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подробно смотрите ниже: описание, характеристики, datasheet QR код

Модуль, igbt, ixys купить в Минске

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QR код

YS



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IGBT Chips

| | V_{CES} | I_c | |
|--|-----------------|--------------|---|
| G-Series, Low $V_{CE(sat)}$ B2 Types | 600 ... 1200 V | 7 ... 20 A | 6 |
| G-Series, Fast C2 Types | 600 V | 7 ... 20 A | 6 |
| S-Series, SCSOA Capability, Fast Types | 600 V | 10 ... 20 A | 6 |
| E-Series, Improved NPT³ technology | 1200 ... 1700 V | 20 ... 150 A | 7 |

MOSFET Chips

| | V_{DSS} | $R_{DS(on)}$ | |
|--|-----------------|--------------------------|-------|
| HiPerFET™ Power MOSFET | 70 ... 1200 V | 0.005 ... 4.5 Ω | 8-10 |
| PolarHT/HV™ Power MOSFET | 55 ... 600 V | 0.015 ... 0.135 Ω | 11 |
| PolarHT/HV™ HiPerFET Power MOSFET | 100 ... 600 V | 0.0075 ... 0.74 Ω | 12-14 |
| N-Channel Depletion Mode MOSFET | 500 ... 1000 V | 30 ... 110 Ω | 15 |
| P-Channel Power MOSFET | -100 ... -600 V | 0.06 ... 1.2 Ω | 15 |
| Chip outlines | | | 16-23 |

Bipolar Chips

| | V_{RRM} / V_{DRM} | $I_{F(AV)M} / I_{T(AV)M}$ | |
|---------------------------------|---------------------|---------------------------|-------|
| Rectifier Diodes | 800 ... 2200 V | 12 ... 788 A | 24-25 |
| FREDs | 200 ... 1200 V | 8 ... 244 A | 26-28 |
| Low Leakage FREDs | 200 ... 1200 V | 9 ... 148 A | 29-30 |
| SONIC-FRD™ Diodes | 600 ... 1800 V | 12 ... 150 A | 31-32 |
| GaAs Schottky Diodes | 100 ... 300 V | 3.5 ... 25 A | 33-34 |
| Schottky Diodes | 8 ... 200 V | 28 ... 145 A | 35-38 |
| Phase Control Thyristors | 800 ... 2200 V | 15 ... 540 A | 39-40 |
| Fast Rectifier Diodes | 1600 ... 1800 V | 10 ... 26 A | 41 |

Direct Copper Bonded (DCB) Ceramic Substrates

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Symbols and Definitions

| | |
|---------------------|---|
| C_{ies} | Input capacitance of IGBT |
| C_{iss} | Input capacitance of MOSFET |
| $-di/dt$ | Rate of decrease of forward current |
| I_C | DC collector current |
| I_D | Drain current |
| I_F | Forward current of diode |
| $I_{F(AV)M}$ | Maximum average forward current at specified T_h |
| I_{FSM} | Peak one cycle surge forward current |
| I_{GT} | Gate trigger current |
| I_R | Reverse current |
| I_{RM} | Maximum peak recovery current |
| I_T | Forward current of thyristor |
| $I_{T(AV)M}$ | Maximum average on-state current of a thyristor at specified T_h |
| I_{TSM} | Maximum surge current of a thyristor |
| $R_{DS(on)}$ | Static drain-source on-state resistance |
| R_{thjc} | Thermal resistance junction to case |
| r_T | Slope resistance of a thyristor or diode (for power loss calculations) |
| T_{case} | Case temperature |
| T_h | Heatsink temperature |
| t_{fi} | Current fall time with inductive load |
| $T_j, T_{(vj)}$ | Junction temperature |
| $T_{jm}, T_{(vj)m}$ | Maximum junction temperature |
| t_{rr} | Reverse recovery time of a diode |
| $V_{CE(sat)}$ | Collector-emitter saturation voltage |
| V_{CES} | Maximum collector-emitter voltage |
| V_{DRM} | Maximum repetitive forward blocking voltage of thyristor |
| V_{DSS} | Drain-source break-down voltage |
| V_F | Forward voltage of diode |
| V_R | Reverse voltage |
| V_{RRM} | Maximum peak reverse voltage of thyristor or diode |
| V_T | On-state voltage of thyristor |
| V_{TO} | Threshold voltage of thyristors or diodes (for power loss calculation only) |

Nomenclature

IGBT and MOSFET Discrete

| | |
|--------------------|---|
| IXSD 40N60A | (Example) |
| IX | IXYS |
| | Die technology |
| E | NPT ³ IGBT |
| F | HiPerFET™ Power MOSFET |
| G | Fast IGBT |
| S | IGBT with SCSOA capability |
| T | Standard Power MOSFET |
| D | Unassembled chip (die) |
| 40 | Current rating, 40 = 40 A |
| N | N-channel type |
| P | P-channel type |
| 60 | Voltage class, 60 = 600 V |
| | MOSFET |
| xx | Prime $R_{DS(on)}$ for standard MOSFET |
| A | Low gate charge die |
| Q | Low gate charge die, 2 nd generation |
| Q2 | PolarHT/HV Power MOSFET |
| P | Linear Mode MOSFET |
| L | IGBT |
| -- | No letter, low $V_{CE(sat)}$ |
| A | Or A2, std speed type |
| B | Or B2, high speed type |
| C | Or C2, very high speed type |

Diode and Thyristor Chips

| | |
|-----------------------|--|
| C-DWEP 69-12 | (Diode Example) |
| C | Package type |
| D | Chip function D = Silicon rectifier diode |
| W | Unassembled chip |
| EP | Process designator EP = Epitaxial rectifier diode N = Rectifier diode, cathode on top P = Rectifier diode, anode on top FN = Fast Rectifier diode, cathode on top FP = Fast Rectifier diode, anode on top |
| 69 | Current rating value of one chip in A |
| -12 | Voltage class, 12 = 1200 V |
| W-CWP 55-12/18 | (Thyristor Example) |
| W | Package type |
| C | Chip function C = Silicon phase control thyristor |
| W | Unassembled chip |
| P | Process designator P = Planar passivated chip cathode on top |
| 55 | Current rating value of one chip in A |
| 12/18 | Voltage class, 12/18 = 1200 up to 1800 V |



Registration No.:
ISO/TS 16949:
001947 TS2



Registration No.:
ISO 14001:
001947 UM



Registration No.:
OHSAS 18001:
001947 OH

Chip and DCB Ceramic Substrates catalogue Edition 2008

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As far as patents or other rights of third parties are concerned, liability is only assumed for chips and DCB parts per se, not for applications, processes and circuits implemented with components or assemblies. Terms of delivery and the right to change design or specifications are reserved.

General Informations for Chips

When mounting Power Semiconductor chips to a header, ceramic substrate or hybrid thick film circuit, the solder system and the chip attach process are very important to the reliability and performance of the final product. This brochure provides several guidelines that describe recommended chip attachment procedures. These methods have been used successfully for many years at IXYS.

Available Packaging Options

IXYS offers various options.

Please order from one of the following possibilities:

| Packaging Options | Delivery form |
|-------------------|--|
| C-...* | Chips in tray (Waffle Pack); Electrically tested |
| T-...* | Chips in wafer, unsawed; Bipolar = 5" (125 mmØ) wafer; Electrically tested, rejects are inked or 6" (150 mmØ) |
| W-...* | Chips in wafer on foil, sawed; Bipolar = 5" (125 mmØ) wafer; Electrically tested, rejects are inked or 6" (150 mmØ) |

...* must be amended by the exact chip type designation.

Package, Storage and Handling

Chips should be transported in their original containers. All chip transfer to other containers or for assembly should be done only with rubber-tipped vacuum pencils. Contact with human skin (or with a tool that has been touched by hand) leaves an oily residue that may adversely impact subsequent chip attach or reliability.

At temperatures below 104°F (40°C), there is no limitation on storage time for chips in sealed original packages. Chips removed from original packages should be assembled immediately. The wetting ability of the contact metallization with solder can be preserved by storage in a clean and dry nitrogen atmosphere.

The IGBT and MOSFET Chips are electrostatic discharge (ESD) sensitive. Normal ESD precautions for handling must be observed. Prior to chip attach, all testing and handling of the chips must be done at ESD safe work stations according to DIN IEC 47(CO) 701. Ionized air blowers are recommended for added ESD protection.

Contamination of the chips degrades the assembly results. Finger prints, dust or oily deposits on the surface of the chips have to be absolutely avoided.

Rough mechanical treatment can cause damage to the chip.

Electrical Tests

The electrical properties listed in the data sheet presume correctly assembled chips. Testing of **non**-assembled chips requires the following precautions:

- High currents have to be supplied homogeneously to the whole metallized contact area.
- Kelvin probes must be used to test voltages at high currents
- Applying the full specified blocking or reverse voltage may cause arcing across the glass passivated junction termination, because the electrical field on top of the passivation glass causes ionization of the surrounding air. This phenomenon can be avoided by using inert fluids or by increasing the pressure of the gas surrounding the chip to values above 30 psig (2 bars).

General Rules for Assembly

The linear thermal expansion coefficient of silicon is very small compared to usual contact metals. If a large area metallized silicon chip is directly soldered to a metal like copper, enormous shear stress is caused by temperature changes (e.g. when cooling down from the solder temperature or by heating during working conditions) which can disrupt the solder mountdown.

If it is found that larger chips are cracking during mountdown or in the application, then the use of a low thermal expansion coefficient buffer layer, e.g. tungsten, molybdenum or Trimetal®, for strain relief should be considered. An alternative solution is to soft-solder these larger chips to DCB ceramic substrates because of their matching thermal expansion coefficients.

Assembly Instructions

MOS/IGBT Chips

Recommended Solder System

IXYS recommends a soft solder chip attach using a solder composition of 92.5 % Pb, 5 % Sn and 2.5 % Ag. The maximum chip attach temperature is 460°C for MOSFET and 360°C for HiPerFET™ and IGBT.

Wire Bonding

It is recommended to use wire of diameter not greater than 0.38 mm (0.015") for bonding to the source emitter and gate pads. Multiple wires should be used in place of thicker wire to handle high drain or emitter currents. See tables for number of recommended wire bonds. For smaller gate pads, 0.15 mm diameter wire is recommended.

Thermal Response Testing

To assure good chip attach processing, thermal response testing per MIL-STD 750, Method 3161 or equivalent should be performed.

Bipolar Chips

Assembling

IXYS bipolar semiconductor chips have a soft-solderable, multi-layer metallization (Ti/Ni/Ag) on the bottom side and, on top, either the same metallization scheme or an aluminium layer sufficiently thick for ultrasonic bonding. Note that the last layer of metal for soldering is pure silver.

Regardless of their type all chips possess the same glass passivated junction termination system on top of the chip. For that reason they can be easily chip bonded or they can all be simply soldered to a flat contacting electrode in accordance to the General Rules on Page 3. All kinds of the usual soft solders with melting points below 660°F (350°C) can be used thanks to their pure silver top metal. Solders with high melting points are preferable due to their better power cycling capability, i.e. they are more resistant to thermal fatigue.

Soldering temperature should not exceed 750°F (400°C). The maximum temperature should not be applied for more than five minutes.

As already mentioned above the electrical properties quoted in the data sheets can only be obtained with properly assembled chips. This is only possible when all contact materials to be soldered together are well wetted and the solder is practically free of voids.

A simple means to achieve good solder connections is to use a belt furnace running with a process gas containing at least 10 % Hydrogen in Nitrogen.

Other approved methods are also allowed, provided that the above mentioned temperature-time-limits are not exceeded and temperature shocks above 930°F/min (500 K/min) are avoided.

We do not recommend the use of fluxes for soldering!

Ultrasonic Wire Bonding

Chips provided with a thick aluminium layer are designed for ultrasonic wire bonding. Wire diameters up to 500 µm can be used dependent on chip types. Setting wires in parallel and application of stitch bonding lead to surge current ratings comparable to soldered chips.

Coating

Although the chips are glass passivated, they must be protected against arcing and environmental influences. The coating material that is in contact with the chip surface must have the following properties:

- elasticity (to prevent mechanical stress)
- high purity, no contamination with alkali metals
- good adhesion to metals and glass passivation.

FRED, Rectifier Diode and Thyristor Chips in Planar Design

Fast Recovery Epitaxial Diodes (FRED)

Power switches (IGBT, MOSFET, BJT, GTO) for applications in electronics are only as good as their associated free-wheeling diodes. At increasing switching frequencies, the proper functioning and efficiency of the power switch, aside from conduction losses, is determined by the turn-off behavior of the diode (characterized by Q_{rr} , I_{RM} and t_{rr} - Fig. 1).

The reverse current characteristic following the peak reverse current I_{RM} is another very important property. The slope of the decaying reverse current di_r/dt results from design parameters; technology and diffusion of the FRED chip Fig. 2. In a circuit this current slope, in conjunction with parasitic inductances (e.g. connecting leads) causes over-voltage spikes and high frequency interference voltages. The higher the di_r/dt ("hard recovery" or "snap-off" behavior) the higher is the resulting additional stress for both the diode and the paralleled switch. A slow decay of the reverse current ("soft recovery" behavior), is the most desirable characteristic, and this is designed into all FRED. The wide range of available blocking voltages makes it possible to apply these FRED as output rectifiers in switch-mode power supplies (SMPS) as well as protective and free-wheeling diodes for power switches in inverters and welding power supplies.

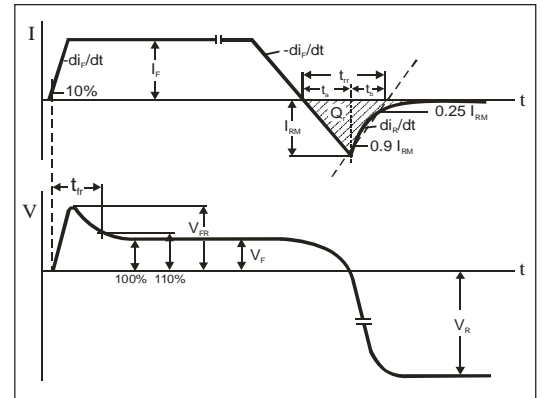


Fig. 1: Current and voltage during turn-on and turn-off switching of fast diodes

Rectifier Diode and Thyristor Chips

The figures 3 a-c show cross sectional views of the diode and thyristor chips in the passivation area. All diode and thyristor chips (DWN, DWFN, CWP) are fabricated using separation diffusion processes so that all junctions terminate on the topside of the chip. Now the entire bottom surfaces of all chips are available for soldering onto a DCB or other ceramic substrate without a molybdenum strain buffer. The elimination of the strain buffer and its solder joint reduces thermal resistance and increases blocking voltage stability. The junction termination areas are passivated with glass, whose thermal expansion coefficient matches that of silicon. All silicon chips increasingly use planar technology with guard rings and channel stoppers to reduce electric fields on the chip surface.

The contact areas of the chips have vapor deposited metal layers which contribute substantially to their high power cycle capability. All chips are processed on silicon wafers of 5" diameter and diced after a wafer sample test which auto-matically marks chips not meeting the electrical specification. The chip geometry is square or rectangular.

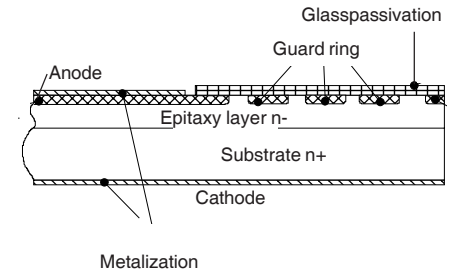


Fig. 2: Cross section of glassivated planar epitaxial diode chip (type DWEP)

Fig. 3a-c

Cross sections of Chips in the passivation area

a) Diode chip, type DWN, DWFN

b) Diode chip, type DWP, DWFP

c) Thyristor chip, type CWP

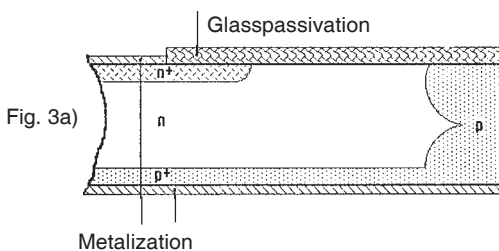


Fig. 3a)

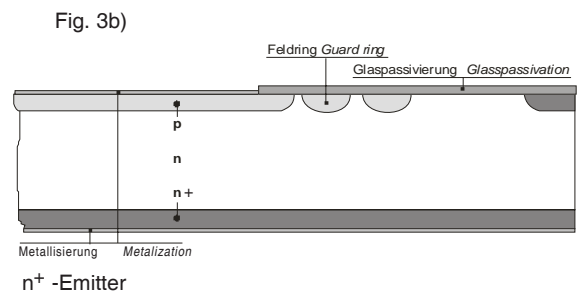


Fig. 3b)

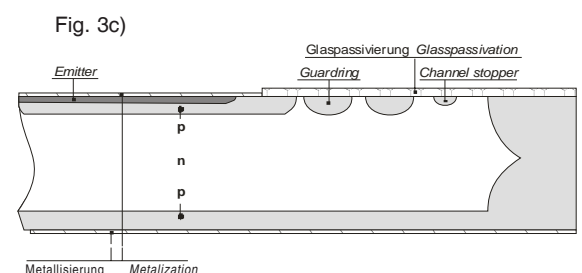


Fig. 3c)

Insulated Gate Bipolar Transistors

GenX3 IGBTs

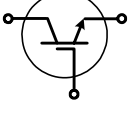
600V A3-Series

| Type $T_{JM} = 150^{\circ}\text{C}$ | V_{CES} V | $V_{CE(sat)}$ V | @ I_C A | Chip type | Chip Size dimensions | | Source bond wire recommended | Equivalent device data sheet |
|--|-----------------|--------------------|--------------|--------------|-------------------------|-----------|------------------------------------|------------------------------------|
| | | | | | mm | mils | | |
| High Gain | IXGD28N60A3-45 | 1.5 | 20 | IX45 | 5.00 x 4.00 | 197 x 157 | 10 mil x 3 | IXGH28N60A3 |
| | IXGD36N60A3-55 | 1.4 | 20 | IX55 | 6.00 x 4.00 | 236 x 157 | 15 mil x 3 | IXGH36N60A3 |
| | IXGD48N60A3-56 | 1.3 | 20 | IX56 | 6.20 x 5.20 | 244 x 205 | 15 mil x 3 | IXGH48N60A3 |
| | IXGD56N60A3-65 | 1.3 | 20 | IX65 | 6.30 x 6.30 | 248 x 248 | 15 mil x 4 | IXGH56N60A3 |
| | IXGD64N60A3-75 | 1.3 | 20 | IX75 | 6.86 x 6.86 | 270 x 270 | 15 mil x 3 | IXGH64N60A3 |
| | IXGD72N60A3-76 | 1.3 | 20 | IX76 | 8.90 x 7.14 | 351 x 281 | 15 mil x 4 | IXGH72N60A3 |
| | IXGD90N60A3-85 | 1.3 | 20 | IX85 | 12.17 x 7.14 | 479 x 281 | 12 mil x 4 | IXGH90N60A3 |
| | IXGD120N60A3-86 | 1.3 | 20 | IX86 | 13.98 x 9.02 | 550 x 355 | 12 mil x 6 | IXGK120N60A3 |
| | IXGD360N60A3-97 | 1.3 | 20 | IX97 | 15.81 x 12.5 | 622 x 492 | 15 mil x 6 | IXGN360N60A3 |

600V B3-Series

| | | | | | | | | |
|-------------|-----------------|-----|----|------|--------------|-----------|------------|--------------|
| Low Gain | IXGD28N60B3-45 | 1.8 | 20 | IX45 | 5.00 x 4.00 | 197 x 157 | 10 mil x 3 | IXGH28N60B3 |
| | IXGD36N60B3-55 | 1.8 | 20 | IX55 | 6.00 x 4.00 | 236 x 157 | 15 mil x 3 | IXGH36N60B3 |
| | IXGD48N60B3-56 | 1.6 | 20 | IX56 | 6.20 x 5.20 | 244 x 205 | 15 mil x 3 | IXGH48N60B3 |
| | IXGD56N60B3-65 | 1.6 | 20 | IX65 | 6.30 x 6.30 | 248 x 248 | 15 mil x 4 | IXGH56N60B3 |
| | IXGD64N60B3-75 | 1.6 | 20 | IX75 | 6.86 x 6.86 | 270 x 270 | 15 mil x 3 | IXGH64N60B3 |
| | IXGD72N60B3-76 | 1.6 | 20 | IX76 | 8.90 x 7.14 | 351 x 281 | 15 mil x 4 | IXGH72N60B3 |
| | IXGD90N60B3-85 | 1.6 | 20 | IX85 | 12.17 x 7.14 | 479 x 281 | 12 mil x 4 | IXGH90N60B3 |
| | IXGD120N60B3-86 | 1.6 | 20 | IX86 | 13.98 x 9.02 | 550 x 355 | 12 mil x 6 | IXGK120N60B3 |
| | IXGD200N60B3-97 | 1.6 | 20 | IX97 | 15.81 x 12.5 | 622 x 492 | 15 mil x 6 | IXGB200N60B3 |

Insulated Gate Bipolar Transistors



G-Series

| Type $T_{JM} = 150^{\circ}C$ | V_{CES} V | $V_{CE(sat)}$ V | @ I_C A | Chip type | Chip Size dimensions | | Source bond wire recommended | Equivalent device data sheet | |
|---------------------------------|-----------------|--------------------|--------------|-----------|----------------------|-------------|------------------------------|------------------------------|-------------|
| | | | | | mm | mils | | | |
| High Gain | IXGD7N60B-2X | 2.2 | 7 | IX2X | 3.17 x 3.17 | 125 x 125 | 10 mil x 1 | IXGP7N60B | |
| | IXGD7N60C-2X | 2.9 | 7 | IX2X | 3.17 x 3.17 | 125 x 125 | 12 mil x 1 | IXGP7N60C | |
| | IXGD16N60B2-3X | 2.5 | 12 | IX3X | 4.39 x 3.60 | 173 x 142 | 12 mil x 1 | IXGH16N60B2 | |
| | IXGD16N60C2-3X | 3.0 | 12 | IX3X | 4.39 x 3.60 | 173 x 142 | 12 mil x 1 | IXGH16N60C2 | |
| | IXGD30N60B2-4X | 2.0 | 20 | IX4X | 5.65 x 4.70 | 222 x 185 | 10 mil x 2 | IXGH30N60B2 | |
| | IXGD30N60C2-4X | 2.7 | 20 | IX4X | 5.65 x 4.70 | 222 x 185 | 10 mil x 2 | IXGH30N60C2 | |
| | IXGD40N60B2-5Y | 1.8 | 20 | IX5Y | 6.59 x 6.59 | 259 x 259 | 12 mil x 3 | IXGH40N60B2 | |
| | IXGD40N60C2-5Y | 2.5 | 20 | IX5Y | 6.59 x 6.59 | 259 x 259 | 12 mil x 3 | IXGH40N60C2 | |
| | IXGD50N60B2-6Z | 2.0 | 20 | IX6Z | 8.65 x 6.52 | 341 x 257 | 12 mil x 4 | IXGH50N60B2 | |
| | IXGD50N60C2-6Z | 2.7 | 20 | IX6Z | 8.65 x 6.52 | 341 x 257 | 12 mil x 4 | IXGH50N60C2 | |
| | IXGD60N60B2-7Y | 1.8 | 20 | IX7Y | 8.89 x 7.16 | 350 x 282 | 12 mil x 4 | IXGH60N60B2 | |
| | IXGD60N60C2-7Y | 2.5 | 20 | IX7Y | 8.89 x 7.16 | 350 x 282 | 12 mil x 4 | IXGH60N60C2 | |
| | IXGD120N60B-9X | 1.6 | 20 | IX9X | 14.20 x 10.60 | 559 x 417 | 15 mil x 6 | IXGK120N60B | |
| | IXGD120N60C2-9X | 2.5 | 20 | IX9X | 14.20 x 10.60 | 559 x 417 | 15 mil x 6 | IXGK120N60C2 | |
| | IXGD200N60A2-9X | 1.35 | 20 | IX9X | 14.20 x 10.60 | 559 x 417 | 15 mil x 6 | IXGN200N60A2 | |
| | IXGD20N120B-4Z | 1200 | 3.4 | 20 | IX4Z | 4.30 x 5.20 | 169 x 205 | 10 mil x 2 | IXGH20N120B |
| | IXGD28N120B-5Z | | 3.5 | 20 | IX5Z | 6.20 x 5.20 | 244 x 205 | 12 mil x 3 | IXGH28N120B |

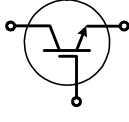
S-Series

| Low Gain | V_{CES} | $V_{CE(sat)}$ | @ I_C | Chip type | Chip Size dimensions | Source bond wire recommended | Equivalent device data sheet |
|----------------|-----------|---------------|---------|-----------|----------------------|------------------------------|------------------------------|
| IXSD10N60B2-3Z | 600 | 2.7 | 10 | IX3Z | 3.60 x 3.60 | 142 x 142 | IXSP10N60B2 |
| IXSD20N60B2-4Z | | 2.7 | 16 | IX4Z | 4.30 x 5.20 | 169 x 205 | IXSH20N60B2 |
| IXSD30N60B2-5Z | | 2.5 | 20 | IX5Z | 6.20 x 5.20 | 244 x 205 | IXSH30N60B2 |

Notes:

1. Recommended Gate bond wire: 5 mil for chip 2X; 8 mil for chips 3X, 3Z., 4X, 5Y, 5Z, 7Y; 12 mil for chip 9X
2. Dice are tested to V_{sat} limits as indicated. Maximum current 20A is limited by test equipment.
3. Recommended die processing thermal budget 300 deg. C for 5 minutes; maximum temperature should not to exceed 360 deg. C
4. This table lists active chips only

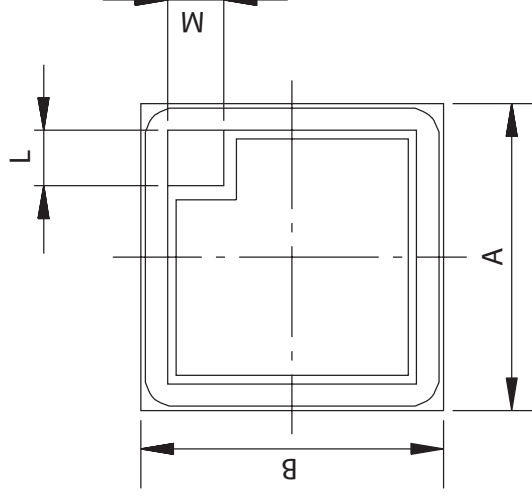
IGBT E-Series with improved NPT³ technology



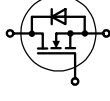
| Type | V _{GES} V | T _{VJM} °C | Short circuit I _{sc} A | I _c A | V _{CE(sat)} T _{VJ} = 125°C | | E _{on} Inductive Load T _{VJ} = 125°C mJ | E _{off} Load mJ | @ I _c A | Q _{g(on)} nC | Internal Gate Resistance Ω | bondable | Dimensions | | | | Si thickn. mm |
|------------------|-----------------------|------------------------|--|---------------------|---|-----------------|--|--------------------------------|-----------------------|--------------------------|-------------------------------------|----------|------------|-------|-------|-------|---------------------|
| | | | | | 25°C typ. V | 125°C typ. V | | | | | | | A | B | L | M | |
| IXED15N120 ① | 1200 | 150 | • | 20 | 2.80 | 2.75 | 2.8 | 1.8 | 20 | 100 | tbd | • | 5.7 | 4.6 | 1.1 | 1.1 | 130 ±20 |
| IXED25N120 | | | • | 25 | 2.00 | 2.20 | 3.2 | 2.3 | 25 | 195 | 10 | • | 6.6 | 6.5 | 1.2 | 1.2 | |
| IXED50N120 | | | • | 50 | 1.90 | 2.10 | 6.3 | 4.7 | 50 | 470 | 5 | • | 9.1 | 9.0 | 1.2 | 1.2 | |
| IXED75N120 | | | • | 75 | 1.90 | 2.10 | 9.2 | 7.8 | 75 | 710 | 5 | • | 11.0 | 11.0 | 1.2 | 1.2 | |
| IXED100N120 | | | • | 100 | 1.90 | 2.10 | 11.8 | 10.1 | 100 | 985 | 4 | • | 12.6 | 12.6 | 1.2 | 1.2 | |
| IXED150N120 | | | • | 150 | 2.15 | 2.40 | 21.0 | 15.0 | 150 | 1110 | 3 | • | 12.0 | 12.0 | 1.2 | 1.2 | |
| IXED75N170 | 1700 | | • | 75 | 2.30 | 2.60 | 25.0 | 19.0 | 75 | 630 | 5 | • | 11.9 | 11.9 | 1.2 | 1.2 | 210 ±15 |
| IXED100N170 | | | • | 100 | 2.30 | 2.60 | 32.0 | 27.0 | 100 | 880 | 4 | • | 13.6 | 13.6 | 1.2 | 1.2 | |
| Tolerance | | | | | | | | | | | | | ±0.05 | ±0.05 | ±0.05 | ±0.05 | |

① Not for new design

- NPT³ is an improved NPT design
- Square RBSOA
- Short circuit rated
- reduced V_{CE(sat)}
- reduced switching losses
- soft switching for good EMC behaviour
- optimized for switching frequencies from 10 kHz up to 25 kHz



HiPerFET™ Power MOSFET



HiPerFET™ Power MOSFETs

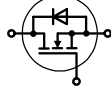
The High Performance MOSFET family of Power MOSFETs is designed to provide superior dv/dt performance while eliminating the need for discrete, fast recovery "free wheeling diodes" in a broad range of power switching applications.

This class of Power MOSFET uses IXYS' HDMOS process, which improves the ruggedness of the MOSFET while reducing the reverse recovery time of the fast intrinsic diode to 250 ns or less at elevated (150°C) junction temperature. The performance of the fast intrinsic diode is comparable to discrete high voltage diodes and is tailored to minimize power dissipation and stress in the MOSFET.

| Type | V _{DSS} max. V | R _{DS(ON)} max. Ω | Chip type | Chip Size dimensions | | Source - bond wire recommended | Equivalent device data sheet |
|----------------|----------------------------|-------------------------------|-----------|----------------------|-----------|--------------------------------|------------------------------|
| | | | | mm | mils | | |
| IXFD180N07-9X | 70 | 0.007 | IX9X | 14.20 x 10.60 | 559 x 417 | 15 mil x 6 | IXFK180N07 |
| IXFD340N07-9Y | | 0.005 | IX9Y | 15.81 x 14.31 | 623 x 563 | 12 mil x 12 | IXFN340N07 |
| IXFD180N085-9X | 85 | 0.007 | IX9X | 14.20 x 10.60 | 559 x 417 | 15 mil x 6 | IXFK180N085 |
| IXFD280N085-9Y | | 0.005 | IX9Y | 15.81 x 14.31 | 623 x 563 | 12 mil x 12 | IXFN280N085 |
| IXFD80N10Q-8X | 100 | 0.018 | IX8X | 12.19 x 7.19 | 480 x 283 | 15 mil x 4 | IXFH80N10Q |
| IXFD170N10-9X | | 0.011 | IX9X | 14.20 x 10.60 | 559 x 417 | 15 mil x 6 | IXFK170N10 |
| IXFD230N10-9Y | | 0.007 | IX9Y | 15.81 x 14.31 | 623 x 563 | 12 mil x 12 | IXFN230N10 |
| IXFD88N20Q-82 | 200 | 0.035 | IX82 | 12.17 x 7.14 | 479 x 281 | 15 mil x 4 | IXFH88N20Q |
| IXFD120N20-9X | | 0.020 | IX9X | 14.20 x 10.60 | 559 x 417 | 15 mil x 6 | IXFK120N20 |
| IXFD180N20-9Y | | 0.014 | IX9Y | 15.81 x 14.31 | 623 x 563 | 12 mil x 12 | IXFN180N20 |
| IXFD40N30Q-72 | 300 | 0.095 | IX72 | 8.89 x 7.16 | 350 x 282 | 15 mil x 3 | IXFH40N30Q |
| IXFD52N30Q-82 | | 0.075 | IX82 | 12.17 x 7.14 | 479 x 281 | 15 mil x 4 | IXFH52N30Q |
| IXFD73N30Q-8Y | | 0.050 | IX8Y | 13.97 x 9.02 | 550 x 355 | 12 mil x 6 | IXFK73N30Q |
| IXFD90N30-9X | | 0.040 | IX9X | 14.20 x 10.60 | 559 x 417 | 15 mil x 6 | IXFK90N30 |
| IXFD130N30-9Y | | 0.028 | IX9Y | 15.81 x 14.31 | 623 x 563 | 12 mil x 12 | IXFN130N30 |

This table lists active chips only. Please contact factory for older designs.

HiPerFET™ Power MOSFET



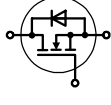
HiPerFET™s offer extended dv/dt ruggedness

The HiPerFET™ series of Power MOSFETs have an extended stress capability in applications where the intrinsic "free-wheeling diode" is used. Both static and dynamic dv/dt withstand capability have been improved to offer a significant margin of safety in high stress conditions found in many types of inductive load switching applications.

| Type | V _{DSS} max. V | R _{DS(ON)} max. Ω | Chip type | Chip Size dimensions | | Source - bond wire recommended | Equivalent device data sheet | | |
|----------------|-------------------------------|----------------------------------|---------------|-------------------------|--------------|--------------------------------------|---|------------|--|
| | | | | mm | mils | | | | |
| IXFD40N50Q-82 | 500 | 0.150 | IX82 | 12.17 x 7.14 | 479 x 281 | 15 mil x 4 | IXFH40N50Q IXFH40N50Q2 XFK48N50Q XFK55N50 XFK66N50Q2 XFB80N50Q2 IXFN80N50 | | |
| IXFD40N50Q2-84 | | 0.150 | IX84 | 12.17 x 7.14 | 479 x 281 | 15 mil x 4 | | | |
| IXFD48N50Q-8Y | | 0.110 | IX8Y | 13.97 x 9.02 | 550 x 355 | 12 mil x 6 | | | |
| IXFD55N50-9X | | 0.100 | IX9X | 14.20 x 10.60 | 559 x 417 | 15 mil x 6 | | | |
| IXFD66N50Q2-94 | | 0.085 | IX94 | 14.20 x 10.60 | 559 x 417 | 15 mil x 6 | | | |
| IXFD80N50Q2-95 | | 0.070 | IX95 | 15.81 x 12.50 | 623 x 492 | 15 mil x 6 | | | |
| IXFD80N50-9Y | | 0.060 | IX9Y | 15.81 x 14.31 | 623 x 563 | 12 mil x 12 | | | |
| IXFD23N60Q-72 | | 600 | 0.350 | IX72 | 8.89 x 7.16 | 350 x 282 | | 15 mil x 3 | IXFH23N60Q IXFH30N60Q XFK36N60Q XFK44N60 XFK52N60Q2 XFB70N60Q2 IXFN60N60 |
| IXFD30N60Q-82 | | | 0.250 | IX82 | 12.17 x 7.14 | 479 x 281 | | 15 mil x 4 | |
| IXFD36N60Q-8Y | 0.170 | | IX8Y | 13.97 x 9.02 | 550 x 355 | 12 mil x 6 | | | |
| IXFD44N60-9X | 0.140 | | IX9X | 14.20 x 10.60 | 559 x 417 | 15 mil x 6 | | | |
| IXFD52N60Q2-94 | 0.130 | | IX94 | 14.20 x 10.60 | 559 x 417 | 15 mil x 6 | | | |
| IXFD70N60Q2-95 | 0.090 | | IX95 | 15.81 x 12.50 | 623 x 492 | 15 mil x 6 | | | |
| IXFD60N60-9Y | 0.090 | IX9Y | 15.81 x 14.31 | 623 x 563 | 12 mil x 12 | | | | |

This table lists active chips only. Please contact factory for older designs.

HiPerFET™ Power MOSFET



| Type | V _{DSS} max. V | R _{DS(ON)} max. Ω | Chip type | Chip Size dimensions | | Source - bond wire recommended | Equivalent device data sheet |
|-----------------|----------------------------|-------------------------------|---------------|----------------------|-------------|--------------------------------|------------------------------|
| | | | | mm | mils | | |
| IXFD23N80Q-82 | 800 | 0.440 | IX82 | 12.17 x 7.14 | 479 x 281 | 15 mil x 4 | IXFH23N80Q |
| IXFD27N80Q-8Y | | 0.350 | IX8Y | 13.97 x 9.02 | 550 x 355 | 12 mil x 6 | IXFK27N80Q |
| IXFD34N80-9X | | 0.250 | IX9X | 14.20 x 10.60 | 559 x 417 | 15 mil x 6 | IXFK34N80 |
| IXFD38N80Q2-94 | | 0.250 | IX94 | 14.20 x 10.60 | 559 x 417 | 15 mil x 6 | IXFK38N80Q2 |
| IXFD50N80Q2-95 | | 0.170 | IX95 | 15.81 x 12.50 | 623 x 492 | 15 mil x 6 | IXFB50N80Q2 |
| IXFD44N80-9Y | 0.160 | IX9Y | 15.81 x 14.31 | 623 x 563 | 12 mil x 12 | IXFN44N80 | |
| IXFD24N90Q-8Y | 900 | 0.500 | IX8Y | 13.97 x 9.02 | 550 x 355 | 12 mil x 6 | IXFK24N90Q |
| IXFD26N90-9X | | 0.330 | IX9X | 14.20 x 10.60 | 559 x 417 | 15 mil x 6 | IXFK26N90 |
| IXFD39N90-9Y | | 0.220 | IX9Y | 15.81 x 14.31 | 623 x 563 | 12 mil x 12 | IXFN39N90 |
| IXFD6N100Q-5U | 1000 | 2.000 | IX5U | 6.81 x 6.74 | 268 x 265 | 10 mil x 2 | IXFH6N100Q |
| IXFD10N100-7Y | | 1.200 | IX7Y | 8.89 x 7.16 | 350 x 282 | 15 mil x 3 | IXFH10N100 |
| IXFD14N100Q2-7F | | 1.000 | IX7F | 8.89 x 7.16 | 350 x 282 | 12 mil x 4 | IXFH14N100Q2 |
| IXFD14N100-8X | | 0.750 | IX8X | 12.19 x 7.19 | 480 x 283 | 15 mil x 4 | IXFH14N100 |
| IXFD21N100Q-8Y | | 0.520 | IX8Y | 13.97 x 9.02 | 550 x 355 | 12 mil x 6 | IXFK21N100Q |
| IXFD21N100F-8F | | 0.520 | IX8F | 13.97 x 9.02 | 550 x 355 | 12 mil x 6 | IXFK21N100F |
| IXFD24N100-9X | | 0.420 | IX9X | 14.20 x 10.60 | 559 x 417 | 15 mil x 6 | IXFK24N100 |
| IXFD24N100F-9F | | 0.420 | IX9F | 14.20 x 10.60 | 559 x 417 | 15 mil x 6 | IXFK24N100F |
| IXFD38N100Q2-95 | | 0.280 | IX95 | 15.81 x 12.50 | 623 x 492 | 15 mil x 6 | IXFB38N100Q2 |
| IXFD36N100-9Y | | 0.270 | IX9Y | 15.81 x 14.31 | 623 x 563 | 12 mil x 12 | IXFN36N100 |
| IXFD3N120-4U | 1200 | 4.500 | IX4U | 5.77 x 4.96 | 227 x 195 | 12 mil x 1 | IXFP3N120 |

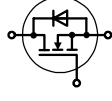
This table lists active chips only. Please contact factory for older designs.

'Q - Class' and 'Q2 - Class' HiPerFET™ MOSFETs for Lower Gate Charge and Faster Switching

New 'Q - class' HiPerFET MOSFETs (identified by the suffix letter Q) are the result of a revolutionary new chip design, which decreases the MOSFET's total gate charge Q_g and the Miller capacitance C_{rss}, while maintaining the ruggedness and fast switching intrinsic diode of the company's current HiPerFET product line. The result is a MOSFET with dramatically improved switching efficiencies and thus enabling higher frequency operation and smaller power supplies.

The newer 'Q2-Class' line combines the low gate charge advantages of Q-Class with a double-metal construction resulting in a new generation of MOSFETs with an intrinsic gate resistance an order of magnitude lower than conventional MOSFETs. The resulting reduction in switching losses allows large MOSFETs to operate up satisfactorily up to the multi-megahertz region.

PolarHT™ MOSFET



| Type | V _{DSS} max. V | R _{DS(ON)} max. mΩ | Chip type | Chip Size dimensions | | Source - bond wire recommended | Equivalent device data sheet |
|-----------------|----------------------------|--------------------------------|-----------|----------------------|-----------|--------------------------------|------------------------------|
| | | | | mm | mils | | |
| IXTD110N055P-5S | 55 | 21 | IX5S | 6.20 x 5.20 | 244 x 205 | 12 mil x 3 | IXTP 110N055P |
| IXTD75N10P-5S | 100 | 31 | IX5S | 6.20 x 5.20 | 244 x 205 | 12 mil x 3 | IXTP 75N10P |
| IXTD110N10P-6S | | 22 | IX6S | 6.86 x 6.86 | 270 x 270 | 12 mil x 4 | IXTQ 110N10P |
| IXTD140N10P-7S | | 20 | IX7S | 8.9 x 7.14 | 351 x 281 | 15 mil x 4 | IXTQ 140N10P |
| IXTD170N10P-8S | | 15 | IX8S | 11.12 x 7.14 | 438 x 281 | 12 mil x 6 | IXTQ 170N10P |
| IXTD200N10P-88 | | 15 | IX88 | 13.34 x 7.14 | 525 x 281 | 15 mil x 6 | IXTK 200N10P |
| IXTD62N15P-5S | 150 | 50 | IX5S | 6.20 x 5.20 | 244 x 205 | 12 mil x 3 | IXTP 62N15P |
| IXTD96N15P-6S | | 30 | IX6S | 6.86 x 6.86 | 270 x 270 | 12 mil x 4 | IXTQ 96N15P |
| IXTD120N15P-7S | | 23 | IX7S | 8.9 x 7.14 | 351 x 281 | 15 mil x 4 | IXTQ 120N15P |
| IXTD150N15P-8S | | 21 | IX8S | 11.12 x 7.14 | 438 x 281 | 12 mil x 6 | IXTQ 150N15P |
| IXTD180N15P-88 | | 20 | IX88 | 13.34 x 7.14 | 525 x 281 | 15 mil x 6 | IXTK 180N15P |
| IXTD50N20P-5S | 200 | 75 | IX5S | 6.20 x 5.20 | 244 x 205 | 12 mil x 3 | IXTP 50N20P |
| IXTD74N20P-6S | | 42 | IX6S | 6.86 x 6.86 | 270 x 270 | 12 mil x 4 | IXTQ 74N20P |
| IXTD96N20P-7S | | 30 | IX7S | 8.9 x 7.14 | 438 x 281 | 15 mil x 4 | IXTQ 96N20P |
| IXTD120N20P-8S | | 28 | IX8S | 11.12 x 7.14 | 438 x 281 | 12 mil x 6 | IXTQ 120N20P4 |
| IXTD140N20P-88 | | 24 | IX88 | 13.34 x 7.14 | 525 x 281 | 15 mil x 6 | IXTK 140N20P |
| IXTD42N25P-5S | 250 | 100 | IX5S | 6.20 x 5.20 | 244 x 205 | 12 mil x 3 | IXTP 42N25P |
| IXTD64N25P-6S | | 60 | IX6S | 6.86 x 6.86 | 270 x 270 | 12 mil x 4 | IXTQ 64N25P |
| IXTD82N25P-7S | | 40 | IX7S | 8.9 x 7.14 | 351 x 281 | 15 mil x 4 | IXTQ 82N25P |
| IXTD100N25P-8S | | 34 | IX8S | 11.12 x 7.14 | 438 x 281 | 12 mil x 6 | IXTQ 100N25P |
| IXTD120N25P-88 | | 30 | IX88 | 13.34 x 7.14 | 525 x 281 | 15 mil x 6 | IXTK 120N25P |
| IXTD36N30P-5S | 300 | 135 | IX5S | 6.20 x 5.20 | 244 x 205 | 12 mil x 3 | IXTP 36N30P |
| IXTD52N30P-6S | | 82 | IX6S | 6.86 x 6.86 | 270 x 270 | 12 mil x 4 | IXTQ 52N30P |
| IXTD69N30P-7S | | 60 | IX7S | 8.9 x 7.14 | 351 x 281 | 15 mil x 4 | IXTQ 69N30P |
| IXTD88N30P-8S | | 50 | IX8S | 11.12 x 7.14 | 438 x 281 | 12 mil x 6 | IXTQ 88N30P |
| IXTD102N30P-88 | | 40 | IX88 | 13.34 x 7.14 | 525 x 281 | 15 mil x 6 | IXTK 102N30P |

This table lists active chips only. Please contact factory for older designs.

PolarHT™ MOSFETs for very low R_{DS(ON)}

PolarHT MOSFETs feature a proprietary cell design and processing that has resulted in a MOSFET with a 30% reduction in R_{DS(ON)} per unit area along with a decrease in gate charge. IXYS has also reduced the wafer thickness, which substantially reduces thermal resistance. The combination of lower R_{DS(ON)}, lower gate charge and higher power dissipation capability has resulted in a new family of MOSFETs, which will increase the cost effectiveness in SMPS applications. IXYS will also introduce HiPerFET versions in which the t_{rr} of the body diode is reduced to make them suitable for phase-shift bridges, motor control and Uninterruptible Power Supply applications.

Polar HT™ HiPerFET Power MOSFET

| Type | V _{DSS} max. V | R _{DS(ON)} max. mΩ | Chip type | Chip Size dimensions | | Source - bond wire recommended | Equivalent device data sheet |
|----------------|----------------------------|--------------------------------|-----------|----------------------|-----------|--------------------------------|------------------------------|
| | | | | mm | mils | | |
| IXFD110N10P-6S | 100 | 0.015 | IX6S | 6.86 x 6.86 | 270 x 270 | 12 mil x 4 | IXFH110N10P |
| IXFD140N10P-7S | | 0.011 | IX7S | 8.9 x 7.14 | 351 x 281 | 15 mil x 4 | IXFH140N10P |
| IXFD170N10P-8S | | 0.009 | IX8S | 11.12 x 7.14 | 438 x 281 | 12 mil x 6 | IXFH170N10P |
| IXFD200N10P-88 | | 0.0075 | IX88 | 13.34 x 7.14 | 525 x 281 | 15 mil x 6 | IXFK200N10P |
| IXFD96N15P-6S | 150 | 0.024 | IX6S | 6.86 x 6.86 | 270 x 270 | 12 mil x 4 | IXFH96N15P |
| IXFD120N15P-7S | | 0.017 | IX7S | 8.9 x 7.14 | 351 x 281 | 15 mil x 4 | IXFH120N15P |
| IXFD150N15P-8S | | 0.013 | IX8S | 11.12 x 7.14 | 438 x 281 | 12 mil x 6 | IXFH150N15P |
| IXFD180N15P-88 | | 0.011 | IX88 | 13.34 x 7.14 | 525 x 281 | 15 mil x 6 | IXFK180N15P |
| IXFD74N20P-6S | 200 | 0.034 | IX6S | 6.86 x 6.86 | 270 x 270 | 12 mil x 4 | IXFH74N20P |
| IXFD96N20P-7S | | 0.024 | IX7S | 8.9 x 7.14 | 351 x 281 | 15 mil x 4 | IXFH96N20P |
| IXFD120N20P-8S | | 0.022 | IX8S | 11.12 x 7.14 | 438 x 281 | 12 mil x 6 | IXFH120N20P |
| IXFD140N20P-88 | | 0.018 | IX88 | 13.34 x 7.14 | 525 x 281 | 15 mil x 6 | IXFK140N20P |
| IXFD100N25P-8S | 250 | 0.027 | IX8S | 11.12 x 7.14 | 438 x 281 | 12 mil x 6 | IXFH100N25P |
| IXFD120N25P-88 | | 0.024 | IX88 | 13.34 x 7.14 | 525 x 281 | 15 mil x 6 | IXFK120N25P |
| IXFD52N30P-6S | 300 | 0.066 | IX6S | 6.86 x 6.86 | 270 x 270 | 12 mil x 4 | IXFH52N30P |
| IXFD69N30P-7S | | 0.049 | IX7S | 8.9 x 7.14 | 351 x 281 | 15 mil x 4 | IXFH69N30P |
| IXFD88N30P-8S | | 0.04 | IX8S | 11.12 x 7.14 | 438 x 281 | 12 mil x 6 | IXFH88N30P |
| IXFD102N30P-88 | | 0.033 | IX88 | 13.34 x 7.14 | 525 x 281 | 15 mil x 6 | IXFK102N30P |
| IXFD12N50P-4J | 500 | 0.5 | IX4J | 5.00 x 5.00 | 197 x 197 | 12 mil x 2 | IXFP12N50P |
| IXFD16N50P-5J | | 0.4 | IX5J | 6.20 x 5.20 | 244 x 205 | 12 mil x 2 | IXFP16N50P |
| IXFD22N50P-63 | | 0.27 | IX63 | 6.30 x 6.30 | 248 x 248 | 12 mil x 4 | IXFH22N50P |
| IXFD26N50P-6J | | 0.23 | IX6J | 6.86 x 6.86 | 270 x 270 | 15 mil x 2 | IXFH26N50P |
| IXFD30N50P-67 | | 0.2 | IX67 | 8.65 x 6.52 | 341 x 257 | 12 mil x 4 | IXFH30N50P |
| IXFD36N50P-7J | | 0.17 | IX7J | 8.91 x 7.15 | 351 x 281 | 12 mil x 4 | IXFH36N50P |
| IXFD44N50P-8J | | 0.14 | IX8J | 11.13 x 7.15 | 438 x 281 | 15 mil x 4 | IXFH44N50P |
| IXFD64N50P-9J | | 0.085 | IX9J | 10.60 x 10.60 | 417 x 417 | 12 mil x 6 | IXFK64N50P |
| IXFD80N50P-93 | | 0.065 | IX93 | 14.20 x 10.60 | 559 x 417 | 12 mil x 6 | IXFK80N50P |

This table lists active chips only. Please contact factory for older designs.

Polar HV™ HiPerFET Power MOSFET

| Type | V _{DSS} max. V | R _{DS(ON)} max. mΩ | Chip type | Chip Size dimensions | | Source - bond wire recommended | Equivalent device data sheet | |
|----------------|----------------------------|--------------------------------|-----------|----------------------|--------------|--------------------------------|------------------------------|-------------|
| | | | | mm | mils | | | |
| IXFD10N60P-4J | 600 | 0.74 | IX4J | 5.00 x 5.00 | 197 x 197 | 12 mil x 2 | IXFP10N60P | |
| IXFD14N60P-5J | | 0.55 | IX5J | 6.20 x 5.20 | 244 x 205 | 12 mil x 2 | IXFH14N60P | |
| IXFD18N60P-63 | | 0.4 | IX63 | 6.30 x 6.30 | 248 x 248 | 12 mil x 4 | IXFH18N60P | |
| IXFD22N60P-6J | | 0.33 | IX6J | 6.86 x 6.86 | 270 x 270 | 15 mil x 2 | IXFH22N60P | |
| IXFD26N60P-67 | | 0.27 | IX67 | 8.65 x 6.52 | 341 x 257 | 12 mil x 4 | IXFH26N60P | |
| IXFD30N60P-7J | | 0.24 | IX7J | 8.91 x 7.15 | 351 x 281 | 12 mil x 4 | IXFH30N60P | |
| IXFD36N60P-8J | | 0.19 | IX8J | 11.13 x 7.15 | 438 x 281 | 15 mil x 4 | IXFH36N60P | |
| IXFD48N60P-9J | | 0.14 | IX9J | 10.60 x 10.60 | 417 x 417 | 12 mil x 6 | IXFK48N60P | |
| IXFD64N60P-93 | | 0.1 | IX93 | 14.20 x 10.60 | 559 x 417 | 12 mil x 6 | IXFK64N60P | |
| IXFD7N80P-4J | | 800 | 1.44 | IX4J | 5.00 x 5.00 | 197 x 197 | 12 mil x 2 | IXFP7N80P |
| IXFD10N80P-5J | 1.1 | | IX5J | 6.20 x 5.20 | 244 x 205 | 12 mil x 2 | IXFP10N80P | |
| IXFD12N80P-63 | 0.85 | | IX63 | 6.30 x 6.30 | 248 x 248 | 12 mil x 4 | IXFH12N80P | |
| IXFD14N80P-6J | 0.72 | | IX6J | 6.86 x 6.86 | 270 x 270 | 15 mil x 2 | IXFH14N80P | |
| IXFD16N80P-67 | 0.6 | | IX67 | 8.65 x 6.52 | 341 x 257 | 12 mil x 4 | IXFH16N80P | |
| IXFD20N80P-7J | 0.5 | | IX7J | 8.90 x 7.14 | 351 x 281 | 12 mil x 4 | IXFH20N80P | |
| IXFD24N80P-8J | 0.4 | | IX8J | 11.12 x 7.14 | 438 x 281 | 15 mil x 4 | IXFH24N80P | |
| IXFD32N80P-9J | 0.27 | | IX9J | 10.6 x 10.6 | 417 x 417 | 12 mil x 6 | IXFN32N80P | |
| IXFD44N80P-93 | 0.19 | | IX93 | 14.2 x 10.6 | 559 x 417 | 12 mil x 6 | IXFN44N80P | |
| IXFD60N80P-9S | 0.14 | | IX9S | 15.81 x 12.5 | 622 x 492 | 12 mil x 8 | IXFN60N80P | |
| IXFD15N100P-76 | 1000 | 0.76 | IX76 | 8.90 x 7.14 | 351 x 281 | 15 mil x 4 | IXFH15N100P | |
| IXFD20N100P-85 | | 0.57 | IX85 | 12.17 x 7.14 | 479 x 281 | 12 mil x 4 | IXFH20N100P | |
| IXFD26N100P-86 | | 0.39 | IX86 | 13.98 x 9.02 | 550 x 355 | 12 mil x 6 | IXFK26N100P | |
| IXFD32N100P-96 | | 0.32 | IX96 | 14.2 x 10.6 | 559 x 417 | 15 mil x 6 | IXFN32N100P | |
| IXFD44N100P-97 | | 0.22 | IX97 | 15.81 x 12.5 | 622 x 492 | 15 mil x 6 | IXFN44N100P | |
| IXFD38N100P-99 | | 0.21 | IX99 | 15.81 x 14.31 | 622 x 563 | 15 mil x 6 | IXFN38N100P | |
| IXFD16N120P-85 | | 1200 | 0.95 | IX85 | 12.17 x 7.14 | 479 x 281 | 12 mil x 4 | IXFH16N120P |
| IXFD20N120P-86 | | | 0.57 | IX86 | 13.98 x 9.02 | 550 x 355 | 12 mil x 6 | IXFN20N120P |
| IXFD26N120P-96 | | | 0.46 | IX96 | 14.2 x 10.6 | 559 x 417 | 15 mil x 6 | IXFN26N120P |
| IXFD30N120P-97 | | | 0.35 | IX97 | 15.81 x 12.5 | 622 x 492 | 15 mil x 6 | IXFB30N120P |
| IXFD32N120P-99 | 0.31 | | IX99 | 15.81 x 14.31 | 622 x 563 | 15 mil x 6 | IXFN32N120P | |

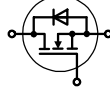
This table lists active chips only. Please contact factory for older designs.

PolarHV™ Power MOSFET

| Type | V _{DSS} max. V | R _{DS(ON)} max. Ω | Chip type | Chip Size dimensions | | Source - bond wire recommended | Equivalent device data sheet |
|-----------------|-------------------------------|----------------------------------|--------------|-------------------------|------------|--------------------------------------|------------------------------------|
| | | | | mm | mils | | |
| IXTD1R6N50P-11 | 500 | 6 | IX11 | 1.91 x 1.91 | 75 x 75 | 10 mil x 1 | IXTP1R6N50P |
| IXTD2R4N50P-1J | | 3.5 | IX1J | 2.29 x 2.29 | 90 x 90 | 10 mil x 1 | IXTP2R4N50P |
| IXTD3N50P-2J | | 2.5 | IX2J | 2.79 x 2.79 | 110 x 110 | 12 mil x 1 | IXTP3N50P |
| IXTD5N50P-23 | | 1.3 | IX23 | 3.69 x 2.79 | 153 x 110 | 12 mil x 1 | IXTP5N50P |
| IXTD6N50P-3J | | 1 | IX3J | 3.60 x 3.60 | 142 x 142 | 15 mil x 1 | IXTP6N50P |
| IXTD8N50P-37 | | 0.8 | IX37 | 4.20 x 4.20 | 165 x 165 | 15 mil x 1 | IXTP8N50P |
| IXTD12N50P-4J | | 0.5 | IX4J | 5.00 x 5.00 | 197 x 197 | 12 mil x 2 | IXTP12N50P |
| IXTD16N50P-5J | | 0.4 | IX5J | 6.20 x 5.20 | 244 x 205 | 12 mil x 2 | IXTP16N50P |
| IXTD22N50P-63 | 0.27 | IX63 | 6.30 x 6.30 | 248 x 248 | 12 mil x 4 | IXTQ22N50P | |
| IXTD26N50P-6J | 0.23 | IX6J | 6.86 x 6.86 | 270 x 270 | 15 mil x 2 | IXTQ26N50P | |
| IXTD30N50P-67 | 0.2 | IX67 | 8.65 x 6.52 | 341 x 257 | 12 mil x 4 | IXTQ30N50P | |
| IXTD36N50P-7J | 0.17 | IX7J | 8.91 x 7.15 | 351 x 281 | 12 mil x 4 | IXTH36N50P | |
| IXTD44N50P-8J | 0.14 | IX8J | 11.13 x 7.15 | 438 x 281 | 15 mil x 4 | IXTQ44N50P | |
| IXTD1R4N60P-11 | 600 | 9 | IX11 | 1.91 x 1.91 | 75 x 75 | 10 mil x 1 | IXTP1R4N60P |
| IXTD2N60P-1J | | 4.7 | IX1J | 2.29 x 2.29 | 90 x 90 | 10 mil x 1 | IXTP2N60P |
| IXTD3N60P-2J | | 2.8 | IX2J | 2.79 x 2.79 | 110 x 110 | 12 mil x 1 | IXTP3N60P |
| IXTD4N60P-23 | | 1.9 | IX23 | 3.69 x 2.79 | 153 x 110 | 12 mil x 1 | IXTP4N60P |
| IXTD5N60P-3J | | 1.6 | IX3J | 3.60 x 3.60 | 142 x 142 | 15 mil x 1 | IXTP5N60P |
| IXTD7N60P-37 | | 1.1 | IX37 | 4.20 x 4.20 | 165 x 165 | 15 mil x 1 | IXTP7N60P |
| IXTD10N60P-4J | | 10 | IX4J | 5.00 x 5.00 | 197 x 197 | 12 mil x 2 | IXTP10N60P |
| IXTD14N60P-5J | | 0.55 | IX5J | 6.20 x 5.20 | 244 x 205 | 12 mil x 2 | IXTQ14N60P |
| IXTD18N60P-63 | 0.42 | IX63 | 6.30 x 6.30 | 248 x 248 | 12 mil x 4 | IXTQ18N60P | |
| IXTD22N60P-6J | 0.35 | IX6J | 6.86 x 6.86 | 270 x 270 | 15 mil x 2 | IXTQ22N60P | |
| IXTD26N60P-67 | 0.23 | IX67 | 8.65 x 6.52 | 341 x 257 | 12 mil x 4 | IXTH26N60P | |
| IXTD30N60P-7J | 0.24 | IX7J | 8.91 x 7.15 | 351 x 281 | 12 mil x 4 | IXTH30N60P | |
| IXTD2N80P-2J | 800 | 6 | IX2J | 2.79 x 2.79 | 110 x 110 | 12 mil x 1 | IXTP2N80P |
| IXTD4N80P-3J | | 4 | IX3J | 3.60 x 3.60 | 142 x 142 | 15 mil x 1 | IXTP4N80P |
| IXTD08N100P-1A | 1000 | 20 | IX1A | 2.29 x 2.29 | 90 x 90 | 10 mil x 1 | IXTP08N100P |
| IXTD1N100P-1C | | 15 | IX1C | 2.54 x 2.54 | 100 x 100 | 10 mil x 1 | IXTP1N100P |
| IXTD1R4N100P-2A | | 11 | IX2A | 2.79 x 2.79 | 110 x 110 | 10 mil x 1 | IXTP1R4N100P |
| IXTD2N100P-2C | | 7.5 | IX2C | 3.89 x 2.79 | 153 x 110 | 12 mil x 1 | IXTP2N100P |
| IXTD3N100P-3C | | 4.8 | IX3C | 4.39 x 3.6 | 173 x 142 | 12 mil x 2 | IXTP3N100P |
| IXTD06N120P-1A | 1200 | 32 | IX1A | 2.29 x 2.29 | 90 x 90 | 10 mil x 1 | IXTP06N120P |
| IXTD08N120P-1C | | 25 | IX1C | 2.54 x 2.54 | 100 x 100 | 10 mil x 1 | IXTP08N120P |
| IXTD1N120P-2A | | 20 | IX2A | 2.79 x 2.79 | 110 x 110 | 10 mil x 1 | IXTP1N120P |
| IXTD1R4N120P-2C | | 13 | IX2C | 3.89 x 2.79 | 153 x 110 | 12 mil x 1 | IXTP1R4N120P |
| IXTD2R4N120P-3C | | 7.5 | IX3C | 4.39 x 3.6 | 173 x 142 | 12 mil x 2 | IXTP2R4N120P |

This table lists active chips only. Please contact factory for older designs.

