



**FE** Fuji Electric  
*Innovating Energy Technology*

## Power Semiconductors **Selection Guide**

06|2024

[www.fujielectric.com](http://www.fujielectric.com)  
[www.fujielectric-europe.com](http://www.fujielectric-europe.com)

## About Us

Fuji Electric Co., Ltd. was established in 1923 in Japan as a capital and technology alliance between Furukawa Electric Co., Ltd. and Siemens AG. The company name was derived from these two companies, with „Fu“ and „Si“ and the highest mountain in Japan mount Fuji.

The Fuji Electric Europe GmbH was founded 1984 in Germany and is a 100% subsidiary of Fuji Electric Co., Ltd. based in Japan. For more than 30 years, Fuji Electric has successfully supplied the European market with power semiconductors for power conversion systems.

With a strong team of sales, application and development engineers, we always support our customers from all over Europe in commercial and technical matters. Furthermore, our international distribution network ensures a special service quality and proximity to customers.

Fuji Electric offers innovative energy technologies to make a sustainable contribution to social and industrial infrastructure worldwide. Population growth and rapid industrial advances are making energy management and environmental protection increasingly important. Therefore, Fuji Electric strives continuously the development and improvement of existing technologies. Our innovative products in energy and environmental technology achieve high added value, outstanding eco-friendliness and energy with maximum efficient use.

## Our Services

### Application Portfolio

For a long while, the main applications of our power semiconductors were the electric drive technology (frequency converters, servo drives) and the uninterruptible power supply (UPS). The foundation stone was placed based on these applications for outstanding quality, high reliability and implementation of the latest technologies.

The application portfolio is growing steadily and it includes new applications today such as: renewable energy (wind energy, photovoltaic), hybrid/electric mobility, energy supply and distribution (smart grid), traction, etc. Technology development always requires new technical and efficient solutions with long service life as well as highest quality.

Our state-of-the-art production sites in front-end, back-end and warehouse locations enable us to supply the world's growing number of customers with power semiconductors.

Our 7<sup>th</sup> IGBT generation (X series) is currently replacing older generations in the market. The new products can easily replace existing products due to their electrical and mechanical compatibility while they are continuing to reduce losses.

### Logistic Services

Our logistic center in Frankfurt offers our customers high availability and enables short delivery times as well as extensive logistics services.

### Technical Support

Our competent application engineering team offers application support from A to Z, as well as special technical solutions. Furthermore, our development engineers support professionally and reliably with on-site design-in solutions.

### Service for thermal interface material (TIM)

Our automated printing process guarantees consistent printing and improved thermal conductivity through accurate printing equipment, optimized module-specific printing patterns and software monitoring.



# Fuji Electric provides Power Semiconductors well suited for various applications



## Inverters (LV-INV)

Semiconductor products best suited for general-purpose inverters that carry out variable-speed operation of motors in products such as belt conveyors, fans and pumps.



## Medium – Voltage Inverters (MV-INV)

Semiconductor products suitable for medium-voltage inverters that drive 3-phase AC 3kV/6kV/6.6kV high-voltage motors used in iron and steel plants, textile plants and paper mills.



## Railroads (TRAIN)

Semiconductor products suited for the power electronics of railroad cars such as the main motor drive and auxiliary power supply equipment of rolling stock.



## NC / Servos (SERVO)

Semiconductor products best suited to NC and servos that carry out speed control and positioning of machine tools, as well as robots that have multi-spindle control features used in assembly, welding and conveyance.



## Elevator/Escalator

Semiconductor products suited for the inverters to drive elevators or escalators. Parts can be used for integrated solutions or machine room installations.



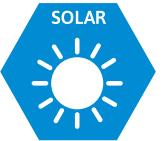
## Wind Power Generation (WIND)

Semiconductor products suitable for AC/DC converters that convert the AC power output from wind turbine generators to DC power, as well as for inverters that convert DC power to AC power of commercial frequencies.



## Welding Machines (WELDING)

Semiconductor products suitable for switching circuits that generate resistance heat in welding machines to melt and integrate by adding heat or pressure to two or more metallic members.



## Solar (SOLAR)

Semiconductor products best suited for power conditioners that convert solar panel generated DC power into AC power to enable the residential consumption, as well as to facilitate the recovery of the power to the power systems of power companies.



## PC / Servers (PC+SERVER)

Semiconductor products suitable for the power supplies of increasingly high-performance desktop PCs and servers, as well as of increasingly compact and lightweight notebook PCs.



## UPS (UPS)

Semiconductor products ideal for the power conversion circuits of UPS (uninterruptible power supply) that prevent system shutdown during power outages and instantaneous power failures.



## Switching Power Supplies (PSU)

Semiconductor products best suited for general-purpose switching power supplies used in a wide variety of applications such as equipment for general consumers and OA and communication devices.



## White Goods

Semiconductor products which suits best to the needs of white goods, like low power (650V rating), compact size and integrated drive and protection functions.



## Fuji Electric Power Semiconductors contributing energy management in various fields

Fuji Electric provides Power Semiconductors enabling high-efficiency energy usage in various fields such as industrial machinery, automobile, railroad, social infrastructure, renewable energy, consumer electronics and information equipment in order to achieve a low carbon society.



RENEWABLE ENERGY



INDUSTRY

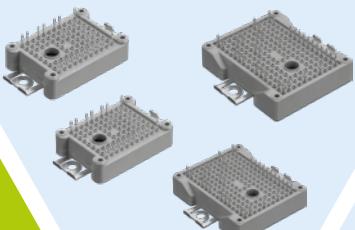


PUBLIC TRANSPORTATION

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High Power next Core (HPnC)  
SiC Modules



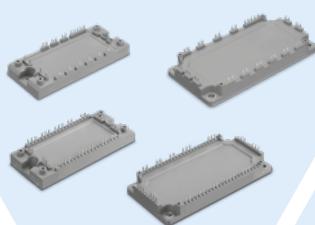
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Rectifier Diode; SiC-SBD



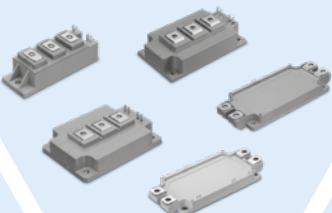
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PIM



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Standard 2-Pack



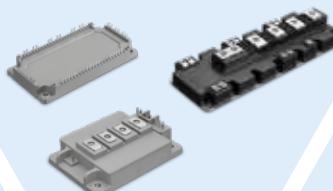
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Small IPM



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Advanced T-type NPC 3-Level  
Modules



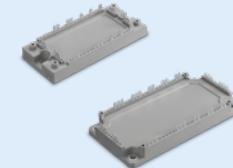
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PrimePACK™\*  
High Power next Core  
(HPnC)



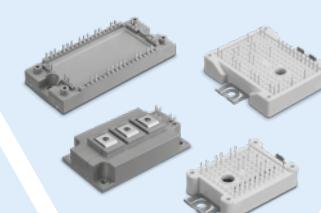
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6-Pack



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SiC Modules



Page 25

I-type NPC 3-Level Modules



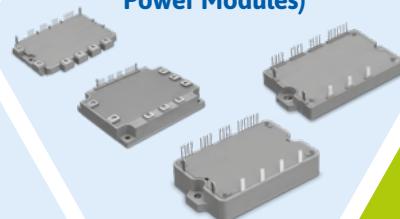
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Discrete IGBT



Page 32 – 37

Package Outlines (in mm)



\* Note: PrimePACK™ is registered trademark of Infineon Technologies AG, Germany.

## Thermal interface material (TIM)

Fuji Electric's printing process of pre-applied TIM is automated and carried out by a computer controlled printing line under clean environment.

Precise printing equipment and optimized module specific printing patterns guarantee a uniform print and maximum thermal conductivity.



The range of modules with pre-applied TIM is being continually expanded.

For latest availability status please contact us:  
[info.semi@fujielectric-europe.com](mailto:info.semi@fujielectric-europe.com)

3D-imaging tests ensure the compliance of our specified TIM thickness.

The whole process is controlled by our traceability system and qualified staff to ensure our high-quality standards.

### Process - Benefits

- + Outsourcing of a dirty process
- + Stable quality level
- + Increased system reliability

### Features

- + Optimized pattern for Fuji modules
- + Increase lifetime of IGBT
- + Advanced IGBT power density

### Thermal - Benefits

- + Higher thermal conductivity
- + Uniform thermal resistance
- + Higher reliability and lifetime

### New TIM

- + Capable for  $T_C$  up to 150 °C
- + Higher thermal conductivity
- + High reliability

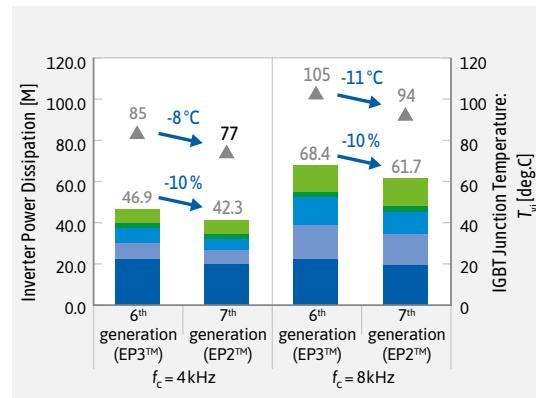


# Features of IGBT module X series

## 1. Low power dissipation

The module has been optimized by reducing the thickness and miniaturizing the structure of the IGBT chip and diode chip that make up the module. This reduces power losses during inverter operation compared to the previous 6<sup>th</sup> generation V series.

Reduced inverter power dissipation by 10% and chip temperature by 10°C compared with the 6<sup>th</sup> generation V series EP3™ package (75A, at  $f_c = 8\text{kHz}$ ).



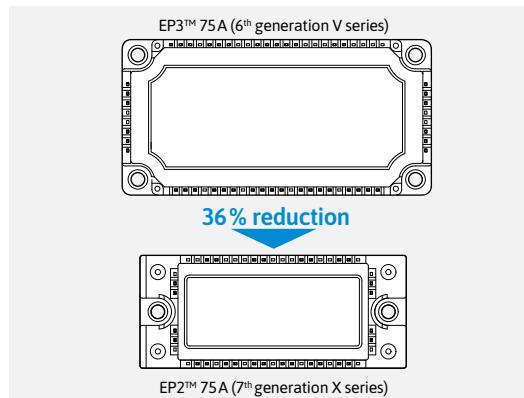
- P<sub>rr</sub>: Reverse recovery loss
- P<sub>f</sub>: FWD conduction loss
- P<sub>on</sub>: Turn-on loss
- P<sub>off</sub>: Turn-off loss
- P<sub>sat</sub>: IGBT conduction loss
- △ T<sub>vj</sub>: Junction temperature

## 2. Miniaturization

The application of the newly developed insulating board has improved the heat dissipation of the module.

A smaller footprint of about 36 % has been achieved by reducing power loss and suppressing heat generation compared with the previous product.

### Application Example

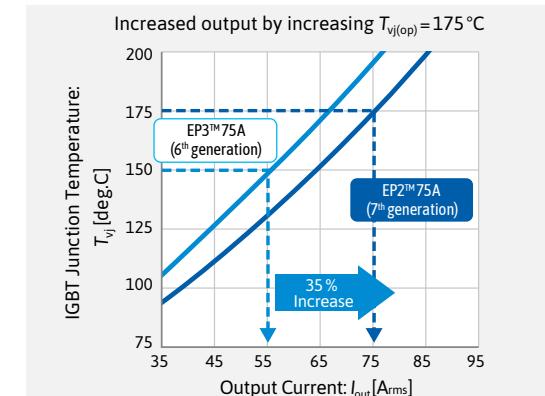


Note: PrimePACK™, EconoPIM™ and EconoPACK™ are registered trademarks of Infineon Technologies AG, Germany

## 3. High temperature operation

Achieves continuous operation at 175°C through chip optimization and improved package reliability and heat resistance.

