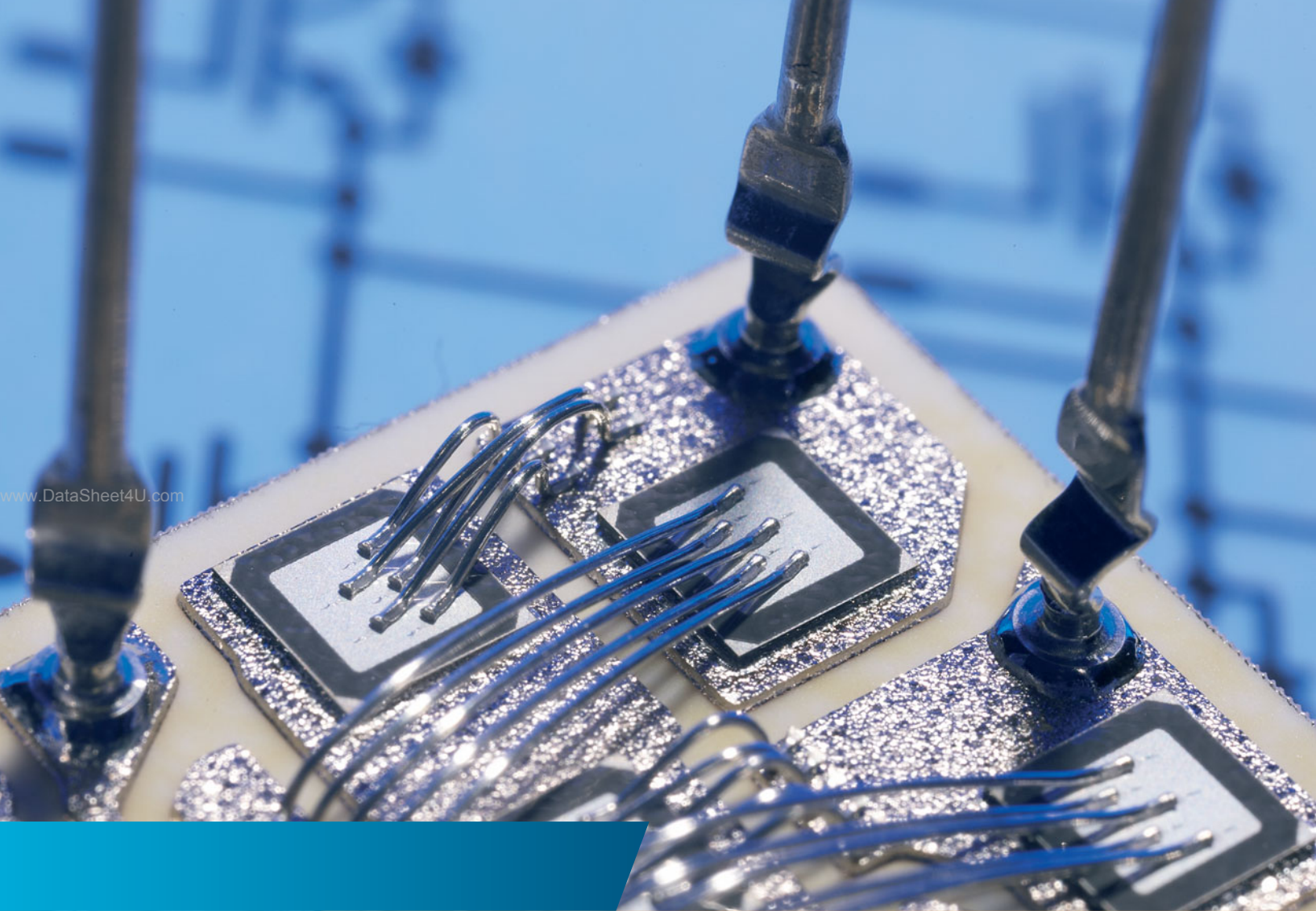




# Power Integrated Module Solutions

 **Tyco Electronics**

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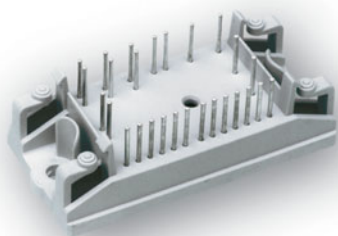
**Tyco Electronics Power Systems is one of the market leaders in Power Modules. Target applications include motor drives, power supplies and welding equipment. With 11 different standard housings and more than 35 standard product families, Tyco Electronics offers a wide power range using different topologies.**



