

Innovative high power semiconductors

Selection Guide 2026



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Infineon Technologies Bipolar

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INFINEON TECHNOLOGIES BIPOLAR

We power the future.

Driven by our customers' needs.

Innovative high-power semiconductors for energy systems
Mastering the challenges of transforming energy and efficiently shaping the digital revolution are two of the greatest tasks we face today. Infineon Technologies Bipolar provides leading-edge semiconductor solutions as the foundation for meeting both of these challenges. We are the worldwide leader in innovation and quality for bipolar semiconductors. As an independent subsidiary of the globally deployed corporations Infineon and Siemens Energy, we have combined their comprehensive expertise since 2007 with the objective of making life easier, safer and greener. For a better future.

Focus on your growth
Our bipolar high-power semiconductors enable the efficient transmission, storage, control and use of electrical energies. They form the foundation for a wide variety of highly advanced system technologies in application areas like wind, hydrogen, industrial drives and uninterruptible power supplies.

Our extensive knowledge of these areas means we can deliver the solution that precisely fits your specific requirements. We transform our expertise into long-lived, high-performance products and scalable growth. Focused, sustainable and reliable – for your success.

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Technology and partnership in step with today

At home in Europe – In the lead worldwide
Infineon Technologies Bipolar offers you the broadest possible portfolio of bipolar semiconductors. Working at our sites in Warstein and Cegléd, we set worldwide standards in the field of semiconductor technology.

Over 700 employees from twelve countries work together every day to bring you the best solutions and service at the highest levels of technology. We continuously expand our manufacturing facilities to ensure our ability to meet all the market requirements.

Driven by your success
We see ourselves as your partner on equal terms. We'll find exactly the right solution for you – and go the extra mile to power your growth and give you a competitive edge.

We'll join you to create a better, more efficient future.

What we promise

The protection of our earth through the sustainable handling of energy is one of the biggest challenges in the 21st century. Therefore we develop and manufacture the advanced bipolar power semiconductors which are used in most applications along the whole energy supply chain.
Our products ensure lowest losses in energy conversion and transmission. A technology that achieves more, wastes less and is accessible to everyone.
That is our contribution to a worth living future.

Jirko Lohse and Mark Schlüter

From left to right:
Jirko Lohse (spokesperson for the management board) and Mark Schlüter



INNOVATIVE HIGH-POWER SOLUTIONS

Driven by your success

We work with you to find exactly the right solution for your application – while going the extra mile to fuel your growth and strengthen your competitive advantage. Together with you, we are shaping a better, more efficient future.

Data Center

Classical or SST based – reliability and safety are key

Legacy data centers rely on our thyristor solutions for the Static Bypass and Static Transfer Switches. For upcoming infrastructure connected directly to medium voltage we are currently developing products able to handle the failure scenarios.

HVDC

Extreme energy and ultimate run

Most demanding applications in terms of lifetime, resilient systems, reliability and current voltage surges are the perfect fit for our Prime Line: Press Pack IGBTs, freewheeling diodes and protection thyristors.

Drives

Highest power density H2S robustness

Low- and medium-voltage VFDs and Soft Starters need thyristors and diodes with the highest power density able to cope with challenging environments and weak grids. Our pressure contact modules offer sulphur protection and short-on-failure behavior by design.

High power rectifiers

Efficient electrolysis through lowest losses

Our thyristor based solution combines low operational costs with long lifetime and compact modular design. Besides water electrolysis, offshore e-marine and heavy vehicle chargers use the same topology.

Smart Grid

When speed and robustness make the difference

Smart Grids need Solid State Circuit Breakers to handle the rapid fault clearing in DC grids, control DC-networks without electric arcing to protect electronic systems. Our technologies offer perfect solutions for various system topologies.

Welding

Higher current with lower on-state losses

Our welding diodes support market demands by delivering higher current ratings, lower conduction losses and greater power-cycling capability.

UPS Bypass

Switch to higher power levels

We offer the broadest thyristor portfolio for UPS bypasses and Static Transfer Switches (STS) up to 3 MVA. Our integrated solutions cover air- and water-cooled stacks.

Wind

Maximum system reliability

Our hermetically sealed and double side cooled Press Pack IGBTs with tailored ultra-soft freewheeling diodes are an excellent choice for designing efficient and reliable converters.

APPLICATIONS

Industrial motor drives

Solutions for low- and medium-voltage motor drives and Soft Starters

Electric motors are widely used, moving everything from air, water, conveyor belts to compressors and elevators. These motors typically operate at a frequency set by the grid or utility, such as 50 Hz or 60 Hz. To change the speed of the motor a Variable Frequency Drive is needed. If the speed remains constant and the inrush current exceeds grid limits the Soft Starter is the preferred solution.

Up to 1000 V line voltage the Drives and Soft Starters are called Low Voltage. Beyond 1000 V line voltage it becomes Medium Voltage.

Variable Frequency Drives (VFDs)

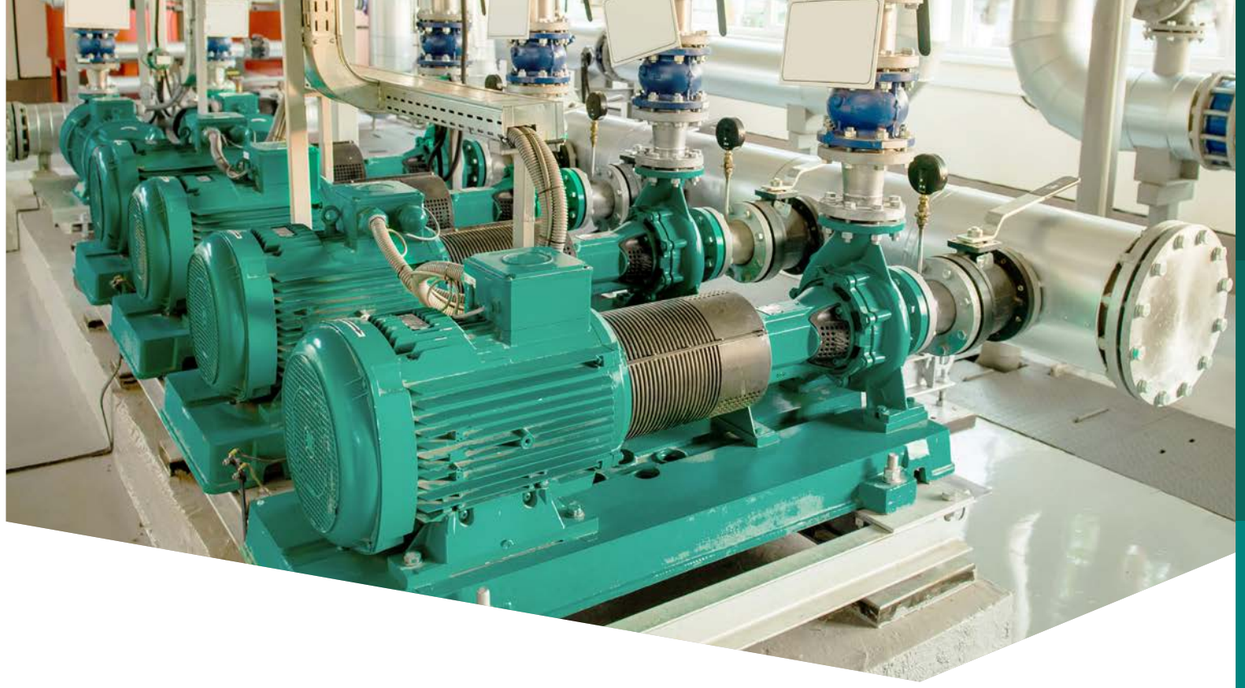
VFD controllers can accurately control the motor shaft speed and torque. This is achieved with an AC line rectifier, creating a DC bus, and an inverter stage which converts the DC to a variable frequency and voltage sine wave using pulse width modulation, allowing a variable motor shaft speed. The input rectifier can also use thyristors to pre-charge the DC bus capacitors.

There are many advantages to using a VFD including process automation and productivity, motor and mechanical drive train protection, and energy consumption optimization for the entire drive system. At lower powers, for example below 250 kW, solder bond modules are often selected due to the very competitive cost. At higher powers pressure contact modules and disc devices are used for the higher surge rating and long-term load cycling capability

Soft Starters

Soft starters limit the initial inrush current when starting a motor, providing a smooth speed ramp from zero to rated speed, reducing mechanical stress on the drive train. They utilize back-to-back thyristors that gradually phase on, controlling the inrush current. The key requirements of the soft starter for the power semiconductors are high reliability, voltage and current surge withstand capability, and long design life under load cycling conditions. Infineon bipolar disc and compression bond modules are designed and manufactured to match this application.

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Best Fit

34 mm and 50 mm Thyristor/Diode-Modules up to 2200 V are mainly used in Solder Bond Technology.
60 mm modules are available only in Pressure Contact Technology in three different performance lines: Eco, Standard and Prime.

Modules for low voltage drives



- TD190N18SOF
- TD240N18SOF



- TD320N18SOF
- TD390N18SOF



- ETD580N16P60
- ETD630N16P60



- TD590N18KOF
- TD820N16KOF
- TD780N18KOF

Modules for medium voltage drives



- DD180N22S
- DD220N22S



- DD340N22S
- DD390N22S



- DD170N36K



- DD210N36K
- DD290N36K



- DD610N36K
- DD800N22K

APPLICATIONS

Uninterruptible power supplies

Switch to higher power levels – with our integrated solutions

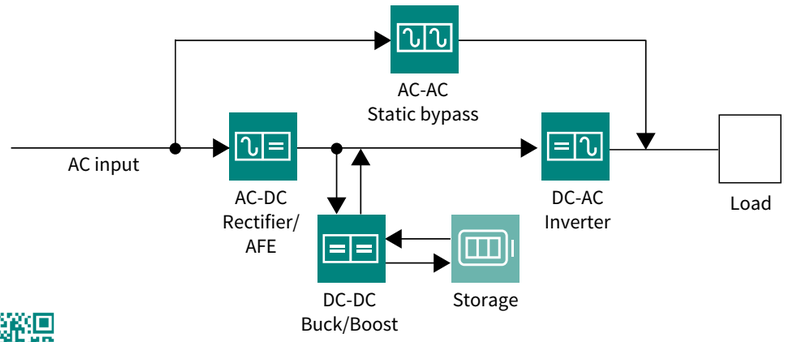


Broadest thyristor portfolio for UPS bypasses up to 3 MVA

An UPS is a power supply that includes a battery to maintain power in the event of power failure. An UPS can also protect a load against grid/utility transients. The UPS has a key role in our electrical power infrastructure. There are several market segments where a loss of grid/utility supply, even for a few seconds, can have severe consequences. Some examples are medical facilities, server farms, telecommunication systems and continuous manufacturing processes.

A typical UPS has an AC line rectifier that creates a DC bus, a battery backup which can power the DC bus in the event that the grid/utility fails and an inverter stage which converts the DC to a clean and stable AC supply for the load. The system also has a three-phase bypass switch to decouple the load from the grid, using anti-parallel thyristors. See the block diagram below.

To be able to switch between loads or grids static transfer switches (STS) are used with the same thyristor topology. Meanwhile more than 50% of UPS built are used in data centers. Their future infrastructure connect directly to medium voltage grids utilizing solid state transformers (SST) in cascaded cells. With this topology additional failure scenarios arise making specialized safety components necessary, being currently developed at Infineon Bipolar.



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Best Fit

Key requirements for the power semiconductors are high reliability, resilience against voltage and current surges and long service life under load cycling conditions. Infineon Bipolar discs and pressure contact modules are perfect matches for this application.

Modules – Pressure Contact





- TT590N18KOF
- TT820N16KOF
- TZ860N16KOF

Press Packs



- T2200N16H100
- T2180N18TOF
- T3160N18TOF
- T3800N18TOF

APPLICATIONS

HVDC & FACTS

When quality and performance are key

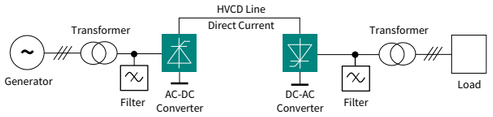
Power grids and power utilities face increasing pressure from several factors: Rising demand for electricity, increasing distances between where energy is generated and where it is consumed, intermittent power from renewables and the high cost of expanding transmission capacities.

The most common power electronic converter topologies developed to reduce grid transmission load are:

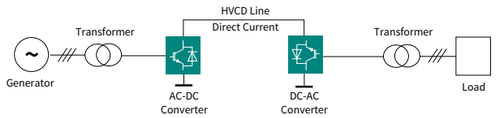
- **Voltage Source Converter High-Voltage DC Transmission (VSC-HVDC)**
- **Line Commutated Converter High-Voltage DC Transmission (LCC-HVDC)**
- **Ultra High-Voltage DC Transmission (UHVDC)**
- **Flexible AC Transmission Systems (FACTS)**

These systems can significantly reduce losses in long-distance power transmission, enable the integration of more renewable energy while increasing system stability and ensure high power quality. The power level of these converters can be in the gigawatt range with voltages up to 1000 kV. These power converters use thyristors and IGBTs as power semiconductors.

A short-on-fail characteristic is a key requirement for power semiconductor devices. This feature of disc-based IGBTs and thyristors ensures fail-safe operation, providing redundancy within the power converter stack. Long life under load cycling, high reliability, and high current and voltage surge capability are also important requirements for the application. All these are design properties of Infineon disc-based IGBTs and thyristors.



Block diagram of an LCC-HVDC converter



Block diagram of an VSC-HVDC converter

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Best Fit



Freewheeling Diodes (FWD)

- **D1600U45X122**
- **D2700U45X122**
- **D3900U45X172**
- **D4600U45X172**



Press Pack IGBTs

- **P2000DL45X168**
- **P2000DE45X168**
- **P3000ZL45X168**
- **P3000ZE45X168**
- **P5000ZL45X202**



Light Triggered Thyristors (LTT)

- **T533N80TOH**
- **T2563N80TOH**
- **T1503N80TOH**

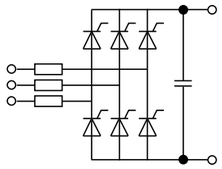
APPLICATIONS

High power rectifiers

High efficiency

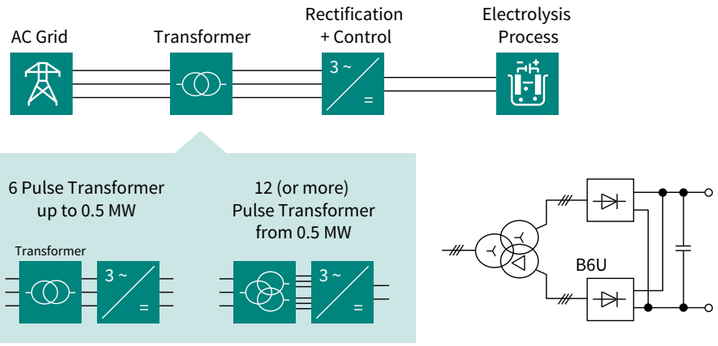
Our system combines lowest operational costs with long lifetime and compact modular design.

Applications such as hydrogen production and vehicle charging require converting AC power from the grid to DC power using diodes and thyristors as rectifiers. A typical schematic is shown below.



At multi-megawatt power levels, for example in water electrolysis applications, multi-phase topologies are often implemented. These are typically 12- or 18-pulse and can significantly reduce grid harmonic currents. A 12-pulse diagram is shown below with a star delta transformer winding and dual rectifier stacks conducting at 30 degrees per phase.

Water-cooled high power rectifier stacks allow for compact power converters, important in vehicle charging where space is at a premium. The strengths of disc-style diodes and thyristors are perfectly suited to all of these rectifier applications that require high reliability, high surge capability and long design life under load cycling conditions.



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Best Fit

Double-side cooling reduces size and our modular stack portfolio using the disc devices below makes each project highly scalable. Output power ranges in multiples of 5 MW, using water-cooling to squeeze these 5 MW for the single unit into a design space of less than 0.5 m³.

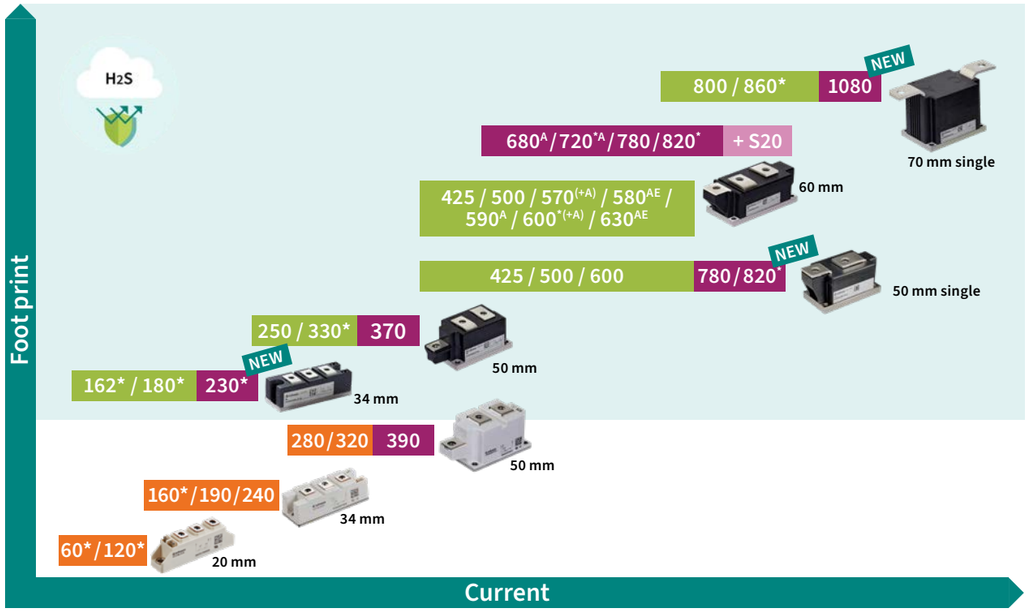
Press Packs



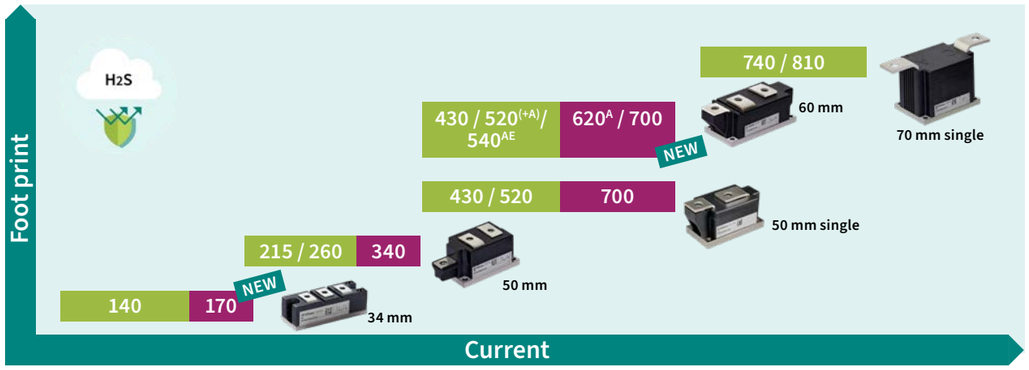
- **T2481N28TOF**
- **T3800N18TOF**
- **T3381N34TOF**
- **T2480N28TOF**
- **T3801N36TOF**
- **T3841N18TOF**
- **T1930N36TOF**
- **T3441N52TOF**

Modules

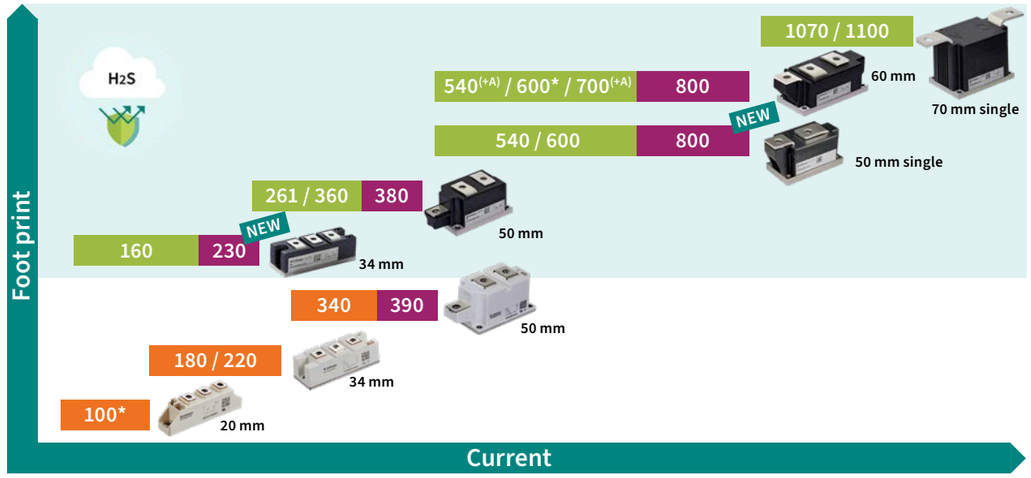
TT/TD-Modules up to 1800 V blocking voltage
Overview current capability



