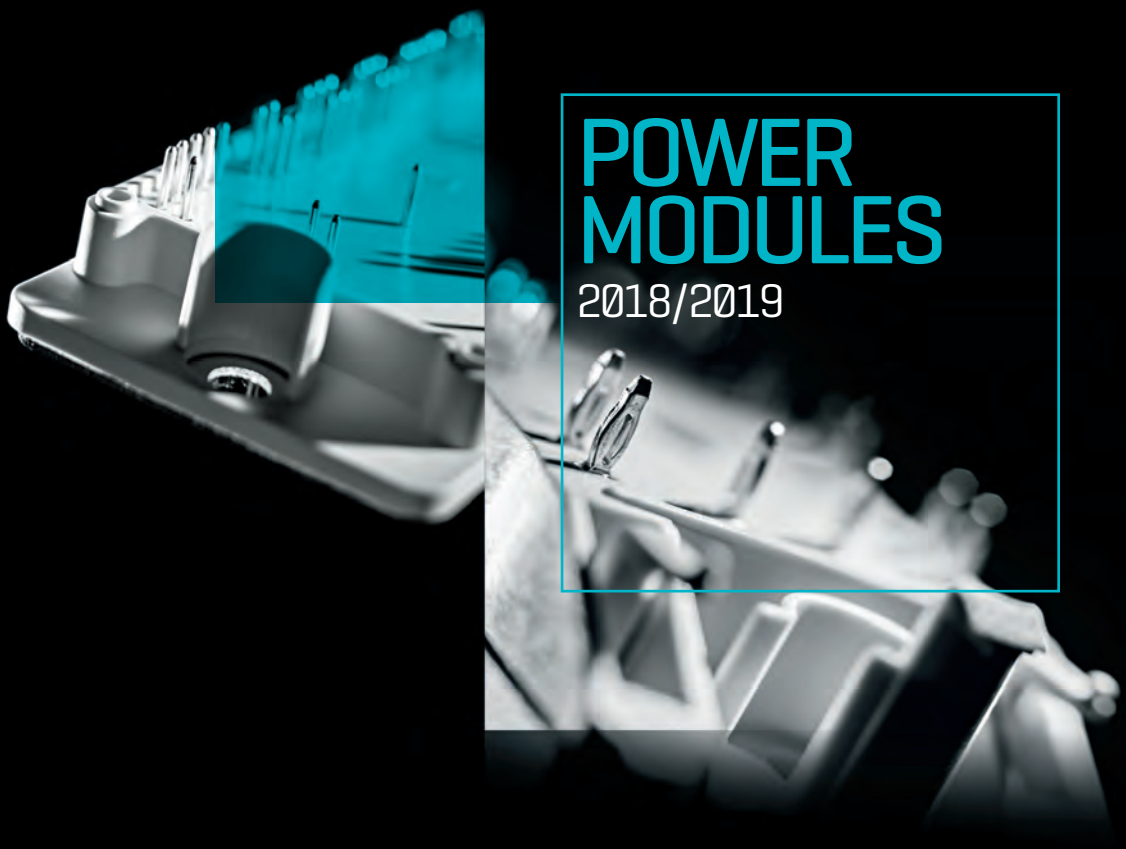
Vincotech



POWER MODULES

2018/2019

EMPOWERING **YOUR IDEAS**

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FAST
FLEXIBLE
CUSTOMER
FOCUSED
SOLUTIONS

Vincotech, an Independent Company within the Mitsubishi Electric Corporation, is a Market Leader and Your Reliable Partner in Power Modules

Established and dependable, Vincotech is the partner of choice when it comes to designing and building power modules for motion control, renewable energy, and power supply applications,setting performance standards for both off-the-shelf and application-specific solutions.

An independently operating affiliate of Mitsubishi Electric Corporation staffed with around 800 people worldwide,

Vincotech delivers fast, flexible and customer-focused solutions,service and support to empower customers' ideas.

Headquartered in Unterhaching near Munich, Germany, Vincotech also owns and operates a production site in Bicske, Hungary. This ISO / TS16949- and ISO14001-certified factory develops and manufactures all power modules.

Engineered to comply with the RoHS and REACH standards, these modules are subjected to a battery of electrical and functional tests prior to packaging to ensure they fully satisfy Vincotech's rigorous standards for quality.

Vincotech, your reliable partner of choice.

The name Vincotech stands for highest product reliability, excellent customer service, and flexible, competitive solutions, all of which culminate in outstanding customer satisfaction.

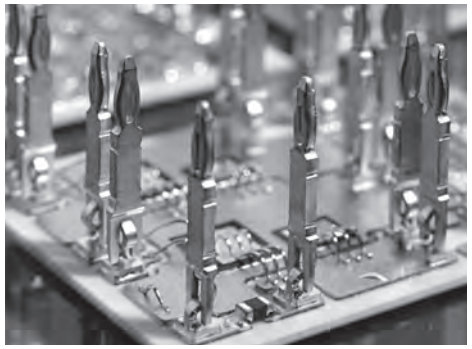
A highly motivated and experienced engineering team at the R&D facility, supported by skilled technical service crews in all major regions, provides the underpinning for the company's strong technology portfolio.

VINCOTECH
TECHNOLOGY GROUPS

Direct Pressed DCB
[Baseplate-less Modules]
Modules without baseplates are ready for assembly and can be pressed directly to the heat sink. A reliable and cost-effective solution for applications where thermal capacity is not an issue.

These modules are the perfect substitute for solid copper or aluminum silicon carbide baseplates.

Description:
/ Single DCB substrate
/ W/o baseplate
/ Modules to be pressed directly to the application heat sink
/ Variable pins
Solder pins / Press-fit pins

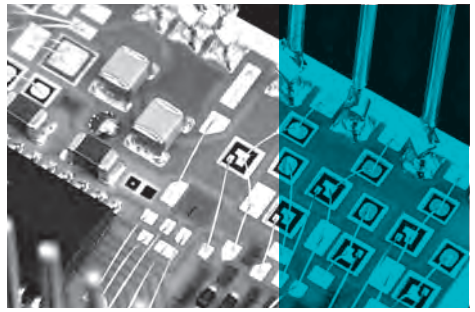


Thick Film Based
IPM Platform
Thick film serves to produce highly integrated power modules in an additive process where various layers of conduction and insulation materials are printed on a ceramic sheet.

The layers can form tracks, pads, or resistors. This technology offers good thermal conductivity, the option of creating layouts similar to a PCB, and freedom in designing housings and pins.

Thick film is a mature technology, having seen several years of use, particularly in critical automotive and other applications.

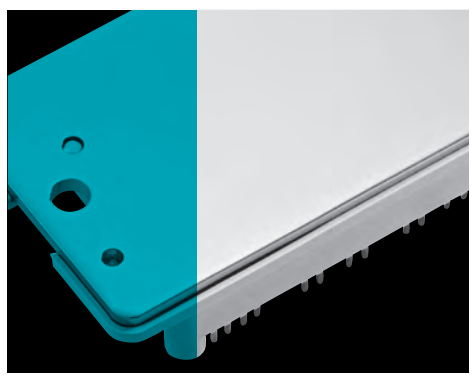
Description:
/ Single substrate TF Al_2O_3
/ Printed AgPd connection tracks
/ Printed, laser-trimmed resistive tracks
/ Bare die / SMD component mix
/ Variable pins
Solder pins / Press-fit pins



DCB Substrate on Cu-Baseplate
Powermoduleswithbaseplatesaremorerobust, extend systems' life and enlarge the active area for heat to flow from the module to the heat sink.

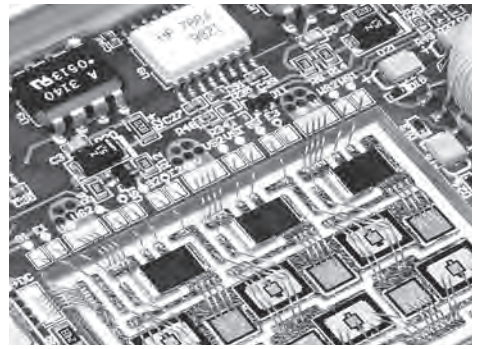
A module with a baseplate can dissipate up to 48% more power. This results in more available inverter power or in reduced junction temperatures. Modules also last longer with the benefit of baseplates' superior thermal dissipation.

Description:
/ Multiple DCB substrates on Cu baseplate
/ Baseplate screwed to the heat sink
/ Variable pins
Solder pins / Press-fit pins



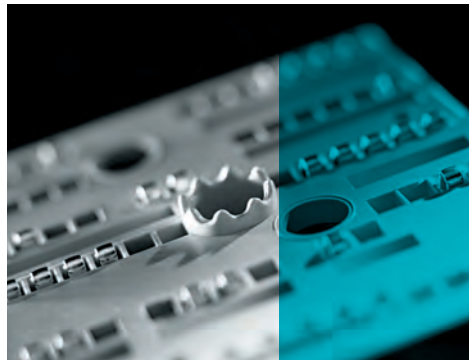
DCB Substrate on Cu-Baseplate Based IPM Platform
IPM platforms with a baseplate can accommodate various topologies as well as a gate drive circuit, SMPS, voltage and current sensors, and many other components. A typical six-pack topology is the most frequently used option. The power semiconductors are bonded directly to a standard PCB that holds the discrete components.

Description:
/ Multiple substrates on Cu baseplate
/ Baseplate screwed to the heat sink
/ Variable interconnect technology
/ PCB-DBC wire interconnection



DCB Substrate on Cu-Baseplate with ScrewContacts
Vincotech high-power modules come in a low inductive package for high-power applications. Optimized for three-level topologies, these modules allow for high switching frequencies and fully symmetrical layouts.

Description:
/ One or several Cu baseplates
/ Baseplate(s) screwed to heat sink
/ Press-fit or solder pins for signal leads
/ Cu screw contact with nuts for power leads

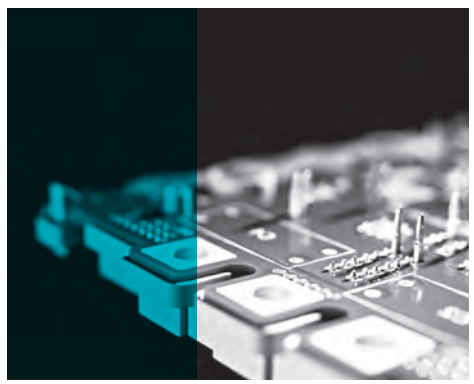


Direct Pressed DCB
[Baseplate-less Modules with SPRiNG Contact]
Direct Pressed in modules can be mounted in a single step to the heat sink and driver board.

These modules are affixed with SPRiNG contacts and just a single screw to create electrical and thermal connections and make assembly an exercise in convenience.

There is no need for time-consuming, costly mounting procedures, and even entire modules are easy to replace with SPRiNG contacts should the need arise.

Description:
/ Single DCB substrate
/ W/o baseplate
/ Cross module assembly
/ Variable press on contacts



ADVANCED TECHNOLOGIES

SUPERIOR SUBSTRATE MATERIAL
High-performance Si_3N_4

Remarkable mechanical strength, superior toughness, and high thermal conductivity make silicon nitride substrates the material of choice for power modules designed for ultra reliable products.

Si_3N_4 Ceramic

/ High thermal conductivity (four times that of Al_2O_3)
/ 50% lower R_{th} for MiniSKiiP® (incl. thermal interface material)
/ Physically robust enough for high-performance thermal interface material (phase-change with 3.4 W/mK) to be used to expedite module assembly and handling
/ Lower thermal expansion rates for improved load power cycling capability

SUPERIOR SUBSTRATE MATERIAL
AlN – Aluminium Nitride

With the benefit of its high thermal conductivity, AlN can serve to increase power modules' current carrying capability while maintaining robust insulating capacity.

Vincotech's advanced power module design accommodates AlN substrates without requiring architectural modifications.

This design uses pressure-contact technology to establish a thermal connection between the module and heat sink. The life span of a power module with an AlN substrate is more than twice that of an Al_2O_3 version.

Key Attributes of Aluminium Nitride

/ Beneficial dielectric properties
/ High thermal conductivity
/ Low thermal expansion coefficient, close to that of Silicon
/ Non-reactive to normal emiconductor process chemicalsand gases

Vincotech - First in SiC Modules
Experts in Smart - Selective Use of SiC-driven Power

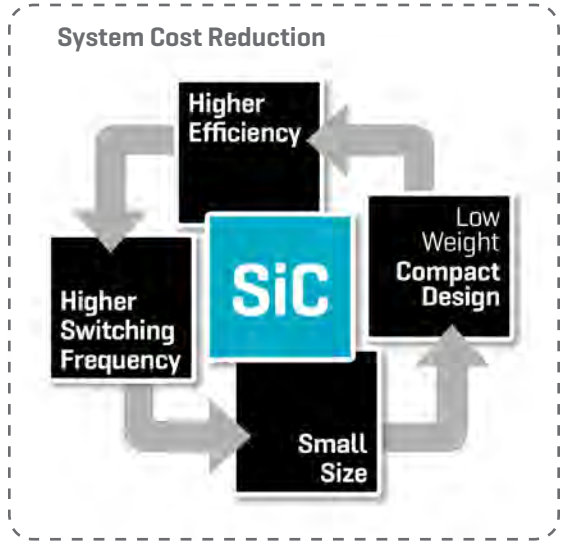
Engineers tasked to build better devices and applications want power modules that boost efficiency and performance. Yet they also need compact solutions that shrink the component footprint.

Vincotech's SiC-based power modules square that circle for all applications. These modules not only deliver better switching performance; they also enable you to design smaller, lighter systems. Vincotech has been empowering customers' ideas for 20+ years now.

Our experience and SiC-based power modules paired with your designs – that sounds like a winning idea to us.

Housing features:

/ Standard and custom power modules
/ SiC components sourced from a range of partners
/ Choice of Al_2O_3, AIN and Si_3N_4 DCB substrates
/ Optional integrated passive capacitors and resistors
/ Low-inductive housings



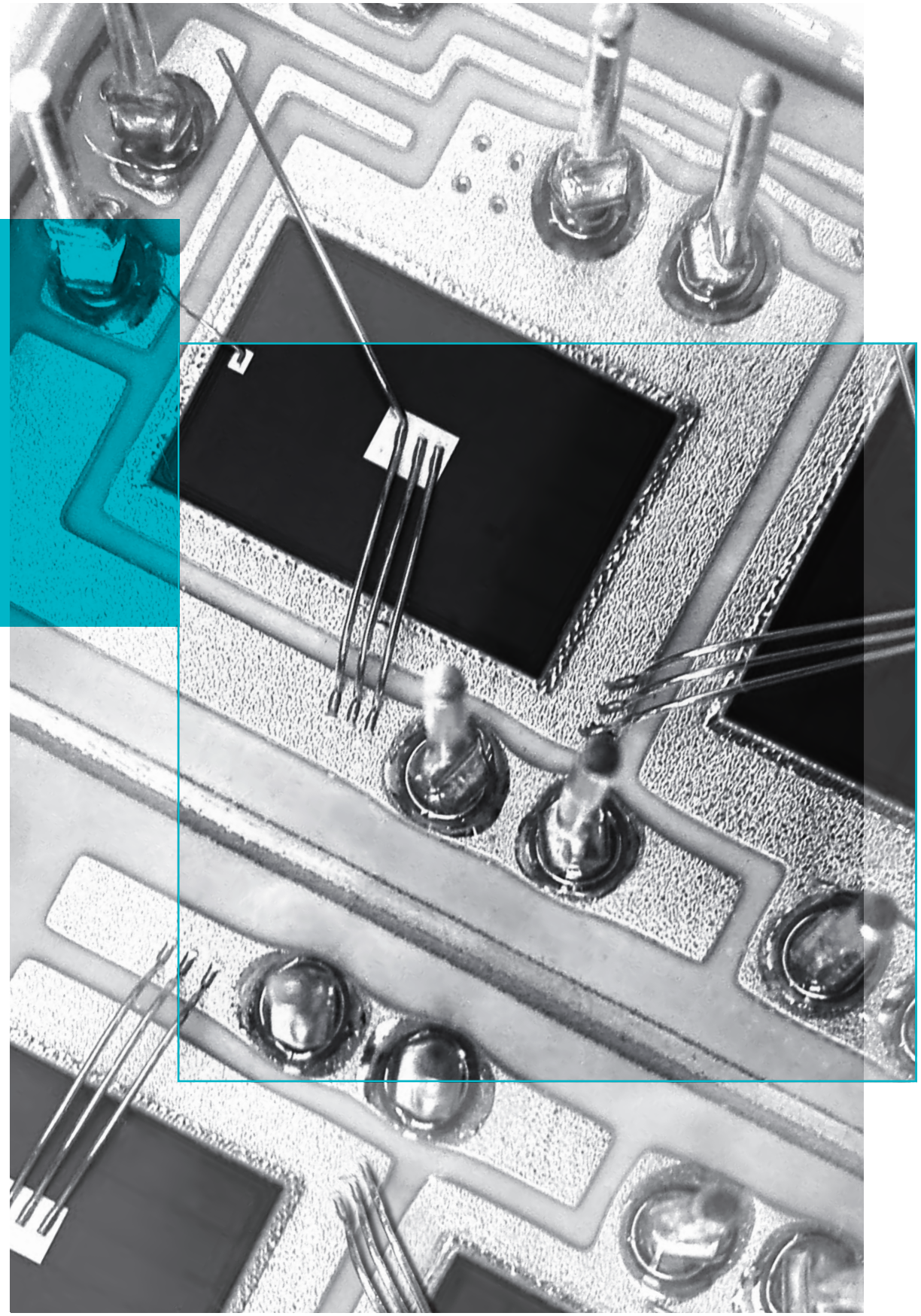
INTER
CONNECTION

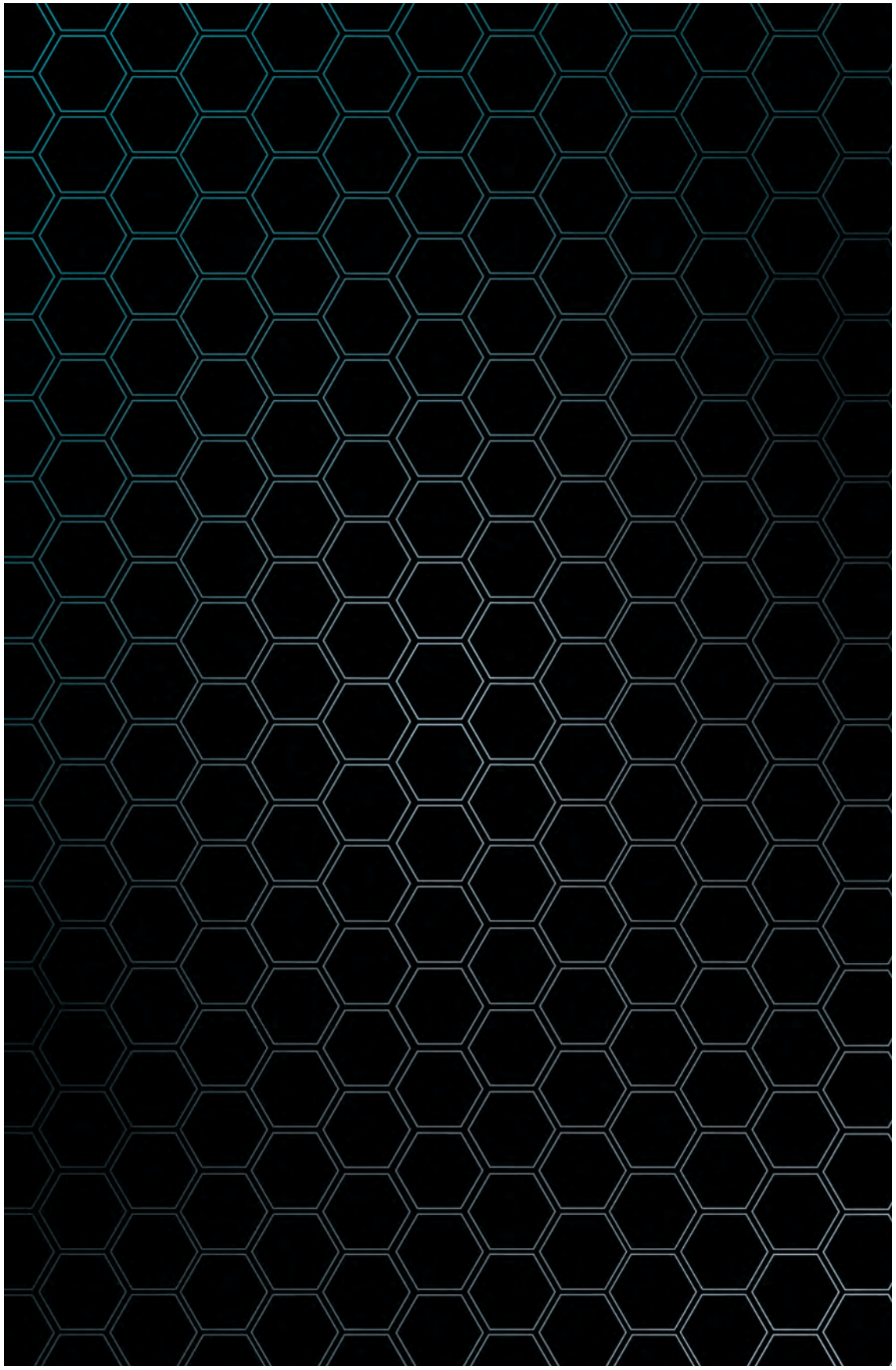
INTERCONNECTION TECHNOLOGIES
Sintered Ag (Die Attach Technology)

High-end power modules must meet challenging demands for thermal and electrical performance and reliability. Vincotech has taken sintering to the next level to meet thesedemands and is able replace all soldered points with sintered connections.

Sintering – the Multiple Solution

/ All Vincotech suppliers' chips may be sintered
/ Chip substrate and baseplate sintered in one step
/ Multi-component capability – chip, NTC and shunt may be sintered together
/ Multi-level capability – up to 3 mm difference in height can be accommodated
/ Lower thermal expansion rates for improved load cycling capability





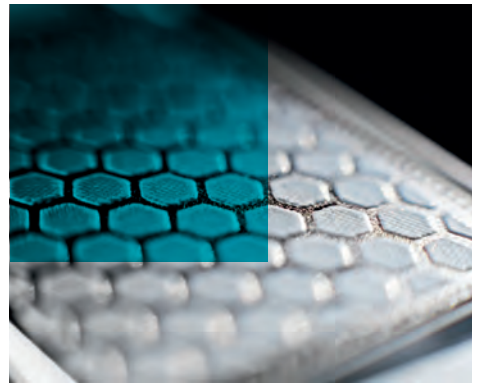
INTERCONNECTION TECHNOLOGIES

Pre-applied Thermal Interface Material (TIM) Phase-change Material

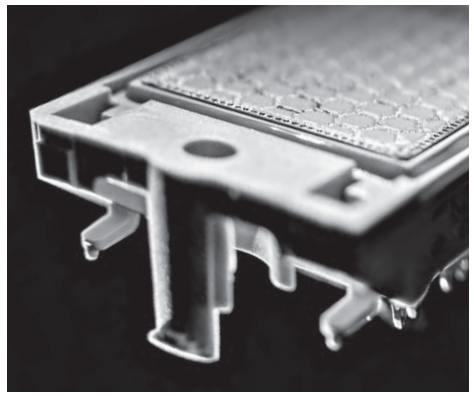
The benefits of using phase-change material to enable thermal conductivity between the module and heat sink are considerable.

The phase-change material is solid at room temperature. This makes it smear-resistant during transportation and module assembly. Our in-house screen-printing process ensures the material's thickness configured and optimized for maximum heat transfer capability.

Benefits:
- Up to 20% R_{th} reduction from T_j to heat sink for Al_2O_3-based modules
- 30 % R_{th} reduction from T_j to heat sink for AlN-based high performance modules
- Solid, non-sticky surface – minimizes contamination risk, prevents layer damage

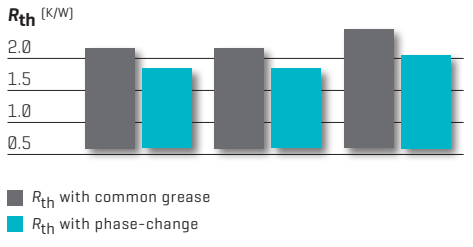


Features:
- Optimized thickness for improved R_{th} and reduced risk of DCB cracking
- Easier production process; no need for screen printing facilities
- Automated screen printing for utmost precision and reliability
- No risk of smearing thermal paste; material is solid at room temperature
- Standard solder profile applicable (e.g. J-STD-001, J-STD-003)
- Non-stick surface, resistant to dirt, dust and other contaminants



Properties:

Parameter	Value	Unit
Thermal conductivity	3.4	W/mK
Phase-change temperature	+45	°C



Order codes:
Example order code for phase-change material:
Version 1: V23990-P840-A48-/3/-PM
Version 2: 10-FZ06BIA045FH01-P897E10-/3/

Please ask your regional contact about the availability of phase-change material.

INTERCONNECTION TECHNOLOGIES

Press-fit Technology
Press to Save Time

Vincotech's Press-fit technology reduces PCB assembly time and effort considerably.

Well established in the automotive industry, the Press-fit pin eliminates the need for soldering. This cuts process time and costs, and boosts production output capacity.

With no need to solder modules, engineers enjoy great flexibility in design. The module can easily be mounted on top or bottom of the PCB at no extra cost and effort.

Benefits:
/ Eliminates costly additional soldering
/ Pins are in the same position as solder pins
/ High current carrying capability (30 A @ 80 °C)
/ Flexible mounting onto the power module DCB
/ Cuts production costs
/ Reliable cold-welding connection to PCB
/ No PCB hole damage to enable reuse
/ Thermo-mechanical push-and-pull-force relief

Features:
/ Approved rounded Press-fit area
/ Complies with DIN and IEC standards
/ Tapered pin head
/ Available for almost all housings

Order codes for Press-fit pins:
Version 1: Press-fit option is shown as an additional letter "Y" at the end of option code.
Example order code version 1: V23990-P840-F49Y-PM

Version 2: Press-fit option is indicated by "P" at the beginning and "Y" at the end.
Example order code version 2: 10-PZ06BIA045FH01-P897E10Y

flow E1 & *flow* E2
The New Benchmark for Low-power Packages

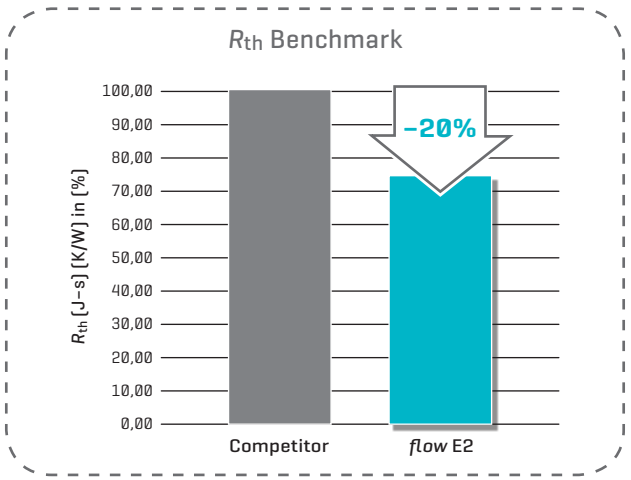
Vincotech has added the industry standard 12 mm *flow* E1 and *flow* E2 packages to further enhance its family of modules for motion control applications.

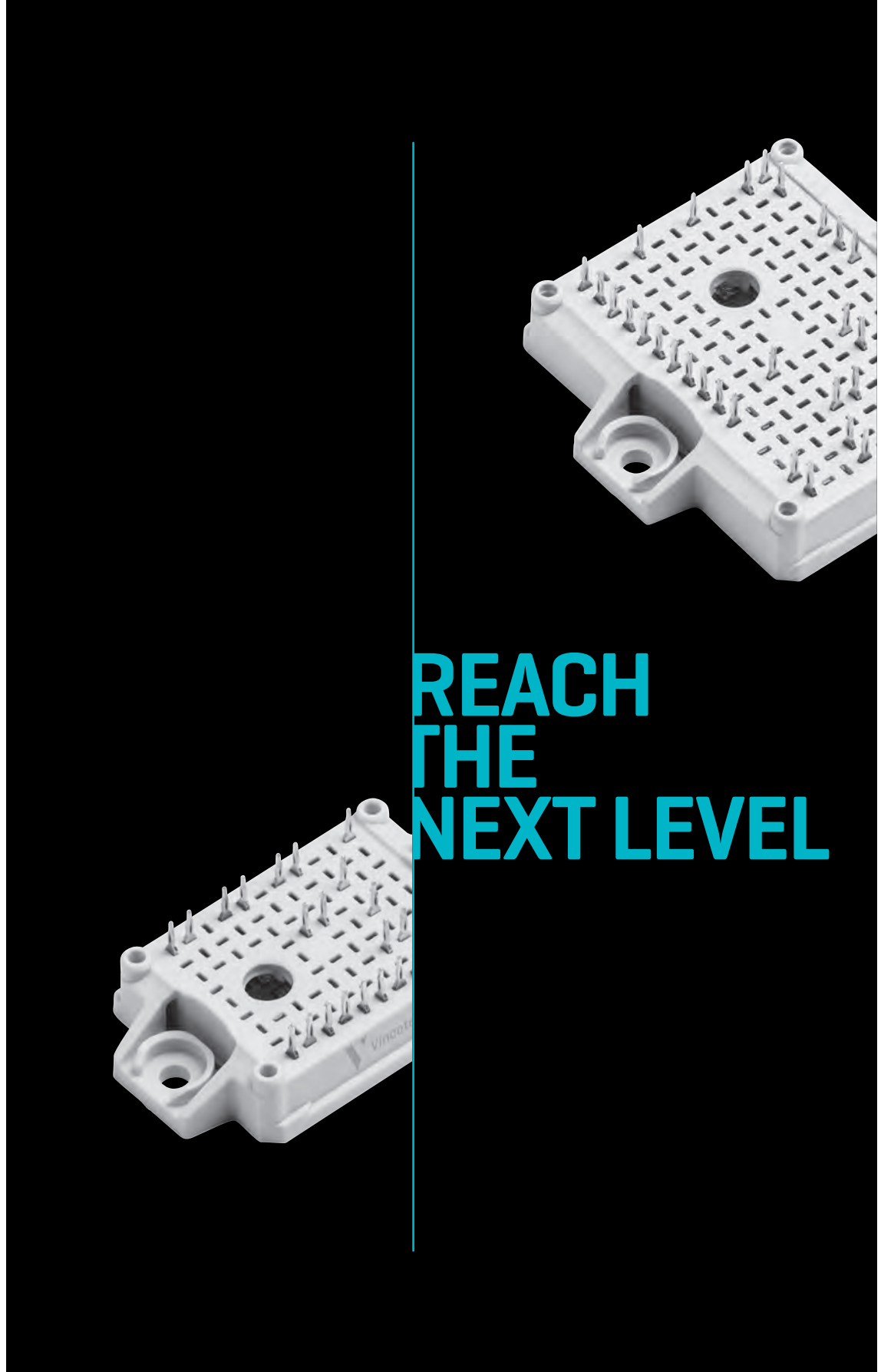
Featuring superior thermal performance and latest generation IGBT M7 chip technology, these new modules provide customers with enhanced efficiency and increased supply chain security.

With the broadest standard product portfolio in the industry, including PIM (CIB) and sixpack configurations with extended power ranges up to 100 A, Vincotech empowers your high performance inverter design.

Main features:

/ Superior thermal performance for increased lifetime, higher power and improved reliability
/ Real multiple source down to chip level for enhanced supply chain security
/ Latest generation IGBT M7 chip technology for improved efficiency





EXCEPTIONAL HOUSINGS

*flow*90 Housing. Twist 90° to Save Space

Vincotech *flow*90 power modules are the perfect match for book-sized inverters and 19-inch rack-mounted power supplies with a 90-degree angle between the heat sink and PCB.

Featuring pins arrayed at a 90-degree angle, *flow*90 0 and *flow*90 1 modules are available as standard products with CON, PIM, and PACK configurations.

This package is also a good choice for custom topologies for switched-mode power supplies, battery chargers and the like.

There is no need for a flexible PCB, and *flow*90 modules make the most of the PCB to minimize the application footprint. Modules with pre-applied phase-change material are available on demand.

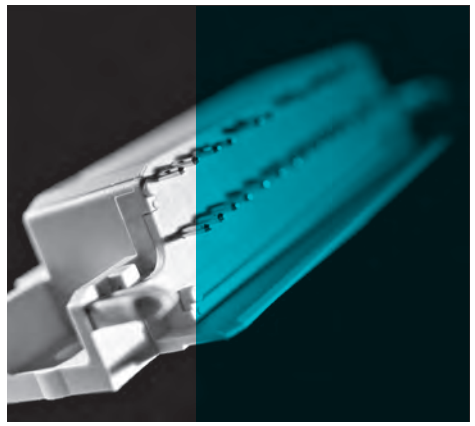
Detailed view of the *flow*90 module

Vincotech can handle this critical task to spare customer the precise application effort.

With all these purpose-driven features, the *flow*90 is the module of choice for many applications that benefit from 90-degree mounting.

Features:

/ Complies with DIN and IEC standards
/ Topologies are easily customized
/ Pre-applied phase-change material available on demand



Benefits:

/ Space-saving housing enabling a 90-degree angle between the heat sink and PCB
/ Accommodates standard heat sinks, so no costly L-shaped versions needed
/ Easy clip-in mounting into the PCB
/ Enables installation on the same side of the PCB as other through-hole components
/ Can be wave-soldered along with the other components in one pass
/ Perfect match for book-sized inverters and 19-inch rack-mounted power supplies

EXCEPTIONAL HOUSINGS

flow 0B Housing. The Compact Cost-cutter

This ultra compact housing for small power applications is an excellent choice for cost-effective, space-saving designs.

A condensed version of the *flow* 0 housing, the *flow* 0B housing is sized for smaller power applications, providing a compact alternative to meet the demands of smaller power embedded drives and frequency inverters.

The first of the two debut topologies in the *flow* 0B housing consists of a PIM + PFC and is called *flow*PIM® 0B + PFC.

Equipped with a single-phase input rectifier, a PFC booster and a three-phase inverter, it uses high-speed 650 V IGBTs for the PFC.

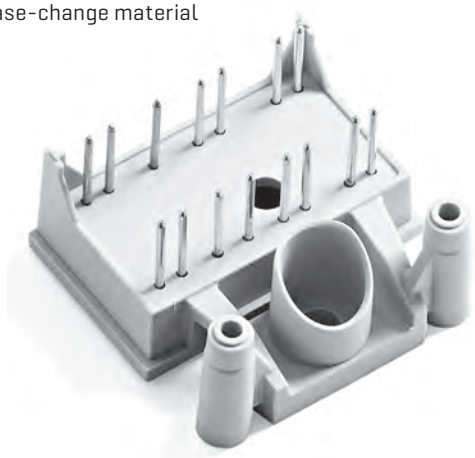
A DC capacitor and an NTC are integrated. The *flow*PIM® 0B + PFC module rated for the highest current features a PFC circuit based on a nominal chip current of 15 A and an inverter ection equipped with 10 A components. The other topology is called *flow*PACK 0B.

This standard inverter topology with 6 IGBTs and freewheeling diodes is available with 1200 V and 600 V ratings.

The 600 V variant covers currents ranging from 6 A to 30 A; the 1200 V variant comes with currents ratings between 4 A and 15 A.

Features:

/ Single-screw heat sink mounting
/ Built-in standoffs with optional PCB screw mounting
/ For very compact designs
/ 17 mm in height for greater creepage distance
/ Thin 0.38 mm Al_2O_3 ceramic for improved thermal performance
/ Solder or Press-fit pins
/ Optionally with pre-applied, highly conductive TIM with 3.4 W/mK
/ Size: 36 mm x 34 mm
/ 17 mm height
/ Phase-change material



EXCEPTIONAL HOUSINGS
VINco X. The Low-inductive High-power Package

The low-inductive design of the VINco X package featuring onboard DC capacitors extends maximum switching frequencies up to 20 kHz, which is unique in this power range.

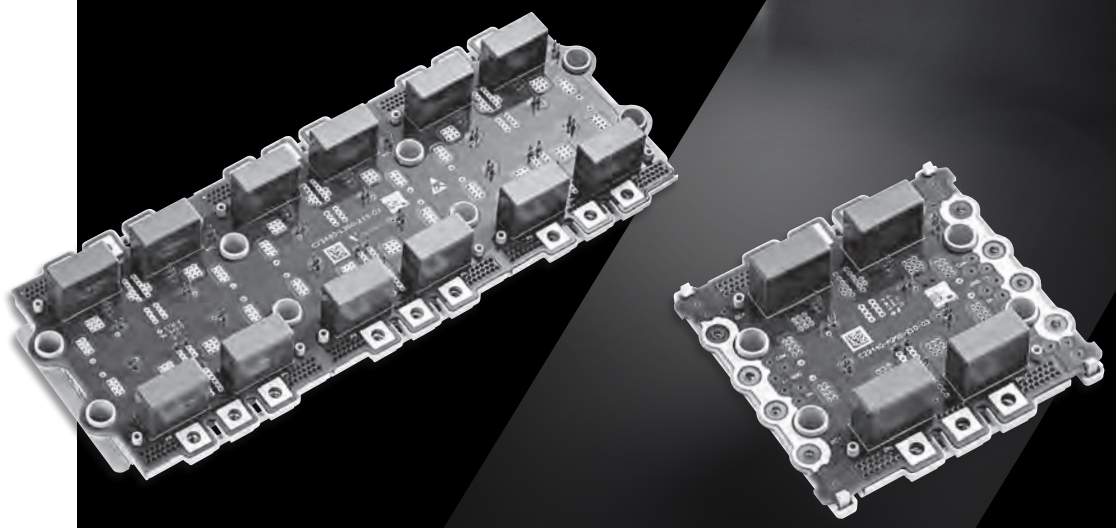
A modular Package
- / Low-inductive PCB
- / Optional onboard snubber capacitors
- / High-current screw terminals
- / Independent baseplates for better thermal performance

Benefits:
- / Easier busbar design
- / Smaller passive components needed
- / Individual dies are not overloaded extending their lifetime
- / Outstanding efficiency
- / Cost competitive solution for central inverters

Features:
- / Optimized connections for three-level topologies
- / Fully symmetrical layouts for uniform current perfomance
- / Available up to 1800 A in bothNPC and MNPC
- / Stray Inductance: 3 – 15 nH* NPC low-inductive path
- / Easy paralleling: <5 nH module to module

(Depending on model)*

VINco X



VINco E3
Packaged to Meet Your Mid-power Needs

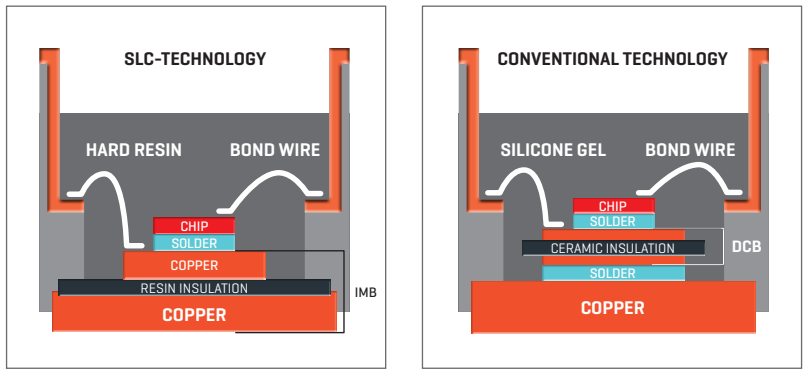
Engineered mainly for industrial drives, solar power and UPS applications, the VINco E3 package raises the performance bar with its enhanced power density and reliability.

Featuring the SLC (SoLid Cover) technology in the industry-standard low-profile package, **Vincotech's new VINco E3 package enables engineers to design mid-power inverters with higher output current, higher power density and improved reliability.**

The new IMB (Insulated Metal Baseplate) combines an electrically insulating resin layer with a direct-bonded top- and bottom-side copper layer. Direct potting resin distributes the mechanical stress more uniformly than silicone gel.

