


International
IR Rectifier

MT..KB SERIES

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 

130 A
 160 A

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 | 130MT.KB | 160MT.KB | Units |
|-------------------------------|-------------|-----------|-------------------|
| I _O | 130 (160) | 160 (200) | A |
| @ T _C | 85 (62) | 85 (60) | °C |
| I _{FSM} | 1130 | 1430 | A |
| @ 50Hz | 1180 | 1500 | A |
| @ 60Hz | 6400 | 10200 | A ² s |
| i ² _t | 5800 | 9300 | A ² s |
| i ² _v t | 64000 | 102000 | A ² √s |
| V _{RRM} range | 800 to 1600 | | V |
| T _{STG} range | - 40 to 150 | | °C |
| T _J range | - 40 to 150 | | °C |

130-160MT..KB Series

Bulletin I27502 rev. A 05/03

International
IR 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 |
|---------------|--------------|--|---|--------------------------------------|
| 130-160MT..KB | 80 | 800 | 900 | 10 |
| | 100 | 1000 | 1100 | |
| | 120 | 1200 | 1300 | |
| | 140 | 1400 | 1500 | |
| | 160 | 1600 | 1700 | |

Forward Conduction

| Parameter | 130MT.KB | 160MT.KB | Units | Conditions |
|--|----------------------|----------------------|-------------------|---|
| I_O Maximum DC output current @ Case temperature | 130 (160) 85 (62) | 160 (200) 85 (60) | A °C | 120° Rect conduction angle |
| I_{FSM} Maximum peak, one-cycle forward, non-repetitive surge current | 1130 | 1430 | A | t = 10ms No voltage |
| | 1180 | 1500 | | t = 8.3ms reapplied |
| | 950 | 1200 | | t = 10ms 100% V_{RRM} |
| | 1000 | 1260 | | t = 8.3ms reapplied |
| I^2t Maximum I^2t for fusing | 64000 | 10200 | A ² s | t = 10ms No voltage |
| | 5800 | 9300 | | t = 8.3ms reapplied |
| | 4500 | 7200 | | t = 10ms 100% V_{RRM} |
| | 4100 | 6600 | | t = 8.3ms reapplied |
| $I^2\sqrt{t}$ Maximum $I^2\sqrt{t}$ for fusing | 64000 | 102000 | A ² √s | t = 0.1 to 10ms, no voltage reapplied |
| $V_{F(TO)1}$ Low level value of threshold voltage | 0.78 | 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 | 0.99 | 1.04 | | ($I > \pi \times I_{F(AV)}$), @ T_J max. |
| r_{f1} Low level value of forward slope resistance | 4.59 | 3.52 | 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 | 4.17 | 3.13 | | ($I > \pi \times I_{F(AV)}$), @ T_J max. |
| V_{FM} Maximum forward voltage drop | 1.63 | 1.49 | V | $I_{pk} = 200A$, $T_J = 25^\circ C$, $t_p = 400\mu s$ 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 | 130MT.KB | 160MT.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 | 0.16 | 0.12 | K/W | DC operation per module |
| | 0.93 | 0.73 | | DC operation per junction |
| | 0.18 | 0.15 | | 120° Rect conduction angle per module |
| | 1.08 | 0.88 | | 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 to terminal | 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. |
| | 3 to 4 | | | |
| wt Approximate weight | 176 | | g | |

Ordering Information Table

| Device Code | | | | | |
|-------------|---|----|-----|---|---|
| 16 | 0 | MT | 160 | K | B |
| ① | ② | ③ | ④ | | |

- 1** - Current rating code: 13 = 130 A (Avg)
 16 = 160 A (Avg)
- 2** - Three phase diodes bridge
- 3** - Essential part number
- 4** - Voltage code: Code x 10 = V_{RRM} (See Voltage Ratings Table)
- 5** - Generation II

Outline Table (without optional barriers)

Screws M5 x 0.8 Length 10

All dimensions in millimeters (inches)

NOTE: To order the Optional Hardware see Bulletin I27900

130-160MT..KB Series

Bulletin I27502 rev. A 05/03



Outline Table (with optional barriers)