N-Channel Depletion Mode MOSFET

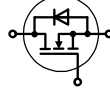


| Type | V_{DSS} max. | $R_{DS(ON)}$ max. | Chip type | Chip Size dimensions | Source - bond wire recommended | Equivalent device data sheet |
|----------------|----------------|-------------------|-----------|------------------------------------|--------------------------------|------------------------------|
| IXTD02N50D-1M | 500 | 30 Ω | IX1M | mm mils 1.96 x 1.68 77 x 66 | 3 mil x 1 | IXTP02N50D |
| IXTD01N100D-1M | 1000 | 110 | IX1M | mm mils 1.96 x 1.68 77 x 66 | 3 mil x 1 | IXTP01N100D |

Depletion Mode MOSFETs

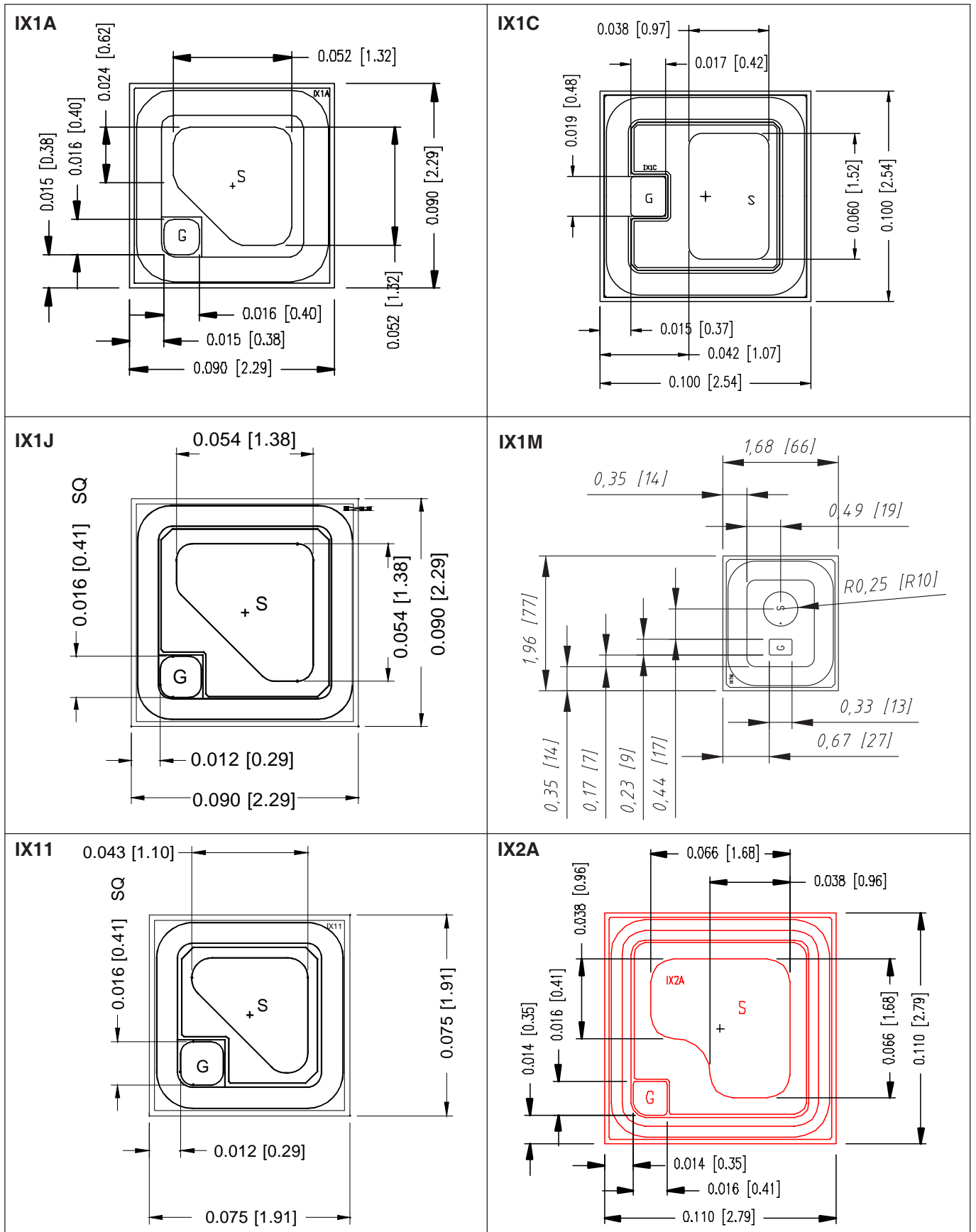
Depletion mode MOSFETs, unlike the regular enhancement type MOSFETs, requires a negative gate bias to turn it off. Consequently they remain on at or above zero gate bias voltage but otherwise have similar MOSFET characteristics. Their $R_{DS(on)}$ and breakdown voltage have a positive temperature coefficient, increasing the gate bias voltage increases the gate channel conductivity and so decreases $R_{DS(on)}$ to some extent and there is a usable intrinsic diode. IXYS Corporation's IXTP01N100D is a depletion mode MOSFET rated at $V_{DSS} = 1000$ Volts and $I_D = 100$ mA and its $R_{DS(on)} = 110$ Ohms at $V_{GS} = 0$ Volt. The other depletion mode MOSFET, IXTP02N50D, is rated at $V_{DSS} = 500$ Volts, $I_D = 200$ mA, while its $R_{DS(on)} = 30$ Ohms. The minimum required gate bias to turn them off is -5 Volts. They are both housed in TO-220 package and can dissipate 25 Watts at $T_C = 25^\circ\text{C}$.

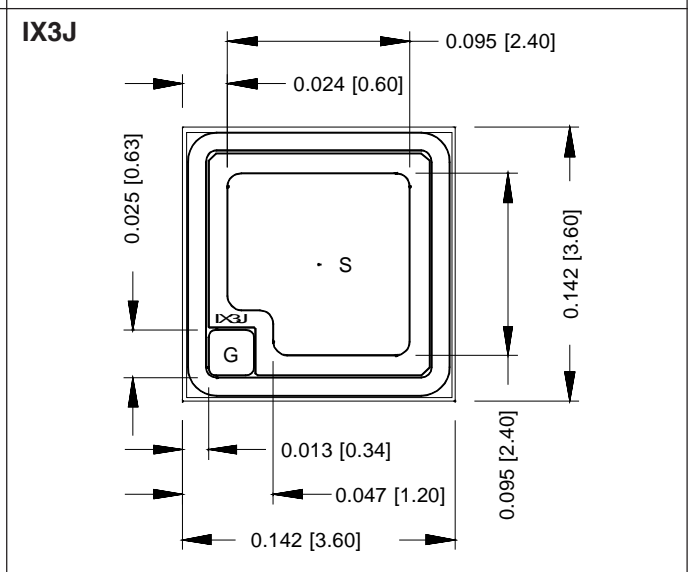
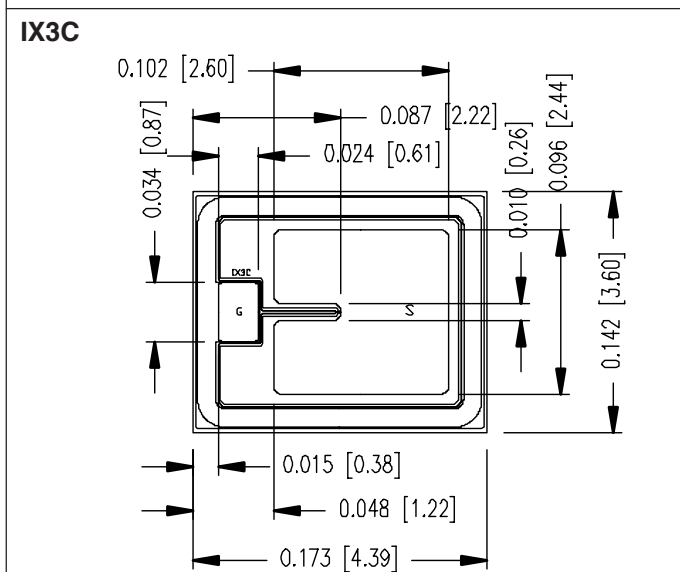
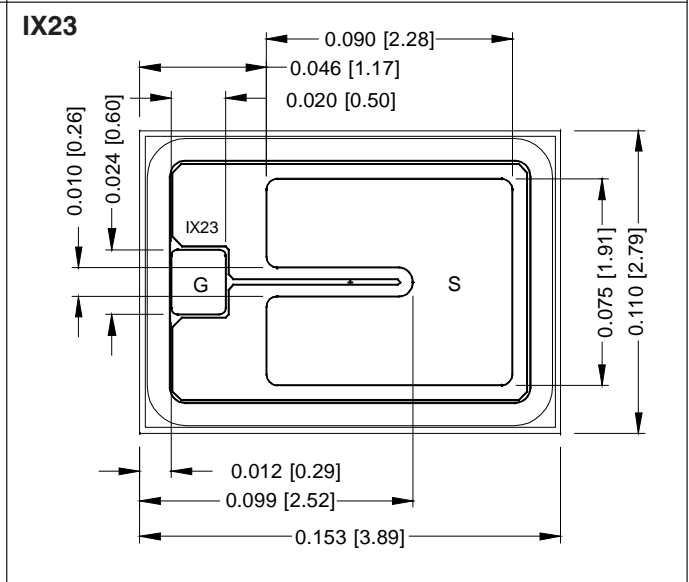
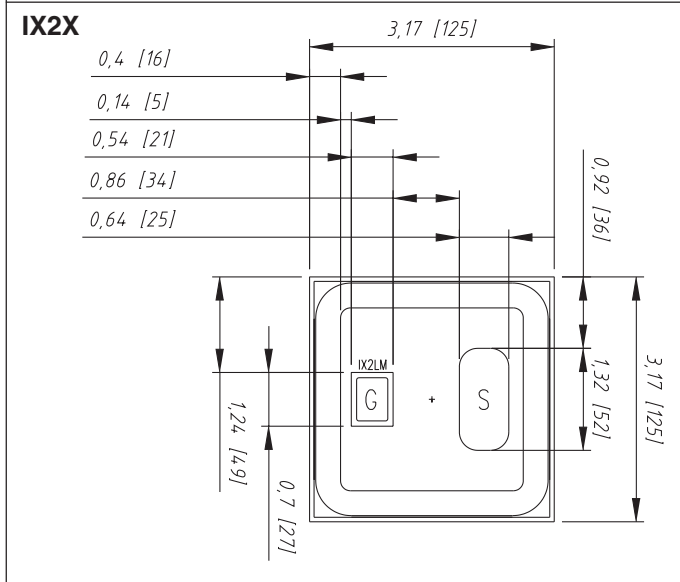
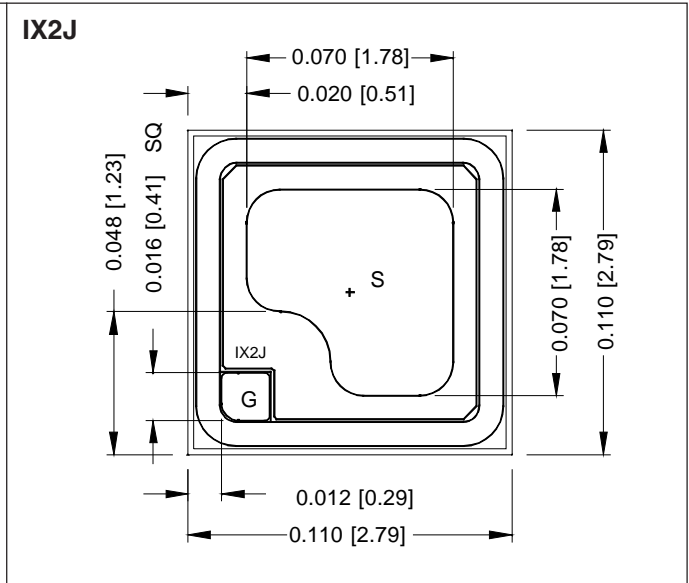
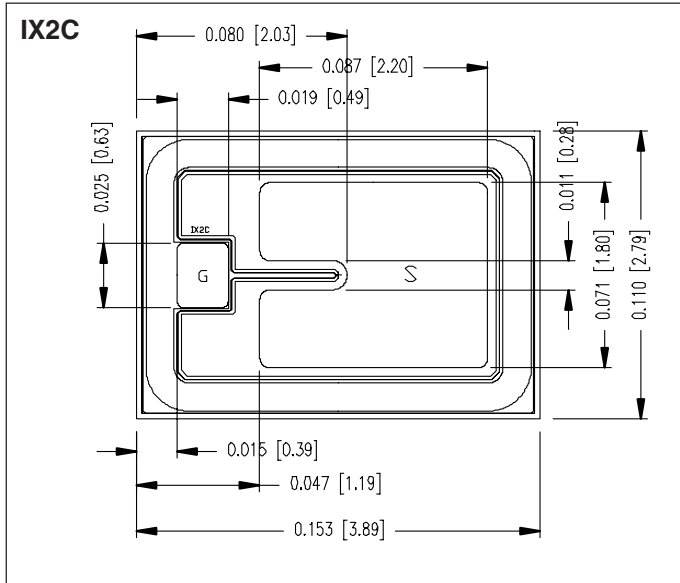
There are many applications in which IXTP01N100D and IXTP02N50D can be used: current regulators, off-line linear regulators, input transient voltage suppressors, input current inrush



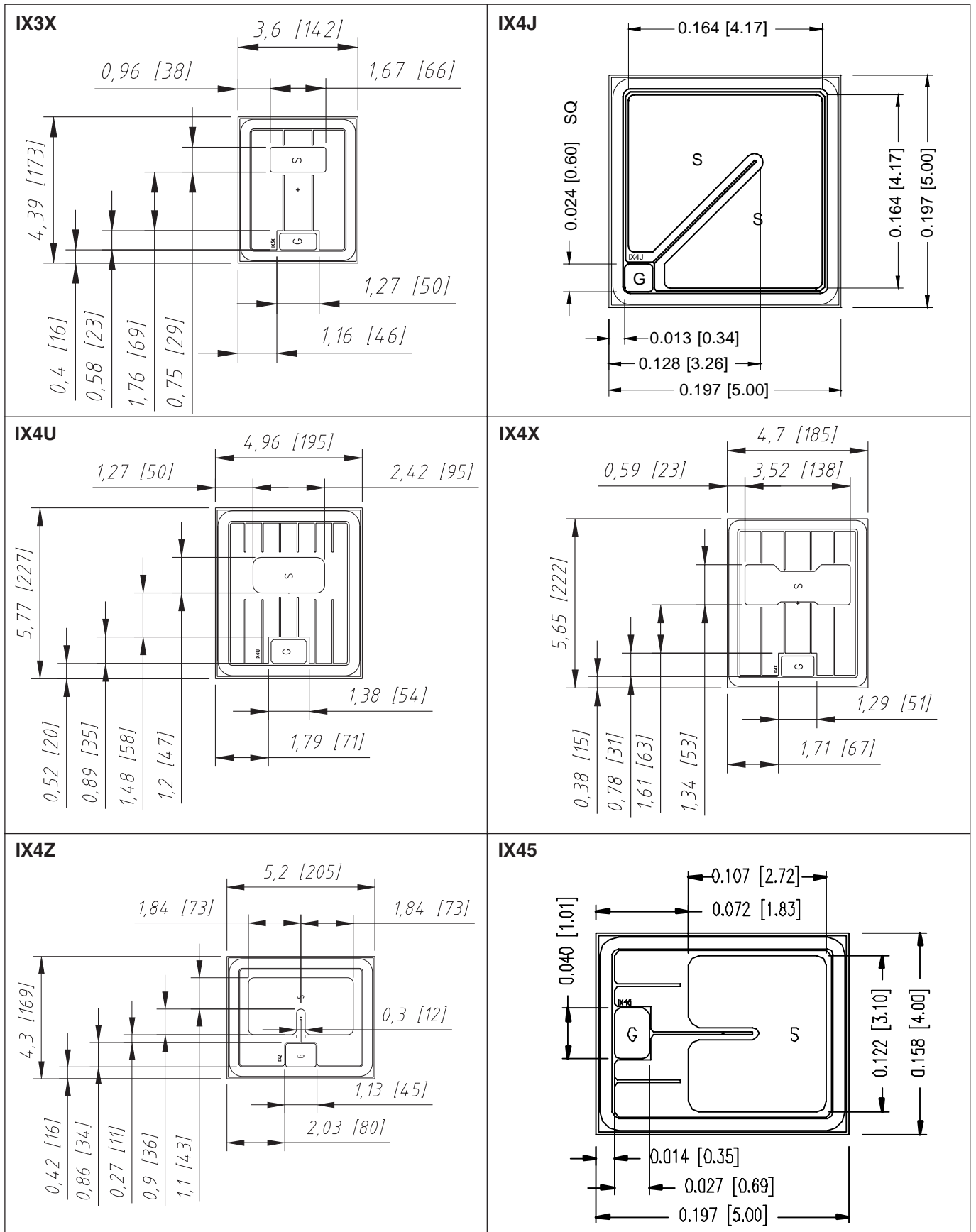
P-Channel Power MOSFET

| Type | V_{DSS} max. | $R_{DS(ON)}$ max. | Chip type | Chip Size dimensions | Source - bond wire recommended | Equivalent device data sheet |
|--------------|----------------|-------------------|-----------|--------------------------------------|--------------------------------|------------------------------|
| IXTD36P10-5B | 100 | 0.08 | IX5B | mm mils 6.59 x 6.59 259 x 259 | 12 mil x 3 | IXTH36P10 |
| IXTD50P10-7B | | 0.06 | IX7B | mm mils 8.84 x 7.18 348 x 283 | 15 mil x 3 | IXTH50P10 |
| IXTD16P20-5B | 200 | 0.22 | IX5B | mm mils 6.59 x 6.59 259 x 259 | 12 mil x 3 | IXTH16P20 |
| IXTD24P20-7B | | 0.16 | IX7B | mm mils 8.84 x 7.18 348 x 283 | 15 mil x 3 | IXTH24P20 |
| IXTD8P50-5B | 500 | 1.20 | IX5B | mm mils 6.59 x 6.59 259 x 259 | 12 mil x 3 | IXTH7P50 |
| IXTD11P50-7B | | 0.75 | IX7B | mm mils 8.84 x 7.18 348 x 283 | 15 mil x 3 | IXTH11P50 |
| IXTD10P60-7B | | 1.05 | IX7B | mm mils 8.84 x 7.18 348 x 283 | 15 mil x 3 | IXTH10P60 |

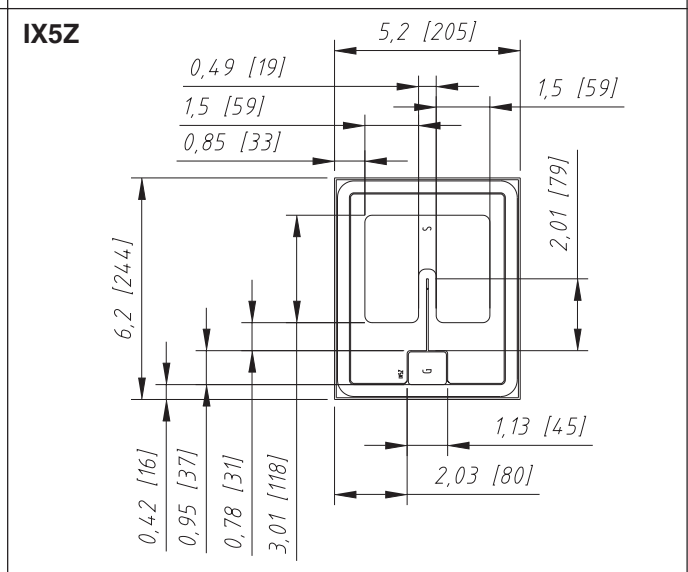
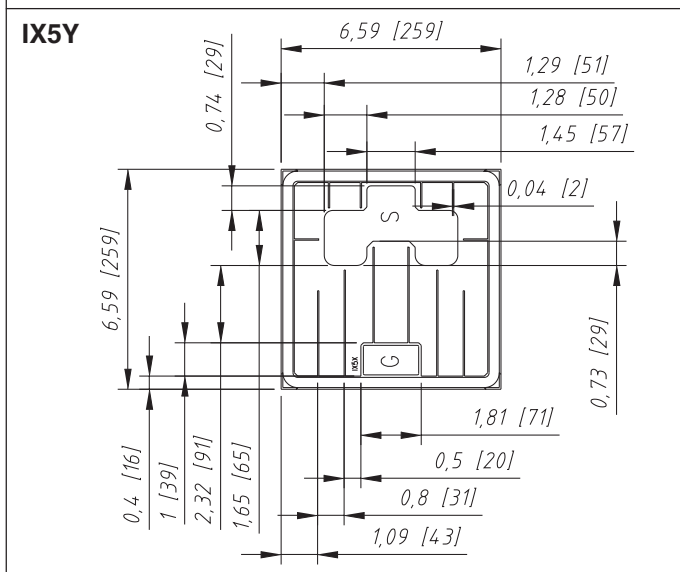
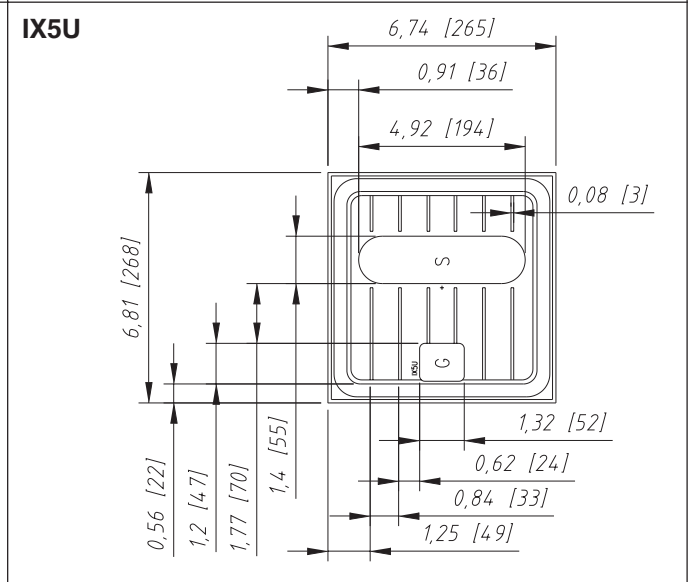
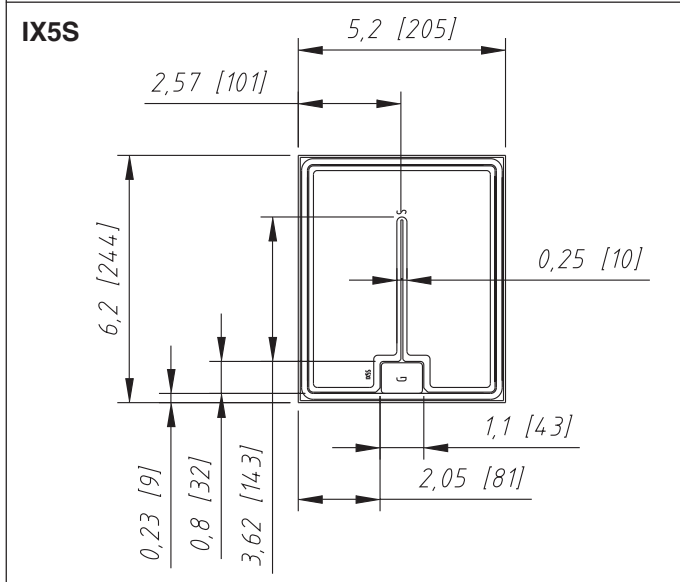
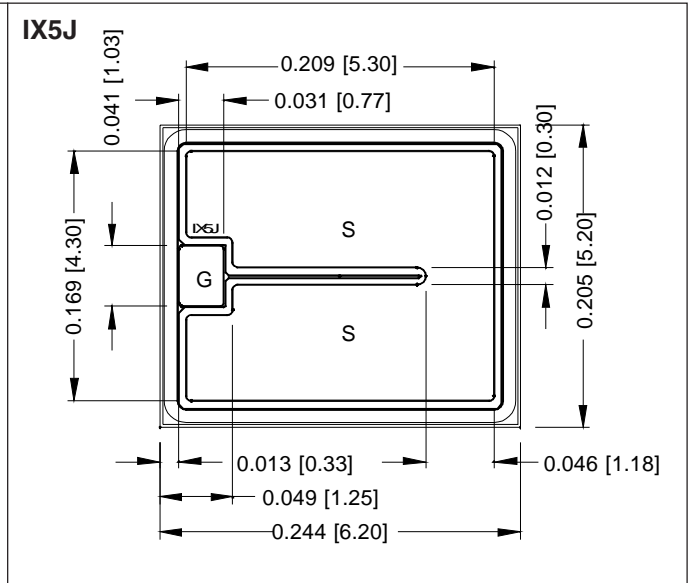
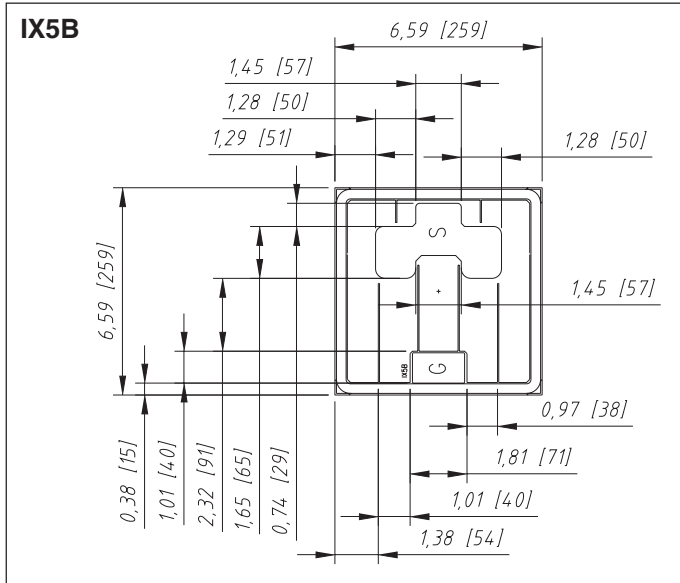




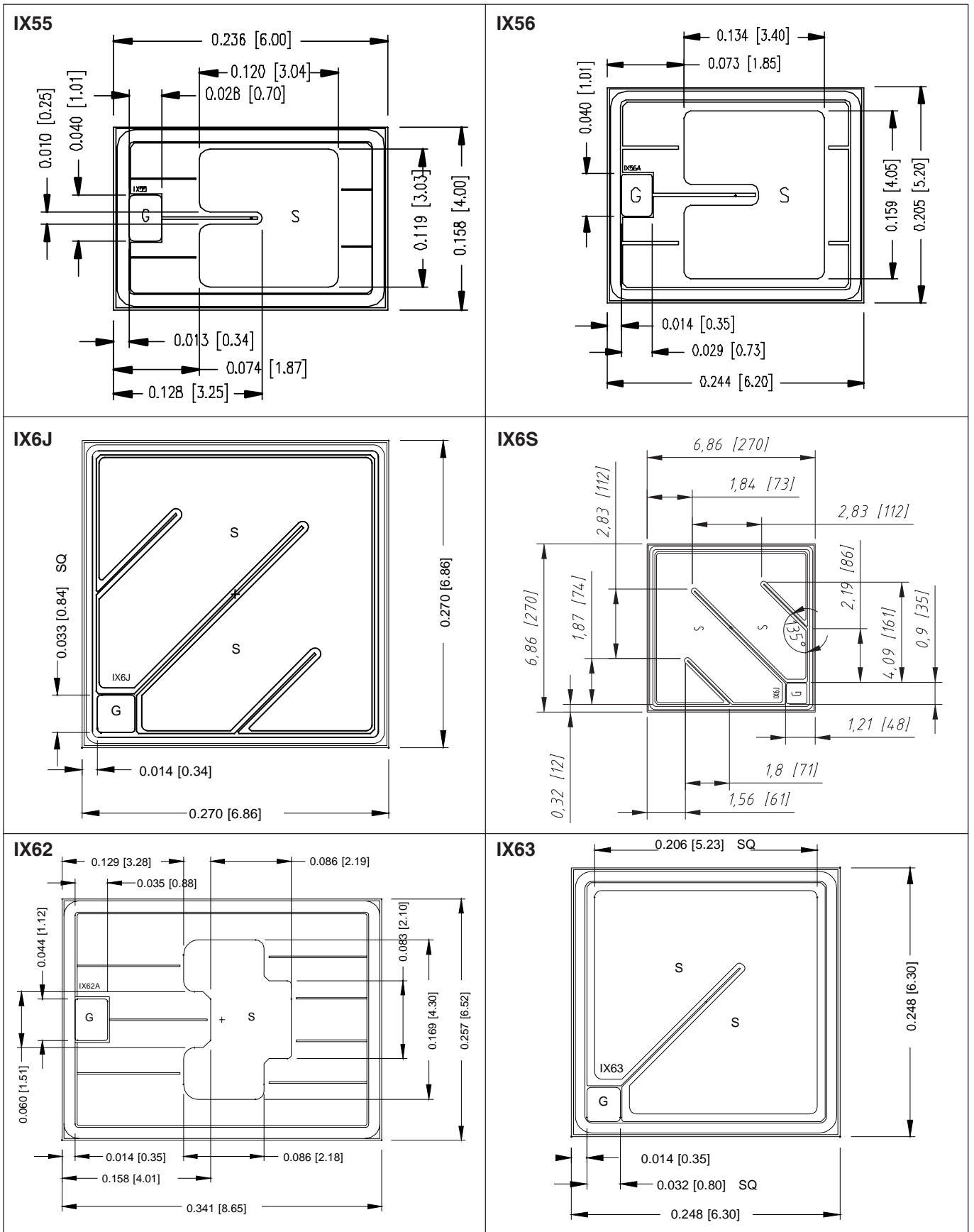
Dimensions in inch and [mm] (1" = 25.4 mm)



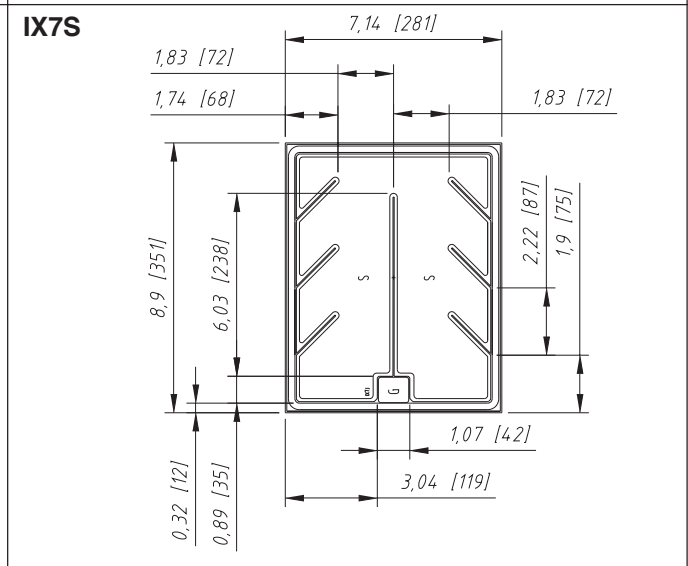
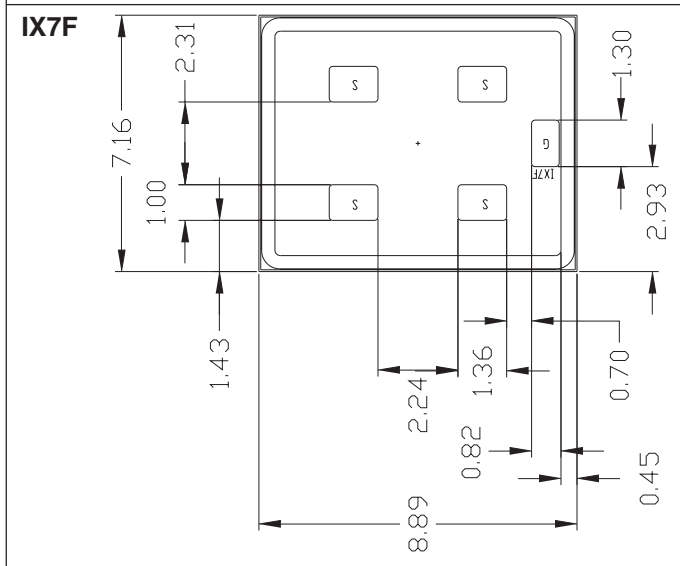
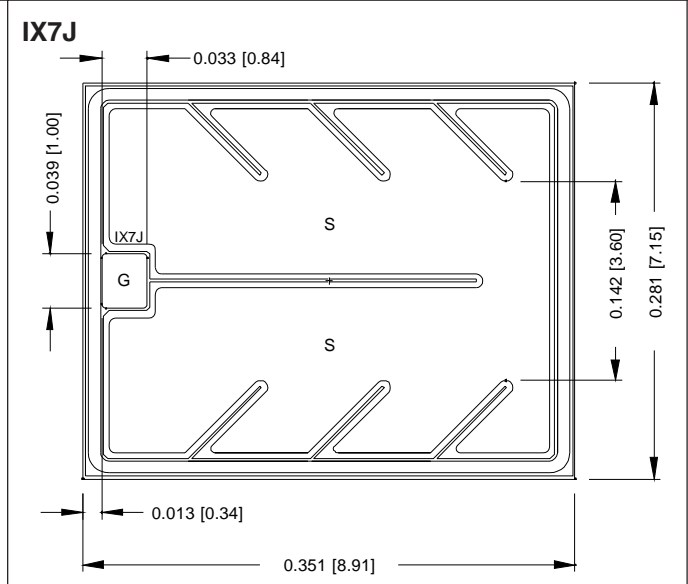
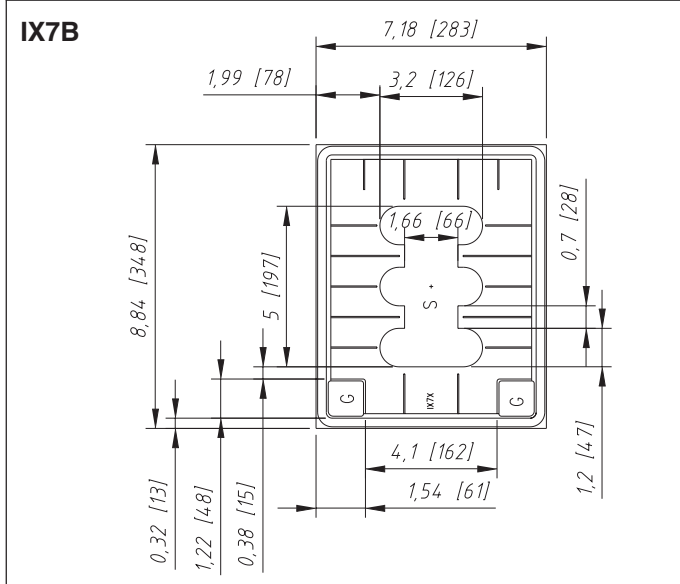
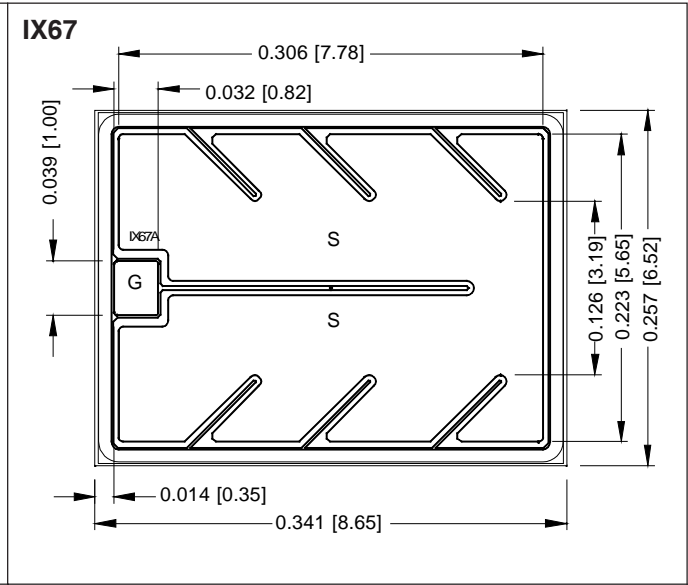
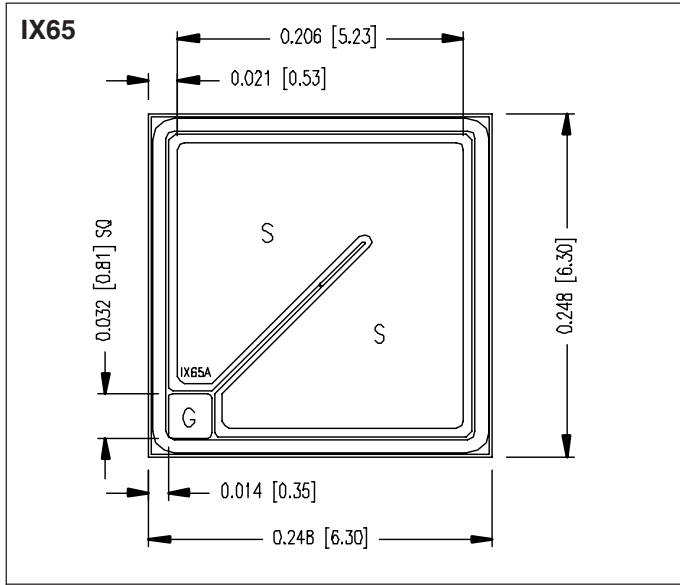
IXYS reserves the right to change limits, test conditions and dimensions



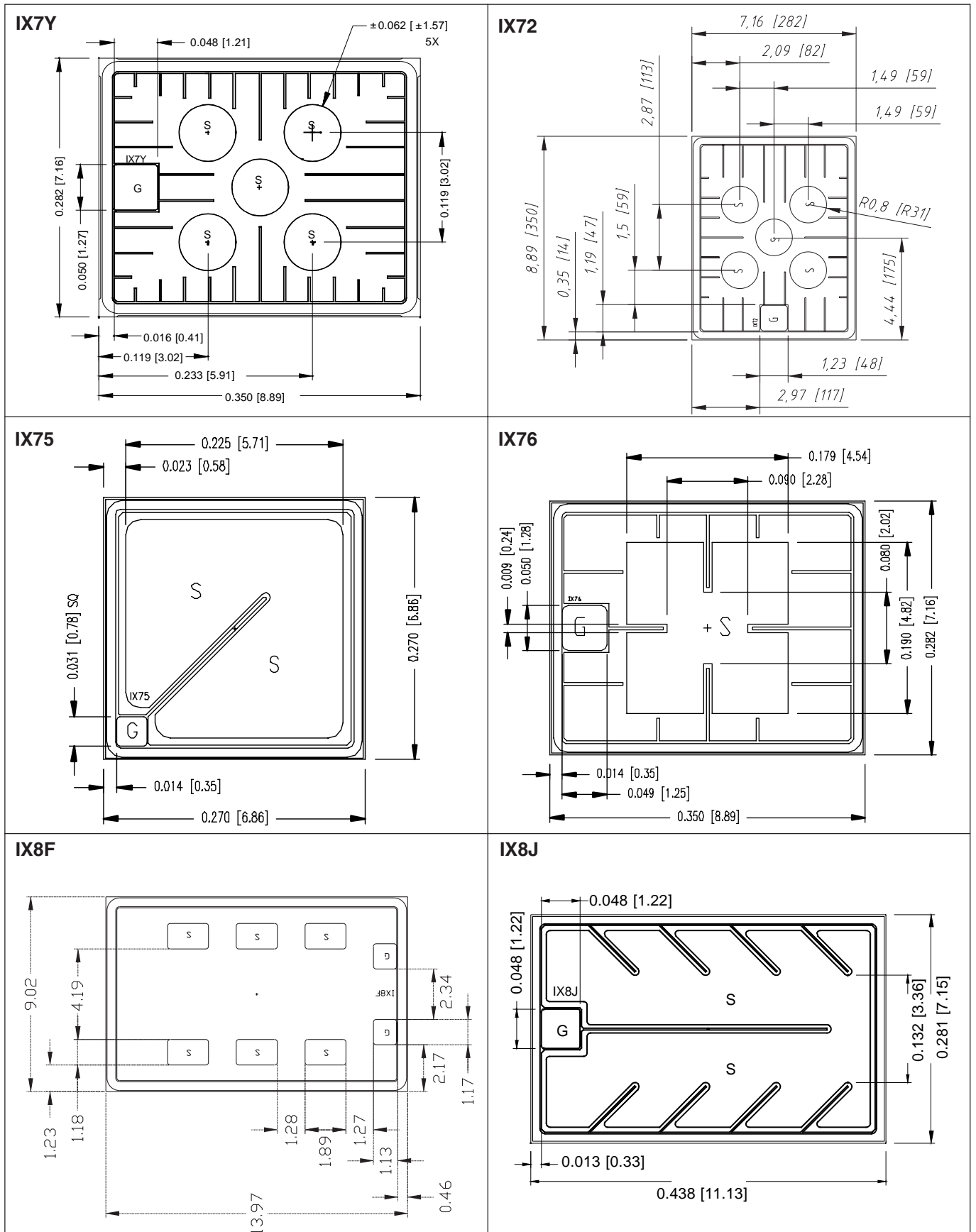
Dimensions in inch and [mm] (1" = 25.4 mm)



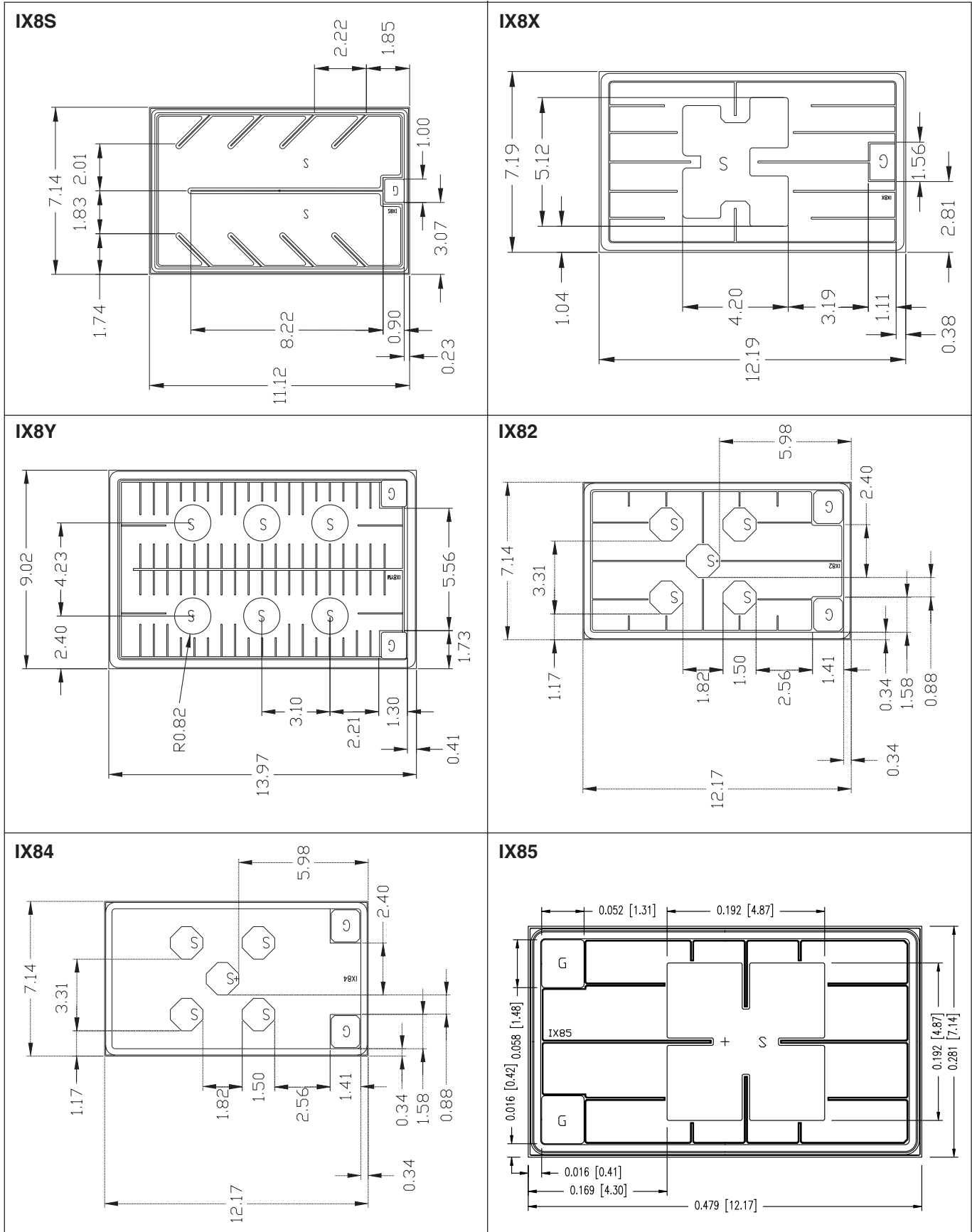
IXYS reserves the right to change limits, test conditions and dimensions



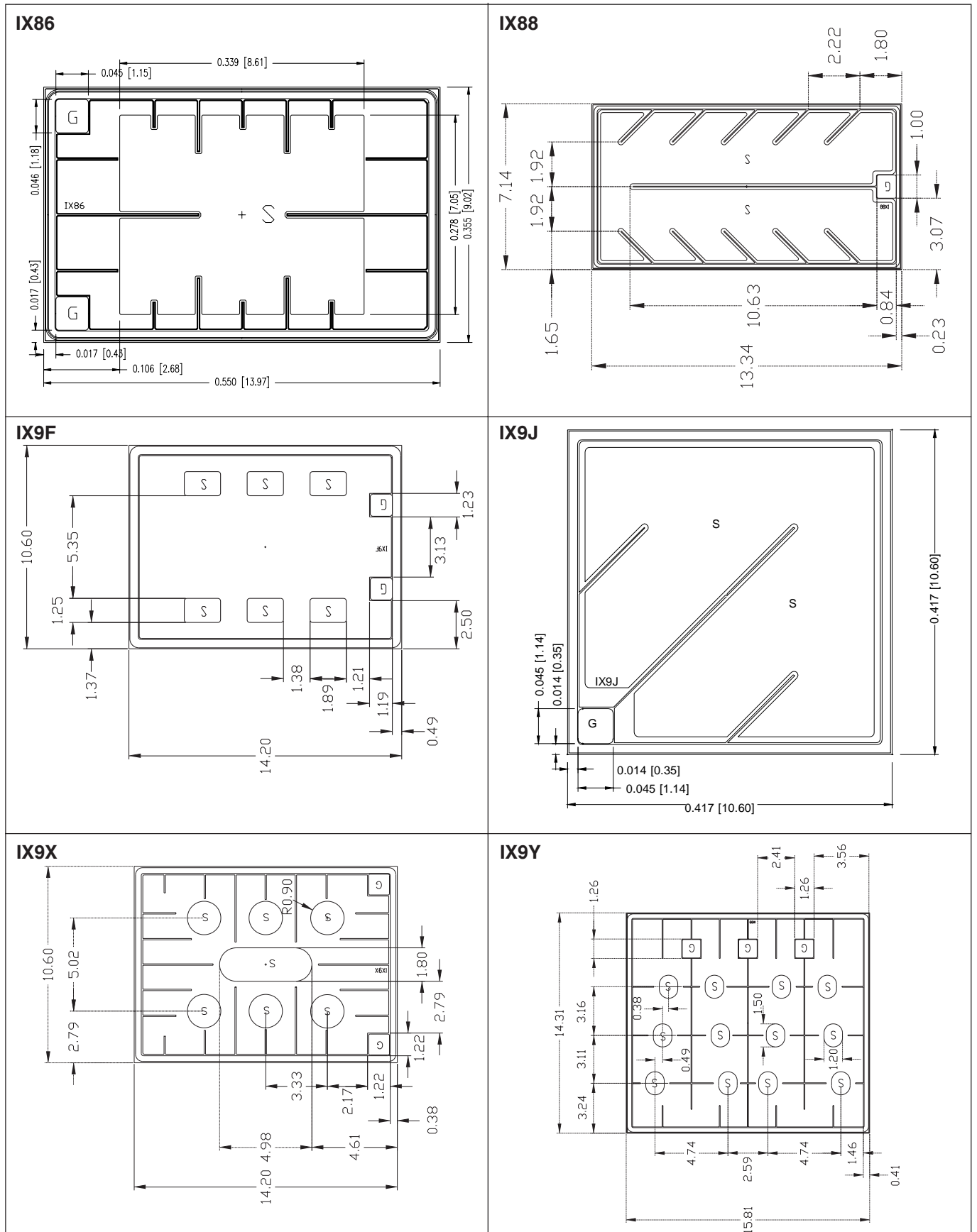
Dimensions in inch and [mm] (1" = 25.4 mm)



IXYS reserves the right to change limits, test conditions and dimensions



Dimensions in inch and [mm] (1" = 25.4 mm)



IXYS reserves the right to change limits, test conditions and dimensions

Rectifier Diodes

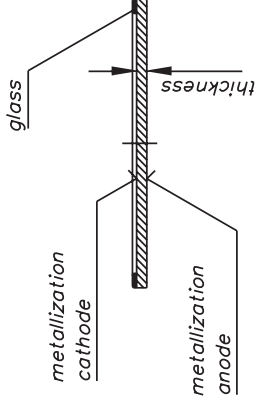
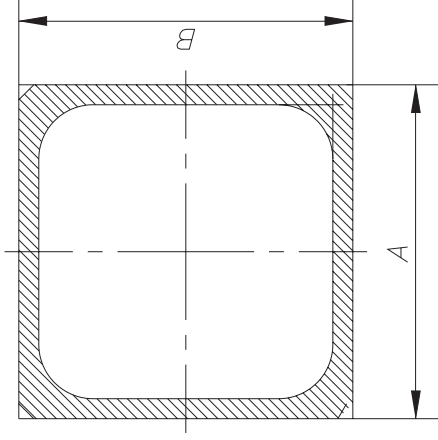


| Type | V _{RRM} V | I _R V _{RRM} T _{VJM} typ. mA | T _{VJM} °C | I _{F(AVM)} rect. d=0.5 T _C =100°C A | R _{thJC} ① typ. KW | V _F T _{VJ} = | | I _{FSM} A | Reverse Recovery | | |
|--------|-----------------------|---|------------------------|--|-----------------------------------|-------------------------------------|------------|-----------------------|--|----------------------|-----------------|
| | | | | | | 25°C V | 125°C V | | I _{RM} 25°C; V _R =100V A | @I _F A | @-di/dt A/μs |
| DWN5 | 800 - | 0.7 | 150 | 12 | 2.80 | 1.14 | 1.05 | 140 | tbid | tbid | tbid |
| DWP5 | 1200 | 0.7 | | 12 | 2.80 | 1.14 | 1.05 | 140 | tbid | tbid | tbid |
| DWN2 | 1200 - | 0.7 | | 12 | 2.80 | 1.13 | 1.05 | 150 | tbid | tbid | tbid |
| DWN9 | 1800 | 1.0 | | 20 | 1.80 | 1.30 | 1.26 | 300 | tbid | tbid | tbid |
| DWN17 | | 1.5 | | 31 | 1.10 | 1.36 | 1.35 | 320 | tbid | tbid | tbid |
| DWP17 | | 1.5 | | 31 | 1.10 | 1.39 | 1.37 | 320 | tbid | tbid | tbid |
| DWN21 | | 3.0 | | 42 | 0.90 | 1.35 | 1.33 | 500 | tbid | tbid | tbid |
| DWP21 | | 3.0 | | 41 | 0.90 | 1.37 | 1.36 | 500 | tbid | tbid | tbid |
| DWN35 | | 1.5 | | 59 | 0.65 | 1.25 | 1.20 | 630 | 11 | 50 | 0.64 |
| DWP35 | | 1.5 | | 58 | 0.65 | 1.25 | 1.22 | 630 | 11 | 50 | 0.64 |
| DWN50 | | 2.0 | | 78 | 0.50 | 1.33 | 1.31 | 900 | 12 | 50 | 1 |
| DWP50 | | 2.0 | | 76 | 0.50 | 1.34 | 1.33 | 900 | 12 | 50 | 1 |
| DWN75 | | 2.0 | | 115 | 0.33 | 1.27 | 1.23 | 1500 | 24 | 50 | 3 |
| DWP75 | | 2.0 | | 118 | 0.35 | 1.28 | 1.25 | 1500 | 24 | 50 | 3 |
| DWN110 | | 3.5 | | 253 | 0.16 | 1.18 | 1.12 | 3200 | 45 | 50 | 6 |
| DWP110 | | 3.5 | | 253 | 0.16 | 1.19 | 1.12 | 3200 | 45 | 50 | 6 |
| DWN340 | | 15.0 | 416 | 0.10 | 0.93 | 1.09 | 5900 | 235 | 300 | 50 | |
| DWN108 | 1600 - | 3.5 | 253 | 0.16 | 0.16 | 1.19 | 3200 | 45 | 50 | 6 | |
| DWN347 | 2200 | 20.0 | 788 | 0.05 | 0.05 | 1.10 | 10500 | 275 | 400 | 50 | |

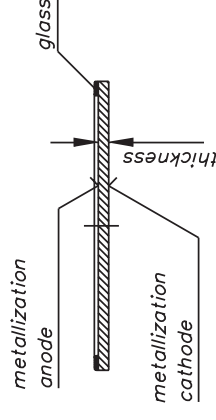
① Mounted on DCB

Rectifier Diodes

| Type | solderable | bondable | Chips per Wafer | Dimensions | | Si-thickn. mm |
|------------------|------------|----------|-----------------|------------|---------|------------------|
| | | | | A mm | B mm | |
| DWN5 | • | • | 1123 | 4.40 | 2.10 | 0.265 |
| DWP5 | • | • | 1123 | 4.40 | 2.10 | 0.265 |
| DWN2 | • | • | 1204 | 2.95 | 2.95 | 0.265 |
| DWN9 | • | • | 684 | 3.90 | 3.90 | 0.265 |
| DWN17 | • | • | 518 | 4.45 | 4.45 | 0.265 |
| DWP17 | • | • | 518 | 4.45 | 4.45 | 0.265 |
| DWN21 | • | • | 346 | 5.40 | 5.40 | 0.265 |
| DWP21 | • | • | 346 | 5.40 | 5.40 | 0.265 |
| DWN35 | • | • | 259 | 6.20 | 6.20 | 0.265 |
| DWP35 | • | • | 259 | 6.20 | 6.20 | 0.265 |
| DWN50 | • | • | 198 | 7.10 | 7.10 | 0.265 |
| DWP50 | • | • | 198 | 7.10 | 7.10 | 0.265 |
| DWN75 | • | • | 125 | 8.70 | 8.70 | 0.265 |
| DWP75 | • | • | 125 | 8.70 | 8.70 | 0.265 |
| DWN110 | • | • | 58 | 12.30 | 12.30 | 0.265 |
| DWP110 | • | • | 58 | 12.30 | 12.30 | 0.265 |
| DWN340 | • | • | 32 | 16.20 | 16.20 | 0.265 |
| DWN108 | • | • | 58 | 12.30 | 12.30 | 0.315 |
| DWN347 | • | • | 16 | 25.30 | 18.50 | 0.315 |
| Tolerance | | | | -0.1 | -0.1 | ±5% |



