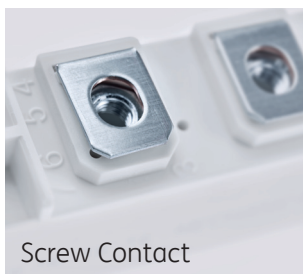
SEMIKRON
innovation + service

Interfaces to Meet Your Needs


Spring Contact


Press-fit Contact


Screw Contact


Solder Contact

Catalogue
2014/2015

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- Online Shop, 24-hour competent power electronics consultation
- Worldwide delivery service
- Everything at a glance!

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SINDOPOWER

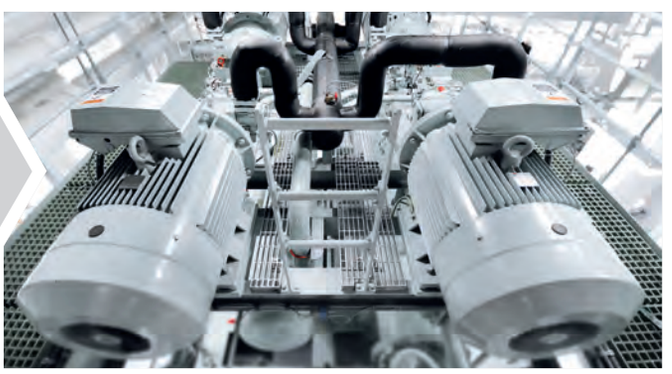
More than 60 years of experience in the field of power electronics, a comprehensive portfolio of chips, modules and inverter systems, a global network of production plants and sales offices as well as our highly qualified staff – these are our success factors. SEMIKRON's power electronics components and systems primarily address the medium and high performance segment (approx. 1kW up to 10MW).

Applications include speed controlled industrial drive units, automation technology, welding equipment and elevators. Other applications include power supplies, power quality, urban transport equipment, renewable energies (wind, solar) as well as electrification of utility vehicles.

New Products

SEMITOP® Press-Fit

SEMiX® Press-Fit



SEMIKUBE® SlimLine

SEMITOP® Press-Fit – the alternative to solder mounting

Building on the SEMITOP success, there is now a new way to process these ultra-compact modules even more rapidly in your production. SEMITOP press-fit. Fast and clean to assemble it will ensure secure connections over the lifetime of your application. Compatible mechanically and in pin layout with the SEMITOP family, this is a true alternative to speed up your line and save cost.

Motor Drives | **Solar Energy** | **Power Energy** | **Power Supplies**

SEMiX® Press-Fit – for solder-free mounting

The SEMiX module platform is now extended even further. Offering pin compatibility for second sourcing and the low inductive power terminals, the SEMIX press-fit modules benefit by connecting the driver and control electronics in only one safe and clean production step.

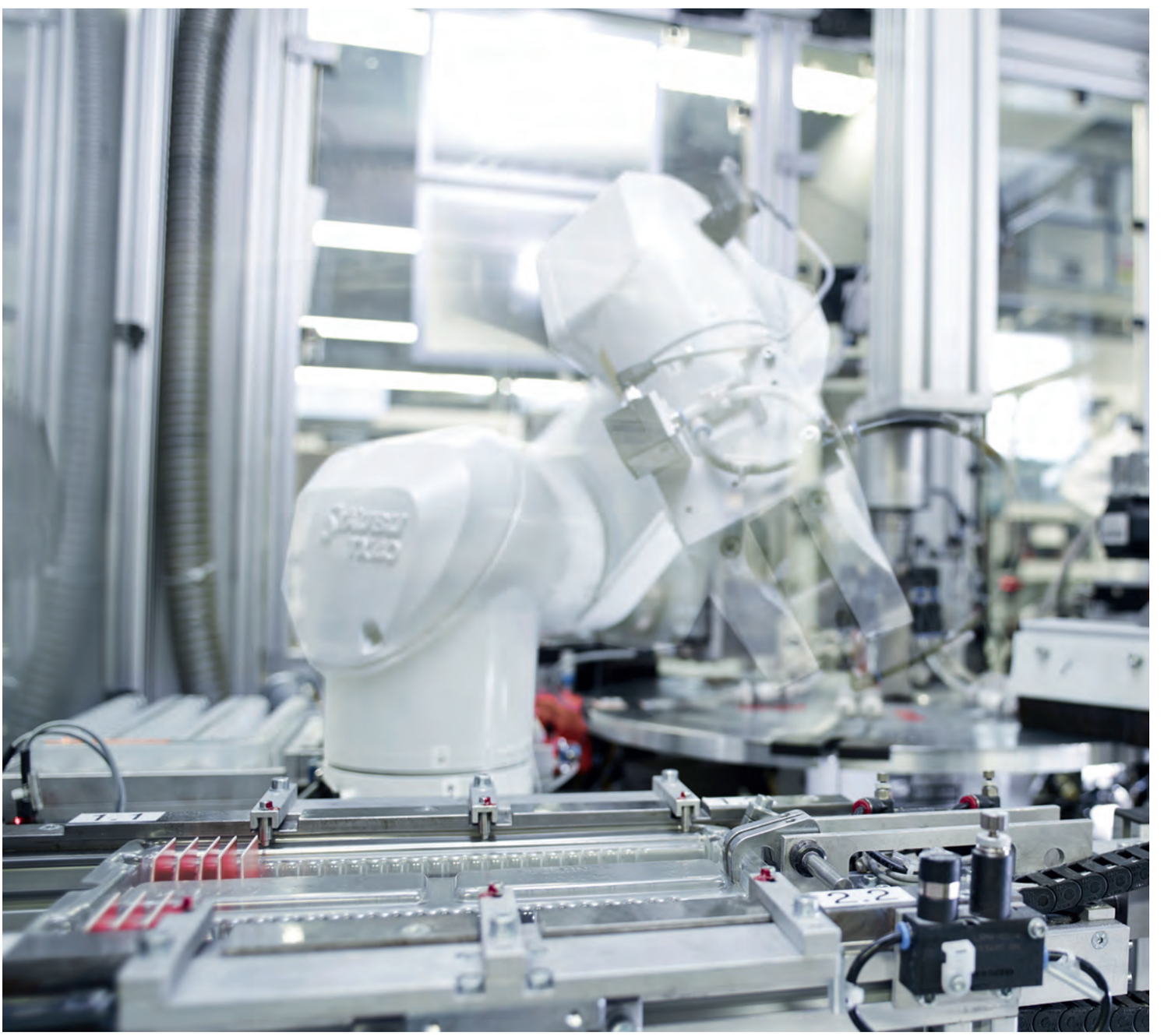
Motor Drives | **Wind Energy** | **Solar Energy** | **Power Quality** | **Power Supplies** | **Urban Transport Equipment**

SEMIKUBE® SlimLine – all the SEMIKUBE experience in a compact design

The Solar PV inverter market is highly dynamic and requires short product development cycles and huge variations in production capability. The SEMIKUBE SlimLine is a pre-qualified IGBT platform ready to be integrated into any air cooled inverter system. Owing to its low mechanical profile and wide operating temperature range the SEMIKUBE SlimLine is ideal for applications with strict space constraints and severe environmental requirements. With its input rectifier variants and precise current feedback the SEMIKUBE SlimLine is also a perfect match for high performance AC inverter drives.

Motor Drives | **Solar Energy**

Content



Product Lines

Product Groups

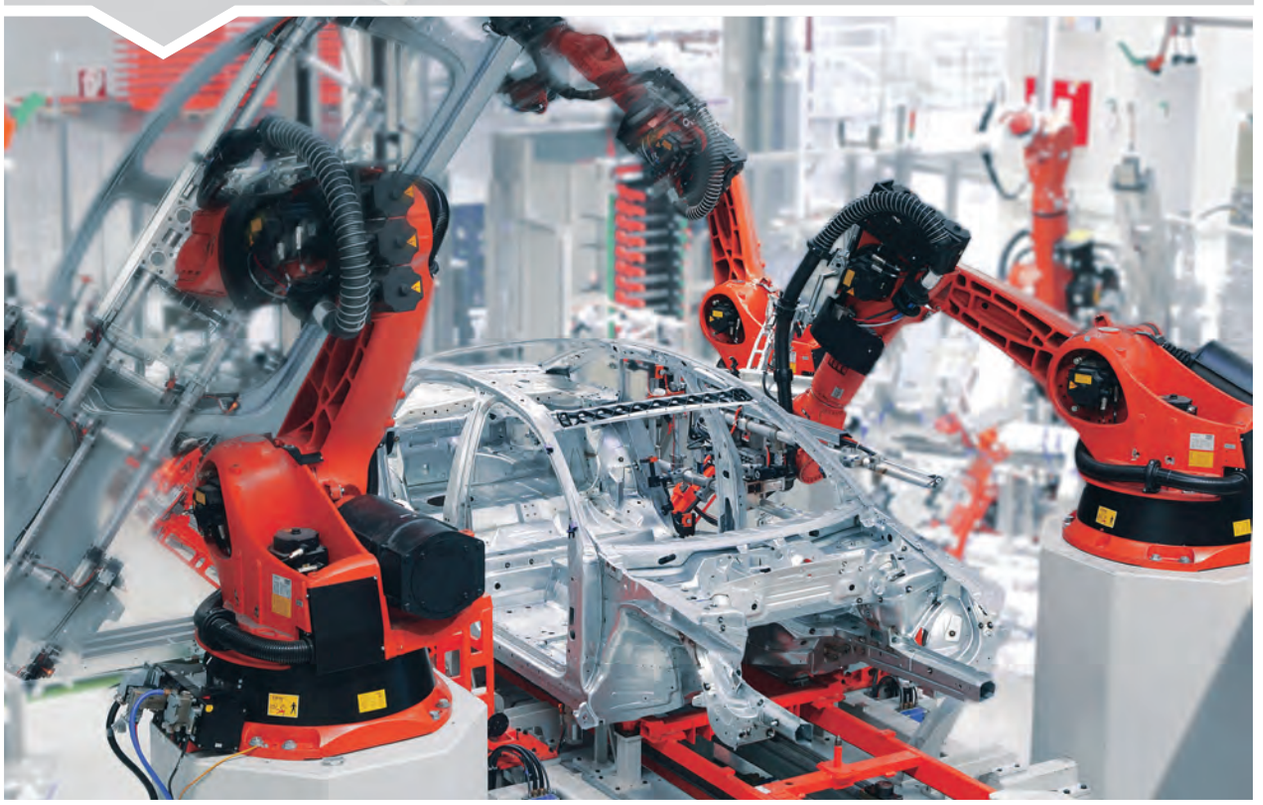
Service & Contact

Product Lines

Product at a Glance

MiniSKiiP®

- Low cost assembly, high production run rate, high yield
- Small and compact inverter design
- High reliability and long product life time



Motor Drives

Solar Energy

Power Quality

AC | DC Power Supplies

Fast, cost efficient and reliable one screw mounting

Benefits

An important mechanical feature of MiniSKiiP modules is the outstanding easy assembly and service friendly spring-contact for load and gate terminals. Compared to conventionally soldered modules, where expensive soldering equipment is required for time-consuming solder processes, no special tools are needed for MiniSKiiP assembly. Instead, a single screw connection is used. The printed circuit board (PCB), the power module and the heat sink are assembled in one mounting step.
This connection technology features a number of additional advantages: the PCB can be more flexible in design, as the power circuit board does not need to include holes for solder pins. The springs provide a flexible connection between the PCB and the power circuitry which is far superior to a soldered joint, particularly under thermal or mechanical stress conditions which can affect lifetime. Thanks to the high mechanical pressure provided by the springs, an air-tight, reliable electrical connection is achieved.

Applications

With more than 16 years of field experience and more than 24 million modules in the field, this module platform has proven successful in all standard applications. Key applications include all kinds of inverters, such as standard drives, stand-alone drives, servo drives, system drives, solar inverters, UPS systems and welding machines. Due to the high reliability of spring contacts, applications such as agricultural vehicles or pitch motors of windmills benefit from the MiniSKiiP technology as well.

Product range

MiniSKiiP modules are designed for 600V/650V, 1200V and 1700V with 4A - 300A nominal chip currents, and feature Trench IGBT technology in combination with the SEMIKRON CAL diodes. 1200V Trench IGBT4 and CAL 4 diodes are designed for maximum junction temperatures of 175°C. In addition to CIB, 6-pack, H-bridge, half bridge, 3-level and uncontrolled/half-controlled rectifiers plus brake chopper, customer-specific modules are also available. For fast evaluation, lab test boards can be ordered for each module type.

Key features

- Solder-free spring contact technology for fast and easy assembly
- Without copper baseplate for cost efficient concept
- Easy and flexible PCB routing without pin holes
- Current range 4A to 300A for inverter range up to 90kW with one product platform
- Comprehensive setup of topologies: CIB, 6-pack, H-bridge, half bridge, 3-level, bridge rectifiers with brake chopper

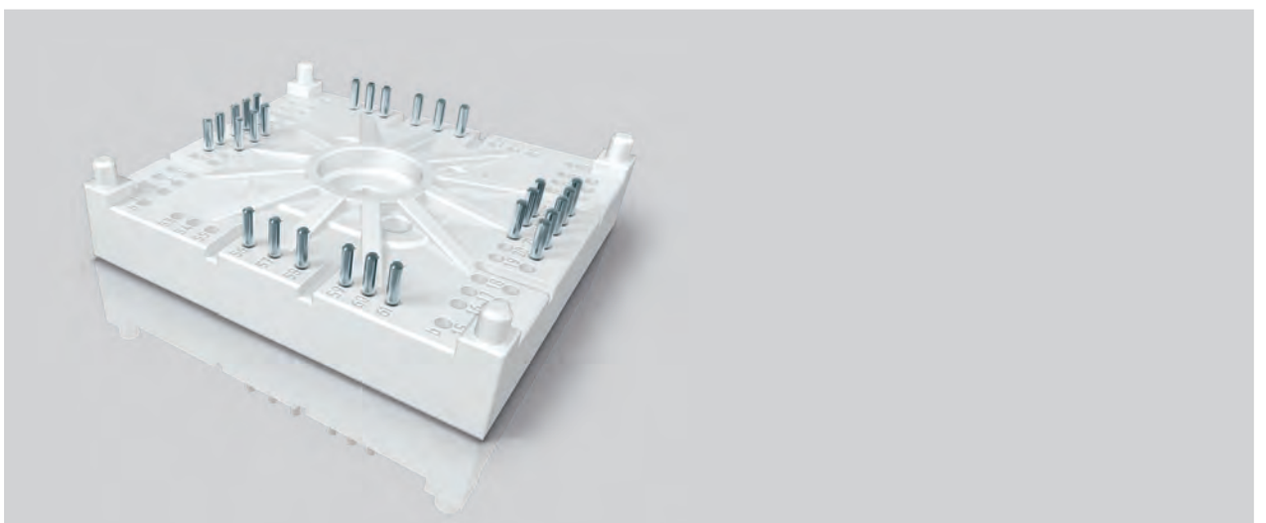
Further information:
www.semikron.com/miniskiip

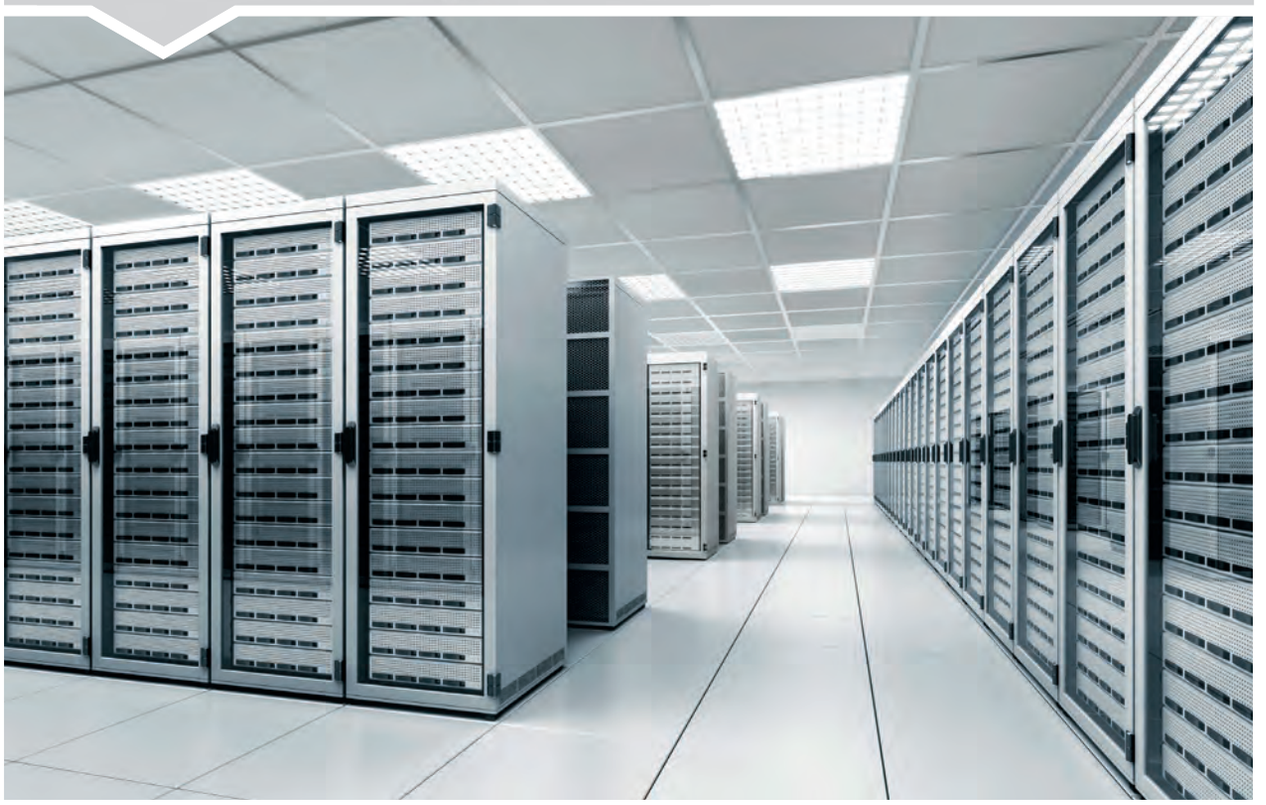
SEMITOP®

Complex topologies in compact space

Simple pin routing thanks to terminal edge positioning

Low inductance design philosophy coupled with latest chip technologies





Solar Energy

Power Quality

Motor Drives

AC | DC Power Supplies

Flexibility for high integration level and high performances

Benefits

Complete family of fully compatible 12mm height modules.
One screw module for easy, fast and reliable assembly.
Pins on the edges allow for more internal available space to fit the most complex topologies. Three level inverters are, for example, integrated in SEMITOP3 and SEMITOP4 housings.
Low inductance design approach together with Si and SiC technologies available to offer the best in class solutions.

Applications

SEMITOP is a useful product in the low and medium power range where flexibility and high integration levels are required. Latest available chip technologies and the ability to offer compact designs make this product suitable for different and new high performing configurations like single three level inverter (NPC and TNPC), double boost and interleaved boost applications covering different markets like UPS, solar, motor drives and welding.

Product range

SEMITOP may include diodes, thyristors, IGBTs and MOSFETs. Thus, a lot of different configurations with chip combinations are possible: three-phase inverters up to 200A/600V and 100A/1200V, CIB configurations up to 100A/600V and 50A/1200V, single leg of three-level inverters up to 150A/600V, mixed three-level inverters up to 100A, MOSFET configurations up to 300A, three-phase bridge rectifiers up to 100A DC output current. Many other configurations are available.

Key features

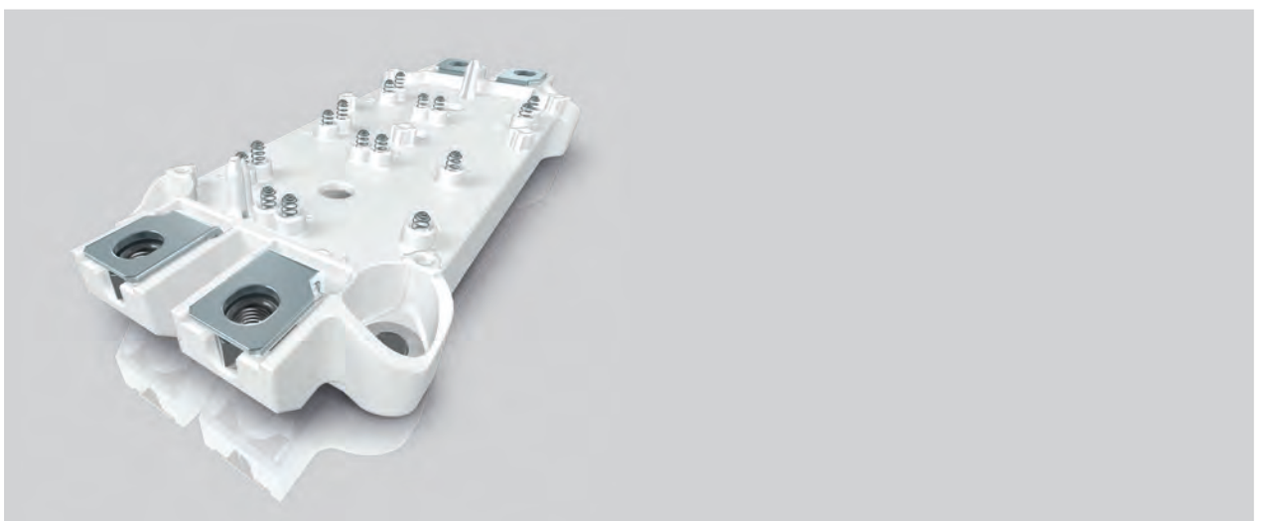
- One central mounting screw for low mounting cost
- Non-baseplate design
- Insulated module
- Low thermal resistance thanks to homogeneous pressure distribution
- Through hole solder pin terminals
- High integration level possible for compact design
- 12mm height

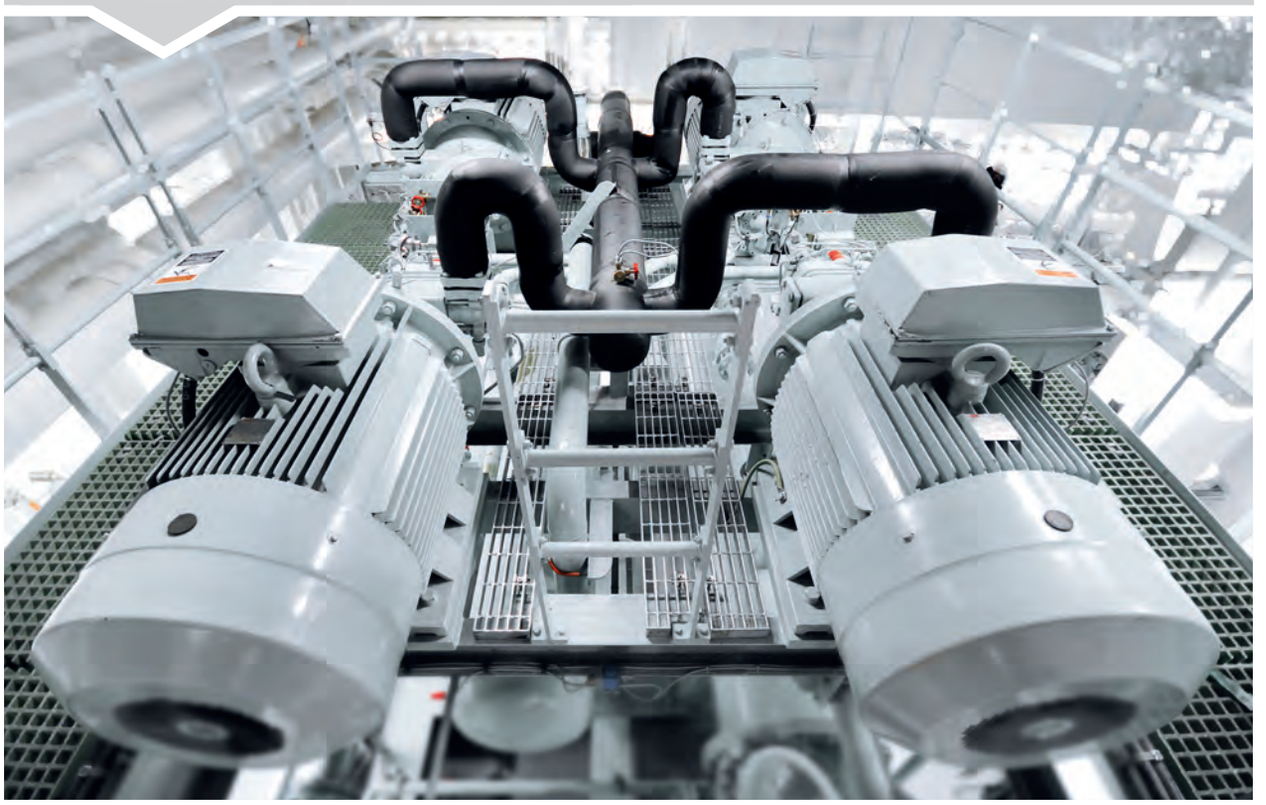
Now also available with press-fit contacts
Please refer to Page 3 – new products

Further information:
www.semikron.com/semitop

SEMiX®

- Reliable spring or press-fit connection
- Direct driver assembly
- Flat and compact inverter design





Motor Drives | Wind Energy | Solar Energy | Power Quality | AC DC Power Supplies | Urban Transport Equipment

IGBT and rectifier module family for solder-free mounting

Benefits

The family concept of SEMiX includes a unification of IGBT and rectifier housings. All have the same height (17mm) and can be connected by one principle DC-link design, due to having the same interface for IGBT and rectifier stage. This saves development time and makes a simple and low-inductance DC-link profile possible. Spring or press-fit contacts allow for a gate driver mounted directly on top of the module. So there is no risk of noise on wires or loose connectors. With the flat package and separated AC and DC terminals a state-of-the-art inverter construction is possible, which is very compact. The auxiliary contacts avoid solder joints and offer highly reliable pressure contacts. This leads to an increased product reliability and lifetime. The solder-free contacts offer a fast and easy assembly process and especially spring contacts are user friendly with regard to servicing. Production at the customer site can be optimised by uniform direction of assembly (everything top down). This simplifies logistics and reduces manufacturing costs. Using the scalability of SEMiX housings, with one basic design a complete inverter line can be built with less effort. In consequence the overall costs can be reduced.

Applications

SEMiX is a flexible and application oriented module. On the basis of a scalable platform concept, modern chip technology is integrated into IGBT and rectifier modules which are used in a wide variety of applications, such as AC motor drives, switching power supplies and current source inverters. Other typical applications include matrix converters, uninterruptible power supplies and electronic welding devices.

Product range

Six different housing sizes are available in the voltage classes 600V, 1200V and 1700V for the IGBT modules. Half-bridge, 6-pack and chopper topologies are available with a current range from 75A to 600A. Besides IGBT 3 and IGBT 4 chips, the 1200V range also includes a series with V-IGBT devices. Controlled, half-controlled and uncontrolled rectifier modules with identical footprint and 17mm height are also available.

Key features

- Available in 600V, 1200V and 1700V and from 75A to 600A
- Multiple IGBT sources
- Solder free contacts for highest durability
- Half bridge, 6-pack and chopper topologies

Now also available with press-fit contacts
Please refer to Page 3 – new products

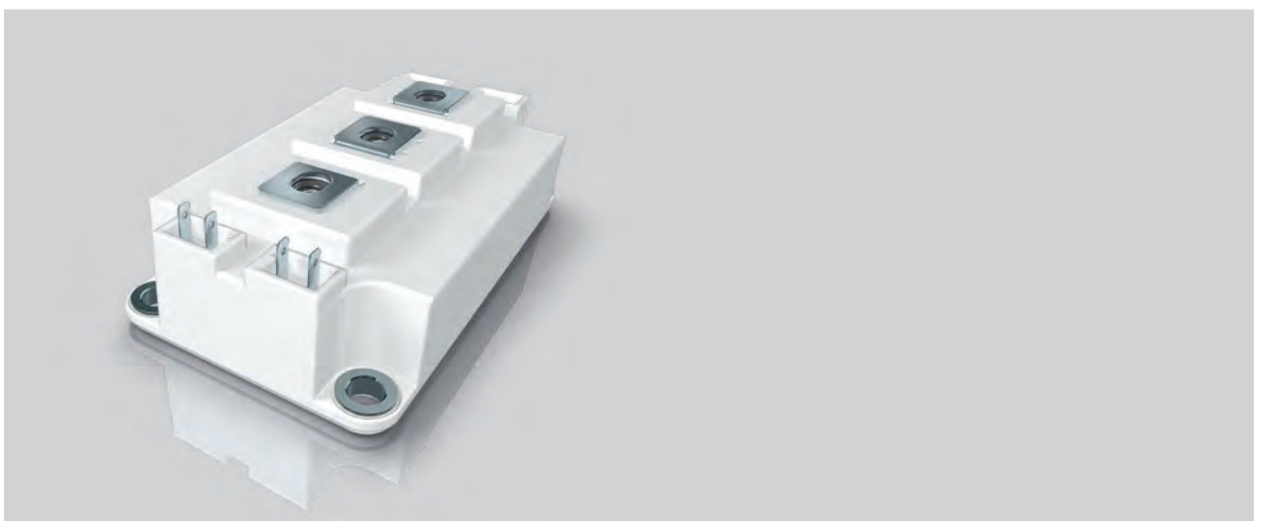
Further information:
www.semikron.com/semix

SEMITRANS®

Safe operation with high DC-link voltages

Maximum power output

Multiple IGBT sources



Motor Drives

Wind Energy

Solar Energy

Power Quality

AC | DC
Power Supplies

Urban Transport Equipment

Low inductance package design with 15nH

Benefits

The SEMITRANS package provides a low-inductive design with 15nH can be used for AC/DC inverters from 20kW to 500kW. The modules are available up to 900A and 1700V. Availability is ensured by different IGBT sources. With a market experience of over 15 years the SEMITRANS package offers a well proven standard design.

Applications

The proven package is designed for a broad range of applications like regenerative inverters and power supplies. The long service life fits perfectly to ambitious applications like AC drives, switched reluctance and DC motors.

Product range

The SEMITRANS family offers a broad range of topologies and power ranges. All standard voltage classes from 600V to 1700V can be chosen. The current rating extends from 50A to 900A. And the SEMITRANS package is available as half bridge, chopper, single switch, MLI and common emitter.

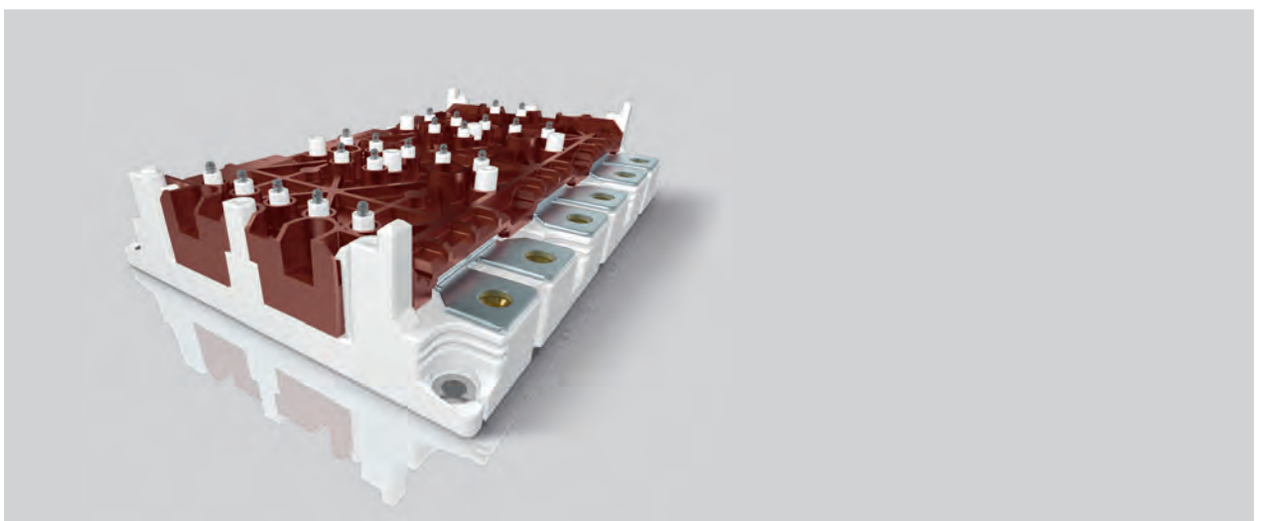
Key features

- Topologies: half bridge, chopper, single switch, MLI, common emitter
- Isolated copper baseplate using DBC Technology
- With integrated gate resitor
- High isolation voltage

Further information:
www.semikron.com/semitrans

SKiM®

- No solder delamination thanks to sintered chips – SKiM 63/93
- 1500 temperature cycles without failure – SKiM 63/93
- More than 60000 power cycles with a temperature swing of 110K – SKiM 63/93
- Pressure contact SKiiP-Technology



Motor Drives | Wind Energy | Solar Energy | Power Quality | Power Supplies | Utility Vehicles | Urban Transport Equipment

100% solder-free ensures durability

Benefits

The SKiM modules can increase the reliability of inverters by several factors, even under substantial active and passive temperature swings. This is achieved by removing all solder layers of standard power modules, replacing them with sintered chips (SKiM 63/93), pressure contacts for the main terminals and springs for the auxiliary contacts.
Thanks to the non-baseplate design and optimised chip layout, a very thin layer of thermal interface material reduces the operating temperatures significantly.

Applications

The SKiM 63/93 is designed for applications that require high inverter reliability. First of all this applies, of course, to automotive applications such as electric powertrains in electric utility vehicles, heavy-duty construction machinery and tractors, or even provide leading-edge performance in super sports and race cars. The SKiM 4/5 with its proven three level topologies can be found in ambitious applications such as solar and UPS.

Product range

The SKiM 4/5 modules are available as 6-pack, MLI and TMLI configuration with nominal currents from 200A to 600A.
The SKiM 63/93 offers 3-phase inverter topologies at 600V and 1200V. The power ranges from 20kW to 180kW with nominal currents of 300A to 900A. Modules in buck and boost configuration for 1200V, 600A complete the portfolio.
Driver solutions are available as well as an optimised water cooler for fast and customer friendly evaluation. In addition, paralleling boards for a simple and powerful half-bridge configuration are also available.

Key features

- IGBT Power module in 6-pack configuration with 3 separated half bridges – SkiM 63/93
- Available in 600V and 1200V and from 200A to 900A
- MLI and TMLI configuration – SKiM4/5
- In 1200V, 600A also available in Buck/Boost configuration – SKiM 63/93
- Solder-free design for highest durability – SKiM 63/93
- Design without baseplate
- Solder-free mounting of the module and the driver PCB
- Low inductive design thanks to symmetrical layout

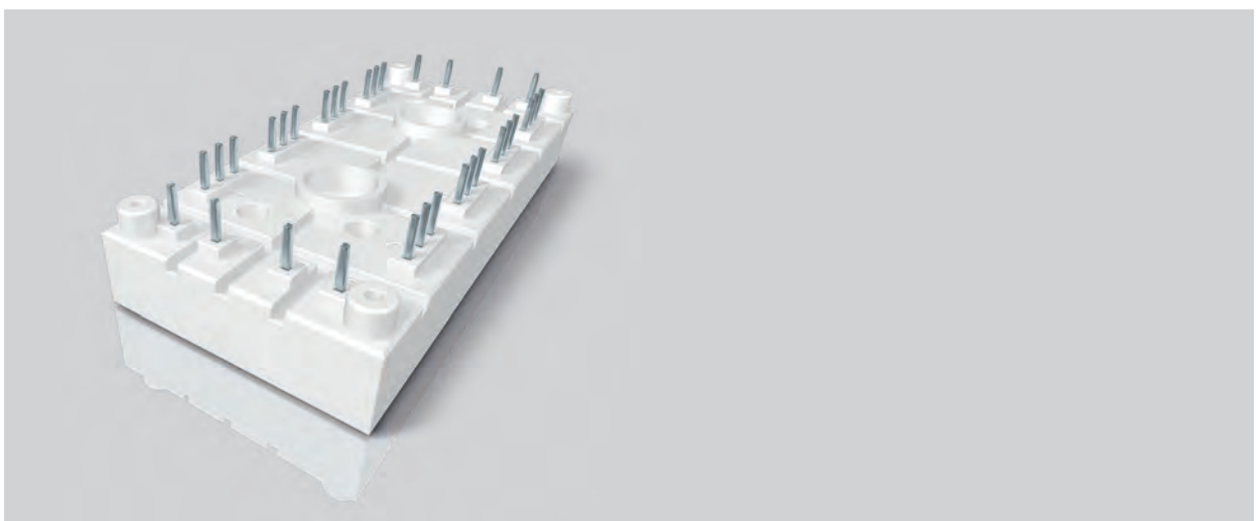
Further information:
www.semikron.com/skim

SEMIPONT®

Compact packages with screw, fast on or lead terminals

High insulation voltages

Diode, thyristor rectifier, rectifier/brake chopper and AC controller



Power
Quality

Compact package with various configurations

Benefits

With blocking voltages up to 1.8kV the SEMIPONT family offers high ruggedness for harsh industrial applications. The different housings with soldered PCB connection allow for compact inverter design.

Applications

Typical application areas for the broad field of SEMIPONT power bridge rectifiers include AC and DC drives, servo drives, (controlled) field rectifiers for DC motors, (controllable) rectifiers for power supplies, input rectifiers for variable frequency drives, soft motor starters, temperature control, (controlled) battery charger rectifiers, DC motor field controllers, DC motor controllers and DC power supplies.

Product range

The SEMIPONT bridge rectifier family is available in various configurations with diode and thyristor rectifiers, rectifier/brake chopper or AC controller. The compact screw mounted packages enable fast PCB mounting. High blocking voltages of up to 1800V, high ruggedness for hard industrial application, high insulation voltages are also available.

Key features

- Diode, thyristor rectifier, rectifier/brake chopper and AC controller
- From 400V up to 1.8kV blocking voltages
- From 40A up to 100A
- Compact packages with screw, fast on or lead terminals

Further information:
www.semikron.com/semipont

SEMIPACK®

Well established thyristor diode package

Market experience over 40 years

Broad power and topology range

Motor Drives

Power Quality

AC | DC Power Supplies

Comprehensive product range – industrial standard

Benefits

SEMIPACK was the first insulated module on the market, and almost 40 years later, it is still state-of-the-art. It is a well established industrial standard with regard to footprint and module outline. Due to the comprehensive product range, the optimal solution can be found for any application. With SemiSel, the free online calculation and simulation tool for losses and temperature, the power electronic system developer is able to make the perfect power module choice.

Applications

The target applications for the thyristor, thyristor/diode or diode modules include input rectifiers (single-phase, three-phase, uncontrolled, half-controlled or controlled) for inverters or UPS systems, soft start applications and control systems.

Product range

The SEMIPACK product line offers a comprehensive product range with seven module lines: with voltages from 800V to 2200V, insulation voltages of 3.6kV, 4.8kV@1s and a current range from 15A to 1200A. Uncontrolled, half-controlled and controlled rectifier modules are available as well as single thyristor or diode modules. Also, fast diodes come in SEMIPACK modules. Furthermore, different contact technologies – soldered contact, bonded contact or pressure contact modules – are available.

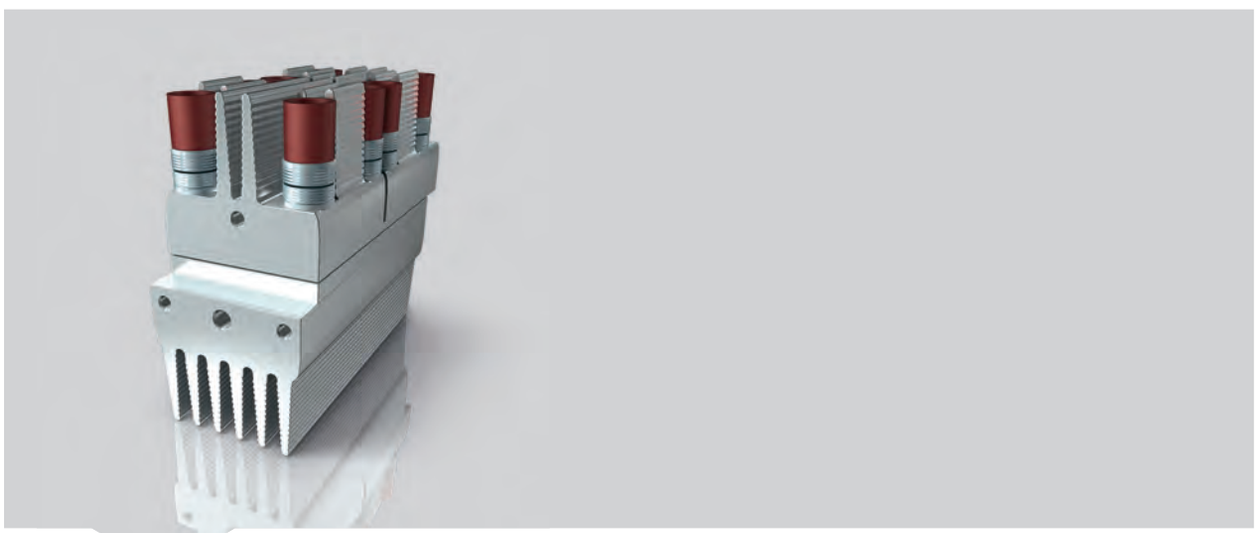
Key features

- 800V up to 2200V
- 15A up to 1200A
- Uncontrolled, half-controlled and controlled rectifier
- Single thyristors and diodes

Further information:
www.semikron.com/semipack

SEMiSTART®

- Double-sided cooling for high load cycle capability
- Robust pressure contact technology
- Low thermal resistance



Motor Drives

Robust thyristor package

Benefits
The main advantage of this power module is the high current capability in a new compact design. A 400kW soft-starter featuring SEMiSTART has just one sixth of the volume of the same device with conventional capsule thyristors.

Applications
SEMiSTART, the anti-parallel thyristor module is designed with an integrated heatsink for soft-start applications.

Product range
The SEMiSTART thyristor module is offered in five current classes, zwei voltages classes and three sizes.
In addition, due to pressure contact technology and double-sided chip cooling, these new thyristor modules can withstand overload currents of up to 3000A for a 20s duration of overload.

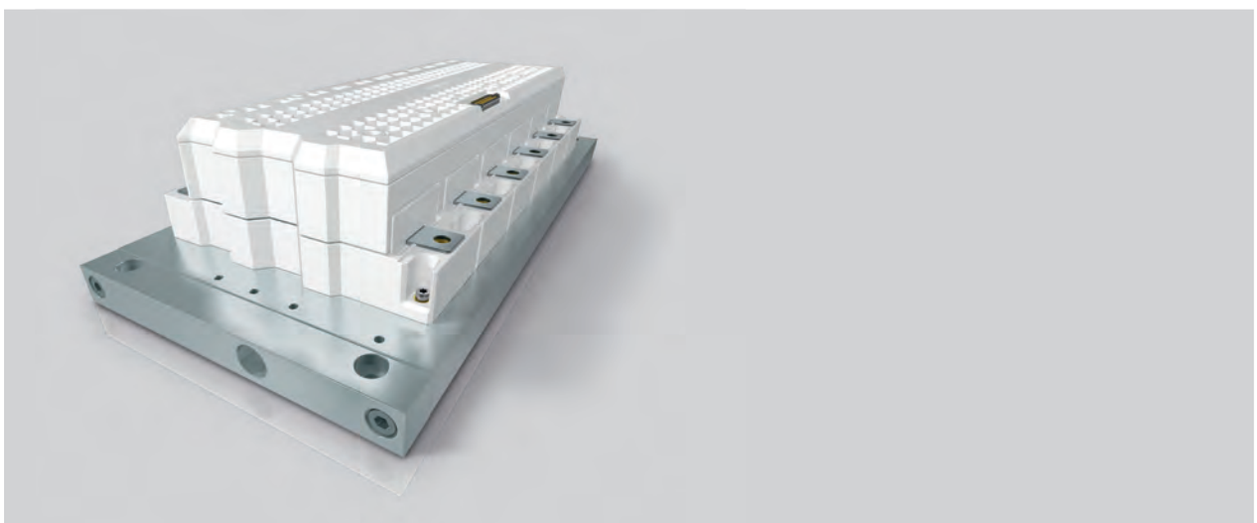
Key features

- 500A up to 3000A overload
- Double sided cooling
- Pressure contact

Further information:
www.semikron.com/semistart

SKiiP®

- 3-in-1: Driver, semiconductors and cooling
- 2-3 times higher power cycling capability due to sinter technology
- Completely assembled and 100% tested – including 1 hour burn-in test



Motor Drives | Wind Energy | Solar Energy | Power Quality | Utility Vehicles | Urban Transport Equipment

Sintered chips – for high operating temperatures

Benefits

SKiiP4 is the most powerful IPM on the market. SKiiP4 modules enable the production of converter units with outputs of up to 2.1MW. The power semiconductors used in SKiiP4 modules can be operated at a junction temperature of up to 175°C. To make sure these components can be reliably used at these temperatures, the power circuitry is 100% solder-free. Sinter technology is used to create a sintered silver layer instead of the solder layer which could limit the service life of power modules. Reliability during active and passive thermal cycling is greatly improved. A further benefit is the better load cycling capability as compared to solder-based modules.
The integrated gate driver in the SKiiP4 sets new standards in terms of reliability and functionality. The digital driver guarantees safe isolation between the primary and secondary side, both for switching signals and all measurement parameters, such as temperature and DC link voltage. This means the user no longer has to introduce complex and costly circuit components to provide safe isolation. For the first time, the SKiiP drive features a CANopen diagnosis channel for the integration of additional functions.

Applications

The success story of the SKiiP family has progressed hand in hand with the advancement of the wind power market. The 4th generation SKiiP modules are a further improvement of the powerful SKiiP series. The mainstay of SKiiP4 modules is the wind power sector, with approximately 57GW out of the 122GW of wind power installed worldwide (at the end of 2009) featuring SEMIKRON solutions, in many cases SKiiP technology. Besides wind power applications, SKiiP modules can also be found in elevators, solar power and railway applications – in fact, in any area where powerful, safe and reliable IGBT IPMs are a must.

Product range

SKiiP4 is available for 1200V and 1700V. In both of these voltage classes, SKiiP4 modules come in the topologies 3GB 1800A, 4GB 2400A and – new to the SKiiP family – 6GB 3600A. The wide range of accessories is now available for both SKiiP3 and SKiiP4. Among them the fiber optic boards, the boards for paralleling of SKiiP systems and the adapter board for connection of SKiiP4 to SKiiP3 controller.

Key features

System

- DC-Link monitoring (SKiiP3, SKiiP4)
- Current sensors (SKiiP3, SKiiP4)
- Temperature measurement (SKiiP3, SKiiP4)
- CAN diagnostic interface (SKiiP4)
- 100% solder-free (SKiiP4)
- Water, air and customized cooler

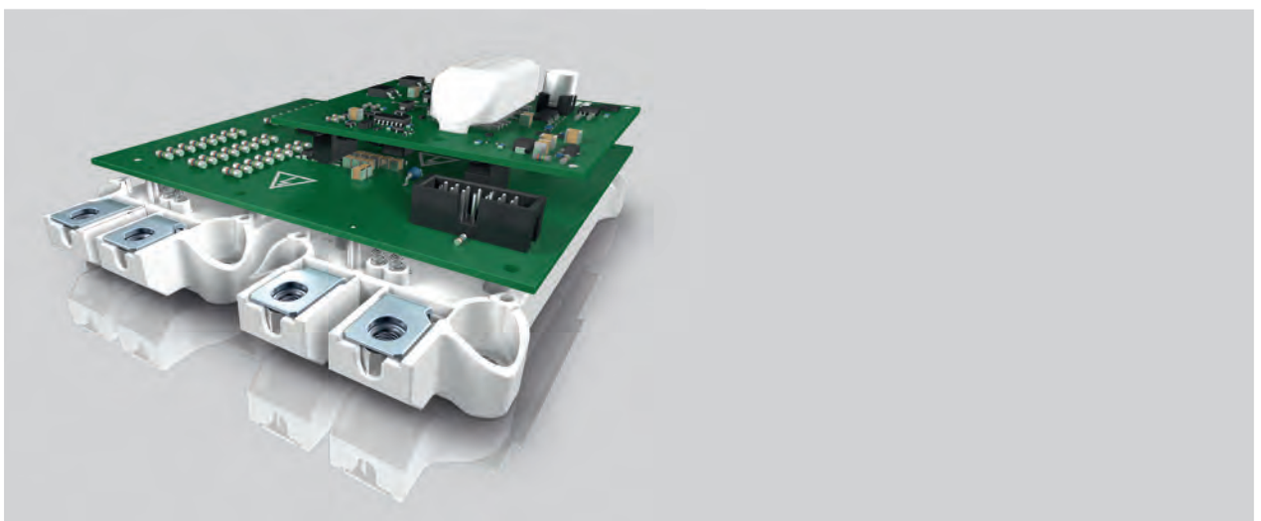
Production and Test

- 100% tested
  (function, isolation, protection function)
- Burn-In
  (SKiiP3 on request, SKiiP4 = 100%)

Further information:
www.semikron.com/skiip

SKYPER®

- MTBF rate of 5 x 10^6 hours (29500) with new SEMIKRON ASIC chipset
- Safe gate control with separate signal transmission
- 7kV burst durability due to interlayer connection and metal pad ASICs



Motor Drives

Solar Energy

Power Quality

Urban Transport Equipment

SKYPER drives 3 x longer

Benefits

The high integration of SEMIKRON's new ASIC chipset provides for safe IGBT gate control over the whole lifecycle. Short circuits are managed very fast by separate error channels.
SoftOff and over voltage feedback avoid dangerous overvoltages. The mixed signal ASICs guarantee lowest tolerances over the full temperature range. MLI or paralleled IGBT topologies are managed by the adjustable error handling.
With an optimized interface and the adjustable filter setting the SKYPER IGBT driver survives external interferences over 100% of EN standards.

Applications

The new SKYPER 42 LJ offers the benefits of digital signal consistency while maintaining full performance. Ambitious applications such as medical or large drives up to 300kW are securely powered. SKYPER 32 is the perfect solution for industrial drives and process control applications. SKYPER 42 meets the requirements of induction heating / welding applications that call for high currents, durable solar inverters and motor drives between 300kW and 1.5MW.

Product range

The SKYPER drivers are available as IGBT driver cores and plug and play driver. The SKYPER platform can drive 600V, 1200V and 1700V IGBT modules. SKYPER 32 drives with a standard and a PRO version 1W per channel. The PRO version has additional protection features like external failure inputs and SoftOff. The SKYPER 42 has 4W per channel and can drive up to 2500A IGBTs. The SKYPER 42 LJ with 2W per channel closes the gap between SKYPER 32 and 42. With the new ASIC chipset, the fast failure management and the consistent signal conditioning the 42LJ is the latest driver product of SEMIKRON.

Key features

- Two driver channels for IGBT single and half bridges
- For 600V, 1200V and 1700V IGBT modules
- Driving up to 2500A
- Short pulse suppression and EMC cage
- SoftOff and separate error channels
- Adjustable filter and failure management
- Customized adapter boards on request

Further information:
www.semikron.com/skyper

SEMISTACK® CLASSICS

Off-the-shelf product range

Air cooled power assemblies

Ready for integration

Motor Drives

Power Quality

Urban Transport Equipment

Standards for LV diode/thyristor rectifiers

Benefits

The SEMISTACK CLASSICS family range has been set up for fast integration of an industrial rectifier. Each power bridge has been sized to embed semi-conductors with suitable RC commutation circuit, proper AC fuses and cooling devices.

Applications

- Regulated/unregulated power supplies
- Alternator excitation
- Motor control
- Soft starters
- Soft charge
- Industrial heating

Product range

The SEMISTACK CLASSICS family range consists of a 125 item list, corresponding to four electrical topologies B6C, B6HK, B6U, W3C. All rectifiers include RC commutation circuit and fuses. Some are offered with a cooling system, heatsink temperature is monitored by thermo switches. Depending on the semiconductor technology, SEMISTACK CLASSICS power assemblies can be isolated (SEMIPACK) or non-isolated (capsule and stud screw).

