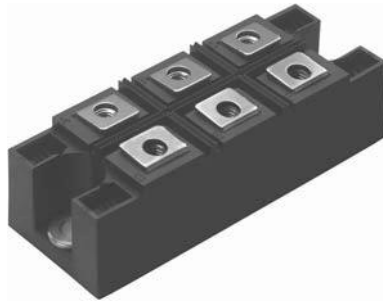


## Three Phase Bridge (Power Module), 200 A



MTK

### FEATURES

- Package fully compatible with the industry standard INT-A-PAK power modules series
- High thermal conductivity package, electrically insulated case
- Low power loss
- Excellent power volume ratio, outline for easy connections to power transistor and IGBT modules
- 4000 V<sub>RMS</sub> isolating voltage
- UL E78996 approved
- Totally lead (Pb)-free
- Designed and qualified for industrial level


**RoHS**  
COMPLIANT

### PRODUCT SUMMARY

|       |       |
|-------|-------|
| $I_o$ | 200 A |
|-------|-------|

### DESCRIPTION

It extends the existing range of MT...KB bridges an extremely compact, encapsulated three phase bridge rectifiers offering efficient and reliable operation. They are intended for use in general purpose and heavy duty applications.

### MAJOR RATINGS AND CHARACTERISTICS

| SYMBOL        | CHARACTERISTICS | VALUES      | UNITS              |
|---------------|-----------------|-------------|--------------------|
| $I_o$         |                 | 200         | A                  |
|               | $T_c$           | 85          | °C                 |
| $I_{FSM}$     | 50 Hz           | 1800        | A                  |
|               | 60 Hz           | 1880        |                    |
| $I^2t$        | 50 Hz           | 16.2        | kA <sup>2</sup> s  |
|               | 60 Hz           | 14.7        |                    |
| $I^2\sqrt{t}$ |                 | 162         | kA <sup>2</sup> √s |
| $V_{RRM}$     |                 | 400         | V                  |
| $T_{Stg}$     | Range           | - 40 to 150 | °C                 |
| $T_J$         |                 |             |                    |

### ELECTRICAL SPECIFICATIONS

#### VOLTAGE RATINGS

| TYPE NUMBER | $V_{RRM}$ , MAXIMUM REPETITIVE PEAK REVERSE VOLTAGE<br>V | $V_{RSM}$ , MAXIMUM NON-REPETITIVE PEAK REVERSE VOLTAGE<br>V | $I_{RRM}$ MAXIMUM AT $T_J = 150\text{ °C}$<br>mA |
|-------------|--|--|--|
| 200MT40KPbF | 400  | 500  | 6  |

| FORWARD CONDUCTION   |               |   |                           |        |                    |
|--|---------------|---|---------------------------|--------|--------------------|
| PARAMETER  | SYMBOL        | TEST CONDITIONS   |                           | VALUES | UNITS              |
| Maximum RMS output current at case temperature                         | $I_O$         | 120° rect. conduction angle                                     |                           | 200    | A                  |
|  |               |   |                           | 85     | °C                 |
| Maximum peak, one-cycle forward, non-repetitive on state surge current | $I_{TSM}$     | t = 10 ms   | No voltage reapplied      | 1800   | A                  |
|  |               | t = 8.3 ms  |                           |        |                    |
|  |               | t = 10 ms   | 100 % $V_{RRM}$ reapplied | 1520   |                    |
|  |               | t = 8.3 ms  |                           | 1590   |                    |
| Maximum $I^2t$ for fusing  | $I^2t$        | t = 10 ms   | No voltage reapplied      | 16.2   | kA <sup>2</sup> s  |
|  |               | t = 8.3 ms  |                           |        |                    |
|  |               | t = 10 ms   | 100 % $V_{RRM}$ reapplied | 11.6   |                    |
|  |               | t = 8.3 ms  |                           | 12.6   |                    |
| Maximum $I^2\sqrt{t}$ for fusing                                       | $I^2\sqrt{t}$ | t = 0.1 to 10 ms, no voltage reapplied                          |                           | 162    | kA <sup>2</sup> √s |
| Value of threshold voltage   | $V_{F(TO)}$   | $T_J$ maximum   |                           | 0.76   | V                  |
| Slope resistance   | $r_t$         |   |                           | 2.4    | mΩ                 |
| Maximum forward voltage drop   | $V_{FM}$      | $I_{pk} = 200$ A, $T_J = 25$ °C, $t_p = 400$ μs single junction |                           | 1.40   | V                  |
| Isolation voltage  | $V_{ISOL}$    | $T_J = 25$ °C all terminal shorted, f = 50 Hz, t = 1 s          |                           | 4000   |                    |

