


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 

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

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) 90 (61)	110 (150) 90 (57)	A °C	120° Rect conduction angle
I_{FSM} Maximum peak, one-cycle forward, non-repetitive surge current	770 810 650 680	950 1000 800 840	A	<div> <div> <div>t = 10ms</div> <div>t = 8.3ms</div> <div>t = 10ms</div> <div>t = 8.3ms</div> </div> <div> <div>No voltage reappplied</div> <div>100% V_{RRM} reappplied</div> </div> </div> <div>Initial $T_J = T_J$ max.</div>
I^2t Maximum I^2t for fusing	3000 2700 2100 1900	4500 4100 3200 2900	A ² s	<div> <div>t = 10ms</div> <div>t = 8.3ms</div> <div>t = 10ms</div> <div>t = 8.3ms</div> </div> <div> <div>No voltage reappplied</div> <div>100% V_{RRM} reappplied</div> </div>
I^2/t Maximum I^2/t for fusing	30000	45000	A ² √s	t = 0.1 to 10ms, no voltage reappplied
$V_{F(TO)1}$ Low level value of threshold voltage	0.89	0.81	V	(16.7% × $\pi \times I_{F(AV)} < I < \pi \times I_{F(AV)}$), @ T_J max.
$V_{F(TO)2}$ High level value of threshold voltage	1.05	0.99		($I > \pi \times I_{F(AV)}$), @ T_J max.
r_{f1} Low level value of forward slope resistance	5.11	4.37	mΩ	(16.7% × $\pi \times I_{F(AV)} < I < \pi \times I_{F(AV)}$), @ T_J max.
r_{f2} High level value of forward slope resistance	4.64	4.64		($I > \pi \times I_{F(AV)}$), @ 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 ± 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	225		g	

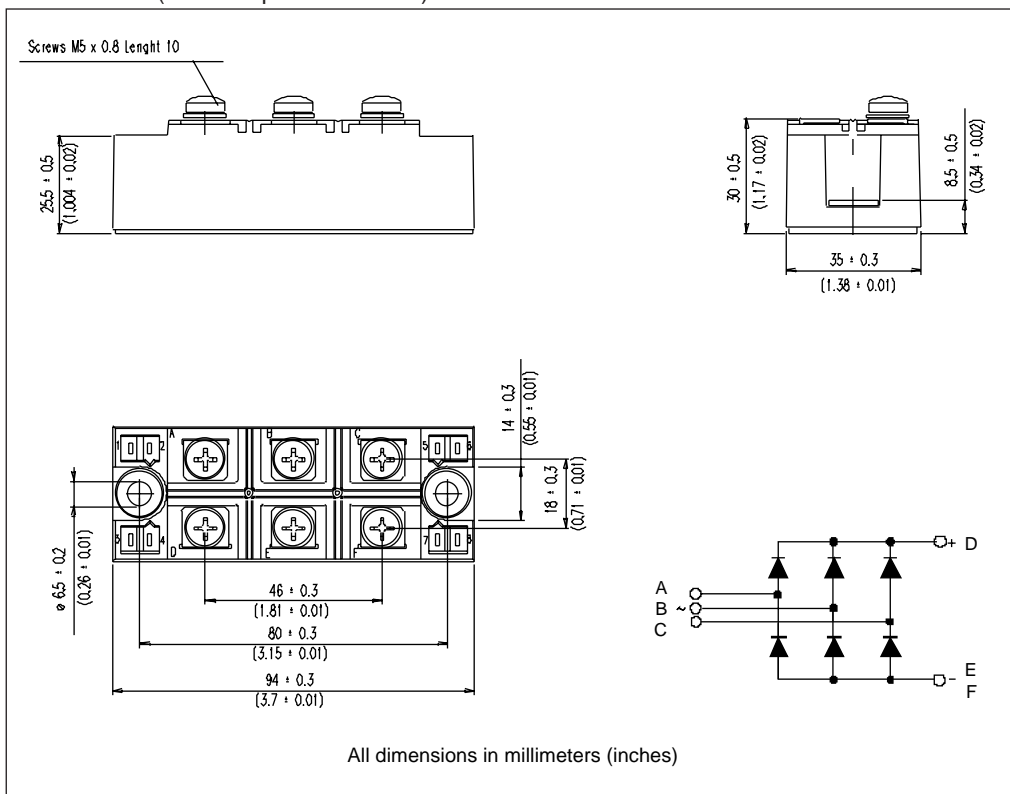
Ordering Information Table

Device Code

11	0	MT	160	K	B
1	2	3	4	5	

- 1** - Current rating code: 9 = 90 A (Avg)
11 = 110 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)



NOTE: To order the Optional Hardware see Bulletin I27900

Bulletin I27501 08/97

IOR Rectifier

Technical drawings of the 1000 Series 12V 100Ah battery, showing dimensions in millimeters (mm) and inches (in).

