Bulletin I27501 rev. A 05/03

International
IOR Rectifier

MT..KB SERIES

THREE PHASE BRIDGE **Power Modules**

90 A
110 A

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}	@ 50Hz	770	950	A
	@ 60Hz	810	1000	A
I^2t	@ 50Hz	3000	4500	A^2s
	@ 60Hz	2700	4100	A^2s
$I^2\sqrt{t}$		30000	45000	$A^2\sqrt{s}$
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

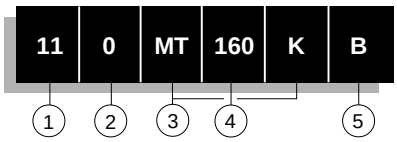
	Parameter	90MT.KB	110MT.KB	Units	Conditions		
I_O	Maximum DC output current	90 (120)	110 (150)	A	120° Rect conduction angle		
	@ Case temperature	90 (61)	90 (57)	°C			
I_{FSM}	Maximum peak, one-cycle forward, non-repetitive surge current	770	950	A	t = 10ms	No voltage reapplied	Initial T_J = T_J max.
		810	1000		t = 8.3ms		
		650	800		t = 10ms	100% V_{RRM} reapplied	
		680	840		t = 8.3ms		
I^2t	Maximum I^2t for fusing	3000	4500	A^2s	t = 10ms	No voltage reapplied	
		2700	4100		t = 8.3ms		
		2100	3200		t = 10ms	100% V_{RRM} reapplied	
		1900	2900		t = 8.3ms		
$I^2\sqrt{t}$	Maximum $I^2\sqrt{t}$ for fusing	30000	45000	$A^2\sqrt{s}$	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% x π x $I_{F(AV)}$ < I < π x $I_{F(AV)}$), @ T_J max.		
$V_{F(TO)2}$	High level value of threshold voltage	1.05	0.99		(I > π x $I_{F(AV)}$), @ T_J max.		
r_{f1}	Low level value of forward slope resistance	5.11	4.37	mΩ	(16.7% x π x $I_{F(AV)}$ < I < π x $I_{F(AV)}$), @ T_J max.		
r_{f2}	High level value of forward slope resistance	4.64	4.64		(I > π x $I_{F(AV)}$), @ T_J max.		
V_{FM}	Maximum forward voltage drop	1.6	1.4	V	I_{pk} = 150A, T_J = 25°C, t_p = 400µs single junction		
V_{INS}	RMS isolation voltage	4000	4000	V	T_J = 25°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		176		g	

Ordering Information Table

Device Code



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

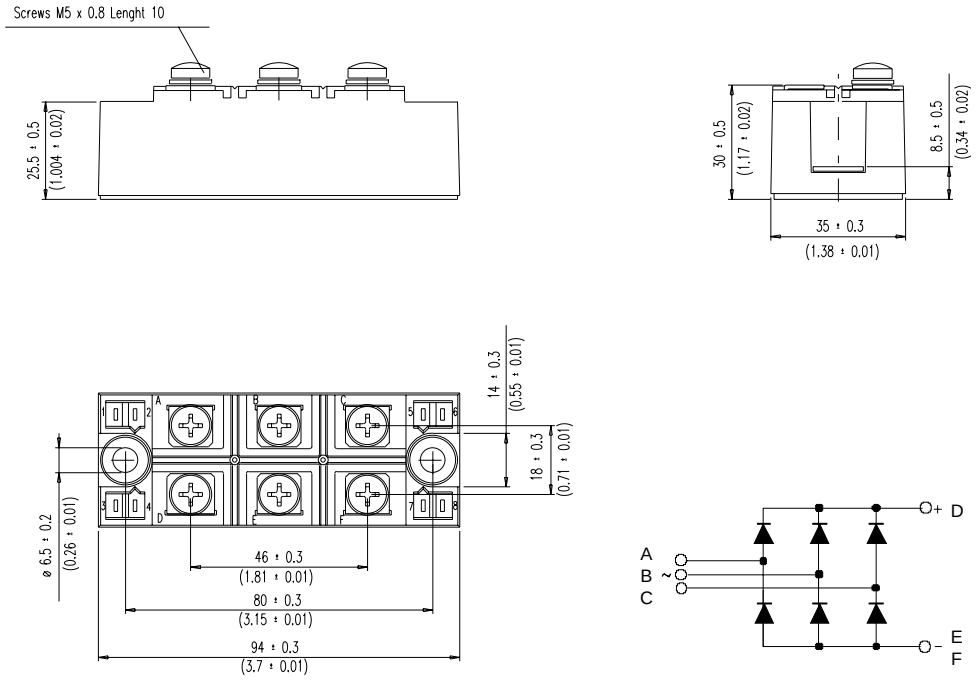
2 - Three phase diodes bridge

3 - Essential part number

4 - Voltage code: Code x 10 = V_{RRM} (See Voltage Ratings Table)