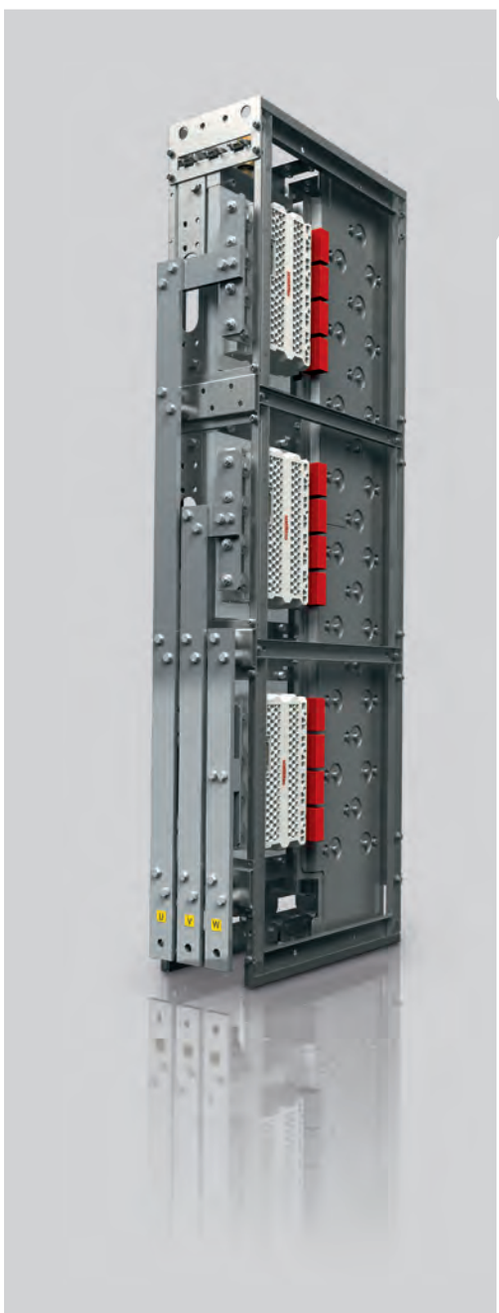
Key features

- 4 topologies B6C, B6U, B6HK, W3C
- Maximum continuous DC current from 60A up to 4015A_{DC}
- Rectifier AC voltage up to 500V_{AC}
- DC bus voltage up to 670V_{DC}
- RC, fuses, cooling fans and thermo switches included

Further information:
www.semikron.com/semistack-classics

SEMISTACK® RE

- Pre-qualified water cooled IGBT power assemblies
- IGBT inverter power density up to 11.4kVA/L
- 2- and 4-quadrant 3-phase converter
- Long life expectancy



Wind Energy

Solar Energy

Low voltage optimized converter for wind and solar PV

Benefits

The SEMISTACK RE offers a pre-qualified power assembly ready for integration following rigorous SEMIKRON qualification and current environmental standards (IEC 60721-3).
The platform design has been optimized to get the best compromise cost/performance for a water-cooled power inverter in the megawatt power range.
The book format enables a compact integration in standard industrial cabinets to achieve high power up to 6MVA low voltage.
Specified for wind turbine applications, the SEMISTACK RE offers a high IGBT cycling capability and a high capacitor bank lifetime, reducing maintenance.

Key features

- Maximum continuous output current from 600A up to 1400A_{RMS}
- Switching frequency up to 5kHz
- Inverter output voltage up to 690V_{AC}
- DC bus voltage up to 1250V_{DC}
- DC bus polypropylene capacitor bank lifetime rated at 100,000 hours at 40 °C
- Analogue measurement T, V_{BUS}, I_{OUT}
- CAN interface (configuration and monitoring)
- Brake chopper optional

Applications

The SEMISTACK RE complies with wind turbine requirements, offering the capability to built 4-quadrant converters suitable with synchronous generator and double fed induction generators, with an optional brake chopper design. The platform flexibility allows to match requirement of solar PV central inverters with a DC bus voltage up to 900VDC continuous.
Alternatively, SEMISTACK RE can be used in low-voltage applications requiring high power and high reliability, such as 3-phase inverters in a shipyard or in a battery energy storage unit installed close to renewable energy power plants.

Product range

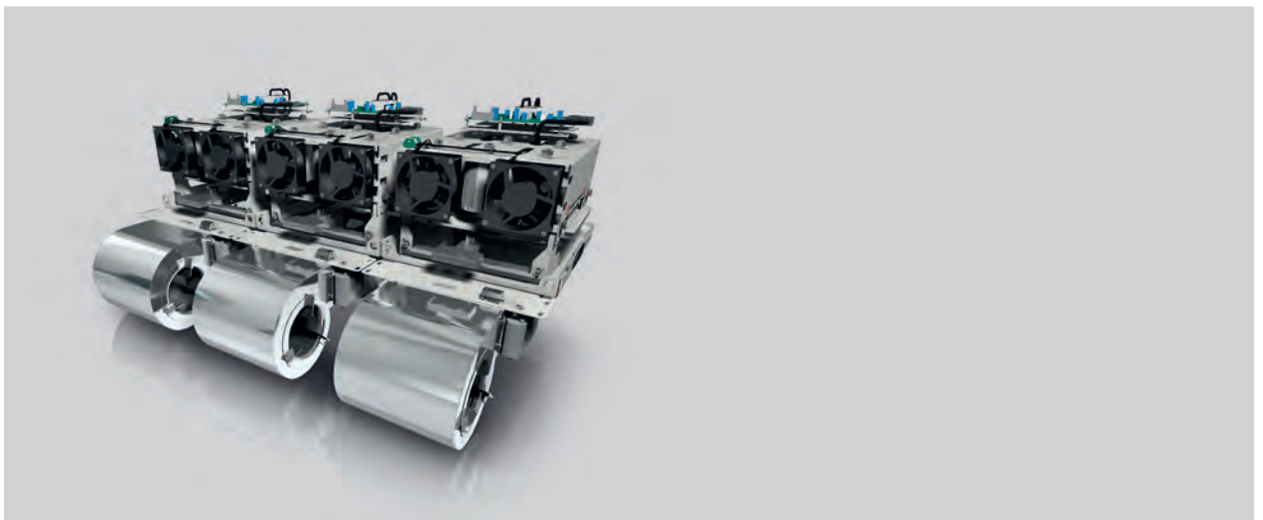
The SEMISTACK RE platform offers a standard inverter size HWD 1500 x 230 x 510 mm to fit two power sub-assemblies into a 600 x 600 x 2000 mm cabinet. The standard size has a current distribution between 1000A and 1400A.
For applications with lower current rating or with a stronger constraint on the cabinet size, a smaller inverter size HWD 1250 x 230 x 510 mm offers continuous output current rated from 600A to 900A_{RMS}.

The SEMISTACK RE embeds the SKiiP IPM product family which integrates the IGBT gate driver and monitoring analogue outputs (temperature, output current and DC bus voltage).
As an option, a CAN interface for supervising the SKiiP.
To increase power capacity up to 6MVA, SEMISTACK RE can be put in parallel, connected together through the DC bus and controlled all-like-one with a SEMIKRON paralleling board.
As an option, SEMISTACK RE platform can be offered as an integration into an industrial cabinet with suitable AC and/or DC power filters, electrical and hydraulic distribution.

Further information:
www.semikron.com/semistack-re

SEMIKUBE®

- Prequalified air cooler IGBT power assembly
- IGBT inverter power density up to 5.7kVA/L
- Flexible design
- UL recognized



Motor Drives

Solar Energy

Versatile low voltage IGBT converter

Benefits

The SEMIKUBE offers a pre-qualified power assembly ready for integration following rigorous SEMIKRON qualification and current environmental standards (IEC 60721-3). The flexible platform concept allows for the adaptation to various electrical function topologies in use.
The power assembly performance shows highest power density, fitting into standard industrial cabinets, and a high reliability maximizing lifetime. Design of the platform remains modular, making the maintenance process easy by replacing parts of the converters in a limited time (30 min).

Applications

The SEMIKUBE complies with AC drives application requirements, offering a typical electrical topology with controlled or uncontrolled rectifier and an IGBT inverter. The platform can also power 500VAC induction and PM motors. An additional brake chopper can be adapted to the platform to respond to more dynamic motion applications.
The SEMIKUBE is optimized for solar PV central inverters. Sized for most common central inverters on the market, i.e. 500kW, 670kW up to 900kW, the SEMIKUBE 3-phase inverter operates on up to 900VDC bus voltage.

Product range

The SEMIKUBE platform offers four sizes to have an optimized power power range from 150A to 1470A$_{RMS}$. The core product is a 3-phase inverter and can integrate a 3-phase rectifier.
The 1200V IGBTs are controlled by an embedded gate driver which converts the user controller pulse train to the IGBT gate signals. The driver includes analogue measurements monitoring each current phase, inverter DC voltage and heatsink temperatures. The DC bus capacitor bank is flexible, using either electrolytic or polypropylene capacitors. The SEMIKUBE air cooled platform can be offered with suitable air cooling options, both for capacitor bank and for the power section.

Key features

- 4 sizes covering a power range from 75kVA to 1000kVA
- Maximum output current from 150A up to 1470A
- Switching frequency up to 20kHz
- Inverter output voltage up to 500V$_{AC}$
- DC bus voltage up to 900V$_{DC}$
- DC bus capacitors both electrolytic and polypropylene
- Analogue measurement T, V$_{DC}$, I$_{out}$
- Brake chopper optional

Now also available as SEMIKUBE SlimLine
Please refer to Page 3 – new products

Further information:
www.semikron.com/semikube

SKiiPRACK®

- Pre-qualified water cooled IGBT power assemblies
- IGBT Inverter power density at 10.4kVA/L
- Flexible mounting
- High reliability and long life expectancy

Motor Drives

Wind Energy

Versatile high power inverter platform

Benefits

The SKiiPRACK offers a pre-qualified power assembly ready for integration following rigorous SEMIKRON qualification and current environmental standards (IEC 60721-3).
Based on a “Cell” construction, the SKiiPRACK platform offers high flexibility for designing numerous electrical topologies and for a convenient integration into standard industrial cabinets.
The SKiiPRACK has been designed for applications requesting high reliability and a long life time up to 20 years. Totally dismountable, the cell concept eases maintenance phases, reducing the time of handling and application stops.

Key features

- Maximum continuous output current from 600A up to $1200A_{RMS}$
- Switching frequency up to 5kHz
- Inverter output voltage up to $690V_{AC}$
- DC bus voltage up to 1100_{VDC}
- DC bus polypropylene capacitor bank lifetime rated at 100,000 hours at 40 °C
- Analogue measurement T, V_{BUS}, I_{OUT}
- As possible options:
- Brake chopper, additional capacitor bank, DC bus electrolytic capacitor bank, diode/thyristor rectifier cells

Applications

The SKiiPRACK complies with wind turbine requirements, offering the capability to build 4-quadrant converters suitable for synchronous generators and double fed induction generators, with an optional brake chopper design.
The platform flexibility allows matching electrical topologies of AC drive applications to power AC induction motors up to 1MW, in particular for pumps or in shipyards.

Product range

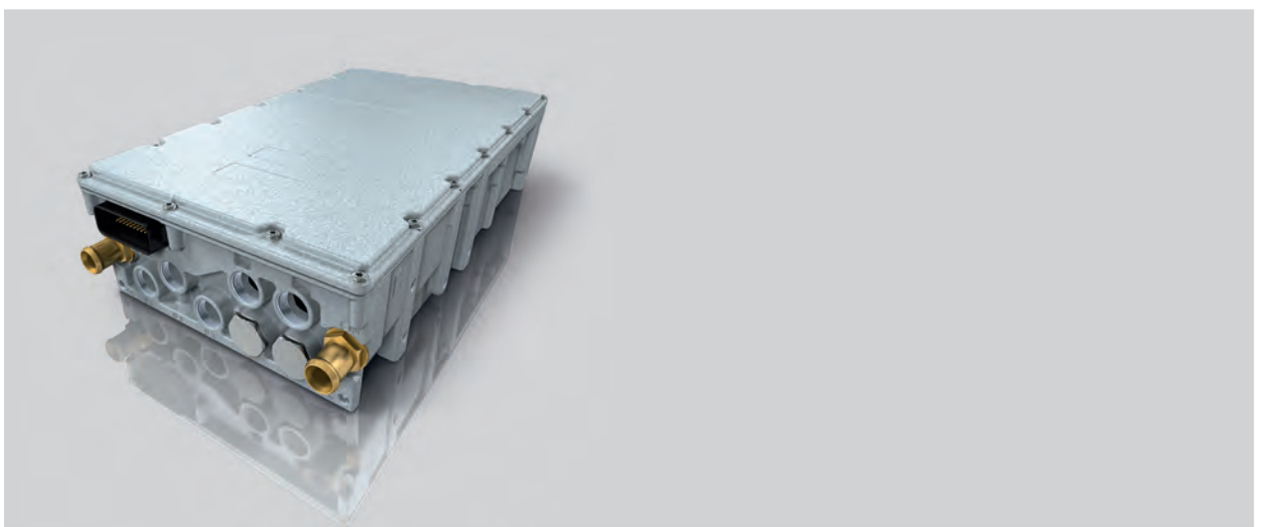
The SKiiPRACK platform consists of a cell HWD 525 x 375 x 470 mm to be assembled with others cells to create a functional unit in standard cabinets 600 mm deep and 2,000mm high. A cell can integrate an H-bridge, a 1-phase leg + brake chopper or 12-pulse rectifier, and combination of them can create 3-phase inverter, 4-quadrant converter or 3-phase rectifier and inverter. The output current range offers scalability from 600A to 1200A continuous.

The SKiiPRACK embeds the SKiiP IPM product family which integrates the IGBT gate driver and monitoring analogue outputs (temperature, output current and DC bus voltage).
As an option, a CAN interface for supervising the SKiiP.
To increase power capacity up to 5MVA, SKiiPRACK can be put in parallel, connected in a very flexible way (horizontal or vertical) together through the DC bus and controlled all-like-one with a SEMIKRON paralleling board. As an option, SKiiPRACK platform can be offered with integration in an industrial cabinet with suitable AC and/or DC power filters, electrical and hydraulic distribution.

Further information:
www.semikron.com/skiiprack

SKAI®2

- Suitable for battery voltages 24V up to 800V
- Sintered power semiconductors
- EMI compliant
- “off-the-shelf” variants with gate driver interface, vector control software, automotive power connections



Utility Vehicles

Urban Transport Equipment

Most compact power electronic system „off-the-shelf“ for eMobility

Benefits

The SKAI power electronic platform – now in its 2nd generation – comprises highly integrated inverters which provide the ideal powertrain solution for mobile electric and hybrid applications. Power densities of up to 20 kVA / liter provide a notable size reduction compared with other available standard inverter products. The systems are designed to operate with supply voltages of 24V up to 800V and with output power ratings of up to 250 kVA.

The IGBT-based SKAI2 HV inverter operates on sintered 100% solder-free 600V or 1200V power semiconductors and it features polypropylene film DC-link capacitors. The MOS-based SKAI2 LV inverter uses the established SkiiP technology with a very low-inductive connection to the DC-link capacitors, driver electronics, latest generation DSP controller, current, voltage and temperature sensors. It is integrated in a waterproof IP67 enclosure. The compact inverters withstand high vibration amplitudes up to 10g rms. QUASAR motor control software functionally complements the system and completes this tried-and-tested package. SEMIKRON provides engineering services to support customers in the integration of the SKAI2 inverter systems. Available services include, for instance, lifetime estimation, field application support, individual parameterization of motor control software etc.

Applications

The SKAI2 ”Off-the-Shelf“ power electronic building block family has been introduced to cover a broad range of vehicle electrification applications. Examples are electric drivetrains with standardized motor/generator flanges to fit or retrofit the drives easily into existing vehicle designs. These types of drivetrains have been developed for many vehicle types , i.e. buses, light trucks, agriculture and construction machinery as well as marine applications or cars.

Product range

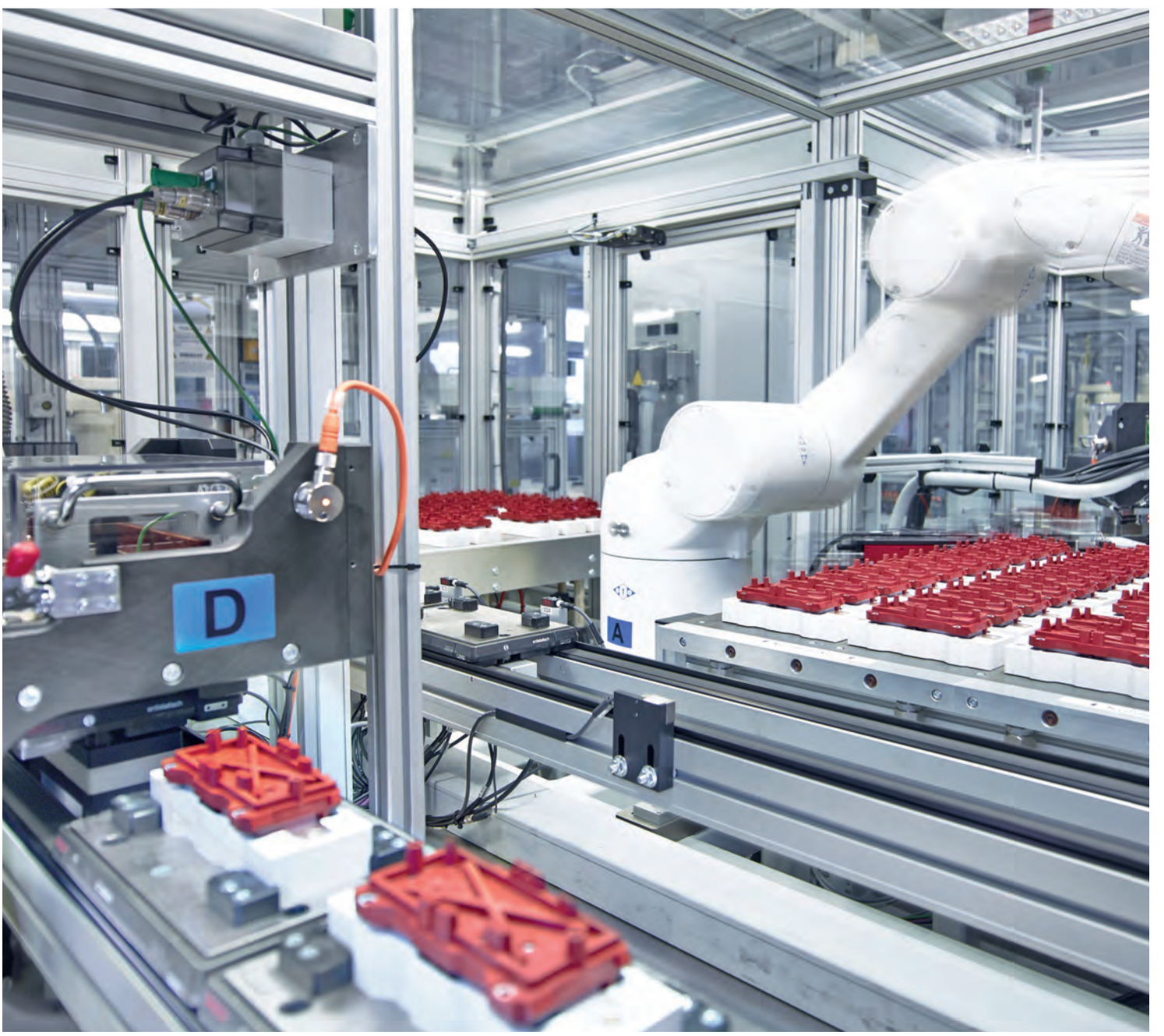
There are versatile SKAI2 HV ”Off-the-Shelf“ variants available. The SKAI2 LV is available as single or dual inverter for supply voltages between 24V and 120V. Cooling methods are liquid, forced air cooling or base plate. There are different optional services available like end-of-line flashing of customer specific software, lifetime estimation based on application profile analysis, field application support, individual parameterization of motor control software and further services on request.

Key features

- Compact integration in IP 67 enclosure
- Voltage, current and temperature sensors
- Gate driver with protection
- IGBT/ MOSFET power semiconductors
- Fully programmable digital signal processor
- EMI filters
- Versatile cooling system (liquid cooled, forced air cooled, base plate)
- DC link capacitors
- Motor control software

Further information:
www.semikron.com/skai

Product Groups



IGBT Modules
for Maximum Performance

1

SEMIKRON offers IGBT (insulated-gate bipolar transistor) modules in SEMITRANS, SEMiX, SKiM, MiniSKiiP and SEMITOP packages in different topologies, current and voltage ratings. Starting from 6A to 900A in voltage classes from 600V to 1700V.

The IGBT modules are used in a variety of applications offering key technologies like sintering, spring or pressfit contacts for easy and fast assembly.

Different topologies like CIB (converter inverter brake), halfbridge, H-bridge, 6-pack and 3-level are available in order to cover almost all application fields.

The latest IGBT chip and diode technologies offer optimized switching performance up to T_j max= 175°C.

For detailed information
please refer data sheets.

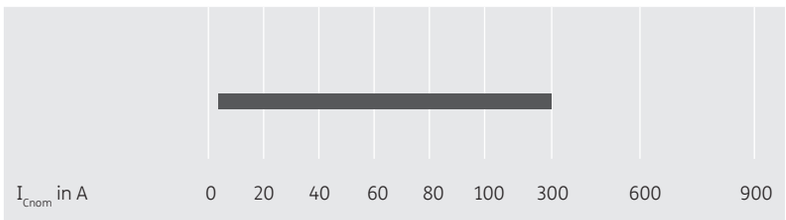
Further information:
www.semikron.com/igbt-modules

IGBT Modules

MiniSKiiP®

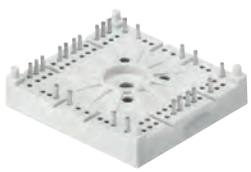
6-pack
3-level
H-bridge
CIB
half bridge

600V up to 1700V

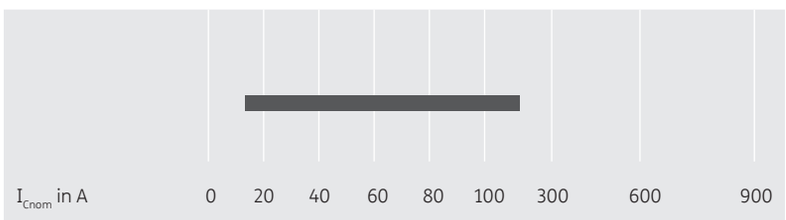


SEMITOP®

half bridge
6-pack
3-level
chopper
H-bridge
CIB



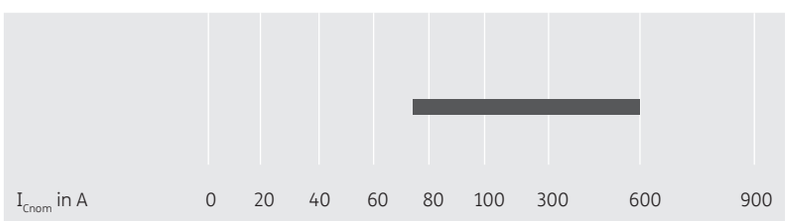
600V up to 1200V



SEMiX®

half bridge
6-pack
chopper

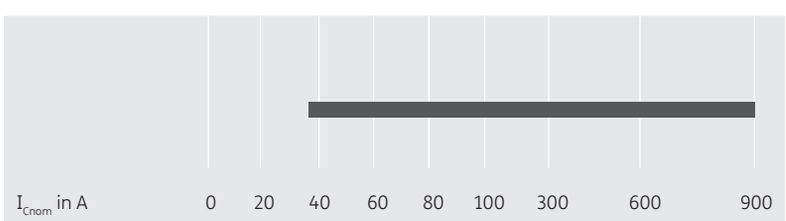
600V up to 1700V



SEMITRANS®

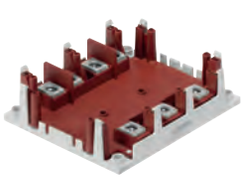
half bridge
6-pack
chopper
single switch

600V up to 1700V

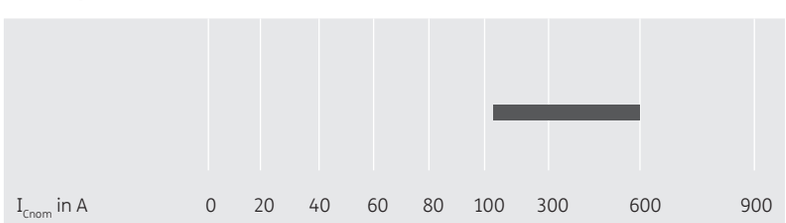


SKiM®4/5

6-pack
3-level

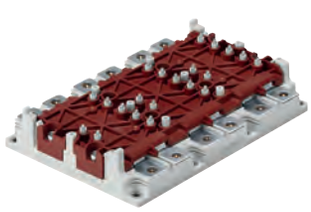


600V up to 1700V

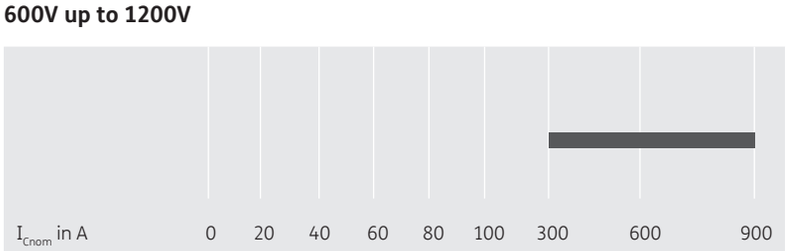


SKiM®63/69

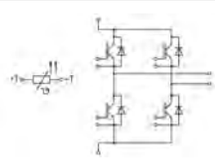
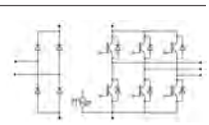
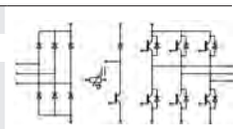
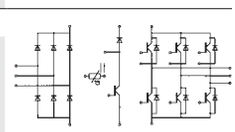
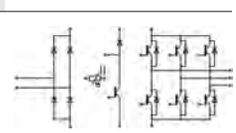
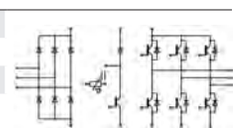
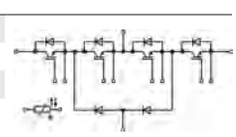
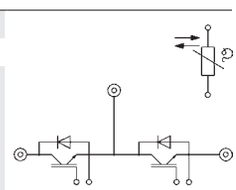
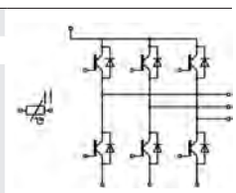
6-pack
chopper



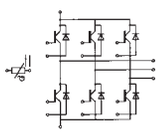
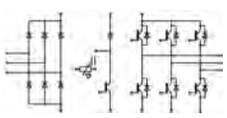
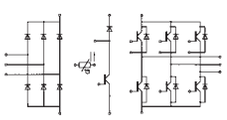
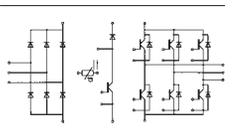
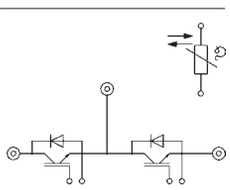
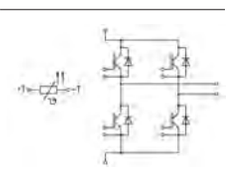
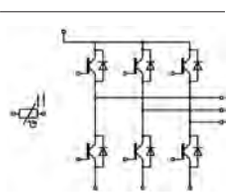
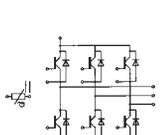
600V up to 1200V



IGBT Modules / MINISKIIP

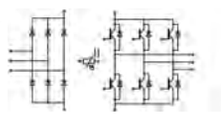
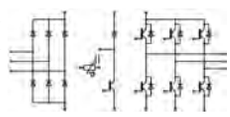
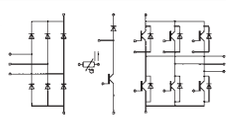
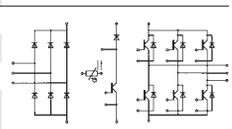
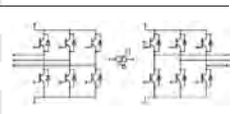
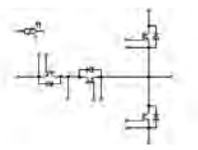
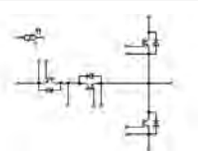
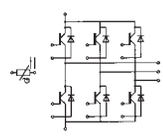
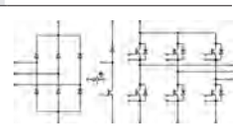
Type	IGBT						Diode				Rectifier		Module	
	I_C @ T_s= 25°C	I_{Cnom}	$V_{CE(sat)}$ @ T_j = 25°C typ.	E_{on}	E_{off}	$R_{th(j-s)}$	I_F @ T_s = 25°C	V_F @ T_j = 25°C typ.	E_{rr}	$R_{th(j-s)}$	I_{FSM} @ T_j = 25°C	$R_{th(j-s)}$	Case	Circuit
	A	A	V	mJ	mJ	K/W	A	V	mJ	K/W	A	K/W		
600V - IGBT3 (Trench)														
SKiiP 16GH066V1	65	50	1.45	1.7	1.7	0.95	56	1.50	1.3	1.6	-	-	II 1	
SKiiP 27GH066V1	88	75	1.45	2.7	3	0.75	77	1.50	1.8	1.2	-	-	II 2	
SKiiP 28GH066V1	112	100	1.45	3.4	3.5	0.6	112	1.30	3.3	0.8	-	-	II 2	
SKiiP 01NEC066V3	12	6	1.45	0.3	0.2	2.4	12	1.30	0.2	3	220	1.5	II 0	
SKiiP 02NEC066V3	20	10	1.45	0.5	0.3	2	20	1.30	0.5	2.5	220	1.5	II 0	
SKiiP 03NEC066V3	27	15	1.45	0.6	0.5	1.8	28	1.40	0.5	2.5	220	1.5	II 0	
SKiiP 12NAB066V1	20	10	1.45	0.5	0.3	2	20	1.30	0.5	2.5	220	1.5	II 1	
SKiiP 13NAB066V1	27	15	1.45	0.6	0.5	1.8	28	1.40	0.5	2.5	220	1.5	II 1	
SKiiP 14NAB066V1	33	20	1.45	0.75	0.7	1.6	31	1.60	0.55	2.5	220	1.5	II 1	
SKiiP 25NAB066V1	43	30	1.45	0.9	1.2	1.35	39	1.50	1.1	2.1	370	1.5	II 2	
SKiiP 26NAB066V1	65	50	1.45	1.6	1.6	0.95	56	1.50	1.3	1.6	370	1.5	II 2	
SKiiP 25NEB066V1	43	30	1.45	0.9	1.2	1.35	39	1.50	1.1	2.1	370	1.5	II 2	
600V - NPT IGBT (Standard)														
SKiiP 11NAB065V1[2)]	12	6	2.00	0.3	0.2	1.9	12	1.30	0.2	2.5	220	1.5	II 1	
SKiiP 12NAB065V1[2)]	20	10	2.00	0.3	0.3	1.5	20	1.40	0.2	2.5	220	1.5	II 1	
SKiiP 13NAB065V1[2)]	24	15	2.00	0.6	0.3	1.4	26	1.40	0.4	2.2	220	1.5	II 1	
SKiiP 14NAB065V1[2)]	29	20	2.00	0.7	0.4	1.25	26	1.60	0.4	2.2	370	1.25	II 1	
650V - IGBT3 (Trench)														
SKiiP 26MLI07E3V1[1)]	98	75	1.45	2.8	2.8	0.6	75	1.5	1.4	1	-	-	II 2	
SKiiP 27MLI07E3V1[1)]	110	100	1.45	4.2	4.2	0.6	107	1.4	3.5	0.8	-	-	II 2	
SKiiP 28MLI07E3V1[1)]	135	150	1.45	5.5	5.6	0.55	126	1.4	5.5	0.75	-	-	II 2	
SKiiP 39MLI07E3V1[1)]	159	200	1.45	3.6	8.9	0.5	163	1.4	8.3	0.6	-	-	II 3	
SKiiP 24GB07E3V1[1)]	-	150	1.45	-	-	-	-	1.5	-	-	-	-	II 2	
SKiiP 26GB07E3V1[1)]	-	200	1.45	-	-	-	-	1.4	-	-	-	-	II 2	
SKiiP 38GB07E3V1[1)]	-	300	1.45	-	-	-	-	1.4	-	-	-	-	II 3	
1200V - IGBT3 (Trench)														
SKiiP 11AC126V1[2)]	16	8	1.70	0.9	1	1.5	14	1.90	0.9	2.5	-	-	II 1	
SKiiP 12AC126V1[2)]	28	15	1.70	1.7	1.9	1.15	26	1.60	1.2	1.95	-	-	II 1	
SKiiP 13AC126V1[2)]	41	25	1.70	4.1	3.1	0.9	30	1.80	2.2	1.7	-	-	II 1	

IGBT Modules / MINISKIIP

Type	IGBT						Diode				Rectifier		Module	
	I_C @ T_s= 25°C	I_{Cnom}	$V_{CE(sat)}$ @ T_j = 25°C typ.	E_{on}	E_{off}	$R_{th(j-s)}$	I_F @ T_s = 25°C	V_F @ T_j = 25°C typ.	E_{rr}	$R_{th(j-s)}$	I_{FSM} @ T_j = 25°C	$R_{th(j-s)}$	Case	Circuit
	A	A	V	mJ	mJ	K/W	A	V	mJ	K/W	A	K/W		
1200V - IGBT3 (Trench)														
SKiiP 23AC126V1[2]	41	25	1.70	3.7	3.1	0.9	30	1.80	2.6	1.7	-	-	II 2	
SKiiP 24AC126V1[2]	52	35	1.70	4.2	4.4	0.75	38	1.80	3.5	1.5	-	-	II 2	
SKiiP 25AC126V1[2]	73	50	1.70	5.8	6.5	0.55	62	1.60	5.1	1	-	-	II 2	
SKiiP 26AC126V1[2]	88	70	1.70	9	7.7	0.5	91	1.50	7.5	0.7	-	-	II 2	
SKiiP 37AC126V2[2]	97	75	1.70	9.6	8.7	0.45	90	1.60	9.6	0.7	-	-	II 3	
SKiiP 38AC126V2[2]	118	105	1.70	13.1	13	0.4	118	1.60	11.2	0.55	-	-	II 3	
SKiiP 39AC126V2[2]	157	140	1.70	19.9	17.2	0.3	167	1.50	16.2	0.4	-	-	II 3	
SKiiP 11NAB126V1[2]	16	8	1.70	0.8	1	1.5	14	1.90	0.9	2.5	220	1.5	II 1	
SKiiP 12NAB126V1[2]	28	15	1.70	2	1.9	1.15	26	1.60	1.3	1.95	220	1.5	II 1	
SKiiP 23NAB126V1[2]	41	25	1.70	3.5	3	0.9	30	1.80	2.5	1.7	370	1.25	II 2	
SKiiP 23NAB126V10[2]	41	25	1.70	3.5	3	0.9	30	1.80	2.5	1.7	635	0.9	II 2	
SKiiP 24NAB126V1[2]	52	35	1.70	4.6	4	0.75	38	1.80	3.3	1.5	370	1.25	II 2	
SKiiP 24NAB126V10[2]	52	35	1.70	4.6	4	0.75	38	1.80	3.3	1.5	635	0.9	II 2	
SKiiP 35NAB126V1[2]	73	50	1.70	6.5	6.1	0.55	62	1.60	4.7	1	700	0.9	II 3	
SKiiP 36NAB126V1[2]	88	70	1.70	9	7.7	0.5	91	1.50	7.5	0.7	700	0.9	II 3	
1200V - IGBT4 (Trench)														
SKiiP24GB12T4V1[1]	-	150	1.85	-	-	-	-	2.2	-	-	-	-	II 2	
SKiiP26GB12T4V1[1]	-	200	1.80	-	-	-	-	2.2	-	-	-	-	II 2	
SKiiP38GB12E4V1[1]	-	300	1.85	-	-	-	-	2.2	-	-	-	-	II 3	
SKiiP 26GH12T4V11	90	70	1.85	9.5	7.1	0.55	83	2.2	5.6	0.75	-	-	II 2	
SKiiP 11AC12T4V1	12	8	1.85	0.87	0.75	1.84	15	2.3	0.53	2.53	-	-	II 1	
SKiiP 12AC12T4V1	18	15	1.85	1.65	1.5	1.3	23	2.4	0.79	1.92	-	-	II 1	
SKiiP 13AC12T4V1	41	25	1.85	3.7	2.4	1	32	2.4	1.64	1.52	-	-	II 1	
SKiiP 23AC12T4V1	41	25	1.85	3.7	2.4	1	32	2.4	1.64	1.52	-	-	II 2	
SKiiP 24AC12T4V1	52	35	1.85	3.7	3	0.85	44	2.3	2.3	1.2	-	-	II 2	
SKiiP 25AC12T4V1	69	50	1.85	6	4.5	0.71	60	2.2	3.2	0.95	-	-	II 2	
SKiiP 26AC12T4V1	90	70	1.85	9.5	7.1	0.55	83	2.2	5.6	0.75	-	-	II 2	
SKiiP 37AC12T4V1	90	75	1.85	11.5	6.8	0.58	83	2.2	5.5	0.75	-	-	II 3	
SKiiP 38AC12T4V1	115	100	1.80	13.7	9.7	0.48	100	2.2	6.5	0.66	-	-	II 3	
SKiiP 39AC12T4V1	167	150	1.85	22.5	14	0.33	136	2.1	11.4	0.52	-	-	II 3	

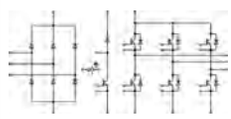
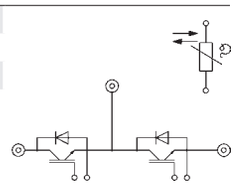
Footnotes: 1) New product / 2) Not for new design

IGBT Modules / MINISKIIP

Type	IGBT						Diode				Rectifier		Module	
	I_C @ T_s= 25°C	I_{Cnom}	$V_{CE(sat)}$ @ T_j = 25°C typ.	E_{on}	E_{off}	$R_{th(j-s)}$	I_F @ T_s = 25°C	V_F @ T_j = 25°C typ.	E_{rr}	$R_{th(j-s)}$	I_{FSM} @ T_j = 25°C	$R_{th(j-s)}$	Case	Circuit
	A	A	V	mJ	mJ	K/W	A	V	mJ	K/W	A	K/W		
1200V - IGBT4 (Trench)														
SKiiP 02NAC12T4V1	6	4	1.85	0.66	0.37	2.49	7.5	1.8	0.34	2.53	220	1.5	II 0	
SKiiP 03NAC12T4V1	7.5	8	1.85	0.9	0.7	1.84	9	2.3	0.5	2.53	220	1.5	II 0	
SKiiP 10NAB12T4V1	6	4	1.85	0.66	0.37	2.49	7.5	1.8	0.34	2.53	220	1.5	II 1	
SKiiP 11NAB12T4V1	12	8	1.85	0.87	0.74	1.84	15	2.3	0.57	2.53	220	1.5	II 1	
SKiiP 12NAB12T4V1	18	15	1.85	1.4	1.3	1.3	23	2.40	1.1	1.92	220	1.5	II 1	
SKiiP 23NAB12T4V1	37	25	1.85	2.65	2.3	1.2	32	2.40	1.6	1.52	370	1.25	II 2	
SKiiP 24NAB12T4V1	48	35	1.85	4.3	3.25	1	44	2.3	2.4	1.2	370	1.25	II 2	
SKiiP 34NAB12T4V1	52	35	1.85	4.3	3.3	0.85	44	2.3	2.4	1.2	370	1.25	II 3	
SKiiP 35NAB12T4V1	69	50	1.85	6	4.7	0.71	60	2.25	3.4	0.95	700	0.9	II 3	
SKiiP 37NAB12T4V1	90	75	1.85	9.7	6.8	0.58	83	2.2	4.9	0.75	700	0.9	II 3	
SKiiP 38NAB12T4V1	115	100	1.80	11.2	10	0.48	99	2.2	6.5	0.66	1000	0.7	II 3	
SKiiP 11ACC12T4V10[1)]	12	8	1.85	0.9	0.7	1.84	15	2.3	0.6	2.53	60	2.5	II 1	
SKiiP 12ACC12T4V10[1)]	18	15	1.85	1.7	1.4	1.3	23	2.4	1.1	1.92	60	2.5	II 1	
SKiiP 23ACC12T4V10[1)]	41	25	1.85	2.8	2.3	1	32	2.4	1.7	1.52	210	1.7	II 2	
SKiiP 24ACC12T4V10[1)]	52	35	1.85	4.2	3.1	0.85	44	2.3	2.2	1.2	210	1.7	II 2	
SKiiP 39TMLI12T4V2[1)]	-	200	1.80	-	-	-	-	2.2	-	-	-	-	II 3	
1200V - IGBT4 (Fast Trench)														
SKiiP 28TMLI12F4V1[1)]	-	80	2.05	-	-	-	-	2.2	-	-	-	-	II 2	
1700V - IGBT3 (Trench)														
SKiiP 38AC176V2[1)]	-	100	2.40	-	-	-	-	1.8	-	-	-	-	II 3	
SKiiP 24NAB176V1[1)]	36	29	1.69	-	-	1	47	1.7	-	1.2	370	1.4	II 2	

Footnotes: 1) New product / 2) Not for new design

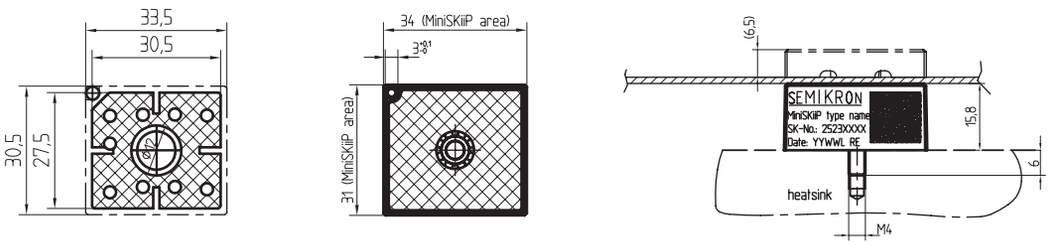
IGBT Modules / MINISKIIP

Type	IGBT						Diode				Rectifier		Module	
	I_C @ T_s = 25°C	I_{Cnom}	$V_{CE(sat)}$ @ T_j = 25°C typ.	E_{on}	E_{off}	$R_{th(j-s)}$	I_F @ T_S = 25°C	V_F @ T_j = 25°C typ.	E_{rr}	$R_{th(j-s)}$	I_{FSM} @ T_j = 25°C	$R_{th(j-s)}$	Case	Circuit
	A	A	V	mJ	mJ	K/W	A	V	mJ	K/W	A	K/W		
1700V - IGBT3 (Trench)														
SKiiP 34NAB176V3[1)]	65	58	1.69	11.7	12.3	0.6	65	1.9	7.6	0.85	635	0.9	II 3	
1700V - IGBT4 (Trench)														
SKiiP 22GB17E4V1[1)]	-	100	1.90	-	-	-	-	2	-	-	-	-	II 2	
SKiiP 24GB17E4V1[1)]	-	150	1.90	-	-	-	-	2	-	-	-	-	II 2	
SKiiP 36GB17E4V1[1)]	-	200	1.90	-	-	-	-	2	-	-	-	-	II 3	
SKiiP 38GB17E4V1[1)]	-	300	1.90	-	-	-	-	2	-	-	-	-	II 3	

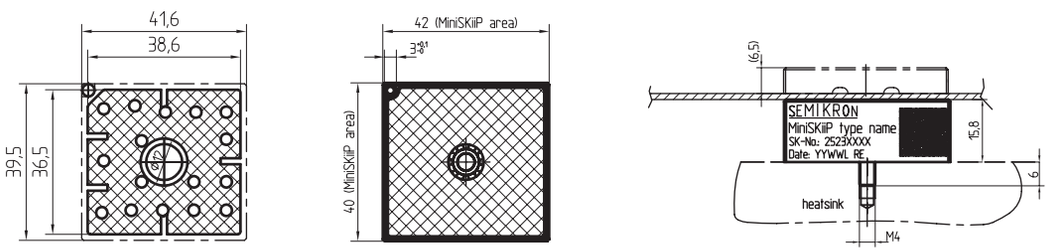
Footnotes: 1) New product / 2) Not for new design

Cases

MiniSKiiP II 0

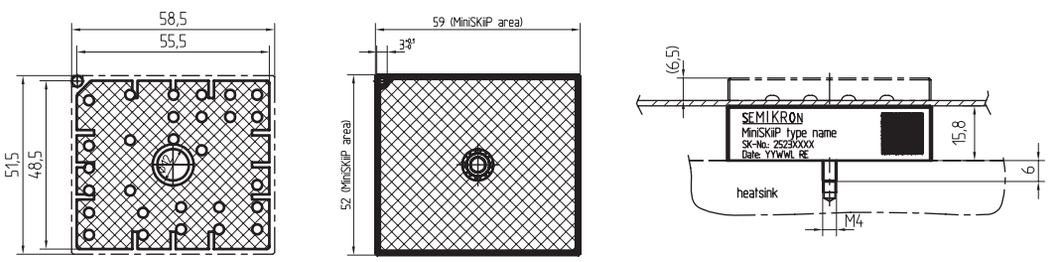


MiniSKiiP II 1



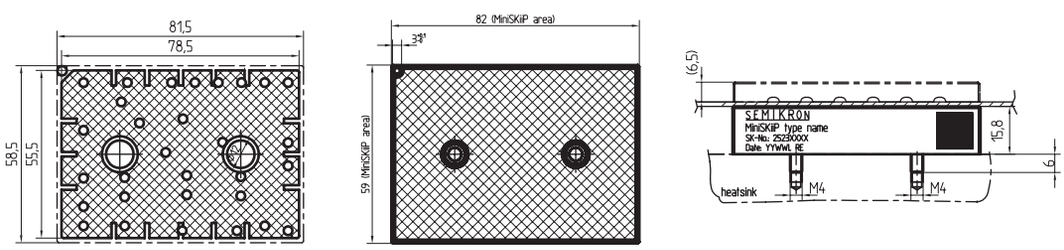
pin configuration depends on circuit
(details in data sheet)

MiniSKiiP II 2



pin configuration depends on circuit
(details in data sheet)

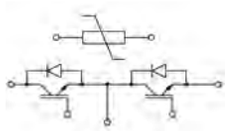
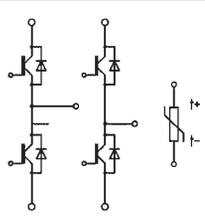
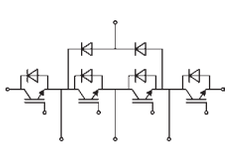
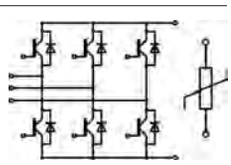
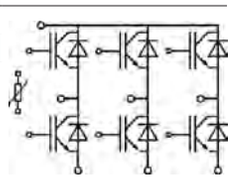
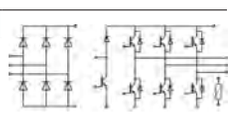
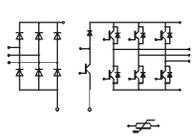
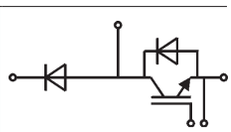
MiniSKiiP II 3



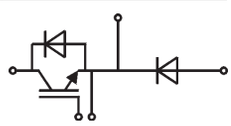
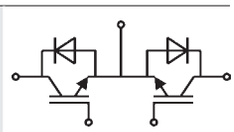
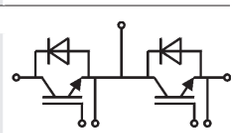
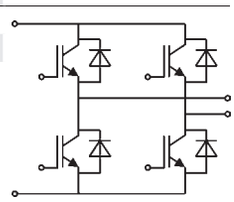
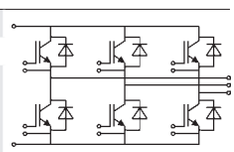
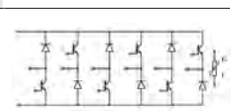
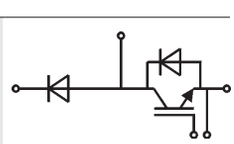
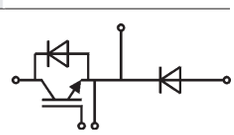
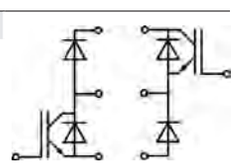
pin configuration depends on circuit
(details in data sheet)

Dimensions in mm

IGBT Modules / SEMITOP

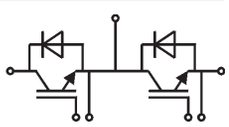
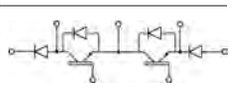
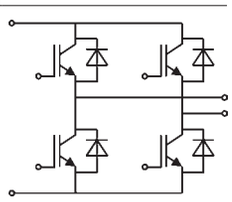
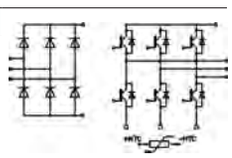
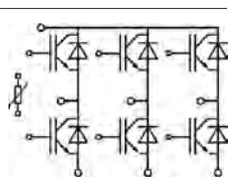
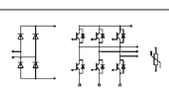
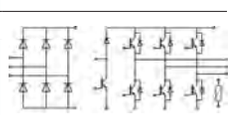
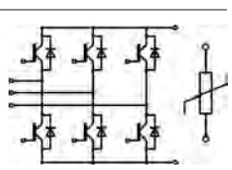
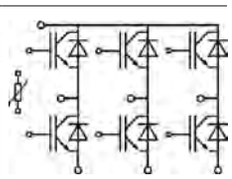
Type	IGBT						Diode				Rectifier		Module	
	I_C @ T_S = 25°C	I_{Cnom}	$V_{CE(sat)}$ @ T_j = 25°C typ.	E_{on}	E_{off}	$R_{th(j-s)}$	I_F @ T_S = 25°C	V_F @ T_j = 25°C typ.	E_{rr}	$R_{th(j-s)}$	$R_{th(j-s)}$	I_{FSM} @ T_j = 25°C	Case	Circuit
	A	A	V	mJ	mJ	K/W	A	V	mJ	K/W	K/W	A		
600V - IGBT3 (Trench)														
SK 75 GB 066 T	77	75	1.45	3.1	2.8	0.94	62	1.35	0.85	1.55	-	-	3	
SK 100 GB 066 T	96	100	1.45	7	6	0.78	108	1.35	1.7	0.91	-	-	3	
SK 150 GB 066 T	124	150	1.45	6.25	5.7	0.55	135	1.35	1.7	0.73	-	-	3	
SK 30 GBB 066 T	40	30	1.45	0.97	1.77	1.65	36	1.45	0.26	2.1	-	-	3	
SK 50 GBB 066 T	60	50	1.45	2.2	1.73	1.11	56	1.50	0.72	1.7	-	-	3	
SK 75 GBB 066 T	77	75	1.45	3.1	2.8	0.94	77	1.35	0.85	1.55	-	-	3	
SK 20 MLI 066	30	20	1.45	0.4	1.07	1.95	30	1.60	0.2	2.46	-	-	3	
SK 30 MLI 066	40	30	1.45	0.97	1.77	1.65	37	1.50	0.26	2.3	-	-	3	
SK 30 MLI 066p[8)]	37	30	1.45	0.97	1.77	1.65	34	1.50	0.26	2.3	-	-	3p	
SK 50 MLI 066	60	50	1.45	1.46	2.02	1.11	56	1.50	1.07	1.7	-	-	3	
SK 75 MLI 066 T	83	75	1.45	1.7	2.8	0.75	92	1.50	1.1	1.2	-	-	4	
SK 100 MLI 066 T	105	100	1.45	2.5	4.2	0.65	110	1.35	1.9	0.9	-	-	4	
SK 150 MLI 066 T	151	150	1.45	2.7	5.9	0.55	115	1.50	2.6	0.72	-	-	4	
SK 75 GD 066 T	83	75	1.45	3.1	2.8	0.75	92	1.35	0.85	1.2	-	-	4	
SK 100 GD 066 T	105	100	1.45	7	6	0.65	99	1.30	1.7	0.8	-	-	4	
SK 150 GD 066 T	151	150	1.45	6.25	5.7	0.55	198	1.30	1.7	0.54	-	-	4	
SK 200 GD 066 T	174	200	1.45	13.9	12	0.45	99	1.30	3.4	0.8	-	-	4	
SK 20 GD 066 ET	30	20	1.45	0.34	0.63	1.95	31	1.45	0.2	2.46	-	-	3	
SK 30 GD 066 ET	40	30	1.45	0.97	1.77	1.65	36	1.45	0.26	2.1	-	-	3	
SK 50 GD 066 ET	60	50	1.45	2.2	1.73	1.11	56	1.50	0.72	1.7	-	-	3	
SK 20 DGDL 066 ET	30	20	1.45	0.3	0.6	1.95	27	1.40	0.2	2.46	2.15	220	3	
SK 30 DGDL 066 ET	40	30	1.45	0.55	1.15	1.65	36	1.50	0.53	2.3	1.7	370	3	
SK 50 DGDL 066 T	69	50	1.45	2.2	1.74	0.95	54	1.35	0.73	1.6	1.5	370	4	
SK 75 DGDL 066 T	81	75	1.45	3.1	2.8	0.75	64	1.35	0.9	1.2	0.9	700	4	
SK 100 DGDL 066 T	106	100	1.45	4.4	3.5	0.65	99	1.10	1.45	0.8	0.9	700	4	
600V - NPT IGBT (Standard)														
SK 45 GAL 063	45	50	2.10	1.4	1.2	1	57	1.45	0.25	1.2	-	-	2	