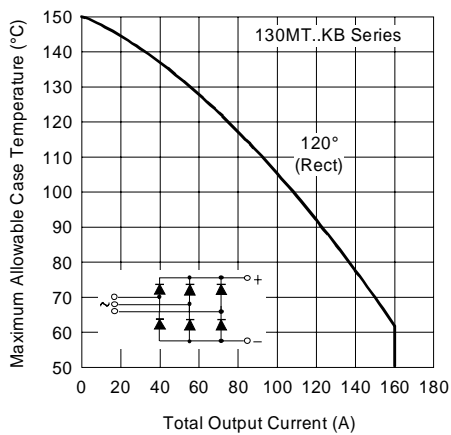
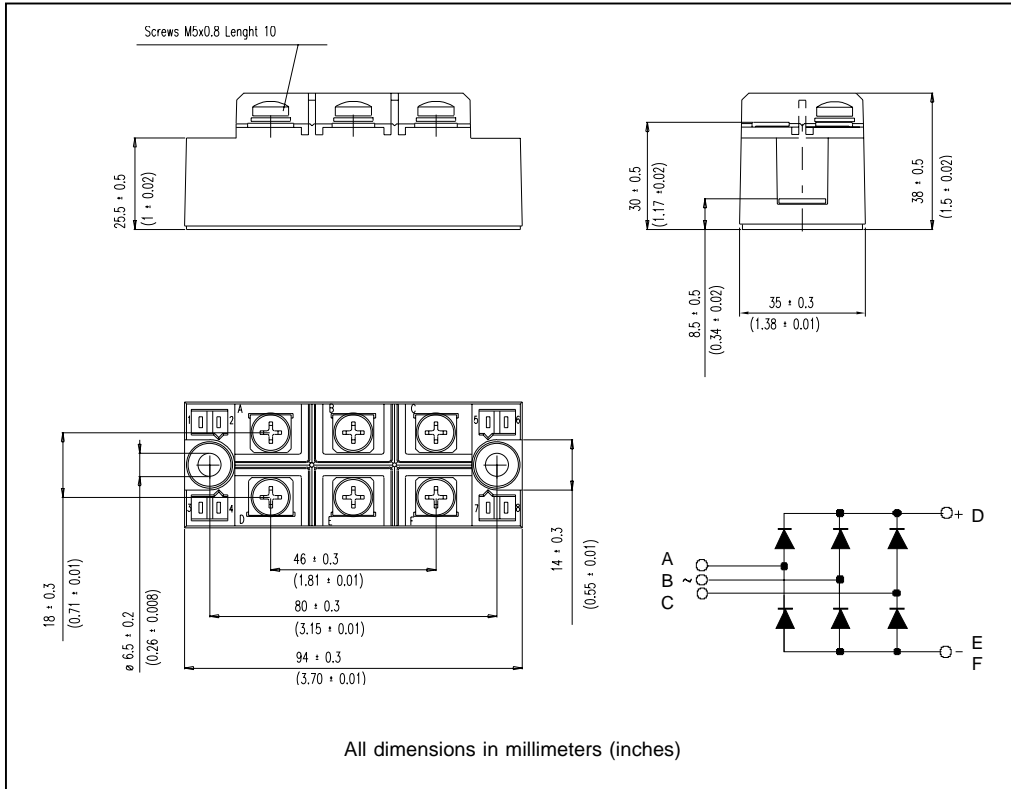