TT/TD-Modules in 2200 V blocking voltage
Overview current capability



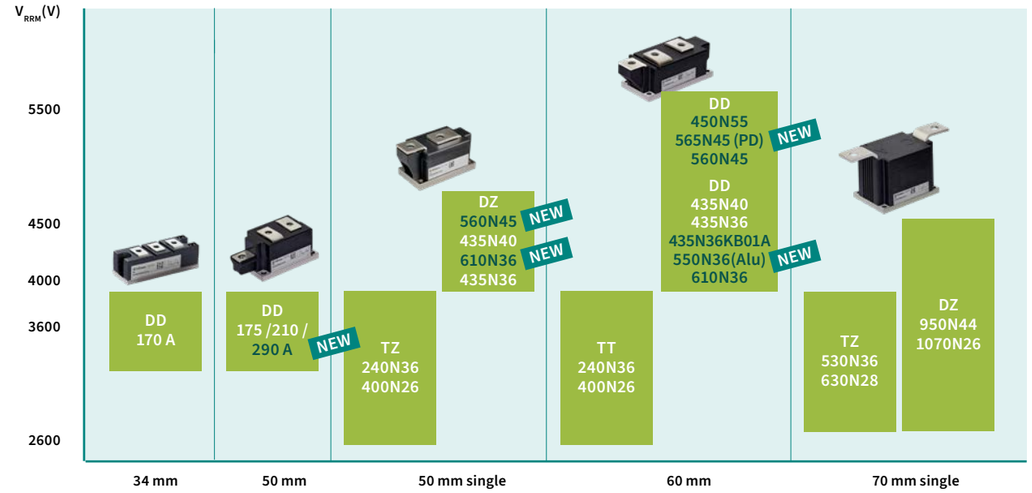
DD-Modules in 2200 V blocking voltage
Overview current capability



Eco Block – Solder Bond Power Block – Pressure Contact Prime Block – Best in Class

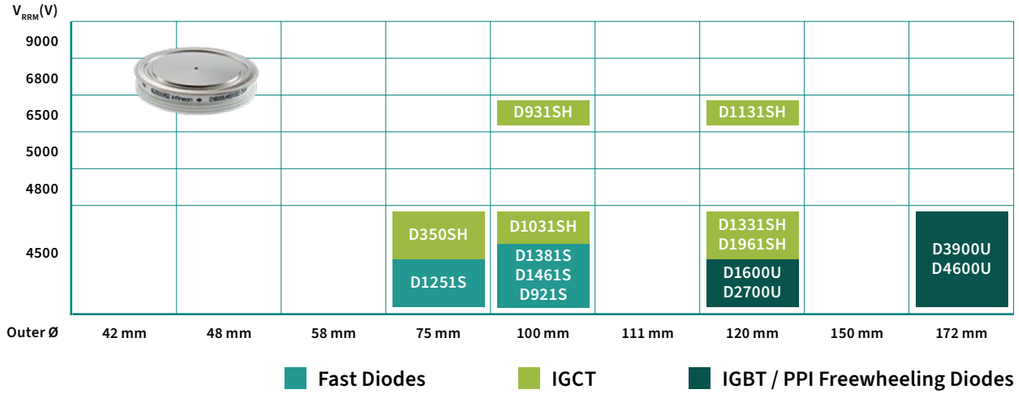
* Only in 1600V | AE Eco Module (Aluminum Base Plate / 2mm Terminals) | A Aluminum Base Plate | (+A) also available with Aluminum Base Plate

Modules over 2200 V blocking voltage
Overview Thyristors and Diodes

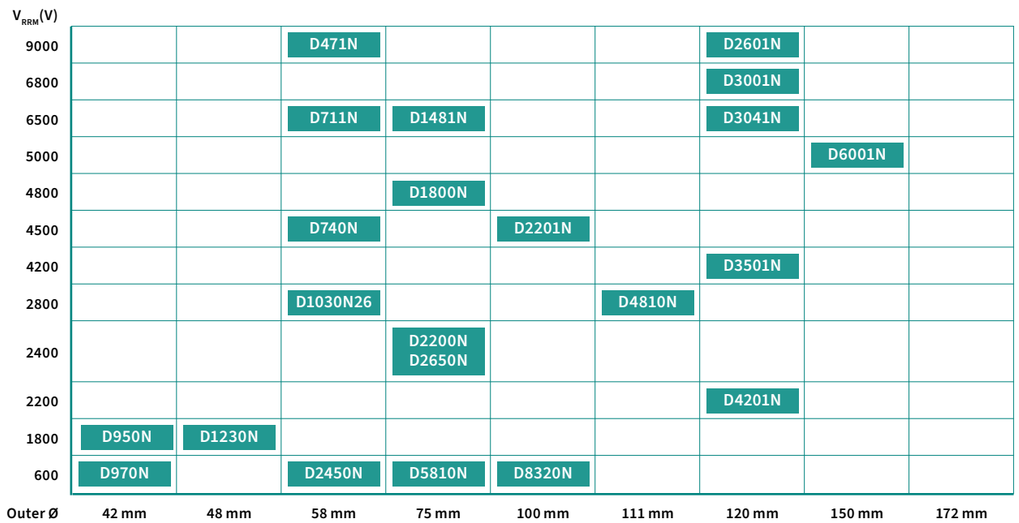


Press Packs

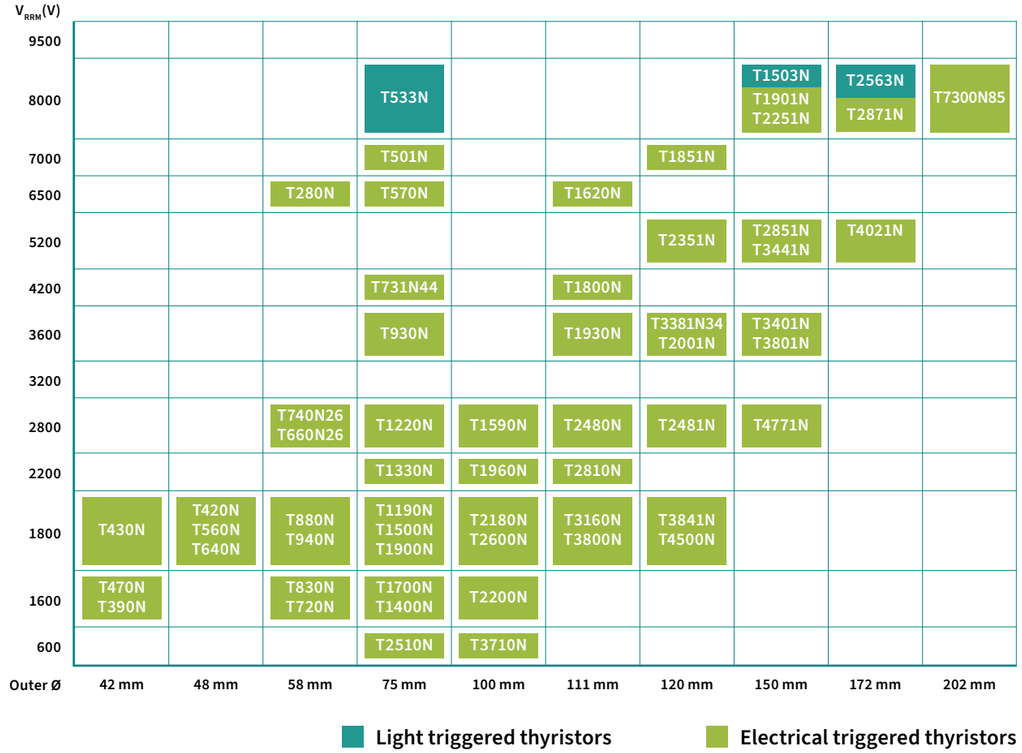
Overview GTO and IGCT / IGBT / PPI Freewheeling Diodes



Overview Rectifier Diodes



Overview Phase Control Thyristors



SOLDER BOND MODULES

Reduce costs without compromising performance

Typical applications for our Eco Block modules are General Purpose Drives, Soft Starters and Uninterruptible Power Supplies.

Our 20 mm, 34 mm, and 50 mm Eco Block modules with solder contact technology deliver a reliable, cost-efficient alternative to pressure contact designs. Perfect for applications where extreme mechanical robustness is not critical. The 50 mm modules cover current ratings up to 390 A, and we offer the 50 mm modules TT/TD320N16SOF with pre-applied silicone-free Thermal Interface Material.

Key features

- Optimized thermal design
- Best in class current rating for 50 mm
- 50 mm foot print available with TIM





Thyristor/Thyristor Modules



Product 	V_{DRM} / V_{RRM} [V]	also available V_{DRM} / V_{RRM} [V]	I_{TAVM}/T_C [A/°C]	I_{TSM} [A] @10ms, $T_{vj\,max}$	$\int I^2\,dt$ [$A^2s \cdot 10^3$] @10ms, $T_{vj\,max}$	V_{T0} [V] @$T_{vj\,max}$	r_T [mΩ] @$T_{vj\,max}$	R_{thJC} [K/W] @180° el sin	T_{VJ} [°C] max	Iso [kV] 1 min	Base plate	Outline
Eco Line – thyristor modules – baseplate 20 mm – solder solder												
TT60N16SOF	1600		55/85	1200	7.2	1	4.80	0.49	130	3.0	Copper	TS20
TT60N16SOFB01	1600		55/85	1200	7.2	1	4.80	0.49	130	3.0	Copper	TS20
TT120N16SOF	1600		119/85	1900	18.05	0.9	3.35	0.20	130	3.0	Copper	TS20
TT120N16SOFB01	1600		119/85	1900	18.05	0.9	3.35	0.20	130	3.0	Copper	TS20
Eco Line – thyristor modules – baseplate 34 mm – solder bond												
TT160N16SOF	1600		160/85	4500	101.3	1.1	0.99	0.165	125	3.0	Copper	TS34
TT190N18SOF	1800	1600	190/85	4500	101.3	0.85	0.90	0.165	125	3.0	Copper	TS34
TT240N18SOF	1800	1600	240/85	4400	96.8	0.85	0.90	0.165	140	3.0	Copper	TS34
Eco Line – thyristor modules – baseplate 50 mm – solder bond												
TT280N18SOF	1800	1600	280/85	7800	304	0.82	0.90	0.11	130	3.0	Copper	TS50
TT320N16SOF TIM	1800	1600	320/85	8200	335	0.58	0.77	0.11	130	3.0	Copper	TS50
TT320N18SOF	1800	1600	320/85	8200	335	0.58	0.77	0.11	130	3.0	Copper	TS50
Prime Line – thyristor modules – baseplate 50 mm – solder bond												
TT390N18SOF	1800	1600	380/85	8100	328	0.58	0.77	0.11	140	3.0	Copper	TS50

For a selection of compatible accessories, please see page 74.

Thyristor/Diode Modules



Product 	V_{DRM} / V_{RRM} [V]	also available V_{DRM} / V_{RRM} [V]	I_{TAVM}/T_C [A/°C]	I_{TSM} [A] @10ms, $T_{vj\,max}$	$\int I^2\,dt$ [$A^2s \cdot 10^3$] @10ms, $T_{vj\,max}$	V_{T0} [V] @$T_{vj\,max}$	r_T [mΩ] @$T_{vj\,max}$	R_{thJC} [K/W] @180° el sin	T_{VJ} [°C] max	Iso [kV] 1 min	Base plate	Outline
Eco Line – thyristor /diode modules – baseplate 20 mm – solder solder												
TD60N16SOF	1600		55/85	1200	7.2	1	4.8	0.49	130	3.0	Copper	TS20
TD120N16SOF	1600		119/85	1900	18.05	0.90	3.35	0.20	130	3.0	Copper	TS20
Eco Line – thyristor /diode modules – baseplate 34 mm – solder bond												
TD160N16SOF	1600		160/85	4500	101.3	1.1	0.99	0.165	125	3.0	Copper	TS34
TD190N18SOF	1800	1600	190/85	4500	101.3	0.85	0.90	0.165	125	3.0	Copper	TS34
TD240N18SOF	1800	1600	240/85	4400	96.8	0.85	0.90	0.165	140	3.0	Copper	TS34
Eco Line - thyristor /diode modules – baseplate 50 mm – solder bond												
TD280N18SOF	1800	1600	280/85	7800	304	0.82	0.90	0.11	130	3.0	Copper	TS50
TD320N16SOF TIM	1600		320/85	8200	335	0.58	0.77	0.11	130	3.0	Copper	TS50
TD320N18SOF	1800	1600	320/85	8200	335	0.58	0.77	0.11	130	3.0	Copper	TS50
Prime Line – thyristor /diode modules – baseplate 50 mm – solder bond												
TD390N18SOF	1800	1600	380/85	8100	328	0.58	0.77	0.11	140	3.0	Copper	TS50

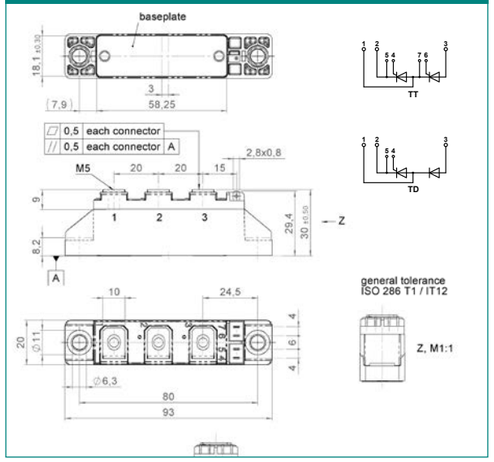
Diode/Diode Modules



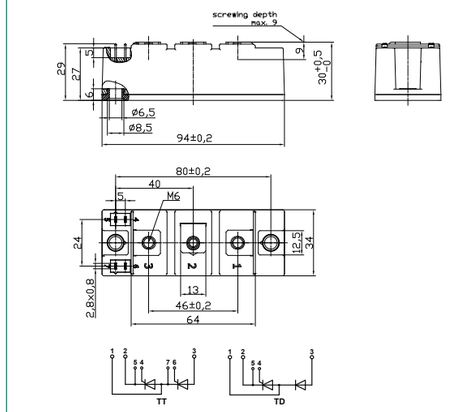
Product 	V_{DRM} / V_{RRM} [V]	also available V_{DRM} / V_{RRM} [V]	I_{FAVM}/T_C [A/°C]	I_{FSM} [A] @10ms, $T_{vj\,max}$	$\int I^2\,dt$ [$A^2s \cdot 10^3$] @10ms, $T_{vj\,max}$	V_{T0} [V] @$T_{vj\,max}$	R_T [mΩ] @$T_{vj\,max}$	R_{thJC} [K/W] @180° el sin	T_{VJ} [°C] max	Iso [kV] 1 min	Base plate	Outline
Eco Line – diode modules – baseplate 20 mm – solder solder												
DD100N16S	1600		108/100	2210	20	0.85	2.45	2.05	130	3.0	Copper	DS20
Eco Line - diode modules – baseplate 34 mm – solder bond												
DD180N22S	2200	1600	174/100	5000	125	0.85	0.95	0.16	135	3.0	Copper	DS34
DD220N22S	2200	1600	226/100	4800	115.2	0.85	0.95	0.16	150	3.0	Copper	DS34
Eco Line – diode modules – baseplate 50 mm – solder bond												
DD340N22S	2200	1600	330/100	8500	385	0.81	0.3	0.086	130	3.0	Copper	DS50
Prime Line – diode modules – baseplate 50 mm – solder bond												
DD390N22S	2200	1600	390/113	8400	352.8	0.81	0.3	0.086	150	3.0	Copper	DS50

Outlines

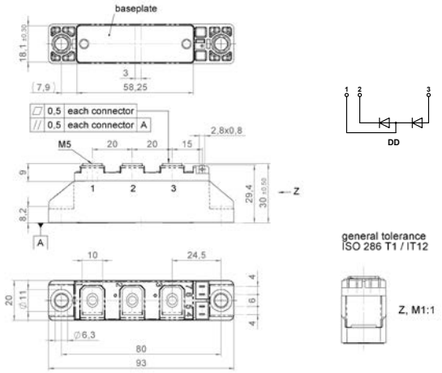
20 mm - TS20



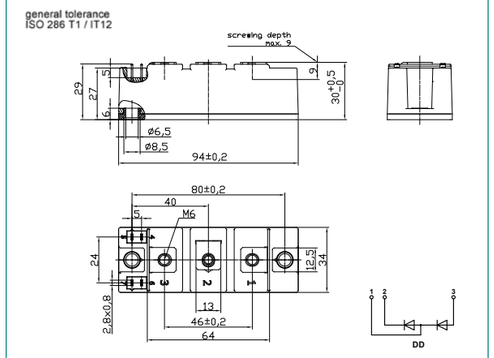
TS34



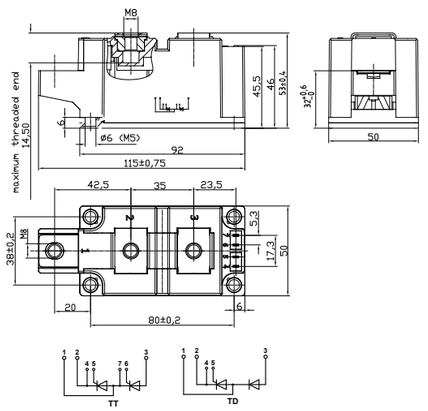
20 mm - DS20



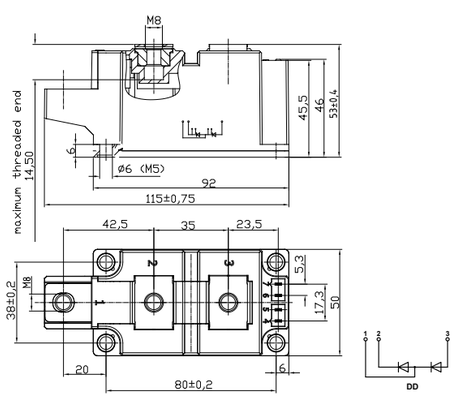
34 mm - DS34



50 mm - TS50



50 mm - DS50



Package Units

Outline	Packaging units
TS20	12
TS34	8
TS50	3

Package Units

Outline	Packaging units
DS20	12
DS34	8
DS50	3

For a selection of compatible accessories, please see page 74.

