
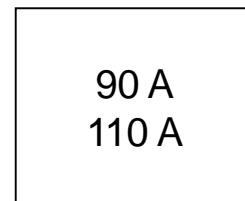


THREE PHASE BRIDGE

Power Modules

Features

- Package fully compatible with the industry standard INT-A-pak power modules series
- High thermal conductivity package, electrically insulated case
- Outstanding number of power encapsulated components
- Excellent power volume ratio, outline for easy connections to power transistor and IGBT modules
- 4000 V_{RMS} isolating voltage
- UL E78996 approved 



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 | 90MT.KB | 110MT.KB | Units |
|-----------------|-------------|-----------|-------------------|
| I_O | 90 (120) | 110 (150) | A |
| @ T_C | 90 (61) | 90 (57) | °C |
| I_{FSM} | 770 | 950 | A |
| @ 50Hz | 810 | 1000 | A |
| @ 60Hz | 3000 | 4500 | A ² s |
| I^2t | 2700 | 4100 | A ² s |
| @ 50Hz | 30000 | 45000 | A ² √s |
| @ 60Hz | | | |
| V_{RRM} range | 800 to 1600 | | V |
| T_{STG} range | -40 to 150 | | °C |
| T_J range | -40 to 150 | | °C |

90-110MT..KB Series

Bulletin I27501 rev. A 05/03

International
IRF Rectifier

ELECTRICAL SPECIFICATIONS

Voltage Ratings

| Type number | Voltage Code | V_{RRM} , maximum repetitive peak reverse voltage V | V_{RSM} , maximum non-repetitive peak rev. voltage V | I_{RRM} max. @ T_J max. mA |
|--------------|--------------|--|---|--------------------------------------|
| 90-110MT..KB | 80 | 800 | 900 | 10 |
| | 100 | 1000 | 1100 | |
| | 120 | 1200 | 1300 | |
| | 140 | 1400 | 1500 | |
| | 160 | 1600 | 1700 | |

Forward Conduction

| Parameter | 90MT.KB | 110MT.KB | Units | Conditions |
|--|----------|-----------|-------------------|--|
| I_O Maximum DC output current @ Case temperature | 90 (120) | 110 (150) | A | 120° Rect conduction angle |
| | 90 (61) | 90 (57) | °C | |
| I_{FSM} Maximum peak, one-cycle forward, non-repetitive surge current | 770 | 950 | A | t = 10ms No voltage |
| | 810 | 1000 | | t = 8.3ms reapplied |
| | 650 | 800 | | t = 10ms 100% V_{RRM} |
| | 680 | 840 | | t = 8.3ms reapplied |
| I^2t Maximum I^2t for fusing | 3000 | 4500 | A ² s | t = 10ms No voltage |
| | 2700 | 4100 | | t = 8.3ms reapplied |
| | 2100 | 3200 | | t = 10ms 100% V_{RRM} |
| | 1900 | 2900 | | t = 8.3ms reapplied |
| $I^2\sqrt{t}$ Maximum $I^2\sqrt{t}$ for fusing | 30000 | 45000 | A ² √s | t = 0.1 to 10ms, no voltage reapplied |
| $V_{F(TO)1}$ Low level value of threshold voltage | 0.89 | 0.81 | V | $(16.7\% \times \pi \times I_{F(AV)} < I < \pi \times I_{F(AV)})$, @ T_J max. |
| $V_{F(TO)2}$ High level value of threshold voltage | 1.05 | 0.99 | V | $(I > \pi \times I_{F(AV)})$, @ T_J max. |
| r_{F1} Low level value of forward slope resistance | 5.11 | 4.37 | mΩ | $(16.7\% \times \pi \times I_{F(AV)} < I < \pi \times I_{F(AV)})$, @ T_J max. |
| r_{F2} High level value of forward slope resistance | 4.64 | 4.64 | mΩ | $(I > \pi \times I_{F(AV)})$, @ T_J max. |
| V_{FM} Maximum forward voltage drop | 1.6 | 1.4 | V | $I_{pk} = 150A$, $T_J = 25^\circ C$, $t_p = 400\mu s$ single junction |
| V_{INS} RMS isolation voltage | 4000 | 4000 | V | $T_J = 25^\circ C$, all terminal shorted $f = 50Hz$, $t = 1s$ |