**The products include Power Integrated Modules (combination of input rectifiers, six pack inverter and brake chopper), six pack modules , PFC-, H-bridge and half-bridge modules. Tyco Electronics covers a broad power spectrum, ranging from 5A to 450A at 600V and 1200V.**

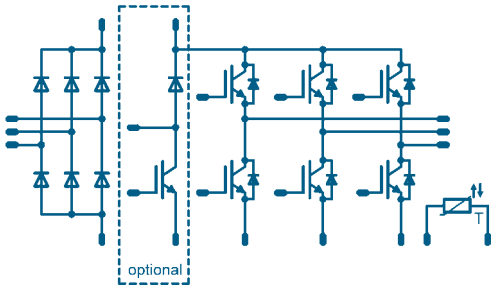
**Tyco Electronics Power Modules for motor drive applications cover a wide power range. They are available in 7 different standard housings from 5A to 100A at 600V, and from 5A to 100A at 1200V, suitable for switching frequencies of up to 30kHz.**

flowPIM 0 2<sup>nd</sup> gen

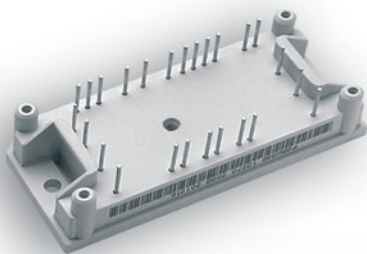


- Trench Fieldstop IGBTs for low saturation losses
- Optional with enhanced rectifier and w/o BRC
- Clip-in PCB mounting

| Part-No            | Voltage | Current* |
|--------------------|---------|----------|
| V23990-P541 -1)-PM | 600V    | 6A       |
| V23990-P543 -1)-PM | 600V    | 10A      |
| V23990-P544 -1)-PM | 600V    | 15A      |
| V23990-P545 -1)-PM | 600V    | 20A      |
| V23990-P546 -1)-PM | 600V    | 30A      |
| V23990-P549 -2)-PM | 1200V   | 8A       |
| V23990-P540 -2)-PM | 1200V   | 15A      |

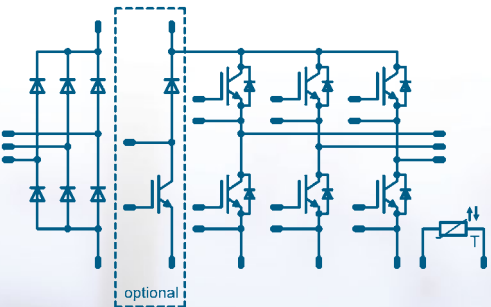


flowPIM 1 2<sup>nd</sup> gen



- Trench Fieldstop IGBTs for low saturation losses
- Optional w/o BRC
- Compact design with enhanced rectifier

| Part-No            | Voltage | Current* |
|--------------------|---------|----------|
| V23990-P585 -3)-PM | 600V    | 30A      |
| V23990-P586 -3)-PM | 600V    | 50A      |
| V23990-P587 -3)-PM | 600V    | 75A      |
| V23990-P588 -4)-PM | 1200V   | 15A      |
| V23990-P589 -4)-PM | 1200V   | 25A      |
| V23990-P580 -4)-PM | 1200V   | 35A      |

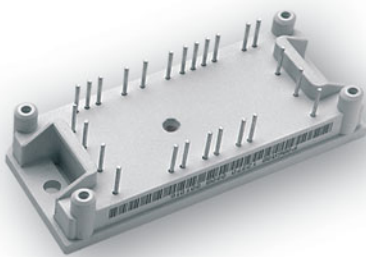


1) A20 with brake with standard rectifier  
A21 with brake with enhanced rectifier  
C20 without brake with standard rectifier  
C21 without brake with enhanced rectifier  
2) A with brake with standard rectifier  
A01 with brake with enhanced rectifier  
C without brake with standard rectifier  
C01 without brake with enhanced rectifier  
3) A20 with brake  
C20 without brake  
4) A with brake  
C without brake  
5) With improved inverter shunt tolerance  
6) With fast IGBT 2  
7) With high-speed FRED