Fig. 1 - Current Ratings Characteristics

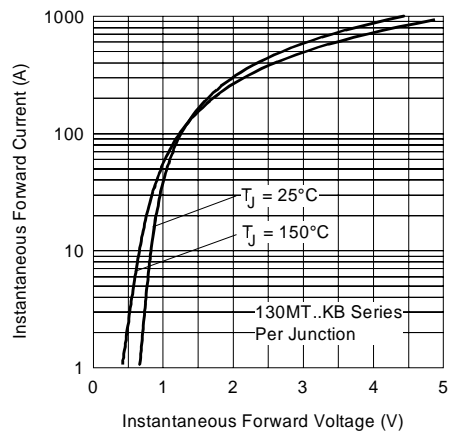


Fig. 2 - Forward Voltage Drop Characteristics

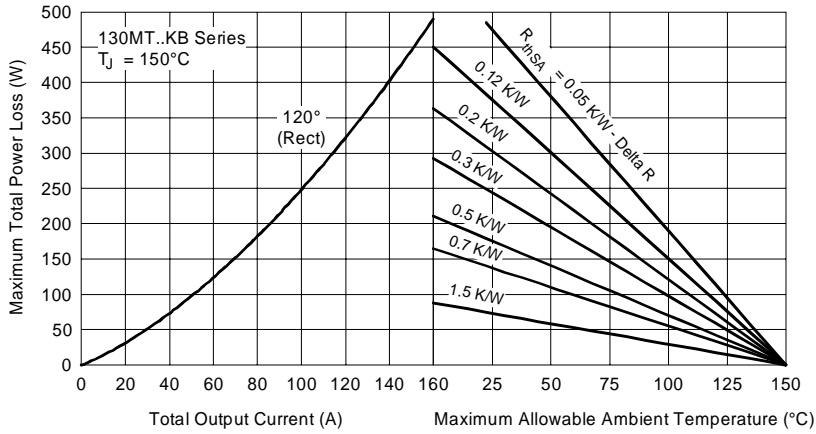


Fig. 3 - Total Power Loss Characteristics

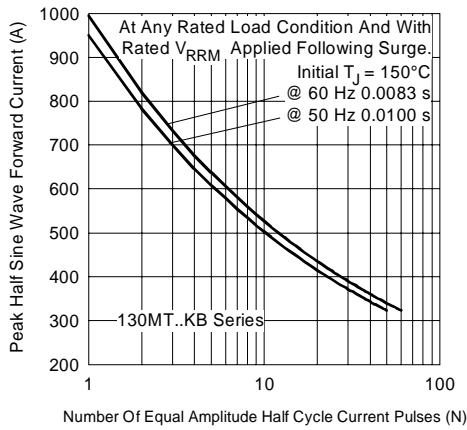


Fig. 4 - Maximum Non-Repetitive Surge Current

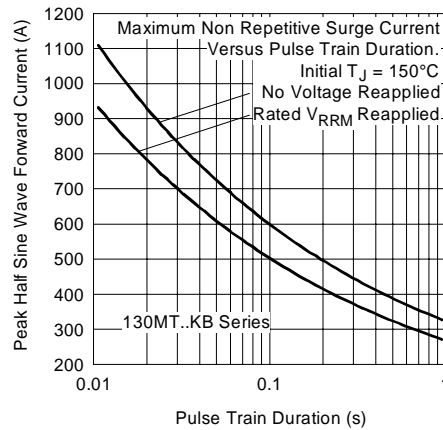


Fig. 5 - Maximum Non-Repetitive Surge Current

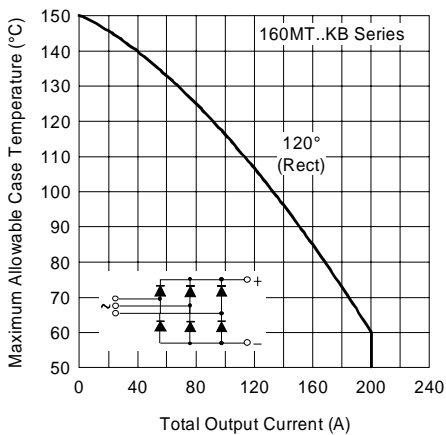


Fig. 6 - Current Ratings Characteristics

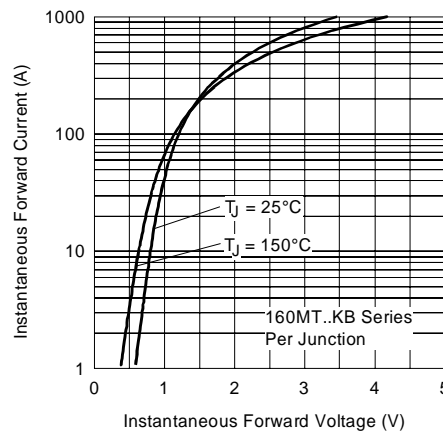


Fig. 7 - Forward Voltage Drop Characteristics

