
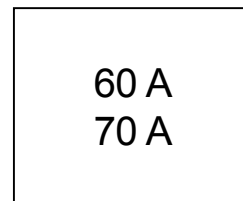


## THREE PHASE BRIDGE

## Power Modules

### Features

- Package fully compatible with the industry standard INT-A-pak power modules series
- High thermal conductivity package, electrically insulated case
- 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-FREE



### Description

A range of 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

| Parameters             | 60MT.K      | 70MT.K | Units            |                   |
|------------------------|-------------|--------|------------------|-------------------|
| $I_o$                  | 60(75)      | 70(90) | A                |                   |
| @T <sub>C</sub>        | 85(61)      | 85(57) | °C               |                   |
| $I_{FSM}$              | @50Hz       | 420    | 480              | A                 |
| @60Hz                  | 440         | 500    | A                |                   |
| $i^2t$                 | @50Hz       | 870    | 1150             | A <sup>2</sup> s  |
| @60Hz                  | 790         | 1050   | A <sup>2</sup> s |                   |
| $i^2\sqrt{t}$          |             | 8700   | 11500            | A <sup>2</sup> √s |
| V <sub>RRM</sub> range | 800 to 1600 |        | V                |                   |
| T <sub>STG</sub> range | -40 to 150  |        | °C               |                   |
| T <sub>J</sub> range   | -40 to 150  |        | °C               |                   |

## 60-70MT..KPbF Series

Bulletin I27217 03/06

International  


### ELECTRICAL SPECIFICATIONS

#### Voltage Ratings

| Type number | Voltage Code | $V_{RRM}$ : maximum repetitive peak reverse voltage<br>V | $V_{RSM}$ : maximum non-repetitive peak rev. voltage<br>V | $I_{RRM}$ max.<br>@ $T_J$ max.<br>mA |
|-------------|--------------|--|---|--------------------------------------|
| 60-70MT..K  | 80           | 800  | 900   | 10                                   |
|             | 100          | 1000   | 1100  |                                      |
|             | 120          | 1200   | 1300  |                                      |
|             | 140          | 1400   | 1500  |                                      |
|             | 160          | 1600   | 1700  |                                      |

#### Forward Conduction

| Parameter   | 60MT.K  | 70MT.K  | Units             | Conditions  |
|---|---------|---------|-------------------|---|
| $I_O$ Maximum DC output current<br>@ Case temperature                   | 60 (75) | 70 (90) | A                 | 120° Rect conduction angle  |
|   | 85 (61) | 85 (57) | °C                |   |
| $I_{FSM}$ Maximum peak, one-cycle forward, non-repetitive surge current | 420     | 480     | A                 | t = 10ms No voltage   |
|   | 440     | 500     |                   | t = 8.3ms reapplied   |
|   | 350     | 400     |                   | t = 10ms 100% $V_{RRM}$   |
|   | 370     | 420     |                   | t = 8.3ms reapplied   |
| $I^2t$ Maximum $I^2t$ for fusing  | 870     | 1150    | A <sup>2</sup> s  | t = 10ms No voltage   |
|   | 790     | 1050    |                   | t = 8.3ms reapplied   |
|   | 610     | 800     |                   | t = 10ms 100% $V_{RRM}$   |
|   | 560     | 730     |                   | t = 8.3ms reapplied   |
| $I^2\sqrt{t}$ Maximum $I^2\sqrt{t}$ for fusing                          | 8700    | 11300   | A <sup>2</sup> √s | t = 0.1 to 10ms, no voltage reapplied                                   |
| $V_{F(TO)1}$ Low level value of threshold voltage                       | 0.85    | 0.86    | V                 | (16.7% x $\pi$ x $I_{F(AV)} < I < \pi$ x $I_{F(AV)}$ ), @ $T_J$ max.    |
| $V_{F(TO)2}$ High level value of threshold voltage                      | 1.07    | 1.08    | V                 | ( $I > \pi$ x $I_{F(AV)}$ ), @ $T_J$ max.                               |
| $r_{f1}$ Low level value of forward slope resistance                    | 8.04    | 7.35    | mΩ                | (16.7% x $\pi$ x $I_{F(AV)} < I < \pi$ x $I_{F(AV)}$ ), @ $T_J$ max.    |
| $r_{f2}$ High level value of forward slope resistance                   | 7.08    | 6.53    | mΩ                | ( $I > \pi$ x $I_{F(AV)}$ ), @ $T_J$ max.                               |
| $V_{FM}$ Maximum forward voltage drop                                   | 1.75    | 1.55    | V                 | $I_{pk} = 100A$ , $T_J = 25^\circ C$ , $t_p = 400\mu s$ single junction |
| $V_{INS}$ RMS isolation voltage   | 4000    | 4000    | V                 | $T_J = 25^\circ C$ , all terminal shorted<br>f = 50Hz, t = 1s           |