\* Rated current of components

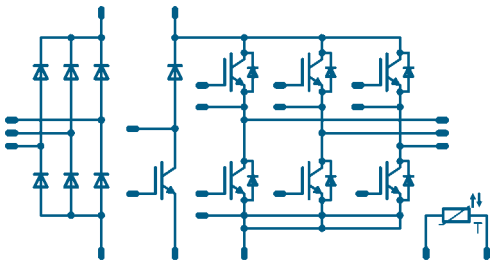


flowPIM 1

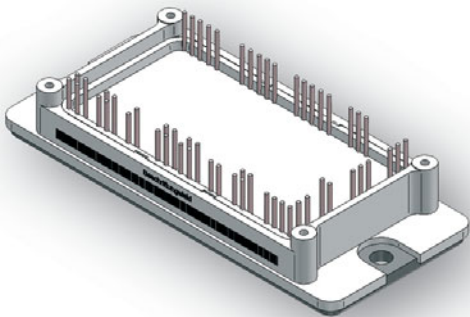


- Higher performance pin to pin compatible replacement of V23990-P8x-A20-PM family

| Part-No           | Voltage | Current* |
|-------------------|---------|----------|
| V23990-P481 -A-PM | 600V    | 5A       |
| V23990-P482 -A-PM | 600V    | 8A       |
| V23990-P483 -A-PM | 600V    | 10A      |
| V23990-P484 -A-PM | 600V    | 15A      |
| V23990-P485 -A-PM | 600V    | 20A      |
| V23990-P486 -A-PM | 600V    | 30A      |
| V23990-P487 -A-PM | 1200V   | 10A      |
| V23990-P488 -A-PM | 1200V   | 15A      |
| V23990-P480 -A-PM | 1200V   | 25A      |

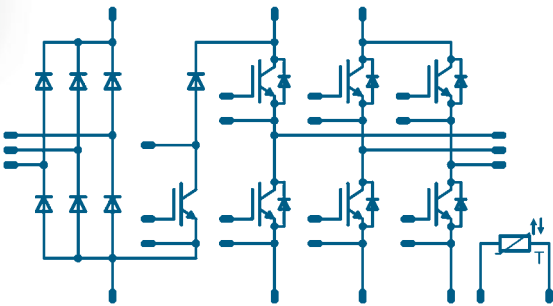


flowPIM 2 3<sup>rd</sup> gen



- IGBT4 technology for low saturation losses and improved EMC behavior
- Improved layout
- Compact and low inductive design
- Isolated temperature sensor

| Part-No          | Voltage | Current* |
|------------------|---------|----------|
| V23990-P763-A-PM | 600V    | 50A      |
| V23990-P764-A-PM | 600V    | 75A      |
| V23990-P765-A-PM | 600V    | 100A     |
| V23990-P767-A-PM | 1200V   | 35A      |
| V23990-P768-A-PM | 1200V   | 50A      |
| V23990-P769-A-PM | 1200V   | 75A      |
| V23990-P760-A-PM | 1200V   | 100A     |

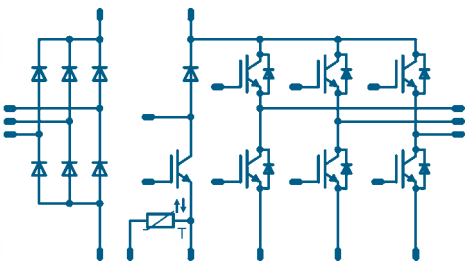


flow90PIM 1

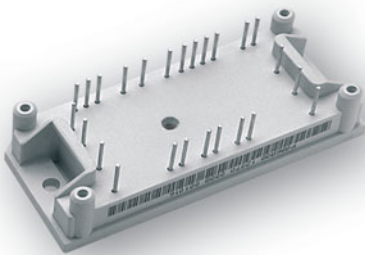


- Trench Fieldstop IGBTs for low saturation losses
- Supports designs with 90° mounting angle between heatsink and PCB
- Clip-in PCB mounting
- Clip or screw on heatsink mounting

| Part-No           | Voltage | Current* |
|-------------------|---------|----------|
| V23990-P631 -A-PM | 600V    | 6A       |
| V23990-P632 -A-PM | 600V    | 10A      |
| V23990-P633 -A-PM | 600V    | 15A      |
| V23990-P634 -A-PM | 600V    | 20A      |
| V23990-P635 -A-PM | 600V    | 30A      |
| V23990-P639 -A-PM | 1200V   | 8A       |
| V23990-P630 -A-PM | 1200V   | 15A      |