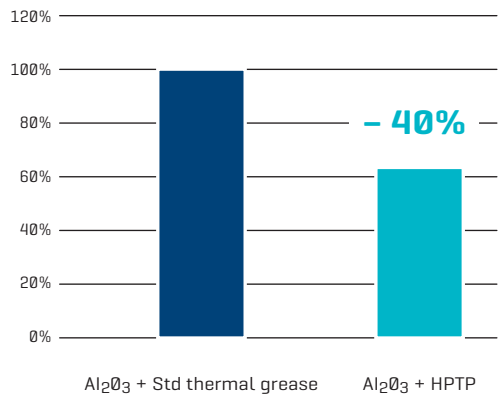
Housing features:

/ Industry standard low-profile package
/ Improved thermal impedance
/ High thermal and power cycling capability



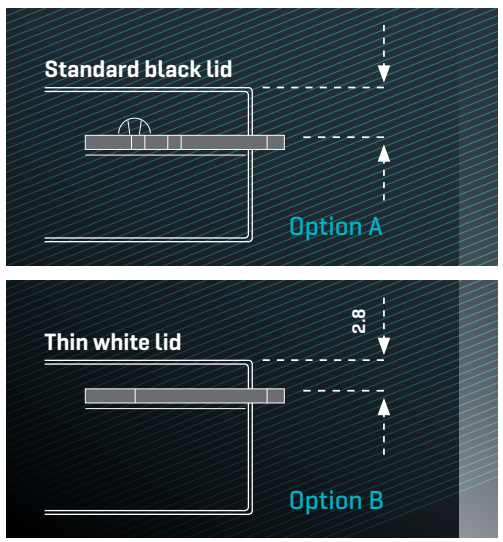
Structure comparison between conventional technology and the new SLC technology.

Thermal resistance R_{th} (j–s)



The new high-performance thermal paste (HPTP) provides an outstanding thermal performance and up to 40% lower thermal resistance R_{th} (j-s) than standard thermal grease.

Lids



EXCEPTIONAL HOUSINGS
MiniSKiiP® – Spring Contacts Connection

For 10+ years Vincotech offers MiniSKiiP® modules with solderless spring contact mounting technology and pre-applied thermal paste.

These second-source modules are affixed with SPRiNG contacts and just a single screw to create electrical and thermal connections and make asassembly an exercise in convenience.

There is no need for time-consuming, costly mounting procedures, and even entire modules are easy to replace with SPRiNG contacts should the need arise.

Thermal Interface Material Features:

- Lower handling costs and less production overhead with no need for screen-printing equipment
- Automated screen printing for utmost precision and reliability
- Thinnest thermal grease layer for minimum thermal resistance and maximum thermal conductivity
- Extended lifetime and enhanced reliability

Lids:

Two lids are available for all MiniSKiiP® modules:

- Standard black 6.5 mm version allowing SMD parts to be mounted below the lid
- Thin white 2.8 mm version sized for highly compact mechanical designs

Order codes: Example order code for different lids and applied grease:

Version 1: V23990-K220-A40-/1A/-PM
Version 2: 80-M206BIA045FH-K999E10-/1A/
Please ask your regional contact about the availability of MiniSKiiP® options.

Comparison of available thermal grease material:

Thermal conductivity	W/m*K	Released for Products
Wacker® Paste P12 silicone-based standard grease	0.81	MiniSKiiP®
Silicone-free standard Thermigrease® TG20032	2.5	MiniSKiiP®
High Performance Thermal Paste HPTP (silicone-based)	2.5	MiniSKiiP®

Products:

Version	Ordering Code
With std lid (6.5 mm height) + thermal grease (0.8 W/mK, P12 silicone-based)	-/1A/
With thin lid (2.8 mm height) + thermal grease (0.8 W/mK, P12 silicone-based)	-/1B/
With std lid (6.5 mm height) + thermal grease (2.5 W/mK, TG20032. silicone-free)	-/4A/
With thin lid (2.8 mm height) + thermal grease (2.5 W/mK, TG20032. silicone-free)	-/4B/
With std lid (6.5 mm height) + thermal grease (2.5 W/mK, HPTP silicone-based)	-/5A/
With thin lid (2.8 mm height) + thermal grease (2.5 W/mK, HPTP silicone-based)	-/5B/

Vincotech – Your Reliable Partner
Bringing Your Best Ideas to Life

Vincotech: Making power modules is what we do. A reliable partner is what we are. Count on us to deliver on our performance promise and put your success first. Vincotech is your reliable partner for all power modules, off-the-rack and tailored solutions alike.

Having customized modules for over 15 years, we have a deep well of experience to draw on. You can count on our flexibility, responsiveness and cooperative spirit.

We put your success first – striving to find the best solution to fit your needs.

Our professionals will team up with your engineers to make the specification process an exercise in innovation and in the end to deliver solutions that fit your needs.

Vincotech is easy to reach when you need information or assistance. What we say goes. We stand by our word. And that makes decisions so much easier to come to. Vincotech products are all about truth in engineering.

Performance descriptions in the development phase are accurate. Customers can count on these products to provide a lifetime of good service based on bug-free, stable designs that minimize maintenance effort.

Vincotech lives by the principle of reliable partnership.

To this end, we communicate efficiently and dependably.

We trust in our employees' capabilities. We are open, honest, reliable and as good as our word – or better. We mean what we say and do what we say we're going to do.

We put the customer's success first. And that is why customers and Vincotech are equal partners.

1

2

3

INTEGRATED SIMULATION ENVIRONMENT TOOL
VincotechISE – an Integrated Simulation and Selection Environment for Power Modules

It contains updated versions of the legacy tools *flow*SIM, *flow*SOL and *flow*SEL.

All power loss and temperature calculations are based on real measurements taken of each module.

01 *flow*SOL
is a simulation tool for solar power modules and similar applications. It features a parameter setup and function blocks tailored to this purpose and covers single-phase and three-phase power modules for transformer-less and transformer-based topologies.

02 *flow*SIM
calculates Vincotech power modules for industrial drive applications. Its GUI looks much like that of the *flow*SOL tool, but is geared towards industrial drives.

This revamped user interface affords you in-depth insight into how parameter adjustments affect losses, temperatures and efficiency.

03 *flow*SEL
is a power module selector designed to help you find the solution best suited to your industrial drive application. Entering all the key application parameters is an exercise in convenience with its interactive schematic.

Software Download
Step 01:
Download and install LabVIEW Runtime Engine once (if not already installed).

Step 02:
Download VincotechISE into your simulation directory.

Step 03:
Start VincotechISE.

For further Info please see:
www.vincotech.com/VincotechISE

Vincotech Delivers Application-specific Solutions with Utmost Creative Choice When it Comes to Design

Completely independent of component suppliers, we cherry-pick what's best for you from more than ten different leading semiconductor suppliers to build modules that benefit your business. Experience the peace of mind that comes with knowing your needs are being met.

Vincotech delivers solutions tailored to your applications.

Customers enjoy great freedom of choice. They are not locked in into one system or tied to standard products or specific suppliers. Free to configure their products as they see fit, they can find the best solution with a lot less effort.

Vincotech delivers to customer's specifications – that is, more efficient products with better thermal connections, optimized to improve their applications.

In our book, 'optimized' means more cost-effective, smaller, longer-lasting and easier-mounting modules that speed up production. That's why Vincotech attaches such great value to its simulation and testing tools.

The tools interactively calculate modules' electrical and thermal behavior based on fully measured parameters.

If you want your power module to be application-specific, it has to be Vincotech.

Vincotech is Fast and Responsive
And that Agility Speed Benefits You

Vincotech provides a wide selection of standard housings to keep your design options wide open. We're there for you at every step of your journey. When you opt for Vincotech, you will experience true face-to-face support from a most responsive supplier.

Our sample lead times are remarkably short at just four weeks on average.

Modules get approved that much faster, so customers' production runs commence sooner and their products are marketed much earlier. To this end, we make ordering easy, eliminate processes that do not add value, and keep the production line flexible.

Vincotech is agile enough to handle fluctuating demand even at short notice and deliver the goods just in time.

Speed and Flexibility – that sums up what Vincotech is all about.

Vincotech's customer focus, paired with efficient development and production flows, saves you time.

Flexibility, fast time to market, cost-effectiveness beyond our products, an innovative spirit, and a service-minded outlook – that´s what we´re all about.

Fast time to market:

/ Advanced simulation tools speed up component selection and mapping.

/ Sample lead time is phenomenally short (four weeks on average).

/ The speed at which we can deliver the initial technical and commercial proposal (including a chip list, electrical configuration, mechanical details, pin-out and pin-positioning, options, etc.) sets standards for the industry to follow.

/ Module approval comes much faster with pre-qualified components and technologies.

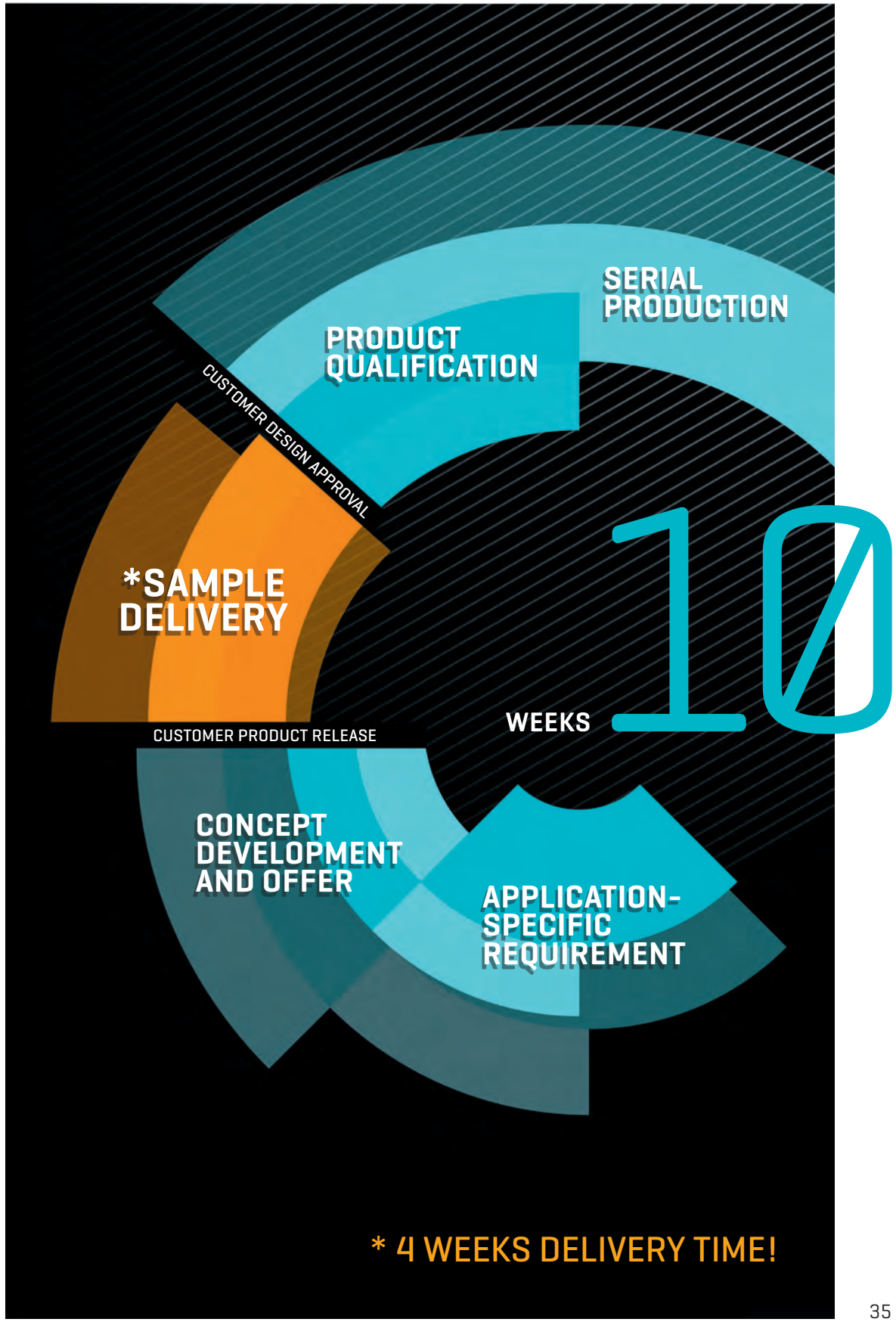
Cost efficiency:

/ Vincotech is fully independent of chip suppliers – choose your preferred chip from more than ten different leading semiconductor manufacturers (including SiC technology).

/ Enjoy the mechanical flexibility that comes with a broad variety of standard housings and free pin positioning.

/ Benefit from different interconnects (solder, Press-fit, screw and spring terminals) and stress-relief zones wherever they are needed.

/ Take advantage of readily customized standard products. Customers are free to cherry-pick from the largest selection of semiconductors and a wealth of pre-qualified topologies.



INDUSTRIAL

INDUSTRIAL DRIVES

Vincotech offers power integrated modules (PIM/CIB – converter, inverter and brake), sixpacks (three-phase modules), half-bridges and rectifier modules engineered to support standard drive applications for industrial use and motor power ranges from 1 kW to 60 kW.

For example: *flow*PIM® 0 | *flow*PACK 1 | *flow*PIM® 2 | VINcoDUAL E3

EMBEDDED

EMBEDDED DRIVES

Drives in circulation pumps, fans, air-conditioners, and other devices connected to the public power grid usually require active power factor correction (PFC). These PIM and IPM modules feature optional integrated PFC.

For example: *flow*PIM® 0 + PFC | *flow*IPM 1B | *flow*IPM 1C

SMPS

CHARGING STATIONS

Switched-mode power supplies are used in industrial applications with power electronics and in battery chargers. Our modules are equipped with PFC circuits (AC/DC), half- and H-bridges, and step-up and step-down converters (DC/DC) for these applications.

For example: *flow*PFC 0 | *fast*PACK 0 H | VINcoBOOST X4 symmetric

SOLAR

SOLAR INVERTERS

The photovoltaic market requires DC/DC converters that adjust the solar input voltage to the DC-link or battery level and DC/AC converters to deliver the solar energy to the public grid. Vincotech's innovative modules support from small single-phase inverters to central inverters in the MW range.

For example: *flow*MNPC 1 and *flow*MNPC 2 for > 100 kW: VINcoMNPC X4
*flow*3xBOOST 0 SiC for < 100 kW: *flow*NPC 0 | *fast*PACK 0 HC
*flow*SOL 0 | *flow*SOL 1 | *flow*3xPHASE 0 SiC

UPS

UNINTERRUPTABLE POWER SUPPLIES (UPS)

Power components for UPS applications. Modules for AC/DC and DC/AC power conversion. Topologies such as single- and three-phase rectifiers, half- and H-bridges, boosters, and NPC/MNPC/AMNPC. Power ranges up to 200 kW.

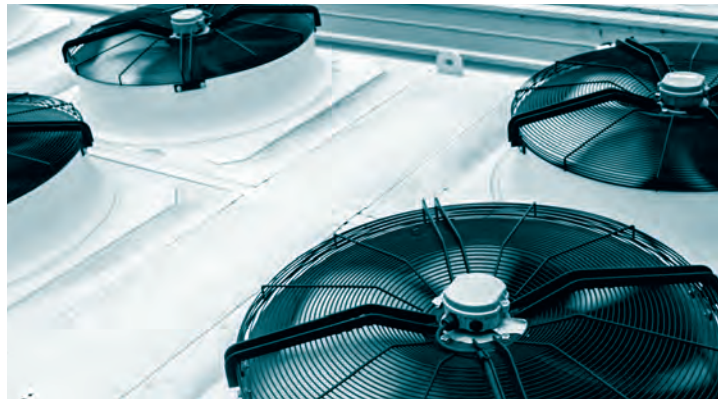
For example: for < 100 kW: *flow*MNPC 0 | VINcoNPC X4
*flow*MNPC 1 and *flow*MNPC 2 for > 100 kW: VINcoMNPC X

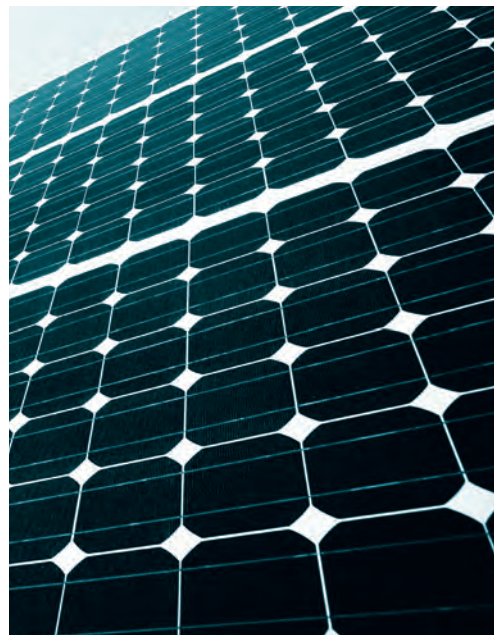
WELDING

WELDING

Inverter welding units need modules that can handle high switching frequencies in resonant mode or in zero voltage switching (ZVS) mode, and are equipped with H- and half-bridge topologies. Our modules also come with PFC to draw maximum power from the single-phase grid.

For example: *flow*PFC 0 | *fast*PACK 0 H | *flow*NPFC 0





OVERVIEW

TOPOLOGIES

PRODUCTS
2018 / 2019

RECTIFIER (+BRAKE)

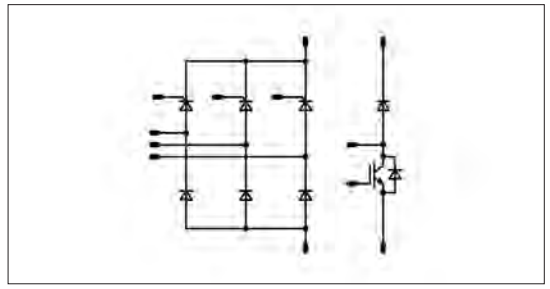
see page 45

Application:

/ CHARGING STATIONS / INDUSTRIAL DRIVES

Topology Features:

/ Converter with brake (optionally)



Sixpack

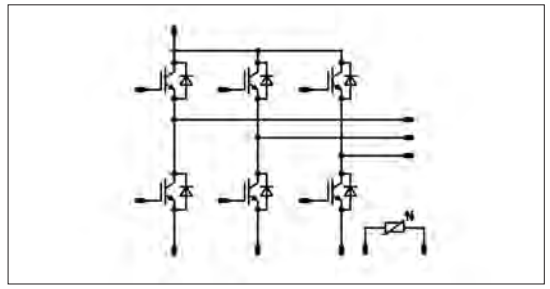
see page 51

Application:

/ EMBEDDED DRIVES / INDUSTRIAL DRIVES

Topology Features:

/ Three-phase inverter



Sixpack+Rectifier

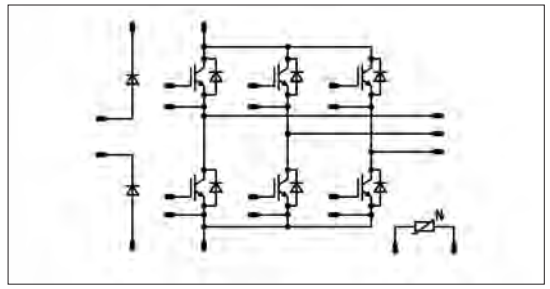
see page 67

Application:

/ EMBEDDED DRIVES / INDUSTRIAL DRIVES

Topology Features:

/ Three-phase inverter for active front end



Sevenpack

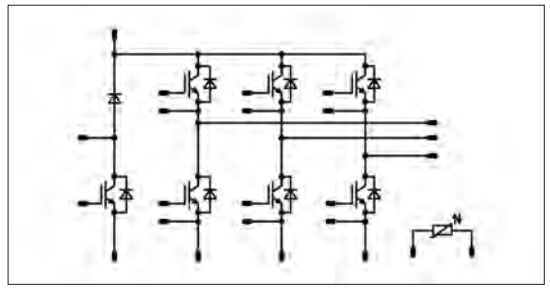
see page 71

Application:

/ EMBEDDED DRIVES / INDUSTRIAL DRIVES

Topology Features:

/ Three-phase inverter + Brake



PIM (CIB)

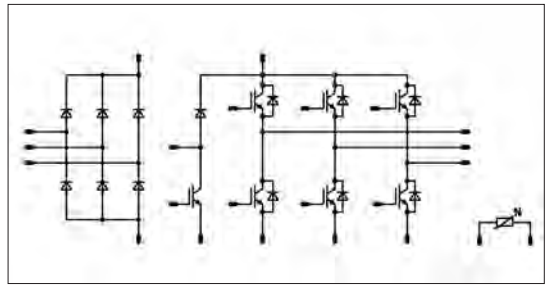
see page 75

Application:

/ EMBEDDED DRIVES / INDUSTRIAL DRIVES

Topology Features:

/ Converter + BRC + Inverter



PIM+PFC (CIP)

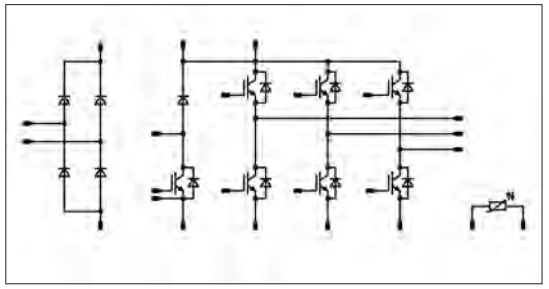
see page 89

Application:

/ EMBEDDED DRIVES / INDUSTRIAL DRIVES

Topology Features:

/ Single-phase converter + Inverter + PFC



IPM (CIB)

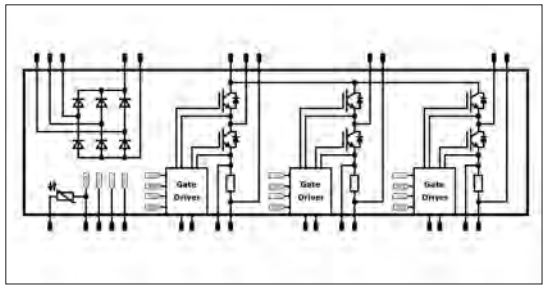
see page 93

Application:

/ EMBEDDED DRIVES / INDUSTRIAL DRIVES

Topology Features:

/ Three-phase converter + Inverter + Brake with integrated gate drive



IPM (CIP/PIM+PFC)

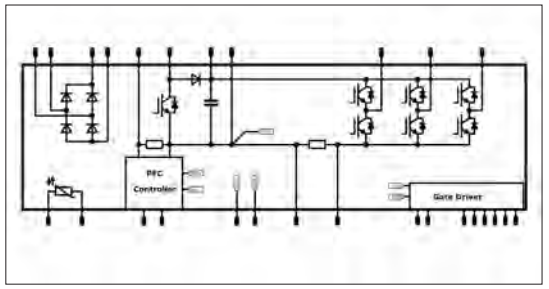
see page 97

Application:

/ EMBEDDED DRIVES / INDUSTRIAL DRIVES

Topology Features:

/ Single-phase converter + Inverter + PFC with integrated gate drive



Half-Bridge

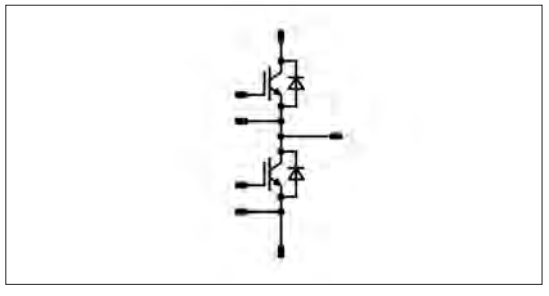
see page 99

Application:

/ CHARGING STATIONS / INDUSTRIAL DRIVES
/ SOLAR INVERTERS / UPS / WELDING & CUTTING

Topology Features:

/ Half-Bridge



H-Bridge

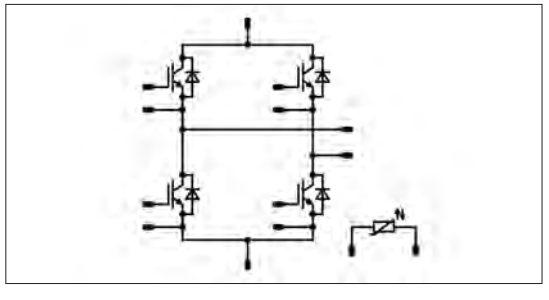
see page 105

Application:

/ CHARGING STATIONS / UPS / WELDING & CUTTING

Topology Features:

/ H-Bridge



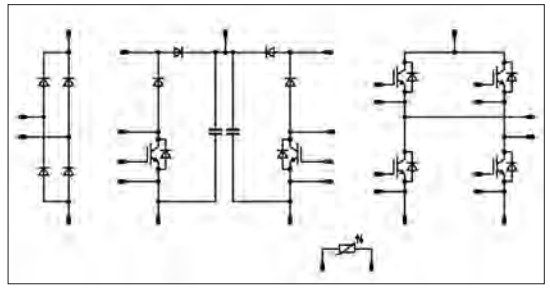
Single-phase Inverter
see page 113

Application:

/ CHARGING STATIONS / SOLAR INVERTERS
/ WELDING & CUTTING

Topology Features:

/ Single-phase inverter



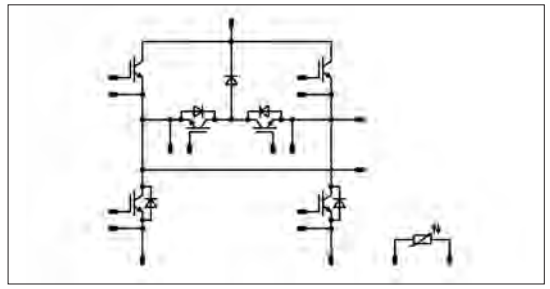
H6.5
see page 119

Application:

/ SOLAR INVERTERS

Topology Features:

/ Three-level topology for single phase inverters



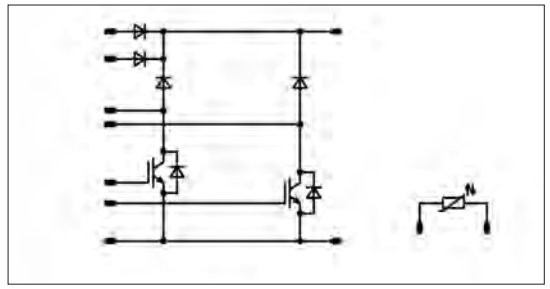
Booster
see page 123

Application:

/ CHARGING STATIONS / SOLAR INVERTERS / UPS

Topology Features:

/ Boost circuit



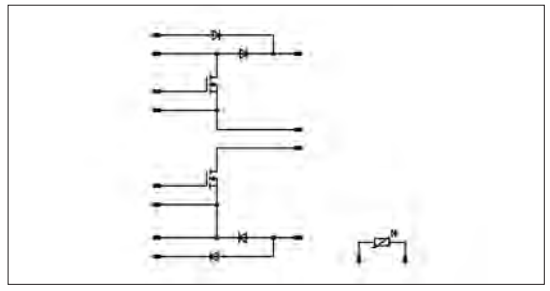
Booster Symmetric
see page 131

Application:

/ CHARGING STATIONS / SOLAR INVERTERS / UPS

Topology Features:

/ Symmetrical boost circuit



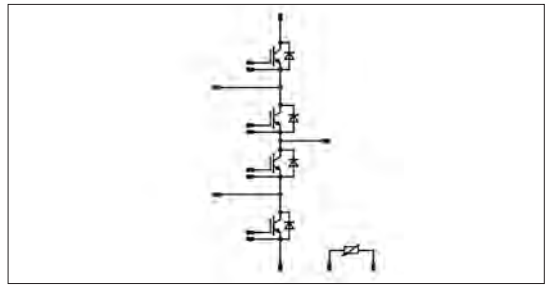
Buck-Booster Symmetric
see page 139

Application:

/ POWER SUPPLY / SOLAR INVERTERS / UPS

Topology Features:

/ Symmetrical buck-boost circuit



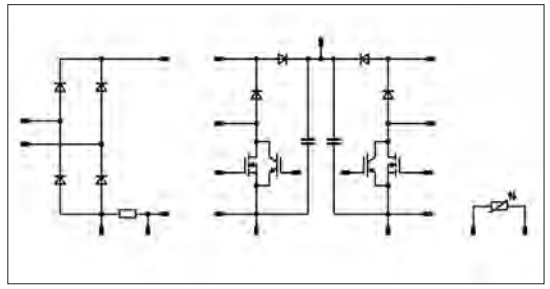
PFC (Single-phase applications)
see page 143

Application:

/ CHARGING STATIONS / UPS / WELDING & CUTTING

Topology Features:

/ PFC boost - Single-phase Rectifier + Boost circuit



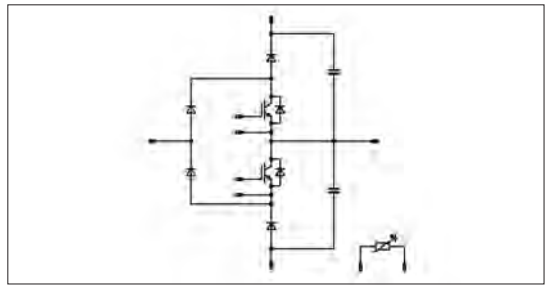
PFC (Three-phase applications)
see page 147

Application:

/ CHARGING STATIONS / UPS / WELDING & CUTTING

Topology Features:

/ Three-level PFC for three-phase applications



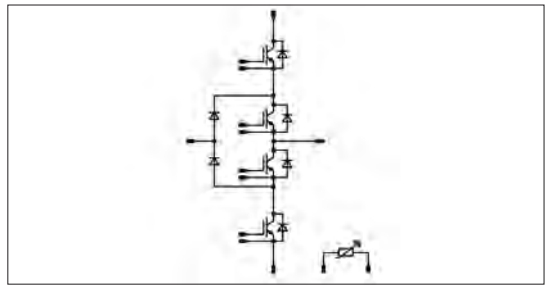
Three-level NPC (I-Type)
see page 153

Application:

/ SOLAR INVERTERS / UPS

Topology Features:

/ Three-level NPC (I-Type)



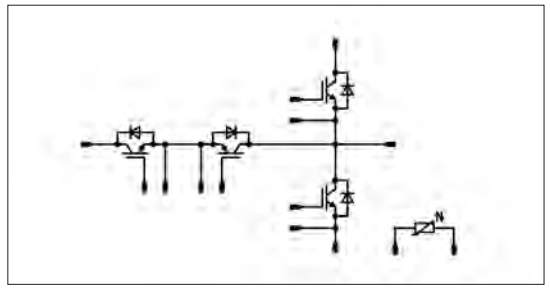
Three-level MNPC (T-Type)
see page 165

Application:

/ SOLAR INVERTERS / UPS

Topology Features:

/ Three-level MNPC (T-Type)



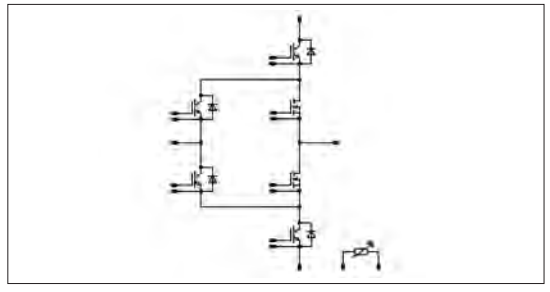
Three-level ANPC
see page 173

Application:

/ SOLAR INVERTERS

Topology Features:

/ Split Advanced NPC topology (ANPC)



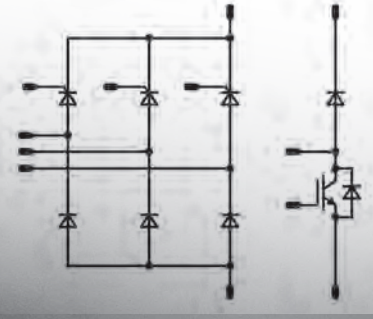
RECTIFIER (+BRAKE)
SIXPACK
SIXPACK+RECTIFIER
SEVENPACK
PIM (CIB)
PIM+PFC (CIP)
IPM (CIB)
IPM (CIP_PIM+PFC)
HALF-BRIDGE
H-BRIDGE
SINGLE-PHASE-INVERTER
H6.5
BOOSTER
BOOSTER-SYMMETRIC
Buck-Booster Symmetric
PFC (Single-phase applications)
PFC (Three-phase applications)
Three-level NPC (I-Type)
Three-level MNPC (T-Type)
Three-level ANPC
Schematics / Housings
Naming System

Application:

/ CHARGING STATIONS / INDUSTRIAL DRIVES

Topology Features:

/ Converter with brake (optionally)



*flow*CON 0

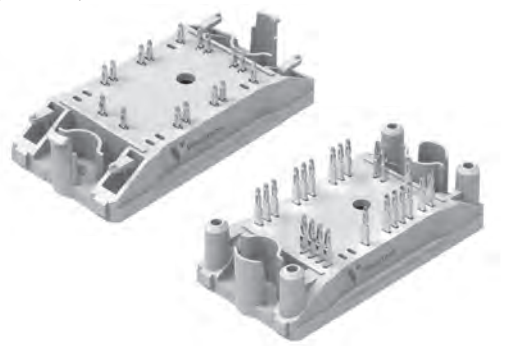
Available Housings:

/ *flow* 0 4-clips 17 mm / *flow* 0 2-clips 17 mm
/ *flow* 0 2-clips 12 mm / *flow* 0 4-towers 17 mm

Possible Features:

/ Three-phase Half Controlled Converter / Brake Chopper
/ Single-phase Half Controlled Converter
/ Three-phase Rectifier / Single-phase Rectifier
/ Brake Chopper / Combination with 1ph Rectifier
/ Modular Rectifier / Modular Half Controlled Converter
/ Combination with 1ph Half Controlled Converter
/ Temperature sensor / Single-phase non-controlled Rectifier
/ Kelvin Emitter for improved switching performance
/ Temperature sensor / Three-phase Non-controlled Rectifier

flow 0 2-clips 12 mm



flow 0 4-towers 17 mm

Schematics see page: 176
More details: www.vincotech.com/flowCON-0

Part-No	Voltage (V)	Current (A)	Technology	Comments
3ph-Half Controlled-BRC				
V23990-P649-G10-PM	1600	34	Thyristor (SCR)	
V23990-P649-H10-PM	1600	34	Thyristor (SCR)	
V23990-P640-G10-PM	1600	42	Thyristor (SCR)	
V23990-P640-H10-PM	1600	42	Thyristor (SCR)	
1ph-Half Controlled				
V23990-P590-J19-PM	1600	75	Thyristor (SCR)	
NEW **3ph-Rectifier**				
V23990-P649-H09-PM	1600	50	Rectifier	JJMicro, SKR, DWP Diode-RW
3ph-Rectifier-BRC				
V23990-P649-G-PM	1600	50	Rectifier	
V23990-P649-H-PM	1600	50	Rectifier	
V23990-P640-G-PM	1600	75	Rectifier	
V23990-P640-H-PM	1600	75	Rectifier	
V23990-P640-G20-PM	1600	75	Rectifier	
1ph-Rectifier				
V23990-P590-J09-PM	1600	105	Rectifier	
Modular Rectifier-BRC				
V23990-P600-I09-PM	1600	105	Rectifier	
Modular Half Controlled-BRC				
V23990-P600-I19-PM	1600	75	Thyristor (SCR)	
1ph-Non-Controlled-NTC				
10-PZ06O2A030FW-LH02J08Y	600	30	Fast diode	
3ph-Non Controlled-BRC-KE-NTC				
10-P0166BA050RW-LD59G09Y	1600	50	Rectifier	
10-PD166BA050RW-LD59G07Y	1600	50	Rectifier	

*flow*CON 0B

Available Housings:

/ *flow* 0B 2-towers 17 mm

Possible Features:

/ Three-phase Rectifier
/ Brake Chopper

flow 0B - 2-tower 17 mm

Schematics see page: 176
More details: www.vincotech.com/flowCON-0B

Part-No	Voltage (V)	Current (A)	Technology	Comments
3ph-Rectifier-BRC				
10-0B166BA028SC-M989G09	1600	35	Rectifier	

*flow*90CON 1

Available Housings:

/ *flow* 90 1 2-clips

Possible Features:

/ Three-phase Half Controlled Converter
/ Open Emitter configuration
/ Brake Chopper

flow 90 1 2-clips

Schematics see page: 176
More details: www.vincotech.com/*flow*90CON-1

Part-No	Voltage [V]	Current [A]	Technology	Comments
3ph-Half Controlled-BRC				
V23990-P717-G10-PM	1600	36	Thyristor (SCR)	
V23990-P717-H10-PM	1600	36	Thyristor (SCR)	
V23990-P717-H-PM	1600	39	Rectifier	
V23990-P717-G-PM	1600	39	Rectifier	
V23990-P718-G10-PM	1600	43	Thyristor (SCR)	
V23990-P718-H10-PM	1600	43	Thyristor (SCR)	
V23990-P718-G-PM	1600	52	Rectifier	
V23990-P718-H-PM	1600	52	Rectifier	
V23990-P719-G-PM	1600	75	Rectifier	
V23990-P719-H-PM	1600	75	Rectifier	

*flow*CON 2

Available Housings:

/ *flow* 2 4-towers 17 mm

Possible Features:

/ Three-phase Rectifier
/ Brake Chopper
/ Temperature sensor

flow 2 4-towers 17 mm

Schematics see page: 176
More details: www.vincotech.com/*flow*CON-2

Part-No	Voltage [V]	Current [A]	Technology	Comments
3ph-Rectifier-BRC				
30-F2166BA150RW-L267G09	1600	150	Rectifier	
3ph-Rectifier-BRC-NTC				
30-F2166BA150RW01-L267G19	1600	150	Rectifier	

MiniSKiiP® CON 3

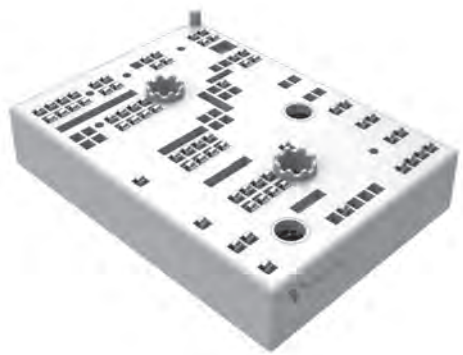
Available Housings:

/ MiniSKiiP® 3

Possible Features:

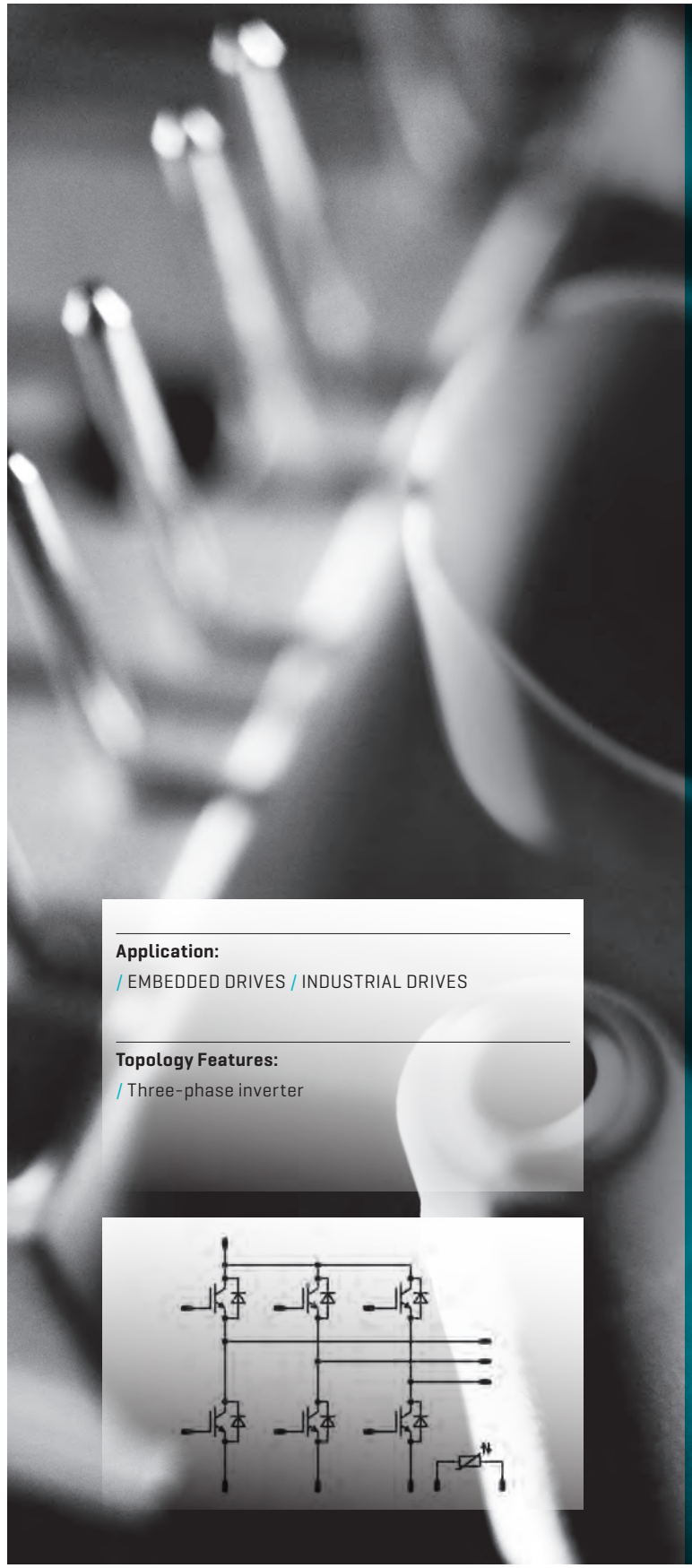
/ Three-phase Rectifier
/ Three-phase Half Controlled Converter
/ Three-phase Full Controlled Converter
/ Brake Chopper
/ Temperature sensor