Thermal and Mechanical Specifications

| Parameter | 90MT.KB | 110MT.KB | 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 | 0.21 | 0.18 | K/W | DC operation per module |
| | 1.26 | 1.07 | | DC operation per junction |
| | 0.25 | 0.21 | | 120° Rect conduction angle per module |
| | 1.47 | 1.25 | | 120° Rect conduction angle per junction |
| R_{thCS} Max. thermal resistance, case to heatsink | 0.03 | | K/W | Per module Mounting surface smooth, flat and greased |
| T Mounting torque $\pm 10\%$ | 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 | |

90-110MT..KB Series

Bulletin I27501 rev. A 05/03

Outline Table (with optional barriers)

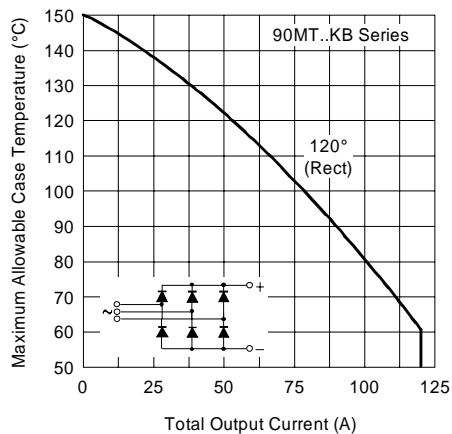
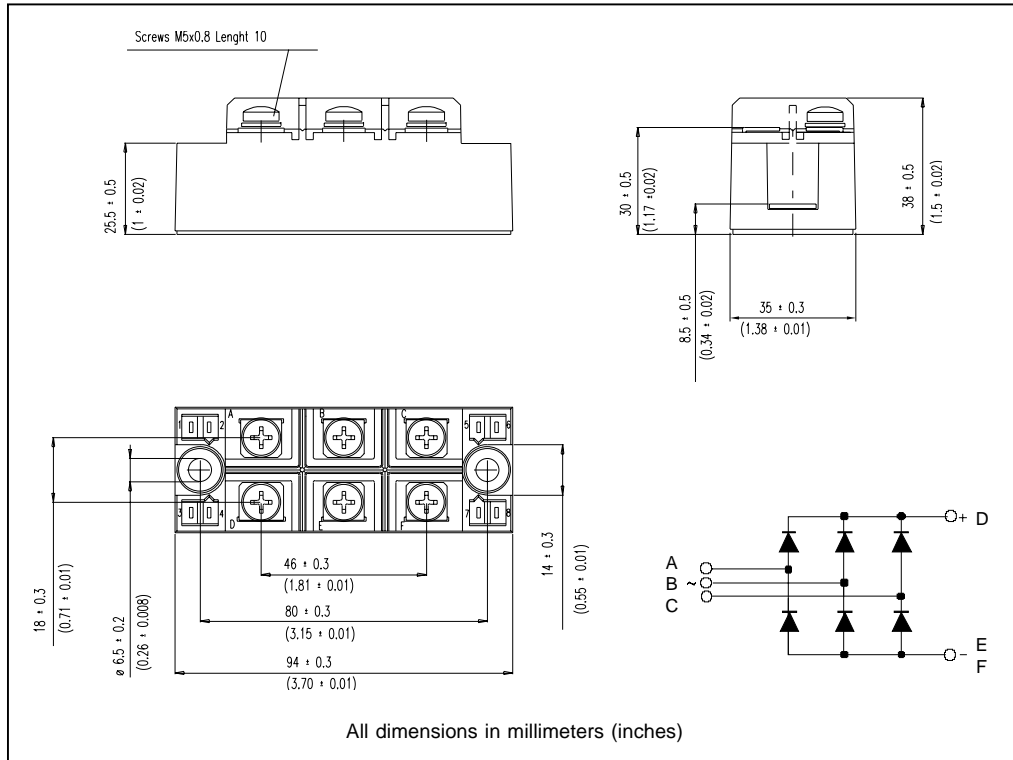