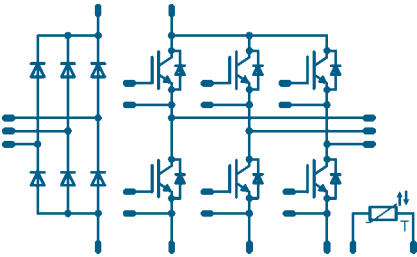


flowPIM 1+E

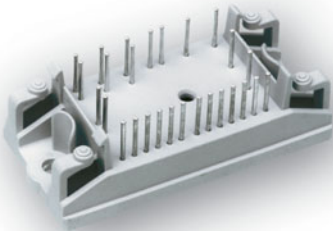


- Ultrafast IGBTs for reduced switching losses dedicated for  $f_{sw} > 8\text{kHz}$
- Typical applications: fans and pumps

| Part-No            | Voltage | Current* |
|--------------------|---------|----------|
| V23990-P516-C-PM   | 1200V   | 8A       |
| V23990-P517-C-PM   | 1200V   | 15A      |
| V23990-P518-C44-PM | 1200V   | 25A      |

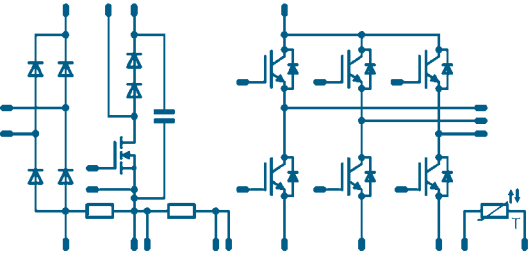


flowPIM 0+P

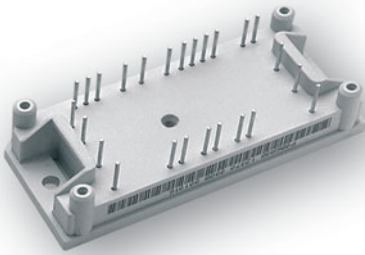


- PIM module with CoolMOS PFC inverter for up to 200kHz switching frequency
- Trench Fieldstop technology
- Clip-in PCB mounting

| Part-No            | Voltage | Current* |
|--------------------|---------|----------|
| V23990-P371-B10-PM | 600V    | 4A       |
| V23990-P372-B10-PM | 600V    | 6A       |
| V23990-P373-B10-PM | 600V    | 10A      |

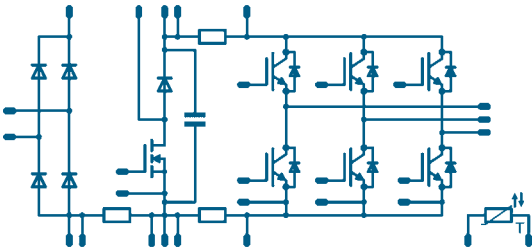


flowPIM 1+P

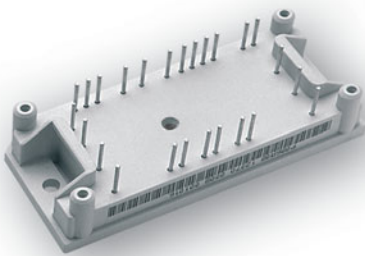


- PIM module with PFC inverter up to 200kHz switching frequency
- With inverter high side shunt for short circuit protection

| Part-No                          | Voltage | Current* |
|----------------------------------|---------|----------|
| V23990-P301-B-PM                 | 600V    | 4A       |
| V23990-P303-B-PM                 | 600V    | 10A      |
| V23990-P303-B11-PM <sup>5)</sup> | 600V    | 10A      |
| V23990-P303-B12-PM <sup>5)</sup> | 600V    | 20A      |
| V23990-P304-B-PM                 | 600V    | 15A      |
| V23990-P305-B-PM                 | 600V    | 20A      |