DWN



DWP

FRED - Fast Recovery Epitaxial Diodes

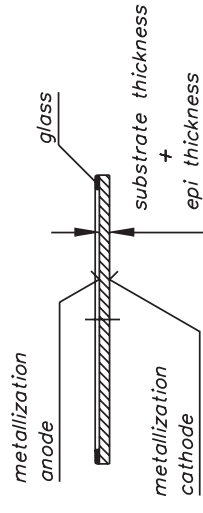
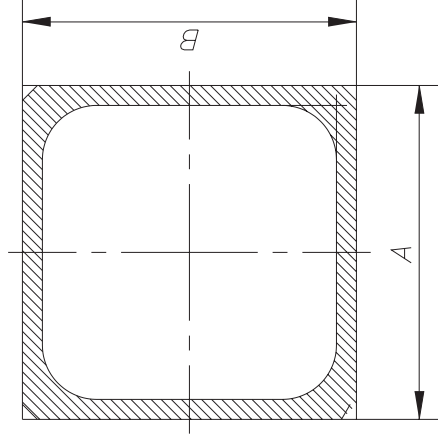


| Type | V _{RRM} V | I _R 0.8XV _{RRM} 125°C mA | T _{VJM} °C | I _{F(AV)M} rect. d=0.5 T _C =100°C A | R _{thJC} ① typ. KW | T _{VJ} = 25°C V | V _F | | I _{FSM} A | I _{FM} 25°C; V _R =100V A | @I _F A | Reverse Recovery | | | | | |
|-----------|-----------------------|---|------------------------|--|-----------------------------------|--------------------------------|----------------|---------|-----------------------|--|----------------------|------------------|--|-----------------|-----|-----|-----|
| | | | | | | | V | @ °C | | | | @-di/dt A/μs | t _{rr} V _R =30V ns | @-di/dt A/μs | | | |
| DWEP27-02 | 200 | 5.0 | 150 | 54 | 0.9 | 1.09 | 0.84 | 30 | 300 | 4 | 50 | 100 | 35 | 1 | 100 | | |
| DWEP37-02 | | 11.0 | | 91 | 0.8 | 1.03 | 0.87 | 100 | 475 | 4 | 100 | 100 | 35 | 1 | 200 | | |
| DWEP77-02 | | 20.0 | | 244 | 0.4 | 0.98 | 0.81 | 150 | 1200 | 7.5 | 100 | 200 | 100 | tbd | 1 | 350 | |
| DWEP8-06 | 600 | 1.5 | | tbd | 2.5 | 1.65 | 1.48 | 8 | 50 | 5 | 12 | 100 | 35 | 1 | 50 | | |
| DWEP12-06 | | 1.5 | | 8 | 2.5 | 1.45 | 1.31 | 150 | 100 | 5 | 25 | 100 | 35 | 1 | 50 | | |
| DWEP15-06 | | 3.0 | | 12 | 1.6 | 1.65 | 1.48 | 150 | 100 | 5 | 25 | 100 | 35 | 1 | 50 | | |
| DWEP23-06 | | 7.0 | | 30 | 0.9 | 1.53 | 1.33 | 150 | 250 | 5 | 50 | 100 | 35 | 1 | 100 | | |
| DWEP25-06 | | 7.0 | | 30 | 0.9 | 1.53 | 1.38 | 150 | 300 | 5 | 50 | 100 | 35 | 1 | 100 | | |
| DWEP35-06 | | 14.0 | | 60 | 0.8 | 1.73 | 1.48 | 150 | 550 | 5 | 100 | 100 | 35 | 1 | 200 | | |
| DWEP55-06 | | 17.0 | | 80 | 0.7 | 1.58 | 1.38 | 125 | 600 | 5 | 100 | 100 | 35 | 1 | 200 | | |
| DWEP75-06 | 20.0 | 162 | 0.4 | 1.31 | 1.12 | 125 | 1000 | 75 | 20 | 200 | 80 | 200 | 35 | 1 | 350 | | |
| DWEP3-10 | 1000 | 2.0 | | tbd | 2.5 | 2.65 | 2.09 | 6 | 40 | 7 | 12 | 100 | 35 | 1 | 50 | | |
| DWEP10-10 | | 4.0 | | 12 | 1.6 | 2.65 | 2.09 | 150 | 75 | 5 | 25 | 100 | 35 | 1 | 50 | | |
| DWEP18-10 | | 7.0 | | 30 | 0.9 | 2.43 | 2.04 | 150 | 200 | 7 | 50 | 100 | 35 | 1 | 100 | | |
| DWEP20-10 | | 7.0 | | 30 | 0.9 | 2.35 | 1.99 | 150 | 200 | 7 | 50 | 100 | 35 | 1 | 100 | | |
| DWEP30-10 | | 14.0 | | 60 | 0.8 | 2.24 | 1.79 | 150 | 500 | 7 | 100 | 100 | 35 | 1 | 200 | | |
| DWEP50-10 | | 17.0 | | 82 | 0.7 | 2.12 | 1.68 | 125 | 500 | 50 | 6.1 | 120 | 50 | 120 | 35 | 1 | 200 |
| DWEP70-10 | | 20.0 | | 129 | 0.4 | 1.89 | 1.57 | 125 | 800 | 75 | 14 | 200 | 80 | 200 | 35 | 1 | 350 |
| DWEP6-12 | 1200 | 2.0 | | tbd | 2.5 | 2.55 | 2.19 | 5 | 80 | 7 | 10 | 100 | 40 | 1 | 50 | | |
| DWEP9-12 | | 4.0 | | 12 | 1.6 | 2.55 | 2.19 | 150 | 75 | 5 | 25 | 100 | 50 | 1 | 50 | | |
| DWEP17-12 | | 7.0 | | 30 | 0.9 | 2.60 | 2.19 | 150 | 200 | 7 | 50 | 100 | 40 | 1 | 100 | | |
| DWEP19-12 | | 7.0 | | 30 | 0.9 | 2.50 | 2.19 | 150 | 200 | 7 | 50 | 100 | 40 | 1 | 100 | | |
| DWEP29-12 | | 14.0 | | 60 | 0.8 | 2.35 | 1.94 | 150 | 500 | 7 | 100 | 100 | 40 | 1 | 200 | | |
| DWEP49-12 | | 17.0 | | 77 | 0.7 | 2.19 | 1.89 | 125 | 500 | 50 | 8.6 | 100 | 50 | 100 | 40 | 1 | 200 |
| DWEP69-12 | | 20.0 | | 123 | 0.4 | 1.77 | 1.54 | 125 | 800 | 75 | 20 | 200 | 75 | 200 | 40 | 1 | 350 |

① Mounted on DCB

FRED - Fast Recovery Epitaxial Diodes

| Type | solderable | bondable | Chips per Wafer | Dimensions | | Si-thickn. |
|------------------|------------|----------|-----------------|------------|------|------------|
| | | | | A mm | B mm | |
| DWEP27-02 | | • | 518 | 4.45 | 4.45 | 0.35 |
| DWEP37-02 | | • | 257 | 6.20 | 6.20 | 0.35 |
| DWEP77-02 | • | • | 151 | 8.91 | 7.22 | 0.35 |
| DWEP8-06 | | • | 1612 | 3.60 | 1.80 | 0.35 |
| DWEP12-06 | | • | 1851 | 2.40 | 2.40 | 0.35 |
| DWEP15-06 | • | • | 990 | 3.25 | 3.25 | 0.35 |
| DWEP23-06 | • | • | 531 | 5.50 | 3.50 | 0.35 |
| DWEP25-06 | • | • | 518 | 4.45 | 4.45 | 0.35 |
| DWEP35-06 | • | • | 257 | 6.20 | 6.20 | 0.35 |
| DWEP55-06 | | • | 230 | 8.65 | 4.95 | 0.35 |
| DWEP75-06 | • | • | 151 | 8.91 | 7.22 | 0.35 |
| DWEP3-10 | | • | 1612 | 3.60 | 1.80 | 0.35 |
| DWEP10-10 | | • | 990 | 3.25 | 3.25 | 0.35 |
| DWEP18-10 | | • | 531 | 5.50 | 3.50 | 0.35 |
| DWEP20-10 | | • | 518 | 4.45 | 4.45 | 0.35 |
| DWEP30-10 | • | • | 257 | 6.20 | 6.20 | 0.35 |
| DWEP50-10 | | • | 230 | 8.65 | 4.95 | 0.35 |
| DWEP70-10 | | • | 151 | 8.91 | 7.22 | 0.35 |
| DWEP6-12 | | • | 1851 | 2.40 | 2.40 | 0.35 |
| DWEP9-12 | • | • | 990 | 3.25 | 3.25 | 0.35 |
| DWEP17-12 | • | • | 531 | 5.50 | 3.50 | 0.35 |
| DWEP19-12 | • | • | 518 | 4.45 | 4.45 | 0.35 |
| DWEP29-12 | • | • | 257 | 6.20 | 6.20 | 0.35 |
| DWEP49-12 | • | • | 230 | 8.65 | 4.95 | 0.35 |
| DWEP69-12 | • | • | 151 | 8.91 | 7.22 | 0.35 |
| Tolerance | | | | -0.1 | -0.1 | ±5% |



FRED - Fast Recovery Epitaxial Diodes with metal field plate

| Type | V_{RRM} V | $I_{R,RT}$ μA | I_R at 150°C μA | V_F at RT V | V_F at 150°C V | @ I_F rated current A | I_{FSM} A | Reverse Recovery I_{RM} A | I_F A | t_{rr} ns | di/dt A/us | Status |
|-----------|----------------|-----------------------|------------------------------|---------------------|------------------------|-------------------------------|----------------|-----------------------------------|------------|----------------|---------------|-------------|
| DMLP04-03 | 300 | 1 | 150 | 1.25 | 0.95 | 10 | 100 | 3 | 10 | 35 | 200 | Available |
| DMLP06-03 | | 1 | 200 | 1.3 | 1.05 | 20 | 150 | 3 | 20 | 35 | 200 | Available |
| DMLP10-03 | | 1 | 250 | 1.28 | 0.95 | 30 | 300 | 3 | 30 | 35 | 200 | Available |
| DMLP15-03 | | 1 | 300 | 1.25 | 0.95 | 40 | 400 | 3 | 40 | 35 | 200 | Available |
| DMLP20-03 | | 1 | 350 | 1.28 | 0.95 | 60 | 550 | 3 | 60 | 35 | 200 | Available |
| DMLP04-04 | 400 | 1 | 250 | 1.35 | 1 | 10 | 100 | 4 | 10 | 45 | 200 | Available |
| DMLP06-04 | | 1 | 300 | 1.35 | 1.09 | 15 | 150 | 3.5 | 20 | 45 | 200 | Available |
| DMLP10-04 | | 1 | 350 | 1.35 | 1 | 30 | 300 | 4 | 30 | 45 | 200 | Available |
| DMLP15-04 | | 1 | 400 | 1.35 | 1 | 40 | 400 | 4 | 40 | 45 | 200 | Available |
| DMLP20-04 | | 1 | 500 | 1.35 | 1 | 60 | 550 | 4 | 60 | 45 | 200 | Available |
| DMLP23-06 | 600 | tbd | tbd | tbd | tbd | 30 | tbd | tbd | 30 | tbd | tbd | Development |

| Type | solderable | bondable | Dimensions | | Number of Chips per Wafer | Si thickness mm |
|-----------|------------|----------|------------|---------|---------------------------------|-----------------------|
| | | | A mm | B mm | | |
| DMLP04-03 | | • | 2.1 | 2.1 | 3675 | 0.25 |
| DMLP06-03 | | • | 2.4 | 2.4 | 2700 | 0.25 |
| DMLP10-03 | | • | 3.3 | 3.3 | 1430 | 0.25 |
| DMLP15-03 | | • | 3.9 | 3.9 | 1020 | 0.25 |
| DMLP20-03 | | • | 4.45 | 4.45 | 780 | 0.25 |
| DMLP04-04 | | • | 2.1 | 2.1 | 3675 | 0.25 |
| DMLP06-04 | | • | 2.4 | 2.4 | 2700 | 0.25 |
| DMLP10-04 | | • | 3.3 | 3.3 | 1430 | 0.25 |
| DMLP15-04 | | • | 3.9 | 3.9 | 1020 | 0.25 |
| DMLP20-04 | | • | 4.45 | 4.45 | 780 | 0.25 |

Low Leakage Fast Recovery Epitaxial Diodes

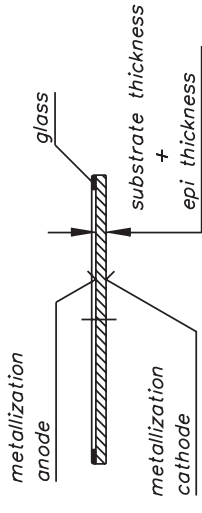
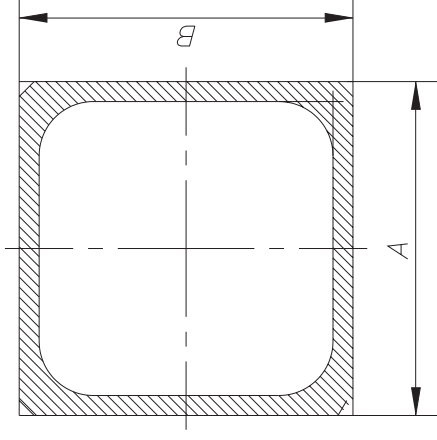


| Type | V _{RRM} V | I _R V _{RRM} T _{VJM} mA | T _{VJM} °C | I _{F(AV)JM} rect. d=0.5 T _C =100°C A | R _{thJC} ① typ. KW | V _F T _{VJ} = 150°C | | I _{FSM} A | I _{RM} 25°C; V _R =100V A | Reverse Recovery | | t _r V _R =30V typ. ns | @I _F A | @-di/dt A/μs | | | | | | | |
|------------|-----------------------|--|------------------------|---|-----------------------------------|---|----------------------|-----------------------|--|----------------------|-----------------|--|----------------------|-----------------|----|-----|----|-----|----|---|----|
| | | | | | | 25°C V | @I _F V | | | @I _F A | @-di/dt A/μs | | | | | | | | | | |
| DWLP4-02 | 200 | 0.20 | 150 | 14 | 2.80 | 1.21 | 0.88 | 80 | 1.2 | 10 | 100 | 25 | 1 | 50 | | | | | | | |
| DWLP15-02 | | 0.50 | | 29 | | 0.99 | 0.82 | | | 25 | 100 | 25 | | | 1 | | | | | | |
| DWLP15-02B | | 0.50 | | 25 | | 1.13 | 0.84 | | | 140 | 100 | 25 | | | 1 | | | | | | |
| DWLP25-02 | | 0.20 | | 46 | | 1.10 | 0.85 | | | 325 | 100 | 25 | | | 1 | | | | | | |
| DWLP4-03 | 300 | 0.20 | | 13 | 2.80 | 1.63 | 1.07 | 40 | 1.4 | 10 | 100 | 30 | 1 | 50 | | | | | | | |
| DWLP8-03 | | 0.25 | | 15 | | 1.45 | 1.01 | | | 60 | 100 | 30 | | | 1 | | | | | | |
| DWLP15-03 | | 0.50 | | 25 | | 1.44 | 1.02 | | | 110 | 100 | 30 | | | 1 | | | | | | |
| DWLP15-03A | | 0.50 | | 29 | | 1.26 | 0.93 | | | 110 | 100 | 30 | | | 1 | | | | | | |
| DWLP23-03 | | 1.00 | | 51 | | 1.19 | 0.84 | | | 300 | 100 | 30 | | | 1 | | | | | | |
| DWLP23-03A | | 1.00 | | 41 | | 1.49 | 1.07 | | | 300 | 100 | 25 | | | 1 | | | | | | |
| DWLP55-03 | | 2.50 | | 72 | | 1.42 | 0.99 | | | 600 | 100 | 30 | | | 1 | | | | | | |
| DWLP75-03 | | 4.00 | | 117 | | 1.43 | 0.95 | | | 1000 | 100 | 30 | | | 1 | | | | | | |
| DWLP8-04 | 400 | 0.25 | | 14 | 2.50 | 1.40 | 0.97 | 60 | 1.4 | 12 | 100 | 30 | 1 | 50 | | | | | | | |
| DWLP15-04 | | 0.50 | | 24 | | 1.40 | 0.98 | | | 110 | 100 | 30 | | | 1 | | | | | | |
| DWLP23-04 | | 1.00 | | 46 | | 1.43 | 1.06 | | | 300 | 100 | 30 | | | 1 | | | | | | |
| DWLP55-04 | | 2.50 | | 67 | | 1.38 | 0.99 | | | 600 | 100 | 30 | | | 1 | | | | | | |
| DWLP75-04 | | 4.00 | | 117 | | 1.39 | 1.03 | | | 1000 | 100 | 30 | | | 1 | | | | | | |
| DWLP150-04 | | 8.50 | | 148 | | 1.38 | 1.12 | | | 1200 | 100 | 30 | | | 1 | | | | | | |
| DWLP4-06 | | 600 | | 0.20 | | | 11 | | | 2.80 | 1.97 | 1.28 | | | 40 | 1.8 | 10 | 100 | 30 | 1 | 50 |
| DWLP8-06A | | | | 0.25 | | | 12 | | | | 1.75 | 1.22 | | | | | 50 | 100 | 35 | | |
| DWLP8-06B | 0.25 | | 11 | 2.34 | 1.53 | | 50 | 100 | 30 | | 1 | | | | | | | | | | |
| DWLP15-06A | 0.50 | | 21 | 1.87 | 1.23 | | 110 | 100 | 35 | | 1 | | | | | | | | | | |
| DWLP15-06B | 0.50 | | 16 | 2.38 | 1.44 | | 110 | 100 | 35 | | 1 | | | | | | | | | | |
| DWLP23-06A | 1.00 | | 40 | 1.54 | 1.17 | | 250 | 100 | 35 | | 1 | | | | | | | | | | |
| DWLP23-06B | 2.00 | | 30 | 2.45 | 1.53 | | 250 | 100 | 30 | | 1 | | | | | | | | | | |
| DWLP55-06 | 2.50 | | 62 | 1.92 | 1.23 | | 600 | 100 | 35 | | 1 | | | | | | | | | | |
| DWLP75-06 | 4.00 | 99 | 1.93 | 1.24 | 1000 | 100 | 35 | 1 | | | | | | | | | | | | | |
| DWLP1-12 | 1200 | 0.20 | | tbd | 25.0 | 2.14 | 1.69 | 20 | 2.3 | 1 | 100 | tbd | tbd | tbd | | | | | | | |
| DWLP8-12 | | 0.25 | | 9 | | 2.61 | 1.65 | | | 40 | 100 | 40 | | | 1 | | | | | | |
| DWLP15-12 | | 0.50 | | 14 | | 2.45 | 1.68 | | | 90 | 100 | 40 | | | 1 | | | | | | |
| DWLP23-12 | | 1.00 | | 29 | | 2.68 | 1.71 | | | 200 | 100 | 40 | | | 1 | | | | | | |
| DWLP55-12 | | 2.50 | | 48 | | 2.54 | 1.59 | | | 500 | 100 | 40 | | | 1 | | | | | | |
| DWLP75-12 | | 4.00 | | 2.50 | | 78 | 2.54 | | | 500 | 100 | 40 | | | 1 | | | | | | |
| | | | | 4.00 | | 78 | 2.56 | | | 1.71 | 800 | 100 | | | 40 | 1 | | | | | |

① Mounted on DCB

Low Leakage Fast Recovery Epitaxial Diodes

| Type | solderable | bondable | Chips per Wafer | Dimensions | | Si-thickn. mm |
|------------|------------|----------|-----------------|------------|------|---------------|
| | | | | A mm | B mm | |
| DWLP4-02 | • | • | 1960 | 3.00 | 1.80 | 0.37 |
| DWLP15-02 | • | • | 990 | 3.25 | 3.25 | 0.37 |
| DWLP15-02B | • | • | 990 | 3.25 | 3.25 | 0.37 |
| DWLP25-02 | • | • | 518 | 4.45 | 4.45 | 0.37 |
| DWLP4-03 | • | • | 1960 | 3.00 | 1.80 | 0.37 |
| DWLP8-03 | • | • | 1612 | 3.60 | 1.80 | 0.37 |
| DWLP15-03 | • | • | 990 | 3.25 | 3.25 | 0.37 |
| DWLP15-03A | • | • | 990 | 3.25 | 3.25 | 0.37 |
| DWLP23-03 | • | • | 531 | 5.50 | 3.50 | 0.37 |
| DWLP23-03A | • | • | 531 | 5.50 | 3.50 | 0.37 |
| DWLP55-03 | • | • | 230 | 8.65 | 4.95 | 0.37 |
| DWLP75-03 | • | • | 151 | 8.91 | 7.22 | 0.37 |
| DWLP8-04 | • | • | 1612 | 3.60 | 1.80 | 0.38 |
| DWLP15-04 | • | • | 990 | 3.25 | 3.25 | 0.38 |
| DWLP23-04 | • | • | 531 | 5.50 | 3.50 | 0.38 |
| DWLP55-04 | • | • | 230 | 8.65 | 4.95 | 0.38 |
| DWLP75-04 | • | • | 151 | 8.91 | 7.22 | 0.38 |
| DWLP150-04 | • | • | 74 | 13.00 | 9.77 | 0.38 |
| DWLP4-06 | • | • | 1960 | 3.00 | 1.80 | 0.40 |
| DWLP8-06A | • | • | 1612 | 3.60 | 1.80 | 0.40 |
| DWLP8-06B | • | • | 1612 | 3.60 | 1.80 | 0.40 |
| DWLP15-06A | • | • | 990 | 3.25 | 3.25 | 0.40 |
| DWLP15-06B | • | • | 990 | 3.25 | 3.25 | 0.40 |
| DWLP23-06A | • | • | 531 | 5.50 | 3.50 | 0.40 |
| DWLP23-06B | • | • | 531 | 5.50 | 3.50 | 0.40 |
| DWLP55-06 | • | • | 230 | 8.65 | 4.95 | 0.40 |
| DWLP75-06 | • | • | 151 | 8.91 | 7.22 | 0.40 |
| DWLP1-12 | • | • | 4545 | 1.52 | 1.52 | 0.46 |
| DWLP8-12 | • | • | 1612 | 3.60 | 1.80 | 0.46 |
| DWLP15-12 | • | • | 990 | 3.25 | 3.25 | 0.46 |
| DWLP23-12 | • | • | 531 | 5.50 | 3.50 | 0.46 |
| DWLP55-12 | • | • | 230 | 8.65 | 4.95 | 0.46 |
| DWLP75-12 | • | • | 151 | 8.91 | 7.22 | 0.46 |
| Tolerance | | | | -0.1 | -0.1 | ±5% |



SONIC diodes with glass passivation

| Type | V _{RRM} V | I _r , RT μA | I _r at 125°C mA | V _F at RT V | V _F at 150°C V | @ I _F rated current A | I _{FSM} A | Reverse Recovery I _{RM} A | I _F A | t _{rr} ns | df/dt A/μs | Status | |
|--------------|-----------------------|---------------------------|-------------------------------|------------------------------|---------------------------------|--|-----------------------|--|---------------------|-----------------------|---------------|-------------|-----------|
| DWHP0.5 slow | 600 | 1 | 0.1 | 2 | 2.22 | 1.2 | tbd | 0.25 | 0.5 | 50 | 10 | Available | |
| DWHP0.5 | | 1 | 0.1 | 3.5 | 3.55 | 1.2 | tbd | 0.2 | 0.5 | 30 | 10 | Available | |
| DWHP4 | | 3 | 1 | 2.25 | 2.03 | 5 | 40 | 2 | 5 | 35 | 100 | Available | |
| DWHP10 | | 5 | 1.5 | 2.38 | 2.14 | 10 | 80 | 4 | 10 | 35 | 200 | Available | |
| DWHP14 | | 10 | 3.5 | 2.26 | 2.05 | 20 | 150 | 8 | 20 | 35 | 400 | Available | |
| DWHP16 | | 10 | 3.5 | 2.26 | 2.05 | 20 | 150 | 8 | 20 | 35 | 400 | Available | |
| DWHP23 | | 35 | 5 | 2.39 | 2.16 | 30 | 200 | 12 | 30 | 35 | 600 | Available | |
| DWHP56 slow | | 60 | 8 | 1.54 | 1.43 | 60 | 550 | 33 | 60 | 60 | 1200 | Available | |
| DWHP69 slow | | 100 | 12 | 1.55 | 1.45 | 100 | 750 | 55 | 100 | 60 | 2000 | Available | |
| DWHP150 slow | | 150 | 20 | 1.55 | 1.45 | 150 | 1400 | 82 | 150 | 60 | 3000 | Available | |
| DWHP200 slow | | 250 | 30 | 1.55 | 1.44 | 250 | 1950 | 140 | 250 | 60 | 5000 | Available | |
| DWHP56 | | 125 | 12 | 2.18 | 1.95 | 60 | 400 | 24 | 60 | 35 | 1200 | Development | |
| DWHP69 | | 200 | 20 | 2.2 | 1.97 | 100 | 500 | 40 | 100 | 35 | 2000 | Development | |
| DWHP150 | | 325 | 30 | 2.16 | 1.93 | 150 | 800 | 60 | 150 | 35 | 3000 | Development | |
| DWHP200 | | 500 | 45 | 2.24 | 2.01 | 250 | 1200 | 100 | 250 | 35 | 5000 | Development | |
| DWHP4 | | 1200 | 10 | 1 | 2.45 | 2.18 | 5 | 35 | 4.2 | 5 | 75 | 150 | Available |
| DWHP10 | | | 5 | 1.5 | 2.58 | 2.28 | 10 | 65 | 8.5 | 10 | 75 | 350 | Available |
| DWHP14 | | | 10 | 3.5 | 2.45 | 2.01 | 20 | 135 | 19 | 20 | 75 | 750 | Available |
| DWHP16 | | | 10 | 3.5 | 2.45 | 2.2 | 20 | 135 | 19 | 20 | 75 | 750 | Available |
| DWHP23 | | | 50 | 5 | 2.59 | 2.29 | 30 | 180 | 25 | 30 | 75 | 1000 | Available |
| DWHP56 slow | 60 | | 8 | 2.04 | 1.76 | 60 | 550 | 65 | 60 | 65 | 1800 | Available | |
| DWHP69 slow | 100 | | 12 | 2.04 | 1.83 | 100 | 750 | 100 | 100 | 100 | 2500 | Available | |
| DWHP150 slow | 150 | | 20 | 2.04 | 1.69 | 150 | 1400 | 150 | 150 | 150 | 4000 | Available | |
| DWHP56 | 125 | | 12 | 2.42 | 2.14 | 60 | 430 | 51 | 60 | 75 | 2500 | Available | |
| DWHP69 | 200 | | 20 | 2.44 | 2.16 | 100 | 930 | 83 | 100 | 75 | 4000 | Available | |
| DWHP150 | 325 | | 30 | 2.4 | 2.13 | 150 | 1130 | 115 | 150 | 125 | 3500 | Available | |
| DWHP200 | 500 | | 45 | 2.46 | 2.18 | 250 | 1800 | 170 | 250 | 125 | 6000 | Available | |
| DWHP6 | 1600-1800 | | 5 | 0.15 | 2.61 | 2.61 | 2 | 25 | 1.6 | 2 | 150 | 20 | Available |
| DWHP15 | | | 16 | 0.35 | 2.89 | 2.89 | 10 | 80 | 8.5 | 10 | 150 | 100 | Available |
| DWHP25 | | | 42 | 1 | 2.65 | 2.65 | 20 | 200 | 16.5 | 20 | 150 | 200 | Available |
| DWHP55 | | | 95 | 2 | 2.73 | 2.73 | 40 | 450 | 33 | 40 | 150 | 400 | Available |
| DWHP68 | | | 200 | 4 | 2.71 | 2.71 | 60 | 650 | 50 | 60 | 150 | 600 | Available |
| DWHP150 | | | 365 | 7.5 | 2.57 | 2.57 | 100 | 1100 | 125 | 150 | 150 | 1500 | Available |
| DWHP200 | | | 550 | 11 | 2.63 | 2.63 | 150 | 1600 | 200 | 250 | 150 | 2500 | Available |
| DWHP205 | | | 4000-4500 | tbd | tbd | tbd | tbd | tbd | tbd | tbd | tbd | tbd | tbd |

SONIC diodes with glass passivation

| Type | solderable | bondable | Dimensions | | Number of Chips per Wafer | Si thickness |
|---------------|------------|----------|------------|------|---------------------------|--------------|
| | | | A | B | | |
| | mm | mm | mm | mm | | mm |
| DWHP0.5-06 | • | • | 1 | 1 | 10777 | 0.2 |
| DWHP4-06 | • | • | 3.6 | 1.8 | 1622 | 0.2 |
| DWHP10-06 | • | • | 2.95 | 2.95 | 1204 | 0.2 |
| DWHP14-06 | • | • | 4.8 | 3.3 | 657 | 0.2 |
| DWHP16-06 | • | • | 3.95 | 3.95 | 668 | 0.2 |
| DWHP23-06 | • | • | 5.5 | 3.5 | 532 | 0.2 |
| DWHP56-06 | • | • | 8.65 | 4.95 | 231 | 0.2 |
| DWHP69-06 | • | • | 8.91 | 7.22 | 152 | 0.2 |
| DWHP150-06 | • | • | 11.4 | 9.4 | 88 | 0.2 |
| DWHP200-06 | • | • | 12.4 | 12.4 | 59 | 0.2 |
| DWHP4-12 | • | • | 3.6 | 1.8 | 1622 | 0.2 |
| DWHP10-12 | • | • | 2.95 | 2.95 | 1204 | 0.2 |
| DWHP14-12 | • | • | 4.8 | 3.3 | 657 | 0.2 |
| DWHP16-12 | • | • | 3.95 | 3.95 | 668 | 0.2 |
| DWHP23-12 | • | • | 5.5 | 3.5 | 532 | 0.2 |
| DWHP56-12 | • | • | 8.65 | 4.95 | 231 | 0.2 |
| DWHP69-12 | • | • | 8.91 | 7.22 | 152 | 0.2 |
| DWHP150-12 | • | • | 11.4 | 9.4 | 88 | 0.2 |
| DWHP200-12 | • | • | 12.4 | 12.4 | 59 | 0.2 |
| DWHP6-16/18 | • | • | 2.4 | 2.4 | 1841 | 0.265 |
| DWHP15-16/18 | • | • | 3.25 | 3.25 | 988 | 0.265 |
| DWHP25-16/18 | • | • | 4.45 | 4.45 | 517 | 0.265 |
| DWHP55-16/18 | • | • | 8.65 | 4.95 | 231 | 0.265 |
| DWHP68-16/18 | • | • | 8.91 | 7.22 | 152 | 0.265 |
| DWHP150-16/18 | • | • | 11.4 | 9.4 | 88 | 0.265 |
| DWHP200-16/18 | • | • | 12.4 | 12.4 | 59 | 0.265 |
| DWHP205-40/45 | • | • | 14.3 | 14.3 | 45 | 0.58 |

- - Available on request
- solder temperature below 350 °C

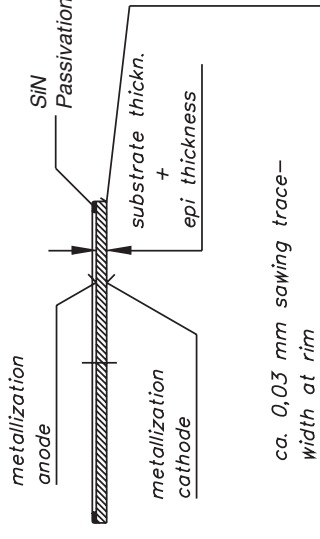
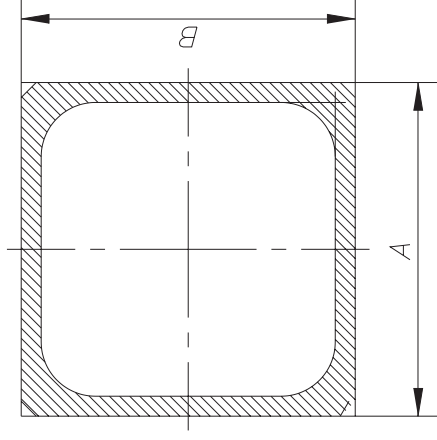
GaAs Schottky Diodes



| Type | V_{RRM} V | T_{VJM} °C | $I_{F(AVIM)}$ rect. $d=0.5$ $T_c=90^\circ\text{C}$ A | R_{thJC} typ. K/W | V_F typ $T_{VJ} =$ 25°C V 125°C V | @ I_F A | $I_{R typ}$ @ V_{RRM} 125°C μA | C_j $0.5 \cdot V_{RRM}$ 125°C pF | I_{FSM} A |
|-------------|----------------|-----------------|---|---------------------------|---|--------------|--|---|----------------|
| DWGS04-01A | 100 | 175 | 8.5 | 10.12 | 0.62 | 2.0 | 700 | 19.0 | 12.5 |
| DWGS10-01C | | | 25.0 | 5.20 | 0.99 | 10.0 | < 10 | 19.0 | 80.0 |
| DWGS04-018A | 180 | 175 | 5.0 | 10.12 | 0.86 | 2.0 | 700 | 8.8 | 12.5 |
| DWGS04-018C | | | 8.4 | 10.12 | 1.25 | 4.0 | < 10 | 8.8 | 32.0 |
| DWGS10-018A | | | 11.0 | 5.20 | 0.80 | 5.0 | 1300 | 22.0 | 30.0 |
| DWGS10-018C | | | 15.0 | 5.20 | 1.21 | 7.5 | < 10 | 22.0 | 80.0 |
| DWGS20-018A | | | 17.0 | 3.70 | 0.80 | 7.5 | 2000 | 33.0 | 50.0 |
| DWGS20-018C | | | 23.0 | 3.70 | 1.24 | 20.0 | < 10 | 33.0 | 120.0 |
| DWGS04-025A | 250 | 175 | 3.9 | 10.12 | 1.30 | 2.0 | 700 | 6.4 | 12.5 |
| DWGS04-025C | | | 7.8 | 10.12 | 1.26 | 4.0 | < 10 | 6.4 | 32.0 |
| DWGS10-025A | | | 9.0 | 5.20 | 1.25 | 5.0 | 1300 | 18.0 | 30.0 |
| DWGS10-025C | | | 14.0 | 5.20 | 1.26 | 7.5 | < 10 | 18.0 | 80.0 |
| DWGS20-025A | | | 13.0 | 3.70 | 1.25 | 7.5 | 2000 | 26.0 | 50.0 |
| DWGS20-025C | | | 20.0 | 3.70 | 1.24 | 20.0 | < 10 | 26.0 | 120.0 |
| DWGS04-03A | 300 | 175 | 3.5 | 10.12 | 1.60 | 2.0 | 700 | 3.7 | 12.5 |
| DWGS04-03C | | | 6.0 | 10.12 | 1.51 | 4.0 | < 10 | 3.7 | 32.0 |
| DWGS10-03A | | | 8.0 | 5.20 | 1.60 | 5.0 | 1300 | 9.0 | 30.0 |
| DWGS10-03C | | | 17.5 | 5.20 | 1.56 | 7.5 | 10 | 9.0 | 80.0 |
| DWGS20-03C | | | 25.0 | 3.70 | 1.56 | 7.5 | 15 | 14.0 | 120.0 |
| | | | | | | 20.0 | 15 | 14.0 | 120.0 |

GaAs Schottky Diodes

| Type | bondable | Chips per Wafer | Dimensions | | Wafer thickness mm | | |
|-------------|----------|-----------------|------------|---------|-----------------------|------|-------|
| | | | A mm | B mm | | | |
| DWGS04-01A | • | 4060 | 1.30 | 1.30 | 0.45 | | |
| DWGS10-01C | • | 2126 | 2.10 | 1.60 | | | |
| DWGS04-018A | • | 4060 | 1.30 | 1.30 | | | |
| DWGS04-018C | • | 4060 | 1.30 | 1.30 | | | |
| DWGS10-018A | • | 2126 | 2.10 | 1.60 | | | |
| DWGS10-018C | • | 2126 | 2.10 | 1.60 | | | |
| DWGS20-018A | • | 1480 | 3.00 | 1.60 | | | |
| DWGS20-018C | • | 1480 | 3.00 | 1.60 | | | |
| DWGS04-025A | • | 4060 | 1.30 | 1.30 | | | |
| DWGS04-025C | • | 4060 | 1.30 | 1.30 | | | |
| DWGS10-025A | • | 2126 | 2.10 | 1.60 | | | |
| DWGS10-025C | • | 2126 | 2.10 | 1.60 | | | |
| DWGS20-025A | • | 1480 | 3.00 | 1.60 | | | |
| DWGS20-025C | • | 1480 | 3.00 | 1.60 | | | |
| DWGS04-03A | • | 4060 | 1.30 | 1.30 | | | |
| DWGS04-03C | • | 4060 | 1.30 | 1.30 | | | |
| DWGS10-03A | • | 2126 | 2.10 | 1.60 | | | |
| DWGS10-03C | • | 2126 | 2.10 | 1.60 | | | |
| DWGS20-03C | • | 1480 | 3.00 | 1.60 | | | |
| Tolerance | | | | | -0.1 | -0.1 | ±10 % |



Schottky Diodes

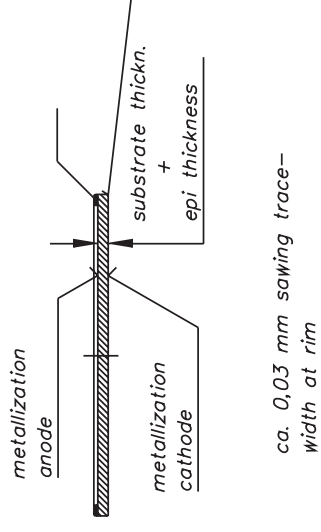
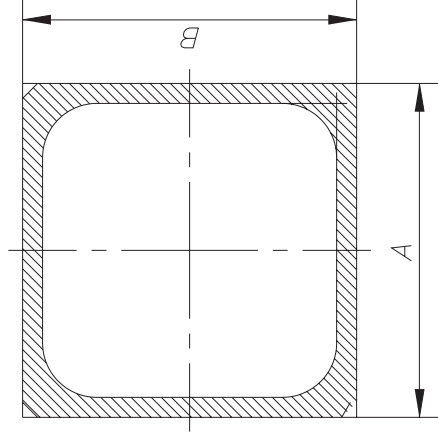


| Type | V _{RRM} V | I _R V _{RRM} mA | @ T _{VJ} °C | T _{VJM} °C | I _{FAVM} rect. d = 0,5 T _C = 125 °C A | R _{thJC} ① typ. K/W | 25 °C | | V _F T _{VJ} =125 °C | | I _{FSM} | | Reverse Recovery @ 25 °C | | |
|------------|-----------------------|--|-------------------------|------------------------|--|------------------------------------|-------|------|---|------|------------------|-----|------------------------------|-------------------------------|-----------------------|
| | | | | | | | V | K/W | V | A | A | A | I _{RM} typ. A | t _{rr} typ. ns | @ I _F A |
| DWS39-08D | 8 | 1250 | 100 | 150 | 145 | 0.8 | 0.31 | 0.21 | 60 | 1000 | tbd | tbd | 50 | 200 | |
| DWS9-15B | 15 | 100 | 100 | 150 | tbd | 1.7 | 0.39 | 0.27 | 10 | 160 | tbd | tbd | 10 | 200 | |
| DWS19-15B | | 200 | 100 | 150 | 65 | 1.4 | 0.39 | 0.27 | 20 | 350 | tbd | tbd | 20 | 200 | |
| DWS29-15B | | 350 | 100 | 150 | 98 | 1.1 | 0.39 | 0.27 | 40 | 660 | tbd | tbd | 40 | 200 | |
| DWS7-30B | 30 | 40 | 100 | 150 | tbd | 1.7 | 0.43 | 0.34 | 10 | 140 | tbd | tbd | 10 | 200 | |
| DWS17-30B | | 80 | 100 | 150 | tbd | 1.4 | 0.43 | 0.34 | 20 | 330 | 2.4 | tbd | 20 | 200 | |
| DWS217-30B | | 140 | 100 | 150 | 65 | 1.2 | 0.43 | 0.34 | 28 | 420 | 5.5 | tbd | 28 | 200 | |
| DWS27-30B | | 150 | 100 | 150 | 82 | 1.1 | 0.43 | 0.34 | 40 | 520 | tbd | tbd | 40 | 200 | |
| DWS37-30B | | 250 | 100 | 150 | 102 | 0.8 | 0.43 | 0.34 | 60 | 800 | tbd | tbd | 50 | 200 | |
| DWS93-45B | 45 | 35 | 100 | 150 | tbd | tbd | 0.48 | 0.43 | 7 | tbd | tbd | tbd | 7 | 200 | |
| DWS94-45A | | 1.8 | 125 | 175 | tbd | tbd | 0.66 | 0.54 | 7 | tbd | tbd | tbd | 7 | 200 | |
| DWS3-45B | | 40 | 100 | 150 | 28 | 1.7 | 0.48 | 0.43 | 10 | 160 | tbd | tbd | 10 | 200 | |
| DWS4-45A | | 2.5 | 125 | 175 | 32 | 1.7 | 0.66 | 0.53 | 10 | 140 | tbd | tbd | 10 | 200 | |
| DWS13-45B | | 100 | 100 | 150 | 42 | 1.4 | 0.48 | 0.43 | 20 | 320 | 1.4 | tbd | 20 | 200 | |
| DWS14-45A | | 5 | 125 | 175 | 47 | 1.4 | 0.66 | 0.53 | 20 | 280 | 1.5 | tbd | 20 | 200 | |
| DWS213-45B | | 140 | 100 | 150 | tbd | 1.2 | 0.48 | 0.43 | 28 | tbd | tbd | tbd | 28 | 200 | |
| DWS214-45A | | 7 | 125 | 175 | tbd | 1.2 | 0.66 | 0.54 | 28 | tbd | tbd | tbd | 28 | 200 | |
| DWS23-45B | | 200 | 100 | 150 | 63 | 1.1 | 0.48 | 0.43 | 40 | 640 | 2 | tbd | 40 | 200 | |
| DWS24-45A | | 10 | 125 | 175 | 68 | 1.1 | 0.66 | 0.54 | 40 | 550 | 2 | tbd | 40 | 200 | |
| DWS33-45B | | 250 | 100 | 150 | 89 | 0.8 | 0.48 | 0.43 | 60 | 900 | 2.6 | tbd | 50 | 200 | |
| DWS34-45A | | 10 | 125 | 175 | 95 | 0.8 | 0.66 | 0.54 | 60 | 800 | 2.5 | tbd | 50 | 200 | |

① Mounted on DCB

Schottky Diodes

| Type | solderable | bondable | Chips per Wafer 6 " | Dimensions | | Si thickness |
|------------|------------|----------|------------------------|------------|---------|--------------|
| | | | | A mm | B mm | |
| DWS39-08D | • | | 513 | 5.41 | 5.41 | 0.25 |
| DWS9-15B | | • | 2783 | 2.4 | 2.4 | 0.25 |
| DWS19-15B | | • | 1502 | 3.25 | 3.25 | 0.25 |
| DWS29-15B | | • | 758 | 4.44 | 4.44 | 0.25 |
| DWS7-30B | | • | 2783 | 2.4 | 2.4 | 0.25 |
| DWS17-30B | | • | 1502 | 3.25 | 3.25 | 0.25 |
| DWS217-30B | | • | 1000 | 4.45 | 3.25 | 0.25 |
| DWS27-30B | | • | 758 | 4.44 | 4.44 | 0.25 |
| DWS37-30B | | • | 513 | 5.41 | 5.41 | 0.25 |
| DWS93-45B | | • | 4180 | 2 | 2 | 0.25 |
| DWS94-45A | | • | 4180 | 2 | 2 | 0.25 |
| DWS3-45B | | • | 2783 | 2.4 | 2.4 | 0.25 |
| DWS4-45A | | • | 2783 | 2.4 | 2.4 | 0.25 |
| DWS13-45B | | • | 1502 | 3.25 | 3.25 | 0.25 |
| DWS14-45A | | • | 1502 | 3.25 | 3.25 | 0.25 |
| DWS213-45B | | • | 1000 | 4.45 | 3.25 | 0.25 |
| DWS214-45A | | • | 1000 | 4.45 | 3.25 | 0.25 |
| DWS23-45B | • | • | 758 | 4.44 | 4.44 | 0.25 |
| DWS24-45A | | • | 758 | 4.44 | 4.44 | 0.25 |
| DWS33-45B | • | • | 513 | 5.41 | 5.41 | 0.25 |
| DWS34-45A | • | • | 513 | 5.41 | 5.41 | 0.25 |
| Tolerance | | | | -0.1 | -0.1 | 5% |



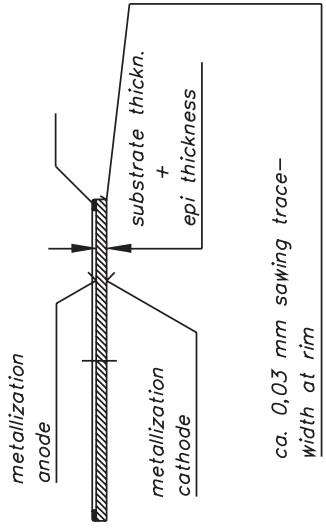
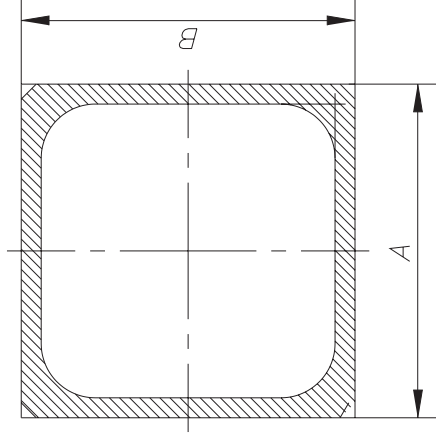


| Type | V _{RRM} V | I _R V _{RRM} mA | @ T _{VJ} °C | T _{VJM} °C | I _{FAVM} rect. d = 0,5 T _C = 125 °C A | R _{thJC} ^① typ. K/W | 25 °C | | V _F T _{VJ} =125 °C | | I _{FSM} | | Reverse Recovery @ 25 °C | | |
|-------------|-----------------------|--|-------------------------|------------------------|--|---|-------|------|---|-----|------------------|-----|-------------------------------|-------------------------------|-----------------------|
| | | | | | | | V | K/W | V | A | A | A | I _{FRM} typ. A | t _{rr} typ. ns | @ I _F A |
| DWS95-60B | 60 | 35 | 100 | 150 | tbd | tbd | 0.59 | 0.52 | 7 | tbd | tbd | tbd | 7 | 200 | |
| DWS96-60A | | 1.8 | 125 | 175 | tbd | tbd | 0.71 | 0.59 | 7 | tbd | tbd | tbd | 7 | 200 | |
| DWS5-60B | | 40 | 100 | 150 | tbd | 1.7 | 0.59 | 0.52 | 10 | 170 | tbd | tbd | 10 | 200 | |
| DWS6-60A | | 2.5 | 125 | 175 | tbd | 1.7 | 0.71 | 0.61 | 10 | 170 | tbd | tbd | 10 | 200 | |
| DWS15-60B | | 50 | 100 | 150 | 43 | 1.4 | 0.59 | 0.52 | 20 | 320 | tbd | tbd | 20 | 200 | |
| DWS16-60A | | 5 | 125 | 175 | tbd | 1.4 | 0.71 | 0.59 | 20 | tbd | tbd | tbd | 20 | 200 | |
| DWS25-60B | | 100 | 100 | 150 | 63 | 1.1 | 0.59 | 0.52 | 40 | 660 | tbd | tbd | 40 | 200 | |
| DWS26-60A | | 10 | 125 | 175 | tbd | 1.1 | 0.71 | 0.59 | 40 | tbd | tbd | tbd | 40 | 200 | |
| DWS35-60B | | 200 | 100 | 150 | 82 | 0.8 | 0.59 | 0.49 | 60 | 900 | tbd | tbd | 50 | 200 | |
| DWS25-80B | 80 | 150 | 100 | 150 | 66 | 1.1 | 0.7 | 0.58 | 40 | 660 | tbd | tbd | 40 | 200 | |
| DWS36-80A | | 10 | 125 | 175 | 91 | 0.8 | 0.78 | 0.61 | 60 | 700 | tbd | tbd | 50 | 200 | |
| DWS92-100A | 100 | 1.8 | 125 | 175 | tbd | tbd | 0.8 | 0.63 | 7 | tbd | tbd | tbd | 7 | 200 | |
| DWS2-100A | | 2.5 | 125 | 175 | 32 | 1.7 | 0.82 | 0.63 | 10 | 120 | tbd | tbd | 10 | 200 | |
| DWS12-100A | | 5 | 125 | 175 | 45 | 1.4 | 0.82 | 0.63 | 20 | 230 | tbd | tbd | 20 | 200 | |
| DWS212-100A | | 7 | 125 | 175 | tbd | 1.2 | 0.8 | 0.63 | 28 | tbd | tbd | tbd | 28 | 200 | |
| DWS22-100A | | 10 | 125 | 175 | 65 | 1.1 | 0.82 | 0.63 | 40 | 450 | tbd | tbd | 40 | 200 | |
| DWS32-100A | | 20 | 125 | 175 | 92 | 0.8 | 0.82 | 0.63 | 60 | 700 | tbd | tbd | 50 | 200 | |
| DWS91-150A | 150 | 1.8 | 125 | 175 | tbd | tbd | 0.81 | 0.66 | 7 | tbd | tbd | tbd | 7 | 200 | |
| DWS1-150A | | 2.5 | 125 | 175 | 30 | 1.7 | 0.81 | 0.66 | 10 | 120 | tbd | tbd | 10 | 200 | |
| DWS11-150A | | 5 | 125 | 175 | 43 | 1.4 | 0.81 | 0.66 | 20 | 200 | tbd | tbd | 20 | 200 | |
| DWS211-150A | | 7 | 125 | 175 | tbd | 1.2 | 0.81 | 0.66 | 28 | tbd | tbd | tbd | 28 | 200 | |
| DWS21-150A | | 10 | 125 | 175 | 60 | 1.1 | 0.81 | 0.66 | 40 | 450 | tbd | tbd | 40 | 200 | |
| DWS31-150A | | 20 | 125 | 175 | 85 | 0.8 | 0.81 | 0.66 | 60 | 700 | tbd | tbd | 50 | 200 | |
| DWS1-180A | 180 | 2.5 | 125 | 175 | 30 | 1.7 | 0.82 | 0.67 | 10 | 120 | tbd | tbd | 10 | 200 | |
| DWS1-200A | 200 | 2.5 | 125 | 175 | tbd | 1.7 | 0.84 | 0.68 | 10 | 120 | tbd | tbd | 10 | 200 | |
| DWS20-200A | | 10 | 125 | 175 | tbd | 1.1 | 0.84 | 0.68 | 40 | tbd | tbd | tbd | 40 | 200 | |
| DWS30-200A | | 5 | 125 | 175 | tbd | 0.8 | 0.84 | 0.68 | 60 | 700 | tbd | tbd | 50 | 200 | |

① Mounted on DCB

Schottky Diodes

| Type | solderable | bondable | Chips per Wafer | Dimensions A mm | Dimensions B mm | Si thickness mm |
|-------------|------------|----------|-----------------|-----------------|-----------------|-----------------|
| DWS95-60B | | • | 4180 | 2 | 2 | 0.25 |
| DWS96-60A | | • | 4180 | 2 | 2 | 0.25 |
| DWS5-60B | | • | 2783 | 2.4 | 2.4 | 0.25 |
| DWS6-60A | | • | 2783 | 2.4 | 2.4 | 0.25 |
| DWS15-60B | | • | 1502 | 3.25 | 3.25 | 0.25 |
| DWS16-60A | | • | 1502 | 3.25 | 3.25 | 0.25 |
| DWS25-60B | | • | 758 | 4.44 | 4.44 | 0.25 |
| DWS26-60A | | • | 758 | 4.44 | 4.44 | 0.25 |
| DWS35-60B | | • | 513 | 5.41 | 5.41 | 0.25 |
| DWS25-80B | | • | 758 | 4.44 | 4.44 | 0.25 |
| DWS36-80A | | • | 513 | 5.41 | 5.41 | 0.25 |
| DWS92-100A | | • | 4180 | 2 | 2 | 0.25 |
| DWS2-100A | | • | 2783 | 2.4 | 2.4 | 0.25 |
| DWS12-100A | | • | 1502 | 3.25 | 3.25 | 0.25 |
| DWS212-100A | | • | 1000 | 4.45 | 3.25 | 0.25 |
| DWS22-100A | | • | 758 | 4.44 | 4.44 | 0.25 |
| DWS32-100A | | • | 513 | 5.41 | 5.41 | 0.25 |
| DWS91-150A | | • | 4180 | 2 | 2 | 0.25 |
| DWS1-150A | | • | 2783 | 2.4 | 2.4 | 0.25 |
| DWS11-150A | | • | 1502 | 3.25 | 3.25 | 0.25 |
| DWS211-150A | | • | 1000 | 4.45 | 3.25 | 0.25 |
| DWS21-150A | | • | 758 | 4.44 | 4.44 | 0.25 |
| DWS31-150A | • | • | 513 | 5.41 | 5.41 | 0.25 |
| DWS1-180A | | • | 2783 | 2.4 | 2.4 | 0.25 |
| DWS1-200A | | • | 2783 | 2.4 | 2.4 | 0.25 |
| DWS20-200A | | • | 758 | 4.44 | 4.44 | 0.25 |
| DWS30-200A | | • | 513 | 5.41 | 5.41 | 0.25 |
| Tolerance | | | | -0.1 | -0.1 | 5% |



Phase Control Thyristors



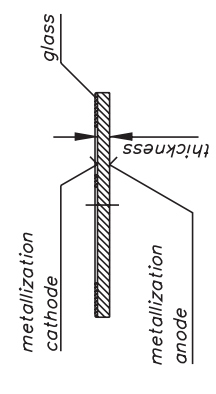
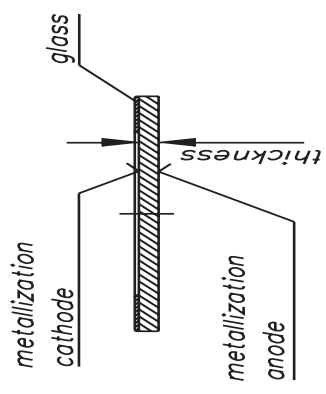
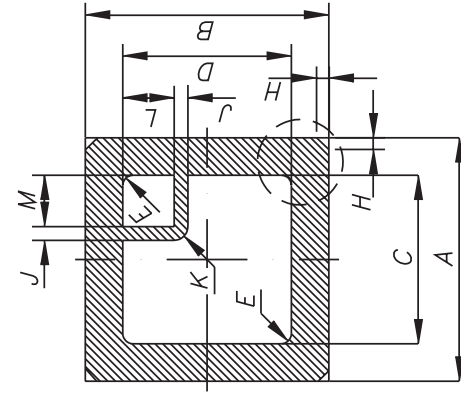
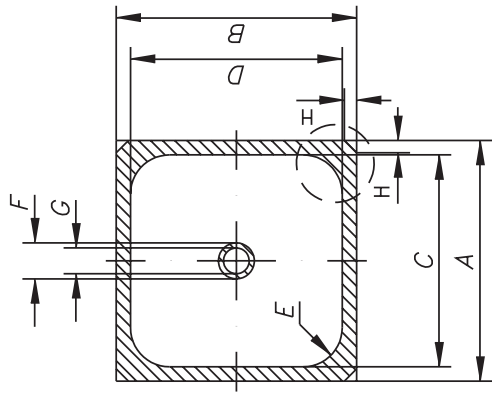
| Type | V _{DRM} V _{RRM} V | I _R V _{RRM} T _{VJM} mA | T _{VJM} °C | I _{F(AV)M} rect. d=0.5 T _C =100°C A | R _{thJC} ② max. kW | V _T T _{VJ} = 25°C typ. V | | @I _F A | I _{TSM} non-rep. t _p =10ms A | t _q V _R = 100V, V _D = V _{DRM} t _p =200µs, di/dt = -10A/µs T _{VJ} = T _{VJM} µs | dv/dt V/µs | @I _T A | I _H R _{GK} = ∞ V _D = 6V T _{VJ} = 25°C mA | I _L T _{VJ} = 25°C mA | @t _p µs |
|----------|---|--|------------------------|--|-----------------------------------|---|------|----------------------|---|--|---------------|----------------------|--|--|-----------------------|
| | | | | | | V | V | | | | | | | | |
| CWP7-CG | 800 - | 5 | 125 | 15 ① | 1.7 | 1.52 | 1.48 | 20 | 200 | tbd | tbd | tbd | 50 | 75 | 10 |
| CWP8 | 1200 | 4 | 150 | tbd | 1.7 | 1.50 | 1.46 | 44 | 300 | 60 | 20 | 16 | 40 | 100 | 10 |
| CWP8-CG | | 4 | 150 | tbd | 1.7 | 1.50 | 1.46 | 44 | 300 | 60 | 20 | 16 | 80 | 100 | 10 |
| CWP35 | | 20 | 150 | tbd | 0.7 | 1.43 | 1.39 | 150 | 1050 | 100 | 10 | 50 | 80 | 100 | 10 |
| CWP16-CG | 1200 - | 8 | 150 | 25 | 1.2 | 1.37 | 1.33 | 45 | 400 | 150 | 10 | 11 | 100 | 150 | 10 |
| CWP21-CG | 1600 | 12 | | 61 | 1.1 | 1.53 | 1.49 | 80 | 520 | 150 | 20 | 15 | 100 | 150 | 10 |
| CWP22-CG | | 12 | | 36 | 0.9 | 1.53 | 1.49 | 80 | 520 | 150 | 15 | 20 | 100 | 450 | 10 |
| CWP24 | | 20 | | tbd | 0.9 | 1.30 | 1.26 | 60 | 600 | 60 | 20 | 25 | 100 | 200 | 10 |
| CWP25-CG | | 20 | | tbd | 0.9 | 1.24 | 1.20 | 60 | 600 | 60 | 20 | 25 | 100 | 200 | 10 |
| CWP41 | 1200 - | 20 | | 125 | 0.5 | 1.50 | 1.46 | 200 | 1150 | 150 | 20 | 120 | 200 | 450 | 10 |
| CWP50 | 1800 | 20 | | tbd | 0.6 | 1.35 | 1.31 | 200 | 1500 | 150 | 20 | 150 | 200 | 450 | 10 |
| CWP55 | | 20 | | tbd | 0.5 | 1.26 | 1.22 | 200 | 1600 | 150 | 20 | 150 | 200 | 450 | 10 |
| CWP71 | | 20 | | tbd | 0.4 | 1.31 | 1.27 | 300 | 2400 | 185 | 20 | 150 | 200 | 450 | 10 |
| CWP130 | | 30 | | 204 | 0.2 | 1.19 | 1.15 | 350 | 4750 | 150 | 20 | 160 | 200 | 300 | 30 |
| CWP180 | | 40 | | 372 | 0.2 | 1.20 | 1.16 | 450 | 5200 | 150 | 20 | 300 | 200 | 300 | 30 |
| CWP341 | | 40 | | tbd | 0.2 | 1.19 | 1.15 | 600 | 7000 | 200 | 50 | 300 | 200 | 200 | 30 |
| CWP347 | | 60 | | 540 | 0.1 | 1.15 | 1.11 | 600 | 9500 | 200 | 50 | 300 | 150 | 200 | 30 |
| CWP69 | 1600 - | 20 | | tbd | 0.2 | 1.52 | 1.48 | 300 | 1700 | 185 | 20 | 150 | 150 | 200 | 30 |
| CWP339 | 2200 | 40 | | tbd | 0.2 | 1.24 | 1.20 | 300 | 6000 | 150 | 20 | 160 | 150 | 200 | 30 |
| CWP345 | | 60 | | 520 | 0.1 | 1.31 | 1.27 | 600 | 8000 | 200 | 50 | 300 | 150 | 200 | 30 |

① = 75°C

② Mounted on DCB

Phase Control Thyristors

| Type | Chips per Wafer | | Dimensions | | | | | | | Si-thickn. |
|------------------|-----------------|----------|------------|-------|------|------|------|-------------|------|------------|
| | solderable | bondable | A | B | F | G | J | Corner Gate | M | |
| | | | mm | mm | mm | mm | mm | mm | mm | mm |
| CWP7-CG | • | • | 4.45 | 4.45 | - | - | 0.2 | 1.0 | 1.5 | 0.38 |
| CWP8 | • | • | 5.20 | 5.20 | 1.80 | 0.90 | - | - | - | 0.38 |
| CWP8-CG | • | • | 5.20 | 5.20 | - | - | 0.2 | 1.0 | 1.5 | 0.32 |
| CWP35 | • | • | 8.70 | 8.70 | 1.80 | 1.00 | - | - | - | 0.38 |
| CWP16-CG | • | • | 6.50 | 6.50 | - | - | 0.2 | 1.5 | 1.5 | 0.38 |
| CWP21-CG | • | • | 7.10 | 7.10 | - | - | 0.2 | 1.5 | 1.5 | 0.38 |
| CWP22-CG | • | • | 7.10 | 7.10 | - | - | 0.2 | 1.5 | 1.5 | 0.38 |
| CWP24 | • | • | 7.10 | 7.10 | 1.80 | 1.00 | - | - | - | 0.32 |
| CWP25-CG | • | • | 7.10 | 7.10 | - | - | 0.2 | 1.5 | 1.5 | 0.32 |
| CWP41 | • | • | 10.00 | 10.00 | 2.30 | 1.50 | - | - | - | 0.38 |
| CWP50 | • | • | 13.00 | 9.77 | 2.30 | 1.50 | - | - | - | 0.38 |
| CWP55 | • | • | 12.30 | 12.30 | 2.30 | 1.50 | - | - | - | 0.38 |
| CWP71 | • | • | 13.40 | 13.40 | 2.30 | 1.50 | - | - | - | 0.38 |
| CWP130 | • | • | 19.05 | 15.40 | 3.46 | 2.50 | - | - | - | 0.38 |
| CWP180 | • | • | 20.55 | 17.65 | 3.50 | 2.50 | - | - | - | 0.38 |
| CWP341 | • | • | 25.30 | 18.50 | 3.50 | 2.50 | - | - | - | 0.38 |
| CWP347 | • | • | 23.40 | 23.40 | 3.50 | 2.50 | - | - | - | 0.38 |
| CWP69 | • | • | 13.40 | 13.40 | 2.30 | 1.50 | - | - | - | 0.46 |
| CWP339 | • | • | 25.30 | 18.50 | 3.50 | 2.50 | - | - | - | 0.46 |
| CWP345 | • | • | 23.40 | 23.40 | 3.50 | 2.50 | - | - | - | 0.46 |
| Tolerance | | | -0.1 | -0.1 | -0.1 | +0.1 | -0.1 | +0.1 | +0.1 | ±5% |



...-CG types

Fast Rectifier Diodes

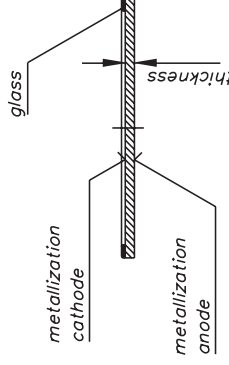
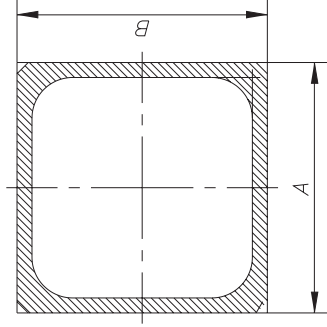


| Type | V _{RRM} V | I _R 0.8xV _{RRM} T _{VJM} typ. mA | T _{VJM} °C | I _{F(AVM)} rect. d=0.5 T _C =75°C A | R _{thJC} ① typ. KW | V _F T _{VJ} = | | @I _F A | I _{FSM} A | I _{RM} 25°C A | Reverse Recovery | | @-di/dt A/μs | |
|--------------|-----------------------|---|------------------------|---|-----------------------------------|-------------------------------------|------------|----------------------|-----------------------|------------------------------|----------------------|-------------------------------|-----------------|-----|
| | | | | | | 25°C V | 125°C V | | | | @I _F A | t _{rr} typ. μs | | |
| DWFN2-16/18 | 1600 - 1800 | 2 | 125 | 10 | 2.9 | 1.79 | tbd | 10 | 75 | tbd | tbd | 1.5 | 4 | 5 |
| DWFN9-16/18 | | 4 | | 16 | 1.6 | 1.98 | tbd | 30 | 160 | tbd | tbd | 1.5 | 8 | 5 |
| DWFN17-16/18 | | 5 | | 17 | 1.3 | 1.89 | tbd | 55 | 300 | tbd | tbd | 1.5 | 10 | 10 |
| DWFN21-16/18 | | 8 | | 23 | 0.9 | 1.98 | tbd | 70 | 400 | tbd | tbd | 1.5 | 15 | 15 |
| DWFN35-16/18 | | 10 | | 26 | 0.7 | 1.88 | tbd | 80 | 500 | tbd | tbd | 1.5 | 25 | 25 |
| DWFP17-13/18 | 1300-1800 | 5 | 125 | 17 | 1.3 | 2.10 | tbd | 55 | 300 | tbd | tbd | 1.5 | 10 | 10 |
| DWFP68-16/18 | 1600-1800 | 5 | 125 | 48 | 0.4 | tbd | tbd | 70 | 500 | 45② | 70 | 250 | tbd | tbd |

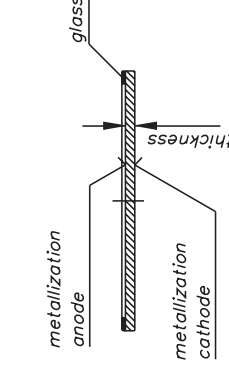
① Mounted on DCB

② @ 125 °C V_r = 100V

| Type | solderable | bondable | Chips per Wafer | Dimensions | | Si thickness | |
|--------------|------------|----------|-----------------------|------------|---------|-----------------|-------|
| | | | | A mm | B mm | mm | mm |
| DWFN2-16/18 | | • | 1205 | 2.95 | 2.95 | 0.265 | 0.265 |
| DWFN9-16/18 | | • | 685 | 3.90 | 3.90 | 0.265 | 0.265 |
| DWFN17-16/18 | • | • | 518 | 4.45 | 4.45 | 0.265 | 0.265 |
| DWFN21-16/18 | | • | 346 | 5.40 | 5.40 | 0.265 | 0.265 |
| DWFN35-16/18 | | • | 260 | 6.20 | 6.20 | 0.265 | 0.265 |
| DWFP17-13/18 | • | • | 518 | 4.45 | 4.45 | 0.265 | 0.265 |
| DWFP68-16/18 | | • | 152 | 8.91 | 7.22 | 0.265 | 0.265 |
| Tolerance | | | | -0.1 | -0.1 | ±5% | ±5% |



DWFN



DWFP

What is DCB

DCB stands for **Direct Copper Bonding** and denotes a process in which copper and a ceramic material are fused together, at high temperatures.