PRESSURE CONTACT MODULES

Designed for highest performance

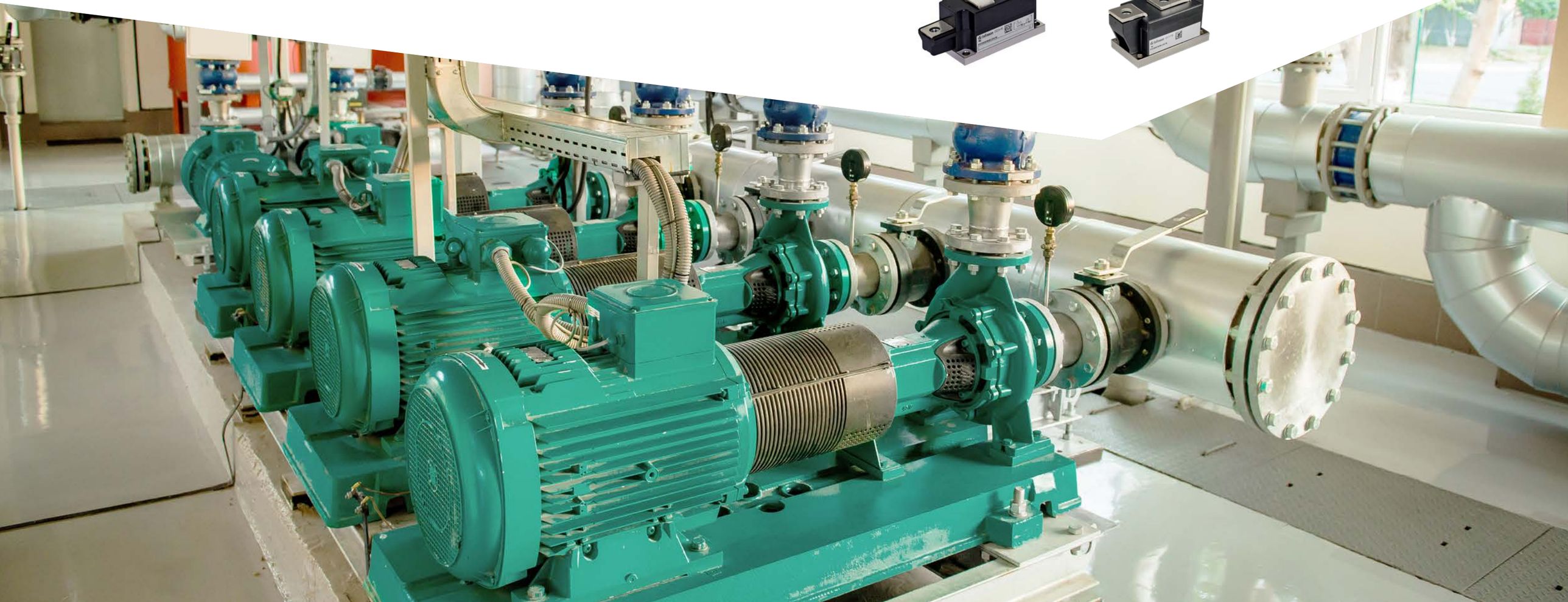
Our Pressure Contact modules are a perfect fit for LV and MV Drives as well as for Static Transfer and Bypass Switches in UPS.

We offer a broad range of pressure contact modules from 20 mm up to 70 mm footprint with 1600 V to 4500 V blocking and from 60 A up to 1100 A. The modules in pressure contact technology are robust against H2S by design, short-on-fail and withstand large overloads. Currently all footprints outperform the market standard regarding power density. These modules are also available with thermal interface material.

Key features

- Short-on-fail
- H2S robust by design
- Highest robustness and reliability
- Highest power density





Thyristor/Thyristor Modules



Product	V_{DRM}/ V_{RRM} [V]	I_{TAVM}/T_C [A/°C] @180° el sin	I_{TSM} [A] @10ms, $T_{vj\,max}$	$\int I^2\,dt$ [$A^2s \cdot 10^3$] @10ms, $T_{vj\,max}$	$V_{(T0)}$ [V] @$T_{vj\,max}$	rT [mΩ] @$T_{vj\,max}$	R_{thJC} [K/W] @180° el sin	T_{VJ} [°C] max	Iso [kV] 1 min	Base plate	Outline
Power Line – thyristor modules – baseplate 20 mm – pressure contact											
TT92N16KOF	1600	92/85	1800	16.2	0.85	2.43	0.37	140	2.5	Copper	TP20
TT104N14KOF	1400	102/85	1800	16.2	0.85	2.43	0.37	140	2.5	Copper	TP20
Power Line – thyristor modules – baseplate 34 mm– pressure contact											
TT122N22KOF	2200	122/85	2950	43.5	1	2.15	0.20	125	2.5	Copper	TP34
TT140N22KOF	2200	140/85	3200	51.2	0.90	1.75	0.19	125	2.5	Copper	TP34
TT162N16KOF	1600	162/85	4400	97	0.85	0.95	0.20	125	2.5	Copper	TP34
TT180N16KOF	1600	180/85	4100	84	0.85	0.90	0.20	130	2.5	Copper	TP34
Prime Line – thyristor modules – baseplate 34 mm – pressure contact											
TT170N22KOF	2200	170/85	4000	80	0.90	1.50	0.155	125	3.0	Copper	TP34
TT230N16KOF	1600	245/85	5450	148	0.85	0.84	0.150	135	3.0	Copper	TP34



Thyristor/Thyristor Modules

Product	V_{DRM}/ V_{RRM} [V]	also avail. V_{DRM}/ V_{RRM} [V]	I_{TAVM}/T_C [A/°C] @180° el sin	I_{TSM} [A] @10ms, $T_{vj\,max}$	$\int I^2\,dt$ [$A^2s \cdot 10^3$] @10ms, $T_{vj\,max}$	$V_{(T0)}$ [V] @$T_{vj\,max}$	rT [mΩ] @$T_{vj\,max}$	R_{thJC} [K/W] @180° el sin	T_{VJ} [°C] max	Iso [kV] 1 min	Base plate	Outline
Power Line – thyristor modules – baseplate 50 mm – pressure contact												
TT215N22KOF	2200		215/85	6300	198	0.95	0.92	0.13	125	3.0	Copper	TP50A
TT250N18KOF	1800	1600	250/85	7000	245	0.80	0.70	0.13	125	3.0	Copper	TP50A
TT251N16KOF	1600		250/85	8000	320	0.80	0.70	0.13	125	3.0	Copper	TP50A
TT260N22KOF	2200		260/85	8000	320	0.85	0.64	0.12	125	3.0	Copper	TP50A
TT330N16KOF	1600		330/85	10000	500	0.80	0.50	0.112	130	3.0	Copper	TP50A
TT330N16KOF TIM	1600		330/85	10000	500	0.80	0.50	0.112	130	3.0	Copper	TP50A
TT330N18AOF	1800		305/85	9000	405	0.80	0.58	0.12	130	3.0	Copper	TP50A
Prime Line – thyristor modules – baseplate 50 mm – pressure contact												
TT340N22KOF	2200		338/85	8000	320	0.85	0.64	0.107	135	3.0	Copper	TP50A
TT370N18KOF	1800		364/85	10000	500	0.80	0.54	0.107	135	3.0	Copper	TP50A

For a selection of compatible accessories, please see page 74.



Thyristor/Thyristor Modules

Product	V_{DRM}/ V_{RRM} [V]	I_{TAVM}/T_C [A/°C] @180° el sin	I_{TSM} [A] @10ms, $T_{vj\,max}$	$\int I^2\,dt$ [$A^2s \cdot 10^3$] @10ms, $T_{vj\,max}$	$V_{(T0)}$ [V] @$T_{vj\,max}$	rT [mΩ] @$T_{vj\,max}$	R_{thJC} [K/W] @180° el sin	T_{VJ} [°C] max	Iso [kV] 1 min	Base plate	Outline
Eco Line – thyristor modules – baseplate 60 mm – pressure contact											
ETT540N22P60	2200	542/85	13300	884	0.85	0.425	0.065	135	3.0	Aluminum	TP60A
ETT580N16P60	1600	586/85	13600	925	0.80	0.327	0.067	135	3.0	Aluminum	TP60A
ETT630N16P60	1600	635/85	14700	1080	0.80	0.287	0.063	135	3.0	Aluminum	TP60A
ETT630N18P60	1800	628/85	16800	1411	0.80	0.341	0.060	135	3.0	Aluminum	TP60A
TT520N22KOFB01A	2200	520/85	14500	1051	0.85	0.35	0.058	125	3.0	Aluminum	TP60A
TT570N16KOFB01A	1600	600/85	14000	980	0.80	0.23	0.058	125	3.0	Aluminum	TP60A
TT570N18KOFB01A	1800	566/85	16500	1361	0.80	0.30	0.058	125	3.0	Aluminum	TP60A
TT600N16KOFB01A	1600	600/85	17500	1531	0.80	0.23	0.058	125	3.0	Aluminum	TP60A

Product	V_{DRM}/ V_{RRM} [V]	also avail. V_{DRM}/ V_{RRM} [V]	I_{TAVM}/T_C [A/°C] @180° el sin	I_{TSM} [A] @10ms, $T_{vj\,max}$	$\int I^2\,dt$ [$A^2s \cdot 10^3$] @10ms, $T_{vj\,max}$	$V_{(T0)}$ [V] @$T_{vj\,max}$	rT [mΩ] @$T_{vj\,max}$	R_{thJC} [K/W] @180° el sin	T_{VJ} [°C] max	Iso [kV] 1 min	Base plate	Outline
Power Line up 3600 V – thyristor modules – baseplate 60 mm – pressure contact												
TT240N36KOF	3600		240/85	5500	151	1.17	1.7	0.078	125	3.0	Copper	TP60A
TT400N26KOF	2600		400/85	11000	605	1	0.50	0.065	125	3.0	Copper	TP60A
Power Line – thyristor modules – baseplate 60 mm – pressure contact												
TT425N18KOF	1800	1600	425/85	12500	781	0.90	0.35	0.065	125	3.0	Copper	TP60A
TT430N22KOF	2200		430/85	12000	720	0.95	0.45	0.065	125	3.0	Copper	TP60A
TT500N18KOF	1800	1600	500/85	14500	1051	0.85	0.35	0.058	125	3.0	Copper	TP60A
TT520N22KOF	2200		520/85	14500	1051	0.85	0.35	0.058	125	3.0	Copper	TP60A
TT570N16KOF	1600		600/85	14000	980	0.80	0.23	0.058	125	3.0	Copper	TP60A
TT570N18KOF	1800		566/85	16500	1361	0.80	0.30	0.058	125	3.0	Copper	TP60A
TT590N18KOF	1800		667/85	17000	1445	0.80	0.30	0.058	135	3.0	Aluminum	TP60A
TT590N18KOF TIM	1800		667/85	17000	1445	0.80	0.30	0.058	135	3.0	Aluminum	TP60A
TT600N16KOF	1600		600/85	17500	1531	0.80	0.23	0.058	125	3.0	Copper	TP60A
TT600N16KS20	1600		600/85	17500	1531	0.80	0.23	0.058	125	3.0	Copper	TP60A



Thyristor/Thyristor Modules

Product 	V_{DRM}/ V_{RRM} [V]	I_{TAVM}/T_C [A/°C] @180° el sin	I_{TSM} [A] @10ms, $T_{vj\,max}$	∫I² dt [A²s · 10³] @10ms, $T_{vj\,max}$	$V_{(T0)}$ [V] @$T_{vj\,max}$	rT [mΩ] @$T_{vj\,max}$	R_{thJC} [K/W] @180° el sin	T_{vj} [°C] max	Iso [kV] 1 min	Base plate	Outline
Prime Line – thyristor modules – baseplate 60 mm – pressure contact											
TT620N22KOF	2200	622/85	17100	1462	0.85	0.35	0.058	135	4.0	Aluminum	TP60A
TT680N18KOF	1800	676/85	19100	1824	0.80	0.285	0.058	135	4.0	Aluminum	TP60A
TT700N22KOF	2200	700/85	17100	1462	0.85	0.35	0.049	135	4.0	Copper	TP60A
TT700N22KOF TIM	2200	700/85	17100	1462	0.85	0.35	0.049	135	4.0	Copper	TP60A
TT720N16KOF	1600	715/85	20100	2020	0.80	0.23	0.058	135	4.0	Aluminum	TP60A
TT780N18KOF	1800	775/85	19100	1824	0.80	0.285	0.048	135	4.0	Copper	TP60A
TT820N16KOF	1600	820/85	20100	2020	0.80	0.23	0.048	135	4.0	Copper	TP60A
TT820N16KOF TIM	1600	820/85	20100	2020	0.80	0.23	0.048	135	4.0	Copper	TP60A
TT820N16KS20	1600	820/85	20100	2020	0.80	0.23	0.048	135	4.0	Copper	TP60A

For a selection of compatible accessories, please see page 74.




Thyristor/Diode Modules

Product 	V_{DRM}/ V_{RRM} [V]	I_{TAVM}/T_C [A/°C] @180° el sin	I_{TSM} [A] @10ms, $T_{vj\,max}$	∫I² dt [A²s · 10³] @10ms, $T_{vj\,max}$	$V_{(T0)}$ [V] @$T_{vj\,max}$	rT [mΩ] @$T_{vj\,max}$	R_{thJC} [K/W] @180° el sin	T_{vj} [°C] max	Iso [kV] 1 min	Base plate	Outline
Power Line – thyristor/diode modules – baseplate 20 mm – pressure contact											
TD92N16KOF	1600	92/85	1800	16.2	0.85	2.43	0.37	140	2.5	Copper	TP20
TD104N14KOF-A	1400	102/85	1800	16.2	0.85	2.43	0.37	140	2.5	Copper	TP20
Power Line – thyristor/diode modules – baseplate 34 mm – pressure contact											
TD140N22KOF	2200	140/85	3200	51.2	0.9	1.75	0.19	125	2.5	Copper	TP34
TD162N16KOF	1600	162/85	4400	97	0.85	0.95	0.20	125	2.5	Copper	TP34
TD180N16KOF	1600	180/85	4100	84	0.85	0.90	0.20	130	2.5	Copper	TP34
Prime Line – thyristor/diode modules – baseplate 34 mm – pressure contact											
TD170N22KOF	2200	170/85	4000	80	0.90	1.50	0.155	125	3.0	Copper	TP34
TD230N16KOF	1600	245/85	5450	148	0.85	0.84	0.150	135	3.0	Copper	TP34



Thyristor/Diode Modules

Product 	V_{DRM}/ V_{RRM} [V]	also avail. V_{DRM}/ V_{RRM} [V]	I_{TAVM}/T_C [A/°C] @180° el sin	I_{TSM} [A] @10ms, $T_{vj\,max}$	∫I² dt [A²s · 10³] @10ms, $T_{vj\,max}$	$V_{(T0)}$ [V] @$T_{vj\,max}$	rT [mΩ] @$T_{vj\,max}$	R_{thJC} [K/W] @180° el sin	T_{vj} [°C] max	Iso [kV] 1 min	Base plate	Outline
Power Line – thyristor/diode modules – baseplate 50 mm – pressure contact												
TD215N22KOF	2200		215/85	6300	198	0.95	0.92	0.13	125	3.0	Copper	TP50A
TD215N22KOF_TIM	2200		215/85	6300	198	0.95	0.92	0.13	125	3.0	Copper	TP50A
TD250N18KOF	1800	1600	250/85	7000	245	0.80	0.70	0.13	125	3.0	Copper	TP50A
TD260N22KOF	2200		260/85	8000	320	0.85	0.64	0.12	125	3.0	Copper	TP50A
TD330N16KOF	1600		330/85	10000	500	0.80	0.50	0.112	130	3.0	Copper	TP50A
TD330N16KOF TIM	1600		330/85	10000	500	0.80	0.50	0.112	130	3.0	Copper	TP50A
TD330N18AOF	1800		305/85	9000	405	0.80	0.58	0.12	130	3.0	Copper	TP50A
Prime Line – thyristor/diode modules – baseplate 50 mm – pressure contact												
TD340N22KOF	2200		338/85	8000	320	0.80	0.54	0.107	135	3.0	Copper	TP50A
TD370N18KOF	1800		364/85	10000	500	0.80	0.54	0.107	135	3.0	Copper	TP50A

Thyristor/Diode Modules



Product	V_{DRM}/ V_{RRM} [V]	I_{TAVM}/T_C [A/°C] @180° el sin	I_{TSM} [A] @10ms, $T_{vj\,max}$	$\int I^2\,dt$ [$A^2s \cdot 10^3$] @10ms, $T_{vj\,max}$	$V_{(T0)}$ [V] @$T_{vj\,max}$	rT [mΩ] @$T_{vj\,max}$	R_{thJC} [K/W] @180° el sin	T_{VJ} [°C] max	Iso [kV] 1 min	Base plate	Outline
Eco Line – thyristor/diode modules – baseplate 60 mm – pressure contact											
ETD540N22P60	2200	542/85	13300	884	0.85	0.425	0.065	135	3.0	Aluminum	TP60A
ETD580N16P60	1600	586/85	13600	925	0.80	0.327	0.067	135	3.0	Aluminum	TP60A
ETD630N16P60	1600	635/85	14700	1080	0.80	0.287	0.063	135	3.0	Aluminum	TP60A
ETD630N18P60	1800	628/85	16800	1411	0.80	0.341	0.060	135	3.0	Aluminum	TP60A
TD520N22KOFB01A	2200	520/85	14500	1051	0.85	0.35	0.058	125	3.0	Aluminum	TP60A
TD570N16KOFB01A	1600	600/85	14000	980	0.80	0.23	0.058	125	3.0	Aluminum	TP60A
TD570N18KOFB01A	1800	566/85	16500	1361	0.80	0.30	0.058	125	3.0	Aluminum	TP60A
TD600N16KOFB01A	1600	600/85	17500	1531	0.80	0.23	0.058	125	3.0	Aluminum	TP60A

Product	V_{DRM}/ V_{RRM} [V]	also avail. V_{DRM}/ V_{RRM} [V]	I_{TAVM}/T_C [A/°C] @180° el sin	I_{TSM} [A] @10ms, $T_{vj\,max}$	$\int I^2\,dt$ [$A^2s \cdot 10^3$] @10ms, $T_{vj\,max}$	$V_{(T0)}$ [V] @$T_{vj\,max}$	rT [mΩ] @$T_{vj\,max}$	R_{thJC} [K/W] @180° el sin	T_{VJ} [°C] max	Iso [kV] 1 min	Base plate	Outline
Power Line – thyristor/diode modules – baseplate 60 mm – pressure contact												
TD425N18KOF	1800	1600	425/85	12500	781	0.90	0.35	0.065	125	3.0	Copper	TP60A
TD430N22KOF	2200		430/85	12000	720	0.95	0.45	0.065	125	3.0	Copper	TP60A
TD500N18KOF	1800	1600	500/85	14500	1051	0.85	0.35	0.058	125	3.0	Copper	TP60A
TD520N22KOF	2200		520/85	14500	1051	0.85	0.35	0.058	125	3.0	Copper	TP60A
TD520N22KOF TIM	2200		520/85	14500	1051	0.85	0.35	0.058	125	3.0	Copper	TP60A
TD570N16KOF	1600		600/85	14000	980	0.80	0.23	0.058	125	3.0	Copper	TP60A
TD570N18KOF	1800		566/85	16500	1361	0.80	0.30	0.058	125	3.0	Copper	TP60A
TD590N18KOF	1800		667/85	17000	1445	0.80	0.30	0.058	135	3.0	Aluminum	TP60A
TD590N18KOF TIM	1800		667/85	17000	1445	0.80	0.30	0.058	135	3.0	Aluminum	TP60A
TD600N16KOF	1600		600/85	17500	1531	0.80	0.23	0.058	125	3.0	Copper	TP60A
TD600N16KOF TIM	1600		600/85	17500	1531	0.80	0.23	0.058	125	3.0	Copper	TP60A

Product	V_{DRM}/ V_{RRM} [V]	I_{TAVM}/T_C [A/°C] @180° el sin	I_{TSM} [A] @10ms, $T_{vj\,max}$	$\int I^2\,dt$ [$A^2s \cdot 10^3$] @10ms, $T_{vj\,max}$	$V_{(T0)}$ [V] @$T_{vj\,max}$	rT [mΩ] @$T_{vj\,max}$	R_{thJC} [K/W] @180° el sin	T_{VJ} [°C] max	Iso [kV] 1 min	Base plate	Outline
Prime Line – thyristor/diode modules – baseplate 60 mm – pressure contact											
TD620N22KOF	2200	622/85	17100	1462	0.85	0.35	0.058	135	4.0	Aluminum	TP60A
TD680N18KOF	1800	676/85	19100	1824	0.80	0.285	0.058	135	4.0	Aluminum	TP60A
TD700N22KOF	2200	700/85	17100	1462	0.85	0.35	0.049	135	4.0	Copper	TP60A
TD720N16KOF	1600	715/85	20100	2020	0.80	0.23	0.058	135	4.0	Aluminum	TP60A
TD780N18KOF	1800	775/85	19100	1824	0.80	0.285	0.048	135	4.0	Copper	TP60A
TD820N16KOF	1600	820/85	20100	2020	0.80	0.23	0.048	135	4.0	Copper	TP60A

For a selection of compatible accessories, please see page 74.

