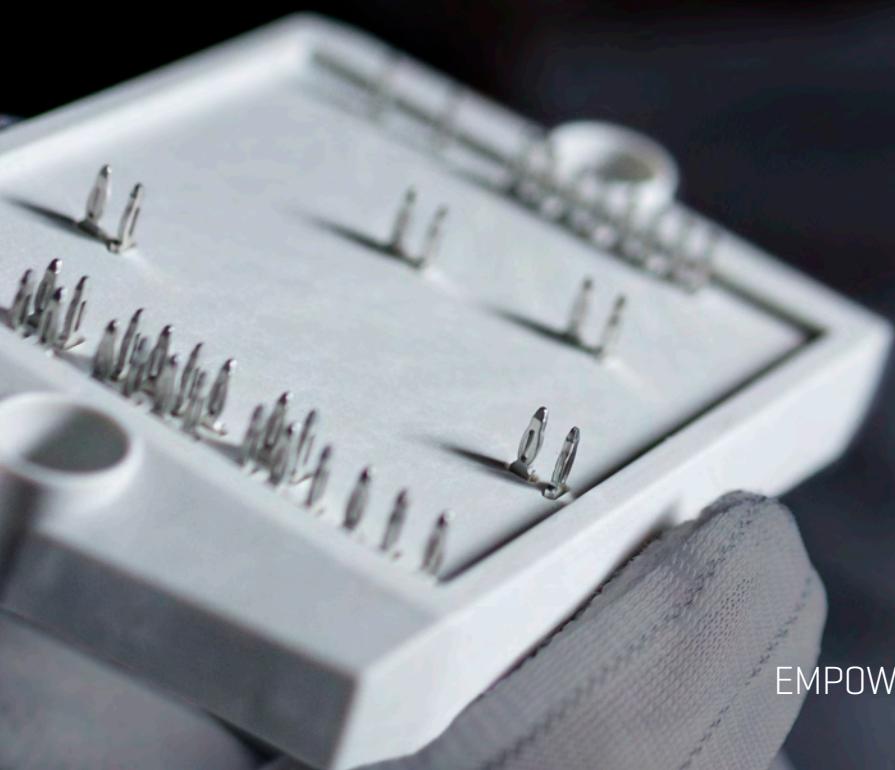




Vincotech

POWER MODULES

2020/2021



EMPOWERING YOUR IDEAS

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FAST FLEXIBLE CUSTOMER FOCUSSED 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

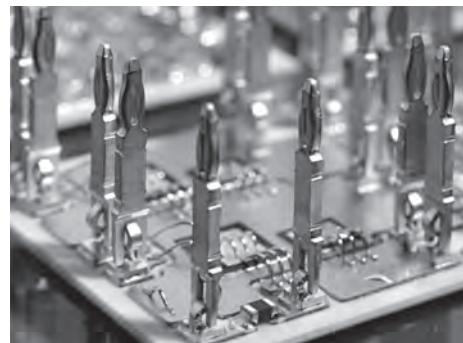
[Baseplate-less Modules]

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 or Press-fit pins



Thick Film Based

IPM Platform

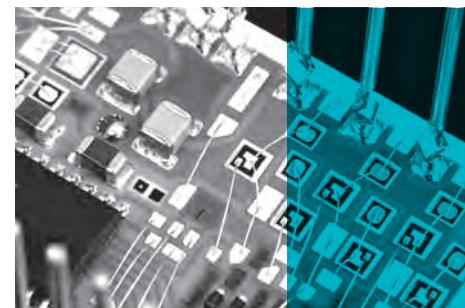
Thick film serves to produce highly integrated power modules in an additive process where various layers of conduction and insulation materials are printed on a ceramic sheet.

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 Al₂O₃
- / Printed AgPd connection tracks
- / Printed, laser-trimmed resistive tracks
- / Bare die / SMD component mix
- / Variable pins
- Solder pins / Press-fit pins



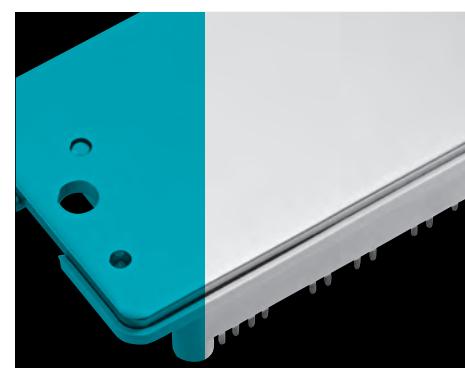
DCB Substrate on Cu-Baseplate

Power modules with baseplates are more robust, 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

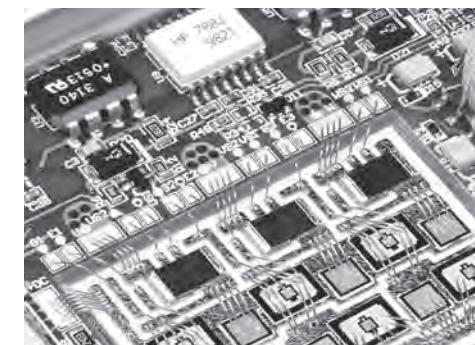


DCB Substrate on Cu-Baseplate Based IPM Platform

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

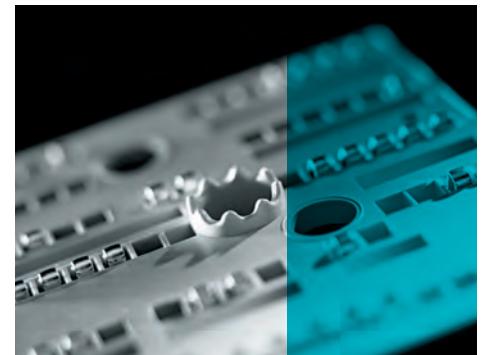


DCB Substrate on Cu-Baseplate with ScrewContacts

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

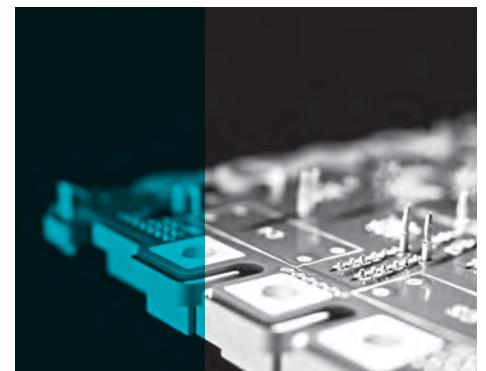
[Baseplate-less Modules with SPRiNG Contact]
Direct Pressed in modules can be mounted in a single step to the heat sink and driver board.

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 Si₃N₄

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.

Si₃N₄ Ceramic

- / High thermal conductivity [four times that of Al₂O₃]
- / 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 Al₂O₃ 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 semiconductor process chemicals and gases

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

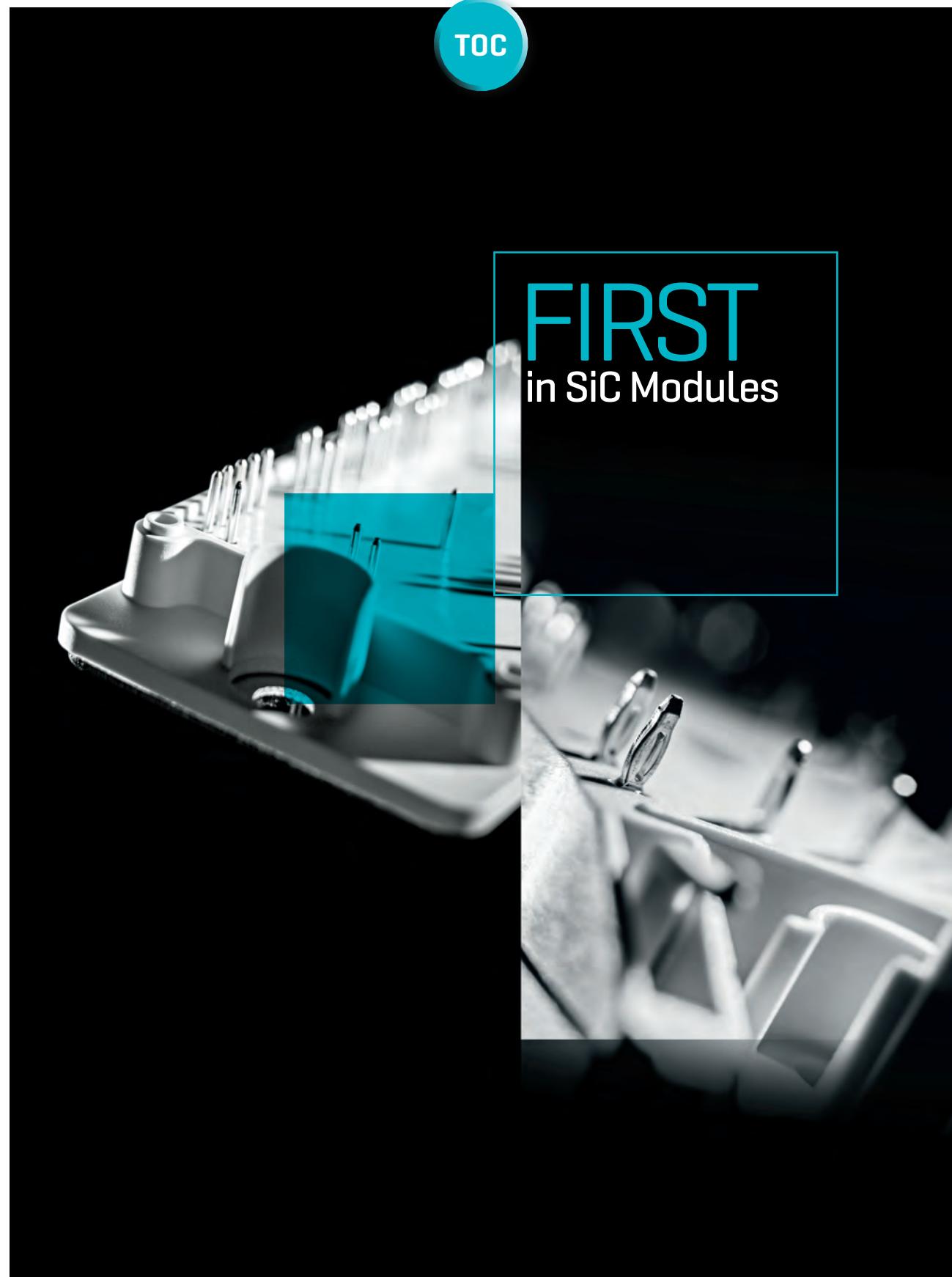
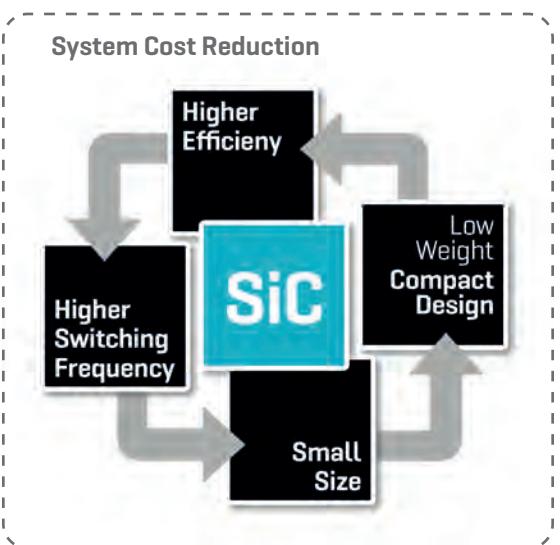
Engineers tasked to build better devices and applications want power modules that boost efficiency and performance. Yet they also need compact solutions that shrink the component footprint.

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 Al₂O₃, AlN and Si₃N₄ DCB substrates
- / Optional integrated passive capacitors and resistors
- / Low-inductive housings



INTER CONNECTION

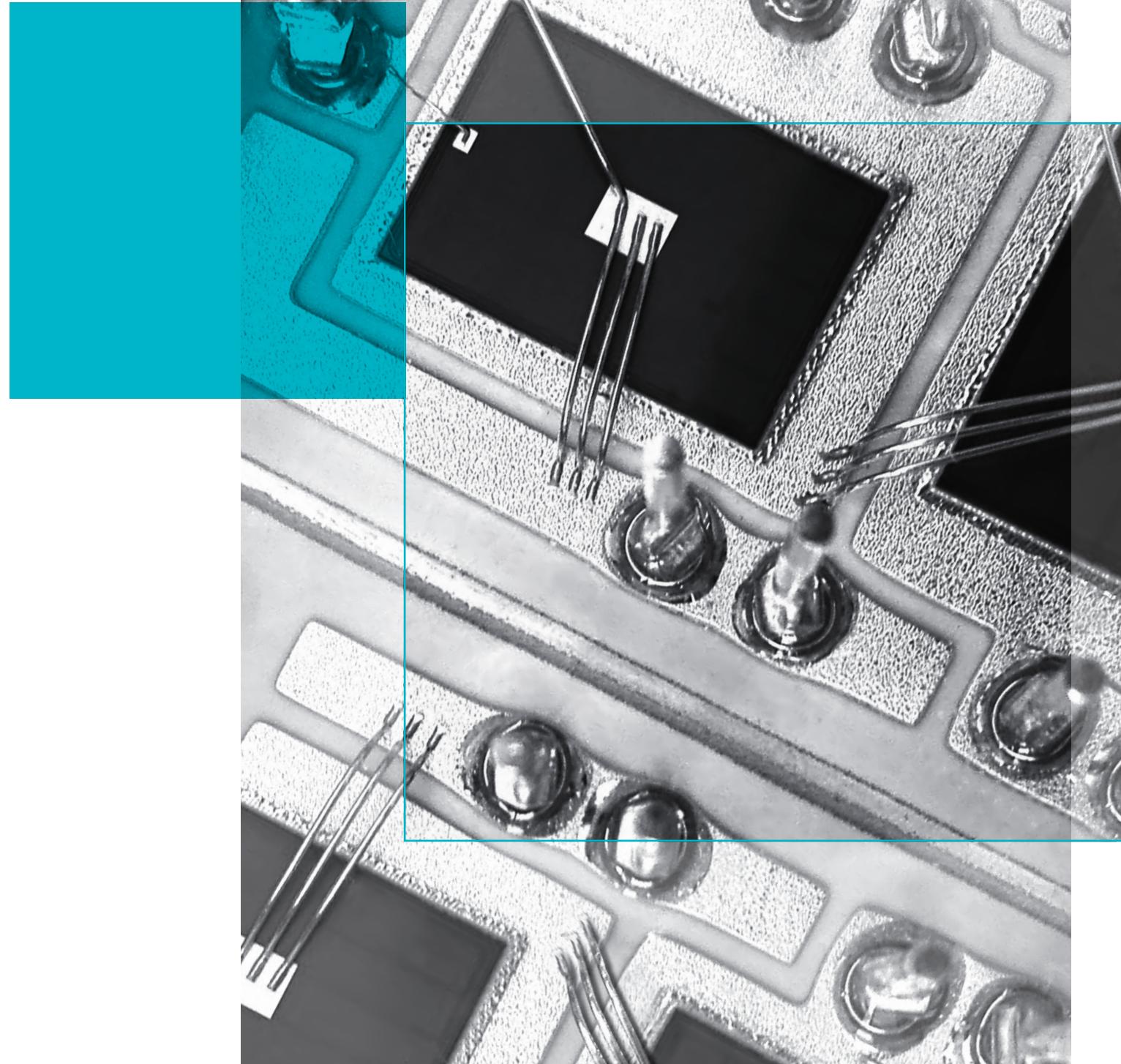
INTERCONNECTION TECHNOLOGIES

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 these demands and is able to 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)

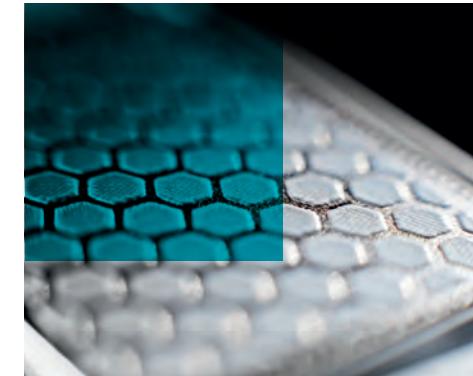
Phase-change Material

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.

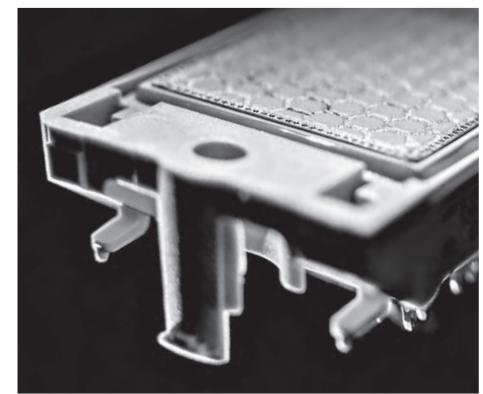
Benefits:

- / 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



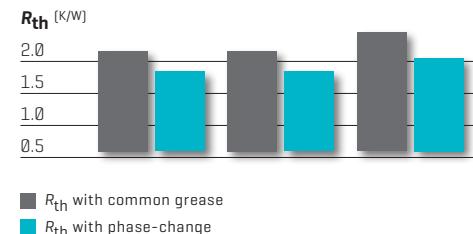
Features:

- / 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



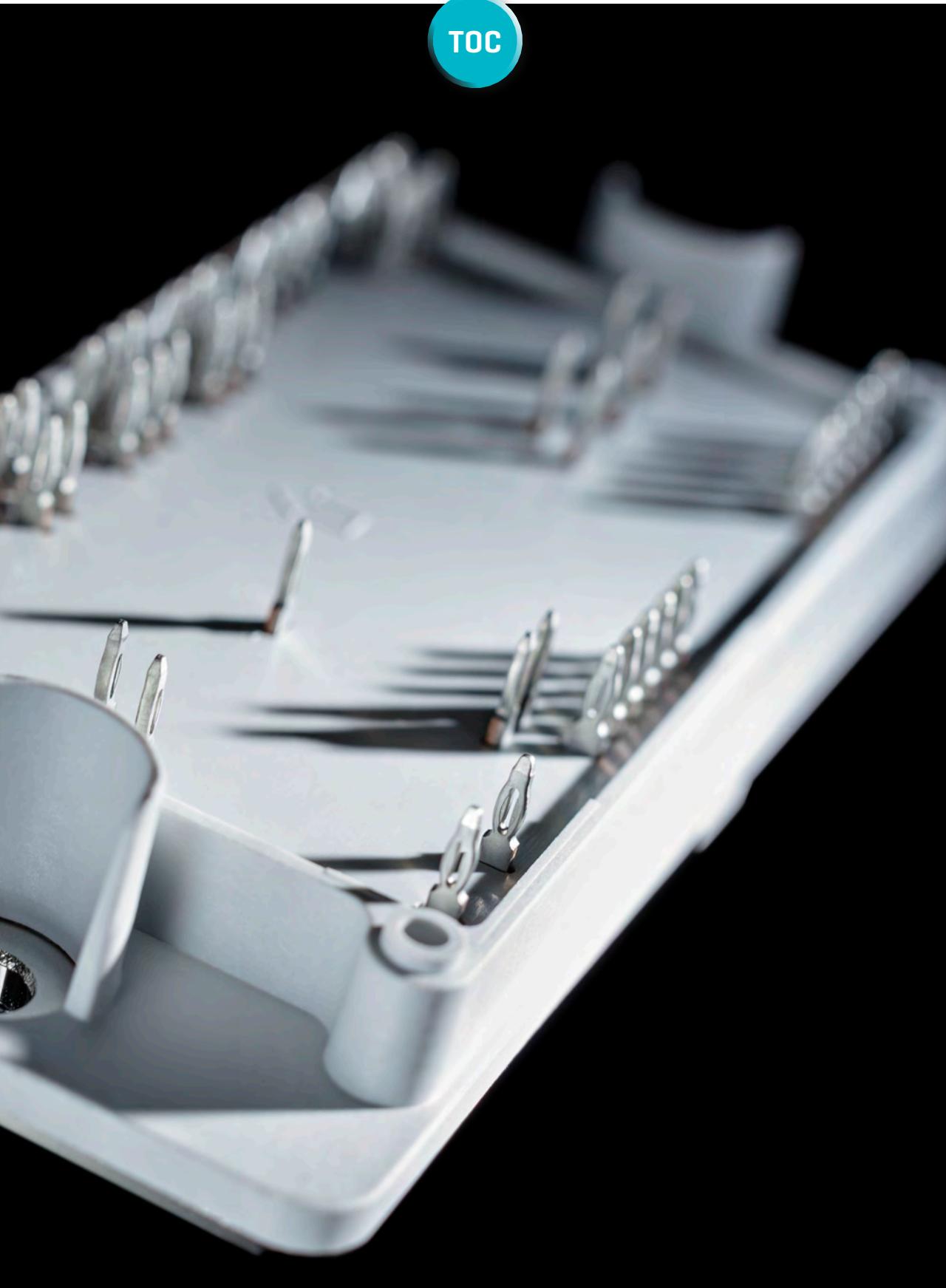
Order codes:

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.



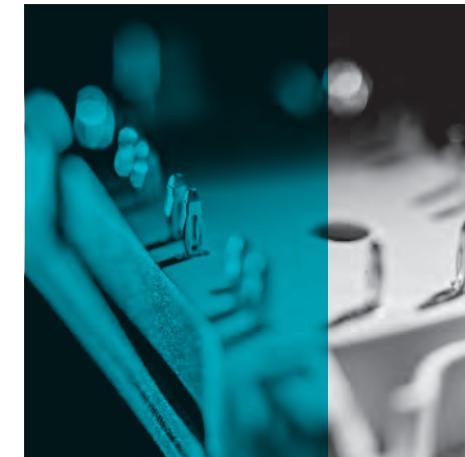
INTERCONNECTION TECHNOLOGIES

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:

- / 15% better thermal performance [$R_{th(j-s)}$] than the competition for extended life, more power, and greater reliability
- / Smaller packages such as the 25 A PIM in *flow E1* for higher power density
- / Real multiple source down to chip level for enhanced supply chain security
- / Easy assembly with pre-applied phase-change material and Press-fit pins

Topology	Package	Technology	$I_{Cnom}[A]$						
			10	15	25	35	50	75	100
PIM [CIB]	<i>flow E1</i>	IGBT4							
		IGBT M7	◆						
	<i>flow E2</i>	IGBT4							
		IGBT M7				◆			
SIXPACK	<i>flow E1</i>	IGBT4							
		IGBT M7				◆			
	<i>flow E2</i>	IGBT4							
		IGBT M7					◆		

◆ Power Extension



REACH
THE
NEXT LEVEL

EXCEPTIONAL HOUSINGS *flow90* Housing. Twist 90° to Save Space

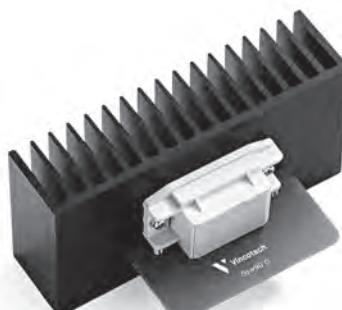


Vincotech *flow90* power modules are the perfect match for book-sized inverters and 19-inch rack-mounted power supplies with a 90-degree angle between the heat sink and PCB.

Featuring pins arrayed at a 90-degree angle, *flow90* 0 and *flow90* 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 *flow90* modules make the most of the PCB to minimize the application footprint. Modules with pre-applied phase-change material are available on demand.



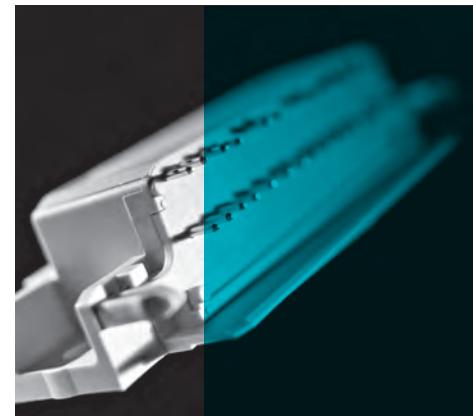
Detailed view of the *flow90* module

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

With all these purpose-driven features, the *flow90* is the module of choice for many applications that benefit from 90-degree mounting.

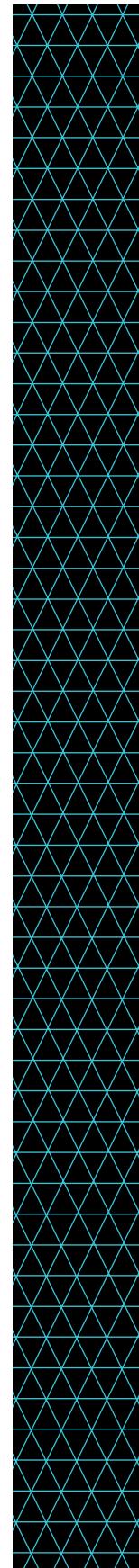
Features:

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

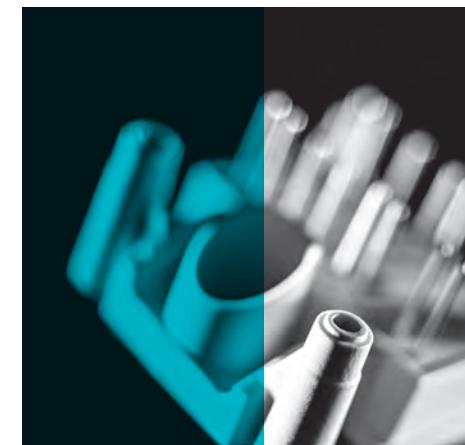


Benefits:

- / 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 *flow0B* 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 *flowPIM® 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.

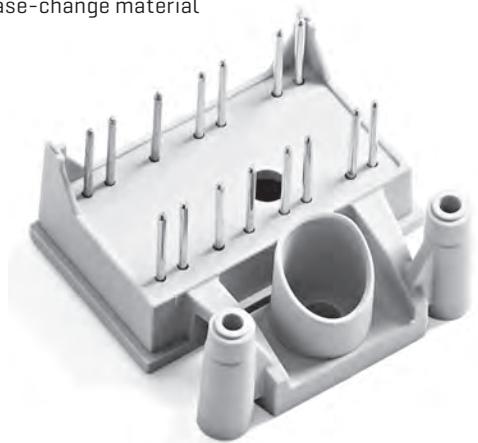
A DC capacitor and an NTC are integrated. The *flowPIM® 0B + PFC* module rated for the highest current features a PFC circuit based on a nominal chip current of 15 A and an inverter section equipped with 10 A components. The other topology is called *flowPACK 0B*.

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 Al₂O₃ 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

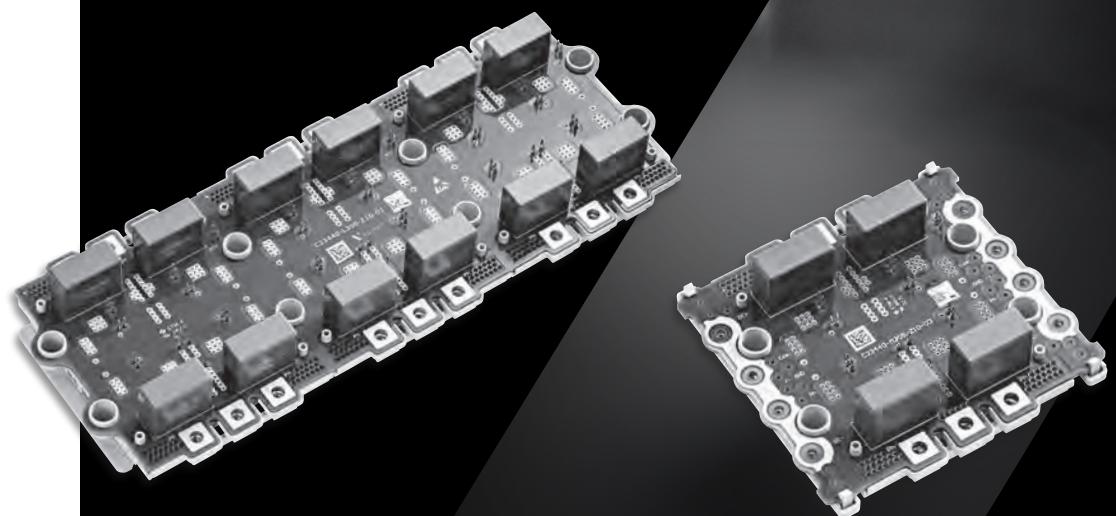
Benefits:

- / 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 performance
- / Available up to 1800 A in both NPC 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

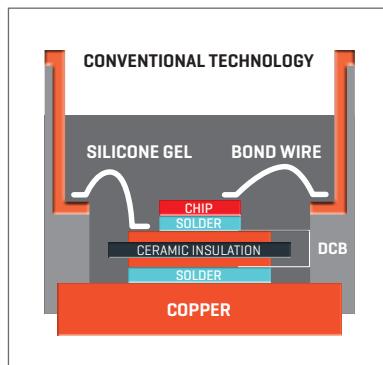
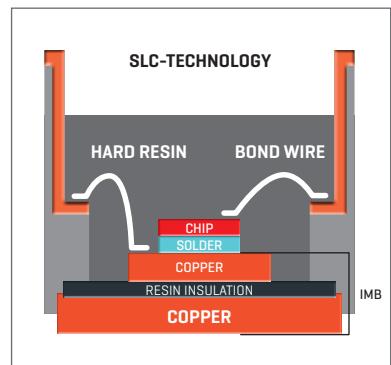
Engineered mainly for industrial drives, solar power and UPS applications, the VINco E3 package raises the performance bar with its enhanced power density and reliability.

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

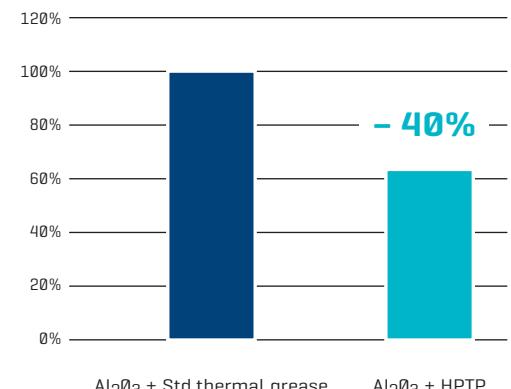


Structure comparison between conventional technology and the new SLC technology.



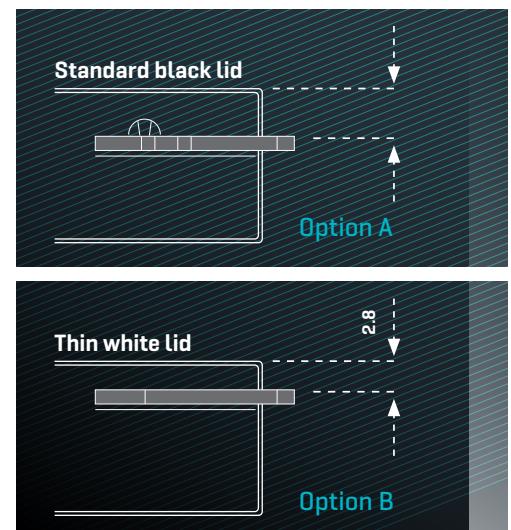


Thermal resistance R_{th} [j-s]



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 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.

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-M206B1A045FH-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.

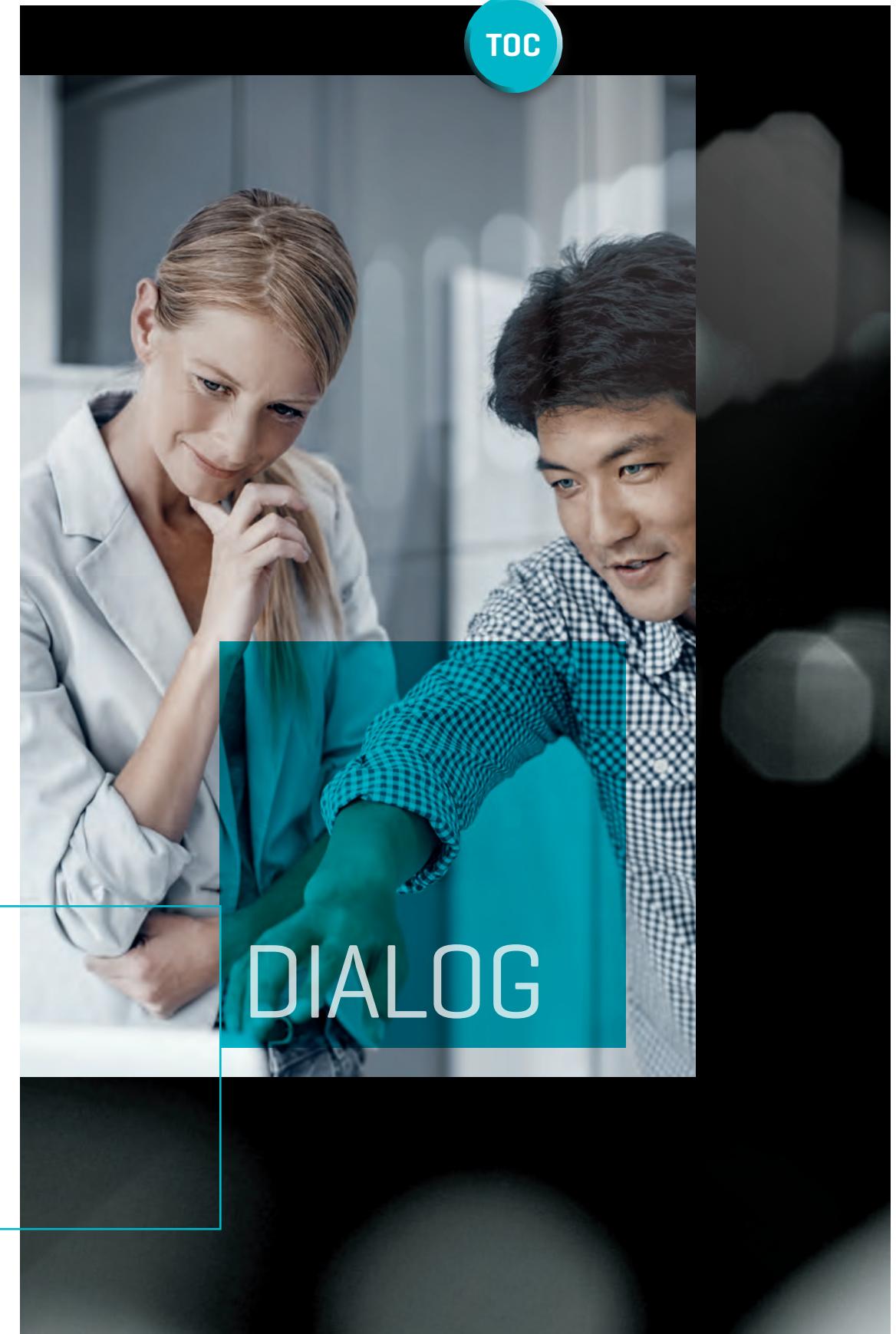
Performance descriptions in the development phase are accurate. Customers can count on these products to provide a lifetime of good service based on bug-free, stable designs that minimize maintenance effort.

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.

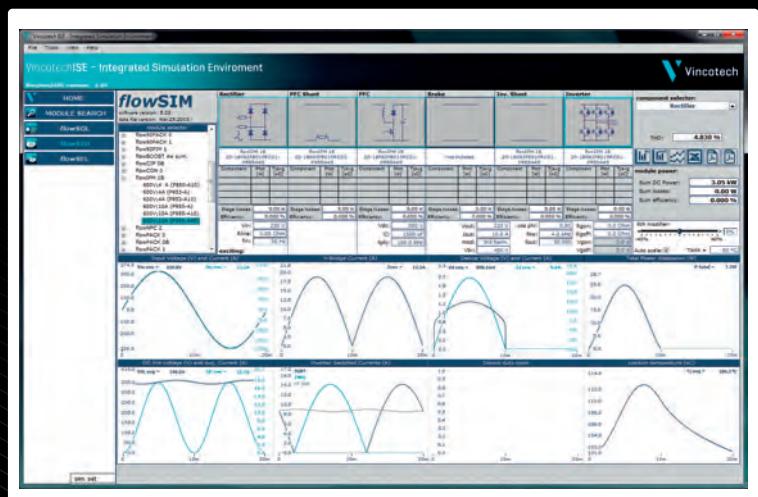
We put the customer's success first. And that is why customers and Vincotech are equal partners.



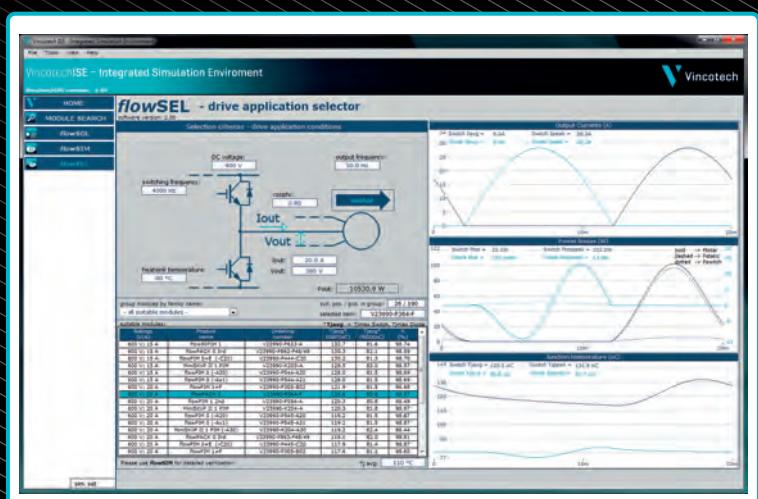
1



2



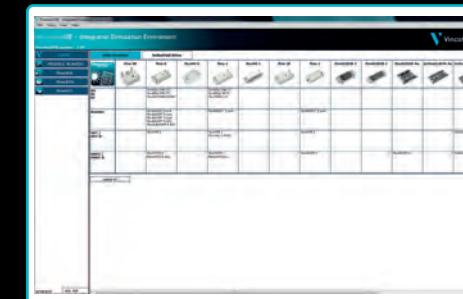
3



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

It contains updated versions of the legacy tools *flowSIM*, *flowSOL* and *flowSEL*.

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



01 *flowSOL*

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 *flowSIM*

calculates Vincotech power modules for industrial drive applications. Its GUI looks much like that of the *flowSOL* 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 *flowSEL*

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).

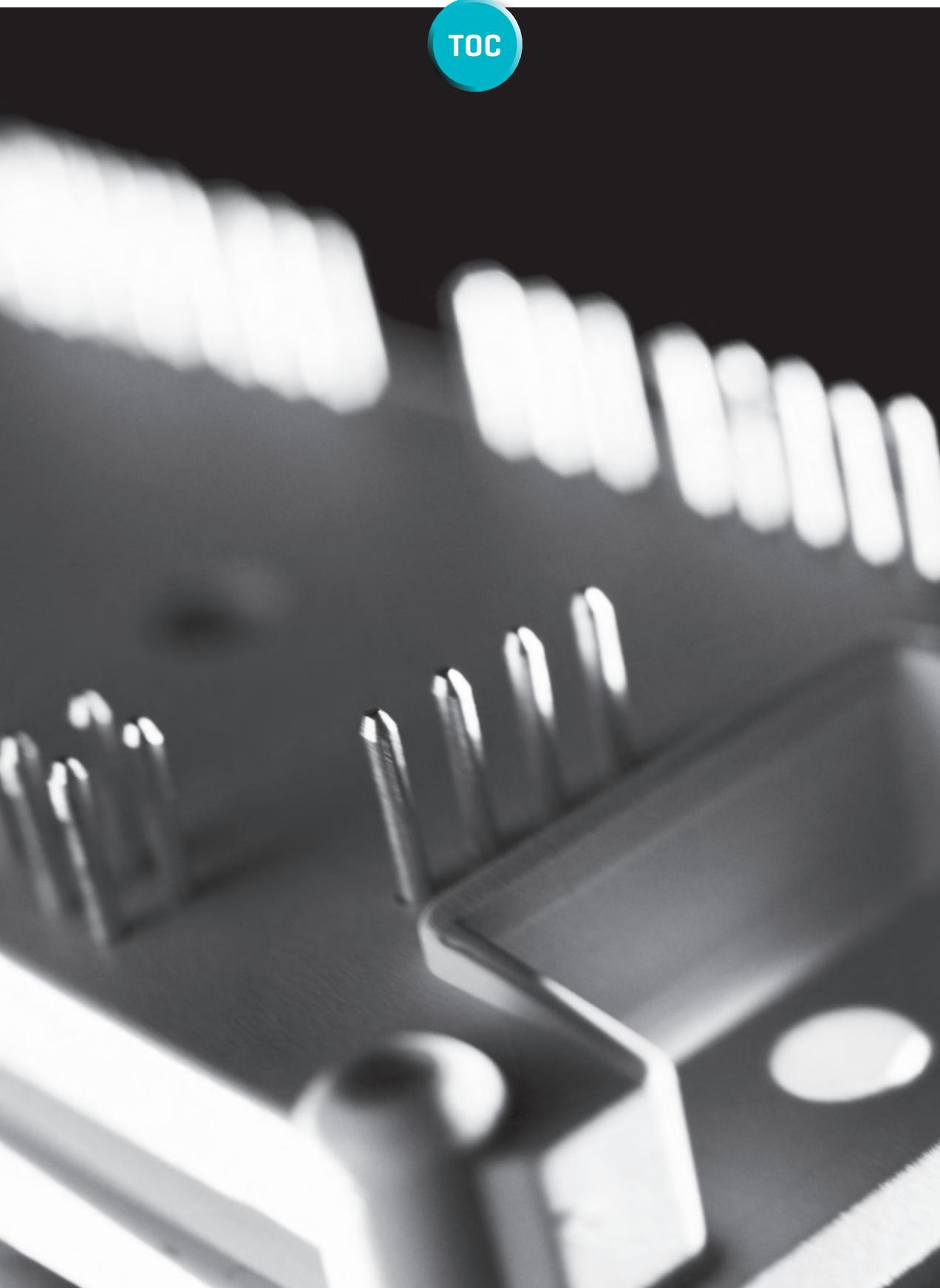
Step 02:

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.