IXYS has developed this particular process in which two layers of copper are directly bonded to an aluminum-oxide or aluminum-nitride ceramic base. Since 1981 our power modules have been designed with DCB substrates. The DCB process yields a thin base and eliminates the need for thick, heavy copper bases that were used in the past. Because modules with DCB bases use fewer layers, they have much lower thermal resistance values and much better power cycling capabilities.

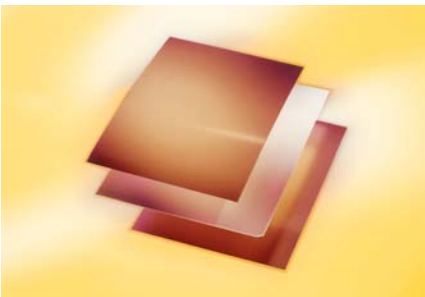
Our power technology allows us to produce DCB ceramic plates in large quantities. The dimensions of our standard sheet are 138 x 190.5 mm, (or 5,5" x 7,5").

Properties of DCB ceramic substrates:

- High mechanical strength and mechanically stability
- Good adhesion and corrosion resistance
- Excellent electrical insulation tested to 2.5 kV(RMS) for 1 minute or more
- Excellent thermal conductivity
- Superb thermal cycling stability
- Matched thermal expansion coefficient to that of silicon and GaAs
- Good heat spreading
- May be etched just like PC boards
- Environmentally friendly

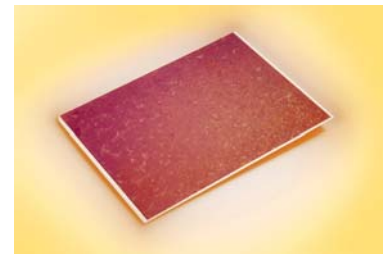
Advantages for the users:

- The 0.3 mm thick copper layer permits the copper pattern to handle high currents.
- The excellent thermal conductivity allows the possibility to place power semiconductor chips in very close proximity. This results in more power per unit of volume and improved reliability of a power system.
- Lighter base plate material than copper base plate.
- High voltage insulation at higher temperature.
- DCB is the basis for the „chip-on-board“ technology which is the packaging trend for the next generation integrated power modules.
- IXYS experience in using DCB in power modules. Wealth of application know-how and support.



Starting materials for DCB ceramic substrates are 0.3 mm thick copper foils, shown on both sides, top and bottom of the ceramic base plate.

Both sides of the finished DCB ceramic substrate are copper. Standard dimensions are **138 x 190.5 mm** (usable area is 130 x 180 mm). A finished DCB part is typically nickel plated.



DCB Data

Unclad aluminum oxide ceramic

| | | | |
|--|------|------------------------------------|---------|
| Al ₂ O ₃ content | | > 96 | % |
| dimensions | | 138 x 190.5, 138 x 210, 115 x 165* | mm |
| usable area | max. | 130 x 180, 107 x 156* | mm |
| thickness | | 1.00, 0.63, 0.38, 0.25 | mm |
| arc through voltage | | 10 | kV |
| thermal conductivity | | > 24 | W/m · K |

Conduction layers - both sides

| | | | |
|-----------------------------------|------|---|------|
| copper thickness | | 0.3 ±0.015 (< 0.3 on request) | mm |
| conductor width | min. | 0.3 ± 0.2 | mm |
| conductor spacing | min. | 0.4 ± 0.2 | mm |
| spacing conductor/edge of ceramic | min. | 0.35 ± 0.2 | mm |
| surface finishes available | | bare copper; nickel plated; nickel + gold plated | |
| peel-off resistance (DIN 532282) | min. | 9 | N/mm |

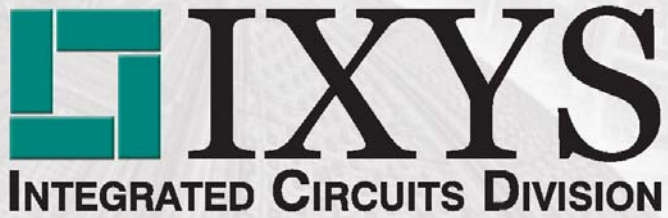
DCB ceramic substrate

| | | | |
|-------------------------------|------------|--|-----------------|
| application temperature range | | -55...+850 | °C |
| resistant to hydrogen | max. up to | 400 | °C |
| thermal expansion coefficient | typical | 7.4 x 10 ⁻⁶ | K ⁻¹ |
| dimensions according | | | |
| to customer specific drawing | | | |
| DCB parts are available as: | | <ul style="list-style-type: none"> • bonded plate • bonded and patterned plate • prelasered, unbroken plate • individuale substrates | |

ALN - DCB on request

* = (for 0.25 mm thk.)

US Patent # 6,798,060 "power device and direct aluminum bonded substrate".



Semiconductor

Product Catalog

IXYS Integrated Circuits Division

IXYS Integrated Circuits Division is a wholly owned subsidiary of IXYS Corporation. Conveniently located close to Boston, Massachusetts, USA, IXYS Integrated Circuits Division designs, manufactures, and markets a wide variety of semiconductor devices, and is a major provider of optically isolated electronic products.



Clare, Inc., founded by Carl P. Clare in 1937 as C. P. Clare & Company, designed and manufactured electromechanical relays (EMR) for the rapidly growing power and telephony markets of the time. C. P. Clare & Company products found their way into aviation and communications products from the very beginning of World War II to the end. Continuously operating under various names from 1937 until the present, C. P. Clare & Company, as Clare, Inc., was purchased by IXYS Corporation in 2002, and is now known as IXYS Integrated Circuits Division (as of April, 2012).

IXYS Integrated Circuits Division's unique mix of high voltage wafer fab, isolation barrier expertise, multi-chip packaging experience, and expertise in analog, power, and mixed signal design, points the way to more functionality in a smaller footprint at lower cost for your designs.

- **High Voltage IGBT and MOSFET Drivers:** High speed, high voltage IGBT and MOSFET drivers, some of which are AEC Q100 qualified.
- **High Voltage ICs:** High voltage 8-channel and 16-channel Analog Switches for the medical and imaging markets, high voltage LED Drivers, and others.
- **Solid State Relays (SSR):** One of the industry's broadest lines of optically isolated SSRs, available in a wide selection of configurations, blocking voltages, and load currents.
- **Power market:** Power Solid State Relays; SCR-based AC Power Switches; and N-Channel, Depletion-Mode, Field Effect Transistors (FET).
- **Illumination:** High voltage, grid-powered, high-brightness LED Drivers.
- **High Speed Digital Optical Isolators:** New high speed isolators that pass DC signals, require no refresh clocking, and provide 3750V_{rms} of galvanic isolation.
- **I²C Optically Isolated Bus Repeaters:** New high speed repeaters that buffer both I²C signals, require no refresh clocking, and provide 3750V_{rms} of galvanic isolation.
- **Portable reader devices:** Display drivers for today's popular electronic-paper readers.
- **Telecom:** A broad range of products that includes Line Card Access Switch (LCAS) products, LITELINK® Silicon Data Access Arrangement (DAA), phone-line interface and monitoring devices, DC Termination devices for xDSL and ISDN applications, Cybergate™ DAA, and others.

Hi-Reliability Program

Building on over 20 years of experience supplying Hi-Rel parts to the aerospace industry, IXYS Integrated Circuits Division now offers a line of high-reliability Solid State Relays and Optocouplers that feature full product traceability, extremely low PPM failure rates, guaranteed operation from -40°C to +85°C (and up to 105°C upon request), 100% burn-in (HTRB) 48 hours minimum, 100% post burn-in electrical tests at room temperature and at 85°C, and thermal cycle (by sample or 100% for 20 cycles).

Any IXYS Integrated Circuits Division Solid State Relay (SSR) or Optocoupler offered in this catalog can be provided as a Hi-Rel device based on extensive additional environmental stressing and screening performed on standard commercial parts. Please go to www.ixysic.com/Products/HiRelProgram.htm for full details.

Custom High Voltage Semiconductor Design Services

IXYS Integrated Circuits Division offers design services to the industry for the custom development of high voltage semiconductor devices. The company's wafer fabrication facility features a 600V BCDMOS process on a bonded-wafer, silicon-on-insulator, trench-isolated technology for IC development. Monolithic silicon with high voltage vertical DMOSFETs, along with CMOS logic and bipolar transistors from IXYS Integrated Circuits Division, address many applications requiring a high voltage interface. In addition, the company's techniques for optical isolation for relays and signal processing offer high voltage isolation between the load side and the system controller.

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* See additional information on IXYS Integrated Circuits Division web site: www.ixysic.com

Solid State Relays

The OptoMOS® line of Solid State Relays (SSRs) uses discrete semiconductor components and patented OptoMOS architecture to provide fast, reliable, bounce-free switching in a compact design. From one of the world's smallest single pole, high voltage, 4-pin relays to multi-pole and multifunction devices, OptoMOS products are an ideal replacement for larger reed and electromechanical relays. Compared to older electromagnetic technologies, OptoMOS relays offer significantly lower drive current, smaller package size, no susceptibility to magnetic interference, and solid state reliability. All of these are key requirements for the design of today's complex low-power, multi-channel products.

IXYS Integrated Circuits Division Solid State Relays are provided in three main types: Unidirectional (UNI), Bidirectional (BI), and Bidirectional Plus (BI+). A UNI relay conducts load current in only one direction, a BI relay conducts load current in both directions, and a BI+ relay has a provision for connecting the output MOSFETs in such a way that the relay in UNI configuration conducts significantly more load current than when it is wired in BI configuration (see the diagram on this page). The accompanying tables reference these three types for all devices listed.

These three main types are available in a variety of configurations: normally open (1-Form-A), normally closed (1-Form-B), dual 1-Form-A, dual 1-Form-B, 1-Form-A and 1-Form-B in the same package, 1-Form-A and 1-Form-B voltage-controlled relays, 2-Form-A, and 1-Form-C.

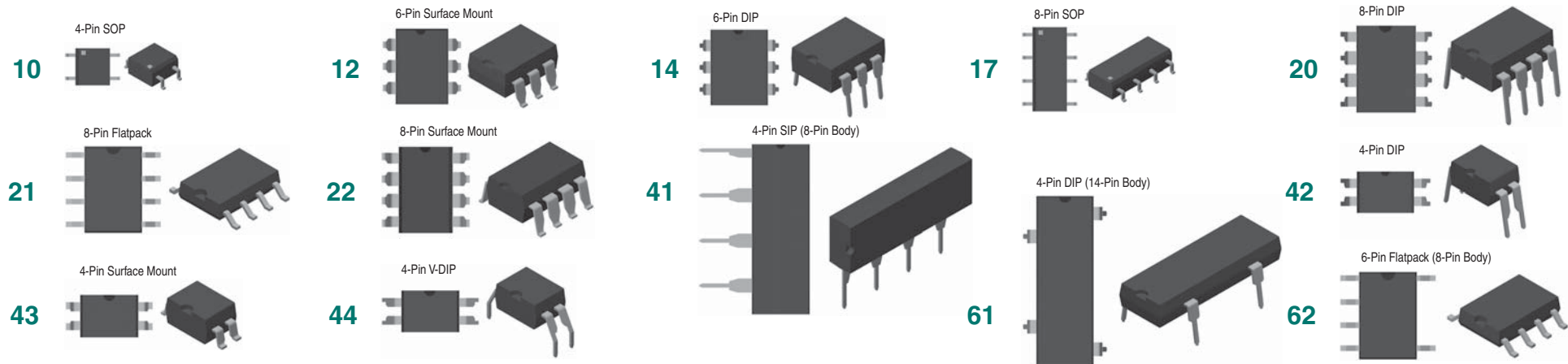
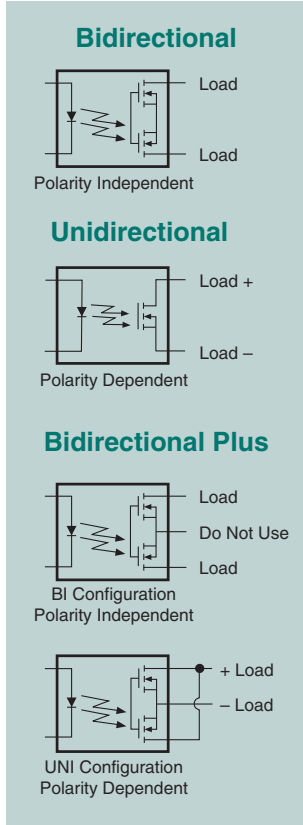
Drawings of all the available packages are shown below. For exact physical dimensions of any package, download the data sheet for the product that you are interested in from the web site page, a link to which is referenced in the note at the bottom of the page. The packages are referred to by number in the accompanying tables.

Features:

- Low Drive Current
- High Reliability
- No EMI/RFI Generation
- Arc-Free with No Snubbing Circuits
- AC or DC Switching
- Current Limiting (Available)
- FCC Compatible
- Low Off-State Leakage

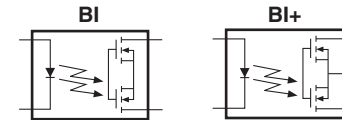
Applications:

- Telecommunications / Datacommunications
- Instrumentation
- Multiplexers
- Data Acquisition / Electronic Switching
- I/O Subsystems
- Meters (Watt-Hour, Water, Gas)
- Medical Equipment (Patient / Equipment Isolation)
- Security
- Aerospace
- Industrial Controls



For data sheets, go to www.ixysic.com/Products/ProdList.htm

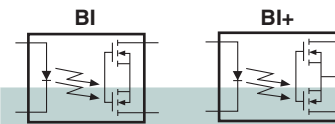
1-Form-A Relays: Single-Pole, Normally Open



| Part Number | Relay Type | Blocking Voltage | Load Current | On Resistance | Input Control Current | Switching Speeds | Isolation Voltage | Off-State Leakage | Package Type | Features and Comments |
|-------------|------------|-------------------|--------------|---------------|-----------------------|---|---------------------|-------------------|--------------|---|
| | | (V _p) | (mA) | (Ω) | (mA) | t _{on} / t _{off} (ms) | (V _{rms}) | (μA) | (Page 6) | |
| CPC1006N | BI | 60 | 75 | 10 | 0.5 | 10 / 10 | 1500 | 1 | 10 | Low I _F , EN 50130-4 |
| CPC1008N | BI | 100 | 150 | 8 | 2 | 2 / 0.5 | 1500 | 1 | 10 | |
| CPC1009N | BI | 100 | 150 | 8 | 2 | 2 / 0.5 | 1500 | 0.02 | 10 | Very Low Off-State I _{LEAK} = 20nA |
| CPC1014N | BI | 60 | 400 | 2 | 2 | 2 / 1 | 1500 | 1 | 10 | EN 50130-4 |
| CPC1016N | BI | 100 | 100 | 16 | 2 | 2 / 0.5 | 1500 | 1 | 10 | |
| CPC1017N | BI | 60 | 100 | 16 | 1 | 10 / 10 | 1500 | 1 | 10 | Low I _F , EN 50130-4 |
| CPC1018N | BI | 60 | 600 | 0.8 | 1 | 3 / 2 | 1500 | 1 | 10 | Low I _F , EN 50130-4 |
| CPC1019N | BI | 60 | 750 | 0.6 | 2 | 3 / 3 | 1500 | 1 | 10 | |
| CPC1020N | BI | 30 | 1200 | 0.25 | 2 | 3 / 3 | 1500 | 1 | 10 | High Load Current, Very Low On Resistance |
| CPC1025N | BI | 400 | 120 | 30 | 2 | 2 / 1 | 1500 | 1 | 10 | |
| CPC1030N | BI | 350 | 120 | 30 | 2 | 2 / 1 | 1500 | 1 | 10 | |
| CPC1035N | BI | 350 | 100 | 35 | 2 | 2 / 1 | 1500 | 1 | 10 | |
| CPC1225N | BI | 400 | 120 | 30 | 2 | 2 / 1 | 1500 | 1 | 10 | EN/IEC 60950-1 Supplementary Isolation Voltage (0.4mm Distance Through Isolation) |
| CPC1230N | BI | 350 | 120 | 30 | 2 | 2 / 1 | 1500 | 1 | 10 | EN/IEC 60950-1 Supplementary Isolation Voltage (0.4mm Distance Through Isolation) |
| CPC1317 | BI | 70 | 150 | 16 | 1 | 2.5 / 2.5 | 3750 | 1 | 21 | EN 50130-4 (Installation Class 3), Transient Voltage Suppression (TVS) |
| CPC1330 | BI | 350 | 120 | 30 | 2 | 2 / 1 | 5000 | 1 | 42, 43 | Enhanced Isolation Voltage |
| CPC1335 | BI | 350 | 100 | 35 | 1 | 10 / 10 | 3750 | 1 | 21 | Low I _F , EN 50130-4 (Installation Class 3), Transient Voltage Suppression (TVS) |
| CPC1390 | BI | 400 | 140 | 22 | 2 | 1 / 1 | 5000 | 1 | 42, 43, 44 | Enhanced Isolation Voltage |
| CPC1393 | BI | 600 | 90 | 50 | 2 | 5 / 5 | 5000 | 1 | 42, 43, 44 | Enhanced Isolation Voltage |
| CPC1394 | BI | 600 | 120 | 35 | 2 | 5 / 3 | 5000 | 1 | 42, 43, 44 | Enhanced Isolation Voltage |
| CPC1510 | BI+ | 250 | 200 | 15 | 2 | 2 / 2 | 3750 | 1 | 12, 14 | Current Limited with Thermal Management - See Page 14 |
| CPC1540 | BI+ | 350 | 120 | 25 | 2 | 2 / 2 | 3750 | 1 | 12, 14 | Current Limited with Thermal Management - See Page 14 |
| CPC1560 | BI+ | 60 | 300 | 5.6 | 1.1 | 0.1 / 0.4 | 3750 | 1 | 20, 22 | Current Limited with Thermal Management - See Page 14 |
| CPC1563 | BI+ | 600 | 120 | 35 | 2 | 2 / 2 | 3750 | 1 | 12, 14 | Current Limited with Thermal Management - See Page 14 |
| CPC1593 | BI+ | 600 | 120 | 35 | 2 | 2 / 2 | 3750 | 1 | 12, 14 | Current Limited, Thermal Management, Voltage Triggered Shutdown - See Page 15 |
| LCA100 | BI+ | 350 | 120 | 25 | 5 | 5 / 5 | 3750 | 1 | 12, 14 | |
| LCA100L | BI+ | 350 | 120 | 25 | 5 | 5 / 5 | 3750 | 1 | 12, 14 | Current Limiting |
| LCA110 | BI+ | 350 | 120 | 35 | 2 | 3 / 3 | 3750 | 1 | 12, 14 | |
| LCA110L | BI+ | 350 | 120 | 35 | 2 | 3 / 3 | 3750 | 1 | 12, 14 | Current Limiting |
| LCA120 | BI+ | 250 | 170 | 20 | 5 | 3 / 3 | 3750 | 1 | 12, 14 | |
| LCA120L | BI+ | 250 | 150 | 20 | 5 | 3 / 3 | 3750 | 1 | 12, 14 | Current Limiting |
| LCA125 | BI+ | 300 | 170 | 16 | 5 | 5 / 5 | 3750 | 1 | 12, 14 | |
| LCA125L | BI+ | 300 | 170 | 20 | 5 | 5 / 5 | 3750 | 1 | 12, 14 | Current Limiting |
| LCA126 | BI+ | 250 | 170 | 15 | 5 | 5 / 5 | 3750 | 1 | 12, 14 | |
| LCA127 | BI+ | 250 | 200 | 10 | 5 | 5 / 5 | 3750 | 1 | 12, 14 | |
| LCA127L | BI+ | 250 | 170 | 15 | 5 | 5 / 5 | 3750 | 1 | 12, 14 | Current Limiting |

For data sheets, go to www.ixysic.com/Products/ProdList.htm

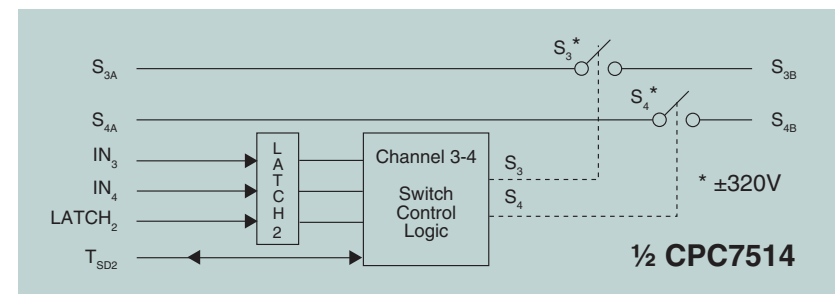
1-Form-A Relays: Single-Pole, Normally Open (Continued)



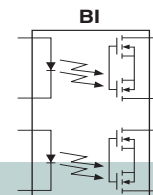
| Part Number | Relay Type | Blocking Voltage | Load Current | On Resistance | Input Control Current | Switching Speeds | Isolation Voltage | Off-State Leakage | Package Type (Page 6) | Features and Comments |
|-------------|------------|-------------------|--------------|---------------|-----------------------|---|---------------------|-------------------|-----------------------|---|
| | | (V _p) | (mA) | (Ω) | (mA) | t _{on} / t _{off} (ms) | (V _{rms}) | (μA) | | |
| LCA129 | BI+ | 250 | 170 | 20 | 2 | 8 / 8 | 3750 | 1 | 12, 14 | |
| LCA182 | BI+ | 350 | 120 | 35 | 0.25 | 3 / 3 | 3750 | 1 | 12, 14 | Very Low I _F |
| LCA701 | BI+ | 100 | 1500 | 0.3 | 2 | 4 / 1 | 3750 | 1 | 12, 14 | High Load Current |
| LCA710 | BI+ | 60 | 1000 | 0.5 | 10 | 2.5 / 0.25 | 3750 | 1 | 12, 14 | High Load Current |
| LCA712 | BI+ | 60 | 1000 | 0.5 | 10 | 2.5 / 0.35 | 3750 | 0.01 | 12, 14 | High Load Current, Low I _{LEAK} |
| LCA715 | BI+ | 60 | 2200 | 0.15 | 5 | 2.5 / 0.25 | 3750 | 1 | 12, 14 | High Load Current |
| LCA717 | BI+ | 30 | 2000 | 0.15 | 2 | 3 / 3 | 3750 | 1 | 12, 14 | High Load Current |
| OMA160 | BI+ | 250 | 50 | 100 | 10 | 0.125 / 0.125 | 3750 | 0.025 | 12, 14 | Low I _{LEAK} , Fast Switching Times |
| PLA110 | BI+ | 400 | 150 | 22 | 5 | 1 / 0.5 | 3750 | 1 | 12, 14 | |
| PLA110L | BI+ | 400 | 150 | 25 | 5 | 1 / 0.25 | 3750 | 1 | 12, 14 | Current Limiting |
| PLA132 | BI+ | 60 | 600 | 1 | 2 | 5 / 2 | 3750 | 1 | 12, 14 | |
| PLA134 | BI+ | 100 | 350 | 3 | 5 | 5 / 5 | 3750 | 1 | 12, 14 | |
| PLA140 | BI+ | 400 | 250 | 8 | 5 | 3 / 1 | 3750 | 1 | 12, 14 | |
| PLA140L | BI+ | 400 | 200 | 13 | 5 | 5 / 3 | 3750 | 1 | 12, 14 | Current Limiting |
| PLA143 | BI+ | 600 | 100 | 50 | 2 | 5 / 5 | 4000 | 1 | 12, 14 | Enhanced Isolation Voltage |
| PLA150 | BI+ | 250 | 250 | 7 | 5 | 2.5 / 0.5 | 3750 | 1 | 12, 14 | |
| PLA160 | BI+ | 300 | 50 | 100 | 10 | 0.05 / 0.05 | 3750 | 0.025 | 12, 14 | Low I _{LEAK} , Fast Switching Times |
| PLA170 | BI+ | 800 | 100 | 50 | 5 | 5 / 5 | 3750 | 1 | 12, 14 | |
| PLA171 | BI | 800 | 100 | 50 | 2 | 5 / 5 | 5000 | 1 | 62 | Enhanced Isolation Voltage (7mm Output Pin Separation) |
| PLA190 | BI+ | 400 | 150 | 22 | 5 | 1 / 0.5 | 5000 | 1 | 12, 14 | Enhanced Isolation Voltage |
| PLA191 | BI+ | 400 | 250 | 8 | 5 | 3 / 1 | 5000 | 1 | 12, 14 | Enhanced Isolation Voltage |
| PLA192 | BI+ | 600 | 150 | 22 | 5 | 5 / 5 | 5000 | 1 | 12, 14 | Enhanced Isolation Voltage, PLA192E is DIN EN 60747-5-5 Certified |
| PLA193 | BI+ | 600 | 100 | 50 | 5 | 5 / 5 | 5000 | 1 | 12, 14 | Enhanced Isolation Voltage, PLA193E is DIN EN 60747-5-5 Certified |
| PLA194 | BI+ | 600 | 130 | 35 | 2 | 3 / 2 | 5000 | 1 | 12, 14 | Enhanced Isolation Voltage |
| XCA170 | BI+ | 350 | 100 | 50 | 5 | 5 / 5 | 3750 | 1 | 12, 14 | |

1-Form-A Relays: CPC7514 Quad Single-Pole, Normally Open

See Page 36 for full details. The CPC7514 Quad High Voltage Isolated Analog Switch Array provides the switching functionality of four independent 1-Form-A relays in a single small economical package. Designed to provide flexible single-ended or differential access to high voltage networks, up to ±320V, the CPC7514 is configured as two sets of matched-pair switches. The CPC7514 is self-biasing, and requires no external power supply. Shown to the right is one 2-switch channel.



For data sheets, go to www.ixysic.com/Products/ProdList.htm

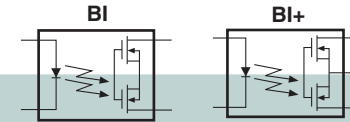


1-Form-A Relays: Dual Single-Pole, Normally Open

| Part Number | Relay Type | Blocking Voltage (V _p) | Load Current (mA) | On Resistance (Ω) | Input Control Current (mA) | Switching Speeds t _{on} / t _{off} (ms) | Isolation Voltage (V _{rms}) | Off-State Leakage (μA) | Package Type (Page 6) | Features and Comments |
|-------------|------------|---------------------------------------|----------------------|----------------------|-------------------------------|--|--|---------------------------|--------------------------|---|
| CPC2014N | BI | 60 | 400 | 2 | 2 | 2 / 1 | 1500 | 1 | 17 | EN 50130-4 |
| CPC2017N | BI | 60 | 120 | 16 | 1 | 3 / 3 | 1500 | 1 | 17 | Low I _F , EN 50130-4 |
| CPC2025N | BI | 400 | 120 | 30 | 2 | 2 / 1 | 1500 | 1 | 17 | |
| CPC2030N | BI | 350 | 120 | 30 | 2 | 2 / 1 | 1500 | 1 | 17 | |
| LAA100 | BI | 350 | 120 | 25 | 5 | 5 / 5 | 3750 | 1 | 20, 21, 22 | |
| LAA100L | BI | 350 | 120 | 25 | 5 | 5 / 5 | 3750 | 1 | 20, 21, 22 | Current Limiting |
| LAA108 | BI | 100 | 300 | 8 | 2 | 3 / 3 | 3750 | 1 | 20, 21, 22 | |
| LAA110 | BI | 350 | 120 | 35 | 5 | 3 / 3 | 3750 | 1 | 20, 21, 22 | |
| LAA110L | BI | 350 | 120 | 35 | 5 | 3 / 3 | 3750 | 1 | 20, 21, 22 | Current Limiting |
| LAA120 | BI | 250 | 170 | 20 | 5 | 5 / 5 | 3750 | 1 | 20, 21, 22 | |
| LAA120L | BI | 250 | 150 | 25 | 5 | 5 / 5 | 3750 | 1 | 20, 21, 22 | Current Limiting |
| LAA125 | BI | 350 | 170 | 16 | 5 | 5 / 5 | 3750 | 1 | 20, 21, 22 | |
| LAA125L | BI | 350 | 150 | 18 | 5 | 5 / 5 | 3750 | 1 | 20, 21, 22 | Current Limiting |
| LAA126 | BI | 250 | 170 | 15 | 5 | 5 / 5 | 3750 | 1 | 20, 22 | |
| LAA126L | BI | 250 | 170 | 20 | 5 | 5 / 5 | 3750 | 1 | 20, 22 | Current Limiting |
| LAA127 | BI | 250 | 200 | 10 | 5 | 5 / 5 | 3750 | 1 | 20, 21, 22 | |
| LAA127L | BI | 250 | 170 | 10 | 5 | 5 / 5 | 3750 | 1 | 20, 21, 22 | Current Limiting |
| LAA710 | BI | 60 | 1000 | 0.5 | 10 | 2.5 / 0.25 | 3750 | 1 | 20, 22 | |
| OAA160 | BI | 250 | 50 | 100 | 3 | 0.125 / 0.125 | 3750 | 0.025 | 20, 21, 22 | Very Low I _{LEAK} , Fast Switching Times |
| PAA110 | BI | 400 | 150 | 22 | 5 | 1 / 0.25 | 3750 | 1 | 20, 21, 22 | |
| PAA110L | BI | 400 | 150 | 25 | 5 | 1 / 0.5 | 3750 | 1 | 20, 21, 22 | Current Limiting |
| PAA127 | BI | 280 | 200 | 10 | 3 | 0.5 / 0.5 | 3750 | 0.025 | 20, 21, 22 | Very Low I _{LEAK} , Fast Switching Times |
| PAA132 | BI | 60 | 600 | 1 | 2 | 5 / 2 | 3750 | 1 | 20, 22 | |
| PAA140 | BI | 400 | 250 | 8 | 5 | 3 / 1 | 3750 | 1 | 20, 21, 22 | |
| PAA140L | BI | 400 | 200 | 13 | 5 | 5 / 3 | 3750 | 1 | 20, 22 | Current Limiting |
| PAA150 | BI | 250 | 250 | 7 | 5 | 2.5 / 0.5 | 3750 | 1 | 20, 21, 22 | |
| PAA190 | BI | 400 | 150 | 22 | 5 | 1 / 0.5 | 5000 | 1 | 20, 22 | Enhanced Isolation Voltage |
| PAA191 | BI | 400 | 250 | 8 | 5 | 3 / 1 | 5000 | 1 | 20, 22 | Enhanced Isolation Voltage |
| PAA193 | BI | 600 | 100 | 50 | 5 | 5 / 5 | 5000 | 10 | 20, 22 | Enhanced Isolation Voltage |
| XAA117 | BI | 60 | 150 | 16 | 1 | 5 / 5 | 3750 | 1 | 20, 21, 22 | Low I _F |
| XAA170 | BI | 350 | 100 | 50 | 5 | 5 / 5 | 3750 | 1 | 20, 21, 22 | |

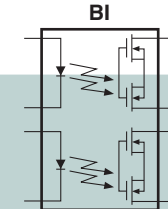
For data sheets, go to www.ixysic.com/Products/ProdList.htm

1-Form-B Relays: Single-Pole, Normally Closed



| Part Number | Relay Type | Blocking Voltage | Load Current | On Resistance | Input Control Current | Switching Speeds | Isolation Voltage | Off-State Leakage | Package Type (Page 6) | Features and Comments |
|-------------|------------|-------------------|--------------|---------------|-----------------------|---|---------------------|-------------------|-----------------------|---|
| | | (V _p) | (mA) | (Ω) | (mA) | t _{on} / t _{off} (ms) | (V _{rms}) | (μA) | | |
| CPC1106N | BI | 60 | 75 | 10 | 0.5 | 10 / 10 | 1500 | 1 | 10 | Low I _c , EN 50130-4 |
| CPC1114N | BI | 60 | 400 | 2 | 2 | 2 / 5 | 1500 | 1 | 10 | |
| CPC1117N | BI | 60 | 150 | 16 | 1 | 10 / 10 | 1500 | 1 | 10 | Low I _c , EN 50130-4 |
| CPC1125N | BI | 400 | 100 | 35 | 2 | 2 / 2 | 1500 | 1 | 10 | |
| CPC1130N | BI | 350 | 120 | 30 | 2 | 2 / 2 | 1500 | 5 | 10 | |
| CPC1135N | BI | 350 | 120 | 35 | 2 | 2 / 2 | 1500 | 5 | 10 | |
| CPC1150N | BI | 350 | 120 | 50 | 2 | 1 / 2 | 1500 | 5 | 10 | |
| CPC1231N | BI | 350 | 120 | 30 | 2 | 2 / 2 | 1500 | 5 | 10 | EN/IEC 60950-1 Supplementary Isolation Voltage (0.4mm Distance Through Isolation) |
| CPC1333 | BI | 350 | 130 | 30 | 2 | 2 / 3 | 5000 | 1 | 42, 43 | Enhanced Isolation Voltage |
| LCB110 | BI+ | 350 | 120 | 35 | 5 | 3 / 3 | 3750 | 1 | 12, 14 | |
| LCB111 | BI+ | 350 | 120 | 35 | 2 | 5 / 5 | 3750 | 1 | 12, 14 | |
| LCB120 | BI+ | 250 | 170 | 20 | 5 | 5 / 5 | 3750 | 1 | 12, 14 | |
| LCB126 | BI+ | 250 | 170 | 15 | 5 | 5 / 5 | 3750 | 1 | 12, 14 | |
| LCB127 | BI+ | 250 | 200 | 10 | 5 | 5 / 5 | 3750 | 1 | 12, 14 | |
| LCB710 | BI+ | 60 | 1000 | 0.6 | 2 | 3 / 3 | 3750 | 1 | 12, 14 | High Load Current |
| LCB716 | BI+ | 60 | 500 | 2 | 2 | 3 / 3 | 3750 | 1 | 12, 14 | |
| LCB717 | BI+ | 30 | 1500 | 0.3 | 2 | 2 / 5 | 3750 | 1 | 12, 14 | High Load Current |
| PLB150 | BI+ | 250 | 250 | 7 | 5 | 1 / 2.5 | 3750 | 1 | 12, 14 | |
| PLB190 | BI+ | 400 | 130 | 25 | 2 | 1 / 2.5 | 5000 | 1 | 12, 14 | Enhanced Isolation Voltage |
| XCB170 | BI+ | 350 | 100 | 50 | 5 | 5 / 5 | 3750 | 1 | 12, 14 | |

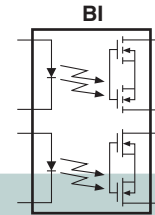
1-Form-B Relays: Dual Single-Pole, Normally Closed



| Part Number | Relay Type | Blocking Voltage | Load Current | On Resistance | Input Control Current | Switching Speeds | Isolation Voltage | Off-State Leakage | Package Type (Page 6) | Features and Comments |
|-------------|------------|-------------------|--------------|---------------|-----------------------|---|---------------------|-------------------|-----------------------|-----------------------|
| | | (V _p) | (mA) | (Ω) | (mA) | t _{on} / t _{off} (ms) | (V _{rms}) | (μA) | | |
| CPC2125N | BI | 400 | 100 | 35 | 2 | 2 / 2 | 1500 | 1 | 17 | |
| LBB110 | BI | 350 | 120 | 35 | 5 | 3 / 3 | 3750 | 1 | 20, 21, 22 | |
| LBB120 | BI | 250 | 170 | 20 | 5 | 5 / 5 | 3750 | 1 | 20, 22 | |
| LBB126 | BI | 250 | 170 | 15 | 5 | 5 / 5 | 3750 | 1 | 20, 21, 22 | |
| LBB127 | BI | 250 | 200 | 10 | 5 | 5 / 5 | 3750 | 1 | 20, 21, 22 | |
| PBB150 | BI | 250 | 250 | 7 | 5 | 2.5 / 2.5 | 3750 | 1 | 20, 21, 22 | |
| PBB190 | BI | 400 | 130 | 25 | 2 | 1 / 2.5 | 5000 | 1 | 20, 22 | |
| XBB170 | BI | 350 | 100 | 50 | 5 | 5 / 5 | 3750 | 1 | 20, 21, 22 | |

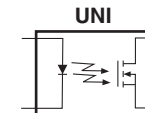
For data sheets, go to www.ixysic.com/Products/ProdList.htm

1-Form-A & 1-Form-B Combination Relays



| Part Number | Relay Type | Blocking Voltage | Load Current | On Resistance | Input Control Current | Switching Speeds | Isolation Voltage | Off-State Leakage | Package Type (Page 6) | Features and Comments |
|-------------|------------|-------------------|--------------|---------------|-----------------------|---|---------------------|-------------------|-----------------------|-----------------------|
| | | (V _p) | (mA) | (Ω) | (mA) | t _{on} / t _{off} (ms) | (V _{rms}) | (μA) | | |
| CPC2317N | BI | 60 | 120 | 16 | 1 | 3 / 3 | 1500 | 1 | 17 | Low I _F |
| CPC2330N | BI | 350 | 120 | 30 | 2 | 3 / 3 | 1500 | 1 | 17 | |
| LBA110 | BI | 350 | 120 | 35 | 2 | 3 / 3 | 3750 | 1 | 20, 21, 22 | |
| LBA110L | BI | 350 | 120 | 35 | 5 | 3 / 3 | 3750 | 1 | 20, 21, 22 | Current Limiting |
| LBA120 | BI | 250 | 170 | 20 | 5 | 5 / 5 | 3750 | 1 | 20, 21, 22 | |
| LBA120L | BI | 250 | 170 | 20 | 5 | 5 / 5 | 3750 | 1 | 20, 22 | Current Limiting |
| LBA126 | BI | 250 | 170 | 15 | 5 | 5 / 5 | 3750 | 1 | 20, 21, 22 | |
| LBA126L | BI | 250 | 150 | 20 | 5 | 5 / 5 | 3750 | 1 | 20, 22 | Current Limiting |
| LBA127 | BI | 250 | 200 | 10 | 5 | 5 / 5 | 3750 | 1 | 20, 21, 22 | |
| LBA127L | BI | 250 | 150 | 15 | 5 | 5 / 5 | 3750 | 1 | 20, 22 | Current Limiting |
| LBA710 | BI | 60 | 1000 | 0.6 | 2 | 5 / 5 | 3750 | 1 | 20, 22 | High Load Current |
| LBA716 | BI | 60 | 1000 | 0.4 | 2 | 5 / 5 | 3750 | 1 | 20, 22 | High Load Current |
| PBA150 | BI | 250 | 250 | 7 | 5 | 2.5 / 2.5 | 3750 | 1 | 20, 22 | |
| XBA170 | BI | 350 | 100 | 50 | 2 | 5 / 5 | 3750 | 1 | 20, 21, 22 | |

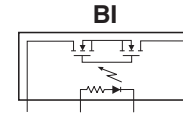
1-Form-A Relays: Single-Pole, Normally Open, Unidirectional (DC-Only)



| Part Number | Relay Type | Blocking Voltage | Load Current | On Resistance | Input Control Current | Switching Speeds | Isolation Voltage | Off-State Leakage | Package Type (Page 6) | Features and Comments |
|-------------|------------|-------------------|--------------|---------------|-----------------------|---|---------------------|-------------------|-----------------------|---|
| | | (V _p) | (mA) | (Ω) | (mA) | t _{on} / t _{off} (ms) | (V _{rms}) | μA | | |
| CPC1002N | UNI | 60 | 700 | 0.55 | 2 | 5 / 2 | 1500 | 1 | 10 | EN 50130-4 |
| CPC1004N | UNI | 100 | 300 | 4 | 2 | 3 / 1 | 1500 | 1 | 10 | Extended Operating Temperature Range: -40°C to +110°C |

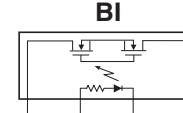
For data sheets, go to www.ixysic.com/Products/ProdList.htm

1-Form-A Relays: Single-Pole, Normally Open, Voltage-Controlled



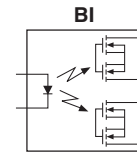
| Part Number | Relay Type | Blocking Voltage | Load Current | On Resistance | Input Control Voltage | Switching Speeds | Isolation Voltage | Off-State Leakage | Package Type (Page 6) | Features and Comments |
|-------------|------------|-------------------|--------------|---------------|-----------------------|---|---------------------|-------------------|-----------------------|---|
| | | (V _p) | (mA) | (Ω) | (V) | t _{on} / t _{off} (ms) | (V _{rms}) | (μA) | | |
| CPC1215 | BI | 400 | 500 | 6 | 5 - 12 | 5 / 3 | 3750 | 1 | 61 | Direct drop-in reed relay replacement |
| CPC1217 | BI | 60 | 200 | 16 | 5 - 12 | 5 / 5 | 2500 | 1 | 41 | EN 50130-4, Direct drop-in reed relay replacement |
| CPC1218 | BI | 60 | 600 | 1.1 | 5 - 12 | 5 / 5 | 2500 | 1 | 41 | EN 50130-4, Direct drop-in reed relay replacement |

1-Form-B Relays: Single-Pole, Normally Closed, Voltage-Controlled



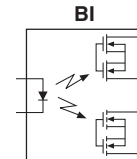
| Part Number | Relay Type | Blocking Voltage | Load Current | On Resistance | Input Control Voltage | Switching Speeds | Isolation Voltage | Off-State Leakage | Package Type (Page 6) | Features and Comments |
|-------------|------------|-------------------|--------------|---------------|-----------------------|---|---------------------|-------------------|-----------------------|---|
| | | (V _p) | (mA) | (Ω) | (V) | t _{on} / t _{off} (ms) | (V _{rms}) | (μA) | | |
| CPC1219 | BI | 60 | 200 | 16 | 5 - 12 | 5 / 5 | 2500 | 1 | 41 | EN 50130-4, Direct drop-in reed relay replacement |

2-Form-A Relays: Common Input, Dual-Pole, Normally Open



| Part Number | Relay Type | Blocking Voltage | Load Current | On Resistance | Input Control Current | Switching Speeds | Isolation Voltage | Off-State Leakage | Package Type (Page 6) | Features and Comments |
|-------------|------------|-------------------|--------------|---------------|-----------------------|---|---------------------|-------------------|-----------------------|-----------------------|
| | | (V _p) | (mA) | (Ω) | (mA) | t _{on} / t _{off} (ms) | (V _{rms}) | (μA) | | |
| LCA210 | BI | 350 | 85 | 35 | 8 | 3 / 3 | 3750 | 1 | 20, 22 | |
| LCA210L | BI | 350 | 100 | 35 | 8 | 4 / 4 | 3750 | 1 | 20, 22 | Current Limiting |
| LCA220 | BI | 250 | 120 | 20 | 10 | 5 / 5 | 3750 | 1 | 20, 22 | |

1-Form-C Relays: Common Input



| Part Number | Relay Type | Blocking Voltage | Load Current | On Resistance | Input Control Current | Switching Speeds | Isolation Voltage | Off-State Leakage | Package Type (Page 6) | Features and Comments |
|-------------|------------|-------------------|--------------|---------------|-----------------------|---|---------------------|-------------------|-----------------------|-----------------------|
| | | (V _p) | (mA) | (Ω) | (mA) | t _{on} / t _{off} (ms) | (V _{rms}) | (μA) | | |
| LCC110 | BI | 350 | 120 | 35 | 8 | 4 / 4 | 3750 | 1 | 20, 21, 22 | |
| LCC120 | BI | 250 | 170 | 20 | 10 | 5 / 5 | 3750 | 1 | 20, 22 | |

For data sheets, go to www.ixysic.com/Products/ProdList.htm

Multifunction Solid State Relays

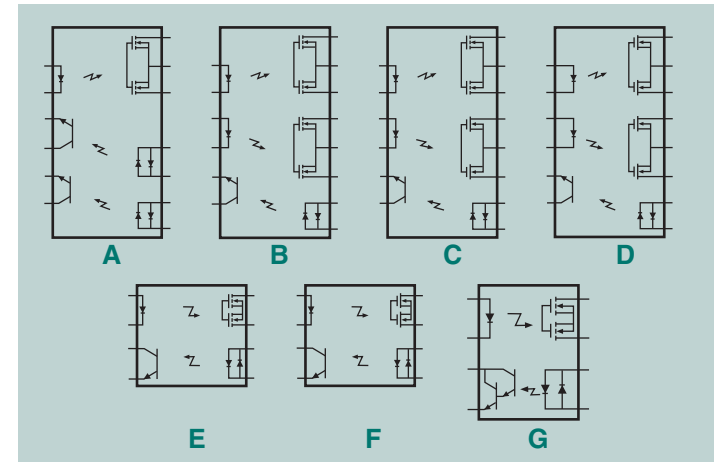
The OptoMOS line of Multifunction SSR Products combines several optically isolated discrete component functions into a single package. These products mix and match solid state relays, optocouplers, and Darlington transistors to create highly functional circuits in a single, small package. Multifunction devices allow designers to consolidate circuit functions into a single device, freeing up valuable board space and reducing component count.

Features:

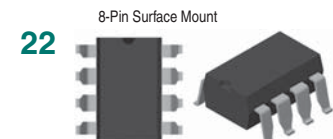
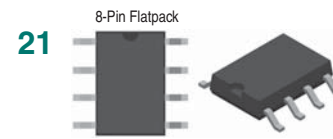
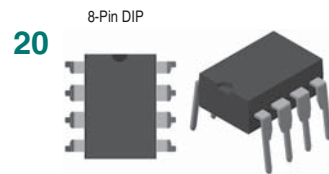
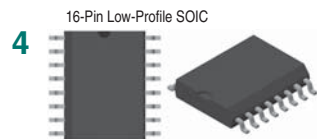
- 3750V_{rms} Input to Output Isolation
- Multiple Functionality in a Single Package
- Current Limiting (Part Numbers with “L” Suffix)
- Machine Insertable, Wave Solderable
- TTL and CMOS Compatible

Applications:

- Telecommunication / Datacommunication
- Instrumentation
- I/O Subsystems / Electronic Switching
- Medical Equipment (Patient / Equipment Isolation)
- Security
- Aerospace
- Industrial Controls



| Part Number | Style | Relay Characteristics | | | | Optocoupler Characteristics | | | | Isolation Voltage (V _{rms}) | Package Type | Features and Comments |
|-------------|-------|------------------------------------|-----------------------|-------------------|----------------------------|-----------------------------|----------------------------|------------------------|----------------------------|---------------------------------------|--------------|---|
| | | Blocking Voltage (V _p) | Current Handling (mA) | On Resistance (Ω) | Input Control Current (mA) | Breakdown Voltage (V) | Current Transfer Ratio (%) | Saturation Voltage (V) | Input Control Current (mA) | | | |
| IAA110 | B | 350 | 100 | 35 | 5 | 20 | 33 | 0.5 | 6 | 3750 | 4 | Two 1-Form-A Relays, One Optocoupler |
| IAB110 | C | 350 | 100 | 35 | 5 | 20 | 33 | 0.5 | 6 | 3750 | 4 | One 1-Form-A Relay, One 1-Form-B Relay, One Optocoupler |
| IAD110 | A | 350 | 100 | 35 | 5 | 20 | 33 | 0.5 | 6 | 3750 | 4 | One 1-Form-A Relay, Two Optocouplers |
| IBB110 | D | 350 | 100 | 35 | 5 | 20 | 33 | 0.5 | 6 | 3750 | 4 | Two 1-Form-B Relays, One Optocoupler |
| TS117 | E | 350 | 120 | 35 | 2 | 20 | 33 | 0.5 | 6 | 3750 | 20, 21, 22 | One 1-Form-A Relay, One Optocoupler |
| TS117L | E | 350 | 120 | 35 | 2 | 20 | 33 | 0.5 | 6 | 3750 | 20, 21, 22 | One Current-Limiting 1-Form-A Relay, One Optocoupler |
| TS118 | F | 350 | 120 | 35 | 5 | 20 | 33 | 0.5 | 6 | 3750 | 20, 21, 22 | One 1-Form-B Relay, One Optocoupler |
| TS120 | G | 350 | 120 | 35 | 5 | 20 | 300 | 0.8 | 2 | 3750 | 20, 21, 22 | One 1-Form-A Relay, One Darlington Optocoupler |
| TS122 | E | 250 | 170 | 20 | 5 | 20 | 33 | 0.5 | 6 | 3750 | 20, 21, 22 | One 1-Form-A Relay, One Optocoupler |
| TS190 | E | 400 | 150 | 22 | 5 | 20 | 33 | 0.5 | 6 | 3750 | 20, 21, 22 | One 1-Form-A Relay, One Optocoupler |
| TS190L | E | 400 | 150 | 25 | 5 | 20 | 33 | 0.5 | 6 | 3750 | 21 | One Current-Limiting 1-Form-A Relay, One Optocoupler |
| XS170 | E | 350 | 100 | 50 | 2 | 20 | 33 | 0.5 | 6 | 3750 | 20, 21, 22 | One 1-Form-A Relay, One Optocoupler |



For data sheets, go to www.ixysic.com/Products/ProdList.htm

Fault Protected Relays

Current Limited SSRs with Thermal Management (ThM)

These specialized OptoMOS relays are single-pole, current limited, normally open (1-Form-A) Solid State Relays that can replace electromechanical relays in many critical industrial and commercial applications. They are constructed using a highly efficient infrared LED for actuation control and an integrated monolithic die for the switch output. The active current-limit circuitry in these relays also has a thermal management feature that provides excellent power-cross immunity for improved survivability in harsh environments. These features greatly improve the robustness of end systems that use these devices when compared to systems using relays without integrated current limit. These devices may be used in both unidirectional DC applications and bidirectional AC applications.

CPC1540 and CPC1563 incorporate an additional fault feature, Voltage Triggered Shutdown (VTS), that quickly shuts the device down if a high voltage transient, >100V, occurs in the load while current limiting is in effect. These two devices are ideal for use in noisy environments where such transients can be expected.

Features:

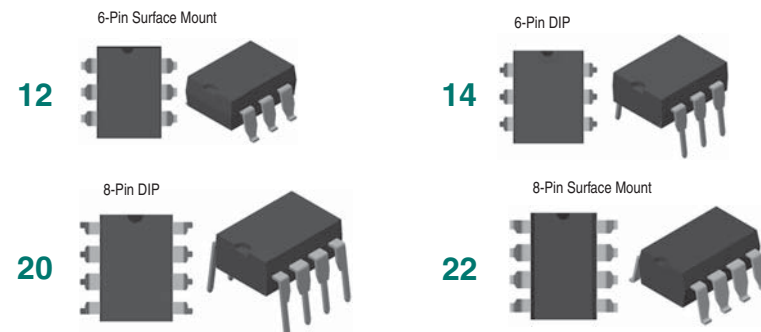
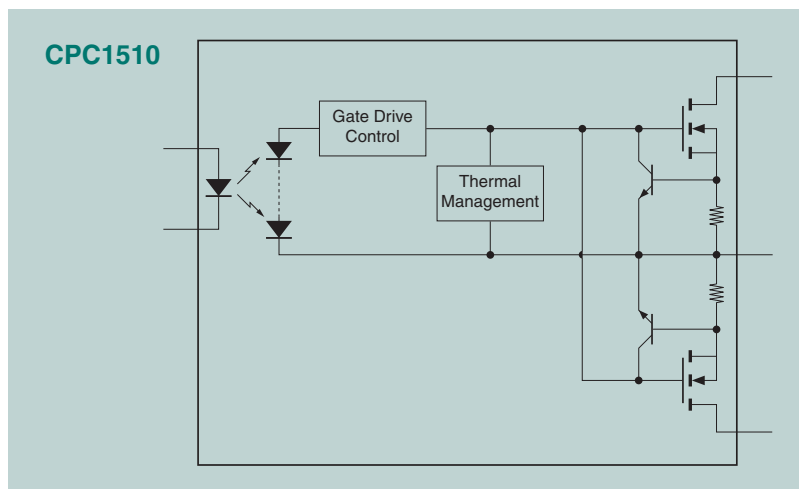
- Integrated Active Current-Limit
- Thermal Management
- Low Input Control Current
- Low Drive Power Requirements
- 3750V_{rms} Isolation, Input-to-Output

Applications:

- Telephony Hook Switch
- VoIP Gateways
- I/O Subsystems
- Electronic Switching
- Medical Equipment (Patient / Equipment Isolation)
- Security
- Aerospace
- Industrial Controls

| Part Number | Blocking Voltage (V _p) | Input Control Current (mA) | On Resistance (Maximum) | | Load Current (Maximum) | | Current Limit (Maximum) | | * VTS Threshold (V) | Switching Speed t _{on} / t _{off} (ms) | Isolation Voltage (V _{rms}) | Package Type | Features & Comments |
|-------------|---------------------------------------|-------------------------------|-------------------------|-----------|------------------------|------------|-------------------------------|--------------------------|------------------------|---|--|--------------|-------------------------------|
| | | | DC-Only (Ω) | AC (Ω) | DC-Only (mA) | AC (mA) | DC-Only (mA _p) | AC (mA _p) | | | | | |
| CPC1510 | 250 | 2 | 3.75 | 15 | 350 | 200 | 920 | 450 | - | 2 / 2 | 3750 | 12, 14 | Industrial Applications |
| CPC1540 | 350 | 2 | 6.75 | 25 | 250 | 120 | 570 | 285 | 100 | 2 / 2 | 3750 | 12, 14 | PSTN Hook Switch Applications |
| CPC1560 | 60 | 1.1 | 1.4 | 5.6 | 600 | 300 | 1500 | 900 | - | 0.1 / 0.4 | 3750 | 20, 22 | Fast Switching Speeds |
| CPC1563 | 600 | 2 | 11.75 | 35 | 250 | 120 | 570 | 285 | 100 | 2 / 2 | 3750 | 12, 14 | High Blocking Voltage |

* Provides additional current limiting after primary current limit has been enabled due to a fault condition.