- Up to 35 % more output than the previous generation
- ΔT<sub>vj</sub> power cycle capability improvement (twice as high as before)



## Product Portfolio

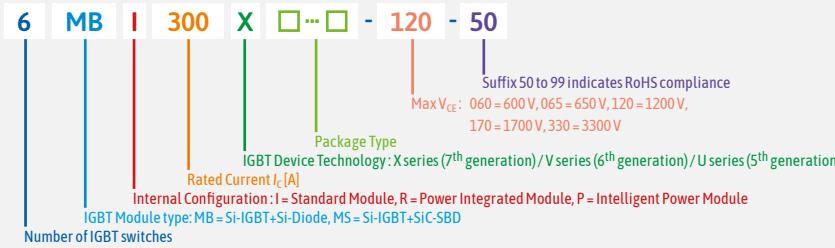
| Number of Switches | Products Category    | Internal Configuration                 |                         |                          |               |                 |                  | Max $V_{CE}(V_{RRM})$ |       |        |        |        |        | Rated Current |             |              |              |              |              | Page         |              |   |       |       |
|--------------------|----------------------|--|-------------------------|--------------------------|---------------|-----------------|------------------|-----------------------|-------|--------|--------|--------|--------|---------------|-------------|--------------|--------------|--------------|--------------|--------------|--------------|---|-------|-------|
|                    |                      | IGBT Module                            |                         |                          | Discrete IGBT | Rectifier Diode | Discrete SiC-SBD | 600 V                 | 650 V | 1200 V | 1700 V | 2300 V | 3300 V | $\leq 50 A$   | $\geq 50 A$ | $\leq 150 A$ | $\geq 150 A$ | $\leq 300 A$ | $\geq 300 A$ | $\leq 600 A$ | $\geq 600 A$ |   |       |       |
|                    |                      | Standard Module                        | Power Integrated Module | Intelligent Power Module |               |                 |                  |                       |       |        |        |        |        |               |             |              |              |              |              |              |              |   |       |       |
| 7                  | Small PIM            | •                                      |                         |                          |               |                 |                  |                       | •     | •      | •      |        |        |               | •           |              |              |              |              |              |              |   | 14    |       |
|                    | EconoPIM™            | •                                      |                         |                          |               |                 |                  |                       | •     | •      | •      |        |        |               | •           | •            |              |              |              |              |              |   | 15/16 |       |
| 6                  | 6-Pack EconoPACK™    | •                                      |                         |                          |               |                 |                  | •                     | •     | •      | •      |        |        |               | •           | •            | •            | •            | •            | •            |              |   | 17    |       |
| 2                  | Standard 2-Pack      | •                                      |                         |                          |               |                 |                  | •                     | •     | •      | •      |        |        |               |             | •            | •            | •            | •            | •            | •            |   |       | 18/19 |
| 1,2                | High Power next Core | •                                      |                         |                          |               |                 |                  |                       |       |        | •      | •      |        |               |             |              |              |              |              |              |              |   |       | 21/23 |
|                    | PrimePACK™           | •                                      |                         |                          |               |                 |                  |                       |       |        | •      | •      |        |               |             |              |              |              |              |              |              |   |       | 20/21 |
| 2,6                | SiC Module           | •                                      |                         |                          |               |                 |                  |                       |       |        | •      | •      | •      | •             | •           | •            | •            | •            | •            | •            | •            | • |       | 22    |
| 4,12               | T/I-type NPC 3-Level | Reverse-Blocking IGBTs are integrated. |                         |                          |               |                 |                  | •                     | •     | •      | •      |        |        |               | •           | •            | •            | •            | •            | •            |              |   | 24/25 |       |
| 6,7                | Small IPM / IPM      | •                                      |                         |                          |               |                 |                  | •                     | •     | •      | •      |        |        |               | •           | •            | •            | •            | •            |              |              |   |       | 25-29 |
| 1                  | Discrete IGBT        |  | •                       |                          |               |                 |                  | •                     | •     | •      | •      |        |        |               | •           | •            |              |              |              |              |              |   |       | 30    |
|                    | Rectifier Diode      |  |                         | •                        |               |                 |                  | •                     | •     | •      | •      |        |        |               | •           | •            |              |              |              |              |              |   |       | 31    |
|                    | SiC-SBD              |  |                         |                          | •             |                 |                  |                       |       |        |        |        |        |               | •           |              |              |              |              |              |              |   |       | 31    |

Note: PrimePACK™, EconoPIM™ and EconoPACK™ are registered trademarks of Infineon Technologies AG, Germany



## Type Name Explanation

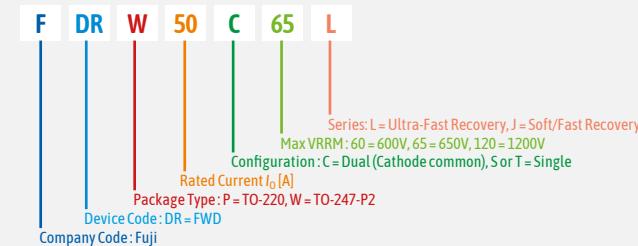
### IGBT Module Production Number



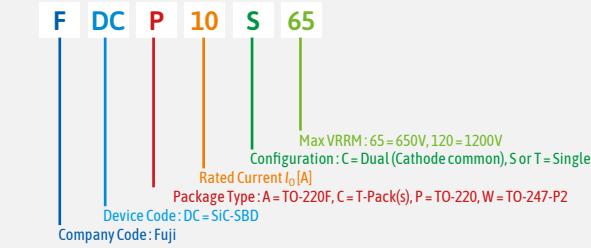
### Discrete IGBT Production Number



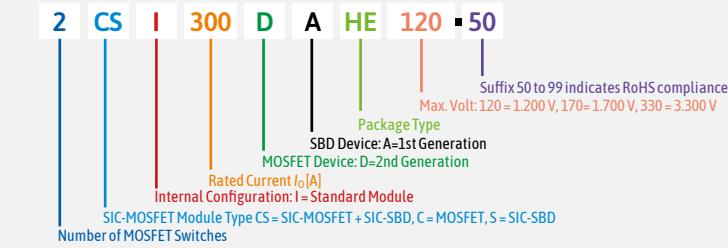
### Rectifier Diode Production Number



### SiC Schottky-Barrier Diode Production Number



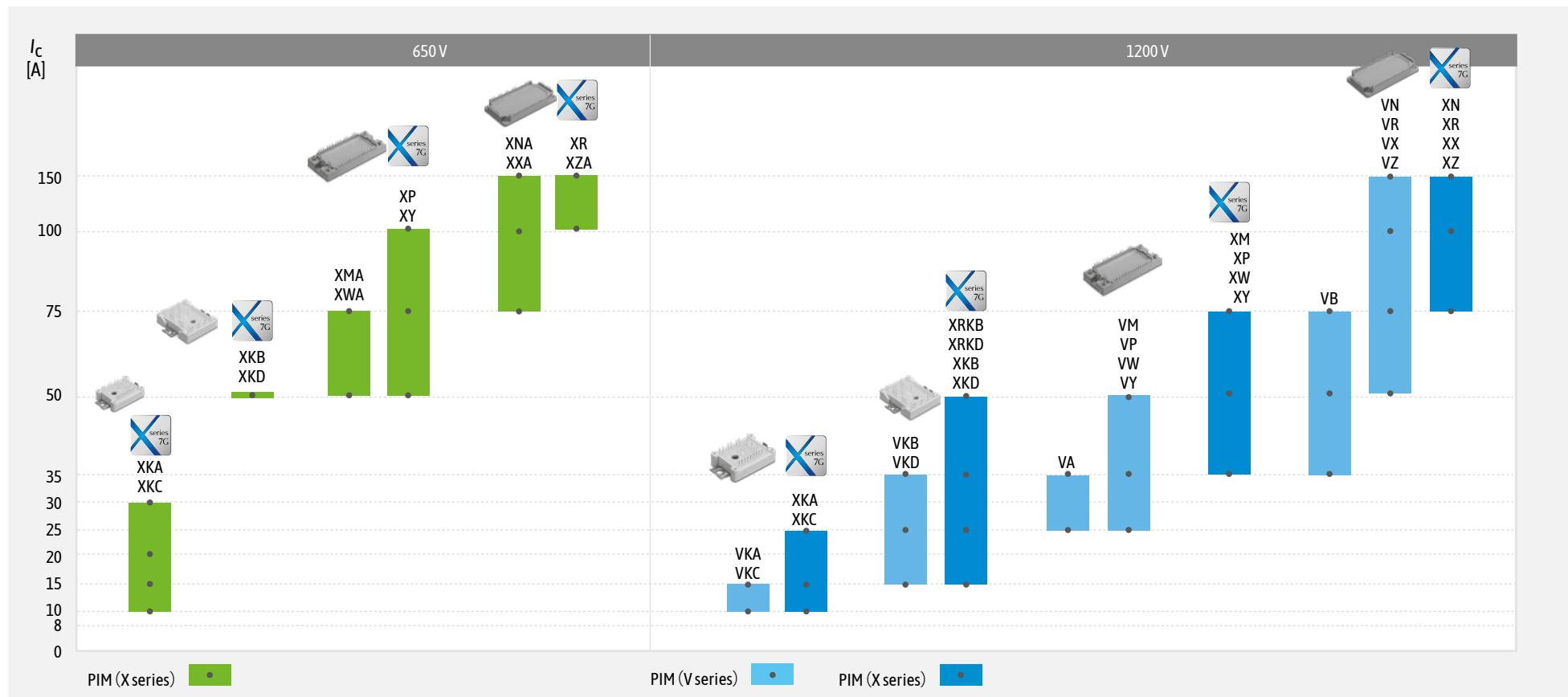
### All-SiC Module Production Number



# PIM (Power Integrated Modules) Product Map

| 7MBR | $I_c$       | IGBT series & Package type |             |                |                | Size  | Page      |  |  |
|------|-------------|----------------------------|-------------|----------------|----------------|-------|-----------|--|--|
|      |             | V series                   |             | X series       |                |       |           |  |  |
|      | Solder pins | Press fit pins             | Solder pins | Press fit pins |                |       |           |  |  |
|      | VKC         | VKA                        | XKC         | XKA            | 33.8 x 62.8 mm | 14    | EconoPIM™ |  |  |
|      | VKD         | VKB                        | XKD, XRKD   | XKB, XRKB      | 56.7 x 62.8 mm |       |           |  |  |
|      | VA, VM, VP  | VW, VY                     | XM, XP      | XW, XY         | 45 x 107.5 mm  | 15/16 |           |  |  |
|      | VB, VN, VR  | VX, VZ                     | XN, XR      | XX, XZ         | 62 x 122 mm    | 15/16 |           |  |  |

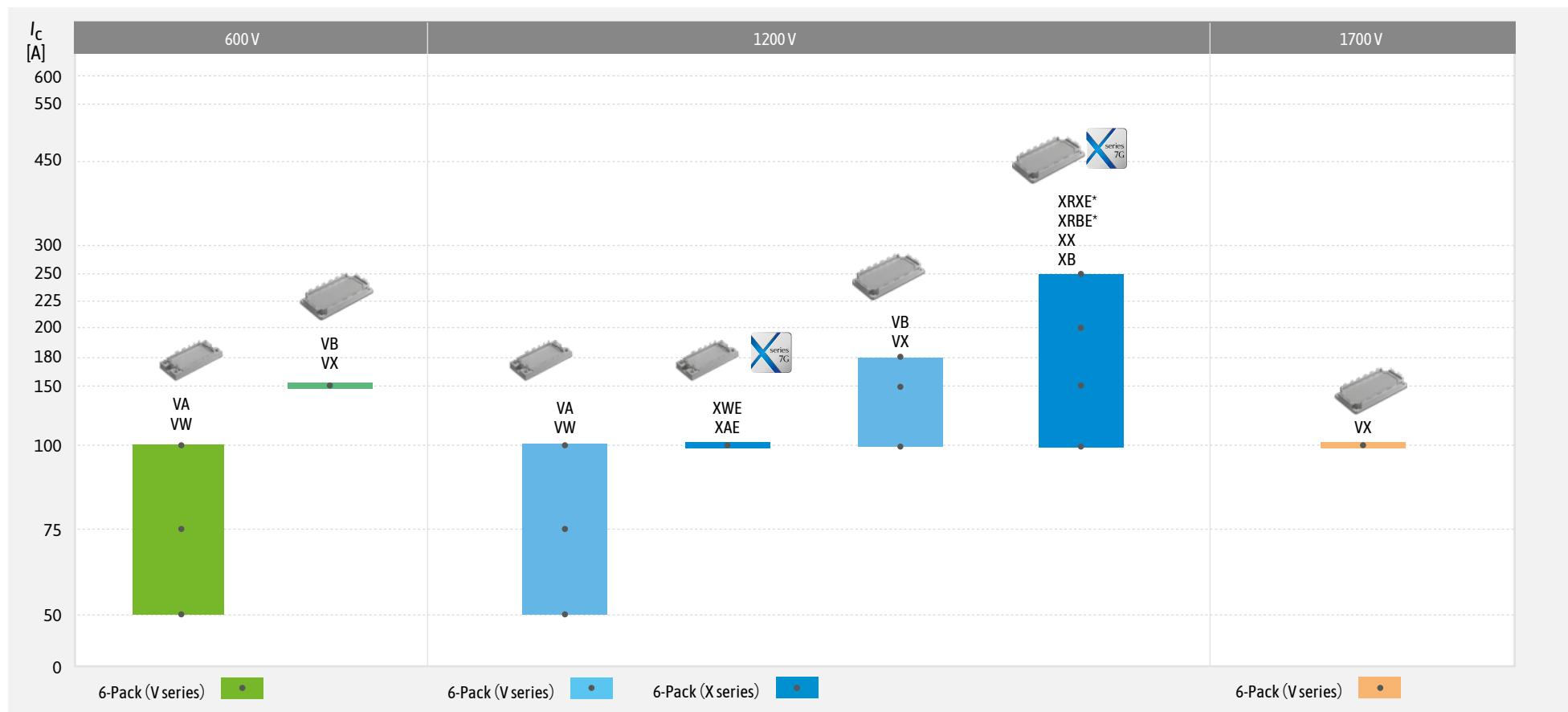
Note:  
EconoPIM™ is registered trademark of  
Infineon Technologies AG, Germany.



## 6-Pack Product Map

| 6MBI | $I_c$ | IGBT series & Package type |                |             |                | Size        | Page |  |  |
|------|-------|----------------------------|----------------|-------------|----------------|-------------|------|--|--|
|      |       | Vseries                    |                | Xseries     |                |             |      |  |  |
|      |       | Solder pins                | Press fit pins | Solder pins | Press fit pins |             |      |  |  |
|      |       | VA                         | VW             | XAE         | XWE            | 45x107.5 mm | 17   |  |  |
|      |       | VB                         | VX             | XB,XRBE*    | XX,XRXE*       | 62x122 mm   | 17   |  |  |

Note: EconoPACK™ is registered trademark of Infineon Technologies AG, Germany.