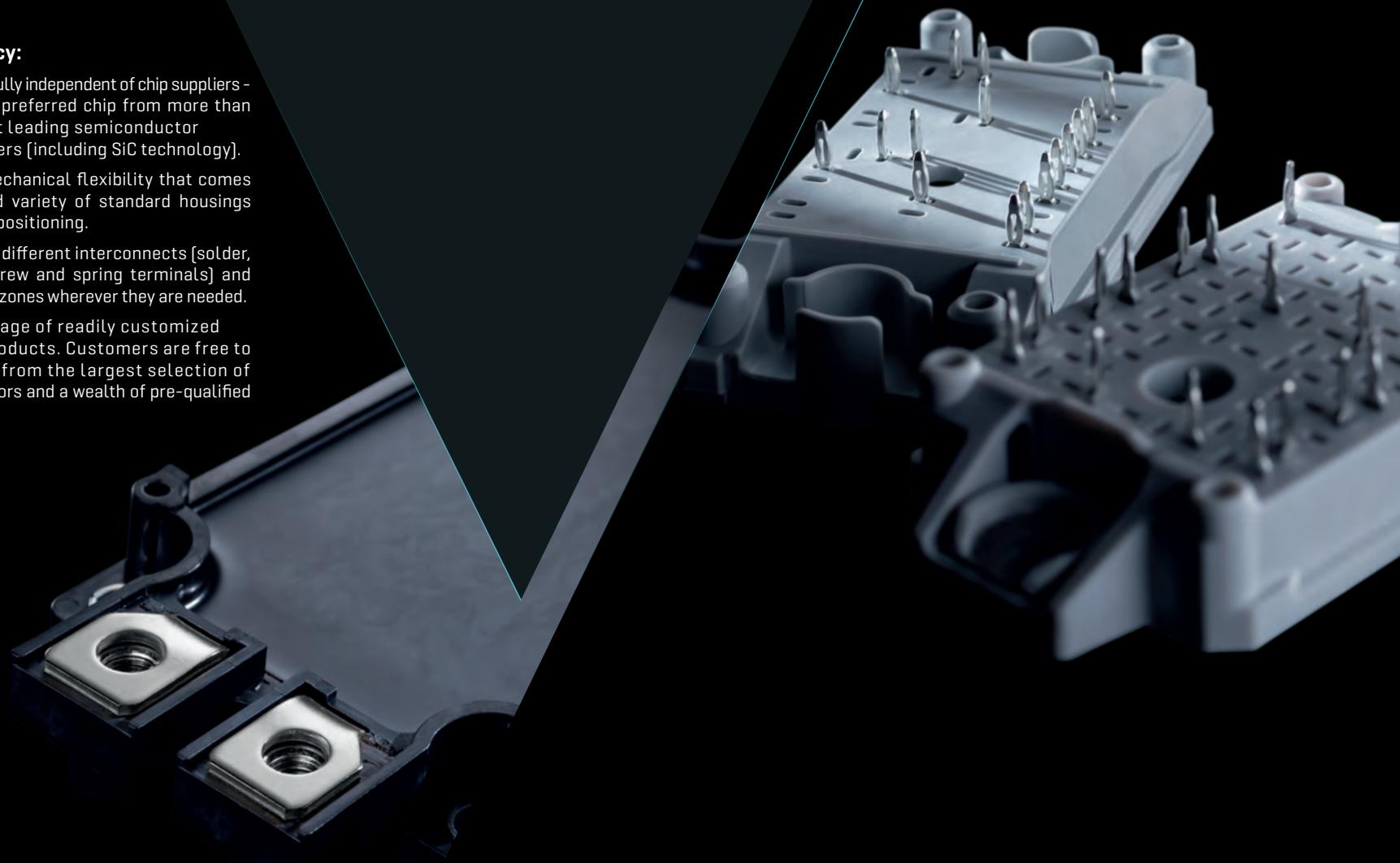
Fast time to market:

- / 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: flowPIM® 0 | flowPACK 1 | flowPIM® 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: flowPIM® 0 + PFC | flowIPM 1B | flowIPM 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: flowPFC 0 | fastPACK 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: flowMNPC 1 and flowMNPC 2 for > 100 kW: VINcoMNPC X4
flow3xBOOST 0 SiC for < 100 kW: flowNPC 0 | fastPACK 0 HC
flowSOL 0 | flowSOL 1 | flow3xPHASE 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: flowMNPC 0 | VINcoNPC X4
flowMNPC 1 and flowMNPC 2 for > 100 kW: VINcoMNPC X

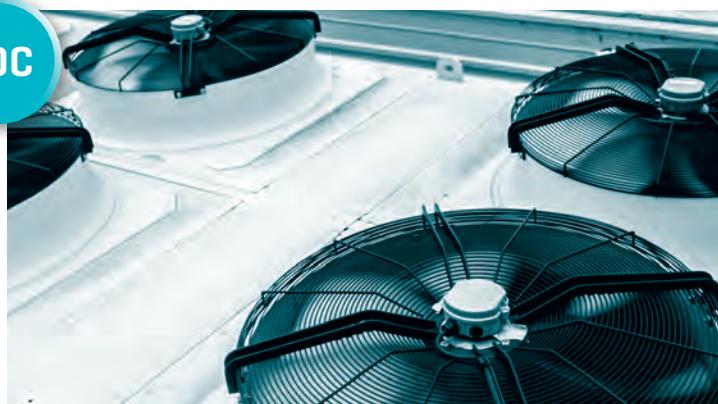
WELDING



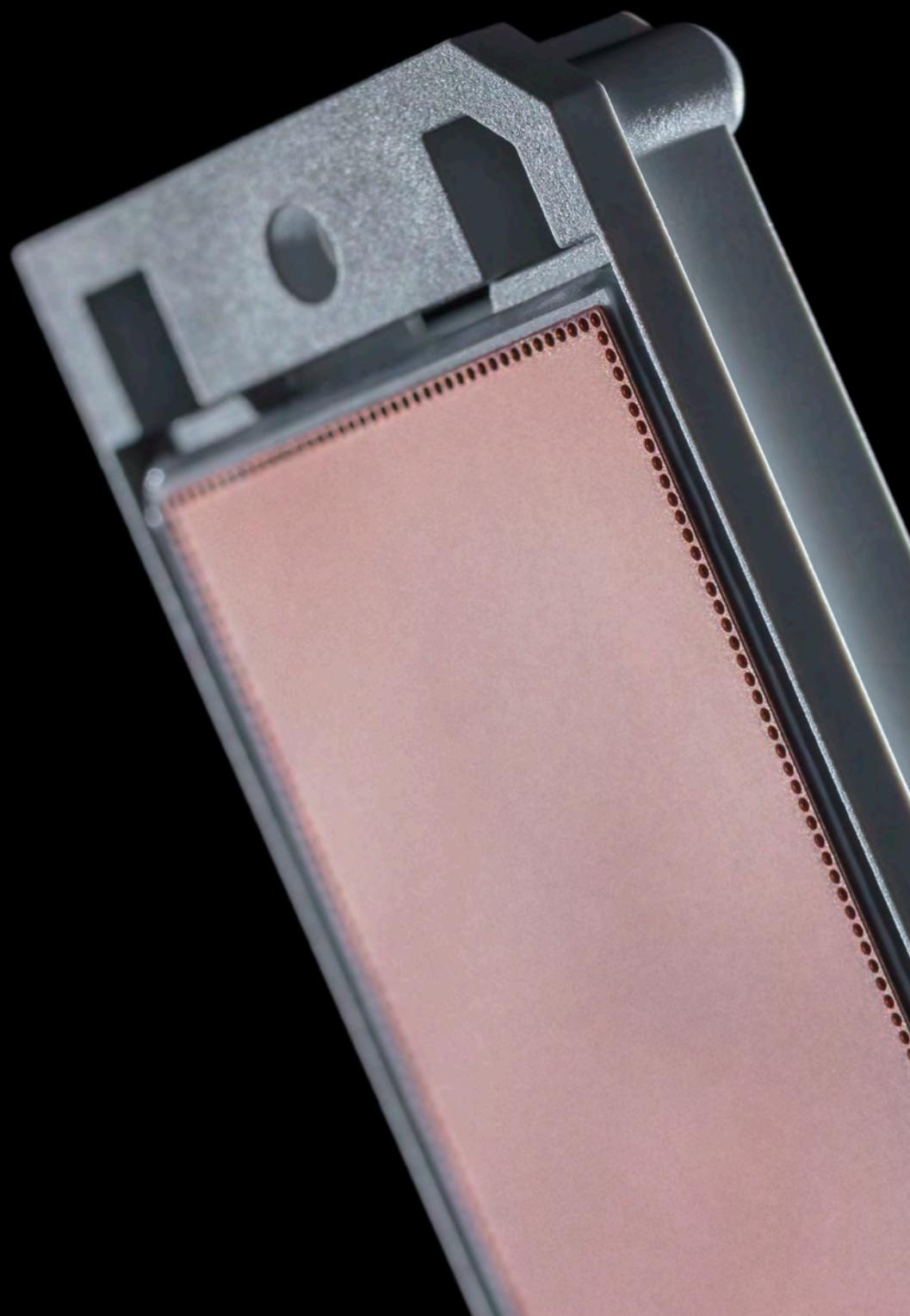
WELDING

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: flowPFC 0 | fastPACK 0 H | flowNPFC 0

OVERVIEW
TOPOLOGIES

TOC



PRODUCTS
2020 / 2021

RECTIFIER (+BRAKE)

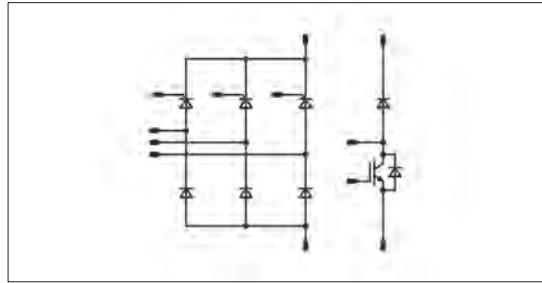
see page 47

Application:

/ CHARGING STATIONS / INDUSTRIAL DRIVES

Topology Features:

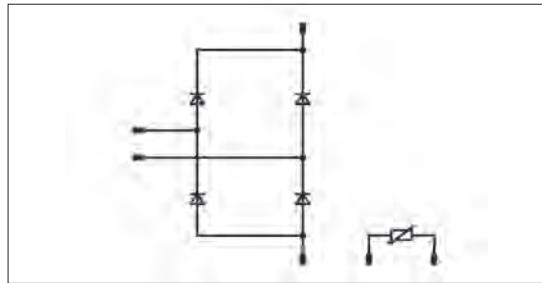
/ Converter with brake (optionally)

**ULTRAFAST RECTIFIER**

see page 55

Application:

/ CHARGING STATIONS / INDUSTRIAL DRIVES / WELDING

Topology Features:/ Designed for high switching frequency
/ Low reverse recovery time and recovery charge**Sixpack**

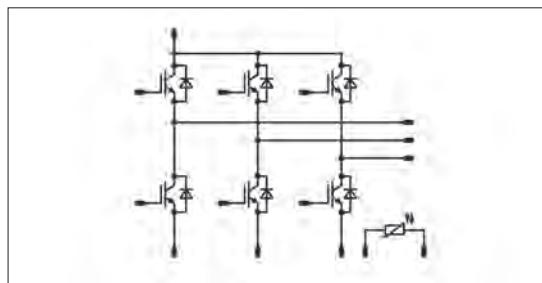
see page 59

Application:

/ EMBEDDED DRIVES / INDUSTRIAL DRIVES

Topology Features:

/ Three-phase inverter

**Sixpack+Rectifier**

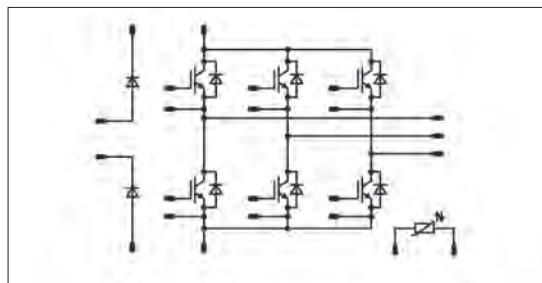
see page 75

Application:

/ EMBEDDED DRIVES / INDUSTRIAL DRIVES

Topology Features:

/ Three-phase inverter for active front end

**Sevenpack**

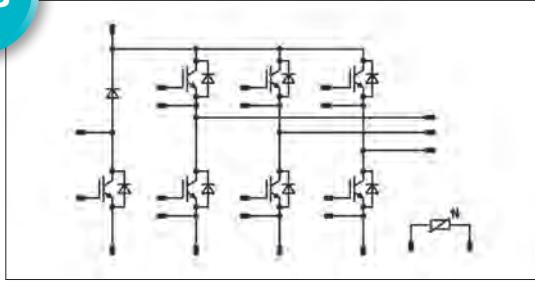
see page 79

Application:

/ EMBEDDED DRIVES / INDUSTRIAL DRIVES

Topology Features:

/ Three-phase inverter + Brake

**PIM [CIB]**

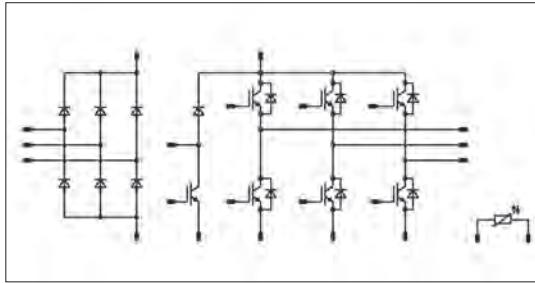
see page 83

Application:

/ EMBEDDED DRIVES / INDUSTRIAL DRIVES

Topology Features:

/ Converter + BRC + Inverter

**PIM+PFC [CIP]**

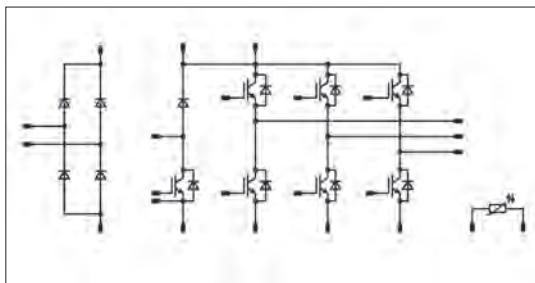
see page 97

Application:

/ EMBEDDED DRIVES / INDUSTRIAL DRIVES

Topology Features:

/ Single-phase converter + Inverter + PFC

**IPM [CIB]**

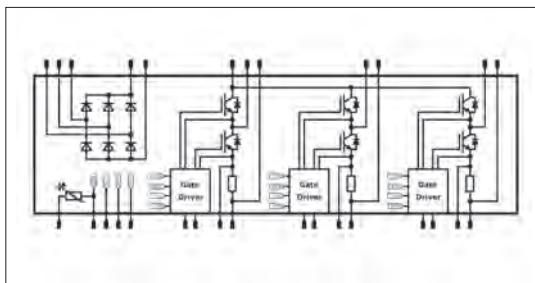
see page 103

Application:

/ EMBEDDED DRIVES / INDUSTRIAL DRIVES

Topology Features:

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



IPM (CIP/PIM+PFC)

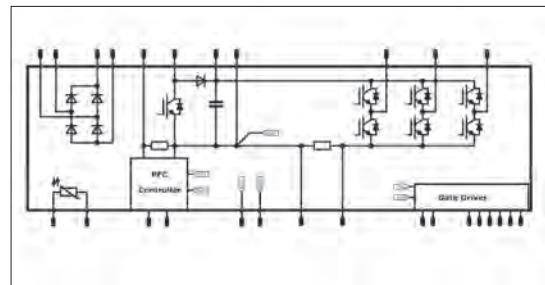
see page 107

Application:

/ EMBEDDED DRIVES / INDUSTRIAL DRIVES

Topology Features:

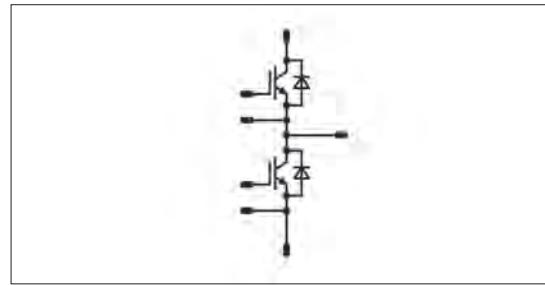
/ Single-phase converter + Inverter + PFC with integrated gate drive

**Half-Bridge**

see page 109

Application:/ CHARGING STATIONS / INDUSTRIAL DRIVES
/ SOLAR INVERTERS / UPS / WELDING & CUTTING**Topology Features:**

/ Half-Bridge

**H-Bridge**

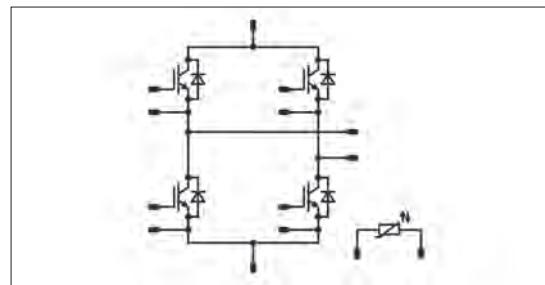
see page 115

Application:

/ CHARGING STATIONS / UPS / WELDING & CUTTING

Topology Features:

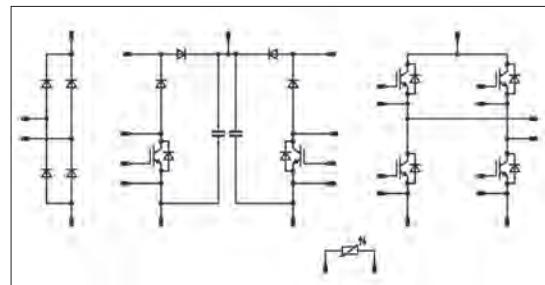
/ H-Bridge

**Single-phase Inverter**

see page 125

Application:/ CHARGING STATIONS / SOLAR INVERTERS
/ WELDING & CUTTING**Topology Features:**

/ Single-phase inverter

**H6.5**

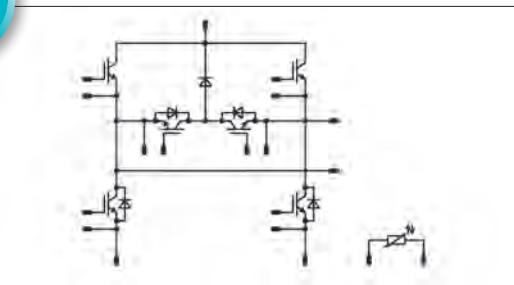
see page 131

Application:

/ SOLAR INVERTERS

Topology Features:

/ Three-level topology for single phase inverters

**Booster**

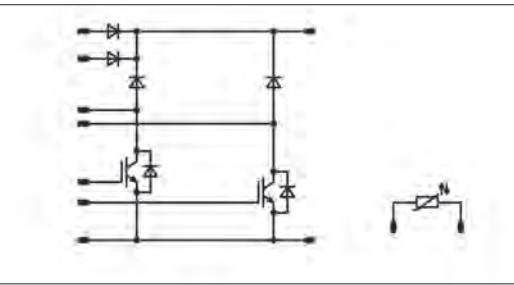
see page 135

Application:

/ CHARGING STATIONS / SOLAR INVERTERS / UPS

Topology Features:

/ Boost circuit

**Booster Symmetric**

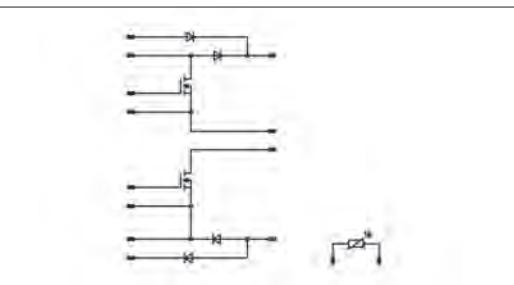
see page 143

Application:

/ CHARGING STATIONS / SOLAR INVERTERS / UPS

Topology Features:

/ Symmetrical boost circuit

**Buck-Booster Symmetric**

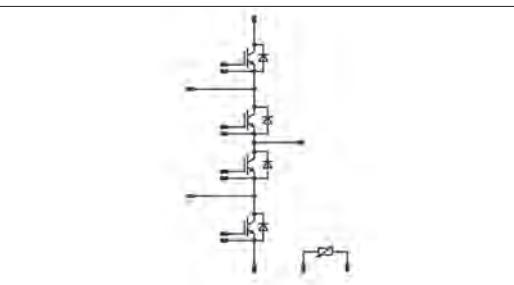
see page 149

Application:

/ POWER SUPPLY / SOLAR INVERTERS / UPS

Topology Features:

/ Symmetrical buck-boost circuit



PFC [Single-phase applications]

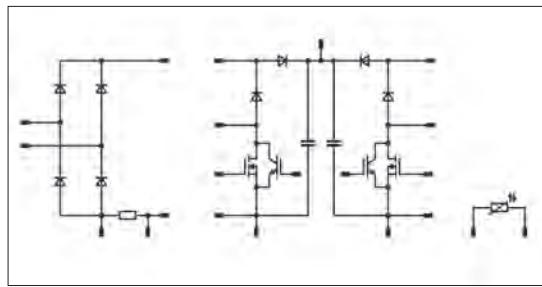
see page 154

Application:

/ CHARGING STATIONS / UPS / WELDING & CUTTING

Topology Features:

/ PFC boost - Single-phase Rectifier + Boost circuit

**PFC [Three-phase applications]**

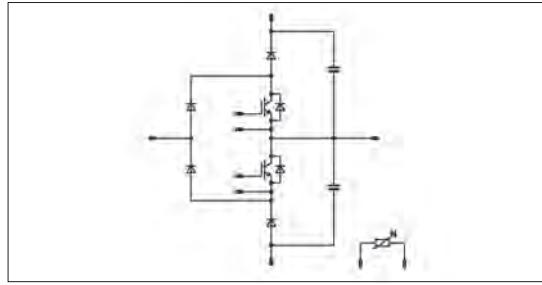
see page 157

Application:

/ CHARGING STATIONS / UPS / WELDING & CUTTING

Topology Features:

/ Three-level PFC for three-phase applications

**Three-level NPC [I-Type]**

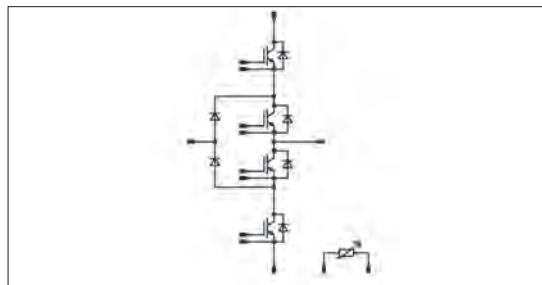
see page 163

Application:

/ SOLAR INVERTERS / UPS

Topology Features:

/ Three-level NPC [I-Type]

**Three-level MNPC [T-Type]**

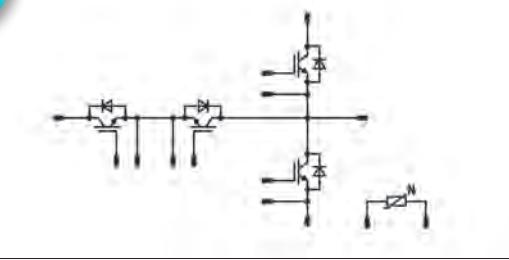
see page 175

Application:

/ SOLAR INVERTERS / UPS

Topology Features:

/ Three-level MNPC [T-Type]

**Three-level ANPC**

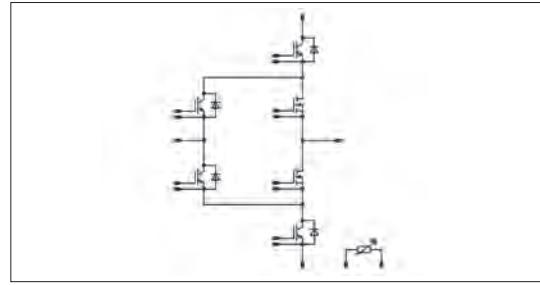
see page 183

Application:

/ SOLAR INVERTERS

Topology Features:

/ Split Advanced NPC topology [ANPC]



ULTRAFAST RECTIFIER

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

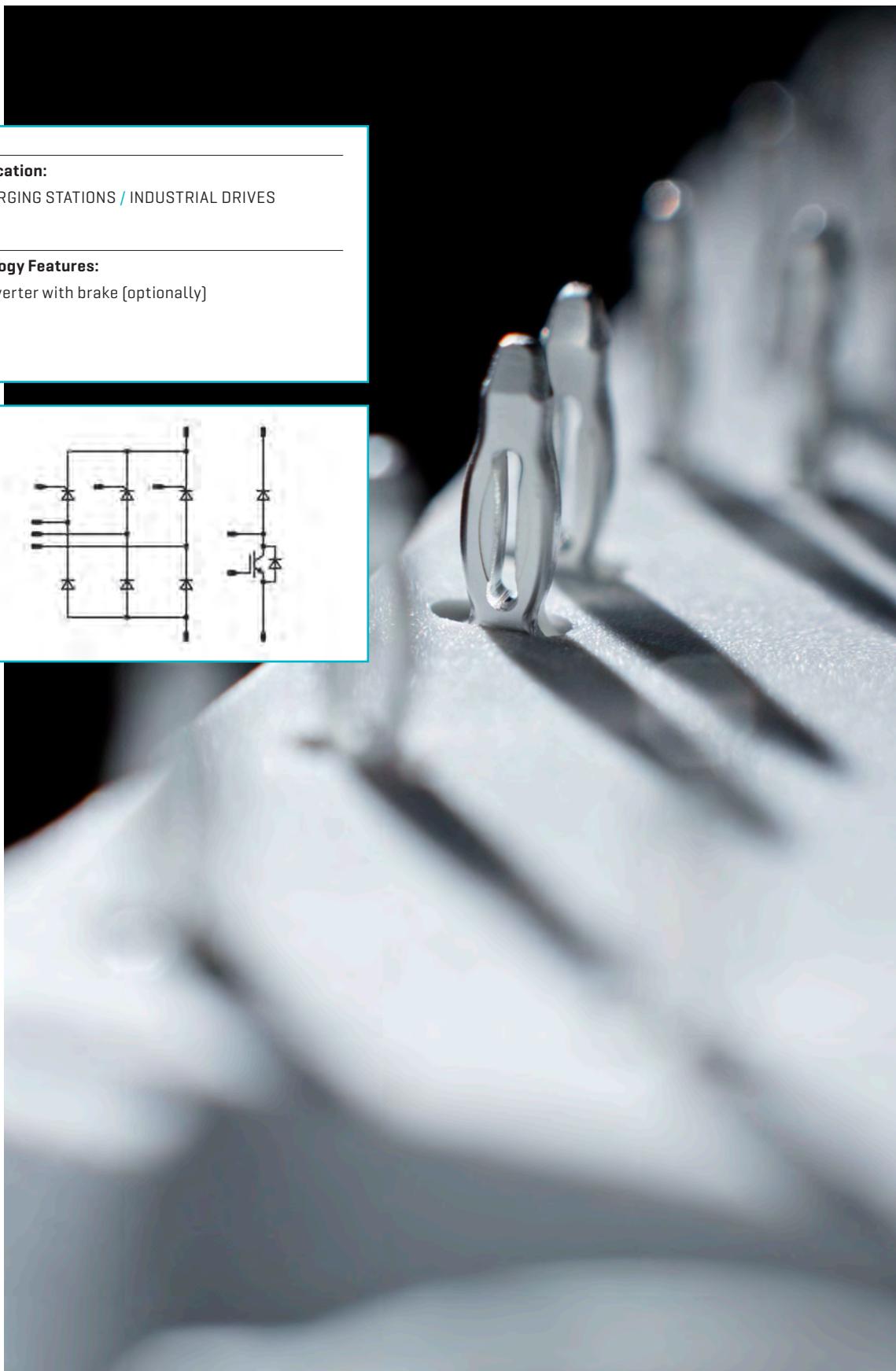
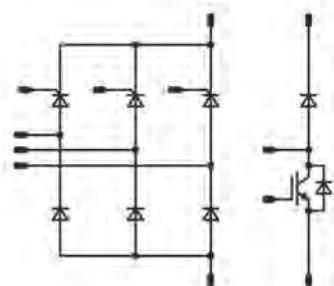
Naming System

Application:

/ CHARGING STATIONS / INDUSTRIAL DRIVES

Topology Features:

/ Converter with brake [optionally]

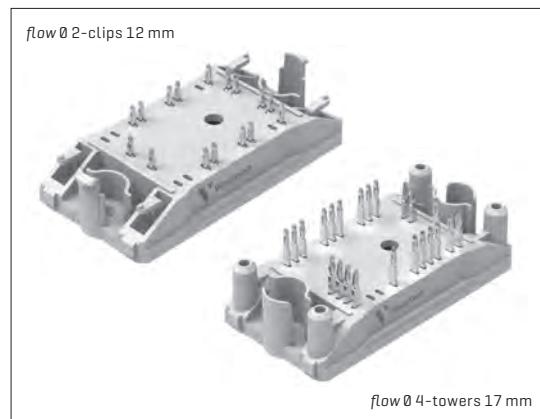


flowCON 0**Available Housings:**

/ 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



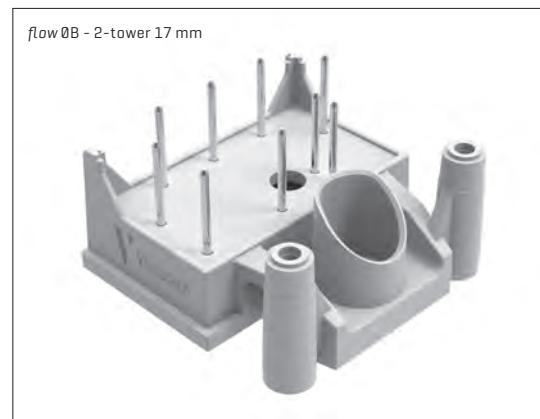
Schematics see page: 188
 More details: www.vincotech.com/flowCON-0

flowCON 0B**Available Housings:**

/ flow 0B 2-towers 17 mm

Possible Features:

/ Three-phase Rectifier
 / Brake Chopper



Schematics see page: 188
 More details: www.vincotech.com/flowCON-0B

Part-No	I Voltage [V]	I Current [A]	I Technology	I 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-BRC				
V23990-P590-J19-PM	1600	75	Thyristor [SCR]	
3ph-Rectifier				
V23990-P649-H-PM	1600	50	Rectifier	
V23990-P649-H09-PM	1600	50	Rectifier	
V23990-P640-H-PM	1600	75	Rectifier	
3ph-Rectifier-BRC				
V23990-P649-G-PM	1600	50	Rectifier	
V23990-P640-G-PM	1600	75	Rectifier	
V23990-P640-G08Y-PM	1600	75	Rectifier	
V23990-P640-G20-PM	1600	75	Rectifier	
1ph-Rectifier				
V23990-P590-J09-PM	1600	105	Rectifier	
NEW 10-P0162KA110RJ-LK90G19Y	1600	105	Rectifier	
NEW 10-P0164RA110RJ-LN06J19Y	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]	
3ph-Non Controlled-BRC-KE-NTC				
10-P0166BA050RW-LD59G09Y	1600	50	Rectifier	
10-PD166BA050RW-LD59G07Y	1600	50	Rectifier	

Part-No	I Voltage [V]	I Current [A]	I Technology	I Comments
3ph-Rectifier-BRC				
10-0B166BA028SC-M989G09	1600	35	Rectifier	

flow90CON 1**Available Housings:**

/ flow 90 1 2-clips

Possible Features:

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



Schematics see page: 188
More details: www.vincotech.com/flow90CON-1

flowCON 2**Available Housings:**

/ flow 2 4-towers 17 mm

Possible Features:

- / Three-phase Rectifier
- / Brake Chopper
- / Temperature sensor



Schematics see page: 189
More details: www.vincotech.com/flowCON-2

Part-No	I Voltage [V]	I Current [A]	I Technology	I 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-H-PM	1600	52	Rectifier	
V23990-P718-G-PM	1600	52	Rectifier	
V23990-P719-H-PM	1600	75	Rectifier	
V23990-P719-G-PM	1600	75	Rectifier	

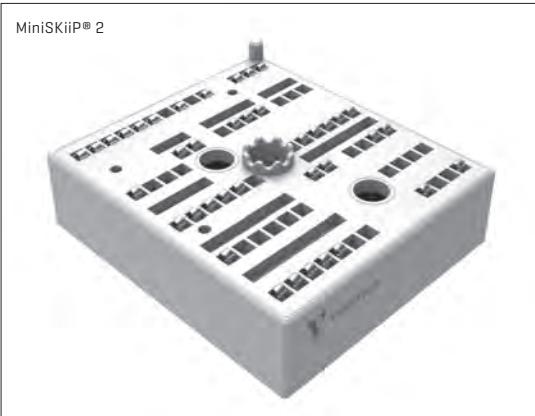
Part-No	I Voltage [V]	I Current [A]	I Technology	I Comments
3ph-Rectifier-BRC-NTC				
30-F2166BA150RW-L267G09	1600	150	Rectifier	
30-F2166BA150RW01-L267G19	1600	150	Rectifier	

MiniSKiiP® CON 2**Available Housings:**

/ MiniSKiiP® 2

Possible Features:

- / Temperature sensor
- / Three-phase Rectifier



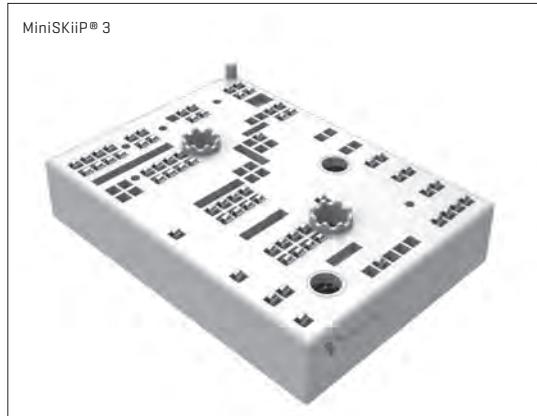
Schematics see page: 188
More details: www.vincotech.com/MiniSkipp-CON-2

MiniSKiiP® CON 3**Available Housings:**

/ MiniSKiiP® 3

Possible Features:

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



Schematics see page: 188
More details: www.vincotech.com/MiniSkipp-CON-3

Part-No	I Voltage [V]	I Current [A]	I Technology	I Comments
3ph-Rectifier-NTC				
80-M2166RA075RS-K738H	1600	75	Rectifier	
80-M2166RA075RJ-K738H10	1600	75	Rectifier	

Part-No	I Voltage [V]	I Current [A]	I Technology	I Comments
3ph-Half-Controlled-BRC-NTC				
80-M3166BB125AS-K489G31	1600	125	Thyristor (SCR)	
80-M3166BA140SC02-K489G40	1600	125	Thyristor (SCR)	
80-M3166BA140SC03-K489G42	1600	125	Thyristor (SCR)	
3ph-Full-Controlled-BRC-NTC				
80-M3166BA125AS02-K849G32	1600	125	Thyristor (SCR)	

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

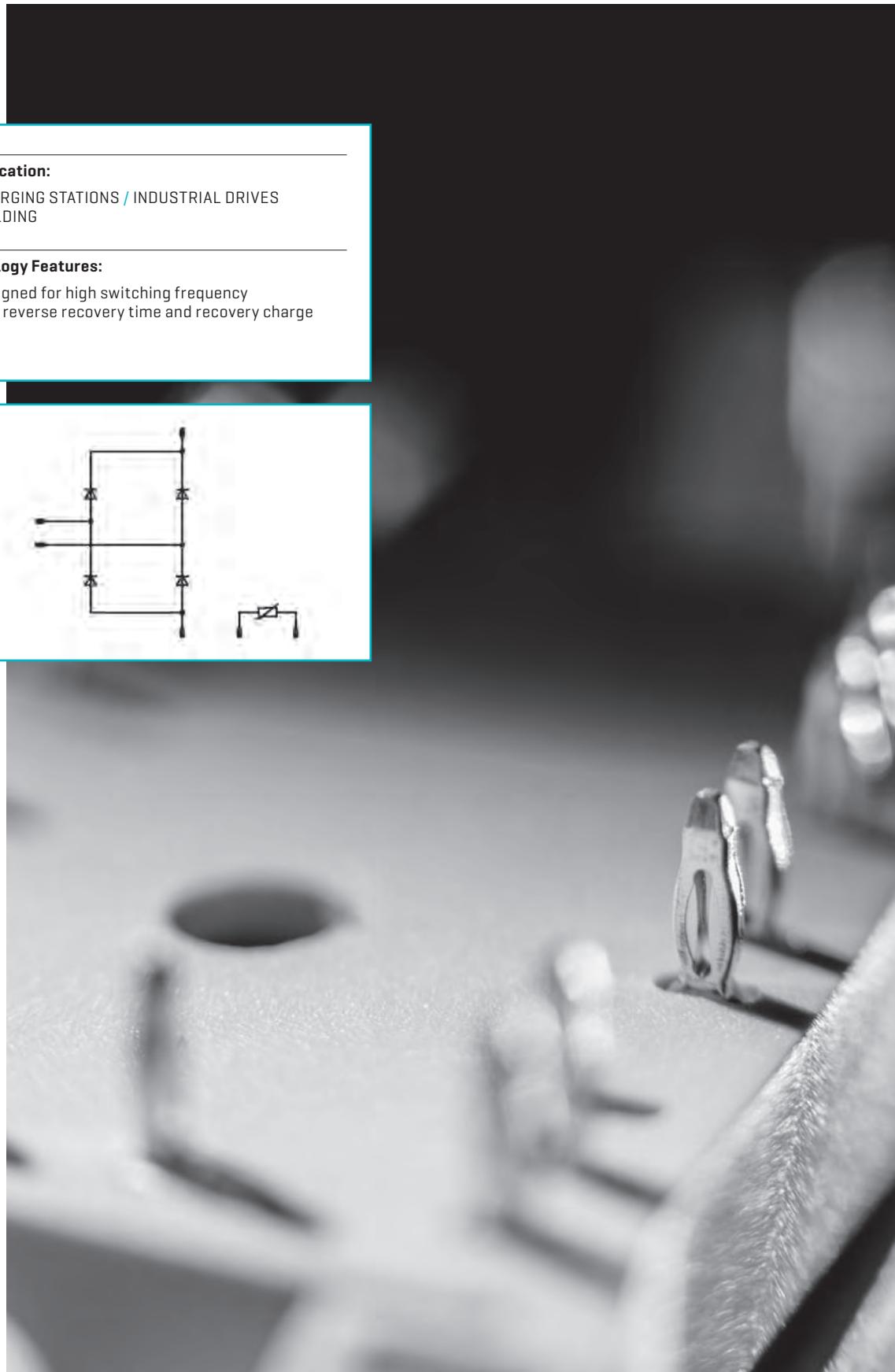
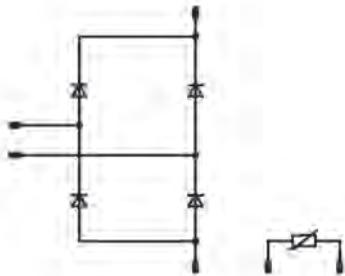
Naming System