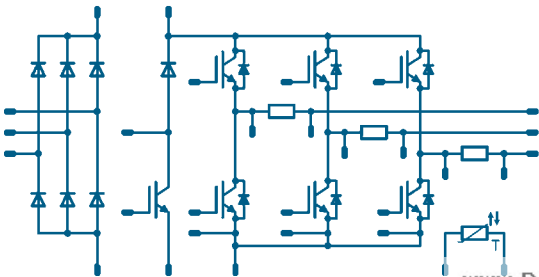


flowPIM 1+S

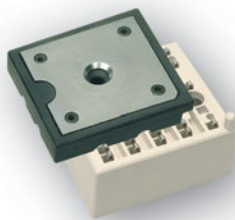


- PIM module with shunts in the motor phases

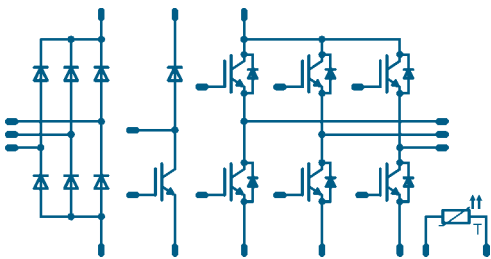
| Part-No          | Voltage | Current* |
|------------------|---------|----------|
| V23990-P329-A-PM | 1200V   | 10A      |
| V23990-P320-A-PM | 1200V   | 15A      |



MiniSKiiP® 1

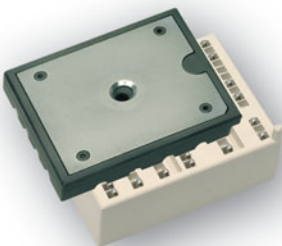


- Trench Fieldstop IGBTs for low saturation losses
- Solderless spring contact mounting system

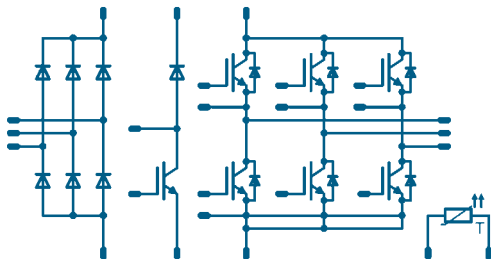


| Part-No                           | Voltage | Current* | Semikron Equivalent |
|-----------------------------------|---------|----------|---------------------|
| V23990-K201 -A30-PM <sup>6)</sup> | 600V    | 6A       | SKiiP 11 NAB 065 V1 |
| V23990-K202 -A30-PM <sup>6)</sup> | 600V    | 10A      | SKiiP 12 NAB 065 V1 |
| V23990-K203 -A30-PM <sup>6)</sup> | 600V    | 15A      | SKiiP 13 NAB 065 V1 |
| V23990-K204 -A30-PM <sup>6)</sup> | 600V    | 20A      | SKiiP 14 NAB 065 V1 |
| V23990-K201 -A-PM                 | 600V    | 6A       | SKiiP 11 NAB 066 V1 |
| V23990-K202 -A-PM                 | 600V    | 10A      | SKiiP 12 NAB 066 V1 |
| V23990-K203 -A-PM                 | 600V    | 15A      | SKiiP 13 NAB 066 V1 |
| V23990-K204 -A-PM                 | 600V    | 20A      | SKiiP 14 NAB 066 V1 |
| V23990-K209 -A-PM                 | 1200V   | 8A       | SKiiP 11 NAB 126 V1 |
| V23990-K200 -A-PM                 | 1200V   | 15A      | SKiiP 12 NAB 126 V1 |
| V23990-K200 -A10-PM <sup>7)</sup> | 1200V   | 15A      |                     |

MiniSKiiP® 2

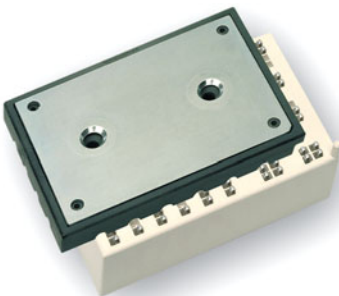


- Trench Fieldstop IGBTs for low saturation losses
- Solderless spring contact mounting system