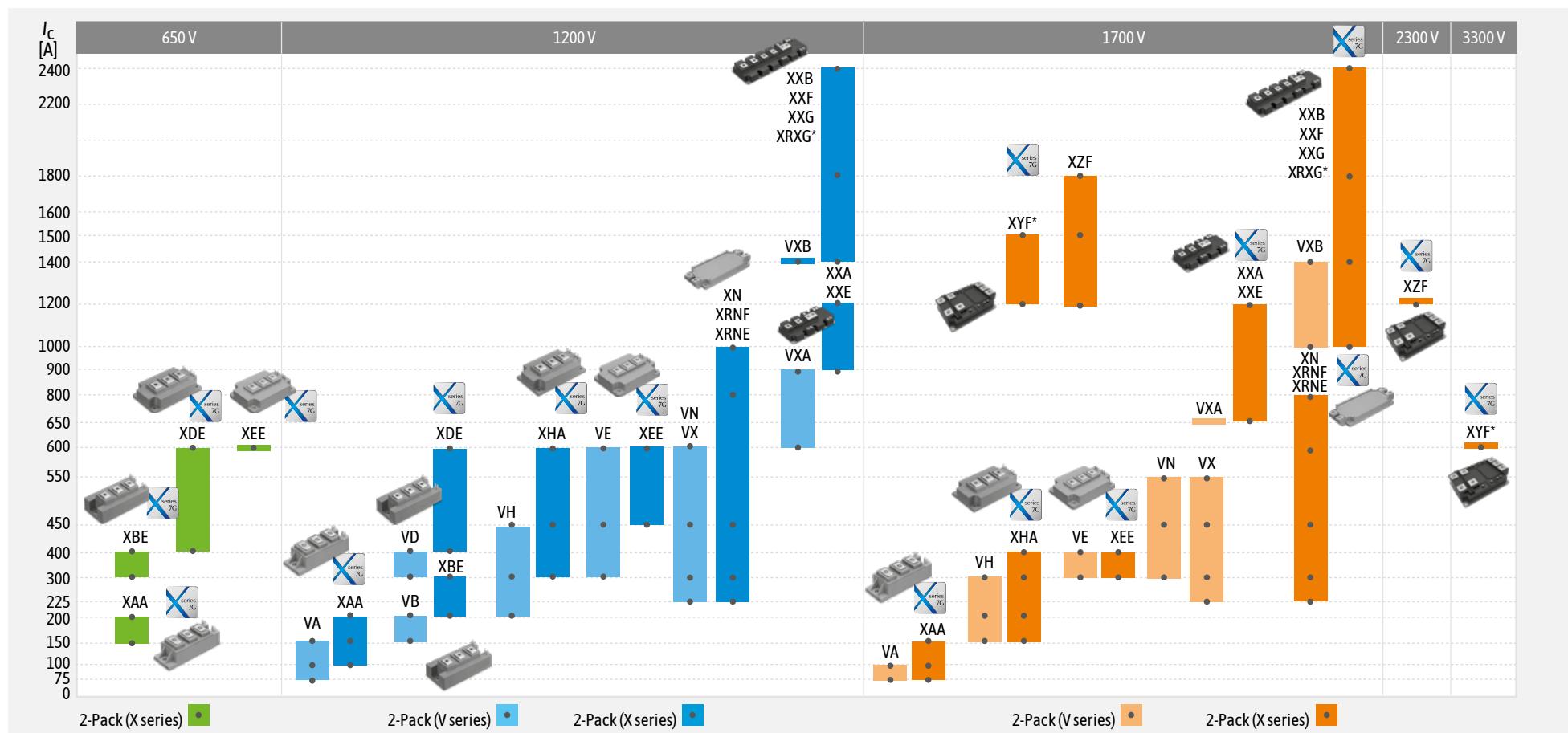
\* Under development

## 2-Pack Product Map

| 2MBI | $I_c$  | IGBT series & Package type |          | Size        |               | Page  |
|------|--------|----------------------------|----------|-------------|---------------|-------|
|      |        | V series                   | X series |             |               |       |
|      | VA     | XAA                        |          | 34x94 mm    | Standard Pack | 18    |
|      | VB     | XBE                        |          | 45x92 mm    |               | 18    |
|      | VD     | XDE                        |          | 62x108 mm   |               | 18    |
|      | VE     | XEE                        |          | 80x110 mm   |               | 18    |
|      | VH     | XHA                        |          | 62x108 mm   | Dual XT       | 18    |
|      | VN, VX | XN, XRNE, XRNF             |          | 62x150 mm   |               | 19    |
|      |        | XYF*, XZF                  |          | 99.5x144 mm | HPnC          | 21    |
|      | VXA    | XXA, XXE                   |          | 89x172 mm   | PrimePACK™    | 20/21 |
|      | VXB    | XXB, XXF, XXG, XRNG        |          | 89x250 mm   |               | 20/21 |

Note:  
PrimePACK™ is registered trademark  
of Infineon Technologies AG, Germany

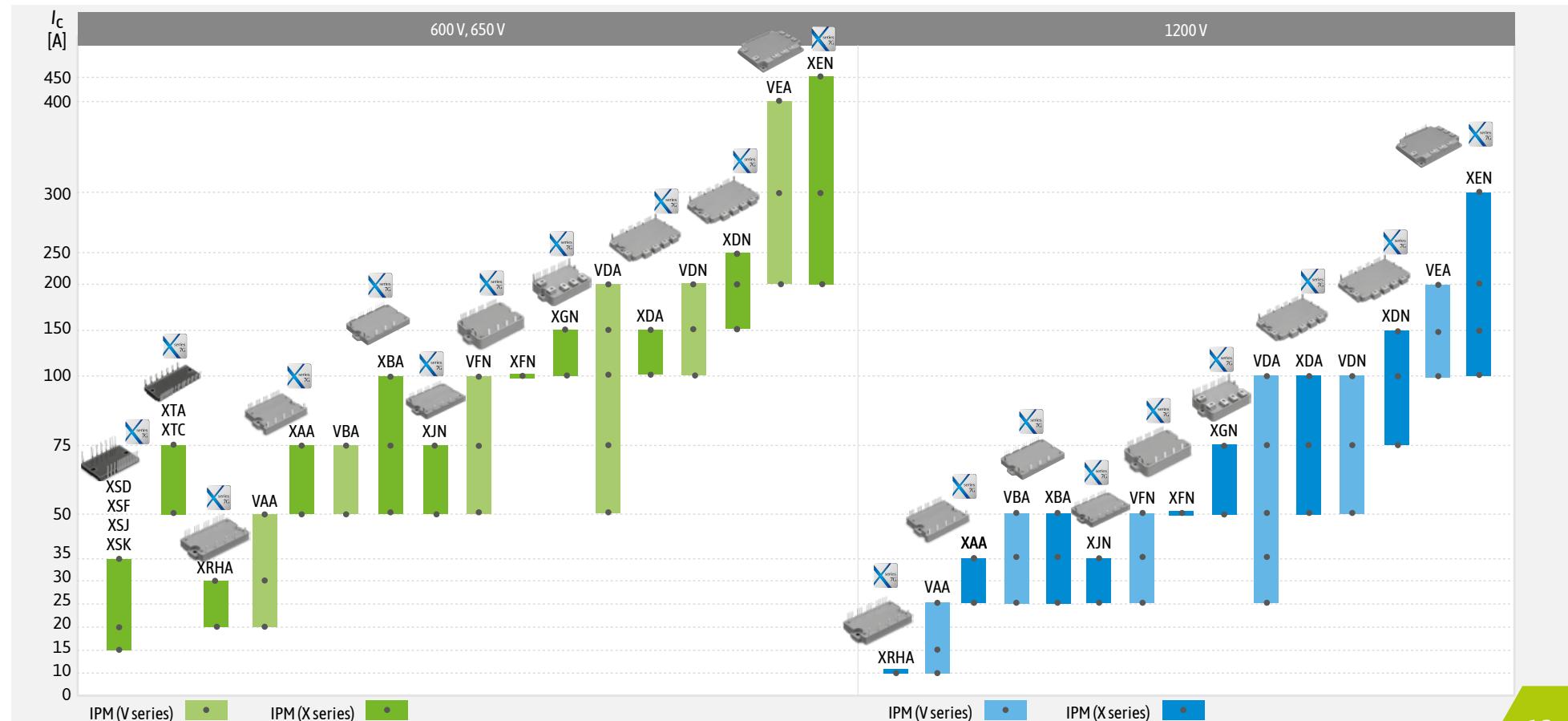
\*Under development



\* Under development

# IPM (Intelligent Power Modules) Product Map

| 6/7MBP | $I_C$ | IGBT series & Package type |  |                    |   |         |        |         |        | Size          | Page |
|--------|-------|----------------------------|--|--------------------|---|---------|--------|---------|--------|---------------|------|
|        |       | Vseries                    |  | Xseries            |   | Vseries |        | Xseries |        |               |      |
|        |       |                            |  |                    |   | 7 in 1  | 6 in 1 | 7 in 1  | 6 in 1 |               |      |
|        |       |                            |  | XSD, XSF, XSJ, XSK |   |         |        |         | •      | 26 x 43 mm    | 25   |
|        |       |                            |  | XTA, XTC           |   |         |        |         | •      | 79 x 31 mm    | 25   |
|        |       |                            |  | XRHA               |   |         |        |         | •      | 36 x 70 mm    | 26   |
|        |       | VAA                        |  | XAA                |   |         | •      |         | •      | 49.5 x 70 mm  | 26   |
|        |       | VBA                        |  | XBA                |   |         | •      |         | •      | 50.2 x 87 mm  | 26   |
|        |       |                            |  | XJN                |   |         |        | •       |        | 50.2 x 87 mm  | 26   |
|        |       | VFN                        |  | XFN                | • |         | •      |         | •      | 55 x 90 mm    | 27   |
|        |       |                            |  | XGN                |   |         |        |         | •      | 55 x 90 mm    | 27   |
|        |       | VDA, VDN                   |  | XDA, XDN           | • |         | •      |         | •      | 84 x 128.5 mm | 28   |
|        |       | VEA                        |  | XEN                | • |         | •      |         | •      | 110 x 142 mm  | 29   |



## Small PIM (Power Integrated Modules)

|       |  650 V Xseries  | 1200 V Vseries Xseries  |                   |
|-------|---|--|-------------------|
| $I_c$ |   | Vseries  | Xseries           |
| 10 A  | 7MBR10XKA065-50   | 7MBR10VKA120-50  | 7MBR10XKA120-50   |
| 15 A  | 7MBR15XKA065-50   | 7MBR15VKA120-50  | 7MBR15XKA120-50   |
| 20 A  | 7MBR20XKA065-50   |  |                   |
| 25 A  |   |  | 7MBR25XKA120-50   |
| 30 A  | 7MBR30XKA065-50   |  |                   |
|       |   |  |                   |
| 15 A  |   | 7MBR15VKB120-50  | 7MBR15XKB120-50   |
| 25 A  |   | 7MBR25VKB120-50  | 7MBR25XKB120-50   |
| 35 A  |   | 7MBR35VKB120-50  | 7MBR35XKB120-50   |
| 50 A  | 7MBR50XKB065-50   |  | 7MBR50XRKB120-50* |
|       |   |  |                   |
| 10 A  | 7MBR10XKC065-50   | 7MBR10VKC120-50  | 7MBR10XKC120-50   |
| 15 A  | 7MBR15XKC065-50   | 7MBR15VKC120-50  | 7MBR15XKC120-50   |
| 20 A  | 7MBR20XKC065-50   |  |                   |
| 25 A  |   |  | 7MBR25XKC120-50   |
| 30 A  | 7MBR30XKC065-50   |  |                   |
|       |   |  |                   |
| 15 A  |   | 7MBR15VKD120-50  | 7MBR15XKD120-50   |
| 25 A  |   | 7MBR25VKD120-50  | 7MBR25XKD120-50   |
| 35 A  |   | 7MBR35VKD120-50  | 7MBR35XKD120-50   |
| 50 A  | 7MBR50XKD065-50   |  | 7MBR50XRKD120-50* |
|       |   |  |                   |

\* RC-IGBT

## PIM (Power Integrated Modules) EconoPIM™

With NTC, solder pins. PIM

| $I_C$ | 650V Xseries     |         | 1200V Xseries    |                  |
|-------|------------------|---------|------------------|------------------|
|       | Vseries          | Xseries | Vseries          | Xseries          |
| 25 A  |                  |         | 7MBR25VA120-50   |                  |
| 35 A  |                  |         | 7MBR35VA120-50   |                  |
|       |                  |         |                  |                  |
| 35 A  |                  |         | 7MBR35VB120-50   |                  |
| 50 A  |                  |         | 7MBR50VB120-50   |                  |
| 75 A  |                  |         | 7MBR75VB120-50   |                  |
|       |                  |         |                  |                  |
| 25 A  |                  |         | 7MBR25VM120-50   |                  |
| 35 A  |                  |         | 7MBR35VM120-50   | 7MBR35XMA120-50  |
| 50 A  | 7MBR50XMA065-50  |         | 7MBR50VM120-50   | 7MBR50XMA120-50  |
| 75 A  | 7MBR75XMA065-50  |         |                  | 7MBR75XME120-50  |
|       |                  |         |                  |                  |
| 50 A  |                  |         | 7MBR50VN120-50   |                  |
| 75 A  | 7MBR75XNA065-50  |         | 7MBR75VN120-50   | 7MBR75XNA120-50  |
| 100 A | 7MBR100XNA065-50 |         | 7MBR100VN120-50  | 7MBR100XNA120-50 |
| 150 A | 7MBR150XNA065-50 |         | 7MBR150VN120-50  | 7MBR150XNE120-50 |
|       |                  |         |                  |                  |
| 25 A  |                  |         | 7MBR25VP120-50   |                  |
| 35 A  |                  |         | 7MBR35VP120-50   | 7MBR35XPA120-50  |
| 50 A  | 7MBR50XPA065-50  |         | 7MBR50VP120-50   | 7MBR50XPA120-50  |
| 75 A  | 7MBR75XPA065-50  |         |                  | 7MBR50XPE120-50  |
| 100 A | 7MBR100XPE065-50 |         |                  | 7MBR75XPE120-50  |
|       |                  |         |                  |                  |
| 50 A  |                  |         | 7MBR50VR120-50   |                  |
| 75 A  |                  |         | 7MBR75VR120-50   | 7MBR75XRA120-50  |
|       |                  |         |                  | 7MBR75XRE120-50  |
| 100 A | 7MBR100XRA065-50 |         | 7MBR100VR120-50  | 7MBR100XRA120-50 |
|       |                  |         |                  | 7MBR100XRE120-50 |
| 150 A | 7MBR150XRA065-50 |         | 7MBR150VR120-50  | 7MBR150XRE120-50 |
|       |                  |         |                  |                  |
|       |                  |         | 7MBR150XRE065-50 |                  |