MiniSKiiP® 3



Schematics see page: 176
More details: www.vincotech.com/MiniSKiiP-CON-3

Part-No	Voltage (V)	Current (A)	Technology	Comments
3ph-Rectifier-BRC-NTC				
80-M3166BA125AS-K489G30	1200	125	Thyristor (SCR)	Equivalent: SKiiP® 39AHB16V1
80-M3166BA140SC02-K489G40	1200	125	Thyristor (SCR)	
80-M3166BA140SC03-K489G42	1200	125	Thyristor (SCR)	
3ph-Half Controlled-BRC-NTC				
80-M3166BB125AS-K489G31	1200	125	Thyristor (SCR)	
3ph-Full-Controlled-BRC-NTC				
80-M3166BA125AS02-K849G32	1600	125	Thyristor (SCR)	



Application:

/ EMBEDDED DRIVES / INDUSTRIAL DRIVES

Topology Features:

/ Three-phase inverter

RECTIFIER (+BRAKE)
SIXPACK
SIXPACK+RECTIFIER
SEVENPACK
PIM (CIB)
PIM+PFC (CIP)
IPM (CIB)
IPM (CIP_PIM+PFC)
HALF-BRIDGE
H-BRIDGE
SINGLE-PHASE-INVERTER
H6.5
BOOSTER
BOOSTER-SYMMETRIC
Buck-Booster Symmetric
PFC (Single-phase applications)
PFC (Three-phase applications)
Three-level NPC (I-Type)
Three-level MNPC (T-Type)
Three-level ANPC
Schematics / Housings
Naming System

*flow*90PACK 0

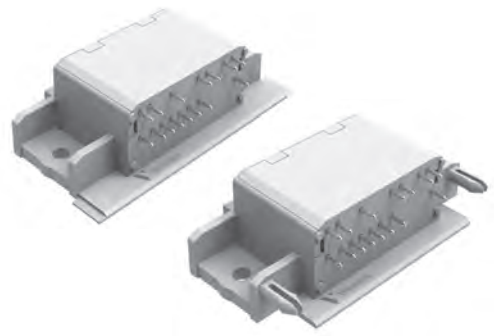
Available Housings:

/ *flow* 90 0 no-clips / *flow* 90 0 2-clips

Possible Features:

/ Inverter
/ Open Emitter configuration
/ Temperature sensor

flow 90 0 no-clips



flow 90 0 2-clips

Schematics see page: 177
More details: www.vincotech.com/*flow*90PACK-0

Part-No	Voltage [V]	Current [A]	Technology	Comments
Inverter-OE-NTC				
10-R0126PA008SC-M627F40	1200	8	IGBT4	
10-RZ126PA008SC-M627F41	1200	8	IGBT4	
10-R0126PA015SC-M628F40	1200	15	IGBT4	
10-RZ126PA015SC-M628F41	1200	15	IGBT4	
10-R0126PA025SC-M629F40	1200	25	IGBT4	
10-RZ126PA025SC-M629F41	1200	25	IGBT4	
10-RZ126PA035SC-M620F41	1200	35	IGBT4	
10-R0126PA035SC-M620F40	1200	35	IGBT4	

*flow*PACK 0

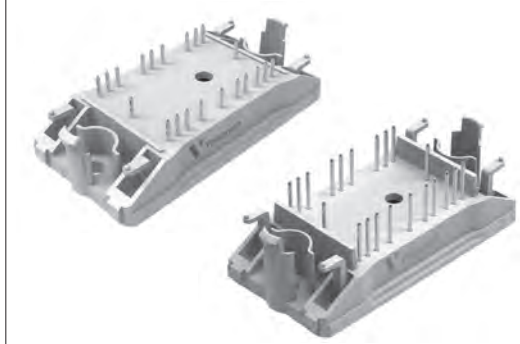
Available Housings:

/ *flow* 0 2-clips 12 mm / *flow* 0 2-clips 17 mm

Possible Features:

/ Inverter
/ Kelvin Emitter for improved switching performance
/ Temperature sensor

flow 0 2-clips 12 mm



flow 0 2-clips 17 mm

Schematics see page: 177
More details: www.vincotech.com/*flow*PACK-0

Part-No	Voltage [V]	Current [A]	Technology	Comments
Inverter-KE-NTC				
V23990-P861-F49-PM	600	10	IGBT3	
V23990-P862-F49-PM	600	15	IGBT3	
V23990-P864-F48-PM	600	30	IGBT3	
V23990-P864-F49-PM	600	30	IGBT3	
V23990-P865-F48-PM	600	50	IGBT3	
V23990-P865-F49-PM	600	50	IGBT3	
V23990-P865-F48Y-PM	600	50	IGBT3	
V23990-P866-F48-PM	600	75	IGBT3	
V23990-P866-F49-PM	600	75	IGBT3	
V23990-P866-F48Y-PM	600	75	IGBT3	
V23990-P867-F48-PM	1200	10	IGBT4	
V23990-P867-F49-PM	1200	10	IGBT4	
10-FZ126PA010M7-P867F78	1200	10	IGBT M7	
V23990-P868-F49Y-PM	1200	15	IGBT4	
10-FZ126PA015M7-P868F78	1200	15	IGBT M7	
V23990-P869-F48-PM	1200	25	IGBT4	
V23990-P869-F49-PM	1200	25	IGBT4	
10-FZ126PA025M7-P869F78	1200	25	IGBT M7	
V23990-P860-F48-PM	1200	35	IGBT4	
V23990-P860-F49-PM	1200	35	IGBT4	
10-FZ126PA035M7-P860F78	1200	35	IGBT M7	

*flow*PACK 0 SiC

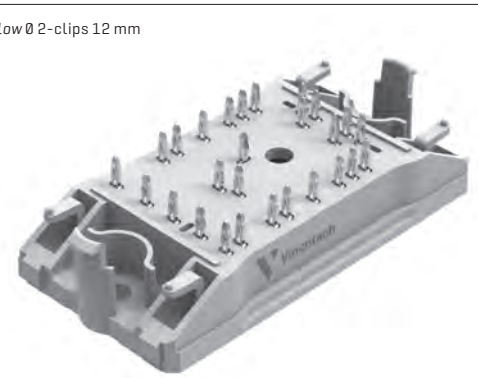
Available Housings:

/ *flow* 0 2-clips 12 mm

Possible Features:

/ 3xHalf Bridge
/ Open Emitter configuration
/ Kelvin Emitter for improved switching performance
/ Integrated DC capacitor
/ Temperature sensor
/ Split output for transient deactivation of the body diode and elimination of X-conduction at fast turn-on

flow 0 2-clips 12 mm



Schematics see page: 177
More details: www.vincotech.com/*flow*PACK-0-SiC

Part-No	Voltage [V]	Current [A]	Technology	Comments
3xHalf Bridge-OE-KE-Cap-SO-NTC				
10-PZ126PA080ME-M909F18Y	1200	35	SiC MOSFET	
10-PZ126PA080MR-M909F28Y	1200	35	SiC MOSFET	

*flow*PACK 0B

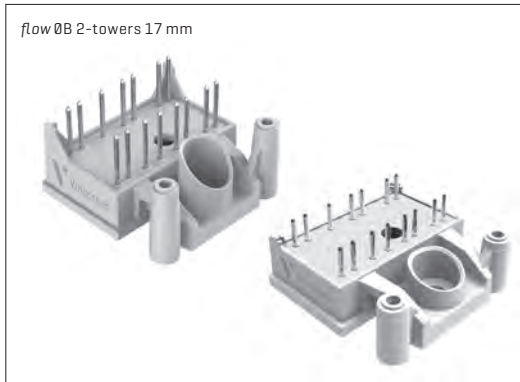
Available Housings:

/ *flow* 0B 2-towers 17 mm / *flow* 0B 2-towers 12 mm

Possible Features:

/ Inverter
/ Open Emitter configuration
/ Temperature sensor

flow 0B 2-towers 17 mm



flow 0B 2-towers 12 mm

Schematics see page: 177
More details: www.vincotech.com/*flow*PACK-0B

Part-No	Voltage [V]	Current [A]	Technology	Comments
Inverter-OE-NTC				
10-0B066PA006SB-M992F09	600	6	IGBT3 LL	
10-0B066PA010SB-M993F09	600	10	IGBT3 LL	
10-0B066PA015SB-M994F09	600	15	IGBT3 LL	
10-0B066PA020SB-M995F09	600	20	IGBT3 LL	
10-0B066PA030SB-M996F09	600	30	IGBT3 LL	
10-ZB066PA030SB-M996F08	600	30	IGBT3 LL	
10-0B126PA004SC-M997F09	1200	4	IGBT4	
10-0B126PA008SC-M998F09	1200	8	IGBT4	
10-0B126PA015SC-M999F09	1200	15	IGBT4	

*flow*90PACK 1

Available Housings:

/ *flow* 90 1 2-clips

Possible Features:

/ Inverter
/ Kelvin Emitter for improved switching performance
/ Temperature sensor
/ Open Emitter configuration

*flow*90 1 2-clips

Schematics see page: 177
More details: www.vincotech.com/*flow*90PACK-1

Part-No	Voltage [V]	Current [A]	Technology	Comments
Inverter-KE-NTC				
V23990-P707-F40-PM	1200	8	IGBT4	
V23990-P708-F40-PM	1200	15	IGBT4	
V23990-P709-F40-PM	1200	25	IGBT4	
V23990-P700-F40-PM	1200	35	IGBT4	
V23990-P700-F44-PM	1200	50	IGBT4	
Inverter-OE-KE-NTC				
V23990-P704-F-PM	600	30	IGBT3	
V23990-P705-F-PM	600	50	IGBT3	
V23990-P706-F-PM	600	75	IGBT3	

*flow*PACK 1

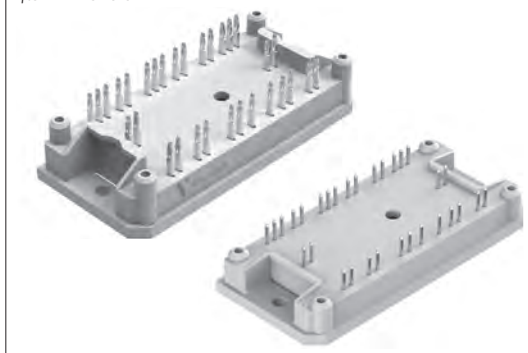
Available Housings:

/ *flow* 1 4-towers 17 mm / *flow* 1 4-towers 12 mm

Possible Features:

/ Inverter
/ Kelvin Emitter for improved switching performance
/ Temperature sensor

flow 1 4-towers 17 mm



flow 1 4-towers 12 mm

Schematics see page: 177
More details: www.vincotech.com/*flow*PACK-1

Part-No	Voltage [V]	Current [A]	Technology	Comments
Inverter-KE-NTC				
V23990-P823-F-PM	600	50	IGBT3	improved R_{th} (AlN)
V23990-P823-F10-PM	600	50	IGBT3	
V23990-P824-F-PM	600	75	IGBT3	improved R_{th} (AlN)
V23990-P824-F10-PM	600	75	IGBT3	
V23990-P825-F-PM	600	100	IGBT3	improved R_{th} (AlN)
V23990-P825-F10-PM	600	100	IGBT3	
V23990-P828-F-PM	1200	35	IGBT4	improved R_{th} (AlN)
V23990-P828-F10-PM	1200	35	IGBT4	
V23990-P828-FY-PM	1200	35	IGBT4	
10-P1126PA035M701-L827F19Y	1200	35	IGBT M7	
10-F1126PA035M7-L827F09	1200	35	IGBT M7	
10-P1126PA035M7-L827F09Y	1200	35	IGBT M7	
V23990-P829-F-PM	1200	50	IGBT4	improved R_{th} (AlN)
V23990-P829-F10-PM	1200	50	IGBT4	
V23990-P829-FY-PM	1200	50	IGBT4	
V23990-P829-F108-PM	1200	50	IGBT4	
V23990-P829-F10Y-PM	1200	50	IGBT4	
10-F1126PA050M7-L828F09	1200	50	IGBT M7	
10-P1126PA050M7-L828F09Y	1200	50	IGBT M7	
V23990-P820-F-PM	1200	75	IGBT4	
V23990-P820-F10-PM	1200	75	IGBT4	improved R_{th} (AlN)
10-P1126PA075M7-L829F09Y	1200	75	IGBT M7	
V23990-P820-F10Y-PM	1200	75	IGBT4	
10-F1126PA075M7-L829F09	1200	75	IGBT M7	
10-F1126PA075SH-L829F49	1200	75	IGBT4 HS	
10-F1126PA100M7-L820F09	1200	100	IGBT M7	
10-P1126PA100M7-L820F09Y	1200	100	IGBT M7	

*flow*PACK 1 SiC

Available Housings:

/ *flow* 1 4-towers 12 mm

Possible Features:

/ 3xHalf Bridge
/ Open Emitter configuration
/ Kelvin Emitter for improved switching performance
/ Temperature sensor

flow 1 4-towers 12 mm

Schematics see page: 177
More details: www.vincotech.com/*flow*PACK-1-SiC

Part-No	Voltage [V]	Current [A]	Technology	Comments
3xHalf Bridge-OE-KE-NTC				
10-PY096PA035ME-L224F18Y	900	70	SiC MOSFET	
10-PY126PA040MR-L226F28Y	1200	35	SiC MOSFET	
10-PY126PA020ME-L227F18Y	1200	50	SiC MOSFET	

*flow*PACK 2

Available Housings:

/ *flow* 2 4-towers 17 mm

Possible Features:

/ 3xHalf Bridge
/ Open Emitter configuration
/ Kelvin Emitter for improved switching performance
/ Temperature sensor

flow 1 4-towers 17 mm

flow 2 4-towers 17 mm

Schematics see page: 177
More details: www.vincotech.com/*flow*PACK-2

Part-No	Voltage [V]	Current [A]	Technology	Comments
3xHalf Bridge-OE-KE-NTC				
30-P2126PA050SC-L287F09Y	1200	50	IGBT4	
30-P2126PA075SC-L288F09Y	1200	75	IGBT4	
30-P2126PA075M7-L288F79Y	1200	75	IGBT M7	
30-P2126PA100SC-L289F09Y	1200	100	IGBT4	
30-P2126PA100M7-L289F79Y	1200	100	IGBT M7	
30-P2126PA150SC-L280F09Y	1200	150	IGBT4	
30-P2126PA150M7-L280F79Y	1200	150	IGBT M7	
30-P2126PA150SH-L280F49Y	1200	150	IGBT4 HS	
3xHalf Bridge-OE-KE				
V23990-P689-F-PM	1200	100	IGBT4	

VINcoPACK E3

Available Housings:

/ VINco E3

Possible Features:

/ Inverter
/ Kelvin Emitter for improved switching performance
/ Temperature sensor

VINco E3

Schematics see page: 177
More details: www.vincotech.com/VINcoPACK-E3

Part-No	Voltage [V]	Current [A]	Technology	Comments
Inverter-KE-NTC				
A0-VS126PA100M7-L997F70	1200	100	IGBT M7	
A0-VS126PA150M7-L998F70	1200	150	IGBT M7	
A0-VS126PA200M7-L999F70	1200	200	IGBT M7	

MiniSKiiP® PACK 1

Available Housings:

/ MiniSKiiP® 1

Possible Features:

/ Inverter
/ Open Emitter configuration
/ Temperature sensor

MiniSKiiP® 1

Schematics see page: 177
More details: www.vincotech.com/MiniSKiiP-PACK-1

Part-No	Voltage [V]	Current [A]	Technology	Comments
Inverter-OE-NTC				
V23990-K218-F40-PM	1200	8	IGBT4	Equivalent: SKiiP® 11NAB12T4V1
80-M1126PA010M7-K217F70	1200	10	IGBT M7	
V23990-K219-F-PM	1200	15	IGBT3	Equivalent: SKiiP® 12NAB126V1
V23990-K219-F40-PM	1200	15	IGBT4	Equivalent: SKiiP® 12NAB12T4V1
80-M1126PA015M7-K218F70	1200	15	IGBT M7	
V23990-K210-F-PM	1200	25	IGBT3	Equivalent: SKiiP® 13AC126V1
V23990-K210-F40-PM	1200	25	IGBT4	Equivalent: SKiiP® 13AC12T4V1
80-M1126PA025M7-K219F70	1200	25	IGBT M7	
80-M1126PA035M7-K210F70	1200	35	IGBT M7	

MiniSKiiP® PACK 2

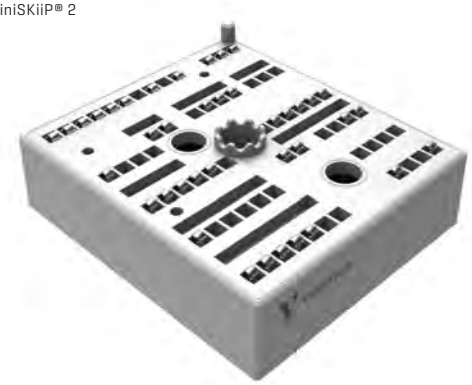
Available Housings:

/ MiniSKiiP® 2

Possible Features:

/ Inverter
/ Kelvin Emitter for improved switching performance
/ Temperature sensor
/ Open Emitter configuration

MiniSKiiP® 2



Schematics see page: 177
More details: www.vincotech.com/MiniSKiiP-PACK-2

Part-No	Voltage [V]	Current [A]	Technology	Comments
Inverter-KE-NTC				
V23990-K232-F-PM	600	50	IGBT3	Equivalent: SKiiP® 26AC066V1
V23990-K233-F-PM	600	75	IGBT3	Equivalent: SKiiP® 27AC066V1
V23990-K237-F40-PM	1200	25	IGBT4	Equivalent: SKiiP® 23AC12T4V1
V23990-K238-F40-PM	1200	35	IGBT4	Equivalent: SKiiP® 24AC12T4V1
80-M2126PA035M7-K717F70	1200	35	IGBT M7	
V23990-K239-F40-PM	1200	50	IGBT4	Equivalent: SKiiP® 25AC12T4V1
80-M2126PA050M7-K718F70	1200	50	IGBT M7	
V23990-K230-F40-PM	1200	70	IGBT4	Equivalent: SKiiP® 26AC12T4V1
80-M2126PA075M7-K719F70	1200	75	IGBT M7	in qualification
80-M2126PA100M7-K710F70	1200	100	IGBT M7	in qualification
Inverter-OE-KE-NTC				
V23990-K359-F40-PM	1200	50	IGBT4	

MiniSKiiP® PACK 3

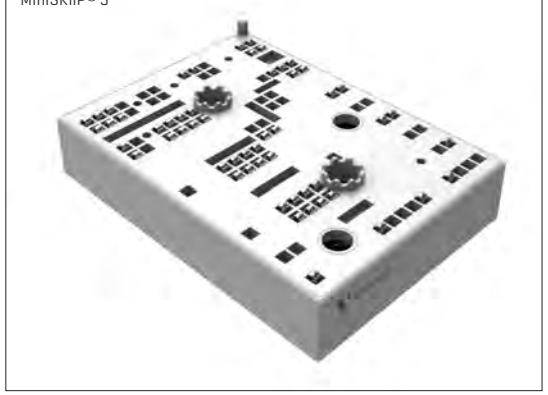
Available Housings:

/ MiniSKiiP® 3

Possible Features:

/ Inverter
/ Kelvin Emitter for improved switching performance
/ Temperature sensor

MiniSKiiP® 3



Schematics see page: 177
More details: www.vincotech.com/MiniSKiiP-PACK-3

Part-No	Voltage [V]	Current [A]	Technology	Comments
Inverter-KE-NTC				
V23990-K438-F40-PM	1200	75	IGBT4	
80-M3126PA100M7-K828F70	1200	100	IGBT M7	
V23990-K439-F40-PM	1200	100	IGBT4	
V23990-K430-F40-PM	1200	150	IGBT4	
80-M3126PA150M7-K829F70	1200	150	IGBT M7	
80-M3126PB200M7-K810F70	1200	200	IGBT M7	

*flow*PACK E1 NEW

Available Housings:

/ *flow* E1

Possible Features:

/ Inverter
/ Kelvin Emitter for improved switching performance
/ Temperature sensor
/ Open Emitter configuration

Schematics see page: 177
More details: www.vincotech.com/*flow*PACK-E1

Part-No	Voltage [V]	Current [A]	Technology	Comments
INVERTER-KE-NTC				
10-EZ126PA025SC-L858F48T	1200	25	IGBT4	
10-EZ126PA025M7-L858F78T	1200	25	IGBT M7	
10-EZ126PA035SC-L859F48T	1200	35	IGBT4	
10-EZ126PA035M7-L859F78T	1200	35	IGBT M7	

*flow*PACK E2 NEW

Available Housings:

/ *flow* E2

Possible Features:

/ Inverter
/ Kelvin Emitter for improved switching performance
/ Temperature sensor
/ Open Emitter configuration

Schematics see page: 177
More details: www.vincotech.com/*flow*PACK-E2

Part-No	Voltage [V]	Current [A]	Technology	Comments
INVERTER-KE-NTC				
10-EY126PA050SC-L196F48T	1200	50	IGBT4	
10-EY126PA050M7-L196F78T	1200	50	IGBT M7	
10-EY126PA075SC-L197F48T	1200	75	IGBT4	
10-EY126PA075M7-L197F78T	1200	75	IGBT M7	
10-EY126PA100M7-L198F78T	1200	100	IGBT M7	

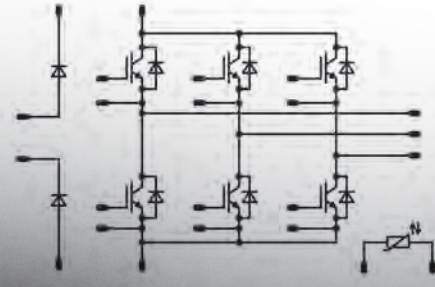
RECTIFIER (+BRAKE)
SIXPACK
SIXPACK+RECTIFIER
SEVENPACK
PIM (CIB)
PIM+PFC (CIP)
IPM (CIB)
IPM (CIP_PIM+PFC)
HALF-BRIDGE
H-BRIDGE
SINGLE-PHASE-INVERTER
H6.5
BOOSTER
BOOSTER-SYMMETRIC
Buck-Booster Symmetric
PFC (Single-phase applications)
PFC (Three-phase applications)
Three-level NPC (I-Type)
Three-level MNPC (T-Type)
Three-level ANPC
Schematics / Housings
Naming System

Application:

/ EMBEDDED DRIVES / INDUSTRIAL DRIVES

Topology Features:

/ Three-phase inverter for active front end



*flow*PACK 1+R

Available Housings:

/ *flow* 1 4-towers 12 mm

Possible Features:

/ Inverter+Rectifier
/ Kelvin Emitter for improved switching performance
/ Temperature sensor

flow 1 4-towers 12 mm

Schematics see page: 178
More details: www.vincotech.com/*flow*PACK-1+R

Part-No	Voltage [V]	Current [A]	Technology	Comments
Inverter+Rectifier-KE-NTC				
10-F106R6A030SB-M434E08	600	30	IGBT3	
10-F106R6A030SB01-M434E18	600	30	IGBT3	w/o NTC
10-F106R6A050SB-M435E08	600	50	IGBT3	
10-F106R6A050SB01-M435E18	600	50	IGBT3	w/o NTC
10-F112R6A015SC-M438E08	1200	15	IGBT4	
10-F112R6A015SC01-M438E18	1200	15	IGBT4	w/o NTC
10-F112R6A035SC-M439E08	1200	35	IGBT4	
10-F112R6A035SC01-M439E18	1200	35	IGBT4	w/o NTC
10-F112R6A050SC-M430E08	1200	50	IGBT4	
10-F112R6A050SC01-M430E18	1200	50	IGBT4	w/o NTC

*flow*PACK 2+R

Available Housings:

/ *flow* 2 4-towers 17 mm

Possible Features:

/ Inverter
/ Open Emitter configuration
/ Kelvin Emitter for improved switching performance
/ Temperature sensor

flow 2 4-towers 17 mm

Schematics see page: 178
More details: www.vincotech.com/*flow*PACK-2+R

Part-No	Voltage [V]	Current [A]	Technology	Comments
Inverter+Rectifier-OE-KE-NTC				
30-F206R6A050SB01-M442E10	600	50	IGBT3 LL	w/o NTC
30-F206R6A075SB01-M443E10	600	75	IGBT3 LL	w/o NTC
30-F206R6A100SB01-M444E10	600	100	IGBT3 LL	w/o NTC
30-F206R6A150SB01-M445E10	600	150	IGBT3 LL	w/o NTC
30-F212R6A050SC01-M447E10	1200	50	IGBT4	w/o NTC
30-F212R6A075SC01-M448E10	1200	75	IGBT4	w/o NTC
30-F212R6A100SC01-M449E10	1200	100	IGBT4	w/o NTC
30-F212R6A150SC01-M440E10	1200	150	IGBT4	w/o NTC

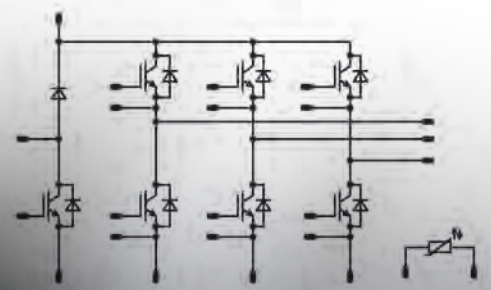
RECTIFIER (+BRAKE)
SIXPACK
SIXPACK+RECTIFIER
SEVENPACK
PIM (CIB)
PIM+PFC (CIP)
IPM (CIB)
IPM (CIP_PIM+PFC)
HALF-BRIDGE
H-BRIDGE
SINGLE-PHASE-INVERTER
H6.5
BOOSTER
BOOSTER-SYMMETRIC
Buck-Booster Symmetric
PFC (Single-phase applications)
PFC (Three-phase applications)
Three-level NPC (I-Type)
Three-level MNPC (T-Type)
Three-level ANPC
Schematics / Housings
Naming System

Application:

/ EMBEDDED DRIVES / INDUSTRIAL DRIVES

Topology Features:

/ Three-phase inverter + Brake



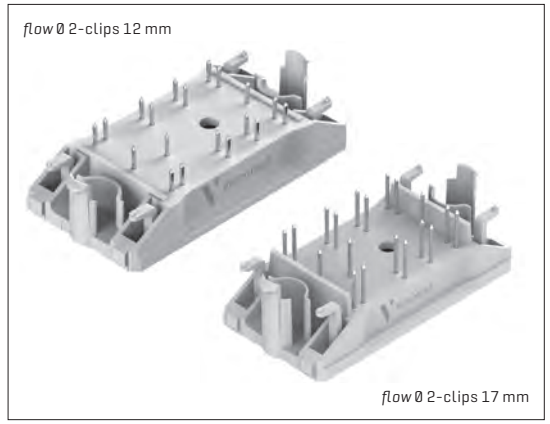
*flow*7PACK 0

Available Housings:

/ *flow* 0 2-clips 12 mm / *flow* 0 2-clips 17 mm

Possible Features:

/ Open Emitter configuration
/ Temperature sensor
/ Brake+Inverter



Schematics see page: 178
More details: www.vincotech.com/*flow*7PACK-0

Part-No	Voltage [V]	Current [A]	Technology	Comments
IB-OE-NTC				
10-F0127PA008SC-L156E09	1200	8	IGBT4	
10-FZ127PA008SC-L156E08	1200	8	IGBT4	
10-F0127PA015SC-L158E09	1200	15	IGBT4	
10-FZ127PA015SC-L158E08	1200	15	IGBT4	
10-F0127PA025SC-L159E09	1200	25	IGBT4	
10-FZ127PA025SC-L159E08	1200	25	IGBT4	

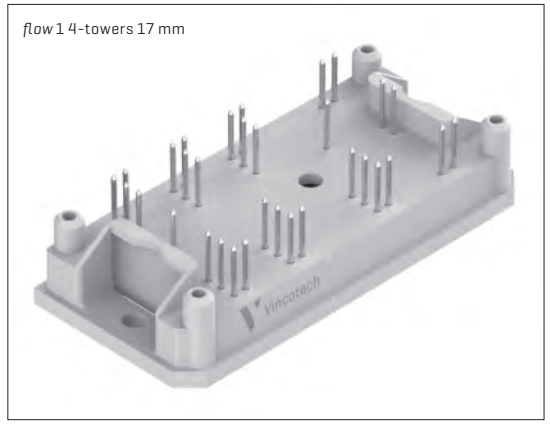
*flow*7PACK 1

Available Housings:

/ *flow* 1 4-towers 17 mm

Possible Features:

/ Open Emitter configuration
/ Temperature sensor
/ Brake+Inverter



Schematics see page: 178
More details: www.vincotech.com/*flow*7PACK-1

Part-No	Voltage [V]	Current [A]	Technology	Comments
IB-OE-NTC				
10-F1127PA025SC-L167E09	1200	25	IGBT4	
10-F1127PA035SC-L168E09	1200	35	IGBT4	
10-F1127PA050SC-L169E09	1200	50	IGBT4	

*flow*7PACK 2

Available Housings:

/ *flow* 2 4-towers 17 mm

Possible Features:

/ Inverter
/ Brake Chopper
/ Open Emitter configuration
/ Kelvin Emitter for improved switching performance
/ Temperature sensor

flow 2 4-towers 17 mm

Schematics see page: 178
More details: www.vincotech.com/*flow*7PACK-2

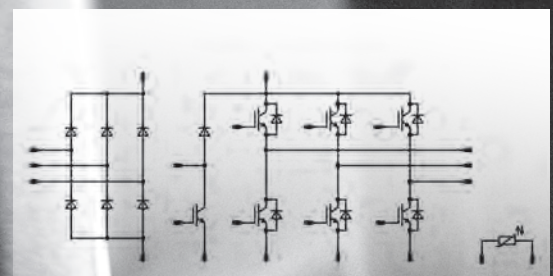
Part-No	Voltage [V]	Current [A]	Technology	Comments
Inverter-OE-KE-Brake-NTC				
30-F2127PA050SC-L177E09	1200	50	IGBT4	
30-F2127PA075SC-L178E09	1200	75	IGBT4	
30-F2127PA100SC-L179E09	1200	100	IGBT4	

Application:

/ EMBEDDED DRIVES / INDUSTRIAL DRIVES

Topology Features:

/ Converter + BRC + Inverter



RECTIFIER (+BRAKE)
SIXPACK
SIXPACK+RECTIFIER
SEVENPACK
PIM (CIB)
PIM+PFC (CIP)
IPM (CIB)
IPM (CIP_PIM+PFC)
HALF-BRIDGE
H-BRIDGE
SINGLE-PHASE-INVERTER
H6.5
BOOSTER
BOOSTER-SYMMETRIC
Buck-Booster Symmetric
PFC (Single-phase applications)
PFC (Three-phase applications)
Three-level NPC (I-Type)
Three-level MNPC (T-Type)
Three-level ANPC
Schematics / Housings
Naming System

*flow*PIM® 0

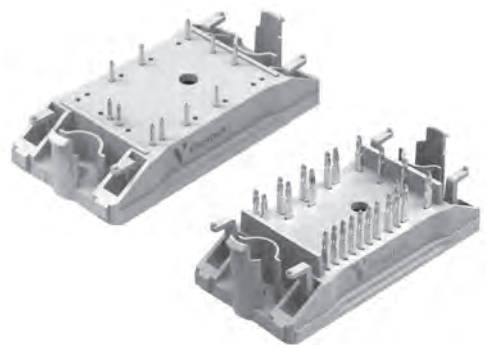
Available Housings:

/ *flow* 0 2-clips 12 mm / *flow* 0 2-clips 17 mm

Possible Features:

/ Open Emitter configuration
/ Temperature sensor
/ Converter+Brake+Inverter
/ Converter+Inverter
/ Single-phase Converter+Brake+Inverter
/ Single-phase Converter+Inverter
/ Three-phase Converter+Brake+Inverter
/ Three-phase Converter+Inverter

flow 0 2-clips 12 mm



flow 0 2-clips 17 mm

Schematics see page: 178
More details: www.vincotech.com/*flow*PIM-0

Part-No	Voltage [V]	Current [A]	Technology	Comments
CIB-OE-NTC				
V23990-P541-A28-PM	600	6	IGBT3	with three-phase standard rectifier
V23990-P541-A29-PM	600	6	IGBT3	with three-phase standard rectifier
V23990-P541-B28-PM	600	6	IGBT3	with single-phase standard rectifier
V23990-P541-B138-PM	600	6	IGBT3	with single-phase enhanced rectifier
V23990-P541-B129-PM	600	6	IGBT3	with single-phase standard rectifier
V23990-P543-A28-PM	600	10	IGBT3	with three-phase standard rectifier
V23990-P543-A29-PM	600	10	IGBT3	with three-phase standard rectifier
V23990-P543-A39-PM	600	10	IGBT3	with three-phase enhanced rectifier
V23990-P543-B129-PM	600	10	IGBT3	with single-phase standard rectifier
V23990-P543-B28-PM	600	10	IGBT3	with single-phase standard rectifier
V23990-P544-A28-PM	600	15	IGBT3	with three-phase standard rectifier
V23990-P544-A29-PM	600	15	IGBT3	with three-phase standard rectifier
V23990-P544-B28-PM	600	15	IGBT3	with single-phase standard rectifier
V23990-P544-B129-PM	600	15	IGBT3	with single-phase standard rectifier
V23990-P544-B128-PM	600	15	IGBT3	with single-phase standard rectifier
V23990-P545-A28-PM	600	20	IGBT3	with three-phase standard rectifier
V23990-P545-A29-PM	600	20	IGBT3	with three-phase standard rectifier
V23990-P545-A39-PM	600	20	IGBT3	with three-phase enhanced rectifier
V23990-P545-B28-PM	600	20	IGBT3	with single-phase standard rectifier
V23990-P545-B128-PM	600	20	IGBT3	with single-phase standard rectifier
V23990-P545-B129-PM	600	20	IGBT3	with single-phase standard rectifier
V23990-P546-A28-PM	600	30	IGBT3	with three-phase standard rectifier
V23990-P546-A38-PM	600	30	IGBT3	with three-phase enhanced rectifier
V23990-P546-A39-PM	600	30	IGBT3	with three-phase enhanced rectifier
V23990-P546-A29-PM	600	30	IGBT3	with three-phase standard rectifier
V23990-P546-D28-PM	600	30	IGBT3	with three-phase standard rectifier
V23990-P546-B28-PM	600	30	IGBT3	with single-phase standard rectifier
V23990-P546-B128-PM	600	30	IGBT3	with single-phase standard rectifier
V23990-P848-A58-PM	1200	4	IGBT4	with three-phase enhanced rectifier
V23990-P848-A49-PM	1200	4	IGBT4	with three-phase standard rectifier
V23990-P848-A59-PM	1200	4	IGBT4	with three-phase enhanced rectifier
10-FZ12PMA005M7-P848A28	1200	5	IGBT M7	with three-phase standard rectifier
10-F012PMA005M7-P848A29	1200	5	IGBT M7	with three-phase standard rectifier
V23990-P849-A48-PM	1200	8	IGBT4	with three-phase standard rectifier
V23990-P849-A49-PM	1200	8	IGBT4	with three-phase standard rectifier
V23990-P849-A58-PM	1200	8	IGBT4	with three-phase enhanced rectifier
V23990-P849-A59-PM	1200	8	IGBT4	with three-phase enhanced rectifier
V23990-P849-A59Y-PM	1200	8	IGBT4	with three-phase enhanced rectifier
V23990-P849-A49Y-PM	1200	8	IGBT4	with three-phase standard rectifier
10-FZ12PMA010M7-P849A28	1200	10	IGBT M7	with three-phase standard rectifier
10-F012PMA010M7-P849A29	1200	10	IGBT M7	with three-phase standard rectifier
V23990-P840-A48-PM	1200	15	IGBT4	with three-phase standard rectifier
V23990-P840-A49-PM	1200	15	IGBT4	with three-phase standard rectifier
V23990-P840-A58-PM	1200	15	IGBT4	with three-phase enhanced rectifier
V23990-P840-A59-PM	1200	15	IGBT4	with three-phase enhanced rectifier
V23990-P840-A58Y-PM	1200	15	IGBT4	with three-phase enhanced rectifier
10-FZ12PMA015M7-P840A28	1200	15	IGBT M7	with three-phase standard rectifier
10-F012PMA015M7-P840A29	1200	15	IGBT M7	with three-phase standard rectifier
CI-OE-NTC				
V23990-P541-C29-PM	600	6	IGBT3	with three-phase standard rectifier
V23990-P541-D138-PM	600	6	IGBT3	with single-phase standard rectifier
V23990-P541-D129-PM	600	6	IGBT3	with single-phase standard rectifier
V23990-P541-D28-PM	600	6	IGBT3	with single-phase standard rectifier
V23990-P543-D129-PM	600	10	IGBT3	with single-phase standard rectifier
V23990-P543-D28-PM	600	10	IGBT3	with single-phase standard rectifier
V23990-P543-C29-PM	600	10	IGBT3	with three-phase standard rectifier
V23990-P543-C28-PM	600	10	IGBT3	with three-phase standard rectifier
V23990-P544-C29-PM	600	15	IGBT3	with three-phase standard rectifier
V23990-P545-C38-PM	600	20	IGBT3	with three-phase enhanced rectifier
V23990-P545-C39-PM	600	20	IGBT3	with three-phase enhanced rectifier
V23990-P545-C29-PM	600	20	IGBT3	with three-phase standard rectifier
V23990-P546-C39-PM	600	30	IGBT3	with three-phase enhanced rectifier
V23990-P546-C38-PM	600	30	IGBT3	with three-phase enhanced rectifier
V23990-P546-C29-PM	600	30	IGBT3	with three-phase standard rectifier
V23990-P546-C28-PM	600	30	IGBT3	with three-phase standard rectifier
V23990-P848-C48-PM	1200	4	IGBT4	with three-phase standard rectifier
V23990-P848-C58-PM	1200	4	IGBT4	with three-phase enhanced rectifier
V23990-P848-C49-PM	1200	4	IGBT4	with three-phase standard rectifier
V23990-P848-C59-PM	1200	4	IGBT4	with three-phase enhanced rectifier
V23990-P849-C48-PM	1200	8	IGBT4	with three-phase standard rectifier
V23990-P849-C49-PM	1200	8	IGBT4	with three-phase standard rectifier
V23990-P849-C58-PM	1200	8	IGBT4	with three-phase enhanced rectifier
V23990-P849-C59-PM	1200	8	IGBT4	with three-phase enhanced rectifier
V23990-P840-C49-PM	1200	15	IGBT4	with three-phase standard rectifier
V23990-P840-C58-PM	1200	15	IGBT4	with three-phase enhanced rectifier
V23990-P840-C59-PM	1200	15	IGBT4	with three-phase enhanced rectifier
V23990-P840-C48-PM	1200	15	IGBT4	with three-phase standard rectifier

*flow*PIM® 0B

Available Housings:

/ *flow* 0B 2-towers 17 mm

Possible Features:

/ Open Emitter configuration
/ Temperature sensor
/ Single-phase Converter+Inverter

flow 0B 2-towers 17 mm

Schematics see page: 178
More details: www.vincotech.com/*flow*PIM-0B

Part-No	Voltage [V]	Current [A]	Technology	Comments
CI-OE-NTC				
10-0B06PRA004RC-L022C09	600	4	IGBT RC	

*flow*PIM® 1

Available Housings:

/ *flow* 1 4-towers 17 mm / *flow* 1 4-towers 12 mm

Possible Features:

/ Kelvin Emitter for improved switching performance
/ Open Emitter configuration
/ Temperature sensor
/ Converter+Brake+Inverter
/ Converter+Inverter

flow 1 4-towers 12 mm

Schematics see page: 178
More details: www.vincotech.com/*flow*PIM-1

Part-No	Voltage [V]	Current [A]	Technology	Comments
CIB-OE-KE-NTC				
V23990-P585-A20-PM	600	30	IGBT3	
V23990-P585-A20Y-PM	600	30	IGBT3	
V23990-P585-A208-PM	600	30	IGBT3	
V23990-P586-A20-PM	600	50	IGBT3	
V23990-P586-A20Y-PM	600	50	IGBT3	
V23990-P586-A208-PM	600	50	IGBT3	
V23990-P586-A208Y-PM	600	50	IGBT3	
V23990-P587-A20-PM	600	75	IGBT3	
V23990-P587-A208-PM	600	75	IGBT3	
V23990-P588-A41-PM	1200	15	IGBT4	
V23990-P588-A418-PM	1200	15	IGBT4	with brake
10-FY12PMA015M7-P587A78	1200	15	IGBT M7	
10-F112PMA015M7-P587A79	1200	15	IGBT M7	
10-PY12PMA015M7-P587A78Y	1200	15	IGBT M7	
V23990-P589-A418-PM	1200	25	IGBT4	
V23990-P589-A418Y-PM	1200	25	IGBT4	
V23990-P589-A41-PM	1200	25	IGBT4	
V23990-P589-A41Y-PM	1200	25	IGBT4	
10-FY12PMA025M7-P588A78	1200	25	IGBT M7	
10-F112PMA025M7-P588A79	1200	25	IGBT M7	
10-PY12PMA025M7-P588A78Y	1200	25	IGBT M7	
10-FY12PMA035M7-P589A78	1200	35	IGBT M7	
10-F112PMA035M7-P589A79	1200	35	IGBT M7	
10-PY12PMA035M7-P589A78Y	1200	35	IGBT M7	
10-FY12PMA050M7-P580A78	1200	50	IGBT M7	
CI-OE-KE-NTC				
V23990-P585-C20-PM	600	30	IGBT3	
V23990-P586-C20-PM	600	50	IGBT3	
V23990-P587-C20-PM	600	75	IGBT3	
V23990-P588-C41-PM	1200	15	IGBT4	
V23990-P588-C418-PM	1200	15	IGBT4	
V23990-P589-C418-PM	1200	25	IGBT4	
V23990-P580-C41-PM	1200	35	IGBT4	
V23990-P580-C41Y-PM	1200	35	IGBT4	
V23990-P580-C418-PM	1200	35	IGBT4	

*flow*90PIM 1

Available Housings:

/ *flow*90 1 2-clips

Possible Features:

/ Converter+Brake+Inverter
/ Open Emitter configuration
/ Temperature sensor

flow90 1 2-clip

Schematics see page: 178
More details: www.vincotech.com/*flow*90PIM-1

Part-No	Voltage [V]	Current [A]	Technology	Comments
CIB-OE-NTC				
V23990-P631-A-PM	600	6	IGBT3	
V23990-P632-A-PM	600	10	IGBT3	
V23990-P633-A-PM	600	15	IGBT3	
V23990-P634-A-PM	600	20	IGBT3	
V23990-P635-A-PM	600	30	IGBT3	
V23990-P638-A40-PM	1200	4	IGBT4	
V23990-P639-A40-PM	1200	8	IGBT4	
10-R112PMA010M7-P639A70	1200	10	IGBT M7	
V23990-P630-A40-PM	1200	15	IGBT4	
10-R112PMA015M7-P639A75	1200	15	IGBT M7	
V23990-P630-A44-PM	1200	25	IGBT4	
10-R112PMA025M7-P630A70	1200	25	IGBT M7	

*flow*PIM® 2

Available Housings:

/ *flow* 2 4-towers 17 mm

Possible Features:

/ Kelvin Emitter for improved switching performance
/ Open Emitter configuration
/ Temperature sensor
/ Converter+Brake+Inverter
/ Converter+Inverter

flow 2 4-towers 17 mm

Schematics see page: 178
More details: www.vincotech.com/*flow*PIM-2

Part-No	Voltage [V]	Current [A]	Technology	Comments
CIB-OE-KE-NTC				
V23990-P763-AY-PM	600	50	IGBT3	
V23990-P764-A-PM	600	75	IGBT3	
V23990-P764-AY-PM	600	75	IGBT3	
V23990-P765-A-PM	600	100	IGBT3	
V23990-P765-AY-PM	600	100	IGBT3	
V23990-P767-A-PM	1200	35	IGBT4	
V23990-P768-A-PM	1200	50	IGBT4	
V23990-P768-AY-PM	1200	50	IGBT4	
30-F212PMA050M7-L888A79	1200	50	IGBT M7	
30-P212PMA050M7-L888A79Y	1200	50	IGBT M7	
V23990-P769-A-PM	1200	75	IGBT4	
V23990-P769-AY-PM	1200	75	IGBT4	
30-F212PMA075M7-L889A79	1200	75	IGBT M7	
30-P212PMA075M7-L889A79Y	1200	75	IGBT M7	
V23990-P760-A-PM	1200	100	IGBT4	
V23990-P760-AY-PM	1200	100	IGBT4	
30-F212PMA100M7-L880A79	1200	100	IGBT M7	
30-P212PMA100M7-L880A79Y	1200	100	IGBT M7	
CI-OE-NTC				
V23990-P768-CY-PM	1200	50	IGBT4	

MiniSKiiP® PIM 0

Available Housings:

/ MiniSKiiP® 0

Possible Features:

/ Single-phase Converter+Inverter
/ Temperature sensor
/ Open Emitter configuration
/ Converter+Inverter

MiniSKiiP® 0

Schematics see page: 178
More details: www.vincotech.com/MiniSKiiP-PIM-0

Part-No	Voltage [V]	Current [A]	Technology	Comments
CI-NTC				
80-M006PNB006SA01-K614D	600	6	IGBT3	Equivalent: SKiiP® 01NEC066V3
80-M006PNB010SA01-K615D	600	10	IGBT3	Equivalent: SKiiP® 02NEC066V3
80-M012PNB008SC-K619C41	1200	8	IGBT4	Equivalent: SKiiP® 03NAC12T4V1
80-M012PNA010M7-K619C71	1200	10	IGBT M7	
CI-OE-NTC				
80-M006PNB006SA-K614C	600	6	IGBT3	Equivalent: SKiiP® 01NAC066V3
80-M006PNB010SA-K615C	600	10	IGBT3	Equivalent: SKiiP® 02NAC066V3

MiniSKiiP® PIM 1

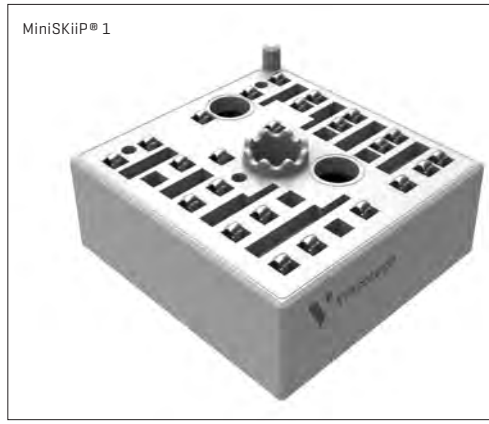
Available Housings:

/ MiniSKiiP® 1

Possible Features:

/ Open Emitter configuration
/ Temperature sensor
/ Single-phase Converter+Brake+Inverter
/ Converter+Brake+Inverter

MiniSKiiP® 1



Schematics see page: 178
More details: www.vincotech.com/MiniSKiiP-PIM-1

Part-No	Voltage [V]	Current [A]	Technology	Comments
CIB-OE-NTC				
V23990-K201-A-PM	600	6	IGBT3	Equivalent: SKiiP® 01NAC066V3
V23990-K202-A-PM	600	10	IGBT3	Equivalent: SKiiP® 02NAC066V3
V23990-K203-A-PM	600	15	IGBT3	Equivalent: SKiiP® 13NAB066V1
V23990-K204-A-PM	600	20	IGBT3	Equivalent: SKiiP® 14NAB066V1
V23990-K209-A40-PM	1200	8	IGBT4	Equivalent: SKiiP® 11NAB12T4V1
80-M112PMA010M7-K209A70	1200	10	IGBT M7	
V23990-K200-A40-PM	1200	15	IGBT4	Equivalent: SKiiP® 12NAB12T4V1
80-M112PMA015M7-K200A70	1200	15	IGBT M7	

MiniSKiiP® PIM 2

Available Housings:

/ MiniSKiiP® 2

Possible Features:

/ Converter+Brake+Inverter
/ Kelvin Emitter for improved switching performance
/ Temperature sensor

MiniSKiiP® 2

Schematics see page: 178
More details: www.vincotech.com/MiniSKiiP-PIM-2

Part-No	Voltage [V]	Current [A]	Technology	Comments
CIB-KE-NTC				
V23990-K222-A-PM	600	30	IGBT3	Equivalent: SKiiP® 25NAB066V1
V23990-K223-A-PM	600	50	IGBT3	Equivalent: SKiiP® 26NAB066V1
V23990-K229-A40-PM	1200	25	IGBT4	Equivalent: SKiiP® 23NAB12T4V1
V23990-K229-A41-PM	1200	25	IGBT4	Equivalent: SKiiP® 23NAB12T4V10
80-M212PMA025M7-K229A70	1200	25	IGBT M7	
V23990-K220-A40-PM	1200	35	IGBT4	Equivalent: SKiiP® 24NAB12T4V1
V23990-K220-A41-PM	1200	35	IGBT4	Equivalent: SKiiP® 24NAB12T4V10
80-M212PMA035M7-K220A70	1200	35	IGBT M7	
80-M212PMA050M7-K740A	1200	50	IGBT M7	

MiniSKiiP® PIM 3

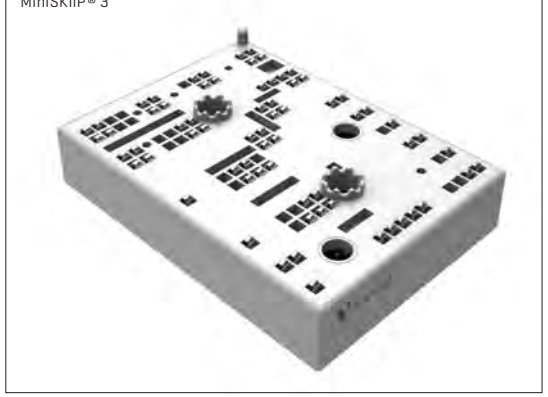
Available Housings:

/ MiniSKiiP® 3

Possible Features:

/ Converter+Brake+Inverter
/ Kelvin Emitter for improved switching performance
/ Temperature sensor

MiniSKiiP® 3



Schematics see page: 178
More details: www.vincotech.com/MiniSKiiP-PIM-3

Part-No	Voltage [V]	Current [A]	Technology	Comments
CIB-KE-NTC				
V23990-K242-A-PM	600	75	IGBT3	Equivalent: SKiiP® 37NAB066V1
V23990-K243-A-PM	600	100	IGBT3	Equivalent: SKiiP® 38NAB066V1
V23990-K427-A40-PM	1200	35	IGBT4	Equivalent: SKiiP® 34NAB12T4V1
V23990-K428-A40-PM	1200	50	IGBT4	Equivalent: SKiiP® 35NAB12T4V1
80-M312PMA050M7-K428A70	1200	50	IGBT M7	
V23990-K429-A40-PM	1200	75	IGBT4	Equivalent: SKiiP® 37NAB12T4V1
80-M312PMA075M7-K429A70	1200	75	IGBT M7	
V23990-K420-A40-PM	1200	100	IGBT4	Equivalent: SKiiP® 38NAB12T4V1
80-M312PMA100M7-K420A70	1200	100	IGBT M7	

*flow*PIM® E1 NEW

Available Housings:

/ *flow* E1

Possible Features:

/ Converter+Brake+Inverter
/ Kelvin Emitter for improved switching performance
/ Temperature sensor

flow E1

Schematics see page: 178
More details: www.vincotech.com/*flow*PIM-E1

Part-No	Voltage [V]	Current [A]	Technology	Comments
CIB-OE-NTC				
10-EZ12PMA010SC-L927A08T	1200	10	IGBT4	
10-EZ12PMA010M7-L927A78T	1200	10	IGBT M7	
10-EZ12PMA015SC-L928A08T	1200	15	IGBT4	
10-EZ12PMA015M7-L928A78T	1200	15	IGBT M7	

*flow*PIM® E2 NEW

Available Housings:

/ *flow* E2

Possible Features:

/ Converter+Brake+Inverter
/ Kelvin Emitter for improved switching performance
/ Temperature sensor

flow E2

Schematics see page: 178
More details: www.vincotech.com/PIM-E2

Part-No	Voltage [V]	Current [A]	Technology	Comments
CIB-OE-NTC				
10-EY12PMA015SC-L186A48T	1200	15	IGBT4	
10-EY12PMA015M7-L186A78T	1200	15	IGBT M7	
10-EY12PMA025SC-L187A48T	1200	25	IGBT4	
10-EY12PMA025M7-L187A78T	1200	25	IGBT M7	
10-EY12PMA035SC-L188A48T	1200	35	IGBT4	
10-EY12PMA035M7-L188A78T	1200	35	IGBT M7	

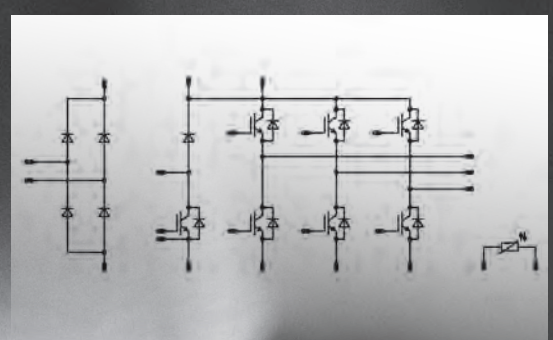
RECTIFIER (+BRAKE)
SIXPACK
SIXPACK+RECTIFIER
SEVENPACK
PIM (CIB)
PIM+PFC (CIP)
IPM (CIB)
IPM (CIP_PIM+PFC)
HALF-BRIDGE
H-BRIDGE
SINGLE-PHASE-INVERTER
H6.5
BOOSTER
BOOSTER-SYMMETRIC
Buck-Booster Symmetric
PFC (Single-phase applications)
PFC (Three-phase applications)
Three-level NPC (I-Type)
Three-level MNPC (T-Type)
Three-level ANPC
Schematics / Housings
Naming System

Application:

/ EMBEDDED DRIVES / INDUSTRIAL DRIVES

Topology Features:

/ Single-phase converter + Inverter + PFC



*flow*PIM® 0B + PFC

Available Housings:

/ *flow* 0B 2-towers 17 mm

Possible Features:

/ Converter+PFC+Inverter
/ Open Emitter configuration
/ Temperature sensor

flow 0B 2-towers 17 mm

Schematics see page: 180
More details: www.vincotech.com/*flow*PIM-0B+PFC

Part-No	Voltage [V]	Current [A]	Technology	Comments
CIP-OE-NTC				
10-0B06PPA004RC-L022A09	600	4	IGBT RC	
10-0B06PPA006RC-L023A09	600	6	IGBT RC	
10-0B06PPA010RC-L025A09	600	10	IGBT RC	
10-0B06PPA010RC01-L025A19	600	10	IGBT RC	PFC: F5+SiC diode (up to 150 kHz)

*flow*PIM® 0 + PFC

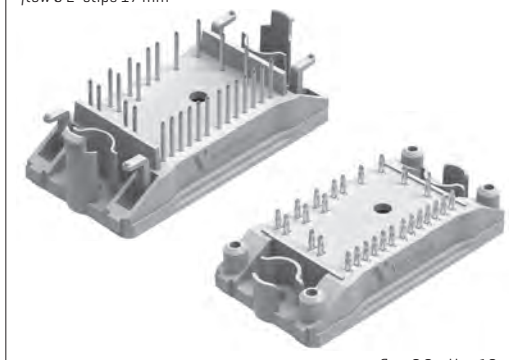
Available Housings:

/ *flow* 0 2-clips 17 mm / *flow* 0 2-clips 12 mm

Possible Features:

/ Converter+PFC+Inverter
/ Integrated Shunt Resistor
/ Open Emitter configuration
/ Temperature sensor

flow 0 2-clips 17 mm



flow 0 2-clips 12 mm

Schematics see page: 180
More details: www.vincotech.com/*flow*PIM-0+PFC

Part-No	Voltage [V]	Current [A]	Technology	Comments
CIP-OE-Shunt-NTC				
10-F006PPA006SB-M682B	600	6	IGBT3 LL	improved Rth (AlN)
10-PC06PPA006SB-M682B06Y	600	6	IGBT3 LL	
10-F006PPA010SB-M683B	600	10	IGBT3 LL	improved Rth (AlN)
10-P006PPA010SB-M683BY	600	10	IGBT3 LL	
10-PC06PPA010SB-M683B06Y	600	10	IGBT3 LL	
10-F006PPA015SB-M684B	600	15	IGBT3 LL	improved Rth (AlN)
10-F006PPA020SB-M685B	600	20	IGBT3 LL	improved Rth (AlN)
10-F006PPA020SB01-M685B10	600	20	IGBT3 LL	with SiC diode in PFC; improved Rth (AlN)

*flow*90PIM 1 + PFC

Available Housings:

/ *flow*90 1 2-clip

Possible Features:

/ Converter+PFC+Inverter
/ Open Emitter configuration
/ Temperature sensor

flow 0B 2-towers 17 mm

Schematics see page: 180
More details: www.vincotech.com/*flow*90PIM-1+PFC

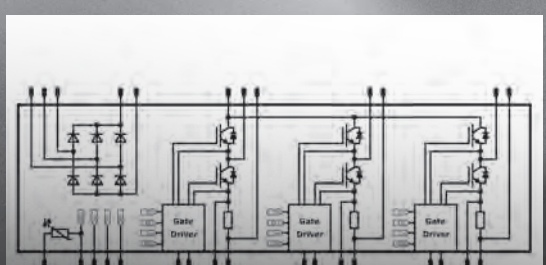
Part-No	I Voltage (V)	I Current (A)	I Technology	I Comments
CIP-OE-NTC				
10-R106PPA020SB01-M934A	I 600	I 20	I IGBT3 LL	

Application:

/ EMBEDDED DRIVES / INDUSTRIAL DRIVES

Topology Features:

/ Three-phase converter + Inverter + Brake with integrated gate drive



RECTIFIER (+BRAKE)
SIXPACK
SIXPACK+RECTIFIER
SEVENPACK
PIM (CIB)
PIM+PFC (CIP)
IPM (CIB)
IPM (CIP_PIM+PFC)
HALF-BRIDGE
H-BRIDGE
SINGLE-PHASE-INVERTER
H6.5
BOOSTER
BOOSTER-SYMMETRIC
Buck-Booster Symmetric
PFC (Single-phase applications)
PFC (Three-phase applications)
Three-level NPC (I-Type)
Three-level MNPC (T-Type)
Three-level ANPC
Schematics / Housings
Naming System

*flow*IPM 1B (CI)

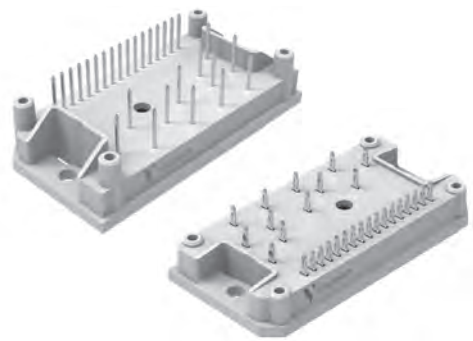
Available Housings:

/ *flow* 1B 4-towers 17 mm / *flow* 1B 4-towers 12 mm

Possible Features:

/ Complete Bootstrap Circuit
/ Converter+Inverter
/ Emitter Shunts
/ Open Emitter configuration
/ Temperature sensor
/ Inverter

flow 1B 4-towers 17 mm



flow 1B 4-towers 12 mm

Schematics see page: 180
More details: www.vincotech.com/*flow*IPM-1B-CI

Part-No	Voltage [V]	Current [A]	Technology	Comments
CIB-OE-NTC				
20-1B12IPA008SC-L239C09	1200	8	IGBT4	
20-FB12IPA008SC-L239C08Y	1200	8	IGBT4	
20-1B12IPA015SC-L579F09	1200	15	IGBT4	w/o rectifier

*flow*IPM 1C (CIB)

Available Housings:

/ *flow* 1C 4-towers 12 mm

Possible Features:

/ Brake Chopper
/ Complete Bootstrap Circuit
/ Emitter Shunts
/ Input rectifier
/ Gate Drives for Brake and Inverter switches
/ Inverter
/ Open Emitter configuration
/ Temperature sensor

flow 1C 4-towers 12 mm

Schematics see page: 180
More details: www.vincotech.com/*flow*IPM-1C-CIB

Part-No	Voltage [V]	Current [A]	Technology	Comments
CIB-OE-BRC-NTC				
20-1C12IBA015SH-LB18A08	1200	15	IGBT4	

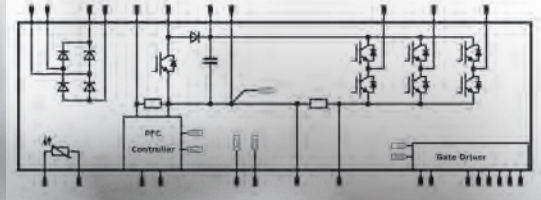
RECTIFIER (+BRAKE)
SIXPACK
SIXPACK+RECTIFIER
SEVENPACK
PIM (CIB)
PIM+PFC (CIP)
IPM (CIB)
IPM (CIP_PIM+PFC)
HALF-BRIDGE
H-BRIDGE
SINGLE-PHASE-INVERTER
H6.5
BOOSTER
BOOSTER-SYMMETRIC
Buck-Booster Symmetric
PFC (Single-phase applications)
PFC (Three-phase applications)
Three-level NPC (I-Type)
Three-level MNPC (T-Type)
Three-level ANPC
Schematics / Housings
Naming System

Application:

/ EMBEDDED DRIVES / INDUSTRIAL DRIVES

Topology Features:

/ Single-phase converter + Inverter + PFC with integrated gate drive



*flow*IPM 1B (CIP)

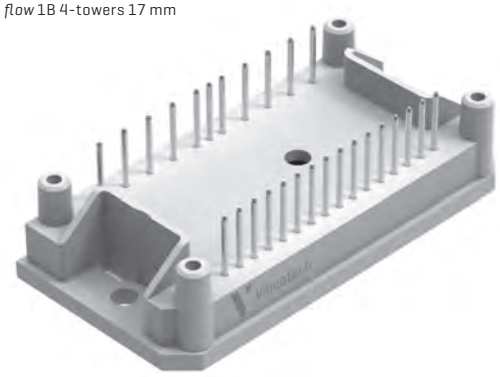
Available Housings:

/ *flow* 1B 4-towers 17 mm

Possible Features:

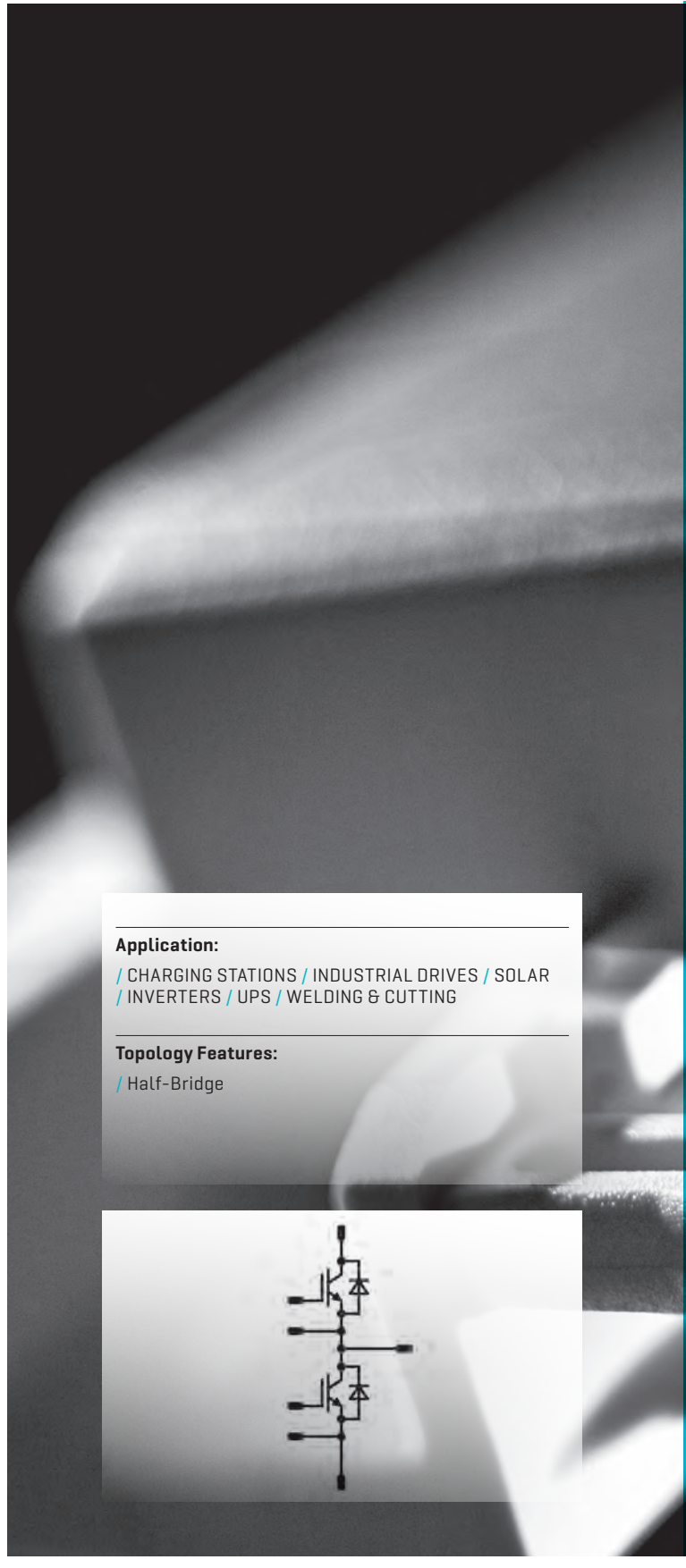
/ Converter+PFC+Inverter
/ PFC controller or gate driver
/ Gate Drive including complete Bootstrap Circuit
/ Integrated DC capacitor
/ Inverter Shunt
/ PFC Shunt
/ Temperature sensor

flow 1B 4-towers 17 mm



Schematics see page: 181
More details: www.vincotech.com/*flow*IPM-1B-CIP

Part-No	Voltage (V)	Current (A)	Technology	Comments
CIP-NTC				
20-1B06IPB004RC-P952A40	600	4	IGBT RC	Integrated PFC controller
20-1B06IPB004RC01-P952A45	600	4	IGBT RC	
20-1B06IPB010RC-P955A40	600	10	IGBT RC	Integrated PFC controller
20-1B06IPB010RC03-P955A65	600	10	IGBT RC	MOSFET switch in the PFC
20-1B06IPB010RC02-L815A49	600	10	IGBT RC	Integrated PFC controller Integrated PFC controller; SiC diode in the PFC
20-1B06IPB010RC01-P955A45	600	10	IGBT RC	



Application:

/ CHARGING STATIONS / INDUSTRIAL DRIVES / SOLAR / INVERTERS / UPS / WELDING & CUTTING

Topology Features:

/ Half-Bridge

RECTIFIER (+BRAKE)
SIXPACK
SIXPACK+RECTIFIER
SEVENPACK
PIM (CIB)
PIM+PFC (CIP)
IPM (CIB)
IPM (CIP_PIM+PFC)
HALF-BRIDGE
H-BRIDGE
SINGLE-PHASE-INVERTER
H6.5
BOOSTER
BOOSTER-SYMMETRIC
Buck-Booster Symmetric
PFC (Single-phase applications)
PFC (Three-phase applications)
Three-level NPC (I-Type)
Three-level MNPC (T-Type)
Three-level ANPC
Schematics / Housings
Naming System

*flow*PHASE 0 + NTC

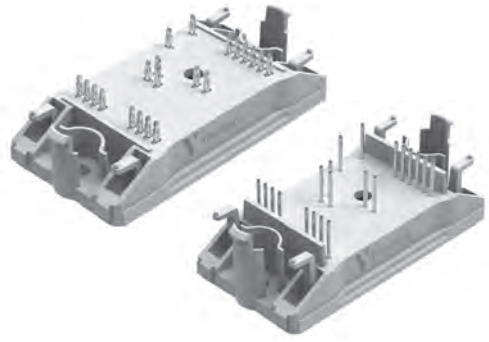
Available Housings:

/ *flow* 0 2-clips 12 mm / *flow* 0 2-clips 17 mm

Possible Features:

/ Half Bridge
/ Temperature sensor

flow 0 2-clips 12 mm



flow 0 2-clips 17 mm

Schematics see page: 181
More details: www.vincotech.com/*flow*PHASE-0+NTC

Part-No	Voltage (V)	Current (A)	Technology	Comments
Half Bridge-NTC				
10-FZ122PB050SC02-M817F08	1200	50	IGBT4	
10-FZ122PB075SC-M818F08	1200	75	IGBT4	
10-FZ122PB100SC02-M819F08	1200	100	IGBT4	
10-FZ122PB100SC03-M819F18	1200	100	IGBT4	
10-FZ122PB100SH-M819F28	1200	100	IGBT4 HS	
10-F0122PB100SC02-M819F09	1200	100	IGBT4	
10-F0122PB100SC03-M819F19	1200	100	IGBT4	
10-PZ122PB100SH-M819F28Y	1200	100	IGBT4 HS	
10-PZ122PB100SH01-M819F38Y	1200	100	IGBT4 HS	
10-PZ122PB100SC02-M819F08Y	1200	100	IGBT4	
10-PZ122PB100SC03-M819F18Y	1200	100	IGBT4	

MiniSKiiP® DUAL 2

Available Housings:

/ MiniSKiiP® DUAL 2

Possible Features:

/ Half Bridge
/ Temperature sensor

MiniSKiiP® DUAL 2

Schematics see page: 181
More details: www.vincotech.com/MiniSkiiP-DUAL-2

Part-No	Voltage (V)	Current (A)	Technology	Comments
Half Bridge-NTC				
80-M2072PA150M7-K704F70	650	150	IGBT M7	
80-M2072PA150SC-K704F40	650	150	IGBT3	Equivalent: SKiiP® 24 GB 07 E3 V1
80-M2072PA200M7-K705F70	650	200	IGBT M7	
80-M2072PA200SC-K705F40	650	200	IGBT3	Equivalent: SKiiP® 26 GB 07 E3 V1
80-M2122PA150M7-K708F70	1200	150	IGBT M7	
80-M2122PA150SC-K708F40	1200	150	IGBT4	Equivalent: SKiiP® 24 GB 12 T4 V1
80-M2122PA200M7-K709F70	1200	200	IGBT M7	
80-M2122PA200SC-K709F40	1200	200	IGBT4	Equivalent: SKiiP® 26 GB 12 T4 V1

MiniSKiiP® DUAL 3

Available Housings:

/ MiniSKiiP® DUAL 3

Possible Features:

/ Half Bridge
/ Temperature sensor

MiniSKiiP® DUAL 3

Schematics see page: 181
More details: www.vincotech.com/MiniSkiiP-DUAL-3

Part-No	Voltage [V]	Current [A]	Technology	Comments
Half Bridge-NTC				
80-M3072PA300SC-K836F30	650	300	IGBT3	Equivalent:SKiiP® 38 GB 07 E3 V1
80-M3072PA300M7-K836F70	650	300	IGBT M7	
80-M3122PA300SC-K839F42	1200	300	IGBT4	Equivalent:SKiiP® 38 GB 12 E4 V1
80-M3122PA300M7-K839F70	1200	300	IGBT M7	
80-M3122PA400SC-K830F40	1200	400	IGBT4	Equivalent:SKiiP® 39 GB 12 E4 V1
80-M3122PA400M7-K830F70	1200	400	IGBT M7	

VINcoDUAL E3

Available Housings:

/ VINco E3

Possible Features:

/ Half Bridge
/ Temperature sensor

VINco E3

Schematics see page: 181
More details: www.vincotech.com/VINcoDUAL-E3

Part-No	Voltage [V]	Current [A]	Technology	Comments
Half Bridge-NTC				
A0-VS122PA300M7-L757F70	1200	300	IGBT M7	
A0-VP122PA300M7-L757F70T	1200	300	IGBT M7	
A0-VS122PA450M7-L758F70	1200	450	IGBT M7	
A0-VS122PA600M7-L759F70	1200	600	IGBT M7	
A0-VP122PA450M7-L758F70T	1200	450	IGBT M7	
A0-VS122PA600M7-L759F70	1200	600	IGBT M7	
A0-VP122PA600M7-L759F70T	1200	600	IGBT M7	
A0-VS122PA690M7-L750F70	1200	690	IGBT M7	
A0-VP122PA690M7-L750F70T	1200	690	IGBT M7	

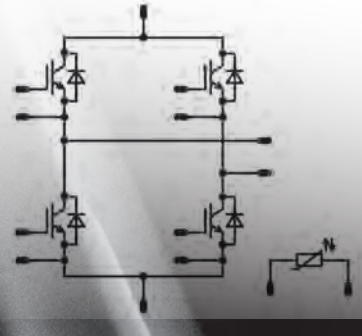
RECTIFIER (+BRAKE)
SIXPACK
SIXPACK+RECTIFIER
SEVENPACK
PIM (CIB)
PIM+PFC (CIP)
IPM (CIB)
IPM (CIP_PIM+PFC)
HALF-BRIDGE
H-BRIDGE
SINGLE-PHASE-INVERTER
H6.5
BOOSTER
BOOSTER-SYMMETRIC
Buck-Booster Symmetric
PFC (Single-phase applications)
PFC (Three-phase applications)
Three-level NPC (I-Type)
Three-level MNPC (T-Type)
Three-level ANPC
Schematics / Housings
Naming System

Application:

/ CHARGING STATIONS / UPS / WELDING & CUTTING

Topology Features:

/ H-Bridge



*fast*PACK 0 H

Available Housings:

/ *flow* 0 4-clips 17 mm / *flow* 0 2-clips 12 mm
/ *flow* 0 2-clips 17 mm

Possible Features:

/ Kelvin Emitter for improved switching performance
/ Temperature sensor

flow 0 4-clips 17 mm

Schematics see page: 181
More details: www.vincotech.com/*flow*PACK-0-H

Part-No	Voltage [V]	Current [A]	Technology	Comments
H-Bridge-KE-NTC				
V23990-P623-F24-PM	600	50	IGBT3	fsw < 30 kHz
V23990-P623-F04-PM	600	60	IGBT2 HS	fsw < 100 kHz
V23990-P623-F14-PM	600	60	IGBT2 HS	fsw < 100 kHz, improved Rth
V23990-P624-F24-PM	600	75	IGBT3	fsw < 30 kHz
V23990-P625-F24-PM	600	100	IGBT3	fsw < 30 kHz
V23990-P623-F59-PM	650	50	IGBT H5	fsw > 30 kHz
V23990-P623-F58-PM	650	50	IGBT H5	
V23990-P627-F88-PM	1200	15	IGBT4 HS	fsw < 100 kHz
V23990-P627-F89-PM	1200	15	IGBT4 HS	fsw < 100 kHz
V23990-P629-F48-PM	1200	40	IGBT4 HS	fsw < 100 kHz

*fast*PACK 0 SiC

Available Housings:

/ *flow* 0 4-towers 12 mm

Possible Features:

/ Kelvin Emitter for improved switching performance
/ Integrated DC capacitor
/ Open Emitter configuration
/ Temperature sensor
/ Dual halfbridge

flow 0 4-tower 12 mm

Schematics see page: 181
More details: www.vincotech.com/*fast*PACK-0-SiC

Part-No	Voltage [V]	Current [A]	Technology	Comments
H-Bridge-OE-KE-Cap-NTC				
10-PC094PB035ME02-L629F36Y	900	70	SiC MOSFET	
10-PC094PB017ME02-L620F36Y	900	140	SiC MOSFET	
2xHalf-Bridge-KE-NTC				
10-PC094PB065ME01-L637F06Y	900	33	SiC MOSFET	
10-PC124PA040MR-L638F18Y	1200	40	SiC MOSFET	

*flow*PACK 1 H

Available Housings:

/ *flow* 1 4-towers 12 mm

Possible Features:

/ Kelvin Emitter for improved switching performance
/ Open Emitter configuration
/ Temperature sensor

flow 1 4-towers 12 mm

Schematics see page: 181
More details: www.vincotech.com/*flow*PACK-1-H

Part-No	Voltage (V)	Current (A)	Technology	Comments
H-Bridge-KE-OE-NTC				
10-FY064PA050SG10-M582F08	600	50	IGBT3 HS	
10-FY074PA050SM-M582F38	650	50	IGBT H5	
10-FY074PA075SG-M583F08	650	75	IGBT3 HS	
10-FY124PA040FV-L588F88	1200	40	Trench Field Stop IGBT	
10-PY124PA040FV-L588F88Y	1200	40	Trench Field Stop IGBT	
10-FY124PA040SH-L588F48	1200	40	IGBT4 HS	
10-PY124PA040SH-L588F48Y	1200	40	IGBT4 HS	
10-PY124PA080FV-L589F88Y	1200	80	Trench Field Stop IGBT	
10-FY124PA080SH-L589F48	1200	80	IGBT4 HS	
10-PY124PA080SH-L589F48Y	1200	80	IGBT4 HS	
10-FY124PA080FV-L589F88	1200	80	Trench Field Stop IGBT	

*fast*PACK 1 HC

Available Housings:

/ *flow* 1 4-towers 12 mm

Possible Features:

/ Integrated DC capacitor
/ Kelvin Emitter for improved switching performance
/ Open Emitter configuration
/ Temperature sensor

flow 1 4-towers 12 mm

Schematics see page: 181
More details: www.vincotech.com/*flow*PACK-1-HC

Part-No	Voltage (V)	Current (A)	Technology	Comments
H-Bridge-KE-OE-Cap-NTC				
10-FY074PA100SM-L583F08	650	100	IGBT H5	fsw > 30 kHz
10-FY074PA100SM01-L583F18	650	100	IGBT H5	fsw > 30kHz, full current FWD
10-PY074PA100SM01-L583F18Y	650	100	IGBT H5	fsw > 30kHz, full current FWD

*fast*PACK 0 MOS

Available Housings:

/ *flow* 0 2-clips 12 mm

Possible Features:

/ Kelvin Emitter for improved switching performance
/ Integrated DC capacitor
/ Open Emitter configuration
/ Temperature sensor

flow 0 2-clips 12 mm

Schematics see page: 181
More details: www.vincotech.com/*fast*PACK-0-MOS

Part-No	Voltage [V]	Current [A]	Technology	Comments
H-Bridge-OE-KE-Cap-NTC				
10-FZ074PA080CR-L622F68	650	20	Infineon CoolMOS™ CFD2	
10-PZ074PA080CR-L622F68Y	650	20	Infineon CoolMOS™ CFD2	

*fast*PACK 1 MOS

Available Housings:

/ *flow* 1 4-towers 12 mm

Possible Features:

/ Kelvin Emitter for improved switching performance
/ Integrated DC capacitor
/ Open Emitter configuration
/ Temperature sensor

flow 1 4-towers 12 mm

Schematics see page: 181
More details: www.vincotech.com/*fast*PACK-1-MOS

Part-No	Voltage [V]	Current [A]	Technology	Comments
H-Bridge-OE-KE-Cap-NTC				
10-FY074PA040CR-L581F78	650	40	Infineon CoolMOS™ CFD2	
10-PY074PA040CR-L581F78Y	650	40	Infineon CoolMOS™ CFD2	
10-FY074PA020CR-L582F78	650	80	Infineon CoolMOS™ CFD2	
10-PY074PA020CR-L582F78Y	650	80	Infineon CoolMOS™ CFD2	