IGBT Modules / SEMITOP

Type	IGBT						Diode				Rectifier		Module	
	I_C @ T_S= 25°C	I_{Cnom}	$V_{CE(sat)}$ @ T_j = 25°C typ.	E_{on}	E_{off}	$R_{th(j-s)}$	I_F @ T_S = 25°C	V_F @ T_j = 25°C typ.	E_{rr}	$R_{th(j-s)}$	$R_{th(j-s)}$	I_{FSM} @ T_j = 25°C	Case	Circuit
	A	A	V	mJ	mJ	K/W	A	V	mJ	K/W	K/W	A		
600V - NPT IGBT (Standard)														
SK 45 GAR 063	45	50	2.10	1.4	1.2	1	57	1.45	0.25	1.2	-	-	2	
SK 80 GM 063	81	100	2.00	3	2.3	0.6	105	1.30	0.2	1.2	-	-	2	
SK 45 GB 063	45	50	2.10	1.4	1.2	1	57	1.45	0.25	1.2	-	-	2	
SK 80 GB 063	81	100	2.10	4	3	0.6	79	1.40	1.2	0.9	-	-	3	
SK 15 GH 063	20	15	2.00	0.71	0.4	1.9	20	1.45	0.45	1.2	-	-	2	
SK 25 GH 063	30	30	2.10	1.1	0.8	1.4	36	1.45	0.25	1.7	-	-	2	
SK 45 GH 063	45	50	2.10	1.4	1.2	1	57	1.30	0.9	1.2	-	-	3	
SK 13 GD 063	18	10	2.10	0.6	0.4	2	22	1.45	0.1	2.3	-	-	3	
SK 25 GD 063	30	30	2.10	1.3	0.9	1.4	36	1.45	0.25	1.7	-	-	3	
SK 45 GD 063	45	50	2.10	1.4	1.2	1	36	1.45	0.25	1.7	-	-	3	
SK 25 GAD 063 T	30	30	2.10	1.3	0.9	1.4	36	1.45	0.25	1.7	-	-	3	
600V - NPT IGBT (Ultrafast)														
SK 50 GAL 065	54	60	2.00	1.1	0.7	0.85	57	1.30	0.2	1.2	-	-	2	
SK 50 GAR 065	54	60	2.00	1.1	0.7	0.85	57	1.30	0.2	1.2	-	-	2	
SK 55 GARL 065 E	54	60	1.70	1.1	0.76	0.85	36	1.45	0.9	1.7	-	-	3	
SK 75 GARL 065 E	80	90	1.70	2.71	2.75	0.6	57	1.30	0.2	1.2	-	-	3	

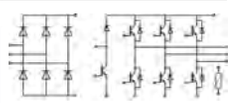
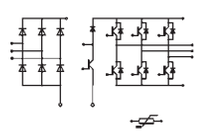
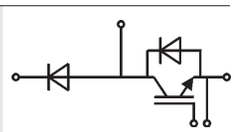
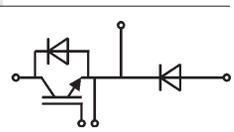
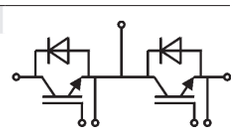
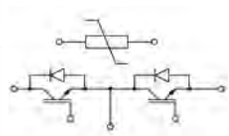
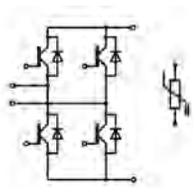
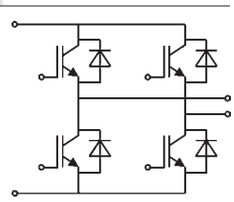
Footnotes: 8) Target data

IGBT Modules / SEMITOP

Type	IGBT						Diode				Rectifier		Module	
	I_C @ T_S= 25°C	I_{Cnom}	$V_{CE(sat)}$ @ T_j = 25°C typ.	E_{on}	E_{off}	$R_{th(j-s)}$	I_F @ T_S = 25°C	V_F @ T_j = 25°C typ.	E_{rr}	$R_{th(j-s)}$	$R_{th(j-s)}$	I_{FSM} @ T_j = 25°C	Case	Circuit
	A	A	V	mJ	mJ	K/W	A	V	mJ	K/W	K/W	A		
600V - NPT IGBT (Ultrafast)														
SK 50 GB 065	54	60	2.00	1.1	0.7	0.85	64	1.45	0.55	1.1	-	-	2	
SK 50 GARL 065 F	54	60	1.70	1.03	0.8	0.85	82	1.70	-	2.3	-	-	2	
SK 50 GARL 065 USA	54	60	1.70	1.07	0.76	0.85	64	1.40	-	2.3	-	-	2	
SK 50 GH 065 F	54	60	2.00	1.07	1.76	0.85	82	1.10	0.42	1.1	-	-	3	
SK 9 DGD 065 ET	12	6	2.00	0.22	0.12	2.6	20	1.35	0.31	2.7	2.15	220	3	
SK 20 DGD 065 ET	26	20	2.00	0.66	0.4	1.7	25	1.60	-	1.7	1.7	370	3	
SK 35 GD 065 ET	45	50	2.00	1.3	0.6	1	36	1.90	0.9	1.7	-	-	3	
SK 10 BGD 065 ET	17	6	2.00	0.18	0.13	2	22	1.30	0.18	2.3	2.7	220	3	
SK 9 BGD 065 ET	12	6	2.00	0.22	0.12	2.6	20	1.35	0.31	2.7	2.15	220	3	
SK 10 DGDL 065 ET	17	6	2.00	0.18	0.13	2	22	1.30	0.18	2.3	2.7	220	3	
SK 20 DGDL 065 ET	24	20	2.00	0.69	0.39	1.7	25	1.60	-	1.7	2	220	3	
1200V - IGBT3 (Trench)														
SK 50 GD 126 T	68	50	1.70	4.6	6.3	0.6	62	1.35	3.6	1	-	-	4	
SK 75 GD 126 T	88	75	1.70	11.3	10	0.5	91	1.46	6	0.7	-	-	4	
SK 100 GD 126 T	114	100	1.70	9.8	11.7	0.4	118	1.50	7.3	0.55	-	-	4	
SK 10 GD 126 ET	15	8	1.70	1	1	2	25	1.90	1.4	2.1	-	-	3	
SK 15 GD 126 ET	22	15	1.70	2	1.8	1.6	25	1.60	1.4	2.1	-	-	3	
SK 25 GD 126 ET	32	25	1.70	3.3	3.1	1.2	28	1.80	2.1	1.9	-	-	3	
SK 35 GD 126 ET	40	35	1.70	4.6	4.3	1.05	34	1.80	2.9	1.7	-	-	3	

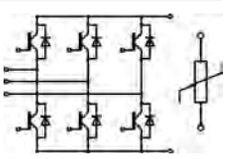
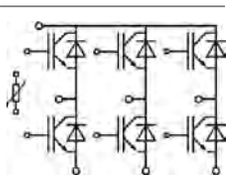
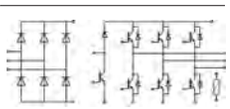
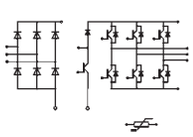
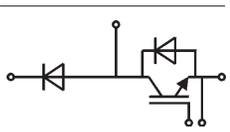
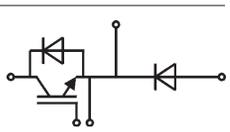
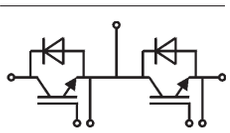
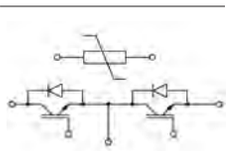
Footnotes: 8) Target data

IGBT Modules / SEMITOP

Type	IGBT						Diode				Rectifier		Module	
	I_C @ T_S= 25°C	I_{Cnom}	$V_{CE(sat)}$ @ T_j = 25°C typ.	E_{on}	E_{off}	$R_{th(j-s)}$	I_F @ T_S = 25°C	V_F @ T_j = 25°C typ.	E_{rr}	$R_{th(j-s)}$	$R_{th(j-s)}$	I_{FSM} @ T_j = 25°C	Case	Circuit
	A	A	V	mJ	mJ	K/W	A	V	mJ	K/W	K/W	A		
1200V - IGBT3 (Trench)														
SK 10 DGDL 126 ET	15	8	1.70	1	1	2	25	1.90	1.4	2.1	2.7	220	3	
SK 15 DGDL 126 ET	22	15	1.70	2	1.8	1.6	25	1.60	1.1	2.1	2	220	3	
SK 25 DGDL 126 T	41	25	1.70	2.8	3.1	0.9	30	1.50	2	1.7	1.5	370	4	
SK 35 DGDL 126 T	52	35	1.70	3.7	4.8	0.75	38	1.50	3	1.5	1.25	370	4	
SK 50 DGDL 126 T	68	50	1.70	4.6	6.3	0.6	62	1.35	3.6	1	0.9	700	4	
1200V - IGBT4 (Trench)														
SK 35 GAL 12T4	44	35	1.85	3.27	3.3	1.21	38	2.3	1.46	1.55	-	225	2	
SK 35 GAR 12T4	44	35	1.85	3.27	3.3	1.21	38	2.3	1.46	1.55	-	225	2	
SK 25 GB 12T4	37	25	1.85	2.27	2.7	1.31	30	2.40	1.28	1.91	-	-	2	
SK 35 GB 12T4	44	35	1.85	3.27	3.3	1.21	40	2.30	1.46	1.55	-	-	2	
SK 50 GB 12T4 T	71	50	1.85	8.3	5	0.9	50	2.20	2.15	1.24	-	-	3	
SK 75 GB 12T4 T	80	75	1.85	13.6	8.2	0.74	70	2.10	3.39	0.97	-	-	3	
SK 100 GB 12T4 T	100	100	1.85	16.6	10	0.6	85	2.25	5.2	0.87	-	-	3	
SK 50 GH 12T4 T	75	50	1.80	8.3	5	0.65	56	2.20	2.15	1.05	-	-	4	
SK 100 GH 12T4 T	126	100	1.80	16.6	10	0.43	102	2.20	5.2	0.62	-	-	4	
SK 25 GH 12T4	55	25	1.85	2.27	2.7	0.6	45	2.41	1.28	0.85	-	-	3	

Footnotes: 8) Target data

IGBT Modules / SEMITOP

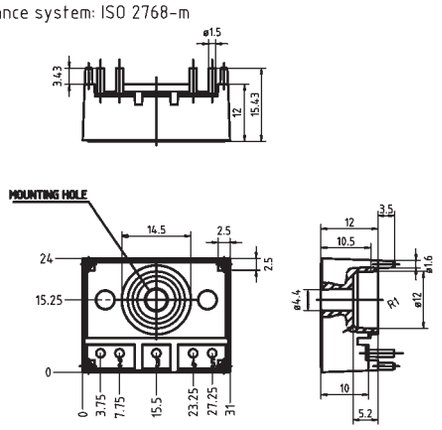
Type	IGBT						Diode				Rectifier		Module	
	I_C @ T_S = 25°C	I_{Cnom}	$V_{CE(sat)}$ @ T_j = 25°C typ.	E_{on}	E_{off}	$R_{th(j-s)}$	I_F @ T_S = 25°C	V_F @ T_j = 25°C typ.	E_{rr}	$R_{th(j-s)}$	$R_{th(j-s)}$	I_{FSM} @ T_j = 25°C	Case	Circuit
	A	A	V	mJ	mJ	K/W	A	V	mJ	K/W	K/W	A		
1200V - IGBT4 (Trench)														
SK 50 GD 12T4 T	75	50	1.85	8.3	5	0.65	60	2.20	2.15	0.97	-	-	4	
SK 75 GD 12T4 T	102	75	1.85	13.6	8.2	0.51	83	2.20	3.38	0.75	-	-	4	
SK 75 GD 12T4 Tp[8)]	99	75	1.85	13.6	8.2	0.51	83	2.17	3.38	0.75	-	-	4p	
SK 100 GD 12T4 T	126	100	1.85	16.6	10	0.43	102	2.25	5.2	0.62	-	-	4	
SK 10 GD 12T4 ET	17	8	1.85	0.41	0.76	2.2	15	2.38	0.41	2.7	-	-	3	
SK 15 GD 12T4 ET	27	15	1.85	0.83	1.52	1.65	21	2.38	0.82	2.34	-	-	3	
SK 25 GD 12T4 ET	37	25	1.85	2.27	2.7	1.31	30	2.40	1.28	1.91	-	-	3	
SK 35 GD 12T4 ET	44	35	1.85	3.27	3.3	1.21	40	2.30	1.46	1.55	-	-	3	
SK 10 DGDL 12T4 ET	17	8	1.85	0.41	0.75	2.2	15	2.38	0.41	2.7	2	220	3	
SK 15 DGDL 12T4 ET	27	15	1.85	0.82	1.52	1.65	21	2.38	0.82	2.34	2	220	3	
SK 25 DGDL 12T4 T	45	25	1.85	2.27	2.7	0.96	30	2.40	-	1.7	1.25	370	4	
SK 35 DGDL 12T4 T	58	35	1.85	3.27	3.3	0.8	46	2.30	1.46	1.37	1.25	370	4	
SK 50 DGDL 12T4 T	75	50	1.85	8.3	5	0.65	60	2.22	2.15	0.97	0.9	700	4	
1200V - NPT IGBT (Ultrafast)														
SK 60 GAL 125	51	50	3.20	8.36	3.32	0.6	43	2.00	2	1.16	-	-	2	
SK 60 GAR 125	51	50	3.20	8.36	3.32	0.6	43	2.00	2	1.16	-	-	2	
SK 60 GB 125	51	50	3.20	8.36	3.32	0.6	57	-	2	0.9	-	-	3	
SK 80 GB 125 T	85	75	3.20	9.9	5	0.32	90	2.00	1	0.65	-	-	3	

Footnotes: 8) Target data

Cases

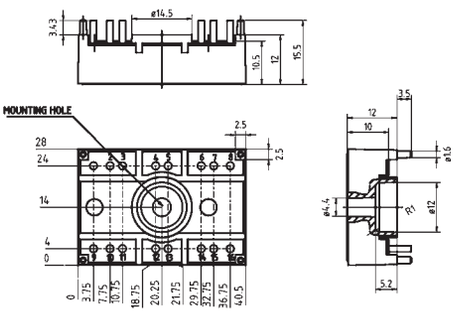
SEMITOP 1

dimensions in mm
tolerance system: ISO 2768-m



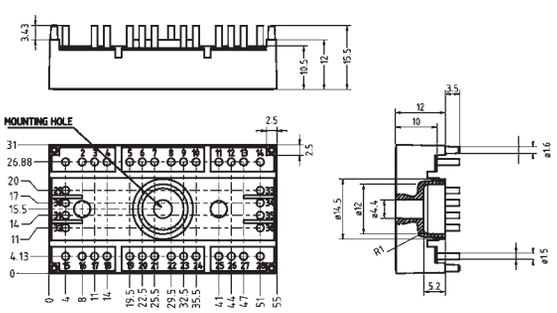
SEMITOP 2

dimensions in mm
tolerance system: ISO 2768-m

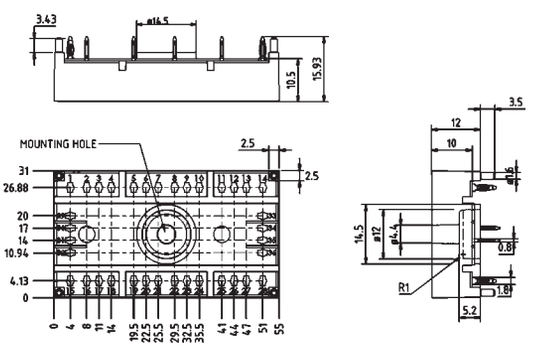


SEMITOP 3

dimensions in mm
tolerance system: ISO 2768-m

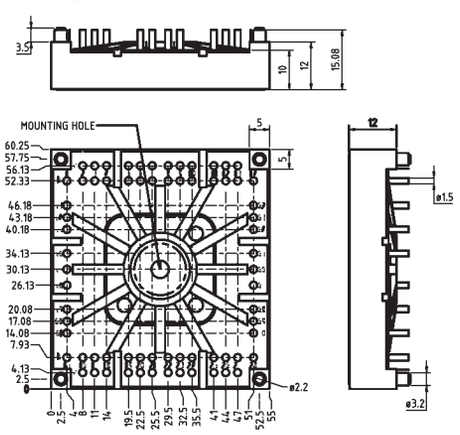


SEMITOP 3 Press-Fit

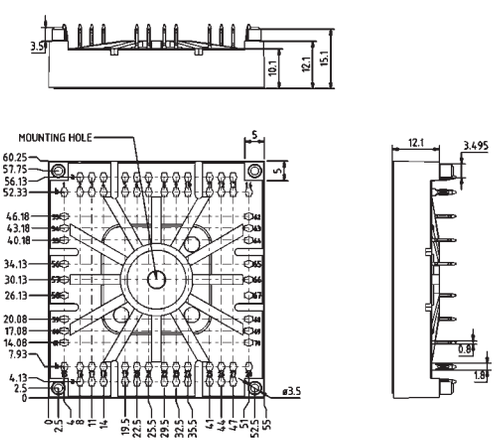


SEMITOP 4

dimensions in mm
tolerance system: ISO 2768-m

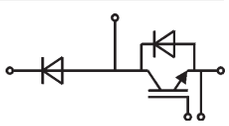
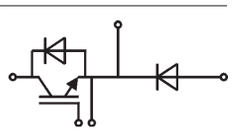
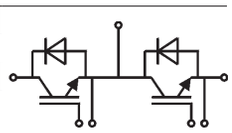
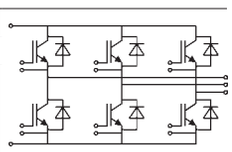
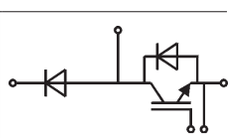
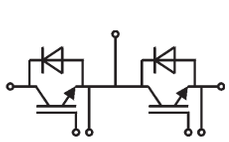
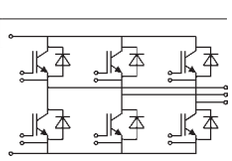
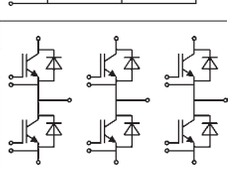
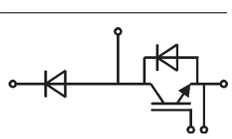


SEMITOP 4 Press-Fit

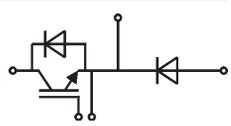
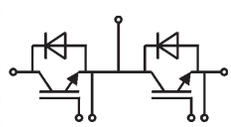
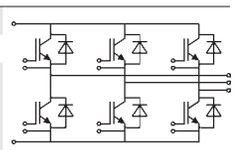
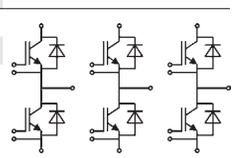
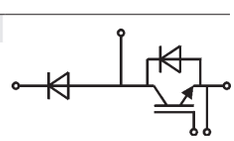
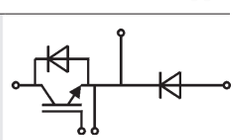
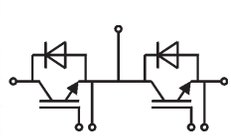
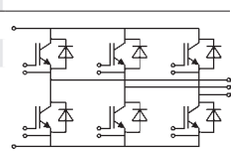


Dimensions in mm

IGBT Modules / SEMiX

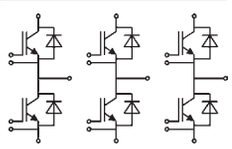
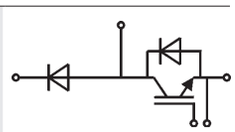
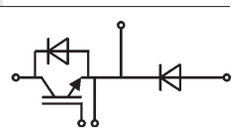
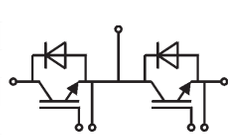
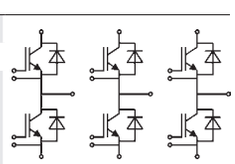
Type	IGBT						Diode				Module		
	I_C @ T_C= 25°C	I_{Cnom}	$V_{CE(sat)}$ @ T_j = 25°C typ.	E_{on}	E_{off}	$R_{th(j-c)}$	I_F @ T_C = 25°C	V_F @ T_j = 25°C typ.	E_{rr}	$R_{th(j-c)}$	Case	$R_{th(c-s)}$	Circuit
	A	A	V	mJ	mJ	K/W	A	V	mJ	K/W		K/W	
600V - IGBT3 (Trench)													
SEMiX402GAL066HDs	502	400	1.45	22	24	0.12	543	1.40	10	0.15	2s	0.045	
SEMiX603GAL066HDs	720	600	1.45	12	43	0.087	771	1.40	13	0.11	3s	0.04	
SEMiX402GAR066HDs	502	400	1.45	22	24	0.12	543	1.40	10	0.15	2s	0.045	
SEMiX603GAR066HDs	720	600	1.45	12	43	0.087	771	1.40	13	0.11	3s	0.04	
SEMiX202GB066HDs	272	200	1.45	6	8	0.21	291	1.40	6.5	0.27	2s	0.045	
SEMiX302GB066HDs	379	300	1.45	11.5	15	0.16	419	1.40	7.5	0.19	2s	0.045	
SEMiX402GB066HDs	502	400	1.45	22	24	0.12	543	1.40	10	0.15	2s	0.045	
SEMiX603GB066HDs	720	600	1.45	12	43	0.087	771	1.40	13	0.11	3s	0.04	
SEMiX101GD066HDs	139	100	1.45	3	4	0.41	151	1.40	4.5	0.51	13	0.04	
SEMiX151GD066HDs	200	150	1.45	3.8	6.1	0.29	219	1.40	5.8	0.36	13	0.04	
SEMiX201GD066HDs	258	200	1.45	5	8	0.23	284	1.40	7.5	0.28	13	0.04	
1200V - V-IGBT													
SEMiX151GAL12Vs	231	150	1.75	19.4	17.1	0.19	189	2.14	11.5	0.31	1s	0.075	
SEMiX151GB12Vs	231	150	1.75	19.4	17.1	0.19	189	2.14	11.5	0.31	1s	0.075	
SEMiX202GB12Vs	310	200	1.75	24.9	24.1	0.14	229	2.20	14.5	0.26	2s	0.045	
SEMiX223GB12Vs	323	225	1.85	19.9	27.2	0.14	263	2.17	16.4	0.23	3s	0.04	
SEMiX302GB12Vs	448	300	1.75	37.3	36.1	0.1	356	2.14	21.8	0.17	2s	0.045	
SEMiX303GB12Vs	448	300	1.75	26.5	36.3	0.1	327	2.20	21.4	0.19	3s	0.04	
SEMiX404GB12Vs	596	400	1.75	39.1	52.3	0.075	440	2.20	34.3	0.14	4s	0.03	
SEMiX453GB12Vs	673	450	1.75	39.8	54.4	0.067	516	2.14	32.7	0.12	3s	0.04	
SEMiX603GB12Vs	800	600	1.85	50	83	0.057	516	2.42	40	0.12	3s	0.04	
SEMiX604GB12Vs	880	600	1.75	58.7	78.5	0.051	707	2.14	49.5	0.086	4s	0.03	
SEMiX101GD12Vs	159	100	1.75	12.9	11.4	0.27	121	2.20	7.7	0.48	13	0.04	
SEMiX151GD12Vs	231	150	1.75	19.4	17.1	0.19	189	2.14	11.5	0.31	13	0.04	
SEMiX223GD12Vc	323	225	1.85	19.9	27.2	0.14	263	2.17	16.4	0.23	33c	0.014	
SEMiX303GD12Vc	448	300	1.75	26.5	36.3	0.1	327	2.20	21.4	0.19	33c	0.014	
SEMiX453GD12Vc	673	450	1.75	39.8	54.4	0.067	516	2.14	32.7	0.12	33c	0.014	
1200V - IGBT4 (Trench)													
SEMiX151GAL12E4s	232	150	1.80	16.6	18.4	0.19	189	2.14	8.9	0.31	1s	0.075	
SEMiX302GAL12E4s	463	300	1.80	30	44	0.096	356	2.14	19	0.17	2s	0.045	
SEMiX453GAL12E4s	683	450	1.80	45	66.5	0.065	544	2.14	28	0.11	3s	0.04	
SEMiX604GAL12E4s	916	600	1.80	35	110	0.049	707	2.14	44	0.086	4s	0.03	

IGBT Modules / SEMiX

Type	IGBT						Diode				Module		
	I_C @ T_C= 25°C	I_{Cnom}	$V_{CE(sat)}$ @ T_j = 25°C typ.	E_{on}	E_{off}	$R_{th(j-c)}$	I_F @ T_C = 25°C	V_F @ T_j = 25°C typ.	E_{rr}	$R_{th(j-c)}$	Case	$R_{th(c-s)}$	Circuit
	A	A	V	mJ	mJ	K/W	A	V	mJ	K/W		K/W	
1200V - IGBT4 (Trench)													
SEMiX151GAR12E4s	232	150	1.80	16.6	18.4	0.19	189	2.14	8.9	0.31	1s	0.075	
SEMiX302GAR12E4s	463	300	1.80	30	44	0.096	356	2.14	19	0.17	2s	0.045	
SEMiX453GAR12E4s	683	450	1.80	45	66.5	0.065	544	2.14	28	0.11	3s	0.04	
SEMiX604GAR12E4s	916	600	1.80	35	110	0.049	707	2.14	44	0.086	4s	0.03	
SEMiX151GB12E4s	232	150	1.80	16.6	18.4	0.19	189	2.14	8.9	0.31	1s	0.075	
SEMiX202GB12E4s	312	200	1.80	22	27.9	0.14	229	2.20	12	0.26	2s	0.045	
SEMiX302GB12E4s	463	300	1.80	30	44	0.096	356	2.14	19	0.17	2s	0.045	
SEMiX303GB12E4s	466	300	1.80	30	41.2	0.095	338	2.20	17.7	0.18	3s	0.04	
SEMiX303GB12E4p[8)]	466	300	1.80	19	40	0.095	378	2.20	20	0.15	3p	0.04	
SEMiX404GB12E4s	618	400	1.80	27	59.7	0.072	440	2.20	26.4	0.14	4s	0.03	
SEMiX453GB12E4s	683	450	1.80	45	66.5	0.065	544	2.14	28	0.11	3s	0.04	
SEMiX453GB12E4p[8)]	683	450	1.80	28	60	0.065	544	2.14	30	0.11	3p	0.04	
SEMiX603GB12E4p[8)]	1110	600	1.80	90	80	0.037	874	2.05	50	0.065	3p	0.04	
SEMiX604GB12E4s	916	600	1.80	35	110	0.049	707	2.14	44	0.086	4s	0.03	
SEMiX71GD12E4s	115	75	1.85	7.5	9	0.38	97	2.17	5.3	0.58	13	0.04	
SEMiX101GD12E4s	160	100	1.80	10.8	13.3	0.27	121	2.20	6.5	0.48	13	0.04	
SEMiX151GD12E4s	232	150	1.80	14.1	19.2	0.19	189	2.14	8.9	0.31	13	0.04	
SEMiX223GD12E4c	333	225	1.85	22	31.4	0.135	270	2.17	17.2	0.22	33c	0.014	
SEMiX303GD12E4c	466	300	1.80	29.4	41.8	0.095	338	2.20	22.9	0.18	33c	0.014	
SEMiX453GD12E4c	683	450	1.80	52	67.8	0.065	544	2.14	28	0.11	33c	0.014	
1200V - IGBT3 (Trench)													
SEMiX452GAL126HDs	455	300	1.70	35	45	0.083	394	1.60	33	0.15	2s	0.045	
SEMiX703GAL126HDs	642	450	1.70	32	68	0.061	561	1.60	60	0.11	3s	0.04	
SEMiX703GAR126HDs	642	450	1.70	32	68	0.061	561	1.60	60	0.11	3s	0.04	
SEMiX252GB126HDs	242	150	1.70	20	21	0.15	228	1.60	18	0.24	2s	0.045	
SEMiX302GB126HDs	311	200	1.70	30	26	0.12	292	1.60	22.5	0.19	2s	0.045	
SEMiX353GB126HDs	364	225	1.70	26.5	32.5	0.1	329	1.60	29	0.17	3s	0.04	
SEMiX452GB126HDs	455	300	1.70	35	45	0.083	394	1.60	33	0.15	2s	0.045	
SEMiX503GB126HDs	466	300	1.70	28	44	0.08	431	1.60	32.5	0.13	3s	0.04	
SEMiX604GB126HDs	590	400	1.70	36	60	0.065	533	1.60	46	0.11	4s	0.03	
SEMiX703GB126HDs	642	450	1.70	32	68	0.061	561	1.60	60	0.11	3s	0.04	
SEMiX904GB126HDs	821	600	1.70	60	88	0.05	752	1.60	75	0.081	4s	0.03	
SEMiX101GD126HDs	129	75	1.70	10	11	0.27	117	1.60	9	0.46	13	0.04	
SEMiX151GD126HDs	168	100	1.70	12	14	0.21	152	1.60	11.5	0.36	13	0.04	
SEMiX251GD126HDs	242	150	1.70	19	22	0.15	207	1.60	14.5	0.28	13	0.04	

Footnotes: 8) Target data

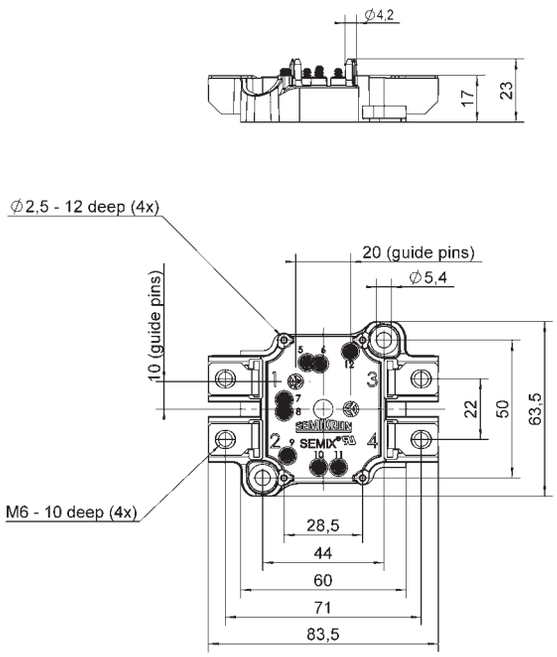
IGBT Modules / SEMiX

Type	IGBT						Diode				Module		
	I_C @ T_C= 25°C	I_{Cnom}	$V_{CE(sat)}$ @ T_j = 25°C typ.	E_{on}	E_{off}	$R_{th(j-c)}$	I_F @ T_C = 25°C	V_F @ T_j = 25°C typ.	E_{rr}	$R_{th(j-c)}$	Case	$R_{th(c-s)}$	Circuit
	A	A	V	mJ	mJ	K/W	A	V	mJ	K/W		K/W	
1200V - IGBT3 (Trench)													
SEMiX353GD126HDc	364	225	1.70	26.5	32.5	0.1	329	1.60	29	0.17	33c	0.014	
SEMiX503GD126HDc	466	300	1.70	28	44	0.08	412	1.60	32.5	0.14	33c	0.014	
SEMiX703GD126HDc	642	450	1.70	32	68	0.061	561	1.59	60	0.11	33c	0.014	
1700V - IGBT3 (Trench)													
SEMiX653GAL176HDs	619	450	2.00	300	180	0.054	545	1.70	73	0.11	3s	0.04	
SEMiX653GAR176HDs	619	450	2.00	300	180	0.054	545	1.70	73	0.11	3s	0.04	
SEMiX252GB176HDs	246	150	2.00	90	55	0.12	288	1.55	32	0.19	2s	0.045	
SEMiX302GB176HDs	308	200	2.00	130	77	0.1	389	1.50	43	0.15	2s	0.045	
SEMiX353GB176HDs	353	225	2.00	155	85	0.086	428	1.55	45	0.13	3s	0.04	
SEMiX452GB176HDs	437	300	2.00	180	110	0.073	389	1.70	46	0.15	2s	0.045	
SEMiX453GB176HDs	444	300	2.00	215	125	0.071	545	1.50	65	0.11	3s	0.04	
SEMiX604GB176HDs	567	400	2.00	215	165	0.058	740	1.50	95	0.081	4s	0.03	
SEMiX653GB176HDs	619	450	2.00	300	180	0.054	545	1.70	73	0.11	3s	0.04	
SEMiX854GB176HDs	779	600	2.00	300	250	0.045	740	1.70	170	0.081	4s	0.03	
SEMiX353GD176HDc	353	225	2.00	155	85	0.086	428	1.55	45	0.13	33c	0.014	
SEMiX453GD176HDc	444	300	2.00	215	125	0.071	545	1.50	65	0.11	33c	0.014	
SEMiX653GD176HDc	619	450	2.00	300	180	0.054	545	1.70	73	0.11	33c	0.014	

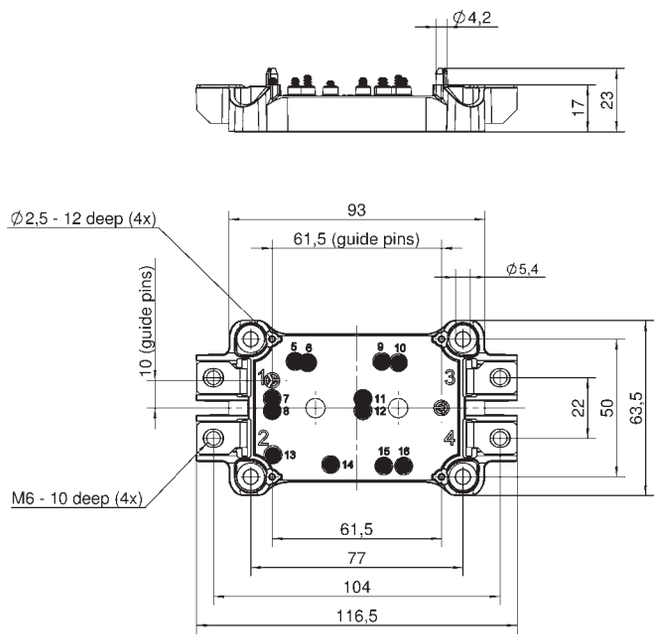
Footnotes: 8) Target data

Cases

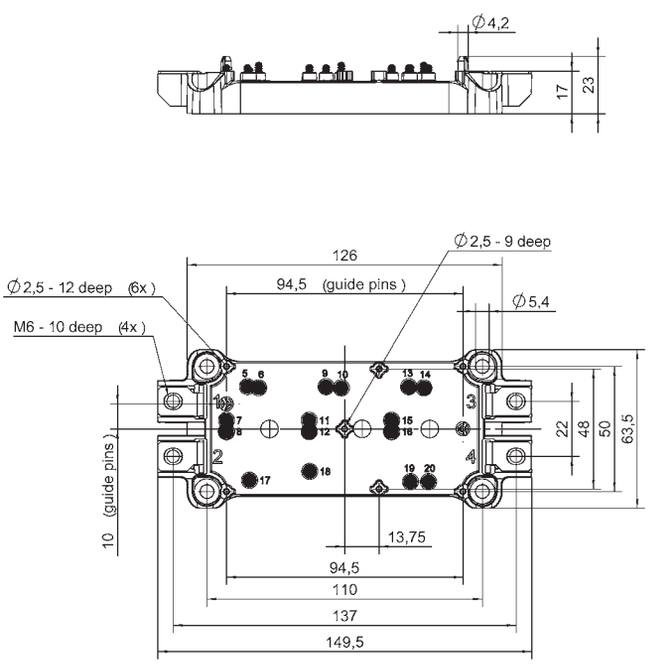
SEMiX 1s



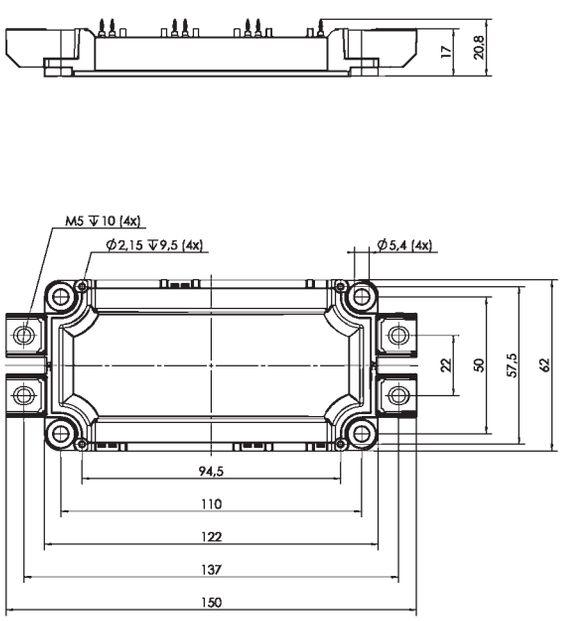
SEMiX 2s



SEMiX 3s



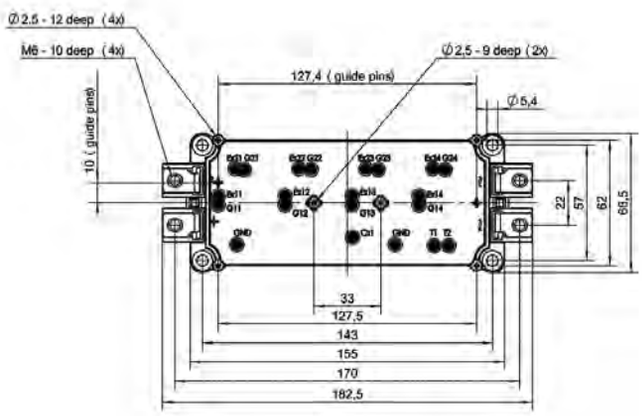
SEMiX 3p



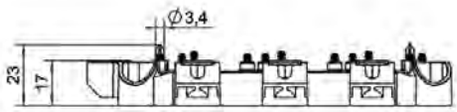
Dimensions in mm

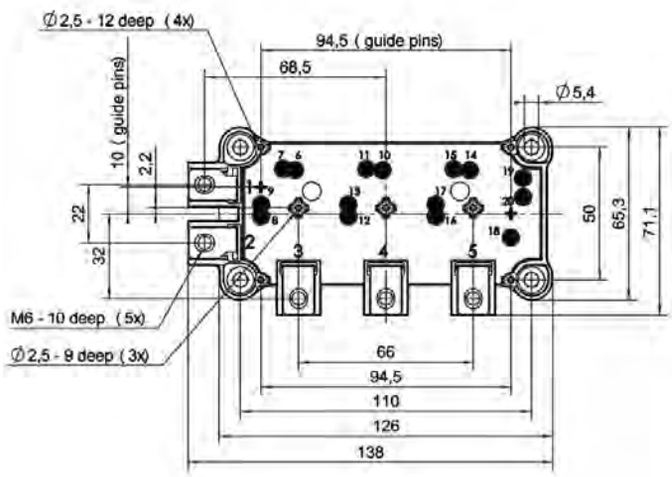
Cases

SEMiX 4s

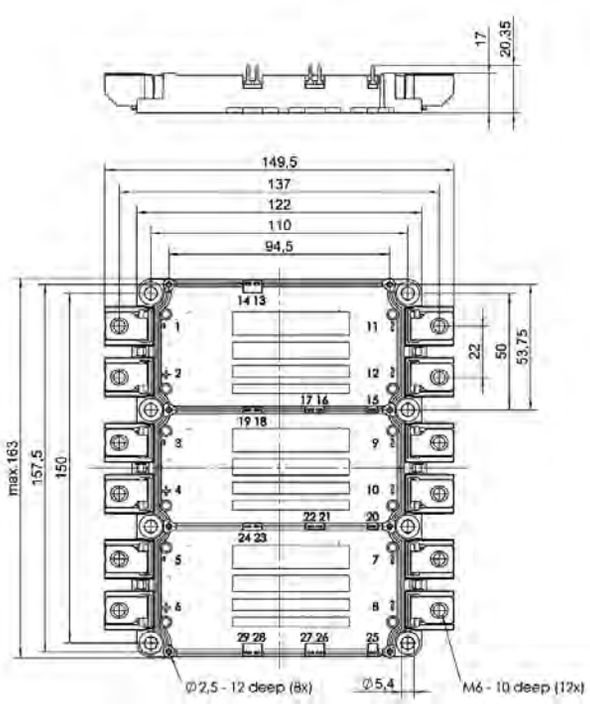


SEMiX 13



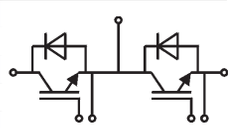
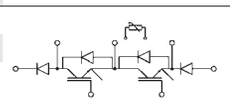
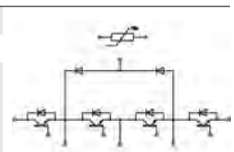
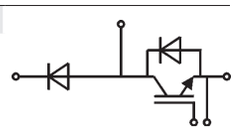
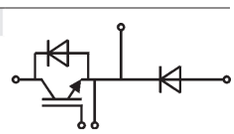
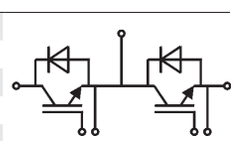
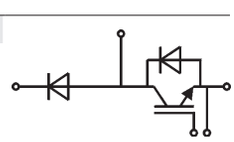
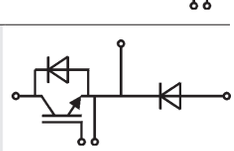
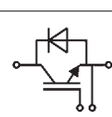
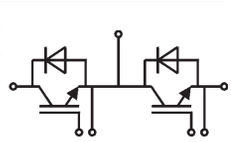


SEMiX 33c

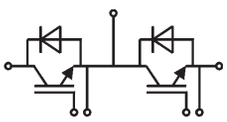
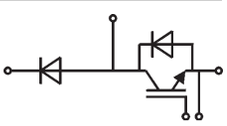
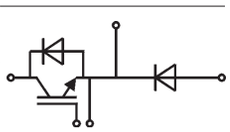
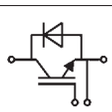
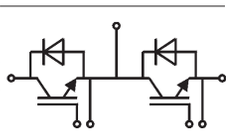
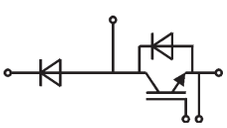
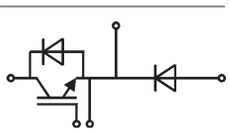
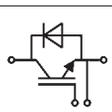
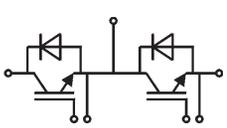


Dimensions in mm

IGBT Modules / SEMITRANS

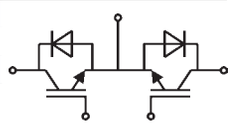
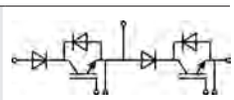
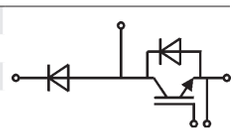
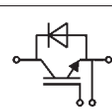
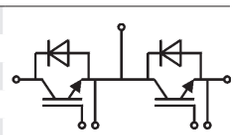
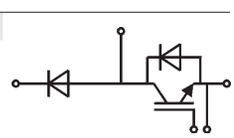
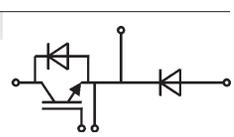
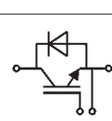
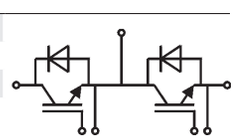
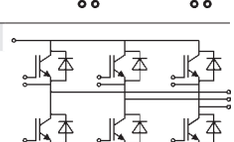
Type	IGBT						Diode				Module		
	I_C @ T_C = 25°C	I_{Cnom}	$V_{CE(sat)}$ @ T_j = 25°C typ.	E_{on}	E_{off}	$R_{th(j-c)}$	I_F @ T_C = 25°C	V_F @ T_j = 25°C typ.	E_{rr}	$R_{th(j-c)}$	Case	$R_{th(c-s)}$	Circuit
	A	A	V	mJ	mJ	K/W	A	V	mJ	K/W		K/W	
600V - IGBT3 (Trench)													
SKM145GB066D	195	150	1.45	8.5	5.5	0.3	150	1.38	3.5	0.5	2	0.05	
SKM195GB066D	265	200	1.45	14	8	0.22	200	1.35	5.6	0.4	2	0.05	
SKM300GB066D	390	300	1.45	7.5	11.5	0.15	350	1.38	10.5	0.25	3	0.038	
SKM400GB066D	500	400	1.45	8	16	0.12	450	1.35	14	0.2	3	0.038	
SKM600GB066D	760	600	1.45	7.5	29.5	0.08	700	1.38	25	0.125	3	0.038	
SKM200GARL066T[1)]	280	200	1.45	2.24	7.89	0.21	270	1.45	4	0.39	5	0.038	
SKM300GARL066T[1)]	400	300	1.45	3.5	10.1	0.15	400	1.45	4	0.26	5	0.038	
SKM400GARL066T[1)]	504	400	1.45	4.48	15.78	0.12	421	1.54	8	0.28	5	0.038	
SKM150MLI066TAT [1)]	200	150	1.45	1.7	5.1	0.29	200	1.35	2	0.52	5	0.038	
SKM200MLI066TAT [1)]	280	200	1.45	2.53	6.82	0.21	270	1.4	4	0.39	5	0.038	
SKM300MLI066TAT [1)]	400	300	1.45	3.5	10.1	0.15	324	1.35	4	0.25	5	0.038	
600V - NPT IGBT (Standard)													
SKM75GAL063D	100	75	2.1	3	2.5	0.35	75	1.55	0.53	0.72	2	0.05	
SKM300GAL063D	400	300	2.1	14	13	0.09	250	1.65	4	0.25	3	0.038	
SKM75GAR063D	100	75	2.1	3	2.5	0.35	75	1.55	0.53	0.72	2	0.05	
SKM300GAR063D	400	300	2.1	14	13	0.09	250	1.65	4	0.25	3	0.038	
SKM50GB063D	70	50	2.10	2.5	1.8	0.5	75	1.35	0.48	1	2	0.05	
SKM75GB063D	100	75	2.1	3	2.5	0.35	75	1.55	0.53	0.72	2	0.05	
SKM100GB063D	130	100	2.1	4	3	0.27	100	1.55	1.5	0.6	2	0.05	
SKM200GB063D	260	200	2.1	11	7.5	0.14	200	1.55	2.1	0.3	3	0.038	
SKM300GB063D	400	300	2.1	14	13	0.09	250	1.65	4	0.25	3	0.038	
1200V - V-IGBT													
SKM150GAL12V	231	150	1.75	13.5	14.2	0.19	189	2.14	8.9	0.31	2	0.05	
SKM400GAL12V	612	400	1.75	39	42	0.072	440	2.20	26	0.14	3	0.038	
SKM400GAR12V	612	400	1.75	39	42	0.072	440	2.20	26	0.14	3	0.038	
SKM300GA12V	420	300	1.85	23	33	0.11	353	2.17	21	0.17	4	0.038	
SKM400GA12V	612	400	1.75	39	42	0.072	440	2.20	26	0.14	4	0.038	
SKM600GA12V	908	600	1.75	76	76	0.049	707	2.14	43	0.086	4	0.038	
SKM50GB12V	77	50	1.85	5	4	0.53	65	2.22	3.6	0.84	2	0.05	
SKM75GB12V	114	75	1.85	6.7	7.1	0.38	97	2.17	4.2	0.58	2	0.05	
SKM100GB12V	159	100	1.75	10.7	8.7	0.27	121	2.20	5.7	0.48	2	0.05	
SKM150GB12V	231	150	1.75	13.5	14.2	0.19	189	2.14	8.9	0.31	2	0.05	
SKM150GB12VG	222	150	1.85	10	16.5	0.2	187	2.17	11	0.31	3	0.038	
SKM200GB12V	311	200	1.75	14	22	0.14	229	2.20	13	0.26	3	0.038	

IGBT Modules / SEMITRANS

Type	IGBT						Diode				Module		
	I_C @ T_C= 25°C	I_{Cnom}	$V_{CE(sat)}$ @ T_j = 25°C typ.	E_{on}	E_{off}	$R_{th(j-c)}$	I_F @ T_C = 25°C	V_F @ T_j = 25°C typ.	E_{rr}	$R_{th(j-c)}$	Case	$R_{th(c-s)}$	Circuit
	A	A	V	mJ	mJ	K/W	A	V	mJ	K/W		K/W	
1200V - V-IGBT													
SKM300GB12V	420	300	1.85	23	33	0.11	353	2.17	21	0.17	3	0.038	
SKM400GB12V	612	400	1.75	39	42	0.072	440	2.20	26	0.14	3	0.038	
1200V - IGBT4 (Trench)													
SKM200GAL12E4	313	200	1.80	21	27	0.14	229	2.20	13	0.26	3	0.038	
SKM300GAL12E4	422	300	1.85	27	39	0.11	353	2.17	23	0.17	3	0.038	
SKM400GAL12E4	616	400	1.80	33	56	0.072	440	2.20	30.5	0.14	3	0.038	
SKM200GAR12E4	313	200	1.80	21	27	0.14	229	2.20	13	0.26	3	0.038	
SKM300GAR12E4	422	300	1.85	27	39	0.11	353	2.17	23	0.17	3	0.038	
SKM400GAR12E4	616	400	1.80	33	56	0.072	440	2.20	30.5	0.14	3	0.038	
SKM300GA12E4	422	300	1.85	23.4	35	0.11	353	2.17	22.2	0.17	4	0.038	
SKM400GA12E4	616	400	1.80	28	59	0.072	440	2.20	37	0.14	4	0.038	
SKM600GA12E4	913	600	1.80	74	84	0.049	707	2.14	38	0.086	4	0.038	
SKM900GA12E4	1305	900	1.83	130	126	0.035	871	2.31	53	0.07	4	0.038	
SKM200GB12E4	313	200	1.80	21	27	0.14	229	2.20	13	0.26	3	0.038	
SKM300GB12E4	422	300	1.85	27	39	0.11	353	2.17	23	0.17	3	0.038	
SKM400GB12E4	616	400	1.80	33	56	0.072	440	2.20	30.5	0.14	3	0.038	
SKM450GB12E4	699	450	1.82	35	61	0.062	440	2.31	33	0.14	3	0.038	
1200V - IGBT4 Fast (Trench)													
SKM50GAL12T4	81	50	1.85	5.5	4.5	0.53	65	2.22	3.6	0.84	2	0.05	
SKM100GAL12T4	160	100	1.80	15	10.2	0.27	121	2.20	5.9	0.48	2	0.05	
SKM150GAL12T4	232	150	1.80	19.2	15.8	0.19	189	2.14	13	0.31	2	0.05	
SKM200GAL12T4	313	200	1.80	21	20	0.14	229	2.20	13	0.26	3	0.038	
SKM300GAL12T4	422	300	1.85	27	29	0.11	353	2.17	23	0.17	3	0.038	
SKM400GAL12T4	616	400	1.80	33	42	0.072	440	2.20	30.5	0.14	3	0.038	
SKM150GAR12T4	232	150	1.80	19.2	15.8	0.19	189	2.14	13	0.31	2	0.05	
SKM400GAR12T4	616	400	1.80	33	42	0.072	440	2.20	30.5	0.14	3	0.038	
SKM300GA12T4	422	300	1.85	23.4	26	0.11	353	2.17	22.2	0.17	4	0.038	
SKM400GA12T4	616	400	1.80	28	44	0.072	440	2.20	37	0.14	4	0.038	
SKM600GA12T4	913	600	1.80	74	63	0.049	707	2.14	38	0.086	4	0.038	
SKM50GB12T4	81	50	1.85	5.5	4.5	0.53	65	2.22	3.8	0.84	2	0.05	
SKM75GB12T4	115	75	1.85	11	6.9	0.38	97	2.17	4.7	0.58	2	0.05	
SKM100GB12T4	160	100	1.80	15	10.2	0.27	121	2.20	5.9	0.48	2	0.05	
SKM100GB12T4G	154	100	1.85	16.1	8.6	0.29	118	2.22	6	0.49	3	0.038	
SKM150GB12T4	232	150	1.80	19.2	15.8	0.19	189	2.14	13	0.31	2	0.05	
SKM150GB12T4G	223	150	1.85	18.7	14.1	0.2	183	2.17	9	0.32	3	0.038	
SKM200GB12T4	313	200	1.80	21	20	0.14	229	2.20	13	0.26	3	0.038	
SKM300GB12T4	422	300	1.85	27	29	0.11	353	2.17	23	0.17	3	0.038	
SKM400GB12T4	616	400	1.80	33	42	0.072	440	2.20	30.5	0.14	3	0.038	

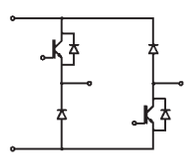
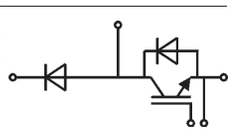
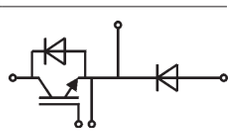
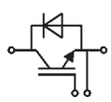
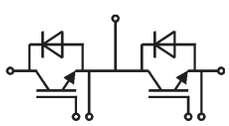
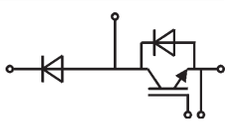
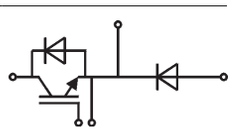
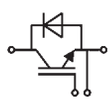
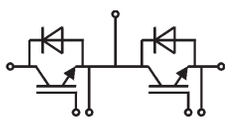
Footnotes: 1) New product