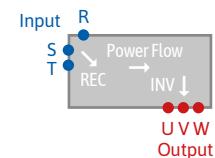
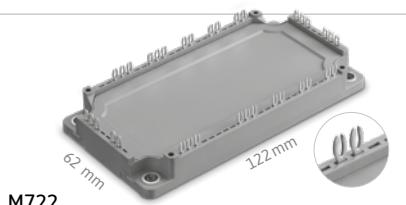
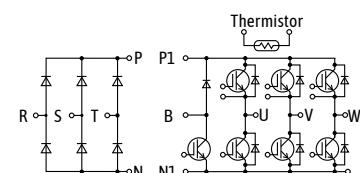
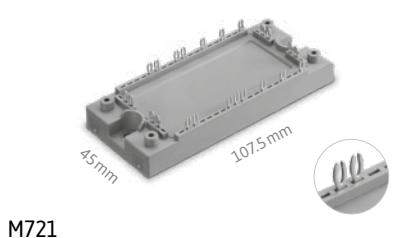
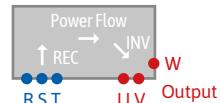
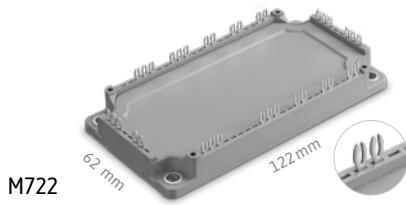
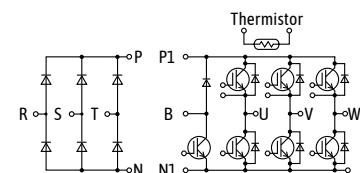
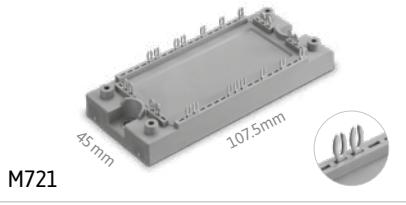
Note 1: Pin assignment of output terminals changes within the range of colored position depending on output current.

Note 2: EconoPIM™ is registered trademark of Infineon Technologies AG, Germany.

## PIM (Power Integrated Modules) EconoPIM™

| $I_C$ | 650V Xseries  |                 | 1200V Xseries   |         |
|-------|---|-----------------|---|---------|
|       |  | Vseries         |  | Xseries |
| 25 A  |   | 7MBR25VW120-50  |   |         |
| 35 A  |   | 7MBR35VW120-50  | 7MBR35XWA120-50   |         |
| 50 A  | 7MBR50XWA065-50   | 7MBR50VW120-50  | 7MBR50XWA120-50   |         |
| 75 A  | 7MBR75XWA065-50   |                 | 7MBR75XWE120-50   |         |
| 50 A  |   | 7MBR50VX120-50  |   |         |
| 75 A  | 7MBR75XXA065-50   | 7MBR75VX120-50  | 7MBR75XXA120-50   |         |
| 100 A | 7MBR100XXA065-50  | 7MBR100VX120-50 | 7MBR100XXA120-50  |         |
| 150 A | 7MBR150XXA065-50  | 7MBR150VX120-50 | 7MBR150XXE120-50  |         |
| 25 A  |   | 7MBR25VY120-50  |   |         |
| 35 A  |   | 7MBR35VY120-50  | 7MBR35XYA120-50   |         |
| 50 A  | 7MBR50XYA065-50   | 7MBR50VY120-50  | 7MBR50XYA120-50   |         |
| 75 A  | 7MBR75XYA065-50   |                 | 7MBR75XYE120-50   |         |
| 100 A | 7MBR100XYE065-50  |                 |   |         |
| 50 A  |   | 7MBR50VZ120-50  |   |         |
| 75 A  |   | 7MBR75VZ120-50  | 7MBR75XZA120-50   |         |
| 100 A | 7MBR100XZA065-50  | 7MBR100VZ120-50 | 7MBR100XZA120-50  |         |
| 150 A | 7MBR150XZA065-50  | 7MBR150VZ120-50 | 7MBR150XZE120-50  |         |

With NTC, press fit pins



Note 1: Pin assignment of output terminals changes within the range of colored position depending on output current.

Note 2: EconoPIM™ is registered trademark of Infineon Technologies AG, Germany.

## 6-Pack EconoPACK™

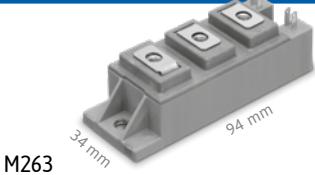
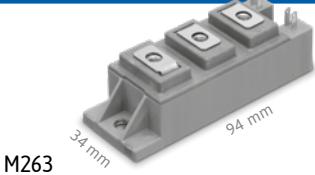
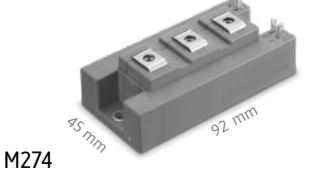
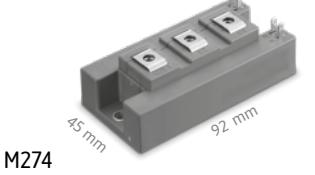
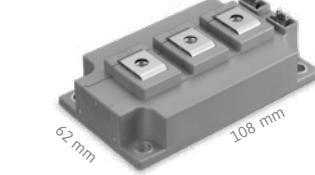
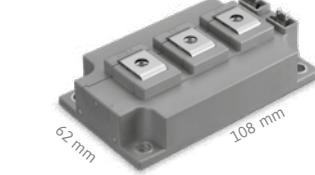
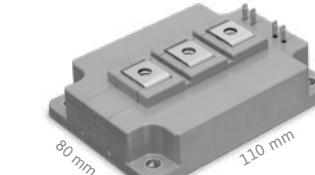
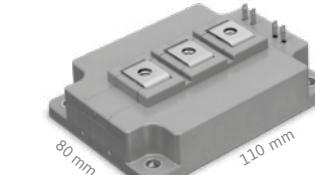
|  |                              | $I_C$   | 600 V            | 1200 V                         |                                 | 1700 V           |
|--|------------------------------|---------|------------------|--------------------------------|---------------------------------|------------------|
|  | With NTC, solder pins        | Vseries | Vseries          | Xseries                        | Xseries                         | Vseries          |
|  |                              | 50 A    | 6MBI50VA-060-50  | 6MBI50VA-120-50                |                                 |                  |
|  | V: M636, X: M669 Solder Pins | 75 A    | 6MBI75VA-060-50  | 6MBI75VA-120-50                |                                 |                  |
|  |                              | 100 A   | 6MBI100VA-060-50 | 6MBI100VA-120-50               | 6MBI100XAE120-50                |                  |
|  | With NTC, press fit pins     | 100 A   |                  | 6MBI100VB-120-50               | 6MBI100XBA120-50                |                  |
|  |                              | 150 A   | 6MBI150VB-060-50 | 6MBI150VB-120-50               | 6MBI150XBA120-50                |                  |
|  | M647 Press fit Pins          | 180 A   |                  | 6MBI180VB-120-50               |                                 |                  |
|  |                              |         |                  | 6MBI180VB-120-55 <sup>*1</sup> |                                 |                  |
|  | M648 Press fit Pins          | 200 A   |                  |                                | 6MBI200XBA120-50                |                  |
|  |                              |         |                  |                                | 6MBI200XBE120-50                |                  |
|  |                              | 250 A   |                  |                                | 6MBI250XRBE120-50 <sup>*2</sup> |                  |
|  |                              | 50 A    | 6MBI50VW-060-50  | 6MBI50VW-120-50                |                                 |                  |
|  |                              | 75 A    | 6MBI75VW-060-50  | 6MBI75VW-120-50                |                                 |                  |
|  |                              | 100 A   | 6MBI100VW-060-50 | 6MBI100VW-120-50               | 6MBI100XWE120-50                |                  |
|  |                              | 100 A   |                  | 6MBI100VX-120-50               | 6MBI100XXA120-50                | 6MBI100VX-170-50 |
|  |                              | 150 A   | 6MBI150VX-060-50 | 6MBI150VX-120-50               | 6MBI150XXA120-50                |                  |
|  |                              | 180 A   |                  | 6MBI180VX-120-50               |                                 |                  |
|  |                              |         |                  | 6MBI180VX-120-55               |                                 |                  |
|  |                              | 200 A   |                  |                                | 6MBI200XXA120-50                |                  |
|  |                              |         |                  |                                | 6MBI200XXE120-50                |                  |
|  |                              | 250 A   |                  |                                | 6MBI250XRXE120-50 <sup>*2</sup> |                  |

Note: EconoPACK™ is registered trademark of Infineon Technologies AG, Germany.

<sup>\*1)</sup> 6MBI180VB-120-55, 6MBI180VX-120-55; 6MBI200XBE120-50; 6MBI200XXE120-50 ; Premium type (Low Thermal Impedance Version)

<sup>\*2)</sup> RC-IGBT

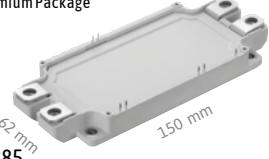
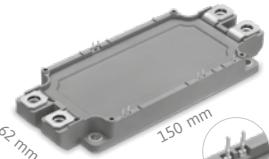
## Standard 2-Pack

| 2-Pack |                       | I <sub>C</sub> | 650 V            | Xseries   | 1200 V             | Vseries           | Xseries   | 1700 V           | Vseries          | Xseries   |
|--------|--|----------------|------------------|---|--------------------|-------------------|---|------------------|------------------|---|
|        |  |                | Xseries          |  | Vseries            | Xseries           |  | Vseries          | Xseries          |  |
| M263   | <br>34 mm<br>94 mm    | 75 A           |                  |   | 2MBI75VA-120-50    |                   |   | 2MBI75VA-170-50  |                  | 2MBI75XAA170-50   |
|        |  |                |                  |   | 2MBI100VA-120-50   | 2MBI100XAA120-50  |   | 2MBI100VA-170-50 |                  | 2MBI100XAA170-50  |
|        |  |                | 150 A            | 2MBI150XAA065-50  | 2MBI150VA-120-50   | 2MBI150XAA120-50  |   |                  |                  | 2MBI150XAA170-50  |
|        |  |                | 200 A            | 2MBI200XAA065-50  |                    |                   | 2MBI200XAA120-50  |                  |                  |   |
|        | <br>45 mm<br>92 mm    | 150 A          |                  |   | 2MBI150VB-120-50   |                   |   |                  |                  |   |
| M274   | <br>300 A             | 200 A          |                  |   | 2MBI200VB-120-50   | 2MBI200XBE120-50  |   |                  |                  |   |
|        |  |                | 300 A            | 2MBI300XBE065-50  |                    |                   | 2MBI300XBE120-50  |                  |                  |   |
|        |  |                | 400 A            | 2MBI400XBE065-50  |                    |                   |   |                  |                  |   |
|        |  |                | 300 A            |   | 2MBI300VD-120-50   |                   |   |                  |                  |   |
|        | <br>62 mm<br>108 mm   | 400 A          | 2MBI400XDE065-50 | 2MBI400VD-120-50  | 2MBI400XDE120-50   |                   |   |                  |                  |   |
| M275   | <br>62 mm<br>108 mm   | 600 A          | 600 A            | 2MBI600XDE065-50  |                    |                   | 2MBI600XDE120-50  |                  |                  |   |
|        |  |                | 150 A            |   |                    |                   |   | 2MBI150VH-170-50 |                  | 2MBI150XHA170-50  |
|        |  |                | 200 A            |   | 2MBI200VH-120-50   |                   |   | 2MBI200VH-170-50 |                  | 2MBI200XHA170-50  |
|        |  |                | 300 A            |   | 2MBI300VH-120-50   | 2MBI300XHA120-50  |   | 2MBI300VH-170-50 |                  | 2MBI300XHA170-50  |
|        | <br>62 mm<br>108 mm | 400 A          |                  |   |                    |                   |   | 2MBI400XHA170-50 |                  | 2MBI400XHA170-81*   |
| M276   | <br>62 mm<br>108 mm | 450 A          | 450 A            |   | 2MBI450VH-120-50   | 2MBI450XHA120-50  |   |                  |                  |   |
|        |  |                | 500 A            |   | 2MBI450VH-120F-50* | 2MBI450XHA120-81* |   |                  |                  |   |
|        |  |                | 600 A            |   |                    |                   | 2MBI600XHA120-50  |                  |                  |   |
|        |  |                | 300 A            |   | 2MBI300VE-120-50   |                   |   | 2MBI300VE-170-50 |                  | 2MBI300XEE170-50  |
|        | <br>80 mm<br>110 mm | 400 A          |                  |   |                    |                   | 2MBI400VE-120-50  |                  | 2MBI400XEE170-50 |   |
| M277   | <br>80 mm<br>110 mm | 450 A          | 450 A            |   | 2MBI450VE-120-50   | 2MBI450XEE120-50  |   |                  |                  |   |
|        |  |                | 500 A            |   |                    |                   | 2MBI600XEE120-50  |                  |                  |   |
|        |  |                | 300 A            | 2MBI600XEE065-50  | 2MBI600VE-120-50   |                   |   |                  |                  |   |
|        |  |                | 400 A            |   |                    |                   |   |                  |                  |   |