#### Thermal and Mechanical Specifications

| Parameter  | 60MT.K      | 70MT.K | Units | Conditions   |
|--|-------------|--------|-------|--|
| $T_J$ Max. junction operating temperature range      | -40 to 150  |        | °C    |  |
| $T_{stg}$ Max. storage temperature range             | -40 to 150  |        | °C    |  |
| $R_{thJC}$ Max. thermal resistance, junction to case | 0.37        | 0.29   | K/W   | DC operation per module  |
|  | 2.22        | 1.75   |       | DC operation per junction  |
|  | 0.40        | 0.34   |       | 120° Rect conduction angle per module  |
|  | 2.42        | 2.01   |       | 120° Rect conduction angle per junction  |
| $R_{thCS}$ Max. thermal resistance, case to heatsink | 0.03        |        | K/W   | Per module<br>Mounting surface smooth, flat and greased  |
| T Mounting torque ± 10%                              | to heatsink | 4 to 6 | Nm    | 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. |
|  | to terminal | 3 to 4 |       |  |
| wt Approximate weight                                | 176         |        | g     |  |



# 60-70MT..KPbF Series

Bulletin I27217 03/06



## Outline Table (with optional barriers)

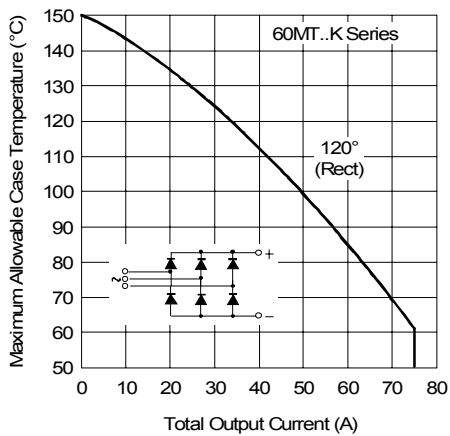
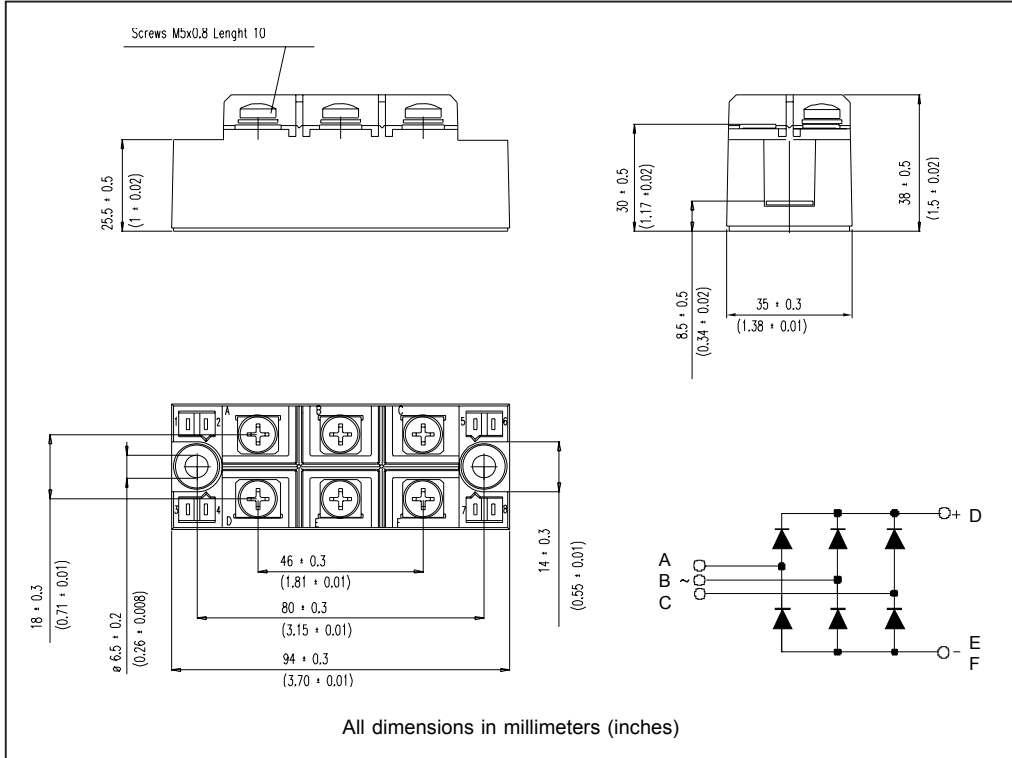