IGBT Modules / SEMITRANS

Type	IGBT						Diode				Module		
	I_C @ T_C = 25°C	I_{Cnom}	$V_{CE(sat)}$ @ T_j = 25°C typ.	E_{on}	E_{off}	$R_{th(j-c)}$	I_F @ T_C = 25°C	V_F @ T_j = 25°C typ.	E_{rr}	$R_{th(j-c)}$	Case	$R_{th(c-s)}$	Circuit
	A	A	V	mJ	mJ	K/W	A	V	mJ	K/W		K/W	
1200V - IGBT4 Fast (Trench)													
SKM150GM12T4G	229	150	1.85	19.2	15.8	0.19	187	2.17	13	0.31	3	0.038	
SKM200GM12T4	313	200	1.80	21	20	0.14	229	2.20	13	0.26	3	0.038	
SKM300GM12T4	422	300	1.85	27	29	0.11	353	2.17	23	0.17	3	0.038	
SKM400GM12T4	616	400	1.80	33	42	0.072	440	2.20	30.5	0.14	3	0.038	
SKM300GBD12T4	422	300	1.85	27	29	0.11	56	2.41	30.5	0.94	3	0.038	
1200V - IGBT3 (Trench)													
SKM195GAL126D	220	150	1.70	16	24.5	0.16	170	2.00	5.8	0.32	2	0.05	
SKM200GAL126D	260	150	1.70	18	24	0.13	200	1.64	18	0.3	3	0.038	
SKM400GAL126D	470	300	1.70	29	48	0.08	400	1.64	27	0.18	3	0.038	
SKM600GAL126D	660	400	1.70	39	64	0.055	490	1.60	41	0.125	3	0.038	
SKM600GA126D	660	400	1.70	39	64	0.055	490	1.60	41	0.125	4	0.038	
SKM800GA126D	960	600	1.70	65	95	0.042	680	1.69	59	0.09	4	0.038	
SKM195GB126D	220	150	1.70	16	24.5	0.16	170	2.00	5.8	0.32	2	0.05	
SKM200GB126D	260	150	1.70	18	24	0.13	200	1.64	18	0.3	3	0.038	
SKM300GB126D	310	200	1.70	21	33	0.12	250	1.60	18	0.25	3	0.038	
SKM400GB126D	470	300	1.70	29	48	0.08	400	1.64	27	0.18	3	0.038	
SKM600GB126D	660	400	1.70	39	64	0.055	490	1.60	41	0.125	3	0.038	
1200V - NPT IGBT (Ultrafast)													
SKM200GAL125D	200	150	3.3	14	8	0.09	200	2.06	8	0.25	3	0.038	
SKM400GAL125D	400	300	3.3	17	18	0.05	390	2.06	16	0.125	3	0.038	
SKM200GAR125D	200	150	3.3	14	8	0.09	200	2.06	8	0.25	3	0.038	
SKM400GAR125D	400	300	3.3	17	18	0.05	390	2.06	16	0.125	3	0.038	
SKM600GA125D	580	400	3.3	30	22	0.041	500	2.00	24	0.09	4	0.038	
SKM800GA125D	760	600	3.20	88	48	0.03	720	2.3	28	0.07	4	0.038	
SKM100GB125DN	100	75	3.3	9	3.5	0.18	95	2.06	4	0.5	2N	0.05	
SKM200GB125D	200	150	3.3	14	8	0.09	200	2.06	8	0.25	3	0.038	
SKM300GB125D	300	200	3.3	16	11	0.075	260	2.00	13	0.18	3	0.038	
SKM400GB125D	400	300	3.3	17	18	0.05	390	2.06	16	0.125	3	0.038	
SKM25GD125D[1)]	39	25	3.20	3.9	1.6	0.56	47	2.13	1.1	1	6	0.05	
SKM50GD125D[1)]	73	50	3.20	8	3.2	0.32	77	2.00	2.1	0.6	6	0.05	

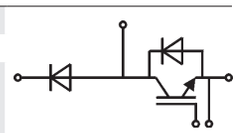
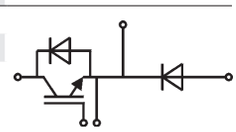
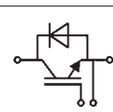
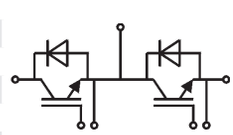
Footnotes: 1) New product

IGBT Modules / SEMITRANS

Type	IGBT						Diode				Module		
	I_C @ T_C = 25°C	I_{Cnom}	$V_{CE(sat)}$ @ T_j = 25°C typ.	E_{on}	E_{off}	$R_{th(j-c)}$	I_F @ T_C = 25°C	V_F @ T_j = 25°C typ.	E_{rr}	$R_{th(j-c)}$	Case	$R_{th(c-s)}$	Circuit
	A	A	V	mJ	mJ	K/W	A	V	mJ	K/W		K/W	
1200V - NPT IGBT (Ultrafast)													
SKM25GAH125D[1)]	39	25	3.20	3.9	1.6	0.56	47	2.13	1.1	1	6	0.05	
1700V - IGBT3 (Trench)													
SKM145GAL176D	160	100	2.00	60	38	0.19	140	1.6	27.5	0.36	2	0.05	
SKM200GAL176D	260	150	2.00	93	58	0.12	210	1.55	31	0.25	3	0.038	
SKM400GAL176D	432	300	2.00	170	118	0.075	440	1.55	78	0.125	3	0.038	
SKM400GAR176D	432	300	2.00	170	118	0.075	440	1.55	78	0.125	3	0.038	
SKM600GA176D	660	400	2.00	255	155	0.044	600	1.6	102	0.09	4	0.038	
SKM800GA176D	830	600	2.00	335	245	0.04	630	1.6	155	0.07	4	0.038	
SKM75GB176D	80	50	2.00	25	18	0.38	80	1.50	14.5	0.55	2	0.05	
SKM100GB176D	125	75	2.00	44	28.5	0.24	100	1.6	21.4	0.45	2	0.05	
SKM145GB176D	160	100	2.00	60	38	0.19	140	1.6	27.5	0.36	2	0.05	
SKM200GB176D	260	150	2.00	93	58	0.12	210	1.55	31	0.25	3	0.038	
SKM400GB176D	432	300	2.00	170	118	0.075	440	1.55	78	0.125	3	0.038	
1700V - NPT IGBT (Standard)													
SKM200GAL173D	220	150	3.4	95	45	0.1	150	2.2	21	0.32	3	0.038	
SKM200GAR173D	220	150	3.4	95	45	0.1	150	2.2	21	0.32	3	0.038	
SKM400GA173D	440	300	3	180	10	0.05	300	2.2	46	0.17	4	0.038	
SKM75GB173D	75	50	3.4	18	13	0.25	60	2.2	10.5	0.75	2	0.05	
SKM100GB173D	110	75	3.4	35	21	0.2	80	2.2	11.5	0.63	2	0.05	
SKM150GB173D	150	100	3.4	60	32	0.125	125	2.2	14	0.4	3	0.038	
SKM200GB173D	220	150	3.4	95	45	0.1	150	2.2	21	0.32	3	0.038	

Footnotes: 1) New product

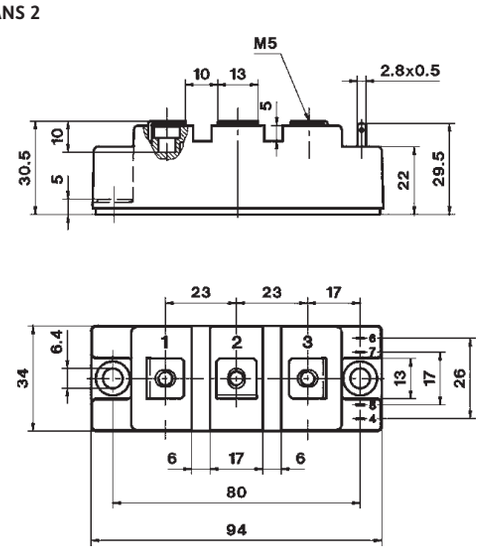
IGBT Modules / SEMITRANS

Type	IGBT						Diode				Module		
	I_C @ T_C= 25°C	I_{Cnom}	$V_{CE(sat)}$ @ T_j = 25°C typ.	E_{on}	E_{off}	$R_{th(j-c)}$	I_F@ T_C = 25°C	V_F @ T_j = 25°C typ.	E_{rr}	$R_{th(j-c)}$	Case	$R_{th(c-s)}$	Circuit
	A	A	V	mJ	mJ	K/W	A	V	mJ	K/W		K/W	
1700V - IGBT4 (Trench) (new product series, target data)													
SKM100GAL17E4[1)]	580	100	1.90	29	45	0.234	100	2.00	28	0.504	2	0.05	
SKM200GAL17E4[1)]	580	200	1.90	78	90	0.122	200	2.00	65	0.276	3	0.038	
SKM400GAL17E4[1)]	580	400	1.90	156.5	180	0.066	400	2.00	130.3	0.13	3	0.038	
SKM100GAR17E4[1)]	580	100	1.90	29	45	0.234	100	2.00	28	0.504	2	0.05	
SKM200GAR17E4[1)]	580	200	1.90	78	90	0.122	200	2.00	65	0.276	3	0.038	
SKM400GAR17E4[1)]	614	400	1.90	156.5	180	0.066	443	2.00	130.3	0.13	3	0.038	
SKM600GA17E4[1)]	1021	600	1.90	210	240	0.042	688	2.14	170	0.09	4	0.038	
SKM75GB17E4[1)]	125	75	1.90	15	34	0.304	88	2.00	15	0.632	2	0.05	
SKM100GB17E4[1)]	164	100	1.90	29	45	0.234	113	2.00	28	0.504	2	0.05	
SKM150GB17E4[1)]	261	150	1.90	62	68	0.162	169	1.98	45	0.345	2	0.05	
SKM200GB17E4[1)]	321	200	1.90	78	90	0.122	213	2.00	65	0.276	3	0.038	
SKM300GB17E4[1)]	476	300	1.90	117	135	0.083	314	2.00	84	0.19	3	0.038	
SKM400GB17E4[1)]	614	400	1.90	156.5	180	0.066	443	2.00	130.3	0.13	3	0.038	

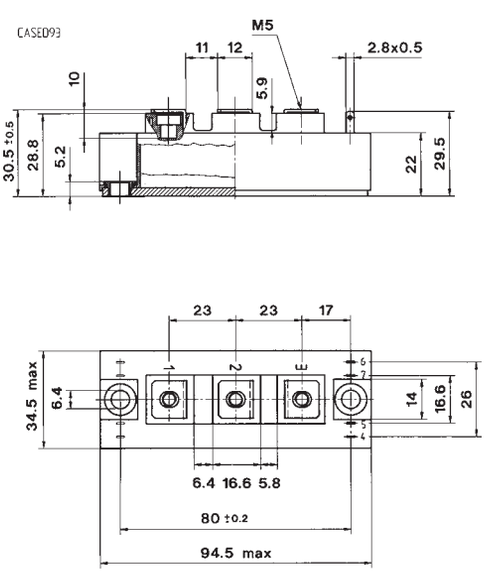
Footnotes: 1) New product

Cases

SEMITRANS 2



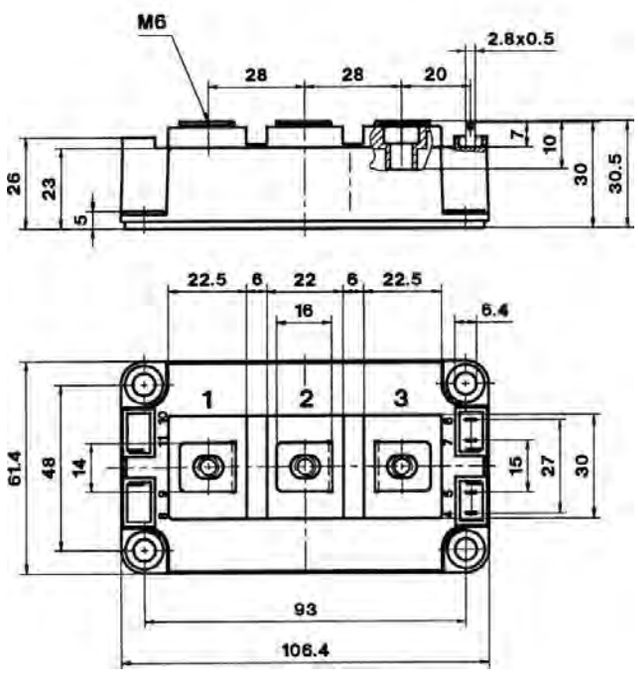
SEMITRANS 2N



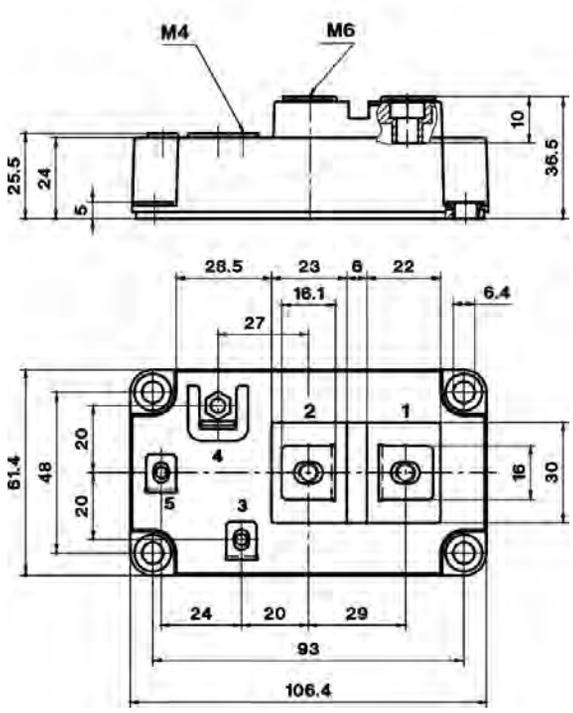
Dimensions in mm

Cases

SEMITRANS 3

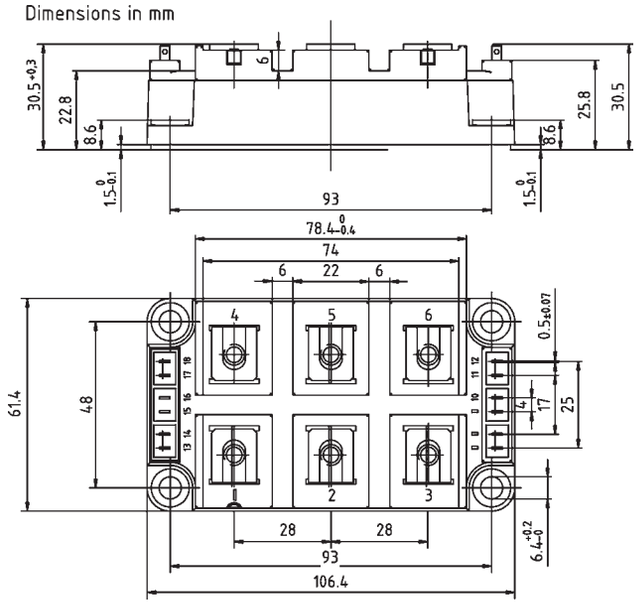


SEMITRANS 4

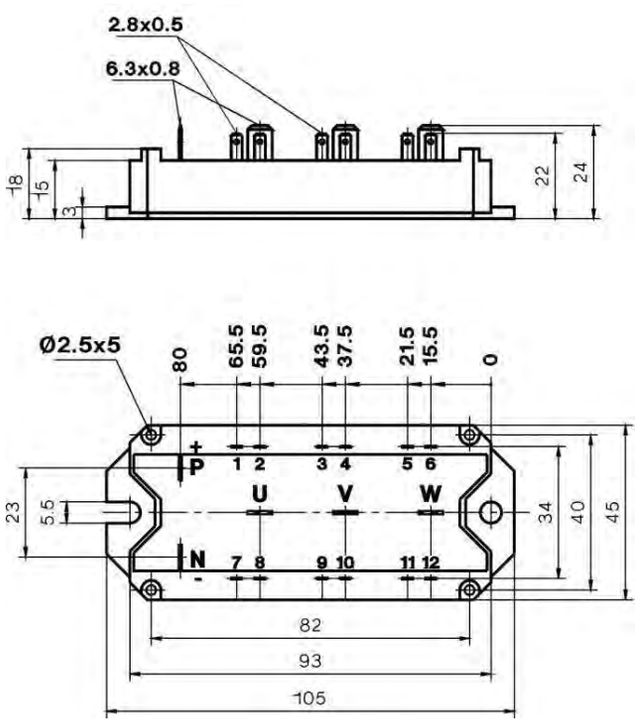


SEMITRANS 5

Dimensions in mm

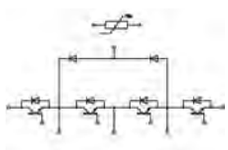
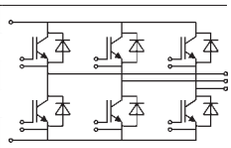
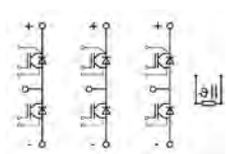
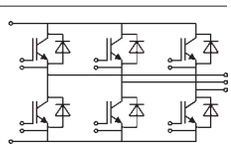
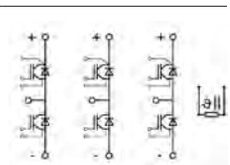
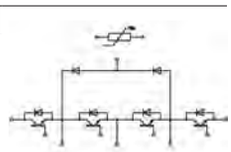
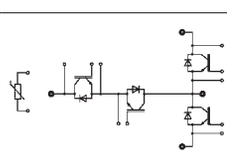
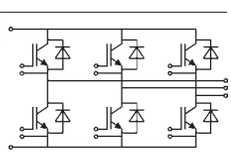


SEMITRANS 6

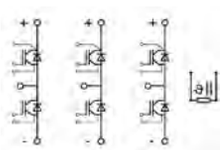


Dimensions in mm

IGBT Modules / SKiM 4/5

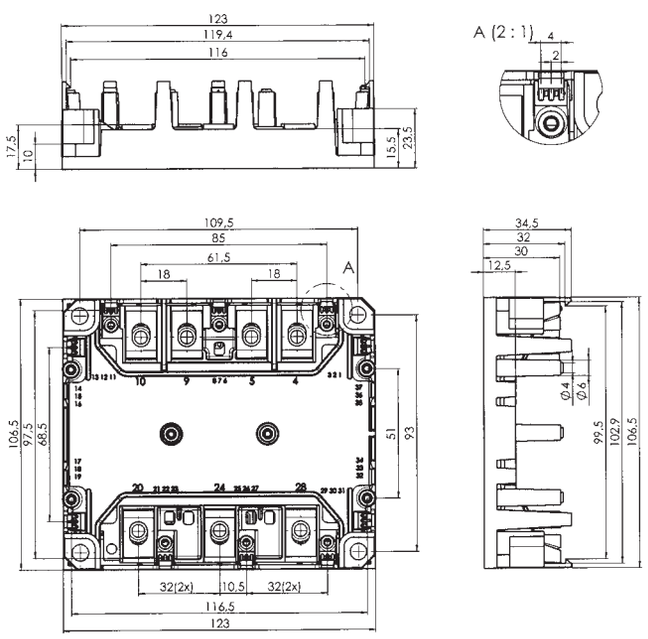
Type	IGBT						Diode				Module	
	I_C @ T_S = 25°C	I_{Cnom}	$V_{CE(sat)}$ @ T_j = 25°C typ.	E_{on}	E_{off}	$R_{th(j-s)}$	I_F @ T_S = 25°C	V_F @ T_j = 25°C typ.	E_{rr}	$R_{th(j-s)}$	Case	Circuit
	A	A	V	mJ	mJ	K/W	A	V	mJ	K/W		
600V - IGBT3 (Trench)												
SKiM201MLI07E4	189	200	1.45	-	-	-	-	-	-	-	4	
SKiM301MLI07E4	256	300	1.45	2.78	17.48	-	198	1.4	-	-	4	
SKiM401MLI07E4	317	400	1.45	3.32	20.91	-	266	1.4	1.8	-	4	
SKiM601MLI07E4	438	600	1.45	6.05	44	-	334	1.4	2.4	-	4	
1200V - IGBT3 (Trench)												
SKiM200GD126D	-	200	1.65	15	25	-	152	2.4	-	0.35	4	
SKiM300GD126D	265	300	1.70	28	47	0.2	260	1.9	-	0.285	4	
SKiM300GD126DL	265	300	1.65	28	47	0.2	260	1.9	-	0.285	4	
SKiM400GD126DM	330	300	1.70	29	46	0.134	300	1.9	-	0.19	4	
SKiM400GD126DLM	330	300	1.65	29	46	0.134	300	1.9	-	0.19	4	
SKiM450GD126D	390	450	1.70	42	70	0.13	345	1.9	-	0.19	5	
SKiM450GD126DL	390	450	1.65	42	70	0.13	345	1.9	-	0.19	5	
SKiM600GD126DLM	480	450	1.65	42	70	0.09	450	1.9	-	0.125	5	
SKiM601GD126DM	480	450	1.70	42	70	0.09	450	1.9	-	0.125	5	
1200V - IGBT4 (Trench)												
SKiM304GD12T4D	312	300	1.80	-	-	0.19	221	2.3	-	0.25	4	
SKiM455GD12T4D1	400	450	1.80	34	40	0.14	295	2.3	28	0.19	5	
SKiM201MLI12E4	224	200	1.80	23.7	32.39	-	180	2.2	14.78	-	4	
SKiM301MLI12E4	312	300	1.80	23.7	32.39	-	253	2.1	14.78	-	4	
SKiM301TMLI12E4B	311	300	1.80	6.62	19.37	0.19	249	2.20	1.79	0.29	4	
SKiM301TMLI12E4C	294	300	1.80	6.619	19.376	0.21	274	2.20	1.79	0.25	4	
SKiM401TMLI12E4B	388	400	1.80	8.83	25.83	0.16	311	2.20	2.391	0.24	4	
SKiM601TMLI12E4B	542	600	1.80	11.44	44.88	0.12	495	2.14	4.37	0.15	4	
1700V - IGBT3 (Trench)												
SKiM120GD176D	110	125	2	72	46	0.4	105	1.6	22	0.56	4	
SKiM220GD176DH4	220	250	2	145	100	0.21	220	1.7	65	0.26	4	

IGBT Modules / SKiM 4/5

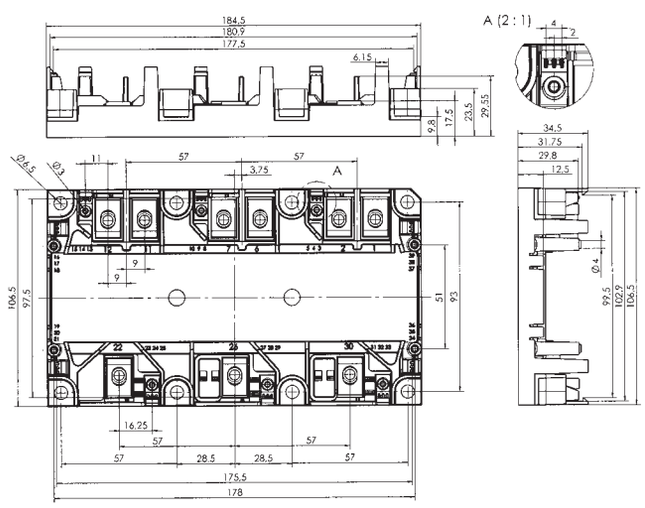
Type	IGBT						Diode				Module	
	I_C @ T_S= 25°C	I_{Cnom}	$V_{CE(sat)}$ @ T_j = 25°C typ.	E_{on}	E_{off}	$R_{th(j-s)}$	I_F@ T_S = 25°C	V_F @ T_j = 25°C typ.	E_{rr}	$R_{th(j-s)}$	Case	Circuit
	A	A	V	mJ	mJ	K/W	A	V	mJ	K/W		
1700V - IGBT3 (Trench)												
SKiM270GD176D	260	300	2.00	170	120	0.175	215	1.7	-	0.29	5	

Cases

SKiM 4

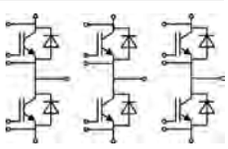
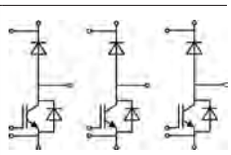
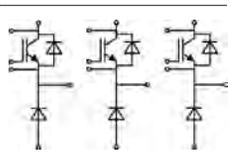
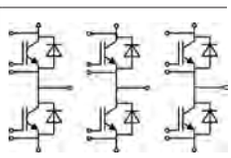


SKiM 5



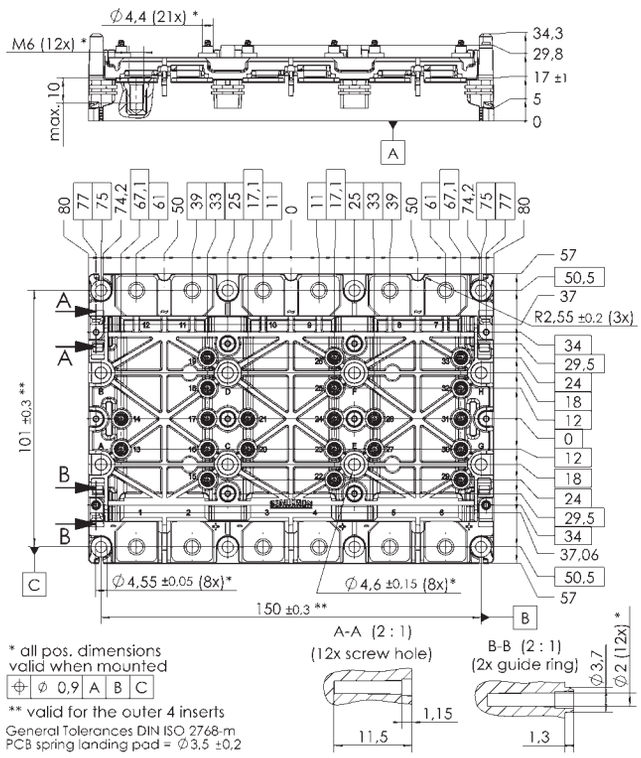
Dimensions in mm

IGBT Modules / SKiM 63/93

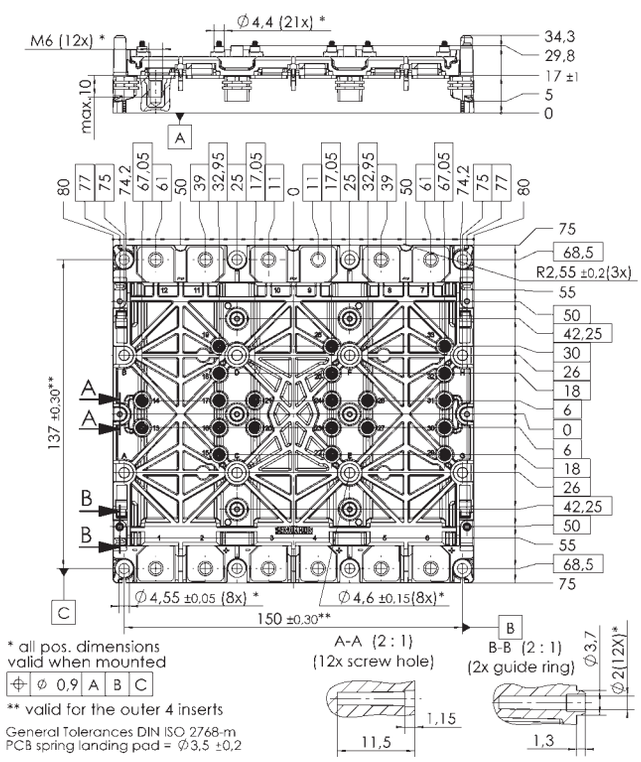
Type	IGBT						Diode				Module	
	I_C @ T_s = 25°C	I_{Cnom}	$V_{CE(sat)}$ @ T_j = 25°C typ.	E_{on}	E_{off}	$R_{th(j-s)}$	I_F @ T_s = 25°C	V_F @ T_j = 25°C typ.	E_{rr}	$R_{th(j-s)}$	Case	Circuit
	A	A	V	mJ	mJ	K/W	A	V	mJ	K/W		
600V - IGBT3 (Trench)												
SKiM406GD066HD	468	400	1.45	8	25	0.135	360	1.5	12	0.243	63	
SKiM606GD066HD	641	600	1.45	16	53	0.105	453	1.6	21	0.201	63	
SKiM909GD066HD	899	900	1.45	36	88	0.078	712	1.5	29	0.135	93	
1200V - IGBT4 (Trench)												
SKiM609GAL12E4	748	600	1.85	136	83	0.068	1397	1.7	39	0.048	93	
SKiM609GAR12E4	748	600	1.85	136	83	0.068	1397	1.7	39	0.048	93	
SKiM306GD12E4	410	300	1.85	19	39	0.116	302	2.1	21	0.218	63	
SKiM459GD12E4	554	450	1.85	22	57	0.092	438	2.1	40	0.155	93	

Cases

SKiM 63



SKiM 93



Dimensions in mm

MOSFET Modules
Best in Class Switching Performance

SEMIKRON produces MOSFET (Metal Oxide Semiconductor Field Effect Transistor) modules in single switch, halfbridge, H-bridge and 6-pack configuration in SEMITOP and SEMITRANS packages.

The available MOSFET modules in the voltage range of 55V up to 600V and current ratings of 40A up to 290A are especially designed for high-speed switching offering low switching losses.

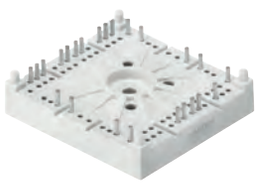
For detailed information
please refer data sheets.

Further information:
www.semikron.com/mosfet-modules

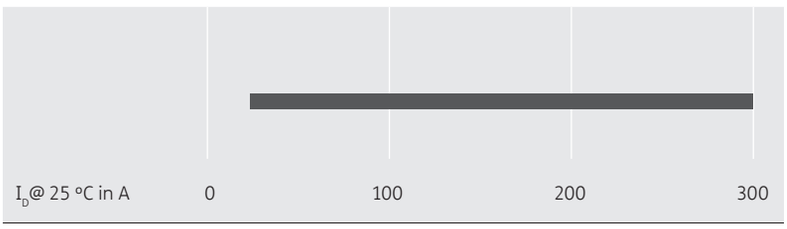
MOSFET Modules

SEMITOP®

6-pack
H-bridge
half bridge



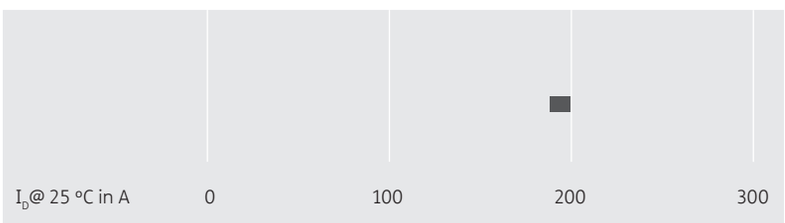
55V up to 600V



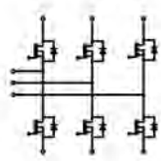
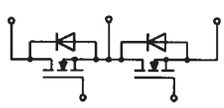
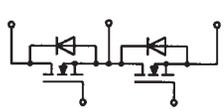
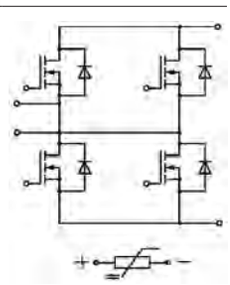
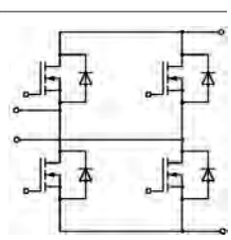
SEMITRANS®

single switch

100V up to 200V



MOSFET Modules / SEMITOP

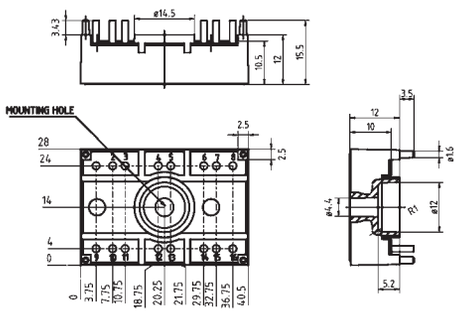
Type	V_{DS} V	I_D @ T_C = 25°C A	$R_{DS(on)}$ @ T_j = 25°C typ. mΩ	$R_{th(j-s)}$ K/W	Case	Circuit
55V						
SK 80 MBBB 055	55	117	2.2	1.1	3	
75V						
SK 300 MB 075	75	290	-	0.45	3	
100V						
SK 260 MB 10	100	230	-	0.45	3	
SK 85 MH 10 T	100	80	-	1.1	2	
600V						
SK 60 MH 60[1)]	600	60	33	0.54	4	

Footnotes: 1) New product

Cases

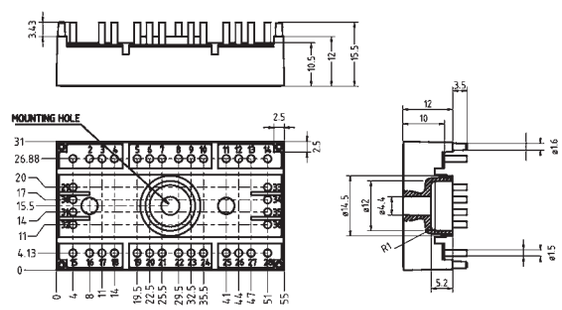
SEMITOP 2

dimensions in mm
tolerance system: ISO 2768-m



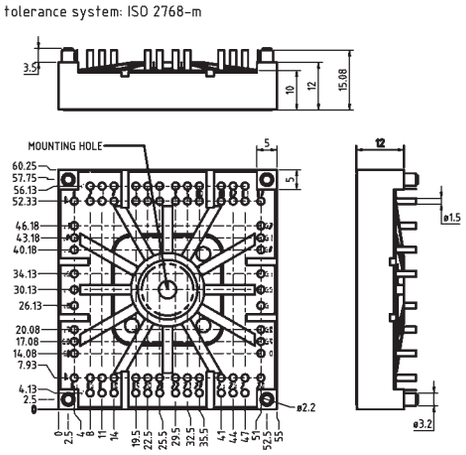
SEMITOP 3

dimensions in mm
tolerance system: ISO 2768-m



SEMITOP 4

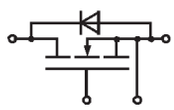
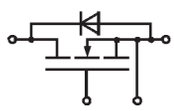
dimensions in mm
tolerance system: ISO 2768-m



Dimensions in mm

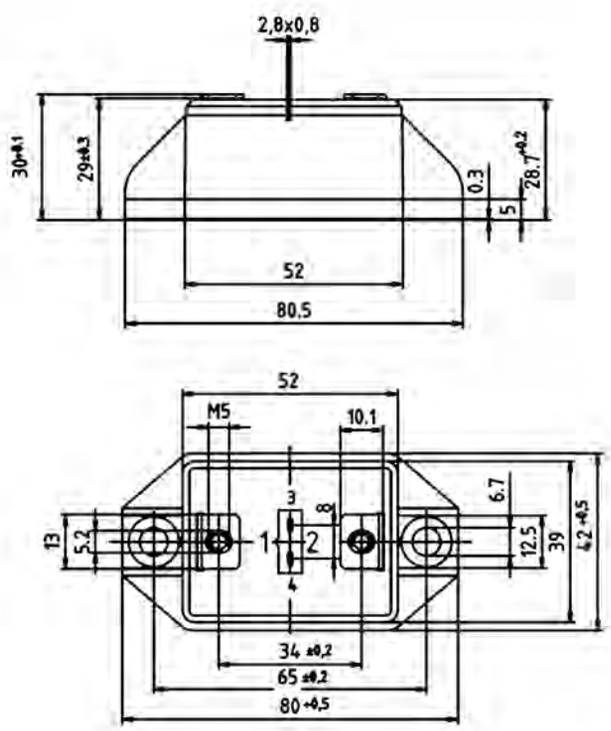
MOSFET Modules / SEMITRANS

Type

	V_{DS} V	I_D @ T_C = 25°C A	$R_{DS(on)}$ @ T_j = 25°C typ. mΩ	$R_{th(j-c)}$ K/W	Case	Circuit
100V						
SKM 111 AR	100	200	7	0.18	M1	
SKM 111 RZR	100	200	7	0.18	M1	
200V						
SKM 180 A020	200	180	9	0.18	M1	

Cases

SEMITRANS M1



Dimensions in mm

Thyristor / Diode Modules with Proven Packages

The SEMIKRON thyristor modules are available in different packages like SEMIPACK, SEMiSTART, Thyristor / Diode Modules, SEMIPONT and SEMITOP. Modules in different packaging technologies are available: soldered, wire bonded and pressure contact modules with and without baseplate.

PCB contacting is possible by soldered pins, pressfit contacts or plug connectors. The thyristor modules are offered in a variety of dual and single topologies for almost all phase control or rectifier applications.

All thyristor modules are equipped with SEMIKRON chips. The product line offers Thyristor / Diode Modules. A product range with voltages up to 2200V. Thanks to the comprehensive product range, the optimal solution for each application can be found.

3

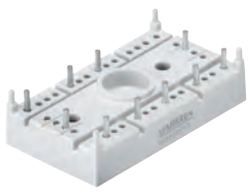
For detailed information
please refer data sheets.

Further information:
www.semikron.com/thyristor-diode-modules

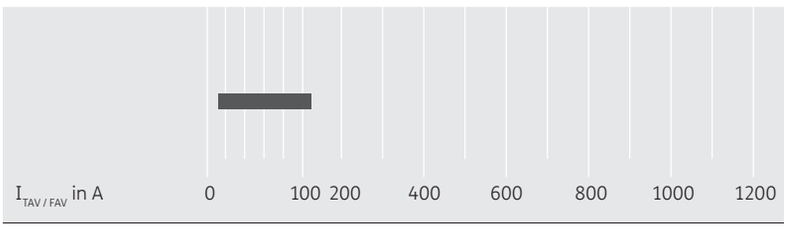
Thyristor / Diode Modules

SEMITOP®1/2/3

W1C, WT, W3C
single switch



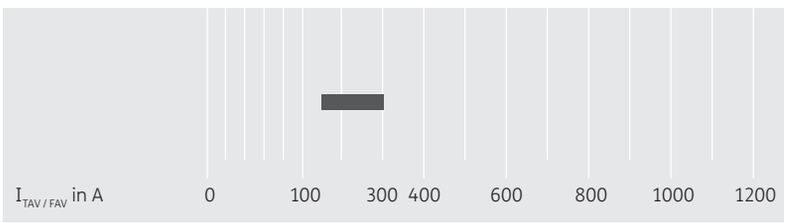
800V up to 1600V



SEMiX®1/2

half bridge

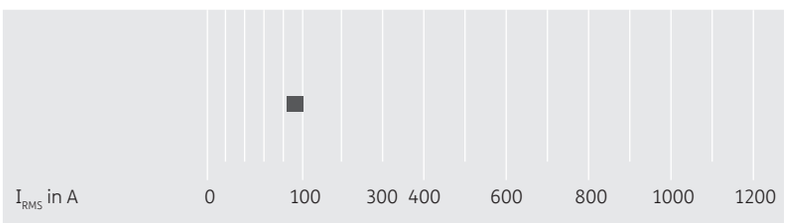
1600V



SEMIPONT®5

W3C

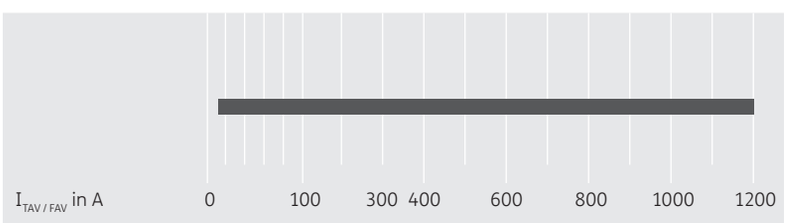
1200V up to 1600V



SEMIPACK®0/1/2/3/4/5/6

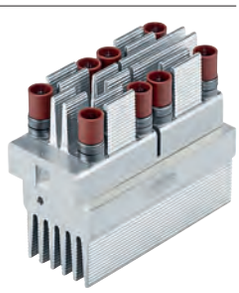
single switch
half bridge

200V up to 2200V

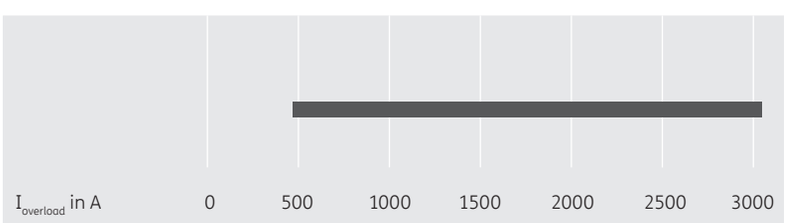


SEMiSTART®

W1C

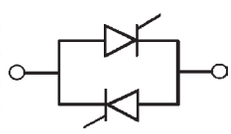
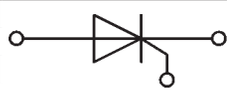
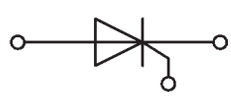
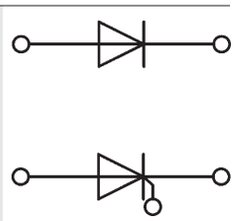
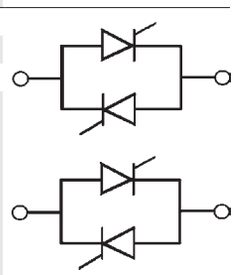
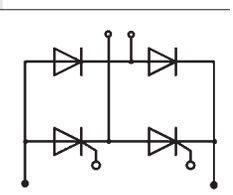
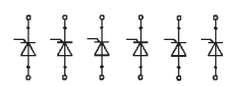
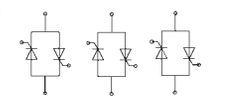
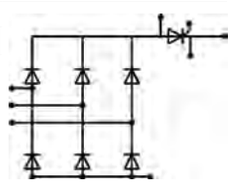


1400V up to 1800V



3

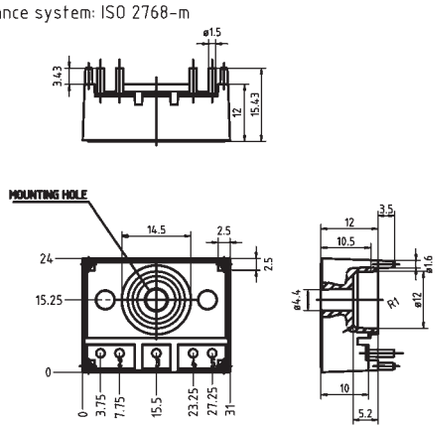
Thyristor / Diode Modules / SEMITOP

Type	V_{RRM} V_{DRM}	I_{TAV} I_{FAV} @ T_S	T_S	I_{TSM} I_{FSM} @ T_{jmax}	$V_{T(TO)}$ @ T_{jmax}	r_T @ T_{jmax}	$R_{th(j-s)}$ per chip	T_j	Case	Circuit
	V	A	°C	A	V	mΩ	K/W	°C		
SK 25 KQ	800-1600	29	85	280	1.1	20.00	1.7	-40 ... +125	1	
SK 45 KQ	800-1600	47	85	380	1	10.00	1.2	-40 ... +125	1	
SK 70 KQ	800-1600	72	85	900	1	6.00	0.8	-40 ... +125	1	
SK 100 KQ	800-1600	101	85	1350	0.9	4.50	0.6	-40 ... +125	2	
SK 120 KQ	800-1600	134	85	1800	0.9	3.50	0.45	-40 ... +125	2	
SK 35 TAA	800-1600	35	80	380	0.85	9.10	1.2	-40 ... +130	2	
SK 55 TAA	800-1600	55	80	900	0.85	5.70	0.8	-40 ... +130	2	
SK 75 TAA	800-1600	75	80	1500	0.9	4.50	0.6	-40 ... +130	2	
SK 100 TAA	800-1600	100	80	2000	0.9	3.50	0.45	-40 ... +130	2	
SK 75 TAE 12	1200	75	80	1250	0.85	4.40	0.6	-40 ... +130	2	
SK 25 WT	800-1600	29	85	280	1.1	20.00	1.7	-40 ... +125	2	
SK 45 WT	800-1600	47	85	380	1	10.00	1.2	-40 ... +125	2	
SK 70 WT	800-1600	72	85	900	1	6.00	0.8	-40 ... +125	3	
SK 100 WT	800-1600	101	85	1350	0.9	4.50	0.6	-40 ... +125	3	
SK 35 BZ	800-1600	35	80	270	0.85	14.00	1.7	-40 ... +125	2	
SK 45 STA	800-1600	47	75	380	1	10.00	1.2	-40 ... +125	3	
SK 25 UT	800-1600	29	85	280	1.1	20.00	1.7	-40 ... +125	3	
SK 45 UT	800-1600	47	85	380	1	10.00	1.2	-40 ... +125	3	
SK 30 DTA	800-1600	25	80	900	1	6.00	1.7	-40 ... +150	3	
SK 60 DTA	800-1600	61	80	1350	0.9	0.60	0.6	-40 ... +125	3	
SK 80 DTA	800-1600	65	80	1800	0.9	3.50	1	-40 ... +150	3	

Cases

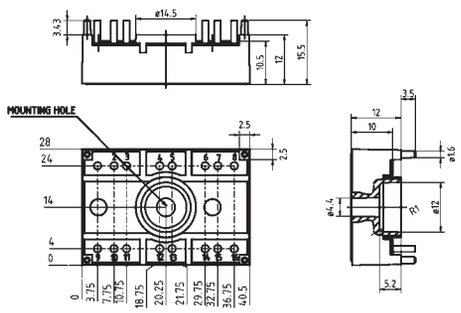
SEMITOP 1

dimensions in mm
tolerance system: ISO 2768-m



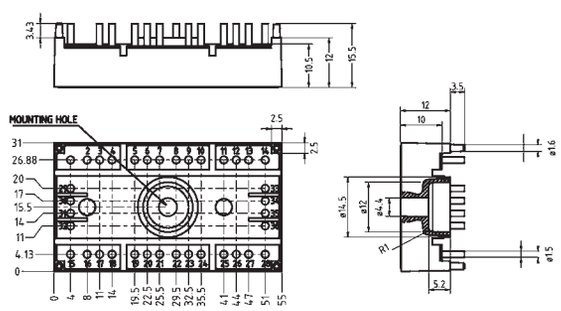
SEMITOP 2

dimensions in mm
tolerance system: ISO 2768-m



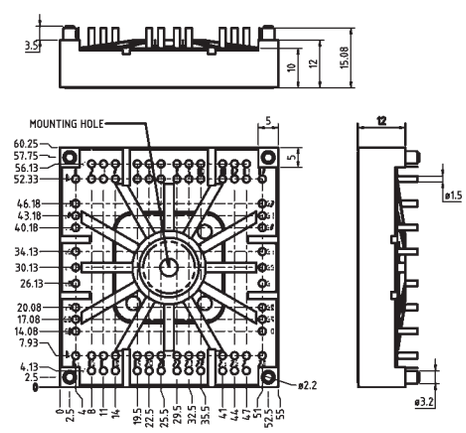
SEMITOP 3

dimensions in mm
tolerance system: ISO 2768-m



SEMITOP 4

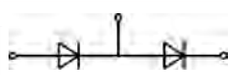
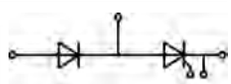
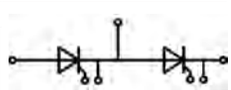
dimensions in mm
tolerance system: ISO 2768-m



Dimensions in mm

Thyristor / Diode Modules / SEMiX

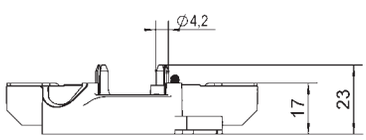
Type

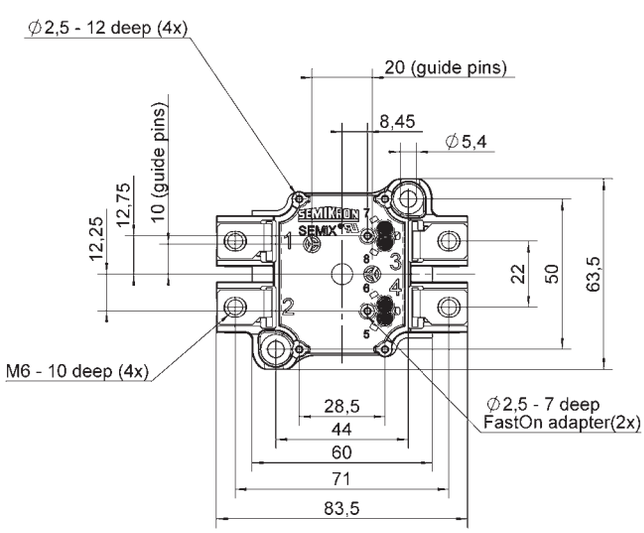
	V_{RRM} V_{DRM}	I_{TAV} I_{FAV} @ T_C	T_C	I_{TSM} I_{FSM} @ T_{jmax}	$V_{T(TO)}$ @ T_{jmax}	r_T @ T_{jmax}	$R_{th(j-c)}$ per chip	$R_{th(c-s)}$	T_j	Case	Circuit
	V	A	°C	A	V	mΩ	K/W	K/W	°C		
SEMiX191KD16s	1600	190	85	5000	0.85	0.95	0.18	0.075	-40 ... +130	1s	
SEMiX302KD16s	1600	300	85	7500	0.85	1.1	0.091	0.045	-40 ... +130	2s	
SEMiX171KH16s	1600	170	85	4800	0.85	1.5	0.18	0.075	-40 ... +130	1s	
SEMiX302KH16s	1600	300	85	8000	0.85	1.1	0.091	0.045	-40 ... +130	2s	
SEMiX141KT16s	1600	140	85	3000	0.85	2.1	0.21	0.075	-40 ... +130	1s	
SEMiX302KT16s	1600	300	85	8000	0.85	1.7	0.091	0.045	-40 ... +130	2s	

3

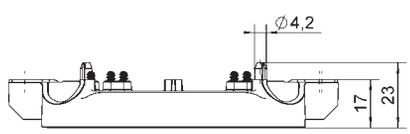
Cases

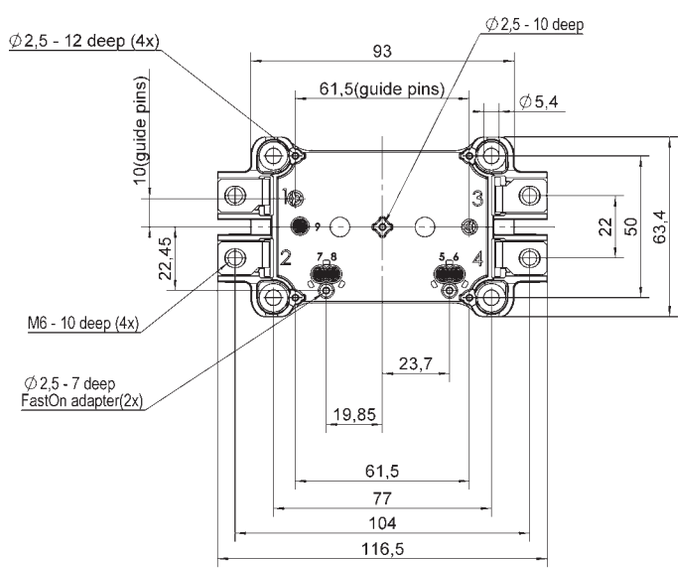
SEMiX 1s





SEMiX 2s

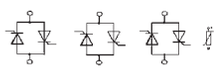
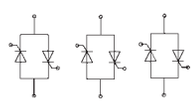




Dimensions in mm

Thyristor / Diode Modules / SEMIPONT

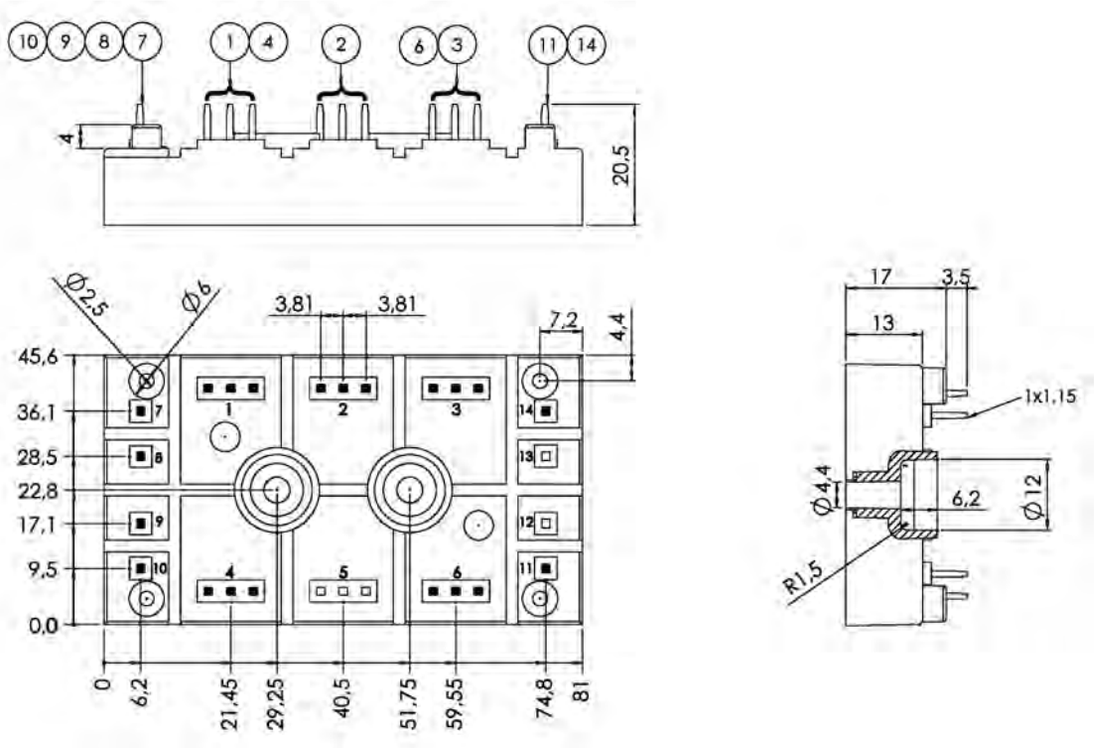
Type

	V_{RRM} V_{DRM}	I_{TAV} I_{FAV} @ T_S	T_S	I_{TSM} I_{FSM} @ T_{jmax}	$V_{T(TO)}$ @ T_{jmax}	r_T @ T_{jmax}	$R_{th(j-s)}$ cont. per chip	T_j	Case	Circuit
	V	A	°C	A	V	mΩ	K/W	°C		
SKUT 85/16 T V2[1)]	1600	94	85	1050	1.1	6.00	-	-40 ... +125	5	
SKUT 85/12 T V2[1)]	1200	94	85	1050	1.1	6.00	-	-40 ... +125	5	
SKUT 115/16T V2[1)]	1600	127	85	1250	0.9	5	-	-40 ... +125	5	
SKUT 115/12T V2[1)]	1200	127	85	1250	0.9	5	-	-40 ... +125	5	
SKUT 85/12 V2 [1)]	1200	85	85	1050	1.1	6.00	0.85	-40 ... +125	5	
SKUT 85/12	1200	85	85	1050	1.1	6.00	0.85	-40 ... +125	5	
SKUT 85/16 V2 [1)]	1600	85	85	1050	1.1	6.00	0.85	-40 ... +125	5	
SKUT 115/12 V2[1)]	1200	105	85	1250	0.9	5.00	0.63	-40 ... +125	5	
SKUT 115/16 V2[1)]	1600	105	85	1250	0.9	5.00	0.63	-40 ... +125	5	