Note: "-81": Pre-applied Thermal-Interface-Material for -50

\* Under development

## Standard 2-Pack

|                          |  | $I_C$  | 1200 V           |                              |   | 1700 V           |                              |   |
|--------------------------|--|--------|------------------|------------------------------|---|------------------|------------------------------|---|
|                          |  |        | Vseries          | Vseries with SIN-substrate*1 | Xseries  | Vseries          | Vseries with SIN-substrate*1 | Xseries  |
| With NTC, solder pins    | <br>M254  | 225 A  | 2MBI225VN-120-50 | 2MBI225VN-120S-50            | 2MBI225XNA120-50  |                  |                              | 2MBI225XNA170-50  |
|                          |  |        |                  |                              | 2MBI225XNA120-81*   |                  |                              |   |
|                          |  | 300 A  | 2MBI300VN-120-50 | 2MBI300VN-120S-50            | 2MBI300XNA120-50  | 2MBI300VN-170-50 |                              | 2MBI300XNA170-50  |
|                          |  | 450 A  | 2MBI450VN-120-50 | 2MBI450VN-120S-50            | 2MBI450XNA120-50  | 2MBI450VN-170-50 |                              | 2MBI450XNA170-50  |
|                          |  | 550 A  |                  |                              |   |                  | 2MBI550VN-170-50*1           |   |
|                          |  | 600 A  |                  | 2MBI600VN-120-50             | 2MBI600XNG120-50*1  |                  |                              | 2MBI600XNG170-50*1  |
| With NTC, press fit pins | <br>M285  | 600 A  |                  |                              | 2MBI600XNE120-50  |                  |                              | 2MBI600XNE170-50  |
|                          |  | 800 A  |                  |                              | 2MBI800XNE120-50  |                  |                              | 2MBI800XRNE170-50*2   |
|                          |  | 1000 A |                  |                              | 2MBI1000XRNE120-50*2  |                  |                              |   |
|                          |  | 225 A  | 2MBI225VX-120-50 |                              | 2MBI225XNB120-50  | 2MBI225VX-170-50 |                              | 2MBI225XNB170-50  |
|                          |  | 300 A  | 2MBI300VX-120-50 |                              | 2MBI300XNB120-50  | 2MBI300VX-170-50 |                              | 2MBI300XNB170-50  |
|                          |  | 450 A  | 2MBI450VX-120-50 |                              | 2MBI450XNB120-50  | 2MBI450VX-170-50 |                              | 2MBI450XNB170-50  |
| With NTF, solder pins    | <br>M282 | 550 A  |                  |                              | 2MBI450XNB120-81*   |                  |                              |   |
|                          |  | 600 A  |                  | 2MBI600VX-120-50             | 2MBI600XNH120-50*1  |                  |                              | 2MBI600XNH170-50*1  |
|                          |  |        |                  |                              | 2MBI600XNH120-81*1  |                  |                              |   |
|                          |  | 600 A  |                  |                              | 2MBI600XNF120-50  |                  |                              | 2MBI600XNF170-50  |
|                          |  | 800 A  |                  |                              | 2MBI800XNF120-50  |                  |                              | 2MBI800XRNF170-50*2   |
|                          |  | 1000 A |                  |                              | 2MBI1000XRNF120-50*2  |                  |                              |   |

Premium Package:

- High isolation capability
- High thermal performance

Note: "-81": Pre-applied Thermal-Interface-Material for -50

\*1) Low thermal impedance version

\*2) RC-IGBT

# PrimePACK™

| I <sub>C</sub> | 1200 V             |  |  |   | 1700 V   |                                     |                                   |                                |
|----------------|--------------------|--|--|---|--|-------------------------------------|-----------------------------------|--------------------------------|
|                | Vseries            |  | Xseries<br>X <sub>G</sub><br>series        | Vseries   |  | Xseries<br>X <sub>G</sub><br>series |                                   |                                |
|                | Low switching loss | Soft turn off                              |  | Low switching loss                                    | Soft turn off  |                                     |                                   |                                |
| M271           | 600 A              | 2MBI600VXA-120E-50<br>2MBI600VXA-120E-54   |  |   |  |                                     |                                   |                                |
|                | 650 A              |  |  |   | 2MBI650VXA-170E-50<br>2MBI650VXA-170E-54<br>2MBI650VXA-170EA-50<br>2MBI650VXA-170EA-54     |                                     | 2MBI650XXA170-50                  |                                |
|                | 900 A              | 2MBI900VXA-120E-50<br>2MBI900VXA-120E-54   | 2MBI900VXA-120P-50<br>2MBI900VXA-120P-54   | 2MBI900XXA120P-50<br>2MBI900XXA120P-81 <sup>1</sup>   |  |                                     |                                   |                                |
|                | 1200 A             |  |  | 2MBI1200XXE120P-50                                    |  |                                     | 2MBI1200XXE170-50                 |                                |
| 2-Pack         | 1000 A             |  |  |   | 2MBI1000VXB-170E-50<br>2MBI1000VXB-170E-54<br>2MBI1000VXB-170EA-50<br>2MBI1000VXB-170EA-54 |                                     | 2MBI1000XXB170-50                 |                                |
| M272           | 1400 A             | 2MBI1400VXB-120E-50<br>2MBI1400VXB-120E-54 | 2MBI1400VXB-120P-50<br>2MBI1400VXB-120P-54 | 2MBI1400XXB120P-50<br>2MBI1400XXB120P-81 <sup>1</sup> | 2MBI1400VXB-170E-50<br>2MBI1400VXB-170E-54   | 2MBI1400VXB-170P-50                 | 2MBI1400XXB170-50                 |                                |
|                | 1800 A             |  |  | 2MBI1800XXF120P-50                                    |  |                                     | 2MBI1800XXF170-50                 |                                |
| M291           | 1800 A             |  |  | 2MBI1800XXG120P-50<br>2MBI1800XXG120P-81 <sup>1</sup> |  |                                     | 2MBI1800XXG170-50                 | 2MBI1800XXG170-81 <sup>1</sup> |
|                | XRXG               | 2400 A                                     |  | 2MBI2400XRXG120-50 <sup>1,2</sup>                     |  |                                     | 2MBI2400XRXG170-50 <sup>1,2</sup> |                                |

Note 1: The products with 'EA' on this page have large FWD.

<sup>1)</sup> Under development

Note 2: PrimePACK™ is registered trademark of Infineon Technologies AG, Germany.

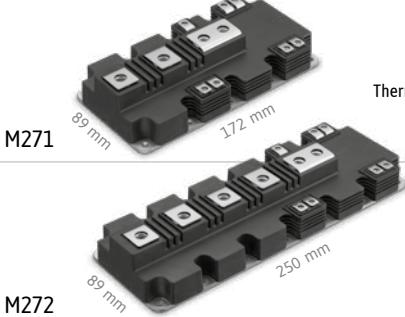
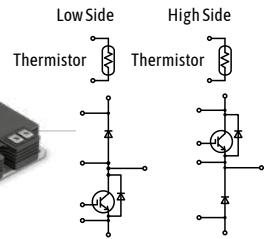
<sup>2)</sup> RC-IGBT

Note 3: The products with suffix '-54' on this page are labeled to specify the rank of  $V_{sat}$  and  $V_f$ .

Note 4: "-81": Pre-applied Thermal-Interface-Material for -50

Note 5: The range of modules with pre-applied TIM(Thermal-Interface-Material) is being continually expanded.

## PrimePACK™

| Chopper | <br><b>M271</b><br>89 mm      172 mm<br><br><b>M272</b><br>89 mm      250 mm |  | $I_C$  | 1200 V                             |                                    | 1700 V                             |                                    |
|---------|---|---|--------|------------------------------------|------------------------------------|------------------------------------|------------------------------------|
|         |   |   |        | V series                           |                                    | V series                           |                                    |
|         |   |   |        | Low side configuration             | High side configuration            | Low side configuration             | High side configuration            |
|         |   |   |        | 650 A                              |                                    | 1MBI650VXA-170EL-50                | 1MBI650VXA-170EH-50                |
|         |   |   | 900 A  | 1MBI900VXA-120PD-50* <sup>1</sup>  | 1MBI900VXA-120PC-50* <sup>1</sup>  | 1MBI900VXA-120EL-54* <sup>2</sup>  | 1MBI900VXA-170EH-54* <sup>2</sup>  |
|         |   |   | 1000 A | 1MBI900VXA-120PD-54* <sup>2</sup>  | 1MBI900VXA-120PC-54* <sup>2</sup>  | 1MBI1000VXB-170EL-50               | 1MBI1000VXB-170EH-50               |
|         |   |   | 1400 A | 1MBI1400VXB-120PL-54* <sup>2</sup> | 1MBI1400VXB-120PH-54* <sup>2</sup> | 1MBI1400VXB-170EL-54* <sup>2</sup> | 1MBI1400VXB-170EH-54* <sup>2</sup> |
|         |   |   |        |                                    |                                    | 1MBI1400VXB-170PL-50               | 1MBI1400VXB-170PH-50               |
|         |   |   |        |                                    |                                    | 1MBI1400VXB-170PL-54* <sup>2</sup> | 1MBI1400VXB-170PH-54* <sup>2</sup> |

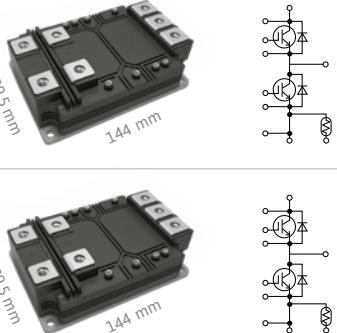
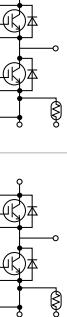
Note 1: PrimePACK™ is registered trademark of Infineon Technologies AG, Germany.

Note 2: The range of modules with pre-applied TIM(Thermal-Interface-Material) is being continually expanded.

\*<sup>1</sup>) Antiparallel diode current rating is 120 A. Application circuit is Boost/Buck chopper only.

\*<sup>2</sup>) The products with suffix '-54' on this page are labeled to specify the rank of  $V_{sat}$  and  $V_f$ .

## High Power next Core (HPnC)

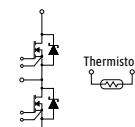
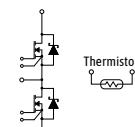
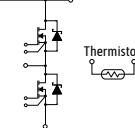
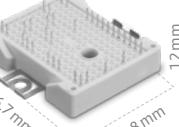
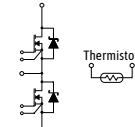
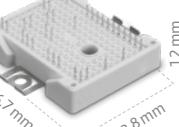
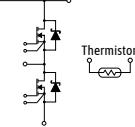
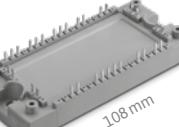
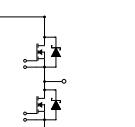
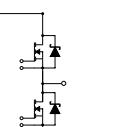
| 2-Pack | <br><b>M297*<sup>1,2</sup></b><br>55 mm      144 mm<br><br><b>M298*<sup>3</sup></b><br>55 mm      144 mm |  | $I_C$  | 1700 V                          |                   | 2300 V         |                | 3300 V                         |                |
|--------|---|---|--------|---------------------------------|-------------------|----------------|----------------|--------------------------------|----------------|
|        |   |   |        | Xseries                         |                   | Xseries        |                | Xseries                        |                |
|        |   |   |        | 7th generation                  | 7th generation    | 7th generation | 7th generation | 7th generation                 | 7th generation |
|        |   |   | 450 A  |                                 |                   |                |                |                                |                |
|        |   |   | 600 A  |                                 |                   |                |                | 2MBI600XYF330-50* <sup>1</sup> |                |
|        |   |   | 1000 A |                                 |                   |                |                |                                |                |
|        |   |   | 1200 A | 2MBI1200XYF170-50* <sup>1</sup> |                   |                |                |                                |                |
|        |   |   | 1500 A | 2MBI1500XYF170-50* <sup>1</sup> |                   |                |                |                                |                |
|        |   |   | 1200 A | 2MBI1200XZF170-50               | 2MBI1200XZF230-50 |                |                |                                |                |
|        |   |   | 1500 A | 2MBI1500XZF170-50               |                   |                |                |                                |                |
|        |   |   | 1800 A | 2MBI1800XZF170-50               |                   |                |                |                                |                |

\*<sup>1</sup>) Under development

\*<sup>2</sup>) Traction variant with MgSiC baseplate

\*<sup>3</sup>) Industrial variant with Cu baseplate

## Silicon Carbide (SiC) Modules

|                   |   |  |  |   |  |   |
|-------------------|---|---|--|---|--|---|
| with solder pins  | Module ID   | Dimensions  |    | $I_C$   | 1200V  | 1700V   |
|                   |   |   |  | SiC MOSFET  | SiC MOSFET   |   |
| M293              |    | 33.8 mm x 62.8 mm x 12 mm   |    | 50 A<br>75 A<br>100 A<br>150 A  | 2CSI50DAKC120-50*<br>2CSI75DAKC120-50*<br>2CSI100DAKC120-50*                       |   |
| M697              |    | 33.8 mm x 62.8 mm x 12 mm   |    | 50 A<br>75 A<br>100 A<br>150 A  | 6CSI50DAKC20-50*   |   |
| M294              |    | 56.7 mm x 62.8 mm x 12 mm   |    | 50 A<br>75 A<br>100 A<br>150 A<br>200 A   | 2CSI100DAKD120-50*<br>2CSI150DAKD120-50*<br>2CSI200DAKD120-50*                     |   |
| M680              |   | 56.7 mm x 62.8 mm x 12 mm   |   | 50 A<br>75 A<br>100 A<br>150 A<br>200 A   | 6CSI50DAKD120-50*<br>6CSI75DAKD120-50*<br>6CSI100DAKD120-50*                       |   |
| EconoPack™ 6 in 1 |  | 45 mm x 108 mm x 5 mm   |  | 50 A<br>75 A<br>100 A<br>150 A<br>200 A<br>100 A<br>150 A<br>200 A<br>100 A<br>150 A<br>200 A | 6CSI50DAAA120-50*<br>6CSI75DAAA120-50*<br>6CSI100DAAA120-50*<br>6CSI150DAAA120-50* |   |
| 62mm STD 2 in 1   |  | 62 mm x 108 mm x 38.5 mm  |  | 300 A<br>400 A<br>450 A<br>600 A<br>750 A   | 2CSI300DAHE120-50<br>2CSI450DAHE120-50<br>2CSI600DAHE120-50                        | 2CSI200DAHE170-50<br>2CSI300DAHE170-50<br>2CSI400DAHE170-50 |