Top View Dimensions:

- Overall Width: 18 ± 0.3 mm (0.71 ± 0.01 in)
- Overall Height: 14 ± 0.3 mm (0.55 ± 0.01 in)
- Terminal Spacing (Left): 46 ± 0.3 mm (1.81 ± 0.01 in)
- Terminal Spacing (Right): 80 ± 0.3 mm (3.15 ± 0.01 in)
- Terminal Spacing (Bottom): 94 ± 0.3 mm (3.70 ± 0.01 in)
- Terminal Diameter: $\phi 6.5 \pm 0.2$ mm (0.26 ± 0.008 in)

Side View Dimensions:

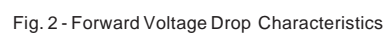
- Overall Height: 25.5 ± 0.5 mm (1 ± 0.02 in)
- Terminal Height: 30 ± 0.5 mm (1.17 ± 0.02 in)
- Terminal Width: 8.5 ± 0.5 mm (0.34 ± 0.02 in)
- Terminal Spacing: 35 ± 0.3 mm (1.38 ± 0.01 in)
- Terminal Depth: 38 ± 0.5 mm (1.5 ± 0.02 in)

Terminal View:

- Terminal Type: 515 Series
- Terminal Material: 304 Stainless Steel
- Terminal Dimensions: $10 \times 10 \times 10$ mm
- Terminal Spacing: 10 ± 0.3 mm (0.39 ± 0.01 in)
- Terminal Material: 304 Stainless Steel
- Terminal Dimensions: $10 \times 10 \times 10$ mm
- Terminal Spacing: 10 ± 0.3 mm (0.39 ± 0.01 in)

Notes:

- Dimensions are in millimeters (mm) and inches (in).
- Dimensions are nominal unless otherwise specified.
- Dimensions are for the battery body only.
- Dimensions are for the battery terminals only.
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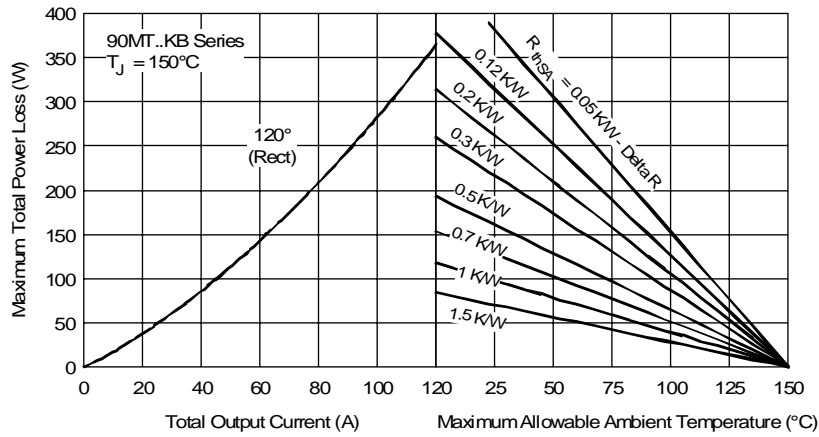