For data sheets, go to www.ixysic.com/Products/ProdList.htm

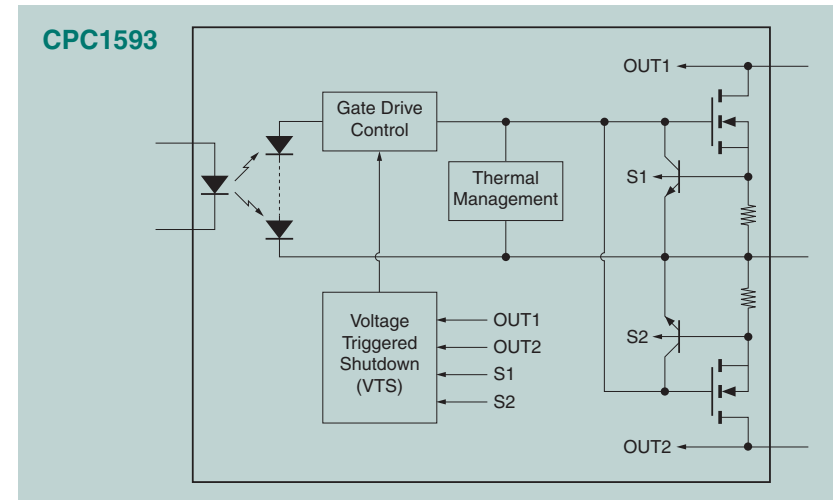
Current Limited SSR with Voltage Triggered Shutdown & Thermal Management

The new CPC1593 OptoMOS solid state relay (SSR) adds a special Voltage Triggered Shutdown (VTS) feature to current limiting and thermal management. The 21V VTS level, if enabled during current limiting, shuts the switch down, thus limiting the power dissipated by the switch, and preventing damage to the device due to extended fault conditions.

The CPC1593 is designed for use in AC environments where fault conditions can persist for long periods of time, and where, upon removal of the fault, return to normal operation is expected. The CPC1593 is designed to survive extended power-cross conditions.

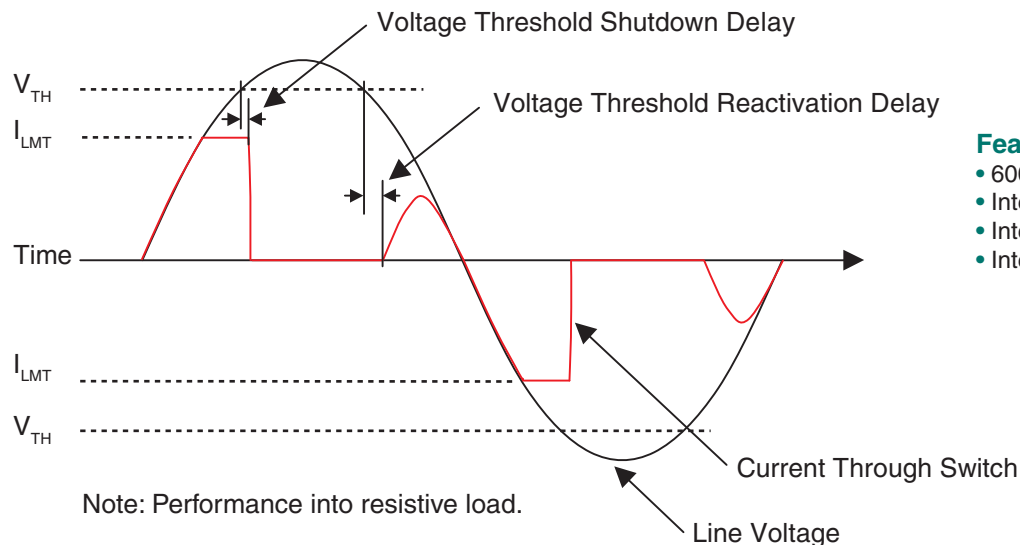
When all fault conditions have been removed, the CPC1593 recommences normal operation, and automatically resets all of its protection circuits. No intervention is necessary.

This three-level, self-resetting fault scheme not only protects the CPC1593's load, but also helps to protect the CPC1593 itself, thus creating a highly effective switching mechanism that can survive in the harshest operating environments.



| Part Number | Blocking Voltage (V_p) | On Resistance (Maximum) | | Load Current (Maximum) | | Current Limit (Maximum) | | Input Control Current (mA) | Switching Speed t_{on} / t_{off} (ms) | Isolation Voltage (V_{rms}) | * VTS Threshold (V) | Package Type | Features & Comments |
|-------------|-------------------------------|-------------------------|-----------------|------------------------|---------|-------------------------|---------------|-------------------------------|---|------------------------------------|------------------------|--------------|-----------------------|
| | | DC-Only (Ω) | AC (Ω) | DC-Only (mA) | AC (mA) | DC-Only (mA_p) | AC (mA_p) | | | | | | |
| CPC1593 | 600 | 11.75 | 35 | 250 | 120 | 570 | 285 | 2 | 2 / 2 | 3750 | 21 | 12, 14 | Power Supply Start-Up |

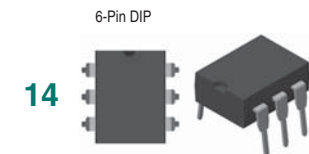
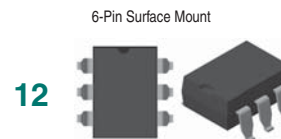
* Provides additional current limiting after primary current limit has been enabled due to a fault condition.



Features:

- 600V_p Blocking Voltage
- Integrated Active Current-Limit
- Integrated Thermal Management
- Integrated Voltage Triggered Shutdown

Ensures Power-Cross Survival!



For data sheets, go to www.ixysic.com/Products/ProdList.htm

Power Relays

IXYS Integrated Circuits Division's line of power relays features OptoMOS technology, reliability, and compact size in the Power SOIC, Power SIP, i4-PAC™ and ISOPLUS™-264 series of power solid state relays. Development of these products was founded on the blending of our traditional strengths in the design and manufacture of photovoltaic integrated circuits (ICs), leadframe design, and multi-chip packaging with IXYS' expertise in power MOSFETs, power packages, and substrate technology.

Our Power Relays are now offered in four package types, which offer between 2500V_{rms} and 5000V_{rms} of input to output isolation. The Power SIP package offers pin-to-pin compatibility with other solid state relays providing an easy upgrade path for existing designs, and compatibility for new designs. The i4-PAC and the ISOPLUS-264 packages feature a unique assembly process whereby the silicon is soft soldered onto a Direct Copper Bond (DCB) substrate rather than traditional bonding onto an epoxy encapsulated copper frame. This structure allows for a substantially lower junction-to-case thermal impedance when compared to conventionally assembled power relays. The i4-PAC package has a thermal resistance of 0.35°C/W while the ISOPLUS-264 package has an even lower thermal impedance of 0.30°C/W.

Our Power SSRs are provided in two types: Unidirectional (UNI) and Bidirectional (BI). The polarity independent BI relay conducts load current in both directions, while the polarity dependent UNI relay conducts load current in only one direction. The accompanying tables reference these two types for all devices listed.

On the back of the i4-PAC and ISOPLUS-264 packages, the electrically isolated surface of the DCB ceramic substrate provides 2500V_{rms} of isolation to the package's electrically conductive power switching and control leads. The combination of an electrically isolated, non-conductive exterior and low thermal impedance makes the new i4-PAC and ISOPLUS-264 power relays an ideal solution for power applications preferring a non-biased heat sink with superior thermal management properties.

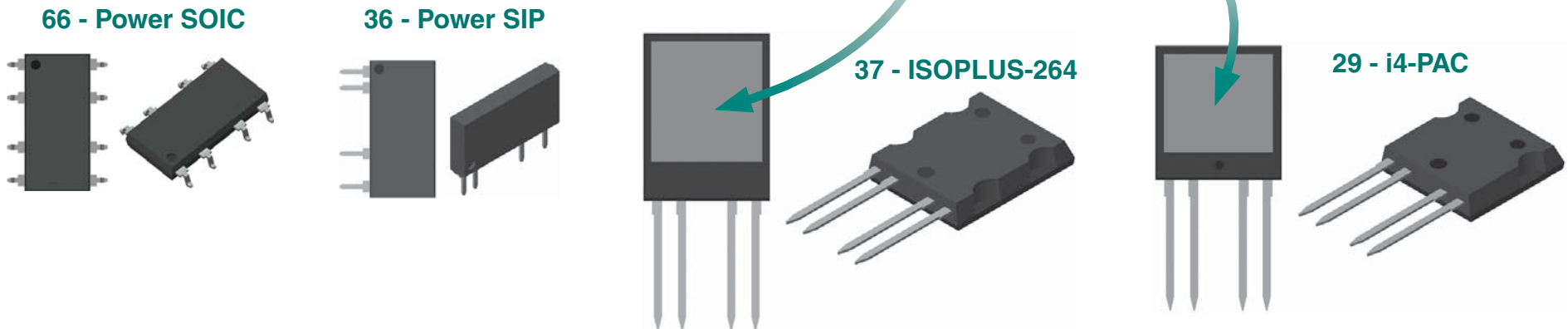
Features:

- Handles Loads up to 32A
- Voltage Ratings up to 1000V_p
- Low On Resistance
- Electrically Isolated Thermal Pad for Heat Sink Applications
- Industry Standard 4-Pin SIP Package
- Low Input Control Current
- Low Thermal Impedances:
 - 0.30°C/W - ISOPLUS-264
 - 0.35°C/W - i4-PAC
 - 1.50°C/W - Power SIP

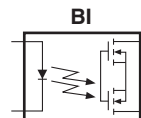
Applications:

- Robotics
- Medical Equipment
- Railroad / Traffic Controls
- Consumer Appliances
- Industrial Control
- Test and Measurement Equipment

Electrically Isolated Thermal Pad

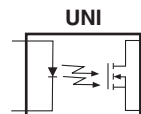


For data sheets, go to www.ixysic.com/Products/ProdList.htm



1-Form-A Power Relays: Single-Pole, Bidirectional

| Part Number | Relay Type | Blocking Voltage (V _p) | Load Current (A _{rms}) | | | On Resistance (Ω) | Input Control Current (mA) | Switching Speeds t _{on} / t _{off} (ms) | Isolation Voltage (V _{rms}) | Off-State Leakage (μA) | Package Type (Page 16) | Features & Comments |
|-------------|------------|------------------------------------|----------------------------------|-----------------|----------------------|-------------------|----------------------------|--|---------------------------------------|------------------------|------------------------|----------------------------|
| | | | Free Air | 5°C/W Heat Sink | T _c =25°C | | | | | | | |
| CPC1906Y | BI | 60 | 2 | - | - | 0.3 | 10 | 10 / 5 | 2500 | 1 | 36 | |
| CPC1907B | BI | 60 | 6 | - | - | 0.06 | 5 | 5 / 1 | 5000 | 1 | 66 | Enhanced Isolation Voltage |
| CPC1908J | BI | 60 | 3.5 | 8.5 | 15 | 0.3 | 10 | 20 / 5 | 2500 | 1 | 29 | |
| CPC1909J | BI | 60 | 6.5 | 15 | 15 | 0.1 | 10 | 25 / 10 | 2500 | 1 | 37 | |
| CPC1916Y | BI | 100 | 2.5 | - | - | 0.34 | 10 | 5 / 3 | 2500 | 1 | 36 | |
| CPC1918J | BI | 100 | 5.25 | 13 | 15 | 0.1 | 10 | 25 / 10 | 2500 | 1 | 37 | |
| CPC1926Y | BI | 250 | 0.7 | - | - | 1.4 | 10 | 10 / 10 | 2500 | 1 | 36 | |
| CPC1927J | BI | 250 | 2.7 | 6.7 | 15 | 0.2 | 10 | 25 / 10 | 2500 | 1 | 37 | |
| CPC1967J | BI | 400 | 1.35 | 3.35 | 13.15 | 0.85 | 10 | 20 / 5 | 2500 | 1 | 29 | |
| CPC1968J | BI | 500 | 2 | 5 | 15 | 0.35 | 10 | 20 / 5 | 2500 | 1 | 37 | |
| CPC1973Y | BI | 400 | 0.35 | - | - | 5 | 10 | 5 / 3 | 2500 | 1 | 36 | |
| CPC1977J | BI | 600 | 1.25 | 3.1 | 12.25 | 1 | 10 | 20 / 5 | 2500 | 1 | 29 | |
| CPC1978J | BI | 800 | 0.75 | 1.85 | 7.25 | 2.3 | 10 | 20 / 5 | 2500 | 1 | 29 | |
| CPC1979J | BI | 600 | 1.4 | 3.5 | 14.5 | 0.75 | 10 | 25 / 5 | 2500 | 1 | 37 | |
| CPC1981Y | BI | 1000 | 0.18 | - | - | 18 | 10 | 10 / 5 | 2500 | 1 | 36 | |
| CPC1983B | BI | 600 | 0.5 | - | - | 6 | 5 | 5 / 2 | 5000 | 1 | 66 | Enhanced Isolation Voltage |
| CPC1983Y | BI | 600 | 0.5 | - | - | 6 | 5 | 5 / 2 | 2500 | 1 | 36 | |
| CPC1983YE | BI | 600 | 0.5 | - | - | 6 | 5 | 5 / 2 | 4000 | 1 | 36 | Enhanced Isolation Voltage |
| CPC1986J | BI | 1000 | 0.65 | 1.6 | 6.5 | 3 | 10 | 20 / 5 | 2500 | 1 | 29 | |
| CPC1988J | BI | 1000 | 0.9 | 2.25 | 9.4 | 2.5 | 10 | 20 / 5 | 2500 | 1 | 37 | |



1-Form-A Power Relays: Single-Pole, Unidirectional

| Part Number | Relay Type | Blocking Voltage (V _p) | Load Current (A) | | | On Resistance (Ω) | Input Control Current (mA) | Switching Speeds t _{on} / t _{off} (ms) | Isolation Voltage (V _{rms}) | Off-State Leakage (μA) | Package Type (Page 16) | Features & Comments |
|-------------|------------|------------------------------------|------------------|-----------------|----------------------|-------------------|----------------------------|--|---------------------------------------|------------------------|------------------------|---------------------|
| | | | Free Air | 5°C/W Heat Sink | T _c =25°C | | | | | | | |
| CPC1706Y | UNI | 60 | 4 | - | - | 0.09 | 5 | 5 / 2 | 2500 | 1 | 36 | |
| CPC1708J | UNI | 60 | 4 | 11.85 | 24 | 0.08 | 10 | 20 / 5 | 2500 | 1 | 29 | |
| CPC1709J | UNI | 60 | 9 | 22.8 | 32 | 0.05 | 10 | 20 / 5 | 2500 | 1 | 37 | |
| CPC1718J | UNI | 100 | 6.75 | 17.5 | 32 | 0.075 | 10 | 20 / 5 | 2500 | 1 | 37 | |
| CPC1726Y | UNI | 250 | 1 | - | - | 0.75 | 10 | 5 / 2 | 2500 | 1 | 36 | |
| CPC1727J | UNI | 250 | 3.4 | 8.6 | 20 | 0.09 | 10 | 20 / 5 | 2500 | 1 | 37 | |
| CPC1777J | UNI | 600 | 1.5 | 4.6 | 15 | 0.5 | 10 | 20 / 5 | 2500 | 1 | 29 | |
| CPC1779J | UNI | 600 | 1.65 | 4.12 | 15 | 0.4 | 10 | 20 / 5 | 2500 | 1 | 37 | |
| CPC1786J | UNI | 1000 | 0.65 | 1.75 | 6.9 | 2 | 10 | 20 / 5 | 2500 | 1 | 29 | |
| CPC1788J | UNI | 1000 | 1 | 2.45 | 10.3 | 1.25 | 10 | 20 / 5 | 2500 | 1 | 37 | |

For data sheets, go to www.ixysic.com/Products/ProdList.htm

Optically Isolated AC Power Switches

Optically Isolated AC Power Switches: $I_{LOAD} \leq 1A$

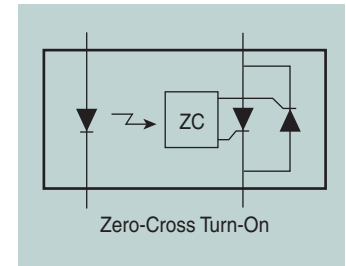
The OptoMOS line of power products uses dual power-SCR outputs to produce an alternative to optocoupler and Triac circuits. These AC Power Switches provide a blocking voltage of up to $800V_p$. In addition, tightly controlled zero-cross circuitry ensures switching of AC loads while minimizing the generation of transients. The input and output circuits are optically coupled to provide $3750V_{rms}$ of isolation and noise immunity between control and load circuits. Long life and environmental integrity make these power switches ideal for controlling a variety of AC circuits in industrial environments where electromagnetic interference would disrupt the operation of electromechanical relays.

Features:

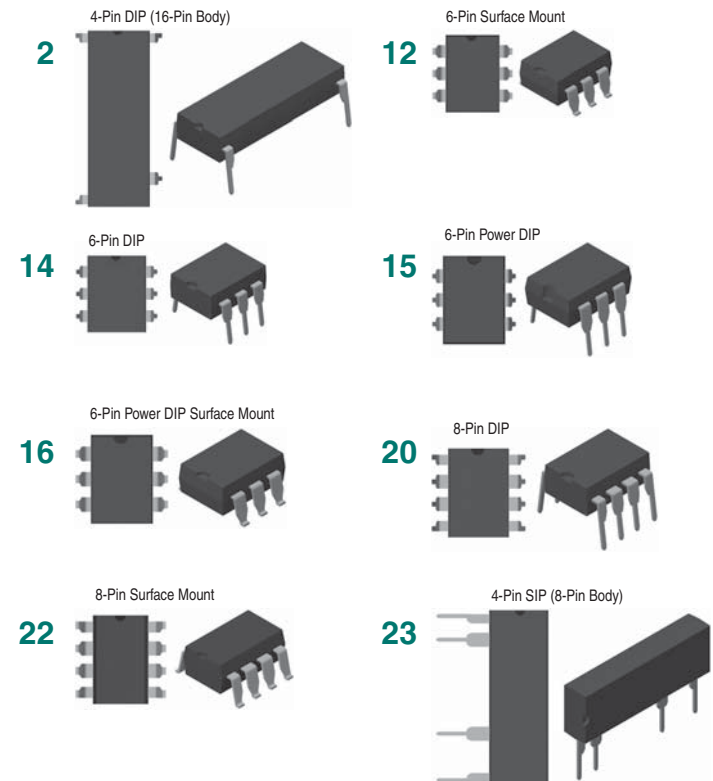
- Load Current up to $1A_{rms}$
- Blocking Voltage up to $800V_p$
- 5mA Input Sensitivity
- Zero-Crossing Turn-On
Switching Speed < 1/2 Cycle
Low EMI and RFI Generation
- DC Control, AC Switching
- Optically Isolated
- TTL and CMOS Compatible
- High Noise Immunity
- Machine Insertable, Wave Solderable

Applications:

- Programmable Controls
- Process Control
- Power Control Panels
- Remote Switching
- Gas Pump Electronics
- Large Relay Control Circuits
- Contactors
- Solenoids
- Motor Controls
- Heater Controls



| Part Number | Blocking Voltage (V_p) | Load Current (A_{rms}) | Input Control Current (mA) | Operating Frequency Min / Max (Hz) | Isolation Voltage (V_{rms}) | Package Type |
|-------------|-------------------------------|-------------------------------|-------------------------------|--|------------------------------------|--------------|
| CPC1943 | 400 | 0.5 | 5 | 20 - 500 | 3750 | 15, 16 |
| CPC1945G | 400 | 1 | 5 | 20 - 400 | 3750 | 2 |
| CPC1945Y | 400 | 1 | 5 | 20 - 400 | 3750 | 23 |
| CPC1961 | 600 | 0.25 | 5 | 20 - 500 | 3750 | 20, 22 |
| CPC1963 | 600 | 0.5 | 5 | 20 - 500 | 3750 | 15, 16 |
| CPC1965G | 600 | 1 | 5 | 20 - 400 | 3750 | 2 |
| CPC1965Y | 600 | 1 | 5 | 20 - 400 | 3750 | 23 |
| CPC1972 | 800 | 0.25 | 5 | 20 - 500 | 3750 | 12, 14 |
| PD1201 | 400 | 1 | 5 | 20 - 500 | 3750 | 2 |
| PD2401 | 500 | 1 | 5 | 20 - 500 | 3750 | 2 |
| PD2601 | 600 | 1 | 5 | 20 - 500 | 3750 | 2 |
| PM1204 | 400 | 0.5 | 5 | 20 - 500 | 3750 | 15, 16 |
| PM1205 | 500 | 0.5 | 5 | 20 - 500 | 3750 | 15, 16 |
| PM1206 | 600 | 0.5 | 5 | 20 - 500 | 3750 | 15, 16 |
| PS1201 | 400 | 1 | 5 | 20 - 500 | 3750 | 23 |
| PS2401 | 500 | 1 | 5 | 20 - 500 | 3750 | 23 |
| PS2601 | 600 | 1 | 5 | 20 - 500 | 3750 | 23 |



For data sheets, go to www.ixysic.com/Products/ProdList.htm

Optically Isolated AC Power Switches: $I_{LOAD} > 1A$

Our solid state AC Power Switches have blocking voltages up to 800V, and are capable of handling very high load currents. These robust AC Power Switches, with their tightly controlled zero-cross circuitry, ensure AC load switching while minimizing the generation of transients. Devices noted as “Rapid Turn-On” in the table below do not include zero-cross circuitry, and are therefore ideal for switching AC loads independent of the load voltage phase.

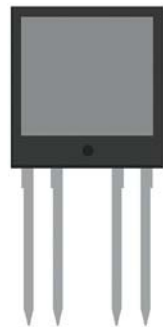
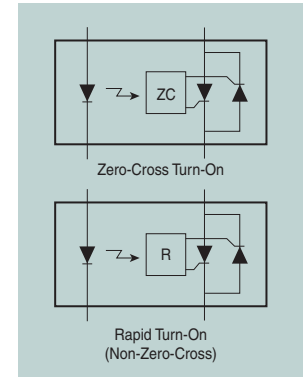
Optically coupled input and output circuits provide up to 5000V_{rms} of isolation and noise immunity between control and load circuits. These arc-free, heavy-duty AC power switches are ideal for controlling a variety of AC circuits in industrial environments where electromagnetic interference would disrupt the operation of electromechanical relays or where explosive atmospheres exist.

Features:

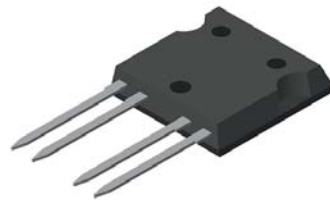
- Load Current up to 50A_{rms}
- Blocking Voltage up to 800V_P
- Zero-Crossing Turn-On
Low EMI and RFI Generation
Switching Speed < ½ Cycle
- Non-Zero-Crossing Turn-On
Switching Speed < 500µs
- 5mA Input Sensitivity
- High Noise Immunity
- DC Control, AC Switching
- Optically Isolated I/O
- TTL and CMOS Compatible
- Machine Insertable, Wave Solderable

Applications:

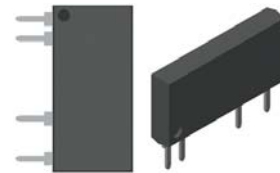
- Programmable Controls
- Process Control
- Power Control Panels
- Remote Switching
- Gas Pump Electronics
- Contactors
- Large Relay Control Circuits
- Solenoids
- Motor Controls
- Heater Controls
- Lighting



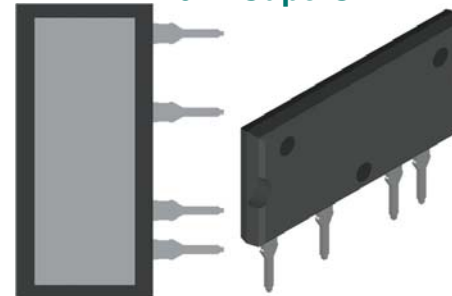
29 - i4-PAC



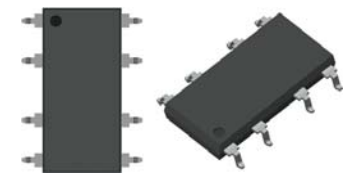
36 - Power SIP



64 - SuperSIP



66 - Power SOIC



| Part Number | Blocking Voltage (V _P) | Load Current | | | Input Control Current (mA) | Input Control Voltage (V) | Operating Frequency Min / Max (Hz) | Zero-Cross Turn-On | Switching Speed (max) | Isolation Voltage (V _{rms}) | Package Type | Features |
|-------------|------------------------------------|----------------------------------|-------------------------------------|--|----------------------------|---------------------------|------------------------------------|--------------------|-----------------------|---------------------------------------|--------------|---|
| | | No Heat Sink (A _{rms}) | 5°C/W Heat Sink (A _{rms}) | T _C =25°C (A _{rms}) | | | | | | | | |
| CPC1964B | 800 | 1.5 | - | - | 5 | - | 20 - 500 | Yes | ½ Cycle | 5000 | 66 | Enhanced Isolation Voltage, 12.5mm Creepage |
| CPC1964BX6 | 600 | 1.5 | - | - | 5 | - | 20 - 500 | No | 500µs | 5000 | 66 | Rapid Turn-On, Enhanced Isolation Voltage |
| CPC1966 | 600 | 3 | - | - | 5 | - | 20 - 500 | Yes | ½ Cycle | 3750 | 36 | |
| CPC1966B | 800 | 3 | - | - | 5 | - | 20 - 500 | Yes | ½ Cycle | 5000 | 66 | Enhanced Isolation Voltage |
| CPC1966YX6 | 600 | 3 | - | - | 5 | - | 20 - 500 | No | 500µs | 3750 | 36 | Rapid Turn-On |
| CPC1976 | 600 | 2 | - | - | 5 | - | 20 - 500 | Yes | ½ Cycle | 3750 | 36 | |
| CPC1976YX6 | 600 | 2 | - | - | 5 | - | 20 - 500 | No | 500µs | 3750 | 36 | Rapid Turn-On |
| CPC1998 | 800 | 5 | 20 | 50 | 5 | - | 20 - 500 | Yes | ½ Cycle | 2500 | 29 | High Load Current |
| CPC40055 | 800 | 5 | 20 | 50 | 5 | - | 20 - 500 | Yes | ½ Cycle | 2500 | 64 | High Load Current, 9.5mm Creepage |
| CPC44055 | 800 | 5 | 20 | 50 | - | 9 - 16 | 20 - 500 | Yes | ½ Cycle | 2500 | 64 | High Load Current, 9.5mm Creepage |

For data sheets, go to www.ixysic.com/Products/ProdList.htm

Gate Drivers

These ultra-fast, high current MOSFET and IGBT gate drivers are optimized for high efficiency performance in motor drive and power conversion applications. With output current ratings of 1.5A to 30A, they are designed to switch the largest MOSFETs and IGBTs with minimum switching times and at frequencies up to 10MHz. Depending on the output current rating, these gate drivers are offered in DFN (56), SOIC (54), Power SOIC (53), DIP (20), TO-220 (57), and TO-263 (58) packages. “F” versions include one inverting driver and one non-inverting driver, “I” versions are inverters, “N” versions are non-inverters, and “D” versions are non-inverters that include an enable function.

Low-Side Gate Drivers

**IXD_604SI (8-Pin Power SOIC) & SIA (8-Pin SOIC)
and IXD_609SI (8-Pin Power SOIC)
are AEC Q100 Qualified!**



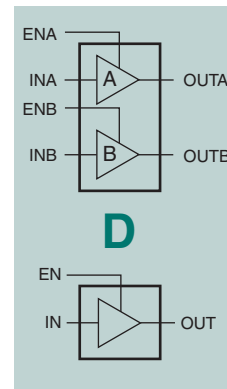
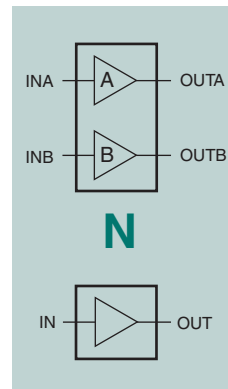
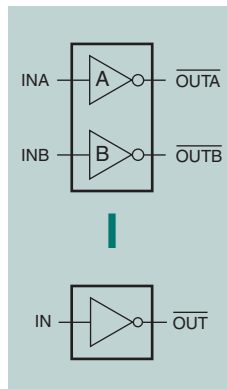
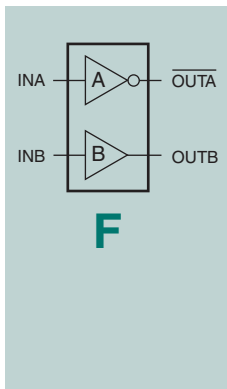
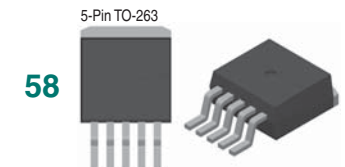
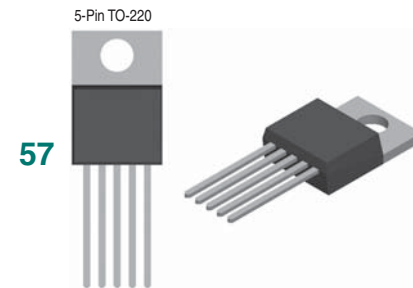
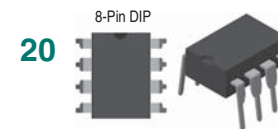
| Part Number | Output Type | I_{PEAK} $T_C=25^\circ C$ (A _p) | Output Resistance (Ω) | Available Logic Configurations | Enable Function | Undervoltage Lockout (V) | Package Type |
|-------------|-------------|---|-----------------------|--------------------------------|-----------------|--------------------------|------------------------|
| IX4423 | DUAL | 3 | 4 | I | | | 54 |
| IX4424 | DUAL | 3 | 4 | N | | | 54 |
| IX4425 | DUAL | 3 | 4 | F | | | 54 |
| IX4426 | DUAL | 1.5 | 9 | I | | | 54, 56 |
| IX4427 | DUAL | 1.5 | 9 | N | | | 54, 56 |
| IX4428 | DUAL | 1.5 | 9 | F | | | 54, 56 |
| IXD_602 | DUAL | 2 | 4 | F, I, N | | | 20, 53, 54, 56 |
| IXD_604 | DUAL | 4 | 2.5 | F, I, N, D | • (D) | | 20, 53, 54, 56 |
| IXD_609 | SINGLE | 9 | 1 | I, N, D | • (D) | | 20, 53, 54, 56, 57, 58 |
| IXD_614 | SINGLE | 14 | 0.8 | I, N, D | • (D) | | 20, 53, 57, 58 |
| IXD_630 | SINGLE | 30 | 0.4 | I, N, D | • (D) | $V_{CC} \leq 12.5$ | 57, 58 |
| IXD_630M | SINGLE | 30 | 0.4 | I, N, D | • (D) | $V_{CC} \leq 9$ | 57, 58 |

Features:

- 1.5A to 30A Peak Source / Sink Drive Current
- Wide Operating Voltage Range: 4.5V to 35V
- -40°C to +125°C Extended Operating Temperature Range
- Logic Input Withstands Negative Swing of up to -5V
- Matched Rise and Fall Times
- Low Propagation Delay Time
- Low 10µA Supply Current
- Low Output Impedance

Applications:

- Efficient Power MOSFET and IGBT Switching
- Switch Mode Power Supplies
- Motor Controls
- DC to DC Converters
- Class-D Switching Amplifiers
- Pulse Transformer Driver



For data sheets, go to www.ixysic.com/Products/ProdList.htm

IX3120 2.5A Output Optically Coupled Gate Driver

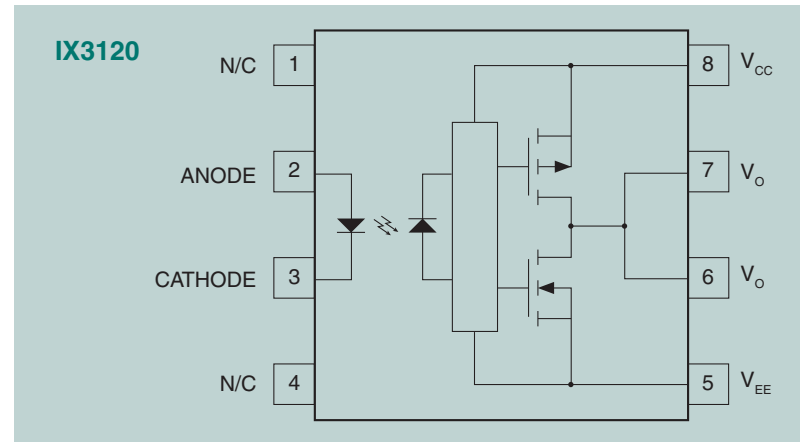
The IX3120 Gate Driver includes an input infrared LED that is optically coupled to a power output stage. The power output stage is capable of sourcing or sinking 2.5A of peak current, which is ideal for driving IGBTs and MOSFETs in the mid-power range. The gate driver optocoupler with its low input LED current, high output peak current, and high noise immunity (25kV/ μ s) is ideally suited for use in motor control and inverter applications. The IX3120 is provided in an 8-pin DIP package and an 8-pin surface mount package.

Features:

- 2.5A Maximum Peak Output Current
- 25kV/ μ s Minimum Common Mode Rejection (CMR) at 1500V_{CM}
- Wide Operating Voltage Range: 15V to 30V
- Undervoltage Lockout with Hysteresis
- 3750V_{rms} Input to Output Isolation
- Wide Temperature Range: -40°C to +100°C

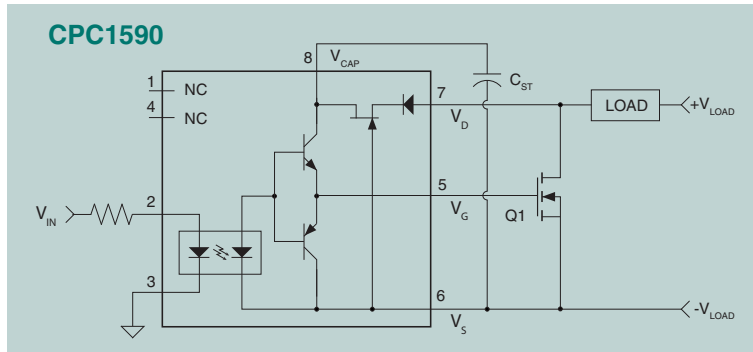
Applications:

- Isolated IGBT / MOSFET Gate Drive
- Switch Mode Power Supplies
- Industrial Inverters
- Motor Drivers



Optically Isolated Gate Drivers

The CPC1580 and CPC1590 are high speed, optically isolated Gate Driver ICs. On-chip circuitry charges an external capacitor from the load voltage which eliminates the need for an external IC power supply. These Gate Drivers are ideal for low duty cycle switching applications. Both devices are provided in an 8-pin flatpack package.

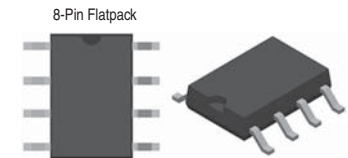


Features:

- No External IC Power Supply
- Low Drive Power Requirements (TTL/CMOS Compatible)
- Load Voltages up to 200V
- Fast Switching Times - On: 40 μ sec / Off: 400 μ sec

Applications:

- Instrumentation
- Multiplexers
- I/O Subsystems
- Meters (Watt-Hour, Water, Gas)
- Medical Equipment (Patient / Equipment Isolation)
- Security
- Aerospace
- Industrial Controls

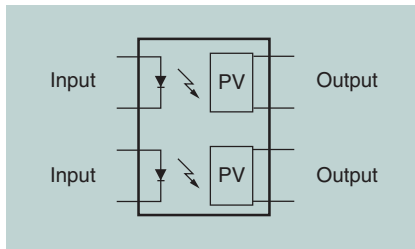


| Part Number | Input Control Current (mA) | Gate Voltage @ I _F =5mA (V _G) | Blocking Voltage (V _P) | Regulated Capacitor Voltage (V _{CAP-MAX}) | Switching Speeds (t _{on} / t _{off} (μs)) | Isolation Voltage (V _{rms}) |
|-------------|----------------------------|--|------------------------------------|---|--|---------------------------------------|
| CPC1580 | 2.5 | 7.5 - 12 | 65 | V _{DS} - 0.2V | 40 / 400 | 3750 |
| CPC1590 | 2.5 | 7.5 - 12 | 200 | 16 | 40 / 400 | 3750 |

For data sheets, go to www.ixysic.com/Products/ProdList.htm

Optically Isolated Dual MOSFET Gate Drivers

These Dual Optically Isolated Photodiode Arrays, which can produce an open-circuit voltage of up to 12V, are well suited for use in discrete solid state relay designs. The FDA215 and the FDA217 are provided in either an 8-pin DIP package or in an 8-pin surface-mount package.

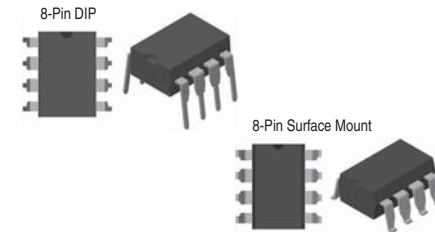


Features:

- Isolated 5.5V to 12V Photovoltaic Output
- Floating Outputs for Parallel or Series Configuration

Applications:

- MOSFET Driver
- Isolated Floating Power Source



| Part Number | Input Control Current (mA) | Nominal Open-Circuit Voltage V_{OC} (V) | Nominal Short-Circuit Current I_{SC} (μ A) | Switching Speeds t_{on} / t_{off} (ms) | Isolation Voltage (V_{rms}) | Package Type |
|-------------|----------------------------|---|---|--|---------------------------------|--------------------------------|
| FDA215 | 5 | 5.5 | 2.5 | 5 / 5 | 3750 | 8-Pin DIP, 8-Pin Surface Mount |
| FDA217 | 5 | 12 | 4.5 | 2 / 0.5 | 3750 | 8-Pin DIP, 8-Pin Surface Mount |

MX877 & MX879 Load Drivers (8-Channel, 60V, Serial Interface)

These devices are 8-channel, high voltage switches with 8-bit parallel or serial input control. The 3-wire serial interface connects directly to a microprocessor using an industry standard protocol. These devices are designed to operate over a temperature range of -40°C to $+85^{\circ}\text{C}$, and are available in a 28-pin QFN package.

The **MX877**, with push-pull output configuration, can drive up to 60V at 80mA. Outputs can be paralleled for increased drive current up to a device total of 400mA sink or source.

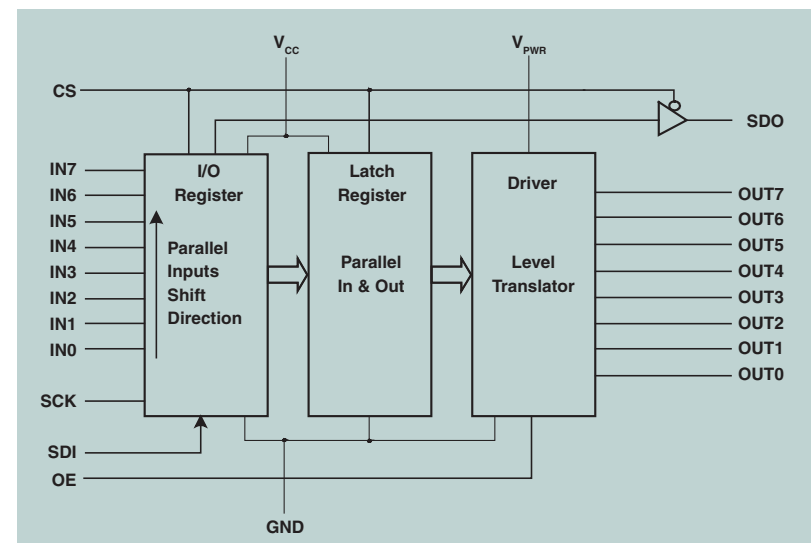
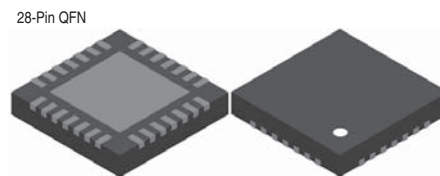
The **MX879**, with open-drain pullup output configuration, can drive up to 60V at 120mA. Outputs can be paralleled for increased drive current up to a device total of 600mA source.

Features:

- 6V to 60V Drive Supply Voltage
- 2.7V to 5.5V Logic Supply Range
- 3-Wire Serial Interface Plus Chip Select
- Captures Serial and Parallel Input Data
- Outputs can be Paralleled
- Small 28-Pin QFN Package

Applications:

- White Goods
- Automatic Test Equipment (ATE)
- Industrial Equipment
- Automotive Relay Control



For data sheets, go to www.ixysic.com/Products/ProdList.htm

High Voltage Analog Switch Arrays

Our High Voltage Analog Switches are low charge injection 8-channel & 16-channel, high voltage analog switch ICs for use in applications requiring high voltage switching. Control of the high voltage switching is via low voltage, TTL logic level compatible inputs for direct connectivity to the system controller. Switch manipulation is managed by serial to parallel shift registers whose outputs are buffered and stored by a transparent latch. Level shifters buffer the latch outputs, and operate the high voltage switches. Construction of the switches using reliable BCDMOS process technology on SOI (Silicon On Insulator) enables the switches to be organized as solid state switches with direct gate drive.

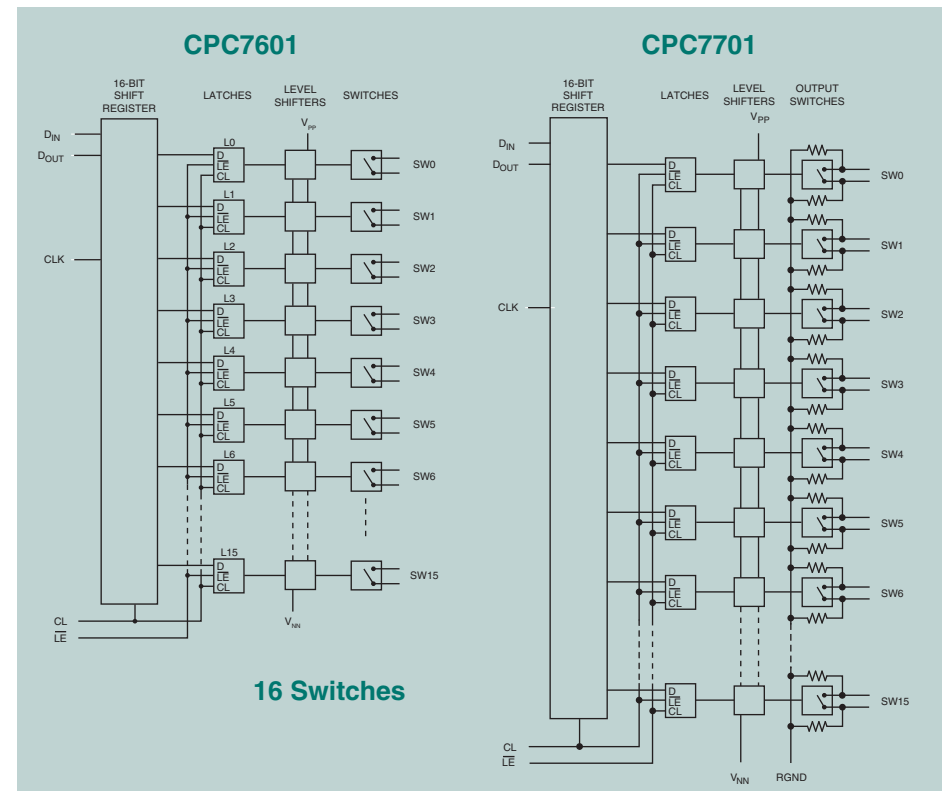
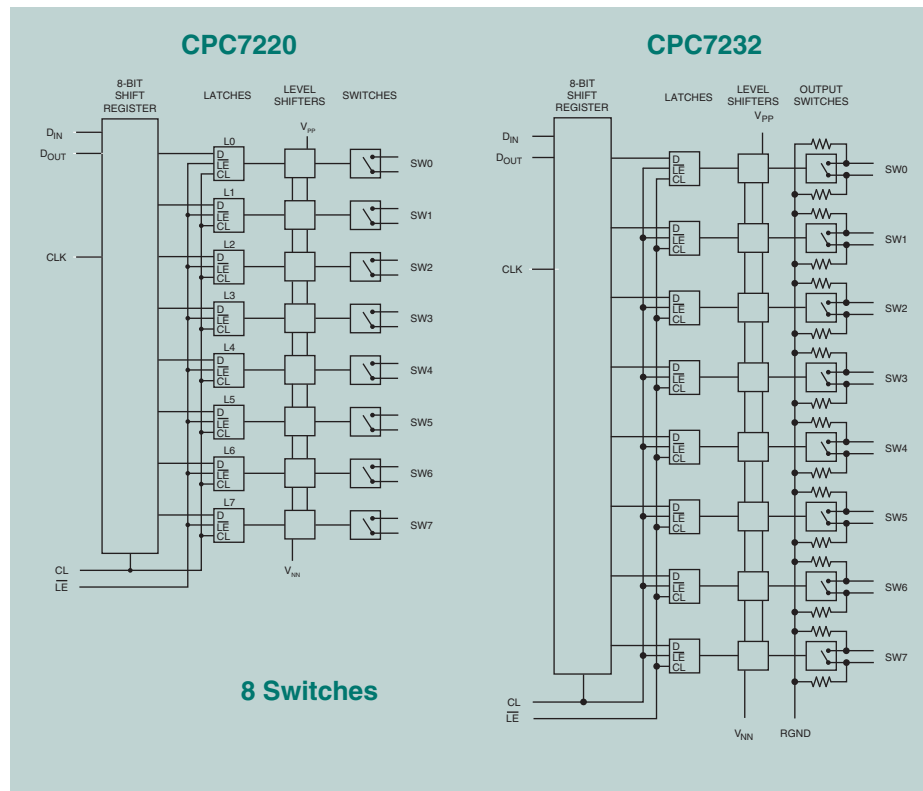
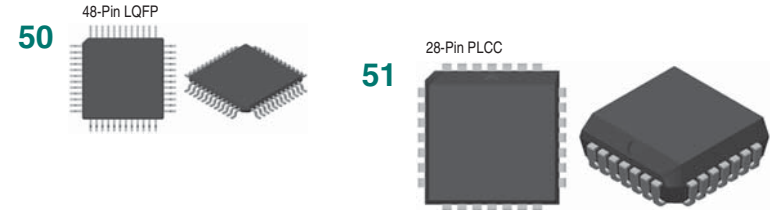
Features:

- Flexible High Voltage Supplies up to $V_{PP} - V_{NN} = 200V$
- Output Switch On Resistance Typically 20Ω
- Low Charge Injection, Low Capacitance Analog Switches
- Very Low Quiescent Current: 30nA Typical
- -58dB Off-Isolation at 5MHz
- Internal Bleed Resistors: CPC7232 & CPC7701

Applications:

- Piezoelectric Transducer Drivers
- Ultrasound Imaging
- Printers
- Industrial Controls and Measurement

| Part Number | Number of Channels | Channel On Resistance (Ω) | Bleed Resistors (k Ω) | Clock Frequency (MHz) | Turn-On Time (μ s) | Turn-Off Time (μ s) | Package Type |
|-------------|--------------------|------------------------------------|-------------------------------|-----------------------|-------------------------|--------------------------|--------------|
| CPC7220 | 8 | 20 | - | 5 | 5 | 5 | 50, 51 |
| CPC7232 | 8 | 21 | 20 - 50 | 5 | 5 | 5 | 50, 51 |
| CPC7601 | 16 | 25 | - | 8 | 5 | 5 | 50 |
| CPC7701 | 16 | 25 | 20 - 50 | 8 | 5 | 5 | 50 |



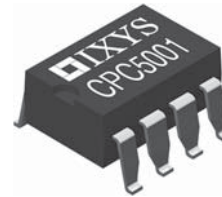
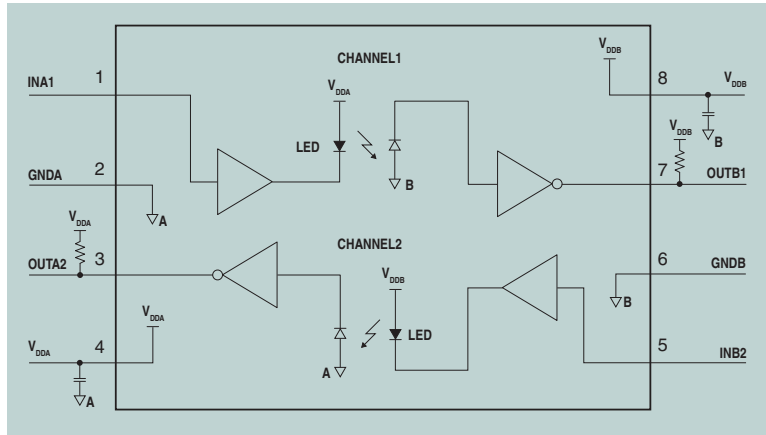
For data sheets, go to www.ixysic.com/Products/ProdList.htm

High Speed Digital Optical Isolators



CPC5001 Single-Channel, Each Direction Digital Optical Isolator

The CPC5001 is a non-inverting digital optical isolator with buffered-logic inputs and open-drain outputs. Channel1 propagates a signal from SideA to SideB, while Channel2 sends a signal from SideB to SideA. It provides galvanic isolation across voltage differences up to 3750V_{rms}. When the two sides are powered by different supply voltages, it also functions as a logic level translator for levels as low as 2.7V or as high as 5.5V. Available in an 8-pin DIP or 8-pin surface mount package, it functionally replaces two logic buffers and two single-channel optoisolators. Internal bandgap references regulate the LED drive currents to 3mA to reduce peak power requirements. Unlike transformer or capacitive isolators, optical isolation passes DC signals, and does not need to be clocked periodically to refresh state. Buffered signals will always return to their proper value after a transient interruption at either side.



Features:

- Isolates One Signal in Each Direction
- Operates From 2.7V to 5.5V
- Buffered Inputs - No External LED Drive Required
- Voltage Level Translation
- Hysteresis at Inputs for Noise Rejection
- Slew-Limited Drivers Reduce EMI
- Power Down to Hi-Z Does Not Load Outputs
- 5Mbd Data Rate

Applications:

- Isolated Signal Monitoring and Control
- Power-Over-Ethernet
- Power Supply High-Side Interface
- Logic Level Translation
- Microprocessor System Interface
- Inter Integrated Circuit (I²C) Interface
- Serial Peripheral Interface
- Full Duplex Communication
- Isolated Line Receiver
- Isolated Data Acquisition Systems

CPC5002 Dual High Speed Digital Optical Isolator

The CPC5002 is a high speed dual optical logic isolator with open-drain outputs. It galvanically isolates two open-drain logic signals across voltage differences up to 3750V_{rms}. Turning on the LED forces the output to turn on, which pulls the voltage at any external pullup resistor towards ground. Its high-gain CMOS comparator requires only 1.4mA of supply current, and only 1.5mA of LED drive current. Unlike transformer or capacitive isolators, optical isolation passes DC logic level signals, and does not need to be clocked periodically to refresh state. Buffered signals will always return to their proper value after a transient interruption at either side. Available in 8-pin DIP and surface mount packages.

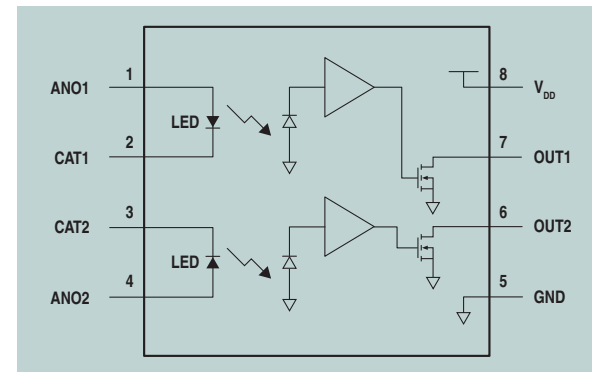
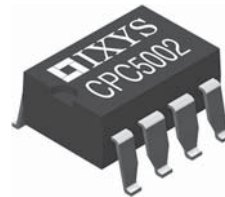
Features:

- Dual Optics Isolates Two Signals
- Operates Over 2.7V < V_{DD} < 5.5V
- 3750V_{rms} Galvanic Isolation
- Power Down to Hi-Z Does Not Load Outputs
- Low-Power CMOS Reduces Supply Current
- LED Drive Current Only 1.5mA
- High Speed: 10Mbaud Typical

Applications:

- Isolated Line Receiver
- Ground Loop Elimination
- ADC/DAC Digital Noise Isolation
- 4-Wire I²C Bus Isolation

10 Mbaud!



For data sheets, go to www.ixysic.com/Products/ProdList.htm

CPC5902 Optically Isolated I²C Bus Repeater

The CPC5902 is a dual, optically isolated, bidirectional logic bus repeater. It galvanically isolates two open-drain logic signals, and provides a galvanic isolation of 3750V_{rms}. When the two sides' supply voltages are configured with different voltages, the CPC5902 also functions as a logic level translator for levels as low as 2.7V or as high as 5.5V.

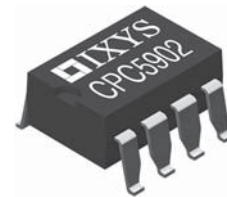
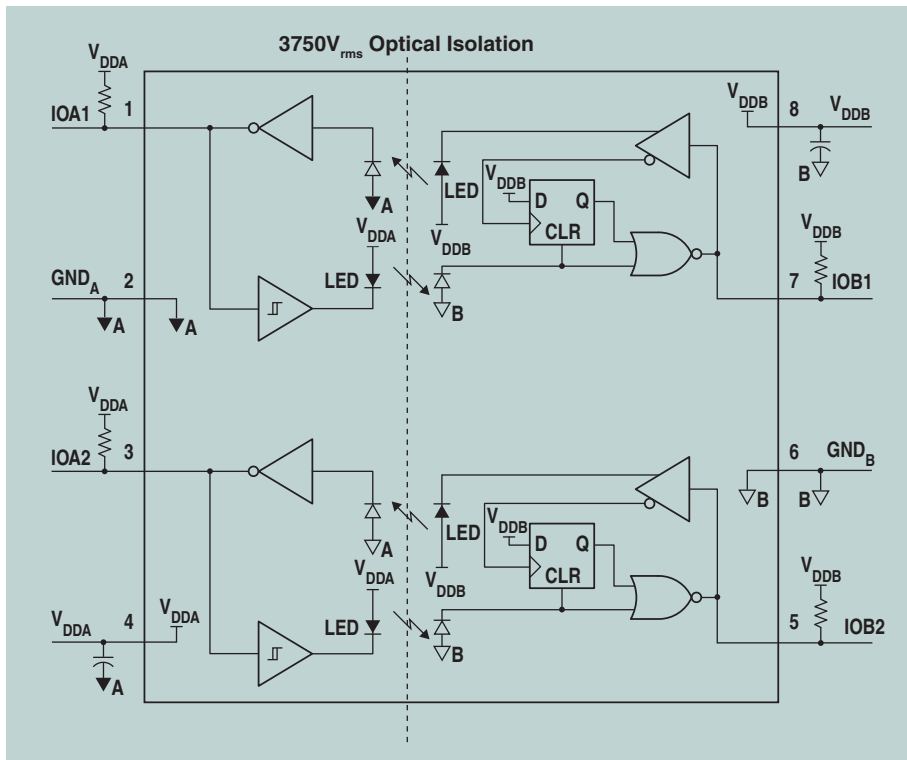
Unlike transformer or capacitive isolators, this optically isolated repeater passes logic level DC signals, and does not need to be clocked periodically to sustain logic states. Buffered signals will always return to their proper value after a transient interruption on either side. As a result, the CPC5902 does not generate the clocking or modulation signal interference that other types of bus repeaters can generate. Available in 8-pin DIP and surface mount packages.

Features:

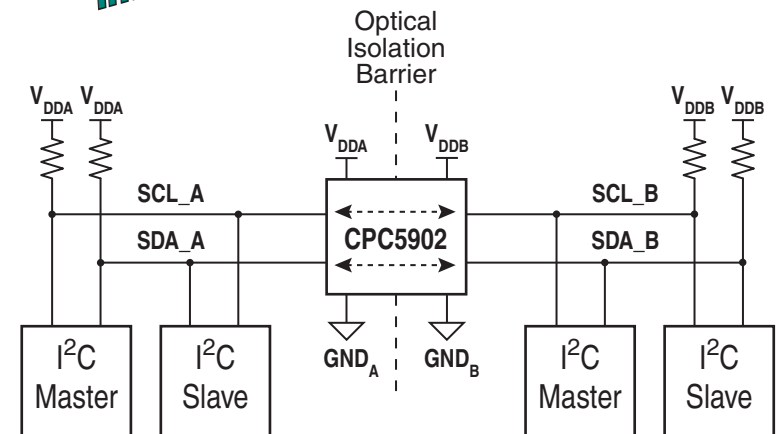
- Bidirectionally Buffers Both I²C Signals
- Extends and Isolates I²C Interfaces
- Supports Standard and Fast Mode I²C (400kbps)
- Supports I²C Clock Stretching
- Operates on 2.7V to 5.5V
- Supports DC Logic Level Buffering Without Refresh
- Glitch-Free Operation
- Power Down to Hi-Z Does Not Load I²C
- Slew-Limited Drivers Reduce EMI

Applications:

- Power-Over-Ethernet
- I²C Bus Length Extender
- Isolated Control and Signal Monitoring
- Power Supply High-Side Interface



No Internal Clock - Minimal EM & RF Emissions
High Voltage Isolation
Immune to External EMI and RFI



Visit our web site and download our Tech Brief, TB-101: "Optically Isolating an I²C Interface"

CPC5903 Optically Isolated I²C Bus Repeater

The CPC5903 is a dual, optically isolated, logic bus repeater. It galvanically isolates two open-drain logic signals, and provides galvanic isolation across voltage differences up to 3750V_{rms}. When the two sides are powered by different supply voltages, it also functions as a logic level translator for levels as low as 2.7V or as high as 5.5V. It enables full bidirectional isolation of the I²C data signal and unidirectional isolation of the I²C clock signal.

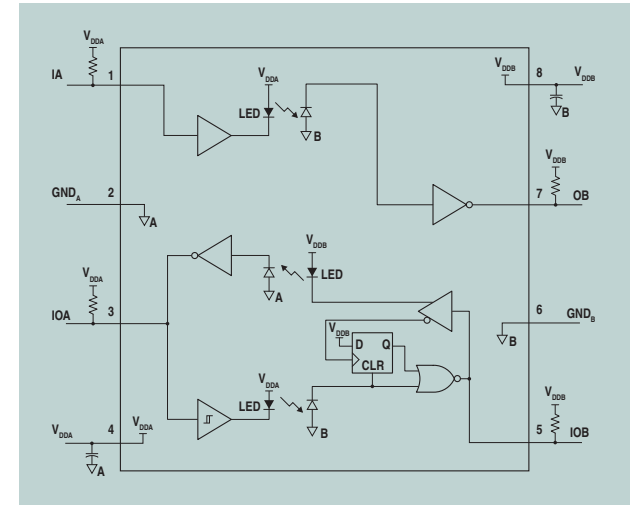
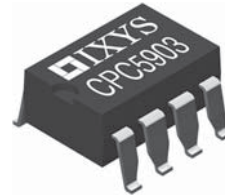
Unlike transformer or capacitive isolators, optical isolation passes DC logic level signals, and does not need to be clocked periodically to refresh state. Buffered signals will always return to their proper value after a transient interruption at either side. Available in 8-pin DIP and surface mount packages.