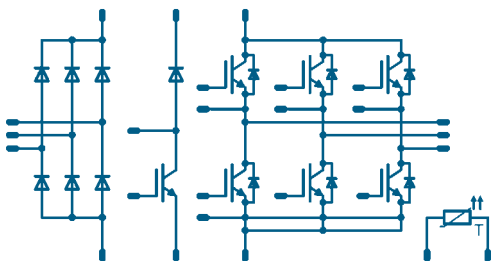


| Part-No                           | Voltage | Current* | Semikron Equivalent |
|-----------------------------------|---------|----------|---------------------|
| V23990-K222 -A30-PM <sup>6)</sup> | 600V    | 30A      | SKiiP 25 NAB 065 V1 |
| V23990-K223 -A30-PM <sup>6)</sup> | 600V    | 50A      | SKiiP 26 NAB 065 V1 |
| V23990-K222 -A-PM                 | 600V    | 30A      | SKiiP 25 NAB 066 V1 |
| V23990-K223 -A-PM                 | 600V    | 50A      | SKiiP 26 NAB 066 V1 |
| V23990-K229 -A-PM                 | 1200V   | 25A      | SKiiP 23 NAB 126 V1 |
| V23990-K229 -A10-PM <sup>7)</sup> | 1200V   | 25A      |                     |
| V23990-K220 -A-PM                 | 1200V   | 35A      | SKiiP 24 NAB 126 V1 |

MiniSKiiP® 3

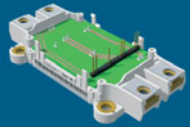


- Trench Fieldstop IGBTs for low saturation losses
- Solderless spring contact mounting system



| Part-No                          | Voltage | Current* | Semikron Equivalent |
|----------------------------------|---------|----------|---------------------|
| V23990-K242-A30-PM <sup>6)</sup> | 600V    | 60A      | SKiiP 37 NAB 065 V1 |
| V23990-K243-A30-PM <sup>6)</sup> | 600V    | 100A     | SKiiP 38 NAB 065 V1 |
| V23990-K242-A-PM                 | 600V    | 75A      | SKiiP 37 NAB 066 V1 |
| V23990-K243-A-PM                 | 600V    | 100A     | SKiiP 38 NAB 066 V1 |
| V23990-K249-A-PM                 | 1200V   | 50A      | SKiiP 35 NAB 126 V1 |
| V23990-K240-A-PM                 | 1200V   | 70A      | SKiiP 36 NAB 126 V1 |

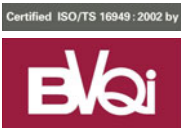
# Housing Dimensions

|                    |                                                                                    |                                                 |                     |                                                                                     |                                                |
|--------------------|------------------------------------------------------------------------------------|-------------------------------------------------|---------------------|-------------------------------------------------------------------------------------|------------------------------------------------|
| <b>flow 0</b>      |   | height*: 17 mm<br>width: 66 mm<br>depth: 33 mm  | <b>flyerIPM</b>     |  | height*: 19 mm<br>width: 99 mm<br>depth: 97 mm |
| <b>flow 1</b>      |   | height*: 17 mm<br>width: 82 mm<br>depth: 38 mm  | <b>PFC-IPM</b>      |  | height*: 25 mm<br>width: 79 mm<br>depth: 69 mm |
| <b>flow 2</b>      |   | height*: 17 mm<br>width: 108 mm<br>depth: 47 mm | <b>flat 1</b>       |  | height*: 13 mm<br>width: 70 mm<br>depth: 41 mm |
| <b>flow90 1</b>    |   | height*: 28 mm<br>width: 84 mm<br>depth: 21 mm  | <b>MiniSKiiP® 1</b> |  | height*: 16 mm<br>width: 42 mm<br>depth: 40 mm |
| <b>flowSCREW 2</b> |   | height*: 17 mm<br>width: 117 mm<br>depth: 64 mm | <b>MiniSKiiP® 2</b> |  | height*: 16 mm<br>width: 59 mm<br>depth: 52 mm |
| <b>flowSCREW 3</b> |  | height*: 17 mm<br>width: 150 mm<br>depth: 64 mm | <b>MiniSKiiP® 3</b> |  | height*: 16 mm<br>width: 82 mm<br>depth: 59 mm |

\* Height equals to installation height

Tyco Electronics is a worldwide leading company in the development and manufacturing of passive and active electronic components. In 1996 the decision was made to step into the future-oriented Power Module market. The responsibility for this product group is based in Ottobrunn, Germany. A dedicated team continuously develops new state of the art technologies, which are turned into standard and customized products. All Power Module products are developed and manufactured in our ISO9001 and TS16949 certified factory in Hungary. Our modules conform to the RoHS standard and are 100% electrically and functionally tested prior to packaging. This way we constantly guarantee high quality products.

**Tyco Electronics, your reliable partner!**



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