5 - Generation II

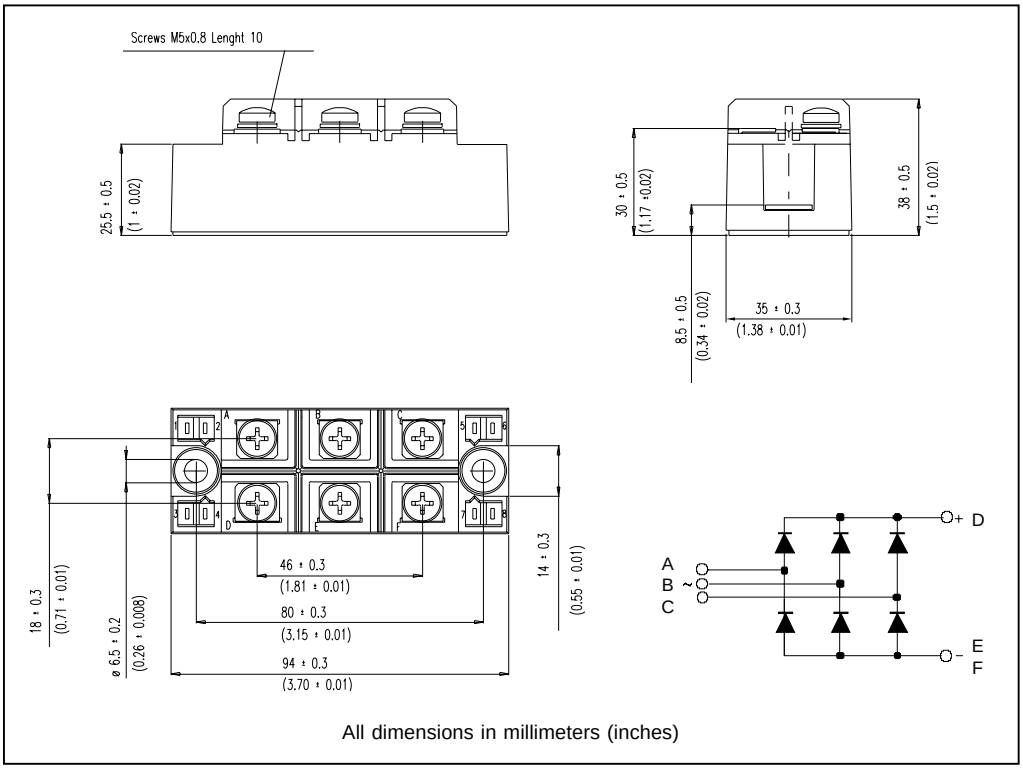
Outline Table (without optional barriers)



All dimensions in millimeters (inches)

NOTE: To order the Optional Hardware see Bulletin I27900

Outline Table (with optional barriers)



All dimensions in millimeters (inches)