130-160MT..KB Series

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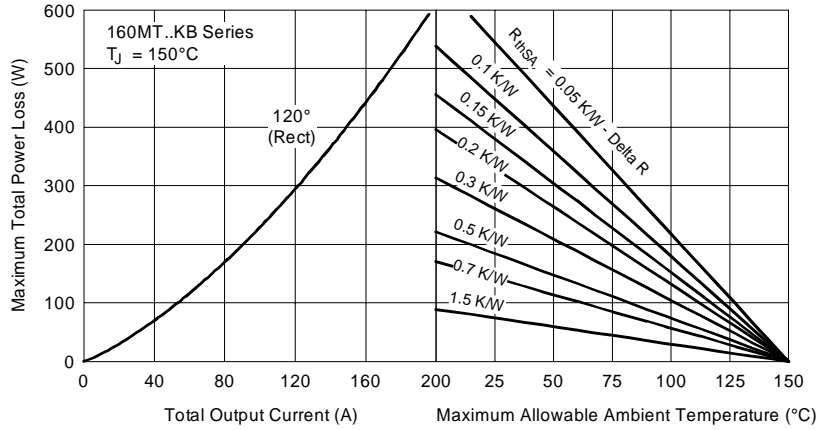


Fig. 8 - Total Power Loss Characteristics

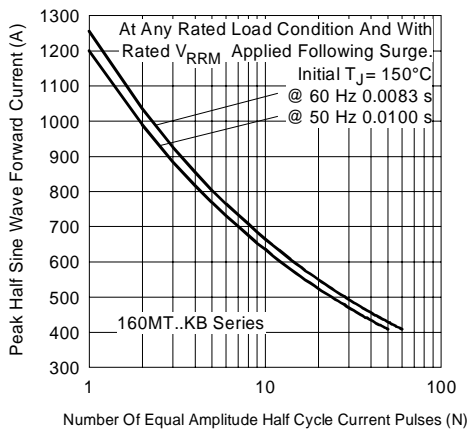


Fig. 9 - Maximum Non-Repetitive Surge Current

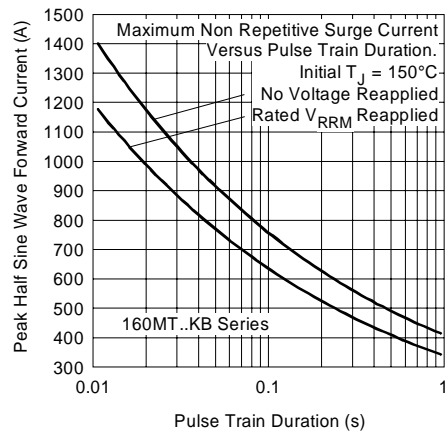


Fig. 10 - Maximum Non-Repetitive Surge Current

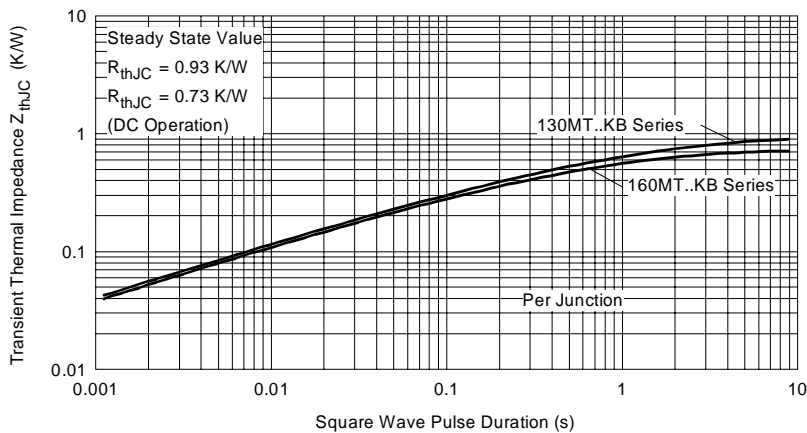


Fig. 11 - Thermal Impedance Z_{thJC} Characteristic

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.

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