Single Thyristor Modules



Product	V_{DRM}/ V_{RRM} [V]	also avail. V_{DRM}/ V_{RRM} [V]	I_{TAVM}/T_C [A/°C] @180° el sin	I_{TSM} [A] @10ms, $T_{vj\,max}$	$\int I^2\,dt$ [$A^2s \cdot 10^3$] @10ms, $T_{vj\,max}$	$V_{(T0)}$ [V] @$T_{vj\,max}$	r_T [mΩ] @$T_{vj\,max}$	R_{thJC} [K/W] @180° el sin	T_{VJ} [°C] max	Iso [kV] 1 min	Base plate	Outline
Power Line up 3600 V – single thyristor modules – baseplate 50 mm – pressure contact												
TZ240N36KOF	3600		240/85	5500	151	1.17	1.7	0.078	125	3.0	Copper	TP50.1
TZ400N26KOF	2600		400/85	11000	605	1	0.50	0.065	125	3.0	Copper	TP50.1
Power Line – single thyristor modules – baseplate 50 mm – pressure contact												
TZ425N16KOF	1600		425/85	12500	781	0.90	0.30	0.078	125	3.0	Aluminum	TP50.1
TZ425N18KOF	1800		425/85	12500	781	0.90	0.30	0.078	125	3.0	Copper	TP50.1
TZ430N22KOF	2200		430/85	12000	720	0.95	0.45	0.065	125	3.0	Copper	TP50.1
TZ500N18KOF	1800	1600	500/85	14500	1051	0.90	0.27	0.065	125	3.0	Copper	TP50.1
TZ520N22KOF	2200		520/85	14500	1051	0.85	0.35	0.055	125	3.0	Copper	TP50.1
TZ600N18KOF	1800	1600	600/85	14000	980	0.90	0.27	0.065	135	3.0	Copper	TP50.1
Prime Line – single thyristor modules – baseplate 50 mm – pressure contact												
TZ820N16KOF	1600		820/85	20100	2020	0.8	0.23	0.048	135	4.0	Copper	TP50.1
TZ780N18KOF	1800		775/85	19100	1824	0.8	0.285	0.048	135	4.0	Copper	TP50.1
TZ700N22KOF	2200		700/85	17100	1462	0.85	0.35	0.049	135	4.0	Copper	TP50.1

Single Thyristor Modules



Product	V_{DRM}/ V_{RRM} [V]	also avail. V_{DRM}/ V_{RRM} [V]	I_{TAVM}/T_C [A/°C] @180° el sin	I_{TSM} [A] @10ms, $T_{vj\,max}$	$\int I^2\,dt$ [$A^2s \cdot 10^3$] @10ms, $T_{vj\,max}$	$V_{(T0)}$ [V] @$T_{vj\,max}$	r_T [mΩ] @$T_{vj\,max}$	R_{thJC} [K/W] @180° el sin	T_{VJ} [°C] max	Iso [kV] 1 min	Base plate	Outline
Power Line up 3600 V – single thyristor modules – baseplate 70 mm – pressure contact												
TZ530N36KOF	3600		530/85	20000	2000	1.05	0.49	0.045	125	3.0	Copper	TP70.1
TZ630N28KOF	2800		630/85	23000	2650	0.95	0.37	0.042	125	3.0	Copper	TP70.1
Power Line – single thyristor modules – baseplate 70 mm – pressure contact												
TZ740N22KOF	2200		740/85	26500	3500	0.82	0.17	0.042	125	3.0	Copper	TP70A
TZ800N18KOF	1800	1600, 1400	800/85	30000	4500	0.82	0.17	0.042	125	3.0	Copper	TP70A
TZ810N22KOF	2200		819/85	35000	6125	0.82	0.17	0.042	125	3.0	Copper	TP70A
TZ810N22KOF TIM	2200		819/85	35000	6125	0.82	0.17	0.042	125	3.0	Copper	TP70A
TZ860N16KOF	1600		910/85	40000	8000	0.80	0.145	0.042	125	3.0	Copper	TP70A
TZ860N16KOF TIM	1600		910/85	40000	8000	0.80	0.145	0.042	125	3.0	Copper	TP70A

Single Diode Modules



Product	V_{DRM} / V_{RRM} [V]	also avail. V_{DRM} / V_{RRM} [V]	I_{FAVM}/T_C [A/°C] @180° el sin	I_{FSM} [A] @10ms, $T_{vj\,max}$	$\int I^2 dt$ [$A^2s \cdot 10^3$] @10ms, $T_{vj\,max}$	V_{T0} [V] @$T_{vj\,max}$	R_T [mΩ] @$T_{vj\,max}$	R_{thJC} [K/W] @180° el sin	T_{VJ} [°C] max	Iso [kV] 1 min	Base plate	Outline
Power Line – single diode modules – baseplate 20 mm – pressure contact												
ND89N16K	1600	1200	89/100	2400	28.8	0.75	2.3	0.45	150	2.5	Copper	DP20
Power Line – single diode modules – baseplate 34 mm – pressure contact												
ND171N18K	1800	1600	170/100	5600	157	0.75	0.8	0.26	150	2.5	Copper	DP34



Single Diode Modules

Product	V_{DRM} / V_{RRM} [V]	also avail. V_{DRM} / V_{RRM} [V]	I_{FAVM}/T_C [A/°C] @180° el sin	I_{FSM} [A] @10ms, $T_{vj\,max}$	$\int I^2 dt$ [$A^2s \cdot 10^3$] @10ms, $T_{vj\,max}$	V_{T0} [V] @$T_{vj\,max}$	R_T [mΩ] @$T_{vj\,max}$	R_{thJC} [K/W] @180° el sin	T_{VJ} [°C] max	Iso [kV] 1 min	Base plate	Outline
Power Line – single diode modules – baseplate 50 mm – pressure contact												
DZ540N22K	2200		540/100	14000	980	0.78	0.31	0.078	150	3.0	Copper	DP50.1
DZ600N16K	1600		600/100	19000	1805	0.75	0.22	0.078	150	3.0	Aluminum	DP50.1
DZ600N18K	1800		600/100	19000	1805	0.75	0.22	0.078	150	3.0	Copper	DP50.1
DZ600N22K	2200		600/100	20400	2080	0.78	0.179	0.078	150	3.0	Copper	DP50.1
DZ800N22K	2200		800/100	20400	2080	0.78	0.179	0.055	150	4.0	Copper	DP50.1
Prime Line up to 4500 V – single diode modules – baseplate 50 mm – pressure contact												
DZ435N40K	4000	3600	435/100	12000	720	0.84	0.6	0.078	150	3.0	Copper	DP50.1
DZ560N45K	4500		624/100	15500	1201	0.85	0.395	0.055	150	4.0	Copper	DP50.1
DZ610N36K	3600		613/100	15500	1201	0.90	0.32	0.059	150	4.0	Copper	DP50.1
Power Line – single diode modules – baseplate 70 mm – pressure contact												
DZ1070N22K	2200	1800	1100/100	35000	6125	0.75	0.073	0.045	150	3.0	Copper	DP70A
DZ1100N22K	2200		1100/100	40000	8000	0.75	0.073	0.048	150	3.0	Copper	DP70A
DZ1100N22K TIM	2200		1100/100	40000	8000	0.75	0.073	0.048	150	3.0	Copper	DP70A
Prime Line up to 4400 V – single diode modules – baseplate 70 mm – pressure contact												
DZ950N44K	4400		950/100	29000	4205	0.85	0.280	0.042	150	3.0	Copper	DP70.1
DZ1070N28K	2800	2600	1070/100	35000	6125	0.80	0.170	0.045	160	3.0	Copper	DP70.1

For a selection of compatible accessories, please see page 74.

Diode/Diode Modules



Product	V_{DRM} / V_{RRM} [V]	also avail. V_{DRM} / V_{RRM} [V]	I_{FAVM}/T_C [A/°C] @180° el sin	I_{FSM} [A] @10ms, $T_{vj\,max}$	$\int I^2 dt$ [$A^2s \cdot 10^3$] @10ms, $T_{vj\,max}$	V_{T0} [V] @$T_{vj\,max}$	R_T [mΩ] @$T_{vj\,max}$	R_{thJC} [K/W] @180° el sin	T_{VJ} [°C] max	Iso [kV] 1 min	Base plate	Outline
Power Line – diode modules – baseplate 20 mm – pressure contact												
DD89N16K	1600	1400, 1200	89/100	2400	28.8	0.75	2.3	0.45	150	2.5	Copper	DP20
DD98N22K	2200		98/100	2000	20	0.82	2	0.39	150	2.5	Copper	DP20
DD104N18K	1800	1600	104/100	2500	31.25	0.70	2.1	0.39	150	2.5	Copper	DP20
Power Line – diode modules – baseplate 34 mm – pressure contact												
DD160N22K	2200		160/100	4600	105.8	0.80	1	0.26	150	2.5	Copper	DP34
DD160N22K TIM	2200		160/100	4600	105.8	0.80	1	0.26	150	2.5	Copper	DP34
DD171N16K-A	1600		170/100	5600	157	0.75	0.80	0.26	150	2.5	Copper	DP34
DD171N16K-K	1600		170/100	5600	157	0.75	0.80	0.26	150	2.5	Copper	DP34
DD171N18K	1800	1600	170/100	5600	157	0.75	0.80	0.26	150	2.5	Copper	DP34
DD230N22K	2200		225/100	6700	224	0.75	0.65	0.20	150	3.0	Copper	DP34
Prime Line up to 3600 V– diode modules – baseplate 34 mm – pressure contact												
DD170N36K	3600		170/100	4300	92.4	0.90	1.35	0.20	150	3.0	Copper	DP34
DD170N36K TIM	3600		170/100	4300	92.4	0.90	1.35	0.20	150	3.0	Copper	DP34
Power Line – diode modules – baseplate 50 mm – pressure contact												
DD260N16K	1600		260/100	8300	344	0.70	0.68	0.17	150	3.0	Copper	DP50A
DD261N22K	2200		260/100	8300	344	0.70	0.68	0.17	150	3.0	Copper	DP50A
DD350N16K	1600		350/100	11000	605	0.75	0.40	0.13	150	3.0	Copper	DP50A
DD360N22K	2200		360/100	13000	550	0.75	0.40	0.125	150	3.0	Copper	DP50A
DD360N22K TIM	2200		360/100	13000	550	0.75	0.40	0.125	150	3.0	Copper	DP50A
DD380N16A	1600		393/100	12000	720	0.75	0.40	0.112	150	3.0	Copper	DP50A
DD380N22K	2200		393/100	12000	720	0.75	0.40	0.112	150	3.0	Copper	DP50A
Prime Line up to 3600 V – diode modules – baseplate 50 mm – pressure contact												
DD175N36K TIM	3600		175/100	4000	80	0.90	1.80	0.17	150	3.0	Copper	DP50A
DD175N36K	3600	3400	175/100	4000	80	0.90	1.80	0.17	150	3.0	Copper	DP50A
DD210N36K TIM	3600		214/100	4300	92	0.90	1.35	0.145	150	4.0	Copper	DP50A
DD210N36K	3600		214/100	4300	92	0.90	1.35	0.145	150	4.0	Copper	DP50A
DD290N36K TIM	3600		300/100	9250	427	0.90	0.63	0.12	150	4.0	Copper	DP50A
DD290N36K	3600		300/100	9250	427	0.90	0.63	0.12	150	4.0	Copper	DP50A



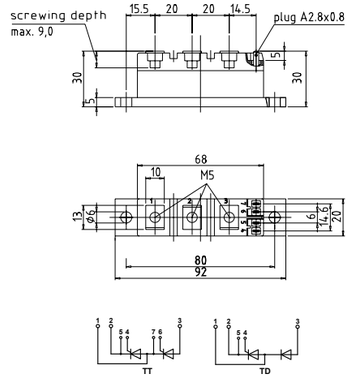
Diode/Diode Modules

Product 	V_{DRM} / V_{RRM} [V]	also avail. V_{DRM} / V_{RRM} [V]	I_{FAVM}/T_C [A/°C] @180° el sin	I_{FSM} [A] @10ms, $T_{vj\,max}$	$\int I^2\,dt$ [$A^2s \cdot 10^3$] @10ms, $T_{vj\,max}$	V_{T0} [V] @$T_{vj\,max}$	R_T [mΩ] @$T_{vj\,max}$	R_{thJC} [K/W] @180° el sin	T_{vj} [°C] max	Iso [kV] 1 min	Base plate	Outline
Power Line – diode modules – baseplate 60 mm – pressure contact												
DD540N22K	2200		540/100	14000	980	0.78	0.31	0.078	150	3.0	Copper	DP60
DD540N22KB01A	2200		540/100	14000	980	0.78	0.31	0.078	150	3.0	Aluminum	DP60
DD540N22KB01A TIM	2200		540/100	14000	980	0.78	0.31	0.078	150	3.0	Aluminum	DP60
DD600N18K	1800	1600	600/100	19000	1800	0.75	0.215	0.078	150	3.0	Copper	DP60
DD700N22K	2200		700/100	19000	1805	0.78	0.19	0.065	150	3.0	Copper	DP60
DD700N22KB01A	2200		700/100	19000	1805	0.78	0.19	0.065	150	3.0	Aluminum	DP60
DD800N22K	2200		800/100	20400	2080	0.78	0.179	0.055	150	4.0	Copper	DP60
Prime Line up to 4500 V– diode modules – baseplate 60 mm – pressure contact												
DD435N36KB01A	3600		435/100	12000	720	0.84	0.6	0.078	150	3.0	Aluminum	DP60
DD435N40K	4000	3600, 3400	435/100	12000	720	0.84	0.6	0.078	150	3.0	Copper	DP60
DD550N36K	3600		557/100	14600	1065	0.9	0.4	0.059	150	4.0	Aluminum	DP60
DD560N45K	4500		624/100	15500	1201	0.85	0.395	0.055	150	4.0	Copper	DP60
DD565N45K	4500		624/100	15500	1201	0.85	0.395	0.055	150	4.0 PD	Copper	DP60
DD610N36K	3600		613/100	15500	1201	0.9	0.32	0.059	150	4.0	Copper	DP60

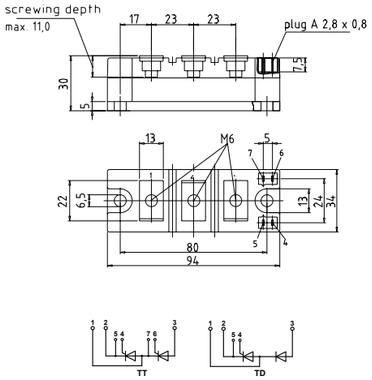
For a selection of compatible accessories, please see page 74.

Outlines

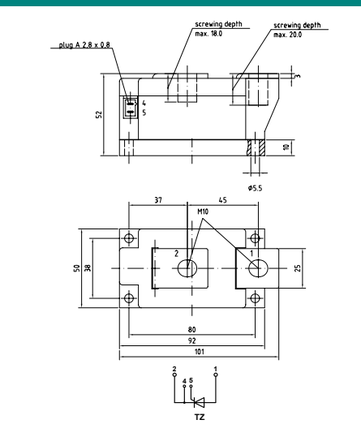
20 mm - TP20



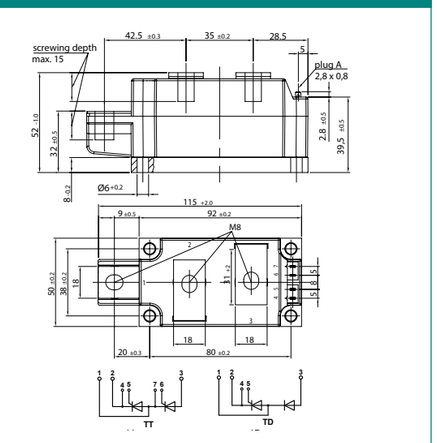
34 mm - TP34



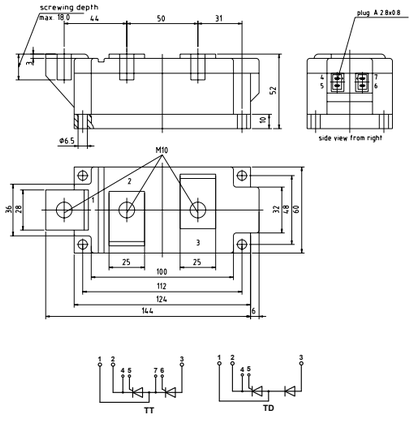
50 mm - TP50.1



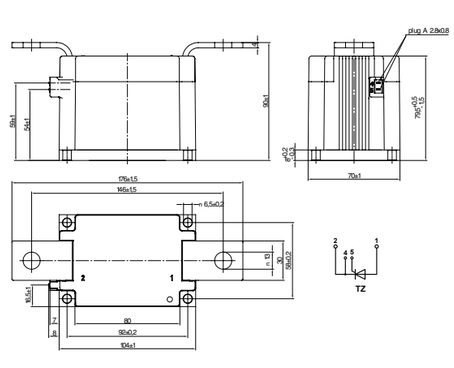
50 mm - TP50A



60 mm - TP60A

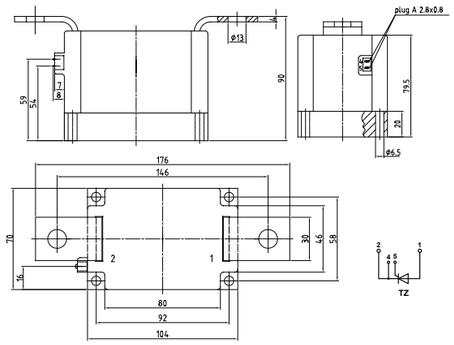


70 mm - TP70A

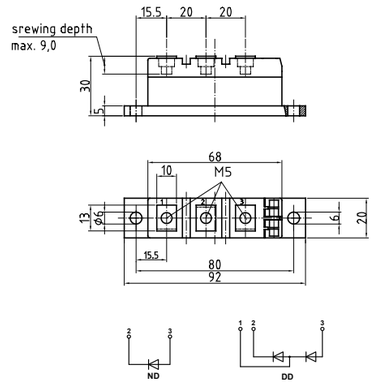


Outlines

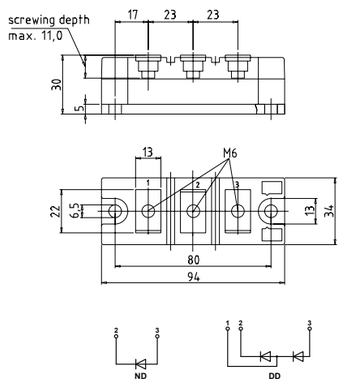
70 mm - TP70.1



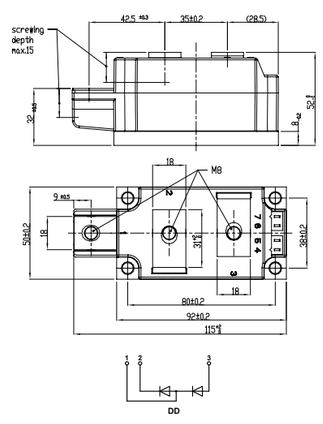
20 mm - DP20



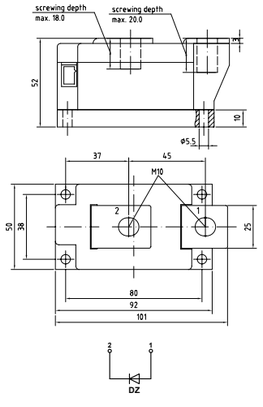
34 mm - DP34



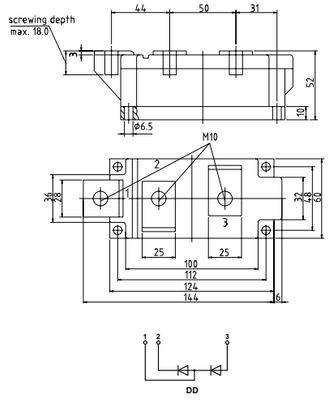
50 mm - DP50A



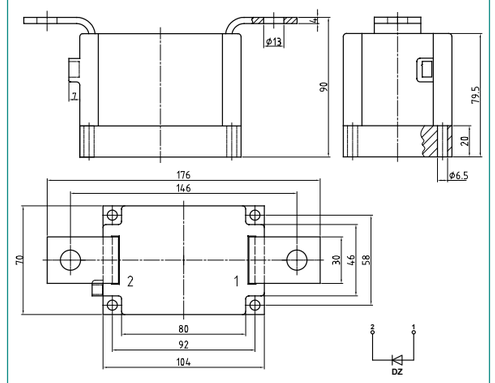
50 mm - DP50.1



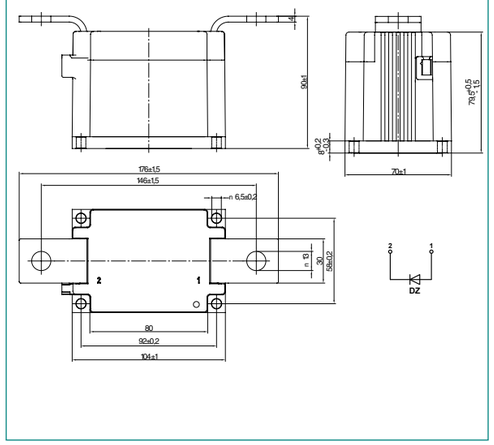
60 mm - DP60



70 mm - DP70.1



70 mm - DP70A



Package Units

Outline	Packaging units
Power block modules	
DP20	15
DP34	8
DP50.1	3
DP50A	3
DP60	2
DP70.1	1
DP70A	1