Application:

- / CHARGING STATIONS / INDUSTRIAL DRIVES
- / WELDING

Topology Features:

- / Designed for high switching frequency
- / Low reverse recovery time and recovery charge

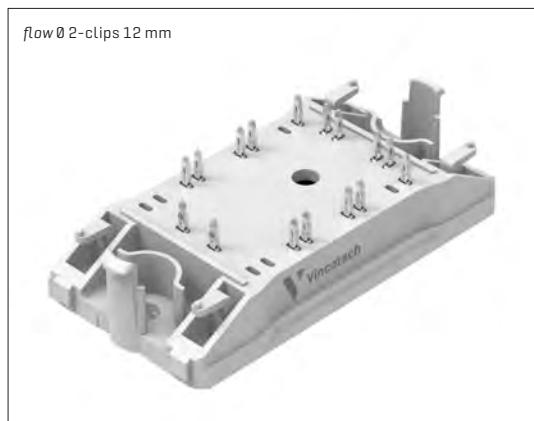


flowCON 0**Available Housings:**

/ flow 0 2-clips 12 mm

Features:

- / Temperature sensor
- / Single-phase non-controlled rectifier



Schematics see page: 189
More details: www.vincotech.com/flowCON-0-UR

flowCON 1**Available Housings:**

/ flow 1 4-towers 12 mm

Features:

- / Temperature sensor
- / Single-phase non-controlled rectifier



Schematics see page: 189
More details: www.vincotech.com/flowCON-1-UR

Part-No	I Voltage [V]	I Current [A]	I Technology	I Comments
1ph-Non-Controlled-NTC				
10-PZ0602A030FW-LH02J08Y	600	30	Fast diode	
NEW 10-PZ120RA100R0-LH00J88Y	1200	100	Rohm SiC diode	

Part-No	I Voltage [V]	I Current [A]	I Technology	I Comments
1ph-Non-Controlled -NTC				
10-PG070RA160RF-LJ53I88T	650	160	Fast diode	
NEW 10-PY120RA060VH-LJ92I08Y	1200	60	Fast diode	

TOC

RECTIFIER (+BRAKE)

ULTRAFAST RECTIFIER

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

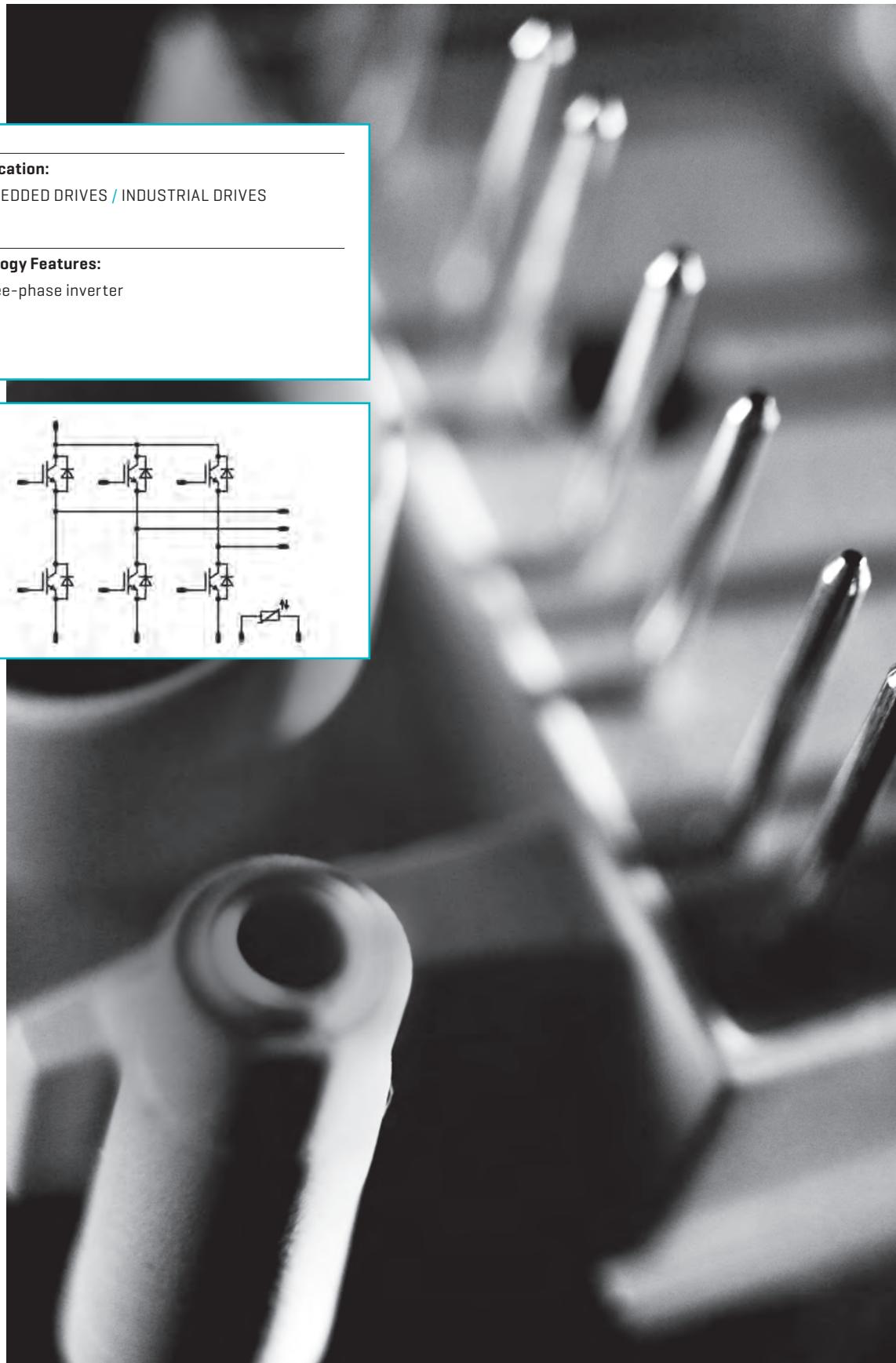
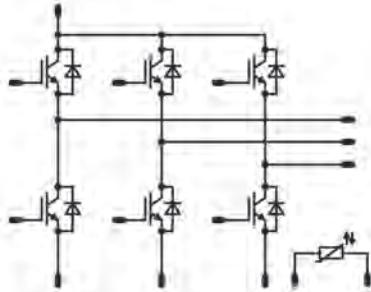
Naming System

Application:

/ EMBEDDED DRIVES / INDUSTRIAL DRIVES

Topology Features:

/ Three-phase inverter

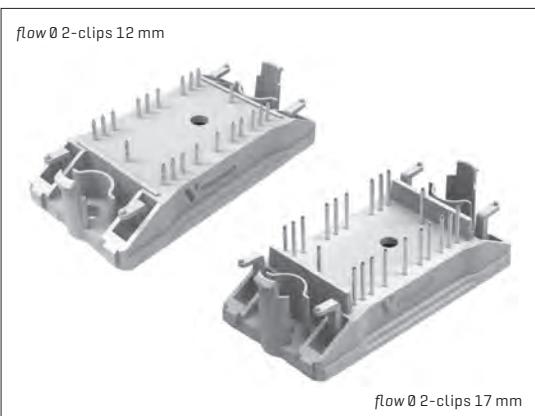


flowPACK 0**Available Housings:**

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

Possible Features:

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



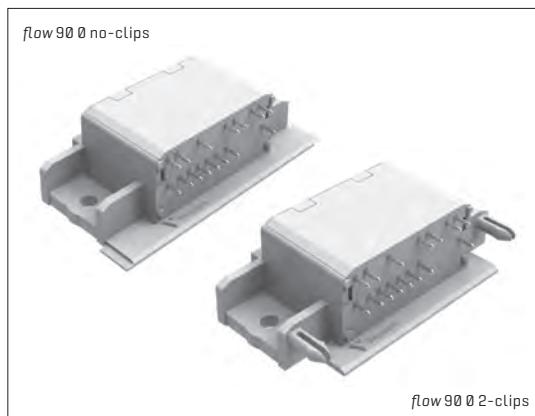
Schematics see page: 189
More details: www.vincotech.com/flowPACK-0

flow90PACK 0**Available Housings:**

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

Possible Features:

- / Inverter
- / Open Emitter configuration
- / Temperature sensor



Schematics see page: 189
More details: www.vincotech.com/flow90PACK-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-F48-PM	1200	15	IGBT4	
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	

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	

flowPACK Ø SiC**Available Housings:**

- / flow Ø 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



Schematics see page: 189
More details: www.vincotech.com/flowPACK-Ø-SiC

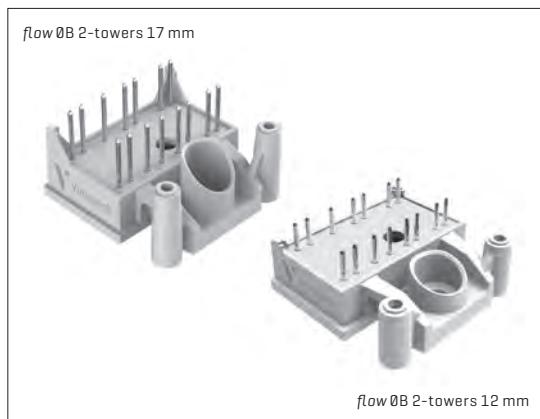
flowPACK ØB**Available Housings:**

- / flow ØB 2-towers 17 mm

- / flow ØB 2-towers 12 mm

Possible Features:

- / Inverter
- / Open Emitter configuration
- / Temperature sensor



Schematics see page: 189
More details: www.vincotech.com/flowPACK-ØB

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

Part-No	I Voltage [V]	I Current [A]	I Technology	I Comments
Inverter-OE-NTC				
10-0B066PA006SB-M992F09	600	6	IGBT3 LL	
10-ZB066PA006SB-M992F08	600	6	IGBT3	
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	

flow90PACK 1**Available Housings:**

- / flow 90 1 2-clips

Possible Features:

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

flow90 1 2-clips



Schematics see page: 189
More details: www.vincotech.com/flow90PACK-1

flowPACK 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



Schematics see page: 189
More details: www.vincotech.com/flowPACK-1

Part-No	Voltage [V]	Current [A]	Technology	Comments
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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	

Part-No	Voltage [V]	Current [A]	Technology	Comments
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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-F10Y-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	

Inverter-KE-Tandem Diode-NTC

10-PY126TA025SH-L826F68Y	1200	25	IGBT4 HS	
10-PY126TA040SH-L827F68Y	1200	40	IGBT4 HS	
10-PY126TA050SH-L828F68Y	1200	50	IGBT4 HS	
10-PY126TA075SH-L829F68Y	1200	75	IGBT4 HS	

flowPACK 1 SiC**Available Housings:**

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

Possible Features:

- / 3xHalf Bridge
- / Open Emitter configuration
- / Kelvin Emitter for improved switching performance
- / Temperature sensor
- / Integrated gate capacitors
- / Inverter



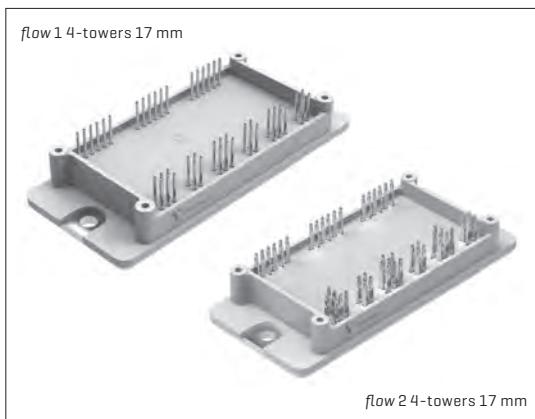
Schematics see page: 189
More details: www.vincotech.com/flowPACK-1-SiC

flowPACK 2**Available Housings:**

- / flow 2 4-towers 17 mm

Possible Features:

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



Schematics see page: 190
More details: www.vincotech.com/flowPACK-2

Part-No	Voltage [V]	Current [A]	Technology	Comments
3xHalf Bridge-OE-KE-NTC				
10-PY096PA035ME-L224F18Y	900	40	SiC MOSFET	
10-PY126PA040MR-L226F28Y	1200	35	SiC MOSFET	
10-PY126PA020MR-L227F28Y	1200	50	SiC MOSFET	
NEW 10-PY126PA016ME-L227F13Y	1200	80	SiC MOSFET	
Inverter-KE-NTC				
10-PH126PA010MR-L820F86T	1200	100	SiC MOSFET	

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



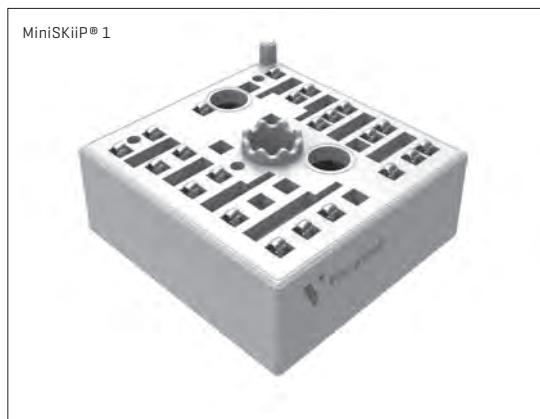
Schematics see page: 189
More details: www.vincotech.com/VINcoPACK-E3

MiniSKiiP® PACK 1**Available Housings:**

/ MiniSKiiP® 1

Possible Features:

- / Inverter
- / Open Emitter configuration
- / Temperature sensor



Schematics see page: 189
More details: www.vincotech.com/MiniSKiiP-PACK-1

Part-No	I Voltage [V]	I Current [A]	I Technology	I Comments
Inverter-KE-NTC				
A0-VS126PA100M7-L997F70	1200	100	IGBT M7	
A0-VP126PA100M7-L997F70T	1200	100	IGBT M7	
A0-VS126PA150M7-L998F70	1200	150	IGBT M7	
A0-VP126PA150M7-L998F70T	1200	150	IGBT M7	
A0-VS126PA200M7-L999F70	1200	200	IGBT M7	
A0-VP126PA200M7-L999F70T	1200	200	IGBT M7	

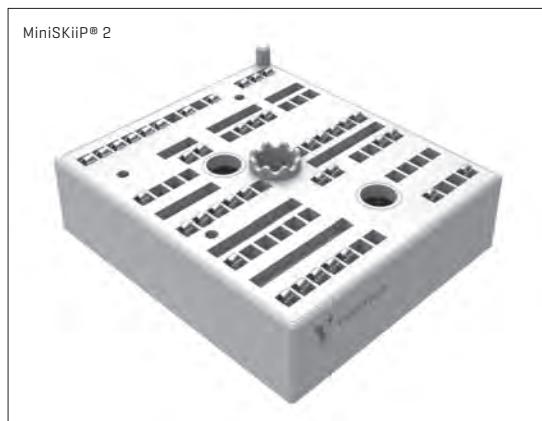
Part-No	I Voltage [V]	I Current [A]	I Technology	I Comments
Inverter-OE-NTC				
V23990-K218-F40-PM	1200	8	IGBT4	Equivalent: SKiiP® 11NAB12T4V1
80-M1126PA010M7-K217F70	1200	10	IGBT M7	
V23990-K219-F-PM	1200	15	IGBT3	Equivalent: SKiiP® 12NAB126V1
V23990-K219-F40-PM	1200	15	IGBT4	Equivalent: SKiiP® 12NAB12T4V1
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
- / 2xInverter



Schematics see page: 189
More details: www.vincotech.com/MiniSKiiP-PACK-2

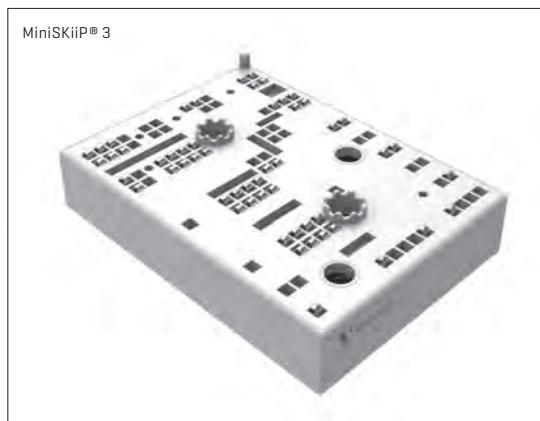
Part-No	Voltage [V]	Current [A]	Technology	Comments
Inverter-KE-NTC				
V23990-K232-F-PM	600	50	IGBT3	Equivalent: SKiiP® 26AC066V1
V23990-K233-F-PM	600	75	IGBT3	Equivalent: SKiiP® 27AC066V1
V23990-K237-F40-PM	1200	25	IGBT4	Equivalent: SKiiP® 23AC12T4V1
V23990-K238-F-PM	1200	35	IGBT3 LL	
V23990-K238-F40-PM	1200	35	IGBT4	Equivalent: SKiiP® 24AC12T4V1
80-M2126PA035M7-K717F70	1200	35	IGBT M7	
V23990-K239-F-PM	1200	50	IGBT3 LL	Equivalent: SKiiP® 25AC126V1
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	
80-M2126PA100M7-K710F70	1200	100	IGBT M7	
Inverter-OE-KE-NTC				
V23990-K359-F40-PM	1200	50	IGBT4	
Twin inverters-CE-NTC				
80-M212WPA035SC-K389F	1200	35	IGBT4	
80-M212WPA050M7-K750F70	1200	50	IGBT M7	

MiniSKiiP® PACK 3**Available Housings:**

/ MiniSKiiP® 3

Possible Features:

- / Inverter
- / Kelvin Emitter for improved switching performance
- / Temperature sensor
- / Open Emitter configuration
- / 2xInverter
- / HS IGBT4
- / Tandem diode



Schematics see page: 189
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	Equivalent: SKiiP® 37AC12T4V1
V23990-K439-F40-PM	1200	100	IGBT4	Equivalent: SKiiP® 38AC12T4V1
80-M3126PA100M7-K828F70	1200	100	IGBT M7	Equivalent: SKiiP® 38AC12T4V1
80-M3126PA150M7-K829F70	1200	150	IGBT M7	Equivalent: SKiiP® 39AC12T4V1
V23990-K430-F40-PM	1200	150	IGBT4	Equivalent: SKiiP® 39AC12T4V1
V23990-K430-F42-PM	1200	150	IGBT4	
80-M3126PB200M7-K810F70	1200	200	IGBT M7	New pin-out for optimized power losses
80-M3126PB200M701-K810F72	1200	200	IGBT M7	New pin-out for optimized power losses
80-M3126PA200M7-K820F70	1200	200	IGBT M7	
Inverter-OE-KE-NTC				
80-M3126PB200M702-K860F70	1200	200	IGBT M7	
Twin inverters-OE-NTC				
80-M312WPA050SH-K889F40	1200	50	IGBT4 HS	
80-M312WPA050SH01-K889F45	1200	50	IGBT4 HS	with tandem diode

flowPACK E1**Available Housings:**

/ flow E1 4 towers 12 mm

Possible Features:

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



Schematics see page: 189
More details: www.vincotech.com/flowPACK-E1

flowPACK E2**Available Housings:**

/ flow E2 4 towers 12 mm

Possible Features:

- / Inverter
- / Temperature sensor
- / Open Emitter configuration



Schematics see page: 189
More details: www.vincotech.com/flowPACK-E2

Part-No	Voltage [V]	Current [A]	Technology	Comments
Inverter-OE-NTC				
10-E1066PA050SA-L855F38Z	600	50	IGBT3-SA	
10-EZ126PA025SC-L858F48T	1200	25	IGBT4	Equivalent: IFX FS25R12W1T4_B11
10-EZ126PA025M7-L858F78T	1200	25	IGBT M7	Equivalent: IFX FS25R12W1T4_B11
10-E1126PA025M7-L858F78Z	1200	25	IGBT M7	
10-EZ126PA035SC-L859F48T	1200	35	IGBT4	Equivalent: IFX FS35R12W1T4_B11
10-EZ126PA035M7-L859F78T	1200	35	IGBT M7	Equivalent: IFX FS35R12W1T4_B11
10-E1126PA035M7-L859F78Z	1200	35	IGBT M7	
10-EZ126PA050M7-L850F78T	1200	50	IGBT M7	
Inverter-OE-KE-NTC				
10-EZ066PA020SA-L853F38T	600	20	IGBT3	Equivalent: IFX FS20R06W1E3_B11
10-EZ066PA030SA-L854F38T	600	30	IGBT3	Equivalent: IFX FS30R06W1E3_B11
10-EZ066PA050SA-L855F38T	600	50	IGBT3	Equivalent: IFX FS50R06W1E3_B11

Part-No	Voltage [V]	Current [A]	Technology	Comments
INVERTER-KE-NTC				
10-EY066PA100SA-L194F38T	600	100	IGBT3	
10-EY126PA050SC-L196F48T	1200	50	IGBT4	Equivalent: IFX FS50R12W2T4_B11
10-EY126PA050M7-L196F78T	1200	50	IGBT M7	Equivalent: IFX FS50R12W2T4_B11
10-E2126PA050M7-L196F78Z	1200	50	IGBT M7	
10-EY126PA075SC-L197F48T	1200	75	IGBT4	Equivalent: IFX FS75R12W2T4_B11
10-EY126PA075M7-L197F78T	1200	75	IGBT M7	Equivalent: IFX FS75R12W2T4_B11
10-E2126PA075M7-L197F78Z	1200	75	IGBT M7	
10-EY126PA100M7-L198F78T	1200	100	IGBT M7	
10-E2126PA100M7-L198F78Z	1200	100	IGBT M7	

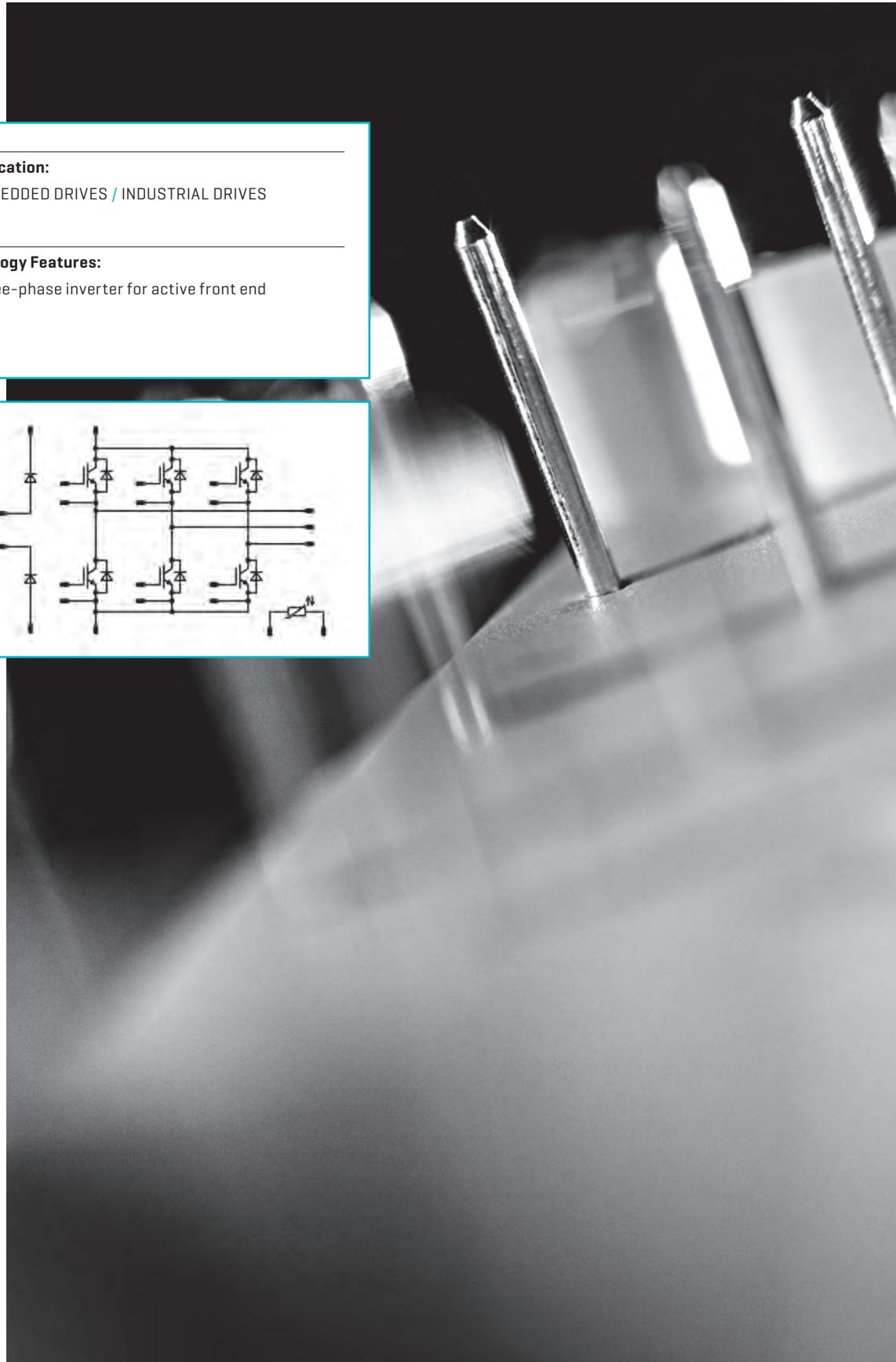
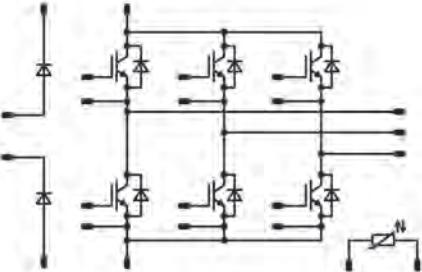
TOC

Application:

/ EMBEDDED DRIVES / INDUSTRIAL DRIVES

Topology Features:

/ Three-phase inverter for active front end



RECTIFIER (+BRAKE)

ULTRAFAST RECTIFIER

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

flowPACK 1+R**Available Housings:**

/ flow 1 4-towers 12 mm

Possible Features:

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



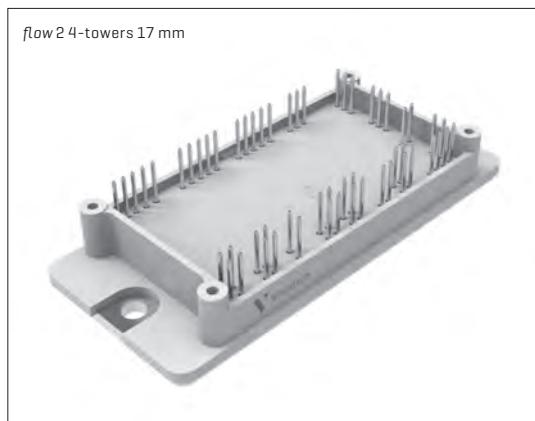
Schematics see page: 190
More details: www.vincotech.com/flowPACK-1+R

flowPACK 2+R**Available Housings:**

/ flow 2 4-towers 17 mm

Possible Features:

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



Schematics see page: 190
More details: www.vincotech.com/flowPACK-2+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

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

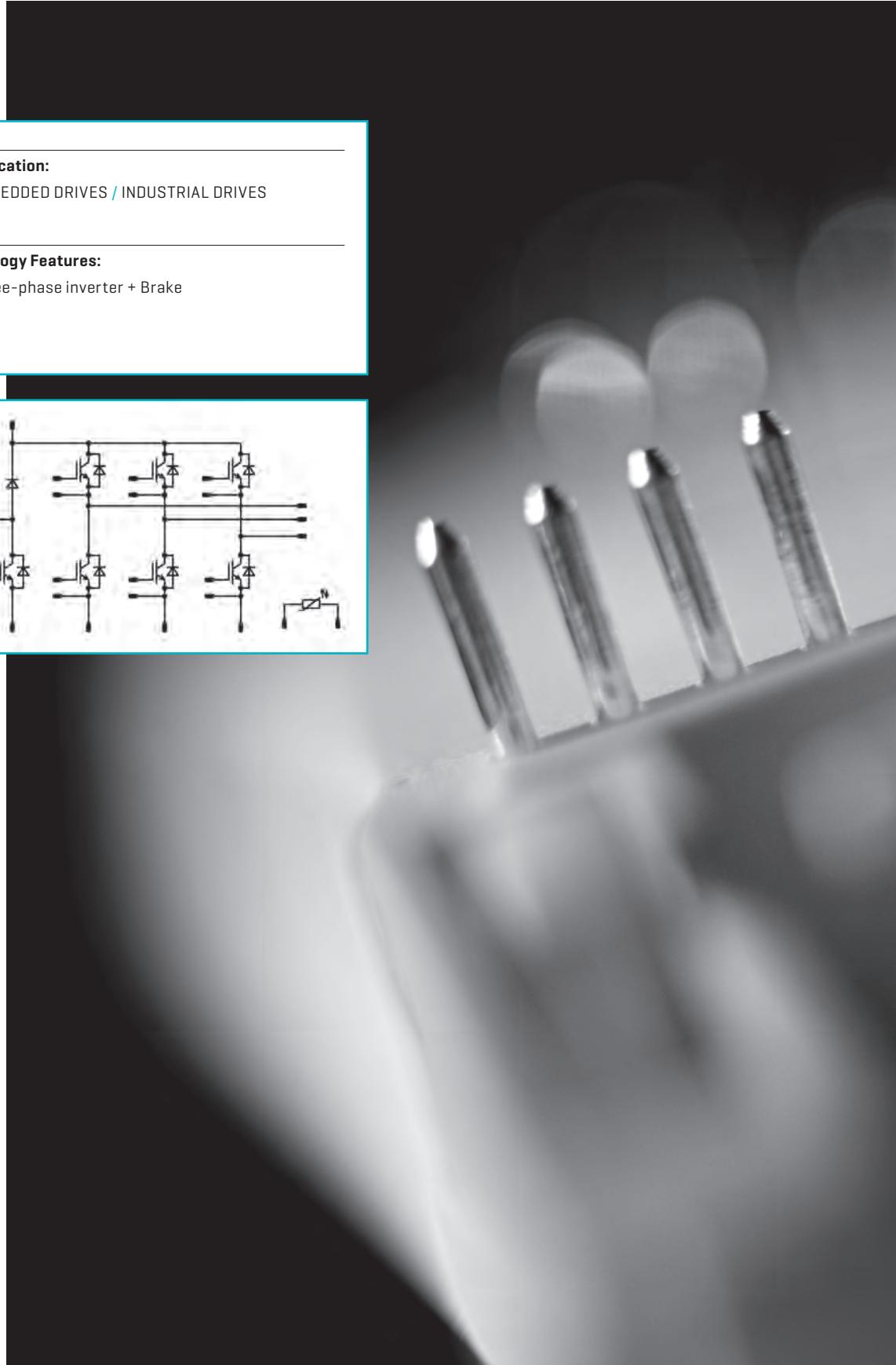
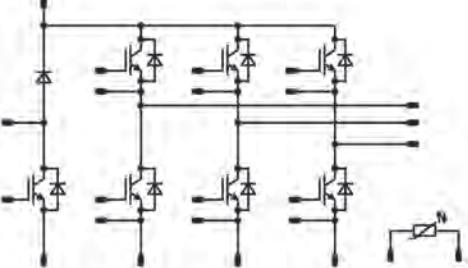
TOC

Application:

/ EMBEDDED DRIVES / INDUSTRIAL DRIVES

Topology Features:

/ Three-phase inverter + Brake



RECTIFIER (+BRAKE)

ULTRAFAST RECTIFIER

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

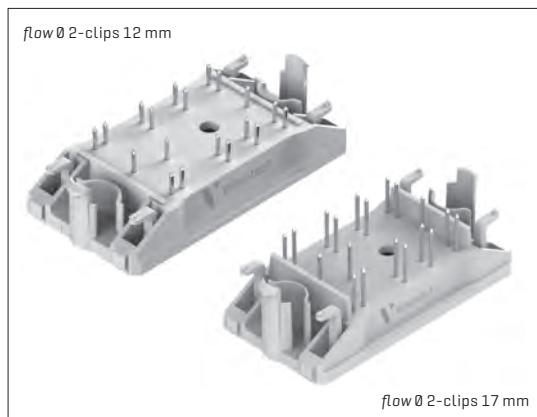
Naming System

flow7PACK 0**Available Housings:**

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

Possible Features:

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



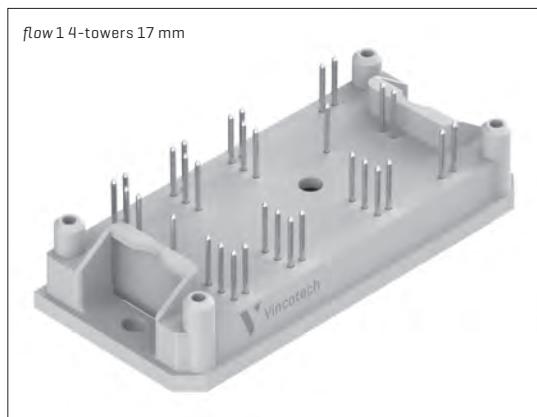
Schematics see page: 191
More details: www.vincotech.com/flow7PACK-0

flow7PACK 1**Available Housings:**

- / flow 1 4-towers 17 mm

Possible Features:

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



Schematics see page: 191
More details: www.vincotech.com/flow7PACK-1

Part-No	I Voltage [V]	I Current [A]	I Technology	I Comments
IB-OE-NTC				
10-F0127PA008SC-L156E09	1200	8	IGBT4	
10-FU127PA008SC-L156E06	1200	8	IGBT4	
10-FZ127PA008SC-L156E08	1200	8	IGBT4	
10-F0127PA015SC-L158E09	1200	15	IGBT4	
10-FU127PA015SC-L158E06	1200	15	IGBT4	
10-FZ127PA015SC-L158E08	1200	15	IGBT4	
10-F0127PA025SC-L159E09	1200	25	IGBT4	
10-FZ127PA025SC-L159E08	1200	25	IGBT4	
10-FU127PA025SC-L159E06	1200	25	IGBT4	

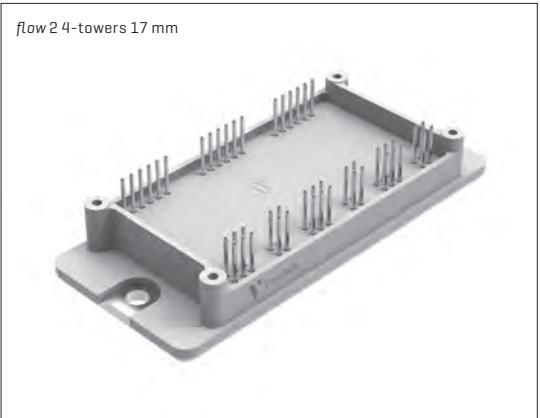
Part-No	I Voltage [V]	I Current [A]	I Technology	I Comments
IB-OE-NTC				
10-F1127PA025SC-L167E09	1200	25	IGBT4	
10-F1127PA035SC-L168E09	1200	35	IGBT4	
10-F1127PA050SC-L169E09	1200	50	IGBT4	

flow7PACK 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



Schematics see page: 191
More details: www.vincotech.com/flow7PACK-2

Part-No	Voltage [V]	Current [A]	Technology	Comments
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Inverter-0E-KE-Brake-NTC				
30-F2127PA050SC-L177E09	1200	50	IGBT4	
30-F2127PA075SC-L178E09	1200	75	IGBT4	
30-F2127PA100SC-L179E09	1200	100	IGBT4	

TOC

Application:
/ EMBEDDED DRIVES / INDUSTRIAL DRIVES

Topology Features:
/ Converter + BRC + Inverter

RECTIFIER (+BRAKE)

ULTRAFAST RECTIFIER

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

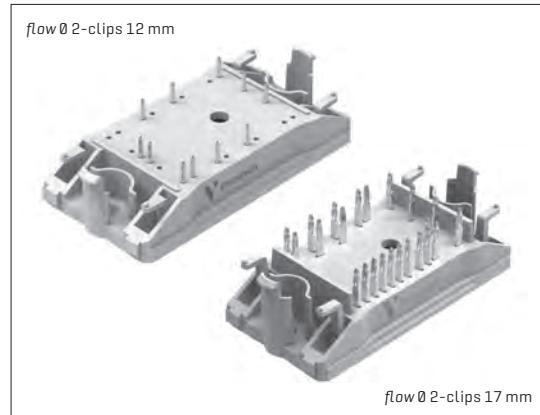
Naming System

flowPIM® 0**Available Housings:**

- / flow Ø 2-clips 12 mm
- / flow Ø 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



Schematics see page: 191
More details: www.vincotech.com/flowPIM-0

Part-No	I Voltage [V]	I Current [A]	I Technology	I Comments
CIB-OE-NTC				
V23990-P541-A28-PM	600	6	IGBT3	three-phase standard rectifier
V23990-P541-A29-PM	600	6	IGBT3	three-phase standard rectifier
V23990-P541-B28-PM	600	6	IGBT3	single-phase standard rectifier
V23990-P541-B138-PM	600	6	IGBT3	single-phase enhanced rectifier
V23990-P541-B129-PM	600	6	IGBT3	single-phase standard rectifier
V23990-P543-A28-PM	600	10	IGBT3	three-phase standard rectifier
V23990-P543-A29-PM	600	10	IGBT3	three-phase standard rectifier
V23990-P543-A39-PM	600	10	IGBT3	three-phase enhanced rectifier
V23990-P543-B28-PM	600	10	IGBT3	single-phase standard rectifier
V23990-P543-B129-PM	600	10	IGBT3	single-phase standard rectifier
V23990-P543-B138-PM	600	10	IGBT3	single-phase enhanced rectifier
V23990-P544-A28-PM	600	15	IGBT3	three-phase standard rectifier
V23990-P544-A29-PM	600	15	IGBT3	three-phase standard rectifier
V23990-P544-B28-PM	600	15	IGBT3	single-phase standard rectifier
V23990-P544-B128-PM	600	15	IGBT3	single-phase standard rectifier
V23990-P544-B129-PM	600	15	IGBT3	single-phase standard rectifier
V23990-P545-A28-PM	600	20	IGBT3	three-phase standard rectifier
V23990-P545-A29-PM	600	20	IGBT3	three-phase standard rectifier
V23990-P545-A39-PM	600	20	IGBT3	three-phase enhanced rectifier
V23990-P545-B28-PM	600	20	IGBT3	single-phase standard rectifier
V23990-P545-B128-PM	600	20	IGBT3	single-phase standard rectifier
V23990-P545-B129-PM	600	20	IGBT3	single-phase standard rectifier
V23990-P546-A28-PM	600	30	IGBT3	three-phase standard rectifier
V23990-P546-A29-PM	600	30	IGBT3	three-phase standard rectifier
V23990-P546-A38-PM	600	30	IGBT3	three-phase enhanced rectifier
V23990-P546-A39-PM	600	30	IGBT3	three-phase enhanced rectifier
V23990-P546-B28-PM	600	30	IGBT3	single-phase standard rectifier
V23990-P546-B128-PM	600	30	IGBT3	single-phase standard rectifier
V23990-P546-D28-PM	600	30	IGBT3	three-phase standard rectifier
V23990-P848-A48-PM	1200	4	IGBT4	three-phase standard rectifier
V23990-P848-A58-PM	1200	4	IGBT4	three-phase enhanced rectifier
V23990-P848-A49-PM	1200	4	IGBT4	three-phase standard rectifier
V23990-P848-A59-PM	1200	4	IGBT4	three-phase enhanced rectifier