Footnotes: 1) New product

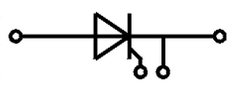
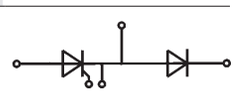
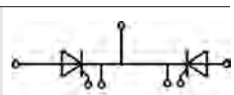
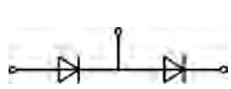
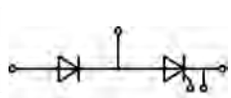
Cases

SEMIPONT 5

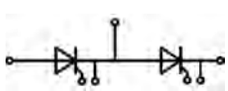


Dimensions in mm

Thyristor / Diode Modules / SEMIPACK

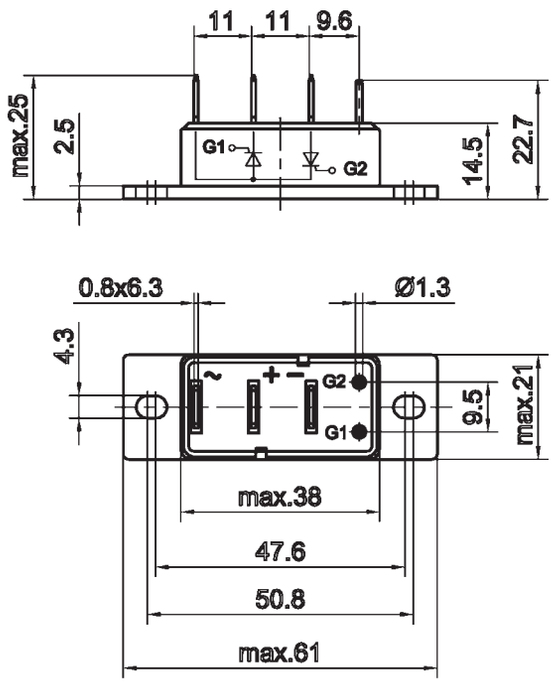
Type	V_{RRM} V_{DRM}	I_{TAV} I_{FAV} @ T_C	T_C	I_{TSM} I_{FSM} @ T_{jmax}	$V_{T(TO)}$ @ T_{jmax}	r_T @ T_{jmax}	$R_{th(j-c)}$ cont. per chip	$R_{th(c-s)}$ per chip	T_j	Case	Circuit
	V	A	°C	A	V	mΩ	K/W	K/W	°C		
SKET 330	800-2200	295	85	8000	1.2	0.55	0.09	0.02	-40 ... +130	4	
SKET 400	800-1800	392	85	12000	0.92	0.30	0.09	0.02	-40 ... +130	4	
SKET 740	1800-2200	699	85	31000	0.88	0.28	0.0405	0.01	-40 ... +125	6	
SKET 800	1400-1800	808	85	32000	0.83	0.25	0.0405	0.01	-40 ... +130	6	
SKKE 15	600-1600	14	85	280	0.85	15	2	0.2	-40 ... +125	0	
SKKE 81	400-2200	82	85	1750	0.85	1.80	0.4	0.2	-40 ... +125	1	
SKKE 162	800-1800	195	85	5000	0.85	1.20	0.18	0.1	-40 ... +135	2	
SKKE 380	1200-1600	380	100	10000	0.8	0.35	0.11	0.04	-40 ... +150	3	
SKKE 600	1200-2200	600	100	18000	0.75	0.25	0.07	0.02	-40 ... +150	4	
SKKE 1200	1800-2200	1180	85	40000	0.72	0.19	0.0385	0.01	-40 ... +160	6	
SKKL 92	800-1800	95	85	1750	0.9	2.00	0.28	0.2	-40 ... +125	1	
SKMT 92	800-1800	95	85	1750	0.9	2.00	0.28	0.2	-40 ... +125	1	
SKKD 15	600-1600	14	85	280	0.85	15	2	0.2	-40 ... +125	0	
SKKD 26	1200-1600	31	85	480	0.85	6.00	1	0.2	-40 ... +125	1	
SKKD 46	400-1800	47	85	600	0.85	5.00	0.6	0.2	-40 ... +125	1	
SKKD 81	400-1800	82	85	1750	0.85	1.80	0.4	0.2	-40 ... +125	1	
SKKD 81 H4	2000-2200	82	85	1750	0.85	1.80	0.4	0.2	-40 ... +125	1	
SKKD 100	400-1800	100	85	2000	0.85	1.30	0.35	0.2	-40 ... +125	1	
SKKD 101/16	1600	134	85	2000	0.87	2.45	0.19	0.22	-40 ... +130	1	
SKKD 162	800-2200	195	85	5000	0.85	1.20	0.18	0.1	-40 ... +135	2	
SKKD 212	1200-1800	212	85	5500	0.75	1.05	0.18	0.1	-40 ... +135	2	
SKKD 260	800-2200	260	85	10000	0.9	0.37	0.14	0.04	-40 ... +130	3	
SKKD 353	1200-1800	215	85	9500	0.8	0.75	0.095	0.08	-40 ... +125	3	
SKKD 380	800-2200	380	100	10000	0.8	0.35	0.11	0.04	-40 ... +150	3	
SKKD 701	1200-2200	701	100	22500	0.7	0.28	0.069	0.02	-40 ... +160	5	
SKKH 15	600-1600	13.5	85	280	1.1	20.00	1.6	0.2	-40 ... +125	0	
SKKH 27	800-1800	25	85	480	0.9	12.00	0.9	0.2	-40 ... +125	1	
SKKH 42	800-1800	40	85	850	1	4.50	0.65	0.2	-40 ... +125	1	
SKKH 57	800-1800	50	85	1250	0.9	3.50	0.57	0.2	-40 ... +125	1	
SKKH 57 H4	2000-2200	50	85	1250	0.9	3.50	0.57	0.2	-40 ... +125	1	
SKKH 58/16 E	1600	55	85	1200	1	4.80	0.47	0.22	-40 ... +130	1	
SKKH 72	800-1800	70	85	1450	0.9	3.50	0.35	0.2	-40 ... +125	1	
SKKH 72 H4	2000-2200	70	85	1450	0.9	3.50	0.35	0.2	-40 ... +125	1	
SKKH 92	800-1800	95	85	1750	0.9	2.00	0.28	0.2	-40 ... +125	1	
SKKH 106	800-1800	106	85	1900	0.9	2.00	0.28	0.2	-40 ... +130	1	
SKKH 107/16 E	1600	119	85	1900	0.9	3.35	0.19	0.22	-40 ... +130	1	
SKKH 122	800-1800	129	85	3200	0.85	2.00	0.2	0.13	-40 ... +125	2	
SKKH 132	800-1800	137	85	4000	1	1.60	0.18	0.1	-40 ... +125	2	
SKKH 132 H4	2000-2200	128	85	3800	1.1	2.00	0.17	0.1	-40 ... +125	2	
SKKH 162	800-1800	156	85	5000	0.85	1.50	0.17	0.1	-40 ... +125	2	
SKKH 162 H4	2000-2200	143	85	4800	0.95	2.00	0.16	0.1	-40 ... +125	2	
SKKH 172	1600	175	85	5000	0.83	1.30	0.155	0.1	-40 ... +125	2	
SKKH 250	1200-1800	250	85	8000	0.925	0.45	0.14	0.04	-40 ... +130	3	
SKKH 273	1200-1800	273	85	8000	0.9	0.92	0.104	0.08	-40 ... +130	3	
SKKH 280 H4	2000-2200	252	85	7500	0.9	0.75	0.11	0.04	-40 ... +125	3	
SKKH 323	1200-1600	320	85	8200	0.81	0.85	0.091	0.08	-40 ... +130	3	
SKKH 330	800-1800	305	85	8000	0.8	0.60	0.11	0.04	-40 ... +130	3	
SKKH 460	1600-2200	460	85	15500	0.88	0.45	0.072	0.02	-40 ... +130	5	
SKKH 570	1600-1800	570	85	15500	0.78	0.32	0.069	0.02	-40 ... +135	5	

Thyristor / Diode Modules / SEMIPACK

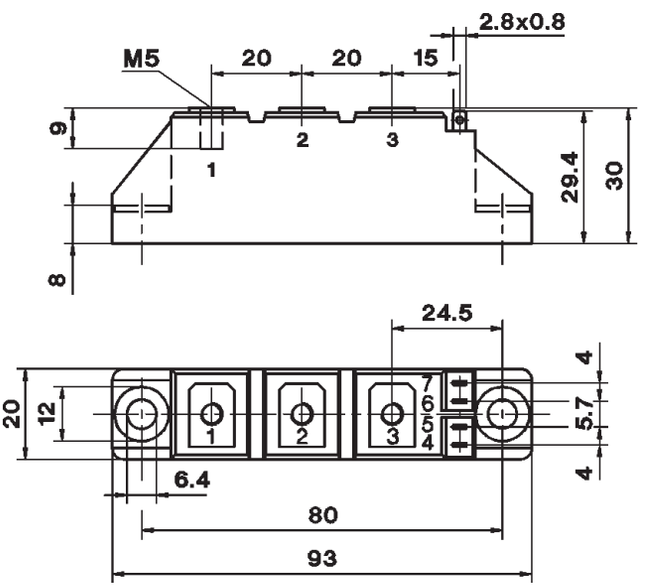
Type	V_{RRM} V_{DRM}	I_{TAV} I_{FAV} @ T_C	T_C	I_{TSM} I_{FSM} @ T_{jmax}	$V_{T(TO)}$ @ T_{jmax}	r_T @ T_{jmax}	$R_{th(j-c)}$ cont. per chip	$R_{th(c-s)}$ per chip	T_j	Case	Circuit
	V	A	°C	A	V	mΩ	K/W	K/W	°C		
SKKT 15	600-1600	13.5	85	280	1.1	20.00	1.6	0.2	-40 ... +125	0	
SKKT 20	800-1600	18	85	280	1	16.00	1.2	0.2	-40 ... +125	1	
SKKT 20B	800-1600	18	85	280	1	16.00	1.2	0.2	-40 ... +125	1	
SKKT 27	800-1600	25	85	480	0.9	12.00	0.9	0.2	-40 ... +125	1	
SKKT 27B	800-1600	25	85	480	0.9	12.00	0.9	0.2	-40 ... +125	1	
SKKT 42	800-1800	40	85	850	1	4.50	0.65	0.2	-40 ... +125	1	
SKKT 42B	800-1800	40	85	850	1	4.50	0.65	0.2	-40 ... +125	1	
SKKT 57	800-1800	50	85	1250	0.9	3.50	0.57	0.2	-40 ... +125	1	
SKKT 57B	800-1800	50	85	1250	0.9	3.50	0.57	0.2	-40 ... +125	1	
SKKT 57 H4	2000-2200	50	85	1250	0.9	3.50	0.57	0.2	-40 ... +125	1	
SKKT 58/16 E	1600	55	85	1200	1	4.80	0.47	0.22	-40 ... +130	1	
SKKT 58B16 E	1600	55	85	1200	1	4.80	0.47	0.22	-40 ... +130	1	
SKKT 72	800-1800	70	85	1450	0.9	3.50	0.35	0.2	-40 ... +125	1	
SKKT 72B	800-1800	70	85	1450	0.9	3.50	0.35	0.2	-40 ... +125	1	
SKKT 72 H4	2000-2200	70	85	1450	0.9	3.50	0.35	0.2	-40 ... +125	1	
SKKT 92	800-1800	95	85	1750	0.9	2.00	0.28	0.2	-40 ... +125	1	
SKKT 92B	800-1800	95	85	1750	0.9	2.00	0.28	0.2	-40 ... +125	1	
SKKT 106	800-1800	106	85	1900	0.9	2.00	0.28	0.2	-40 ... +130	1	
SKKT 106B	800-1800	106	85	1900	0.9	2.00	0.28	0.2	-40 ... +130	1	
SKKT 107/16 E	1600	119	85	1900	0.9	3.35	0.19	0.22	-40 ... +130	1	
SKKT 107B16 E	1600	119	85	1900	0.9	3.35	0.19	0.22	-40 ... +130	1	
SKKT 122	800-1800	129	85	3200	0.85	2.00	0.2	0.13	-40 ... +125	2	
SKKT 132	800-1800	137	85	4000	1	1.60	0.18	0.1	-40 ... +125	2	
SKKT 132 H4	2000-2200	128	85	3800	1.1	2.00	0.17	0.1	-40 ... +125	2	
SKKT 162	800-1800	156	85	5000	0.85	1.50	0.17	0.1	-40 ... +125	2	
SKKT 162 H4	2000-2200	143	85	4800	0.95	2.00	0.16	0.1	-40 ... +125	2	
SKKT 172	1400-1800	175	85	5000	0.83	1.30	0.155	0.1	-40 ... +125	2	
SKKT 250	800-1800	250	85	8000	0.925	0.45	0.14	0.04	-40 ... +130	3	
SKKT 273	1200-1800	273	85	8000	0.9	0.92	0.104	0.08	-40 ... +130	3	
SKKT 280 H4	2000-2200	252	85	7500	0.9	0.75	0.11	0.04	-40 ... +125	3	
SKKT 330	800-1800	305	85	8000	0.8	0.60	0.11	0.04	-40 ... +130	3	
SKKT 323	1200-1600	320	85	8200	0.81	0.85	0.091	0.08	-40 ... +130	3	
SKKT 460	1600	460	85	15500	0.88	0.45	0.072	0.02	-40 ... +130	5	
SKKT 460 H4	2200	460	85	15500	0.88	0.45	0.072	0.02	-40 ... +130	5	
SKKT 570	1200-1800	570	85	15500	0.78	0.32	0.069	0.02	-40 ... +135	5	

Cases

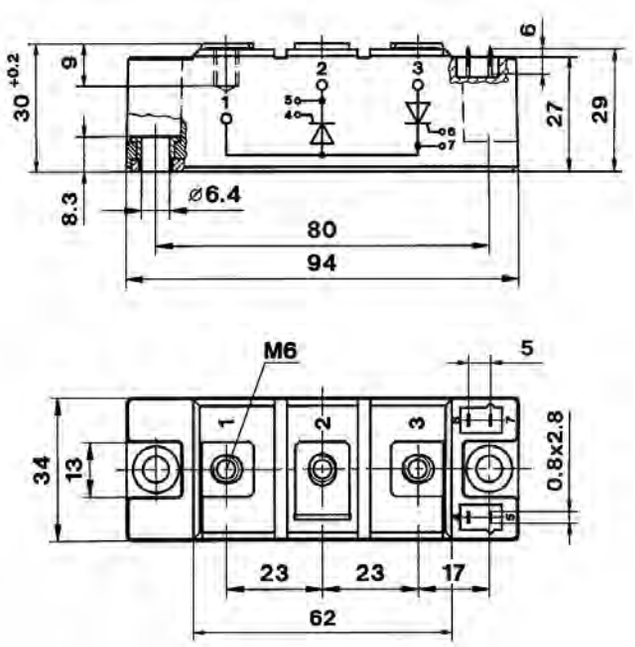
SEMIPACK 0



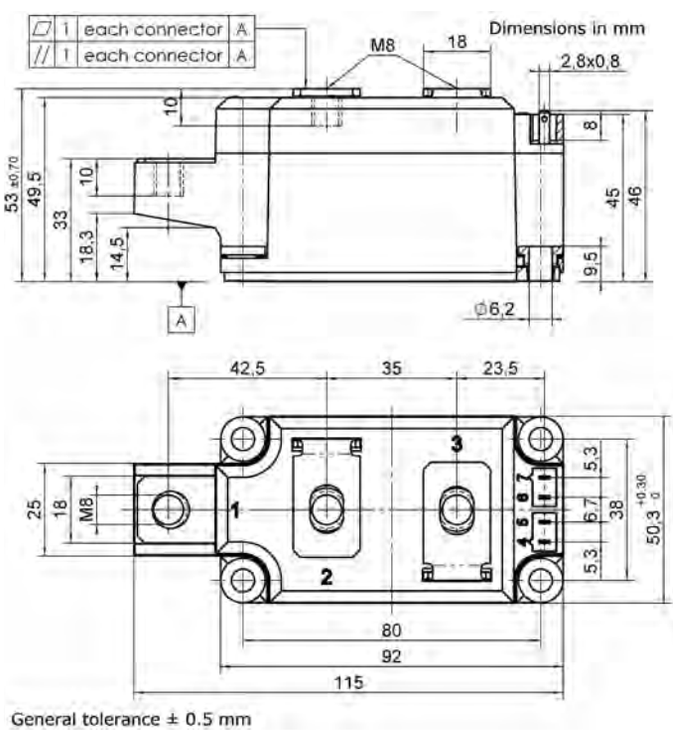
SEMIPACK 1



SEMIPACK 2



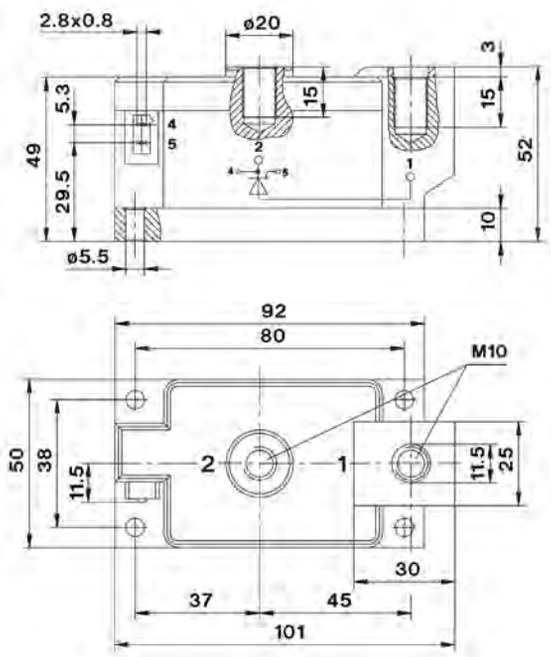
SEMIPACK 3



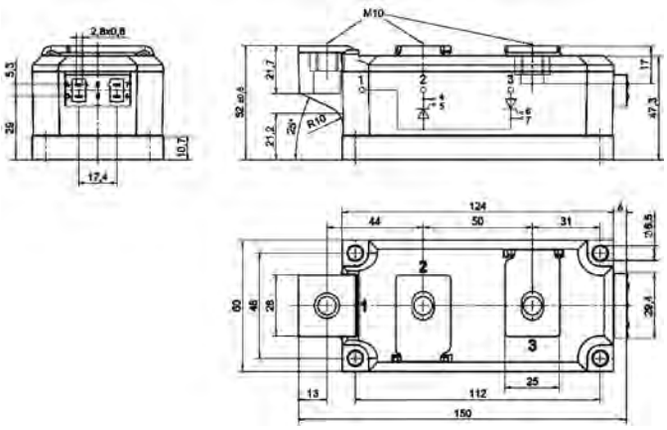
Dimensions in mm

Cases

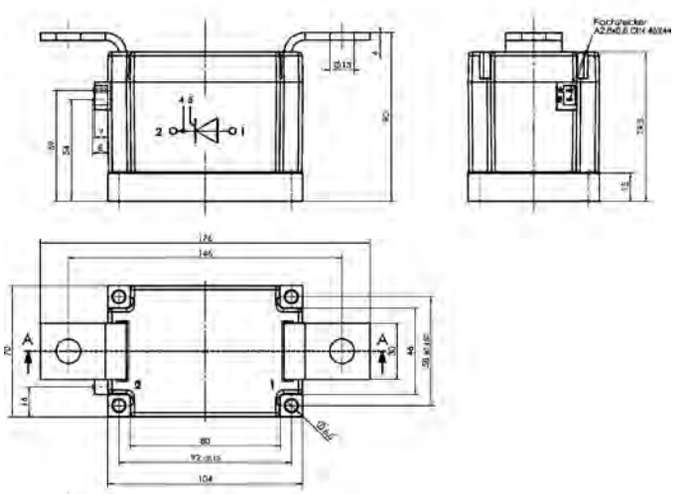
SEMIPACK 4



SEMIPACK 5



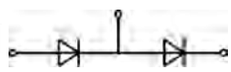
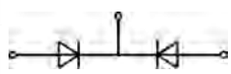
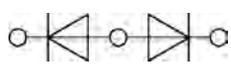
SEMIPACK 6



Dimensions in mm

Thyristor / Diode Modules / SEMIPACK FAST

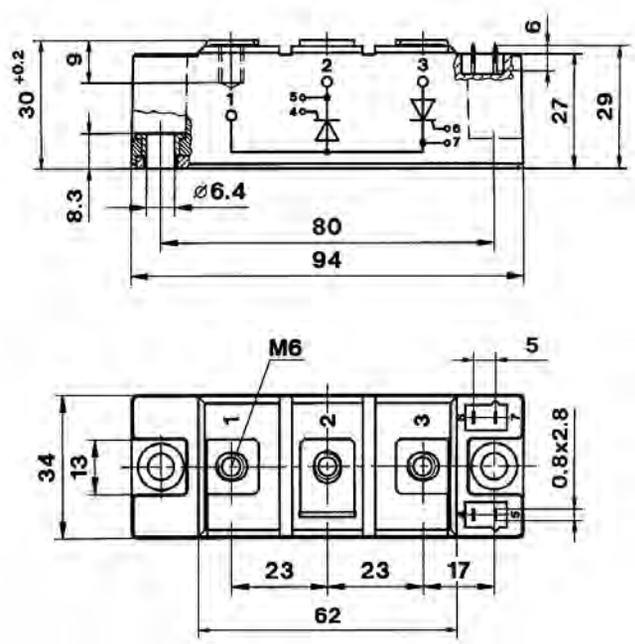
Type

	V_{RRM} V_{DRM}	I_{TAV} I_{FAV} @ T_C	T_C	I_{FSM} @ T_{jmax}	$V_{T(TO)}$ @ T_{jmax}	r_T @ T_{jmax}	$R_{th(j-c)}$ per chip	$R_{th(c-s)}$	T_j	Case	Circuit
	V	A	°C	A	V	mΩ	K/W	K/W	°C		
SKKE 120F	1700	120	82	1800	1.5	4.5	0.2	0.05	-40 ... +150	2	
SKKE 290F	600	290	109	6000	0.9	1.2	0.08	0.05	-40 ... +150	2	
SKKE 301F	1200	300	43	3600	1.2	2.75	0.11	0.05	-40 ... +150	2	
SKKE 310F	1200	310	84	5500	1.2	1.9	0.08	0.05	-40 ... +150	2	
SKKE 330F[3)]	1700	330	70	5200	1.5	1.9	0.079	-	-40 ... +150	4	
SKKE 600F[3)]	1200	600	85	5800	1.2	1.9	0.062	-	-40 ... +150	4	
SKKD 40F	400-1000	40	80	940	1.2	4	0.7	0.2	-40 ... +125	1	
SKKD 42F	1000-1400	42	85	1100	1	5	0.7	0.2	-40 ... +130	1	
SKKD 60F	1700	60	83	900	1.5	9	0.4	0.1	-40 ... +150	2	
SKKD 75F12	1200	75	55	900	1.2	11	0.4	0.1	-40 ... +150	2	
SKKD 150F	1200	150	54	1800	1.2	5.5	0.2	0.1	-40 ... +150	2	
SKKD 170F	1200	170	85	2300	1.2	3.5	0.14	0.1	-40 ... +150	2	
SKKD 205F	600	205	87	3000	0.9	2	0.16	0.1	-40 ... +150	2	
SKMD 105F	800-1600	105	83	2100	1.2	2.5	0.24	0.2	-40 ... +130	1	
SKMD 150F12	1200	150	54	1800	1.2	5.5	0.2	0.1	-40 ... +150	2	
SKMD 202E	200-300	202	87	2800	0.8	1.5	0.2	0.1	-40 ... +150	2	
SKND 150F	1200	150	54	1800	1.2	5.5	0.2	0.1	-40 ... +150	2	
SKND 202E	200-300	202	87	2800	0.8	1.5	0.2	0.1	-40 ... +150	2	
SKND 205F	600	205	87	3000	0.9	2	0.16	0.1	-40 ... +150	2	

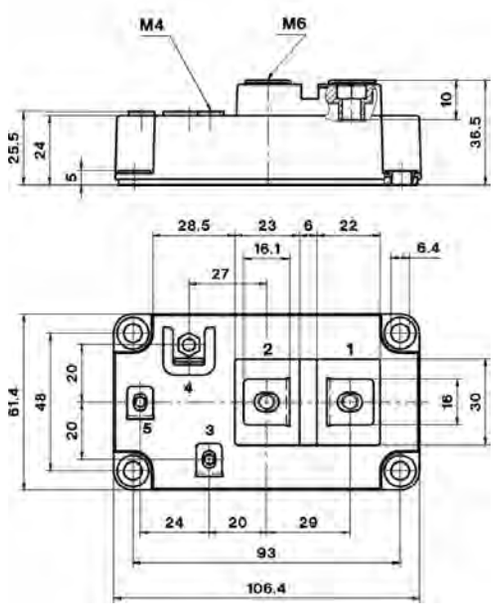
Footnotes: 3) SEMIPACK Fast in SEMITRANS 4 case

Cases

SEMIPACK 2

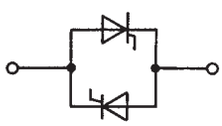


SEMIPACK Fast in SEMITRANS 4



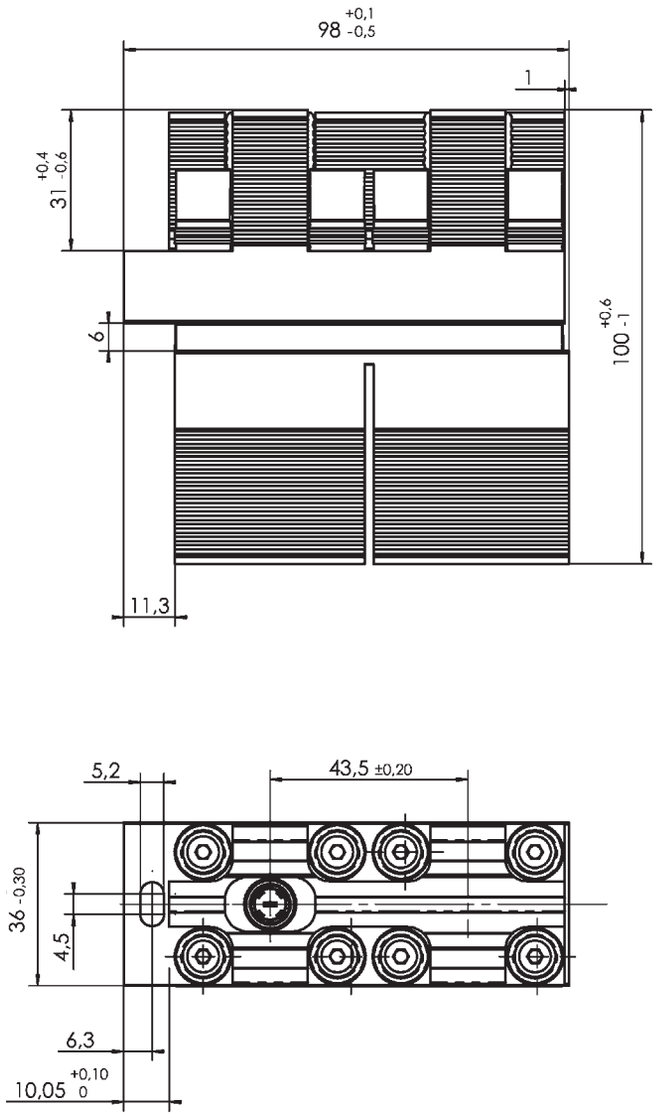
Dimensions in mm

Thyristor Modules / SEMISTART

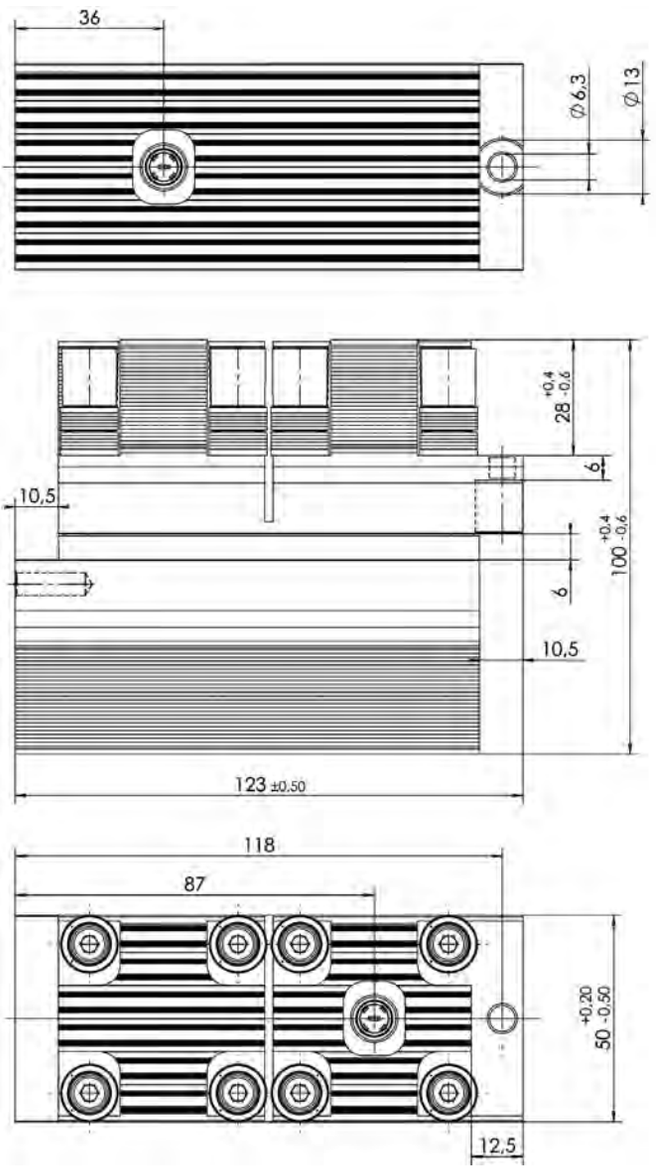
Type	V_{RRM} V_{DRM}	$I_{overload}$ W1C (for 20s)	T_C	I_{TSM} @ T_j = 125°C	$V_{T(TO)}$ @ T_{jmax} =125°C	r_T @ T_{jmax} =125°C	$R_{th(j-r)}$ cont. per chip	T_{jmax} (for 20s)	Case	Circuit
	V	A	°C	A	V	mΩ	K/W	°C		
SKKQ 560	1400-1800	560	150	5200	0.9	0.9	0.106	150	1	
SKKQ 800	1400-1800	800	150	5200	0.9	0.8	0.106	150	2	
SKKQ 1200	1400-1800	1225	150	8000	0.9	0.5	0.066	150	2	
SKKQ 1500	1400-1800	1500	150	15000	0.85	0.3	0.037	150	2	
SKKQ 3000	1400-1800	3080	150	25500	0.95	0.18	0.026	150	3	

Cases

SEMiSTART 1



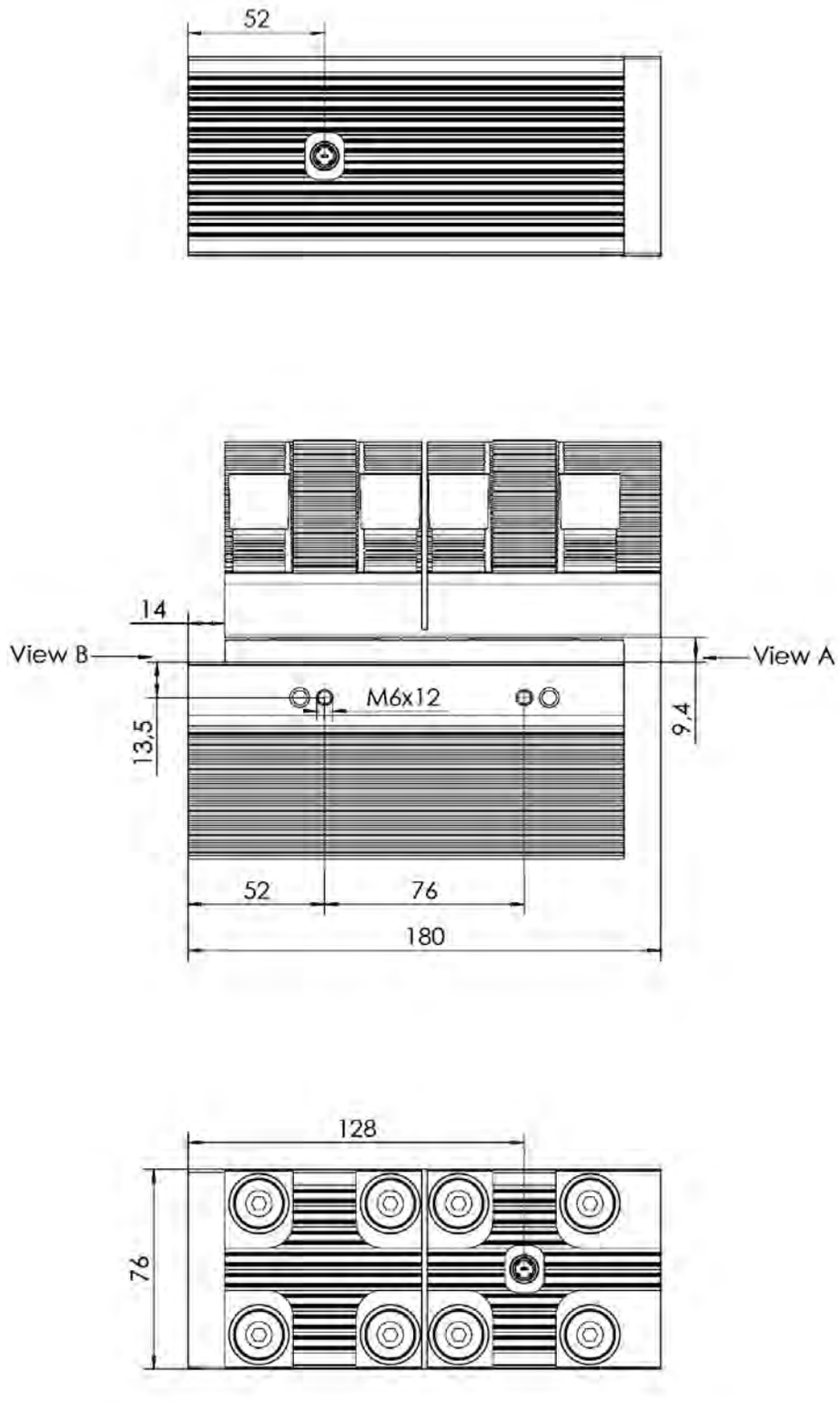
SEMiSTART 2



Dimensions in mm

Cases

SEMiSTART 3



Dimensions in mm

Bridge Rectifier Modules for Reliable Inverter Design

Bridge rectifiers are components which have every branch of a rectifier circuit in a single, compact case. Bridge rectifiers exist from a few amps to several hundred amps in different package types.

SEMIKRON offers bridge rectifier modules in single phase or 3-phase topology with or without brake chopper. The bridge rectifier modules are available in different package like SEMiX, SEMITOP, SEMIPONT and MiniSKiiP.

4

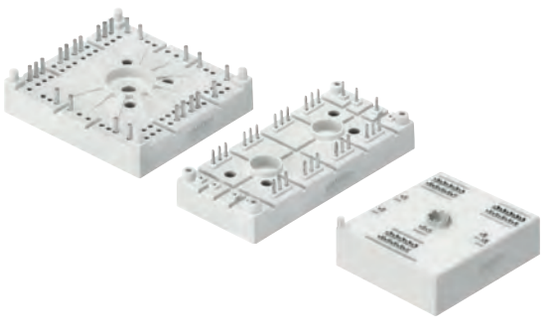
For detailed information
please refer data sheets.

Further information:
www.semikron.com/bridge-rectifier-modules

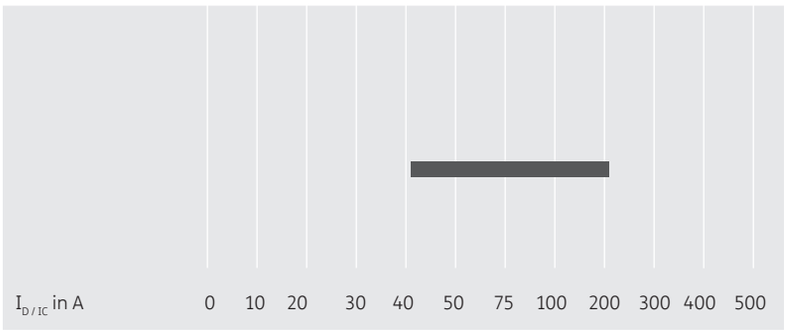
Bridge Rectifier Modules

SEMITOP®/SEMIPONT®/MiniSKiiP®

rectifier with
brake chopper



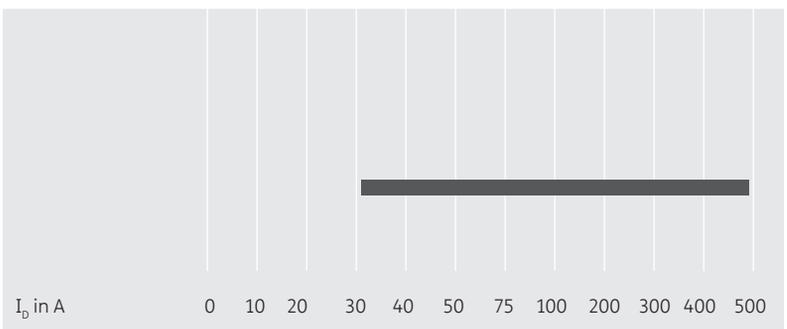
600V up to 1800V



SEMITOP®/SEMIPONT®/SEMiX®

three phase

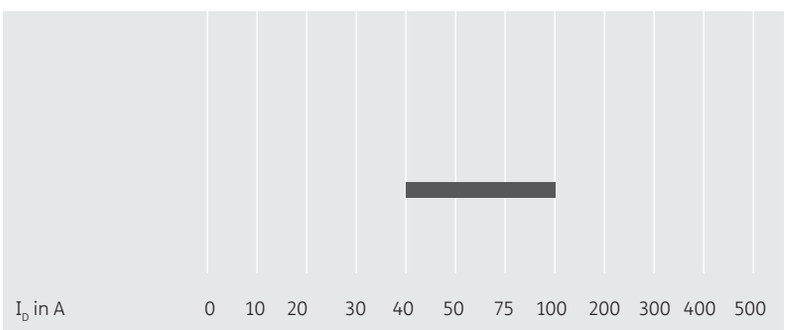
400V up to 1800V



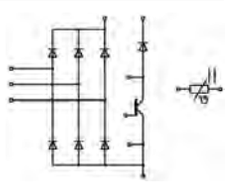
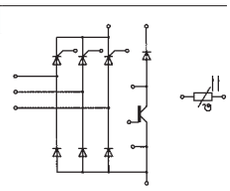
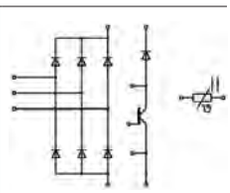
SEMIPONT®/SEMITOP®

single phase

400V up to 1800V



Bridge Rectifier Modules / MINISKIIP

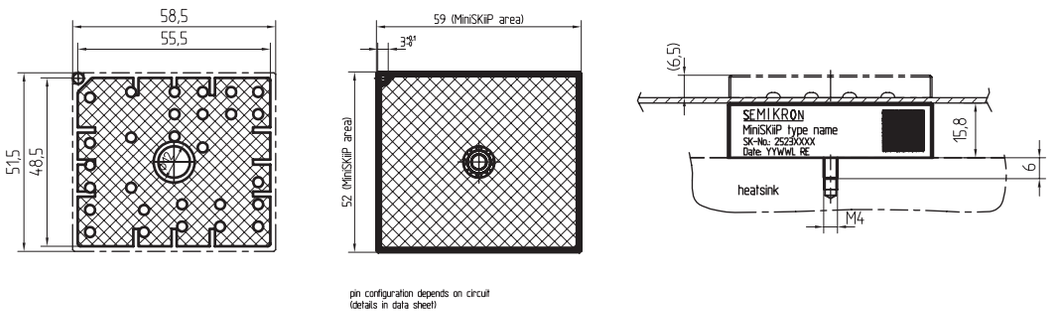
Type	IGBT						Diode				Rectifier		Module		
	I_C@T_S=25°C	I_{Cnom}	$V_{CE(sat)}$@T_j=25°C typ.	E_{on}	E_{off}	$R_{th(j-s)}$	I_F@T_S=25°C	V_F@T_j=25°C typ.	E_{rr}	$R_{th(j-s)}$	$R_{th(j-s)}$	I_{FSM}@T_S=25°C	Case	$R_{th(c-s)}$	Circuit
	A	A	V	mJ	mJ	K/W	A	V	mJ	K/W	K/W	A		K/W	
1200V - IGBT3 (Trench)															
SKiiP 28ANB16V1	118	105	1.70	13.1	13	0.4	118	1.60	11.2	0.55	0.7	1000	II 2	-	
SKiiP 39ANB16V1	157	140	1.70	19.9	17.2	0.3	167	1.50	16.2	0.4	0.5	1600	II 3	-	
SKiiP 39AHB16V1	157	140	1.70	19.9	17.3	0.3	167	1.50	16.2	0.4	0.5	1250	II 3	-	
SKiiP 28AHB16V1	118	105	1.70	14.4	13.3	0.4	118	1.60	10.8	0.55	0.7	1000	II 2	-	
1700V - IGBT3 (Trench)															
SKiiP 28ANB18V3[1)]	-	100	2.40	-	-	-	-	1.8	-	-	0.7	1000	II 2	-	

Footnotes: 1) New product

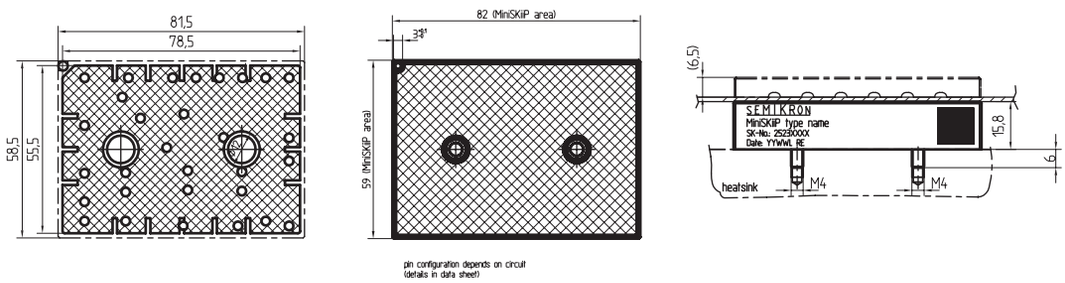
Bridge Rectifier Modules / MINISKIIP

Cases

MiniSKiiP II 2

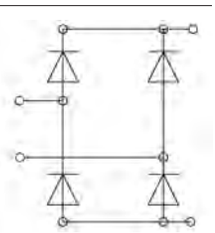
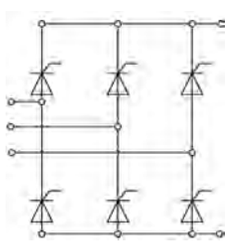
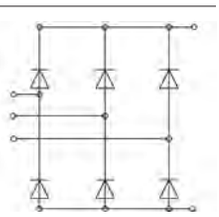
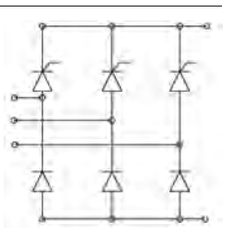
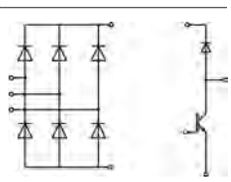
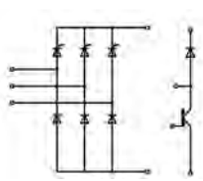


MiniSKiiP II 3



Dimensions in mm

Bridge Rectifier Modules / SEMITOP

Type	V_{RRM} V_{DRM}	I_D @ T_S	T_S	I_{TSM} I_{FSM}@T_{jmax}	$V_{T(TO)}$@T_{jmax}	r_T@T_{jmax}	$R_{th(j-s)}$ per chip	T_j	Case	Circuit
	V	A	°C	A	V	mΩ	K/W	°C		
1 and 3 phase										
SK 50 B 06 UF	600	46	80	400	0.8	11.00	0.45	-40 ... +150	2	
SK 50 B	800-1600	51	80	270	0.8	13.00	1.7	-40 ... +150	2	
SK 55 B 06 F	600	54	80	440	0.9	16.00	1.2	-40 ... +150	2	
SK 55 B 12 F	1200	57	80	550	1.2	22.00	0.9	-40 ... +150	2	
SK 70 B	800-1600	68	80	560	0.8	11.00	1.2	-40 ... +150	2	
SK 100 B	800-1600	100	80	890	0.83	3.90	1	-40 ... +150	2	
SK 40 DT	800-1600	42	80	280	1.1	20.00	1.7	-40 ... +125	3	
SK 70 DT	800-1600	68	80	380	1	10.00	1.2	-40 ... +125	3	
SK 55 D	800-1600	55	80	200	0.8	13.00	2.15	-40 ... +150	2	
SK 70 D	800-1600	70	80	270	0.8	13.00	1.7	-40 ... +150	2	
SK 80 D 12F	1200	80	80	550	1.2	22.00	0.9	-40 ... +150	3	
SK 95 D	800-1600	95	80	560	0.8	11.00	1.2	-40 ... +150	2	
SK 95 D 16p[8)]	1600	95	80	560	0.8	11.00	1.2	-40 ... +150	2p	
SK 40 DH	800-1600	42	80	270	1.1	20.00	1.7	-40 ... +150	3	
SK 70 DH	800-1600	68	80	270	1	10.00	1.2	-40 ... +125	3	
SK 55 DGL 126	1200	55	80	370	0.8	13.00	2	-40 ... +150	3	
SK 95 DGL 126	1600	96	80	700	0.8	11.00	1.2	-40 ... +150	3	
SK 170 DHL 126	1200	170	70	1000	0.8	7.00	0.51	-40 ... +150	4	
SK 200 DHL 066	600	210	70	1250	0.8	4.00	0.52	-40 ... +150	4	

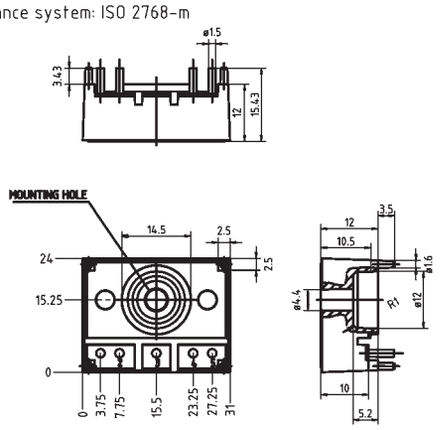
Footnotes: 8) Target data

Bridge Rectifier Modules / SEMITOP

Cases

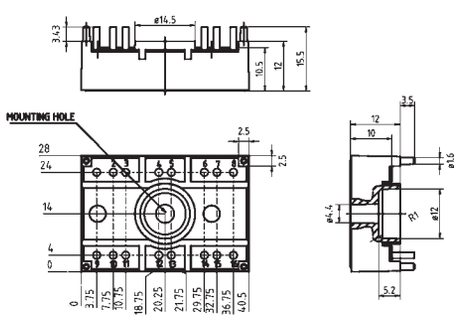
SEMITOP 1

dimensions in mm
tolerance system: ISO 2768-m

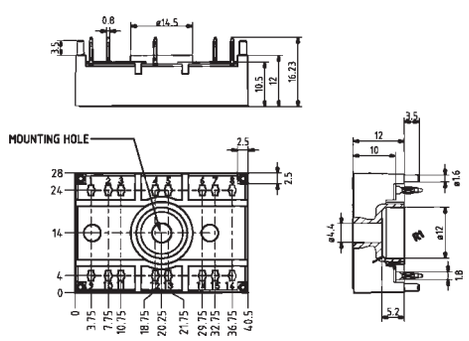


SEMITOP 2

dimensions in mm
tolerance system: ISO 2768-m

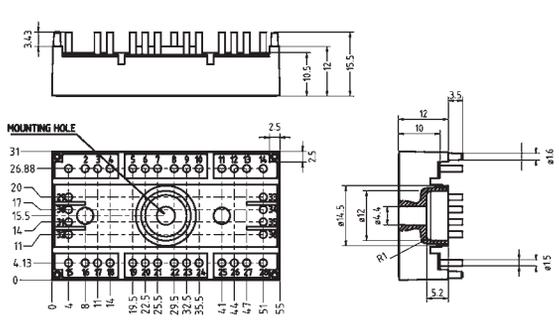


SEMITOP 2 Press-Fit



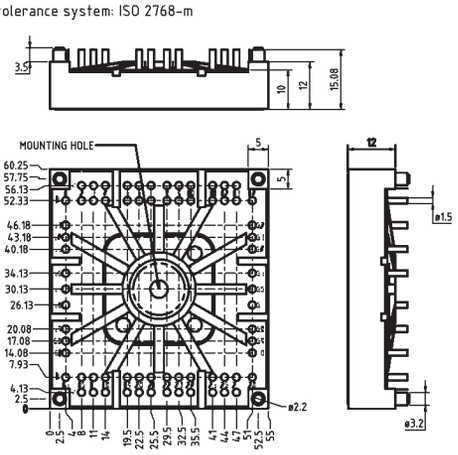
SEMITOP 3

dimensions in mm
tolerance system: ISO 2768-m



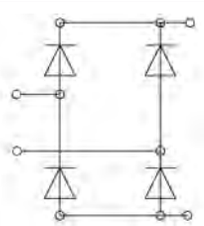
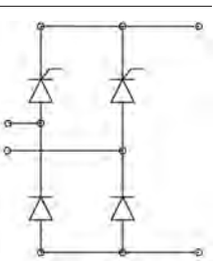
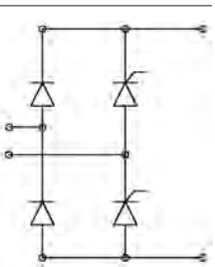
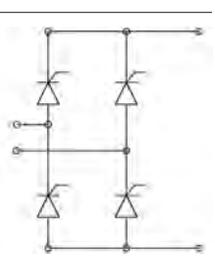
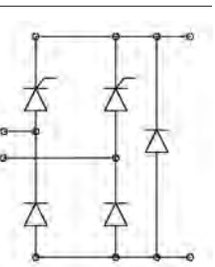
SEMITOP 4

dimensions in mm
tolerance system: ISO 2768-m

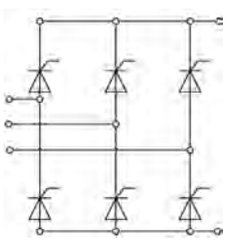
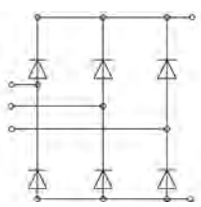
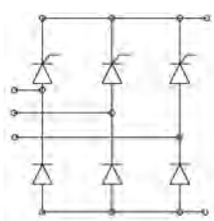
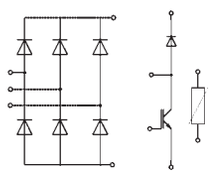
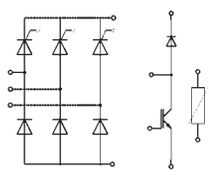


Dimensions in mm

Bridge Rectifier Modules / SEMIPONT

Type	V_{RRM} V_{DRM} V	I_D @ T_C A	T_C °C	I_{TSM} I_{FSM}@T_{jmax} A	$V_{T(TO)}$@T_{jmax} V	r_T@T_{jmax} mΩ	$R_{th(j-c)}$ cont. per chip K/W	T_j °C	Case	Circuit
1 and 3 phase										
SKB 52	400-1800	50	99	425	0.85	8	1.5	-40 ... +150	3	
SKB 60	400-1600	60	88	850	0.85	5	1	-40 ... +125	2	
SKB 72	400-1800	70	101	640	0.85	5	1.1	-40 ... +150	3	
SKBH 28	600-1400	28	89	280	1	16	1.8	-40 ... +125	1	
SKBZ 28	400-1400	28	89	280	1	16	1.8	-40 ... +125	1	
SKBT 28	600-1400	28	89	280	1	16	1.8	-40 ... +125	1	
SKBT 40	800-1400	46	92	400	1	16	1	-40 ... +125	2	
SKCH 28	400-1400	28	89	280	1	16	1.8	-40 ... +125	1	
SKCH 40	400-1600	40	92	400	1	16	1	-40 ... +125	2	