Outline	Packaging units
Power block modules	
TP20	15
TP34	8
TP50.1	3
TP50A	3
TP60A	2
TP70.1	1
TP70A	1

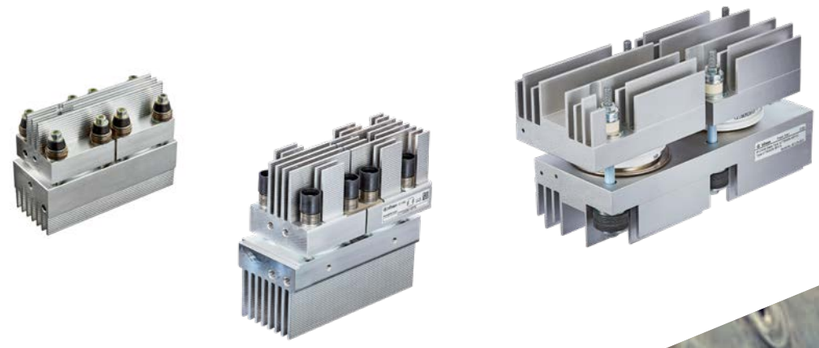
Cost-effective and fully integrated solution for overloads up to 5000 A

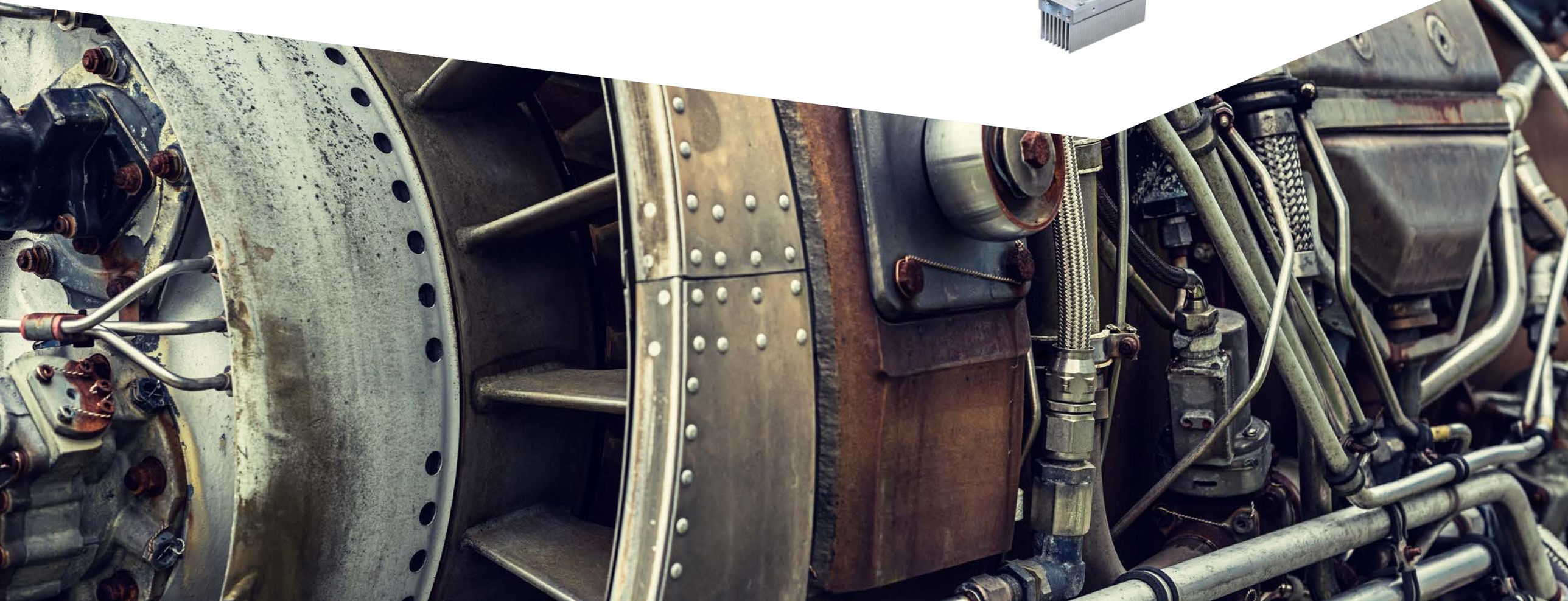
Our Power Start modules are designed for low voltage soft start applications include belt conveyors, big fans and mills.

Our soft starter module family meets the market's needs for cost-effective and compact semiconductor solutions. With its design, power start reduces complexity and allows a broad range of current classes. This feature enables simple integration of the module together with the bypass contactor into the typical design space. It also provides an integrated heatsink and makes use of double-sided cooling to withstand the highest overload currents.

Key features

- Reduced to essential components
- Integrated heatsink
- Double-side cooling
- Thermal capacity coupled to silicon
- No thermal grease







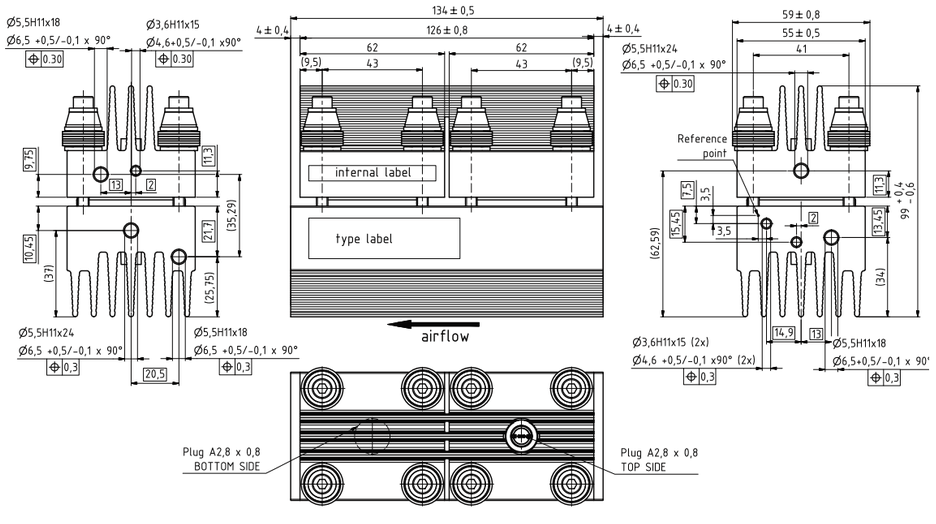
Thyristor Soft Starter Modules

Product	V_{DRM} / V_{RRM} [V]	also available V_{DRM} V_{RRM} [V]	$I_{OVERLOAD\ (21S)}$ [A]	I_{TSM} [A] @10ms, $T_{vj\ max}$	$\int I^2 dt$ [$A^2s \cdot 10^3$]	$V_{(T0)}$ [V] @$T_{vj\ max}$	R_T [mΩ] @$T_{vj\ max}$	$R_{THJA\ (21S)}$ [K/W]	T_{VJ} [°C] max	Outline
Power Line – thyristor soft starter modules – baseplate 55 mm – pressure contact										
STT800N18P55	1800	1600	800	5400	146	0.9	0.83	0.203	155	P55
STT1400N18P55	1800	1600	1300	9000	405	0.9	0.49	0.123	155	P55
STT1900N18P55	1800	1600	1900	14000	980	0.9	0.28	0.087	155	P55
STT2200N18P55	1800	1600	2180	17500	1531	0.9	0.24	0.084	155	P55
Power Line – thyristor soft starter modules – baseplate 76 mm – pressure contact										
STT3400N18P76	1800	1600	3300	36000	4805	0.9	0.154	0.049	150	P76
Power Line – thyristor soft starter modules – baseplate 110 mm – pressure contact										
STT5000N18P110	1800	1400	4780	38000	7220	0.9	0.106	0.032	155	P110

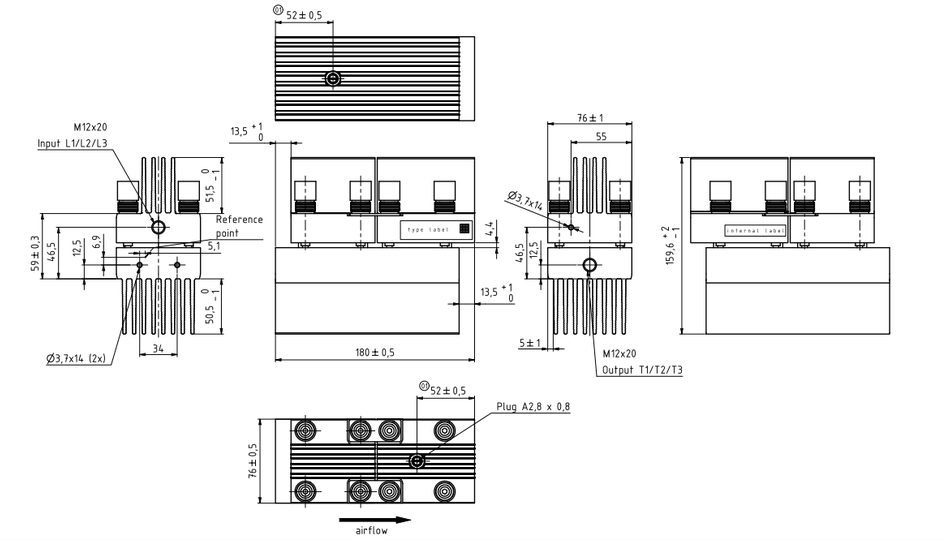
Housing	a [mm]	b [mm]	c [mm]
STT800N18P55	100	134	55
STT1400N18P55	100	134	55
STT1900N18P55	100	134	55
STT2200N18P55	100	134	55
STT3400N18P76	160	180	76
STT5000N18P110	110	167	280

Outlines

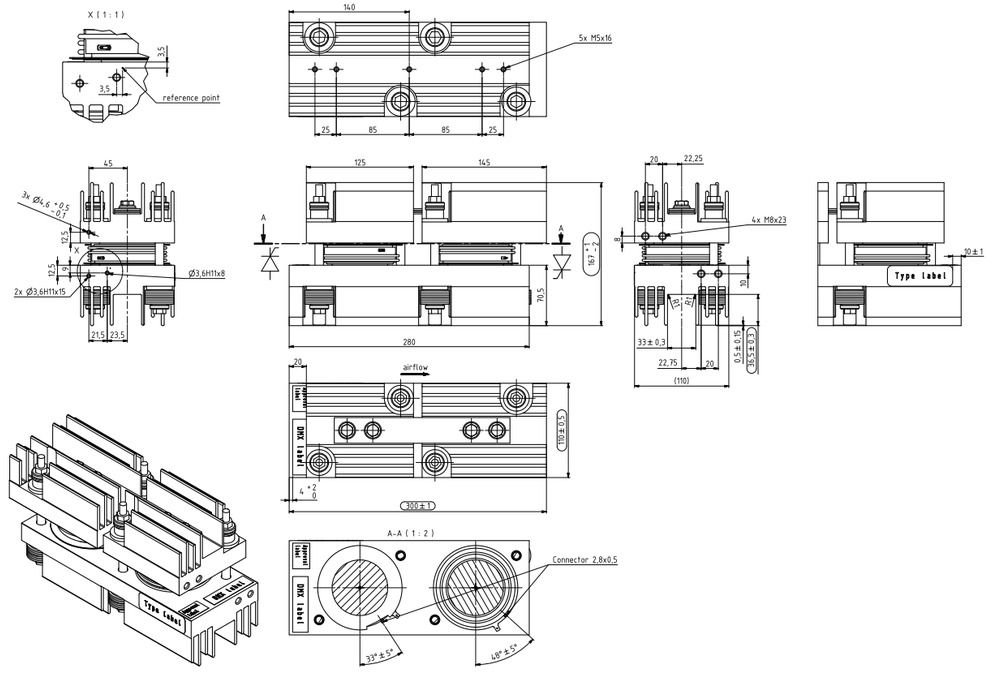
P55



P76



P110



Package Units

Outline	Packaging units
P55	1
P76	1
P110	1

THYRISTOR PRESS PACKS

When quality and performance are key

Thyristors in disc housings are at the heart of a large number of applications in the medium and high voltage range.

All thyristor discs are assembled in hermetically sealed ceramic housings in order to avoid negative environmental influences like high humidity and corrosive gases. The main benefit is double side cooling and short-on-fail functionality. For special applications light-triggered thyristors (LTT) are available in three footprints.

Key features

- Double side cooling
- Short-on-fail
- Hermetically sealed ceramic housings
- Light triggered versions available





Thyristor Press Packs



Product	V_{DRM} / V_{RRM} [V]	also avail. V_{DRM} / V_{RRM} [V]	I_{TAVM}/T_C [A/°C] @180° el sin	I_{TSM} [A] @10ms, $T_{vj\,max}$	$\int I^2\,dt$ [$A^2s \cdot 10^3$] @10ms, $T_{vj\,max}$	V_{T0} [V] @$T_{vj\,max}$	R_T [mΩ] @$T_{vj\,max}$	R_{thJC} [K/KW] @180° el sin	T_{VJ} [°C] max	Clamping force [kN]	Outline
Power Line – thyristor press packs up to 800 V											
T2510N06TOF VT	600		2509/85	42000	8820	0.75	0.072	18.4	140	24-56	T75.26K
T3710N06TOF VT	600	400	3710/85	60000	18000	0.75	0.048	12.5	140	30-65	T100.26K
Power Line – thyristor press packs up to 1800 V											
T390N16TOF	1600	1400	381/85	4250	91	0.85	0.90	62	125	3-6	T42.14K0
T420N16TOF	1600		424/85	6400	205	0.90	0.75	56	125	5-10	T48.14K0
T430N18TOF	1800	1400	433/85	4600	106	0.85	0.90	51	125	4-8	T42.14K0
T470N16TOF	1600		470/85	6350	202	0.80	0.75	51	125	4-8	T42.14K0
T560N18TOF	1800	1600, 1400	559/85	6900	238	0.80	0.60	44	125	5-10	T48.14K0
T640N18TOF	1800	1600	644/85	8000	320	0.80	0.50	39	125	6-12	T48.14K0
T720N16TOF	1600		718/85	12500	781	0.85	0.35	38	125	9-18	T57.26K
T830N16TOF	1600	1400	844/85	12500	781	0.85	0.30	30	125	9-18	T58.14K0
T880N18TOF	1800	1600, 1400	879/85	15500	1200	0.85	0.27	32	125	10.5-21	T57.26K
T940N18TOF	1800	1600	959/85	15500	1200	0.85	0.27	28	125	10.5-21	T58.14K0
T1190N18TOF VT	1800	1600, 1400	1190/85	22500	2530	0.90	0.19	23	125	16-32	T75.26K
T1400N16H75 VT	1600		1410/85	29500	4351	0.80	0.21	18.5	125	14-26	T75.26K
T1500N18TOF VT	1800	1600, 1400	1500/85	33500	5611	0.90	0.15	18.4	125	24-56	T75.26K
T1700N16H75 VT	1600		1770/85	28000	3920	0.80	0.167	18.5	135	14-26	T75.26K
T2180N18TOF VT	1800	1600, 1400	2180/85	36000	7220	0.90	0.106	12.5	125	30-65	T111.26K
T2200N16H100	1600		2170/85	44000	9680	0.90	0.106	12.6	125	30-45	T100.26K
T3160N18TOF VT	1800	1600	3160/85	57000	16245	0.85	0.082	8.5	125	42-95	T111.26K
T3841N18TOF VT	1800		4040/85	57000	16245	0.80	0.08	7.74	125	42-95	T120.26K
Prime Line – thyristor press packs up to 1800 V											
T1900N18TOF VT	1800	1600	1810/85	30700	4713	0.83	0.15	18.4	135	24-56	T75.26K
T2600N18TOF VT	1800	1600	2610/85	36000	6480	0.85	0.106	12.5	135	30-65	T100.26K
T3800N18TOF VT	1800		3800/85	53000	14045	0.80	0.08	8.5	135	42-95	T111.26K

Thyristor Press Packs



Product	V_{DRM} / V_{RRM} [V]	also avail. V_{DRM} / V_{RRM} [V]	I_{TAVM}/T_C [A/°C] @180° el sin	I_{TSM} [A] @10ms, $T_{vj\,max}$	$\int I^2\,dt$ [$A^2s \cdot 10^3$] @10ms, $T_{vj\,max}$	V_{T0} [V] @$T_{vj\,max}$	R_T [mΩ] @$T_{vj\,max}$	R_{thJC} [K/KW] @180° el sin	T_{VJ} [°C] max	Clamping force [kN]	Outline
Power Line – thyristor press packs up to 3000 V											
T660N26TOF	2600		659/85	11500	660	1	0.5	33	125	10.5-21	T57.26K
T740N26TOF	2600		745/85	11500	660	1	0.5	28	125	10.5-21	T58.14K0
T1220N28TOF VT	2800		1220/85	22500	2531	1	0.275	18.4	125	20-45	T75.26K
T1330N22TOF VT	2200		1329/85	23000	2645	0.9	0.234	18.4	125	20-45	T75.26K
T1590N28TOF VT	2800	2600	1590/85	28000	3920	1.1	0.237	12.5	125	30-65	T100.26K
T1960N22TOF VT	2200		1960/85	35000	6125	0.9	0.15	12.5	125	30-65	T100.26K
T2480N28TOF VT	2800	2600	2480/85	43500	9460	0.95	0.154	8.5	125	42-95	T111.26K
T2481N28TOF VT	2800		2720/85	43500	9460	0.9	0.148	7.74	125	42-95	T120.26K
T2810N22TOF VT	2200		2810/85	50000	12500	0.9	0.112	8.5	125	42-95	T111.26K
T4771N28TOF PR	2800	2200	4340/85	91000	41400	0.77	0.107	4.8	125	63-91	T150.26K

Thyristor Press Packs



Product	V_{DRM} / V_{RRM} [V]	I_{TAVM}/T_C [A/°C] @180° el sin	I_{TSM} [A] @10ms, $T_{vj\,max}$	$\int I^2\,dt$ [$A^2s \cdot 10^3$] @10ms, $T_{vj\,max}$	V_{T0} [V] @$T_{vj\,max}$	R_T [mΩ] @$T_{vj\,max}$	R_{thJC} [K/KW] @180° el sin	T_{VJ} [°C] max	Clamping force [kN]	Outline
Power Line – thyristor press packs up to 5500 V										
T731N44TOH	4400	870/85	16000	1280	1.08	0.65	18.5	125	15-24	T76.26K
T930N36TOF VT	3600	930/85	17500	1530	1	0.43	21.5	125	20-45	T75.26K
T1800N42TOF VT	4200	1800/85	41000	8405	0.85	0.4	8.5	125	40-65	T111.26K
T1930N36TOF VT	3600	2180/85	37000	6850	1.08	0.2	8.5	125	40-65	T111.26K
T2001N36TOF	3600	2060/85	41000	8400	1	0.25	8.7	125	36-52	T120.26K
T2351N52TOH	5200	2250/85	54000	14600	0.81	0.36	6.5	125	45-65	T120.26K
T2851N52TOH	5200	2980/85	79000	31000	0.77	0.235	5.4	125	63-91	T150.35K
T3401N36TOF VT	3600	3560/85	87000	37850	0.82	0.143	5	125	63-91	T150.35K
T3441N52TOH	5200	3200/85	79000	31000	0.77	0.235	4.8	125	63-91	T150.26K
T3801N36TOF VT	3600	3830/85	87000	37850	0.82	0.143	4.8	125	63-91	T150.26K
T3381N34TOH	3400	3400/85	59000	17405	0.96	0.142	6.8	125	42-95	T120.26K
T4021N52TOH	5200	3880/85	100000	50000	0.93	0.145	4.5	125	90-130	T172.35K