Part-No	I Voltage [V]	I Current [A]	I Technology	I Comments
10-FZ12PMA005M7-P848A28	1200	5	IGBT M7	three-phase standard rectifier
10-F012PMA005M7-P848A29	1200	5	IGBT M7	three-phase standard rectifier
V23990-P849-A49-PM	1200	8	IGBT4	three-phase standard rectifier
V23990-P849-A58-PM	1200	8	IGBT4	three-phase enhanced rectifier
V23990-P849-A59-PM	1200	8	IGBT4	three-phase enhanced rectifier
V23990-P849-A59Y-PM	1200	8	IGBT4	three-phase enhanced rectifier
V23990-P849-A49Y-PM	1200	8	IGBT4	three-phase standard rectifier
10-FZ12PMA010M7-P849A28	1200	10	IGBT M7	three-phase standard rectifier
10-F012PMA010M7-P849A29	1200	10	IGBT M7	three-phase standard rectifier
V23990-P840-A48-PM	1200	15	IGBT4	three-phase standard rectifier
V23990-P840-A49-PM	1200	15	IGBT4	three-phase standard rectifier
V23990-P840-A58-PM	1200	15	IGBT4	three-phase enhanced rectifier
V23990-P840-A59-PM	1200	15	IGBT4	three-phase enhanced rectifier
V23990-P840-A58Y-PM	1200	15	IGBT4	three-phase enhanced rectifier
10-FZ12PMA015M7-P840A28	1200	15	IGBT M7	three-phase standard rectifier
10-F012PMA015M7-P840A29	1200	15	IGBT M7	three-phase standard rectifier

CI-DE-NTC

V23990-P541-C29-PM	600	6	IGBT3	three-phase standard rectifier
V23990-P541-D138-PM	600	6	IGBT3	single-phase standard rectifier
V23990-P541-D129-PM	600	6	IGBT3	single-phase standard rectifier
V23990-P541-D28-PM	600	6	IGBT3	single-phase standard rectifier
V23990-P543-D129-PM	600	10	IGBT3	single-phase standard rectifier
V23990-P543-D138-PM	600	10	IGBT3	single-phase enhanced rectifier
V23990-P543-D28-PM	600	10	IGBT3	single-phase standard rectifier
V23990-P543-C29-PM	600	10	IGBT3	three-phase standard rectifier
V23990-P543-C28-PM	600	10	IGBT3	three-phase standard rectifier
V23990-P544-C29-PM	600	15	IGBT3	three-phase standard rectifier
V23990-P545-C38-PM	600	20	IGBT3	three-phase enhanced rectifier
V23990-P545-C39-PM	600	20	IGBT3	three-phase enhanced rectifier
V23990-P545-C29-PM	600	20	IGBT3	three-phase standard rectifier
V23990-P546-C39-PM	600	30	IGBT3	three-phase enhanced rectifier
V23990-P546-C38-PM	600	30	IGBT3	three-phase enhanced rectifier
V23990-P546-C29-PM	600	30	IGBT3	three-phase standard rectifier
V23990-P546-C28-PM	600	30	IGBT3	three-phase standard rectifier
V23990-P848-C48-PM	1200	4	IGBT4	three-phase standard rectifier
V23990-P848-C58-PM	1200	4	IGBT4	three-phase enhanced rectifier
V23990-P848-C49-PM	1200	4	IGBT4	three-phase standard rectifier
V23990-P848-C59-PM	1200	4	IGBT4	three-phase enhanced rectifier
V23990-P849-C48-PM	1200	8	IGBT4	three-phase standard rectifier
V23990-P849-C49-PM	1200	8	IGBT4	three-phase standard rectifier
V23990-P849-C58-PM	1200	8	IGBT4	three-phase enhanced rectifier
V23990-P849-C59-PM	1200	8	IGBT4	three-phase enhanced rectifier
10-F012PNA015M7-P840C29	1200	15	IGBT M7	three-phase standard rectifier
V23990-P840-C49-PM	1200	15	IGBT4	three-phase standard rectifier
V23990-P840-C58-PM	1200	15	IGBT4	three-phase enhanced rectifier
V23990-P840-C59-PM	1200	15	IGBT4	three-phase enhanced rectifier
V23990-P840-C48-PM	1200	15	IGBT4	three-phase standard rectifier

flowPIM® 0B**Available Housings:**

/ flow 0B 2-towers 17 mm

Possible Features:

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



Schematics see page: 191
More details: www.vincotech.com/flowPIM-0B

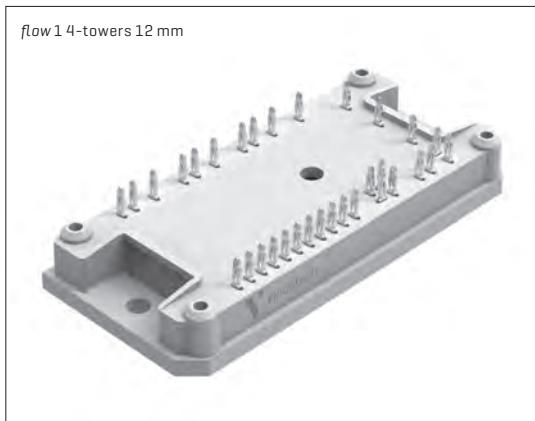
flowPIM® 1**Available Housings:**

/ 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



Schematics see page: 191
More details: www.vincotech.com/flowPIM-1

Part-No	I Voltage [V]	I Current [A]	I Technology	I Comments
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CI-OE-NTC

10-0B06PRA004RC-L022C09 | 600 | 4 | IGBT RC

Part-No	I Voltage [V]	I Current [A]	I Technology	I Comments
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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-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
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
10-FY12PMA025M7-P588A78	1200	25	IGBT M7
10-F112PMA025M7-P588A79	1200	25	IGBT M7
10-PY12PMA025M7-P588A78Y	1200	25	IGBT M7
V23990-P580-A46-PM	1200	35	IGBT4
V23990-P580-A47-PM	1200	35	IGBT4
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
10-FY12PMA025I7-P588A98	1200	25	IGBT7

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

flow90PIM 1**Available Housings:**

/ flow90 1 2-clips

Possible Features:

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



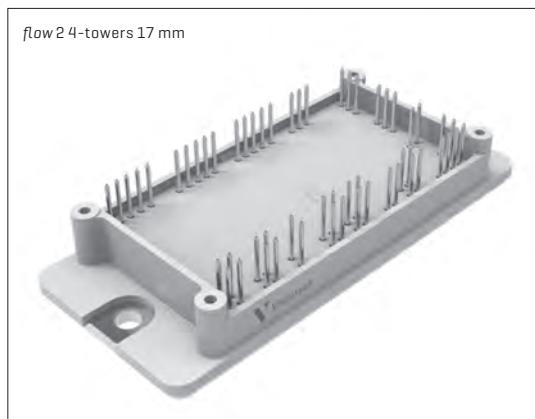
Schematics see page: 191
More details: www.vincotech.com/flow90PIM-1

flowPIM® 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



Schematics see page: 191
More details: www.vincotech.com/flowPIM-2

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	

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	
30-F212PMA035M7-L887A79	1200	35	IGBT M7	
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



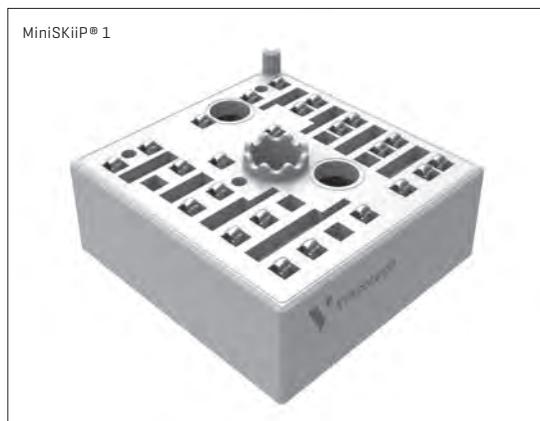
Schematics see page: 191
More details: www.vincotech.com/MiniSKiiP-PIM-0

MiniSKiiP® PIM 1**Available Housings:**

/ MiniSKiiP® 1

Possible Features:

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



Schematics see page: 191
More details: www.vincotech.com/MiniSKiiP-PIM-1

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

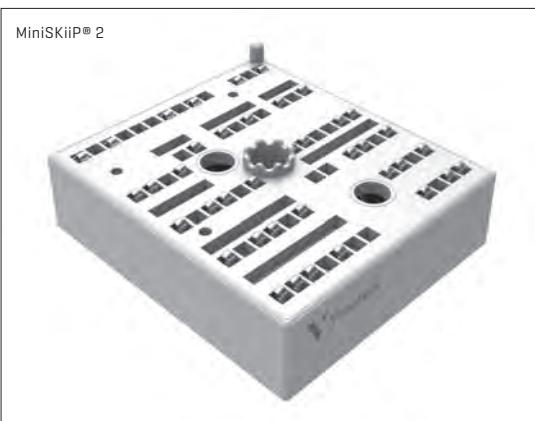
Part-No	I Voltage [V]	I Current [A]	I Technology	I Comments
CIB-OE-NTC				
V23990-K201-A-PM	600	6	IGBT3	Equivalent: SKiiP® 01NAC066V3
V23990-K202-A-PM	600	10	IGBT3	Equivalent: SKiiP® 02NAC066V3
V23990-K203-A-PM	600	15	IGBT3	Equivalent: SKiiP® 13NAB066V1
V23990-K203-B-PM	600	15	IGBT3	
V23990-K204-A-PM	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
V23990-K200-A41-PM	1200	15	IGBT4	enhanced rectifier
80-M112PMA015M7-K200A70	1200	15	IGBT M7	
80-M112PMA025M7-K200A80	1200	25	IGBT M7	

MiniSKiiP® PIM 2**Available Housings:**

/ MiniSKiiP® 2

Possible Features:

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



Schematics see page: 191
More details: www.vincotech.com/MiniSKiiP-PIM-2

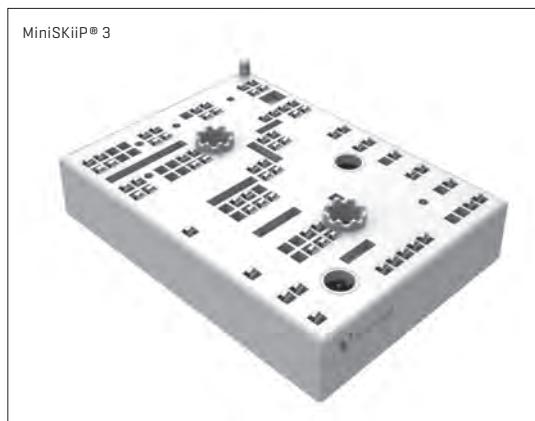
Part-No	I Voltage [V]	I Current [A]	I Technology	I Comments
CIB-KE-NTC				
V23990-K222-A-PM	600	30	IGBT3	Equivalent: SKiiP® 25NAB066V1
V23990-K223-A-PM	600	50	IGBT3	Equivalent: SKiiP® 26NAB066V1
V23990-K229-A40-PM	1200	25	IGBT4	Equivalent: SKiiP® 23NAB12T4V1
V23990-K229-A41-PM	1200	25	IGBT4	Equivalent: SKiiP® 23NAB12T4V10; Enhanced rectifier
80-M212PMA025M7-K229A70	1200	25	IGBT M7	Equivalent: SKiiP® 23NAB12T4V1
80-M212PMA025I7-K229A90	1200	25	IGBT7	
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	Equivalent: SKiiP® 24NAB12T4V1
80-M212PMA050M7-K740A	1200	50	IGBT M7	
CIB-OE-NTC				
80-M212PMB025M7-K229A71	1200	25	IGBT M7	
80-M212PMB035M7-K220A71	1200	35	IGBT M7	
80-M212PMB050M7-K740A71	1200	50	IGBT M7	

MiniSKiiP® PIM 3**Available Housings:**

/ MiniSKiiP® 3

Possible Features:

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



Schematics see page: 191
More details: www.vincotech.com/MiniSKiiP-PIM-3

Part-No	I Voltage [V]	I Current [A]	I Technology	I 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	Equivalent: SKiiP® 35NAB12T4V1
V23990-K429-A40-PM	1200	75	IGBT4	Equivalent: SKiiP® 37NAB12T4V1
80-M312PMA075M7-K429A70	1200	75	IGBT M7	Equivalent: SKiiP® 37NAB12T4V1
V23990-K420-A40-PM	1200	100	IGBT4	Equivalent: SKiiP® 38NAB12T4V1
80-M312PMA100M7-K420A70	1200	100	IGBT M7	Equivalent: SKiiP® 38NAB12T4V1
80-M312PMA150M7-K420A82	1200	150	IGBT M7	

flowPIM® E1**Available Housings:**

/ flow E1 4 towers 12 mm

Possible Features:

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



Schematics see page: 191
More details: www.vincotech.com/flowPIM-E1

flowPIM® E2**Available Housings:**

/ flow E2 4 towers 12 mm

Possible Features:

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

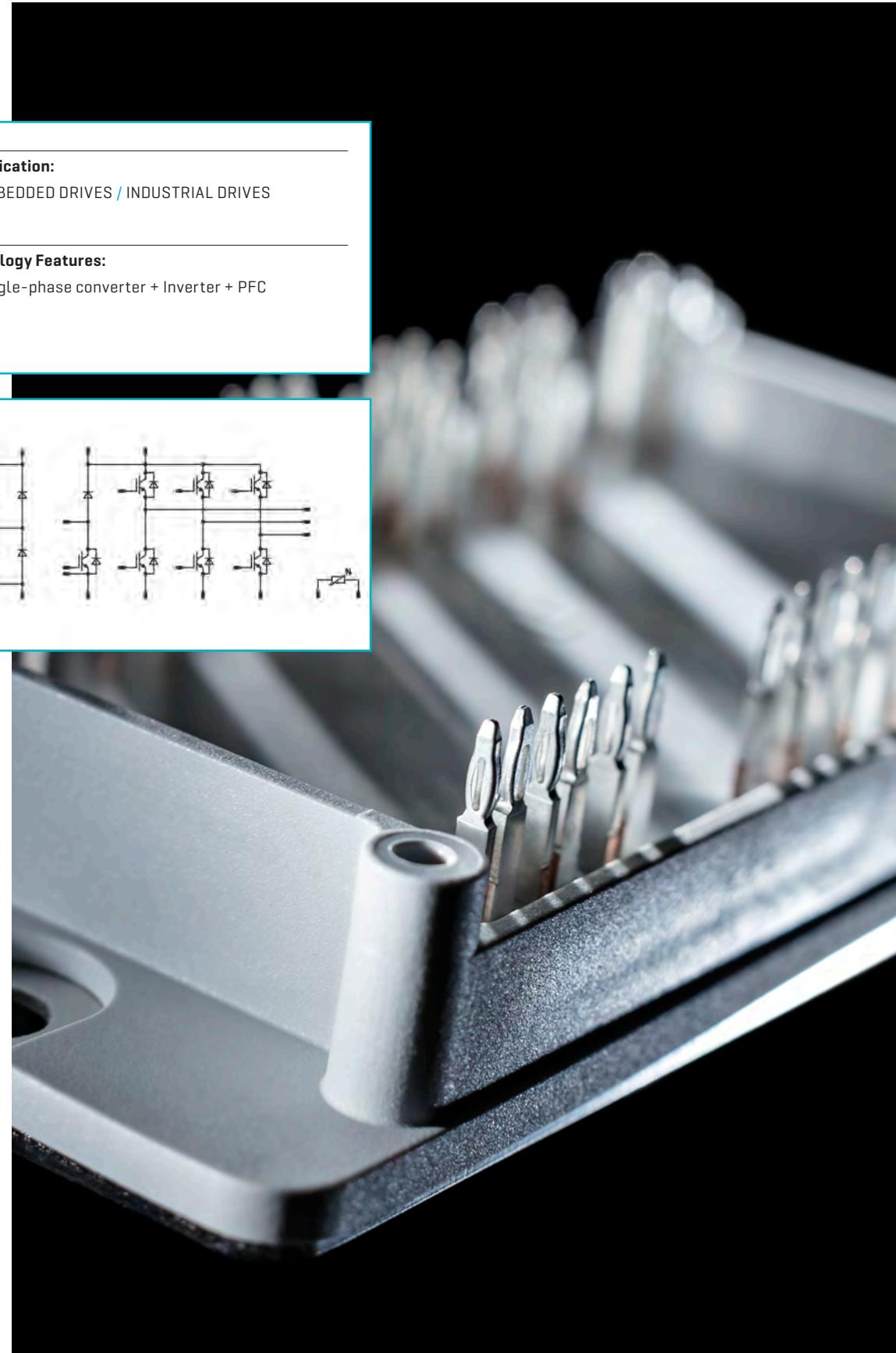


Schematics see page: 191
More details: www.vincotech.com/PIM-E2

Part-No	Voltage [V]	Current [A]	Technology	Comments
CIB-OE-NTC				
10-EZ06PMA010SA-L923A38T	600	10	IGBT3	Equivalent: IFX FP10R06W1E3_B11
10-EZ06PMA015SA-L924A38T	600	15	IGBT3	Equivalent: IFX FP15R06W1E3_B11
10-EZ06PMA020SA-L925A38T	600	20	IGBT3	Equivalent: IFX FP20R06W1E3_B11
10-EZ06PMA030SA-L926A38T	600	30	IGBT3	Equivalent: IFX FP30R06W1E3_B11
10-EZ12PMA010SC-L927A08T	1200	10	IGBT4	Equivalent: IFX FP10R12W1T4_B11
10-EZ12PMA010M7-L927A78T	1200	10	IGBT M7	Equivalent: IFX FP10R12W1T4_B11
10-E112PMA010M7-L927A78Z	1200	10	IGBT M7	
10-EZ12PMA015SC-L928A08T	1200	15	IGBT4	Equivalent: IFX FP15R12W1T4_B11
10-EZ12PMA015M7-L928A78T	1200	15	IGBT M7	Equivalent: IFX FP15R12W1T4_B11
10-E112PMA015M7-L928A78Z	1200	15	IGBT M7	
10-EZ12PMA025M7-L929A78T	1200	25	IGBT M7	
CI-OE-NTC				
10-EZ12PNA010SC-L927C08T	1200	10	IGBT4	Equivalent: IFX FP10R12W1T4_B3
10-EZ12PNA010M7-L927C78T	1200	10	IGBT M7	Equivalent: IFX FP10R12W1T4_B3
10-E112PNA010M7-L927C78Z	1200	10	IGBT M7	
10-EZ12PNA015SC-L928C08T	1200	15	IGBT4	Equivalent: IFX FP15R12W1T4_B3
10-EZ12PNA015M7-L928C78T	1200	15	IGBT M7	Equivalent: IFX FP15R12W1T4_B3
10-E112PNA015M7-L928C78Z	1200	15	IGBT M7	

Part-No	Voltage [V]	Current [A]	Technology	Comments
CIB-OE-NTC				
10-EY06PMA050SA-L184A38T	600	50	IGBT3	Equivalent: IFX FP50R06W2E3_B11
10-E206PMA050SA-L184A38Z	600	50	IGBT3	
10-EY12PMA015SC-L186A48T	1200	15	IGBT4	Equivalent: IFX FP15R12W2T4_B11
10-EY12PMA015M7-L186A78T	1200	15	IGBT M7	Equivalent: IFX FP15R12W2T4_B11
10-E212PMA015M7-L186A78Z	1200	15	IGBT M7	
10-EY12PMA025SC-L187A48T	1200	25	IGBT4	Equivalent: IFX FP25R12W2T4_B11
10-EY12PMA025M7-L187A78T	1200	25	IGBT M7	Equivalent: IFX FP25R12W2T4_B11
10-E212PMA035M7-L188A78Z	1200	25	IGBT M7	
10-EY12PMA035SC-L188A48T	1200	35	IGBT4	Equivalent: IFX FP35R12W2T4_B11
10-E212PMA035SC-L188A48Z	1200	35	IGBT4	Equivalent: IFX FP35R12W2T4_B11
10-E212PMA025M7-L187A78Z	1200	35	IGBT M7	
10-EY12PMA035M7-L188A78T	1200	35	IGBT M7	Equivalent: IFX FP35R12W2T4_B11
10-EY12PMA050M7-L189A78T	1200	50	IGBT M7	
CI-OE-NTC				
10-EY12PNA025M7-L187C78T	1200	25	IGBT M7	
10-EY12PNA035M7-L188C78T	1200	35	IGBT M7	

TOC



- RECTIFIER (+BRAKE)
- ULTRAFAST RECTIFIER
- 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

flowPIM® ØB + PFC**Available Housings:**

/ flow ØB 2-towers 17 mm

Possible Features:

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



Schematics see page: 193
More details: www.vincotech.com/flowPIM-ØB+PFC

Part-No	I Voltage [V]	I Current [A]	I Technology	I 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]
10-0B06PPA010RC02-L025A89	600	10	IGBT RC	with Rohm RGW IGBT

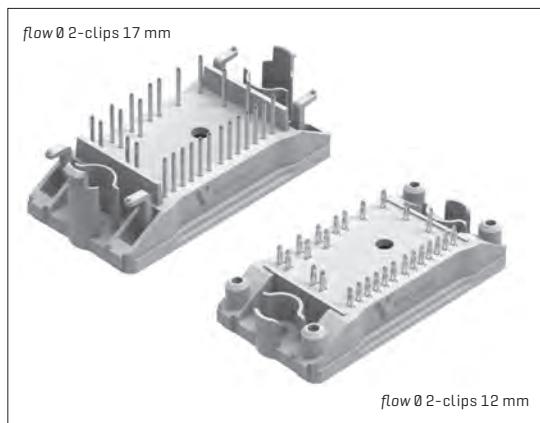
flowPIM® Ø + PFC**Available Housings:**

/ flow Ø 2-clips 17 mm

/ flow Ø 4 towers 12 mm

Possible Features:

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



Schematics see page: 193
More details: www.vincotech.com/flowPIM-Ø+PFC

Part-No	I Voltage [V]	I Current [A]	I Technology	I Comments
CIP-OE-Shunt-NTC				
10-F006PPA010SB-M683B	600	10	IGBT3 LL	
10-P006PPA010SB-M683BY	600	10	IGBT3 LL	
10-PC06PPA010SB-M683B06Y	600	10	IGBT3 LL	
NEW 10-F006PPA010SB03-M683B50	600	10	IGBT3	
NEW 10-P006PPA010SB04-M683B30Y	600	10	IGBT3	
10-F006PPA015SB-M684B	600	15	IGBT3 LL	
NEW 10-P006PPA015SB03-M684B30Y	600	15	IGBT3	
NEW 10-FU06PPA015SB-M684B06	600	15	IGBT3	
10-F006PPA020SB-M685B	600	20	IGBT3 LL	
NEW 10-P006PPA020SB-M685BY	600	20	IGBT3	
10-F006PPA020SB01-M685B10	600	20	IGBT3 LL	with SiC diode in PFC
NEW 10-P006PPA020SB01-M685B10Y	600	20	IGBT3	with SiC diode in PFC
NEW 10-P006PPA020SB02-M685B30Y	600	20	IGBT3	

flowPIM® 1 + PFC**Available Housings:**

- / flow 1 4 towers 12 mm

Possible Features:

- / 2-leg interleaved PFC + Inverter
- / On-board Capacitors
- / Open Emitter configuration
- / Shunt
- / Temperature sensor
- / 3-leg interleaved PFC + Inverter
- / 3x Shunts
- / Converter + 2-leg interleaved PFC + Inverter



Schematics see page: 193
More details: www.vincotech.com/flowPIM-1+PFC

flow90PIM 1 + PFC**Available Housings:**

- / flow90 1 2-clip

Possible Features:

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



Schematics see page: 193
More details: www.vincotech.com/flow90PIM-1+PFC

Part-No	I Voltage [V]	I Current [A]	I Technology	I Comments
---------	---------------	---------------	--------------	------------

IP-OE-Shunt-NTC

10-PG06PPA030SJ01-LH52E08T	600	30	IGBT fast	
10-PG06PPA050SJ01-LH54E08T	600	50	IGBT fast	

IP-OE-NTC

10-PG06PPA030SJ02-LH92E08T	600	30	IGBT fast	
10-PG06PPA050SJ02-LH94E08T	600	50	IGBT fast	

CIP-OE-Shunt-NTC

NEW 10-PG06PPA020SJ-LJ01B08T	600	20	IGBT3.1	
10-PG06PPA030SJ-LJ02B08T	600	30	IGBT fast	
10-PG06PPA050SJ-LJ04B08T	600	50	IGBT fast	

Part-No	I Voltage [V]	I Current [A]	I Technology	I Comments
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CIP-OE-NTC

10-R106PPA020SB01-M934A	600	20	IGBT3 LL	
10-R106PPA020SB03-M934A10	600	20	IGBT3 LL	Rohm PFC switch

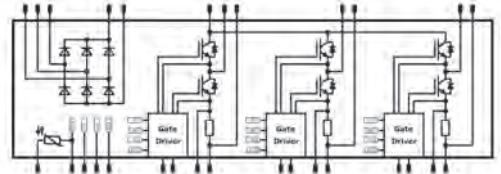
TOC

Application:

/ EMBEDDED DRIVES / INDUSTRIAL DRIVES

Topology Features:

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



RECTIFIER (+BRAKE)

ULTRAFAST RECTIFIER

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

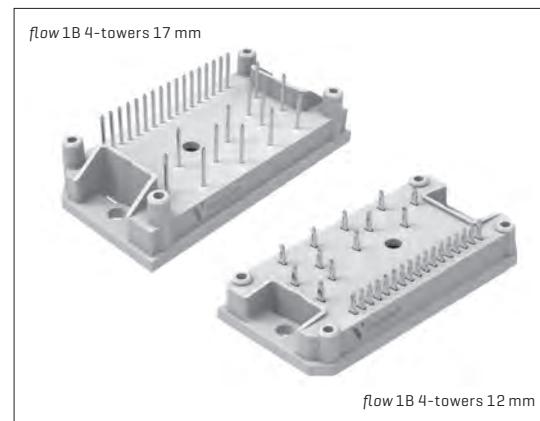
Naming System

flowIPM 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



Schematics see page: 194
More details: www.vincotech.com/flowIPM-1B-CI

Part-No	I Voltage [V]	I Current [A]	I Technology	I 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

flowIPM 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



Schematics see page: 194
More details: www.vincotech.com/flowIPM-1C-CIB

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

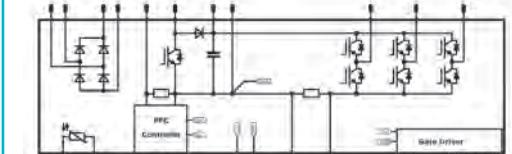
TOC

Application:

/ EMBEDDED DRIVES / INDUSTRIAL DRIVES

Topology Features:

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



RECTIFIER (+BRAKE)

ULTRAFAST RECTIFIER

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

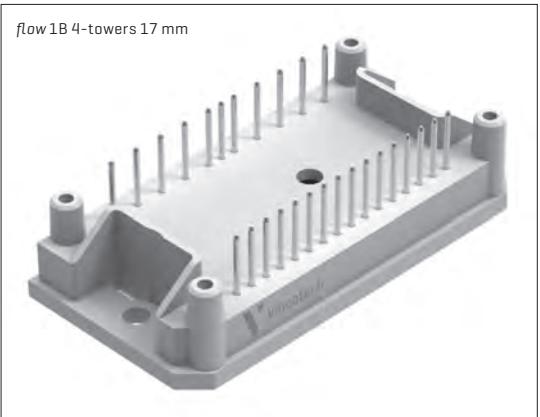
Naming System

flowIPM 1B [CIP]**Available Housings:**

/ flow 1B 4-towers 17 mm

Possible Features:

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



Schematics see page: 194
More details: www.vincotech.com/flowIPM-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	
20-1B06IPB006RC01-P953A45	600	6	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 SiC diode in the PFC
20-1B06IPB010RC01-P955A45	600	10	IGBT RC	

RECTIFIER (+BRAKE)

ULTRAFAST RECTIFIER

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]

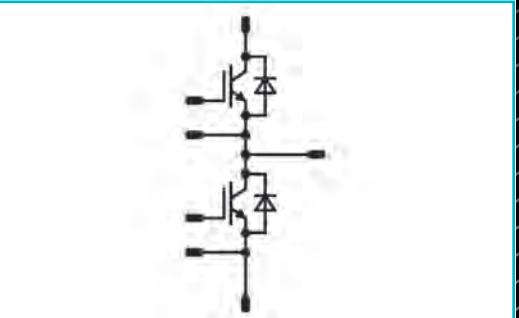
Three-level NPC (I-Type)

Three-level MNPC (T-Type)

Three-level ANPC

Schematics / Housings

Naming System

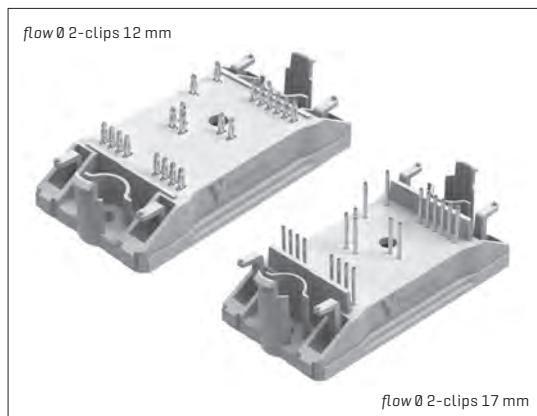


flowPHASE 0 + NTC**Available Housings:**

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

Possible Features:

- / Half Bridge
- / Temperature sensor



Schematics see page: 194
More details: www.vincotech.com/flowPHASE-0+NTC

Part-No	I Voltage [V]	I Current [A]	I Technology	I 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

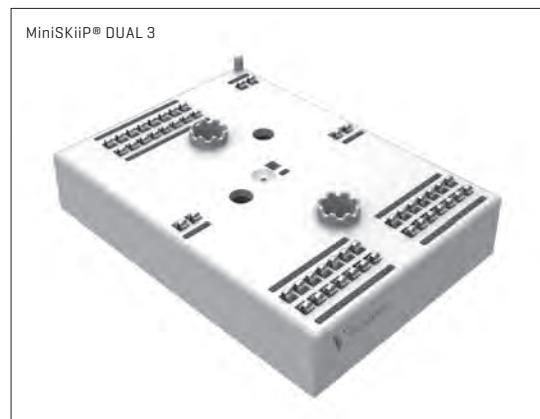


Schematics see page: 194
More details: www.vincotech.com/MiniSkiiP-DUAL-2

Part-No	I Voltage [V]	I Current [A]	I Technology	I Comments
Half Bridge-NTC				
80-M2072PA150SA-K704F30	650	150	IGBT3	Equivalent: SKiiP 24GB07E3V1
80-M2072PA200SA-K705F30	650	150	IGBT3	Equivalent: SKiiP 26GB07E3V1
80-M2122PA150SC-K708F40	1200	150	IGBT4	Equivalent: SKiiP® 24GB12T4V1
80-M2122PA150M7-K708F70	1200	150	IGBT M7	
80-M2122PA200M7-K709F70	1200	200	IGBT M7	Equivalent: SKiiP® 26GB12T4V1
80-M2122PA200SC-K709F40	1200	200	IGBT4	Equivalent: SKiiP® 26GB12T4V1
80-M2122PA300M7-K700F70	1200	300	IGBT M7	

MiniSKiiP® DUAL 3**Available Housings:**

/ MiniSKiiP® DUAL 3

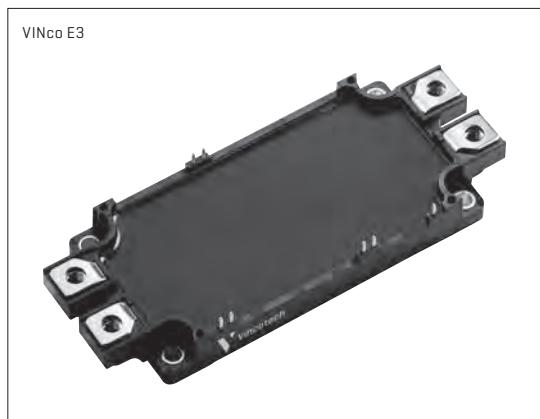
Possible Features:/ Half Bridge
/ Temperature sensor

Schematics see page: 194
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-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	

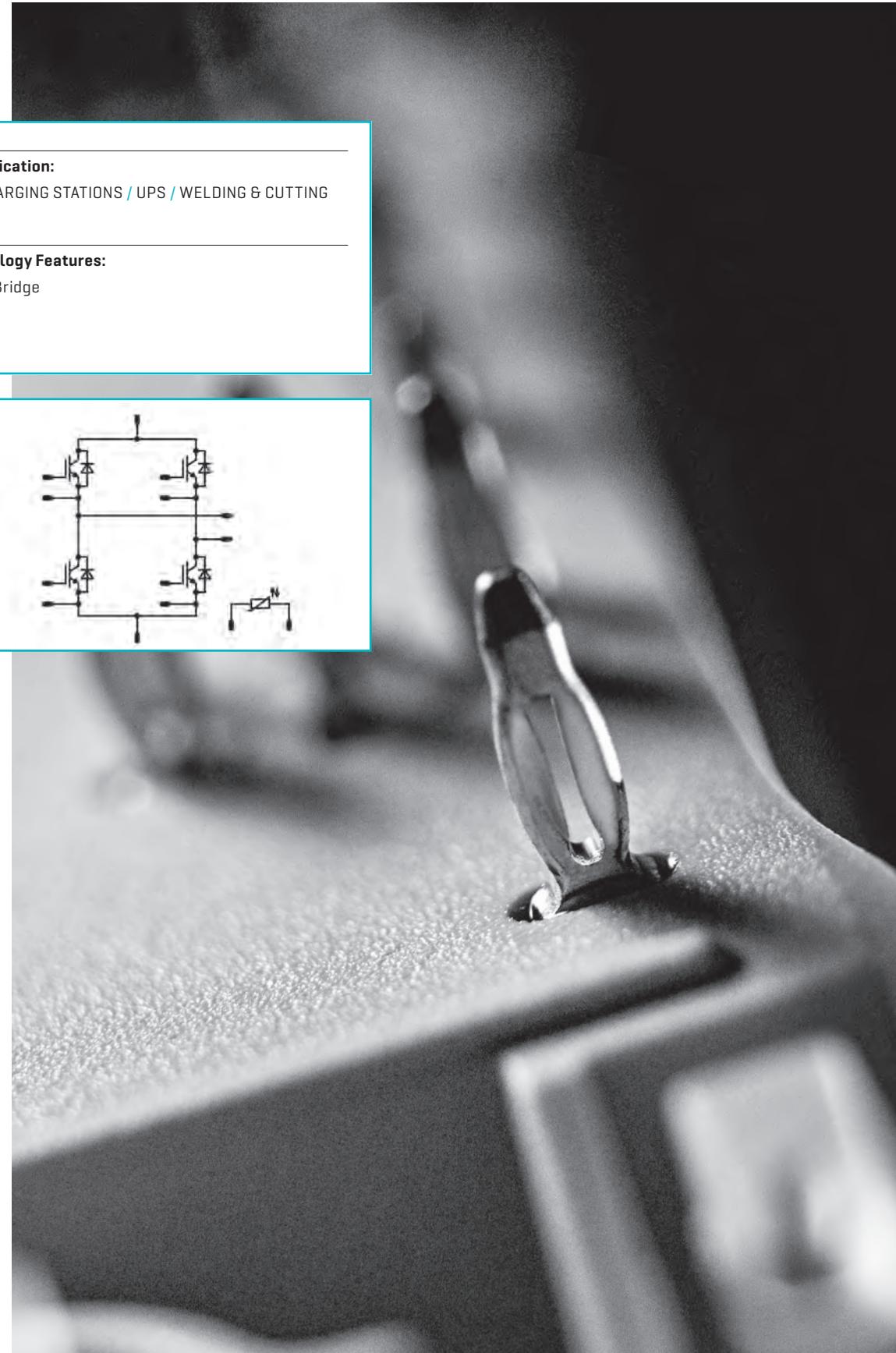
VINcoDUAL E3**Available Housings:**

/ VINco E3s

Possible Features:/ Half Bridge
/ Temperature sensor

Schematics see page: 194
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-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)
- ULTRAFAST RECTIFIER
- 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

fastPACK 0 H**Available Housings:**

/ flow Ø 4-clips 17 mm / flow Ø 2-clips 12 mm
 / flow Ø 2-clips 17 mm

Possible Features:

/ Kelvin Emitter for improved switching performance
 / Temperature sensor



Schematics see page: 194
 More details: www.vincotech.com/flowPACK-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-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

fastPACK 0 HC**Available Housings:**

/ flow Ø 4-clips 17 mm / flow Ø 2-clips 12 mm
 / flow Ø 2-clips 17 mm

Possible Features:

/ Kelvin Emitter for improved switching performance
 / Temperature sensor



Schematics see page: 194
 More details: www.vincotech.com/flowPACK-0-HC

Part-No	Voltage [V]	Current [A]	Technology	Comments
H-Bridge-KE-OE-Cap-NTC				
10-PZ074PA030SM-L623F08Y	650	30	IGBT H5	
10-FZ074PA030SM-L623F08	650	30	IGBT H5	
10-PZ074PA050SM-L624F08Y	650	50	IGBT H5	
10-FZ074PA050SM-L624F08	650	50	IGBT H5	
10-PZ074PA075SM-L625F08Y	650	75	IGBT H5	
10-FZ074PA075SM-L625F08	650	75	IGBT H5	
H-Bridge-KE-Cap-NTC				
V23990-P729-F48-PM	1200	40	IGBT4 HS	
V23990-P729-F49-PM	1200	40	IGBT4 HS	

fastPACK 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



Schematics see page: 194
More details: www.vincotech.com/fastPACK-0-SiC

Part-No	I Voltage [V]	I Current [A]	I Technology	I Comments
H-Bridge-0E-KE-Cap-NTC				
10-PC094PB035ME02-L629F36Y	900	40	SiC MOSFET	
10-PC094PB017ME02-L620F36Y	900	80	SiC MOSFET	
2xHalf-Bridge-KE-NTC				
10-PC094PB065ME01-L637F06Y	900	20	SiC MOSFET	
10-PC124PA040MR-L638F18Y	1200	35	SiC MOSFET	

flowPACK 1 H**Available Housings:**

/ flow 1 4-towers 12 mm

Possible Features:

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



Schematics see page: 195
More details: www.vincotech.com/flowPACK-1-H

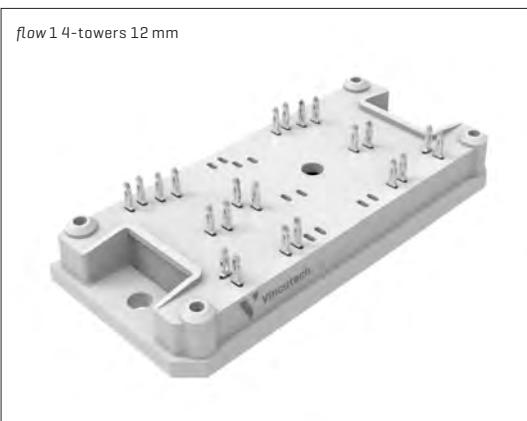
Part-No	I Voltage [V]	I Current [A]	I Technology	I Comments
H-Bridge-KE-0E-NTC				
10-FY074PA050SM-M582F38	650	50	IGBT H5	
10-FY124PA040FV-L588F88	1200	40	Trench Field Stop IGBT	
10-PY124PA040FV-L588F88Y	1200	40	Trench Field Stop IGBT	
10-FY124PA040SH-L588F48	1200	40	IGBT4 HS	
10-PY124PA040SH-L588F48Y	1200	40	IGBT4 HS	
10-FY124PA080FV-L589F88	1200	80	Trench Field Stop IGBT	
10-PY124PA080FV-L589F88Y	1200	80	Trench Field Stop IGBT	
10-FY124PA080SH-L589F48	1200	80	IGBT4 HS	
10-PY124PA080SH-L589F48Y	1200	80	IGBT4 HS	

flowPACK 1 SiC**Available Housings:**

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

Possible Features:

- / Dual halfbridge
- / Integrated gate capacitors
- / Kelvin Emitter for improved switching performance
- / Temperature sensor