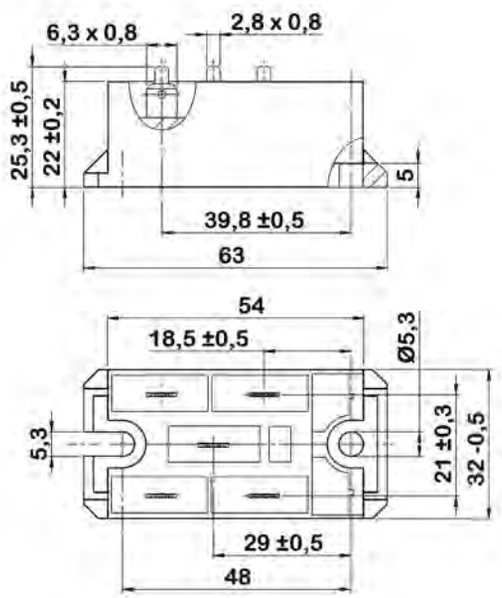
Bridge Rectifier Modules / SEMIPONT

Type	V_{RRM} V_{DRM} V	I_D @ T_C A	T_C °C	I_{TSM} I_{FSM}@T_{jmax} A	$V_{T(TO)}$@T_{jmax} V	r_T@T_{jmax} mΩ	$R_{th(j-c)}$ cont. per chip K/W	T_j °C	Case	Circuit
1 and 3 phase										
SKDT 60	400-1400	60	86	400	1	16	1	-40 ... +125	2	
SKDT 115	1200-1600	110	80	950	1.1	6	0.84	-40 ... +125	5	
SKDT 145	1200-1600	140	80	1250	0.9	5	0.6	-40 ... +125	5	
SKD 31	200-1600	31	100	320	0.85	12	2	-40 ... +125	1	
SKD 60	400-1600	60	102	850	0.85	5	1	-40 ... +125	2	
SKD 62	400-1800	60	110	425	0.85	8	1.5	-40 ... +150	3	
SKD 82	400-1800	80	110	640	0.85	5	1.1	-40 ... +150	3	
SKD 100	400-1600	100	93	1000	0.85	5	0.85	-40 ... +125	2	
SKD 110	800-1800	110	100	1000	0.85	4	0.9	-40 ... +150	4	
SKD 115	1200-1800	110	85	1150	0.8	7	1	-40 ... +150	5	
SKD 145	1200-1800	140	85	1700	0.8	4	0.8	-40 ... +150	5	
SKD 160	800-1800	205	100	1500	0.85	3	0.65	-40 ... +150	4	
SKD 210	900-1800	207	99	1600	0.85	3	0.5	-40 ... +150	4	
SKDH 100	800-1400	100	84	850	1	4.5	0.85	-40 ... +125	2	
SKDH 115	1200-1600	110	80	950	1.1	6	0.84	-40 ... +125	5	
SKDH 145	1200-1600	110	80	1250	0.9	5	0.63	-40 ... +125	5	
3 phase with brake chopper										
SKD 146/..-L105	1200-1600	140	85	1250	0.8	4	0.8	-40 ... +125	6	
SKD146/..-L140T4	1200-1600	140	85	1250	0.8	4	0.8	-40 ... +125	6	
SKD 116/18-L 75	1800	110	85	1050	0.8	7	0.8	-40 ... +125	6	
SKD 116/..-L105	1200-1600	110	85	1050	0.8	7	1	-40 ... +125	6	
SKD 116/..-L140	1200-1600	110	85	1050	0.8	7	1	-40 ... +125	6	
SKDH116/..L105	1200-1600	110	85	1000	0.8	7	1	-40 ... +125	6	
SKDH116/..L140	1200-1600	110	85	1000	0.8	7	1	-40 ... +125	6	
SKDH146/..-L105	1200-1600	140	85	1250	0.8	4	0.8	-40 ... +125	6	
SKDH146/..-L140	1200-1600	140	85	1250	0.8	4	0.8	-40 ... +125	6	

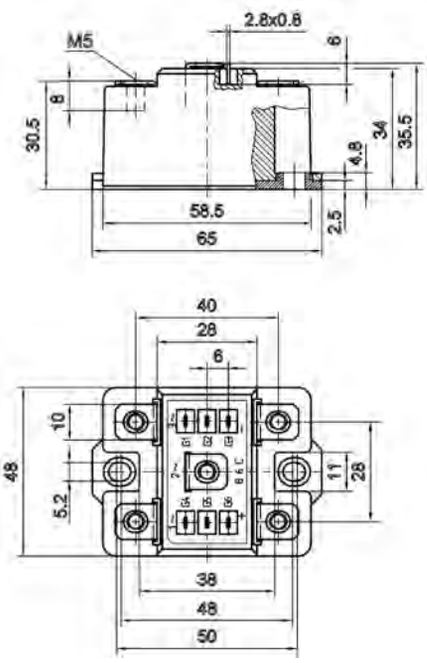
Bridge Rectifier Modules / SEMIPONT

Cases

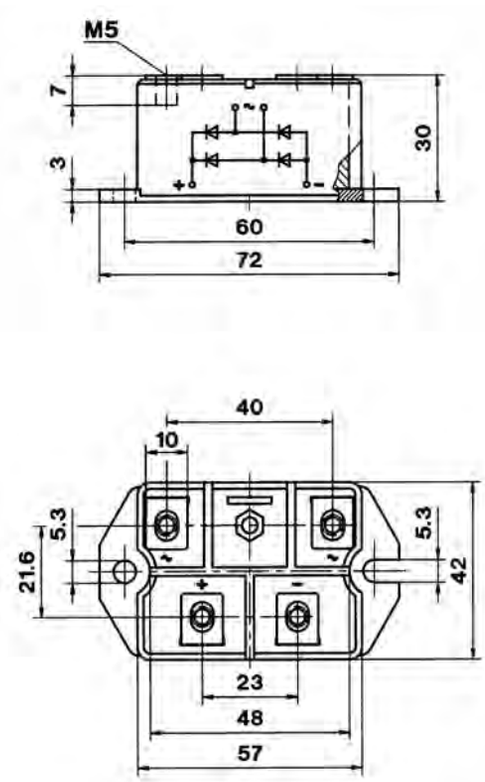
SEMIPONT 1



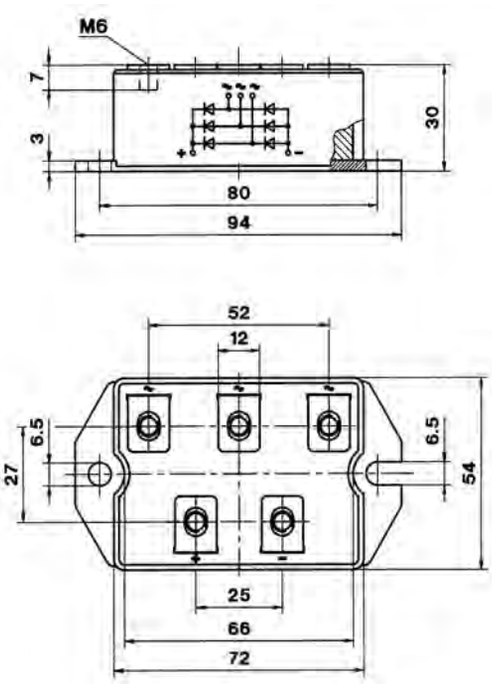
SEMIPONT 2



SEMIPONT 3



SEMIPONT 4

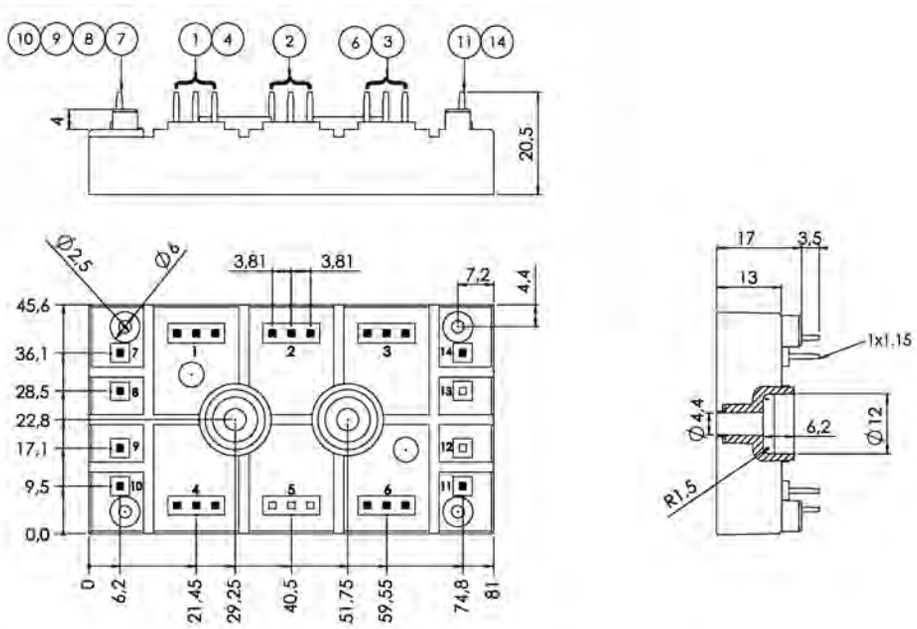


Dimensions in mm

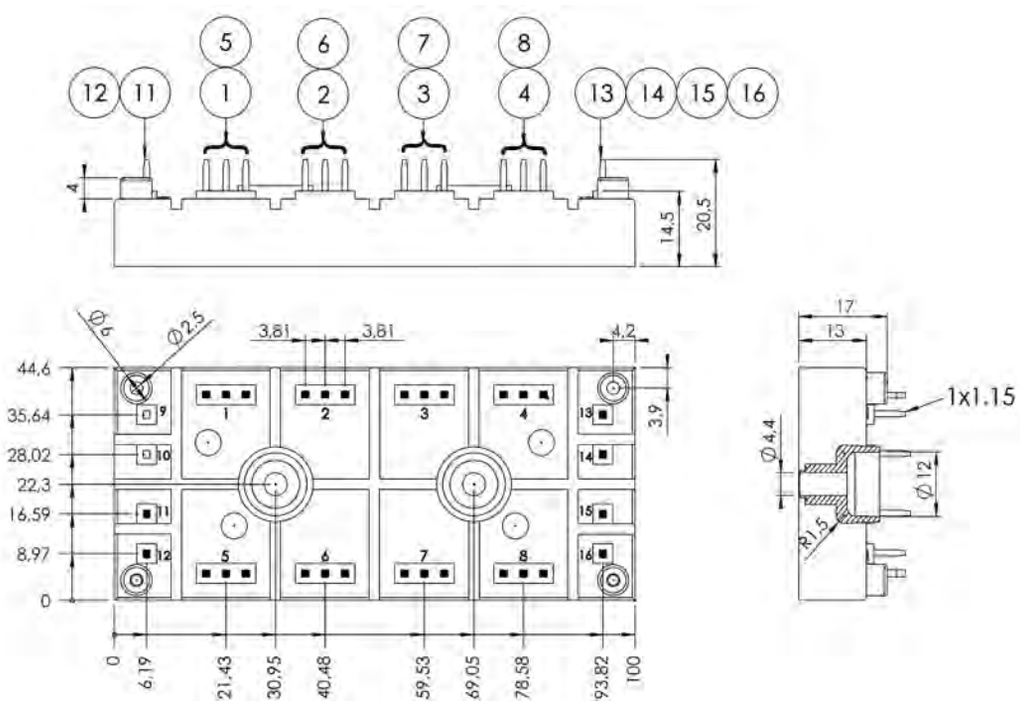
Bridge Rectifier Modules / SEMIPONT

Cases

SEMIPONT 5

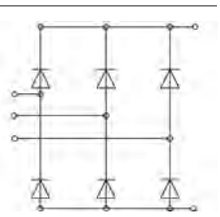
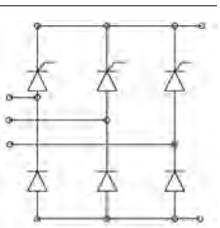


SEMIPONT 6



Dimensions in mm

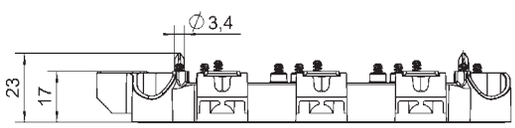
Bridge Rectifier Modules / SEMiX

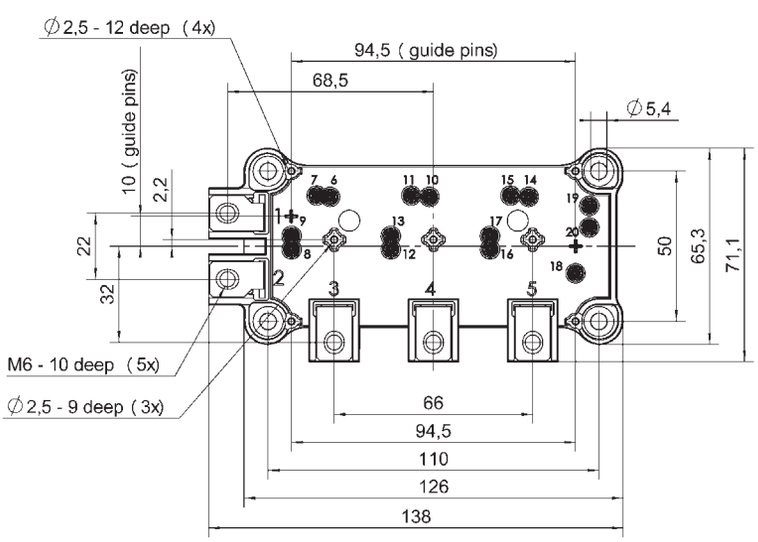
Type	V_{RRM} V_{DRM} V	I_D @ T_C A	T_C °C	I_{TSM} I_{FSM}@T_{jmax} A	$V_{T(TO)}$@T_{jmax} V	r_T@T_{jmax} mΩ	$R_{th(j-c)}$ per chip K/W	$R_{th(c-s)}$ K/W	T_j °C	Case	Circuit
3 phase											
SEMiX251D12Fs	1200	250	85	1330	1.2	7	0.26	0.04	-40 ... +150	13	
SEMiX291D16s	1600	290	85	1380	0.83	4.6	0.45	0.04	-40 ... +150	13	
SEMiX341D16s	1600	340	85	2000	0.9	2.7	0.22	0.04	-40 ... +130	13	
SEMiX501D17Fs	1700	489	85	2140	1.1	2.7	0.165	0.04	-40 ... +150	13	
SEMiX241DH16s	1600	240	85	1900	0.85	4	0.32	0.04	-40 ... +130	13	

4

Cases

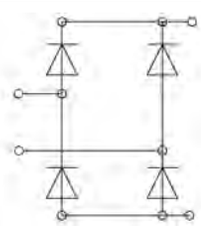
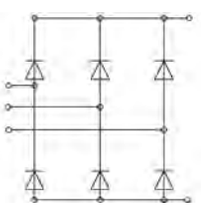
SEMiX 13





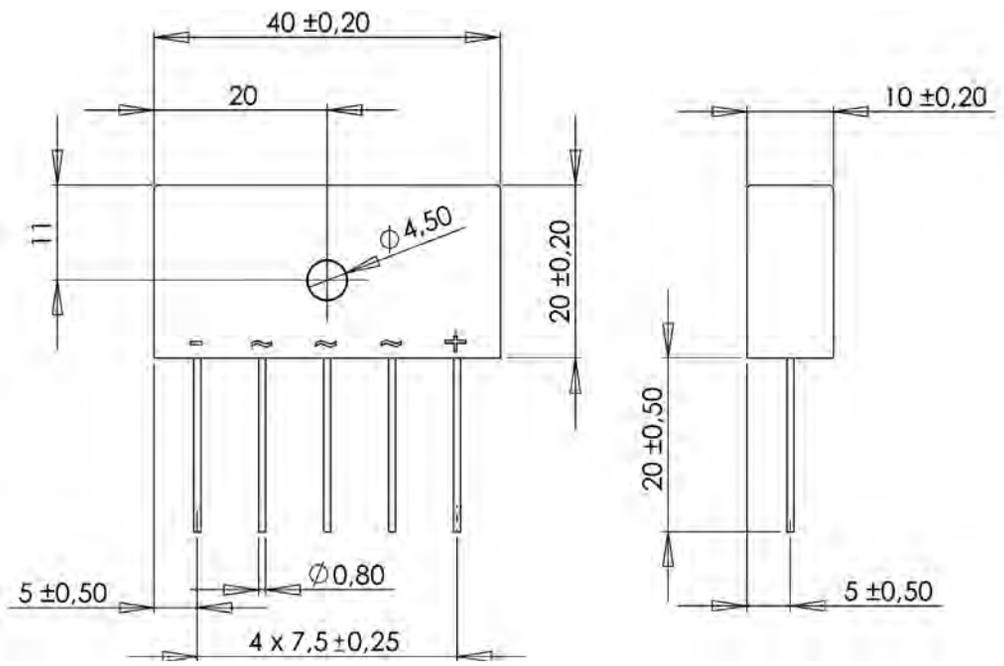
Dimensions in mm

Bridge Rectifier Modules / Power Bridge

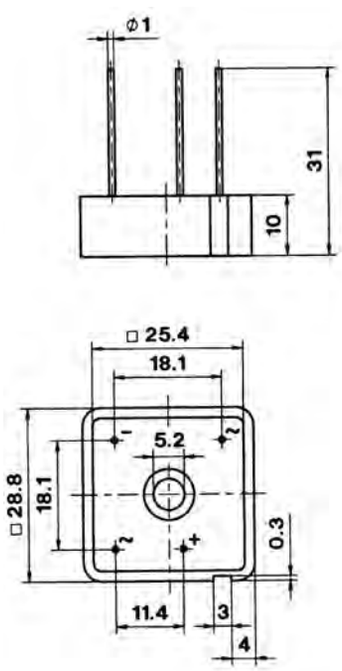
Type	V_{RRM} V_{DRM}	I_D @ $T_{C/S}$	$T_{C/S}$	I_{FSM}@T_{jmax}	$V_{T(TO)}$@T_{jmax}	r_T@T_{jmax}	$R_{th(j-s)}$ cont. per chip	T_j	Case	Circuit
	V	A	°C	A	V	mΩ	K/W	°C		
1 phase										
SKB 25	100-1600	17	75	320	0.85	12.00	2.15	-40 ... +150	G 10b, G 11b	
SKB 26	200-1600	18	75	320	0.85	12.00	2.05	-40 ... +150	G 50a	
SKB 30	200-1600	30	94	320	0.85	12.00	0.8	-40 ... +150	G 12, G 13	
3 phase										
DBI 6-16	1600	9	90	150	0.85	30.00	3.15	-40 ... +150	DBI	
DBI 15	200-1600	15	75	210	0.85	12.00	2.55	-40 ... +150	DBI	
DBI 25	200-1600	25	32	310	0.85	9.00	2.35	-40 ... +150	DBI	
SKD 25	200-1600	20	73	320	0.85	12.00	1.9	-40 ... +150	G 10b, G 11b	
SKD 30	200-1600	30	98	320	0.85	12.00	0.8	-40 ... +150	G 12, G 13	
SKD 33	400-1800	33	110	240	0.8	18.00	2.5	-40 ... +150	G55	
SKD 51	400-1800	50	127	700	0.8	8.50	1.2	-40 ... +150	G51	
SKD 53	400-1800	53	100	270	0.8	13.00	1.9	-40 ... +150	G55	
SKD 83	400-1800	83	95	560	0.8	7.50	1.4	-40 ... +150	G55	

Cases

DBI



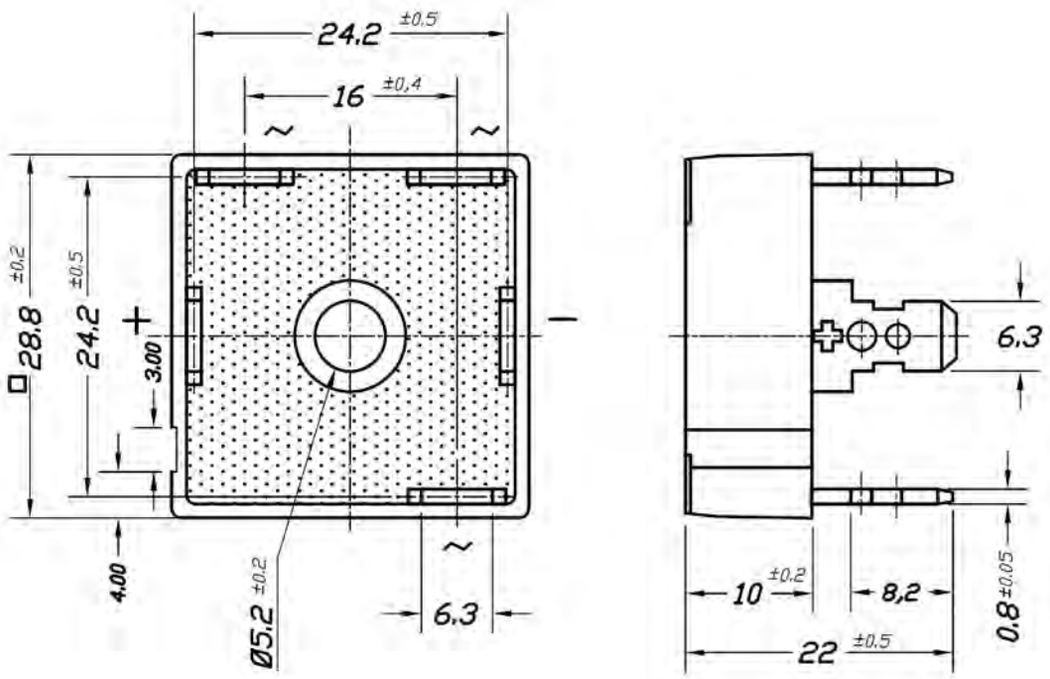
G 50a



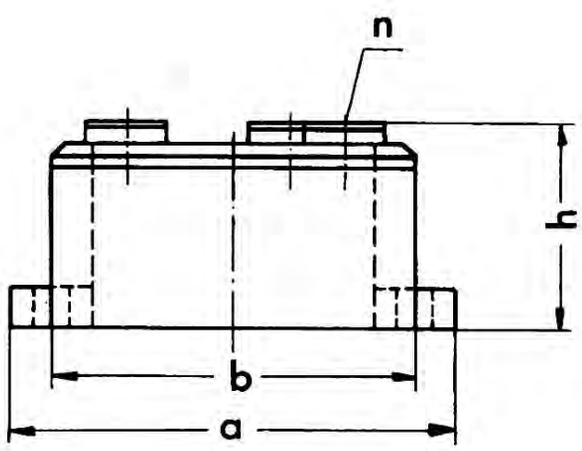
Dimensions in mm

Cases

G 10b, G 11b



G 12, G 13



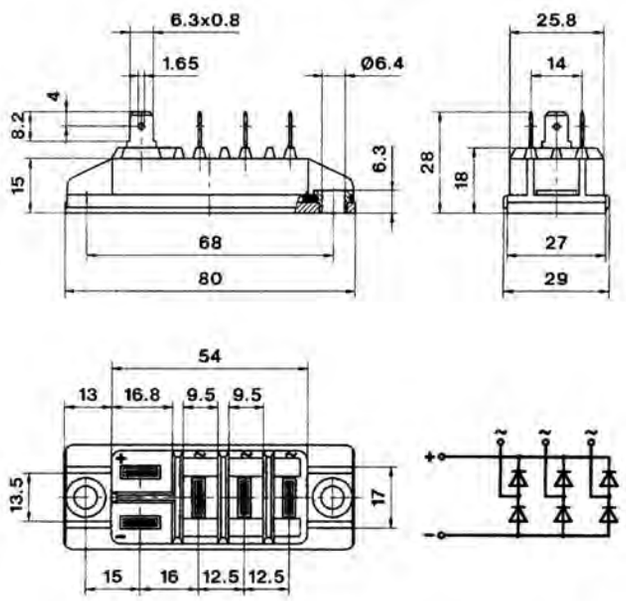
Cases	a	b	h	n
G 12, 13	55	45	24	M 4

Dimensions in mm

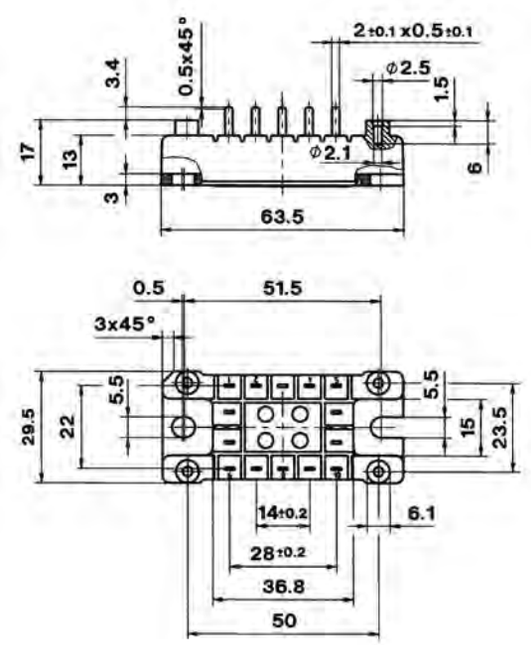
Bridge Rectifier Modules / Power Bridge

Cases

G 51



G 55



Dimensions in mm

IPM
SEMIKRON Offers Highly Integrated IPMs

The SkiiP IPMs represent the benchmark for regenerative inverter solutions up to 5MW.

5

For detailed information
please refer data sheets.

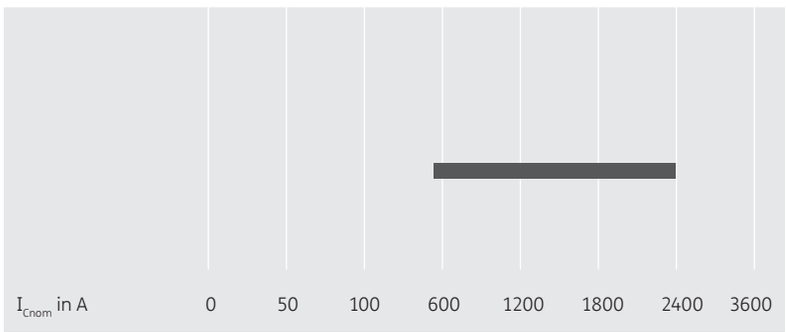
Further information:
www.semikron.com/ipm

IPM

SKiiP®3

6-pack
half bridge

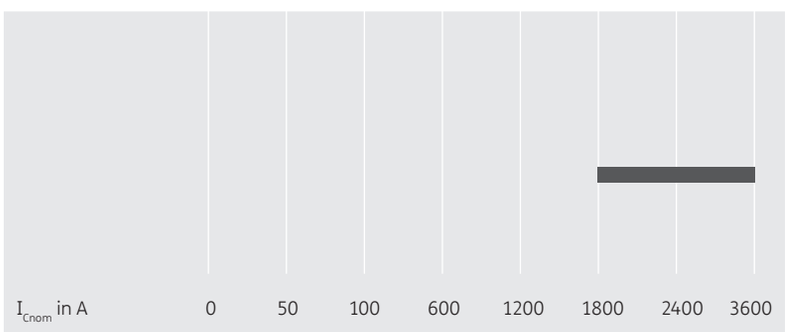
1200V up to 1700V



SKiiP®4

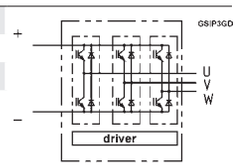
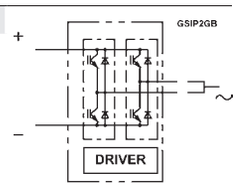
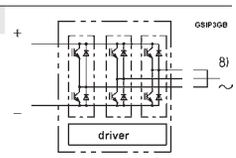
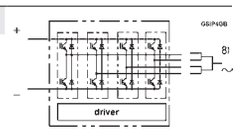
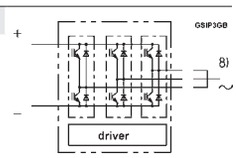
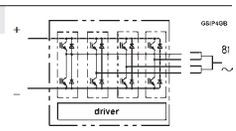
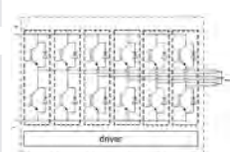
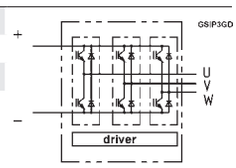
half bridge

1200V up to 1700V



5

IPM / SKiiP

Type	IGBT				Diode			Module		
	I_C @ T_S= 25°C	I_{nom}	$V_{CE(sat)}$ @ T_j = 25°C typ.	E_{on} + E_{off}	I_F @ T_S = 25°C	V_F @ T_j = 25°C typ.	E_{rr}	Options F=F-Option U=U-Option S=SKiFace Adapter	Case	Circuit
	A	A	V	mJ	A	V	mJ			
1200V - IGBT 3 (Trench) - SKiiP3										
SKiiP 603 GD123-3DUL V3	627	600	1.7	195	508	1.50	28	-	S33	
SKiiP 603 GD123-3DUW V3	627	600	1.7	195	508	1.50	28	-	S33	
SKiiP 613 GD123-3DUL V3	577	600	1.7	195	466	1.50	28	-	S33	
SKiiP 613 GD123-3DUW V3	577	600	1.7	195	466	1.50	28	-	S33	
SKiiP 1213 GB123-2DL V3	1145	1200	1.7	390	925	1.50	56	F,U	S23	
SKiiP 1213 GB123-2DW V3	1145	1200	1.7	390	925	1.50	56	F,U	S23	
SKiiP 1813 GB123-3DL V3	1695	1800	1.7	585	1411	1.50	84	F,U	S33	
SKiiP 1813 GB123-3DW V3	1695	1800	1.7	585	1411	1.50	84	F,U	S33	
SKiiP 2413 GB123-4DL V3	2280	2400	1.7	780	1807	1.50	112	F,U	S43	
SKiiP 2413 GB123-4DW V3	2280	2400	1.7	780	1807	1.50	112	F,U	S43	
1200V - IGBT 4 (Trench) - SKiiP4										
SKiiP 1814 GB12E4-3DUL	2345	1800	2.01	1260	1776	2.33	150	F,S	S34	
SKiiP 1814 GB12E4-3DUW	2345	1800	2.01	1260	1776	2.33	150	F,S	S34	
SKiiP 2414 GB12E4-4DUL	3109	2400	2.01	1680	2369	2.33	200	F,S	S44	
SKiiP 2414 GB12E4-4DUW	3109	2400	2.01	1680	2369	2.33	200	F,S	S44	
SKiiP 3614 GB12E4-6DUL	4664	3600	2.01	2520	3558	2.33	300	F,S	S64	
SKiiP 3614 GB12E4-6DUW	4664	3600	2.01	2520	3558	2.33	300	F,S	S64	
SKiiP 3614 GB12E4-6DULR	4664	3600	2.01	2520	3558	2.33	300	F,S	S64	
1700V - IGBT 3 (Trench) - SKiiP3										
SKiiP 513 GD172-3DUL V3	540	500	1.9	288	438	2.00	43	-	S33	
SKiiP 513 GD172-3DUW V3	540	500	1.9	288	438	2.00	43	-	S33	
SKiiP 603 GD172-3DUL V3	587	570	1.9	288	476	2.00	43	-	S33	
SKiiP 603 GD172-3DUW V3	570	570	1.9	288	476	2.00	43	-	S33	

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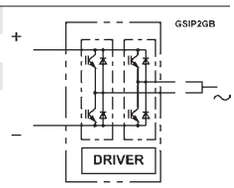
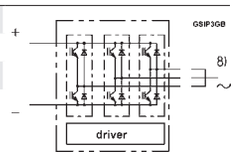
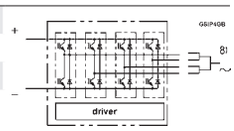
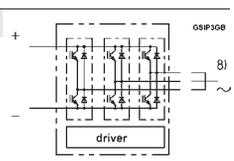
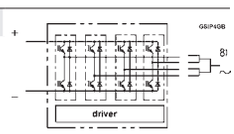
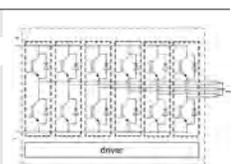
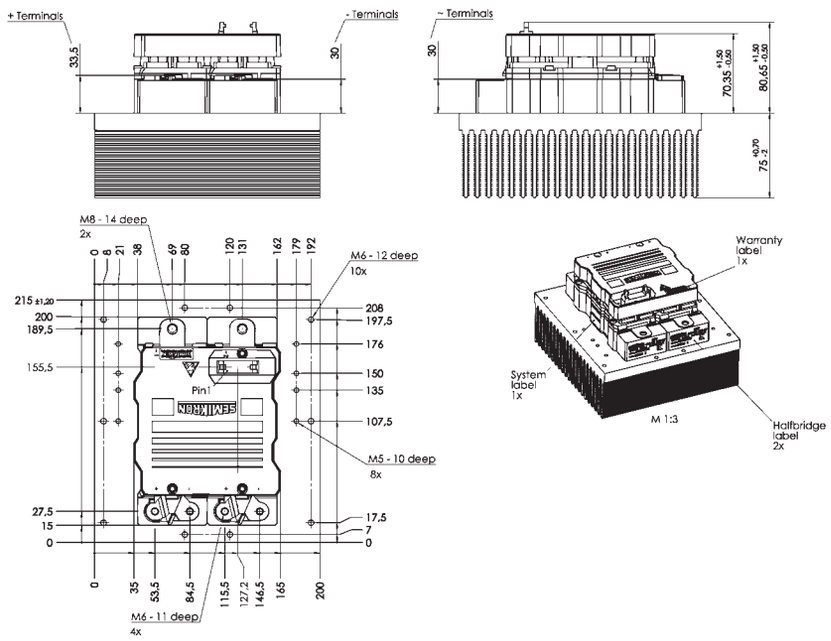
IPM / SKiiP

Type	IGBT				Diode			Module		
	I_C @ T_S= 25°C	I_{nom}	$V_{CE(sat)}$ @ T_j = 25°C typ.	E_{on} + E_{off}	I_F @ T_S = 25°C	V_F @ T_j = 25°C typ.	E_{rr}	Options F=F-Option U=U-Option S=SKiFace Adapter	Case	Circuit
	A	A	V	mJ	A	V	mJ			
1700V - IGBT 3 (Trench) - SKiiP3										
SKiiP 1013 GB172-2DL V3	1072	1000	1.9	575	879	2.00	86	F,U	S23	
SKiiP 1013 GB172-2DW V3	1072	1000	1.9	575	879	2.00	86	F,U	S23	
SKiiP 1203 GB172-2DL V3	1159	1200	1.9	575	961	2.00	86	F,U	S23	
SKiiP 1203 GB172-2DW V3	1159	1200	1.9	575	961	2.00	86	F,U	S23	
SKiiP 1513 GB172-3DL V3	1589	1500	1.9	863	1336	2.00	128	F,U	S33	
SKiiP 1513 GB172-3DW V3	1589	1500	1.9	863	1336	2.00	128	F,U	S33	
SKiiP 1803 GB172-3DL V3	1744	1800	1.9	863	1454	2.00	128	F,U	S33	
SKiiP 1803 GB172-3DW V3	1744	1800	1.9	863	1454	2.00	128	F,U	S33	
SKiiP 2013 GB172-4DL V3	2102	2000	1.9	1150	1758	2.00	171	F,U	S43	
SKiiP 2013 GB172-4DW V3	2102	2000	1.9	1150	1758	2.00	171	F,U	S43	
SKiiP 2403 GB172-4DL V3	2282	2400	1.9	1150	1921	2.00	171	F,U	S43	
SKiiP 2403 GB172-4DW V3	2282	2400	1.9	1150	1921	2.00	171	F,U	S43	
1700V - IGBT 4 (Trench) - SKiiP4										
SKiiP 1814 GB17E4-3DUL	2547	1800	2.12	2130	1771	2.02	498	F,S	S34	
SKiiP 1814 GB17E4-3DUW	2547	1800	2.12	2130	1771	2.02	498	F,S	S34	
SKiiP 2414 GB17E4-4DUL	3385	2400	2.12	2840	2362	2.02	664	F,S	S44	
SKiiP 2414 GB17E4-4DW	3385	2400	2.12	2840	2367	2.02	664	F,S	S44	
SKiiP 3614 GB17E4-6DUL	5078	3600	2.12	6840	3547	2.02	996	F,S	S64	
SKiiP 3614 GB17E4-6DUW	5078	3600	2.12	6840	3547	2.02	996	F,S	S64	
SKiiP 3614 GB17E4-6DULR	5078	3600	2.12	6840	3547	2.02	996	F,S	S64	

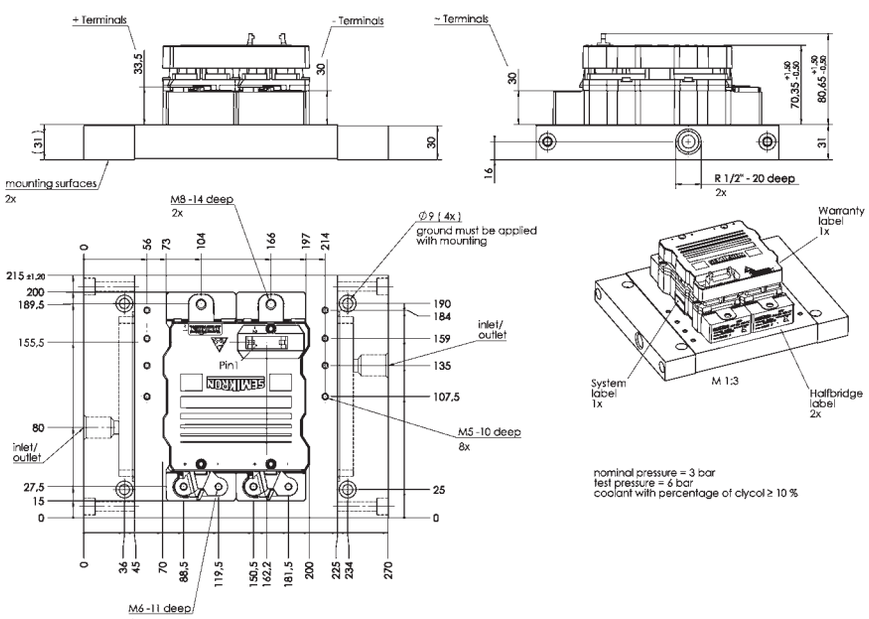
SKiiP 3

Case S 23 mounted on P3016 heat sink



Weight without heat sink:	1,7 kg
P3016:	4,4 kg

Case S 23 mounted on liquid cooled heat sink NWK 40

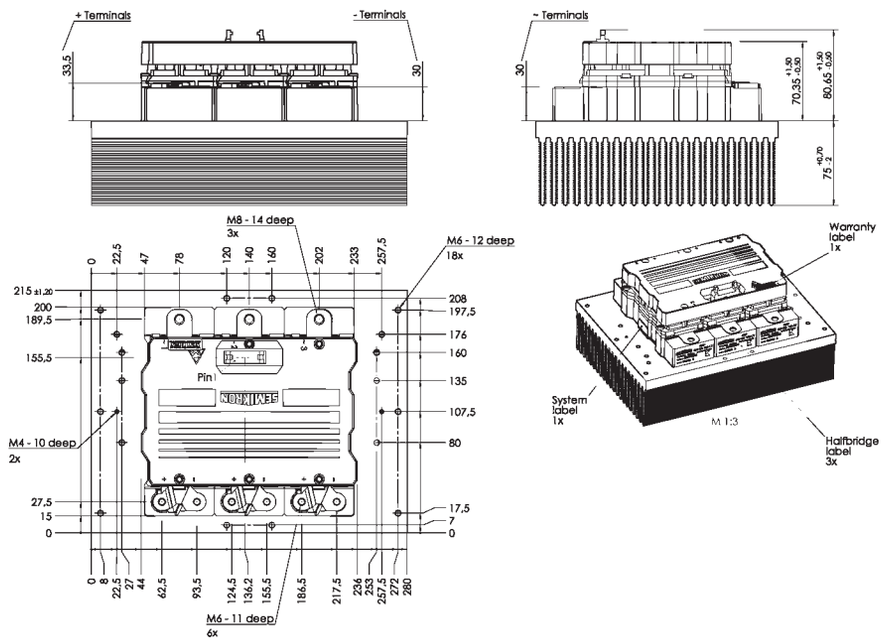


NWK 40:	2,8 kg

Dimensions in mm

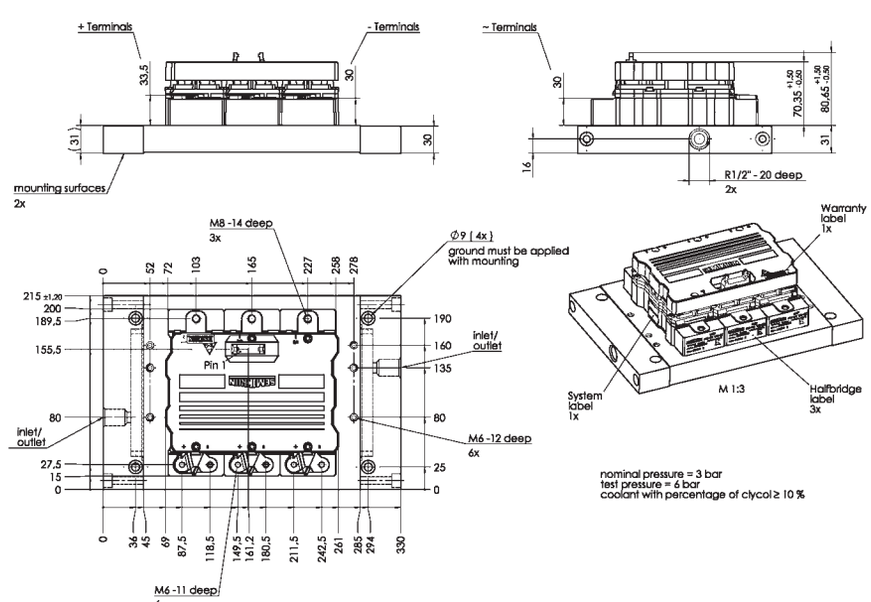
SKiiP 3

Case S 33 mounted on P3016 heat sink



Weight without heat sink:	2,4 kg
P3016:	6,2 kg

Case S 33 mounted on liquid cooled heat sink NWK 40

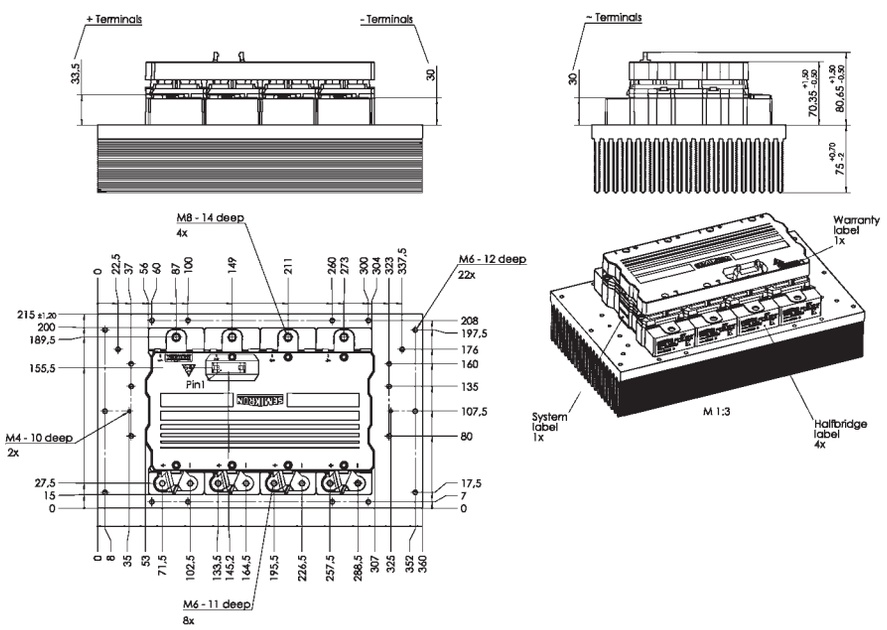


NWK 40:	5,2 kg

Dimensions in mm

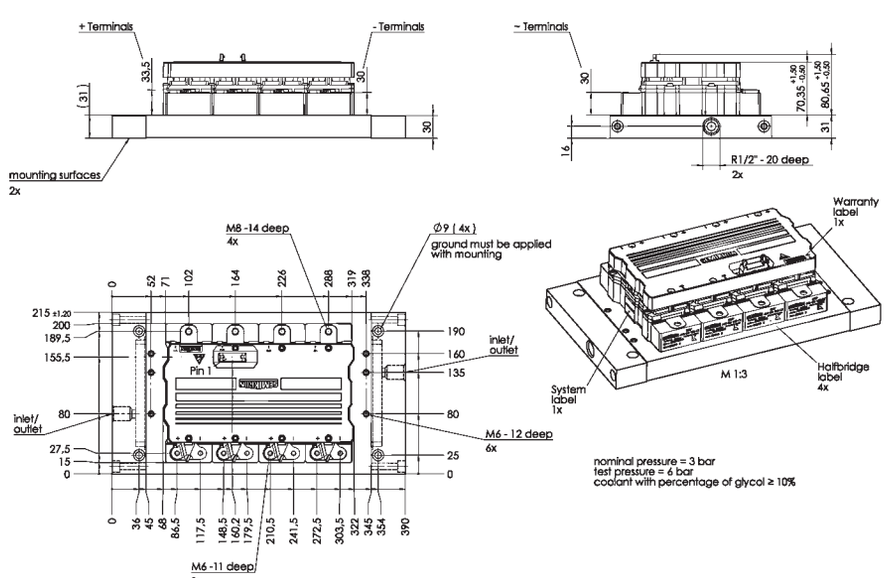
SKiiP 3

Case S 43 mounted on P3016 heat sink



Weight without heat sink:	3,1 kg
P3016:	8,0 kg

Case S 43 mounted on liquid cooled heat sink NWK 40

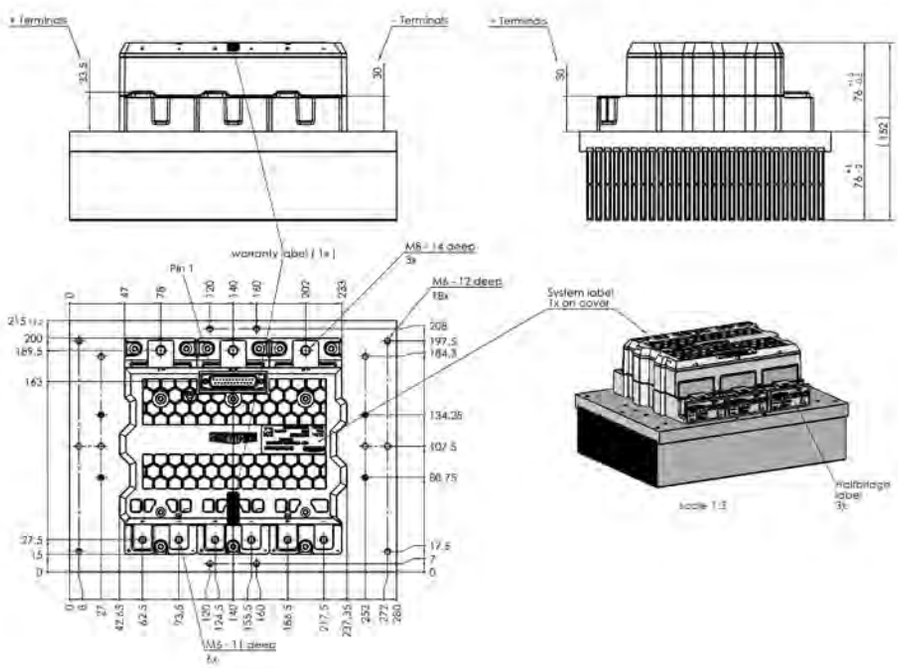


NWK 40:	6,2 kg

Dimensions in mm

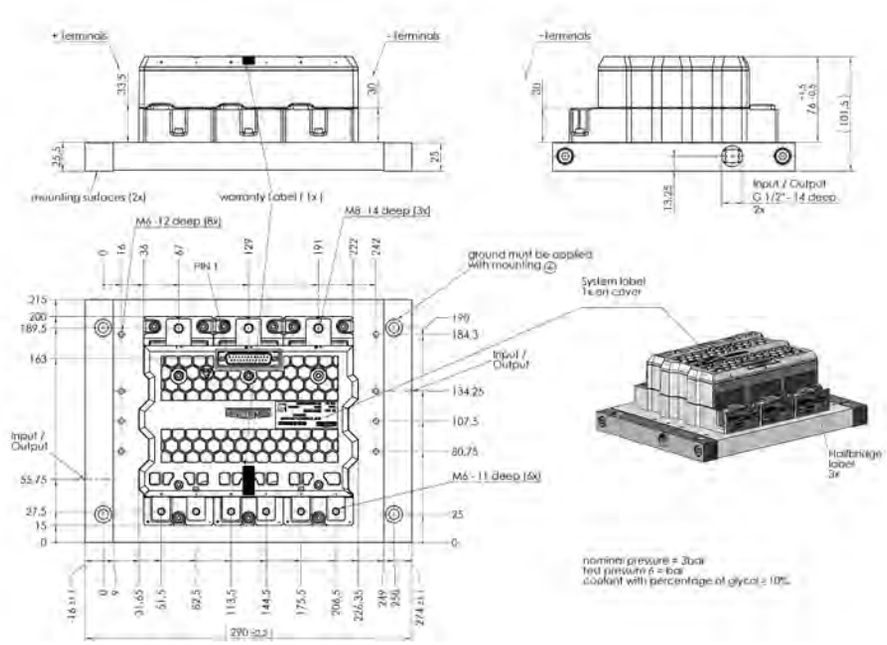
SKiiP 4

Case S 34 mounted on P4016 heat sink



Weight without heat sink:	2,48 kg
P4016:	5,9 kg

Case S 34 mounted on liquid cooled heat sink NHC

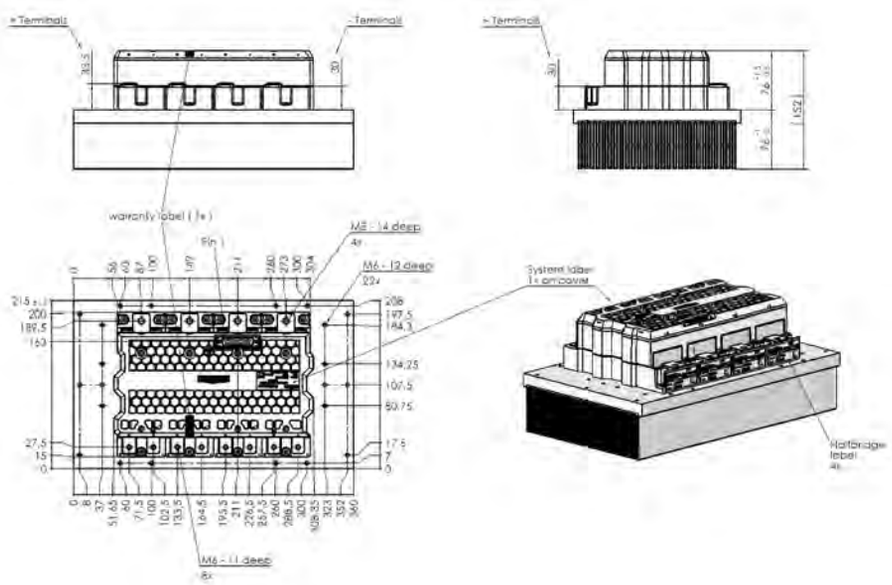


NHC:	3,49 kg

Dimensions in mm

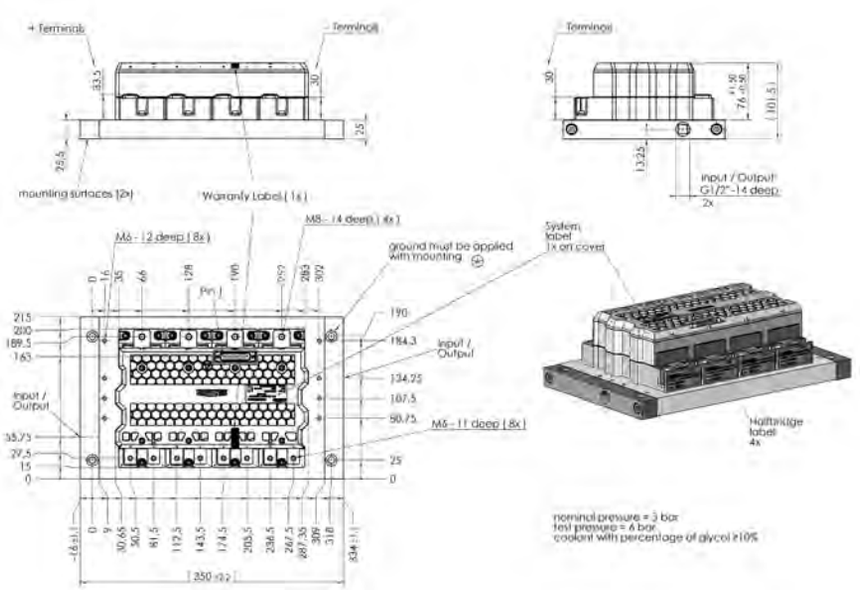
SKiiP 4

Case S 44 mounted on P4016 heat sink



Weight without heat sink:	3,22 kg
P4016:	7,55 kg

Case S 44 mounted on liquid cooled heat sink NHC

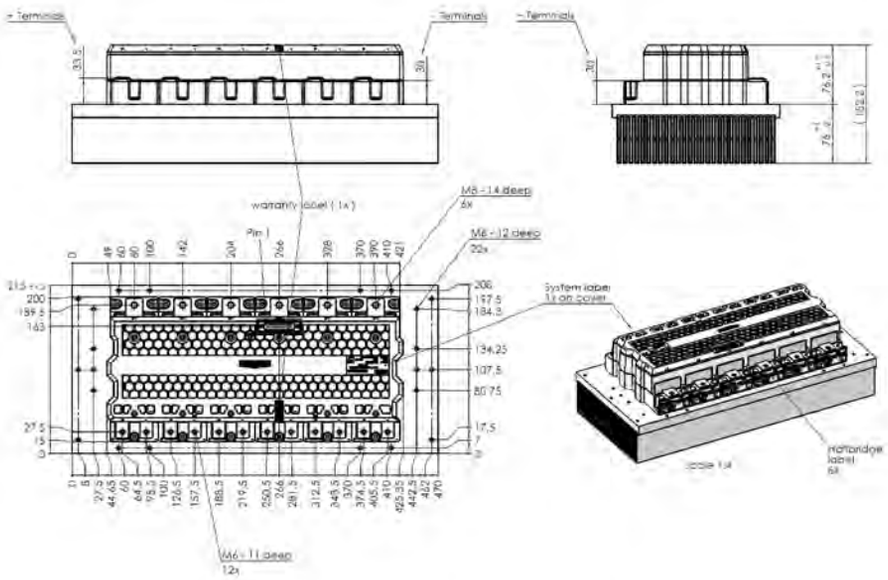


NHC:	4,25 kg

Dimensions in mm

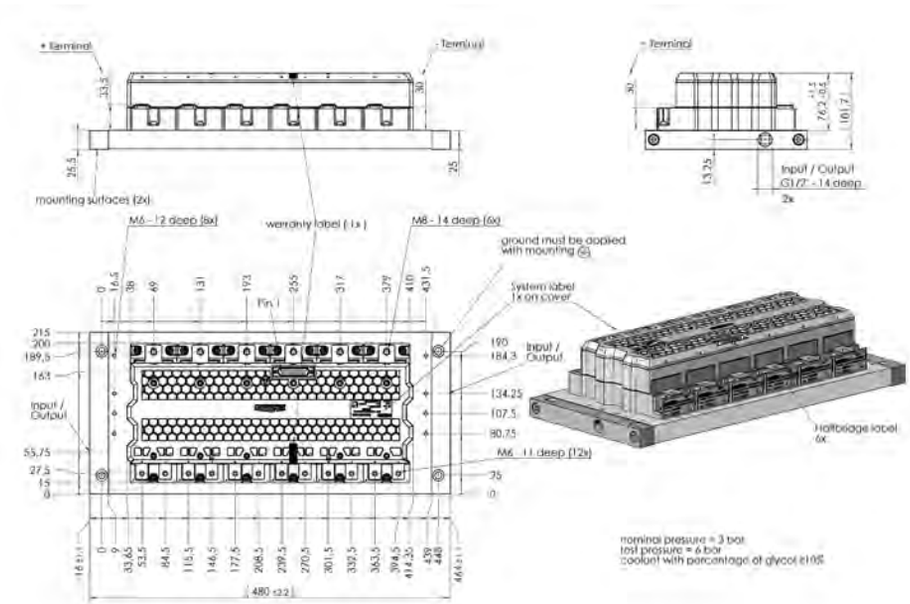
SKiiP 4

Case S 64 mounted on P4016 heat sink



Weight without heat sink:	4,84 kg
P4016:	9,9 kg

Case S 64 mounted on liquid cooled heat sink NHC



NHC:	5,77 kg

Dimensions in mm

IPM / SKiiP Accessories

Type	
F-Option SKiiP4	
SKiiP4 F-Option	Fiber optic control board for SKiiP4
SKiiP4 F-Option with D-Sub connector	Fiber optic control board for SKiiP4
SKiiP3 Parallel Board	
SKiiP3 Parallel Board 4-fold	Board for paralleling of 4 SKiiP3, F-Option usage possible
SKiiP3 Parallel Board 3-fold	Board for paralleling of 3 SKiiP3, F-Option usage possible
SKiiP3 Parallel Board 2-fold	Board for paralleling of 2 SKiiP3, F-Option usage possible
SKiiP 4 Parallel Board	
SKiiP4 Parallel Board 4-fold without F-Option	Board for paralleling of 4 SKiiP4, F-Option usage not possible
SKiiP4 Parallel Board 4-fold F-Option	Board for paralleling of 4 SKiiP4, F-Option usage possible
SKiiP4 Parallel Board 3-fold without F-Option	Board for paralleling of 3 SKiiP4, F-Option usage not possible
SKiiP4 Parallel Board 3-fold F-Option	Board for paralleling of 3 SKiiP4, F-Option usage possible
SKiiP4 Parallel Board 2-fold without F-Option	Board for paralleling of 2 SKiiP4, F-Option usage not possible
SKiiP4 Parallel Board 2-fold F-Option	Board for paralleling of 2 SKiiP4, F-Option usage possible
SKiFace Adapter Board	
SKiiP4 SKiFace Adapter UZK	Adapter board to connect SKiiP4 to SKiiP3 controller with DC-Link voltage measurement function
SKiiP4 SKiFace Adapter Temp	Adapter board to connect SKiiP4 to SKiiP3 controller with temperatur measurement function

IGBT Driver
SEMIKRON IGBT Driver Family

SEMIKRON offers two driver families – the SKHI and the SKYPER drivers. SKYPER 12 press-fit, SKYPER 32, SKYPER 42 LJ and SKYPER 52, with 1W to 10W output power per channel, cover the whole range between 30kW and 2MW inverters. The high integration of SEMIKRON's new ASIC chipset provide for safe IGBT gate control over the whole lifecycle. Short circuits are managed very fast by separate error channels. SoftOff and over voltage feedback avoid dangerous over voltages.