Thyristor Press Packs



Product	V_{DRM} / V_{RRM} [V]	I_{TAVM}/T_C [A/°C] @180° el sin	I_{TSM} [A] @10ms, $T_{vj\,max}$	$\int I^2\,dt$ [$A^2s \cdot 10^3$] @10ms, $T_{vj\,max}$	V_{T0} [V] @$T_{vj\,max}$	R_T [mΩ] @$T_{vj\,max}$	R_{thJC} [K/KW] @180° el sin	T_{VJ} [°C] max	Clamping force [kN]	Outline
Power Line – thyristor press packs up to 7000 V										
T280N65TOF	6500	280/85	5800	115	1.35	2.8	43	125	7-12	T58.26K
T501N70TOH	7000	640/85	13000	845	1.30	1.35	17	125	15-24	T76.26K
T570N65TOF	6500	540/85	10500	442	1.35	1.4	21	125	13-23	T75.26K
T1620N65TOF PR	6500	1613/85	32000	5120	1.35	0.43	8.1	125	40-65	T111.26K
T1851N70TOH	7000	1830/85	48000	11500	1.22	0.49	6.5	125	45-65	T120.26K
Prime Line – electrical triggered thyristors up to 10000 V										
T1901N80TOH	8000	2100/85	65000	21100	1.24	0.44	5.4	125	63-91	T150.35K
T2251N80TOH	8000	2260/85	65000	21100	1.24	0.44	4.8	125	63-91	T150.26K
T2871N80TOH	8000	2620/85	90000	40500	1.27	0.336	4.5	125	90-130	T172.35K
T7300N85X203	8500	6100/55	70000	38000	1.204	0.158	3.5	90	135-210	T202.35K

Thyristor Press Packs
Light triggered



Product	V_{DRM} / V_{RRM} [V]	I_{TAVM}/T_C [A/°C] @180° el sin	I_{TSM} [A] @10ms, $T_{vj\,max}$	$\int I^2\,dt$ [$A^2s \cdot 10^3$] @10ms, $T_{vj\,max}$	V_{T0} [V] @$T_{vj\,max}$	R_T [mΩ] @$T_{vj\,max}$	R_{thJC} [K/KW] @180° el sin	T_{VJ} [°C] max	Clamping force [kN]	Outline
Prime Line – light triggered thyristors up to 8000 V										
T533N80TOH PR	8000	540/85	10500	550	1.26	1.47	20.0	120	15-24	T76.35L
T1503N80TOH PR	8000	1770/85	55000	15125	1.24	0.44	6.3	120	63-91	T150.40L
T2563N80TOH PR	8000	2300/85	90000	40500	1.20	0.35	4.8	120	90-130	T172.40L

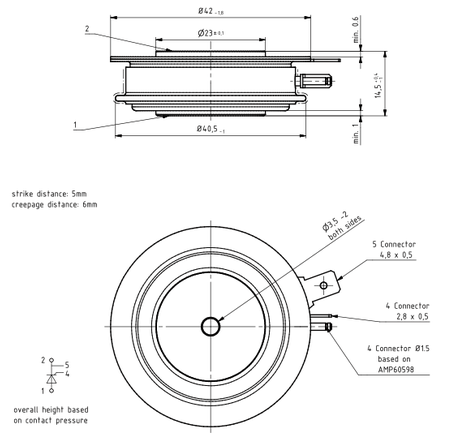
Package Units

Outline	Packaging units
T42.14K0	18
T48.14K0	12
T58.14K0	9
T58.26K0	6
T75.26K0	4
T76.26K	4
T76.35L	4
T100.26K0	2

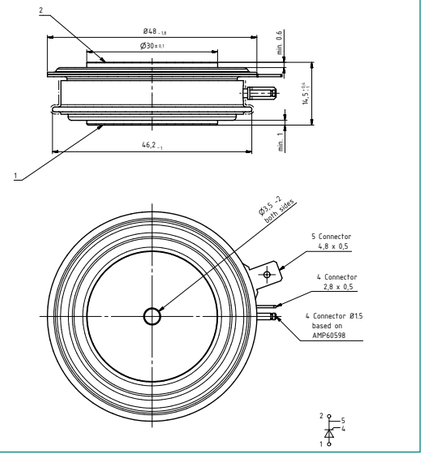
Outline	Packaging units
T111.26K0	2
T120.26K	2
T120.35K	2
T150.35K	1
T150.40L	1
T172.26K	1
T172.35K	1
T172.40L	1
T202.35K	1

Outlines

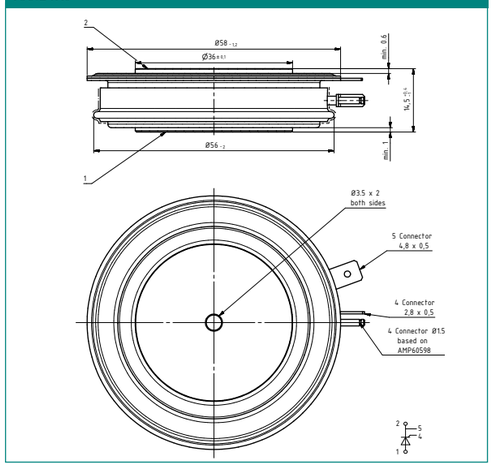
T42.14K0



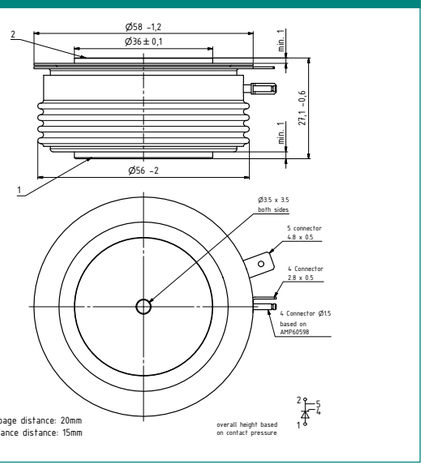
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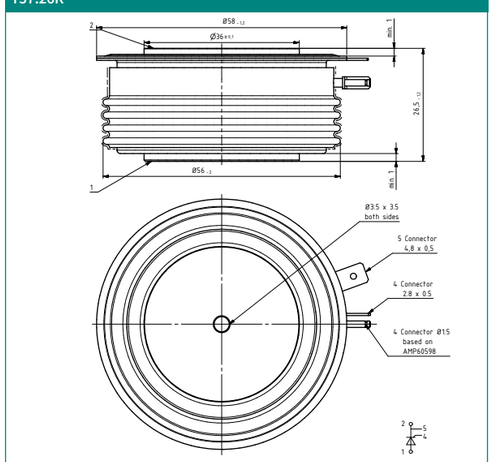
T58.14K0



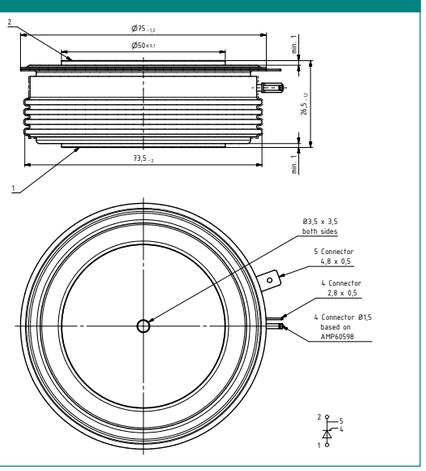
T58.26K



T57.26K

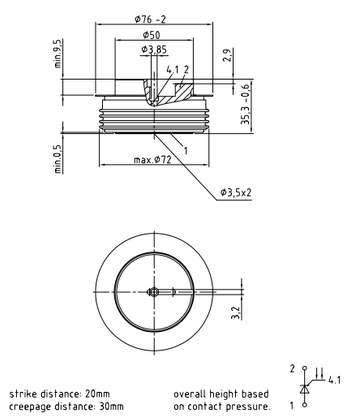


T75.26K



Outlines

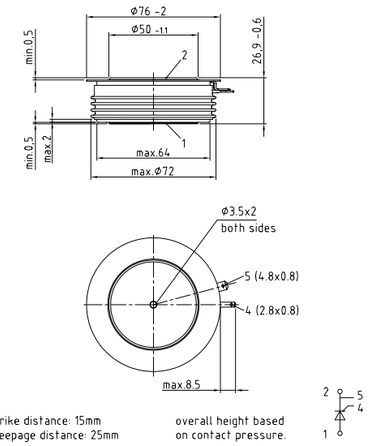
T76.35L



strike distance: 20mm
creepage distance: 30mm

overall height based on contact pressure.

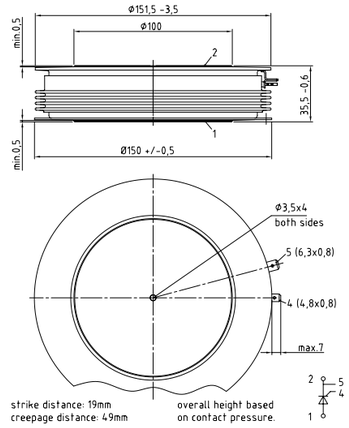
T76.26K



strike distance: 15mm
creepage distance: 25mm

overall height based on contact pressure.

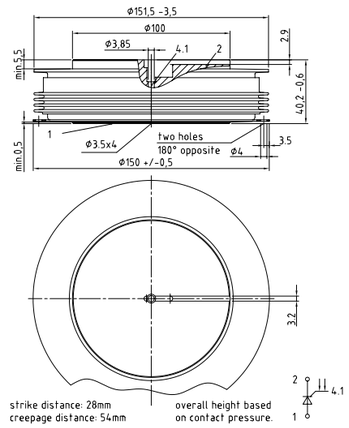
T150.35K



strike distance: 19mm
creepage distance: 49mm

overall height based on contact pressure.

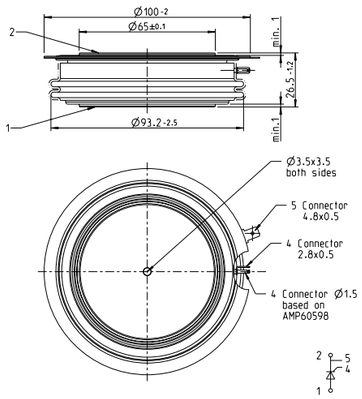
T150.40L



strike distance: 28mm
creepage distance: 54mm

overall height based on contact pressure.

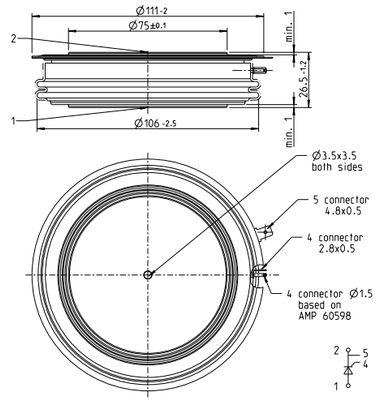
T100.26K



strike distance: 15mm
creepage distance: 25mm

overall height based on contact pressure

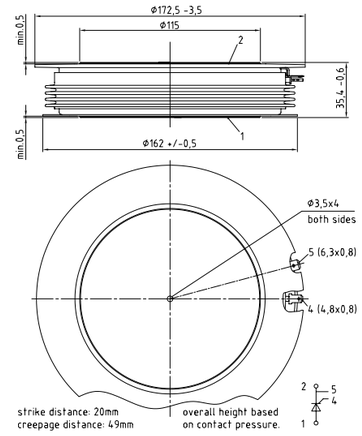
T111.26K



strike distance: 15mm
creepage distance: 25mm

overall height based on contact pressure

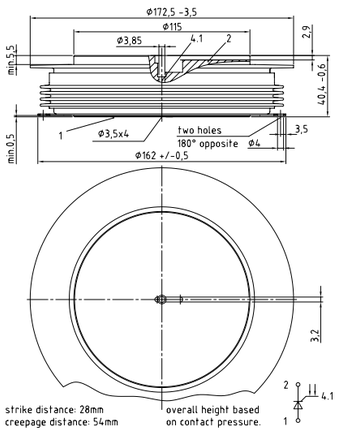
T172.35K



strike distance: 20mm
creepage distance: 49mm

overall height based on contact pressure.

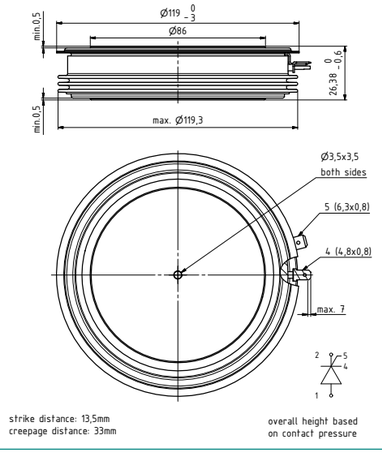
T172.40L



strike distance: 28mm
creepage distance: 54mm

overall height based on contact pressure.

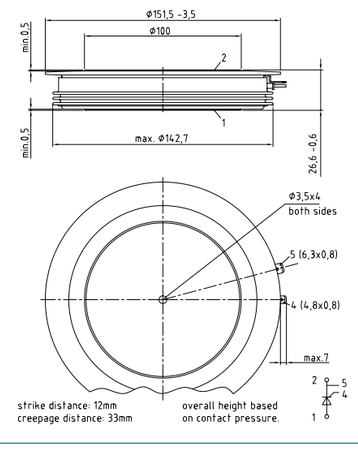
T120.26K



strike distance: 13,5mm
creepage distance: 33mm

overall height based on contact pressure

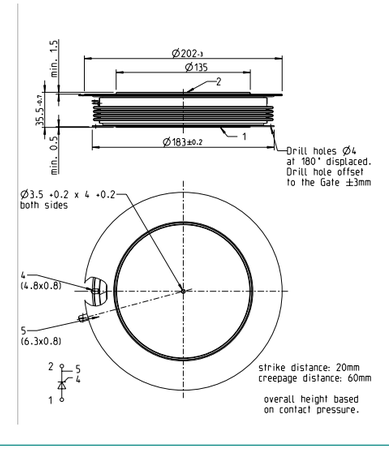
T150.26K



strike distance: 12mm
creepage distance: 33mm

overall height based on contact pressure.

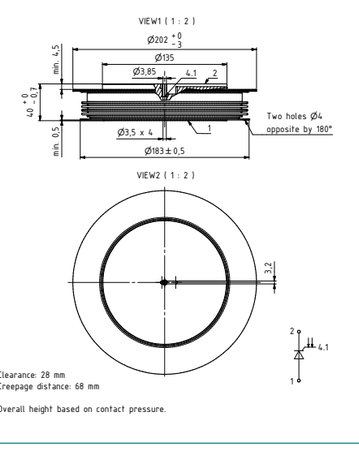
T202.35K



strike distance: 20mm
creepage distance: 60mm

overall height based on contact pressure.

T202.40L



Clearance: 28 mm
Creepage distance: 68 mm

Overall height based on contact pressure.

PRESS PACK DIODES

Minimum switching losses. Extreme soft recovery behavior.

We offer diodes in discs housing from 42 mm to 150 mm diameter covering 600 V to 9000 V and 470 A to 8400 A.

All diode discs are assembled in hermetically sealed ceramic housings in order to avoid negative environmental influences like high humidity and corrosive gases. The main benefit is double side cooling and short-on-fail functionality. Besides diodes for rectifier applications, we also offer freewheeling diodes for GTOs, IGCTs as well as ultra-soft diodes for IGBTs (PPIs).

Key features

- Double side cooling
- Short-on-fail
- Hermetically sealed ceramic housings
- High case-non-rupture current
- Ultra-Soft turn-off behavior





Diode Discs



Product	V_{RRM} [V]	also avail. V_{RRM} [V]	I_{FAVM} T_C [A/°C] @180° el sin	I_{FSM} [A] @10ms, $T_{vj\ max}$	$\int I^2\,dt$ [$A^2s \cdot 10^3$] @10ms, $T_{vj\ max}$	V_{T0} [V] @$T_{vj\ max}$	R_T [mΩ] @$T_{vj\ max}$	R_{thJC} [K/KW] @180° el sin	T_{vj} [°C] max	Clamping force [kN]	Outline
Rectifier diodes up to 600 V											
D970N06T	600		972/100	8800	387	0.70	0.31	57.0	180	3.9-7.6	D42.14K0
D2450N06T	600	400	2452/100	4000	4061	0.70	0.1	25.3	180	12-24	D58.14K0
D5810N06T VF	600		5800/58	70000	24500	0.70	0.04	17.0	180	30-60	D75.26K
D8320N06T VF	600		8320/56	95000	45000	0.70	0.02	12.5	180	40-80	D100.26K
Rectifier diodes up to 1800 V											
D950N18T	1800		950/100	10250	525	0.70	0.5	45.0	180	6-12	D42.14K0
D1230N18T	1800		1234/100	11800	696	0.81	0.28	39.0	180	6-15	D48.14K0
Rectifier diodes up to 3000 V											
D1030N26T	2600		1030/100	14500	1051	0.82	0.28	38.0	160	10-24	D57.26K
D2200N24T VF	2400	2200	2200/100	35000	6125	0.83	0.15	17.0	160	24-60	D75.26K
D2650N24T VF	2400		3520/100	41000	5611	0.82	0.15	16.9	180	24-60	D75.26K
D4201N22T	2200		4830/100	73500	27000	0.67	0.08	9.2	160	36-52	D120.35K
D4810N28T VF	2800	2200	4810/100	60000	18000	0.83	0.06	8.0	160	42-95	D111.26K
Rectifier diodes up to 5000 V											
D740N44T	4400		750/100	11000	605	0.85	0.65	39.0	160	10-24	D57.26K
D1800N48T VF	4800	4000	1800/100	27500	3781	0.85	0.25	16.9	160	24-60	D75.26K
D2201N45T	4500		2320/100	38000	7220	0.69	0.206	11.2	140	27-45	D100.26K
D3501N42T	4200		3690/100	56000	15700	0.73	0.13	9.2	160	36-52	D120.35K
D6001N50T	5000		6070/100	110000	60500	0.80	0.09	4.6	160	63-91	D150.26K
Rectifier diodes up to 10000 V											
D471N90T	9000		565/100	10000	500	1.04	1.78	31.5	160	10-16	D58.26K
D711N65T	6500		790/100	10500	550	0.84	0.87	31.5	160	10-16	D58.26K
D1481N65T	6500		1650/100	24500	3000	0.75	0.42	15.8	160	15-36	D120.26K
D2601N90T	9000	8500	2240/100	50000	12500	0.94	0.41	8.55	160	36-52	D120.26K
D3001N68T	6800		2900/100	53000	14040	0.84	0.22	9.2	160	36-52	D120.35K
D3041N65T	6500		3040/100	53000	14040	0.84	0.22	8.55	160	36-52	D120.26K

Freewheeling Diodes



Product	V_{RRM} [V]	I_{FAVM}/T_C	I_{FSM} (@10ms, $T_{vj\ max}$)	$\int I^2\,dt$ [$A^2s \cdot 10^3$] @10ms, $T_{vj\ max}$	V_{T0} [V] @$T_{vj\ max}$	r_T [mΩ] @$T_{vj\ max}$	R_{thJC} [K/KW] @180° el sin	T_{vj} [°C] max	Q_R [mAs] @di/dt = 1000 A/µs I_{FM} = 2.5 kA, $T_{vj\ max}$	I_{RM} [A] @di/dt = 1000 A/µs I_F = 2.5 kA, $T_{vj\ max}$	Clamping force [kN]
IGCT/IGBT – Freewheeling Diodes											
D350SH45T	4500	700/85	13000	845	1.92	1.24	19	140	2.5	850	15-36
D931SH65T	6500	940/85	16000	1280	1.99	1.44	11.1	140	3.5	1300	27-45
D1131SH65T	6500	1100/85	22000	2420	2.19	1.364	7.5	140	3.5	1200	36-52
D1031SH45T	4500	1120/85	23000	2645	1.78	0.968	10.0	140	3.5	1500	27-45
D1331SH45T	4500	1310/85	28000	3920	1.83	0.948	7.5	140	3.5	1500	36-52
D1961SH45T	4500	1310/85	40000	8000	1.25	0.500	7.5	140	12.0	2250	36-52
D1600U45X122	4500	1680/55	28000	3920	1.80	0.994	7.5	140	6.0	3600	36-65
D2700U45X122	4500	2900/55	48000	11500	1.38	0.447	5.6	140	9.5	4200	50-100
D3900U45X172	4500	4400/55	80000	32000	1.30	0.300	3.3	140	13.0	5500	50-130
D4600U45X172	4500	4780/55	80000	32000	1.25	0.300	3.3	140	13.0	5500	50-130