Fig. 1 - Current Ratings Characteristics

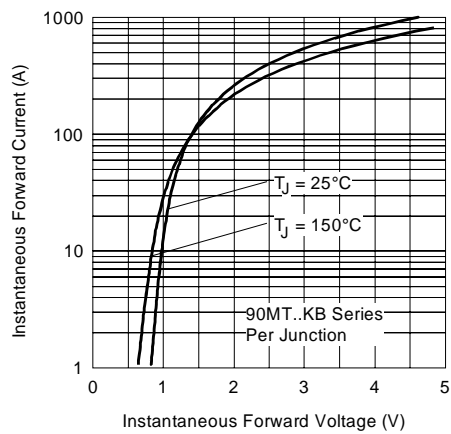


Fig. 2 - Forward Voltage Drop Characteristics

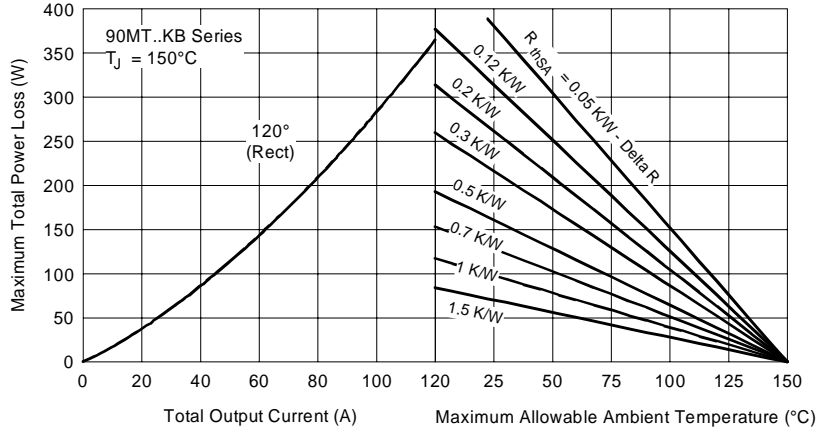


Fig. 3 - Total Power Loss Characteristics

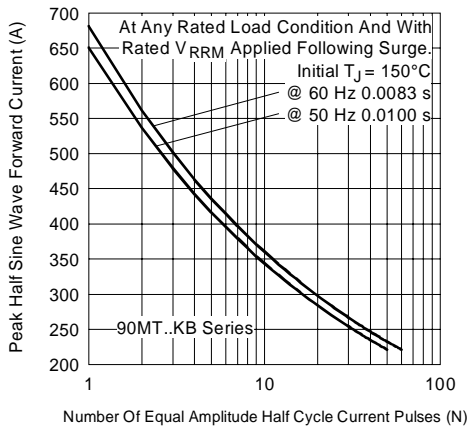


Fig. 4 - Maximum Non-Repetitive Surge Current

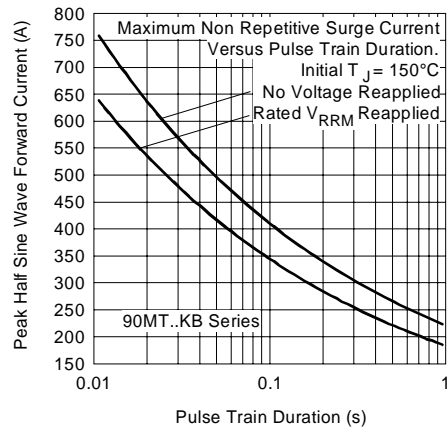


Fig. 5 - Maximum Non-Repetitive Surge Current

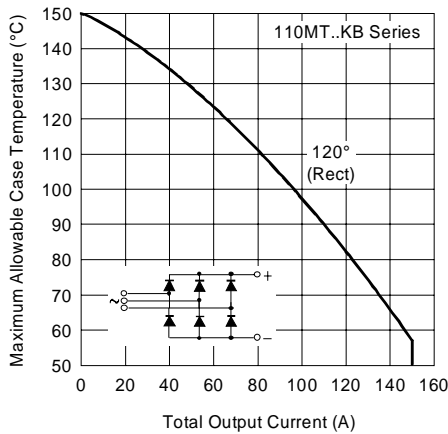


Fig. 6 - Current Ratings Characteristics

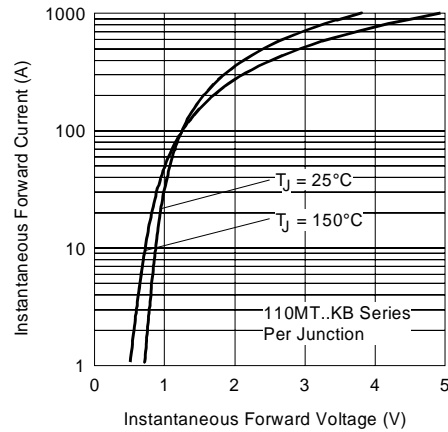