Schematics see page: 195
More details: www.vincotech.com/flowPACK-1-SiC

Part-No	I Voltage [V]	I Current [A]	I Technology	I Comments
2xHalf Bridge-KE-Cap-NTC 10-PY124PA020MR03-L227F38Y	1200	50	SiC MOSFET	

fastPACK 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



Schematics see page: 194
More details: www.vincotech.com/flowPACK-1-HC

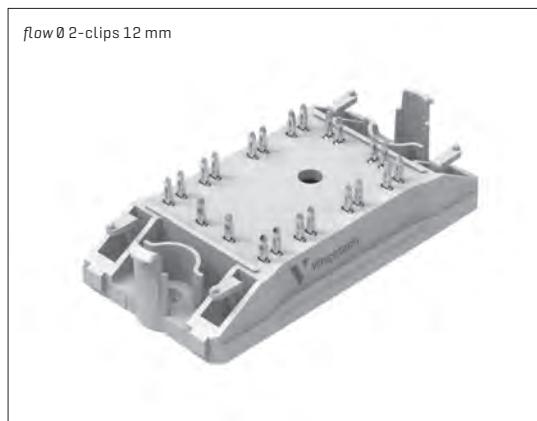
Part-No	I Voltage [V]	I Current [A]	I Technology	I Comments
H-Bridge-KE-OE-Cap-NTC				
10-FY074PA100SM-L583F08	650	100	IGBT H5	fsw > 30 kHz
10-PY074PA100SM-L583F08Y	650	100	IGBT H5	fsw > 30 kHz
10-FY074PA100SM01-L583F18	650	100	IGBT H5	fsw > 30kHz, full current FWD
10-PY074PA100SM01-L583F18Y	650	100	IGBT H5	fsw > 30kHz, full current FWD

fastPACK 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



Schematics see page: 194
More details: www.vincotech.com/fastPACK-0-MOS

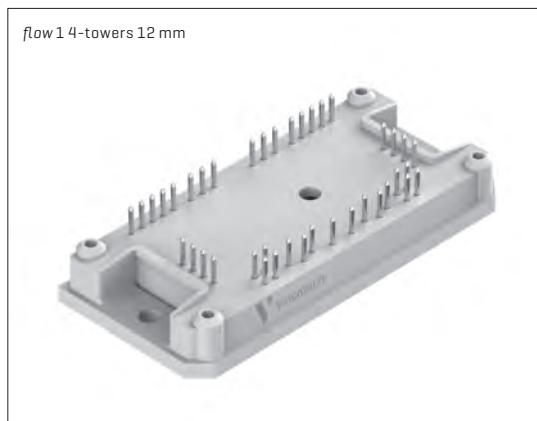
Part-No	I Voltage [V]	I Current [A]	I Technology	I Comments
H-Bridge-0E-KE-Cap-NTC				
10-FZ074PA080CR-L622F68	I 650	I 20	I Infineon CoolMOS™ CFD2	
10-PZ074PA080CR-L622F68Y	I 650	I 20	I Infineon CoolMOS™ CFD2	

fastPACK 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



Schematics see page: 194
More details: www.vincotech.com/fastPACK-1-MOS

Part-No	I Voltage [V]	I Current [A]	I Technology	I Comments
H-Bridge-0E-KE-Cap-NTC				
10-FY074PA040CR-L581F78	I 650	I 40	I Infineon CoolMOS™ CFD2	
10-PY074PA040CR-L581F78Y	I 650	I 40	I Infineon CoolMOS™ CFD2	
10-FY074PA020CR-L582F78	I 650	I 80	I Infineon CoolMOS™ CFD2	
10-PY074PA020CR-L582F78Y	I 650	I 80	I Infineon CoolMOS™ CFD2	

fastPACK E1 SiC**Available Housings:**

/ flow E1 4-tower 12 mm

Possible Features:

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



Schematics see page: 198
More details: www.vincotech.com/fastPACK-E1-SiC

Part-No	I Voltage [V]	I Current [A]	I Technology	I Comments
H-Bridge-OE-KE-NTC 10-EZ124PA032ME-LQ17F18T	I 1200	I 40	I SiC MOSFET	

fastPACK E2 SiC**Available Housings:**

/ flow E2 4-tower 12 mm

Possible Features:

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



Schematics see page: 198
More details: www.vincotech.com/fastPACK-E2-SiC

Part-No	I Voltage [V]	I Current [A]	I Technology	I Comments
H-Bridge-OE-KE-NTC 10-EY124PA016ME-LP49F18T	I 1200	I 80	I SiC MOSFET	

RECTIFIER (+BRAKE)

ULTRAFAST RECTIFIER

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

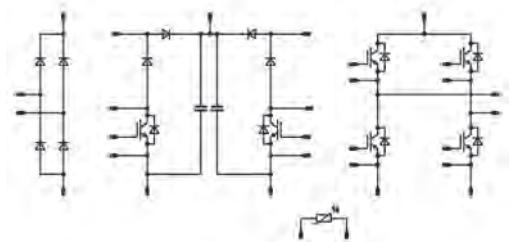
Naming System

Application:

/ CHARGING STATIONS / SOLAR INVERTERS /
/ WELDING & CUTTING

Topology Features:

/ Single-phase inverter

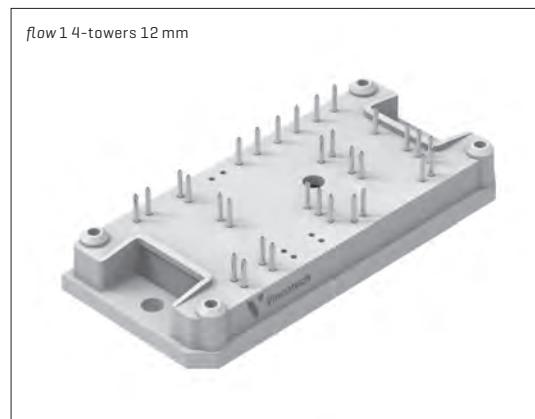


flowRPI 1**Available Housings:**

/ flow 1 4-towers 12 mm

Possible Features:

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



Schematics see page: 195
More details: www.vincotech.com/flowRPI-1

Part-No	I Voltage [V]	I Current [A]	I Technology	I Comments
Rectifier + Dual Booster + H-Bridge-KE-OE-NTC-CAP				
10-FY07ZAA015SM-L512B28	I 650	I 15	I IGBT H5	
10-FY07ZAA030SM-L513B28	I 650	I 30	I IGBT H5	
10-FY07ZAA050SM-L514B28	I 650	I 50	I IGBT H5	
10-FY07ZAB050SM-L514B08	I 650	I 50	I IGBT H5	I Wide input voltage range rated PFC
10-FY07ZAB075SM-L515B08	I 650	I 75	I IGBT H5	I Wide input voltage range rated PFC
CIP-OE-Cap-NTC				
10-FY07ZAA080CR02-L445B13	I 650	I 80	I Infineon CoolMOS™ C6	I CFD+SiC diode (->shunt)
10-PY07ZAA080CR02-L445B13Y	I 650	I 80	I Infineon CoolMOS™ C6	I CFD+SiC diode (->shunt)
10-FY07ZAA080CR01-L445B18	I 650	I 80	I Infineon CoolMOS™ C6	I CFD+SiC diode (-> CT)
10-PY07ZAA080CR01-L445B18Y	I 650	I 80	I Infineon CoolMOS™ C6	I CFD+SiC diode (-> CT)

flowSOL 0 BI [TL]**Available Housings:**

/ flow 0 2-clips 12 mm

Possible Features:

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



Schematics see page: 195
More details: www.vincotech.com/flowSOL-0-BI-TL

Part-No	I Voltage [V]	I Current [A]	I Technology	I Comments
Booster + H-Bridge-KE-NTC				
10-FZ07BIA030SM02-P894E58	I 650	I 30	I IGBT H5	
10-PZ07BIA030SM02-P894E58Y	I 650	I 30	I IGBT H5	
10-FZ07BIA030SSY-P894E78	I 650	I 30	I IGBT S5	
10-FZ07BIA030SG-P894E38	I 650	I 30	I IGBT3 HS	
10-PZ07BIA030SG-P894E38Y	I 650	I 30	I IGBT3 HS	
10-FZ07BIA030RW-P894E88	I 650	I 30	I IGBT fast	
10-PZ07BIA030RW-P894E88Y	I 650	I 30	I IGBT fast	
10-FZ07BIA030SM01-P894E68	I 650	I 30	I IGBT H5	
10-PZ07BIA030SM01-P894E68Y	I 650	I 30	I IGBT H5	

flowSOL 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



Schematics see page: 195
More details: www.vincotech.com/flowSOL-0-BI-T-prim

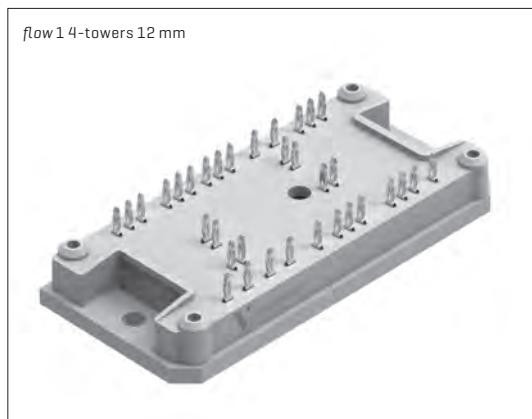
Part-No	I Voltage [V]	I Current [A]	I Technology	I Comments
Booster + H-Bridge-KE-NTC 10-FZ06BIA083FI-P896E	600	30	Infineon CoolMOS™ CFD2	

flowSOL 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



Schematics see page: 195
More details: www.vincotech.com/flowSOL-1-BI-TL

Part-No	I Voltage [V]	I Current [A]	I Technology	I 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	

flowSOL 1 BI [T] primary**Available Housings:**

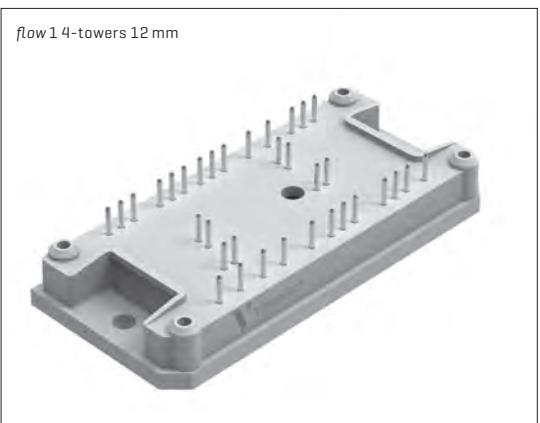
/ flow 1 4-towers 12 mm

Possible Features:

/ Dual Booster + H-Bridge

/ Kelvin Emitter for improved switching performance

/ Temperature sensor



Schematics see page: 195
More details: www.vincotech.com/flowSOL-1-BI-TL-prim

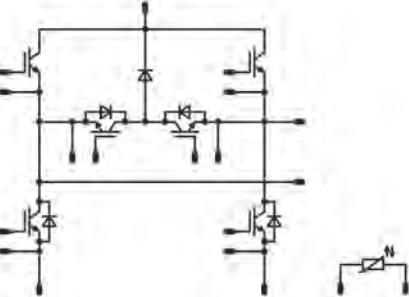
Part-No	Voltage [V]	Current [A]	Technology	Comments
Dual Booster + H-Bridge-KE-NTC-CAP 10-FY06BIA080MF-M527E58	650	20	Infineon CoolMOS™ CFD2	

Application:

/ SOLAR INVERTERS

Topology Features:

/ Three-level topology for single phase inverters



RECTIFIER (+BRAKE)

ULTRAFAST RECTIFIER

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

flowSOL Ø BI [TL]**Available Housings:**

- / flow Ø 2-clips 12 mm

Possible Features:

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



Schematics see page: 196
More details: www.vincotech.com/flowSOL-Ø-BI-TL

Part-No	I Voltage [V]	I Current [A]	I Technology	I 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	

flowPACK 1 H6.5**Available Housings:**

- / flow 1 4-towers 12 mm

Possible Features:

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



Schematics see page: 196
More details: www.vincotech.com/flowPACK-1-H65

Part-No	I Voltage [V]	I Current [A]	I Technology	I Comments
H6.5-KE-NTC				
10-PY07HVA050S5-L984F08Y	650	50	IGBT S5	
10-FY07HVA050S5-L984F08	650	50	IGBT S5	
10-FY07HVA050RG-L984F88	650	50	IGBT fast	
10-PY07HVA075S5-L985F08Y	650	75	IGBT S5	
10-FY07HVA075S5-L985F08	650	75	IGBT S5	
10-PY07HVA075S502-L985F18Y	650	75	IGBT S5	
10-PY07HVA100S5-L986F08Y	650	100	IGBT S5	
10-FY07HVA100S5-L986F08	650	100	IGBT S5	

flowSOL 1 BI [TL]**Available Housings:**

/ flow 1 4-towers 12 mm

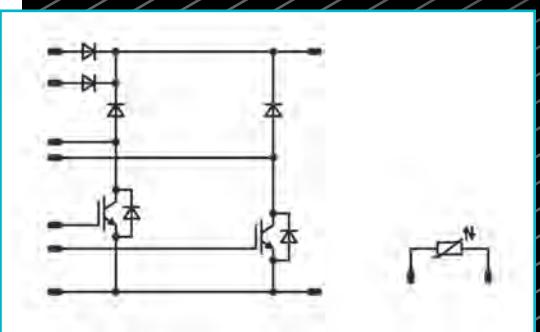
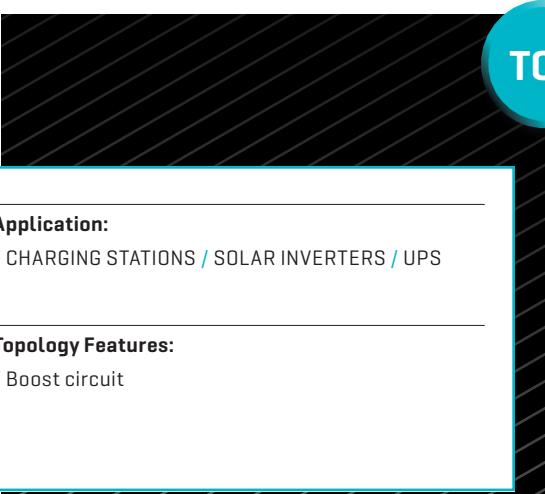
Possible Features:

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



Schematics see page: 196
More details: www.vincotech.com/flowSOL-1-BI-TL

Part-No	Voltage [V]	Current [A]	Technology	Comments
Booster + H6.5-KE-NTC				
10-PY07BVA030S5-LF42E08Y	650	30	IGBT S5	
10-FY07BVA030RW-LF42E28	650	30	IGBT fast	
10-PY07BVA030RW-LF42E28Y	650	30	IGBT fast	
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	

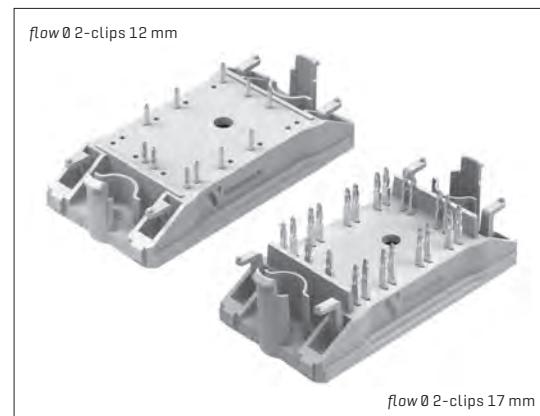
TOC**RECTIFIER (+BRAKE)****ULTRAFAST RECTIFIER****SIXPACK****SIXPACK+RECTIFIER****SEVENPACK****PIM [CIB]****PIM+PFC [CIP]****IPM [CIB]****IPM [CIP_PIM+PFC]****HALF-BRIDGE****H-BRIDGE****SINGLE-PHASE-INVERTER****H6.5****BOOSTER****BOOSTER-SYMMETRIC****Buck-Booster Symmetric****PFC [Single-phase applications]****PFC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

flowBOOST 0 dual**Available Housings:**

- / flow Ø 2-clips 12 mm
- / flow Ø 2-clips 17 mm

Possible Features:

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



Schematics see page: 196
More details: www.vincotech.com/flowBOOST-0-dual

Part-No	I Voltage [V]	I Current [A]	I Technology	I Comments
Dual Boost-KE-OE-Bypass diode-NTC				
V23990-P623-L82-PM	650	50	IGBT H5	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	50A Si diode, improved reverse protection
V23990-P629-L48-PM	1200	40	IGBT4 HS	SiC diode [optimized current]
V23990-P629-L48Y-PM	1200	40	IGBT4 HS	SiC diode [optimized current]
V23990-P629-L49-PM	1200	40	IGBT4 HS	SiC diode [optimized current]
V23990-P629-L49Y-PM	1200	40	IGBT4 HS	SiC diode [optimized current]
V23990-P629-L58-PM	1200	40	IGBT4 HS	50A Si diodes
V23990-P629-L58Y-PM	1200	40	IGBT4 HS	50A Si diodes
V23990-P629-L59-PM	1200	40	IGBT4 HS	50A Si diodes
V23990-P629-L63-PM	1200	40	NPT IGBT	SiC diodes, substitute for P629-L62
V23990-P629-L63Y-PM	1200	40	NPT IGBT	SiC diodes, substitute for P629-L62
V23990-P629-L94-PM	1200	40	NPT IGBT	high rated current SiC diodes, improved R _{th} [ALN]
V23990-P629-L94Y-PM	1200	40	NPT IGBT	high rated current SiC diodes, improved R _{th} [ALN]
V23990-P629-L98-PM	1200	40	NPT IGBT	
V23990-P629-L99-PM	1200	40	NPT IGBT	High rated current SiC diodes, improved R _{th} [ALN]
V23990-P629-L99Y-PM	1200	40	NPT IGBT	High rated current SiC diodes, improved R _{th} [ALN]
V23990-P629-L43-PM	1200	50	IGBT4 HS	SiC Diode
V23990-P629-L43Y-PM	1200	50	IGBT4 HS	SiC diodes
V23990-P629-L57-PM	1200	50	IGBT4 HS	
V23990-P629-L57Y-PM	1200	50	IGBT4 HS	
Dual Boost-KE-Cap-NTC				
10-FZ07B2A030SM02-M575L48	650	30	IGBT H5	
10-FZ06B2A040MF01-M575L28	600	40	Infineon CoolMOS™ C6	

flow3xBOOST 0**Available Housings:**

- / flow Ø 2-clips 12 mm

Possible Features:

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



Schematics see page: 196
More details: www.vincotech.com/flow3xBOOST-0

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

flowBOOST 0 dual 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



Schematics see page: 196
More details: www.vincotech.com/flowBOOST-0-dual-SiC

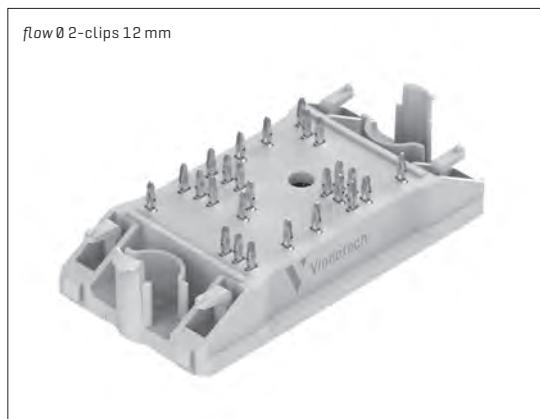
Part-No	I Voltage [V]	I Current [A]	I Technology	I Comments
Dual Boost-KE-OE-Bypass diode-NTC				
V23990-P629-L83-PM	1200	35	SiC MOSFET	SiC diode
V23990-P629-L81-PM	1200	35	SiC MOSFET	SiC MOS [ROHM™] + SiC diode [ROHM™]
Dual Boost-KE-Cap-NTC				
10-PZ12B2A040MR01-M330L68Y	1200	35	SiC MOSFET	2nd gen SiC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

flow3xBOOST 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



Schematics see page: 196
More details: www.vincotech.com/flow3xBOOST-0-SiC

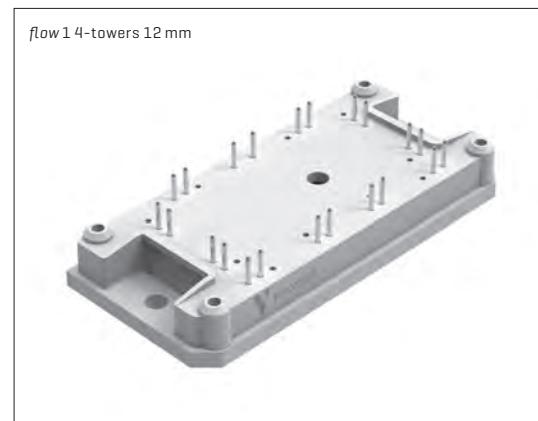
Part-No	I Voltage [V]	I Current [A]	I Technology	I Comments
Triple Boost-KE-Cap-NTC				
10-PZ123BA080ME-M909L18Y	1200	20	SiC MOSFET	
10-PZ123BA080MR-M909L28Y	1200	20	SiC MOSFET	
10-PZ123BA040MR01-M909L68Y	1200	35	SiC MOSFET	

flowBOOST 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 capacitor
- / Temperature sensor



Schematics see page: 196
More details: www.vincotech.com/flowBOOST-1-dual-SiC

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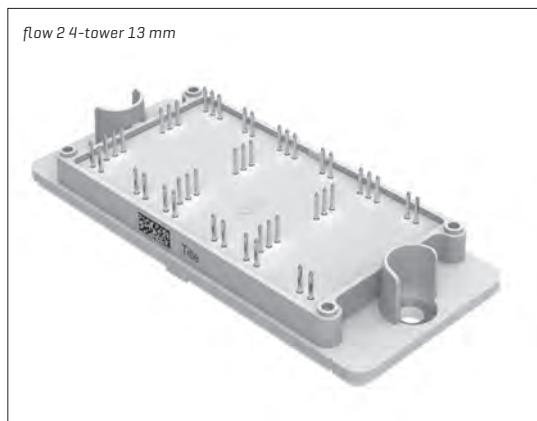
Dual Boost-KE-Cap-Bypass diode-NTC				
10-FY12B2A040MR02-L387L63	1200	30	SiC MOSFET	
10-FY12B2A040MR-L387L68	1200	30	SiC MOSFET	

flow3xBOOST 2 SiC**Available Housings:**

/ flow 2 4-towers 13 mm

Possible Features:

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



Schematics see page: 196
More details: www.vincotech.com/flow3xBOOST-2-SiC

Part-No	Voltage [V]	Current [A]	Technology	Comments
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Triple Boost-KE-Cap-Bypass diode-NTC				
30-FT123BA040MR-L878L08	1200	35	SiC MOSFET	

RECTIFIER (+BRAKE)

ULTRAFAST RECTIFIER

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

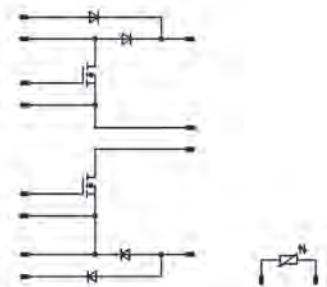
Naming System

Application:

/ CHARGING STATIONS / SOLAR INVERTERS / UPS

Topology Features:

/ Symmetrical boost circuit

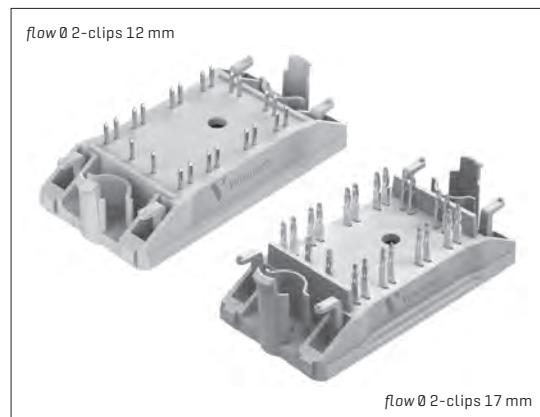


flowBOOST 0 symmetric**Available Housings:**

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

Possible Features:

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



Schematics see page: 201
More details: www.vincotech.com/flowBOOST-0-sym

Part-No	I Voltage [V]	I Current [A]	I Technology	I Comments
---------	---------------	---------------	--------------	------------

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	
10-FZ07NBA075SM-P916L58	650	75	IGBT H5	
10-FZ07NBA075SG10-M304L58	650	75	Trench Field Stop IGBT	
10-FZ07NBA100SM10-M305L68	650	100	IGBT H5	

Symm. Boost-KE-Bypass diode-NTC

10-PZ06NBA041FS-P915L68Y	600	40	Infineon CoolMOS™ C6	SiC diodes
10-FZ06NBA041FS01-P915L78	600	40	Infineon CoolMOS™ C6	

Symm. Boost-KE-Parallel-NTC

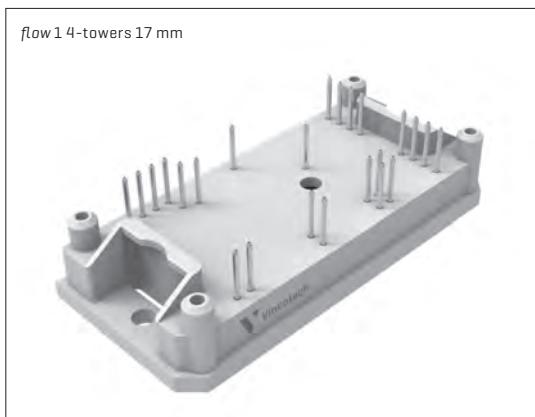
10-FZ06NBA084FP10-M306L38	600	84	Trench Field Stop IGBT	
10-FZ06NBA084FP-M306L48	600	84	Parallel Switch	
10-FZ06NBA110FP-M306L28	600	110	Parallel Switch	

flowBOOST 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
- / Bypass Diode



Schematics see page: 201
More details: www.vincotech.com/flowBOOST-1-sym

Part-No	I Voltage [V]	I Current [A]	I Technology	I Comments
---------	---------------	---------------	--------------	------------

Symm. Boost-KE-NTC

10-F106BIB020FK-M285L	600	80	ST MDmesh™ M5
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-FY07NBA160RV-M506L78	650	160	IGBT fast
10-FY07NBA225S502-M507L98	650	225	IGBT S5

flowBOOST 1 symmetric dual**Available Housings:**

/ flow 1 4-towers 12 mm

Possible Features:

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



Schematics see page: 201
www.vincotech.com/flowBOOST-1-sym-dual

Part-No	I Voltage [V]	I Current [A]	I Technology	I Comments
Dual Symm. Boost-KE-Bypass diode-NTC				
10-FY09S2A065ME-L869L08	900	50	SiC MOSFET	
10-FY12S2A075SH-L860L48	1200	75	IGBT4 HS	
10-FY12S2A080N3-L860L28	1200	80	Ultra Field Stop IGBT	

flowBOOST 2 symmetric**Available Housings:**

/ flow 2 4-towers 17 mm

Possible Features:

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



Schematics see page: 201
More details: www.vincotech.com/flowBOOST-2-sym

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

BOOSTER SYMMETRIC

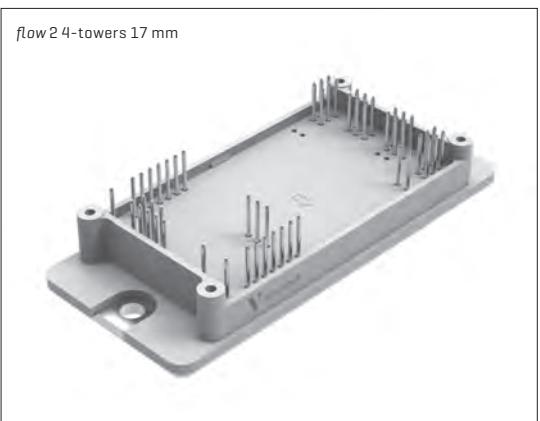
flowBOOST 2 symmetric

Available Housings:

/ flow 2 4-towers 17 mm

Possible Features:

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



Schematics see page: 201
More details: www.vincotech.com/flowBOOST-2-sym

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

TOC

RECTIFIER (+BRAKE)

ULTRAFAST RECTIFIER

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)

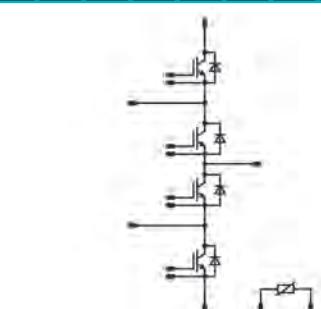
Three-level NPC (I-Type)

Three-level MNPC (T-Type)

Three-level ANPC

Schematics / Housings

Naming System



flowBUCK-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: 197
More details: www.vincotech.com/flowBUCK-BOOST-0

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

flowBUCK-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: 197
More details: www.vincotech.com/flowBUCK-BOOST-1

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

RECTIFIER (+BRAKE)

ULTRAFAST RECTIFIER

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

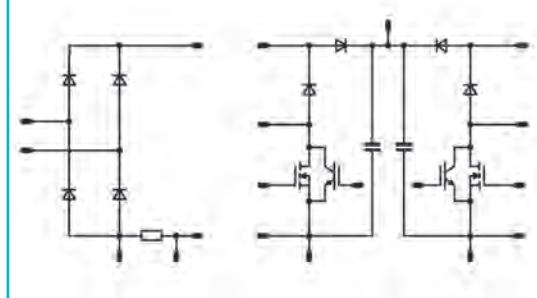
Naming System

Application:

/ CHARGING STATIONS / UPS / WELDING & CUTTING

Topology Features:

/ PFC boost - Single-phase Rectifier + Boost circuit

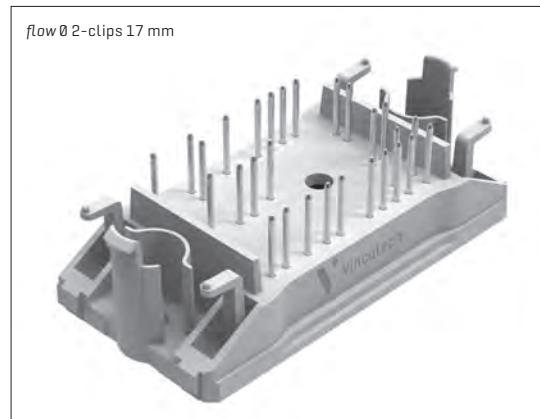


flowPFC 0**Available Housings:**

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

Possible Features:

- / Dual Boost PFC
- / Integrated Shunt Resistor
- / Integrated DC capacitor
- / Temperature sensor
- / Half Controlled Converter



Schematics see page: 202
More details: www.vincotech.com/flowPFC-0

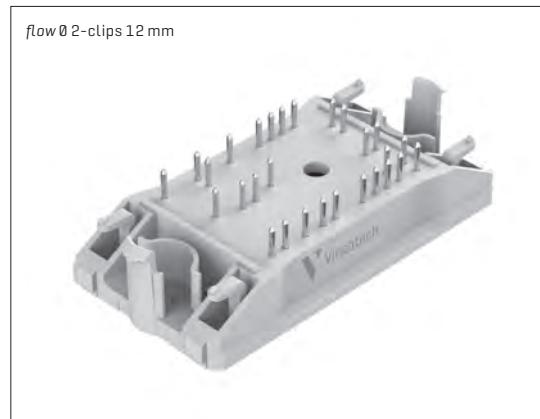
Part-No	I Voltage [V]	I Current [A]	I Technology	I Comments
Dual Boost PFC-Half Controlled-Shunt-Cap-NTC				
10-F0062TA099FS-P980D59	600	18	Infineon CoolMOS™ C6	

flowPFC 0 CD**Available Housings:**

- / flow 0 2-clips 12 mm

Possible Features:

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



Schematics see page: 202
More details: www.vincotech.com/flowPFC-0-CD

Part-No	I Voltage [V]	I Current [A]	I Technology	I Comments
Dual Boost PFC-CSC-Shunt-Cap-NTC				
10-FZ062TA099FS05-P980D68	600	18	Infineon	CoolMOS™ C6
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	fsw < 400 kHz CoolMOS™ CPI

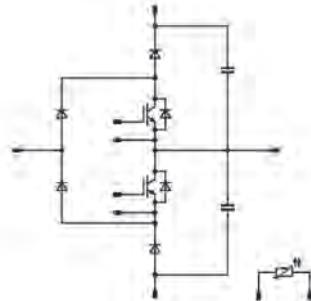
TOC

Application:

/ CHARGING STATIONS / UPS / WELDING & CUTTING

Topology Features:

/ Three-level PFC for three-phase applications



RECTIFIER (+BRAKE)

ULTRAFAST RECTIFIER

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

flowANPFC Ø**Available Housings:**

/ flow Ø 2-clips 12 mm

Possible Features:

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



Schematics see page: 198
More details: www.vincotech.com/flowANPFC-Ø

Part-No	I Voltage [V]	I Current [A]	I Technology	I Comments
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ANPFC-KE-CAP-NTC
10-PZ07ANA100RG02-LK39L88Y | 650 | 100 | IGBT fast

flowNPFC Ø**Available Housings:**

/ flow Ø 2-clips 12 mm

Possible Features:

- / Neutral Boost PFC
- / Integrated DC capacitor
- / Temperature sensor



Schematics see page: 198
More details: www.vincotech.com/flowNPFC-Ø

Part-No	I Voltage [V]	I Current [A]	I Technology	I Comments
---------	---------------	---------------	--------------	------------

NPFC-Cap-NTC
10-FZ07LBA100SM03-L705L08 | 650 | 100 | IGBT H5 | ultra fast recovery diodes
10-FZ07LBA100SM01-L705L18 | 650 | 100 | IGBT H5

flowSPFC 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



Schematics see page: 198
More details: www.vincotech.com/flowSPFC-0

Part-No	I Voltage [V]	I Current [A]	I Technology	I 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	

flow3xNPFC 1**Available Housings:**

/ flow 1 2-clips 12 mm

Possible Features:

- / 3xNeutral Boost PFC
- / Temperature sensor



Schematics see page: 198
More details: www.vincotech.com/flow3xNPFC-1

Part-No	I Voltage [V]	I Current [A]	I Technology	I Comments
3xNPFC-NTC				
10-PY12NMB030SM-L394L08Y	650	30	IGBT H5	SiC Diodes
10-TY12NMB030SM-L394L08	650	30	IGBT H5	SiC Diodes

NEW

PFC [Three-phase applications]

flow3xANPFC 1**Available Housings:**

/ flow1 4-towers 12 mm

Possible Features:/ 3x Advanced Neutral Boost PFC
/ Temperature sensor

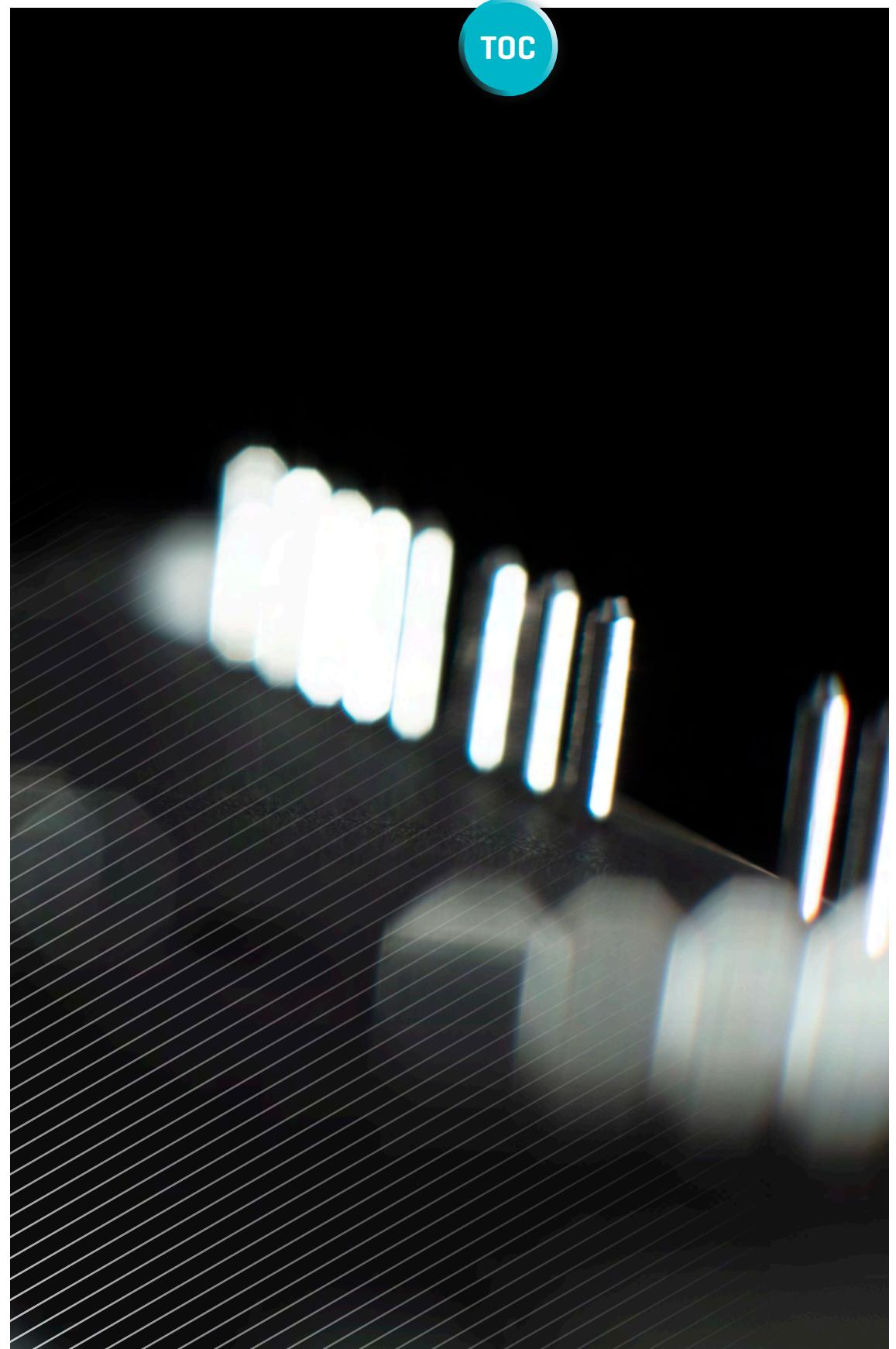
flow3xMNPC 1_12 mm 4 tower Solder pins



Schematics see page: 198
More details: www.vincotech.com/flow3xANPFC-1

Part-No	I Voltage [V]	I Current [A]	I Technology	I Comments
3xANPFC-NTC				
10-PY073AA050RG01-LK14L08Y	650	50	IGBT fast	
10-PY073AA050RG02-LK14L03Y	650	50	IGBT fast	SiC Boost diodes