Features:

- Bidirectional Buffers SDA I²C Signal
- SideA Extends and Isolates I²C Interfaces
- Standard-Mode and Fast-Mode I²C
- SideB Fast-mode Compliant: V_{DDB} > 4.5V
- Operates on 2.7V to 5.5V
- No Internal Clock - Low EM & RF Generation
- Voltage Level Translation
- Slew-Limited Drivers Reduce EMI
- Power Down to Hi-Z Does Not Load I²C
- 3750V_{rms} Galvanic Isolation

Applications:

- Isolated Signal Monitoring and Control
- Power-Over-Ethernet
- Power Supply High-Side Interface
- I²C Bus Length Extenders
- I²C Logic Level Translation



Optocouplers

Optically Isolated Linear Error Amplifiers

Optically Isolated Linear Error Amplifiers combine our optical technology with an industry standard 431-type precision programmable shunt regulator to provide linear isolated feedback for power supply designs. The LIA120 features matched photodiodes for linear high-gain response with excellent temperature stability for a total gain error of less than 2dB.

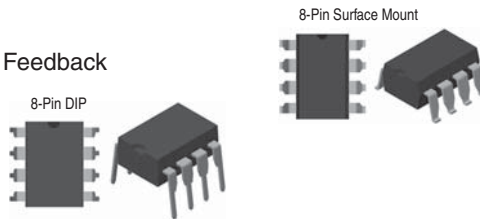
These devices are well suited for isolated high-gain feedback amplifiers that require excellent linearity and low temperature variation such as power supply feedback stages, modem and audio transformer replacements, industrial control signals, and sensor feedback.

Features:

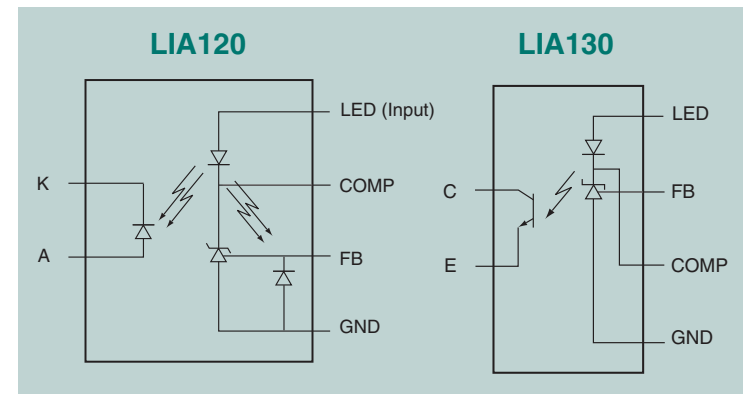
- 70dB Linearity Typical
- Optocoupler, Precision Reference, and Error Amplifier in a Single Package
- Low Voltage Operation: 2.7V

Application:

- Power Supply Feedback



| Part Number | Reference Voltage (V) | V _{REF} Tolerance (%) | CTR K1 (%) | CTR K2 (%) | CTR Matching K3 (%) | Linearity (dB) | Isolation Voltage (V _{rms}) | Package Type |
|-------------|-----------------------|--------------------------------|------------|------------|---------------------|----------------|---------------------------------------|--------------------------------|
| LIA120 | 1.24V | 1 | 1 - 3 | 1 - 3 | 85 - 115 | 70 | 3750 | 8-Pin Surface Mount |
| LIA130 | 1.24V | 1 | - | - | - | - | 3750 | 8-Pin DIP, 8-Pin Surface Mount |



For data sheets, go to www.ixysic.com/Products/ProdList.htm

Single & Dual Optocouplers

Single and Dual OptoMOS Optocouplers provide an optically isolated means of current detection or control of switching circuits. These devices offer a single or dual anti-parallel LED input stage for unidirectional or bidirectional signal control to the optically coupled output. The output can be either a single transistor or, for greater gain, a Darlington transistor. These optocouplers are ideal for use in circuits where electrical isolation of control circuitry or voltage detection is crucial.

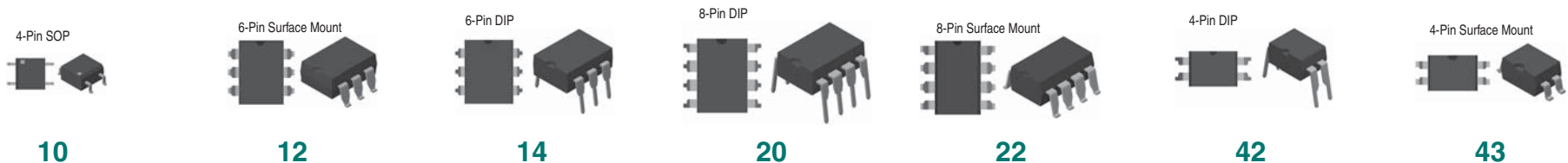
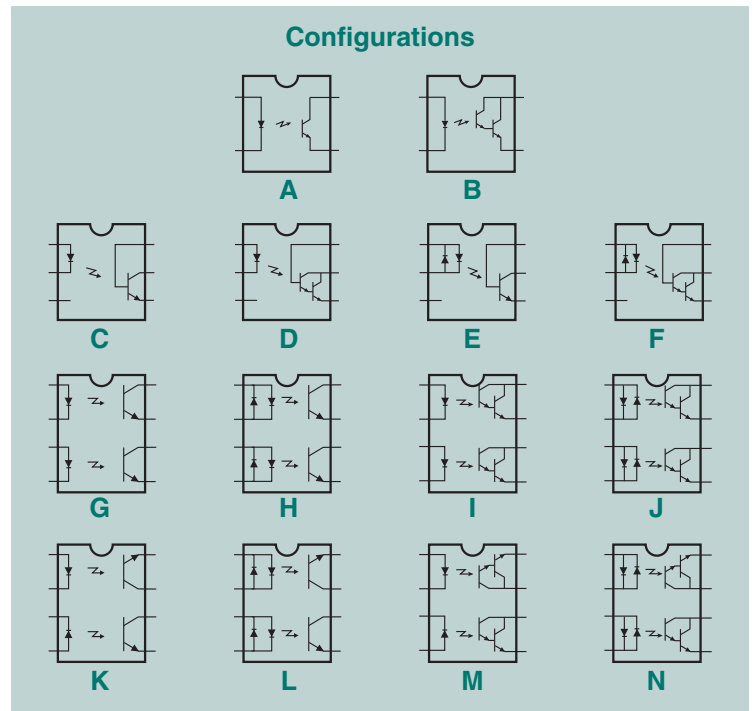
Features:

- AC and DC Compatible Inputs
- 1500V_{rms}, 3750V_{rms}, 5000V_{rms} I/O Isolation
- Machine Insertable, Wave Solderable

Applications:

- Modem Switching (Laptops, Notebooks, PDAs)
- Voltage Detection
- TIP / RING Circuits
- Ringing Detection
- Loop Detection
- Current Sensing
- Telecom Switching

| Part Number | Minimum Breakdown Voltage (BV _{CEO}) | Typical Current Transfer Ratio (%) | Maximum Saturation Voltage (V) | Input Control Current (mA) | Minimum Isolation Voltage (V _{rms}) | Package Type | Configuration |
|-------------|--|------------------------------------|--------------------------------|----------------------------|---|--------------|---------------|
| CPC1001N | 30 | 330 | 0.3 | 0.2 | 1500 | 10 | A |
| CPC1301 | 350 | 5500 | 1.2 | 1 | 5000 | 42, 43 | B |
| CPC1302 | 350 | 5500 | 1.2 | 1 | 3750 | 20, 22 | I |
| CPC1303 | 30 | 1000 | 0.5 | 0.2 | 5000 | 42, 43 | A |
| LDA100 | 30 | 300 | 0.5 | 1 | 3750 | 12, 14 | E |
| LDA101 | 30 | 300 | 0.5 | 1 | 3750 | 12, 14 | C |
| LDA102 | 30 | 350 | 0.5 | 1 | 3750 | 12, 14 | C |
| LDA110 | 30 | 8500 | 1 | 1 | 3750 | 12, 14 | F |
| LDA111 | 30 | 8500 | 1 | 1 | 3750 | 12, 14 | D |
| LDA200 | 30 | 300 | 0.5 | 1 | 3750 | 20, 22 | L |
| LDA201 | 30 | 300 | 0.5 | 1 | 3750 | 20, 22 | K |
| LDA202 | 30 | 300 | 0.5 | 1 | 3750 | 20, 22 | H |
| LDA203 | 30 | 300 | 0.5 | 1 | 3750 | 20, 22 | G |
| LDA210 | 30 | 8500 | 1 | 1 | 3750 | 20, 22 | N |
| LDA211 | 30 | 8500 | 1 | 1 | 3750 | 20, 22 | M |
| LDA212 | 30 | 8500 | 1 | 1 | 3750 | 20, 22 | J |
| LDA213 | 30 | 8500 | 1 | 1 | 3750 | 20, 22 | I |



For data sheets, go to www.ixysic.com/Products/ProdList.htm

Linear Optocouplers

OptoMOS Linear Optocouplers feature an infrared LED optically coupled to a pair of photodiodes. The input photodiode is used to generate a feedback signal that provides a servomechanism to the LED drive current thus compensating for the LED's nonlinear characteristics. The output photodiode provides an isolated output signal that is linear with respect to the servo LED current.

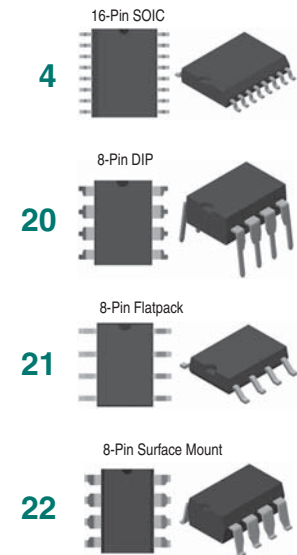
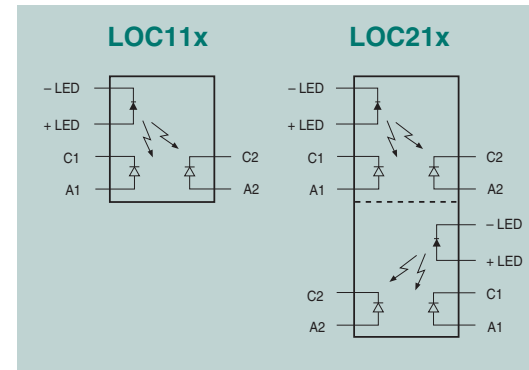
Features:

- Couples Analog & Digital Signals
- 3750V_{rms} Input / Output Isolation
- Bandwidth >200kHz in Photoconductive Mode
- Bandwidth 40kHz in Photovoltaic Mode
- High Gain Stability
- Low Input / Output Capacitance
- Low Power Consumption
- 0.01% Servo Linearity
- THD 87dB Typical
- Machine Insertable, Wave Solderable

Applications:

- Power Supply Feedback Voltage / Current
- Medical Sensor Interfacing
- Isolation of Process Control Transducers
- Isolated 4-20mA Converters
- Digital Telephone Isolation

| Part Number | Servo Gain K1=I ₂ /I _F (Min / Max) | Forward Gain K2=I ₂ /I _F (Min / Max) | Transfer Gain K3=K ₂ /K ₁ (Min / Max) | Input Control Current (mA) | Isolation Voltage (V _{rms}) | Package Type |
|-------------|--|--|---|----------------------------|---------------------------------------|--------------|
| LOC110 | 0.004 / 0.03 | 0.004 / 0.03 | 0.668 / 1.179 | 2 - 10 | 3750 | 20, 21, 22 |
| LOC111 | 0.008 / 0.03 | 0.006 / 0.03 | 0.733 / 1.072 | 2 - 10 | 3750 | 20, 21, 22 |
| LOC112 | 0.004 / 0.03 | 0.004 / 0.03 | 0.733 / 1.072 | 2 - 10 | 3750 | 20, 21, 22 |
| LOC117 | 0.008 / 0.03 | 0.006 / 0.03 | 0.887 / 1.072 | 2 - 10 | 3750 | 20, 21, 22 |
| LOC210 | 0.004 / 0.03 | 0.004 / 0.03 | 0.773 / 1.072 | 2 - 10 | 3750 | 4 |
| LOC211 | 0.008 / 0.03 | 0.006 / 0.03 | 0.773 / 1.072 | 2 - 10 | 3750 | 4 |



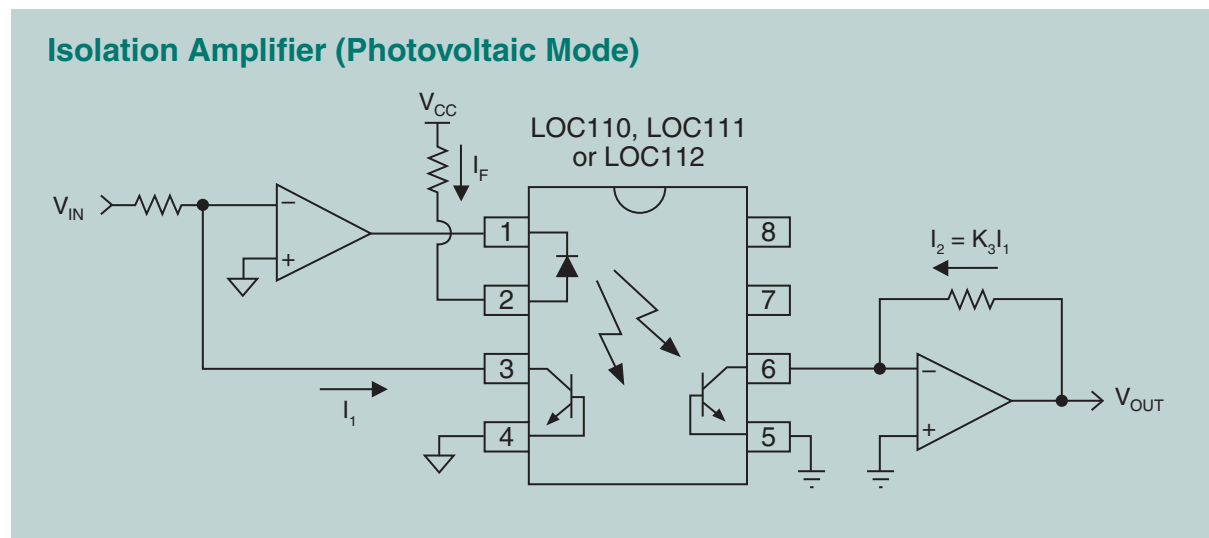
Two Fundamental Operating Configurations:

Photoconductive Mode:

- Wide Bandwidth (>200kHz)
- 8-bit Linearity

Photovoltaic Mode:

- 14-bit Linearity
- 40kHz Bandwidth



For data sheets, go to www.ixysic.com/Products/ProdList.htm

Discrete Components

N-Channel Depletion Mode FETs

Our N-channel depletion mode Field Effect Transistors (FETs) utilize a proprietary third generation vertical DMOS process. The third generation process realizes world class, high voltage MOSFET performance in an economical silicon gate process. The vertical DMOS process yields a robust device for low-power applications with high input impedance. These highly reliable FET devices have been used extensively in our solid state relays for industrial and telecommunications applications.

These normally on MOSFETs are well suited for low cost, pre-regulator applications that are tolerant of high voltage drop and power dissipation between the power source and the output regulator stage. The pre-regulator is particularly effective as an inexpensive solution for filtering AC line voltage variations in non-isolated DC power supplies as compared to switch-mode power supplies or step-down transformers.



| Part Number | $V_{(BR)DSX}$ (V) | $R_{DS(on)}$ Max (Ω) | $V_{GS(off)}$ Min (V) | $V_{GS(off)}$ Max (V) | I_{DSS} @ $V_{GS} = 0V$ Min (mA) | I_D @ $V_{GS} = -0.57V$ Min (mA) | Package Type | Features & Comments |
|-------------|----------------------|----------------------------------|--------------------------|--------------------------|---------------------------------------|---------------------------------------|-----------------|--|
| CPC3701 | 60 | 1 | -0.8 | -2.9 | 600 | - | SOT-89 | |
| CPC3703 | 250 | 4 | -1.6 | -3.9 | 360 | - | SOT-89 | |
| CPC3708 | 350 | 14 | -2 | -3.6 | - | 130 | SOT-89, SOT-223 | |
| CPC3710 | 250 | 10 | -1.6 | -3.9 | 220 | - | SOT-89 | |
| CPC3714 | 350 | 14 | -1.6 | -3.9 | 240 | - | SOT-89 | |
| CPC3720 | 350 | 22 | -1.6 | -3.9 | 130 | - | SOT-89 | |
| CPC3730 | 350 | 30 | -1.6 | -3.9 | 140 | - | SOT-89 | |
| CPC3780 | 800 | 45 | -1.6 | -3.9 | 100 | - | SOT-223 | |
| CPC5602 | 350 | 14 | -2 | -3.6 | - | 130 | SOT-223 | Designed for Use with LITELINK Designs |
| CPC5603 | 415 | 14 | -2 | -3.6 | - | 130 | SOT-223 | Designed for Use with LITELINK Designs |

Diode Bridges

The CPC7556N integrated diode bridge offers protection from high voltage transients by means of an adjustable voltage clamp. The clamp performs two actions, first to limit the voltage across the diode bridge rectified outputs to a value determined by external resistors and the gate voltage, and second to fully discharge the V+ to V- outputs when the gate's trigger threshold is exceeded during the voltage limiting function. The rectified outputs are discharged as a result of the voltage fold-back function of the OVP device. Voltage fold-back of the OVP circuit will continue until the current through the protector falls below the hold current threshold.

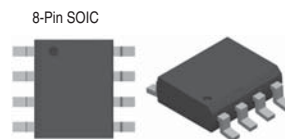
The CPC7557N is an integrated diode bridge built on our High Voltage SOI technology. Very small in size, this integrated diode bridge device offers a space-saving method for inclusion of a highly reliable, monolithic, full-wave bridge rectifier into today's miniature circuit designs.

Features:

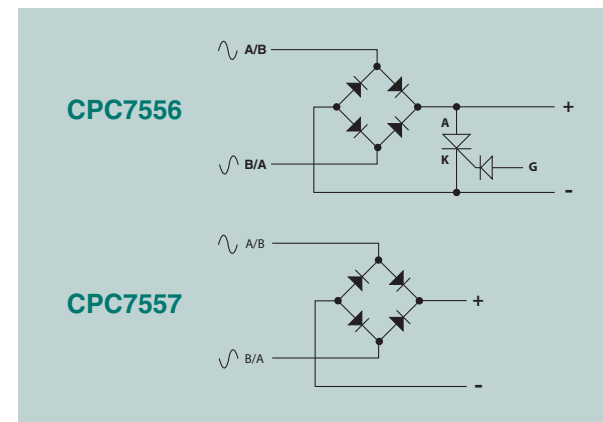
- Monolithic Construction
- Surface Mount Package

Applications:

- Telecommunications Protection Clamp
- High Voltage Multiplexer / Switch
- High Voltage ESD Clamp



| Part Number | Reverse Voltage (V) | Forward Current (mA _{rms}) | Diode V_F Drop (V) | Thyristor Current (mA) | Reverse Leakage I_{LEAK} (μA) |
|-------------|------------------------|---|-------------------------|---------------------------|---|
| CPC7556 | 100 | 240 | 0.97 | 120 | 1 |
| CPC7557 | 100 | 240 | 0.97 | - | 1 |



For data sheets, go to www.ixysic.com/Products/ProdList.htm

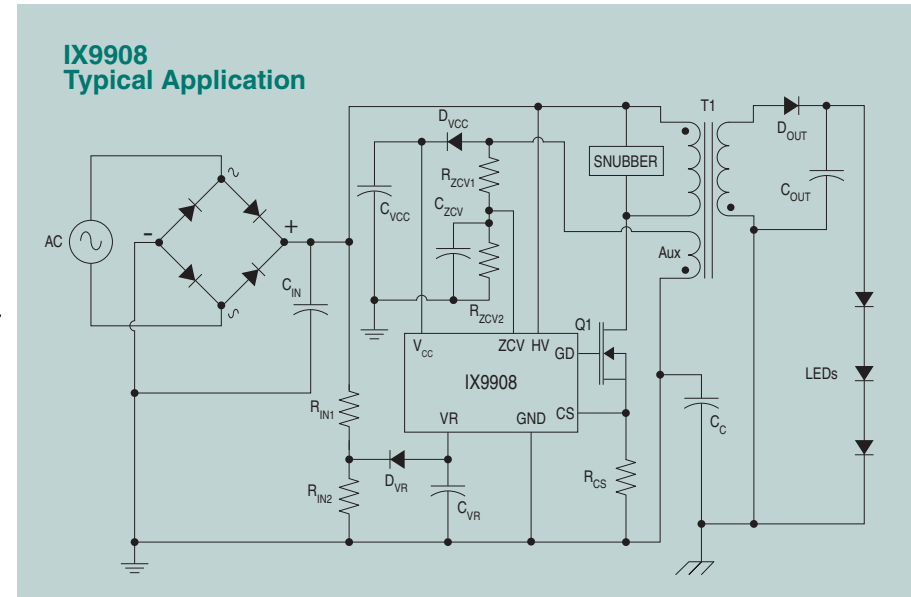
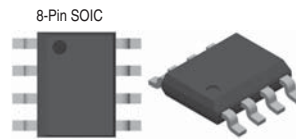
Display Products

IX9908 High Voltage, Dimmable LED Driver with PFC Control

The IX9908 is a quasi-resonant controller optimized for phase-cut dimmable, off-line LED applications. Precise PWM generation supports phase-cut dimming and power factor correction. The product features a wide operating range, up to 600V, and low power consumption. Multiple safety features ensure full system protection in failure situations. The IX9908, with its strong feature set and low cost, is an excellent choice for quasi-resonant flyback LED bulb designs.

Features:

- Single Stage, Primary Control with PFC and Dimming Features
- >90% Efficiency
- >98% Power Factor
- Wide Operating Voltage Range: Up to 600V
- Digital Soft Start
- Cycle-by-Cycle Peak Current Control



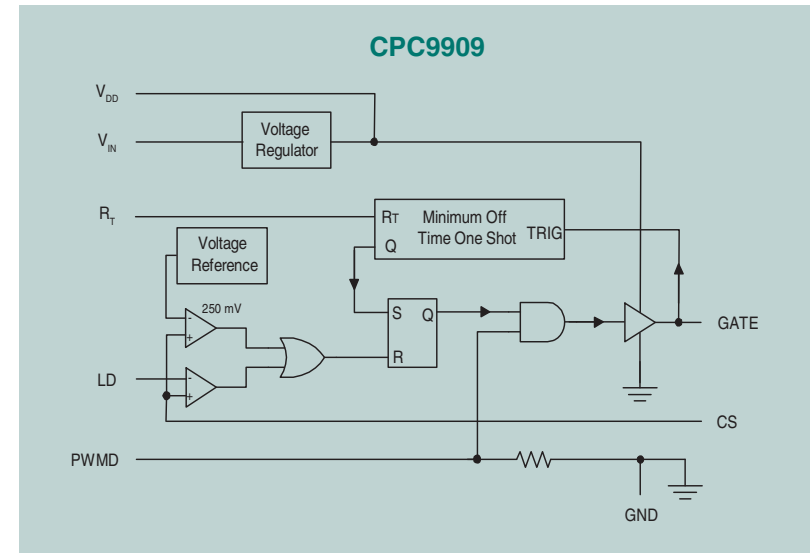
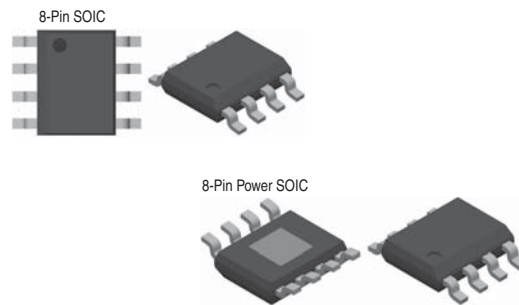
CPC9909 High Efficiency, High Brightness Off-Line LED Driver

The CPC9909 is a low-cost, high-efficiency, off-line, high-brightness (HB) LED Driver manufactured using our high voltage BCDMOS on SOI process. It has an internal regulator that allows it to operate from $8V_{DC}$ to $550V_{DC}$. Available in an 8-pin SOIC and a thermally enhanced 8-pin Power SOIC.

The wide input operating voltage range enables the driver to be used in a broad range of HB LED applications.

Features:

- 8V to 550V Input Voltage Range
- >90% Efficiency
- Stable Operation at >50% Duty Cycle
- Drives Multiple LEDs in Series / Parallel
- Regulated LED Current
- Linear or PWM Brightness Control Inputs
- Resistor-Programmable Minimum Off-Time
- Buck or Boost Configuration



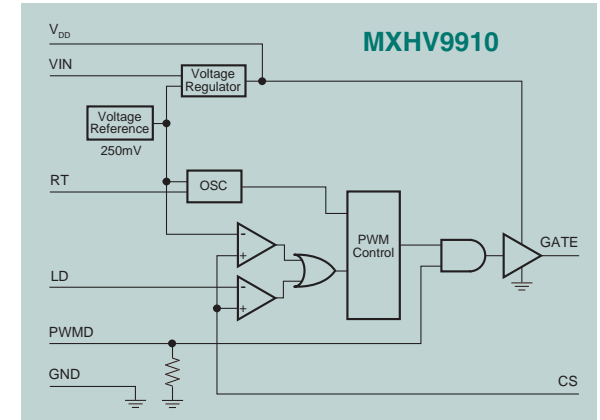
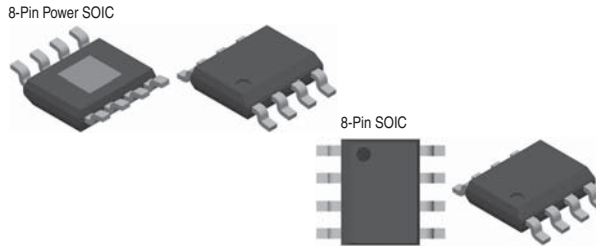
For data sheets, go to www.ixysic.com/Products/ProdList.htm

MXHV9910 High Voltage, Off-Line LED Driver

The MXHV9910 features a fixed-frequency, peak-current control method, which provides an ideal solution for driving multiple LEDs in series and in parallel. Internal circuitry allows it to operate from a universal AC line, or from 8V_{DC} to 450V_{DC}. This highly versatile input operating voltage enables this IC to be used in a broad range of HB LED applications. In addition, LED dimming can be implemented by applying a small DC voltage to the LD pin, or by applying a low-frequency digital PWM signal to the PWMD pin. Applications include flat-panel display RGB backlighting, signage, decorative LED lighting, and DC & AC/DC LED driver applications. Available in an 8-pin SOIC and a thermally enhanced 8-pin Power SOIC.

Features:

- 8V to 450V Input Voltage Range
- >90% Efficiency
- Drives Multiple LEDs in Series / Parallel Combinations
- Regulated LED Drive Current
- Linear or PWM Brightness Control Inputs
- Resistor-Programmable Oscillator Frequency



IXEP2300 300-Output ePaper Gate Driver

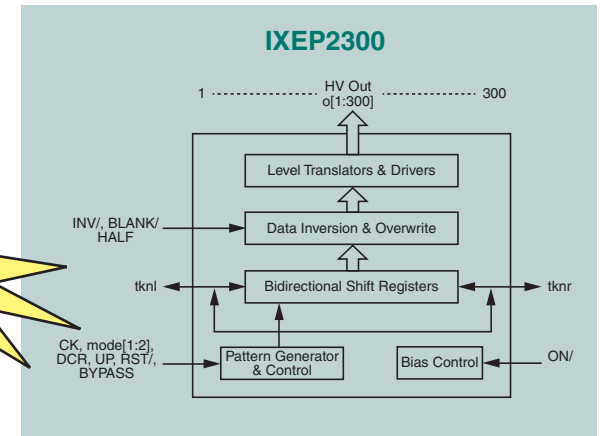
The IXEP2300 is a 300-channel, 42V display gate driver. It has an internal pattern generator for applications where minimal controller interface is desirable. It also has global blanking and inversion to facilitate powering up and down the display in the inactive state. The IXEP2300 features token passing capability and a sleep mode to reduce power consumption. IXEP2300 is available as gold-bumped die in wafer form and in a waffle pack.

Features:

- 300 Output Gate Driver
- 42V HV Output Drive Capable (V_{DD} to V_{EE})
- 3.3V Logic Operation
- Internal Pattern Generator
- Reset, Blanking, Polarity Inversion
- Bypass Function
- Cascadable With Bidirectional Shift Control

Applications:

- eBooks / eReaders
- Electronic Shelf Labels / Point Of Purchase Displays
- Mobile Phones / Portable Handheld Devices
- Smart Cards
- Signage

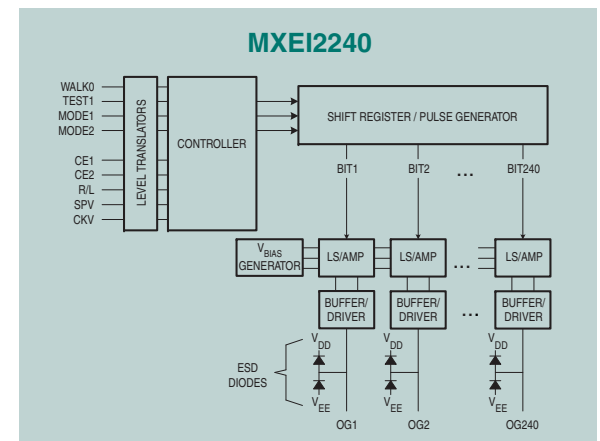


MXEI2240 240-Output ePaper Gate Driver

MXEI2240 is a 240-bit serial shift register, level translator, and high voltage buffered driver. MXEI2240 is an excellent choice for driving the displays of eBooks and eReaders, mobile phones and other portable handheld devices, smart cards, and other electronic display devices. MXEI2240 output switching modes are: one pulse, continuous two pulse, jumping two pulse, or no pulse pattern. MXEI2240 can be cascaded up to a maximum of four devices. MXEI2240 is available as gold bumped die in wafer form and in a waffle pack.

Features:

- CMOS Technology
- Drives Segment or Active Matrix Displays
- 16V to 57V Output Drive (V_{DD} to V_{EE})
- Selectable Output Shift Direction and Polarity



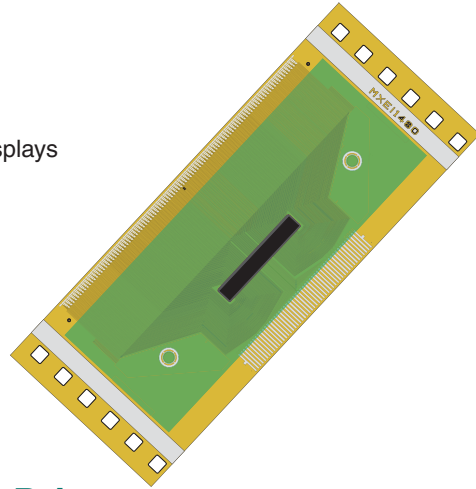
For data sheets, go to www.ixysic.com/Products/ProdList.htm

MXEI1480 ±15V ePaper Source Driver

The MXEI1480 is a selectable 400-bit or 480-bit long, 2-bit wide, serial-input, parallel-output digital shift register with level conversion on each parallel output, which converts the 2 digital bits into V_{POS} , V_{SS} , or V_{NEG} analog output voltages. An 8-bit input bus simultaneously inputs 4 groups of 2 bits each. MXEI1480 is available as gold-bumped die in waffle pack, gold-bumped die in wafer form, and 70mm Wide Tape Carrier.

Features:

- CMOS Technology
- ±15V Output Driver Supply Voltage
- Drives Segment or Active Matrix Displays
- 4-Level Gray Scale
- 25MHz Clock Frequency
- Bidirectional Data Transfer
- Selectable Register Length
- 2.7V to 5.5V Logic Supply Voltage
- Cascadable

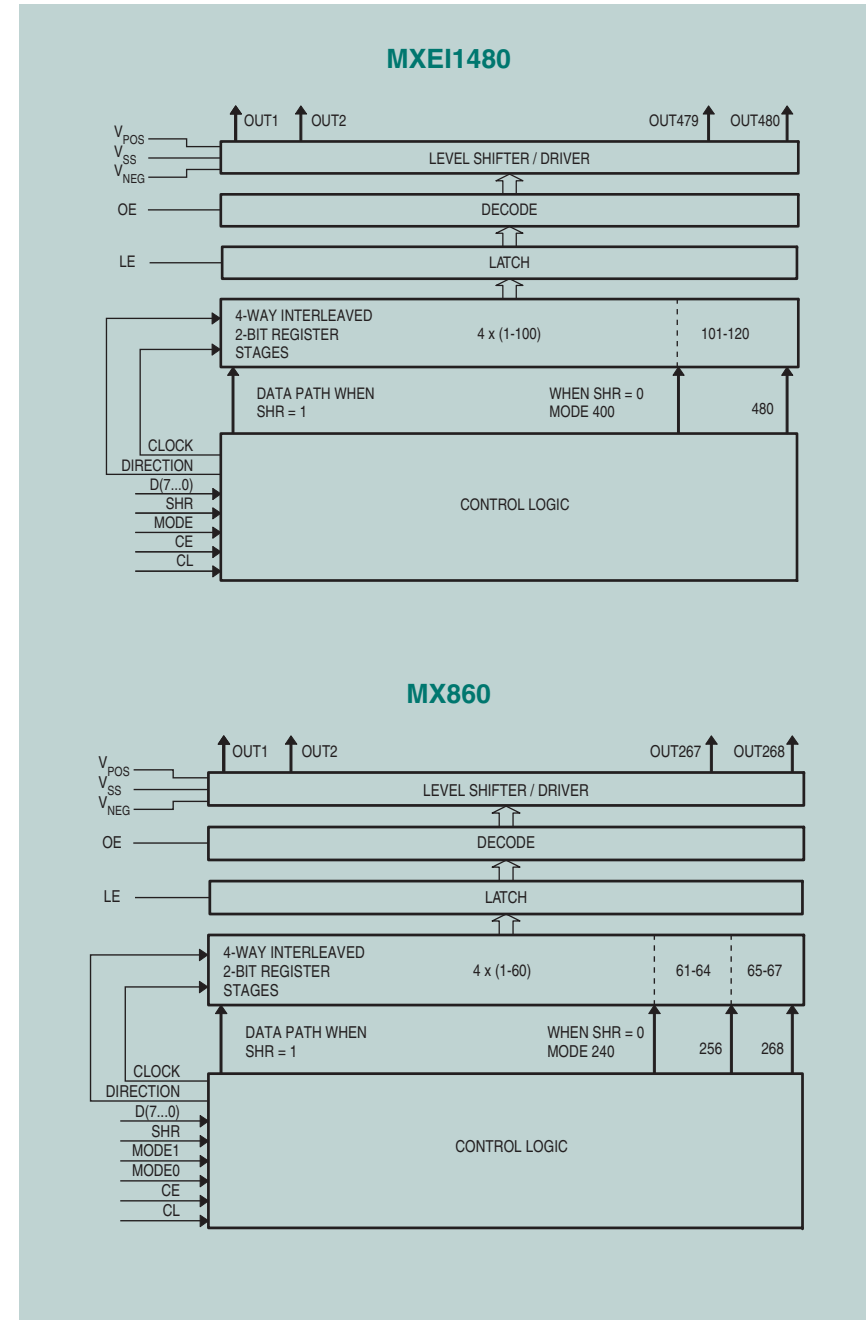
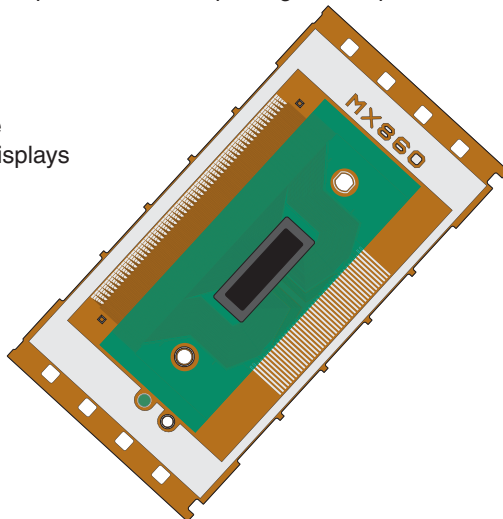


MX860 ±15V ePaper Source Driver

The MX860 is a selectable 240-bit, 256-bit, or 268-bit long 2-bit wide serial-input, parallel-output digital shift register with level conversion on each parallel output, which converts the 2 digital bits into V_{POS} , V_{SS} , or V_{NEG} analog output voltages. An 8-bit input bus simultaneously inputs 4 groups of 2 bits each. MX860 is available as gold-bumped die in waffle pack, gold-bumped die in wafer form, and 48mm Super Wide Tape Carrier.

Features:

- CMOS Technology
- ±15V Output Driver Supply Voltage
- Drives Segment or Active Matrix Displays
- 4-Level Gray Scale
- 25MHz Clock Frequency
- Bidirectional Data Transfer
- Selectable Register Length
- 2.7V to 5.5V Logic Supply Voltage
- Cascadable



For data sheets, go to www.ixysic.com/Products/ProdList.htm

Line Card Access Switches (LCAS)

The LCAS product family consists of monolithic ICs that contain high voltage switches for TIP and RING line break, power ringing, line test access, test in access, and ringing generator testing. They provide the necessary functions to replace all 2-Form-C electromechanical relays found on both traditional voice and integrated voice and data (IVD) line cards found in Central Office, Digital Loop Carriers, and Channel Banks. LCAS ICs enable low-power, high-density line cards.

New features include: (1) TTL compatible inputs, (2) smart logic for safe power up and hot plug state control, and (3) increased dV/dt immunity.

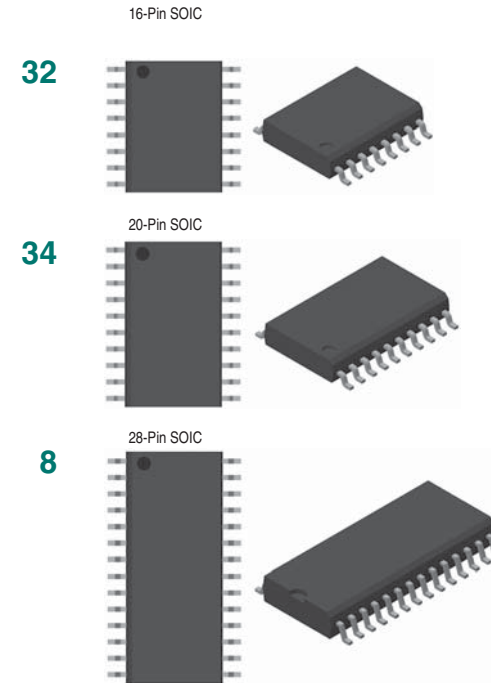
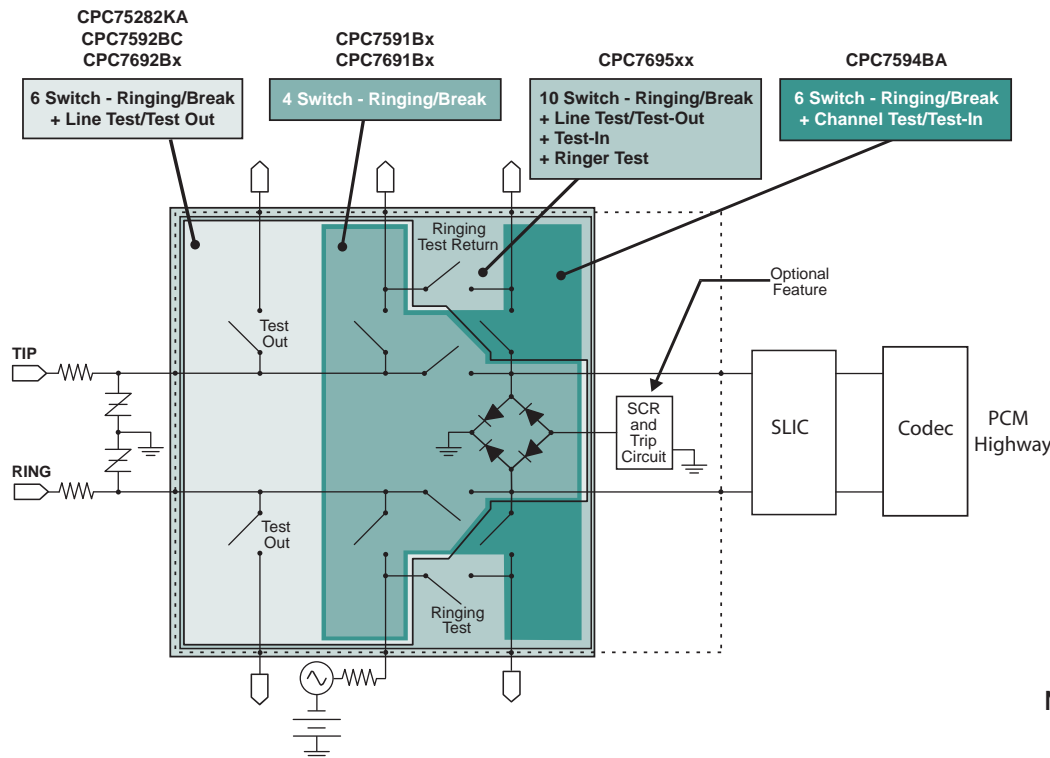
Features:

- Small Surface Mount SOIC Packages
- Monolithic IC Reliability
- Low, Matched On Resistance
- Built-in Zero-Cross Switching
- Impulse Noise Reduction
- Current Limiting, Thermal Shutdown, and SLIC Protection
- Robust Power-Cross and Lightning Surge Performance
- Ultra-Low Power Consumption of <10.5mW

Applications:

- VoIP Gateways
- Central Offices (CO)
- Digital Loop Carriers (DLC)
- Digitally Added Main Line (DAML)
- Hybrid Fiber Coax (HFC)
- Fiber in the Loop (FITL)
- Pair Gain Systems
- Channel Banks
- PBX Systems

1500V/ μ s!
Switch dV/dt Immunity
CPC769x Family



Note: Packages refer to devices in the table on the next page.

For data sheets, go to www.ixysic.com/Products/ProdList.htm



| Part Number | Minimum 1500V/ μ s dV/dt | Switch Pairs | | | | | | Zero-Cross Switching | Current Limit | Protection Features | | | Logic States | Package Type (Page 34) |
|-------------|------------------------------|--------------|-------|---------|----------|---------|--------------|----------------------|---------------|---------------------|----------------|---------------------------|--------------|------------------------|
| | | # Switches | Break | Ringing | Test Out | Test In | Ringing Test | | | Diode Bridge | Protection SCR | Minimum Hold Current (mA) | | |
| CPC7691BA | • | 4 | • | • | | | | • | • | • | • | 110 | 3 | 32 |
| CPC7691BB | • | 4 | • | • | | | | • | • | • | | | 3 | 32 |
| CPC7692BA | • | 6 | • | • | • | | | • | • | • | • | 110 | 4 | 32 |
| CPC7692BC | • | 6 | • | • | • | | | • | • | • | • | 110 | 5 | 32 |
| CPC7695xA | • | 10 | • | • | • | • | • | • | • | • | • | 110 | 7 | 8, 34 |
| CPC7695xB | • | 10 | • | • | • | • | • | • | • | • | | | 7 | 8, 34 |
| CPC7695xC | • | 10 | • | • | • | • | • | • | • | • | • | 110 | 8 | 8, 34 |
| CPC7591BA | | 4 | • | • | | | | • | • | • | • | 110 | 3 | 32 |
| CPC7591BB | | 4 | • | • | | | | • | • | • | | | 3 | 32 |
| CPC7592BC | | 6 | • | • | • | | | • | • | • | • | 110 | 5 | 32 |
| CPC7594BA | | 6 | • | • | | • | | • | • | • | • | 110 | 4 | 32 |

CPC75282 Dual 6-Pole LCAS

The CPC75282 Dual Line Card Access Switch (LCAS), a member of our next generation Line Card Access Switch family, is a monolithic solid state device that provides the switching functionality of four 2-Form-C relays in a single, small, economical package.

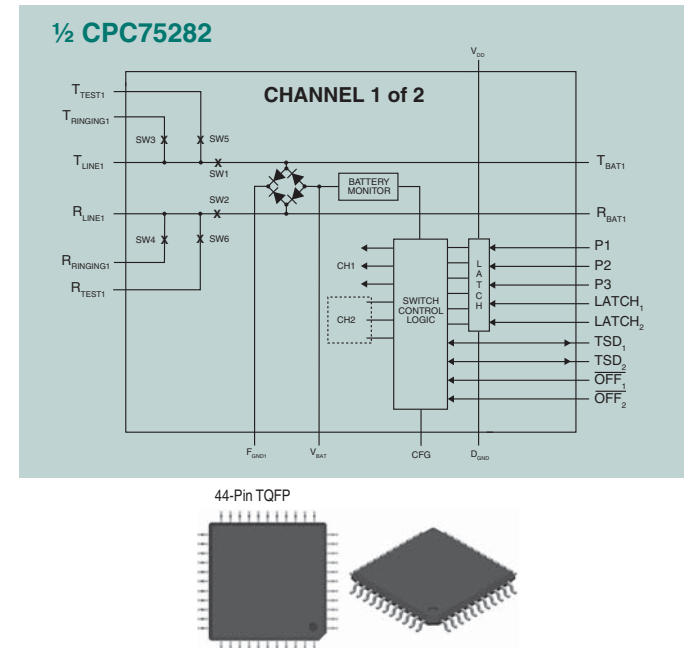
The CPC75282 Dual LCAS device is designed to provide ringing and test access to the telephone loop in Central Office, Digitally Added Main Line, Private Branch Exchange, Digital Loop Carrier, and Hybrid Fiber Coax / Fiber in the Loop analog line card applications. Test access switches provide access to the telephone loop for line (drop) test or message waiting in the PBX application. Available in a 44-pin TQFP package.

Features:

- Improved Switch dV/dt Immunity of 1500V/ μ s
- Smart Logic for Power Up / Hot Plug State Control
- Low, Matched R_{ON}
- Eliminates the Need for Zero-Cross Switching
- Flexible Switch Timing to Transition from Ringing Mode to Talk Mode
- Tertiary Protection Consisting of Integrated Current Limiting, Voltage Clamping, and Thermal Shutdown for SLIC Protection
- 5V Operation with Very Low Power Consumption
- Intelligent Battery Monitor
- Latched Logic Level Inputs, No External Drive Circuitry Required

Applications:

- VoIP Gateways
- Central Office (CO)
- Digital Loop Carrier (DLC)
- PBX Systems
- Digitally Added Main Line (DAML)
- Hybrid Fiber Coax (HFC)
- Fiber in the Loop (FITL)
- Pair Gain System
- Channel Banks



For data sheets, go to www.ixysic.com/Products/ProdList.htm

CPC7508 LCAS for Ringing SLIC

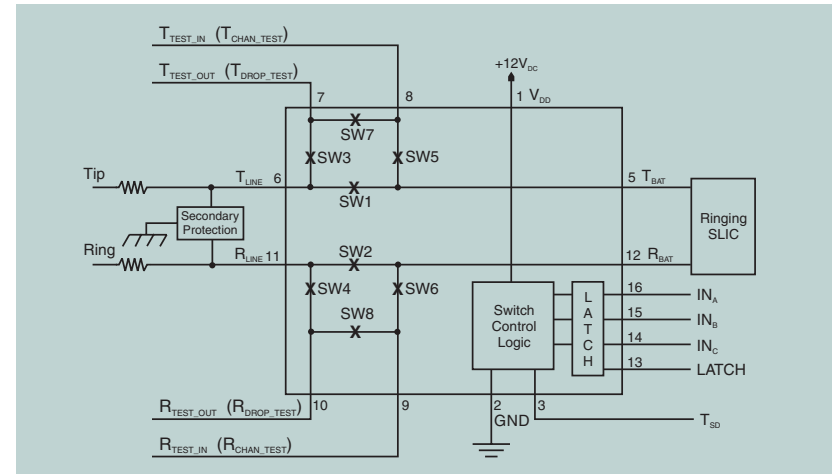
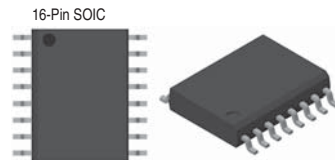
The CPC7508 is a member of our next generation Line Card Access Switch (LCAS) family. Used with ringing SLICs, it provides the necessary functions to replace the two 2-Form-C electromechanical test relays used in contemporary Fiber to the Home (FTTH) and Optical Network Unit (ONU) deployments, as well as Voice over IP (VoIP) telephony terminals. Solid state switches provide the mechanism for TIP and RING line break, drop test, and channel test while requiring only a single +12V supply for operation. Interface compatibility with 3.3V or 5V logic for switch state control is provided by the TTL logic level inputs. The CPC7508 is designed for fiber access units where EMR's are used for test access and line monitoring functions, but solid state switches are desired due to reduced operating noise, lower power consumption, and longer lifetimes. Available in a 16-pin SOIC package.

Features:

- TTL Logic Level Inputs for 3.3V Logic Interfaces
- Smart Logic for Power Up / Hot Plug State Control
- Monolithic IC Reliability
- Low, Matched R_{ON}
- Clean, Bounce-Free Switching
- Tertiary Protection Consisting of Integrated Current Limiting and Thermal Shutdown for SLIC Protection

Applications:

- Fiber to the Home (FTTH)
- Fiber in the Loop (FITL)
- VoIP Gateways
- PBX Systems
- Digitally Added Main Line (DAML)
- Hybrid Fiber Coax (HFC)



CPC7514 Quad High Voltage Isolated Analog Switch Array

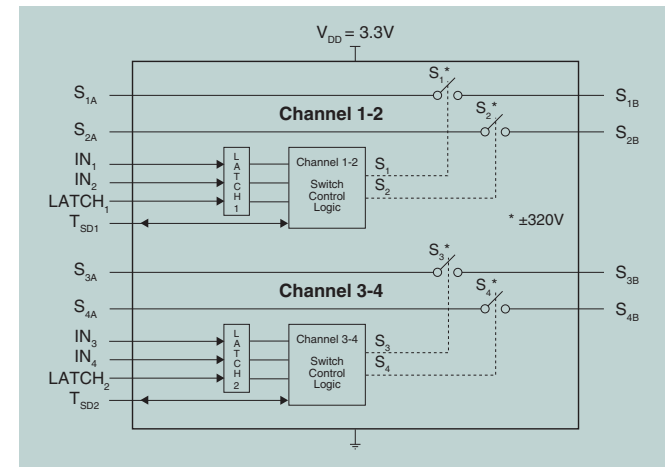
The CPC7514 Quad High Voltage (HV) Isolated Analog Switch Array builds upon our Line Card Access Switch (LCAS) design and fabrication expertise for telecom and non-telecom applications. This monolithic solid state device provides the switching functionality of four normally open (1-Form-A) relays in one small economical package. Designed to provide flexible single-ended or differential access to high voltage networks, the CPC7514 High Voltage Array (HVA) is configured as two sets of matched, paired switches for improved differential performance. Additionally, sensitive differential applications will benefit from the matched pairs excellent pair-to-pair isolation. The self-biasing switches do not require external high voltage supplies for proper operation. Independent switch current limiting and switch-pair thermal shutdown features provide enhanced protection for devices connected to high voltage networks up to +320V.

Features:

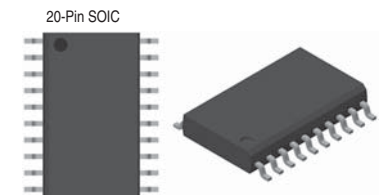
- Low, Matched R_{ON}
- Switch Voltage up to $\pm 320V$
- 320V Logic Input to Switch Output Isolation
- 110dB Switch-to-Switch Isolation at 5kHz
- Flexible Switch Configurations
- Smart Logic for Power Up / Hot Plug State Control
- 3.3V Operation with Very Low Power Consumption
- Switch Current Limiting Protects Against Fault Conditions
- Thermal Shutdown Protects Against Fault Conditions
- Latched TTL Logic Level Inputs
- Clean, Bounce-Free Switching
- Monolithic IC Reliability

Applications:

- Instrumentation
- Industrial Controls and Monitoring
 - Automatic Test Equipment (ATE)
 - Battery Charging Circuits
- Telephony
 - VoIP Gateways
 - Central Office (CO) and Remote Terminal (RT)
 - Concentrators
 - PBX Systems
 - Optical Network Terminals (ONT)
 - Optical Network Units (ONU)
 - Hybrid Fiber Coax (HFC)



3.3V Supply!



For data sheets, go to www.ixysic.com/Products/ProdList.htm

LITELINK™ Silicon DAA, Phone Line Interface

The LITELINK Phone Line Interface is the industry's only single-package silicon Data Access Arrangement (DAA) featuring a 32-pin, small outline, low profile, surface mount package. It is ideal for both voice and data (V.22bis to V.90/V.92) and applications in particularly dense circuit environments. The internal optical isolation barrier eliminates high-cost transformer or capacitive isolation circuits. This solution saves cost relative to competitive circuits through reduced passive component count and smaller printed circuit board space.

The 3kV_{rms} internal isolation barrier exceeds all worldwide regulatory requirements. In addition, the LITELINK application circuit is capable of surviving 6kV (10µsec x 700µsec) lightning surge waveforms making it the most robust silicon DAA on the market.

LITELINK offers the lowest operational phone line quiescent current. The device easily interfaces to commonly available standard single-ended or differential voice and modem codecs on the market. Contact IXYS Integrated Circuits Division for information on codec reference designs that offer programmable AC termination impedance for global applications. LITELINK complies with international PSTN agency requirements.

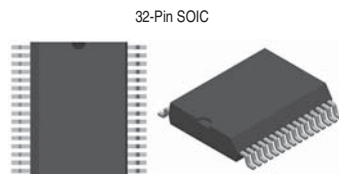
The newest device is the CPC5622 that offers continuous Caller-ID (CID) signal monitoring, which is ideal for telephony applications in countries where CID information is present before the ringing signal. The CPC5622 also offers both full-wave and half-wave ringing signal detection, enabling the designer to choose the appropriate interface to the codec/DSP block. Available in a 32-pin SOIC package.

Features:

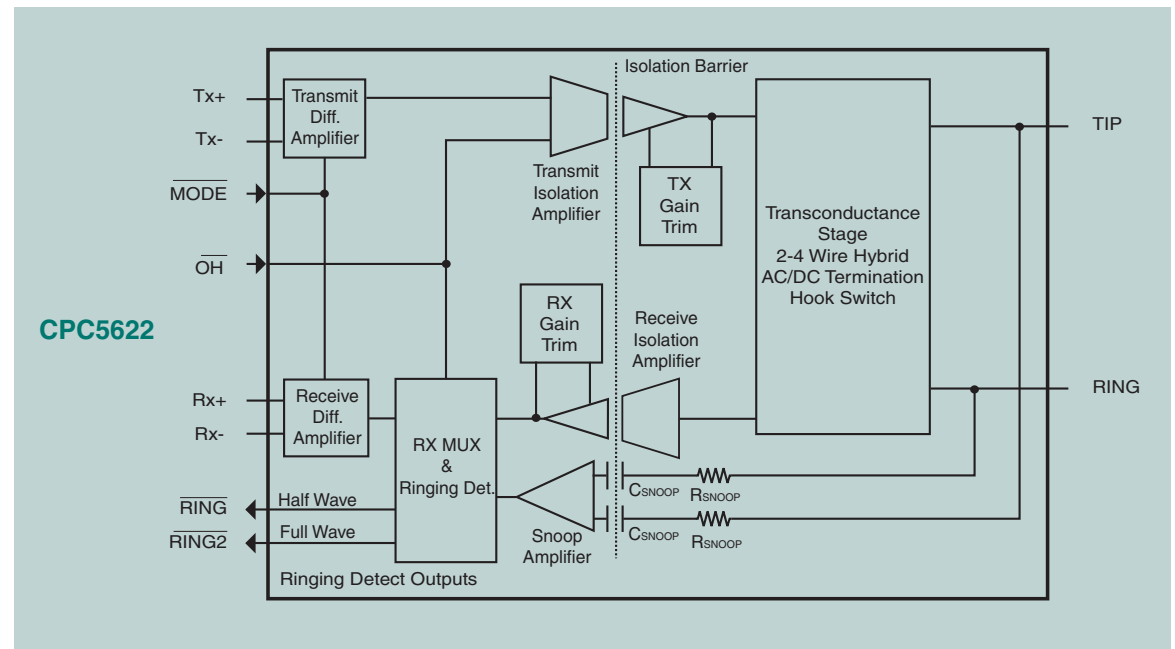
- Voice and Data Applications
- Modem DAA for Speeds up to V.92
- Half-Wave or Full-Wave Ringing Detection
- Worldwide Telephone Network Compatibility
- Caller-ID Reception
- Line Side Powered from Telephone Line
- 3.3V to 5V Power Supply
- Easy Interface with Modem ICs and Voice Codecs
- High Power Transmit Option for Voice Applications (>3dBm)
- Small 32-Pin SOIC Package

Applications:

- Computer Telephony
- VoIP Gateways
- PBXs
- Satellite Set-Top Box
- V.92 Modems
- Fax Machines
- Voice Mail Systems
- Embedded Modems
- Vending Machines
- Automated Banking
- Remote Metering
- Surveillance
- Security Systems



| Part Number | Isolation Voltage (V _{rms}) | Power Supply (V) | Caller ID | Ringing Detect |
|-------------|---------------------------------------|------------------|------------|-----------------------|
| CPC5622 | 3000 | 3.3 - 5 | Continuous | Half-Wave & Full-Wave |
| CPC5621 | 3000 | 3.3 - 5 | Selectable | Full-Wave |
| CPC5620 | 3000 | 3.3 - 5 | Selectable | Half-Wave |



For data sheets, go to www.ixysic.com/Products/ProdList.htm

Voltage Monitor Devices

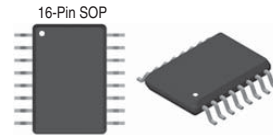
The **CPC5712** is a special-purpose Voltage Monitor with Detectors integrated circuit that is used in various high voltage telephony applications such as VoIP gateways and IP-PBXs, as well as non-telephony applications in instrumentation and industrial control. The device monitors the TIP/RING potential through a high-impedance divider (resistor isolation) to derive two resistor-programmable signal level detects, polarity information, and a scaled, linear representation of the phone line voltages.

The **CPC5710** is a versatile building block for designing telephone line-monitoring circuits. The device has two outputs: a scaled, linear representation of the input TIP/RING voltage, and a switchable, internally set comparator output. The comparator output provides a ringing detect signal, the level of which is set by the resistor values selected for the input network. A formula for selecting these input resistors is given in the CPC5710 Data Sheet that is available on our web site. The Data Sheet also includes an application circuit that derives Line-in-Use (LIU) and line polarity information from the scaled output signal. This high-impedance, resistive-barrier application circuit is fully compliant to the EN 60950 safety standard, and meets the ITU-T K.21 over voltage and over current specifications (with appropriate PCB layout).