\* Under development

## Silicon Carbide (SiC) Modules

|        |                      | $I_C$  | 1700 V                         | 2300 V                         | 3300 V                        |
|--------|----------------------|--------|--------------------------------|--------------------------------|-------------------------------|
|        |                      |        | SiC MOSFET                     | SiC MOSFET                     | SiC MOSFET                    |
| 2-Pack | For traction use     | 850 A  |                                |                                | 2CI850DYF330-50 <sup>*1</sup> |
|        | M297 <sup>*1,2</sup> | 1000 A | 2CI1000DYF170-50 <sup>*1</sup> |                                |                               |
|        |                      | 1500 A | 2CI1500DYF170-50 <sup>*1</sup> |                                |                               |
|        |                      | 1800 A | 2CI1800DYF170-50 <sup>*1</sup> |                                |                               |
|        | For industrial use   | 1000 A | 2CI1000DZF170-50 <sup>*1</sup> |                                |                               |
|        | M298 <sup>*1,3</sup> | 1200 A |                                | 2CI1200HZF230-50 <sup>*1</sup> |                               |
|        |                      | 1500 A | 2CI1500DZF170-50 <sup>*1</sup> |                                |                               |
|        |                      | 1800 A | 2CI1800DZF170-50 <sup>*1</sup> |                                |                               |

<sup>\*1)</sup> Under development

<sup>\*2)</sup> Traction variant with MgSiC baseplate

<sup>\*3)</sup> Industrial variant with Cu baseplate



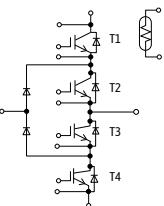
## Advanced T-type NPC 3-Level Modules

|                                  |       | $I_C$                            | 1200 V  |  | 1700 V   |  |
|----------------------------------|-------|----------------------------------|---|--|--|--|
|                                  |       |                                  | V series  | RB-IGBT  | V series   | RB-IGBT  |
| 3 Phase With NTC,<br>solder pins | M1203 | 50 A<br>75 A<br>100 A            | 12MBI50VN-120-50<br>12MBI75VN-120-50<br>12MBI100VN-120-50 | 600 V<br>600 V<br>600 V                                |  |  |
|                                  | M1202 | 50 A<br>75 A<br>100 A            | 12MBI50VX-120-50<br>12MBI75VX-120-50<br>12MBI100VX-120-50 | 600 V<br>600 V<br>600 V                                |  |  |
|                                  | M403  | 220 A<br>300 A<br>340 A<br>400 A | T3<br>T4<br>RB-IGBT<br>T1<br>T2                           |  | 4MBI220VF-170R2-50<br>4MBI300VG-120R-50<br>4MBI300VG-120R1-50<br>4MBI340VF-120R-50<br>4MBI400VF-120R-50 <sup>*1</sup><br>4MBI400VG-060R-50 | 1200 V   |
| 1 Phase                          | M404  | 450 A                            | T2<br>T3<br>RB-IGBT<br>T1<br>T4                           | 4MBI450VB-120R1-50<br>4MBI450VB-120R1-60 <sup>*4</sup> | 900 V<br>900 V   | 4MBI450VB-170R2-50<br>4MBI450VB-170R2-60 <sup>*4</sup> |
|                                  |       | 600 A                            |   |  |  | 1200 V   |
|                                  |       | 650 A                            |   |  |  | 1200 V   |
|                                  |       | 900 A                            |   |  |  | 1200 V   |
|                                  |       | 220 A<br>300 A<br>340 A<br>400 A | T3<br>T4<br>RB-IGBT<br>T1<br>T2                           | 4MBI600VB-170R2-50<br>4MBI600VB-170R2-60 <sup>*4</sup> | 900 V  | 1200 V   |
|                                  |       | 450 A                            |   |  |  |  |
|                                  |       | 600 A                            |   |  |  |  |
|                                  |       | 650 A                            |   |  |  |  |
|                                  |       | 900 A                            |   |  |  |  |

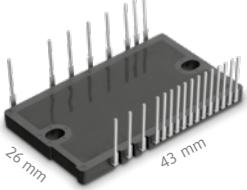
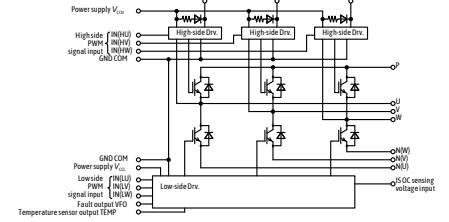
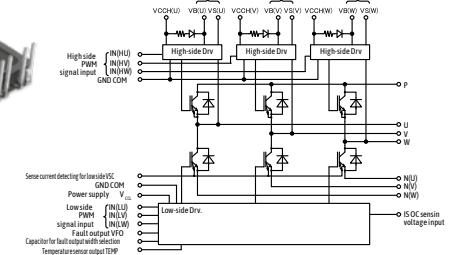
Note: AT-NPC (Advanced T-type Neutral-Point-Clamped) 3-level Module integrates RB-IGBT (Reverse Blocking-IGBT) in addition to ordinary IGBT and FWD in single package.

<sup>\*1)</sup> Particular for Inverter of UPS or PCS   <sup>\*2)</sup> Particular for Converter of UPS   <sup>\*3)</sup> Under development   <sup>\*4)</sup> The products with suffix '-60' on this page are labeled to specify the rank of  $V_{sat}$  and  $V_f$ .

## I-type NPC 3-Level Module

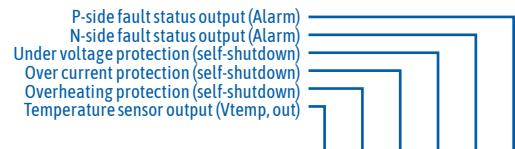
| 1 Phase | M404 | 89 mm<br>250 mm |  | $I_C$   | 1200 V           | 1700 V  |
|---------|------|-----------------|---|---------|------------------|---------|
|         |      |                 |   | Vseries | Vseries          | Vseries |
|         |      |                 |   | 600 A   | 4MBI600VC-120-50 |         |

## Small IPM (Intelligent Power Modules)

| Small IPM with High Voltage Driver- $I_C$ without Brake-Chopper | P633A |   |   | $I_C$ | 600 V           | Xseries |
|---|-------|---|--|-------|-----------------|---------|
|   |       |   |  | 7G    |                 |         |
|   | P633A |   |  | 15 A  | 6MBP15XSD060-50 |         |
|   |       |   |  | 20 A  | 6MBP20XSD060-50 |         |
|   |       |   |  | 30 A  | 6MBP30XSD060-50 |         |
|   |       |   |  | 35 A  | 6MBP35XSD060-50 |         |
|   |       |   |  | 15 A  | 6MBP15XSF060-50 |         |
|   |       |   |  | 20 A  | 6MBP20XSF060-50 |         |
|   |       |   |  | 30 A  | 6MBP30XSF060-50 |         |
|   |       |   |  | 35 A  | 6MBP35XSF060-50 |         |
|   |       |   |  | 50 A  | 6MBP50XTA065-50 |         |
|   |       |   |  | 75 A  | 6MBP75XTA065-50 |         |
|   | P642  |  |  |       |                 |         |

# IPM (Intelligent Power Modules)

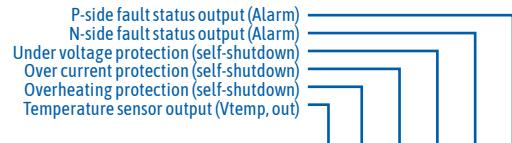
## Built-in protection functions



|                       | I <sub>C</sub> | 600 V           | 650 V            | 1200 V          |                  |
|-----------------------|----------------|-----------------|------------------|-----------------|------------------|
|                       |                | V series        | Xseries 7G       | V series        | Xseries 7G       |
| Without Brake-Chopper | 10 A           |                 |                  |                 | 6MBP10XRHA120-50 |
|                       | 20 A           |                 | 6MBP20XRHA065-50 |                 |                  |
|                       | 30 A           |                 | 6MBP30XRHA065-50 |                 |                  |
|                       | 10 A           |                 |                  | 6MBP10VAA120-50 |                  |
|                       | 15 A           |                 |                  | 6MBP15VAA120-50 |                  |
|                       | 20 A           | 6MBP20VAA060-50 |                  | 6MBP25VAA120-50 | 6MBP25XAA120-50  |
|                       | 25 A           |                 |                  | 6MBP25VAA120-50 |                  |
|                       | 30 A           | 6MBP30VAA060-50 |                  |                 | 6MBP35XAA120-50  |
|                       | 35 A           |                 |                  |                 |                  |
|                       | 50 A           | 6MBP50VAA060-50 | 6MBP50XAA065-50  |                 |                  |
| With Brake-Chopper    | 75 A           |                 | 6MBP75XAA065-50  |                 |                  |
|                       | 25 A           |                 |                  | 6MBP25VBA120-50 | 6MBP25XBA120-50  |
|                       | 35 A           |                 |                  | 6MBP35VBA120-50 | 6MBP35XBA120-50  |
|                       | 50 A           | 6MBP50VBA060-50 | 6MBP50XBA065-50  | 6MBP50VBA120-50 | 6MBP50XBA120-50  |
|                       | 75 A           | 6MBP75VBA060-50 | 6MBP75XBA065-50  |                 |                  |
|                       | 100 A          |                 | 6MBP100XBA065-50 |                 |                  |
|                       | 25 A           |                 |                  |                 | 7MBP25XJN120-50  |
|                       | 35 A           |                 |                  |                 | 7MBP35XJN120-50  |
|                       | 50 A           |                 | 7MBP50XJN065-50  |                 |                  |
|                       | 75 A           |                 | 7MBP75XJN065-50  |                 |                  |

# IPM (Intelligent Power Modules)

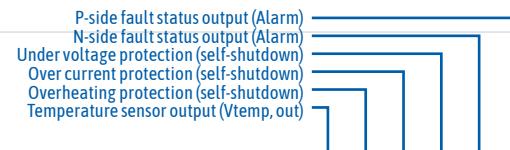
## Built-in protection functions



|                          |              | I <sub>c</sub> | 600V<br>Vseries  | 650V<br>Xseries<br>Xseries 7G | 1200V<br>Vseries | 1200V<br>Xseries<br>Xseries 7G |
|--------------------------|--------------|----------------|------------------|-------------------------------|------------------|--------------------------------|
| Without<br>Brake-Chopper | 6MBP□XFN□-50 | 25A            |                  |                               | 6MBP25VFN120-50  |                                |
|                          |              | 35A            |                  |                               | 6MBP35VFN120-50  |                                |
|                          | 6MBP□VFN□-50 | 50A            | 6MBP50VFN060-50  |                               | 6MBP50VFN120-50  | 6MBP50XFN120-50                |
|                          |              | 75A            | 6MBP75VFN060-50  |                               |                  |                                |
|                          |              | 100A           | 6MBP100VFN060-50 | 6MBP100XFN065-50              |                  |                                |
| With Brake-<br>Chopper   | 7MBP□XFN□-50 | 25A            |                  |                               | 7MBP25VFN120-50  |                                |
|                          |              | 35A            |                  |                               | 7MBP35VFN120-50  |                                |
|                          |              | 50A            | 7MBP50VFN060-50  |                               | 7MBP50VFN120-50  | 7MBP50XFN120-50                |
|                          |              | 75A            | 7MBP75VFN060-50  |                               |                  |                                |
|                          |              | 100A           | 7MBP100VFN060-50 | 7MBP100XFN065-50              |                  |                                |
|                          | 7MBP□VFN□-50 | 25A            |                  |                               |                  |                                |
|                          |              | 35A            |                  |                               |                  |                                |
|                          |              | 50A            |                  |                               |                  |                                |
|                          |              | 75A            |                  |                               |                  |                                |
|                          |              | 100A           |                  |                               |                  |                                |
| P636                     | 7MBP□XGN□-50 | 25A            |                  |                               |                  |                                |
|                          |              | 35A            |                  |                               |                  |                                |
|                          |              | 50A            |                  |                               |                  |                                |
|                          |              | 75A            |                  |                               |                  |                                |
|                          | 7MBP□XGN□-50 | 100A           |                  |                               |                  |                                |
|                          |              | 25A            |                  |                               |                  |                                |
|                          |              | 35A            |                  |                               |                  |                                |
|                          |              | 50A            |                  |                               |                  |                                |
| P638                     | 7MBP□XGN□-50 | 75A            |                  |                               | 6MBP50XGN120-50  |                                |
|                          |              | 100A           |                  |                               | 6MBP75XGN120-50  |                                |
|                          |              | 150A           |                  |                               | 6MBP100XGN065-50 |                                |
|                          |              | 200A           |                  |                               | 6MBP150XGN065-50 |                                |
|                          | 7MBP□XGN□-50 | 25A            |                  |                               |                  |                                |
|                          |              | 35A            |                  |                               |                  |                                |
|                          |              | 50A            |                  |                               |                  |                                |
|                          |              | 75A            |                  |                               |                  |                                |