TOC



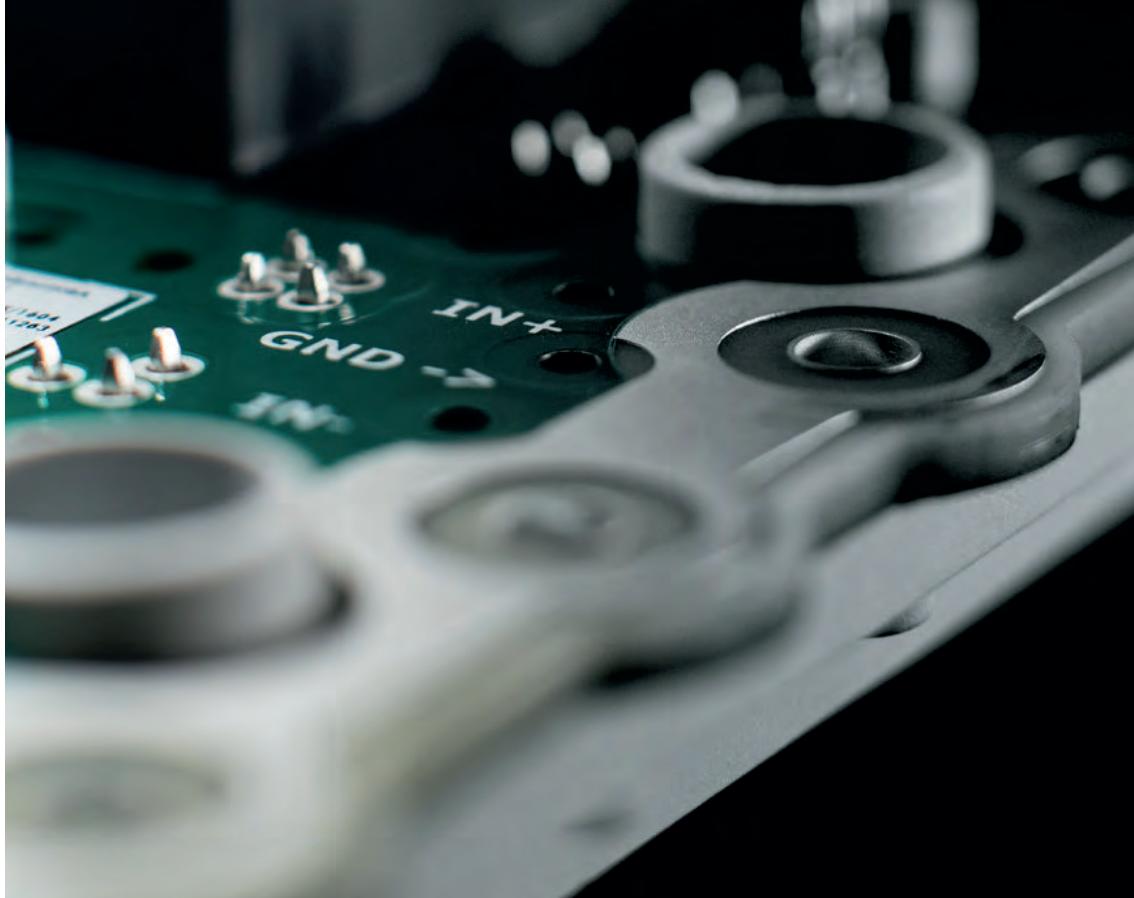
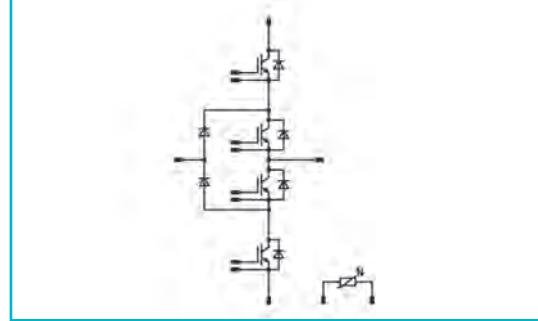
TOC

Application:

/ SOLAR INVERTERS / UPS

Topology Features:

/ Three-level NPC [I-Type]



RECTIFIER (+BRAKE)

ULTRAFAST RECTIFIER

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

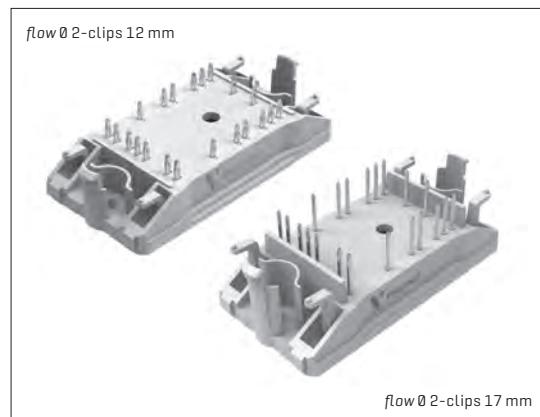
Naming System

flowNPC Ø IGBT**Available Housings:**

- / flow Ø 2-clips 12 mm
- / flow Ø 2-clips 17 mm

Possible Features:

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



Schematics see page: 199
More details: www.vincotech.com/flowNPC-Ø-IGBT

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

flowNPC Ø MOS**Available Housings:**

- / flow Ø 2-clips 12 mm

Possible Features:

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



Schematics see page: 199
More details: www.vincotech.com/flowNPC-Ø-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-PZ06NRA041FS02-P965F68Y	1200	30	Infineon CoolMOS™ C6	
10-FZ06NRA041FS03-P965F78	1200	30	Infineon CoolMOS™ C6	
10-PZ06NRA041FS03-P965F78Y	1200	30	Infineon CoolMOS™ C6	

flowNPC 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



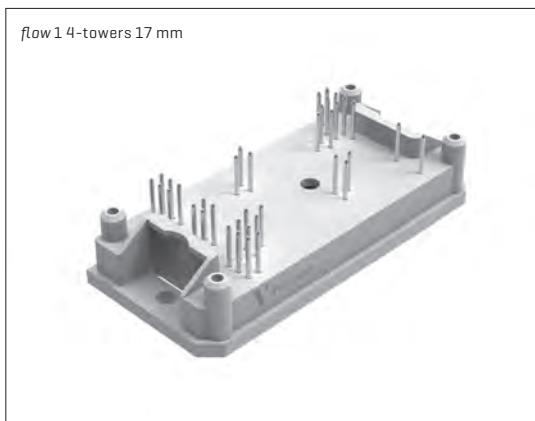
Schematics see page: 199
More details: www.vincotech.com/flowNPC-0-par

flowNPC 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



Schematics see page: 199
More details: www.vincotech.com/flowNPC-1

Part-No	I Voltage [V]	I Current [A]	I Technology	I Comments
NPC-KE-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-FZ06NRA069FP03-P967F78	1200	75	Parallel Switch	CoolMOS™ + IGBT, IGBT3, STEALTH™
10-FZ06NPA070FP01-P969F10	1200	75	Parallel Switch	CoolMOS™ + IGBT, IGBT3, STEALTH™
10-FZ06NPA070FP-P969F	1200	75	Parallel Switch	CoolMOS™ + IGBT, IGBT3, SiC diodes
10-F006NPA070FP-P969F09	1200	75	NPT IGBT	
10-P006NPA070FP-P969F09Y	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™

Part-No	I Voltage [V]	I Current [A]	I Technology	I 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-PY07NPA150SM01-L364F08Y	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-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-FY07NIA100S503-M515F58	1200	100	IGBT S5	
10-F106NIA150SA-M136F	1200	150	IGBT3	
10-PY07NIB150SG-M136F38Y	1200	150	IGBT3 HS	
10-F107NIB150SG06-M136F39	1200	150	IGBT3 HS	
10-P107NIB150SG06-M136F39Y	1200	150	IGBT3 HS	
10-FY07NIA150S5-M516F58	1200	150	IGBT S5	
10-FY07NIA150S502-L365F58	1200	150	IGBT S5	
10-PY07NIA150S502-L365F58Y	1200	150	IGBT S5	
10-PY07NIA200S503-L366F53Y	1200	200	IGBT S5	
10-FY07NIA200RG-L366F63	1200	200	IGBT fast	
10-PY07NIA200RG-L366F63Y	1200	200	IGBT fast	
10-FY07NIB200S504-LH46F58	1200	200	IGBT S5	

flow3xNPC 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



Schematics see page: 199
More details: www.vincotech.com/flow3xNPC-1

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

flowNPC 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



Schematics see page: 199
More details: www.vincotech.com/flowNPC-1-split

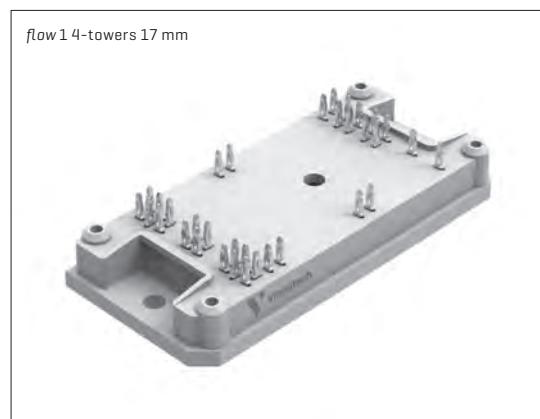
Part-No	I Voltage [V]	I Current [A]	I Technology	I Comments
NPC-Split-KE-Pos-NTC				
10-F124NID150SH03-LG18F98	2400	150	IGBT4 HS	tandem diodes
10-F124NID200SH03-LG19F98	2400	200	IGBT4 HS	tandem diodes
NPC-Split-KE-Neg-NTC				
10-F124NIE150SH03-LG28F98	2400	150	IGBT4 HS	complementary to LG18F98; tandem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

flowNPC 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-off
- / Low inductive commutation loop
- / Temperature sensor



Schematics see page: 199
More details: www.vincotech.com/flowNPC-1-MOS

Part-No	I Voltage [V]	I Current [A]	I Technology	I Comments
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NPC-KE-Split Output-NTC

10-PY06NRA041FS-M413FY	1200	50	Infineon CoolMOS™ C6 SiC diode	
10-PY06NRA021FS-M410FY	1200	60	Infineon CoolMOS™ C6 SiC diode	

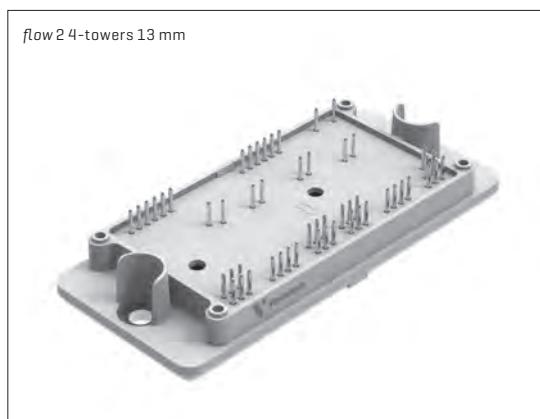
flowNPC 2**Available Housings:**

- / 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



Schematics see page: 199
More details: www.vincotech.com/flowNPC-2

Part-No	I Voltage [V]	I Current [A]	I Technology	I Comments
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NPC-KE-NTC

30-F206NIA200SA-M105F	1200	200	IGBT3
30-F206NIA200SG-M105F25	1200	200	IGBT3 HS
30-FT07NIB200SG02-L965F08	1200	200	IGBT3 HS
30-PT07NIB200SG02-L965F08Y	1200	200	IGBT3 HS
30-F206NIA300SA-M106F	1200	300	IGBT3
30-FT07NIB300S502-LE06F58	1200	300	IGBT S5
30-PT07NIB300S502-LE06F58Y	1200	300	IGBT S5
30-FT07NIA320RV-LE06F68	1200	320	IGBT fast
30-PT07NIA320RV-LE06F68Y	1200	320	IGBT fast

NPC-Split-KE-NTC-Tandem diodes

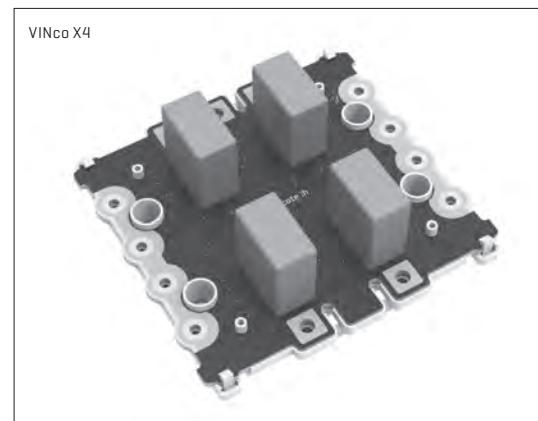
30-FT12NIA150SH-LG09F08	2400	150	IGBT4 HS	tandem diodes
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NPC-KE-Cap-NTC

30-FT07NIB300S503-LH36F58	1200	300	IGBT S5
30-PT07NIB300S503-LH36F58Y	1200	300	IGBT S5

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

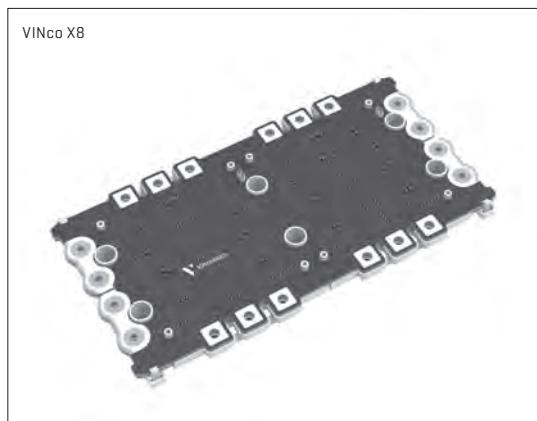


Schematics see page: 199
More details: www.vincotech.com/VINcoNPC-X4

Part-No	I Voltage [V]	I Current [A]	I Technology	I 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



Schematics see page: 199
More details: www.vincotech.com/VINcoNPC-X8

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

THREE-LEVEL NPC [I-TYPE]

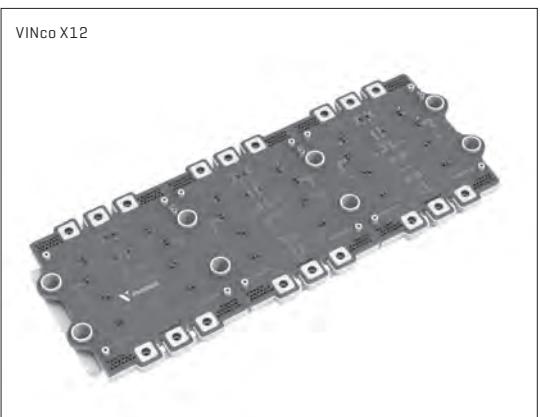
VINcoNPC X12

Available Housings:

/ VINco X12

Possible Features:

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



Schematics see page: 199
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	
70-W624NIA1K2M702-L400FP70	2400	1200	IGBT M7	
70-W624NIA1K8M701-LD00FP70	2400	1800	IGBT M7	



TOC

RECTIFIER [+BRAKE]

ULTRAFAST RECTIFIER

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]

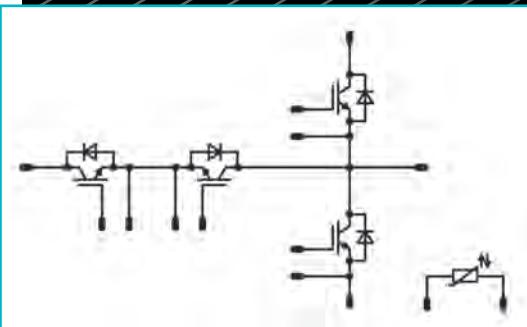
Three-level ANPC

Schematics / Housings

Naming System

Application:
/ SOLAR INVERTERS / UPS

Topology Features:
/ Three-level MNPC [T-Type]



flowMNPC 0**Available Housings:**

- / flow Ø 2-clips 12 mm
- / flow Ø 2-clips 17 mm

Possible Features:

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



Schematics see page: 200
More details: www.vincotech.com/flowMNPC-0

Part-No	Voltage [V]	Current [A]	Technology	Comments
MNPC [T-type]-KE-NTC				
10-FZ07NMA100SM-M265F58	650	100	IGBT H5	
10-PZ07NMA100SM-M265F58Y	650	100	IGBT H5	
10-PZ12NMA040SH-M267FY	1200	40	IGBT4 HS	
10-FZ12NMA040SH-M267F	1200	40	IGBT4 HS	
10-FZ12NMA080SH23-M260F03	1200	80	IGBT4 HS	
10-PZ12NMA080SH23-M260F03Y	1200	80	IGBT4 HS	
10-PZ12NMA080SH01-M260FY	1200	80	IGBT4 HS	
10-FZ12NMA080SH04-M260F13	1200	80	IGBT4 HS	
10-PZ12NMA080SH04-M260F13Y	1200	80	IGBT4 HS	
10-FZ12NMA080NS03-M260F38	1200	80	Trench Field Stop II IGBT	
10-PZ12NMA080NS03-M260F38Y	1200	80	Trench Field Stop II IGBT	
10-PZ12NMA080NS07-M260F78Y	1200	80	Trench Field Stop II IGBT	
10-PF12NMA080SH08-M260F98T	1200	80	IGBT4 HS	
10-FZ12NMA080SH-M269F	1200	80	IGBT4 HS	
10-FZ12NMA080SH01-M260F	1200	80	IGBT4 HS	
10-PZ12NMA080SH-M269FY	1200	80	IGBT4 HS	
10-F012NME080SH-M910F09	1200	80	IGBT4 HS	ultra fast diodes improved LVRT
10-P012NME080SH-M910F09Y	1200	80	IGBT4 HS	Ultra fast diodes improved LVRT
MNPC [T-type]-KE-Cap-NTC				
10-FZ12NMA080SM01-L740F58	1200	80		Trench Field Stop IGBT

flowMNPC 0 SiC**Available Housings:**

- / flow Ø 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



Schematics see page: 200
More details: www.vincotech.com/flowMNPC-0-SiC

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

flowMNPC 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



Schematics see page: 200
More details: www.vincotech.com/flowMNPC-1

Part-No	I Voltage [V]	I Current [A]	I Technology	I Comments
MNPC [T-type]-KE-NTC				
10-FY07NMA150S5-M824F58	650	150	IGBT S5	
10-PY07NMA150S5-M824F58Y	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-FY12NMA160SH01-M820F18	1200	160	IGBT4 HS	Improved LVRT
10-PY12NMA160SH01-M820F18Y	1200	160	IGBT4 HS	Improved LVRT
10-FY12NMA160SH09-M820F98	1200	160	IGBT4 HS	

flow3xMNPC 1**Available Housings:**

- / flow 1 4-towers 17 mm

Possible Features:

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



Schematics see page: 200
More details: www.vincotech.com/flow3xMNPC-1

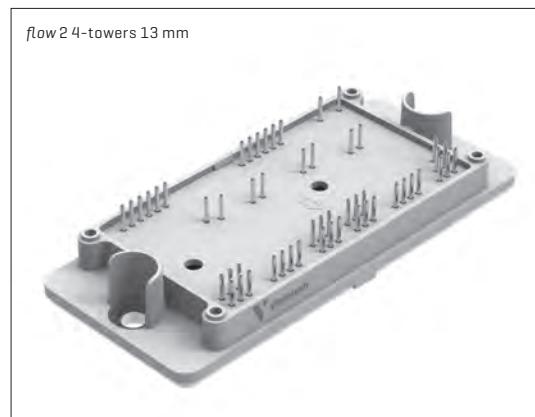
Part-No	I Voltage [V]	I Current [A]	I Technology	I Comments
3xMNPC [T-type]-KE-NTC				
10-FY12M3A025SH-M746F08	1200	25	IGBT4 HS	IGBT4 HS, IGBT3
10-PY12M3A025SH-M746F08Y	1200	25	IGBT4 HS	IGBT4 HS, IGBT3
10-F112M3A025SH-M746F09	1200	25	IGBT4 HS	IGBT4 HS, IGBT3
10-P112M3A025SH-M746F09Y	1200	25	IGBT4 HS	IGBT4 HS, IGBT3
10-FY12M3A040SH-M749F08	1200	40	IGBT4 HS	IGBT4 HS, IGBT3
10-PY12M3A040SH-M749F08Y	1200	40	IGBT4 HS	IGBT4 HS, IGBT3
10-F112M3A040SH-M749F09	1200	40	IGBT4 HS	IGBT4 HS, IGBT3
10-PY12M3A040SH-M749F09Y	1200	40	IGBT4 HS	IGBT4 HS, IGBT3

flowMNPC 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



Schematics see page: 200
More details: www.vincotech.com/flowMNPC-2

Part-No	I Voltage [V]	I Current [A]	I Technology	I Comments
MNPC [T-type]-KE-Split Output-NTC				
30-FT12NMA160SH-M669F08	1200	160	IGBT4 HS	
30-FT12NMA160SH02-M669F28	1200	160	IGBT4 HS	
30-PT12NMA160SH02-M669F28Y	1200	160	IGBT4 HS	
30-FT12NMA200SH-M660F08	1200	200	IGBT4 HS	
30-PT12NMA200SH-M660F08Y	1200	200	IGBT4 HS	
30-FT12NMA200SH01-M660F18	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



Schematics see page: 200
More details: www.vincotech.com/VINcoMNPC-X4

Part-No	I Voltage [V]	I Current [A]	I Technology	I Comments
MNPC [T-type]-KE-NTC				
70-W212NMA400NB02-M209P62	1200	400	IGBT M6	
70-W212NMA600NB02-M200P62	1200	600	IGBT M6	
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-W212NMA600NB04-M200P60	1200	600	IGBT M6	
70-W212NMC600SH01-M700P	1200	600	IGBT4 HS	
70-W212NMA800M7-LC00F70	1200	800	GBT M7	

THREE-LEVEL MNPC (T-TYPE)

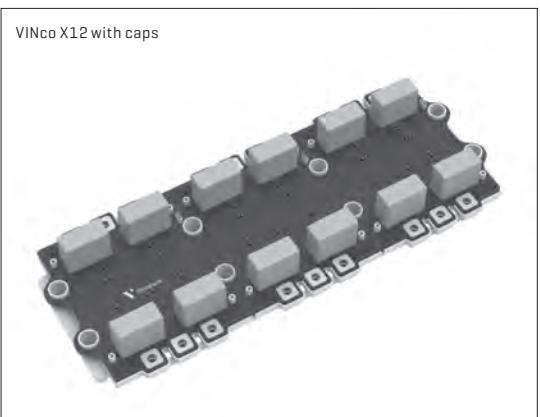
VINcoMNPC X12

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



Schematics see page: 200
More details: www.vincotech.com/VINcoMNPC-X12

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

TOC

RECTIFIER (+BRAKE)

ULTRAFAST RECTIFIER

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)

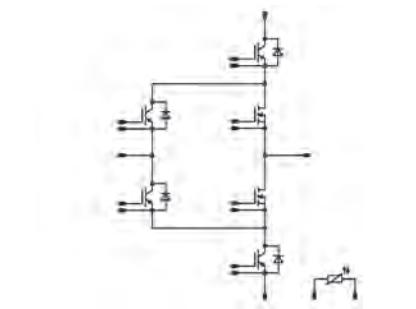
Three-level NPC (I-Type)

Three-level MNPC (T-Type)

Three-level ANPC

Schematics / Housings

Naming System



flowANPC 1**Available Housings:**

- / flow 1 4 towers 12 mm

Possible Features:

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



Schematics see page: 201
More details: www.vincotech.com/flowANPFC-1

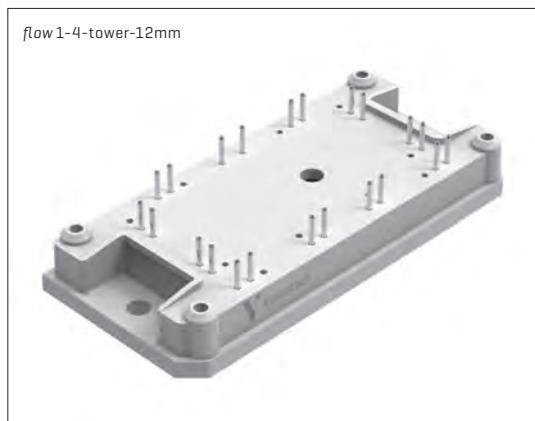
Part-No	I Voltage [V]	I Current [A]	I Technology	I Comments
ANPC-split-Pos-NTC 10-PG12NAB008MR04-LC59F46T	2400	150	SiC MOSFET	
ANPC-split-Neg-NTC 10-PG12NAC008MR04-LC69F46T	2400	150	SiC MOSFET	

flowANPC 1 split**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



Schematics see page: 201
More details: www.vincotech.com/flowANPC-1-split

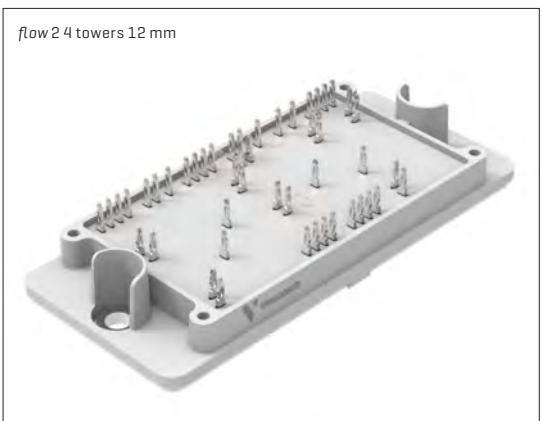
Part-No	I Voltage [V]	I Current [A]	I Technology	I Comments
ANPC-split-Pos-NTC 10-PG12NAB008MR02-LC59F36T	2400	150	SiC MOSFET	complementary to LC69F36T
10-PG12NAB008MR04-LC59F46T	2400	150	SiC MOSFET	complementary to LC69F46T
ANPC-split-Neg-NTC 10-PG12NAC008MR02-LC69F36T	2400	150	SiC MOSFET	
10-PG12NAC008MR04-LC69F46T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

flowANPC 2**Available Housings:**

/ flow 2 4 towers 12 mm

Possible Features:

- / Advanced Neutral Point Clamped topology
- / Integrated snubber capacitor
- / Split output for improved switching performance
- / Temperature sensor



Schematics see page: 201
More details: www.vincotech.com/flowANPFC-2

Part-No	Voltage [V]	Current [A]	Technology	Comments
ANPC-split-NTC-Cap-KE 30-PT07NAA300S501-LF64F58Y	1200	300	IGBT S5	

TOC

RECTIFIER (+BRAKE)

ULTRAFAST RECTIFIER

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)

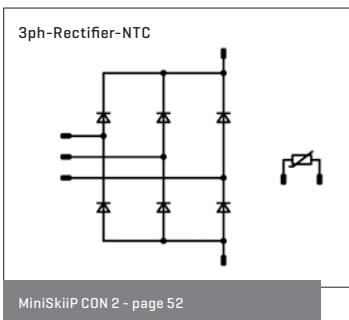
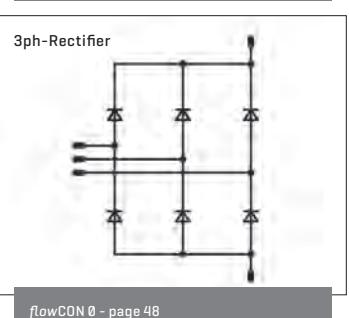
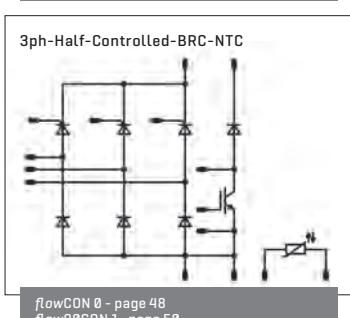
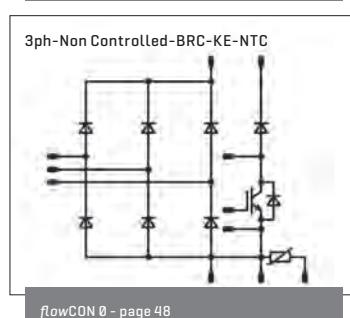
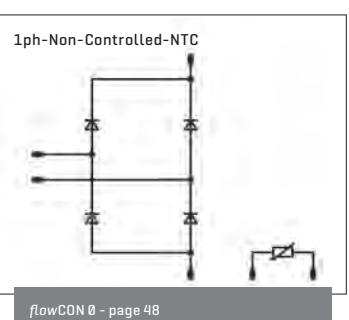
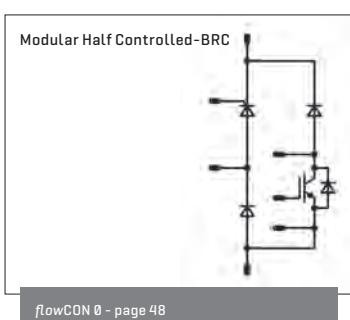
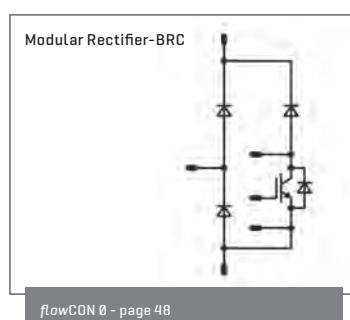
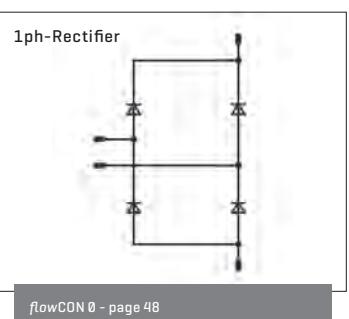
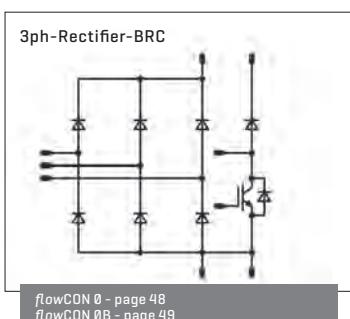
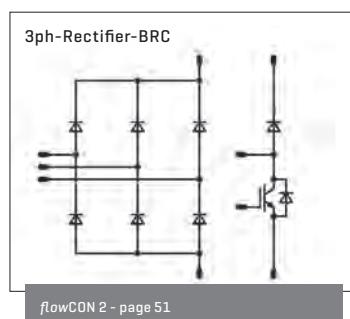
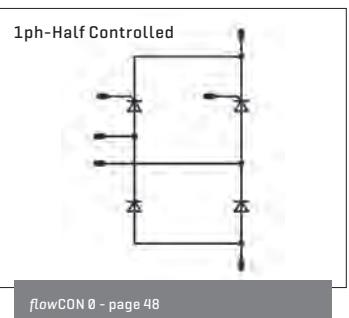
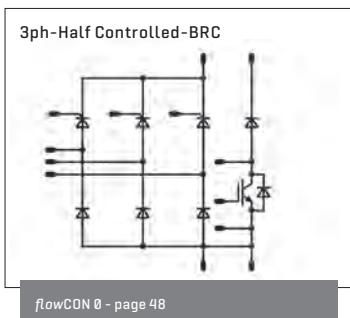
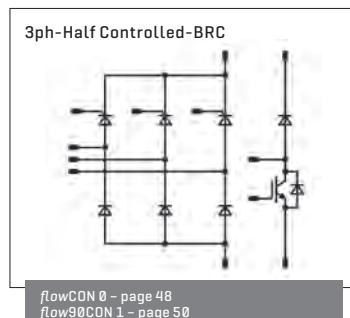
Three-level NPC (I-Type)

Three-level MNPC (T-Type)

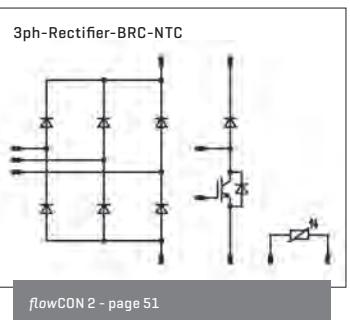
Three-level ANPC

SCHEMATICS / HOUSINGS

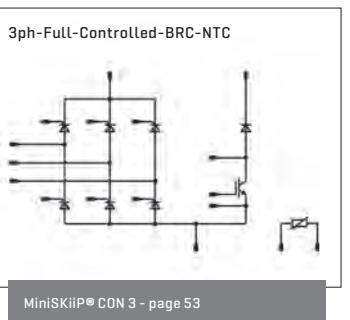
Naming System

RECTIFIER (+BRAKE)

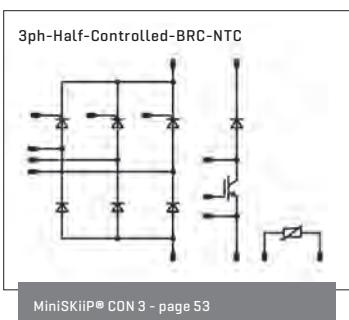
MiniSKiiP CON 2 - page 52



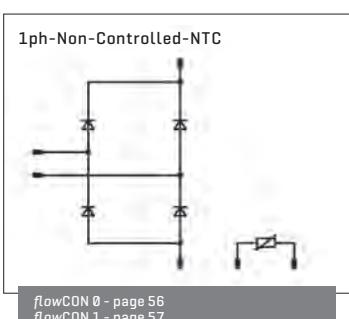
flowCON 2 - page 51



MiniSKiiP® CON 3 - page 53

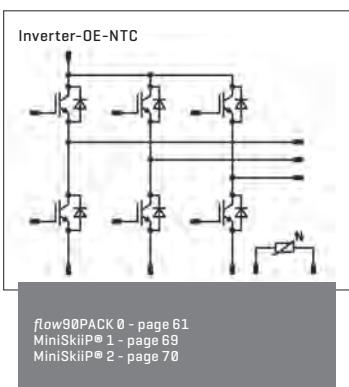
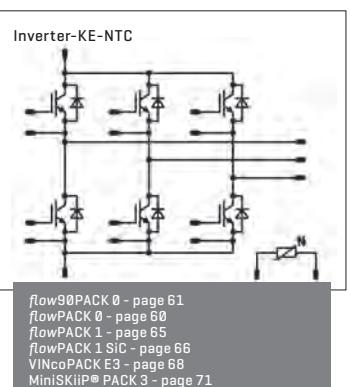
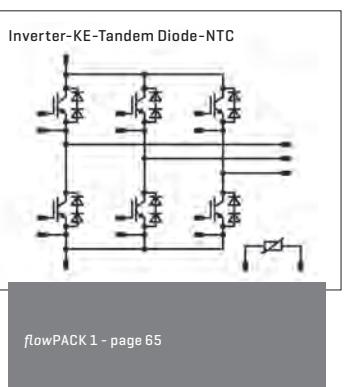