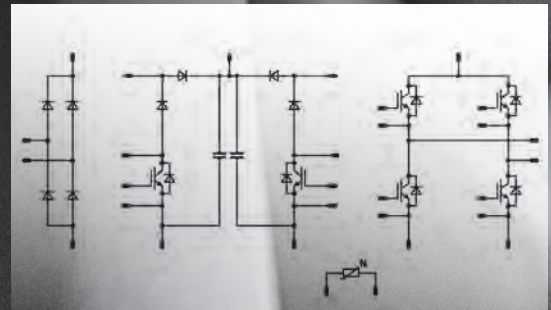
RECTIFIER (+BRAKE)
SIXPACK
SIXPACK+RECTIFIER
SEVENPACK
PIM (CIB)
PIM+PFC (CIP)
IPM (CIB)
IPM (CIP_PIM+PFC)
HALF-BRIDGE
H-BRIDGE
SINGLE-PHASE-INVERTER
H6.5
BOOSTER
BOOSTER-SYMMETRIC
Buck-Booster Symmetric
PFC (Single-phase applications)
PFC (Three-phase applications)
Three-level NPC (I-Type)
Three-level MNPC (T-Type)
Three-level ANPC
Schematics / Housings
Naming System

Application:

/ CHARGING STATIONS / SOLAR INVERTERS /
/ WELDING & CUTTING

Topology Features:

/ Single-phase inverter



*flow*RPI 1

Available Housings:

/ *flow* 1 4-towers 12 mm

Possible Features:

/ Rectifier + Dual Booster + H-Bridge
/ Kelvin Emitter for improved switching performance
/ Open Emitter configuration
/ Temperature sensor

flow 1 4-towers 12 mm

Schematics see page: 182
More details: www.vincotech.com/*flow*RPI-1

Part-No	Voltage (V)	Current (A)	Technology	Comments
Rectifier + Dual Booster + H-Bridge-KE-OE-NTC-CAP				
10-FY07ZAA015SM-L512B28	650	15	IGBT H5	
10-FY07ZAA030SM-L513B28	650	30	IGBT H5	
10-FY07ZAA050SM-L514B28	650	50	IGBT H5	
10-FY07ZAB050SM-L514B08	650	50	IGBT H5	Wide input voltage range rated PFC
10-FY07ZAB075SM-L515B08	650	75	IGBT H5	Wide input voltage range rated PFC

*flow*SOL 0 BI (TL)

Available Housings:

/ *flow* 0 2-clips 12 mm

Possible Features:

/ Booster + H-Bridge
/ Kelvin Emitter for improved switching performance
/ Temperature sensor

flow 0 2-clips 12 mm

Schematics see page: 182
More details: www.vincotech.com/*flow*SOL-0-BI-TL

Part-No	Voltage (V)	Current (A)	Technology	Comments
Booster + H-Bridge-KE-NTC				
10-FZ07BIA030SM02-P894E58	650	30	IGBT H5	
10-PZ07BIA030SM02-P894E58Y	650	30	IGBT H5	
10-FZ07BIA030S5Y-P894E78	650	30	IGBT S5	
10-PZ07BIA030SG-P894E38Y	650	30	IGBT3 HS	
10-PZ07BIA030RW-P894E88Y	650	30	IGBT fast	
10-FZ07BIA030SG-P894E38	650	30	IGBT3 HS	
10-FZ07BIA030RW-P894E88	650	30	IGBT H5	
10-PZ07BIA030SM01-P894E68Y	650	30	IGBT H5	
10-FZ07BIA030SM01-P894E68	650	30	IGBT H5	

*flow*SOL 0 BI (T) primary

Available Housings:

/ *flow* 0 2-clips 12 mm

Possible Features:

/ Booster + H-Bridge
/ Kelvin Emitter for improved switching performance
/ Temperature sensor

flow 0 2-clips 12 mm

Schematics see page: 182
More details: www.vincotech.com/*flow*SOL-0-BI-T-prim

Part-No	Voltage [V]	Current [A]	Technology	Comments
Booster + H-Bridge-KE-NTC				
10-FZ06BIA083FI-P896E	600	30	Infineon CoolMOS™ CFD2	

*flow*SOL 1 BI (TL)

Available Housings:

/ *flow* 1 4-towers 12 mm

Possible Features:

/ Dual Booster + H-Bridge
/ Kelvin Emitter for improved switching performance
/ Integrated DC capacitor
/ Temperature sensor
/ Split output for elimination of X-conduction at fast turn-on

flow 1 4-towers 12 mm

Schematics see page: 182
More details: www.vincotech.com/*flow*SOL-1-BI-TL

Part-No	Voltage [V]	Current [A]	Technology	Comments
Dual Booster + H-Bridge-KE-Cap-NTC-bypass diode				
10-FY06BIA050SG-M523E18	600	50	IGBT3 HS	
10-FY07BIA050SM-M523E38	650	50	IGBT H5	
10-PY07BIA050SM-M523E38Y	650	50	IGBT H5	
Dual Booster + H-Bridge-KE-Cap-NTC				
10-FY07BIA041MF-M528E68	650	33	Infineon CoolMOS™ CFD2	
10-FY07BIA041MC-M528E58	650	33	Infineon CoolMOS™ CFD2	

*flow*SOL 1 BI (T) primary

Available Housings:

/ *flow* 1 4-towers 12 mm

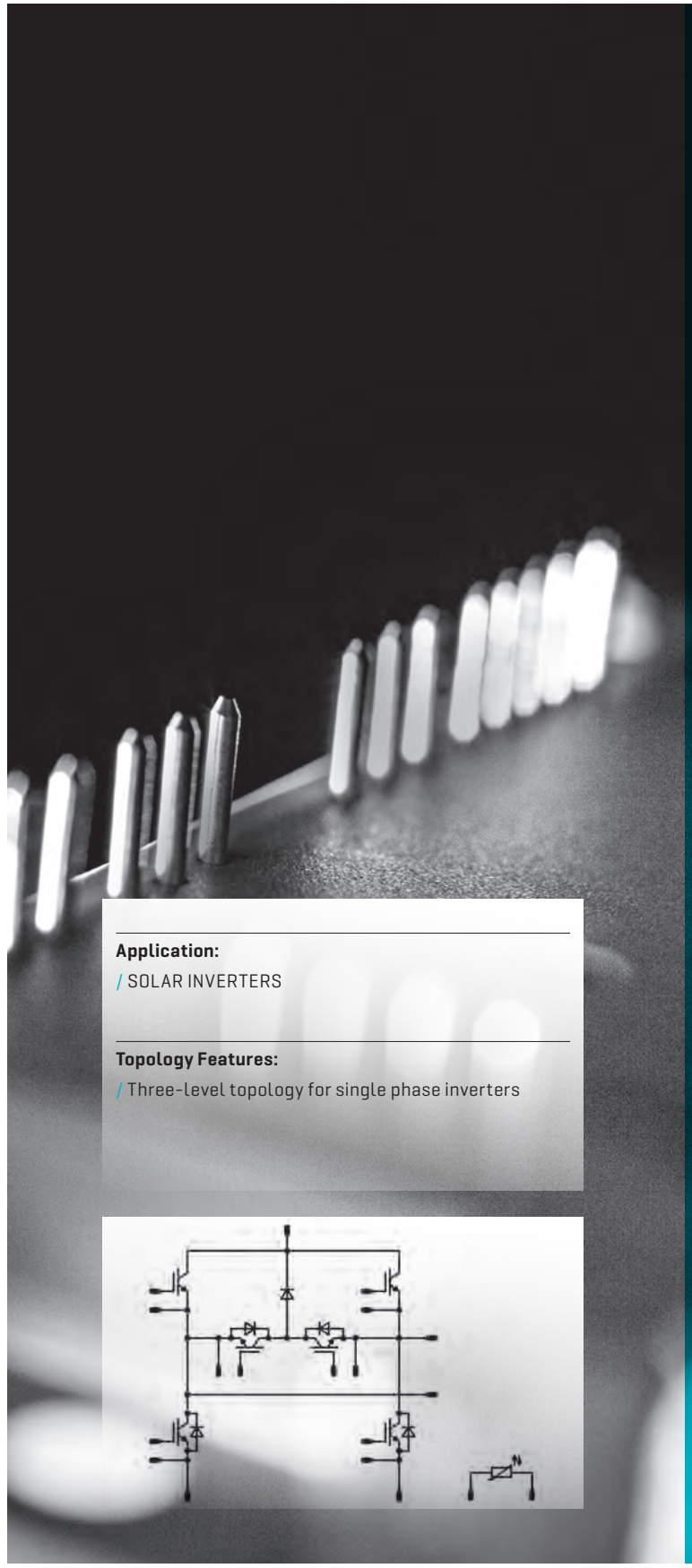
Possible Features:

/ Dual Booster + H-Bridge
/ Kelvin Emitter for improved switching performance
/ Temperature sensor

flow 1 4-towers 12 mm

Schematics see page: 182
More details: www.vincotech.com/*flow*SOL-1-BI-TL-prim

Part-No	Voltage [V]	Current [A]	Technology	Comments
Dual Booster + H-Bridge-KE-NTC-CAP				
10-FY06BIA080MF-M527E58	650	20	Infineon CoolMOS™ CFD2	



Application:

/ SOLAR INVERTERS

Topology Features:

/ Three-level topology for single phase inverters

RECTIFIER (+BRAKE)
SIXPACK
SIXPACK+RECTIFIER
SEVENPACK
PIM (CIB)
PIM+PFC (CIP)
IPM (CIB)
IPM (CIP_PIM+PFC)
HALF-BRIDGE
H-BRIDGE
SINGLE-PHASE-INVERTER
H6.5
BOOSTER
BOOSTER-SYMMETRIC
Buck-Booster Symmetric
PFC (Single-phase applications)
PFC (Three-phase applications)
Three-level NPC (I-Type)
Three-level MNPC (T-Type)
Three-level ANPC
Schematics / Housings
Naming System

*flow*SOL 0 BI (TL)

Available Housings:

/ *flow* 0 2-clips 12 mm

Possible Features:

/ Kelvin Emitter for improved switching performance
/ Temperature sensor
/ Booster + H6.5

flow 0 2-clips 12 mm

Schematics see page: 182
More details: www.vincotech.com/*flow*SOL-0-BI-TL

Part-No	Voltage [V]	Current [A]	Technology	Comments
Booster + H6.5-KE-NTC				
10-FZ07BVA020SM-LD44E08	650	20	IGBT H5	
10-PZ07BVA020SM-LD44E08Y	650	20	IGBT H5	
10-FZ07BVA030S5-LD45E08	650	30	IGBT S5	

*flow*PACK 1 H6.5

Available Housings:

/ *flow* 1 4-towers 12 mm

Possible Features:

/ H6.5
/ Kelvin Emitter for improved switching performance
/ Temperature sensor

flow 1 4-towers 12 mm

Schematics see page: 182
More details: www.vincotech.com/*flow*PACK-1-H65

Part-No	Voltage [V]	Current [A]	Technology	Comments
H6.5-KE-NTC				
10-PY07HVA050S5-L984F08Y	650	50	IGBT S5	
10-FY07HVA050S5-L984F08	650	50	IGBT S5	
10-PY07HVA075S5-L985F08Y	650	75	IGBT S5	
10-FY07HVA075S5-L985F08	650	75	IGBT S5	
10-PY07HVA075S502-L985F18Y	650	75	IGBT S5	Equipped with full IGBT S5
10-PY07HVA100S5-L986F08Y	650	100	IGBT S5	
10-FY07HVA100S5-L986F08	650	100	IGBT S5	

*flow*SOL 1 BI (TL)

Available Housings:

/ *flow* 1 4-towers 12 mm

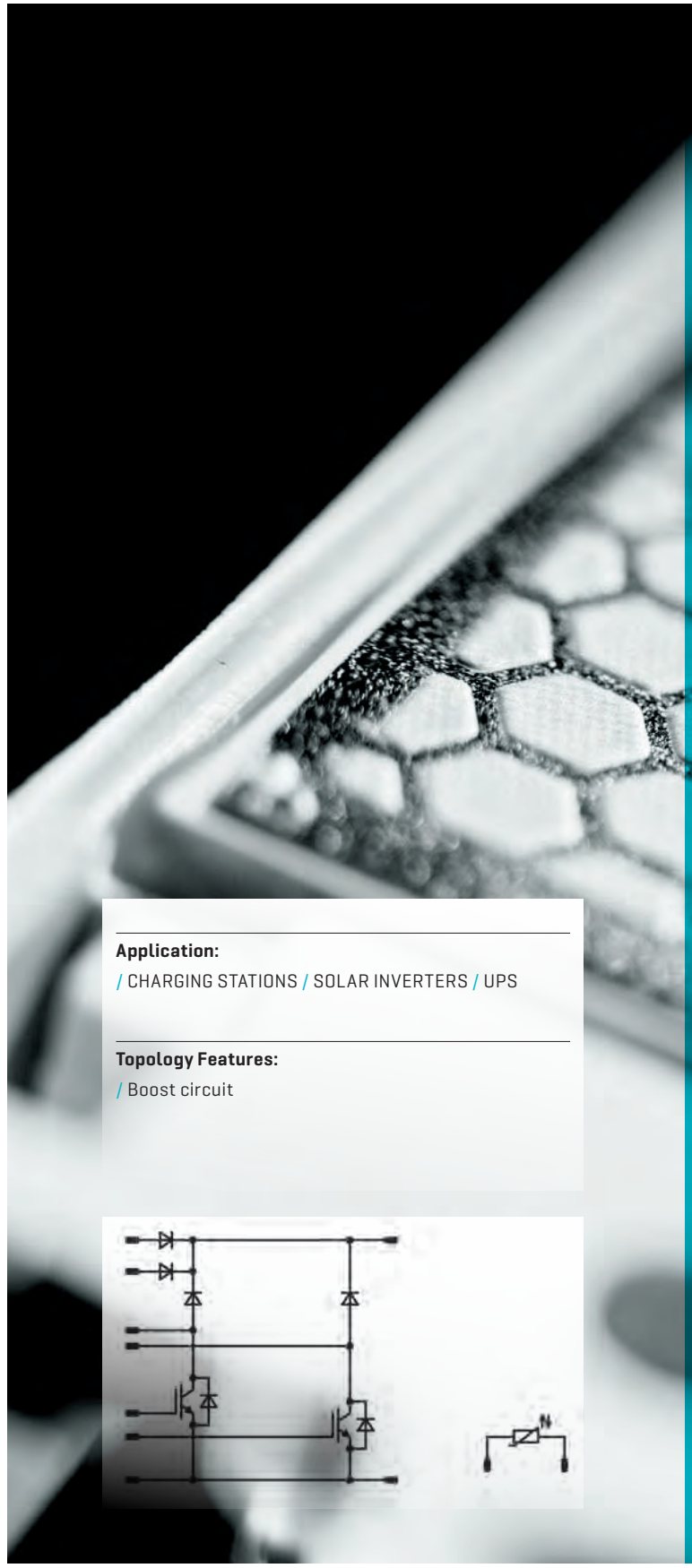
Possible Features:

/ Kelvin Emitter for improved switching performance
/ Temperature sensor
/ Booster + H6.5

flow 1 4-towers 12 mm

Schematics see page: 182
More details: www.vincotech.com/*flow*SOL-1-BI-TL

Part-No	Voltage (V)	Current (A)	Technology	Comments
Dual Booster + H6.5-KE-NTC				
10-FY07BVA050S5-LF44E18	650	50	IGBT S5	
10-PY07BVA050S5-LF45E18Y	650	50	IGBT S5	
10-FY07BVA075S5-LF45E18	650	75	IGBT S5	
10-PY07BVA075S5-LF45E18Y	650	75	IGBT S5	



Application:

/ CHARGING STATIONS / SOLAR INVERTERS / UPS

Topology Features:

/ Boost circuit

RECTIFIER (+BRAKE)
SIXPACK
SIXPACK+RECTIFIER
SEVENPACK
PIM (CIB)
PIM+PFC (CIP)
IPM (CIB)
IPM (CIP_PIM+PFC)
HALF-BRIDGE
H-BRIDGE
SINGLE-PHASE-INVERTER
H6.5
BOOSTER
BOOSTER-SYMMETRIC
Buck-Booster Symmetric
PFC (Single-phase applications)
PFC (Three-phase applications)
Three-level NPC (I-Type)
Three-level MNPC (T-Type)
Three-level ANPC
Schematics / Housings
Naming System

*flow*BOOST 0

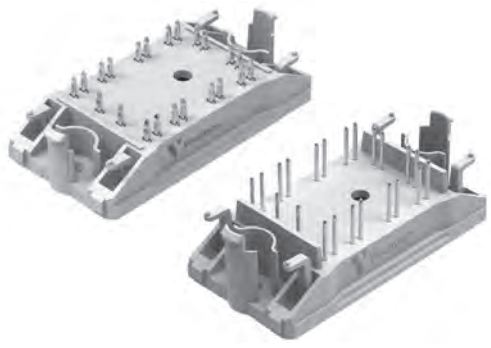
Available Housings:

/ *flow* 0 2-clips 12 mm / *flow* 0 2-clips 17 mm

Possible Features:

/ Kelvin Emitter for improved switching performance
/ Dual Booster
/ Bypass Diode
/ Open Emitter configuration
/ Temperature sensor

flow 0 2-clips 12 mm



flow 0 2-clips 17 mm

Schematics see page: 183
More details: www.vincotech.com/*flow*BOOST-0

Part-No	Voltage [V]	Current [A]	Technology	Comments
Dual Boost-KE-OE-Bypass diode-NTC				
V23990-P629-F62-PM	1200	40	NPT IGBT	
V23990-P629-F628Y-PM	1200	40	NPT IGBT	
V23990-P629-F629-PM	1200	40	NPT IGBT	
V23990-P629-F629Y-PM	1200	40	NPT IGBT	
V23990-P629-L98-PM	1200	40	NPT IGBT	

*flow*BOOST 0 dual

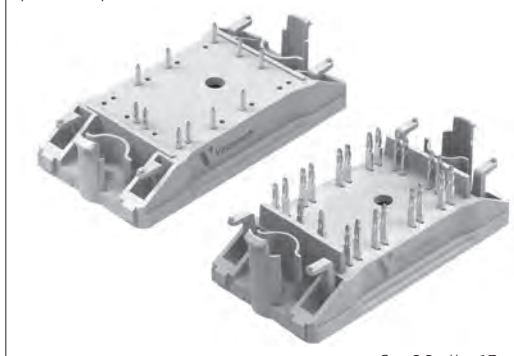
Available Housings:

/ *flow* 0 2-clips 12 mm / *flow* 0 2-clips 17 mm

Possible Features:

/ Kelvin Emitter for improved switching performance
/ Dual Booster
/ Bypass Diode
/ Open Emitter configuration
/ Temperature sensor

flow 0 2-clips 12 mm



flow 0 2-clips 17 mm

Schematics see page: 183
More details: www.vincotech.com/*flow*BOOST-0-dual

Part-No	Voltage [V]	Current [A]	Technology	Comments
Dual Boost-KE-OE-Bypass diode-NTC				
V23990-P621-F68-PM	900	19	Infineon CoolMOS™ C3	
V23990-P621-F68Y-PM	900	19	Infineon CoolMOS™ C3	
V23990-P623-L82-PM	650	50	IGBT H5	IGBT H5 with 50A Si diodes, for 110V grid
V23990-P629-F63-PM	1200	40	NPT IGBT	
V23990-P629-F72-PM	1200	40	NPT IGBT	30A STEALTH™ diode, improved reverse protection
V23990-P629-F73-PM	1200	40	NPT IGBT	with 50A Si diode, improved reverse protection
V23990-P629-L59-PM	1200	40	IGBT4 HS	with 50A Si diodes
V23990-P629-L49-PM	1200	40	IGBT4 HS	with SiC diode (optimized current rating)
V23990-P629-L63-PM	1200	40	NPT IGBT	with SiC diodes, substitude for P629-L62
V23990-P629-L99-PM	1200	40	NPT IGBT	High rated current SiC diodes, improved Rth (AlN)
V23990-P629-L48Y-PM	1200	40	IGBT4 HS	with SiC diode (optimized current rating)
V23990-P629-L99Y-PM	1200	40	NPT IGBT	High rated current SiC diodes, improved Rth (AlN)
V23990-P629-L58-PM	1200	40	IGBT4 HS	with 50A Si diodes
V23990-P629-L58Y-PM	1200	40	IGBT4 HS	with 50A Si diodes
V23990-P629-L49Y-PM	1200	40	IGBT4 HS	with SiC diode (optimized current rating)
V23990-P629-L94-PM	1200	40	NPT IGBT	high rated current SiC diodes, improved Rth (AlN)
V23990-P629-L63Y-PM	1200	40	NPT IGBT	with SiC diodes, substitude for P629-L62
V23990-P629-L94Y-PM	1200	40	NPT IGBT	high rated current SiC diodes, improved Rth (AlN)
V23990-P629-L48-PM	1200	40	IGBT4 HS	with SiC diode (optimized current rating)
V23990-P629-L43-PM	1200	50	IGBT4 HS	with SiC Diode
V23990-P629-L43Y-PM	1200	50	IGBT4 HS	with SiC diodes

*flow*BOOST 1 dual SiC

Available Housings:

/ *flow* 1 4-towers 12 mm

Possible Features:

/ Kelvin Emitter for improved switching performance
/ Dual Booster
/ Bypass Diode
/ Integrated DC capacito
/ Temperature sensor

flow 1 4-towers 12 mm

Schematics see page: 183
More details: www.vincotech.com/*flow*BOOST-1-dual-SiC

Part-No	Voltage [V]	Current [A]	Technology	Comments
Dual Boost-KE-Cap-Bypass diode-NTC				
10-FY12B2A040MR02-L387L63	1200	30	SiC MOSFET	
10-FY12B2A040MR-L387L68	1200	30	SiC MOSFET	

*flow*2xBOOST 0

Available Housings:

/ *flow* 0 2-clips 12 mm

Possible Features:

/ Dual Booster
/ Triple Booster
/ Integrated DC capacitor
/ Kelvin Emitter for improved switching performance
/ Temperature sensor

flow 0 2-clips 12 mm

Schematics see page: 183
More details: www.vincotech.com/*flow*2xBOOST-0

Part-No	Voltage [V]	Current [A]	Technology	Comments
Dual Boost-KE-Cap-NTC				
10-FZ07B2A030SM02-M575L48	650	30	IGBT H5	
Triple Boost-KE-Cap-NTC				
10-FZ06B2A040MF01-M575L28	600	40	Infineon CoolMOS™ C6	

*flow*3xBOOST 0

Available Housings:

/ *flow* 0 2-clips 12 mm

Possible Features:

/ Integrated DC capacitor
/ Kelvin Emitter for improved switching performance
/ Temperature sensor
/ Triple Booster

flow 0 2-clips 12 mm

Schematics see page: 183
More details: www.vincotech.com/*flow*3xBOOST-0

Part-No	Voltage [V]	Current [A]	Technology	Comments
Triple Boost-KE-Cap-NTC				
10-FZ063BA040MF-M575L08	600	44	Infineon CoolMOS™ C6	
10-FZ073BA030SM02-M575L38	650	30	IGBT H5	

*flow*BOOST 0 SIC

Available Housings:

/ *flow* 0 2-clips 12 mm

Possible Features:

/ Kelvin Emitter for improved switching performance
/ Dual Booster
/ Bypass Diode
/ Open Emitter configuration
/ Temperature sensor
/ Integrated DC capacitor

flow 0 2-clips 12 mm

Schematics see page: 183
More details: www.vincotech.com/*flow*BOOST-0-SiC

Part-No	Voltage [V]	Current [A]	Technology	Comments
Dual Boost-KE-OE-Bypass diode-NTC				
V23990-P629-L83-PM	1200	35	SiC MOSFET	with SiC diode
V23990-P629-L81-PM	1200	35	SiC MOSFET	SiC MOS (ROHM™) + SiC diode (ROHM™)
Dual Boost-KE-Cap-NTC				
10-PZ12B2A040MR01-M330L68Y	1200	35	SiC MOSFET	2nd gen SiC MOS + SiC diode ROHM™
10-PZ12B2A040ME01-M330L63Y	1200	35	SiC MOSFET	2nd gen SiC MOS + SiC diode CREE

*flow*3xBOOST 0 SIC

Available Housings:

/ *flow* 0 2-clips 12 mm

Possible Features:

/ Kelvin Emitter for improved switching performance
/ Triple Booster
/ Integrated DC capacitor
/ Temperature sensor

flow 0 2-clips 12 mm

Schematics see page: 183
More details: www.vincotech.com/*flow*3xBOOST-0-SiC

Part-No	Voltage (V)	Current (A)	Technology	Comments
Triple Boost-KE-Cap-NTC				
10-PZ123BA040MR01-M909L68Y	1200	20	SiC MOSFET	
10-PZ123BA080ME-M909L18Y	1200	35	SiC MOSFET	
10-PZ123BA080MR-M909L28Y	1200	35	SiC MOSFET	
Triple Boost-KE-Cap-Bypass diode-NTC				
30-FT123BA040MR-L878L08	1200	20	SiC MOSFET	

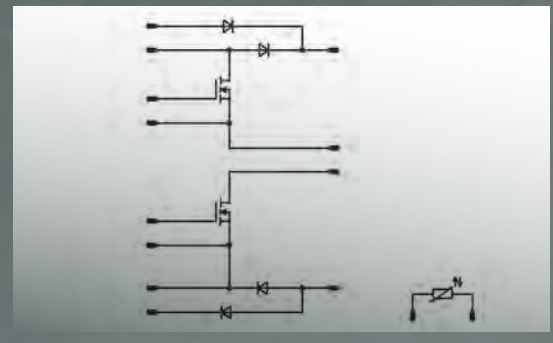
RECTIFIER (+BRAKE)
SIXPACK
SIXPACK+RECTIFIER
SEVENPACK
PIM (CIB)
PIM+PFC (CIP)
IPM (CIB)
IPM (CIP_PIM+PFC)
HALF-BRIDGE
H-BRIDGE
SINGLE-PHASE-INVERTER
H6.5
BOOSTER
BOOSTER-SYMMETRIC
Buck-Booster Symmetric
PFC (Single-phase applications)
PFC (Three-phase applications)
Three-level NPC (I-Type)
Three-level MNPC (T-Type)
Three-level ANPC
Schematics / Housings
Naming System

Application:

/ CHARGING STATIONS / SOLAR INVERTERS / UPS

Topology Features:

/ Symmetrical boost circuit



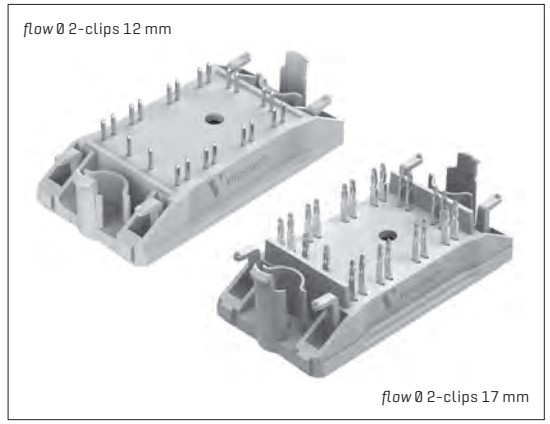
*flow*BOOST 0

Available Housings:

/ *flow* 0 2-clips 12 mm / *flow* 0 2-clips 17 mm

Possible Features:

/ Kelvin Emitter for improved switching performance
/ Symmetrical Booster
/ Temperature sensor



Schematics see page: 184
More details: www.vincotech.com/*flow*BOOST-0

Part-No	Voltage [V]	Current [A]	Technology	Comments
Symm. Boost-KE-NTC				
10-FZ07NBA075SG10-M304L58	650	75	Trench Field Stop IGBT	
Symm. Boost-KE-Parallel-NTC				
10-FZ06NBA084FP10-M306L38	600	84	Trench Field Stop IGBT	

*flow*BOOST 0 symmetric

Available Housings:

/ *flow* 0 2-clips 12 mm

Possible Features:

/ Kelvin Emitter for improved switching performance
/ Symmetrical Booster
/ Temperature sensor
/ Parallel switch

Schematics see page: 184
More details: www.vincotech.com/*flow*BOOST-0-symmetric

Part-No	Voltage [V]	Current [A]	Technology	Comments
Symm. Boost-KE-NTC				
10-FZ07NBA075SM-P916L58	650	75	IGBT H5	
10-FZ07NBA100SM10-M305L68	650	100	IGBT H5	
Symm. Boost-KE-Parallel-NTC				
10-FZ06NBA084FP-M306L48	600	84	Parallel Switch	
10-FZ06NBA110FP-M306L28	600	110	Parallel Switch	

*flow*BOOST 0 s+b

Available Housings:

/ *flow* 0 2-clips 12 mm

Possible Features:

/ Kelvin Emitter for improved switching performance
/ Symmetrical Booster
/ Bypass Diode
/ Temperature sensor

flow 0 2-clips 12 mm

Schematics see page: 184
More details: www.vincotech.com/*flow*BOOST-0-s+b

Part-No	Voltage [V]	Current [A]	Technology	Comments
Symm. Boost-KE-Bypass diode-NTC				
10-PZ06NBA041FS-P915L68Y	600	40	Infineon CoolMOS™ C6	with SiC diodes
10-FZ06NBA041FS01-P915L78	600	40	Infineon CoolMOS™ C6	
Symm. Boost-KE-NTC				
10-FZ06NBA030SA-P914L33	600	30	IGBT3	
10-FZ06NBA050SA-P915L33	600	50	IGBT3	
10-FZ06NBA075SA-P916L33	600	75	IGBT3	
10-FZ07NBA030SM01-P914L53	650	30	IGBT H5	
10-FZ07NBA050SM-P915L58	650	50	IGBT H5	

*flow*BOOST 1 symmetric

Available Housings:

/ *flow* 1 4-towers 17 mm / *flow* 1 4-towers 12 mm

Possible Features:

/ Kelvin Emitter for improved switching performance
/ Symmetrical Booster
/ Temperature sensor

flow 1 4-towers 17 mm

Schematics see page: 184
More details: www.vincotech.com/*flow*BOOST-1-sym

Part-No	Voltage [V]	Current [A]	Technology	Comments
Symm. Boost-KE-NTC				
10-FY07NBA075S5-M505L58	650	75	IGBT S5	
10-FY07NBA100SM-M506L48	650	100	IGBT H5	
10-FY07NBA100S5-M506L58	650	100	IGBT S5	
10-FY07NBA150S5-M506L98	650	150	IGBT S5	
10-F106BIB020FK-M285L	600	80	ST MDmesh™ M5	

*flow*BOOST 2 symmetric

Available Housings:

/ *flow* 2 4-towers 17 mm

Possible Features:

/ Kelvin Emitter for improved switching performance
/ Symmetrical Booster
/ Bypass Diode
/ Temperature sensor

flow 2 4-towers 17 mm

Schematics see page: 184
More details: www.vincotech.com/*flow*BOOST-2-sym

Part-No	Voltage (V)	Current (A)	Technology	Comments
Symm. Boost-KE-Bypass diode-NTC				
30-F206NBA200SG-M235L25	600	200	IGBT3 HS	

VINcoBOOST X4 symmetric

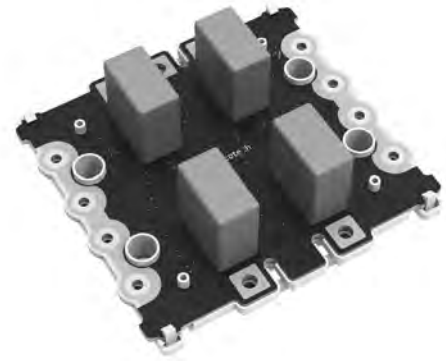
Available Housings:

/ VINco X4

Possible Features:

/ Kelvin Emitter for improved switching performance
/ Symmetrical Booster
/ Integrated DC capacitor
/ Temperature sensor

VINco X4



Schematics see page: 184
More details: www.vincotech.com/VINcoBOOST-X4-sym

Part-No	Voltage (V)	Current (A)	Technology	Comments
Symm. Boost-KE-Cap-NTC				
70-W206NBA400SA-M786L	600	400	IGBT3	
70-W206NBA600SA-M788L	600	600	IGBT3	

RECTIFIER (+BRAKE)
SIXPACK
SIXPACK+RECTIFIER
SEVENPACK
PIM (CIB)
PIM+PFC (CIP)
IPM (CIB)
IPM (CIP_PIM+PFC)
HALF-BRIDGE
H-BRIDGE
SINGLE-PHASE-INVERTER
H6.5
BOOSTER
BOOSTER-SYMMETRIC
Buck-Booster Symmetric
PFC (Single-phase applications)
PFC (Three-phase applications)
Three-level NPC (I-Type)
Three-level MNPC (T-Type)
Three-level ANPC
Schematics / Housings
Naming System

Application:

/ POWER SUPPLY / SOLAR INVERTERS / UPS

Topology Features:

/ Symmetrical buck-boost circuit

*flow*BUCK-BOOST 0

Available Housings:

/ *flow* 0 2-clips 12 mm

Possible Features:

/ Kelvin Emitter for improved switching performance
/ Temperature sensor
/ Symmetrical Buck-Booster

flow 0 2-clips 12 mm

Schematics see page: 184
More details: www.vincotech.com/*flow*BUCK-BOOST-0

Part-No	Voltage [V]	Current [A]	Technology	Comments
Symm. Buck Boost-KE-NTC				
10-FZ07BBA075S5-L684L58	650	75	IGBT S5	

*flow*BUCK-BOOST 1

Available Housings:

/ *flow* 1 4-towers 12 mm

Possible Features:

/ Kelvin Emitter for improved switching performance
/ Temperature sensor
/ Symmetrical Buck-Booster

flow 1 4-towers 12 mm

Schematics see page: 184
More details: www.vincotech.com/*flow*BUCK-BOOST-1

Part-No	Voltage [V]	Current [A]	Technology	Comments
Symm. Buck Boost-KE-NTC				
10-PY07BBA150S5-M735L58Y	650	150	IGBT S5	

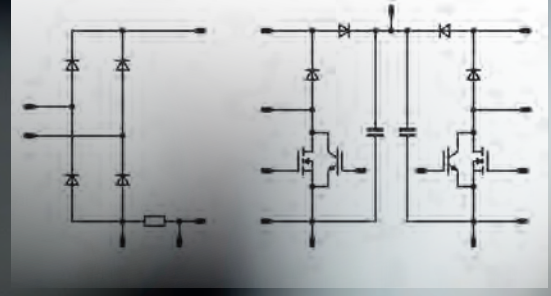
RECTIFIER (+BRAKE)
SIXPACK
SIXPACK+RECTIFIER
SEVENPACK
PIM (CIB)
PIM+PFC (CIP)
IPM (CIB)
IPM (CIP_PIM+PFC)
HALF-BRIDGE
H-BRIDGE
SINGLE-PHASE-INVERTER
H6.5
BOOSTER
BOOSTER-SYMMETRIC
Buck-Booster Symmetric
PFC (Single-phase applications)
PFC (Three-phase applications)
Three-level NPC (I-Type)
Three-level MNPC (T-Type)
Three-level ANPC
Schematics / Housings
Naming System

Application:

/ CHARGING STATIONS / UPS / WELDING & CUTTING

Topology Features:

/ PFC boost - Single-phase Rectifier + Boost circuit



*flow*PFC 0

Available Housings:

/ *flow* 0 2-clips 17 mm / *flow* 0 4-towers 17 mm

Possible Features:

/ Dual Boost PFC
/ Current sense interface in the collector with low inductive bypass diode
/ Integrated Shunt Resistor
/ Integrated DC capacitor
/ Temperature sensor
/ Half Controlled Converter

flow 0 2-clips 17 mm

Schematics see page: 185
More details: www.vincotech.com/*flow*PFC-0

Part-No	Voltage [V]	Current [A]	Technology	Comments
Dual Boost PFC-CSC-Shunt-Cap-NTC				
10-F0062TA030FB05-P983D59	600	30	IGBT2 HS	
10-F0062TA030FB06-P983D79	600	30	IGBT2 HS	
Dual Boost PFC-Half Controlled-Shunt-Cap-NTC				
10-F0062TA099FS-P980D59	600	18	Infineon CoolMOS™ C6	
10-FX062TA099FS-P980D57	600	36	Infineon CoolMOS™ C6	

*flow*PFC 0 CD

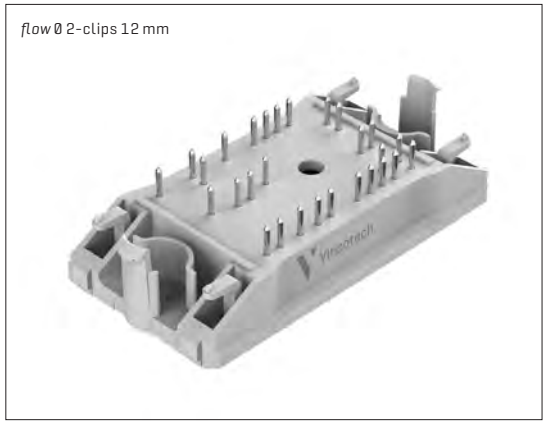
Available Housings:

/ *flow* 0 2-clips 12 mm

Possible Features:

/ Dual Boost PFC
/ Current sense interface in collector with low inductive bypass diode
/ Integrated DC capacitor
/ Temperature sensor
/ Half Controlled Converter
/ Current sense interface in emitter with low inductive bypass diode
/ Integrated shunt resistor with/without protection diode

flow 0 2-clips 12 mm



Schematics see page: 185
More details: www.vincotech.com/*flow*PFC-0-CD

Part-No	Voltage [V]	Current [A]	Technology	Comments
Dual Boost PFC-CSC-Shunt-Cap-NTC				
10-FZ062TA099FS05-P980D68	600	18	Infineon CoolMOS™ C6	
10-FZ062TA040FB-P984D18	600	50	IGBT2 HS	fsw < 100 kHz, with STEALTH™ II
10-FZ062TA030SM-P986D13	650	30	IGBT H5	
10-FZ062TA050SM-P987D13	650	50	IGBT H5	
Dual Boost PFC-Half Controlled-CSE-Shunt-Cap-NTC				
10-FZ062TA099FH01-P980D28	600	30	Infineon CoolMOS™ CPI	fsw < 400 kHz

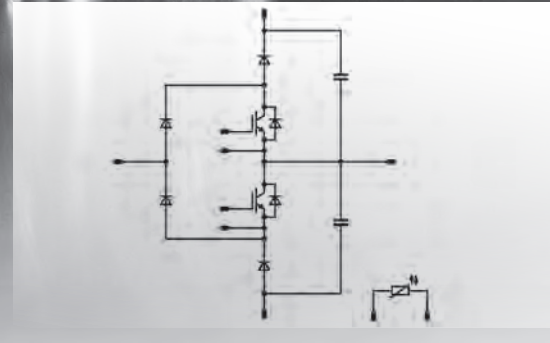
RECTIFIER (+BRAKE)
SIXPACK
SIXPACK+RECTIFIER
SEVENPACK
PIM (CIB)
PIM+PFC (CIP)
IPM (CIB)
IPM (CIP_PIM+PFC)
HALF-BRIDGE
H-BRIDGE
SINGLE-PHASE-INVERTER
H6.5
BOOSTER
BOOSTER-SYMMETRIC
Buck-Booster Symmetric
PFC (Single-phase applications)
PFC (Three-phase applications)
Three-level NPC (I-Type)
Three-level MNPC (T-Type)
Three-level ANPC
Schematics / Housings
Naming System

Application:

/ CHARGING STATIONS / UPS / WELDING & CUTTING

Topology Features:

/ Three-level PFC for three-phase applications



*flow*ANPFC 0

Available Housings:

/ *flow* 0 2-clips 12 mm

Possible Features:

/ Kelvin Emitter for improved switching performance
/ Integrated DC capacitor
/ Temperature sensor
/ Advanced Neutral Boost PFC

flow 0 2-clips 12 mm

Schematics see page: 185
More details: www.vincotech.com/*flow*ANPFC-0

Part-No	Voltage [V]	Current [A]	Technology	Comments
ANPFC-KE-CAP-NTC				
10-FZ07ANA100SM-LE29L08	650	100	IGBT H5	

*flow*NPFC 0

Available Housings:

/ *flow* 0 2-clips 12 mm

Possible Features:

/ Neutral Boost PFC
/ Integrated DC capacitor
/ Temperature sensor

flow 0 2-clips 12 mm

Schematics see page: 185
More details: www.vincotech.com/*flow*NPFC-0

Part-No	Voltage [V]	Current [A]	Technology	Comments
NPFC-Cap-NTC				
10-FZ07LBA100SM03-L705L08	650	100	IGBT H5	with ultra fast recovery diodes
10-FZ07LBA100SM01-L705L18	650	100	IGBT H5	

*flow*SPFC 0

Available Housings:

/ *flow* 0 2-clips 12 mm

Possible Features:

/ Symmetric Boost PFC
/ Kelvin Emitter for improved switching performance
/ Integrated DC capacitor
/ Temperature sensor

flow 0 2-clips 12 mm

Schematics see page: 185
More details: www.vincotech.com/*flow*SPFC-0

Part-No	Voltage [V]	Current [A]	Technology	Comments
SPFC-KE-Cap-NTC				
10-FZ071SA050SM02-L524L18	650	50	IGBT H5	
10-FZ071SA075S501-L525L58	650	75	IGBT S5	
10-FZ071SA075SM02-L525L18	650	75	IGBT H5	
10-FZ071SA100SM02-L526L18	650	100	IGBT H5	

*flow*3xNPFC 1

Available Housings:

/ *flow* 1 2-clips 12 mm

Possible Features:

/ 3xNeutral Boost PFC
/ Temperature sensor

flow 1 2-clips 12 mm

Schematics see page: 185
More details: www.vincotech.com/*flow*3xNPFC-1

Part-No	Voltage [V]	Current [A]	Technology	Comments
3xNPFC-NTC				
10-TY12NMB030SM-L394L08	650	30	IGBT H5	with SiC Diodes

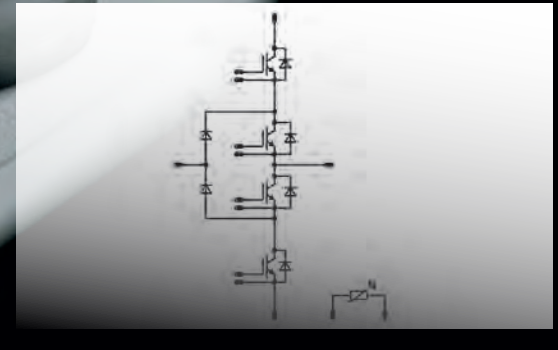
RECTIFIER (+BRAKE)
SIXPACK
SIXPACK+RECTIFIER
SEVENPACK
PIM (CIB)
PIM+PFC (CIP)
IPM (CIB)
IPM (CIP_PIM+PFC)
HALF-BRIDGE
H-BRIDGE
SINGLE-PHASE-INVERTER
H6.5
BOOSTER
BOOSTER-SYMMETRIC
Buck-Booster Symmetric
PFC (Single-phase applications)
PFC (Three-phase applications)
Three-level NPC (I-Type)
Three-level MNPC (T-Type)
Three-level ANPC
Schematics / Housings
Naming System

Application:

/ SOLAR INVERTERS / UPS

Topology Features:

/ Three-level NPC (I-Type)



*flow*NPC 0 IGBT

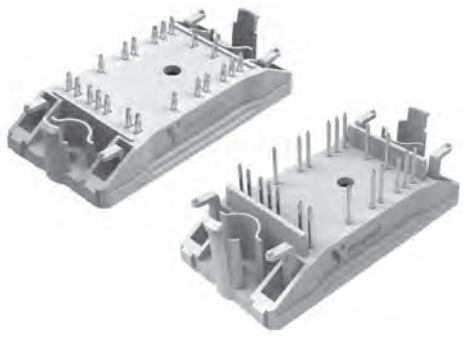
Available Housings:

/ *flow* 0 2-clips 12 mm / *flow* 0 2-clips 17 mm

Possible Features:

/ Kelvin Emitter for improved switching performance
/ Neutral Point Clamped Topology (I-Type)
/ Temperature sensor

flow 0 2-clips 12 mm



flow 0 2-clips 17 mm

Schematics see page: 186
More details: www.vincotech.com/*flow*NPC-0-IGBT

	Part-No	Voltage (V)	Current (A)	Technology	Comments
	NPC-KE-NTC				
	10-F007NIA030SM-P965F39	1200	30	IGBT H5	
	10-PZ06NIA030SA-P924F33Y	1200	30	IGBT3	
	10-F007NIA030SM01-P965F49	1200	30	IGBT H5	
	10-FZ06NIA030SA-P924F33	1200	30	IGBT3	
	10-FZ06NIA050SA-P925F33	1200	50	IGBT3	
	10-F007NRA050SG-P966F09	1200	50	IGBT3	
	10-F007NRA050SG-P966F09	1200	50	IGBT3	
	10-FZ07NIA060SM-P926F43	1200	60	IGBT H5	
	10-FZ06NIA075SA-P926F33	1200	75	IGBT3	
	10-FZ07NIA075SM-P926F58	1200	75	IGBT H5	
	10-PZ07NIA075S5-P926F53Y	1200	75	IGBT S5	
	10-FZ06NRA075FU-P969F08	1200	75	IGBT UltraFast	
NEW	10-PZ06NRA075FU-P969F08Y	1200	75	Trench Field Stop IGBT	
	10-FZ06NRA060FU-P967F08	1200	75	IGBT UltraFast	
	10-PZ06NRA060FU-P967F08Y	1200	75	IGBT UltraFast	
	10-FZ06NRA075FU-P969F08	1200	75	IGBT UltraFast	
NEW	10-PZ06NIA075SA-P926F33Y	1200	75	IGBT3	
NEW	10-FZ07NIA100S502-P927F58	1200	100	IGBT S5	Optimized for Solar PV
	10-PF07NIA100S505-P927F53T	1200	100	IGBT S5	Optimized for Solar PV
	10-PF07NIA100RV-P927F86T	1200	100	IGBT FAST-RG	Optimized for Solar PV

*flow*NPC 0 MOS

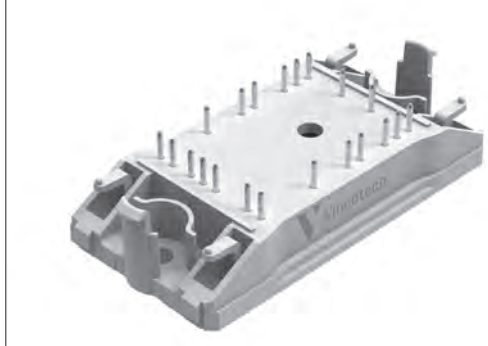
Available Housings:

/ *flow* 0 2-clips 12 mm

Possible Features:

/ Kelvin Emitter for improved switching performance
/ Neutral Point Clamped Topology (I-Type)
/ Temperature sensor

flow 0 2-clips 12 mm



Schematics see page: 186
More details: www.vincotech.com/*flow*NPC-0-MOS

Part-No	Voltage (V)	Current (A)	Technology	Comments
NPC-KE-NTC				
10-FZ06NRA045FH01-P965F10	1200	30	Infineon CoolMOS™ C6	
10-FZ06NRA041FS02-P965F68	1200	30	Infineon CoolMOS™ C6	
10-FZ06NRA041FS03-P965F78	1200	30	Infineon CoolMOS™ C6	
10-PZ06NRA041FS02-P965F68Y	1200	30	Infineon CoolMOS™ C6	
10-PZ06NRA041FS03-P965F78Y	1200	30	Infineon CoolMOS™ C6	

*flow*NPC 0 parallel

Available Housings:

/ *flow* 0 2-clips 12 mm

Possible Features:

/ Neutral Point Clamped Topology (I-Type)
/ Kelvin Emitter for improved switching performance
/ Parallel switch
/ Temperature sensor

flow 0 2-clips 12 mm

Schematics see page: 186
More details: www.vincotech.com/*flow*NPC-0-par

Part-No	Voltage [V]	Current [A]	Technology	Comments
NPC-KE-Parallel-NTC				
10-FZ06NPA045FP-P967F	1200	50	Parallel Switch	CoolMOS™ + IGBT, IGBT3, SiC diodes
10-FZ06NPA045FP01-P967F10	1200	50	Parallel Switch	CoolMOS™ + IGBT, IGBT3, STEALTH™
10-FZ06NPA070FP01-P969F10	1200	75	Parallel Switch	CoolMOS™ + IGBT, IGBT3, STEALTH™
10-FZ06NRA069FP02-P967F68	1200	75	Parallel Switch	CoolMOS™ + IGBT, IGBT3, SiC diodes
10-FZ06NRA069FP03-P967F78	1200	75	Parallel Switch	CoolMOS™ + IGBT, IGBT3, STEALTH™
10-F006NPA070FP-P969F09	1200	75	NPT IGBT	
10-PZ06NPA070FP01-P969F10Y	1200	75	NPT IGBT	
10-FZ06NRA084FP02-P969F68	1200	100	Parallel Switch	CoolMOS™ + IGBT, IGBT3, SiC diodes
10-PZ06NRA084FP02-P969F68Y	1200	100	Parallel Switch	CoolMOS™ + IGBT, IGBT3, SiC diodes
10-FZ06NRA084FP03-P969F78	1200	100	Parallel Switch	CoolMOS™ + IGBT, IGBT3, STEALTH™
10-PZ06NRA084FP03-P969F78Y	1200	100	Parallel Switch	CoolMOS™ + IGBT, IGBT3, STEALTH™

*flow*NPC 1

Available Housings:

/ *flow* 1 4-towers 17 mm / *flow* 1 4-towers 12 mm

Possible Features:

/ Neutral Point Clamped Topology (I-Type)
/ Kelvin Emitter for improved switching performance
/ Integrated DC capacitor
/ Temperature sensor

flow 1 4-towers 17 mm

Schematics see page: 186
More details: www.vincotech.com/*flow*NPC-1

Part-No	Voltage [V]	Current [A]	Technology	Comments
NPC-KE-Cap-NTC				
10-PY07NIB080SM03-L095F03Y	1200	80	IGBT H5	4-quadrant operation; integrated capacitor
10-FY07NIB080SM03-L095F03	1200	80	IGBT H5	4-quadrant operation; integrated capacitor
10-FY07NPA150SM01-L364F08	1200	150	IGBT H5	IGBT H5, L5 and STEALTH™; for Solar applications
10-FY07NPA150SM02-L365F08	1200	150	IGBT H5	4-quadrant operations, very high speed; for ESS
10-PY07NPA150SM02-L365F08Y	1200	150	IGBT H5	4-quadrant operations, very high speed; for ESS
10-PY07NPA150SM01-L364F08Y	1200	150	IGBT H5	IGBT H5, L5 and STEALTH™; for Solar applications
10-PY07NIA150S504-L365F54Y	1200	150	IGBT S5	
10-FY07NPA200SM02-L366F08	1200	200	IGBT H5	4-quadrant operations, very high speed; for ESS
10-PY07NPA200SM02-L366F08Y	1200	200	IGBT H5	4-quadrant operations, very high speed; for ESS
NPC-KE-NTC				
10-F106NIA100SA-M135F	1200	100	IGBT3	
10-FY06NIA100SA-M135F08	1200	100	IGBT3	
10-PY06NIA100SA-M135F08Y	1200	100	IGBT3	
10-F106NIA150SA-M136F	1200	150	IGBT3	
10-F107NIB150SG06-M136F39	1200	150	IGBT3 HS	IGBT3 HS + fast Si diodes, improved Rth (AlN)
10-P107NIB150SG06-M136F39Y	1200	150	IGBT3 HS	IGBT3 HS + fast Si diodes, improved Rth (AlN)
10-FY07NIA150S5-M516F58	1200	150	IGBT S5	
10-PY07NIA150S502-L365F58Y	1200	150	IGBT S5	
NEW 10-PY07NIA200S503-L366F53Y	1200	200	IGBT S5	Optimized for Solar PV

*flow*3xNPC 1

Available Housings:

/ *flow* 1 4-towers 12 mm / *flow* 1 2-clips 12 mm

Possible Features:

/ Three-phase Neutral Point Clamped Topology (I-Type)
/ Kelvin Emitter for improved switching performance
/ Temperature sensor

flow 1 2-clips 12 mm

Schematics see page: 186
More details: www.vincotech.com/*flow*3xNPC-1

Part-No	Voltage [V]	Current [A]	Technology	Comments
3xNPC-KE-NTC				
10-PY07N3A015SM-M892F08Y	1200	15	IGBT H5	
10-PY07N3A030SM-M894F08Y	1200	30	IGBT H5	
10-PY07N3A050SM-M896F04Y	1200	50	IGBT H5	
10-PH07N3A030S5-M894F98T	1200	30	IGBT S5	
10-PH07N3A050S5-M896F98T	1200	50	IGBT S5	

*flow*NPC 1 split

Available Housings:

/ *flow* 1 4-towers 17 mm

Possible Features:

/ Kelvin Emitter for improved switching performance
/ Temperature sensor
/ Neutral Point Clamped Topology (I-Type) – positive
/ Positive Side of Inverter
/ Tandem diode
/ Negative Side of Inverter

flow 1 4-towers 17 mm

Schematics see page: 186
More details: www.vincotech.com/*flow*NPC-1-split

Part-No	Voltage [V]	Current [A]	Technology	Comments
NPC-Split-KE-Pos-NTC				
10-F124NID150SH03-LG18F98	2400	150	IGBT4 HS	with tandem diodes
NEW 10-F124NID200SH03-LG19F98	2400	200	IGBT4 HS	with tandem diodes
NPC-Split-KE-Neg-NTC				
10-F124NIE150SH03-LG28F98	2400	150	IGBT4 HS	this module is complementary of the LG18F98; with tandem diodes
NEW 10-F124NIE200SH03-LG29F98	2400	200	IGBT4 HS	this module is complementary of the LG19F98; with tandem diodes

*flow*NPC 1 MOS

Available Housings:

/ *flow* 1 4-towers 12 mm

Possible Features:

/ Neutral Point Clamped Topology (I-Type)
/ Kelvin Emitter for improved switching performance
/ Split output for transient deactivation of the body diode and elimination of X-conduction at fast turn-o
/ Low inductive commutation loop
/ Temperature sensor

flow 1 4-towers 17 mm

Schematics see page: 186
More details: www.vincotech.com/*flow*NPC-1-MOS

Part-No	Voltage [V]	Current [A]	Technology	Comments
NPC-KE-Split Output-NTC				
10-PY06NRA041FS-M413FY	1200	50	Infineon CoolMOS™ C6 with SiC diode	
10-PY06NRA021FS-M410FY	1200	60	Infineon CoolMOS™ C6 with SiC diode	

*flow*NPC 2

Available Housings:

/ *flow* 2 4-towers 17 mm / *flow* 2 4-towers 13 mm

Possible Features:

/ Kelvin Emitter for improved switching performance
/ Neutral Point Clamped Topology (I-Type)
/ Temperature sensor

flow 2 4-towers 13 mm

Schematics see page: 186
More details: www.vincotech.com/*flow*NPC-2

Part-No	Voltage [V]	Current [A]	Technology	Comments
NPC-KE-NTC				
30-F206NIA200SA-M105F	1200	200	IGBT3	
30-F206NIA200SG-M105F25	1200	200	IGBT3 HS	
30-F206NIA300SA-M106F	1200	300	IGBT3	
30-FT07NIB200SG02-L965F08	1200	200	IGBT3 HS	
30-PT07NIB200SG02-L965F08Y	1200	200	IGBT3 HS	
30-FT07NIB200S501-LD96F58	1200	200	IGBT S5	
30-FT07NIB300S502-LE06F58	1200	300	IGBT S5	
NPC-Split-KE-NTC-Tandem diodes				
NEW 30-FT12NIA150SH-LG09F08	2400	150	IGBT4 HS	with tandem diodes

VINcoNPC X4

Available Housings:

/ VINco X4

Possible Features:

/ Neutral Point Clamped Topology (I-Type)
/ Kelvin Emitter for improved switching performance
/ Optional snubber diode for switching loss reduction with asymmetrical inductance feature
/ Temperature sensor

VINco X4

Schematics see page: 186
More details: www.vincotech.com/VINcoNPC-X4

Part-No	Voltage [V]	Current [A]	Technology	Comments
NPC-KE-DC snubber diode-DC-NTC				
70-W224NIA400SH-M400P	2400	400	IGBT4 HS	

VINcoNPC X8

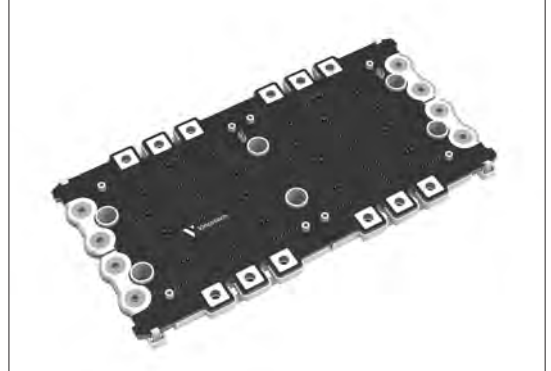
Available Housings:

/ VINco X8

Possible Features:

/ Neutral Point Clamped Topology (I-Type)
/ Kelvin Emitter for improved switching performance
/ Temperature sensor

VINco X8



Schematics see page: 186
More details: www.vincotech.com/VINcoNPC-X8

Part-No	Voltage [V]	Current [A]	Technology	Comments
NPC-KE-DC snubber diode-DC-NTC				
70-W424NIA800SH-M800F	2400	800	IGBT4 HS	
NEW **NPC-KE-NTC**				
70-W424NIA1K2M702-LD07FP70	2400	1200	IGBT M7	

VINcoNPC X12

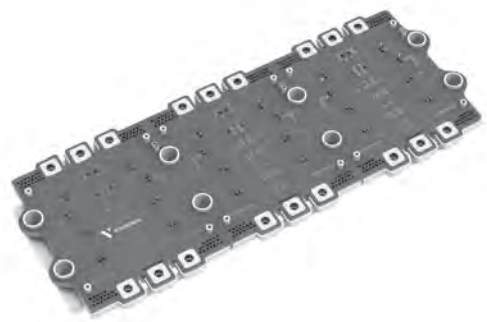
Available Housings:

/ VINco X12

Possible Features:

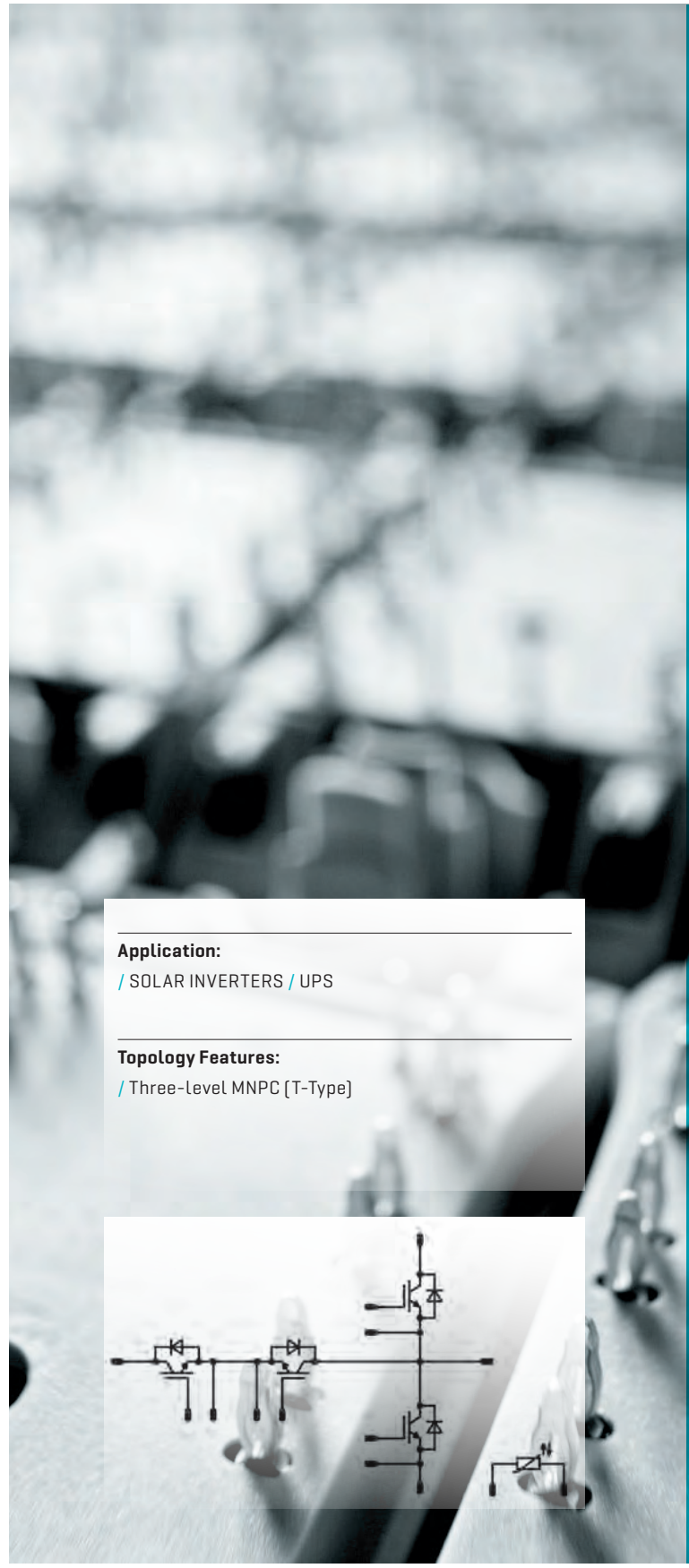
/ Neutral Point Clamped Topology (I-Type)
/ Kelvin Emitter for improved switching performance
/ Temperature sensor

VINco X12



Schematics see page: 186
More details: www.vincotech.com/VINcoNPC-X12

Part-No	Voltage (V)	Current (A)	Technology	Comments
NPC-KE-NTC				
70-W624N3A1K2SC-L400FP	2400	1200	IGBT4 HS	
70-W624N3A1K2SC01-L400FP10	2400	1200	IGBT4	
NEW 70-W624NIA1K2M702-L400FP70	2400	1200	IGBT M7	
70-W624NIA1K8M701-LD00FP70	2400	1800	IGBT M7	



Application:

/ SOLAR INVERTERS / UPS

Topology Features:

/ Three-level MNPC (T-Type)

RECTIFIER (+BRAKE)
SIXPACK
SIXPACK+RECTIFIER
SEVENPACK
PIM (CIB)
PIM+PFC (CIP)
IPM (CIB)
IPM (CIP_PIM+PFC)
HALF-BRIDGE
H-BRIDGE
SINGLE-PHASE-INVERTER
H6.5
BOOSTER
BOOSTER-SYMMETRIC
Buck-Booster Symmetric
PFC (Single-phase applications)
PFC (Three-phase applications)
Three-level NPC (I-Type)
Three-level MNPC (T-Type)
Three-level ANPC
Schematics / Housings
Naming System

*flow*MNPC 0

Available Housings:

/ *flow* 0 2-clips 12 mm / *flow* 0 2-clips 17 mm

Possible Features:

/ Mixed Voltage Neutral Point Clamped Topology (T-Type)
/ Kelvin Emitter for improved switching performance
/ Temperature sensor

flow 0 2-clips 12 mm

Schematics see page: 188
More details: www.vincotech.com/*flow*MNPC-0

Part-No	Voltage [V]	Current [A]	Technology	Comments
MNPC (T-type)-KE-NTC				
10-FZ07NMA100SM-M265F58	650	100	IGBT H5	for 110V grid
10-PZ12NMA040SH-M267FY	1200	40	IGBT4 HS	
10-FZ12NMA040SH-M267F	1200	40	IGBT4 HS	
10-F012NME080SH-M910F09	1200	80	IGBT4 HS	with ultra fast diodes improved LVRT
10-P012NME080SH-M910F09Y	1200	80	IGBT4 HS	Ultra fast diodes improved LVRT
10-FZ12NMA080NS03-M260F38	1200	80	Trench Field Stop II IGBT	
10-PZ12NMA080NS03-M260F38Y	1200	80	Trench Field Stop II IGBT	
10-PZ12NMA080SH23-M260F03Y	1200	80	IGBT4 HS	
NEW 10-PZ12NMA080SH01-M260FY	1200	80	IGBT4 HS	
10-PZ12NMA080NS07-M260F78Y	1200	80	Trench Field Stop II IGBT	
MNPC (T-type)-KE-Cap-NTC				
10-FZ12NMA080SM01-L740F58	1200	80	Trench Field Stop IGBT	

*flow*MNPC 0 SIC

Available Housings:

/ *flow* 0 2-clips 12 mm

Possible Features:

/ Common Emitter configuration
/ Kelvin Emitter for improved switching performance
/ Mixed Voltage Neutral Point Clamped Topology (T-Type)
/ Temperature sensor

flow 0 2-clips 12 mm

Schematics see page: 188
More details: www.vincotech.com/*flow*MNPC-0-SiC

Part-No	Voltage [V]	Current [A]	Technology	Comments
MNPC (T-type)-KE-Split Output-Cap-NTC-Common Emitter				
10-PZ12NMA027MR-M340F68Y	1200	100	SiC MOSFET	with SiC diode
10-PZ12NMA027ME-M340F63Y	1200	100	SiC MOSFET	with SiC diode

*flow*MNPC 1

Available Housings:

/ *flow* 1 4-towers 12 mm

Possible Features:

/ Mixed Voltage Neutral Point Clamped Topology (T-Type)
/ Kelvin Emitter for improved switching performance
/ Temperature sensor
/ Integrated DC capacitor
/ Split output for elimination of X-conduction at fast turn-on
/ Low inductive commutation loop

flow 1 4-towers 12 mm

Schematics see page: 188
More details: www.vincotech.com/*flow*MNPC-1

Part-No	Voltage [V]	Current [A]	Technology	Comments
MNPC (T-type)-KE-NTC				
10-FY07NMA150S5-M824F58	650	150	IGBT S5	
10-FY07NMB150S5-LE75F08	650	150	IGBT S5	4-quadrant operations, very high speed; for ESS
MNPC (T-Type)-KE-Split Output-Cap-NTC				
10-FY12NMA080SH-M427F	1200	80	IGBT4 HS	
10-PY12NMA080SH-M427FY	1200	80	IGBT4 HS	
10-FY12NMA160SH-M420F	1200	160	IGBT4 HS	
10-PY12NMA160SH01-M820F18Y	1200	160	IGBT4 HS	Improved LVRT
10-FY12NMA160SH01-M820F18	1200	160	IGBT4 HS	Improved LVRT

*flow*3xMNPC 1

Available Housings:

/ *flow* 1 4-towers 17 mm / *flow* 1 4-towers 12 mm

Possible Features:

/ Three-phase Mixed Voltage Neutral Point Clamped Topology (T-Type)
/ Kelvin Emitter for improved switching performance
/ Temperature sensor

flow 1 4-towers 17 mm

Schematics see page: 188
More details: www.vincotech.com/*flow*3xMNPC-1

Part-No	Voltage [V]	Current [A]	Technology	Comments
3xMNPC (T-type)-KE-NTC				
10-FY12M3A025SH-M746F08	1200	25	IGBT4 HS	IGBT4 HS, IGBT3
10-F112M3A025SH-M746F09	1200	25	IGBT4 HS	IGBT4 HS, IGBT3
10-P112M3A025SH-M746F09Y	1200	25	IGBT4 HS	IGBT4 HS, IGBT3
10-PY12M3A025SH-M746F08Y	1200	25	IGBT4 HS	IGBT4 HS, IGBT3
10-FY12M3A040SH-M749F08	1200	40	IGBT4 HS	IGBT4 HS, IGBT3
10-F112M3A040SH-M749F09	1200	40	IGBT4 HS	IGBT4 HS, IGBT3
10-PY12M3A040SH-M749F08Y	1200	40	IGBT4 HS	IGBT4 HS, IGBT3

*flow*MNPC 2

Available Housings:

/ *flow* 2 4-towers 13 mm

Possible Features:

/ Mixed Voltage Neutral Point Clamped Topology (T-Type)
/ Kelvin Emitter for improved switching performance
/ Split output for elimination of X-conduction at fast turn-on
/ Low inductive commutation loop
/ Temperature sensor

flow 2 4-towers 13 mm

Schematics see page: 188
More details: www.vincotech.com/*flow*MNPC-2

Part-No	Voltage [V]	Current [A]	Technology	Comments
MNPC (T-type)-KE-Split Output-NTC				
30-FT12NMA160SH-M669F08	1200	160	IGBT4 HS	
30-FT12NMA160SH02-M669F28	1200	160	IGBT4 HS	
30-FT12NMA200SH-M660F08	1200	200	IGBT4 HS	
30-PT12NMA200SH-M660F08Y	1200	200	IGBT4 HS	
MNPC (T-type)-KE-Split Output-Cap-NTC				
10-PY12NMA160SH-M420FY	1200	160	IGBT4 HS	

VINcoMNPC X4

Available Housings:

/ VINco X4

Possible Features:

/ Mixed Voltage Neutral Point Clamped Topology (T-Type)
/ Kelvin Emitter for improved switching performance
/ Temperature sensor

VINco X4 with Caps

Schematics see page: 188
More details: www.vincotech.com/VINcoMNPC-X4

Part-No	Voltage [V]	Current [A]	Technology	Comments
MNPC (T-type)-KE-NTC				
70-W212NMA400NB02-M209P62	1200	400	IGBT M6	
70-W212NMA600NB02-M200P62	1200	600	IGBT M6	
NEW 70-W212NMA800M7-LC00F70	1200	800	IGBT M7	
MNPC (T-type)-KE-Cap-NTC				
70-W212NMA300SC-M208P	1200	300	IGBT4	
70-W212NMA400SC-M209P	1200	400	IGBT4	
70-W212NMC400SH01-M709P	1200	400	IGBT4 HS	
70-W212NMA600SC-M200P	1200	600	IGBT4	
70-W212NMC600SH01-M700P	1200	600	IGBT4 HS	
70-W212NMA600NB04-M200P60	1200	600	IGBT M6	

VINcoMNPC X12

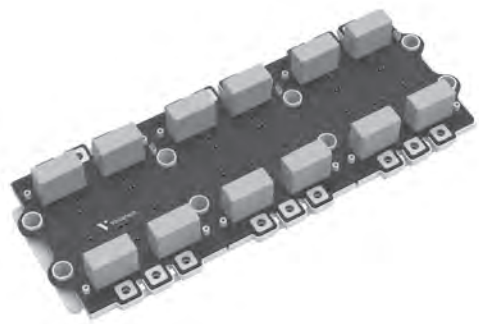
Available Housings:

/ VINco X12

Possible Features:

/ Mixed Voltage Neutral Point Clamped Topology (T-Type)
/ Kelvin Emitter for improved switching performance
/ Temperature sensor
/ Integrated DC capacitor

VINco X12 with caps



Schematics see page: 188
More details: www.vincotech.com/VINcoMNPC-X12

Part-No	Voltage (V)	Current (A)	Technology	Comments
MNPC (T-type)-KE-Cap-NTC				
70-W612M3A1K8SC02-L300FP70	1200	1800	IGBT4	Improved NTC accuracy
NEW 70-W612NMA1K8M702-LC09FP70	1200	1800	IGBT M7	

Application:

/ SOLAR INVERTERS

Topology Features:

/ Split Advanced NPC topology (ANPC)

RECTIFIER (+BRAKE)
SIXPACK
SIXPACK+RECTIFIER
SEVENPACK
PIM (CIB)
PIM+PFC (CIP)
IPM (CIB)
IPM (CIP_PIM+PFC)
HALF-BRIDGE
H-BRIDGE
SINGLE-PHASE-INVERTER
H6.5
BOOSTER
BOOSTER-SYMMETRIC
Buck-Booster Symmetric
PFC (Single-phase applications)
PFC (Three-phase applications)
Three-level NPC (I-Type)
Three-level MNPC (T-Type)
Three-level ANPC
Schematics / Housings
Naming System

*flow*ANPC 1 split NEW

Available Housings:

/ *flow* 1-4-tower-12mm

Possible Features:

/ Temperature sensor
/ Positive Side of Inverter
/ Negative Side of Inverter
/ Advanced Neutral Point Clamped topology
/ Split output for improved switching performance

flow 1-4-tower-12mm

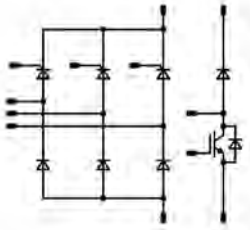
Schematics see page: 189
More details: www.vincotech.com/*flow*ANPC-1-split

Part-No	Voltage [V]	Current [A]	Technology	Comments
ANPC-split-Pos-NTC				
10-PG12NAB008MR02-LC59F36T	2400	150	SiC MOSFET	This module is complementary to LC69F36T
10-PG12NAB008MR04-LC59F46T	2400	150	SiC MOSFET	This module is complementary to LC69F46T
ANPC-split-Neg-NTC				
10-PG12NAC008MR02-LC69F36T	2400	150	SiC MOSFET	
10-PG12NAC008MR04-LC69F46T	2400	150	SiC MOSFET	

RECTIFIER (+BRAKE)
SIXPACK
SIXPACK+RECTIFIER
SEVENPACK
PIM (CIB)
PIM+PFC (CIP)
IPM (CIB)
IPM (CIP_PIM+PFC)
HALF-BRIDGE
H-BRIDGE
SINGLE-PHASE-INVERTER
H6.5
BOOSTER
BOOSTER-SYMMETRIC
Buck-Booster Symmetric
PFC (Single-phase applications)
PFC (Three-phase applications)
Three-level NPC (I-Type)
Three-level MNPC (T-Type)
Three-level ANPC
Schematics / Housings
Naming System

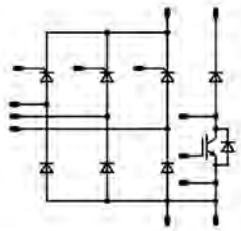
RECTIFIER (+BRAKE)

3ph-Half Controlled-BRC



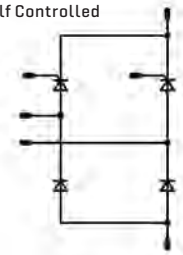
*flow*CON 0 - page 46
*flow*90CON 0 - page 48

3ph-Half Controlled-BRC



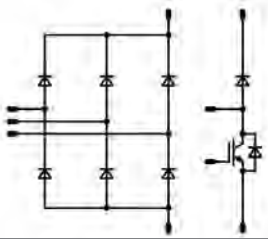
*flow*CON 0 - page 46

1ph-Half Controlled



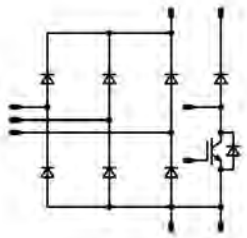
*flow*CON 0 - page 46

3ph-Rectifier-BRC



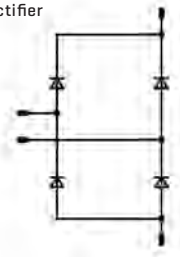
*flow*CON 2 - page 49

3ph-Rectifier-BRC



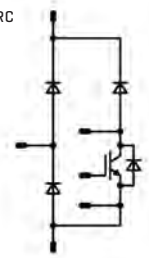
*flow*CON 0 - page 46
*flow*CON 0B - page 47

1ph-Rectifier



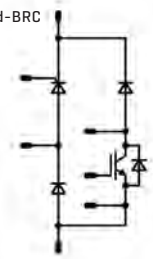
*flow*CON 0 - page 46

Modular Rectifier-BRC



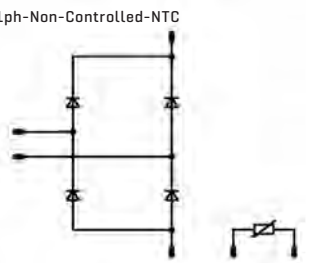
*flow*CON 0 - page 46

Modular Half Controlled-BRC



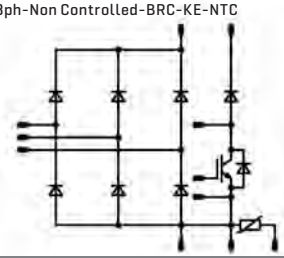
*flow*CON 0 - page 46

1ph-Non-Controlled-NTC



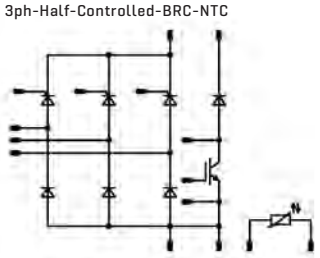
*flow*CON 0 - page 46

3ph-Non Controlled-BRC-KE-NTC



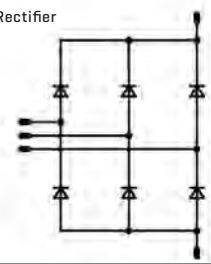
*flow*CON 0 - page 46

3ph-Half-Controlled-BRC-NTC



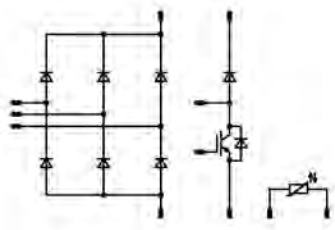
MiniSKiiP® CON 3 - page 50

3ph-Rectifier



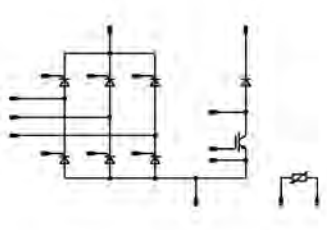
*flow*CON 0 - page 46

3ph-Rectifier-BRC-NTC



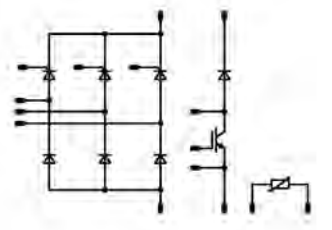
*flow*CON 2 - page 49

3ph-Full Controlled-BRC-NTC



MiniSKiiP® CON 3 - page 50

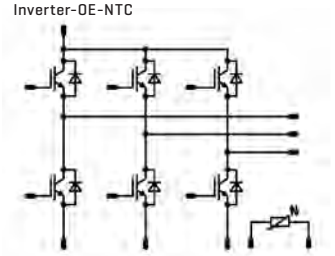
3ph-Half-Controlled-BRC-NTC



MiniSKiiP® CON 3 - page 50

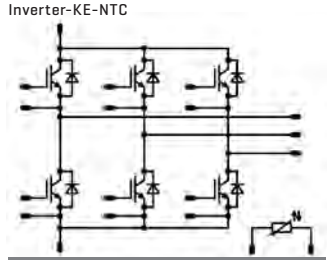
Sixpack

Inverter-OE-NTC



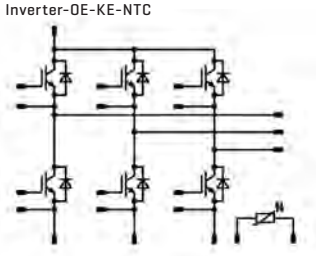
*flow*90PACK 0 - page 52
MiniSkiiP® 1 - page 61
MiniSkiiP® 2 - page 62

Inverter-KE-NTC



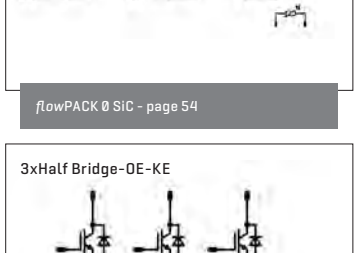
*flow*90PACK 0 - page 56
*flow*PACK 0 - page 53
*flow*PACK 1 - page 57
*flow*PACK 1 SiC - page 58
VINcoPACK E3 - page 60
MiniSKiiP® PACK 3 - page 63

Inverter-OE-KE-NTC



*flow*PACK 0B - page 55
*flow*90PACK 1 - page 56
MiniSKiiP® PACK 2 - page 62

3xHalf Bridge-OE-KE-Cap-SO-NTC

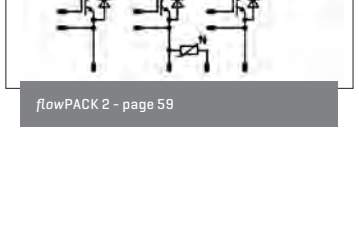


*flow*PACK 0 SiC - page 54

3xHalf Bridge-OE-KE-NTC

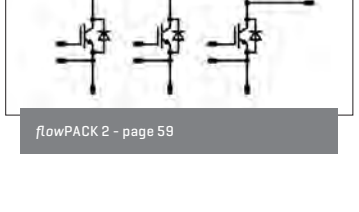
*flow*PACK 1 SiC - page 58

3xHalf Bridge-OE-KE-NTC



*flow*PACK 2 - page 59

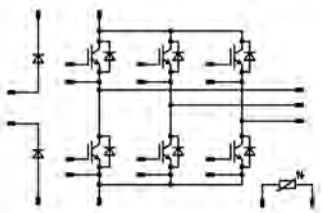
3xHalf Bridge-OE-KE



*flow*PACK 2 - page 59

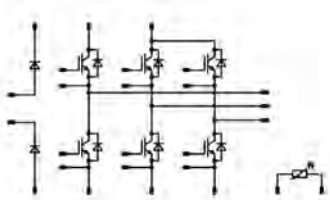
Sixpack+Rectifier

Inverter+Rectifier-KE-NTC



*flow*PACK 1+R - page 68

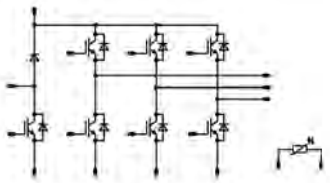
Inverter+Rectifier-OE-KE-NTC



*flow*PACK 2+R - page 69

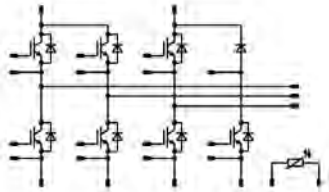
Sevenpack

IB-OE-NTC



*flow*7PACK 0 - page 72
*flow*7PACK 1 - page 73

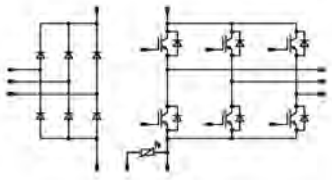
Inverter-OE-KE-Brake-NTC



*flow*7PACK 2 - page 74

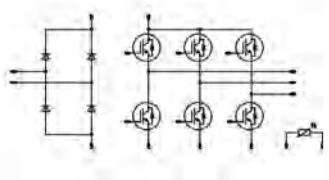
PIM (CIB)