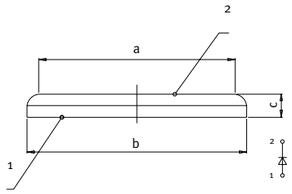
Product	V_{RRM} [V]	I_{FAVM}/T_C	I_{FSM} (@10ms, $T_{vj\ max}$)	$\int I^2\,dt$ [$A^2s \cdot 10^3$] @10ms, $T_{vj\ max}$	V_{T0} [V] @$T_{vj\ max}$	r_T [mΩ] @$T_{vj\ max}$	R_{thJC} [K/KW] @180° el sin	T_{vj} [°C] max	Q_R [mAs] @di/dt = 1000 A/µs I_{FM} = 2.5 kA, $T_{vj\ max}$	I_{RM} [A] @di/dt = 1000 A/µs I_F = 2.5 kA, $T_{vj\ max}$	Clamping force [kN]
GTO – Freewheeling Diodes											
D921S45T	4500	1380/85	28000	2650	1.40	0.48	12.5	140		800	27-45
D1251S45T	4500	1310/85	18000	1620	1.25	0.45	12.5	140		800	15-36
D1381S45T	4500	1380/85	28000	5120	1.40	0.48	12.5	140		700	27-35
D1461S45T	4500	1460/85	28000	5120	1.43	0.38	12.5	140		840	27-45

Welding Diodes



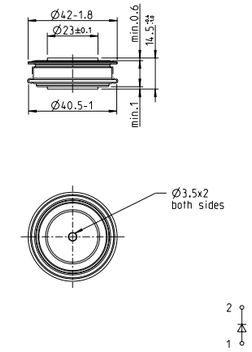
Product	V_{RRM} [V]	I_{FAVM}/T_C @ 180° el sin	I_{FSM} @10ms, $T_{vj\,max}$	$\int I^2 dt$ [$A^2s \cdot 10^3$] @10ms $T_{vj\,max}$	V_{T0} [V] @$T_{vj\,max}$	R_T [mΩ] @$T_{vj\,max}$	R_{thJC} [K/kW] @180° el sin	T_{VJ} [°C] max	Clamping force [kN]
38DN06B02	600	5820/100	32300	5200	0.74	0.049	9.60	180	15-30
46DN06B02	600	7640/100	48000	11520	0.78	0.034	7.23	180	25-45
56DN06B02	600	10300/100	70000	24500	0.73	0.024	5.80	180	30-45
65DN06B02	600	12810/100	95000	45100	0.76	0.018	4.70	180	40-80

Housing	dia [mm]	height [mm]
38DN06B02	38	4,0
46DN06B02	46	4,0
56DN06B02	56	5,0
65DN06B02	65	5,0



Outlines

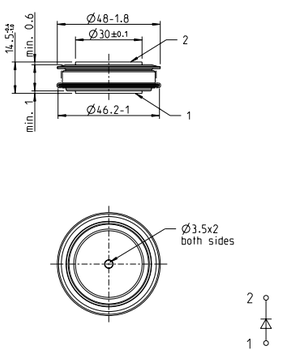
D42.14K0



strike distance: 9mm
creepage distance: 10mm

overall height based on contact pressure

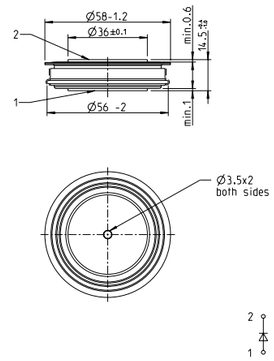
D48.14K0



strike distance: 9mm
creepage distance: 10mm

overall height based on contact pressure

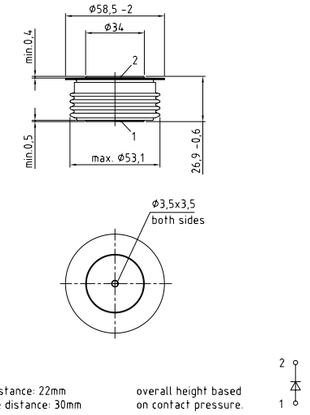
D58.14K084



strike distance: 8.0mm
creepage distance: 9.0mm

overall height based on contact pressure

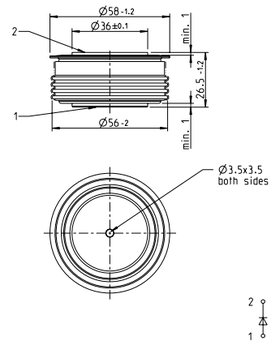
D58.26K



strike distance: 22mm
creepage distance: 30mm

overall height based on contact pressure.

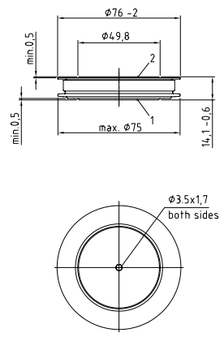
D57.26K



strike distance: 20mm
creepage distance: 25mm

overall height based on contact pressure

D75.14K0

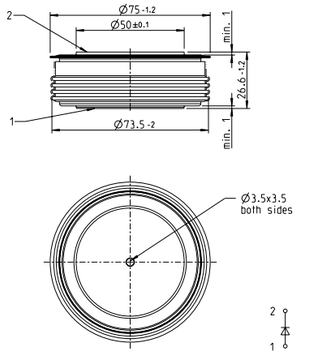


strike distance: 12,5mm
creepage distance: 16mm

overall height based on contact pressure.

Outlines

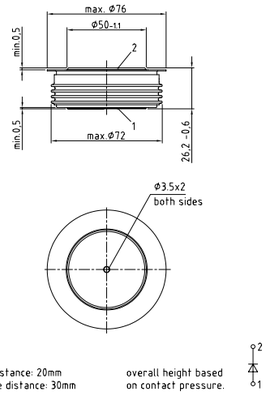
T75.26K



strike distance: 20mm
Creepage distance: 25mm

overall height based on contact pressure

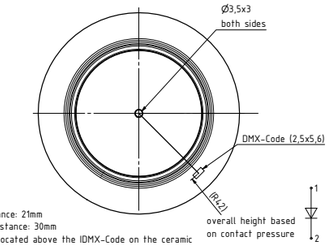
D76.26K



strike distance: 20mm
creepage distance: 30mm

overall height based on contact pressure.

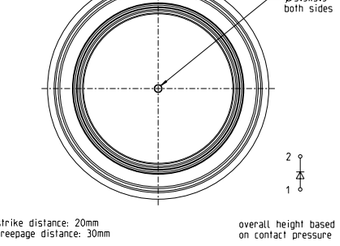
D100.26K



strike distance: 21mm
creepage distance: 30mm
DMX-Code located above the IDMX-Code on the ceramic

overall height based on contact pressure

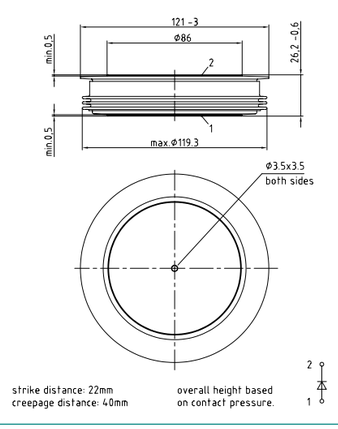
D111.26K



strike distance: 20mm
creepage distance: 30mm

overall height based on contact pressure

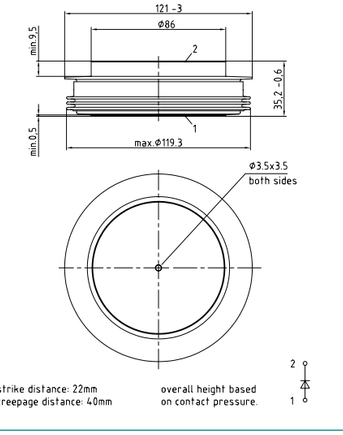
D120.26K



strike distance: 22mm
creepage distance: 40mm

overall height based on contact pressure.

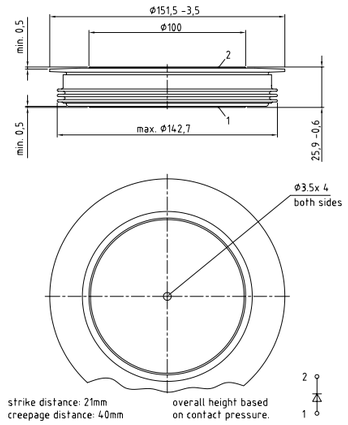
D120.35K



strike distance: 22mm
creepage distance: 40mm

overall height based on contact pressure.

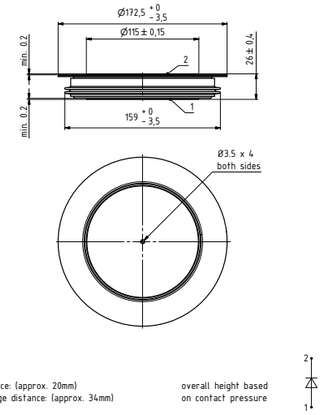
D150.26K



strike distance: 21mm
creepage distance: 40mm

overall height based on contact pressure.

D172.26K



Clearance: (approx. 20mm)
Creepage distance: (approx. 34mm)

overall height based on contact pressure

Package Units

Outline	Packaging units
D42.14K0	18
D48.14K0	12
D58.14K0	9
D58.26K0	6
D75.26K0	4
D76.26K	4

Outline	Packaging units
D100.26K0	2
D111.26K0	2
D120.26K	2
D120.35K	2
D150.26K	1
D150.35K	1

PRESS PACK IGBTS

Extreme energy. Ultimate run.

We offer a complete 4.5 kV high-power product portfolio of Press Pack IGBTs using trench 4.5 kV IGBT chips.

The application-optimized Press Pack IGBTs offer 2000 A, 3000 A and 5000 A with or without internal freewheeling diode. Our press pack IGBTs are the perfect fit for MMC sub-module design. The PPI housing is hermetically sealed and specially designed to withstand failure events caused by the system: The PPI offers a "short-on-fail" feature and an extremely robust non-rupturing case.



Key features

- Low loss by 4.5 kV trench IGBT chip
- Full long-term short-on-fail
- Highest power cycling capability
- Hermetically sealed housing





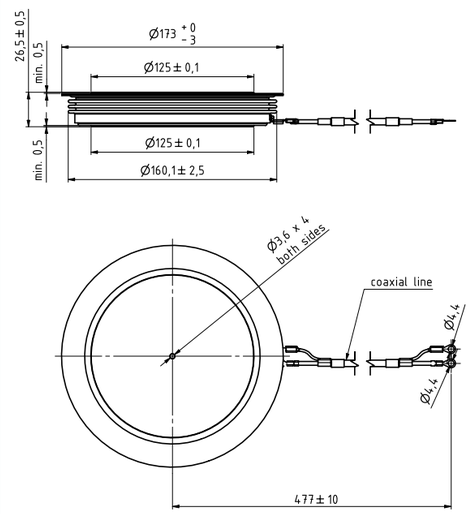
Press Pack IGBTs

Product 	V_{CES} [V]	I_{cnom} [A]	I_{CRM} [A]	$V_{CE(SAT)}$ (typ) [V]	R_G [Ohm]	R_{thJC} IGBT [K/kW]	V_{RRM} Diode [V]	I_F Diode [A]	I_{FRM} Diode [A]	I_{FSM} Diode [A] T_{vj}=125°C, t_p=10ms	V_F Diode [V] T_{vj}=25°C, I_c=2000A typ	R_{thJC} Diode [K/kW]	Clamp. Force [kN]	$T_{vj\,max}$ [°C]	Outline
P2000DL 45X168APT8	4500	2000	4000	2.25 (T_{vj}=25°C, I_c=2000A)	0.090	6.6	4500	2000	4000	17000	2.8	13.2	50-80	150	P168.26K
P2000DE 45X168	4500	2000	4000	2.7 [V] (T_{vj}=25°C, I_c=2000A)	0.090	6.6	4500	2000	4000	18000	3.4	13.2	50-80	150	P168.26K

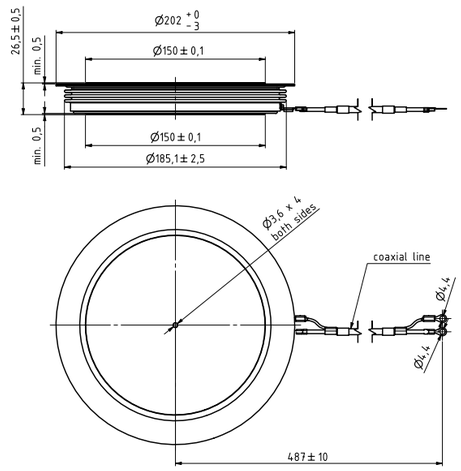
Product	V_{CES} [V]	I_{cnom} [A]	I_{CRM} [A]	$V_{CE(SAT)}$ (typ) [V]	R_G [Ohm]	R_{thJC} IGBT [K/kW]	Clamp. Force [kN]	$T_{vj\,max}$ [°C]	Outline
P3000ZL45X168APT8	4500	3000	6000	2.25 (T_{vj}=25°C, I_c=3000A)	0.070	4.4	50-80	150	P168.26K
P5000ZL45X202APT8	4500	5000	10000	2.27 (T_{vj}=25°C, I_c=5000A)	0.035	3.0	75-105	150	P202.26K

Outlines

P168.26K



P202.26K



Creepage: typ. 43,5 mm
Clearance: typ. 14,5 mm

Package Units

Outline	Packaging units
P168.26K	1
P202.26K	1

ASSEMBLIES

Ready for Bipolar Power Stacks?

Approved heatsink and mounting concepts for semiconductors

Our stacks are characterized by long service life in a compact modular design. The thyristors and diodes combined with water or air coolers are available in standardized configurations. We'll gladly work together closely with our customers to develop customized configurations. We can optionally equip the stacks with additional parts such as water connections, fans, fuses, switch circuits and sensors. The portfolio covers currents up to 14 kA and voltages up to 20 kV.

Key features

- Infineon Technologies Bipolar offers more than 50 years' experience in semiconductor converter design
- Simplify your process with approved heatsink and mounting concepts for all bipolar semiconductors
- Save time and reduce costs with one-stop service
- Use our fast and direct technical support to get your individual solution
- Stack solutions include semiconductors, cooling and accessories (e.g. snubbers, fuses, temperature sensors, fans and firing circuits)



Bipolar Power Stacks

Infineon Power Stacks with bipolar power semiconductors are used in a wide variety of applications in a power range from a few kilowatts up to several megawatts. The modular portfolio of our System Line covers solutions with thyristors and diodes and is optimized for the respective requirements.
Four design lines based on basic building blocks support the requirements from semiconductors, applications and markets:



Compact Blocks

Compact Blocks are designed for thyristor and diode modules in pressure contact or solder bond technology and defined by a potential free common compact heatsink.



Frame Blocks

Frame Blocks are designed for thyristor and diode discs and defined by highly efficient two sided air cooling with perfect electrical conductivity in an insulating plastic frame.



Tower Blocks

Tower Blocks are designed for thyristor and diode discs and are defined by highest insulation and current capability. They follow a tower design that enables a series connection of discs with air or water cooling.



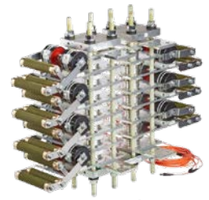
Power Stacks

More complex applications are supported by stacks, a customizable combination of Compact, Frame or Tower blocks.

Applications

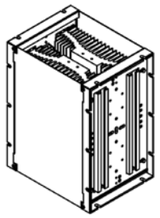
- Industrial AC and DC drives
- Soft starters, STATS
- Rectifiers and static by-passes in UPS
- Wind energy systems
- Welding, plating
- Electrolysis
- Electric heat
- High voltage direct current (HVDC)
- Transmisson systems
- Flexible AC transmission systems (FACTS)
- TAP changers for transformers
- Controllable transformers
- Pulsed Power, Crowbars
- Freewheeling and clamping circuits
- Exciter devices
- Rectifiers for voltage source inverters (VSI)

Your individual solution

Semiconductor package (embedded)			
Coolant	Air or liquid	Air	Air or liquid
Operating voltage	Up to 1.2 kV AC	Up to 2.5 kV AC	Up to 20 kV AC
Operating current	Up to 3 kA DC	Up to 8 kA DC	Up to 14 kA DC
Insulation	Like modules	Fiber Reinforced Plastics (FRP), plastics	Fiber Reinforced Plastics (FRP), AIN, coolant
Examples Block package	 **Compact Block**	 **Frame Block**	 **Tower Block**
Examples Power Stack package	 **Compact Stack**	 **Frame Stack**	 **Tower Stack**

Frame Block Portfolio

We offer a wide range of Frame Blocks with two-sided air cooling. All Frame Blocks are available with natural air cooling or forced air cooling.



Frame Block
with KE01 heat sink



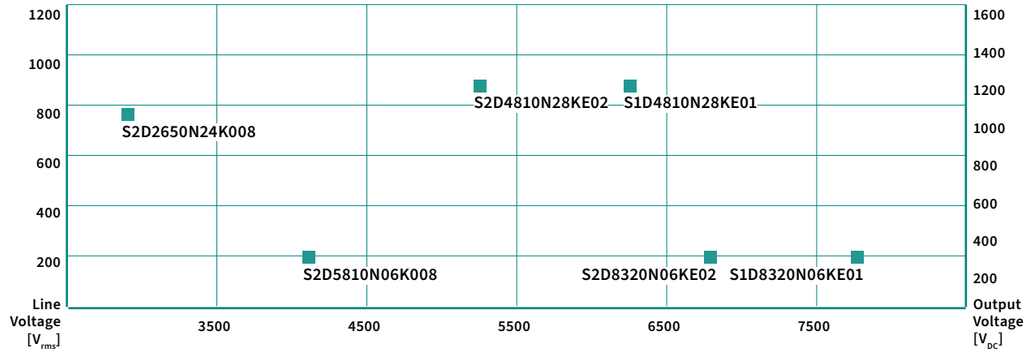
Frame Block
with KE02 heat sink



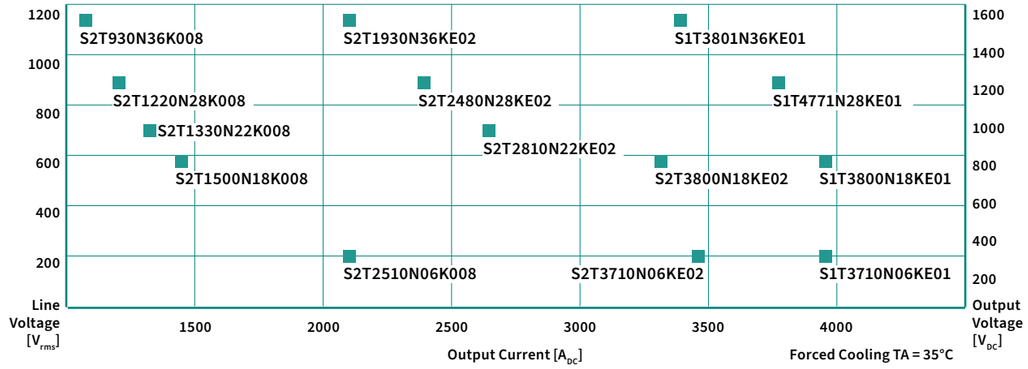
Frame Block
with K008 heat sink

Thyristor based Frame Blocks for 3 Phase Rectifier applications

Diode based Frame Blocks for 3 Phase Rectifier applications



Thyristor based Frame Blocks for AC-Switch Applications



4 steps to your individual Power Stack

We support your requests flexible with building blocks:

1. Find a module or disc which supports your application needs
2. Choose one of the building blocks for basic circuits
3. Define the stack from blocks according the application needs
4. Add accessories according the applications needs

Personal service and support:
support@infineon-bip.com | Phone: +49 2902 9899-1766



Accessories

We offer standard gate leads suitable for our thyristor module portfolio as well as for our press pack devices. In addition, we supply clamping units for disc cells from 42 mm to 75 mm diameter and 14/26 mm disc thickness as well as fiber optic cables and laser diodes for our light-triggered thyristors.