MiniSKiiP® CON 3 - page 53

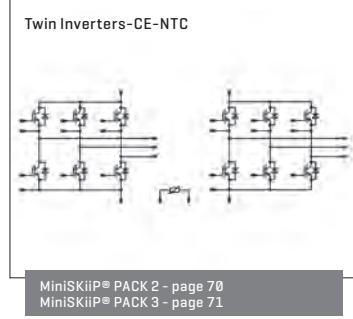
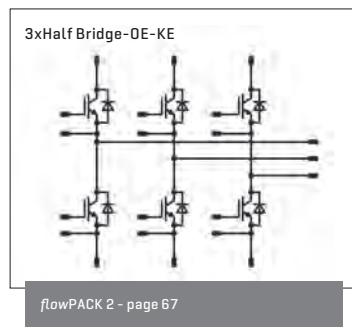
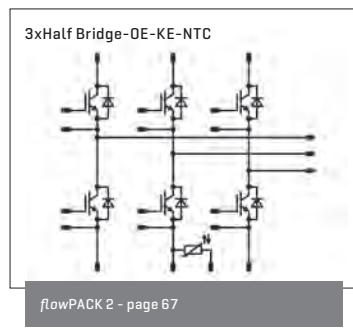
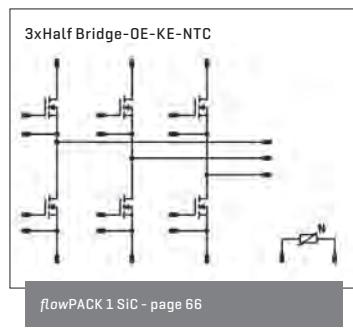
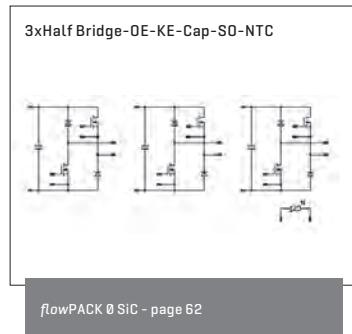
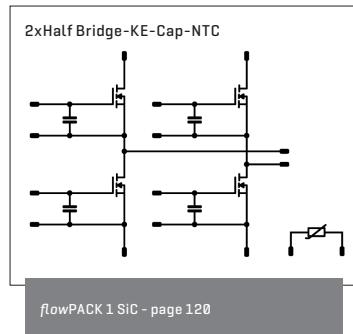
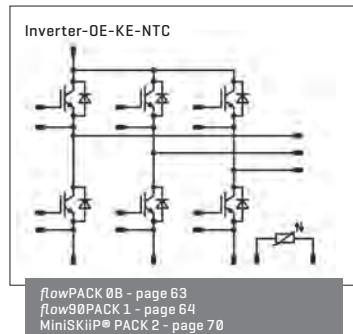
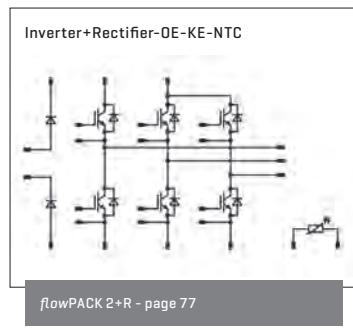
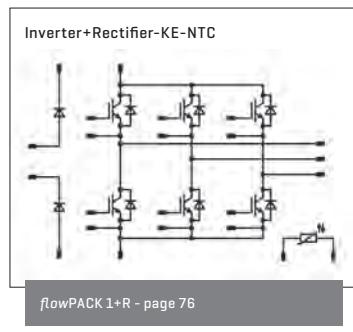
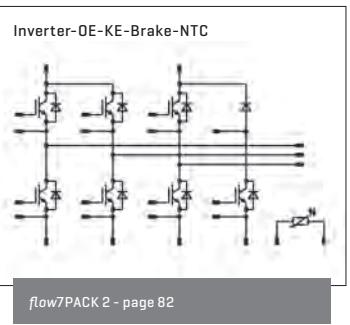
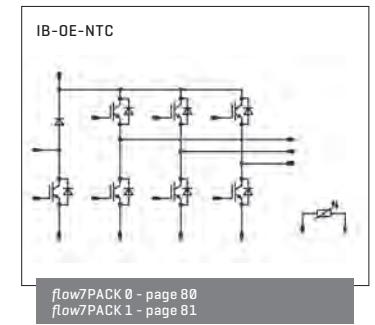
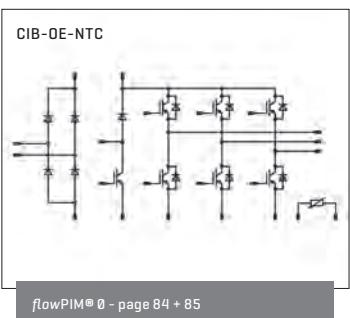
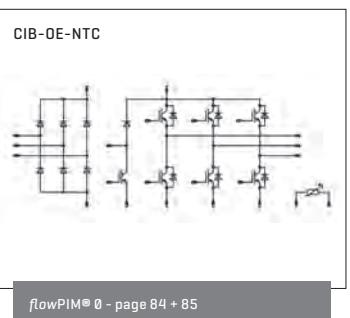
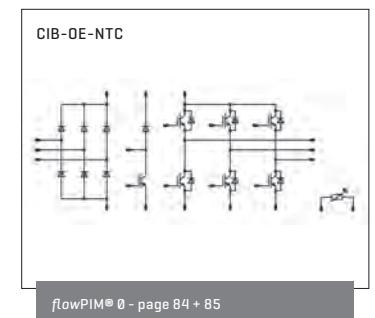
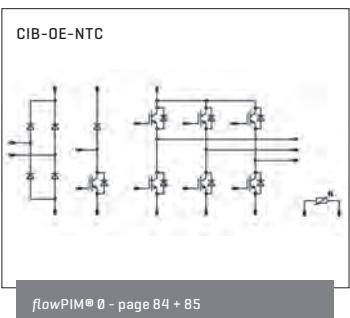
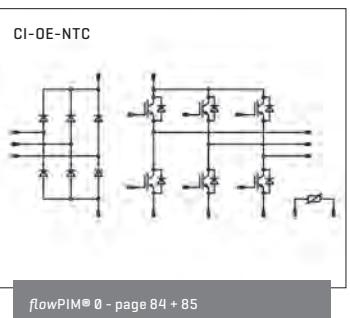
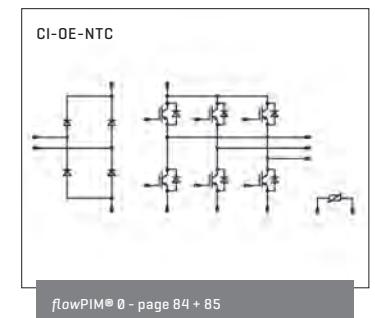
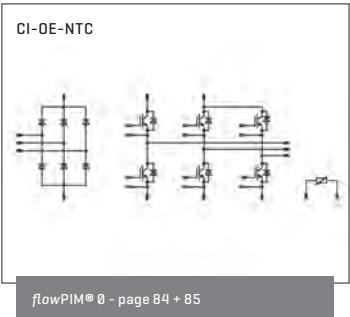
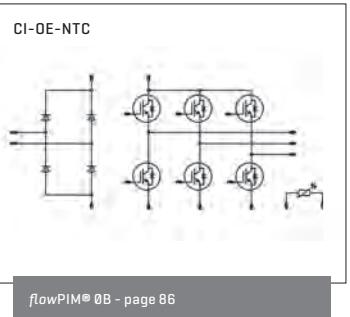
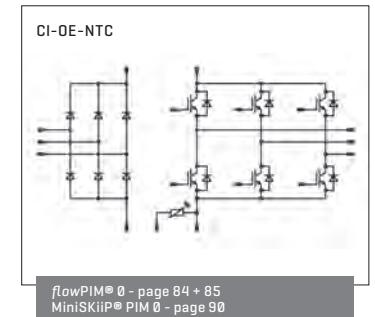
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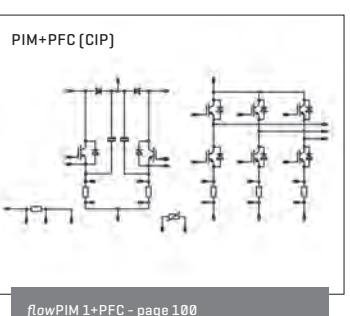
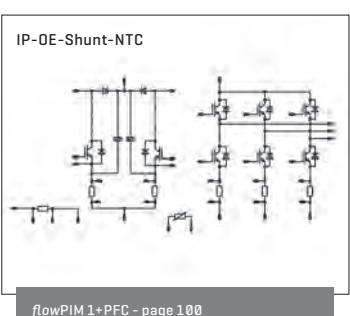
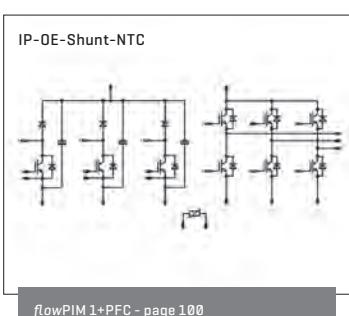
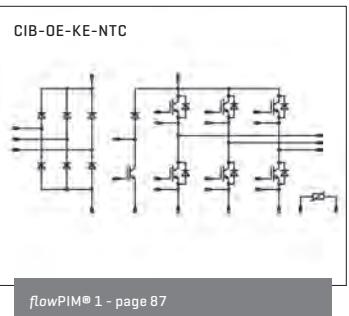
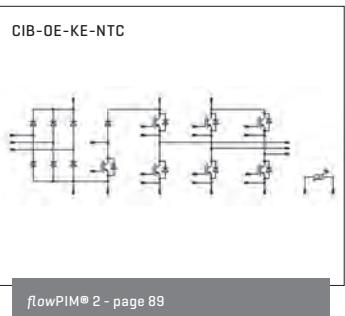
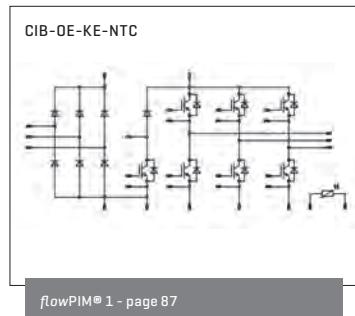
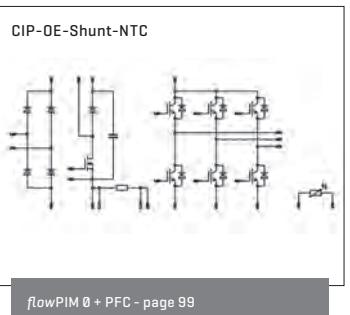
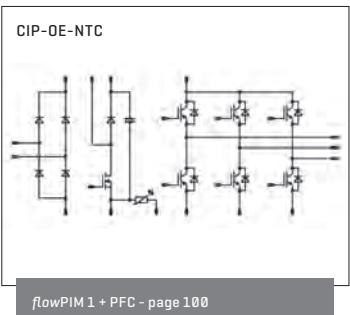
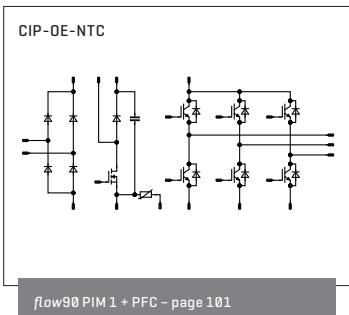
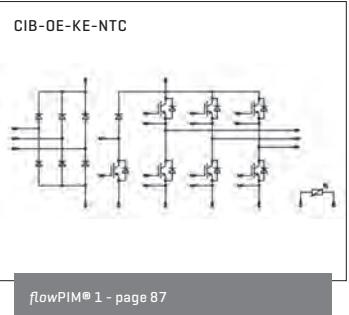
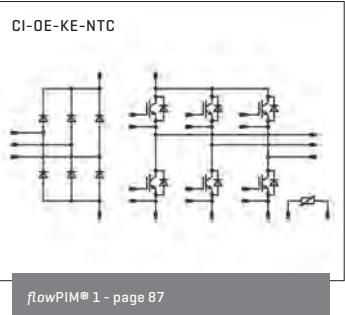
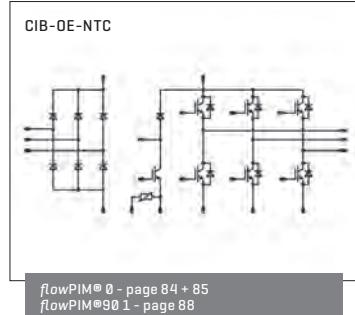
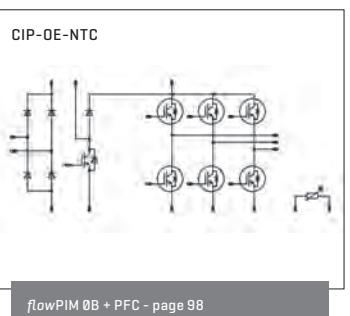
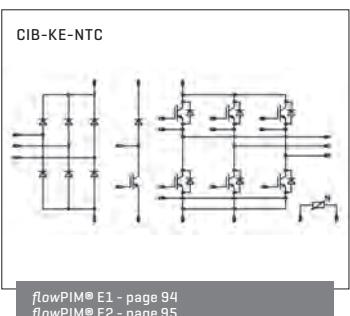
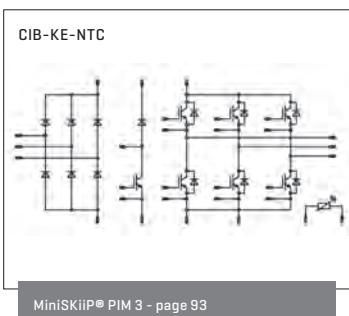
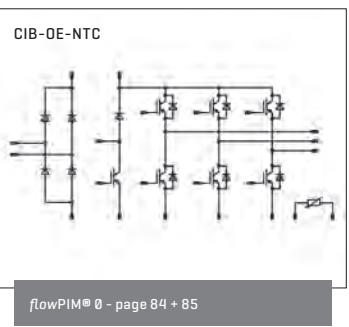
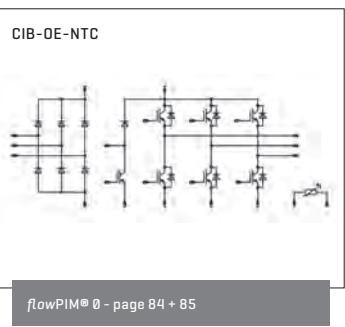
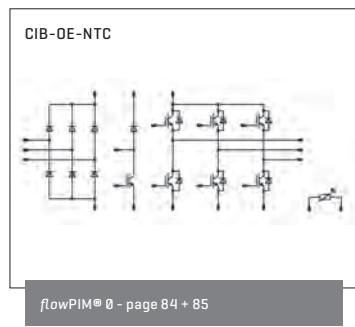
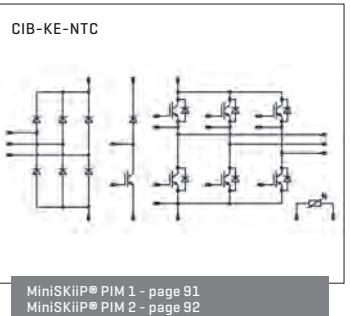
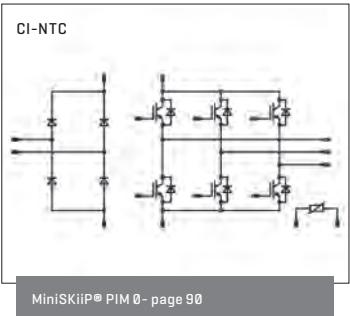
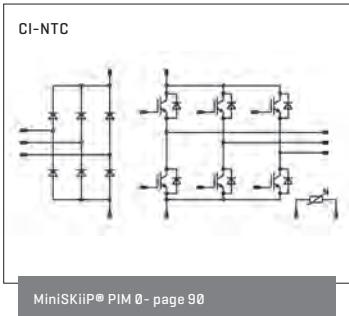
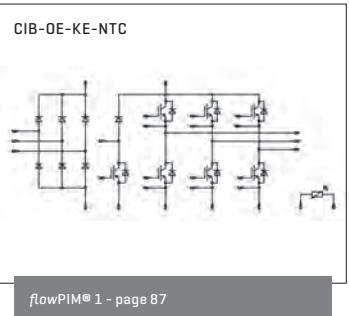
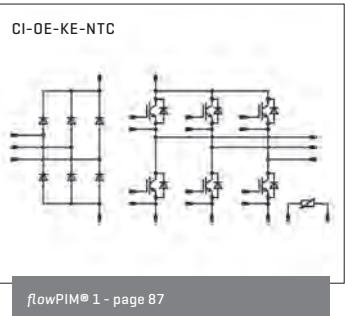
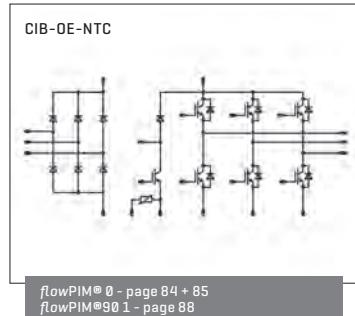
flowCON 0 - page 56

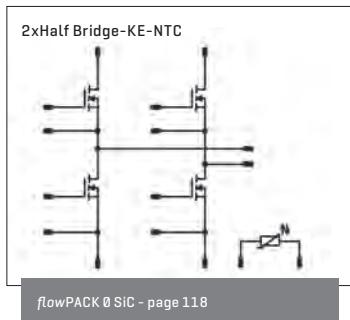
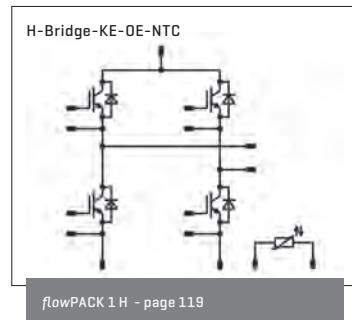
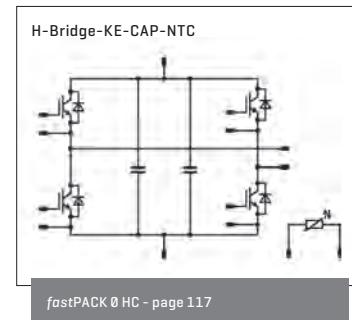
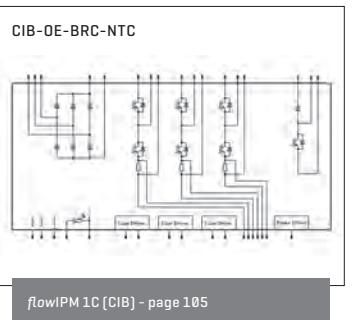
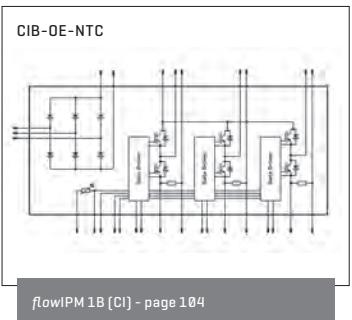
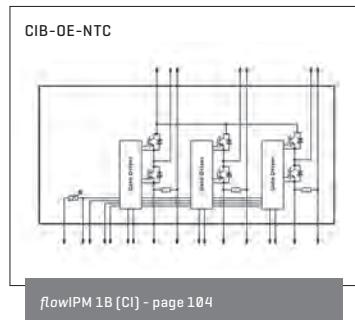
flowCON 1 - page 57

Sixpackflow90PACK 0 - page 61
MiniSKiiP® 1 - page 69
MiniSKiiP® 2 - page 70flowPACK 0 - page 60
flowPACK 1 - page 65
flowPACK 1 SiC - page 66
VINcoPACK E3 - page 68
MiniSKiiP® PACK 3 - page 71

flowPACK 1 - page 65

**Sixpack+Rectifier****Sevenpack****PIM [CIB]**



IPM [CIB]

flowIPM 1B [CI] - page 104

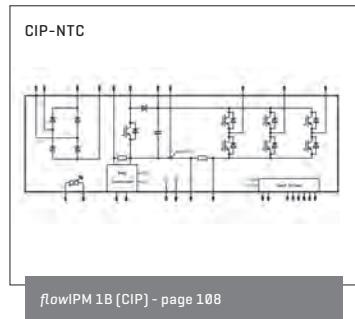
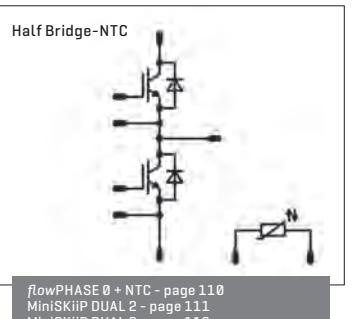
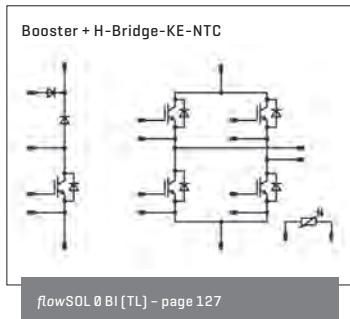
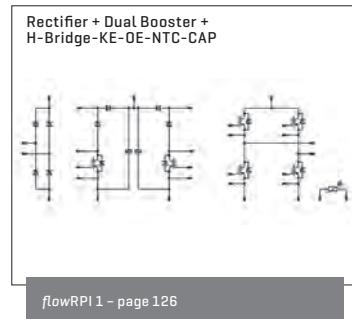
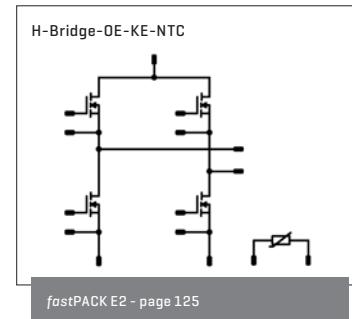
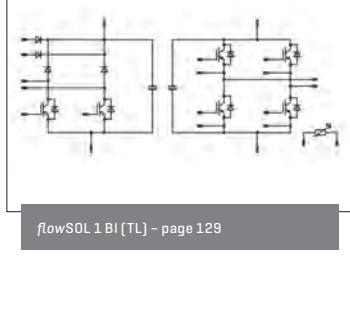
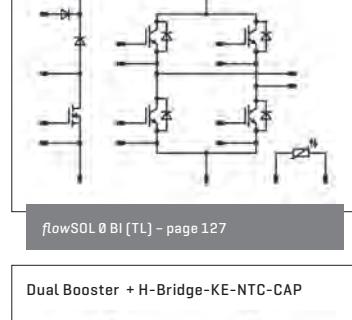
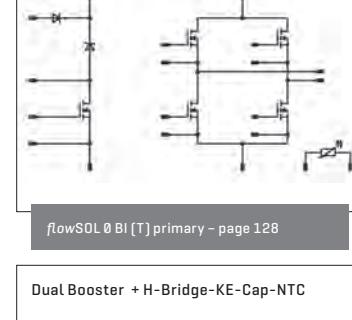
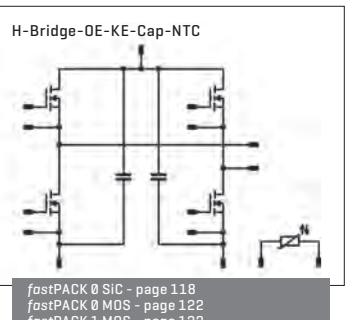
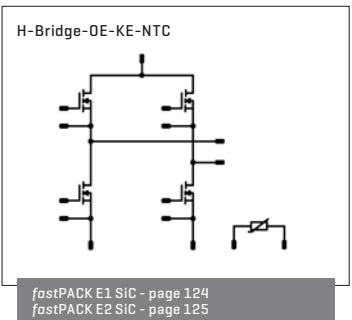
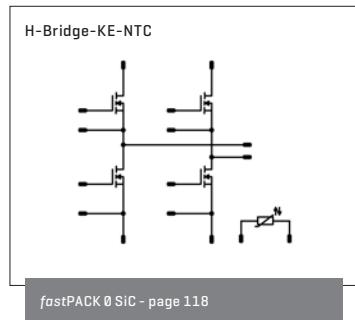
flowIPM 1B [CI] - page 104

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IPM [CIP/PIM+PFC]**Half-Bridge**flowPHASE 0 + NTC - page 110
MiniSKiiP DUAL 2 - page 111
MiniSKiiP DUAL 3 - page 112
VINcoDUAL E2 - page 113**H-Bridge**

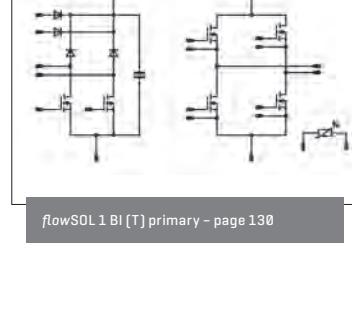
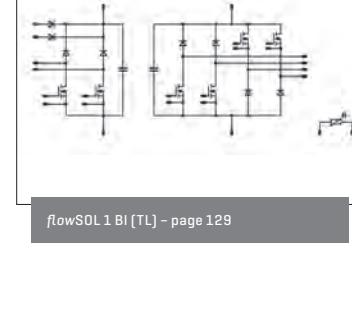
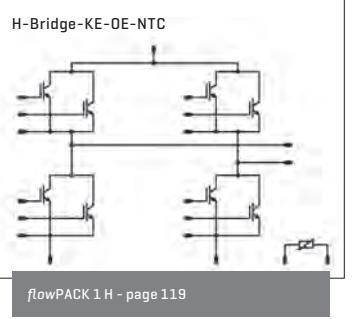
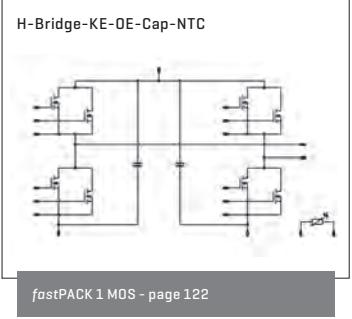
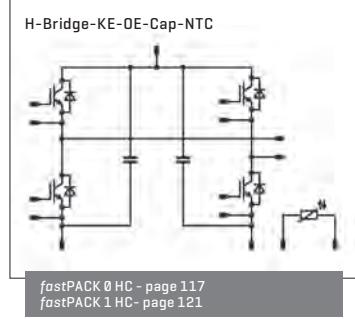
fastPACK 0 SiC - page 118

fastPACK E1 SiC - page 124
fastPACK E2 SiC - page 125fastPACK 0 SiC - page 118
fastPACK 0 MDS - page 122
fastPACK 1 MOS - page 122

flowSOL 0 BI [T] primary - page 128

flowSOL 0 BI [TL] - page 127

flowSOL 1 BI [TL] - page 129

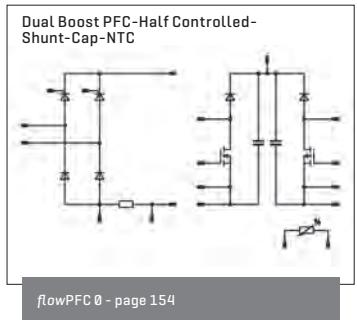
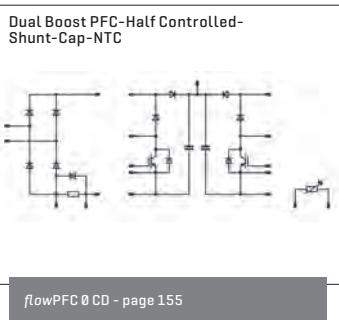
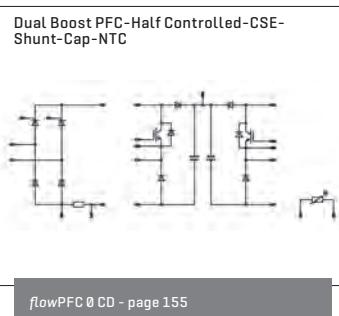
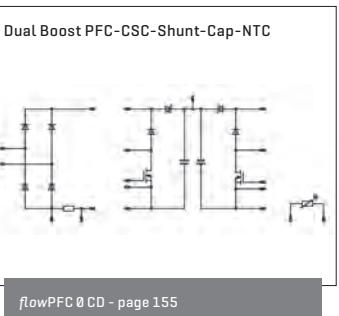
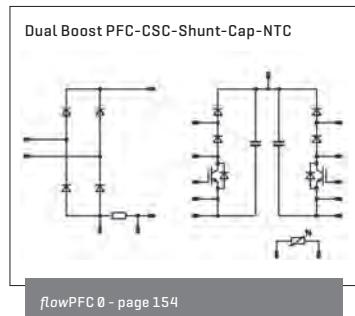
fastPACK 0 HC - page 117
fastPACK 1 HC - page 121

fastPACK 1 MOS - page 122

flowPACK 1 H - page 119

flowSOL 1 BI [TL] - page 129

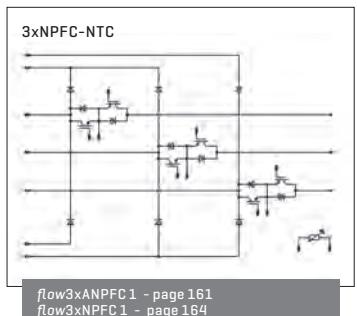
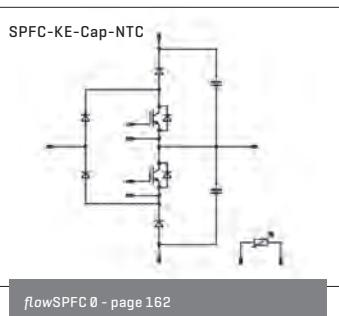
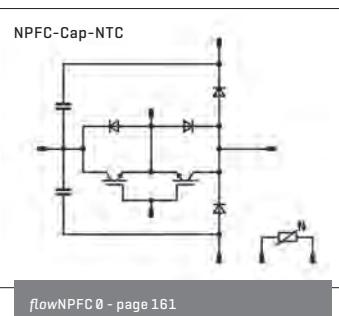
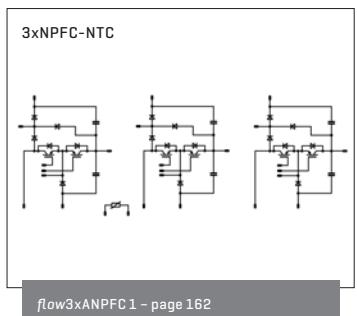
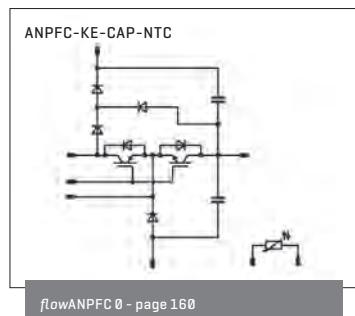
flowSOL 1 BI [T] primary - page 130

PFC [Single-phase applications]

flowPFC 0 - page 154

flowPFC 0 CD - page 155

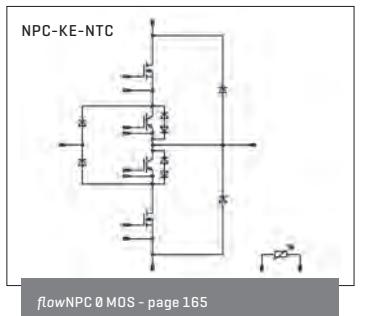
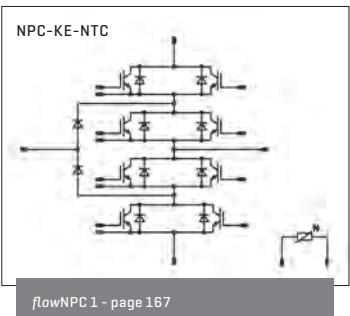
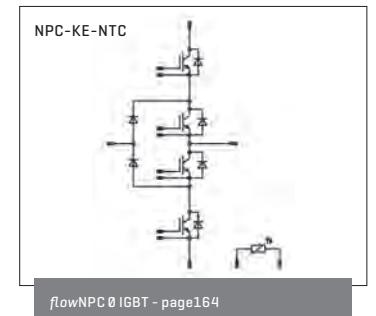
flowPFC 0 CD - page 155

PFC [Three-phase applications]

flowSPFC 0 - page 162

flow3xANPFC 1 - page 161

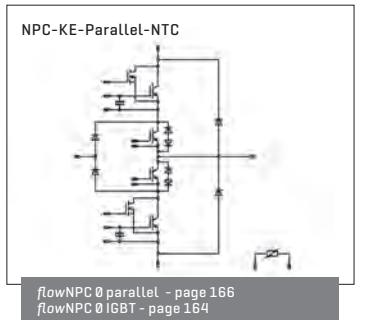
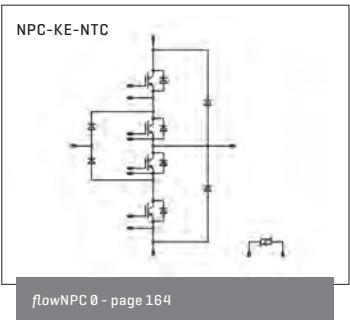
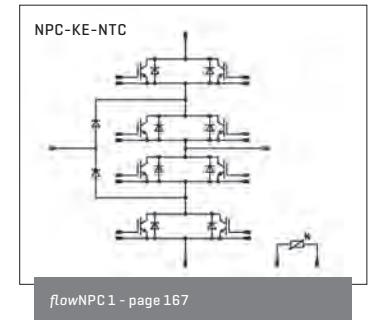
flow3xNPFC 1 - page 164

Three-level NPC [I-Type]

flowNPC 0 IGBT - page 164

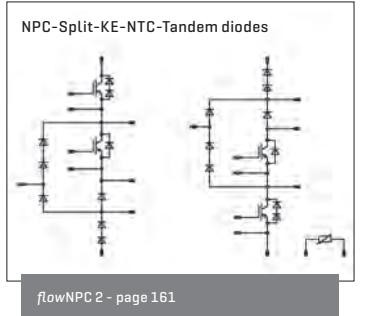
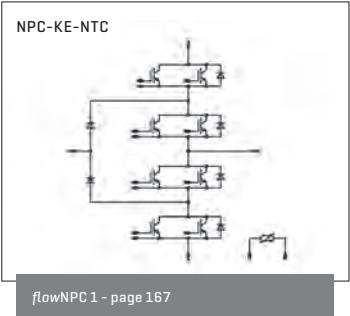
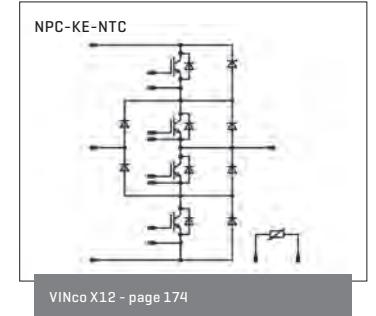
flowNPC 1 - page 167

flowNPC 0 MOS - page 165



flowNPC 1 - page 167

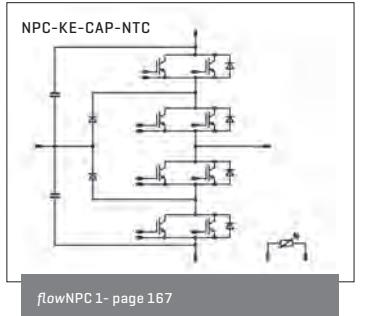
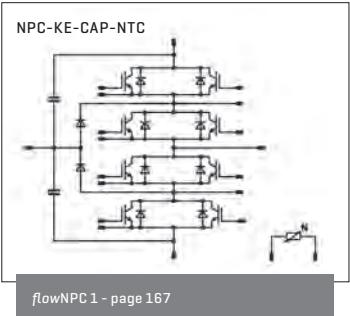
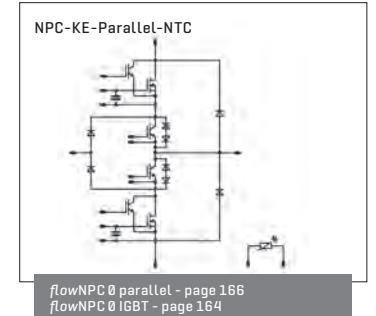
flowNPC 0 - page 164

flowNPC 0 parallel - page 166
flowNPC 0 IGBT - page 164

VINco X12 - page 174

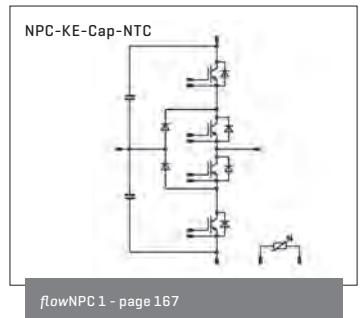
flowNPC 1 - page 167

flowNPC 2 - page 161

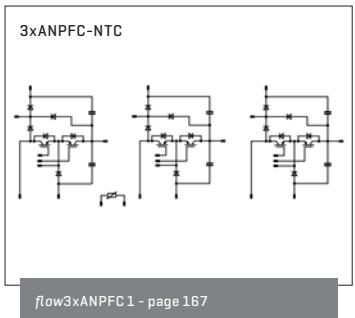
flowNPC 0 parallel - page 166
flowNPC 0 IGBT - page 164

flowNPC 1 - page 167

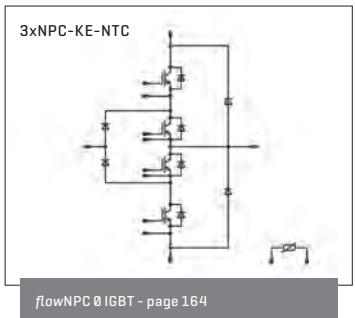
flowNPC 1 - page 167



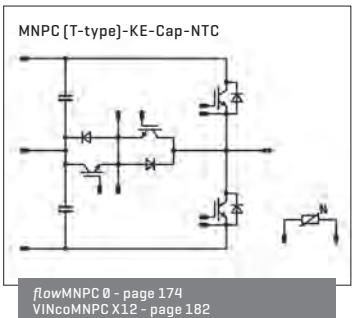
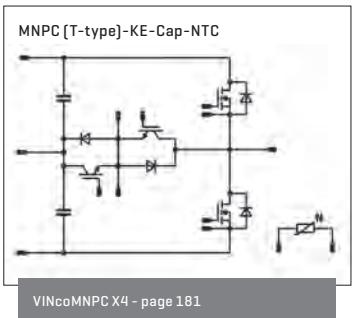
flowNPC 1 - page 167



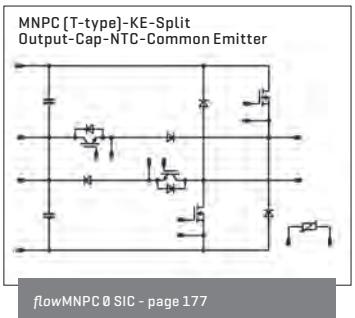
flow3xANPFC 1 - page 167



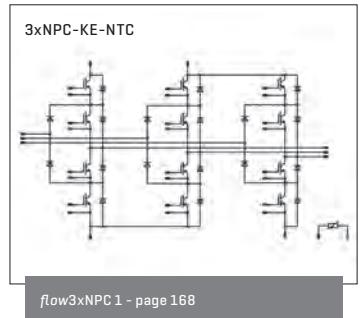
flowNPC 0 IGBT - page 164

flowMNPC 0 - page 174
VINcoMNPC X12 - page 182

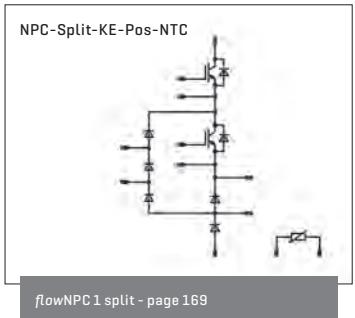
VINcoMNPC X4 - page 181



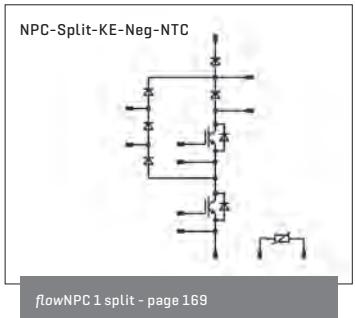
flowMNPC 0 SIC - page 177



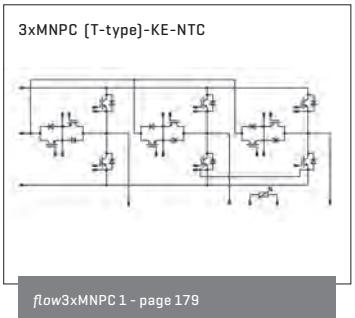
flow3xNPC 1 - page 168



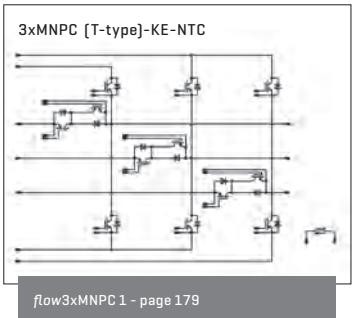
flowNPC 1 split - page 169



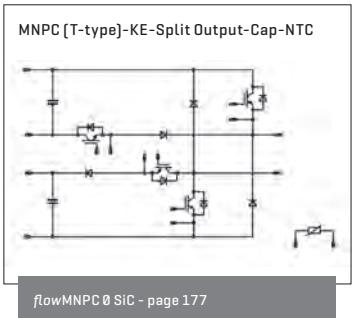
flowNPC 1 split - page 169



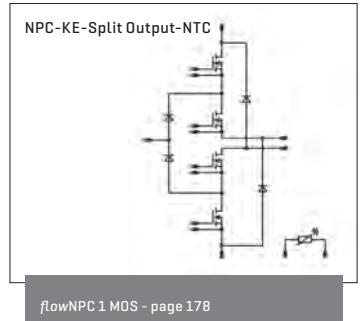
flow3xMNPC 1 - page 179



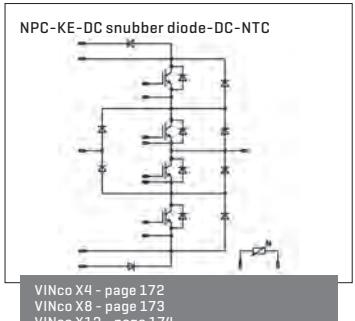
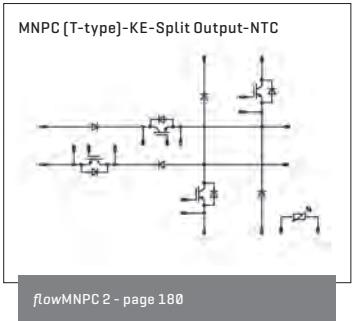
flow3xMNPC 1 - page 179



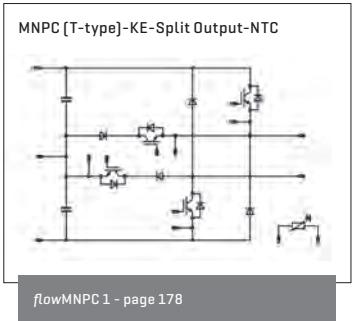
flowMNPC 0 SiC - page 177



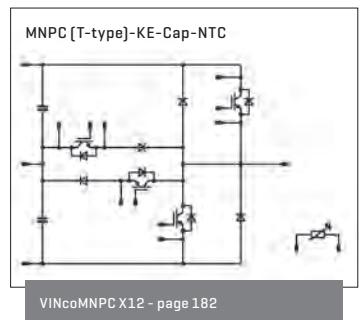
flowNPC 1 MOS - page 178

VINco X4 - page 172
VINco X8 - page 173
VINco X12 - page 174

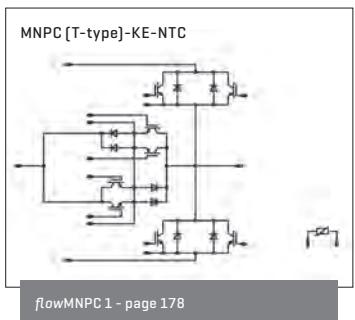
flowMNPC 2 - page 180



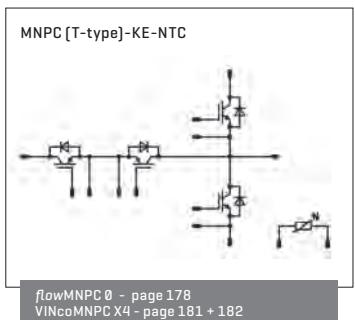
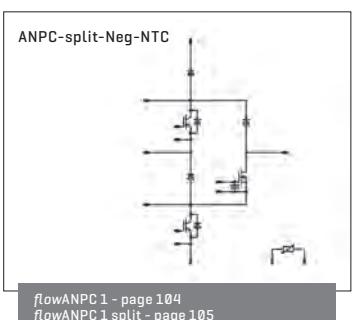
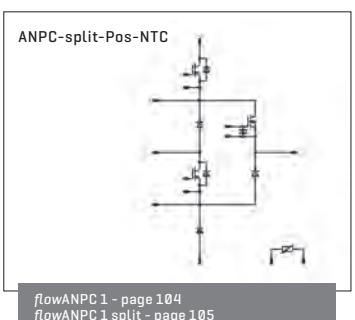
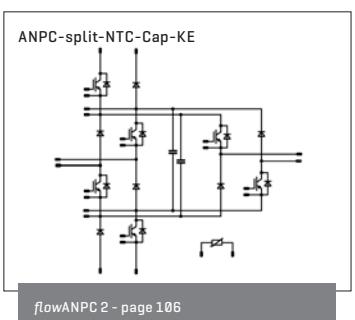
flowMNPC 1 - page 178

Three-level MNPC [T-Type]