Fig. 1 - Current Ratings Characteristics

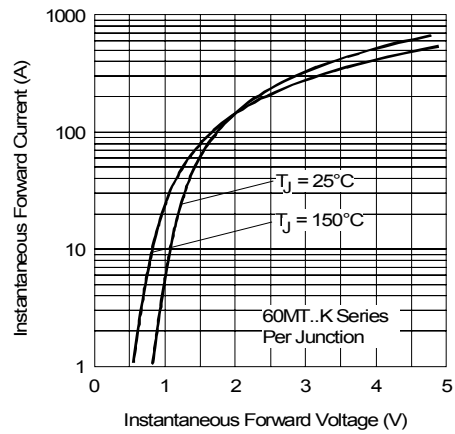


Fig. 2 - Forward Voltage Drop Characteristics

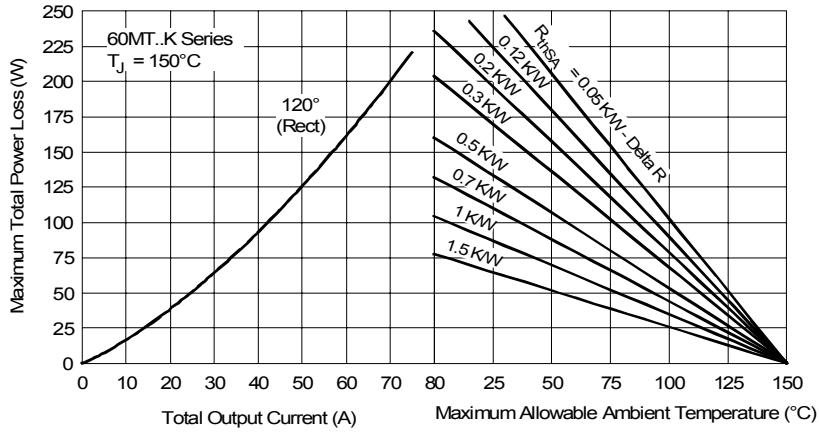


Fig. 3 - Total Power Loss Characteristics

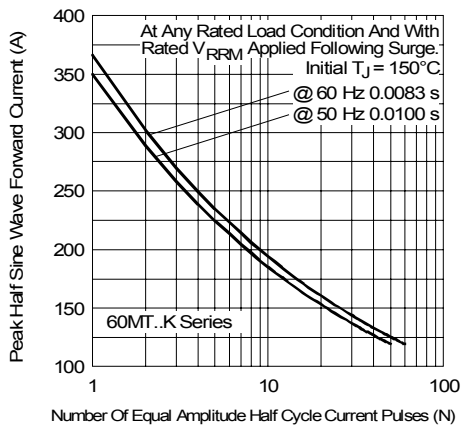


Fig. 4 - Maximum Non-Repetitive Surge Current

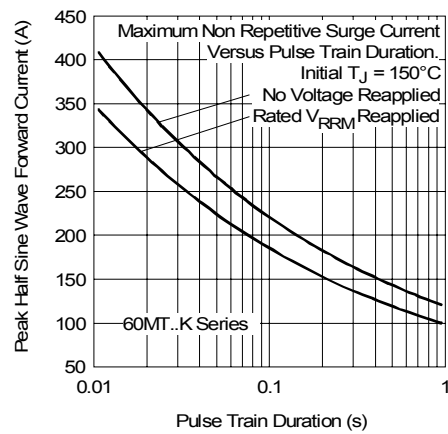


Fig. 5 - Maximum Non-Repetitive Surge Current

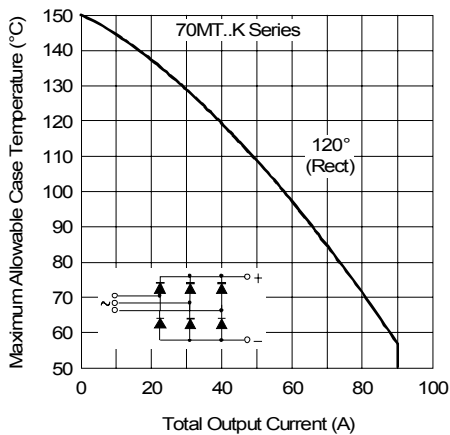


Fig. 6 - Current Ratings Characteristics

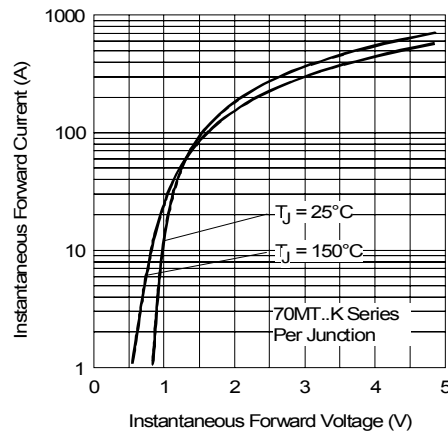


Fig. 7 - Forward Voltage Drop Characteristics

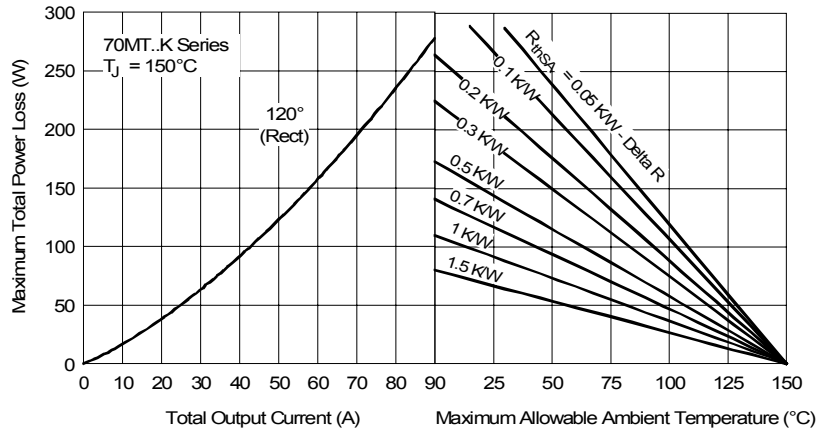