| THERMAL AND MECHANICAL SPECIFICATIONS                    |                |  |  |             |       |
|--|----------------|--|--|-------------|-------|
| PARAMETER  | SYMBOL         | TEST CONDITIONS  |  | VALUES      | UNITS |
| Maximum junction operating and storage temperature range | $T_J, T_{Stg}$ |  |  | - 40 to 150 | °C    |
| Maximum thermal resistance, junction to case             | $R_{thJC}$     | DC operation per module  |  | 0.12        | K/W   |
|  |                | DC operation per junction  |  | 0.69        |       |
|  |                | 120° rect. conduction angle per module   |  | 0.14        |       |
|  |                | 120° rect. conduction angle per junction   |  | 0.82        |       |
| Maximum thermal resistance, case to heatsink per module  | $R_{thCS}$     | Mounting surface smooth, flat and greased.<br>Heatsink compound thermal conductivity = 0.42 W/mK   |  | 0.033       |       |
| Mounting torque ± 10 % to heatsink                       |                | A mounting compound is recommended and the torque should be rechecked after a period of 3 hours to allow for the spread of the compound. Lubricated threads. |  | 4 to 6      | Nm    |
| Approximate weight                                       |                |  |  | 176         | g     |

Three Phase Bridge  
(Power Module), 200 A

Vishay High Power Products

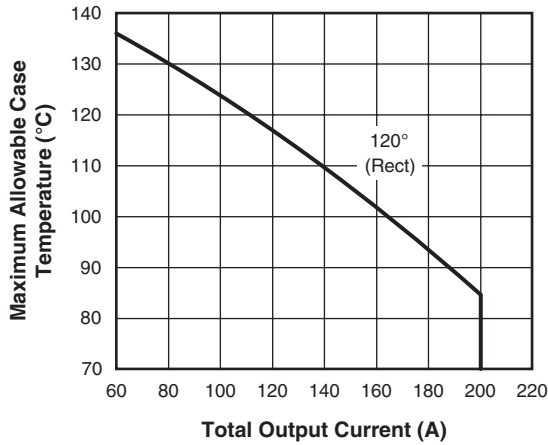


Fig. 1 - Current Rating Characteristics

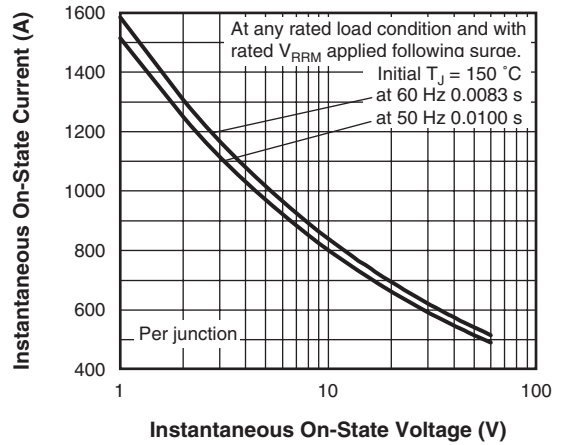


Fig. 3 - Maximum Non-Repetitive Surge Current

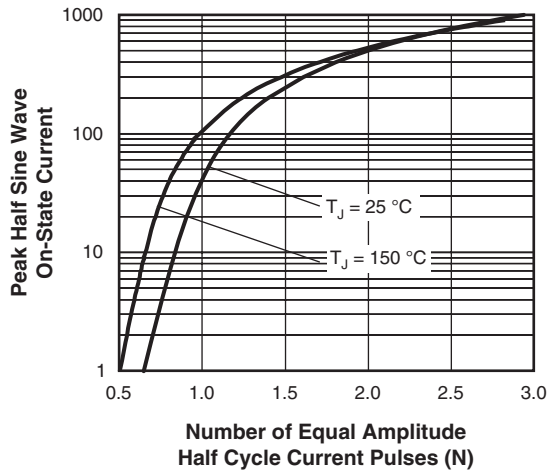


Fig. 2 - On-State Voltage Drop Characteristics

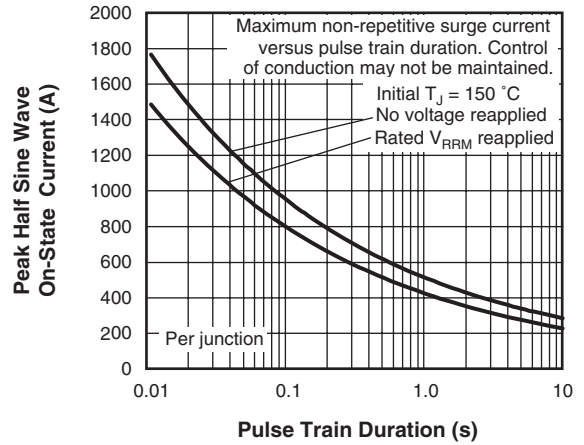