# IPM (Intelligent Power Modules)

## Built-in protection functions



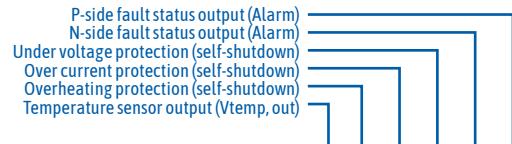
|                       | $I_C$ | 600 V<br>Vseries | 650 V<br>Xseries 7G | 1200 V<br>Vseries | 1200 V<br>Xseries 7G |
|-----------------------|-------|------------------|---------------------|-------------------|----------------------|
| Without Brake-Chopper | 25 A  |                  |                     | 6MBP25VDA120-50   |                      |
|                       | 35 A  |                  |                     | 6MBP35VDA120-50   |                      |
|                       | 50 A  | 6MBP50VDA060-50  |                     | 6MBP50VDA120-50   | 6MBP50XDA120-50      |
|                       |       |                  |                     | 6MBP50VDN120-50   |                      |
|                       | 75 A  | 6MBP75VDA060-50  |                     | 6MBP75VDA120-50   | 6MBP75XDA120-50      |
|                       |       |                  |                     | 6MBP75VDN120-50   | 6MBP75XDN120-50      |
|                       | 100 A | 6MBP100VDA060-50 | 6MBP100XDA065-50    | 6MBP100VDA120-50  | 6MBP100XDA120-50     |
|                       |       | 6MBP100VDN060-50 |                     | 6MBP100VDN120-50  | 6MBP100XDN120-50     |
|                       | 150 A | 6MBP150VDA060-50 | 6MBP150XDA065-50    |                   |                      |
|                       |       | 6MBP150VDN060-50 | 6MBP150XDN065-50    |                   | 6MBP150XDN120-50     |
|                       | 200 A | 6MBP200VDA060-50 |                     |                   |                      |
|                       |       | 6MBP200VDN060-50 | 6MBP200XDN065-50    |                   |                      |
|                       | 250 A |                  |                     | 6MBP250XDN065-50  |                      |
| With Brake-Chopper    | 25 A  |                  |                     | 7MBP25VDA120-50   |                      |
|                       | 35 A  |                  |                     | 7MBP35VDA120-50   |                      |
|                       | 50 A  | 7MBP50VDA060-50  |                     | 7MBP50VDA120-50   | 7MBP50XDA120-50      |
|                       |       |                  |                     | 7MBP50VDN120-50   |                      |
|                       | 75 A  | 7MBP75VDA060-50  |                     | 7MBP75VDA120-50   | 7MBP75XDA120-50      |
|                       |       |                  |                     | 7MBP75VDN120-50   | 7MBP75XDN120-50      |
|                       | 100 A | 7MBP100VDA060-50 | 7MBP100XDA065-50    | 7MBP100VDA120-50  | 7MBP100XDA120-50     |
|                       |       | 7MBP100VDN060-50 |                     | 7MBP100VDN120-50  | 7MBP100XDN120-50     |
|                       | 150 A | 7MBP150VDA060-50 | 7MBP150XDA065-50    |                   |                      |
|                       |       | 7MBP150VDN060-50 | 7MBP150XDN065-50    |                   | 7MBP150XDN120-50     |
|                       | 200 A | 7MBP200VDA060-50 |                     |                   |                      |
|                       |       | 7MBP200VDN060-50 | 7MBP200XDN065-50    |                   |                      |
| P630                  | 250 A |                  |                     | 7MBP250XDN065-50  |                      |

Note 1: The products with 'VDN'/'XDN' on this page have high heat dissipation characteristics.

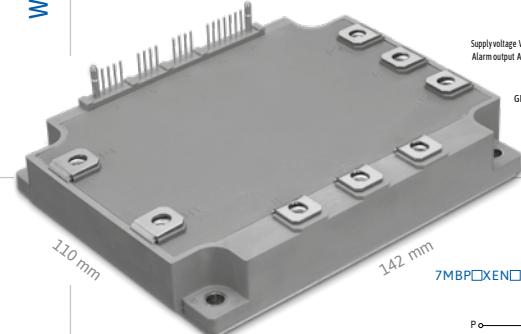
Note 1: The products with 'VDN' on this page have high heat dissipation characteristics.

# IPM (Intelligent Power Modules)

## Built-in protection functions

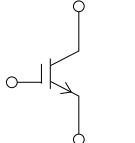
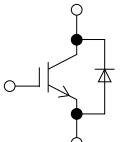


|                       | $I_C$ | 600 V<br>Vseries | 650 V<br>Xseries 7G | 1200 V<br>Vseries | Xseries 7G       |
|-----------------------|-------|------------------|---------------------|-------------------|------------------|
| Without Brake-Chopper | 100A  |                  |                     | 6MBP100VEA120-50  | 6MBP100XEN120-50 |
|                       | 150A  |                  |                     | 6MBP150VEA120-50  | 6MBP150XEN120-50 |
|                       | 200A  | 6MBP200VEA060-50 | 6MBP200XEN065-50    | 6MBP200VEA120-50  | 6MBP200XEN120-50 |
|                       | 300A  | 6MBP300VEA060-50 | 6MBP300XEN065-50    |                   | 6MBP300XEN120-50 |
|                       | 400A  | 6MBP400VEA060-50 | 6MBP450XEN065-50    |                   |                  |
|                       | 450A  |                  |                     |                   |                  |
| With Brake-Chopper    | 100A  |                  |                     | 7MBP100VEA120-50  | 7MBP100XEN120-50 |
|                       | 150A  |                  |                     | 7MBP150VEA120-50  | 7MBP150XEN120-50 |
|                       | 200A  | 7MBP200VEA060-50 | 7MBP200XEN065-50    | 7MBP200VEA120-50  | 7MBP200XEN120-50 |
|                       | 300A  | 7MBP300VEA060-50 | 7MBP300XEN065-50    |                   | 7MBP300XEN120-50 |
|                       | 400A  | 7MBP400VEA060-50 |                     |                   |                  |
|                       | 450A  |                  | 7MBP450XEN065-50    |                   |                  |



P631

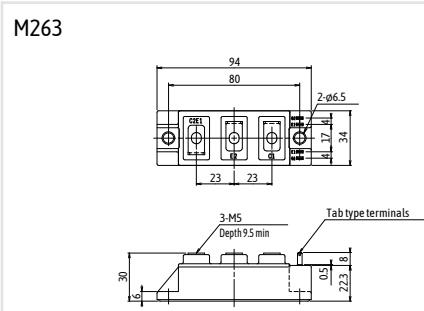
## Discrete IGBT

|   | I <sub>C</sub> | 600 V      |            | 650 V      | 1200 V      |             |
|---|----------------|------------|------------|------------|-------------|-------------|
|   |                | V series   | RB series  | XS series  | XS series   | V series    |
|  | 30 A           |            |            | FGW30XS65  |             |             |
|   | 40 A           |            |            | FGW40XS65  | FGW40XS120  |             |
|   | 50 A           |            |            | FGW50XS65  |             |             |
|   | 75 A           |            |            | FGW75XS65  | FGW75XS120  |             |
|   |                |            |            |            |             |             |
|   |                |            |            |            |             |             |
|   | 15 A           |            |            |            |             | FGW15N120VD |
|   | 25 A           |            |            |            |             | FGW25N120VD |
|   | 30 A           | FGW30N60VD |            | FGW30XS65C |             |             |
|   | 40 A           |            |            | FGW40XS65C | FGW40XS120C | FGW40N120VD |
|  | 50 A           | FGW50N60VD |            | FGW50XS65D |             |             |
|   |                |            |            | FGW50XS65C |             |             |
|   | 75 A           |            |            | FGW75XS65D | FGW75XS120C |             |
|   |                |            |            | FGW75XS65C |             |             |
|   |                |            |            |            |             |             |
|   |                |            |            |            |             |             |
|   | 85 A           |            | FGW85N60RB |            |             |             |
|   |                |            |            |            |             |             |
|   |                |            |            |            |             |             |
|   | 75 A           |            |            | FGZ75XS65C | FGZ75XS120C |             |
|   |                |            |            |            |             |             |

## SiC-SBD

| SiC-SBD           | Symbol  | I <sub>C</sub> | 650V         |            | 1200V        |              |
|-------------------|---|----------------|--------------|------------|--------------|--------------|
|                   |   |                | SiC-SBD 2G   | SiC-SBD 1G | SiC-SBD 2G   | SiC-SBD 1G   |
| T-Pack(s)         |    | 10A            |              | FDCC10S65  |              |              |
|                   |   | 20A            |              |            |              |              |
|                   |   | 25A            |              | FDCC25S65  |              |              |
|                   |   | 20A            |              | FDCC20C65  |              |              |
| TO-220-2 (Type:A) |    | 6A             | FDC2PT06S65  |            |              |              |
|                   |   | 8A             | FDC2PT08S65  |            |              |              |
|                   |   | 10A            | FDC2PT010S65 |            |              |              |
| TO-220-2 (Type:B) |    | 10A            |              | FDPC10S65  |              |              |
|                   |   | 25A            |              | FDPC25S65  |              |              |
| TO-220            |    | 20A            |              | FDCP20C65  |              |              |
|                   |   |                |              |            |              |              |
| TO-220F           |   | 20A            |              | FDCA20C65  |              |              |
|                   |   |                |              |            |              |              |
| TO-220F-2         |  | 6A             | FDC2AT06S65  |            |              |              |
|                   |   | 8A             | FDC2AT08S65  |            |              |              |
|                   |   | 10A            | FDC2AT10S65  | FDCA10S65  |              |              |
|                   |   | 18A            |              |            |              |              |
|                   |   | 25A            |              | FDC25S65   |              | FDCA18S120   |
| TO-247 (Type:A)   |  | 10A            |              | FDCY10S65  |              |              |
|                   |   | 18A            |              |            |              |              |
|                   |   | 25A            |              | FDCY25S65  |              | FDCY18S120   |
|                   |   | 20A            |              | FDCY20S65  |              |              |
|                   |   | 36A            |              |            |              | FDCY36C120   |
| TO-247-2          |  | 50A            |              | FDCY50C65  |              |              |
|                   |   | 18A            |              |            |              |              |
|                   |   | 20A            |              |            |              | FDCW18T120   |
|                   |   | 40A            |              |            | FDC2WT20S120 | FDC2WT40S120 |

## Package Outlines (in mm)



The technical drawing illustrates the M275 terminal block. The front view shows a rectangular housing with four circular mounting holes. Dimensions include a total width of 108, a central slot width of 93, and two side slots each labeled '25'. The side view shows the height of the block as 4.065. A callout indicates 'Tab type terminals' for the top and bottom slots. The bottom view shows a cross-section of the internal terminal blocks, labeled '3-M6 Depth 10.5mm'. Dimensions for the bottom view include 30.5, 221.63, and 30.9.

The technical drawing illustrates the M285 component with two views: a top view showing internal pads and mounting holes, and a side view showing the profile and solder pins. Key dimensions include:

- Top View Dimensions:**
  - Total width: 117 mm
  - Total height: 27.5 mm
  - Pad width: 150 mm
  - Pad height: 39.9 mm
  - Pad thickness: 1.0 mm
  - Pad center-to-center: 99.6 mm
  - Pad center-to-side: 49.8 mm
  - Pad side-to-side: 137 mm
  - Pad side-to-side (inner): 110 mm
  - Pad side-to-side (outer): 94.5 mm
  - Mounting hole diameter: 4.055 mm
  - Mounting hole distance from edge: 11 mm
  - Mounting hole distance from center: 17 mm
  - Mounting hole distance from side: 22 mm
  - Mounting hole distance from inner side: 27.5 mm
  - Mounting hole distance from outer side: 4.46 mm
- Side View Dimensions:**
  - Total height: 20.5 mm
  - Solder pin length: 7 mm
  - Depth of component body: 10.0 mm

The technical drawing illustrates the physical dimensions of the M276 component. The top view shows a rectangular package with a central cavity. Key dimensions include a total width of 108 mm, a central cavity width of 93 mm, and side wall heights of 62 mm and 48 mm. The bottom view provides a cross-sectional look at the component's thickness of 30.5 mm. A callout specifies a 'Depth 10.5min.' requirement. The right side of the drawing details the mounting terminals, identifying them as 'Tab type terminals' with a pitch of 3.16 mm and a height of 1.8 mm.

M286

Technical drawing showing a cross-section of a mechanical assembly. The drawing includes dimensions for various parts and features like 'Press fit pins' at the bottom.