In use, the resistor divider and the high input impedance of both the CPC5710 and the CPC5712 make the circuits practically undetectable on the line.

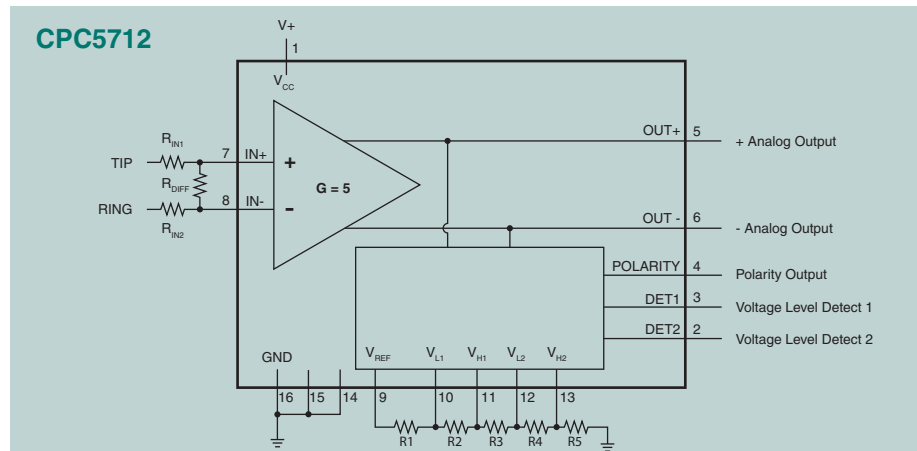
CPC5712 Features:

- Two Independent, Programmable Level Detectors with Programmable Hysteresis
- Fixed-Level Polarity Detector with Hysteresis
- Differential Linear Output
- Excellent Common-Mode Rejection Ratio (CMRR)
- 16-Pin SOP Package
- Worldwide Telephone Network Compatibility
- Minimum External Components
- High Differential Input Impedance, Very Low Common-Mode Input Impedance
- Fixed Gain
- 3V to 5.5V Operation
- Low Power Consumption
- CMOS Logic Level Output (TTL Compatible)



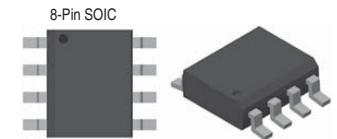
CPC5712 Applications:

- VoIP Gateways, IP-PBX, xDSL
- TIP/RING Monitoring: Polarity Detection for Caller ID, Enhanced 911, Line-in-Use, Battery Detection, PSTN Check
- Non-Telephony Voltage Level Detection Applications: Instrumentation and Industrial Control



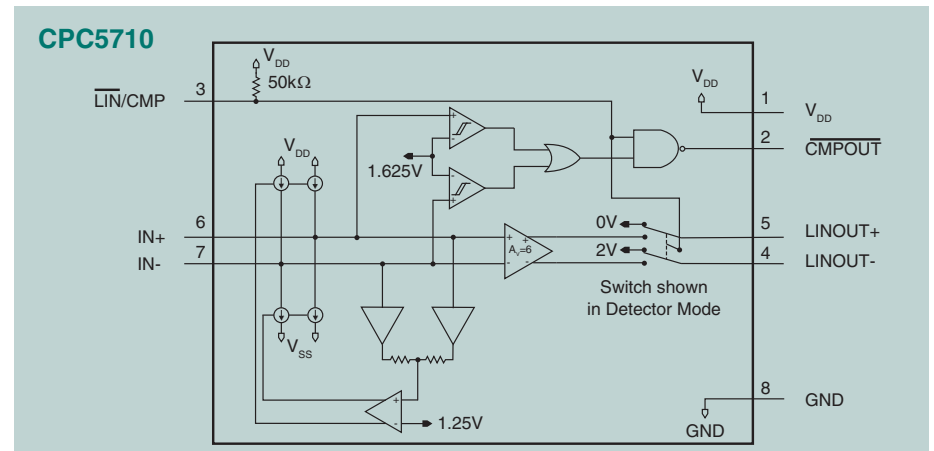
CPC5710 Features:

- Differential or Single-Ended Linear Output
- Full-Wave Ringing Level Detector Comparator with Internal Threshold, Large Hysteresis, and TTL Logic Level Output
- High Common-Mode Rejection Ratio (CMRR)
- 8-Pin SOIC Package
- Worldwide Telephone Network Compatibility
- High Differential Input Impedance, Very Low Common-Mode Input Impedance
- Fixed Gain
- 3V to 5.5V Operation
- CMOS Logic Level Output (TTL Compatible)



CPC5710 Applications:

- Display Feature (Caller ID) Signal Buffering
- Line-in-Use Detection (Another Phone-Off-Hook)
- Ringing Signal Detection
- Battery Presence Monitoring
- TIP/RING Voltage Monitoring
- Line Polarity



For data sheets, go to www.ixysic.com/Products/ProdList.htm

DC Termination IC: CPC1465 SHDSL/ISDN

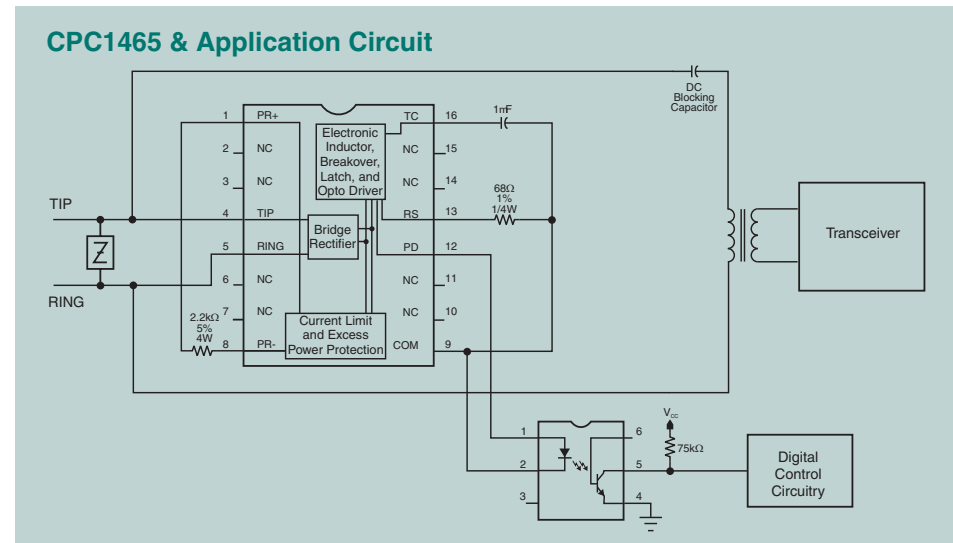
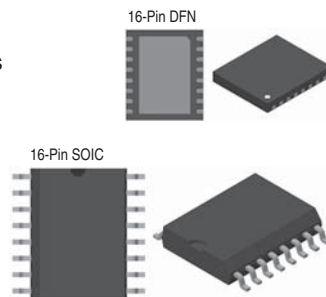
The CPC1465 provides a polarity-insensitive DC termination for wetting (sealing) current on the CPE side conforming to ITU-T G.991.2 to eliminate corrosion on G.SHDSL/ISDN lines. The CPC1465 has excellent linearity (70dB typ.) to minimize harmonic distortion, and well-controlled turn-on and turn-off characteristics to minimize injecting impulse noise with in-band signal energy into the G.SHDSL channel. This DC termination IC, which interfaces with the TIP/RING pair, is rated at 300V, and is able to handle power-cross and lightning transients with appropriate protection. Manufactured in our proven 320V Silicon-On-Insulator (SOI) process, the CPC1465 is packaged as a 16-pin SOIC or as a 16-pin DFN.

Features:

- Meets Wetting (Sealing) Current Requirements Per ITU-T G.991.2
- Integrated Bridge Rectifier for Polarity Correction
- Uses Inexpensive Optocoupler for DC Signaling
- Electronic Inductor, Breakover, and Latch Circuits
- Current Limiting and Excess Power Protection Circuits
- ANSI SHDSL and ISDN Compatible
- MLT and SARTS Compatible
- Excellent Linearity (70dB typ.)

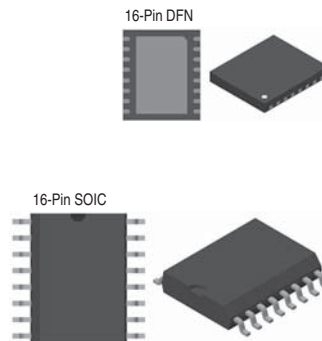
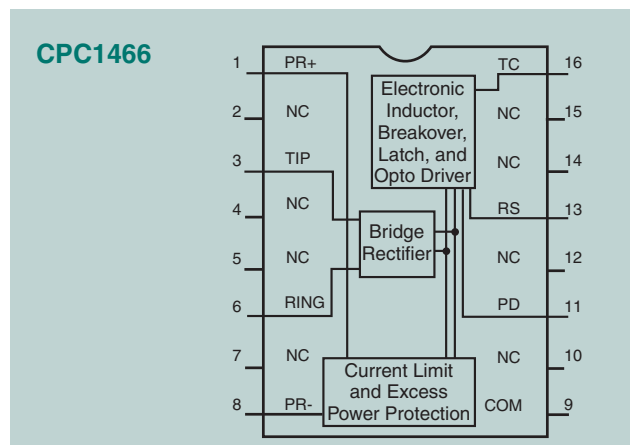
Applications:

- G.SHDSL
- ISDN
- Router and Bridge Customer Premises Equipment
- Leased Line Equipment
- T1/E1 Network Line Cards and Repeaters
- Network Termination 1 (NT1) Equipment
- Mechanized Loop Test (MLT) Networks
- Switched Access Remote Test System (SARTS) Networks



DC Termination IC: CPC1466 Broadband ADSL/VDSL

The CPC1466 is a DC Termination IC for broadband ADSL/VDSL applications. The high voltage, monolithic device provides a path for DC wetting (sealing) current in customer premises equipment (CPE) to eliminate phone line corrosion on DSL twisted-pair copper lines without telephone voice services (i.e. broadband-only services).



Features:

- Meets Wetting (Sealing) Current Requirements Per ITU-T G.992.3
- Integrated Bridge Rectifier for Polarity Correction
- Uses Inexpensive Optocoupler for DC Sealing Current Monitoring
- Electronic Inductor, Breakover, and Latch Circuits
- Current Limiting and Excess Power Protection Circuits
- ADSL/VDSL Compatible with Low-Pass Filter Network
- MLT and SARTS Compatible
- Compatible with Portable Test Sets
- Small 16-Pin SOIC and 16-Pin DFN Packages

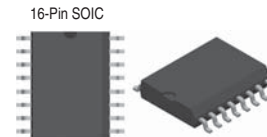
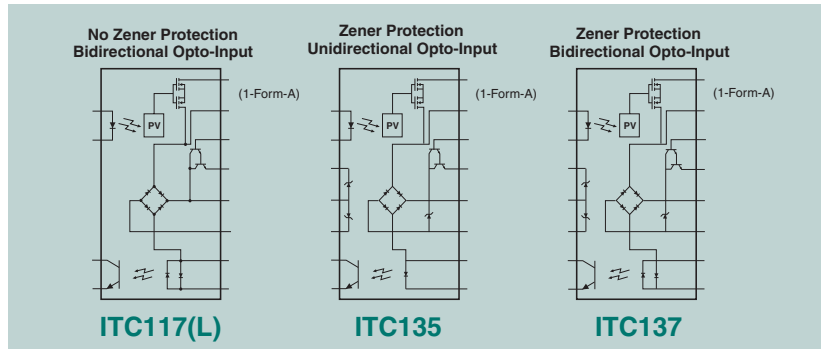
Applications:

- ADSL/VDSL Broadband Modems
- Router and Bridge Customer Premises Equipment
- Leased Line Equipment
- Mechanized Loop Test (MLT) Networks
- Switched Access Remote Test Systems (SARTS) Networks

For data sheets, go to www.ixysic.com/Products/ProdList.htm

Telecom Multifunction Solid State Relays

The OptoMOS line of Multifunction Products combines several optically isolated discrete component functions into a single package. These products mix and match solid state relays, optocouplers, bridge rectifiers, Darlington transistors, and Zener diodes to create highly functional circuits in a single, small package. Multifunction devices allow designers to consolidate circuit functions into a single device, freeing up valuable board space and reducing component count. Designed specifically for the telecommunications industry, the Integrated Telecom Circuit (ITC) series is well suited for voice telephony and modem applications, providing most of the major functions required when designing DAA (Data Access Arrangement) or voice (FXO) line interface circuits. Available in a 16-pin SOIC package.



Features:

- 3750V_{rms} Input to Output Isolation
- Multiple Functionality in a Single Package
- Current Limiting (Part Numbers with "L" Suffix)
- Machine Insertable, Wave Solderable
- TTL and CMOS Compatible

Applications:

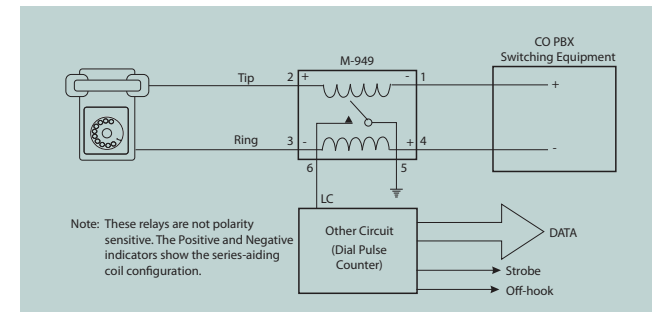
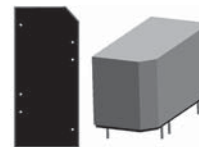
- Telecommunication / Datacommunication
- Instrumentation
- I/O Subsystems
- Electronic Switching
- Medical Equipment (Patient / Equipment Isolation)
- Security
- Aerospace
- Industrial Controls

| Part Number | Relay Parameters | | | | Optocoupler Parameters | | | | Isolation Voltage (V _{rms}) | Package Type | Features |
|-------------|------------------------------------|-------------------|-------------------|----------------------------|------------------------|----------------------------|------------------------|----------------------------|---------------------------------------|--------------|--|
| | Blocking Voltage (V _p) | Load Current (mA) | On Resistance (Ω) | Input Control Current (mA) | Breakdown Voltage (V) | Current Transfer Ratio (%) | Saturation Voltage (V) | Input Control Current (mA) | | | |
| ITC117 | 350 | 120 | 15 | 5 | 20 | 33 | 0.5 | 6 | 3750 | 16-Pin SOIC | Full-Wave Ringing Detect |
| ITC117L | 350 | 120 | 20 | 5 | 20 | 33 | 0.5 | 6 | 3750 | 16-Pin SOIC | Full-Wave Ringing Detect, Current Limiting |
| ITC135 | 350 | 120 | 15 | 5 | 20 | 33 | 0.5 | 6 | 3750 | 16-Pin SOIC | Half-Wave Ringing Detect |
| ITC137 | 350 | 120 | 15 | 5 | 20 | 33 | 0.5 | 6 | 3750 | 16-Pin SOIC | Full-Wave Ringing Detect |

Line Sense Relay

M-949-11 Balanced Dual Coil Telephone Line Current Sensing Relay

- Senses Telephone Line Current From 15mA to 200mA
- Used by Control Circuitry for:
 - On-Hook / Off-Hook Monitoring
 - Switch Hook Flash Detection
 - Rotary Dial Pulse
- Meets High Isolation Voltage Requirement of 4000V
- Meets UL and British Standard Specifications
- Includes 1-Form-A Relay Contact



For data sheets, go to www.ixysic.com/Products/ProdList.htm

Cybergate™ Data Access Arrangement (DAA) Modules

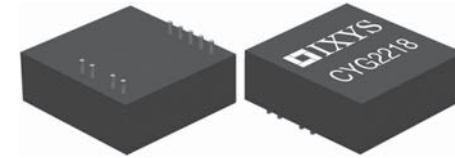
The Cybergate family is a turnkey modular DAA solution. The V.34 family provides the circuitry required in a single, completely functional DAA circuit in a 1.07" x 1.07" x 0.4" plastic module. This plug-and-play design allows the user to choose the necessary options to minimize costs and maximize value. Standard features include surge protection, transient protection Zeners, ringing detection, hook switch circuitry, gyrator circuitry (impedance balancing), and a transformer. Caller-ID (CID) and loop current detection are also available as options.

Features:

- 28.8kbps
- Optional Caller ID and Loop Current Sense
- Ringing Detection
- Low Power Hook Switch
- Surge Protection
- Gyrator Circuitry
- Meets Most Regulatory Agency Requirements

Applications:

- Modems
- Remote Data Acquisition
- Fax Machines
- Security / Metering
- Computer Telephony
- PBX
- Voice Mail Systems



Small Package Size!

1.07" x 1.07" x 0.4"
27.18mm x 27.18mm x 10.16mm

| Part Number | Region | Hook Switch Resistance (Ω) | DC Loop Current (mA) | Return Loss (Min) (dB) | Insertion Loss (Max) TX - Transmit (dB) RX - Receive (dB) | Ringing Voltage Detection Range (V _{rms}) | Isolation Voltage (V _{rms}) | FEATURES | | | | |
|-------------|--------------------|----------------------------|----------------------|------------------------|---|---|---------------------------------------|-----------------------------|-----------------------------|-----------|---------------------|---------------------|
| | | | | | | | | Ringing Detection Full Wave | Ringing Detection Half Wave | Caller ID | Loop Current Detect | 2-4 Wire Conversion |
| CYG2000 | N. America Asia | 15 | 20-120 | 18 | TX 7 RX 7 | 20-150 | 1000 | | • | | | |
| CYG2011 | N. America Asia | 15 | 20-120 | 18 | TX 7 RX 7 | 20-150 | 1000 | • | | | • | |
| CYG2020 | N. America Asia | 15 | 20-120 | 18 | TX 7 RX 7 | 20-150 | 1000 | | • | • | | |
| CYG2100 | Europe | 35 | 5-120 | 14 | TX 7 RX 7 | 29-150 | 1500 | | • | | | |
| CYG2110 | France | 35 | 5-120 | 14 | TX 7 RX 7 | 29-150 | 1500 | | • | | | |
| CYG2111 | CTR-21 | 35 | 5-60 | 14 | TX 7.5 RX 7.5 | 29-150 | 1500 | | • | | | |
| CYG2217 | N. America Asia | 15 | 20-120 | 39 | TX 7 RX 1 | 20-150 | 1000 | | • | | | • |
| CYG2218 | N. America Asia | 15 | 20-120 | 39 | TX 1 RX 1 | 20-150 | 1000 | | • | | | • |
| CYG2320 | Australia | - | 5-120 | 14 | TX 7 RX 7 | 29 MIN | 1500 | | • | | | |

CPC5608 Low Power Transistor Array

The CPC5608 is a 5-channel, low-power transistor array IC with a simple 2-state logic control input. A logic low input turns on switches OUT1, OUT2, and OUT3; a logic high turns on switches OUT4 and OUT5. Output transistors are capable of sinking 50mA in low output voltage (<7V) circuits. The IC features a low supply voltage range of 2.5V to 5.5V and no static supply bias current draw, making it ideal for portable battery and on-hook telephone applications. Available in an 8-pin SOIC package.

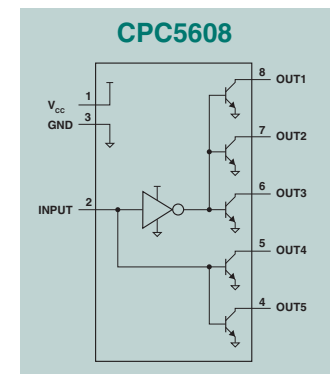


Features:

- No Static Current Draw from Power Supply (CMOS Control)
- Low-Voltage Operation (V_{CC} = 2.5V)
- Low Output Transistor Leakage

Applications:

- Portable Battery Equipment
- Telephony
- Instrumentation



For data sheets, go to www.ixysic.com/Products/ProdList.htm

M-980-02 Call Progress Tone Detector

This Call Progress device is an inexpensive band detector that provides an accurate method of detecting common call progress tones including busy tone, dial tone, call waiting tones, and others. The detector is available in both DIP and SOIC packages, and operates on a 3V to 5V supply.

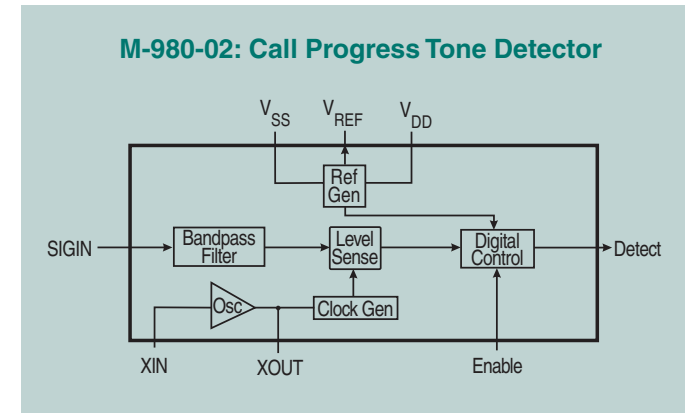
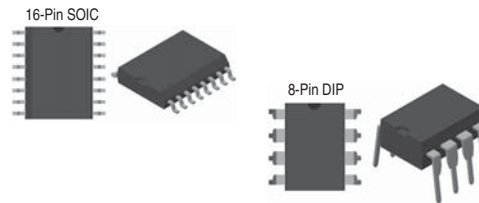
Features:

- Receive Common Call Progress Tones
- The M-980-02 Operates with a Single 3-5 Volt Supply
- Linear Input (Detector)
- Inexpensive Band Detector with Wide Dynamic Range (>38dB)
- Low Power Consumption

Applications:

- PBX Circuits
- Billing Systems
- Test Equipment
- Point-of-Sale Terminals

| Part Number | Function (315 - 640Hz) | Package Types |
|-------------|------------------------|------------------------|
| M-980-02 | Tone Detector | 16-Pin SOIC, 8-Pin DIP |



CPC2400E Embedded Modem Module

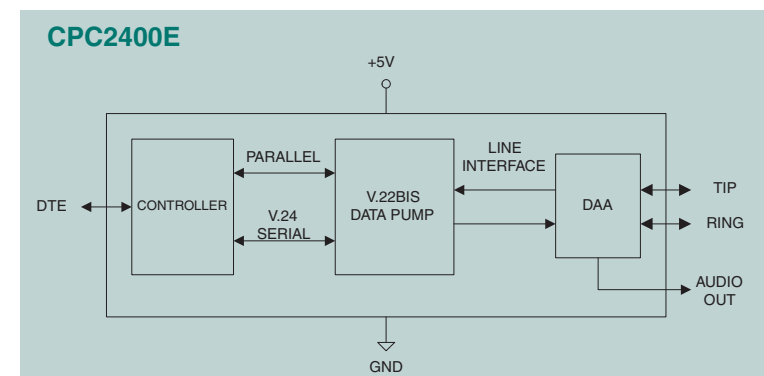
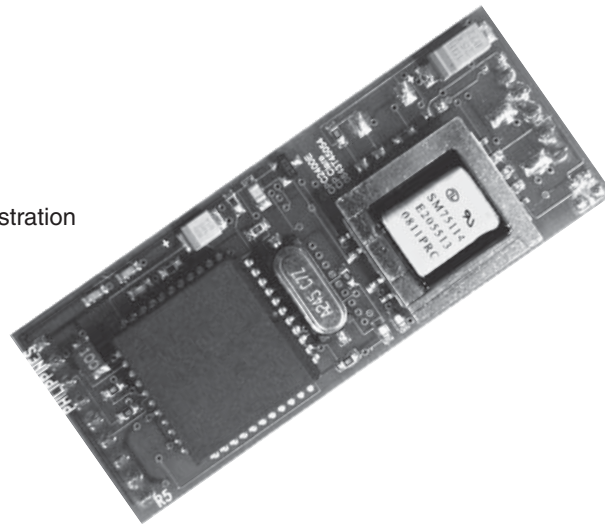
The Embedded Modem Module (EMM) combines a datapump and microcontroller with the Data Access Arrangement (DAA) to deliver an all-in-one solution for V.22bis modem transaction-oriented applications. This plug-and-play module provides a total solution complete with transferable FCC registration. It supports a standard serial V.24 TTL interface to the DTE equipment. The CPC2400E features a quick handshake time of 1.6 seconds. This offers a clear advantage for short connection sessions when compared to V.34 and V.90 modems which have a data handshake period greater than 10 seconds.

Features:

- Easy Integration and Installation
- Small Footprint of 1.00" x 2.50"
- Low Power Consumption
- 5V Power Supply Operation
- Supports V.22bis, V.22, V.23
- FCC Part 15B Compliant
- FCC Part 68 User Transferable Registration
- UL Approved

Applications:

- Point-Of-Sale (POS)
- Gaming Equipment
- Utility Metering
- Lock Boxes
- Remote Monitoring
- Embedded Applications
- Medical Appliances



For data sheets, go to www.ixysic.com/Products/ProdList.htm

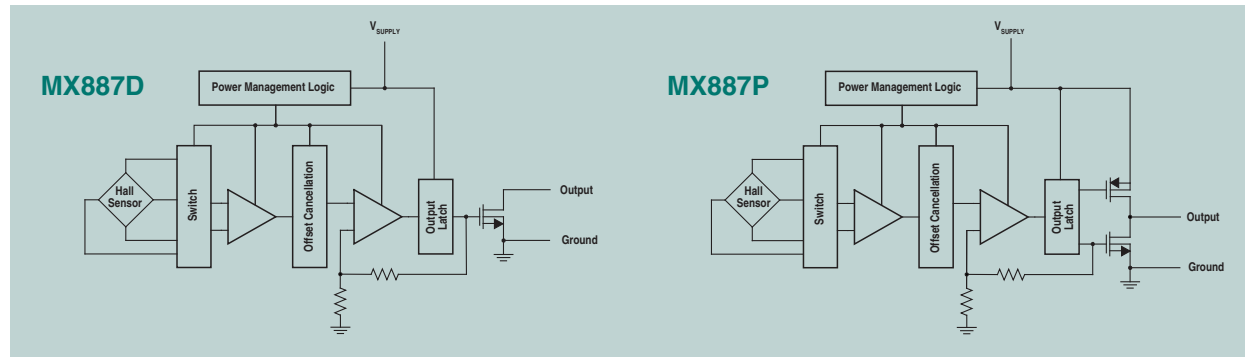
Other Semiconductor Products

MX887D/P Hall-Effect Switches

The **MX887D** and **MX887P** integrated Hall-Effect switches target the requirements of low-power portable devices with battery operating voltages from 2.5V to 5.5V. On-chip power management circuitry reduces the effective average current to just 5µA at 3V supply voltage.

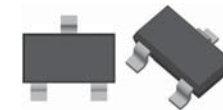
Both devices turn on when either a north or south magnetic pole is applied, and turn off when the magnetic field is removed. The MX887D switches between GND and high-impedance state, while the output of the MX887P switches between the supply voltage and GND.

MX887D and MX887P are ideal reed relay replacements, especially in low-power portable device applications. Available in a TSOT-23 package.



Applications:

- Handheld Portable Devices
- White Goods
- Automotive - Body Systems
- Security Systems
- High-Reliability Reed Switch Replacement



Solar Cells

Our Solar Cells address the diverse needs of the growing number of µpower solar applications. The SOI process, which also creates isolation trenches on the die, produces multiple solar cells on a single, monolithic piece of monocrystalline silicon. These isolated solar cells can then be interconnected to give a useful level of voltage from a small, SOIC package that can be easily installed in an automated process. Ideal for use in applications where high current is not needed, but where voltages higher than those provided by single solar cells is required. These solar cells are offered in 8-pin and 16-pin SOIC packages.

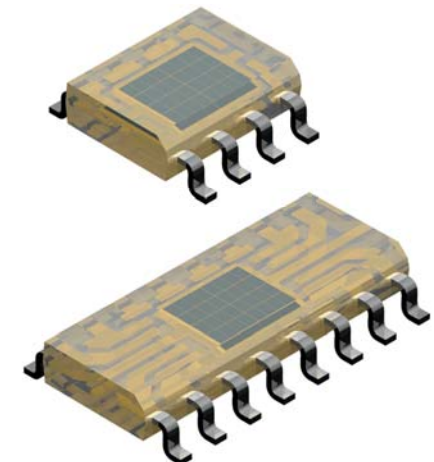
| Part Number | Open-Circuit Voltage (V) | Short-Circuit Current (µA) | Package Type |
|-------------|--------------------------|----------------------------|--------------|
| CPC1822 | 4 | 50 | 8-Pin SOIC |
| CPC1824 | 4 | 100 | 16 Pin SOIC |
| CPC1831 | 8 | 25 | 8-Pin SOIC |
| CPC1832 | 8 | 50 | 16-Pin SOIC |

Features:

- Provides True Wireless Power
- Triggers with Natural Sunlight or Artificial Light
- Semiconductor Miniature Size and Reliability

Applications:

- µPower Wireless Sensors
- Solar Tracking
- Portable Electronics
- Solar Battery Chargers
- Battery Operated Equipment
- Consumer Electronics
- Sunlight / Light / Flame Detection



For data sheets, go to www.ixysic.com/Products/ProdList.htm

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IXYS Integrated Circuits Division

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New Optimised Phase Control Thyristors

IUK-TSM-2014-006

Issue 2 June 2014

As part of its ongoing program of optimising performance, increasing current ratings and reducing material content, IXYS UK presents its most recent introductions of optimised, high power phase control thyristors.

These thyristors are constructed using an all diffused silicon slice, fused to a metal disc. The thermal capacity of the metal disc and its direct fusion to the silicon slice enhances performance, presenting excellent transient thermal characteristics and higher surge current ratings.

Each part features a new package design while retaining industry standard footprints, allowing for maximum silicon to package ratio giving a higher current density over older designs in similar package outlines.

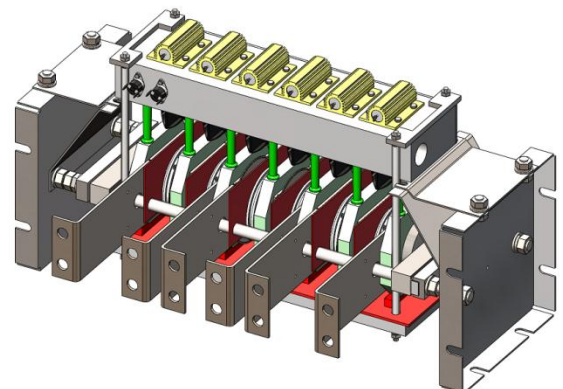
Features & Benefits

- High average current ratings
- Lower thermal resistance
- Double side cooling
- Higher surge current ratings
- Enhanced mechanical design incorporating alloying technology
- Industry standard, fully hermetic packages



Applications

- Industrial Drives
- Wind Power Converters
- Soft Starters
- Excitation
- Utilities
- Controlled Rectifiers
- UPS Systems
- DC Drives

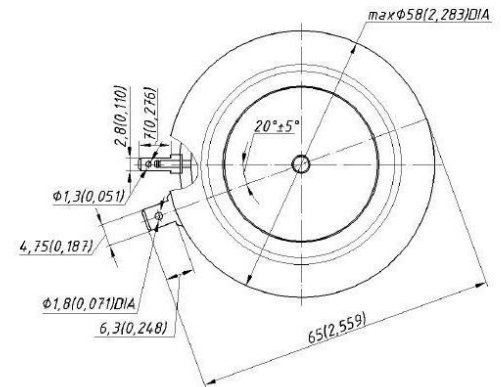
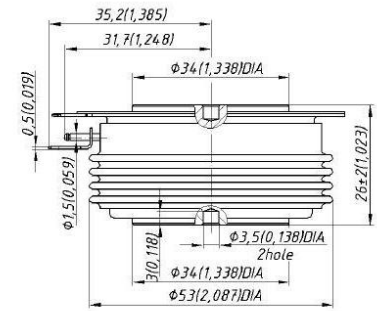
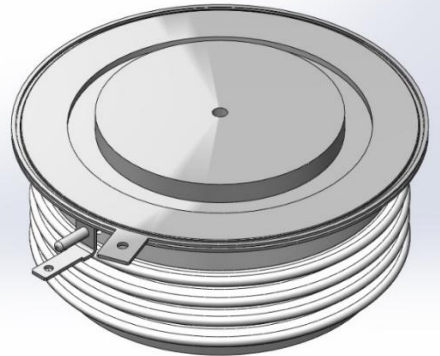


N1075LN180 & N1140LN140

| Part Number | V_{DRM}/V_{RRM} | I_{TAV} | I_{TSM} | I^2t | V_{TO} | r_T | R_{thJC} |
|-------------|-------------------|--------------------|--|--------------------|------------|-------|--------------|
| | | $T_K = 55^\circ C$ | 10ms ½ sine $V_R \leq 60\% V_{RRM}$ | | @ T_{JM} | | 180° Sine |
| | V | A | A | A ² s | V | mΩ | K/W |
| N1075LN180 | 1800 | 1240 | 15750 | 1.24×10^6 | 0.85 | 0.32 | 0.033 |
| N1140LN140 | 1400 | 1315 | 17500 | 1.53×10^6 | 0.82 | 0.28 | 0.033 |

34mm electrode diameter

$T_{JM} = 130^\circ C$



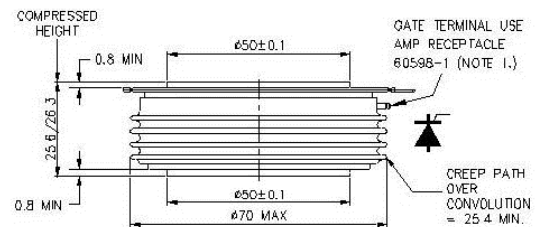
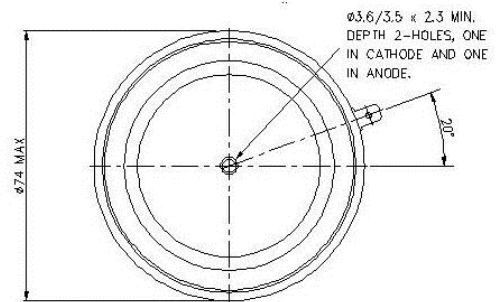
N2055MCxx0

Available in three voltage ratings, 1800V, 2200V and 2800V (xx = $V_{RRM}/V_{DRM} \div 100$)

| Part Number | V_{DRM}/V_{RRM} | I_{TAV} | I_{TSM} | I^2t | V_{TO} | r_T | R_{thJC} |
|-------------|-------------------|--------------------|--|--------------------|------------|-------|--------------|
| | | $T_K = 55^\circ C$ | 10ms ½ sine $V_R \leq 60\% V_{RRM}$ | | @ T_{JM} | | 180° Sine |
| | V | A | kA | A ² s | V | mΩ | K/W |
| N2055MC180 | 1800 | 2055 | 21.8 | 2.38×10^6 | 1.00 | 0.25 | 0.015 |
| N2055MC220 | 2200 | | | | | | |
| N2055MC280 | 2800 | | | | | | |

50mm electrode diameter

$T_{JM} = 125^\circ C$



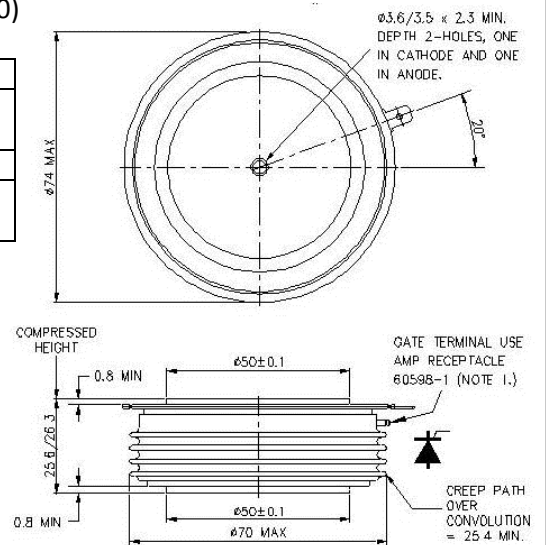
N2600MCxx0

Available in two voltage ratings, 1600V and 1800V ($xx = V_{RRM}/V_{DRM} \div 100$)

| Part Number | V_{DRM}/V_{RRM} | I_{TAV} | I_{TSM} | I^2t | V_{TO} | r_T | R_{thJC} |
|-------------|-------------------|--------------------|--|-------------------|------------|-------|--------------|
| | | $T_K = 55^\circ C$ | 10ms ½ sine $V_R \leq 60\% V_{RRM}$ | | @ T_{JM} | | 180° Sine |
| | V | A | kA | A ² s | V | mΩ | K/W |
| N2600MC160 | 1600 | 2600 | 30 | 4.5×10^6 | 0.95 | 0.13 | 0.015 |
| N2600MC180 | 1800 | | | | | | |

50mm electrode diameter

$T_{JM} = 125^\circ C$



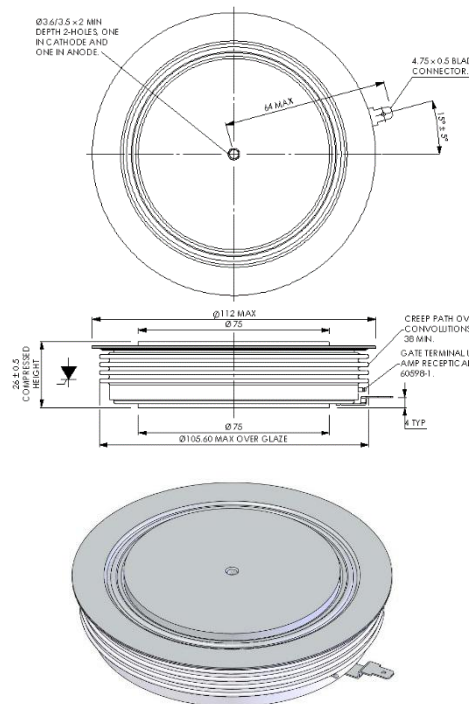
N2825T#xx0

Available in two voltage ratings, 4000V and 4500V ($xx = V_{RRM}/V_{DRM} \div 100$) and two housing options TJ (26mm clamp height) & TE (35mm clamp height)

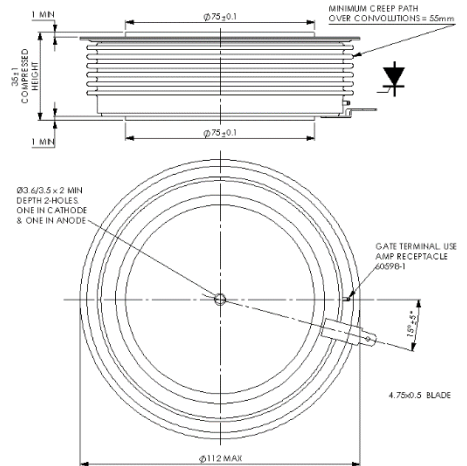
| Part Number | V_{DRM}/V_{RRM} | I_{TAV} | I_{TSM} | I^2t | V_{TO} | r_T | R_{thJC} |
|-------------|-------------------|--------------------|--|--------------------|------------|-------|--------------|
| | | $T_K = 55^\circ C$ | 10ms ½ sine $V_R \leq 60\% V_{RRM}$ | | @ T_{JM} | | 180° Sine |
| | V | A | kA | A ² s | V | mΩ | K/W |
| N2825TJ400 | 4000 | 2825 | 36.9 | 6.81×10^6 | 1.21 | 0.27 | 0.008 |
| N2825TJ450 | 4500 | | | | | | |
| N2825TE400 | 4000 | | | | | | |
| N2825TE450 | 4500 | | | | | | |

75mm electrode diameter

$T_{JM} = 125^\circ C$



TJ Housing

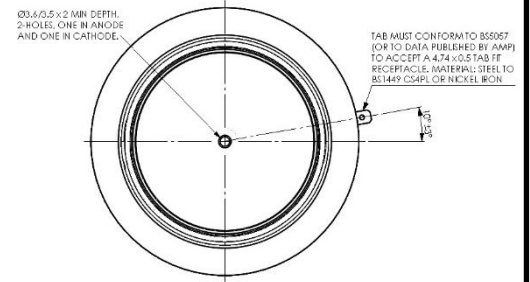


TE Housing

N3175HExx0

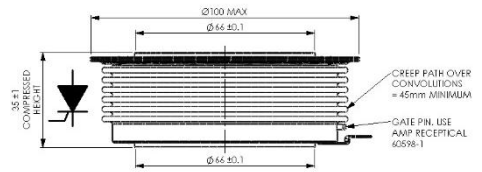
Available in two voltage ratings, 1600V and 1800V ($xx = V_{RRM}/V_{DRM} \div 100$)

| Part Number | V_{DRM}/V_{RRM} | I_{TAV} | I_{TSM} | I^2t | V_{TO} | r_T | R_{thJC} |
|-------------|-------------------|--------------------|--|--------------------|------------|-------|--------------|
| | | $T_K = 55^\circ C$ | 10ms ½ sine $V_R \leq 60\% V_{RRM}$ | | @ T_{JM} | | 180° Sine |
| | V | A | kA | A ² s | V | mΩ | K/W |
| N3175HE160 | 1600 | 3175 | 45.5 | 1.07×10^7 | 0.90 | 0.11 | 0.0125 |
| N3175HE180 | 1800 | | | | | | |



66mm electrode diameter

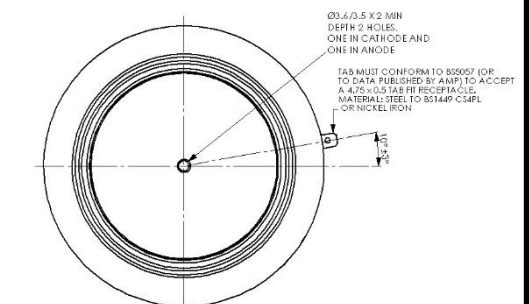
$T_{JM} = 125^\circ C$



N3565HAxx0

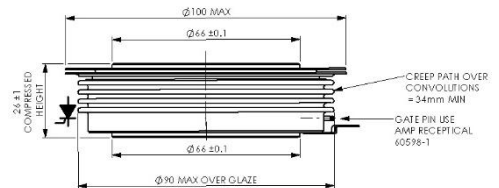
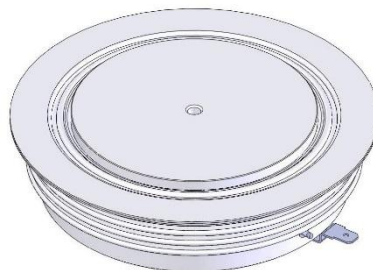
Available in two voltage ratings, 1600V and 1800V ($xx = V_{RRM}/V_{DRM} \div 100$)

| Part Number | V_{DRM}/V_{RRM} | I_{TAV} | I_{TSM} | I^2t | V_{TO} | r_T | R_{thJC} |
|-------------|-------------------|--------------------|--|--------------------|------------|-------|--------------|
| | | $T_K = 55^\circ C$ | 10ms ½ sine $V_R \leq 60\% V_{RRM}$ | | @ T_{JM} | | 180° Sine |
| | V | A | kA | A ² s | V | mΩ | K/W |
| N3565HA160 | 1600 | 3565 | 45.5 | 1.07×10^7 | 0.90 | 0.11 | 0.0105 |
| N3565HA180 | 1800 | | | | | | |



66mm electrode diameter

$T_{JM} = 125^\circ C$



N3790T#xx0

Available in two voltage ratings, 2400V and 2800V ($xx = V_{RRM}/V_{DRM} \div 100$) and two housing options TJ (26mm clamp height) & TE (35mm clamp height)

| Part Number | V_{DRM}/V_{RRM} | I_{TAV} | I_{TSM} | I^2t | V_{TO} | r_T | R_{thJC} |
|-------------|-------------------|--------------------|--|--------------------|------------|-------|--------------|
| | | $T_K = 55^\circ C$ | 10ms ½ sine $V_R \leq 60\% V_{RRM}$ | | @ T_{JM} | | 180° Sine |
| | V | A | kA | A ² s | V | mΩ | K/W |
| N3790TJ240 | 2400 | 3790 | 49.5 | 12.3×10^6 | 0.90 | 0.15 | 0.008 |
| N3790TJ280 | 2800 | | | | | | |
| N3790TE240 | 2400 | | | | | | |
| N3790TE280 | 2800 | | | | | | |

75mm electrode diameter

$T_{JM} = 125^\circ C$

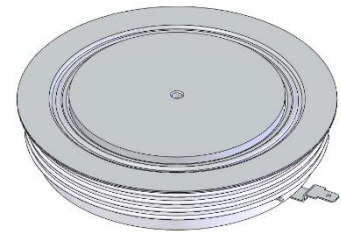
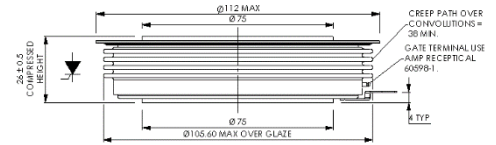
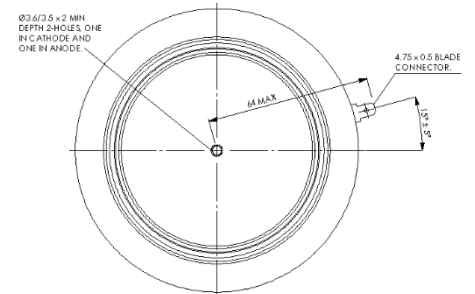
N4340T#xx0

Available in two voltage ratings, 1800V and 2200V ($xx = V_{RRM}/V_{DRM} \div 100$) and two housing options TJ (26mm clamp height) & TE (35mm clamp height)

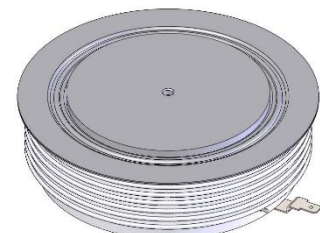
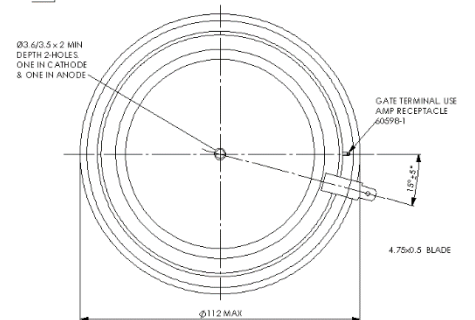
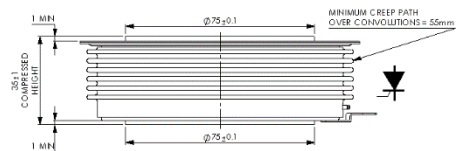
| Part Number | V_{DRM}/V_{RRM} | I_{TAV} | I_{TSM} | I^2t | V_{TO} | r_T | R_{thJC} |
|-------------|-------------------|--------------------|--|--------------------|------------|-------|--------------|
| | | $T_K = 55^\circ C$ | 10ms ½ sine $V_R \leq 60\% V_{RRM}$ | | @ T_{JM} | | 180° Sine |
| | V | A | kA | A ² s | V | mΩ | K/W |
| N4340TJ180 | 1800 | 4340 | 55.0 | 15.1×10^6 | 0.886 | 0.105 | 0.008 |
| N4340TJ220 | 2200 | | | | | | |
| N4340TE180 | 1800 | | | | | | |
| N4340TE220 | 2200 | | | | | | |

75mm electrode diameter

$T_{JM} = 125^\circ C$



TJ Housing



TE Housing



Supporting Components

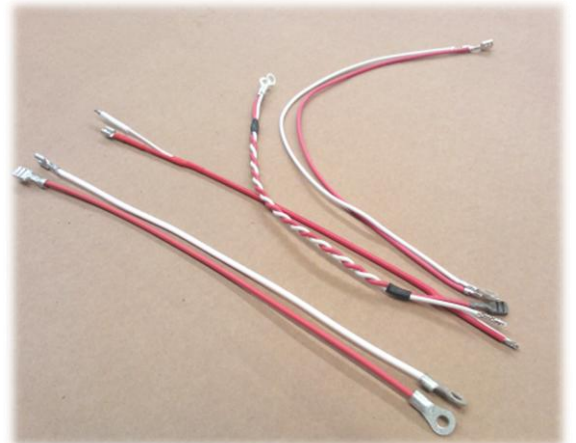
As part of our continuing commitment to meet our customers' demands, IXYS UK offers a range of complimentary products to support our high power semiconductor devices

All supporting components are designed to match our extensive range of devices in order to achieve maximum performance capability.

These quality products are available to help reduce vendor count and offer a one-stop supplier for all your power semiconductor needs

Products available:

- Bar Clamps
- Standard Base Clamp Assemblies
- Box Clamps
- Coolers
- Heatsinks
- Insulator Capsules
- PTFE Tubing
- Leads
- Mounting Grease

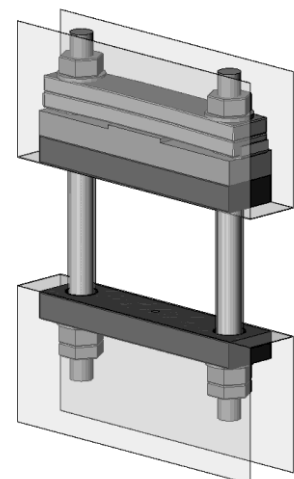
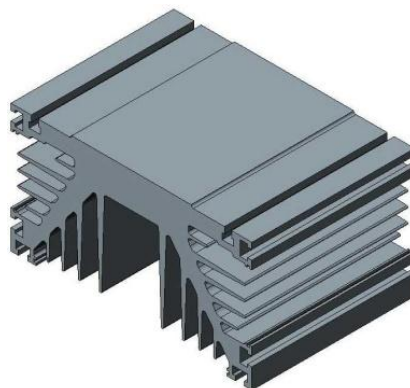
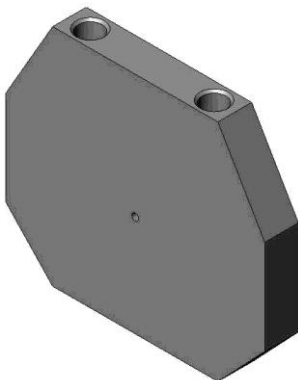
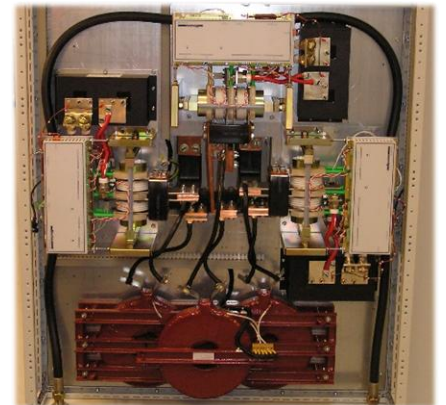


Standard gate leads

IXYS UK can also provide snubber and power capacitors, ultra rapid semiconductor protection fuses, trigger circuits, gate drives and a host of other accessories to supply customers with a complete total solution. Please consult factory or visit our website, www.ixysuk.com, for more information

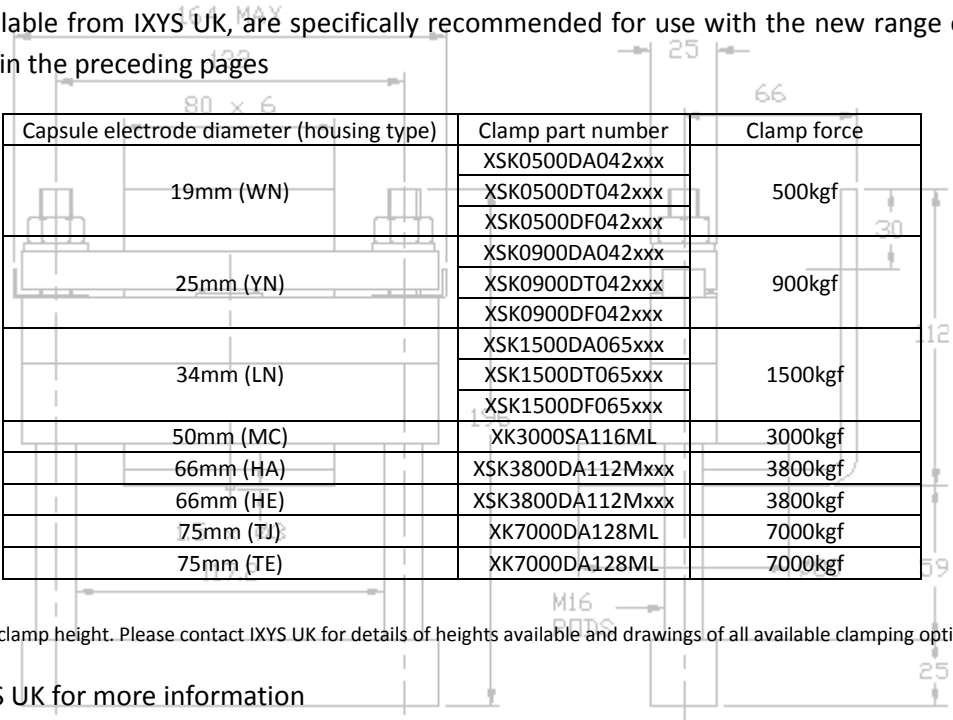


IXYS UK's range of clamps and accessories are used worldwide with the array of semiconductor devices we can offer in applications such as rectification, energy generation, industrial drives, excitation and many more



Supporting Components – Bar Clamps

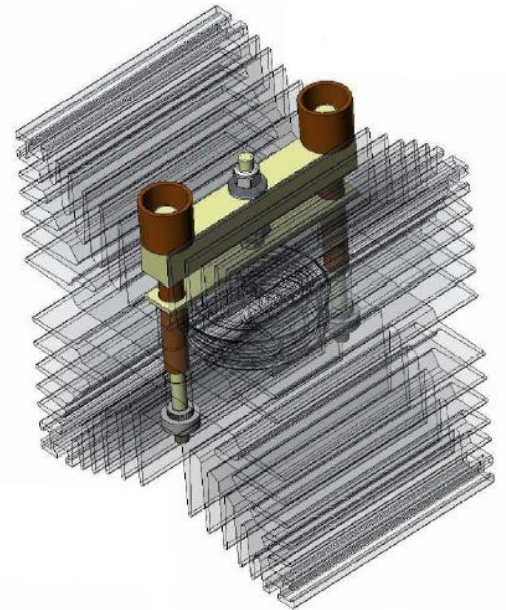
These clamps, available from IXYS UK, are specifically recommended for use with the new range of phase control thyristors detailed in the preceding pages



| Capsule electrode diameter (housing type) | Clamp part number | Clamp force |
|---|-------------------|-------------|
| 19mm (WN) | XSK0500DA042xxx | 500kgf |
| | XSK0500DT042xxx | |
| | XSK0500DF042xxx | |
| 25mm (YN) | XSK0900DA042xxx | 900kgf |
| | XSK0900DT042xxx | |
| | XSK0900DF042xxx | |
| 34mm (LN) | XSK1500DA065xxx | 1500kgf |
| | XSK1500DT065xxx | |
| | XSK1500DF065xxx | |
| 50mm (MC) | XK3000SA116ML | 3000kgf |
| 66mm (HA) | XSK3800DA112Mxxx | 3800kgf |
| 66mm (HE) | XSK3800DA112Mxxx | 3800kgf |
| 75mm (TJ) | XK7000DA128ML | 7000kgf |
| 75mm (TE) | XK7000DA128ML | 7000kgf |

xxx – Indicates maximum clamp height. Please contact IXYS UK for details of heights available and drawings of all available clamping options

Please contact IXYS UK for more information



IXYS UK Westcode Ltd's BS EN ISO9001 quality system is registered by BSI



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Press-Pack IGBT 3-Level Inverters

IUK-TSM-2014-001 Issue 1, Feb 2014

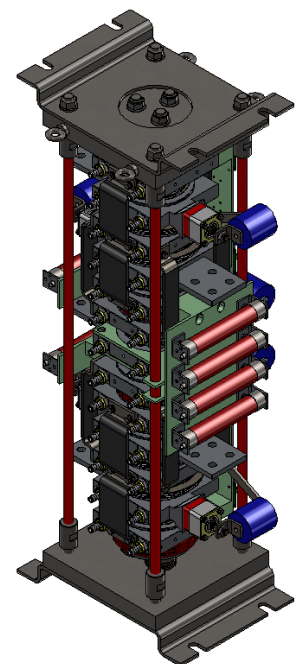
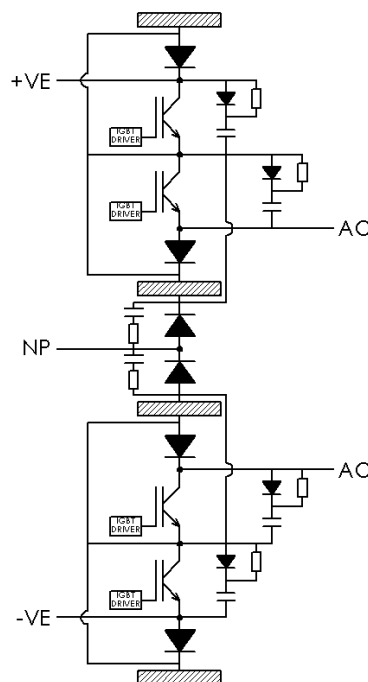
A range of 3-level topology assemblies using press-pack IGBT technology have been developed to serve applications at the highest end of the power market.

3 separate designs are available, a totally independent 3.3kV system, a 6.6kV system and a 10kV system. The 6.6kV and 10kV systems are based on the combination of 2 IGBT stacks and 1 diode stack. Each system benefits from direct water cooling to provide highly effective heat dissipation away from the devices and pre-loaded disc spring clamping to evenly distribute the applied force across the entire surface area of the device.

Also designed into each system is an integrated snubber circuit design and an isolated clamping rod system to limit the occurrence of eddy currents within the unit.