Fig. 4 - Maximum Non-Repetitive Surge Current

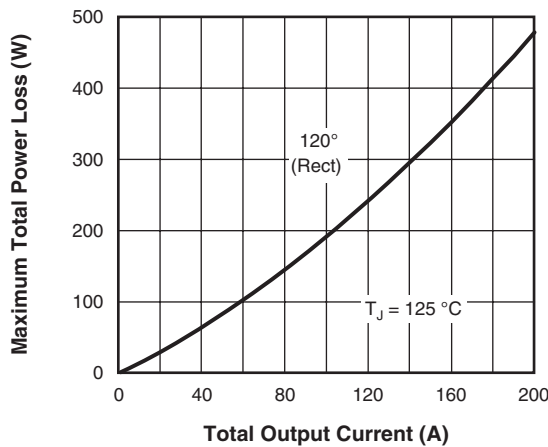
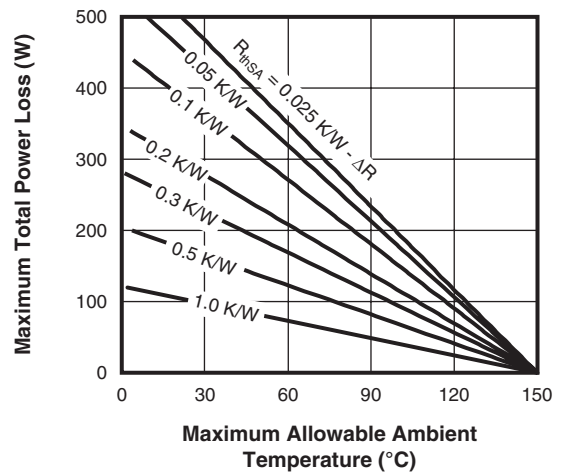


Fig. 5 - Current Rating Nomogram (1 Module Per Heatsink)



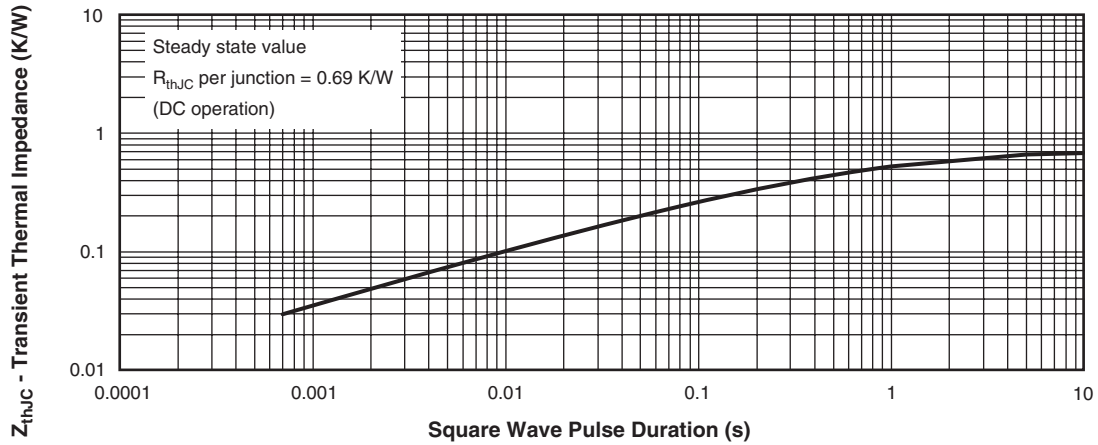


Fig. 6 - Thermal Impedance  $Z_{thJC}$  Characteristics

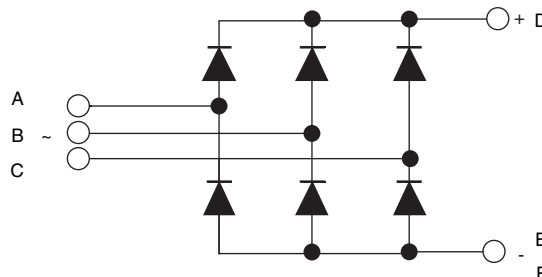
## ORDERING INFORMATION TABLE

|             |           |          |  |           |          |            |
|-------------|-----------|----------|--|-----------|----------|------------|
| Device code | <b>20</b> | <b>0</b> | <b>MT</b>                                  | <b>40</b> | <b>K</b> | <b>PbF</b> |
|             | ①         | ②        | ③  | ④         | ⑤        |            |
|             | <b>1</b>  | -        | Current rating code: 20 = 200 A (average)  |           |          |            |
|             | <b>2</b>  | -        | Three phase diodes bridge                  |           |          |            |
|             | <b>3</b>  | -        | Essential part number                      |           |          |            |
|             | <b>4</b>  | -        | Voltage code x 10 = $V_{RRM}$ (40 = 400 V) |           |          |            |
|             | <b>5</b>  | -        | PbF = Lead (Pb)-free                       |           |          |            |

### Note

- To order the optional hardware go to [www.vishay.com/doc?95172](http://www.vishay.com/doc?95172)

## CIRCUIT CONFIGURATION



### LINKS TO RELATED DOCUMENTS

|            |   |
|------------|---|
| Dimensions | <a href="http://www.vishay.com/doc?95004">http://www.vishay.com/doc?95004</a> |
|------------|---|



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