Fig. 8 - Total Power Loss Characteristics

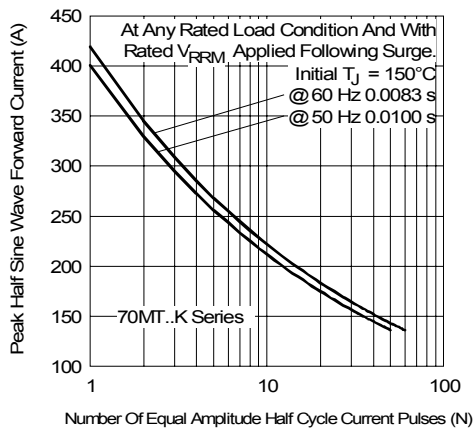


Fig. 9 - Maximum Non-Repetitive Surge Current

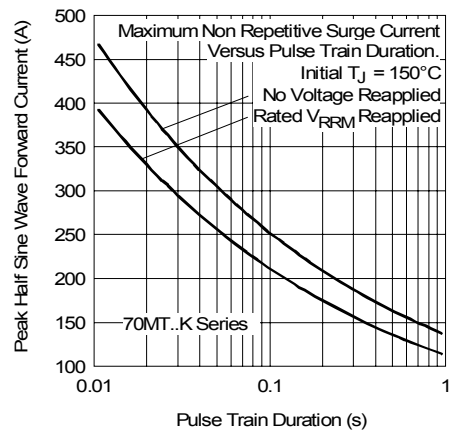


Fig. 10 - Maximum Non-Repetitive Surge Current

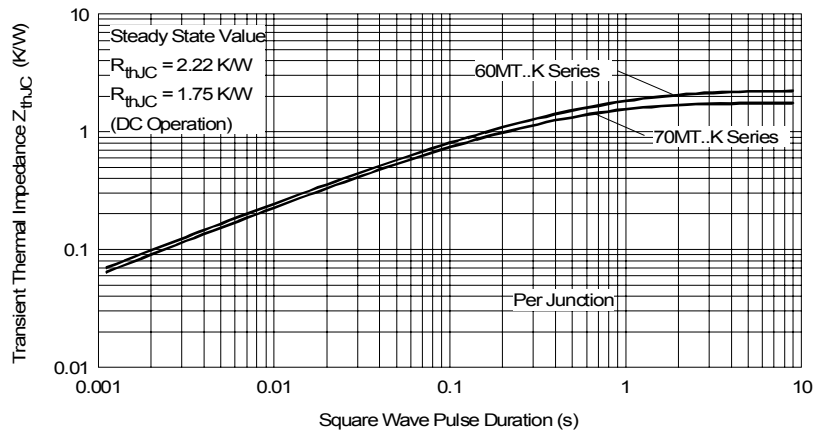


Fig. 11 - Thermal Impedance  $Z_{thJC}$  Characteristic

Data and specifications subject to change without notice.  
This product has been designed and qualified for Industrial Level and Lead-Free.  
Qualification Standards can be found on IR's Web site.

International  
**IOR** Rectifier

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