Fig. 7 - Forward Voltage Drop Characteristics

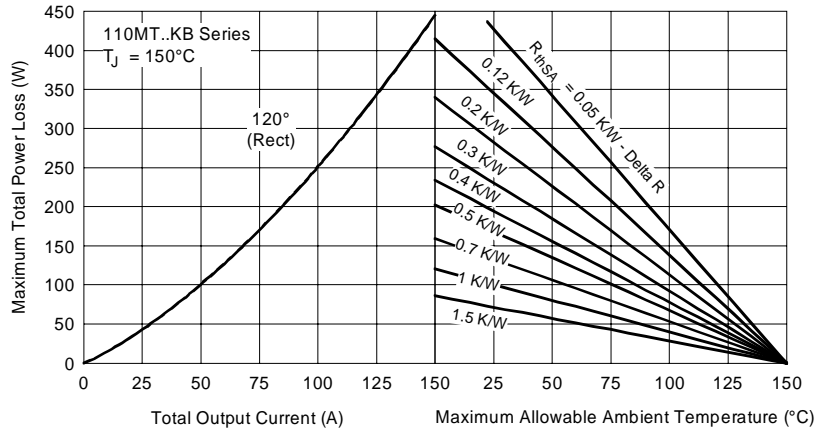


Fig. 8 - Total Power Loss Characteristics

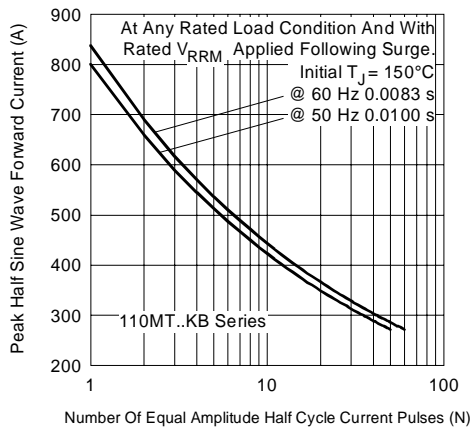


Fig. 9 - Maximum Non-Repetitive Surge Current

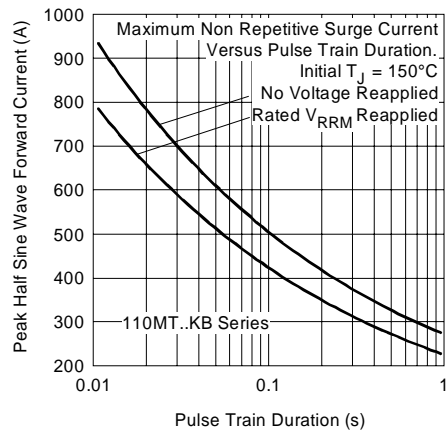


Fig. 10 - Maximum Non-Repetitive Surge Current

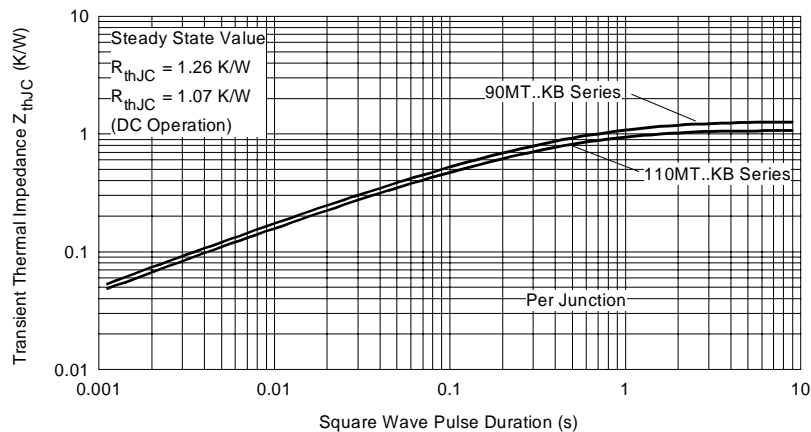


Fig. 11 - Thermal Impedance Z_{thJC} Characteristic

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

International
IOR Rectifier

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