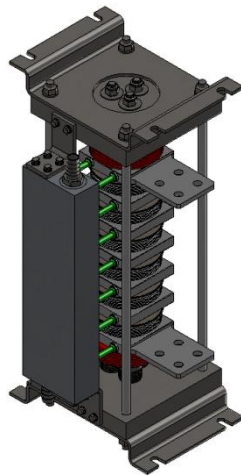
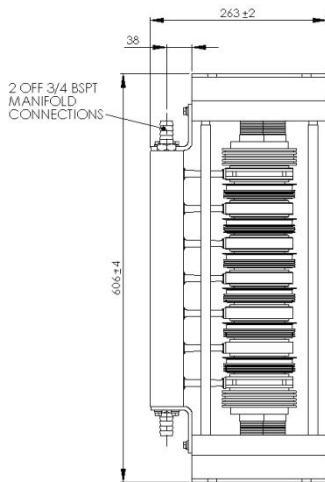
Features and benefits

- Direct water cooled for effective heat dissipation
- Pre-loaded clamping to evenly distribute the applied force
- Isolated clamping rod system
- Integrated snubber circuit
- Single unit mechanical configuration: Short inductance paths for relative size of unit to avoid high stray inductance
- Advanced optically fired gate trigger circuits

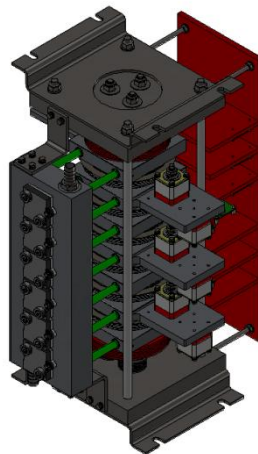
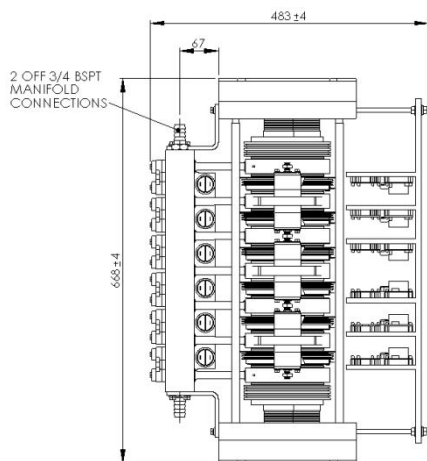


10kV System – Phase leg requirement: 2 x IGBT stack & 1 x Diode stack

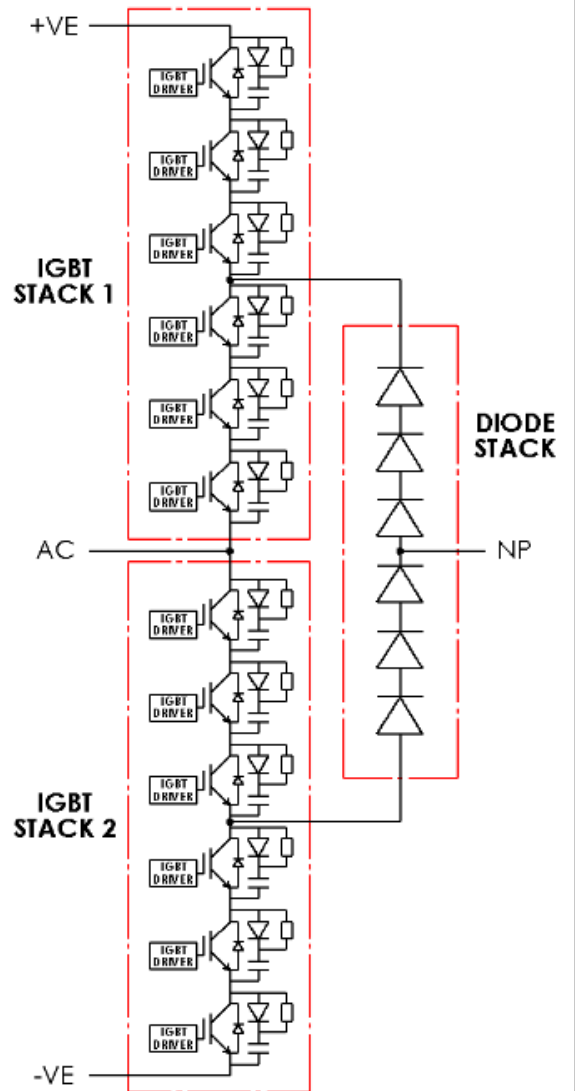
| | |
|-----------------------------|------------|
| Power Rating (MW) | 16 |
| Nominal Line Current (Amps) | 1000 |
| No. of IGBT's | 6 |
| No. of Diodes | 6 |
| No. of Coolers | 7 |
| Required IGBT Type | T1600GB45G |
| Required Diode Type | E2400TC45C |



Diode stack: XA1000TV45WE/A



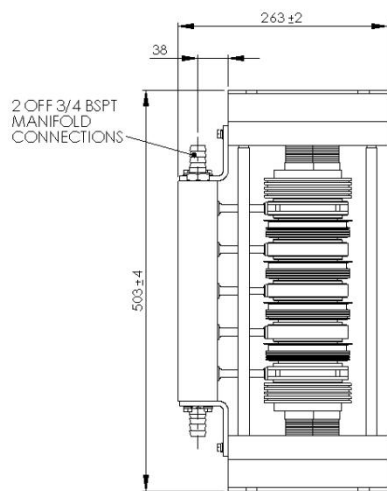
IGBT stack: XA1000GV45WT/A



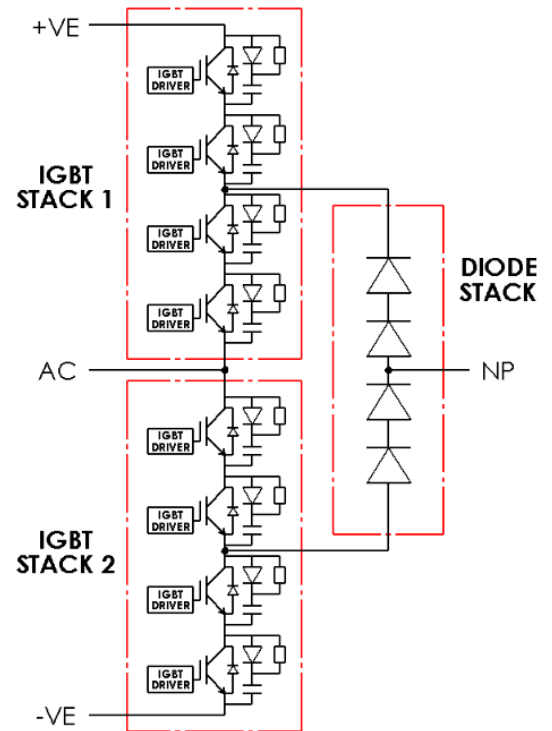
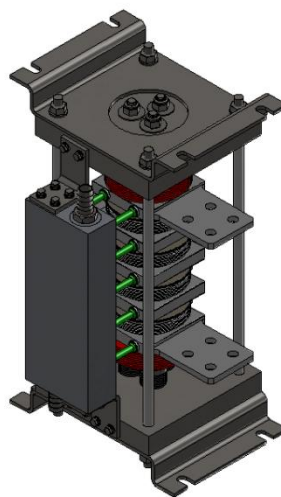
Phase leg schematic

6.6kV System – Phase leg requirement: 2 x IGBT stack & 1 x Diode stack

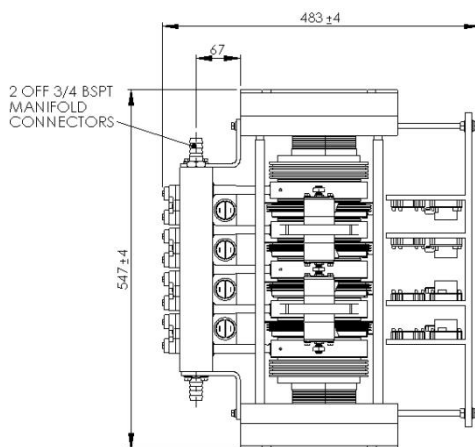
| | |
|------------------------------------|------------|
| Power Rating (MW) | 12 |
| Nominal Line Current (Amps) | 1000 |
| No. of IGBT's | 4 |
| No. of Diodes | 4 |
| No. of Coolers | 5 |
| Required IGBT Type | T1600GB45G |
| Required Diode Type | E2400TC45C |



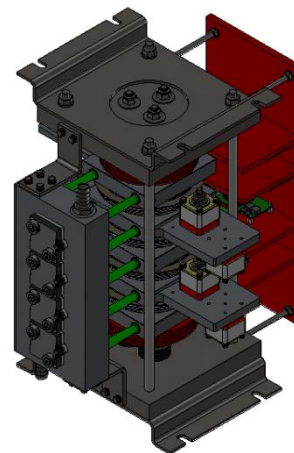
Diode stack: XA1000TV45WE/B



Phase leg schematic

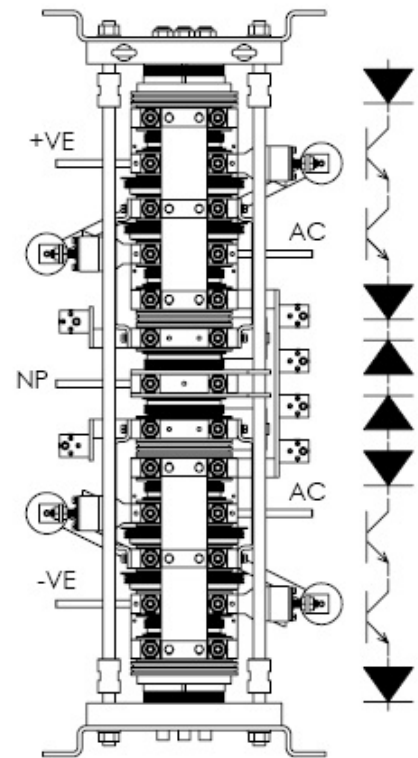
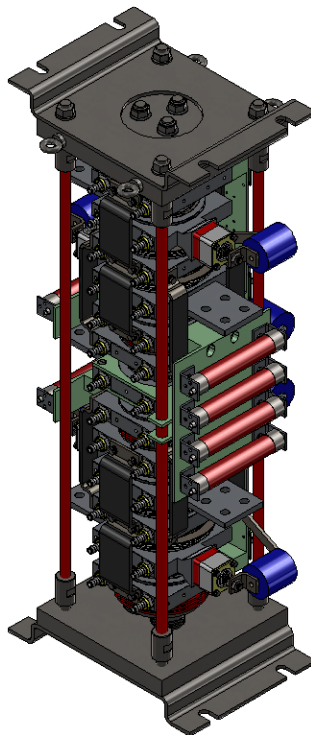
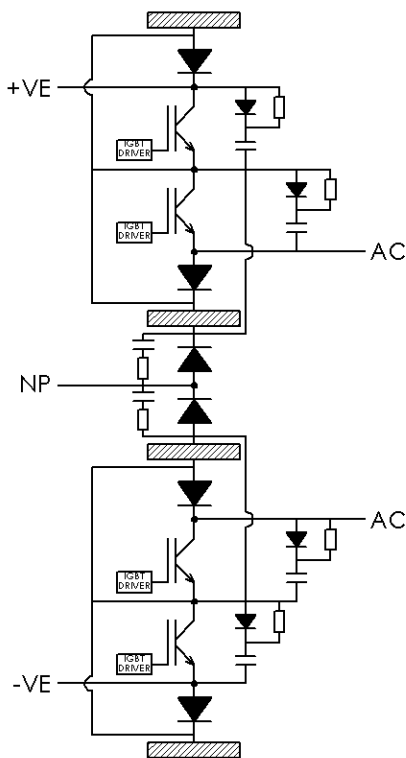


IGBT stack: XA1000GV45WT/B



3.3kV System – Complete phase leg

| | |
|------------------------------------|------------|
| Power Rating (MW) | 8 |
| Nominal Line Current (Amps) | 1600 |
| No. of IGBT's | 4 |
| No. of Diodes | 6 |
| No. of Coolers | 13 |
| Required IGBT Type | T2400GB45E |
| Required Diode Type | E2400TC45C |



XA1600GV45WT



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Press-pack IGBT's

Devices, assemblies & supporting products

IUK-TSM-2014-003

Issue 2, Feb 2015

With a track record spanning more than 15 years as a leading innovator in press-pack IGBT technology, IXYS UK is proud to offer their range of 2.5kV, 4.5kV and new 6.5kV devices featuring the latest generation chipsets offering improved SOA.

In addition to the range of press-pack IGBT capsules, IXYS UK can also offer standard and custom design IGBT assemblies including the new 10kV, 6.6kV and 3.3kV 3-level inverter phase legs.

To support these products, IXYS UK can supply IGBT gate drives specifically designed to work with the press-pack IGBT's and a range of clamps, coolers and ancillary components.

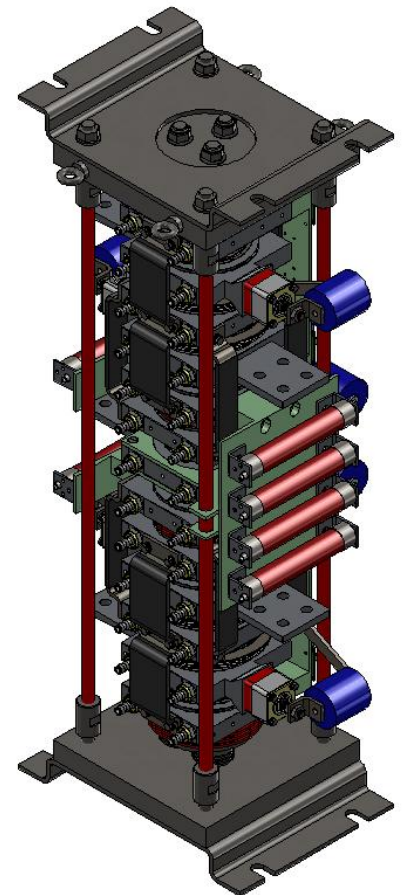


Image courtesy of CKD Elektrotechnika

Applications



- Medium voltage drives
 - Marine drives
 - Traction
 - Wind power converters
 - Industrial
- Energy utilities
 - STATCOM
 - FACTS
 - Active VAr controllers
 - Renewable generation

Press-pack IGBT's

IXYS UK's press-pack IGBT's utilise an enhanced planar cell technology, delivering comparable $V_{CE(sat)}$ to modern trench designs whilst retaining the superior RBSOA, SCSOA performance and easy driving characteristics of traditional planar technology. When combined with IXYS UK's proven hermetic press-pack technology, these devices re-define the state-of-the-art for high power switching devices.

Available in a range of packages with electrode diameters of up to 132mm, IXYS UK can offer both reverse conducting and asymmetric blocking types available.

Improved diode chips complement the IGBT and offer breakthrough levels of performance and a choice of diode to IGBT ratio enables full utilisation of the IGBT in reverse conducting applications.

IXYS UK's new generation HP-sonic monolithic diodes complement the 2.5kV and 4.5kV asymmetric IGBT range and also support such applications as multi-level diode clamped converters. New multi-chip 6.5kV diodes are now available to support the new 6.5kV asymmetric IGBT's

Press-pack IGBT's are now gaining significant market share in the high performance medium voltage drive sector in the 2MW to 30MW and beyond range. They offer all the benefits of conventional IGBT's and more, over alternative bipolar technology while maintaining the high reliability levels associated with press-pack devices in these systems.

| Part No. | V_{CES} V | I_C A | $V_{CE(sat)}$ $I_C=I_C$ V | Reverse Conducting | Diode V_F $I_F=I_C$ V | T_{JMAX} °C | Outline |
|------------|----------------|------------|---------------------------------|-----------------------|-------------------------------|------------------|---------|
| T0360ND25A | 2500 | 360 | 3.07 | Y | 2.25 | 125 | W40 |
| T0500ND25E | 2500 | 500 | 3.06 | N | N/A | 125 | W40 |
| T0570VD25G | 2500 | 570 | 3.06 | Y | 2.01 | 125 | W67 |
| T0850VD25E | 2500 | 850 | 3.04 | N | N/A | 125 | W67 |
| T1200TD25A | 2500 | 1200 | 3.15 | Y | 2.50 | 125 | W41 |
| T1500TD25E | 2500 | 1500 | 3.06 | N | N/A | 125 | W41 |
| T2250AD25E | 2500 | 2250 | 3.03 | N | N/A | 125 | W71 |

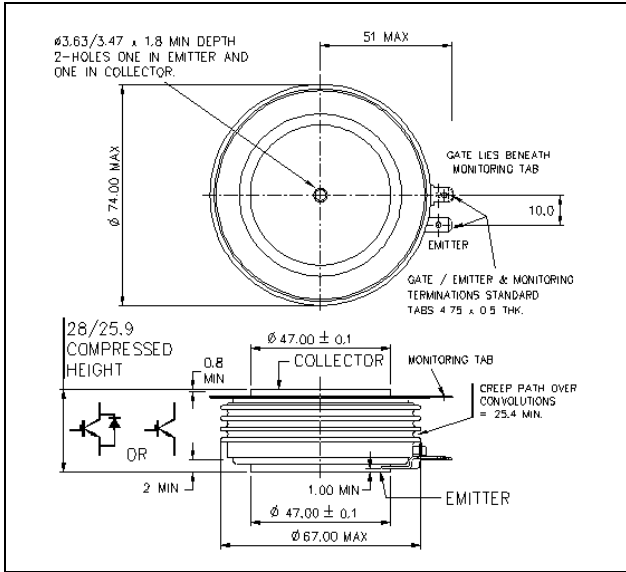
| | | | | | | | |
|------------|------|------|-----|---|------|-----|-----|
| T0160NB45A | 4500 | 160 | 3.4 | Y | 3.75 | 125 | W40 |
| T0240NB45E | 4500 | 240 | 3.8 | N | N/A | 125 | W40 |
| T0340VB45G | 4500 | 340 | 3.5 | Y | 3.45 | 125 | W67 |
| T0510VB45E | 4500 | 510 | 3.6 | N | N/A | 125 | W67 |
| T0600TB45A | 4500 | 600 | 3.7 | Y | 3.9 | 125 | W41 |
| T0800TB45E | 4500 | 800 | 3.5 | N | N/A | 125 | W41 |
| T0800EB45G | 4500 | 800 | 3.6 | Y | 3.5 | 125 | W44 |
| T0900EB45A | 4500 | 900 | 3.8 | Y | 3.9 | 125 | W44 |
| T1200EB45E | 4500 | 1200 | 3.6 | N | N/A | 125 | W44 |
| T1600GB45G | 4500 | 1600 | 3.5 | Y | 3.45 | 125 | W45 |
| T1800GB45A | 4500 | 1800 | 3.6 | Y | 3.9 | 125 | W45 |
| T2400GB45E | 4500 | 2400 | 3.6 | N | N/A | 125 | W45 |

| | | | | | | | |
|------------|------|------|------|---|------|-----|------|
| T0258HF65G | 6500 | 258 | 4.80 | Y | 3.45 | 125 | W95 |
| T0385HF65E | 6500 | 385 | 4.80 | N | N/A | 125 | W95 |
| T0600AF65G | 6500 | 600 | 4.80 | Y | 3.45 | 125 | W98 |
| T0900AF65E | 6500 | 900 | 4.80 | N | N/A | 125 | W98 |
| T0900DF65A | 6500 | 900 | 4.80 | Y | 3.40 | 125 | W96 |
| T1290BF65A | 6500 | 1290 | 4.80 | Y | 3.60 | 125 | W103 |
| T1375DF65E | 6500 | 1375 | 4.80 | N | N/A | 125 | W96 |
| T1890BF65E | 6500 | 1890 | 4.80 | N | N/A | 125 | W103 |

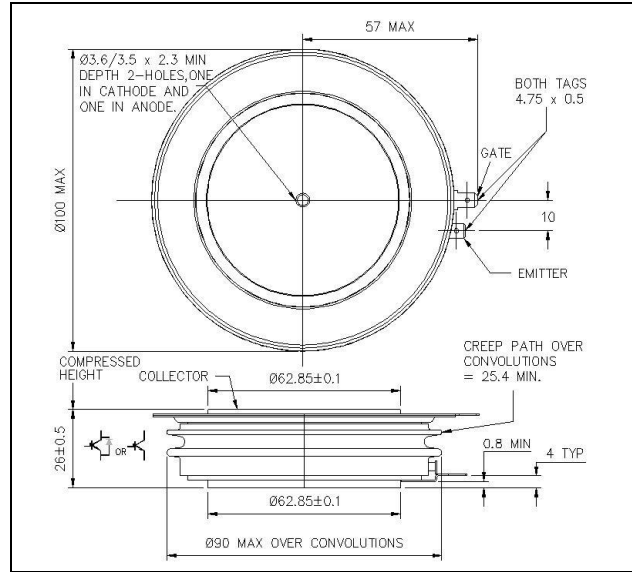
Features and benefits

- Bondless construction for improved reliability
- Hermetic devices suitable for all cooling options including direct liquid immersion
- Explosion and rupture resistant (at more than 10 times the energy of a similarly rated module)
- High thermal cycling resistance
- Double side cooling
- Mechanically compatible with GTO thyristors, allowing

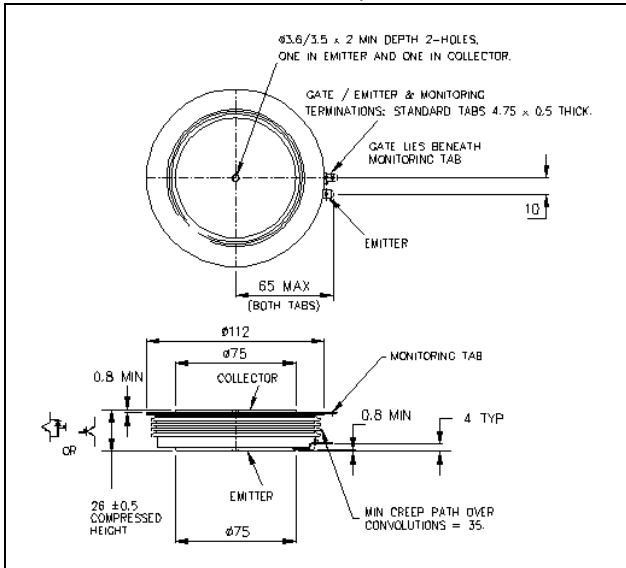
W40 – 47mm ϕ pole face



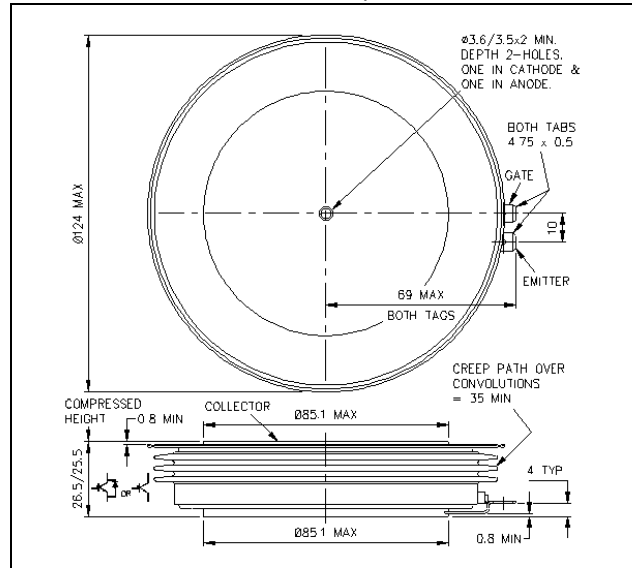
W67 – 63mm ϕ pole face



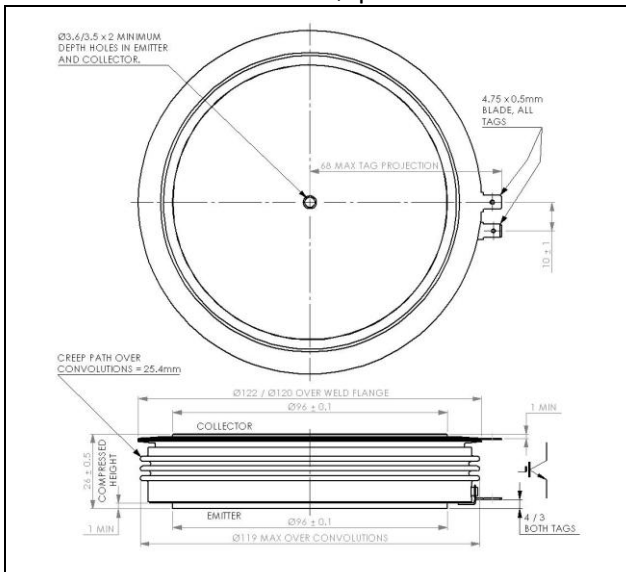
W41 – 75mm ϕ pole face



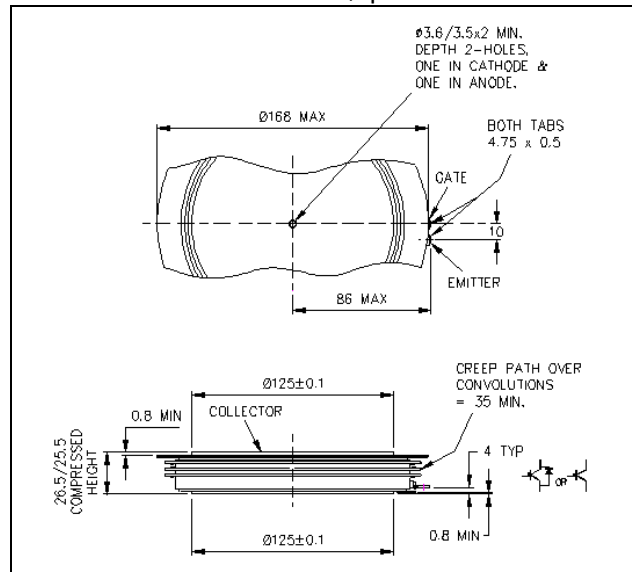
W44 – 85mm ϕ pole face



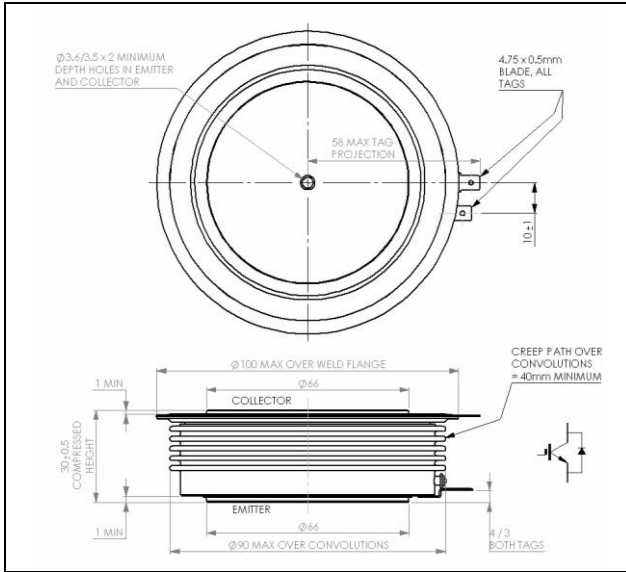
W71 – 96mm ϕ pole face



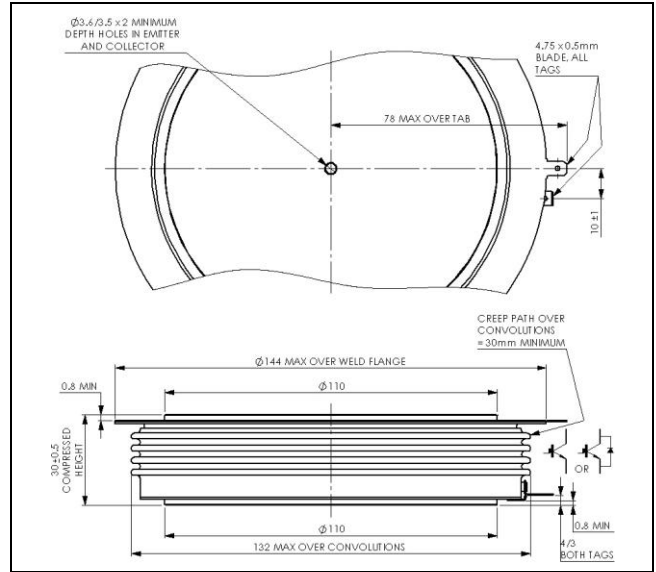
W45 – 125mm ϕ pole face



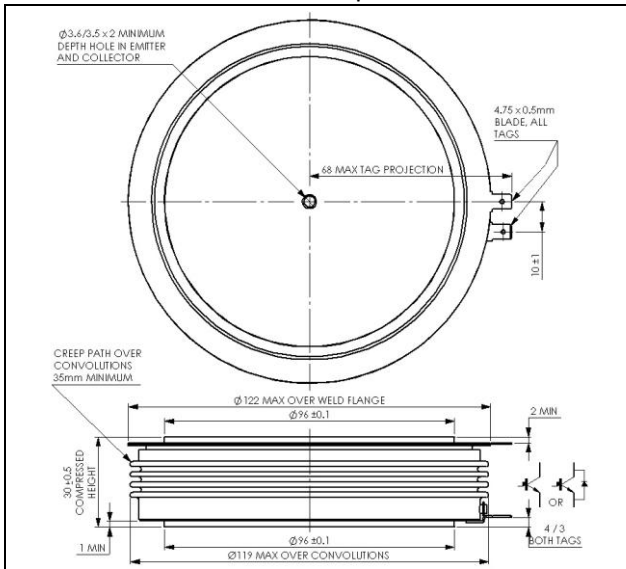
W95 – 66mm ϕ pole face



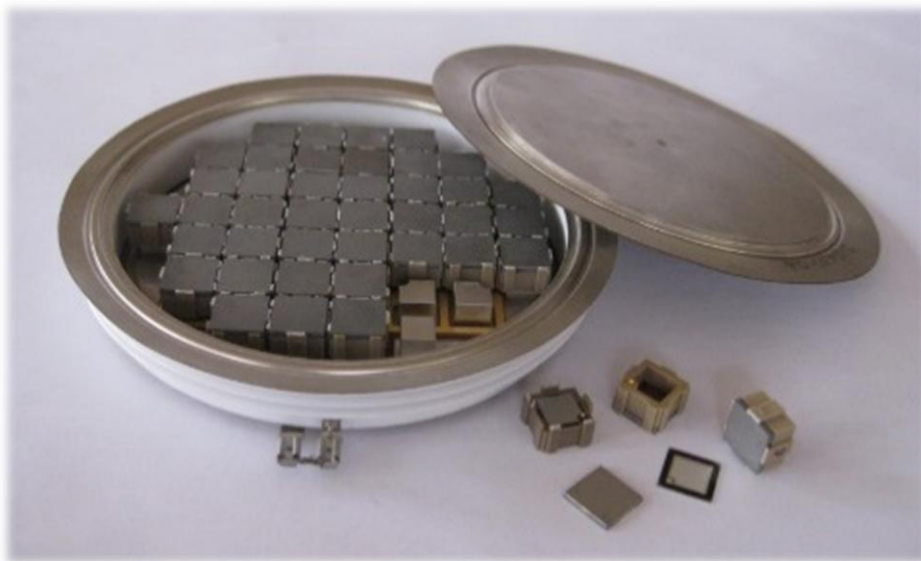
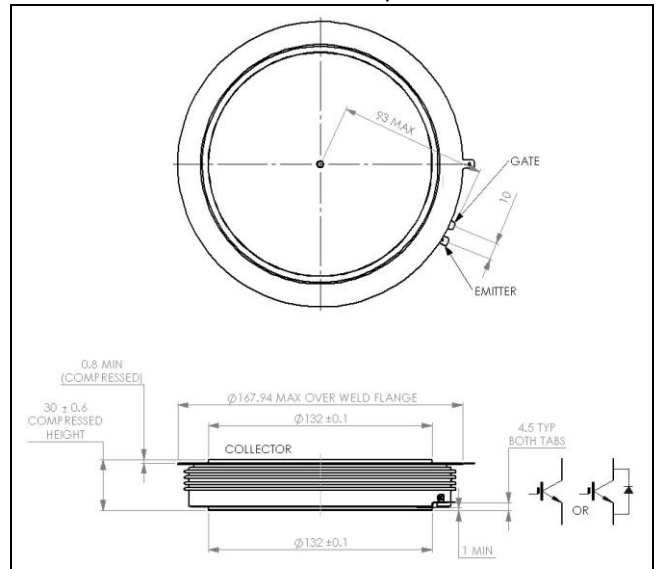
W96 – 110mm ϕ pole face



W98 - 96mm ϕ pole face



W103 - 132mm ϕ pole face



New generation high-power sonic fast recovery diodes

Improved safe operating area (SOA) and reverse recovery characteristics for our 2.5kV, 4.5kV HP-sonic monolithic diode range complements our new asymmetric IGBT range and also supports such applications as multi-level diode clamped converters. Also available are a new range of multi-chip 6.5kV diodes suitable for the new 6.5kV asymmetric IGBT's.

These diodes incorporate a unique manufacturing process and lifetime control to offer a class leading trade-off between conduction and switching losses. The wide SOA makes them ideal as freewheeling diodes for snubberless IGBT and IGCT applications.

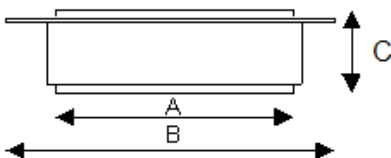
Features

- Robust dynamic characteristics – $di/dt > 4000A/\mu s$
- Up to 150°C operating junction temperature
- Soft fast recovery – no snap off
- Low recovery losses, low forward voltage drop
- Snubberless operation

Applications

- Anti-parallel diodes of IGBT's and IGCT's
- Clamp and snubber diodes
- Any application which requires a fast low loss diode
- Ideally suited for:
 - Traction
 - Medium voltage drives
 - Renewables
 - Induction heating
 - Pulsed power applications

| Part No. | V_{RRM} | I_{FAV} | I_{FSM} | I^2t | V_{T0} | r_T | T_{JM} | R_{thJK} | Dimension | | |
|---------------|-----------|-----------------------|-----------|--|----------|------------------|----------|---------------------|-----------|-----|--------------------|
| | V | A $T_K=55^\circ C$ | A | 10ms ½ sine $V_R \leq 60\% V_{RRM}$ A^2s | V | mΩ @ T_{JM} | °C | 180° Sine K/W | A | B | C |
| E0170YC40-45C | 4000-4500 | 210 | 1390 | 9.67×10^3 | 2.580 | 7.170 | 150 | 0.073 | 25 | 42 | 26 |
| E0280YH20-25C | 2000-2500 | 350 | 2330 | 27.1×10^3 | 1.410 | 2.600 | 150 | 0.073 | 25 | 42 | 26 |
| E0330MF65F | 6500 | 277 | 3070 | 47.1×10^3 | 1.890 | 5.800 | 125 | 0.043 | 50 | 75 | 30 |
| E0460QC40-45C | 4000-4500 | 532 | 5750 | 165×10^3 | 2.150 | 3.040 | 150 | 0.029 | 38 | 60 | 26 |
| E0660N#40-45C | 4000-4500 | 765 | 7318 | 268×10^3 | 2.000 | 2.236 | 150 | 0.020 | 47 | 74 | NC – 26 NH – 14 |
| E0770HF65F | 6500 | 632 | 7060 | 249×10^3 | 1.890 | 2.358 | 125 | 0.019 | 66 | 100 | 30 |
| E0800QC20-25C | 2000-2500 | 960 | 10700 | 575×10^3 | 1.410 | 0.839 | 150 | 0.029 | 38 | 60 | 26 |
| E1000TF65F | 6500 | 915 | 10400 | 537×10^3 | 2.291 | 1.185 | 125 | 0.015 | 75 | 112 | 30 |
| E1200NC20-25C | 2000-2500 | 1338 | 13300 | 884×10^3 | 1.305 | 0.678 | 150 | 0.020 | 47 | 74 | 26 |
| E1300VF40-45C | 4000-4500 | 1350 | 14000 | 1.08×10^6 | 2.310 | 0.930 | 150 | 0.013 | 63 | 100 | 26 |
| E1375EF65F# | 6500 | 1125 | 13400 | 898×10^3 | 1.890 | 1.423 | 125 | 0.011 | 85 | 124 | 30 |
| E1500N#36-48P | 3600-4800 | 1280 | 17050 | 1.45×10^6 | 1.417 | 0.656 | 140 | 0.019 | 47 | 74 | NC – 26 NH – 14 |
| E2060FF65F | 6500 | 1690 | 22100 | 2.44×10^6 | 1.890 | 0.951 | 125 | 0.007 | 100 | 144 | 30 |
| E2250VF20-25C | 2000-2500 | 2426 | 25200 | 3.17×10^6 | 1.510 | 0.250 | 150 | 0.013 | 63 | 100 | 26 |
| E2400TC40-45C | 4000-4500 | 2233 | 25600 | 3.29×10^6 | 2.060 | 0.590 | 150 | 0.008 | 75 | 112 | 26 |
| E4000TC20-25C | 2000-2500 | 4080 | 50000 | 12.5×10^6 | 1.406 | 0.149 | 150 | 0.008 | 75 | 112 | 26 |



IGBT Gate Drives

The C044BG400 IGBT Gate Driver is a low power consumption driver with on board VCE desaturation detection for high reliability application. The driver features a fibre-optic communication interface for drive, status and switching feedback signals. A fully supervised DC/DC converter with EMI filtering, low coupling capacitance and high partial discharge level is integrated into the board. The high voltage collector sense and gate interface are implemented on a separate card to allow close coupling to the IGBT. A range of pre-configured boards is available to complement IXYS UK's range of press-pack IGBTs – other applications on request.



| Part No. | IGBT Type |
|---------------|------------|
| C0044BG400SBK | T0160NB45A |
| C0044BG400SBL | T0240NB45E |
| C0044BG400SBQ | T0340VB45G |
| C0044BG400SBA | T0360ND25A |
| C0044BG400SBB | T0500ND25E |
| C0044BG400SBE | T0510VB45E |
| C0044BG400SBF | T0570VD25G |
| C0044BG400SBM | T0600TB45A |
| C0044BG400SBG | T0800EB45G |
| C0044BG400SBN | T0800TB45E |
| C0044BG400SBH | T0850VD25E |
| C0044BG400SBP | T0900EB45A |
| C0044BG400SBR | T1200EB45E |
| C0044BG400SBC | T1200TD25A |
| C0044BG400SBD | T1500TD25E |
| C0044BG400SBJ | T1600GB45G |
| C0044BG400SBS | T1800GB45A |
| C0044BG400SBV | T2250AD25E |
| C0044BG400SBT | T2400GB45E |

Features and benefits

- High reliability topology
- Designed for ultra-low power consumption
- Built in DC/DC converter with soft start
- Integrated input filter for low EMI
- Separate low impedance path for parasitic EMI currents
- PD-voltage levels available up to 11kV on request
- Low impedance from gate to emitter at start-up and power fail
- Monitoring of all secondary supply voltages
- Monitoring of IGBT switching status (V_{CE} de-sat condition)
- Soft switch-off at V_{CE} de-sat fault condition
- Fibre-optic links for switching commands and status control
- Low light protection for input signal
- Short-pulse suppression, configurable
- Balanced propagation delay time
- Gate current up to 44A
- Optional gate speed-up capacitors

6.5kV gate drives in development
Please contact IXYS UK for more information

Press-pack IGBT 3-level inverters

A range of 3-level topology assemblies using press-pack IGBT technology have been developed to serve applications at the highest end of the power market.

3 separate designs are available, a totally independent 3.3kV system, a 6.6kV system and a 10kV system. The 6.6kV and 10kV systems are based on the combination of 2 IGBT stacks and 1 diode stack. Each system benefits from direct water cooling to provide highly effective heat dissipation away from the devices and pre-loaded disc spring clamping to evenly distribute the applied force across the entire surface area of the device.

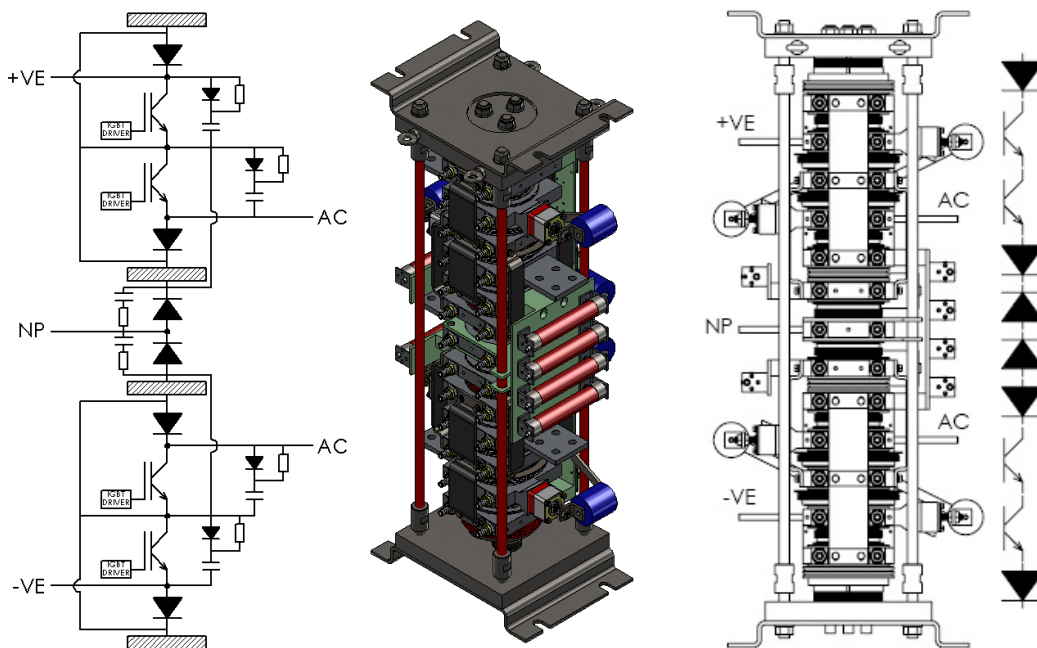
Also designed into each system is an integrated snubber circuit design and an isolated clamping rod system to limit the occurrence of eddy currents within the unit.

Features and benefits

- Direct water cooled for effective heat dissipation
- Pre-loaded clamping to evenly distribute the applied force
- Isolated clamping rod system
- Integrated snubber circuit
- Single unit mechanical configuration: Short inductance paths for relative size of unit to avoid high stray inductance
- Advanced optically fired gate trigger circuits

3.3kV system – Complete phase leg

| | |
|------------------------------------|------------|
| Power Rating (MW) | 8 |
| Nominal Line Current (Amps) | 1600 |
| No. of IGBT's | 4 |
| No. of Diodes | 6 |
| No. of Coolers | 13 |
| Required IGBT Type | T2400GB45E |
| Required Diode Type | E2400TC45C |

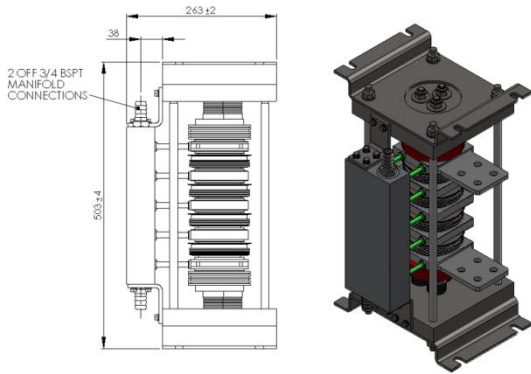


XA1600GV45WT

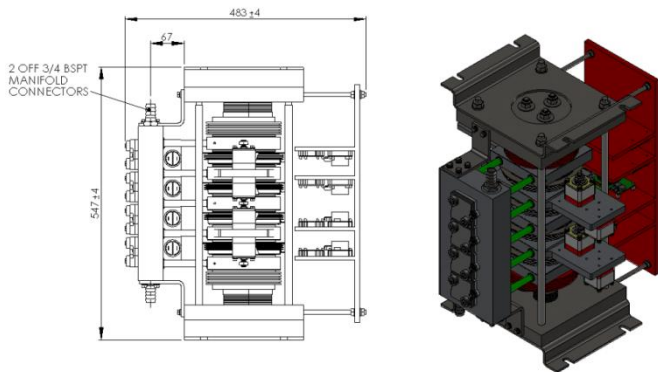
6.6kV system

Phase leg requirement – 2 × IGBT stack & 1 × diode stack

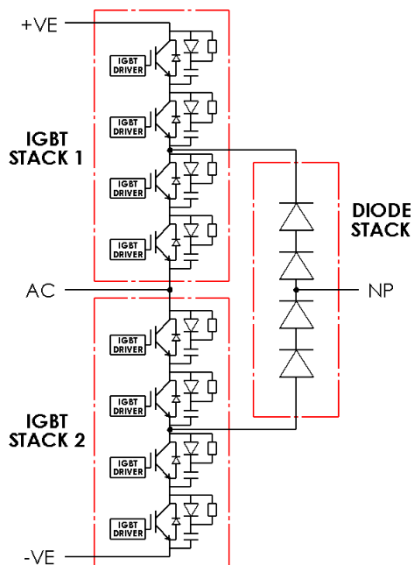
| | |
|-----------------------------|------------|
| Power Rating (MW) | 12 |
| Nominal Line Current (Amps) | 1000 |
| No. of IGBT's | 4 |
| No. of Diodes | 4 |
| No. of Coolers | 5 |
| Required IGBT Type | T1600GB45G |
| Required Diode Type | E2400TC45C |



Diode stack: XA1000TV45WE/B



IGBT stack: XA1000GV45WT/B

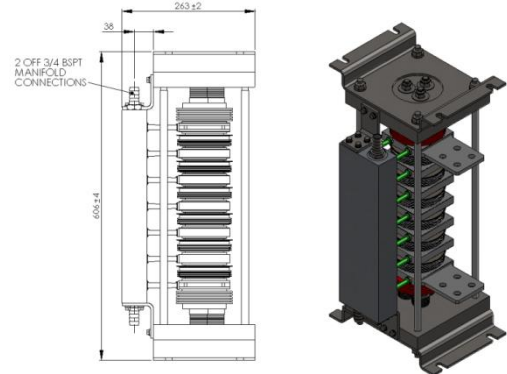


Phase leg schematic

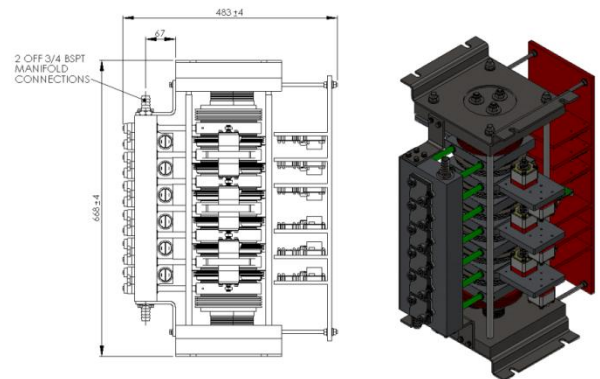
10kV system

Phase leg requirement – 2 × IGBT stack & 1 × diode stack

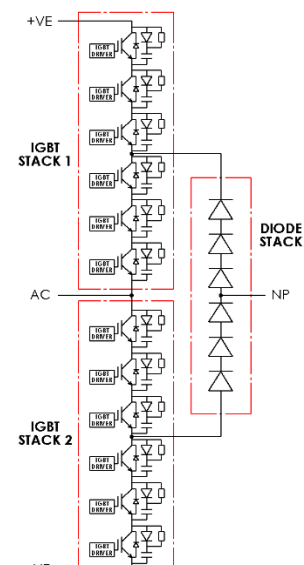
| | |
|-----------------------------|------------|
| Power Rating (MW) | 16 |
| Nominal Line Current (Amps) | 1000 |
| No. of IGBT's | 6 |
| No. of Diodes | 6 |
| No. of Coolers | 7 |
| Required IGBT Type | T1600GB45G |
| Required Diode Type | E2400TC45C |



Diode stack: XA1000TV45WE/A



IGBT stack: XA1000GV45WT/A



Phase leg schematic

New – DC Link Capacitors

The E50 PK16 capacitor can be universally used for the assembly of low inductance DC buffer circuits and DC filters; with its high energy density it can replace banks of series-connected electrolytic capacitors as well as large film capacitors in rectangular cases.

The capacitance in a DC buffer circuit must be sufficiently sized to both handle and smoothen the occurring ripple currents. The traditional use of series/parallel-connected electrolytic capacitors offered large capacitance at seeming low cost, however the low cost per microfarad is countered by very low current strength, the high sensitivity to voltage and current surges, as well as high risk of field failures resulting in high maintenance cost. Advanced know-how in special capacitor film coating and many years of practical experience in designing and manufacturing capacitors have allowed the design of the E50 PK16 range with high current density. With fivefold the current strength of conventional electrolytic capacitors, it is not necessary to reproduce the same capacitance in film technology. Instead, the user now gets a superior technical solution within the same – or even less – space.

Thanks to its compact cylindrical aluminium (NT) or plastic (N4) can design these capacitors are ideal for both electrical and mechanical requirements of high-speed IGBT converters. Its robust terminals and the robust fixing stud allow for very simple and reliable mounting that unites lowest inductance and highest current strength. The particularly large creepage and clearance distances make this design suitable for a wide range of operating voltages. As a result, existing standard converter concepts can easily be adapted to new applications without having to change the principal construction and to re-approve the entire system. The capacitors listed below have been designed specifically to match the requirements of IXYS UK's press-pack IGBT range in most inverter/converter applications.

Features and benefits

- Superior voltage and current strength
- Dramatic increase in operational life
- Drastic reduction of failures
- Minimisation of power dissipation losses
- Substantial reduction of self-inductance and series resistance
- More exact manufacturing tolerances
- Elimination of sharing resistors



New – DC Link Capacitors

| Part No. | V _{DC} | Capacitance | Series resistance | Maximum current | Inductance | Diameter | Length | Design |
|----------------|-----------------|-------------|---------------------|-----------------------|----------------------|----------|--------|--------|
| | V | μF | R _S Ω | I _{MAX} A | L _e nH | mm | mm | |
| E50.N15-254N5W | 1300 | 250 | 4.20 | 60 | 40 | 85 | 155 | N5 |
| E50.N15-304NTW | 1300 | 300 | 3.70 | 60 | 40 | 85 | 155 | NT |
| E50.R16-554NTW | 1300 | 545 | 2.30 | 80 | 40 | 116 | 165 | NT |
| E50.N25-564NTW | 1300 | 560 | 2.30 | 60 | 60 | 85 | 252 | NT |
| E50.R23-824NTW | 1300 | 820 | 1.70 | 100 | 50 | 116 | 230 | NT |
| E50.R29-115NTW | 1300 | 1090 | 1.40 | 100 | 60 | 116 | 295 | NT |
| E50.R34-145NTW | 1300 | 1370 | 1.10 | 100 | 70 | 116 | 345 | NT |
| E50.S29-165NTW | 1300 | 1560 | 1.10 | 120 | 70 | 136 | 295 | NT |
| E50.S34-205NTW | 1300 | 1950 | 0.69 | 120 | 70 | 136 | 345 | NT |

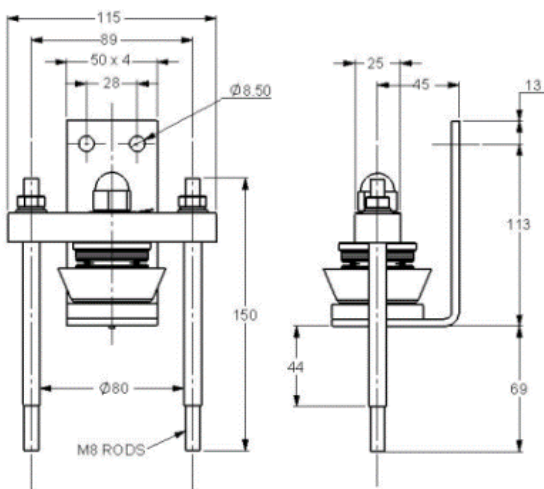
| | | | | | | | | |
|----------------|------|-----|------|-----|----|-----|-----|----|
| E50.N15-603NTW | 2800 | 60 | 1.3 | 50 | 40 | 85 | 155 | NT |
| E50.N23-104NTW | 2800 | 100 | 1.70 | 60 | 60 | 85 | 232 | NT |
| E50.R16-114NTW | 2800 | 110 | 0.66 | 80 | 40 | 116 | 165 | NT |
| E50.R23-174NTW | 2800 | 165 | 0.63 | 100 | 50 | 116 | 230 | NT |
| E50.R29-224NTW | 2800 | 220 | 0.62 | 100 | 60 | 116 | 295 | NT |
| E50.R34-284NTW | 2800 | 275 | 0.85 | 100 | 70 | 116 | 345 | NT |
| E50.S29-314NTW | 2800 | 310 | 0.61 | 120 | 70 | 136 | 295 | NT |
| E50.S34-394NTW | 2800 | 390 | 0.76 | 120 | 70 | 136 | 345 | NT |

| | | | | | | | | |
|----------------|------|------|------|-----|----|-----|-----|----|
| E50.N15-293NTW | 3600 | 29 | 1.40 | 50 | 40 | 85 | 155 | NT |
| E50.N23-503NTW | 3600 | 50 | 1.90 | 60 | 60 | 85 | 232 | NT |
| E50.R16-573NTW | 3600 | 57 | 0.67 | 80 | 40 | 116 | 165 | NT |
| E50.R23-863NTW | 3600 | 85.5 | 0.65 | 100 | 50 | 116 | 230 | NT |
| E50.R29-114NTW | 3600 | 114 | 0.68 | 100 | 60 | 116 | 295 | NT |
| E50.R34-144NTW | 3600 | 142 | 0.88 | 100 | 70 | 116 | 345 | NT |
| E50.S29-164NTW | 3600 | 160 | 0.63 | 120 | 70 | 136 | 295 | NT |

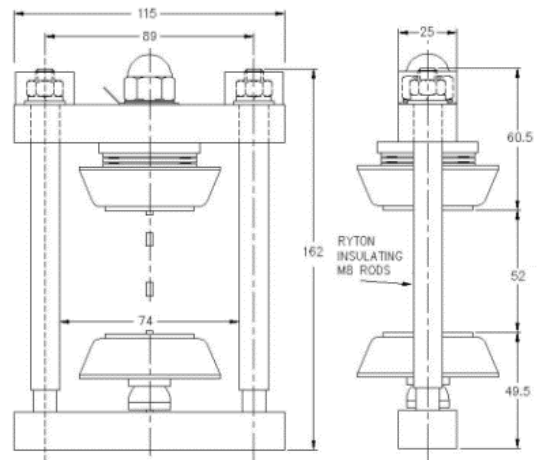


Recommended clamps for capsule IGBT's

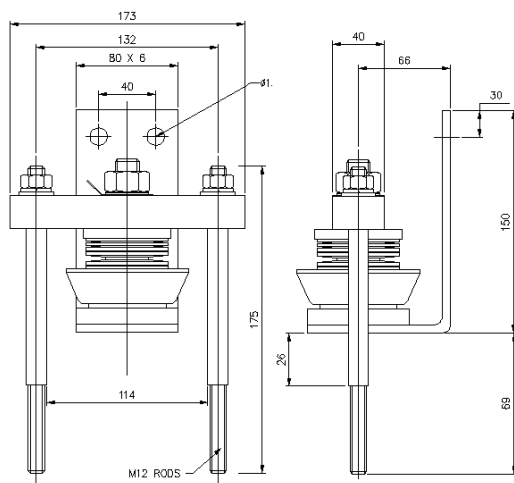
| Device type | Device housing code | Electrode diameter (mm) | Max capsule height (mm) | Recommended clamps |
|-----------------|---------------------|-------------------------|-------------------------|--------------------|
| Press-pack IGBT | NB/ND | 47 | 28 | XK1000D/SA074M |
| | VB/VB | 62.85 | 26 | XK3060D/SA140ML |
| | TB/TD | 75 | 26 | XK2000D/SA114M |
| | AB/AD | 96 | 26 | XK3060D/SA140ML |
| | EB | 85.1 | 26.5 | XK3060D/SA140ML |
| | GB | 125 | XK6120D/SA180ML | |



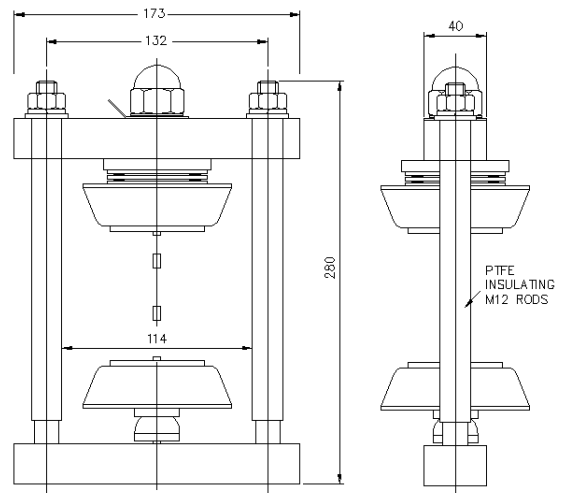
XK1000DA074M



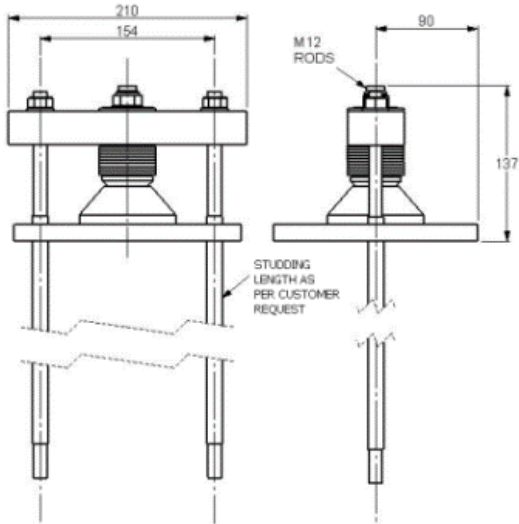
XK1000SA074M



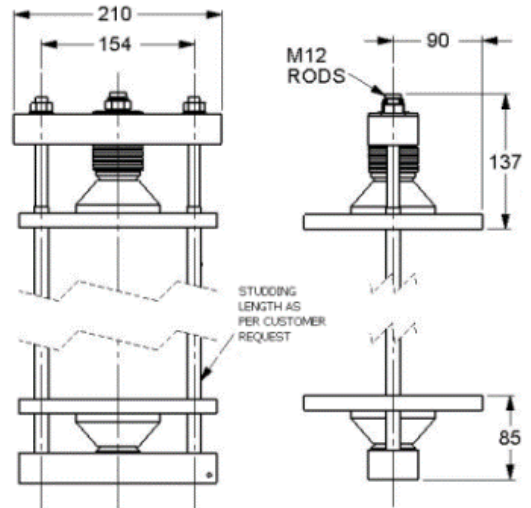
XK2000DA114M



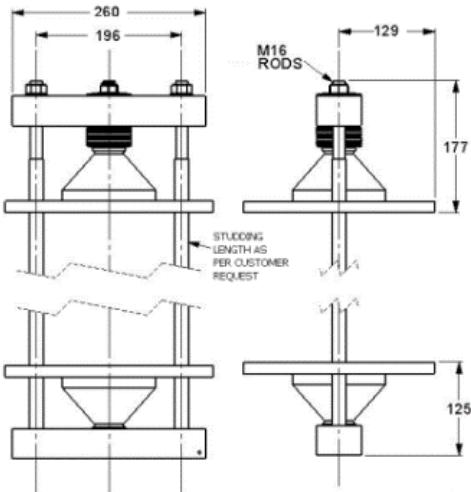
XK2000SA114M



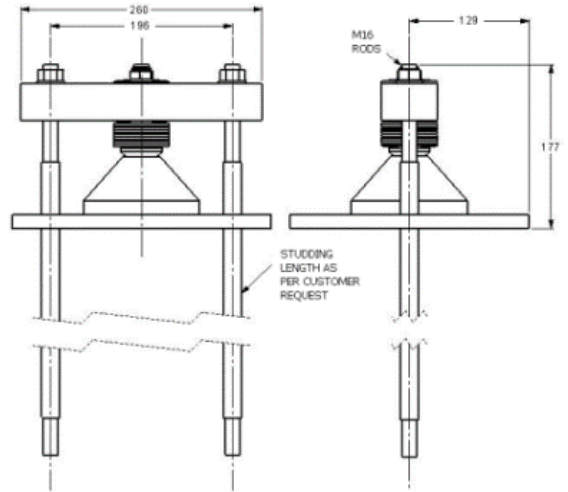
XK3060DA140ML



XK3060SA140ML



XK6120DA180ML



XK6120SA180ML



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