CI-OE-NTC



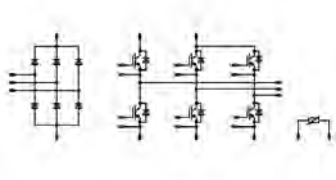
*flow*PIM® 0 - page 77
MiniSKiiP® PIM 0 - page 82

CI-OE-NTC



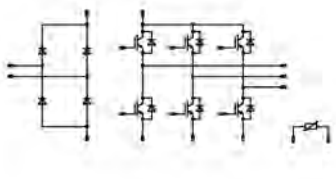
*flow*PIM® 0B - page 78

CI-OE-NTC



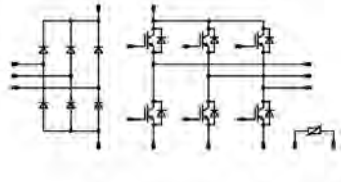
*flow*PIM® 0 - page 77

CI-OE-NTC



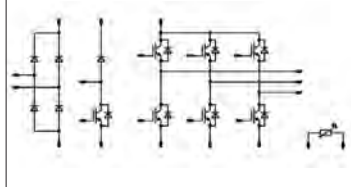
*flow*PIM® 0 - page 77

CI-OE-NTC



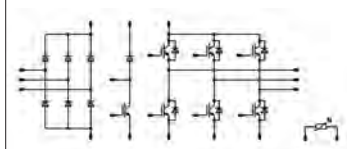
*flow*PIM® 0 - page 77

CIB-OE-NTC



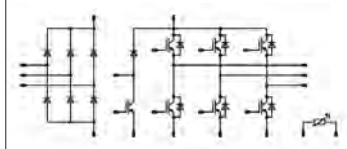
*flow*PIM® 0 - page 76 + 77

CIB-OE-NTC



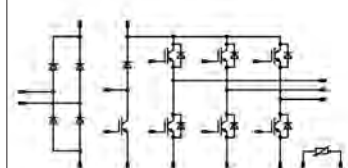
*flow*PIM® 0 - page 76 + 77

CIB-OE-NTC



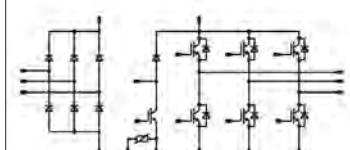
*flow*PIM® 0 - page 76 + 77

CIB-OE-NTC



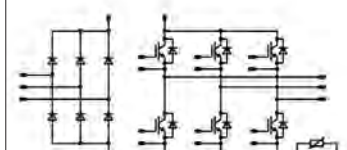
*flow*PIM® 0 - page 76 + 77

CIB-OE-NTC



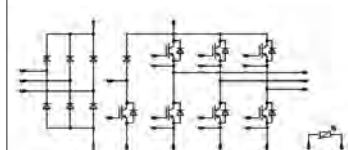
*flow*PIM® 0 - page 76 + 77
*flow*PIM®90 1 - page 80

CI-OE-KE-NTC



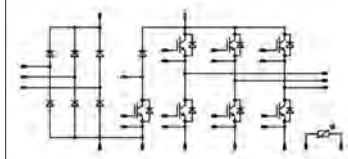
*flow*PIM® 1 - page 79

CIB-OE-KE-NTC



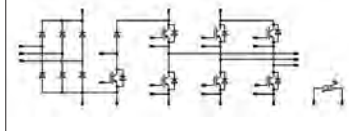
*flow*PIM® 1 - page 79

CIB-OE-KE-NTC



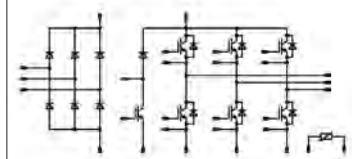
*flow*PIM® 1 - page 79

CIB-OE-KE-NTC



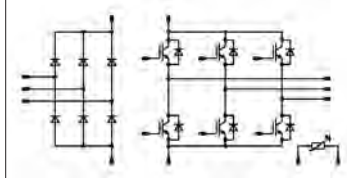
*flow*PIM® 2 - page 81

CIB-OE-KE-NTC



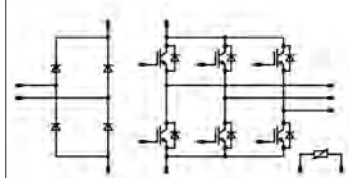
*flow*PIM® 1 - page 79

CI-NTC



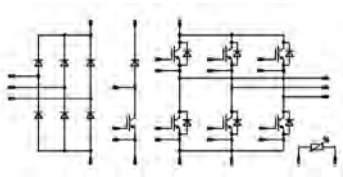
MiniSKiiP® PIM 0- page 82

CI-NTC



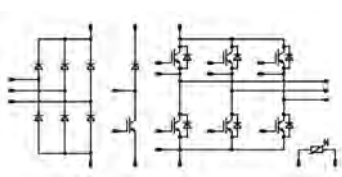
MiniSKiiP® PIM 0- page 82

CIB-KE-NTC



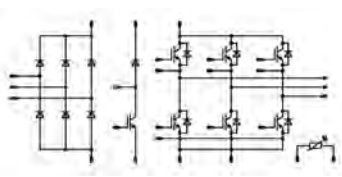
MiniSKiiP® PIM 3 - page 85

CIB-KE-NTC



MiniSKiiP® PIM 1 - page 83
MiniSKiiP® PIM 2 - page 84

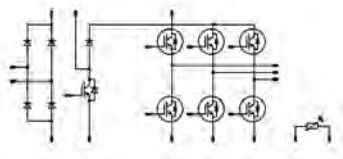
CIB-KE-NTC



*flow*PIM® E1 - page 86
*flow*PIM® E2 - page 87

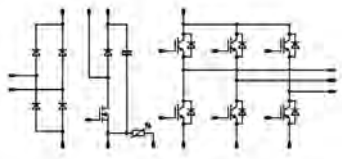
PIM+PFC (CIP)

CIP-OE-NTC



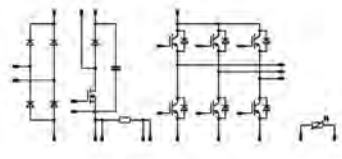
*flow*PIM 0B + PFC - page 89

CIP-OE-NTC



*flow*PIM 1 + PFC - page 91

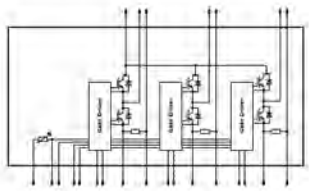
CIP-OE-Shunt-NTC



*flow*PIM 0B + PFC - page 90

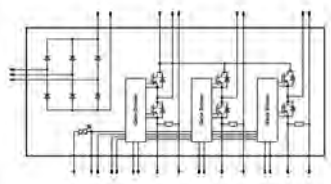
IPM (CIB)

CIB-OE-NTC



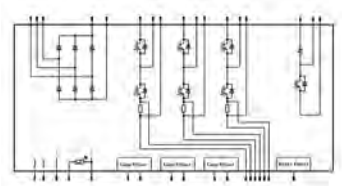
*flow*IPM 1B (CI) - page 94

CIB-OE-NTC



*flow*IPM 1B (CI) - page 94

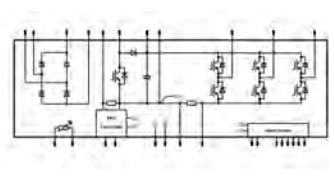
CIB-OE-BRC-NTC



*flow*IPM 1C (CIB) - page 95

IPM (CIP/PIM+PFC)

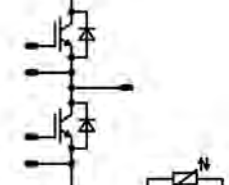
CIP-NTC



*flow*IPM 1B (CIP) - page 98

Half-Bridge

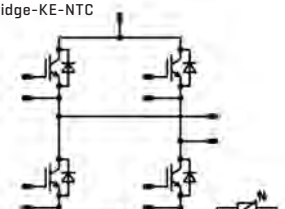
Half Bridge-NTC



*flow*PHASE 0 - page 99
*flow*PHASE 0 + NTC - page 100
MiniSKiiP® DUAL 2 - page 101

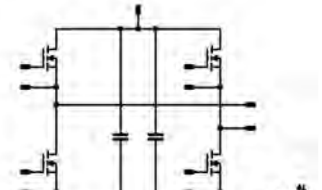
H-Bridge

H-Bridge-KE-NTC



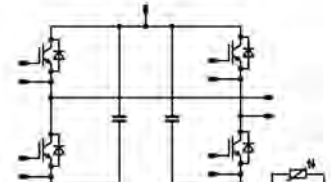
*fast*PACK 0 H - page 106

H-Bridge-OE-KE-Cap-NTC



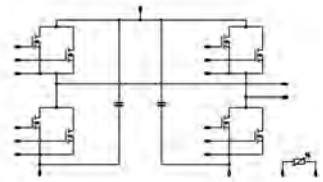
*fast*PACK 1 MOS - page 110
fast PACK 0 SiC - page 107

H-Bridge-KE-OE-Cap-NTC



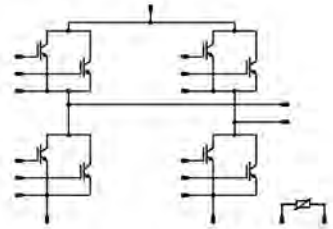
*flow*PACK 1 HC - page 109

H-Bridge-KE-OE-Cap-NTC



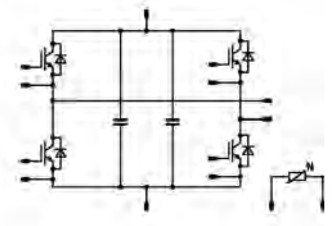
*fast*PACK 1 MOS - page 111

H-Bridge-KE-OE-NTC



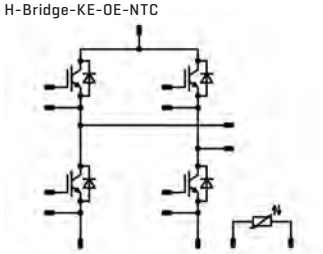
*flow*PACK 1 MOS - page 111
*flow*PACK 1 H - page 108

H-Bridge-KE-CAP-NTC



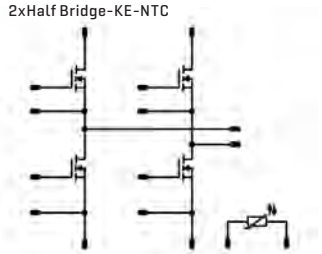
*flow*PACK 0 H - page 106

H-Bridge-KE-OE-NTC



*flow*PACK 1 H - page 108

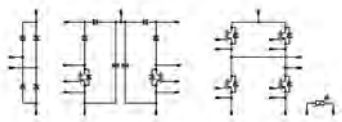
2xHalf Bridge-KE-NTC



*fast*PACK 0 SiC - page 107

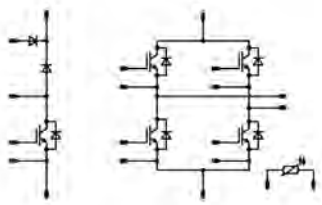
Single-phase Inverter

Rectifier + Dual Booster + H-Bridge-KE-OE-NTC-CAP



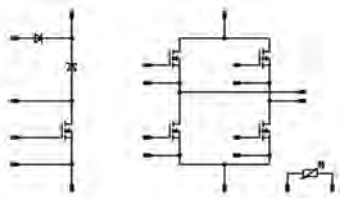
*flow*RPI 1 – page 114

Booster + H-Bridge-KE-NTC



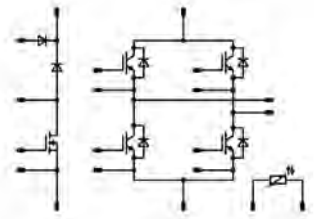
*flow*SOL 0 BI (TL) – page 115

Booster + H-Bridge-KE-NTC



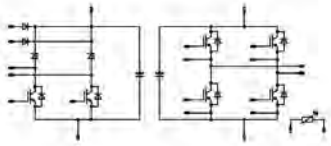
*flow*SOL 0 BI (T) primary – page 116

Booster + H-Bridge-KE-NTC



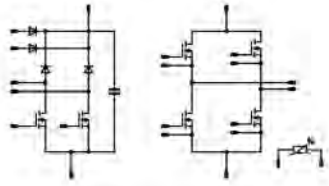
*flow*SOL 0 BI (TL) – page 115

Dual Booster + H-Bridge-KE-Cap-NTC-bypass diode



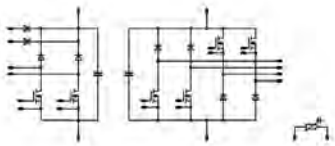
*flow*SOL 1 BI (TL) – page 117

Dual Booster + H-Bridge-KE-NTC-CAP



*flow*SOL 1 BI (T) primary – page 118

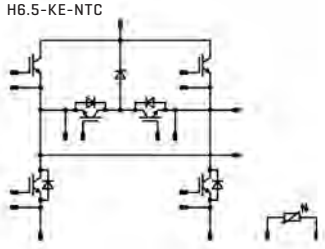
Dual Booster + H-Bridge-KE-Cap-NTC



*flow*SOL 1 BI (TL) – page 115

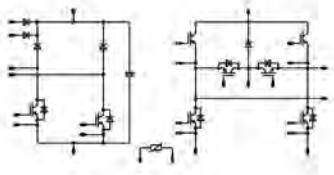
H6.5

H6.5-KE-NTC



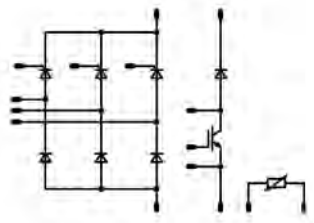
*flow*PACK 1 H6.5 – page 121

Dual Booster+H6.5-KE-NTC



*flow*SOL 1 BI (TL) – page 121

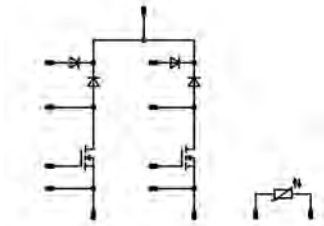
Booster + H6.5-KE-NTC



*flow*SOL 0 BI (TL) – page 120

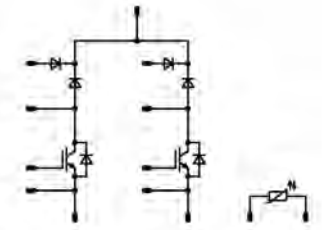
Booster

Dual Boost-KE-OE-Bypass diode-NTC



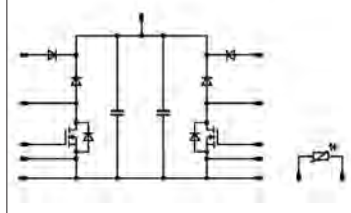
*flow*BOST 0 - page 124
*flow*BOOST 0 dual - page 125

Dual Boost-KE-OE-Bypass diode-NTC



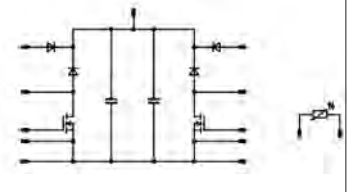
*flow*BOOST 0 - page 124
*flow*BOOST 0 dual - page 125

Dual Boost-KE-Cap-Bypass diode-NTC



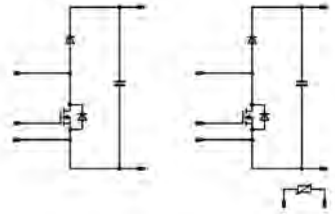
*flow*BOOST 1 dual SiC – page 126

Dual Boost-KE-Cap-Bypass diode-NTC



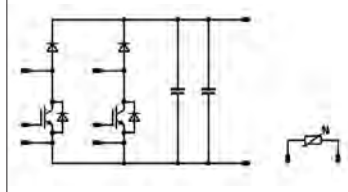
*flow*BOOST 1 dual SiC – page 126

Dual Boost-KE-Cap-NTC



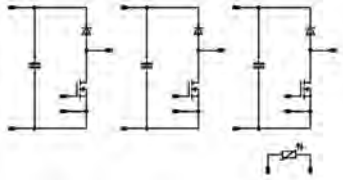
*flow*BOOST 0 SiC - page 129

Dual Boost-KE-Cap-NTC



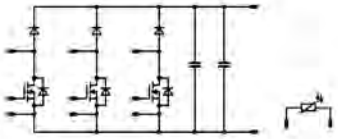
*flow*2xBOOST 0 - page 127

Triple Boost-KE-Cap-NTC



*flow*3xBOOST 0 - page 128

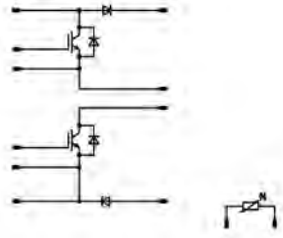
Triple Boost-KE-Cap-NTC



*flow*3xBOOST 0 - page 128

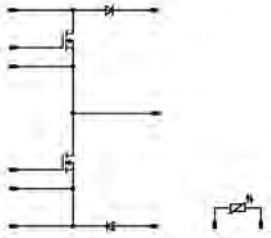
Booster Symmetric

Symm. Boost-KE-NTC



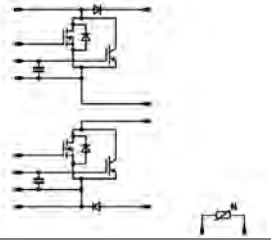
*flow*BOOST 0 s+b - page 134
*flow*BOOST 1 symmetric - page 135

Symm. Boost-KE-NTC



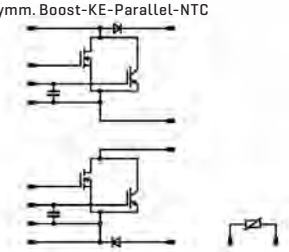
*flow*BOOST 1 symmetric - page 135

Symm. Boost-KE-Parallel-NTC



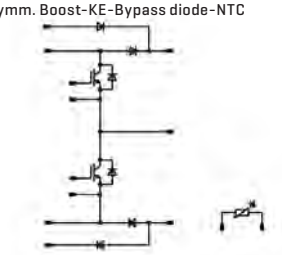
*flow*BOOST 0 symmetric - page 133

Symm. Boost-KE-Parallel-NTC



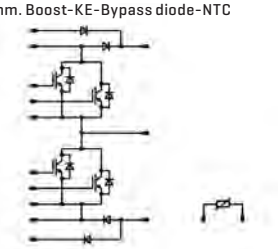
*flow*BOOST 0 symmetric - page 133

Symm. Boost-KE-Bypass diode-NTC



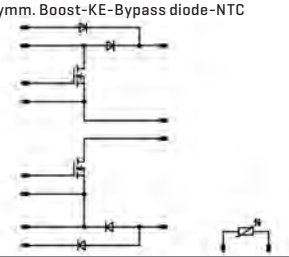
*flow*BOOST 2 symmetric - page 136

Symm. Boost-KE-Bypass diode-NTC



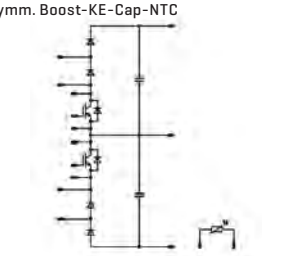
*flow*BOOST 0 symmetric - page 133

Symm. Boost-KE-Bypass diode-NTC



*flow*BOOST 0 s+b - page 134

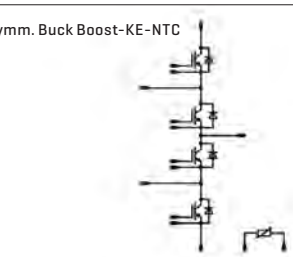
Symm. Boost-KE-Cap-NTC



VINcoBOOST X4 symmetric - page 137

Buck-Booster Symmetric

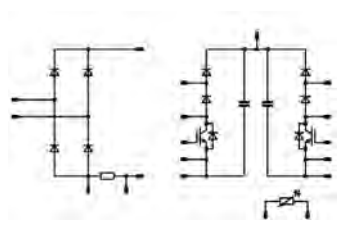
Symm. Buck Boost-KE-NTC



*flow*BUCK-BOOST 1 -page 141

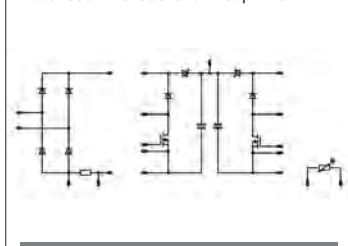
PFC (Single-phase applications)

Dual Boost PFC-CSC-Shunt-Cap-NTC



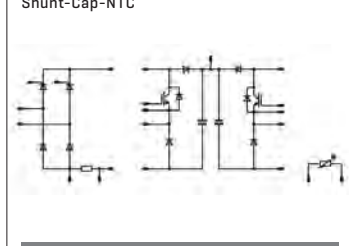
*flow*PFC 0 - page 144

Dual Boost PFC-CSC-Shunt-Cap-NTC



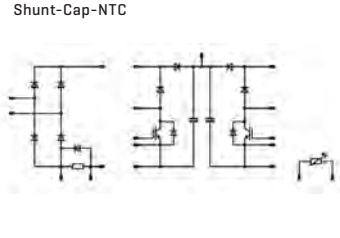
*flow*PFC 0 CD - page 145

Dual Boost PFC-Half Controlled-CSE-Shunt-Cap-NTC



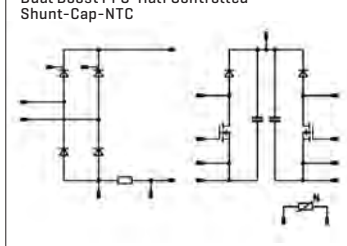
*flow*PFC 0 CD - page 145

Dual Boost PFC-Half Controlled-Shunt-Cap-NTC



*flow*PFC 0 CD - page 145

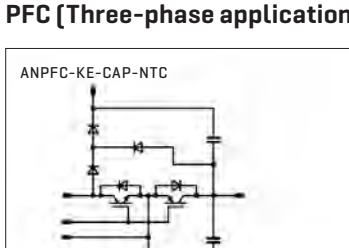
Dual Boost PFC-Half Controlled-Shunt-Cap-NTC



*flow*PFC 0 - page 144

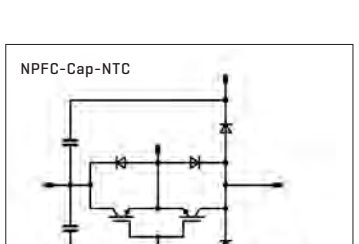
PFC (Three-phase applications)

ANPFC-KE-CAP-NTC



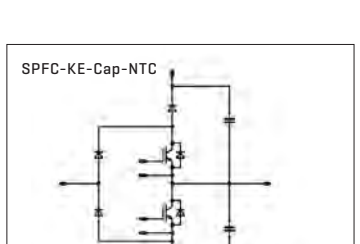
*flow*ANPFC 0 - page 148

NPFC-Cap-NTC



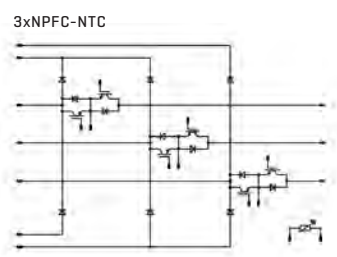
*flow*NPFC 0 - page 149

SPFC-KE-Cap-NTC



*flow*SPFC 0 - page 150

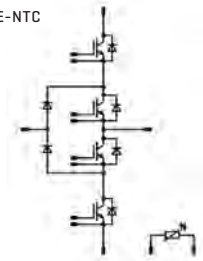
3xNPFC-NTC



*flow*3xNPFC 1 - page 151

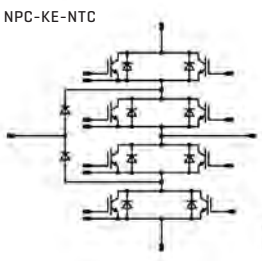
Three-level NPC (I-Type)

NPC-KE-NTC



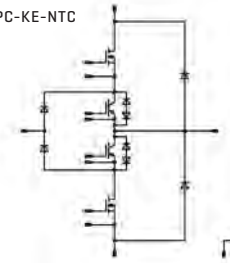
*flow*NPC 0 IGBT - page154

NPC-KE-NTC



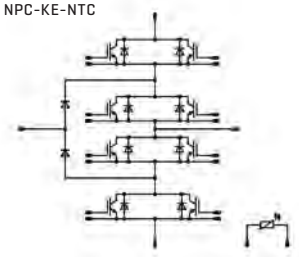
*flow*NPC 1 - page 157

NPC-KE-NTC



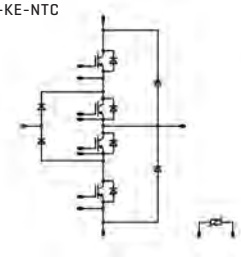
*flow*NPC 0 MOS - page 155

NPC-KE-NTC



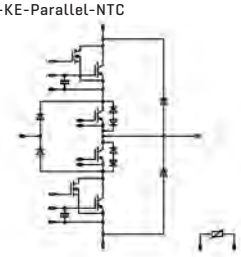
*flow*NPC 1 - page 157

NPC-KE-NTC



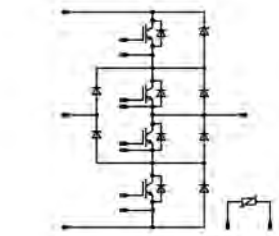
*flow*NPC 0 - page 154

NPC-KE-Parallel-NTC



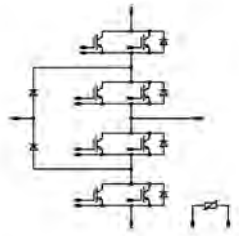
*flow*NPC 0 parallel - page 156
*flow*NPC 0 IGBT - page 154

NPC-KE-NTC



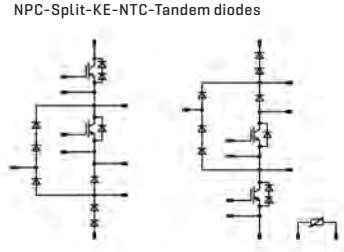
VINcoNPC X12 - page 164

NPC-KE-NTC



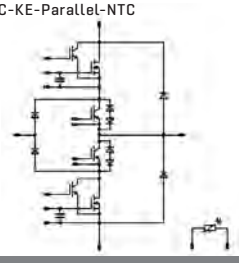
*flow*NPC 1 - page 157

NPC-Split-KE-NTC-Tandem diodes



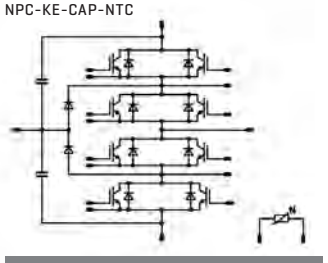
*flow*NPC 2 - page 161

NPC-KE-Parallel-NTC



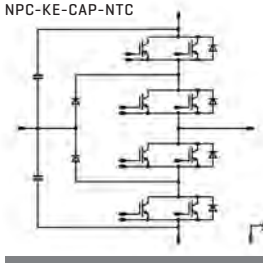
*flow*NPC 0 parallel - page 156
*flow*NPC 0 IGBT - page 154

NPC-KE-CAP-NTC



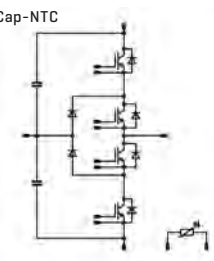
*flow*NPC 1 - page 157

NPC-KE-CAP-NTC



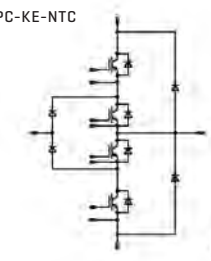
*flow*NPC 1- page 157

NPC-KE-Cap-NTC



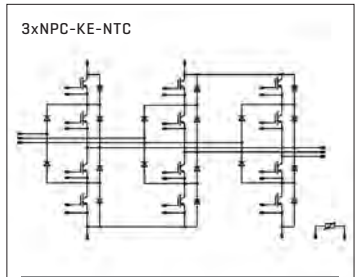
*flow*NPC 1 - page 157

3xNPC-KE-NTC



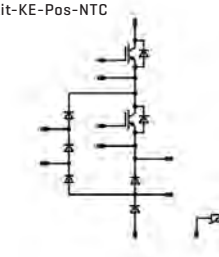
*flow*NPC 0 IGBT - page 154

3xNPC-KE-NTC



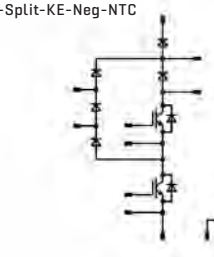
*flow*3xNPC 1 - page 158

NPC-Split-KE-Pos-NTC



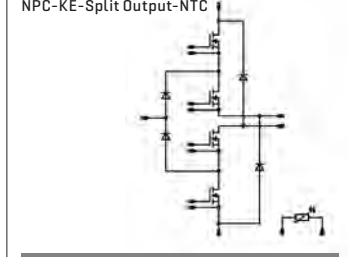
*flow*NPC 1 split - page 159

NPC-Split-KE-Neg-NTC



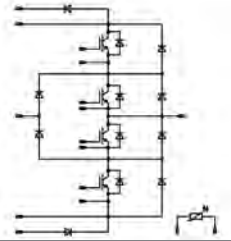
*flow*NPC 1 split - page 159

NPC-KE-Split Output-NTC



*flow*NPC 1 MOS - page 160

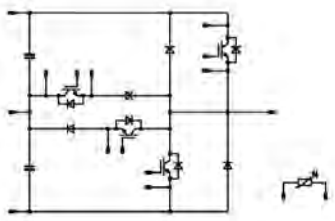
NPC-KE-DC snubber diode-DC-NTC



VINcoNPC X4 - page 162
VINcoNPC X8 - page 163

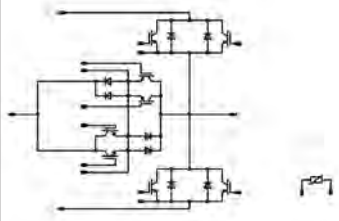
Three-level MNPC (T-Type)

MNPC (T-type)-KE-Cap-NTC



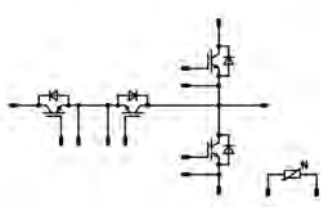
VINcoMNPC X12 - page 172

MNPC (T-type)-KE-NTC



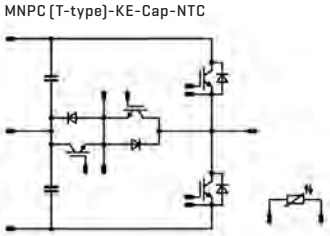
*flow*MNPC 1 - page 166

MNPC (T-type)-KE-NTC



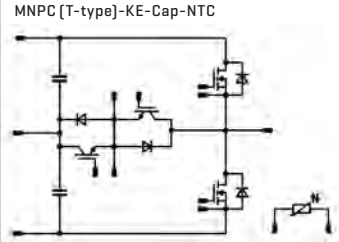
*flow*MNPC 0 - page 166
VINcoMNPC X4 - page 171

MNPC (T-type)-KE-Cap-NTC



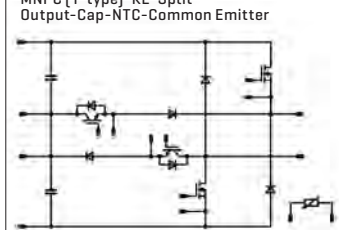
*flow*MNPC 0 - page 166
VINcoMNPC X12 - page 172

MNPC (T-type)-KE-Cap-NTC



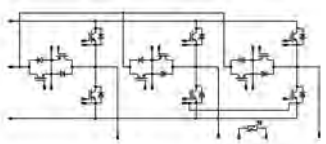
VINcoMNPC X4 - page 171

MNPC (T-type)-KE-Split
Output-Cap-NTC-Common Emitter



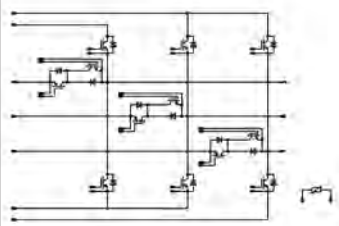
*flow*MNPC 0 SIC - page 167

3xMNPC (T-type)-KE-NTC



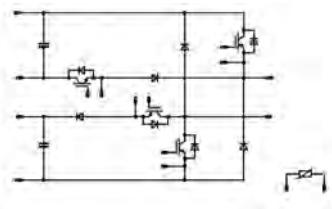
*flow*3xMNPC 1 - page 169

3xMNPC (T-type)-KE-NTC



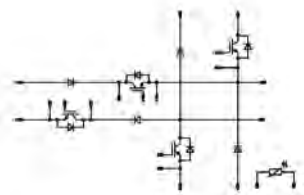
*flow*3xMNPC 1 - page 169

MNPC (T-type)-KE-Split Output-Cap-NTC



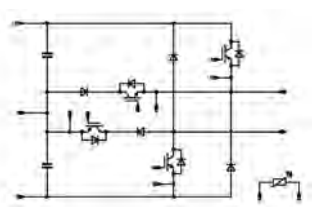
*flow*MNPC 0 SiC - page 167

MNPC (T-type)-KE-Split Output-NTC



*flow*MNPC 2 - page 170

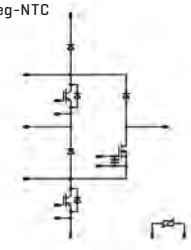
MNPC (T-type)-KE-Split Output-NTC



*flow*MNPC 1 - page 160

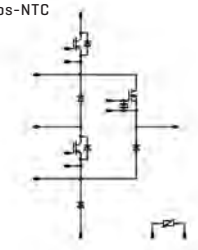
Three-level ANPC

ANPC-split-Neg-NTC



*flow*ANPC 1 split - page 174

ANPC-split-Pos-NTC



*flow*ANPC 1 split - page 174

Housing Items

flow housings

Housing	*flow* 0B	*flow* 0	*flow* 1	*flow* 1B	*flow* 1C	*flow* 2	*flow*90 0	*flow*90 1	*flow* E
Electrical connection to PCB	Solder	Solder Press-fit	Solder Press-fit	Solder Press-fit	Solder Press-fit	Solder Press-fit	Solder	Solder	Press-fit
Mechanical connection to PCB	srew	srew 2-clip 4-clip	srew 2-clip	srew	srew	srew 2-clip	optional	2-clip	srew
Baseplate	▫	▫	▫	▫	▪	▪	▫	▫	▫
Heigh [mm]	17	12 / 17	12 / 17	17	12	13 / 17	38	35	

Screw Terminals

Housing	VINco E3	VINco X
Contacts	srew	screw Press-fit
Mechanical connection to PCB	screw	screw
Baseplate	▪	▪
Heigh [mm]	17	16

MiniSKiiP® Housings

Housing	**MiniSKiiP® 0**	**MiniSKiiP® 1**	**MiniSKiiP® 2**	**MiniSKiiP® 3**
Contacts	spring	spring	spring	spring
Baseplate	▫	▫	▫	▫
Heigh [mm]	16	16	16	16

▪ Yes ▫ No

www.vincotech.com/housings

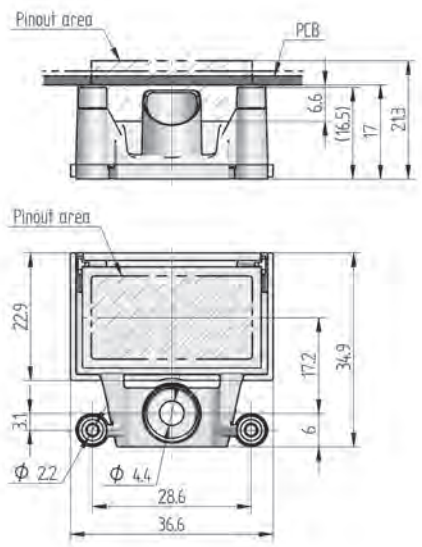
flow 0B 17 mm

Dimensions:

Height: 17 mm
Lenght: 35 mm
Width: 37 mm

Features:

/ Single screw heat sink mounting
/ Ultra-compact design
/ Thermo-mechanical push-and-pull force relief
/ Optionally with phase-change material



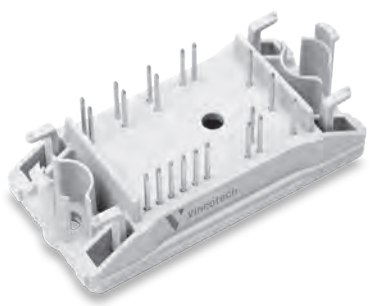
flow 0 17 mm

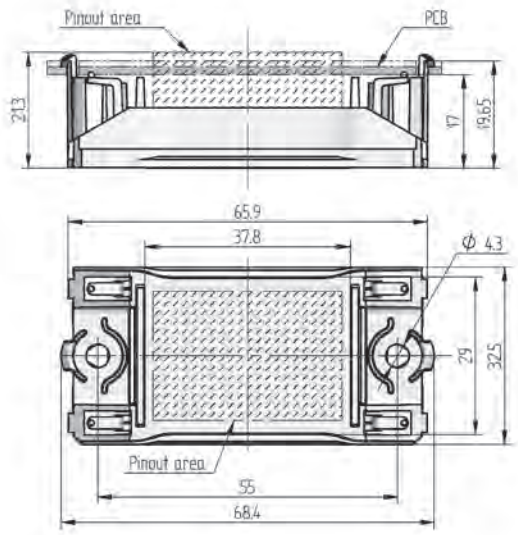
Dimensions:

Height: 17 mm
Lenght: 66 mm
Width: 33 mm

Features:

/ 2-clips for fast, easy assembly
/ qualified for wave soldering
/ Convex shaped substrate for superior thermal contact
/ Thermo-mechanical push-and-pull force relief





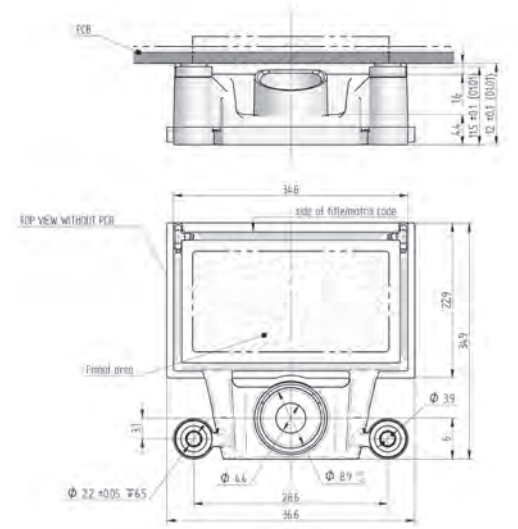
flow 0B 12 mm

Dimensions:

Height: 12 mm
Lenght: 35 mm
Width: 37 mm

Features:

/ Single screw heat sink mounting
/ Ultra-compact design
/ Thermo-mechanical push-and-pull force relief
/ Optionally with phase-change material



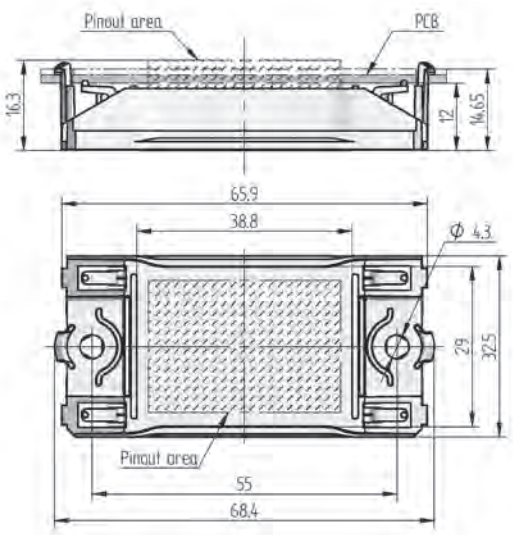
flow 0 12 mm

Dimensions:

Height: 12 mm
Lenght: 66 mm
Width: 33 mm

Features:

/ 2-clips for fast, easy assembly
/ qualified for wave soldering
/ Convex shaped substrate for superior thermal contact
/ Thermo-mechanical push-and-pull force relief



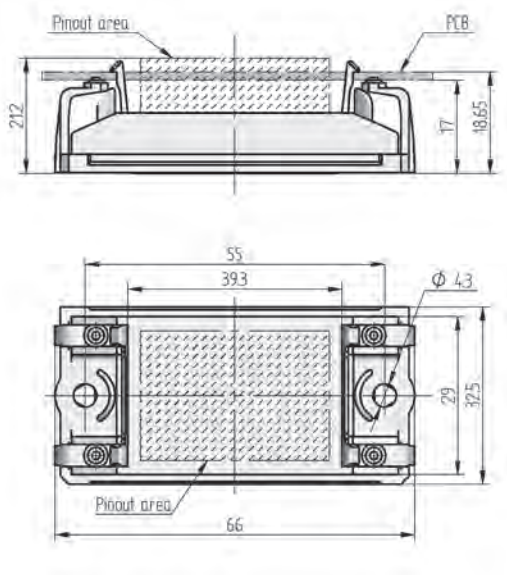
flow 0 17 mm 4-clip

Dimensions:

Height: 17 mm
Lenght: 66 mm
Width: 33 mm

Features:

/ 4-clips for fast, easy assembly
/ qualified for wave soldering
/ Convex shaped substrate for superior thermal contact
/ Thermo-mechanical push-and-pull force relief



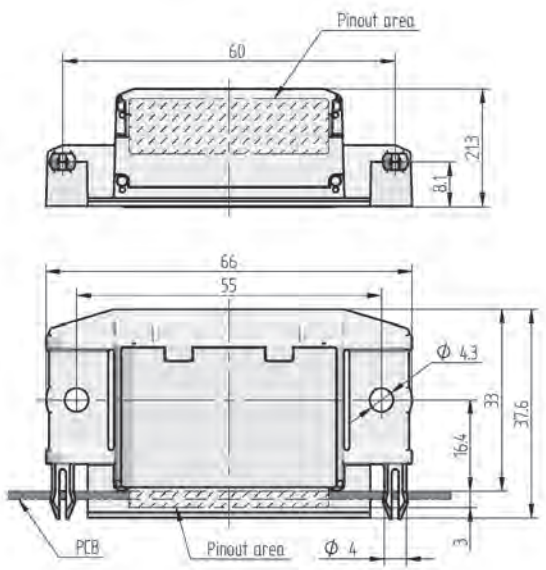
*flow*90 0

Dimensions:

Height: 38 mm
Width: 66 mm
Depth: 21 mm

Features:

/ 90° mounting angle between heatsink and PCB
/ clip or screw-on heatsink mounting
/ Thermo-mechanical push-and-pull force relief
/ clip-in PCB mounting
/ Complies with DIN and IEC standards
/ Topologies are easily customized
/ Pre-applied phase-change material available on demand



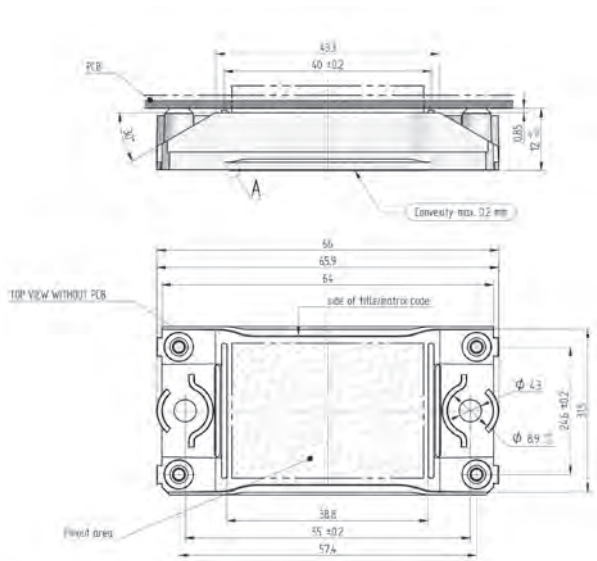
flow 0 12 mm 4-tower

Dimensions:

Height: 12 mm
Lenght: 66 mm
Width: 33 mm

Features:

/ 4-towers
/ Convex shaped substrate for superior thermal contact
/ Thermo-mechanical push-and-pull force relief



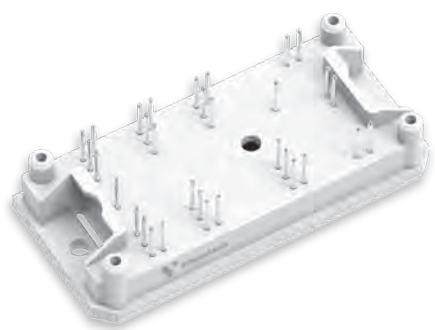
flow 1 17 mm 4-tower

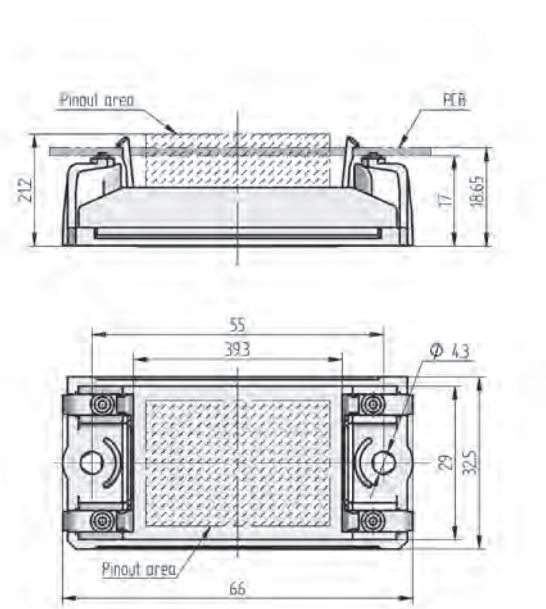
Dimensions:

Height: 12 mm
Lenght: 66 mm
Width: 33 mm

Features:

/ 4-towers
/ Convex shaped substrate for superior thermal contact
/ Thermo-mechanical push-and-pull force relief





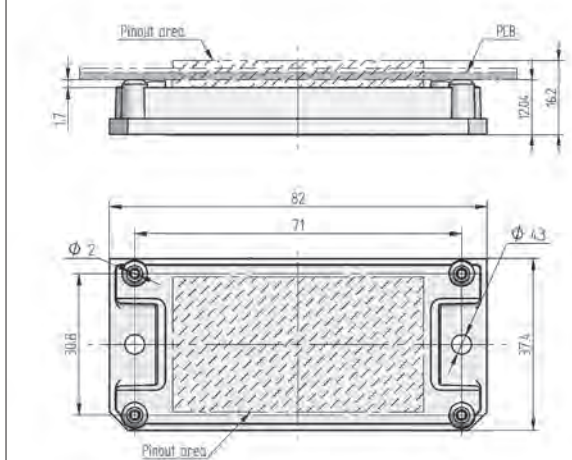
flow 1 12 mm 4-tower

Dimensions:

Height: 12 mm
Lenght: 82 mm
Width: 38 mm

Features:

/ 4-towers
/ Convex shaped substrate for superior thermal contact
/ Thermo-mechanical push-and-pull force relief



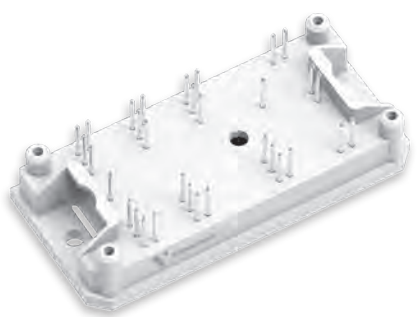
flow 1B 12 mm

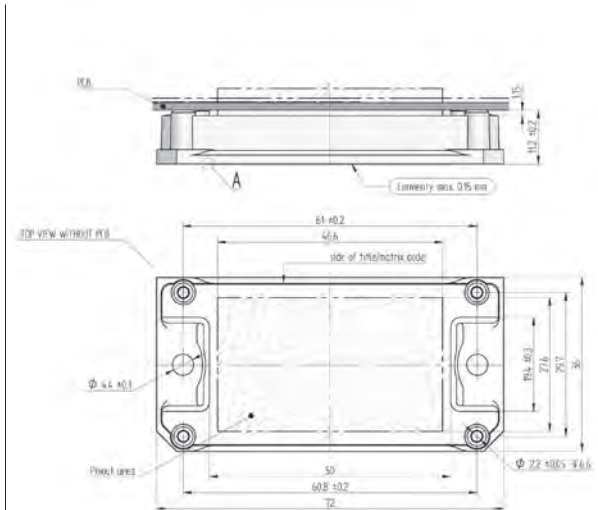
Dimensions:

Height: 12 mm
Lenght: 72 mm
Width: 36 mm

Features:

/ 4-towers
/ Ceramic substrate for Thick-film based designs
/ Thermo-mechanical push-and-pull force relief





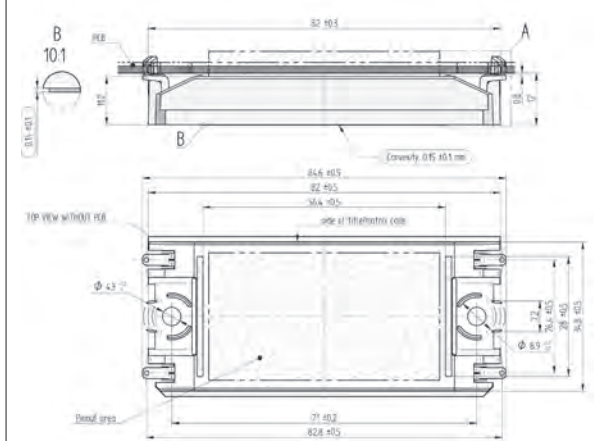
flow 1 12 mm 2-clip

Dimensions:

Height: 12 mm
Lenght: 72 mm
Width: 36 mm

Features:

/ -clip-in, reliable mechanical connection, qualified for wave soldering
/ Convex shaped substrate for superior thermal contact
/ Thermo-mechanical push-and-pull force relief



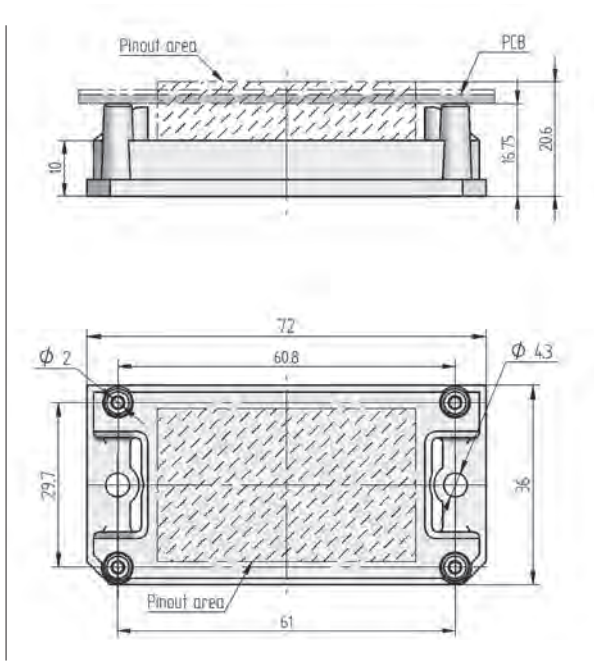
flow 1B 17 mm

Dimensions:

Height: 17 mm
Lenght: 72 mm
Width: 36 mm

Features:

/ 4-towers
/ Ceramic substrate for Thick-film based designs
/ Thermo-mechanical push-and-pull force relief



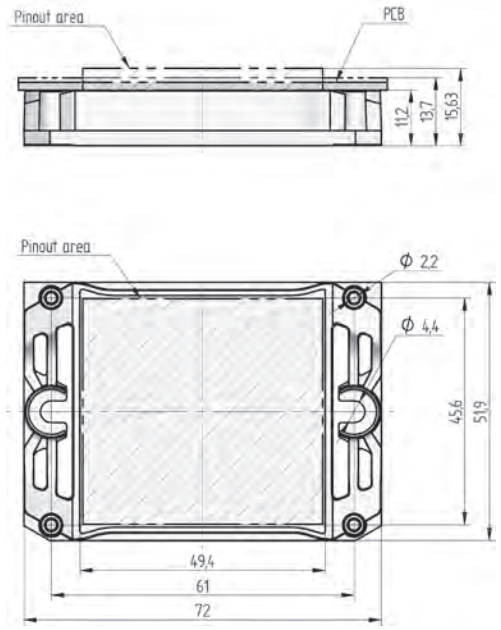
flow 1C

Dimensions:

Height: 12 mm
Width: 72 mm
Depth: 52 mm

Features:

/ 4-towers
/ Ceramic substrate for Thick-film based designs
/ Thermo-mechanical push-and-pull force relief



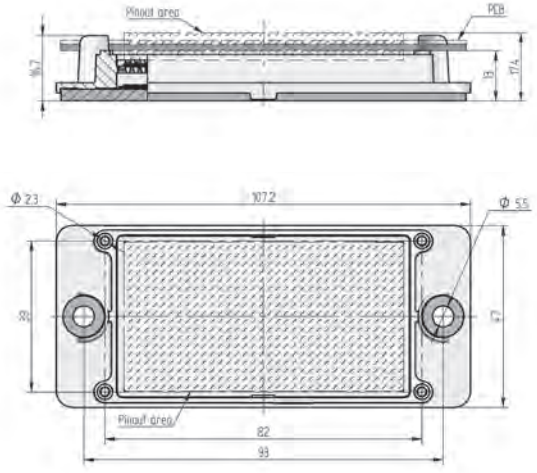
flow 2 17 mm

Dimensions:

Height: 17 mm
Lenght: 107 mm
Width: 47 mm

Features:

/ 4-towers
/ Convex shaped baseplate for superior thermal contact
/ Cu baseplate
/ Thermo-mechanical push-and-pull force relief



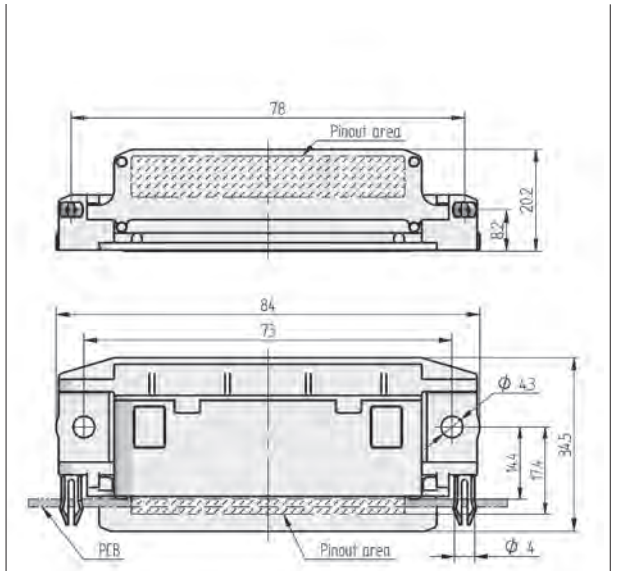
*flow*90 1

Dimensions:

Height: 35 mm
Width: 84 mm
Depth: 21 mm

Features:

/ 90° mounting angle between heatsink and PCB
/ clip or screw-on heatsink mounting
/ clip-in PCB mounting
/ Thermo-mechanical push-and-pull force relief



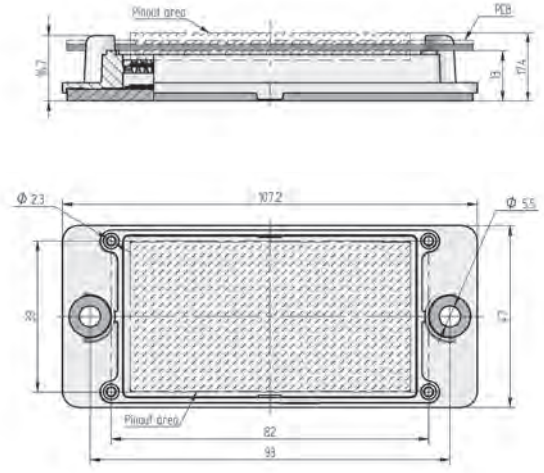
flow 2 13 mm

Dimensions:

Height: 13 mm
Lenght: 107 mm
Width: 47 mm

Features:

/ 4-towers
/ Convex shaped baseplate for superior thermal contact
/ Cu baseplate
/ Thermo-mechanical push-and-pull force relief



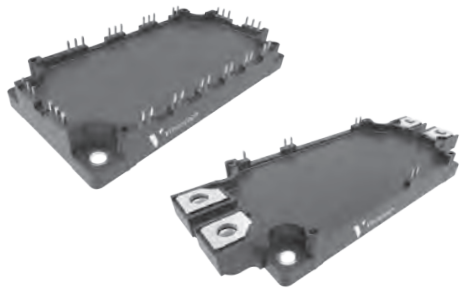
VINco E3

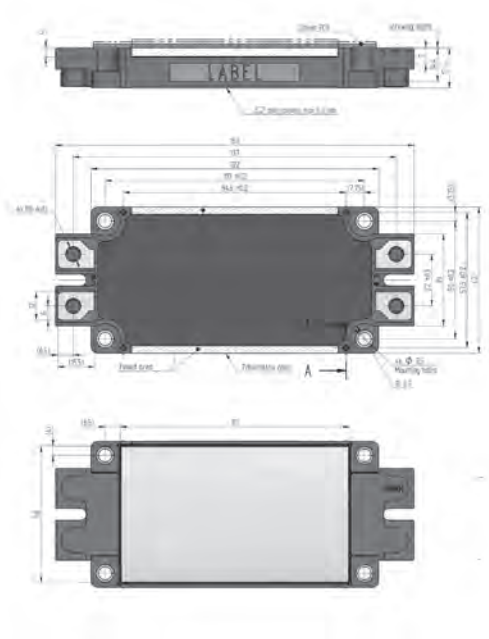
Dimensions:

Height: 17 mm
Lenght: 152 mm
Width: 62 mm

Features:

/ SoLid Cover Technology
/ Standard mid-power industry package
/ Driver pins are avaliable in press-fit and solder-pin
/ M6 High Power Screw Contact





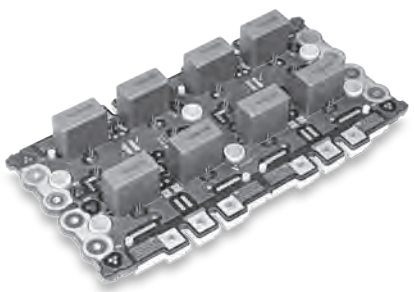
VINco X8

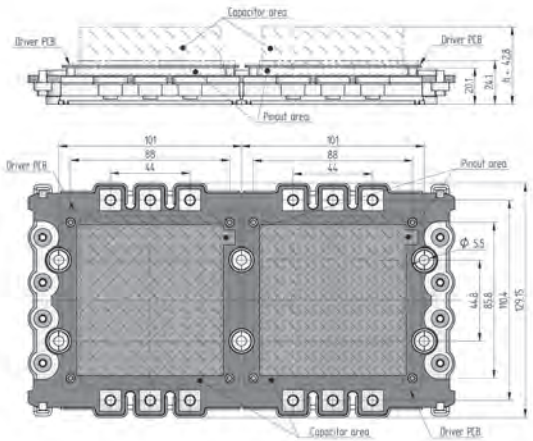
Dimensions:

Height: 16 mm
Lenght: 242 mm
Width: 129.2 mm

Features:

/ Low inductive Package
/ M4 low inductive interface for easy paralleling
/ M6 high power screw contact
/ Press-fit pin driver contact
/ Fully symmetrical layouts





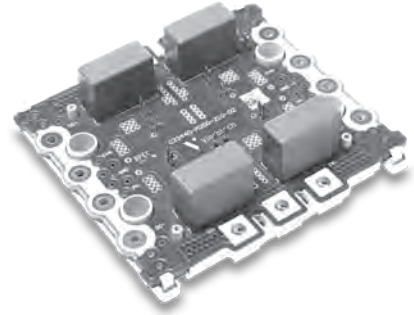
VINco X4

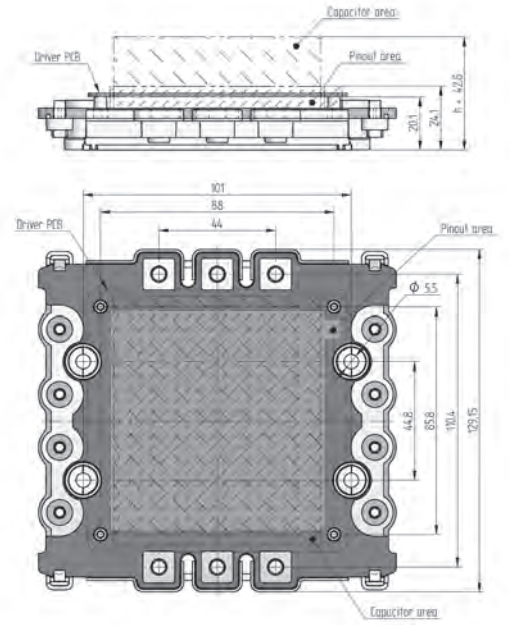
Dimensions:

Height: 16 mm
Lenght: 134.8 mm
Width: 129.2 mm

Features:

/ Low inductive Package
/ M4 low inductive interface for easy paralleling
/ M6 high power screw contact
/ Press-fit pin driver contact
/ Fully symmetrical layouts





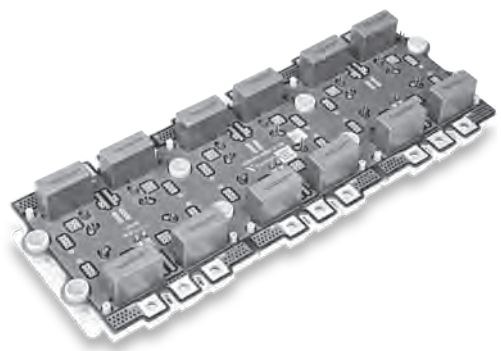
VINco X12

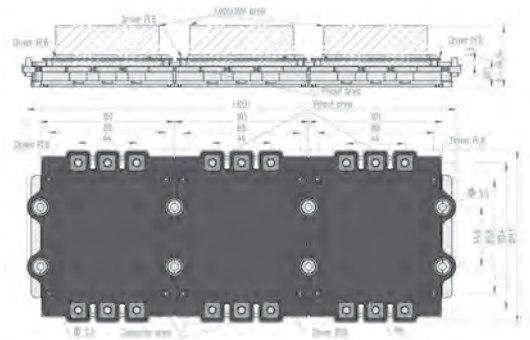
Dimensions:

Height: 16 mm
Lenght: 323 mm
Width: 129.2 mm

Features:

/ Low inductive Package
/ M6 high power screw contact
/ Press-fit pin driver contact
/ Fully symmetrical layouts





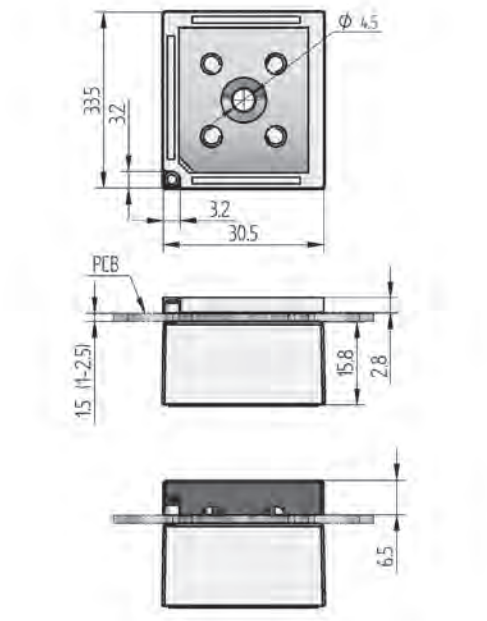
MiniSKiiP® 0

Dimensions:

Height: 16 mm
Lenght: 34 mm
Width: 31 mm

Features:

/ Easy assembly in one mounting step
/ Flexible PCB design w/o pin holes
/ Solderless spring contacts
/ Rugged spring contact



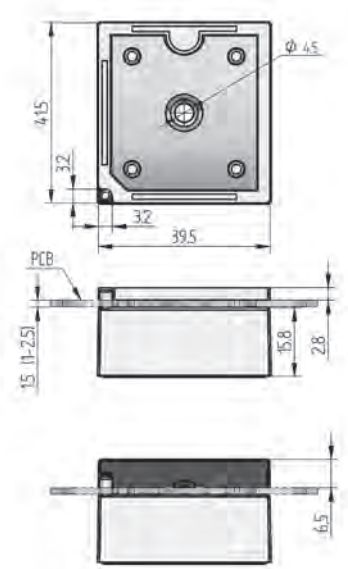
MiniSKiiP® 1

Dimensions:

Height: 16 mm
Lenght: 42 mm
Width: 40 mm

Features:

/ Easy assembly in one mounting step
/ Flexible PCB design w/o pin holes
/ Solderless spring contacts
/ Rugged spring contact



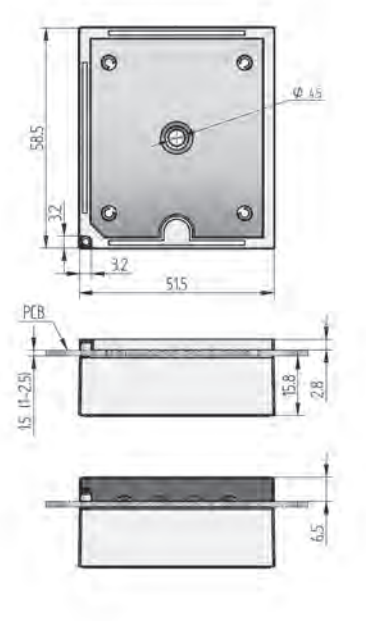
MiniSKiiP® 2

Dimensions:

Height: 16 mm
Lenght: 59 mm
Width: 52 mm

Features:

/ Easy assembly in one mounting step
/ Flexible PCB design w/o pin holes
/ Solderless spring contacts
/ Rugged spring contact



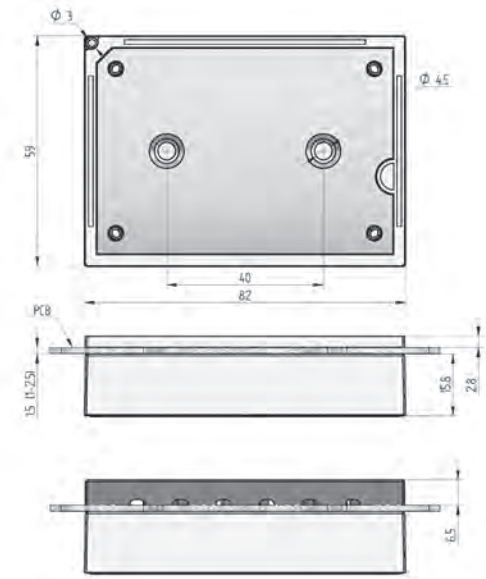
MiniSKiiP® 3

Dimensions:

Height: 16 mm
Lenght: 82 mm
Width: 59 mm

Features:

/ Easy assembly in one mounting step
/ Flexible PCB design w/o pin holes
/ Solderless spring contacts
/ Rugged spring contact



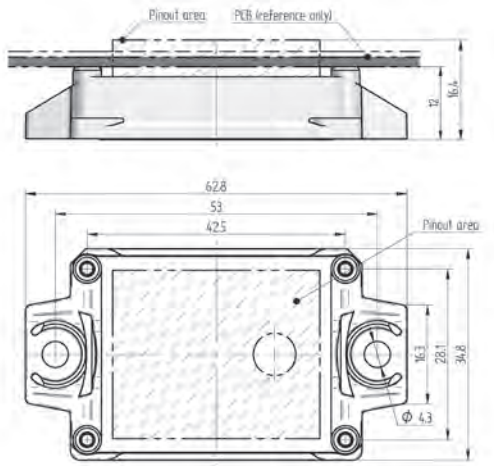
flow E1

Dimensions:

Height: 12 mm
Lenght: 62 mm
Width: 34 mm

Features:

/ Convex shaped substrate for superior thermal contact
/ Compact design
/ CTI600 housing material
/ Thermo-mechanical push-and-pull force relief



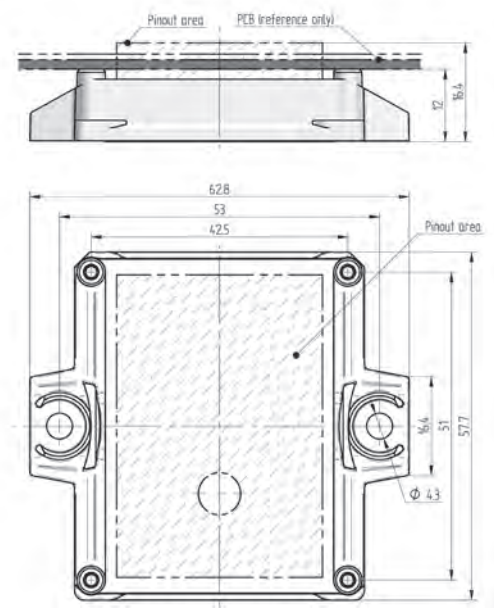
flow E2

Dimensions:

Height: 12 mm
Lenght: 62 mm
Width: 57 mm

Features:

/ Convex shaped substrate for superior thermal contact
/ Compact design
/ CTI600 housing material
/ Thermo-mechanical push-and-pull force relief



RECTIFIER (+BRAKE)
SIXPACK
SIXPACK+RECTIFIER
SEVENPACK
PIM (CIB)
PIM+PFC (CIP)
IPM (CIB)
IPM (CIP_PIM+PFC)
HALF-BRIDGE
H-BRIDGE
SINGLE-PHASE-INVERTER
H6.5
BOOSTER
BOOSTER-SYMMETRIC
Buck-Booster Symmetric
PFC (Single-phase applications)
PFC (Three-phase applications)
Three-level NPC (I-Type)
Three-level MNPC (T-Type)
Three-level ANPC
Schematics / Housings
Naming System

VERSION 1

This ordering code is identical with the product name shown here. It remains valid for all products released before mid 2009 and subsequent releases within product families established before 2009.

Leading Number
V23990: Power modules
V23109: Relays
S30814: Hybrids

Product Identification
First two digits: product family identifier
Last digit: module identifier
Modules are listed from lowest to highest power (e.g. 600 V / 4 A – 1200 V / 15 A)

Part Number
Ending

V23990-P868-F49 Y-/3/-PM

Product Classification
P: *flow* power modules
K: MiniSKiiP® power modules
S: Relays
Q: Hybrids

Option Code
Different housings
Optional DCB material
Optional parts (e.g. brake)
Y as last letter:
Press-fit option

Option Code 2 (optional)
Thermal Interface Material:
MiniSKiiP® options

VERSION 2

Version 2 introduces a new name and ordering code for products released after mid 2009.

/ The new product name describes the module's characteristics.
/ The new ordering code extends the product's name. It is listed in the product data sheet.

* Examples

Technology Group
For UL notification

Voltage*
06: 600 V
07: 650 V
09: 900 V
12: 1200 V
16: 1600 V
24: 2400 V

Pinout
Modules with same topology, same housing, and same pinout have same character

Current/$R_{DS(on)}$*
005: 5 A
050: 50 A
100: 100 A
1k5: 1500 A
045: 45 mOhm
099: 99 mOhm

Options
Alternative parts
Optional substrate material

Internal Identifier

10 - PZ 06 NR A 041 FS 02 - P965F68 Y- /3/

***flow* housing with Solder pins**
FZ: *flow* Ø 12 mm
F0: *flow* Ø 17 mm
FU: *low* Ø 12 mm without clips 4-tower
FX: *flow* Ø 17 mm w/o-clips 4-tower
ZB: *flow* ØB 12 mm
ØB: *flow* ØB 17 mm
FY: *flow* 1 12 mm
F1: *flow* 1 17 mm
TY: *flow* 1 2-clip 12 mm
1B: *flow* 1B
1C: *flow* 1C
FT: *flow* 2 - 12 mm
F2: *flow* 2 - 17 mm
R0: *flow* 90 Ø with-clips
RZ: *flow* 90 Ø without-clips
R1: *flow* 90 1
E1: *flow* E1 12 mm solder
E2: *flow* E2 12 mm solder

***flow* housing with Press-fit Pins**
PZ: *flow* Ø 12 mm
P0: *flow* Ø 17 mm
PC: *flow* Ø 12 mm without clips 4-tower
PD: *flow* Ø 17 mm without-clips 4-tower
P1: *flow* 1 17 mm
PY: *flow* 1 12 mm
PW: *flow* 1 2-clip 12 mm
FB: *flow* 1B 12 mm
P2: *flow* 2 17 mm
PT: *flow* 2 12 mm
EZ: *flow* E1 12 mm Press-fit
EY: *flow* E2 12 mm Press-fit

Screw Terminals
W2: VINco X4
W4: VINco X8
W6: VINco X12

Low-profile packages:
VS: VINco E3 Solder pins
VP: VINco E3 Press-fit pins

MiniSKiiP®
M0: MiniSKiiP® 0
M1: MiniSKiiP® 1
M2: MiniSKiiP® 2
M3: MiniSKiiP® 3

Topology
B3: 3xBooster
AN: Advanced NPFC
NA: ANPC
NB: Boost Symmetric
BV: Booster + H6.5
BI: Booster + Inverter
BB: Buck-Booster Symmetric
B2: Dual Booster
HV: H6.5
2P: Half-Bridge
4P: H-Bridge
IB: IPM (PIM + Brake)
IP: IPM (PIM)
NM: MNPC
M3: MNPC (3-Phase)
LB: Neutral Boost PFC
NI: NPC
N3: NPC (3-Phase)
NP: NPC (Inverter Parallel)
NR: NPC (Inverter Reactive)
2T: PFC - rectifier + 2x boost
2U: 2U: Rectifier + P-Switch PFC
AA: RPI (Rectifier-PFC-Inverter)
PN: PIM (w/o Brake)
PP: PIM + PFC (w/o Brake)
PM: PIM(CIB)
ZA: Rectifier + PFC + Inverter
7P: Sevenpack
R6: Sixpack+Rectifier
1S: Symmetric PFC
6B: Three-phase rectifier + Brake

Option Code (optional)

Chip Technology
SL: IGBT F5
RG: IGBT fast
FY: IGBT fast
SM: IGBT H5
SU: IGBT L5
FX: IGBT low drop
NB: IGBT M6
M7: IGBT M7
RC: IGBT RC
S5: IGBT S5
FU: IGBT UltraFast
F4: IGBT UltraFast
SD: IGBT2
FC: IGBT2 fast
FB: IGBT2 HS
SA: IGBT3
SG: IGBT3 HS3
SB: IGBT3 LL
SC: IGBT4
SH: IGBT4 HS
FL: Infineon CoolMOS™ C3
FS: Infineon CoolMOS™ C6
CR: Infineon CoolMOS™ CFD2
FH: Infineon CoolMOS™ CP
FT: Low voltage MOSFET
MF: MOSFET + Fast Diode
MC: MOSFET + SiC
FR: NPT IGBT
FP: Parallel Switch
RW: Rectifier
ME: SiC MOSFET
MR: SiC MOSFET
MI: SiC MOSFET
FQ: SJ MOSFET
FK: ST MDmesh™ M5
FV: Trench Field Stop IGBT
NS: Trench Field Stop II IGBT
N3: Ultra Field Stop IGBT

COMPONENT TECHNOLOGY FEATURES

IGBT fast	/ High efficiency in hard switching and resonant topologies / High speed switching / Low gate charge
IGBT H5	/ High efficiency in hard switching and resonant topologies / High speed switching / Low gate charge
IGBT M6	/ 10 µs short circuit time / Low gate capacitance / Low loss
IGBT M7	/ Easy paralleling / Low turn-off losses / Low collector emitter saturation voltage / Positive temperature coefficient / Short tail current / Switching optimized for EMC
IGBT RC	/ Optimised collector emitter saturation voltage and forward voltage for low conduction losses Reverse conductive IGBT technology / Smooth switching performance leading to low EMI levels
IGBT S5	/ High speed and smooth switching / Low gate charge / Very low collector emitter saturation voltage
IGBT UltraFast	/ High input impedance / High speed switching / Low saturation voltage
IGBT2 HS	/ High speed switching / Low turn-off losses / Positive temperature coefficient / Short circuit prove
IGBT3	/ Easy paralleling / Low turn-off losses / Low collector emitter saturation voltage / Positive temperature coefficient / Short tail current
IGBT3 HS	/ High speed switching / Low EMI / Low turn-off losses / Low collector emitter saturation voltage
IGBT3 LL	/ Easy paralleling / Low turn-off losses / Positive temperature coefficient / Short tail current
IGBT4	/ Easy paralleling / Low turn-off losses / Low collector emitter saturation voltage / Positive temperature coefficient / Short tail current
IGBT4 HS	/ Easy paralleling / High speed switching / Low switching losses
Infineon CoolMOS™ C3	/ Easy to use/drive
Infineon CoolMOS™ C6	/ Easy to use/drive / Extremly low losses / Very high commutation ruggedness
Infineon CoolMOS™ CFD2	/ Easy to use/drive / Extremly low losses / Ultra-fast body diode / Very high commutation ruggedness
Infineon CoolMOS™ CP	/ Lowest drain source on state resistance per chip area / Ultra low effective capacitances / Ultra low gate charge
NPT IGBT	/ High input impedance / High speed switching / Low saturation voltage
Parallel Switch	/ High speed switching / MOSFET paralleled with IGBT / Very low switching and conduction losses
Rectifier	/ High inrush current capability
SiC MOSFET	/ Fast reverse recovery / High speed SiC-MOSFET technology / Low on-resistance
ST MDmesh™ M5	/ Avalanche tested / Low gate input resistance / Low input capacitance and gate charge
Thyristor (SCR)	/ High inrush current capability
Trench Field Stop IGBT	/ Positive temperature coefficient / Very low saturation voltage
Trench Field Stop II IGBT	/ Low gate charge / Low collector emitter saturation voltage

ABBREVIATIONS

AC	Alternating Current
Al_2O_3	Aluminium Oxide
AlN	Aluminium Nitride
AMNPC	Advanced MNPC
ANPFC	Advanced Neutral Boost PFC
BRC	Brake Chopper
CI	Converter Inverter
CIB	Converter Inverter Break
DC	Direct Current
DCB	Direct Copper Bonding
EMC	Electromagnetic Compatibility
FET	Field-Effect Transistor
FWD	Free Wheeling Diode
IGBT	Insulated Gate Bipolar Transistor
IPM	Intelligent Power Module
JFET	Junction Field-Effect Transistor
KE	Kelvin Emitter
LVRT	Low Voltage Ride Through
MNPC	Mixed voltage NPC
MOSFET	Metal-Oxide Semiconductor Field-Effect Transistor
MPP	Maximum Power Point
NPC	Neutral Point Clamp
NPFC	Neutral Power Factor Correction
NTC	Negative Temperature Coefficient
OE	Open Emitter
PCM	Phase-change Material
PFC	Power Factor Correction
PIM	Power Integrated Module
PTC	Positive Temperature Coefficient
$R_{DS(on)}$	On resistance
REACH	Registration, Evaluation, Athorization & Restriction of Chemicals (EU 1907/2006)
RoHS	Restriction of certain Hazardous Substances (EU 2011/65)
R_{th}	Thermal Resistance
SCR	Silicon Controlled Rectifier (thyristor)
Si	Silicon
SiC	Silicon Carbide
SMPS	Switching Mode Power Supplies
SPFC	Symmetric Boost
TIM	Thermal Interface Material
T_j	Junction Temperature
UPS	Uninterruptable CHARGER STATIONS
ZVS	Zero Voltage Switching

VINCOTECH **WORLDWIDE**

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LOCATIONS

Vincotech is an internationally expanding company within the Mitsubishi Electric Corporation. The firm is headquartered in Germany and operates a production site in Hungary.

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YOUR CONTACT

Vincotech GmbH
Biberger Strasse 93 / 82008 Unterhaching / Germany
T +49 89 878 067-0 / F +49 89 878 067-300

www.vincotech.com