The mixed signal ASICs guarantee lowest tolerances over the full temperature range. MLI or paralleled IGBT topologies are managed by the adjustable error handling. With an optimized interface and the adjustable filter setting the SKYPER family operates safely in noisy environments. Adapter boards are available for most of the SEMIKRON modules.

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For detailed information
please refer data sheets.

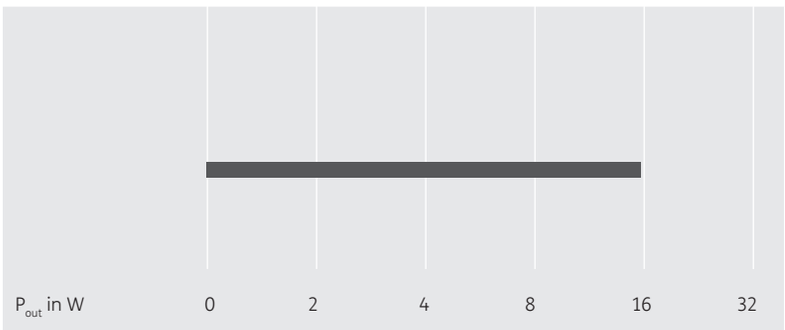
Further information:
www.semikron.com/driver

IGBT Driver

SKYPER®

Driver
Driver Cores
Adapterboards

600V up to 1700V



6

Driver Electronics / SEMIDRIVER

Type	Channels	V_{CE} V	$V_{G(on)}$ V	$V_{G(off)}$ V	$I_{outPEAK}$ A	$Q_{out/pulse}$ µC	f_{max} kHz	VisoIIO kV	dv/dt kV/µs
Driver									
SKHI 10/12 R	1	1200	15	-8	8	9.6	100	2500	75
SKHI 10/17 R	1	1700	15	-8	8	9.6	100	4000	75
SKHI 23/12 R	2	1200	15	-8	8	4.8	100	2500	75
SKHI 23/17 R	2	1700	15	-8	8	4.8	100	4000	75
SKHIT 01 R[5)]	3	528	-	-	-	-	10	2500	-
Driver Core									
SKHI 21A R[6)]	2	1200	15	0	8	4	50	2500	50
SKHI 22 A/B H4 R	2	1700	15	-7	8	4	50	4000	50
SKHI 22 A/B R	2	1200	15	-7	8	4	50	2500	50
SKHI 24 R	2	1700	15	-8	15	5	50	4000	50
SKYPER 32 R	2	1700	15	-7	15	2.5	50	4000	50
SKYPER 32 PRO R	2	1700	15	-7	15	6.3	50	4000	50
SKYPER 42 R	2	1700	15	-8	30	50	100	4000	100
SKYPER 42 LJ R	2	1700	15	-8	20	20	100	4000	100
SKHI 61 R	6	900	14.9	-6.5	2	1	50	2500	15
SKHI 71 R	7	900	14.9	-6.5	2	1	50	2500	15
Adapter Board									
Board 1 SKYPER 32 R	2	1700	15	-7	15	2.5	50	4000	50
Board 1 SKYPER 32PRO R	2	1700	15	-7	15	6.3	50	4000	50
Board 2 // 4S SKYPER 42 R	2	1200	15	-8	30	50	100	4000	100
Board 2 generic SKYPER 42 R	2	1700	15	-8	30	50	100	4000	100
Board 2//3S SKYPER 42 R	2	1700	15	-8	30	50	100	4000	100
Board 2S SKYPER 32 PRO R Gold	2	1700	15	-7	15	6.3	50	4000	50
Board 2S SKYPER 32 R Gold	2	1700	15	-7	15	2.5	50	4000	50
Board 3S SKYPER 32 PRO R Gold	2	1700	15	-7	15	6.3	50	4000	50
Board 3S SKYPER 32 R Gold	2	1700	15	-7	15	2.5	50	4000	50
Board 4S SKYPER 32 PRO R Gold	2	1700	15	-7	15	6.3	50	4000	50
Board 4S SKYPER 32 R Gold	2	1700	15	-7	15	2.5	50	4000	50
Board 63 GB SKYPER 42 R	2	1700	15	-8	30	50	100	4000	100
Board 93 GB SKYPER 42 R	2	1700	15	-8	30	50	100	4000	100

Footnotes: 5) Thyristor Driver / 6) MOSFET Driver

Stacks
Fully Qualified Inverter Assemblies Tailored to your Specific Needs

In addition to standard semiconductor components, SEMIKRON has developed a full range of power converter assemblies.

Solution center application engineers are available to offer specific power solutions by adapting present platforms or by designing fully customized converters.

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For detailed information please refer data sheets.

Further information:
www.semikron.com/stacks

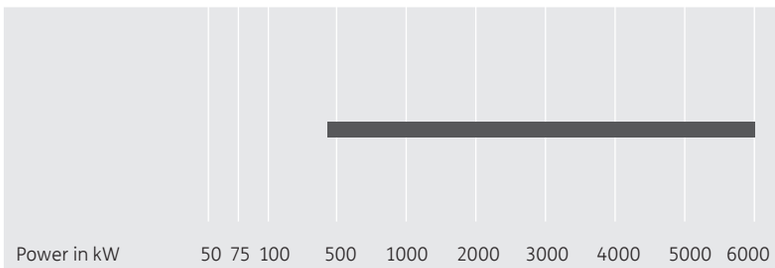
Stacks

Water cooled

SEMISTACK® RE

Synchronus wind generators

Double-fed wind generators
Solar inverters

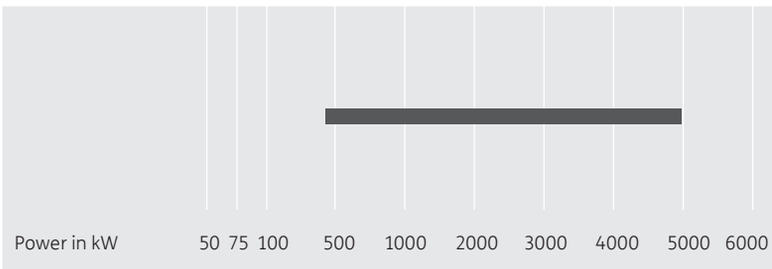


SKiiPRACK®

Synchronus wind generators

Double-fed wind generators

High power AC drives

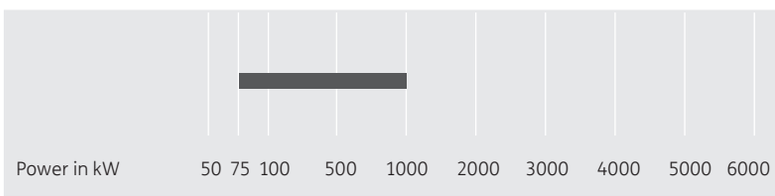


Air cooled

SEMIKUBE®

Solar inverters

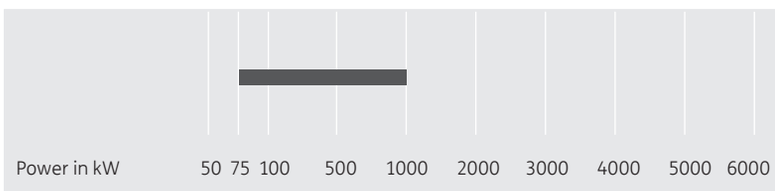
Pump and compressor drives



SEMIKUBE® SlimLine

Solar inverters

AC drives and servos



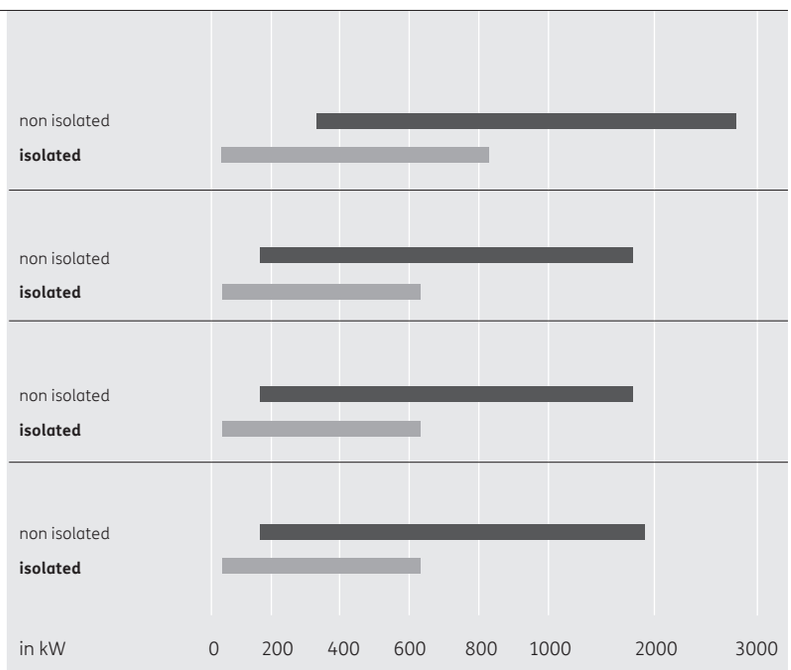
SEMISTACK® CLASSICS

B6U
3-phase uncontrolled rectifier

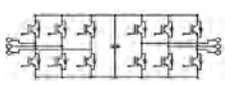
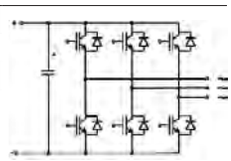
B6HK
3-phase half controlled rectifier

B6C
3-phase fully controlled rectifier

W3C
3-phase reverse parallel thyristor converter



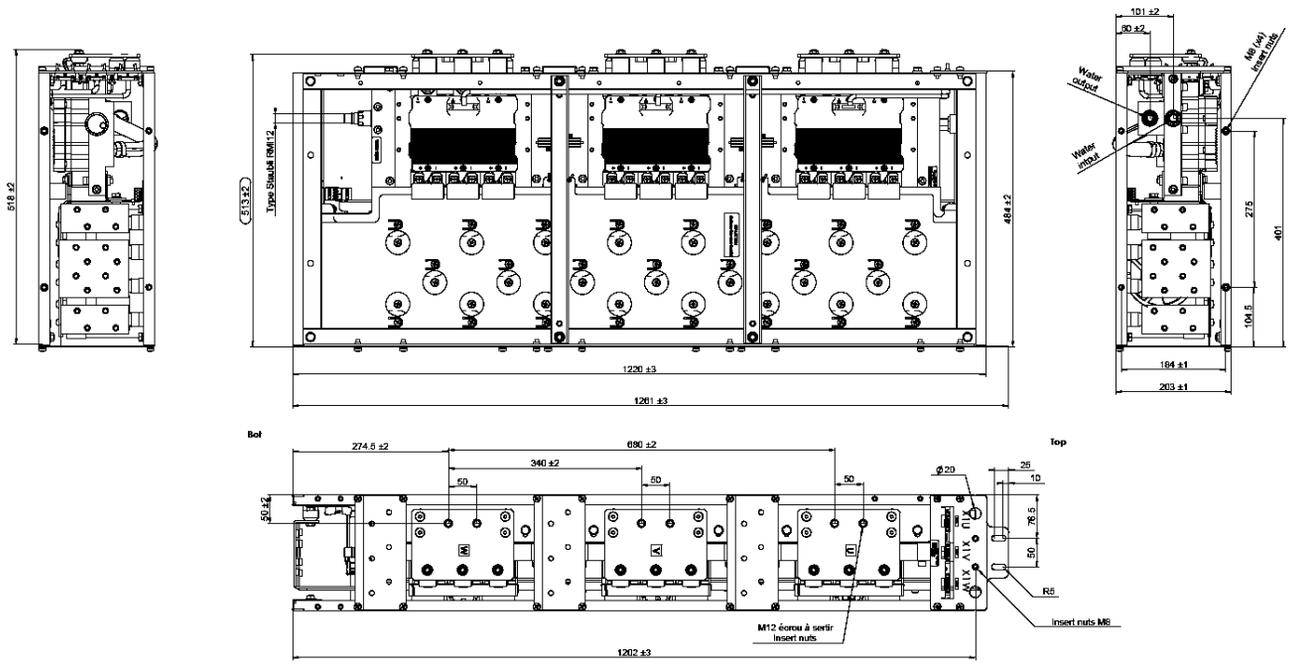
Stacks / SEMISTACK RE

Type	V_{AC} V	V_{DC} V	Current A	Component Family	Cooling	Heatsink profile	Isolated	Circuit
4-Quadrant converter								
SKS B2 120 GDD 69/11 - A11 MA PB	690	1100	1200	SKiiP 3	Water/Glycol	-	yes	
SKS B2 140 GDD 69/12 U - A11 MA PB	690	1250	1400	SKiiP 4	Water/Glycol	-	yes	
3-phase inverter								
SKS B1 090 GD 69/11 - MA PB	690	1100	900	SKiiP 3	Water/Glycol	-	yes	
SKS B2 100 GD 69/11 - MA PB	690	1100	1000	SKiiP 3	Water/Glycol	-	yes	
SKS B2 120 GD 69/11 - MA PB	690	1100	1200	SKiiP 3	Water/Glycol	-	yes	
SKS B2 140 GD 69/12 U - MA PB	690	1250	1400	SKiiP 4	Water/Glycol	-	yes	

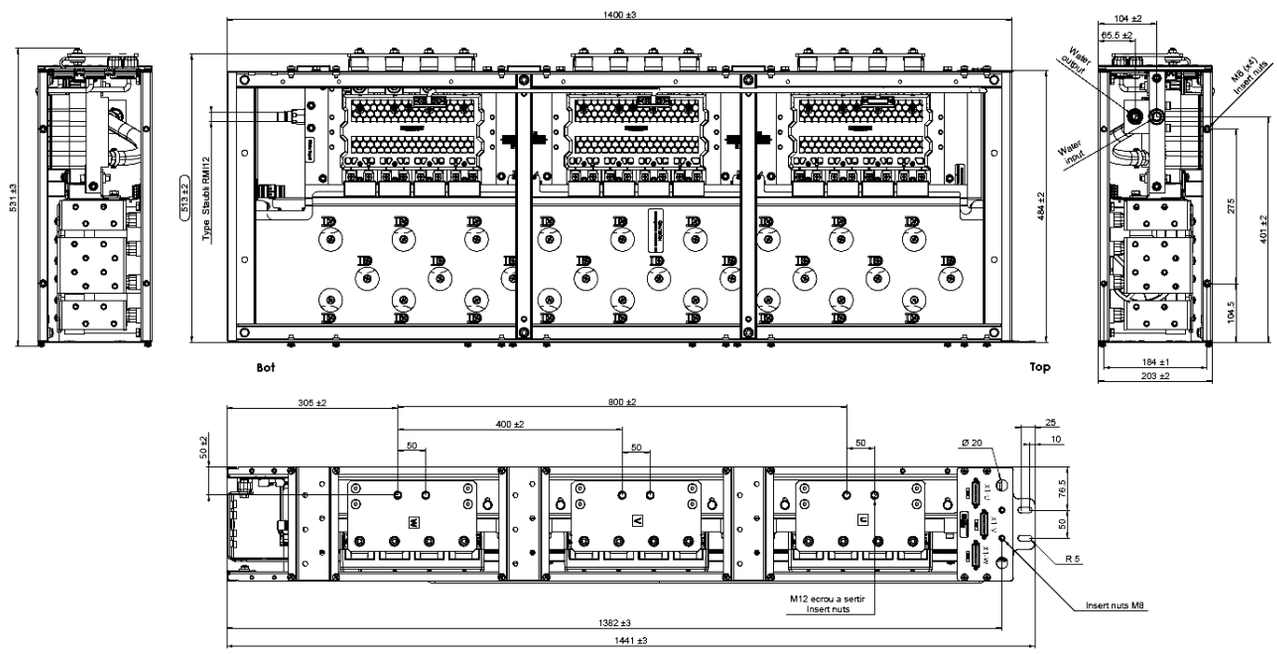
Stacks / SEMISTACK RE

Cases

SKS B1 090 GD 69/11 - MA PB



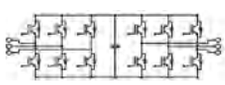
SKS B2 100 GD 69/11 - MA PB, SKS B2 120 GD 69/11 - MA PB, and SKS B2 140 GD 69/12 - MA PB



Dimensions in mm

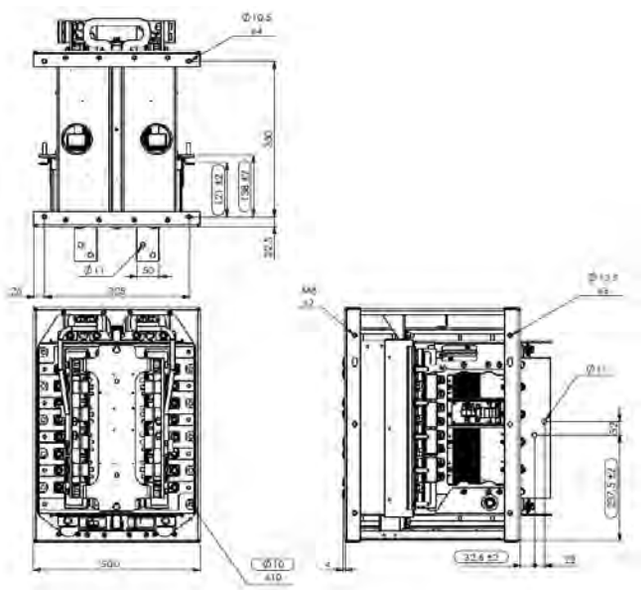
Stacks / SKiiPRACK

Type

	V_{AC} V	V_{DC} V	Current A	Component Family	Cooling	Heatsink profile	Isolated	Circuit
4-Quadrant converter								
SKS C 120 GDD 69/11 - A3A WA B1B	690	1100	1200	SKiiP 3	Water/Glycol	-	yes	
SKS C 240 GDD 69/11 - A6A MA B1C	690	1100	2400	SKiiP 3	Water/Glycol	-	yes	

Cases

SKiiPRACK basic stack element, the CELL

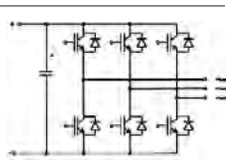
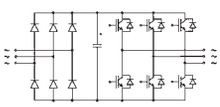


3-Cell vertical integration

Dimensions in mm

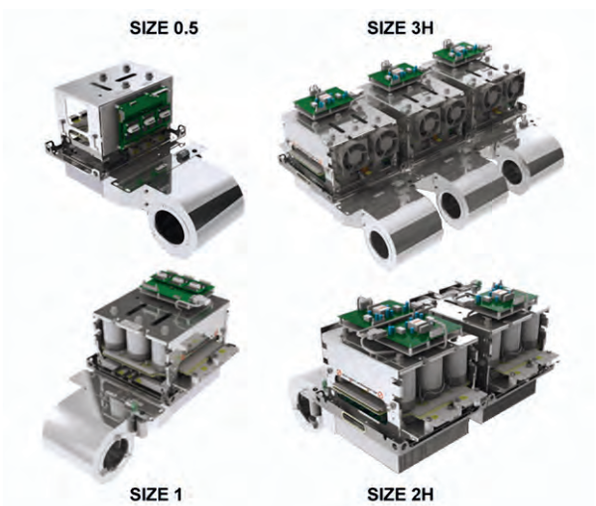
Stacks / SEMIKUBE

Type

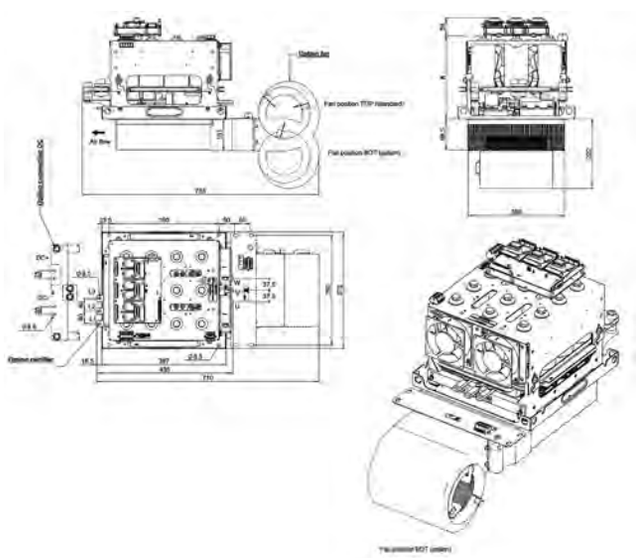
	V_{AC} V	V_{DC} V	Current A	Component Family	Cooling	Heatsink profile	Isolated	Circuit
3-phase inverter								
IGD-1-424-P1N4-DL-FA	460	750	200	SEMITRANS	Forced-air cooled	PX 308	yes	
IGD-2-424-P1N6-DH-FA	460	750	350	SEMITRANS	Forced-air cooled	PX 308	yes	
IGD-4-424-P1F7-BL-FA	460	750	750	SEMITRANS	Forced-air cooled	PX 308	yes	
IGD-8-326-E1F12-BH-FA	460	750	1230	SEMITRANS	Forced-air cooled	PX 308	yes	
IGD-8-426-E1F12-BH-FA	460	750	1470	SEMITRANS	Forced-air cooled	PX 308	yes	
IGD-8-424-P1F9-BH-FA	460	750	1470	SEMITRANS	Forced-air cooled	PX 308	yes	
3-phase rectifier and inverter								
IGDD6-1-326-D1616-E1N6-DL-FA	460	750	150	SEMITRANS/SEMIPACK	Forced-air cooled	PX 308	yes	
IGDD6-1-426-D1616-E1N6-DL-FA	460	750	180	SEMITRANS/SEMIPACK	Forced-air cooled	PX 308	yes	
IGDD6-2-326-D1616-E1F12-DH-FA	460	750	280	SEMITRANS/SEMIPACK	Forced-air cooled	PX 308	yes	
IGDD6-2-426-D1616-E1F12-DH-FA	460	750	330	SEMITRANS/SEMIPACK	Forced-air cooled	PX 308	yes	
IGDD6-4-326-D3816-E1F12-BL-FA	460	750	570	SEMITRANS/SEMIPACK	Forced-air cooled	PX 308	yes	
IGDD6-4-426-D3816-E1F12-BL-FA	460	750	680	SEMITRANS/SEMIPACK	Forced-air cooled	PX 308	yes	

Cases

Frames



Size 1

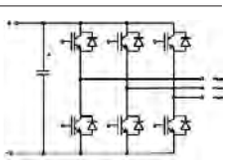


Dimensions in mm

7

Stacks / SEMIKUBE SlimLine

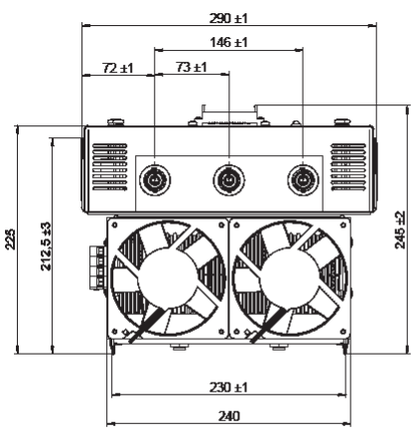
Type

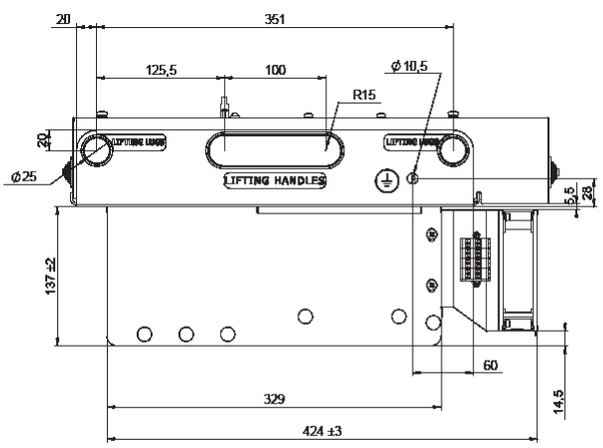
	V_{AC} V	V_{DC} V	Current A	Component Family	Cooling	Frame	Isolated	Circuit
3-phase inverter								
SKS SL 20 GD 50/10 - C E4 P1 AF[1)]	500	1000	230	SEMITRANS	Forced-air cooled	SL20	yes	
SKS SL 40 GD 50/10 - C E4 P1 AF[1)]	500	1000	440	SEMITRANS	Forced-air cooled	SL40	yes	
SKS SL 80 GD 50/10 - C E4 P1 AF[1)]	500	1000	750	SEMITRANS	Forced-air cooled	SL80	yes	
SKS SL 150 GD 50/10 - C E4 P1 AF[1)]	500	1000	1500	SEMITRANS	Forced-air cooled	SL150	yes	

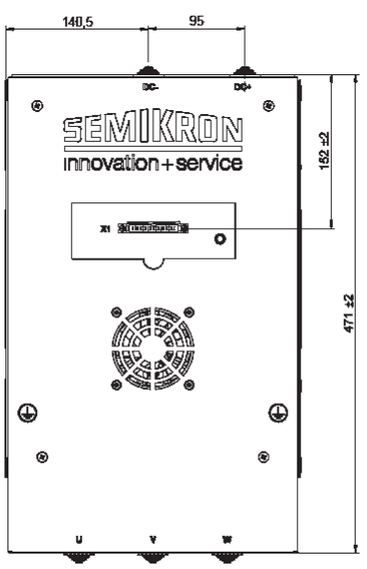
Footnotes: 1) New product

Cases

Frame SL20



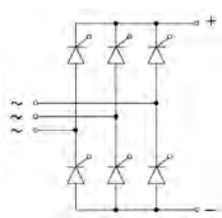


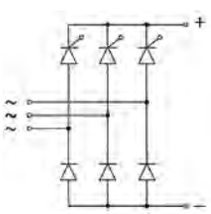


Dimensions in mm

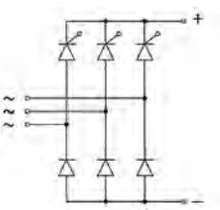
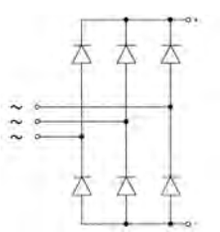
Stacks / SEMISTACK CLASSICS

Type	V_{AC} V	V_{DC} V	DC Current A	Component Family	Cooling	Heatsink profile	Isolated	Circuit
3-phase fully-controlled thyristor bridge rectifier								
SKS 88N B6C 60 V16	500	670	88	SEMIPACK 1	Natural cooled	P3/180	yes	
SKS 88N B6C 60 V16 SU	500	670	88	SEMIPACK 1	Natural cooled	P3/180	yes	
SKS 180F B6C 120 V16	500	670	180	SEMIPACK 1	Forced-air cooled	P3/180	yes	
SKS 180F B6C 120 V16 SU	500	670	180	SEMIPACK 1	Forced-air cooled	P3/180	yes	
SKS 215N B6C 145 V16	500	670	215	Stud devices	Natural cooled	P1/150	no	
SKS 215N B6C 145 V16 SU	500	670	215	Stud devices	Natural cooled	P1/150	no	
SKS 250F B6C 170 V16	500	670	250	SEMIPACK 2	Forced-air cooled	P3/265	yes	
SKS 250F B6C 170 V16 SU	500	670	250	SEMIPACK 2	Forced-air cooled	P3/265	yes	
SKS 355N B6C 240 V16	500	670	355	Stud devices	Natural cooled	P1/200	no	
SKS 355N B6C 240 V16 SU	500	670	355	Stud devices	Natural cooled	P1/200	no	
SKS 365F B6C 245 V16	500	670	365	SEMIPACK 2	Forced-air cooled	P16/200	yes	
SKS 365F B6C 245 V16 SU	500	670	365	SEMIPACK 2	Forced-air cooled	P16/200	yes	
SKS 570F B6C 380 V16	500	670	570	SEMIPACK 3	Forced-air cooled	P16/200	yes	
SKS 570F B6C 380 V16 SU	500	670	570	SEMIPACK 3	Forced-air cooled	P16/200	yes	
SKS 640F B6C 430 V16	500	670	640	SEMIPACK 3	Forced-air cooled	P16/200	yes	
SKS 640F B6C 430 V16 SU	500	670	640	SEMIPACK 3	Forced-air cooled	P16/200	yes	
SKS 700N B6C 470 V16	500	670	700	Capsules	Natural cooled	P11/415	no	
SKS 700N B6C 470 V16 SU	500	670	700	Capsules	Natural cooled	P11/415	no	
SKS 845N B6C 570 V16	500	670	845	Capsules	Natural cooled	U3/515	no	
SKS 845N B6C 570 V16 SU	500	670	845	Capsules	Natural cooled	U3/515	no	
SKS 970F B6C 650 V16	500	670	970	SEMIPACK 5	Forced-air cooled	P16/300	yes	
SKS 970F B6C 650 V16 SU	500	670	970	SEMIPACK 5	Forced-air cooled	P16/300	yes	
SKS 1000N B6C 670 V16	500	670	1000	Capsules	Natural cooled	U3/515	no	
SKS 1000N B6C 670 V16 SU	500	670	1000	Capsules	Natural cooled	U3/515	no	
SKS 1200F B6C 800 V16	500	670	1200	Capsules	Forced-air cooled	P17/130	no	
SKS 1200F B6C 800 V16 SU	500	670	1200	Capsules	Forced-air cooled	P17/130	no	
SKS 1500F B6C 1010 V16	500	670	1500	Capsules	Forced-air cooled	P17/130	no	
SKS 1500F B6C 1010 V16 SU	500	670	1500	Capsules	Forced-air cooled	P17/130	no	
SKS 1890F B6C 1270 V16	500	670	1890	Capsules	Forced-air cooled	P18/180	no	
SKS 1890F B6C 1270 V16 ZU	500	670	1890	Capsules	Forced-air cooled	P18/180	no	
SKS 2580F B6C 1730 V16	500	670	2580	Capsules	Forced-air cooled	N4/250	no	
SKS 2580F B6C 1730 V16 ZU	500	670	2580	Capsules	Forced-air cooled	N4/250	no	
3-phase half-controlled bridge rectifier								
SKS 88N B6HK 60 V16	500	670	88	SEMIPACK 1	Natural cooled	P3/180	yes	
SKS 88N B6HK 60 V16 SU	500	670	88	SEMIPACK 1	Natural cooled	P3/180	yes	
SKS 180F B6HK 120 V16	500	670	180	SEMIPACK 1	Forced-air cooled	P3/180	yes	
SKS 180F B6HK 120 V16 SU	500	670	180	SEMIPACK 1	Forced-air cooled	P3/180	yes	
SKS 215N B6HK 145 V16	500	670	215	Stud devices	Natural cooled	P1/150	no	
SKS 215N B6HK 145 V16 SU	500	670	215	Stud devices	Natural cooled	P1/150	no	
SKS 250F B6HK 170 V16	500	670	250	SEMIPACK 2	Forced-air cooled	P3/265	yes	
SKS 250F B6HK 170 V16 SU	500	670	250	SEMIPACK 2	Forced-air cooled	P3/265	yes	
SKS 355N B6HK 240 V16	500	670	355	Stud devices	Natural cooled	P1/200	no	
SKS 355N B6HK 240 V16 SU	500	670	355	Stud devices	Natural cooled	P1/200	no	
SKS 365F B6HK 245 V16	500	670	365	SEMIPACK 2	Forced-air cooled	P16/200	yes	
SKS 365F B6HK 245 V16 SU	500	670	365	SEMIPACK 2	Forced-air cooled	P16/200	yes	
SKS 570F B6HK 380 V16	500	670	570	SEMIPACK 3	Forced-air cooled	P16/200	yes	
SKS 570F B6HK 380 V16 SU	500	670	570	SEMIPACK 3	Forced-air cooled	P16/200	yes	
SKS 640F B6HK 430 V16	500	670	640	SEMIPACK 3	Forced-air cooled	P16/200	yes	
SKS 640F B6HK 430 V16 SU	500	670	640	SEMIPACK 3	Forced-air cooled	P16/200	yes	
SKS 700N B6HK 470 V16	500	670	700	Capsules	Natural cooled	P11/415	no	
SKS 700N B6HK 470 V16 SU	500	670	700	Capsules	Natural cooled	P11/415	no	
SKS 845N B6HK 570 V16	500	670	845	Capsules	Natural cooled	U3/515	no	
SKS 845N B6HK 570 V16 SU	500	670	845	Capsules	Natural cooled	U3/515	no	
SKS 970F B6HK 650 V16	500	670	970	SEMIPACK 5	Forced-air cooled	P16/300	yes	
SKS 970F B6HK 650 V16 SU	500	670	970	SEMIPACK 5	Forced-air cooled	P16/300	yes	
SKS 1000N B6HK 670 V16	500	670	1000	Capsules	Natural cooled	U3/515	no	

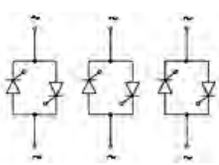




Stacks / SEMISTACK CLASSICS

Type	V_{AC} V	V_{DC} V	DC Current A	Component Family	Cooling	Heatsink profile	Isolated	Circuit
3-phase half-controlled bridge rectifier								
SKS 1000N B6HK 670 V16 SU	500	670	1000	Capsules	Natural cooled	U3/515	no	
SKS 1200F B6HK 800 V16	500	670	1200	Capsules	Forced-air cooled	P17/130	no	
SKS 1200F B6HK 800 V16 SU	500	670	1200	Capsules	Forced-air cooled	P17/130	no	
SKS 1500F B6HK 1010 V16	500	670	1500	Capsules	Forced-air cooled	P17/130	no	
SKS 1500F B6HK 1010 V16 SU	500	670	1500	Capsules	Forced-air cooled	P17/130	no	
SKS 1890F B6HK 1270 V16	500	670	1890	Capsules	Forced-air cooled	P18/180	no	
SKS 1890F B6HK 1270 V16 ZU	500	670	1890	Capsules	Forced-air cooled	P18/180	no	
SKS 2580F B6HK 1730 V16	500	670	2580	Capsules	Forced-air cooled	N4/250	no	
SKS 2580F B6HK 1730 V16 ZU	500	670	2580	Capsules	Forced-air cooled	N4/250	no	
3-phase uncontrolled bridge rectifier								
SKS 91N B6U 60 V16	500	670	91	SEMIPACK 1	Natural cooled	P3/180	yes	
SKS 91N B6U 60 V16 SU	500	670	91	SEMIPACK 1	Natural cooled	P3/180	yes	
SKS 185F B6U 125 V16	500	670	185	SEMIPACK 1	Forced-air cooled	P3/180	yes	
SKS 185F B6U 125 V16 SU	500	670	185	SEMIPACK 1	Forced-air cooled	P3/180	yes	
SKS 290F B6U 195 V16	500	670	290	SEMIPACK 2	Forced-air cooled	P3/265	yes	
SKS 290F B6U 195 V16 SU	500	670	290	SEMIPACK 2	Forced-air cooled	P3/265	yes	
SKS 425N B6U 285 V16	500	670	425	Stud devices	Natural cooled	P1/150	no	
SKS 425N B6U 285 V16 SU	500	670	425	Stud devices	Natural cooled	P1/150	no	
SKS 430F B6U 290 V16	500	670	430	SEMIPACK 2	Forced-air cooled	P16/200	yes	
SKS 430F B6U 290 V16 SU	500	670	430	SEMIPACK 2	Forced-air cooled	P16/200	yes	
SKS 535N B6U 360 V16	500	670	535	Stud devices	Natural cooled	P1/200	no	
SKS 535N B6U 360 V16 SU	500	670	535	Stud devices	Natural cooled	P1/200	no	
SKS 660F B6U 440 V16	500	670	660	SEMIPACK 3	Forced-air cooled	P16/200	yes	
SKS 660F B6U 440 V16 SU	500	670	660	SEMIPACK 3	Forced-air cooled	P16/200	yes	
SKS 850F B6U 570 V16	500	670	850	SEMIPACK 3	Forced-air cooled	P16/200	yes	
SKS 850F B6U 570 V16 SU	500	670	850	SEMIPACK 3	Forced-air cooled	P16/200	yes	
SKS 1185N B6U 795 V16	500	670	1185	Capsules	Natural cooled	P11/415	no	
SKS 1185N B6U 795 V16 SU	500	670	1185	Capsules	Natural cooled	P11/415	no	
SKS 1220F B6U 820 V16	500	670	1220	SEMIPACK 5	Forced-air cooled	P16/300	yes	
SKS 1220F B6U 820 V16 SU	500	670	1220	SEMIPACK 5	Forced-air cooled	P16/300	yes	
SKS 1630N B6U 1090 V16	500	670	1630	Capsules	Natural cooled	U3/515	no	
SKS 1630N B6U 1090 V16 ZU	500	670	1630	Capsules	Natural cooled	U3/515	no	
SKS 1910N B6U 1280 V16	500	670	1910	Capsules	Natural cooled	U3/515	no	
SKS 1910N B6U 1280 V16 ZU	500	670	1910	Capsules	Natural cooled	U3/515	no	
SKS 1950F B6U 1305 V16	500	670	1950	Capsules	Forced-air cooled	P17/130	no	
SKS 1950F B6U 1305 V16 ZU	500	670	1950	Capsules	Forced-air cooled	P17/130	no	
SKS 2300F B6U 1540 V16	500	670	2300	Capsules	Forced-air cooled	P18/180	no	
SKS 2300F B6U 1540 V16 ZU	500	670	2300	Capsules	Forced-air cooled	P18/180	no	
SKS 4015F B6U 2690 V16	500	670	4015	Capsules	Forced-air cooled	N4/250	no	

Stacks / SEMISTACK CLASSICS

Type	V_{AC} V	V_{DC} V	DC Current A	Component Family	Cooling	Heatsink profile	Isolated	Circuit
3-phase reverse parallel thyristor converter								
SKS 67N W3C 60 V16	500	-	67	SEMIPACK 1	Natural cooled	P3/180	yes	
SKS 67N W3C 60 V16 SU	500	-	67	SEMIPACK 1	Natural cooled	P3/180	yes	
SKS 140F W3C 120 V16	500	-	140	SEMIPACK 1	Forced-air cooled	P3/180	yes	
SKS 140F W3C 120 V16 SU	500	-	140	SEMIPACK 1	Forced-air cooled	P3/180	yes	
SKS 170N W3C 150 V16	500	-	170	Stud devices	Natural cooled	P1/150	no	
SKS 170N W3C 150 V16 SU	500	-	170	Stud devices	Natural cooled	P1/150	no	
SKS 195F W3C 170 V16	500	-	195	SEMIPACK 2	Forced-air cooled	P3/265	yes	
SKS 195F W3C 170 V16 SU	500	-	195	SEMIPACK 2	Forced-air cooled	P3/265	yes	
SKS 275N W3C 240 V16	500	-	275	Stud devices	Natural cooled	P1/200	no	
SKS 275N W3C 240 V16 SU	500	-	275	Stud devices	Natural cooled	P1/200	no	
SKS 290F W3C 250 V16	500	-	290	SEMIPACK 2	Forced-air cooled	P16/200	yes	
SKS 290F W3C 250 V16 SU	500	-	290	SEMIPACK 2	Forced-air cooled	P16/200	yes	
SKS 450F W3C 390 V16	500	-	450	SEMIPACK 3	Forced-air cooled	P16/200	yes	
SKS 450F W3C 390 V16 SU	500	-	450	SEMIPACK 3	Forced-air cooled	P16/200	yes	
SKS 520F W3C 450 V16	500	-	520	SEMIPACK 3	Forced-air cooled	P16/200	yes	
SKS 520F W3C 450 V16 SU	500	-	520	SEMIPACK 3	Forced-air cooled	P16/200	yes	
SKS 545N W3C 470 V16	500	-	545	Capsules	Natural cooled	P11/415	no	
SKS 545N W3C 470 V16 SU	500	-	545	Capsules	Natural cooled	P11/415	no	
SKS 650N W3C 560 V16	500	-	650	Capsules	Natural cooled	U3/515	no	
SKS 650N W3C 560 V16 SU	500	-	650	Capsules	Natural cooled	U3/515	no	
SKS 760F W3C 660 V16	500	-	760	SEMIPACK 5	Forced-air cooled	P16/300	yes	
SKS 760F W3C 660 V16 SU	500	-	760	SEMIPACK 5	Forced-air cooled	P16/300	yes	
SKS 780N W3C 675 V16	500	-	780	Capsules	Natural cooled	U3/515	no	
SKS 780N W3C 675 V16 SU	500	-	780	Capsules	Natural cooled	U3/515	no	
SKS 950F W3C 825 V16	500	-	950	Capsules	Forced-air cooled	P17/130	no	
SKS 950F W3C 825 V16 SU	500	-	950	Capsules	Forced-air cooled	P17/130	no	
SKS 1180F W3C 1020 V16	500	-	1180	Capsules	Forced-air cooled	P17/130	no	
SKS 1180F W3C 1020 V16 SU	500	-	1180	Capsules	Forced-air cooled	P17/130	no	
SKS 1540F W3C 1335 V16	500	-	1540	Capsules	Forced-air cooled	P18/180	no	
SKS 1540F W3C 1335 V16 SU	500	-	1540	Capsules	Forced-air cooled	P18/180	no	
SKS 2150F W3C 1860 V16	500	-	2150	Capsules	Forced-air cooled	N4/250	no	
SKS 2150F W3C 1860 V16 ZU	500	-	2150	Capsules	Forced-air cooled	N4/250	no	

Systems
Most Compact Power Electronics System for Utility Vehicles

SEMIKRON's inverter systems are already fully equipped with current sensors, IGBT drivers, DC link capacitors and a fast processor (DSP).

The systems are designed to operate with supply voltages of 24V up to 800V and with output power ratings of up to 250 kVA.

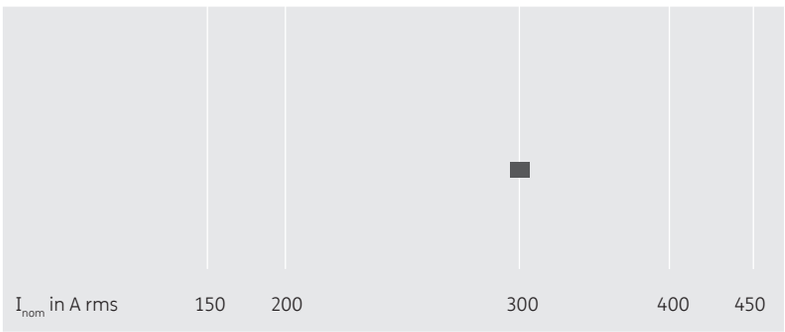
For detailed information please refer data sheets.