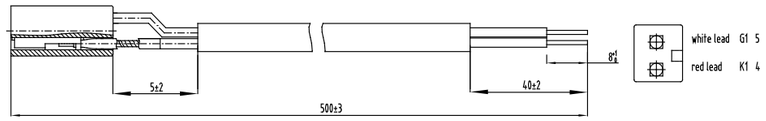


Gateleads for Modules with Baseplate 20 mm

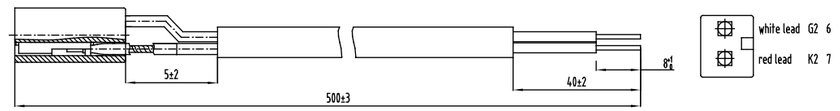


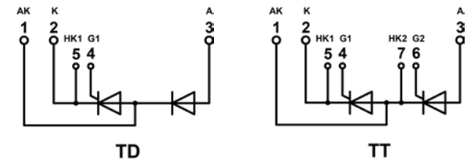
Product	Connection to	Connection to	Color	Length [mm]	Ordering Code
Module with baseplate 20 mm					
GATELEAD L=500 PB20 G1K1	5 / 4	G1/K1	G yellow / HK red	500	SP000983478
GATELEAD L=500 PB20 G2K2	6 / 7	G2/K2	G yellow / HK red	500	SP000983484

Outline G1/K1



Outline G2/K2



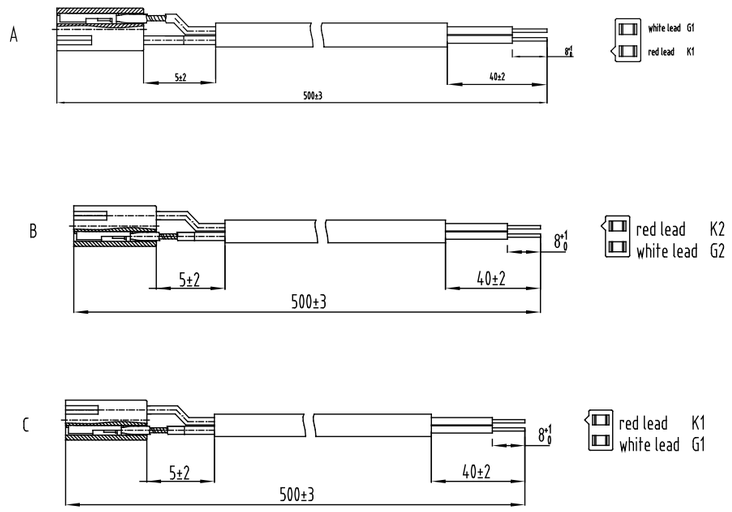


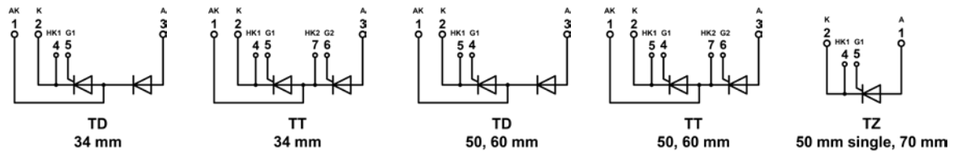
Gateleads for Modules with Baseplates 34-70 mm



Product	Connection to	Connection to	Color	Length [mm]	Outline	Ordering Code
Module with baseplate 34 mm						
GATELEAD L=500 PB34-60_2	4 / 5	G1/HK1	G white / HK red	500	A	SP000983496
GATELEAD L=500 PB34-70_1	6 / 7	G2/HK2	G white / HK red	500	B	SP000983490

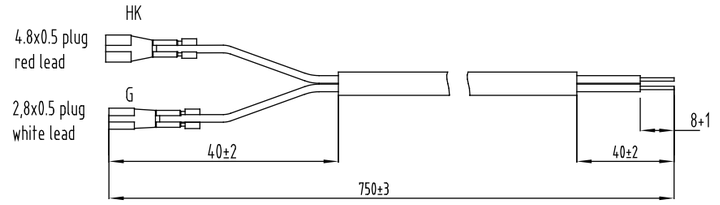
Module with baseplate 34 mm						
GATELEAD L=500 PB34-60_2	5 / 4	G1/HK1	G white / HK red	500	A	SP000983496
GATELEAD L=500 PB34-70_1	6 / 7	G1/HK1	G white / HK red	500	B	SP000983490



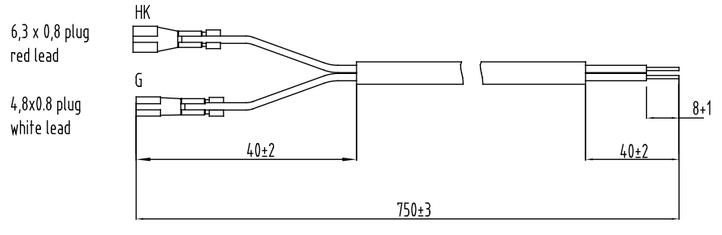


Gateleads for Disc Type Devices

Disc outline	Product	Color	Connector [mm]	Length [mm]	Ordering Code
T42.14K0	GATELEAD L=750/0.5 MP	red/white	4.8x0.5/2.8x0.5	750	SP000983448
T48.14K0					
T58.14K0					
T58.26K0					
T75.26K0					
T100.26K0					
T111.26K0					
T120.26K	GATELEAD L=750/0.8 HP	red/white	6.3x0.8/4.8x0.8	750	SP000983442
T120.35K					
T150.26K					
T150.35K					
T172.26K					



GATELEAD
L=750/0.5 MP



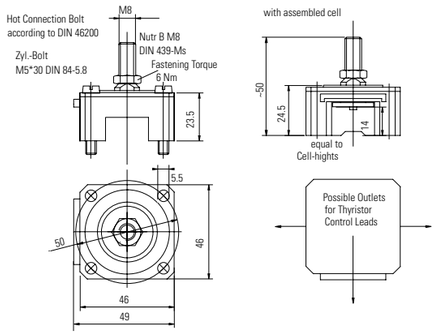
GATELEAD
L=750/0.8 HP

Clamping Units for Discs

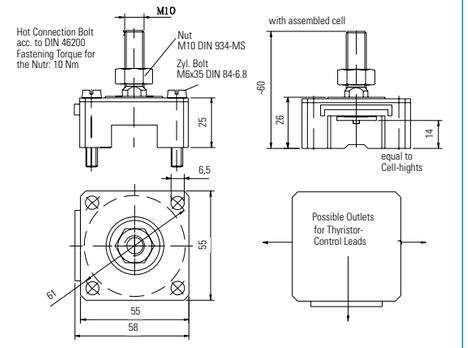


Product	For disc diameter [mm]	For disc height [mm]	Clamping force [KN]	Min. creeping distance [mm]	Housing	Ordering Code
V50-14.45M	42	14	4.5	11	T42/14	SP000096563
V50-14.45N	42	14	4.5	11	T42/14	SP000090625
V61-14.80M	48	14	8	11	T48/14	SP000096565
V61-14.80N	48	14	8	11	T48/14	SP000090627
V72-14.150M	58	14	15	11	T58/14	SP000096566
V72-26.120M	58	26	12	23	T58/26	SP000096567
V72-26.150M	75	26	15	23	T75/26	SP000096568
V89-26.300N	75	26	30	26	T75/26	SP000090624
V89-26.400N	75	26	40	26	T75/26	SP000090662
V100-35.200N	75	26	20	26	T75/26	SP000090635

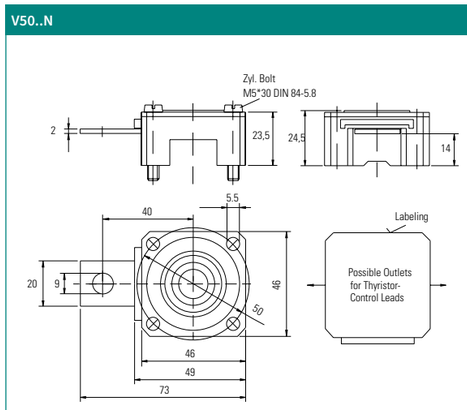
V50..M



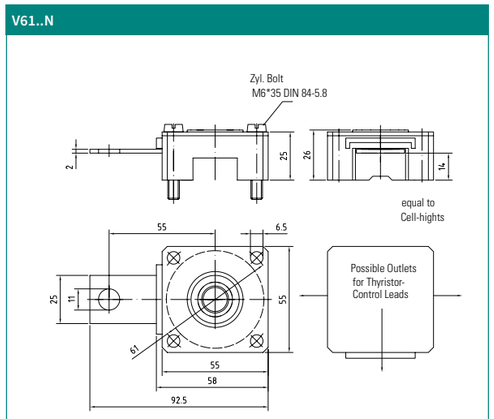
V61..M



V50..N



V61..N



Laser Diode for Light Triggered Thyristors



Product	For Light Guide	Wave length	Ordering Code
Laser Diode with ST connector (female)			
LASER DIODE SPL-PL90 A	For Light Guides with ST connector for disc housings T76.35L, T150.40L, T172.40L	905 nm	SP000091118

Light Guides for Light Triggered Thyristors



Product	For disc housing	Features	Ordering Code
Light Guide with ST connector (male)			
LIGHT FIBER LWL R10-LR50-L3000 A	T76.35L	Mono glass fiber: 200 µm Pre-tested with pull force of 350 N/mm²	SP000091119
LIGHT FIBER LWL R10-LR87-L3000	T150.40L, T172.40L	Mono glass fiber: 200 µm Pre-tested with pull force of 350 N/mm²	SP000091117
Other lengths on request	T76.35L, T150.40L, T172.40L		

Naming Systems

Naming for standard modules

TT | 162 | N | 16 | K | O | F | -K | TIM

Circuit
- **TT** – with 2 thyristors
- **TD** – with 1 thyristor and 1 diode
- **DD** – with 2 diodes
- **ND** – with 1 diode
- **DZ** – with 1 diode
- **TZ** – with 1 thyristor

162 – I_{TAV}, I_{FAV} average on-state current [A] at TC
- – 85°C (thyristors)
- 100°C (diodes)

N – phase control device

16 – V_{RRM}, V_{DRM} /100 repetitive peak off state and reverse voltage

K – mechanical construction: pressure contact technology

S – mechanical construction: solder technology

O – no guaranteed turn-off time

F – 1000V/µs critical rise of off-state (du/dt)

-K – design with common cathode

-A – design with common anode

TIM – baseplate with pre-applied Thermal Interface Material (TIM)

Naming for Ecoline 60mm and Power Start Modules

e/s | TT | 1100 | N | 16 | P | 70 | TIM

e – Eco Block Modules



s – Power Start Modules



TT – half bridge thyristor thyristor
- **TD** – half bridge thyristor diode
- **TZ** – single thyristor
- **DD** – half bridge diode diode
- **DZ** – single diode

1100 – I_{TAV}, I_{FAV} average on-state current [A] at TC
- – 85°C (thyristors)
- 100°C (diodes)

N – phase control device

16 – V_{RRM}, V_{DRM} /100 repetitive peak off state and reverse voltage

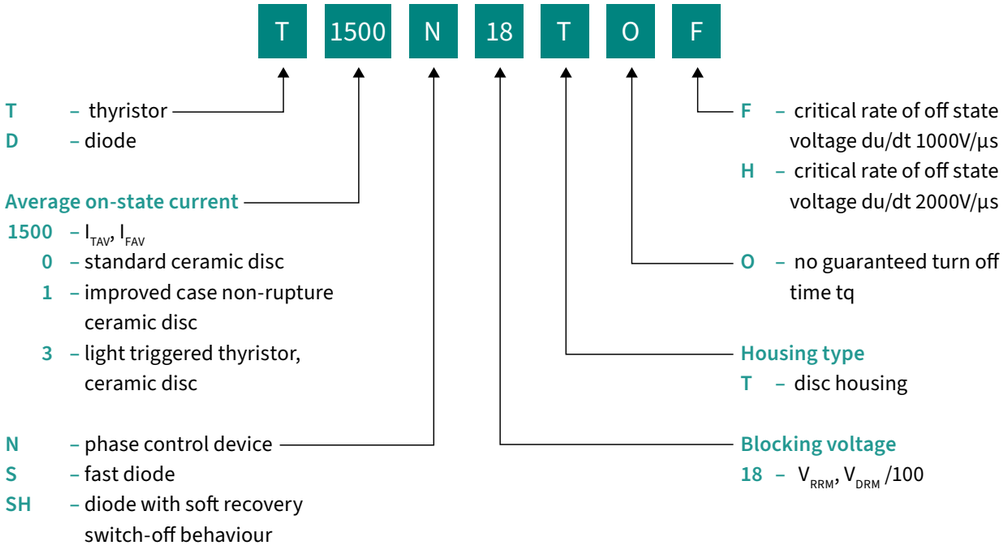
P – pressure contact technology

55 – 55 mm housing
60 – 60 mm housing
76 – 76 mm housing
110 – 110 mm housing

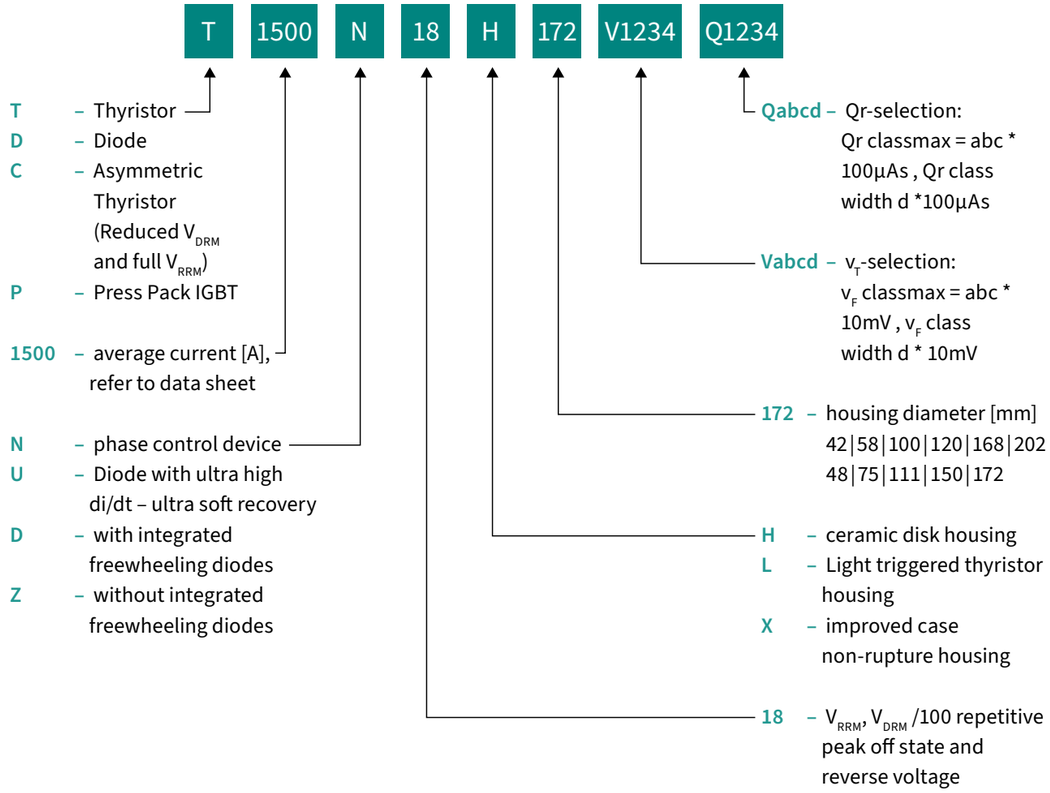
TIM – baseplate with preapplied TIM

Naming Systems

Naming for thyristor and diode discs

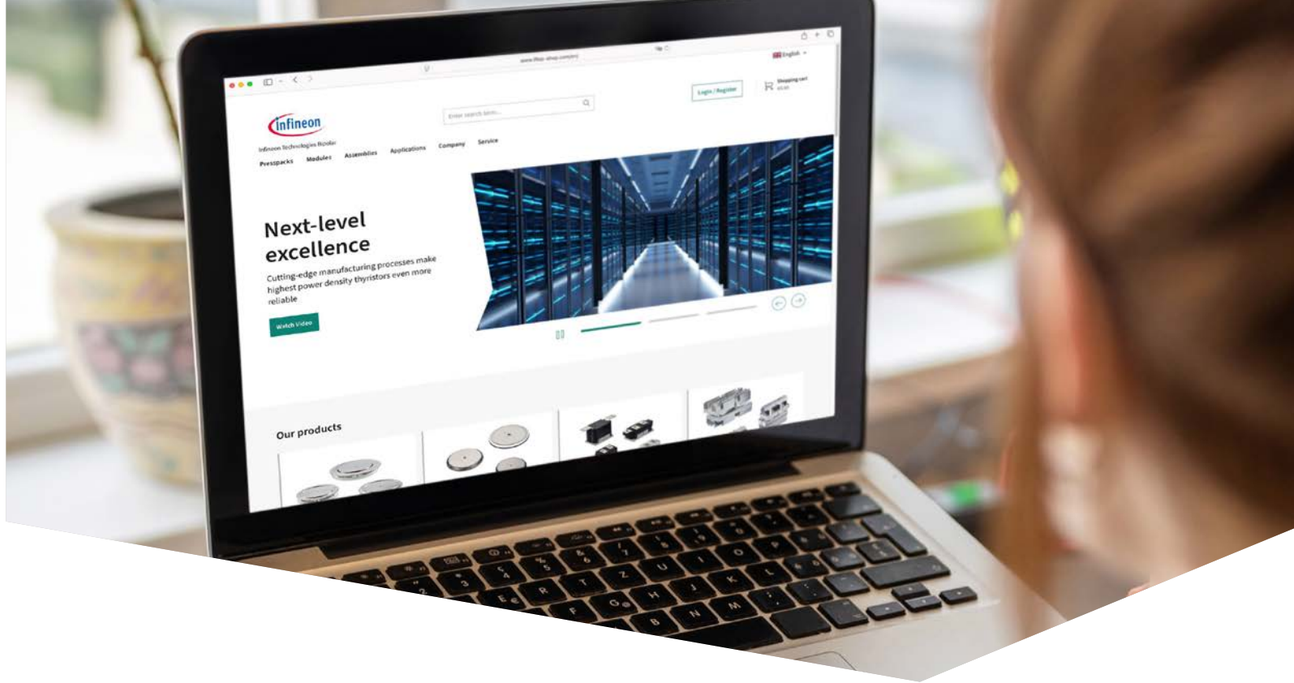


Naming for thyristor/diode discs and Press Pack IGBTs



Explanations

F	clamping force
G	weight
i_D	forward off-state current
I_{GD}	gate non trigger current
i_{GM}	peak gate current
I_H	holding current
I_L	latching current
i_R	reverse current
I_{TAV}/I_{FAV}	on-state current (average value)
I_{TAVM}/I_{FAVM}	maximum average on-state current
I_{TM}/I_{FM}	on-state current (peak value)
I_{TRMSM}/I_{FRMSM}	maximum RMS on-state current
I_{TSM}/I_{FSM}	surge non repetitive on-state current
I_F	DC forward current
$\int i^2\,dt$	I2t value
di_G/dt	rate of rise of gate current
$di_T/d_t/di_F/d_t$	rate of rise of on-state current
$(di/dt)^{cr}$	critical rate of rise of on-state current
M	mounting torque
r_T	slope resistance
R_{thCK}	thermal resistance, case to heatsink
R_{thJA}	thermal resistance, junction to coolant
R_{thJC}	thermal resistance, junction to case
t_g	trigger pulse duration
t_q	circuit commutated turn-off time
T_{vj}	junction temperature
$T_{vj\,max}$	maximum permissible junction temperature
$T_{vj\,op}$	junction operating temperature
T_{stg}	storage temperature
v_D	forward off-state voltage
V_{DRM}	repetitive peak forward off-state voltage
V_{DSM}	non-repetitive peak forward off-state voltage
V_{GD}	gate non trigger voltage
V_{IsoL}	insulation test voltage
v_R	reverse voltage
V_{RRM}	repetitive reverse voltage
V_{RSM}	non-repetitive peak reverse voltage
v_T/v_F	on-state voltage
$V_{(TO)}$	threshold voltage
$(dv/dt)_{cr}$	critical rate of rise of off-state voltage
Z_{thJC}	transient thermal impedance, junction to case



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