Fig. 3 - Total Power Loss Characteristics

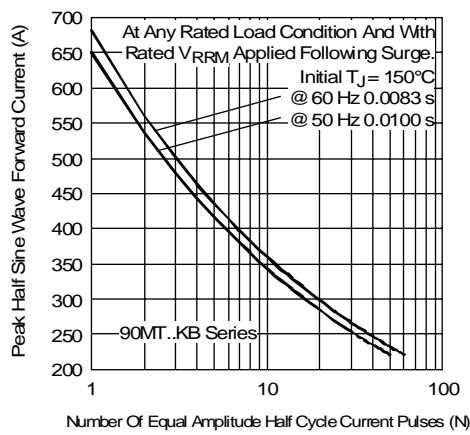


Fig. 4 - Maximum Non-Repetitive Surge Current

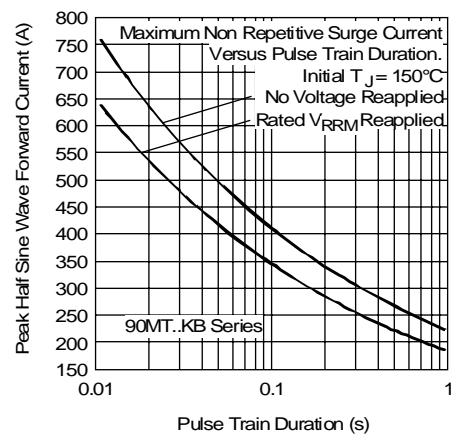


Fig. 5 - Maximum Non-Repetitive Surge Current

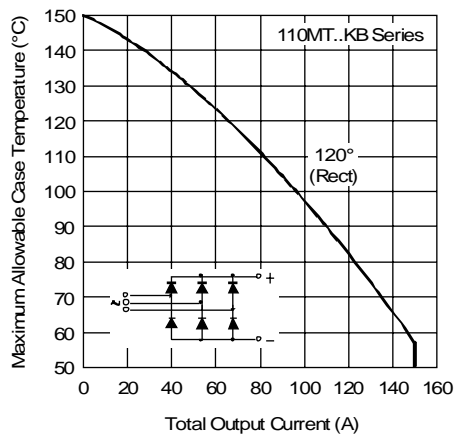


Fig. 6 - Current Ratings Characteristics

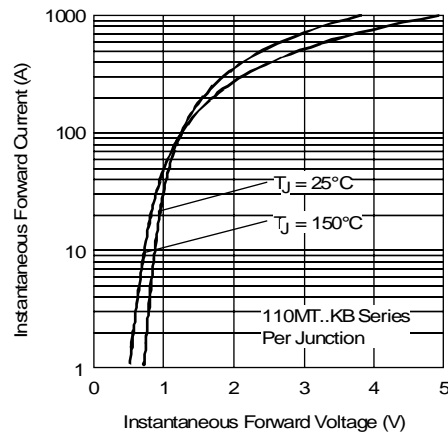


Fig. 7 - Forward Voltage Drop Characteristics

90-110MT..KB Series

Bulletin I27501 08/97

International
IOR Rectifier

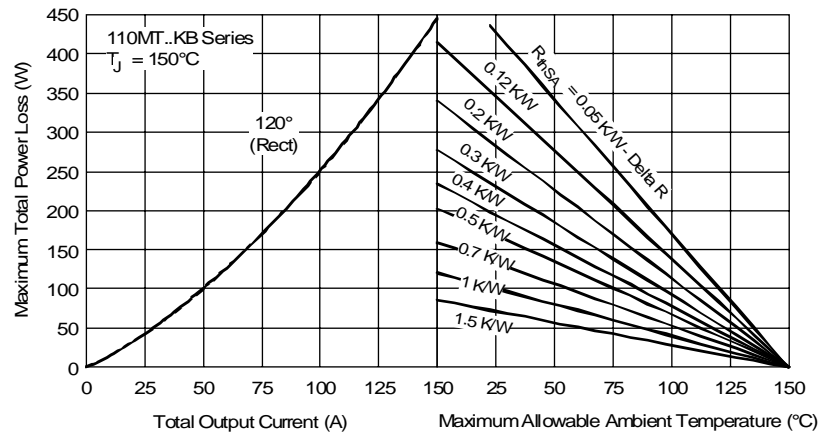


Fig. 8 - Total Power Loss Characteristics

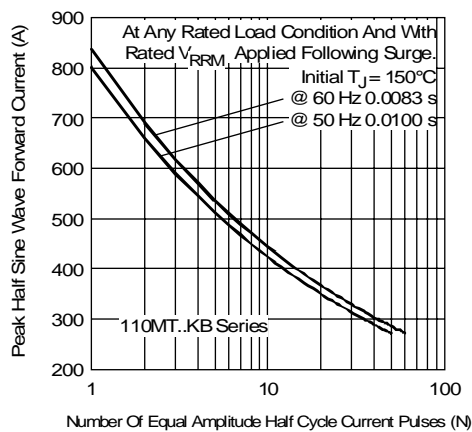


Fig. 9 - Maximum Non-Repetitive Surge Current

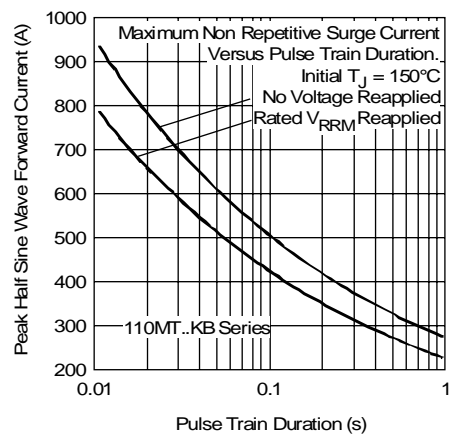


Fig. 10 - Maximum Non-Repetitive Surge Current

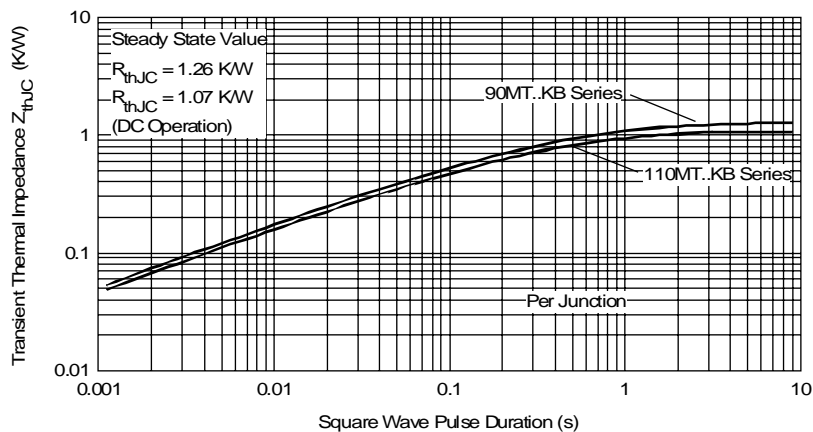


Fig. 11 - Thermal Impedance Z_{thJC} Characteristic