Further information:
www.semikron.com/systems

Systems

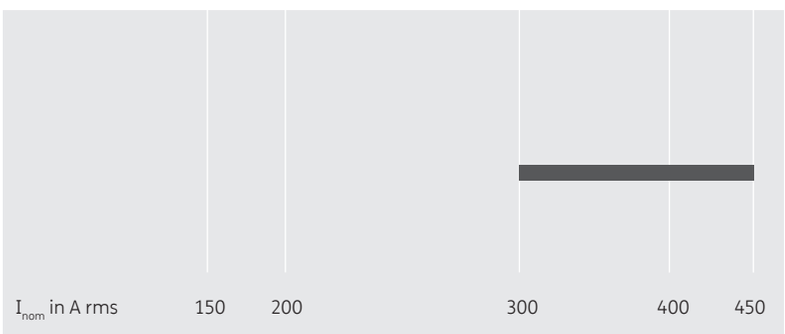
SKAI®2 IGBT Inverter

600V up to 1200V



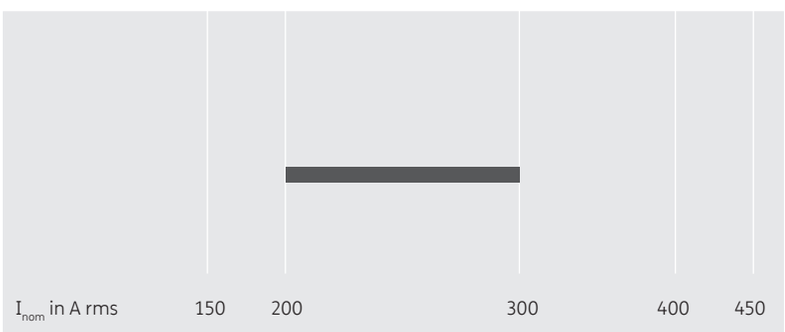
SKAI®2 MOSFET Single Inverter

24V up to 160V

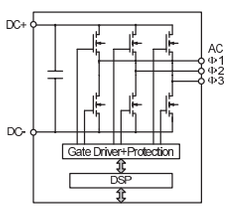
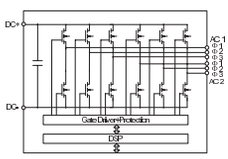
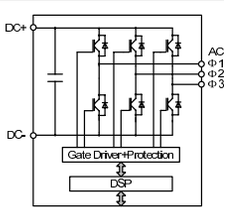
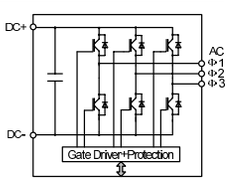


SKAI®2 MOSFET Dual Inverter

24V up to 160V



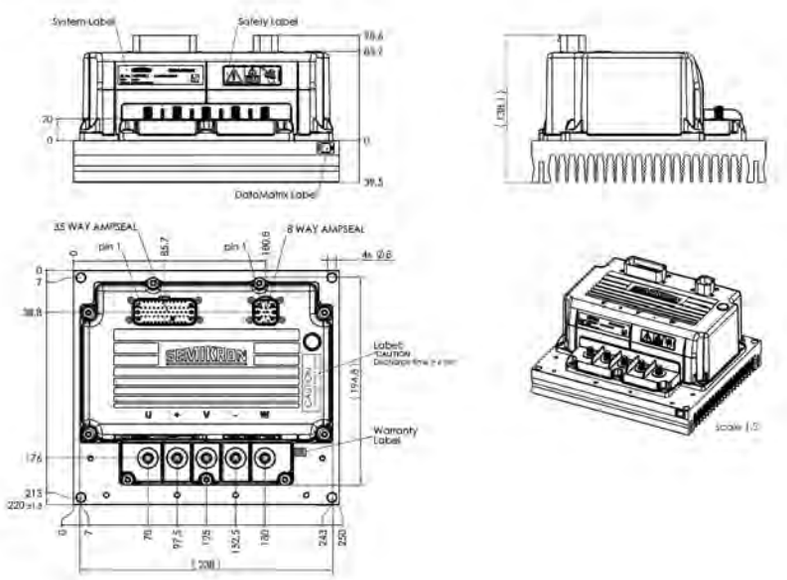
Systems / SKAI2

Type	$V_{battery\ (max)}$ V	I_{nom} A_{rms}	Topology	Cooling	DSP	Case	Circuit
MOSFET - Three-phase inverter							
SKAI 60 A2 MD10-P	72	365	3-Phase	Baseplate	Yes	3	
SKAI 70 A2 MD15-W	115	450	3-Phase	Liquid	Yes	2	
SKAI 50 A2 MD20-L	160	300	3-Phase	Forced Air	Yes	1	
SKAI 50 A2 MD20-W	160	350	3-Phase	Liquid	Yes	2	
SKAI 70 A2 MM15-L	115	250	Dual 3-Phase	Forced Air	Yes	4	
SKAI 70 A2 MM15-P	115	250	Dual 3-Phase	Baseplate	Yes	6	
SKAI 70 A2 MM15-W	115	300	Dual 3-Phase	Liquid	Yes	5	
SKAI 50 A2 MM20-L	160	200	Dual 3-Phase	Forced Air	Yes	4	
SKAI 50 A2 MM20-W	160	250	Dual 3-Phase	Liquid	Yes	5	
IGBT - Three-phase inverter							
SKAI 90 A2 GD06-WCI	450	300	3-Phase	Liquid	Yes	7	
SKAI 45 A2 GD12-WCI	800	300	3-Phase	Liquid	Yes	7	
SKAI 90 A2 GD06-WDI	450	300	3-Phase	Liquid	No	7	
SKAI 45 A2 GD12-WDI	800	300	3-Phase	Liquid	No	7	

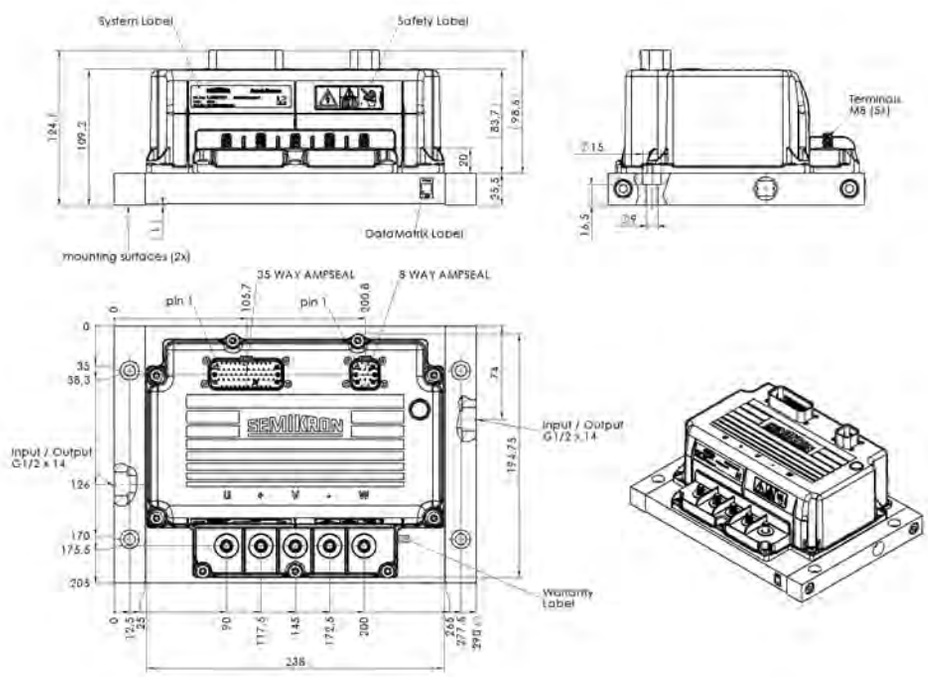
Systems / SKAI2

Cases

Case 1



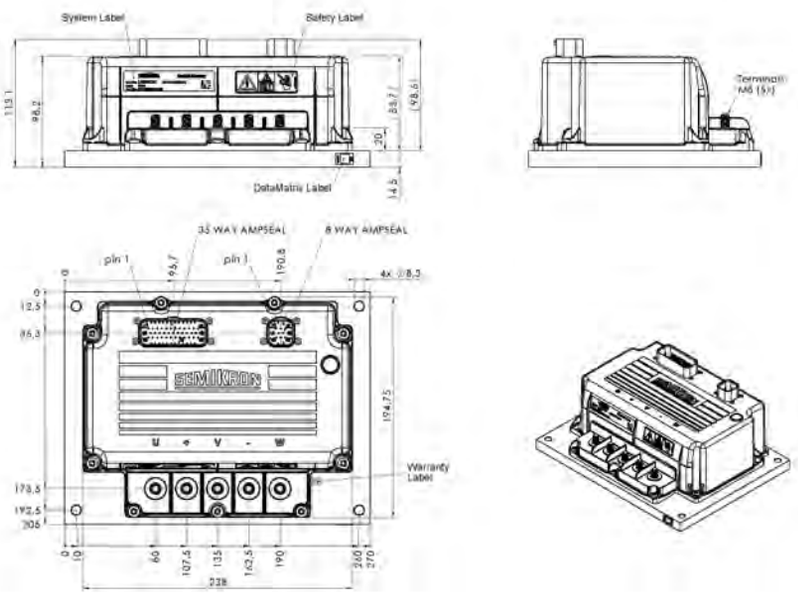
Case 2



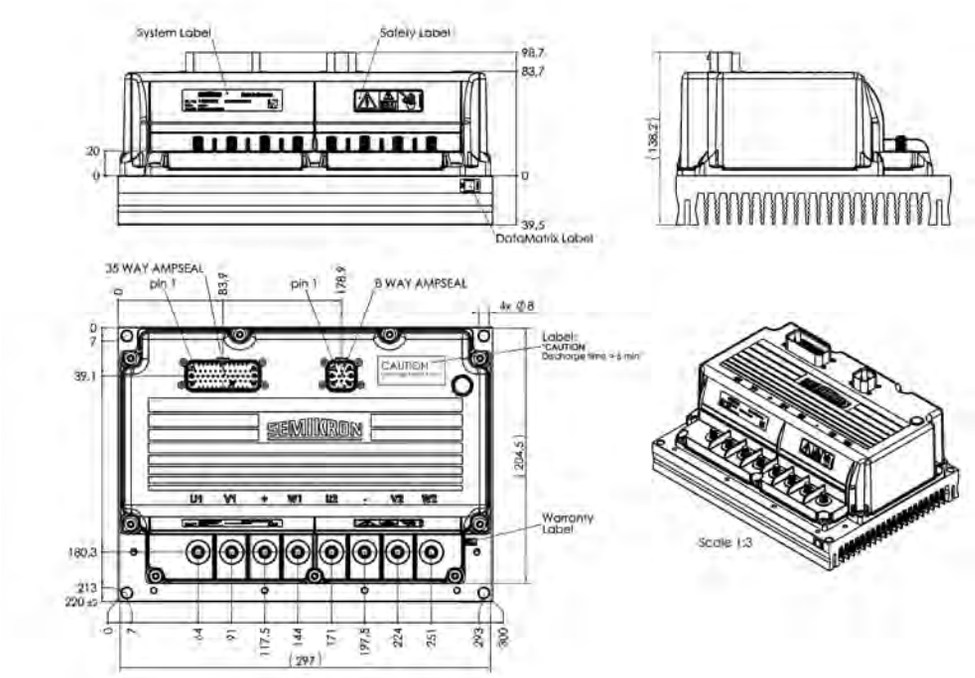
Dimensions in mm

Cases

Case 3



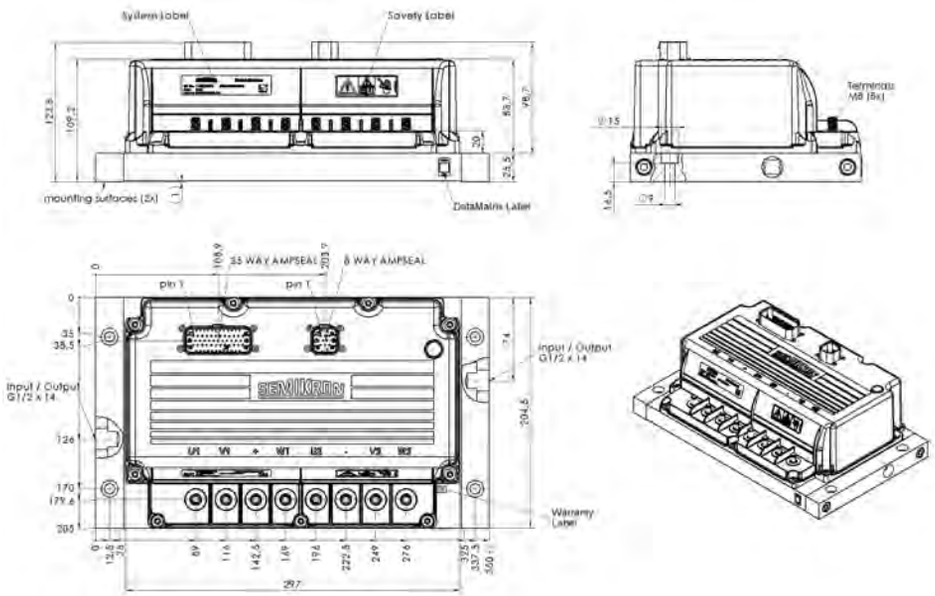
Case 4



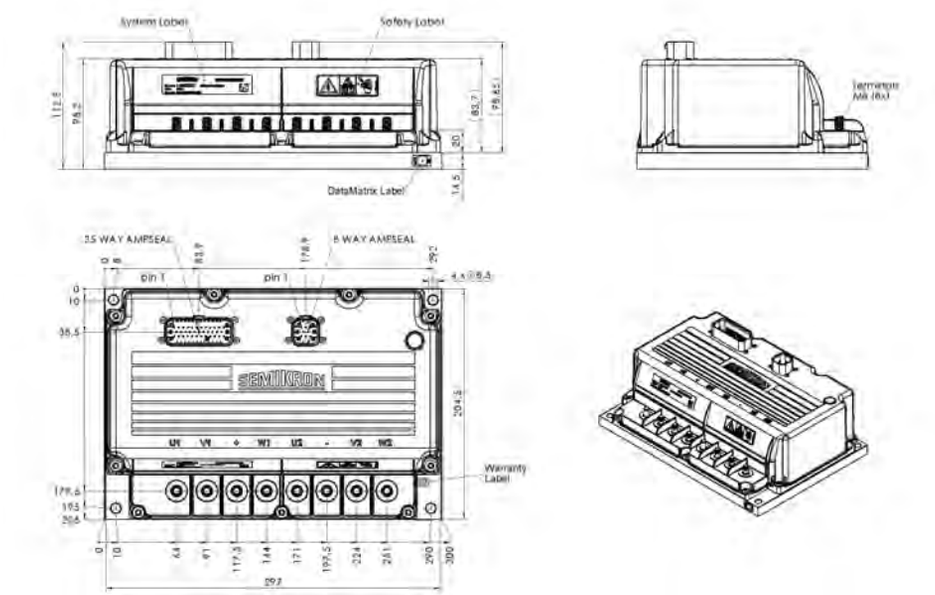
Dimensions in mm

Cases

Case 5



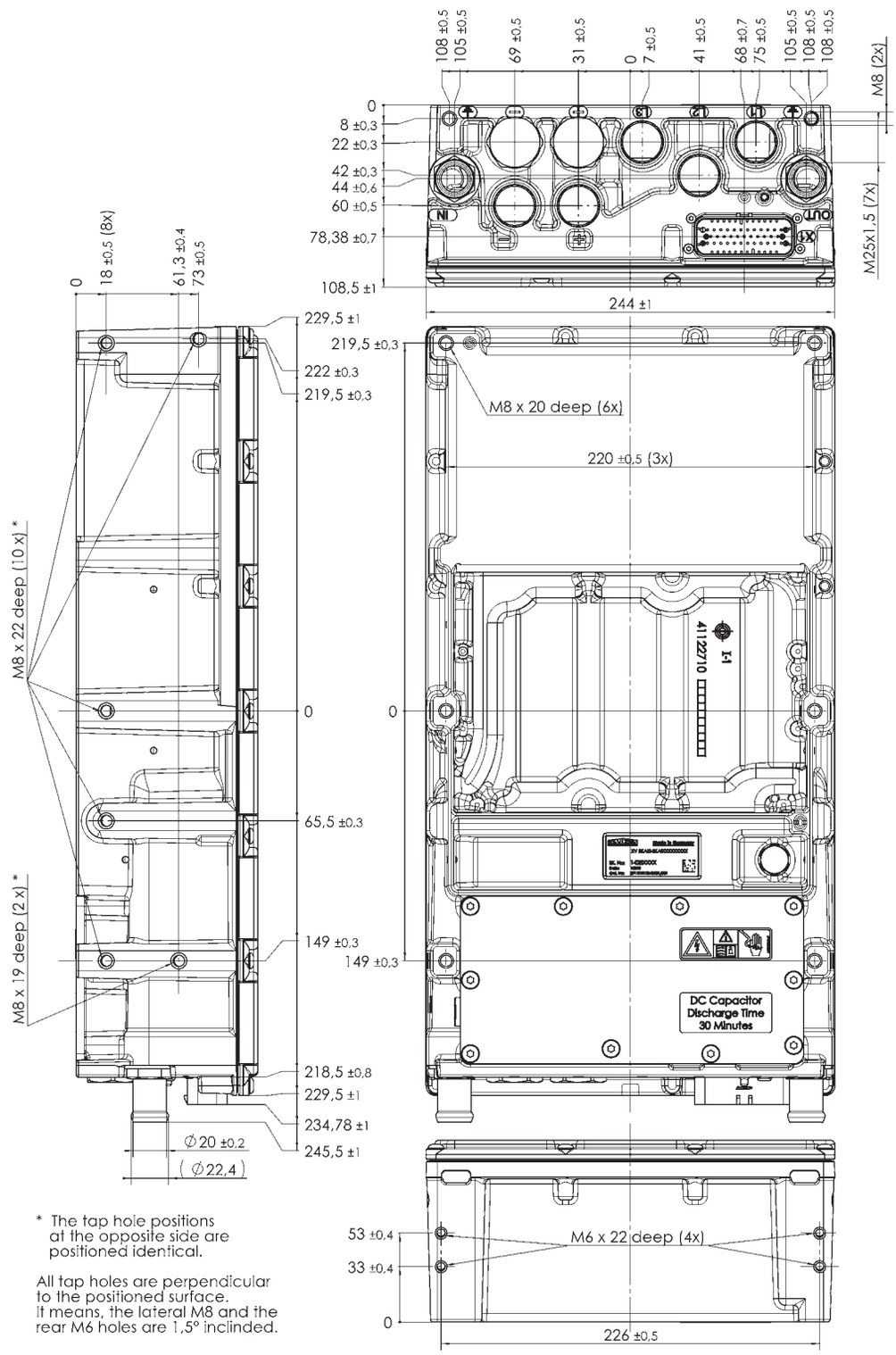
Case 6



Dimensions in mm

Cases

Case 7



Dimensions in mm

Discretes
Chips / Diodes / Thyristors

Chips – CAL (Controlled Axial Lifetime) freewheeling diodes are available in 600V / 650V, 1200V, and 1700V voltage classes with current ratings up to 200A. Depending on the target application's frequency, variants with custom designed switching properties are available. Rectifier diodes and thyristors are designed for the 1600V voltage class, covering a wide range of current ratings up to 770A, equivalent to a die size of more than 500 mm^2. Variable configurations of the thyristor gate (corner vs. center gate) enable an optimized bond layout in the respective target design on the customer side. All chips are used throughout SEMIKRON's module and system range which means a proven history of outstanding performance and reliability. They are compatible to various joint and assembly techniques. Customers may benefit from the vast application knowledge of the SEMIKRON engineering team.

Discretes – the discrete components of SEMIKRON offer a wide variety of packaging technologies, including axial epoxy diodes, stud screw fit diodes, stud screw fit thyristors, capsule diodes and thyristors.
The line offers standard rectifiers with current ratings up to 6000A, fast rectifiers up to 140A, avalanche rectifiers and high voltage rectification up to 5000V, rectifier bridges for single phase and 3-phase (leaded, fast-on and with screw terminals) and phase control thyristors up to 1200A.

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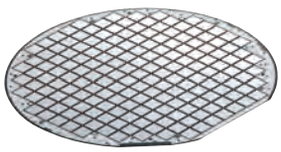
For detailed information
please refer data sheets.

Further information:
www.semikron.com/chips
www.semikron.com/discretes

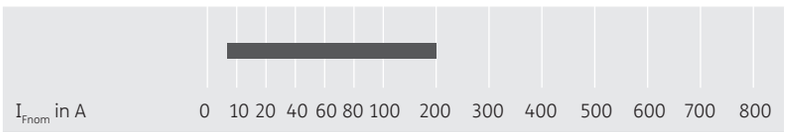
Discretes

Chips SEMICELL

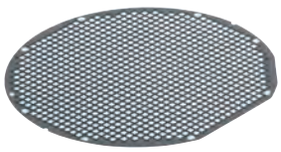
Freewheling Diode CAL



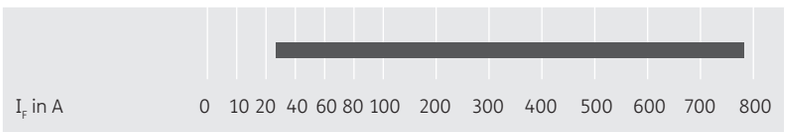
600V up to 1700V



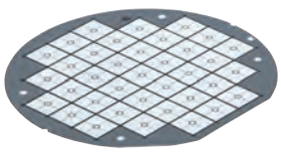
Rectifier Diode



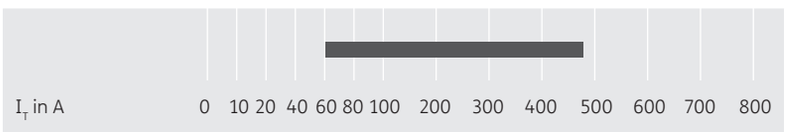
1600V



Thyristor



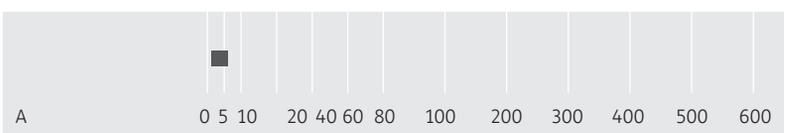
1600V



Discrete Diodes

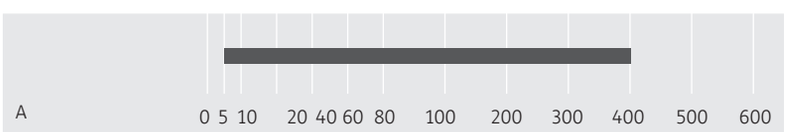
Leaded

100V up to 2000V



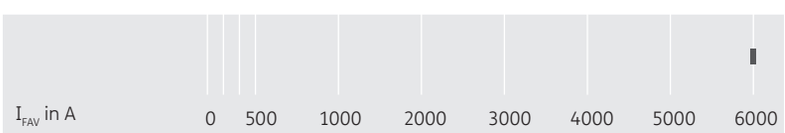
Stud screw fit

400V up to 5000V



Capsule

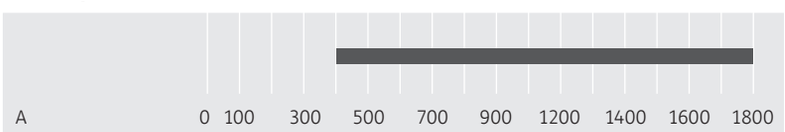
200V up to 600V



Discrete Thyristors

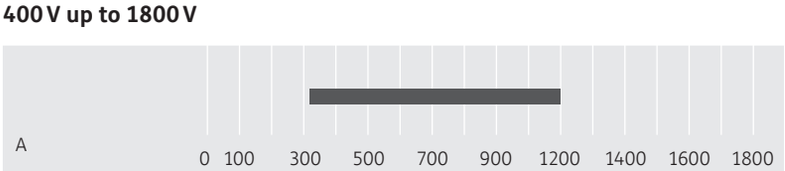
Stud screw fit

400 V up to 1800 V



Capsule

400 V up to 1800 V



Type	V_{RRM} V	I_F @T_j=150°C A	I_{FSM} @T_j=150°C 10ms A	V_F @T_j=25°C V	I_F @ V_F T_j=25°C A	Q_{rr} @T_j=125°C µC
600V - Freewheeling Diodes CAL I3 Fast						
SKCD 06 C 060 I3	600	15	80	1.35	8	1
SKCD 09 C 060 I3	600	20	100	1.35	13	1.46
SKCD 14 C 060 I3	600	28	180	1.35	23	1.85
SKCD 18 C 060 I3	600	30	200	1.35	25	1.98
SKCD 31 C 060 I3	600	50	440	1.35	50	3.3
SKCD 47 C 060 I3	600	80	720	1.35	85	6.2
SKCD 61 C 060 I3	600	100	1000	1.35	110	8.7
SKCD 81 C 060 I3	600	150	1260	1.35	155	11.5
SKCD 121 C 060 I3	600	210	2100	1.35	245	18

Type	V_{RRM} V	I_F @T_j=175°C A	I_{FSM} @T_j=150°C 10ms A	V_F @T_j=25°C V	I_F @ V_F T_j=25°C A	Q_{rr} @T_j=150°C µC
600V - Freewheeling Diodes CAL High Density						
SKCD 04 C 060 I HD	600	10	65	1.23	4.7	1.3
SKCD 06 C 060 I HD	600	20	95	1.23	8	1.42
SKCD 09 C 060 I HD	600	30	160	1.23	13	2.4
SKCD 16 C 060 I HD	600	50	320	1.23	25	3.87
SKCD 24 C 060 I HD	600	75	395	1.23	41	6
SKCD 42 C 060 I HD	600	100	810	1.23	75	11.1
SKCD 61 C 060 I HD	600	150	1080	1.23	112	15.75
SKCD 81 C 060 I HD	600	200	1310	1.23	152	19.69

Type	V_{RRM} V	I_F @T_j=175°C A	I_{FSM} @T_j=150°C 10ms A	V_F @T_j=25°C V	I_F @ V_F T_j=25°C A	E_{rr} @T_j=150°C mJ
650V - Freewheeling Diodes CAL I4 Fast						
SKCD 24 C 065 I4F	650	50	460	1.30	39	1.1
SKCD 42 C 065 I4F	650	100	680	1.30	73	2.2
SKCD 61 C 065 I4F	650	150	1100	1.30	109	3.8
SKCD 81 C 065 I4F	650	200	1290	1.30	148	5.8

Type	V_{RRM} V	I_F @T_j=150°C A	I_{FSM} @T_j=150°C 10ms A	V_F @T_j=25°C V	I_F @ V_F T_j=25°C A	Q_{rr} @T_j=125°C µC
1200V - Freewheeling Diodes CAL I3 Fast						
SKCD 11 C 120 I3	1200	15	130	2.00	10	1.6
SKCD 18 C 120 I3	1200	25	200	2.00	15	3
SKCD 23 C 120 I3R	1200	30	270	2.00	25	3.8
SKCD 31 C 120 I3	1200	40	370	2.00	35	5.3
SKCD 47 C 120 I3	1200	55	600	2.00	55	7.5
SKCD 61 C 120 I3	1200	75	800	2.00	70	11
SKCD 81 C 120 I3	1200	100	1100	2.00	100	16.5
SKCD 121 C 120 I3	1200	150	1600	2.00	155	24
1200V - Freewheeling Diodes CAL High Density						
SKCD 06 C 120 I HD	1200	6	60	1.50	5	1.24
SKCD 11 C 120 I HD	1200	15	140	1.50	12	2.9
SKCD 14 C 120 I HD	1200	20	170	1.50	15	4
SKCD 18 C 120 I HD	1200	25	200	1.50	20	5
SKCD 31 C 120 I HD	1200	55	480	1.50	45	11
SKCD 47 C 120 I HD	1200	85	700	1.50	70	17.4
SKCD 61 C 120 I HD	1200	115	900	1.50	90	24.5
SKCD 81 C 120 I HD	1200	160	1150	1.50	130	34.4

Type	V_{RRM} V	I_F @T_j=175°C A	I_{FSM} @T_j=150°C 10ms A	V_F @T_j=25°C V	I_F @ V_F T_j=25°C A	E_{rr} @T_j=150°C mJ
1200V - Freewheeling Diodes CAL I4 Fast						
SKCD 08 C 120 I4F	1200	8	36	2.33	8	0.4
SKCD 11 C 120 I4F	1200	15	65	2.38	15	0.6
SKCD 16 C 120 I4F	1200	25	100	2.41	25	1
SKCD 22 C 120 I4F	1200	35	170	2.30	35	1.6
SKCD 31 C 120 I4F	1200	50	270	2.22	50	2.6
SKCD 46 C 120 I4F	1200	75	430	2.17	75	4.2
SKCD 46 C 120 I4F R	1200	75	430	2.17	75	4.2
SKCD 53 C 120 I4F	1200	100	550	2.20	100	5.4
SKCD 81 C 120 I4F	1200	150	900	2.14	150	8.7

Type	V_{RRM} V	I_F @T_j=150°C A	I_{FSM} @T_j=150°C 10ms A	V_F @T_j=25°C V	I_F @ V_F T_j=25°C A	Q_{rr} @T_j=125°C µC
1700V - Freewheeling Diodes CAL Fast						
SKCD 47 C 170 I	1700	55	550	2.05	55	15
SKCD 61 C 170 I	1700	75	720	2.05	75	24
1700V - Freewheeling Diodes CAL High Density						
SKCD 47 C 170 I HD	1700	75	650	1.73	75	25
SKCD 61 C 170 I HD	1700	100	710	1.73	100	35
SKCD 81 C 170 I HD	1700	150	1070	1.73	150	53.5

Type	V_{RRM} V	I_F @T_j=175°C A	I_{FSM} @T_j=150°C 10ms A	V_F @T_j=25°C V	I_F @ V_F T_j=25°C A	E_{rr} @T_j=150°C mJ
1700V - Freewheeling Diodes CAL I4 Fast						
SKCD 28 C 170 I4F	1700	40	280	1.71	23	12
SKCD 46 C 170 I4F	1700	75	450	1.71	43	17
SKCD 56 C 170 I4F	1700	100	580	1.71	57	22.2
SKCD 81 C 170 I4F	1700	150	860	1.71	89	31.5

Type	V_{RRM} V	$I_{F(DC)}$ @T_j=150°C A	I_{FSM} @T_j=150°C 10ms A	V_F @T_j=25°C V	I_F @ V_F T_j=25°C A	t_{rr} @T_j=25°C µs
1600V - Rectifier						
SKR 3,5 Qu bond[4)]	1600	25	200	1	8	20
SKR 4,2 Qu bond[4)]	1600	35	270	1	13	20
SKR 4,8 Qu bond[4)]	1600	45	350	1	18	21
SKR 5,6 Qu bond[4)]	1600	50	490	1	25	22
SKR 6,2 Qu bond[4)]	1600	65	600	1	33	22
SKR 7,0 Qu bond[4)]	1600	75	890	1	45	23
SKR 8,9 Qu bond[4)]	1600	140	1380	1	77	26
SKR 10,3 Qu bond[4)]	1600	170	1650	1	106	29
SKR 12,4 Qu bond[4)]	1600	235	2300	1	160	34
SKR 15,2 Qu bond[4)]	1600	330	3800	1	245	42
SKR 16,3 x 18,2 Qu bond[4)]	1600	365	5100	1	320	49
SKR 18,2 Qu bond[4)]	1600	380	5500	1	360	53
SKR 22,4 Qu bond[4)]	1600	770	9450	1	550	72

Footnotes: 4) solderable top metallization on request

Type	V_{RRM}, V_{DRM} V	$I_{T(DC)}$ @ T_j=130°C A	I_{TSM} @T_j=130°C 10ms A	V_{GT} @T_j=25°C V	I_{GT} @T_j=25°C A	t_q @T_j=130°C µs
1600V - Thyristor Central Gate						
SKT 8,9 Qu ZG bond[4)]	1600	105	1000	1.98	100	150
SKT 10,3 Qu ZG bond[4)]	1600	125	1250	1.98	100	150
SKT 12,4 Qu ZG bond[4)]	1600	165	1800	1.98	100	150
SKT 13,5 Qu ZG bond[4)]	1600	185	2300	1.98	100	135
SKT 15,2 Qu ZG bond[4)]	1600	215	3200	1.98	100	150
SKT 18,2 Qu ZG bond[4)]	1600	250	5000	1.98	100	150
SKT 24,3 Qu ZG bond SG [4)]	1600	480	8200	1.98	150	150
1600V - Thyristor Corner Gate						
SKT 5,6 Qu RG bond[4)]	1600	60	280	1.98	100	150
SKT 7,0 Qu RG bond[4)]	1600	75	450	1.98	100	150
SKT 8,9 Qu RG bond[4)]	1600	105	1000	1.98	100	150
SKT 10,3 Qu RG bond[4)]	1600	125	1250	1.98	100	150
SKT 12,4 Qu RG bond[4)]	1600	165	1800	1.98	100	150

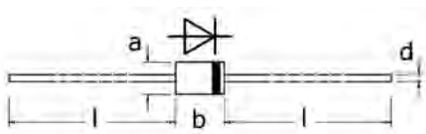
Footnotes: 4) solderable top metallization on request

Discretes / Diodes / Leaded

Type	Voltage (V)	Current (A)	T_C	I_{FSM}@T_j=25°C	V_F	$R_{th(j-c)}$ per chip	T_j	Case	Topology Picture
	V	A	°C	A	V	K/W	°C		
Standard recovery									
SK 1	1000-1600	1.45	60	60	1.50	85	-40 ... +150	E33	
SKN 2,5	400-1600	2.5	45	180	1.20	55	-40 ... +180	E5	
SK 3	1000-1600	3.3	85	180	1.20	60	-40 ... +150	E34	
SKN 5	200-1600	5	45	190	1.25	25	-40 ... +180	E6	
Avalanche									
SKa1	1300-1700	1.45	60	60	1.50	85	-40 ... +150	E33	
SKNa2	1300-1700	2	45	180	1.20	55	-40 ... +150	E5	
SKa3	1300-1700	3.3	90	180	1.20	60	-40 ... +150	E34	
SKNa4	1300-1700	3.7	35	190	1.20	25	-40 ... +150	E6	

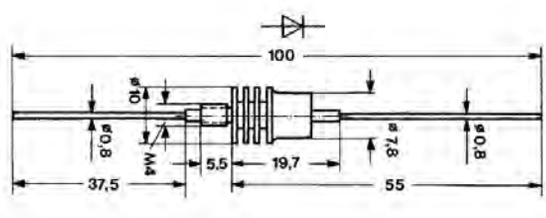
Cases

E33 / E33

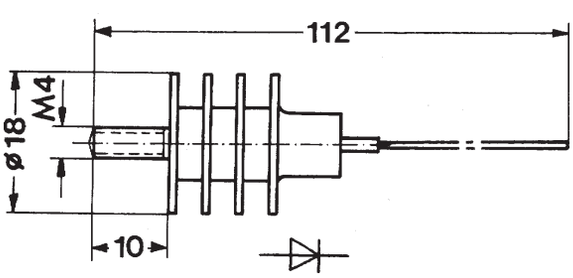


Cases	a	b	l	d
E 33	4,5	7	28	0,75
E 34	6	9	27	1,18

E5

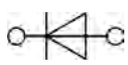
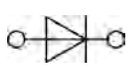
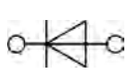
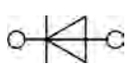


E6



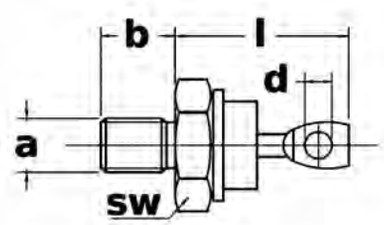
Dimensions in mm

Discretes / Diodes / Stud Screw Fit

Type	Voltage (V)	Current (A)	T_C	I_{FSM}@T_j=25°C	V_F	$R_{th(j-c)}$ per chip	T_j	Case	Topology Picture
	V	A	°C	A	V	K/W	°C		
Standard recovery									
SKN 20	400-1600	20	125	375	1.55	2	-40 ... +180	E9	
SKN 26	400-1600	25	100	375	1.55	2	-40 ... +180	E8	
SKN 45	400-1600	45	125	700	1.60	0.85	-40 ... +180	E12	
SKN 70	400-1600	70	125	1150	1.50	0.55	-40 ... +180	E12	
SKN 71	400-1600	70	125	1150	1.50	0.55	-40 ... +180	E11	
SKN 100	400-1800	100	120	1750	1.55	0.45	-40 ... +180	E13	
SKN 130	400-1800	130	125	2500	1.50	0.35	-40 ... +180	E14	
SKN 240	400-1800	240	125	6000	1.40	0.2	-40 ... +180	E15	
SKN 320	400-1600	320	125	9000	1.35	0.16	-40 ... +180	E16	
SKN 400	1800-3000	400	100	9000	1.45	0.11	-40 ... +160	E17	
SKR 20	400-1600	20	125	375	1.55	2	-40 ... +180	E9	
SKR 26	400-1600	25	100	375	1.55	2	-40 ... +180	E8	
SKR 45	400-1600	45	125	700	1.60	0.85	-40 ... +180	E12	
SKR 70	400-1600	70	125	1150	1.50	0.55	-40 ... +180	E12	
SKR 71	400-1600	70	125	1150	1.50	0.55	-40 ... +180	E11	
SKR 100	400-1800	100	120	1750	1.55	0.45	-40 ... +180	E13	
SKR 130	400-1800	130	125	2500	1.50	0.35	-40 ... +180	E14	
SKR 240	400-1800	240	125	6000	1.40	0.2	-40 ... +180	E15	
SKR 320	400-1600	320	125	9000	1.35	0.16	-40 ... +180	E16	
Fast recovery									
SKN 2F17	400-1000	17	113	450	2.15	1.2	-40 ... +150	E7	
SKN 3F20	800-1200	20	104	375	2.15	1.2	-40 ... +150	E7	
SKN 2F50	400-1000	50	105	1100	1.80	0.5	-40 ... +150	E10	
SKN 60F	1200-1700	60	100	1400	1.75	0.5	-40 ... +150	E10	
SKN 135F	800-1200	135	100	2500	1.95	0.2	-40 ... +150	E14	
SKN 136F	800-1200	135	100	2500	1.95	0.2	-40 ... +150	E31	
SKN 140F	1200-1700	140	100	2500	1.80	0.2	-40 ... +150	E14	
SKN 141F	1200-1700	140	100	2500	1.80	0.2	-40 ... +150	E31	
SKR 2F17	400-1000	17	113	450	2.15	1.2	-40 ... +150	E7	
SKR 3F20	800-1200	20	104	375	2.15	1.2	-40 ... +150	E7	
SKR 2F50	400-1000	50	95	800	1.80	0.65	-40 ... +150	E10	
SKR 60F	1200-1700	60	100	1400	1.75	0.5	-40 ... +150	E10	
SKR 135F	800-1200	135	100	2500	1.95	0.2	-40 ... +150	E14	
SKR 136F	800-1200	135	100	2500	1.95	0.2	-40 ... +150	E31	
SKR 140F	1200-1700	140	100	2500	1.80	0.2	-40 ... +150	E14	
SKR 141F	1200-1700	140	100	2500	1.80	0.2	-40 ... +150	E31	
Avalanche									
SKNa 20	1300-1700	20	93	375	1.55	2	-40 ... +150	E9	
SKNa 22	3600-5000	25	104	450	1.95	1	-40 ... +160	E42	
SKNa 47	3600-5000	45	106	700	1.80	0.6	-40 ... +160	E43	
SKNa 102	3600-5000	125	80	1900	1.90	0.3	-40 ... +160	E44	
SKNa 202	3600-5000	200	80	3800	1.95	0.2	-40 ... +160	E45	
SKNa 402	3600-5000	400	88	7800	1.85	0.1	-40 ... +160	E46	

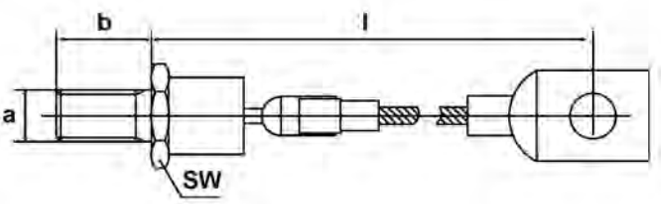
Cases

E7 / E8 / E10 / E11 / E31



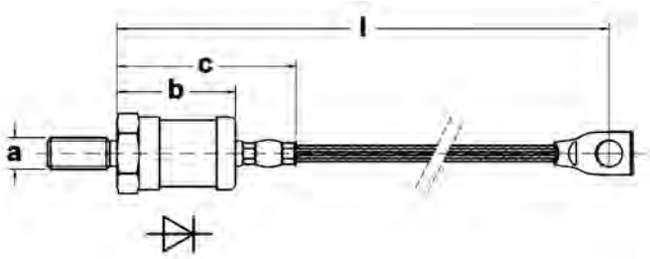
Cases	a	b	d	l	sw
E 7	M 5	11	2,7	22	11
E 8	M 6	11	2,7	21,5	11
E 10	M 6	11	4	25	17
E 11	M 8	11	4	25,5	17
E 31	M 12	18	8,4	55	24

E9 / E12 ... E17



Cases	a	b	l	SW
E 9	M 6	11	130	11
E 12	M 8	11	135	17
E 13	M 12	18	165	24
E 14	M 12	18	165	24
E 15	M 16 x 1,5	20	190	32
E 16, E 17	M 24 x 1,5	20	230	41

E 42 / E 43 / E 44 / E 45 / E 46

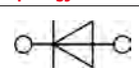


Cases	a	b	c	l
E 42	M 6	28.5	45	150
E 43	M 8	32	54	160
E 44	M 12	38	57	185
E 45	M 16 x 1,5	48	70	205
E 46	M 24 x 1,5	54	82	250

Dimensions in mm

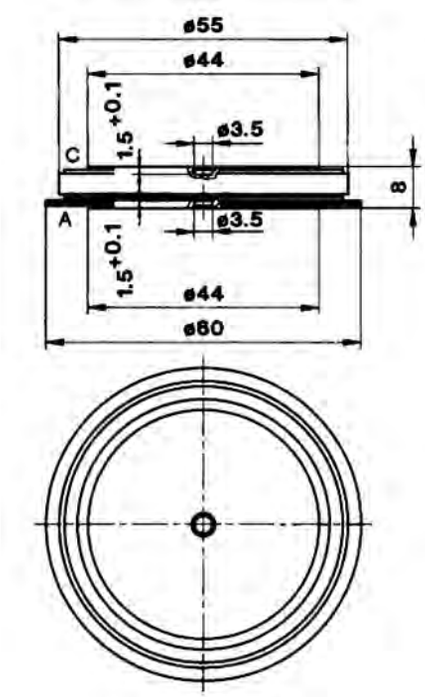
Discretes / Diodes / Capsules

Type

	Voltage (V)	Current (A)	T_C	I_{FSM}@T_j=25°C	V_F	$R_{th(j-c)}$ per chip	T_j	Case	Topology Picture
	V	A	°C	A	V	K/W	°C		
SKN 6000	200-600	6000	85	60000	1.30	0.012	-40 ... +180	E35	

Cases

E35



Dimensions in mm

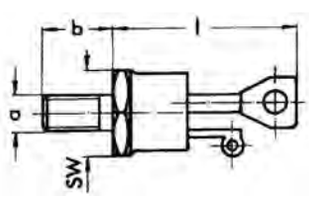
Discretes / Thyristors / Stud Screw Fit

Type

	Voltage (V)	Current (A)	T_C	I_{TSM}@T_j=25°C	V_T @ I_T, T_j=25°C	I_T@V_T	$R_{th(j-c)}$ per chip	T_j	Case	Topology Picture
	V	A	°C	A	V	A	K/W	°C		
SKT 10	600-1200	10	111	250	1.6	30	1.3	-40 ... +130	B1	
SKT 16	400-1800	16	104	370	2.4	75	0.9	-40 ... +130	B2	
SKT 24	400-1800	24	95	450	1.9	75	0.9	-40 ... +130	B2	
SKT 40	400-1800	40	80	700	1.95	120	0.66	-40 ... +130	B3	
SKT 50	600-1800	50	78	1050	1.8	120	0.6	-40 ... +130	B3	
SKT 55	400-1800	55	92	1300	1.8	200	0.47	-40 ... +130	B5	
SKT 80	600-1800	80	85	1700	2.25	300	0.28	-40 ... +130	B5	
SKT 100	400-1800	100	85	2000	1.75	300	0.28	-40 ... +130	B5	
SKT 130	400-1600	130	85	3500	2.25	500	0.18	-40 ... +130	B6	
SKT 160	400-1600	160	84	4300	1.75	500	0.18	-40 ... +130	B6	
SKT 250	400-1600	250	85	7000	1.65	800	0.123	-40 ... +130	B7	
SKT 300	400-1600	300	93	11000	1.45	800	0.096	-40 ... +130	B7	

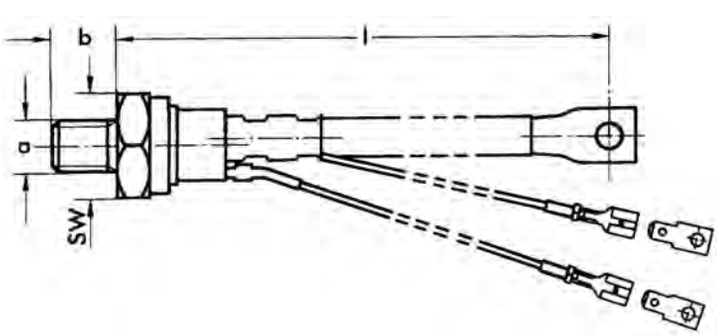
Cases

B1 ... B3



Cases	a	b	l	SW
B 1	M 5	11	20,3	11
B 2	M 6	11	30	14
B 3	M 8	11	33,5	17

B5 ... B7



Cases	a	b	l	SW
B 5	M 12	18	160	24
B 6	M 16 x 1,5	20	190	32
B 7	M 24 x 1,5	20	230	41

Dimensions in mm

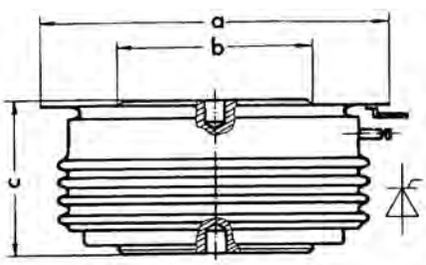
Discretes / Thyristor / Capsules

Type

	Voltage (V)	Current (A)	T_C	I_{TSM}@T_j=25°C	V_T @ I_T, T_j=25°C	I_T@V_T	$R_{th(j-c)}$ per chip	T_j	Case	Topology Picture
	V	A	°C	A	V	A	K/W	°C		
SKT 340	1200-1800	340	82	5700	1.9	1000	0.072	-40 ... +125	B8	
SKT 493	400-1800	490	80	8000	2.1	1500	0.047	-40 ... +125	B11a	
SKT 551	1200-1800	550	85	9000	1.65	1500	0.047	-40 ... +125	B11	
SKT 553	400-1800	550	85	9000	1.65	1500	0.047	-40 ... +125	B11a	
SKT 760	1200-1800	760	80	15000	1.65	2400	0.04	-40 ... +125	B10	
SKT 1200	1200-1800	1200	85	30000	1.65	3600	0.021	-40 ... +125	B14	

Cases

B8 ... B14



Cases	a	b	c
B 8	41	19	14
B 10	57,3	34	26
B 11	41	25	14
B 11a	41	25	14
B 14	73	47	26

Dimensions in mm

Accessories
Heatsinks / Fans

Heatsinks – SEMIKRON offers a broad range of different heat sinks including forced and natural air cooling. The heatsinks are available for capsules, insulated base modules or IPMs.

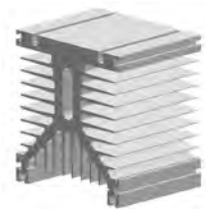
Fans – SEMIKRON offers a broad range of axial, centrifugal and radial fans for different inverter designs.

For detailed information
please refer data sheets.

Further information:
www.semikron.com/heatsinks
www.semikron.com/fans

Heatsinks

Forced air cooled



Natural cooled

Fans

Axial

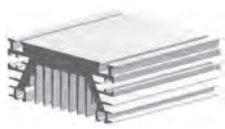
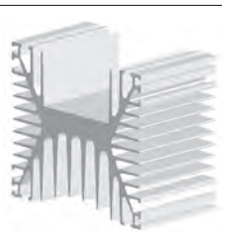
Centrifugal

Radial

Accessories / Heatsinks

Type	Suitable for	R_{thsa} natural cooling K/W	R_{thsa} forced air cooling K/W	Weight kg	Weight kg/m	Produkt Picture
Forced-air cooled						
N 4	Capsules	-	0.04	6.3	25.1	
P 11	Capsules	0.2	0.05	3.8	15	
P 17	Capsules	0.45	0.12	1.5	10.6	
P 18	Capsules	0.37	0.08	1.6	12.2	
P 8[7)]	Capsules	0.35	0.07	1.7	9.6	
P 8,5[7)]	Capsules	0.3	0.08	1.5	9.5	
P 9[7)]	Capsules	0.21	0.06	4.1	17.8	
U 3	Capsules	0.14	0.06	7.1	23.7	
P 21[7)]	Isolated base modules	-	0.02	4.1	40.8	

Accessories / Heatsinks

Type	Suitable for	R_{thsa} natural cooling K/W	R_{thsa} forced air cooling K/W	Weight kg	Weight kg/m	Produkt Picture
Forced-air cooled						
R 4A	Isolated base modules	1.4	0.38	0.6	-	
P 16	SKiiP or modules	-	0.06	1.3	23.5	
Px 308[7]	SKiiP or modules	-	0.013	2	12.2	
P 1	Studs or modules	0.7	0.4	0.8	11.3	
P 3	Isolated base modules	0.45	0.14	0.7	17.6	
Natural cooled						
P 4[7]	Stud device	0.27	-	4.1	20.6	

Footnotes: 7) Non standard item, available on request only, typical minimum batch quantities of 60 pieces will apply

Accessories / Fans

Type	V_{in}	f	V_{air}/t	P_{max}	T_{Amax}	Weight	Noise	Produkt Picture
	V	Hz	m³/h	W	°C	kg	dB	
Axial Fans								
SKF 3-230-01	230	50 / 60	150 / 174	15 / 14	70	0.55	37 / 41	
SKF RE-024-01	24	-	500	90	75	0.43	76	
SKF SR-024-01	24	-	56	3.6	70	0.085	43	
SKF 9-230-01	230	50 / 60	375 / 440	24 / 26	70	1	54 / 60	
SKF 8-230-01	230	50 / 60	325 / 380	45 / 39	50 / 70	1.1	49 / 53	
Centrifugal Fans								
SKF 17A-230-11	230	50 / 60	850 / 930	110 / 120	70	2	74	
SKF 17B-230-11	230	50 / 60	1080 / 1200	230	70	2.8	73 / 75	
Radial Fans								
SKF 16A-230-01	230	50 / 60	630 / 590	130 / 140	60 / 50	3.3	59	
SKF 16J-230-01	230	60	920	320	60	4.4	74	
SKF 16O-230-02	230	50	1150	300	50	4.2	63	
SKF 16B-230-01	230	50 / 60	640 / 580	167 / 191	70 / 50	3.75	58 / 57	
SKF 16A-230-11	230	50 / 60	630 / 590	130 / 140	60 / 50	3.3	59	

Service & Contact

Services

Contact

Application Manual

Available in German, English and Chinese

Power Semiconductors

IGBT´s and MOSFET´s integrated in power modules are the key components of power electronic circuits today and are continuously finding their way into new fields of application. This goes hand in hand with the ever increasing call for line rectifier diodes and thyristors as a cost effective way of connecting the circuits to the power grid. The aim of the application manual is to provide users with support in selecting and using such devices.

The manual contains basic background knowledge on semiconductors in order to enable a better understanding of application possibilities and limits. More in-depth explanations are given on packaging and assembly technologies, because of the major influence they have on module properties and limitations in field applications. Statements on reliability data, life cycle analyses and key test processes round off the chapter. The Application Manual also explains the structure of datasheets and provides notes to help users better understand datasheet parameters.

The Application Manual contains detailed application-related information on electrical configuration under important operating conditions, driver and protection elements for semiconductors; thermal dimensioning and cooling, tips on parallel and series connection, assembly tips for optimized power layouts with regard to parasitic elements and the requirements arising from specific ambient conditions.

This book is written for users and provides help with component selection and design-in work. It couples a vast wealth of experience with detailed practical knowledge, the result being a vast pool of information which up till now has been spread across various individual articles or in the minds of experts only.

Further information:
www.semikron.com/application-manual

„465 pages of acquired knowledge“

SemiSel

Free support for your converter design

Applications

SemiSel is the SEMIKRON online calculation and simulation tool for losses, temperatures and optimal choice of power electronic components (www.semikron.com). The days when a module was purchased solely on the basis of its nominal current are over. Today, increased product diversity in the field of power semiconductors calls for comparisons beyond the information contained in data sheets. Only a comparison under application-oriented conditions, such as voltage level, switching frequency or cooling conditions, can demonstrate differences in the performance of the devices available. Miniaturisation combined with higher power densities makes it essential to get information about device losses and temperatures to specify requirements for a cooling system at an early state of product development.

Benefits

The risk arising from variations in both component and electrical circuit parameters should be considered in proper circuit design. These facts are only a few of the many points that need to be considered when developing a power electronics system. And this is where efficient support is provided by SemiSel to enable developers to make the right decision. SemiSel is still the most comprehensive free tool of its kind that can be used to investigate different power electronic circuits under different operating conditions.

This programme has been available online since 2001, and it has been continually improved and expanded since its introduction. It provides a good compromise of user-friendliness, applications and speed. The calculation functions range from product proposal for nominal operating conditions to drivers and heat sink specifications and product selections for specific overload conditions and complex calculations, such as complete load cycles that take into account temperature cycling problems.

Further information:
www.semikron.com/semisel

Applications & Technologies

Motor Drives
Converters for all types of electric motors utilized in industry. SEMIKRON power semiconductors help to maximize efficiency in any 2 or 4-quadrant drive or servo.

Wind Energy
With power semiconductors in the converters or in the drives controlling blade pitch, nearly one in every two wind turbines in the world is fitted with SEMIKRON power modules.

Solar Energy
With focus on cost and efficiency in photo voltaic systems, SEMIKRON has products serving the complete spectrum from micro inverters and medium power multi string to Mega Watt central inverters.

Utility Vehicles
Power electronics forms the heart of any electric vehicle. SEMIKRON's solder-free semiconductor modules and systems are particularly well suited to the robust needs of today's vehicles.

Power Quality
PFC, AVC and UPS systems ensure a clean reliable mains supply is kept available to critical applications. SEMIKRON power modules are at the heart of critical power systems.

Power Supplies
In electro technology and medical diagnostics power semiconductors at the mains input facilitate and improve processes and save energy.

Urban Transport Equipment
Electrical transportation applications demand high reliability of the drive systems with their cyclic operating profile and the continuous auxiliary supplies over years of operation.

SKiN® Technology
SKiN technology is free of bond wires and does not use solder or thermal paste.

SKiNTER Technology
The SKiNTER technology utilises a cold-welded silver layer instead of solder between DCB and chip. Hence, the module is solder-free.

SPRING Technology
The SPRiNG technology utilises springs to establish the contacts to the PCB. It is the best choice for fastest assembly and when field reliability in harsh environments is critical.

SKiiP® Technology
SEMIKRON's SKiiP technology utilises spring loaded mechanical and electrical contacts and features a compact and durable module construction.

PRESS-FIT Technology
Alternative concept to Solder Mounting of module and PCB. The solder free solution ensures easy and fast assembly to the PCB in a single step reducing assembly time.

SOLDER Technology
The proven interface for power modules. Solder pins are used in a broad range of applications worldwide offering a robust interface. Solder processes are widely used and easy to implement.

SCREW Technology
The standard interface to the power terminals for medium and high power modules. Easy to use and robust power interface to AC and DC terminals.

Abbreviations

Acronym	English
E_{off}	Energy dissipation during turn-off
E_{on}	Energy dissipation during turn-on
E_{rr}	Energy dissipation during reverse recovery (diode)
f	Operating frequency
f_{max}	Maximum frequency
I_C	Continuous collector current
I_{Cnom}	Nominal collector current
I_D	Direct output current (of a rectifier connection)
I_D	Continuous drain current (MOSFET)
I_F	Forward current (actual value)
I_{FAV}	Mean forward current
I_{FSM}	Surge forward current
I_{GT}	Minimum guaranteed gate trigger current
$I_{outPEAK}$	Output peak current (driver)
$I_{overload}$	Overload current for a specified time
i_T	On-State current (instantaneous value)
I_{TAV}	Mean on-state current
I_{TSM}	Surge on-state curren
$Q_{out/pulse}$	Output charge per pulse (Driver)
Q_{rr}	Reverse recovery charge
$R_{DS(on)}$	Drain-source on-resistance (MOSFET)
r_T	On-state slope resistance, forward slope resistance (Thyristor)

Acronym	English
$R_{th(c-s)}$	Thermal resistance case to heat sink
$R_{th(j-a)}$	Thermal resistance junction to ambient
$R_{th(j-c)}$	Thermal resistance junction to case
$R_{th(j-s)}$	Thermal resistance junction to sink
$R_{th(s-a)}$	Thermal resistance heat sink to ambient
T_c	Case temperature
T_j	Junction temperature
t_q	Circuit commutated turn-off time (thyristor)
T_s	Heatsink temperature
V_{air}/t	Air flow
V_{CE}	Collector-emitter voltage
V_{CEsat}	Collector-emitter saturation voltage
V_{DRM}	Repetitive peak off-state voltage
V_{DS}	Drain-source voltage
V_F	Forward voltage
$V_{G(off)}$	Turn-off gate voltage level (driver)
$V_{G(on)}$	Turn-on gate voltage level (driver)
V_{GT}	Gate trigger voltage
V_{in}	Input voltage
$V_{isol(IO)}$	Isolation test voltage (r.m.s. /1 min.) input-output (driver)
V_{RRM}	Repetitive peak reverse voltage
V_T	On-state voltage (Thyristor)
W	Weight

Note

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