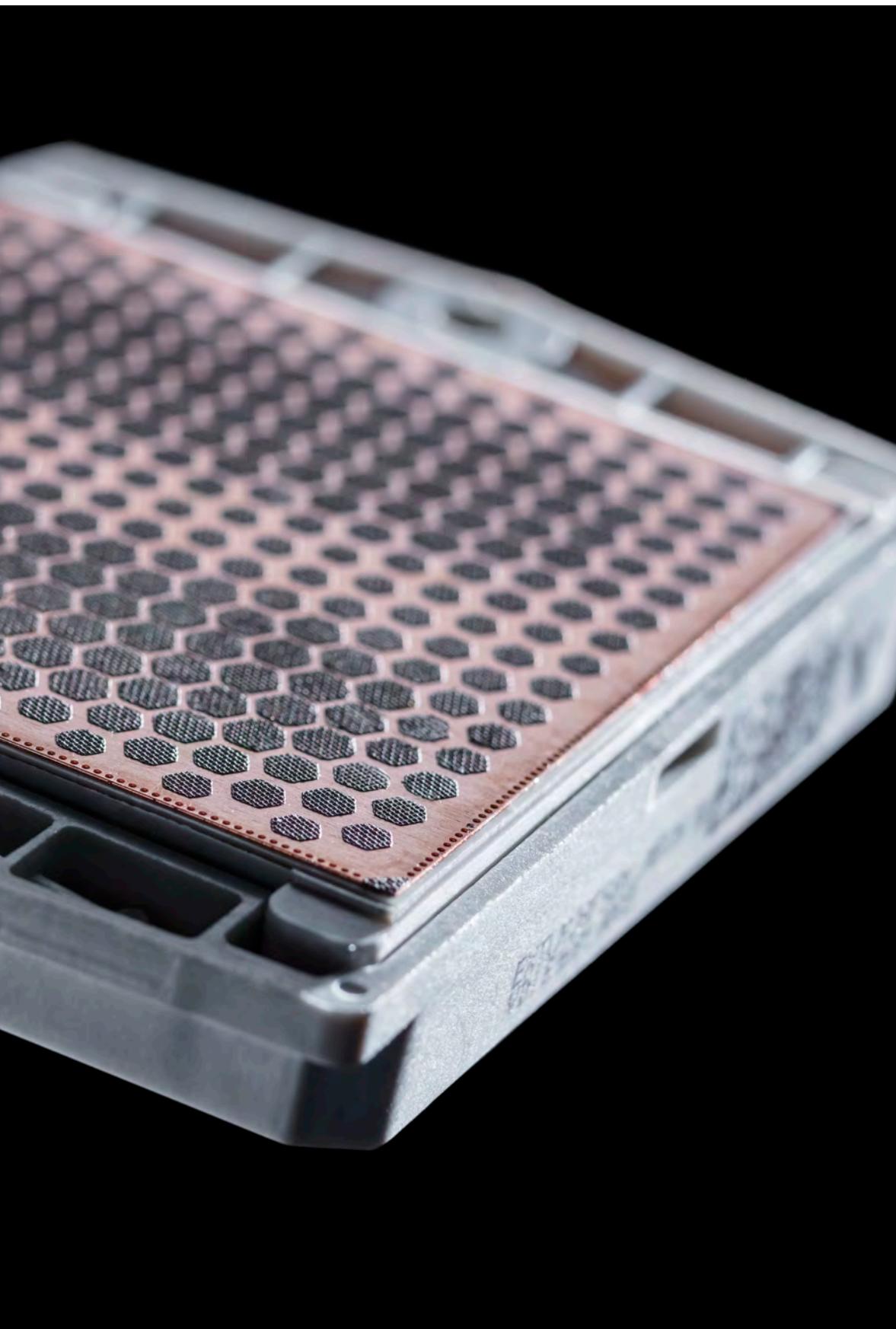
VINcoMNPC X12 - page 182



flowMNPC 1 - page 178

flowMNPC 0 - page 178
VINcoMNPC X4 - page 181 + 182**Three-level ANPC**flowANPC 1 - page 104
flowANPC 1 split - page 105flowANPC 1 - page 104
flowANPC 1 split - page 105

flowANPC 2 - page 106



Housing Items

flow housings

Housing	flow 0B	flow 0	flow 1	flow 1B	flow 1C	flow 2	flow90 0	flow90 1	flow E	flow S3
Electrical connection to PCB	Solder	Solder Press-fit	Solder Press-fit	Solder Press-fit	Solder Press-fit	Solder	Solder	Solder	Solder Press-fit	Solder Press-fit
Mechanical connection to PCB	screw	screw 2-clip 4-clip	screw	screw	screw	optional	2-clip	screw	screw	
Baseplate	□	□	□	□	□	■	□	□	□	□
Height [mm]	12 / 17	12 / 17	12 / 17	12 / 17	12	13 / 17	38	35	12	12

Screw Terminals

Housing	VINco E3	VINco X
Contacts	screw	screw Press-fit
Mechanical connection to PCB	screw	screw
Baseplate	■	■
Height [mm]	17	16

MiniSKiiP® Housings

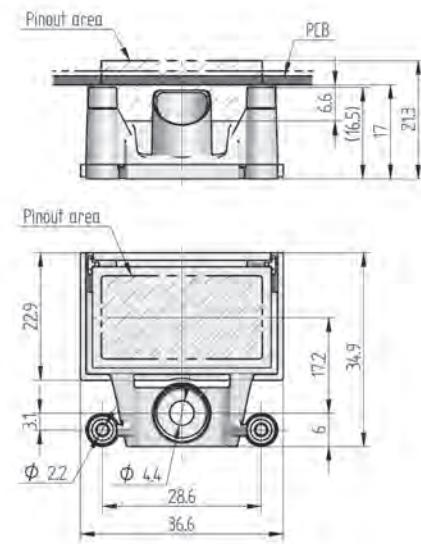
Housing	MiniSKiiP® 0	MiniSKiiP® 1	MiniSKiiP® 2	MiniSKiiP® 3
Contacts	spring	spring	spring	spring
Height [mm]	16	16	16	16

flow ØB 17 mm**Dimensions:**

Height: 17 mm
Length: 35 mm
Width: 37 mm

Features:

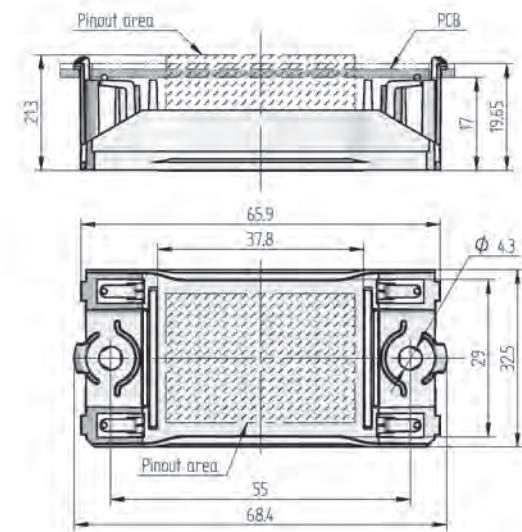
- / Single screw heat sink mounting
- / Ultra-compact design
- / Thermo-mechanical push-and-pull force relief
- / Optionally with phase-change material

**flow Ø 17 mm****Dimensions:**

Height: 17 mm
Length: 66 mm
Width: 33 mm

Features:

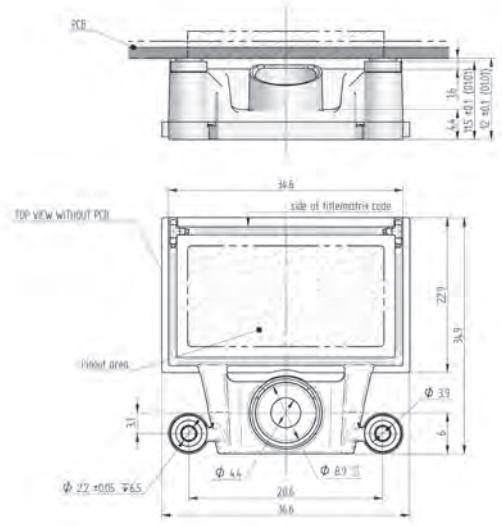
- / 2-clips for fast, easy assembly
- / qualified for wave soldering
- / Convex shaped substrate for superior thermal contact
- / Thermo-mechanical push-and-pull force relief

**flow ØB 12 mm****Dimensions:**

Height: 12 mm
Length: 35 mm
Width: 37 mm

Features:

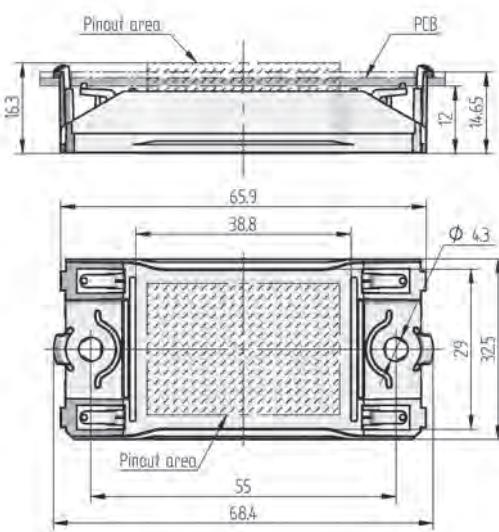
- / Single screw heat sink mounting
- / Ultra-compact design
- / Thermo-mechanical push-and-pull force relief
- / Optionally with phase-change material

**flow Ø 12 mm****Dimensions:**

Height: 12 mm
Length: 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

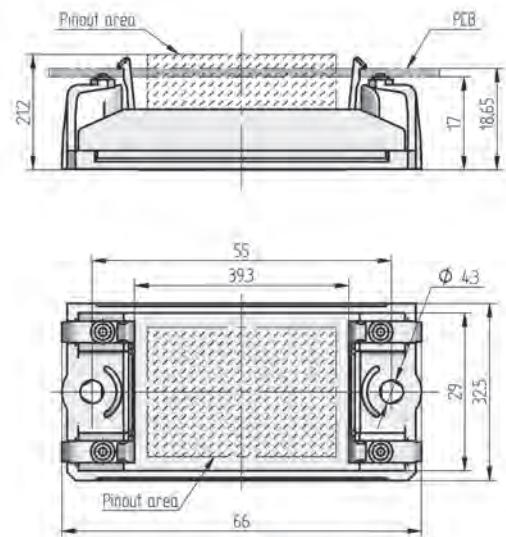


flow 0 17 mm 4-clip**Dimensions:**

Height: 17 mm
Length: 66 mm
Width: 33 mm

Features:

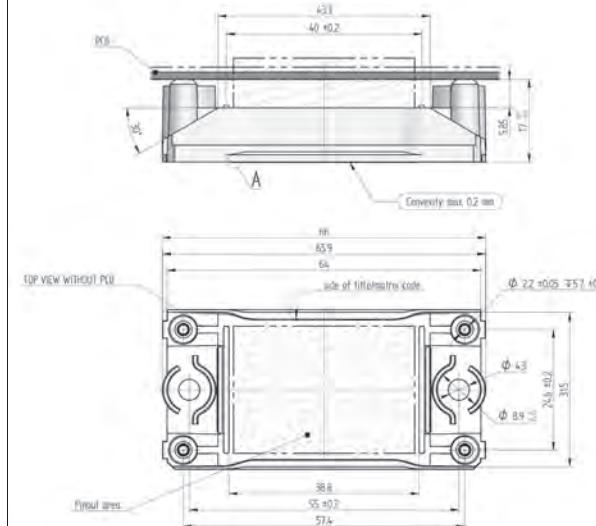
- / 4-clips for fast, easy assembly
- / qualified for wave soldering
- / Convex shaped substrate for superior thermal contact
- / Thermo-mechanical push-and-pull force relief

**flow 0 17 mm 4-tower****Dimensions:**

Height: 17 mm
Length: 66 mm
Width: 33 mm

Features:

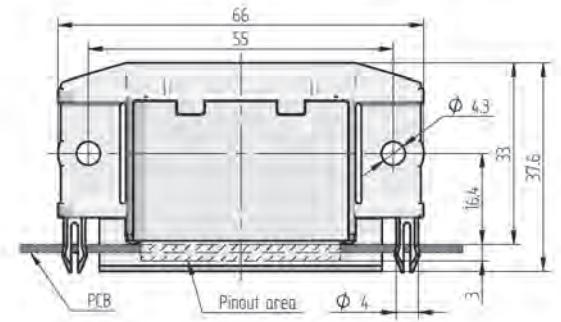
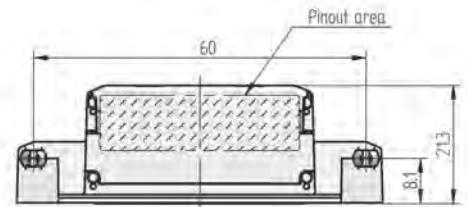
- / 4-towers
- / Convex shaped substrate for superior thermal contact
- / Thermo-mechanical push-and-pull force relief

**flow 90 0****Dimensions:**

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

Features:

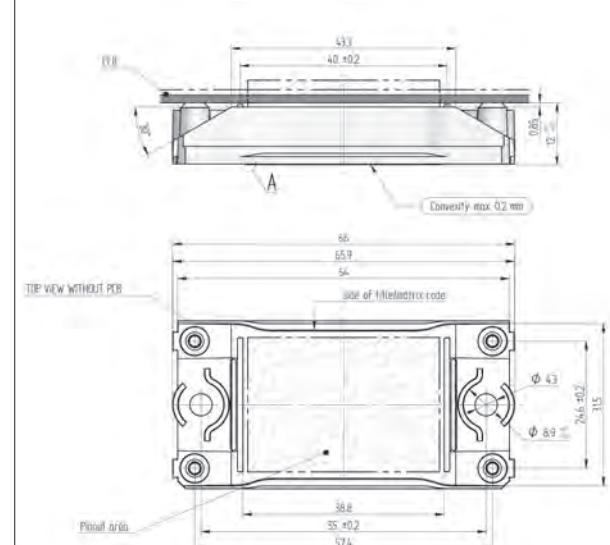
- / 90° mounting angle between heatsink and PCB
- / clip or screw-on heatsink mounting
- / Thermo-mechanical push-and-pull force relief
- / clip-in PCB mounting
- / Complies with DIN and IEC standards
- / Topologies are easily customized
- / Pre-applied phase-change material available on demand

**flow 0 12 mm 4-tower****Dimensions:**

Height: 12 mm
Length: 66 mm
Width: 33 mm

Features:

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

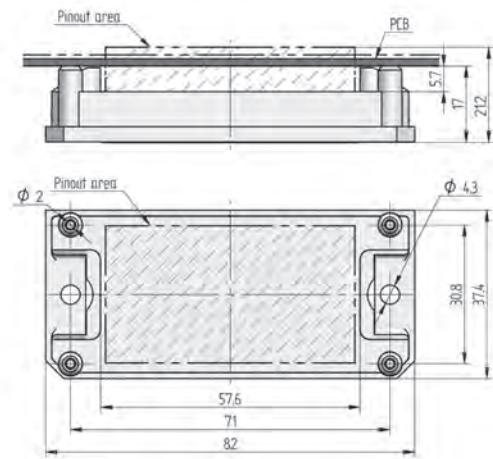


flow 1 17 mm 4-tower**Dimensions:**

Height: 12 mm
Length: 82 mm
Width: 38 mm

Features:

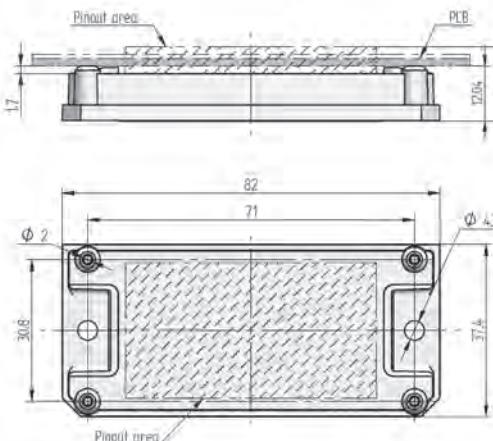
- / 4-towers
- / Convex shaped substrate for superior thermal contact
- / Thermo-mechanical push-and-pull force relief

**flow 1 12 mm 4-tower****Dimensions:**

Height: 12 mm
Length: 82 mm
Width: 38 mm

Features:

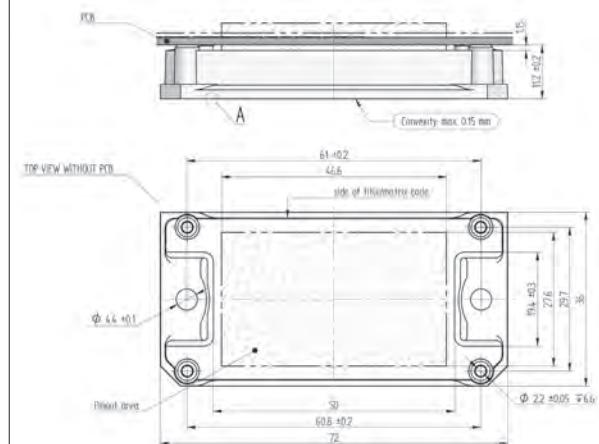
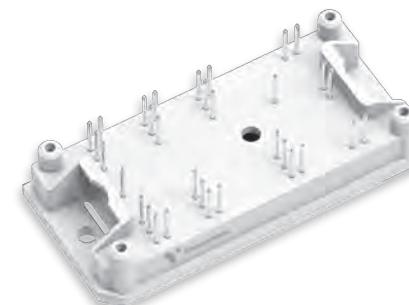
- / 4-towers
- / Convex shaped substrate for superior thermal contact
- / Thermo-mechanical push-and-pull force relief

**flow 1B 12 mm****Dimensions:**

Height: 12 mm
Length: 72 mm
Width: 36 mm

Features:

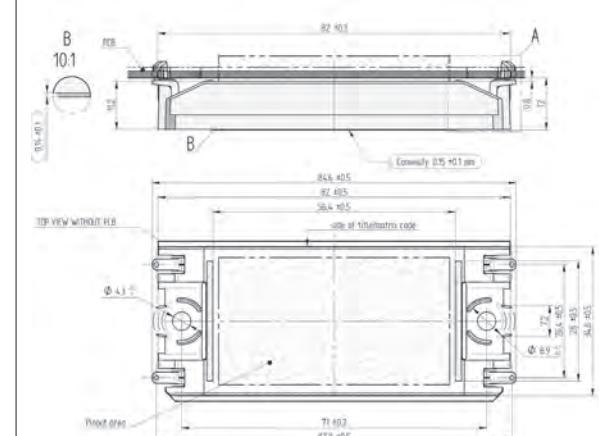
- / 4-towers
- / Ceramic substrate for Thick-film based designs
- / Thermo-mechanical push-and-pull force relief

**flow 1 12 mm 2-clip****Dimensions:**

Height: 12 mm
Length: 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

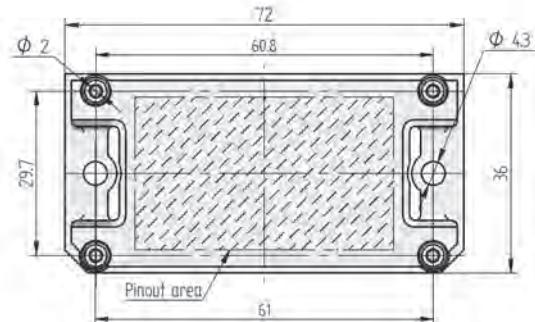
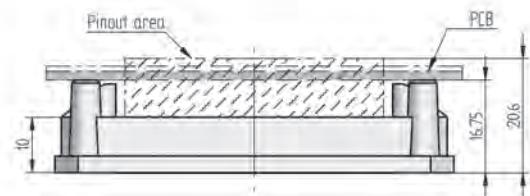


flow 1B 17 mm**Dimensions:**

Height: 17 mm
Length: 72 mm
Width: 36 mm

Features:

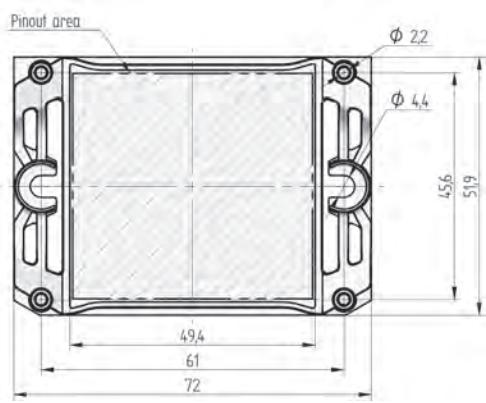
- / 4-towers
- / Ceramic substrate for Thick-film based designs
- / Thermo-mechanical push-and-pull force relief

**flow 1C****Dimensions:**

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

Features:

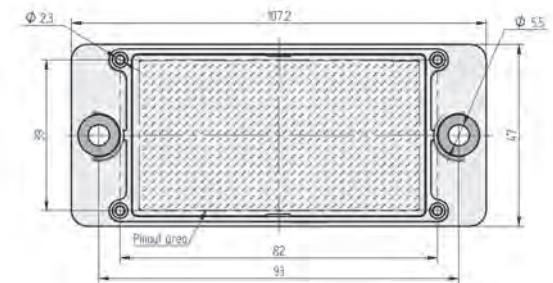
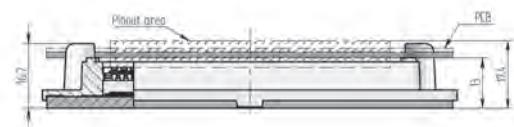
- / 4-towers
- / Ceramic substrate for Thick-film based designs
- / Thermo-mechanical push-and-pull force relief

**flow 2 17 mm****Dimensions:**

Height: 17 mm
Length: 107 mm
Width: 47 mm

Features:

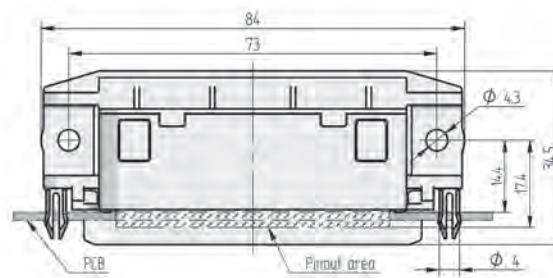
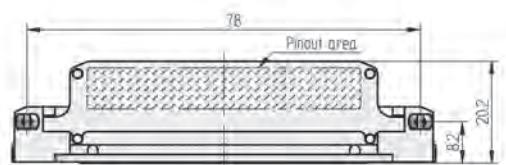
- / 4-towers
- / Convex shaped baseplate for superior thermal contact
- / Cu baseplate
- / Thermo-mechanical push-and-pull force relief

**flow90 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

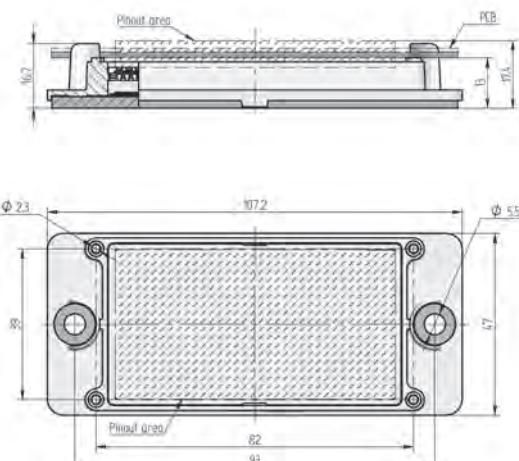


flow 2 13 mm**Dimensions:**

Height: 13 mm
Length: 107 mm
Width: 47 mm

Features:

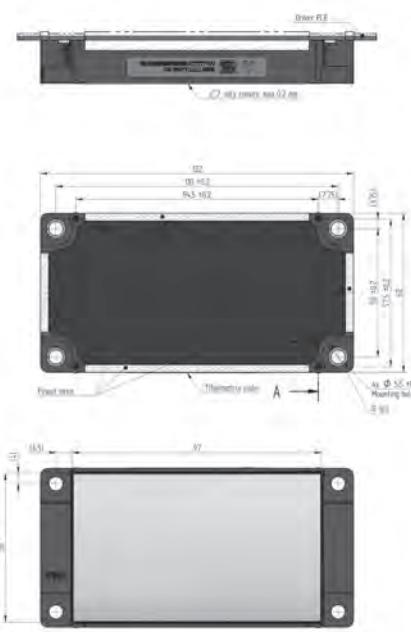
- / 4-towers
- / Convex shaped baseplate for superior thermal contact
- / Cu baseplate
- / Thermo-mechanical push-and-pull force relief

**VINco E3****Dimensions:**

Height: 17 mm
Length: 12 mm
Width: 62 mm

Features:

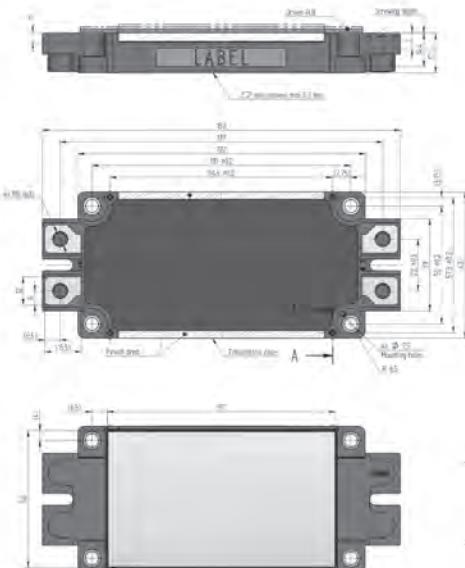
- / SoLid Cover Technology
- / Standard mid-power industry package
- / Driver pins are available in press-fit and solder-pin
- / Tin plated solder pin terminals

**VINco E3s****Dimensions:**

Height: 17 mm
Length: 152 mm
Width: 62 mm

Features:

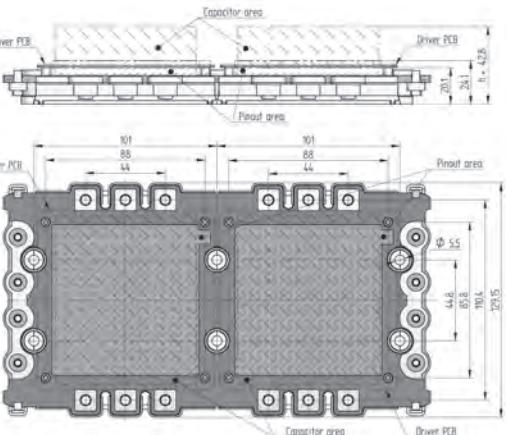
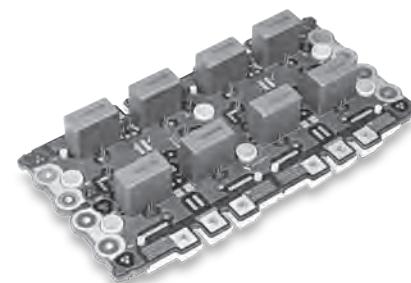
- / SoLid Cover Technology
- / Standard mid-power industry package
- / Driver pins are available in press-fit and solder-pin
- / Tin plated solder pin terminals

**VINco X8****Dimensions:**

Height: 16 mm
Length: 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

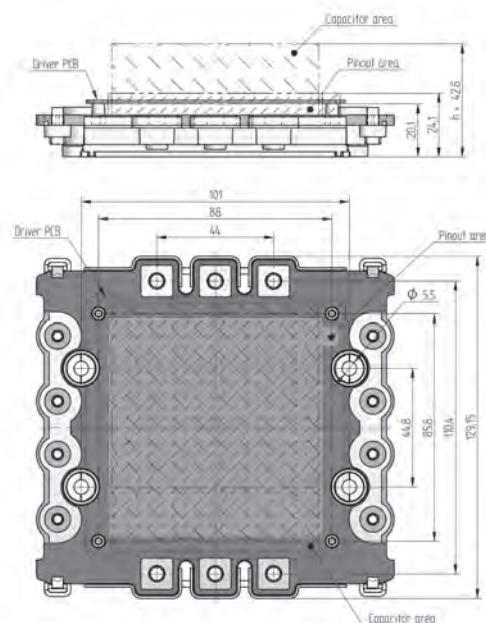
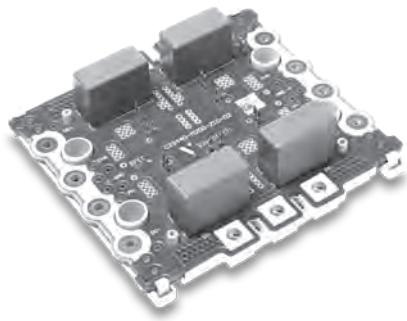


VINco X4**Dimensions:**

Height: 16 mm
Length: 134.8 mm
Width: 129.2 mm

Features:

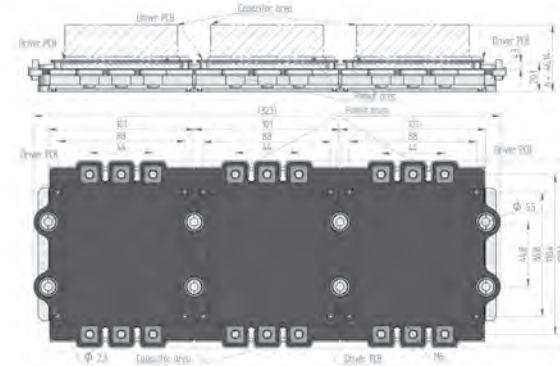
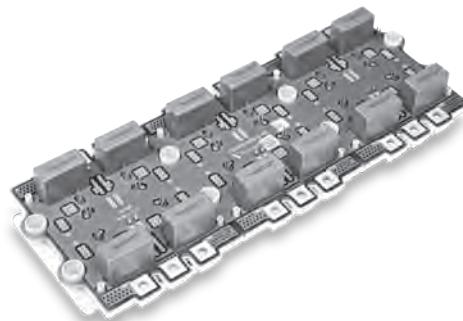
- / Low inductive Package
- / M4 low inductive interface for easy paralleling
- / M6 high power screw contact
- / Press-fit pin driver contact
- / Fully symmetrical layouts

**VINco X12****Dimensions:**

Height: 16 mm
Length: 323 mm
Width: 129.2 mm

Features:

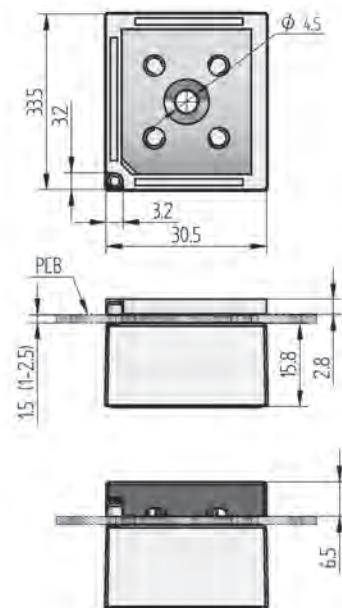
- / Low inductive Package
- / M6 high power screw contact
- / Press-fit pin driver contact
- / Fully symmetrical layouts

**MiniSKiiP® 0****Dimensions:**

Height: 16 mm
Length: 34 mm
Width: 31 mm

Features:

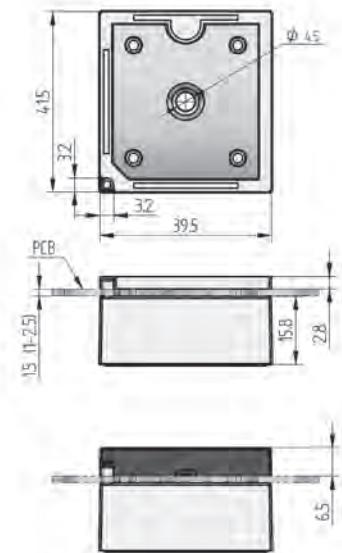
- / Easy assembly in one mounting step
- / Flexible PCB design w/o pin holes
- / Solderless spring contacts
- / Rugged spring contact

**MiniSKiiP® 1****Dimensions:**

Height: 16 mm
Length: 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

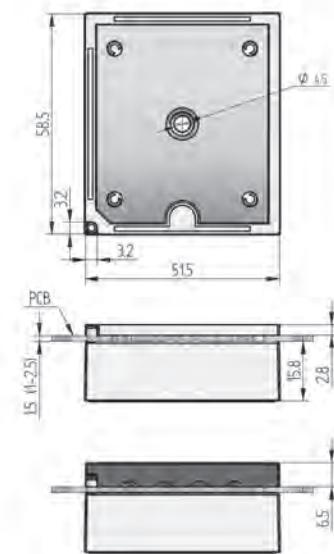


MiniSKiiP® 2**Dimensions:**

Height: 16 mm
Length: 59 mm
Width: 52 mm

Features:

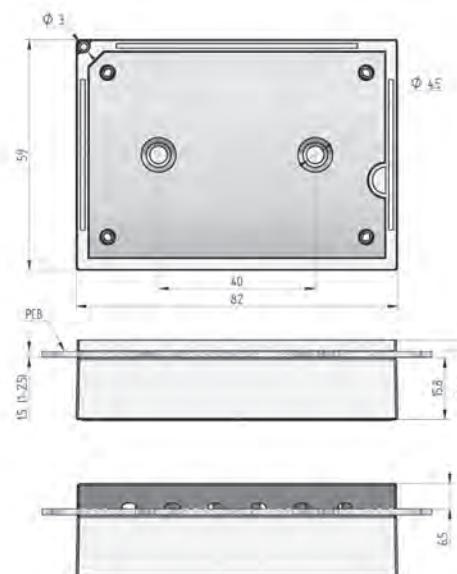
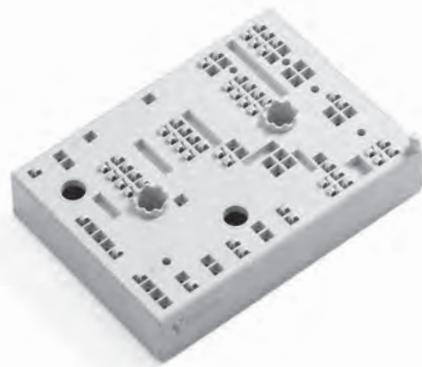
- / Easy assembly in one mounting step
- / Flexible PCB design w/o pin holes
- / Solderless spring contacts
- / Rugged spring contact

**MiniSKiiP® 3****Dimensions:**

Height: 16 mm
Length: 82 mm
Width: 59 mm

Features:

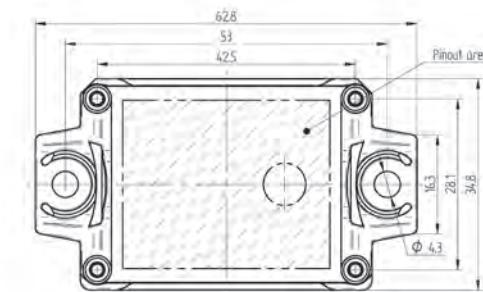
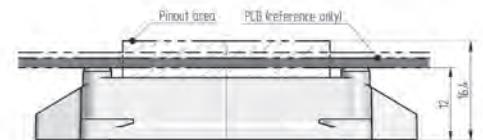
- / Easy assembly in one mounting step
- / Flexible PCB design w/o pin holes
- / Solderless spring contacts
- / Rugged spring contact

**flow E1****Dimensions:**

Height: 12 mm
Length: 62 mm
Width: 34 mm

Features:

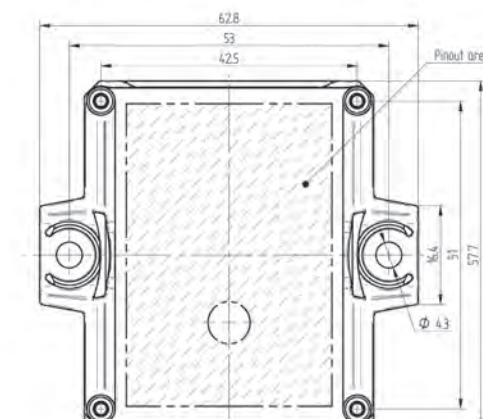
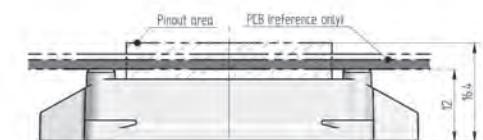
- / Convex shaped substrate for superior thermal contact
- / Compact design
- / CTI600 housing material
- / Thermo-mechanical push-and-pull force relief

**flow E2****Dimensions:**

Height: 12 mm
Length: 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





TOC

RECTIFIER (+BRAKE)

ULTRAFAST RECTIFIER

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]

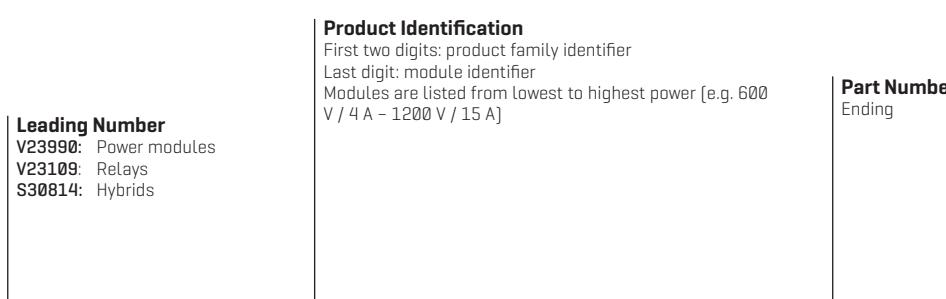
Three-level ANPC

Schematics / Housings

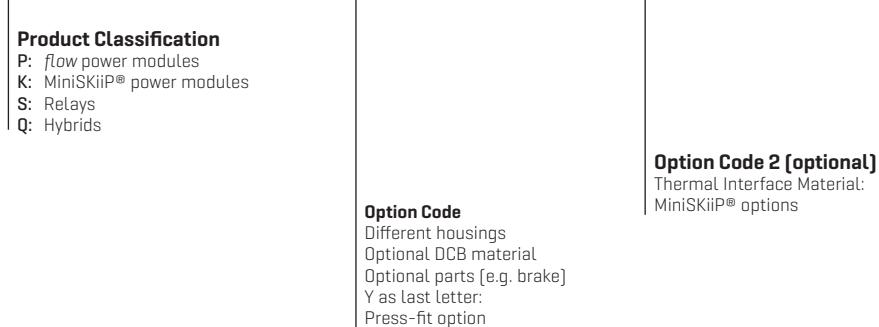
NAMING SYSTEM

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.

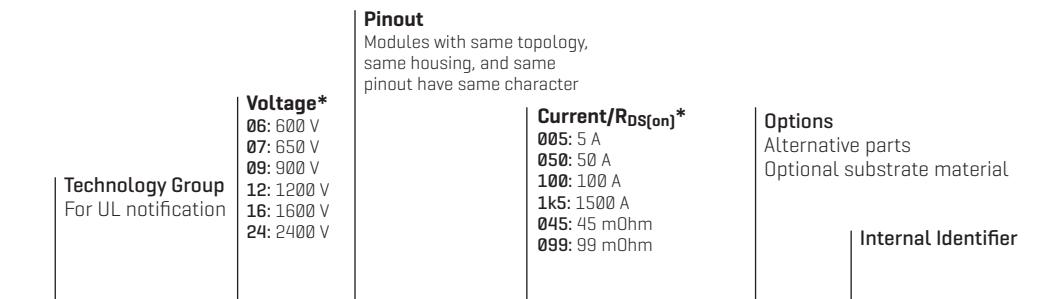


V23990-P868-F49Y-/3/-PM

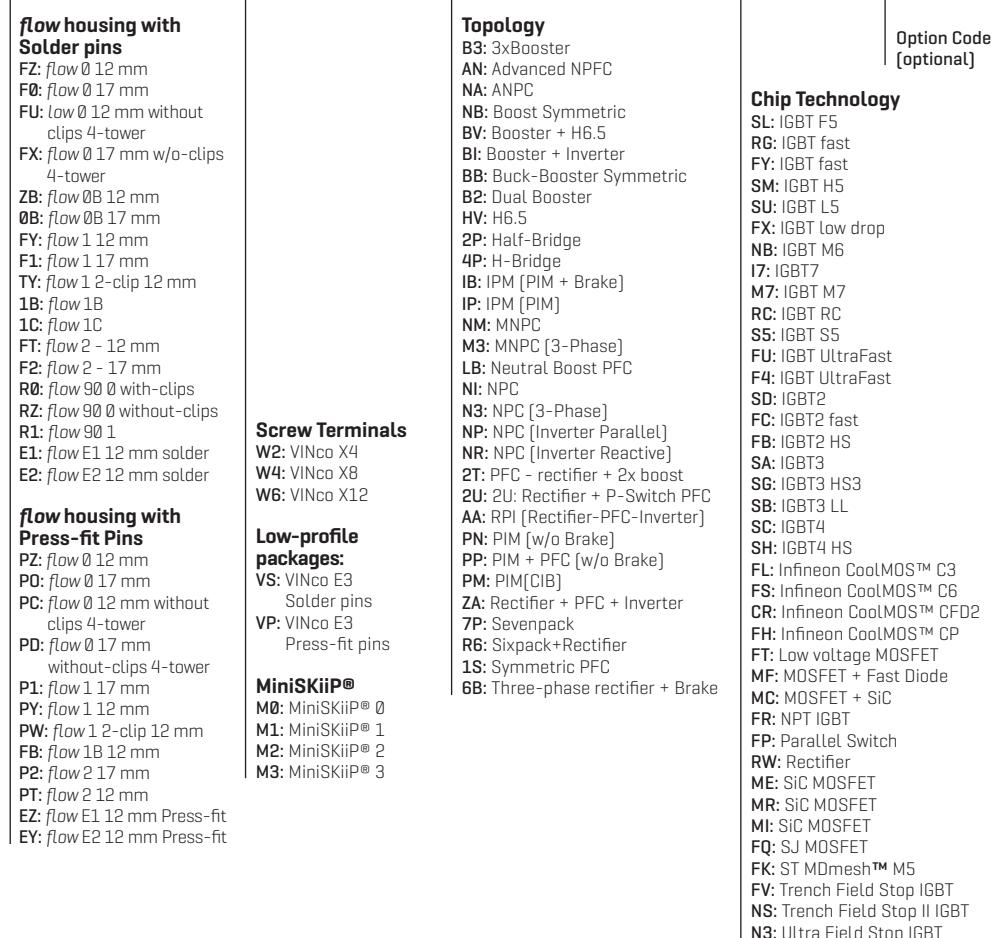
**VERSION 2**

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.



10-PZ06NR|A|041FS|02-P965F68Y-||3/



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 ₂ O 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, Authorization & 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

▲ HEADQUARTERS ■ DESIGN CENTER ♦ SALES OFFICES ● MANUFACTURING

LOCATIONS

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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