M272

250

14.05.5  
16  
Screwing dep.  
max.16

89

73

12.5

M4  
Screwing depth  
max.8

39 39 39 39 39 39

11 67 11 14

11 39 53 18 37 37 37 37

12.5

38 25.5

M274

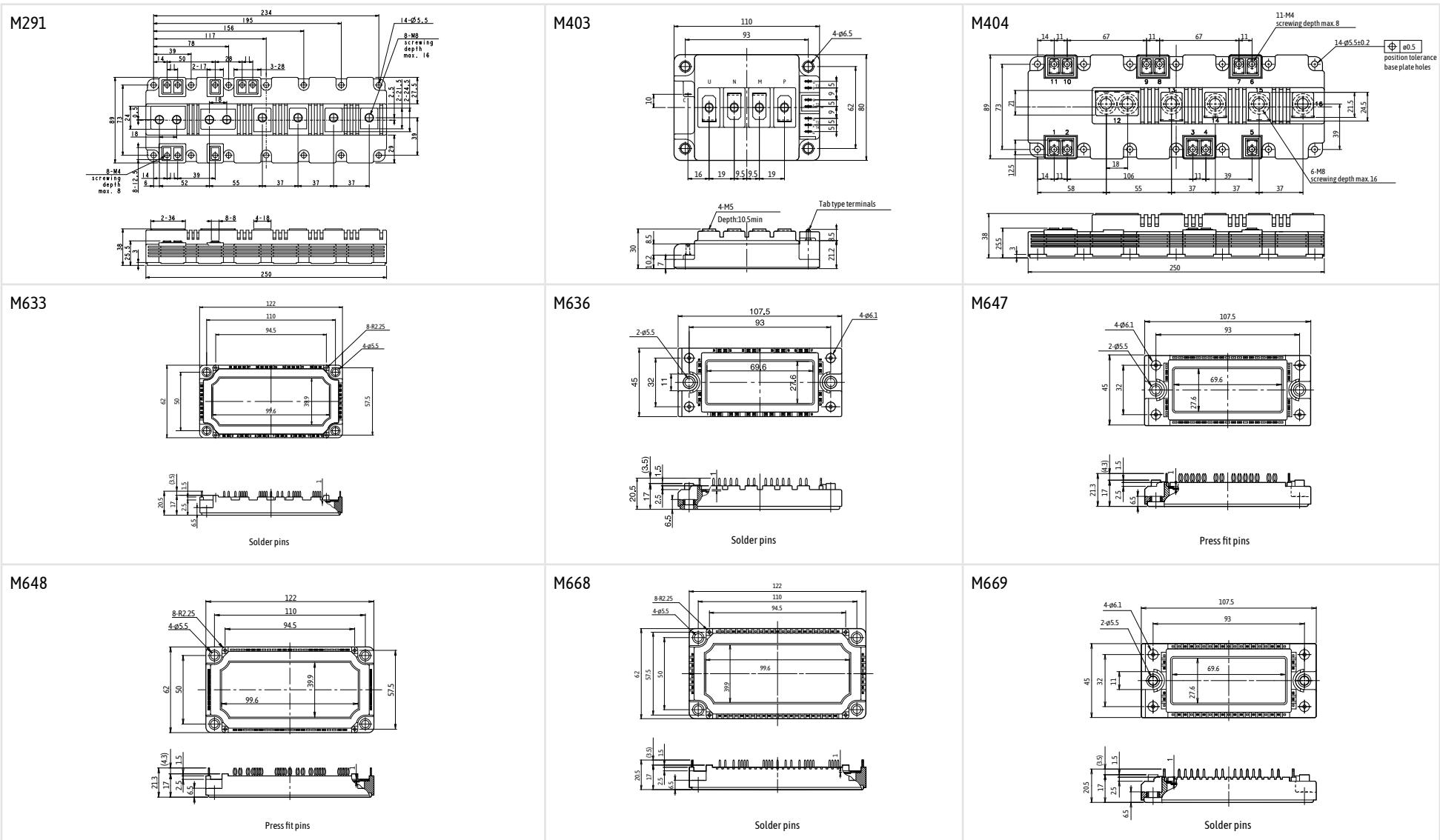
2-Ø5.5

92  
80  
23  
23  
17  
5  
25  
45  
5

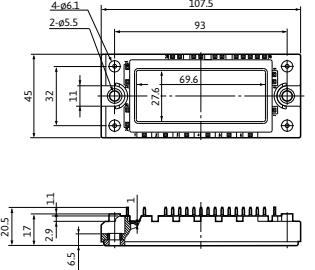
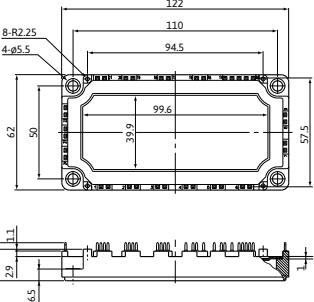
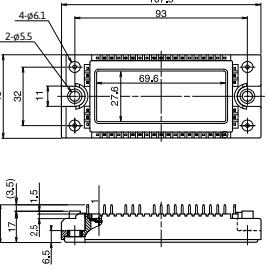
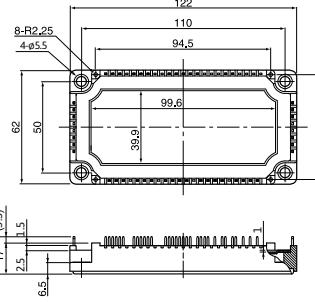
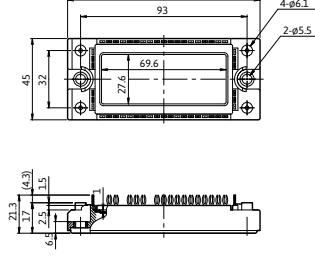
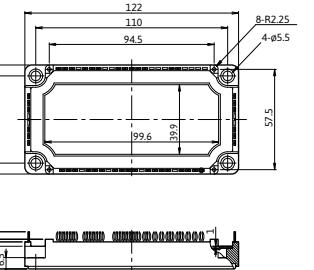
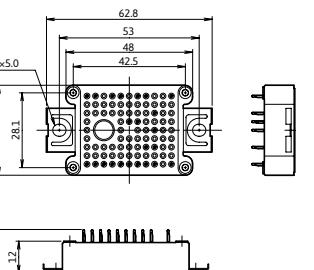
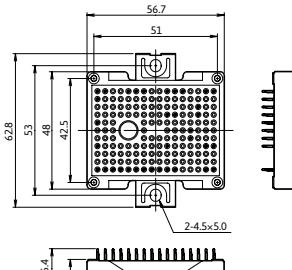
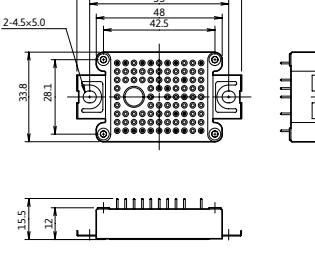
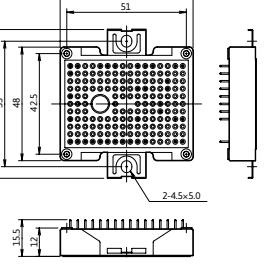
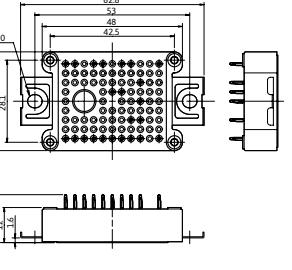
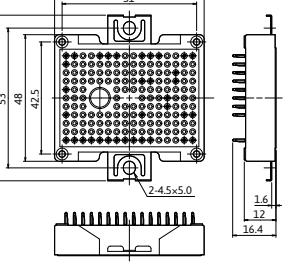
3-M5  
Depth 10 min.  
Tab type terminals

30  
6  
22.5  
15

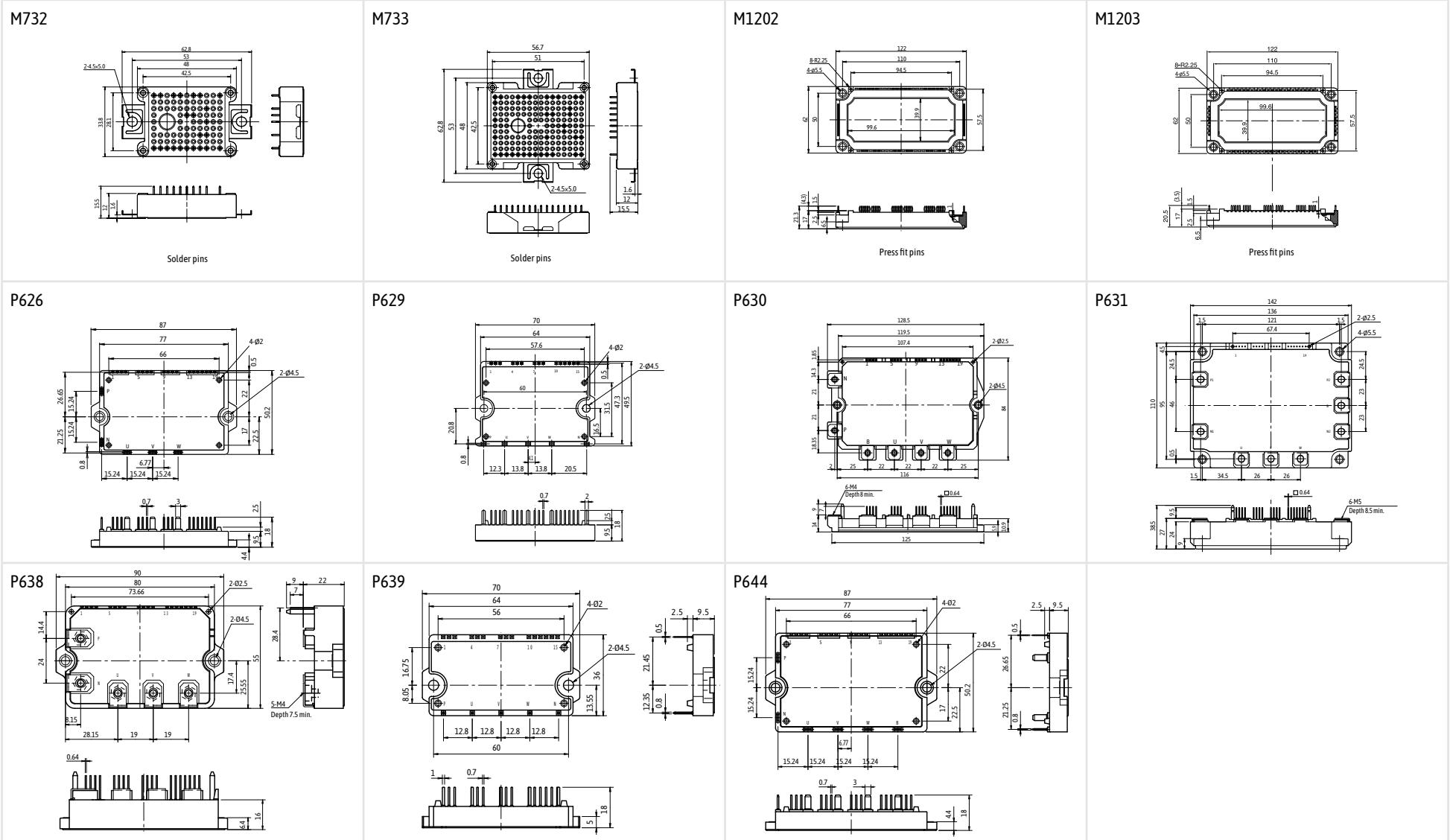
## Package Outlines (in mm)



## Package Outlines (in mm)

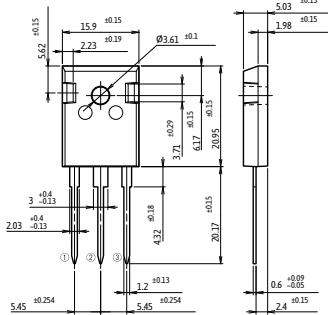
|   |   |  |  |
|---|---|--|--|
| <p><b>M711</b></p>  <p>Solder pins</p>     | <p><b>M712</b></p>  <p>Solder pins</p>    | <p><b>M719</b></p>  <p>Solder pins</p>      | <p><b>M720</b></p>  <p>Solder pins</p>      |
| <p><b>M721</b></p>  <p>Press fit pins</p> | <p><b>M722</b></p>  <p>Press fit pins</p> | <p><b>M726</b></p>  <p>Press fit pins</p>   | <p><b>M727</b></p>  <p>Press fit pins</p>   |
| <p><b>M728</b></p>  <p>Solder pins</p>   | <p><b>M729</b></p>  <p>Solder pins</p>  | <p><b>M730</b></p>  <p>Press fit pins</p> | <p><b>M731</b></p>  <p>Press fit pins</p> |

## Package Outlines (in mm)

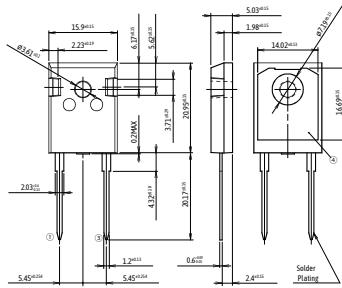


# Package Outlines (in mm)

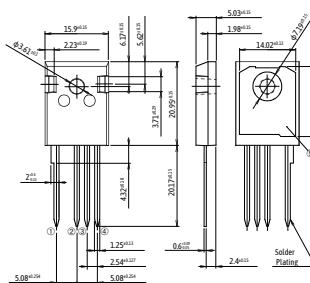
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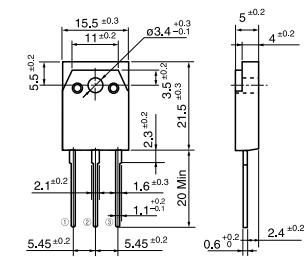
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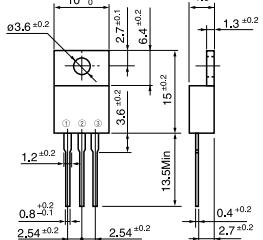
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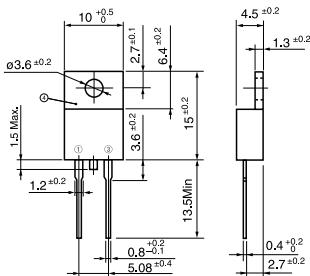
T0-247



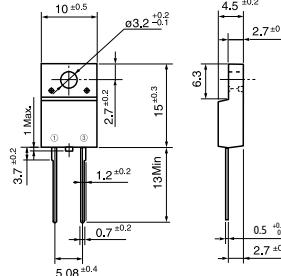
T0-220



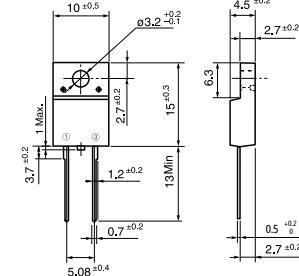
TO-220-2



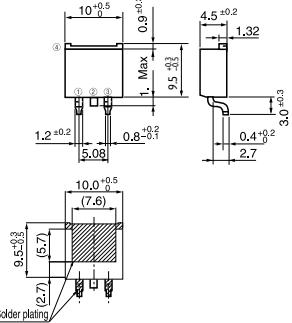
TO-220F



TO-220F-2



## T-Packs(s)



## Contributing to the creation of a sustainable society

Fuji Electric contributes to the resolution of social and environmental issues through its business activities.

### Fuji Electric Corporate Activities and SDGs



Fuji Electric's corporate policy is to contribute to the realization of a safe, secure, and sustainable society through its energy and environmental businesses, based on its management philosophy of "contribute to prosperity," "encouraging creativity," and "seek harmony with the environment." Acting in accordance with this code, Fuji Electric is contributing to the accomplishment of the United Nations Sustainable Development Goals through its business activities.



We have formulated nine SDG targets for all of our corporate activities. To help achieve these targets, we have established an SDG Promotion Committee and are carrying out initiatives that are in line with the international community's goal of achieving the SDGs.

### Environmental Vision by 2050



## Notes

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## Notes

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