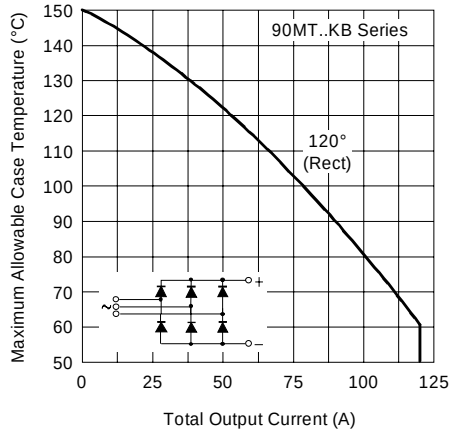


Fig. 1 - Current Ratings Characteristics

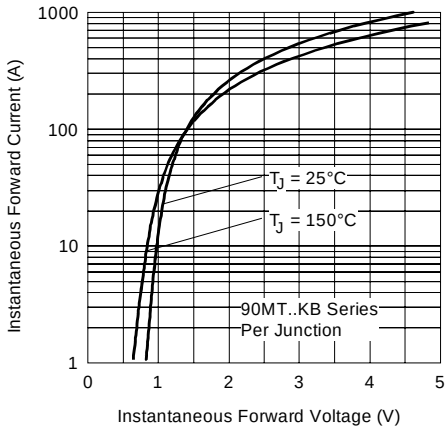


Fig. 2 - Forward Voltage Drop Characteristics

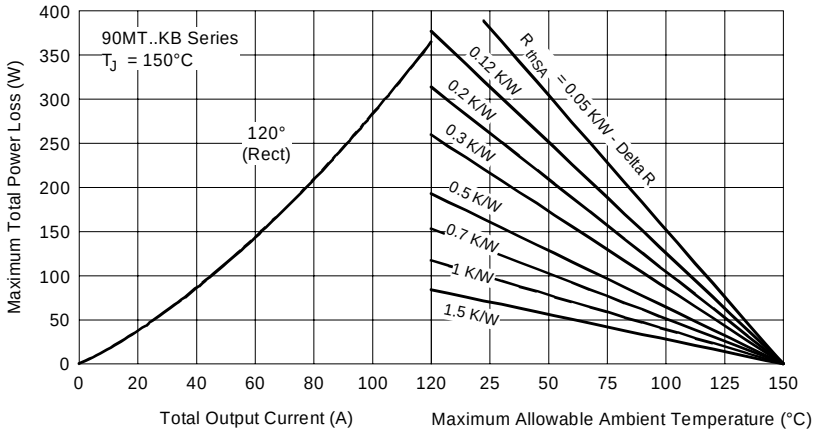


Fig. 3 - Total Power Loss Characteristics

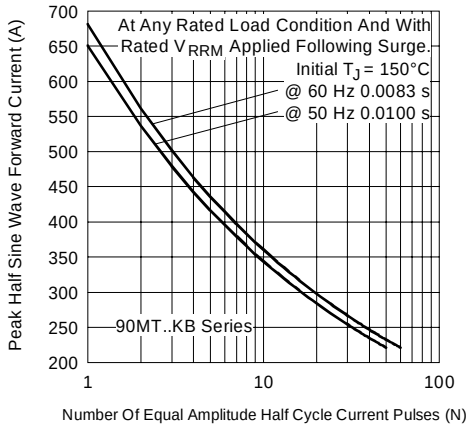


Fig. 4 - Maximum Non-Repetitive Surge Current

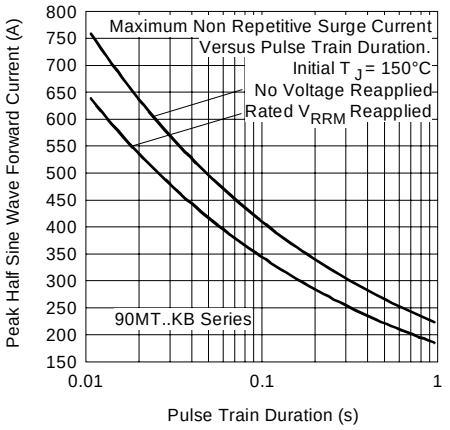


Fig. 5 - Maximum Non-Repetitive Surge Current

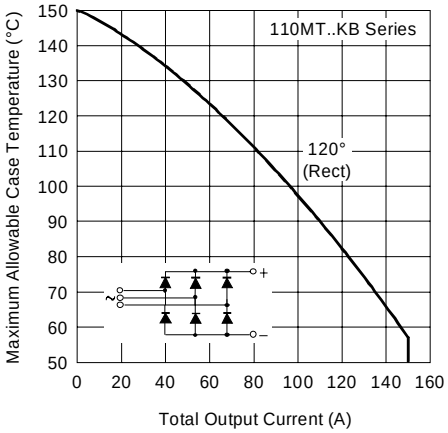


Fig. 6 - Current Ratings Characteristics

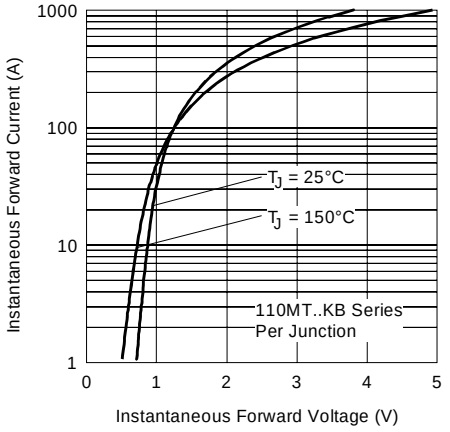


Fig. 7 - Forward Voltage Drop Characteristics

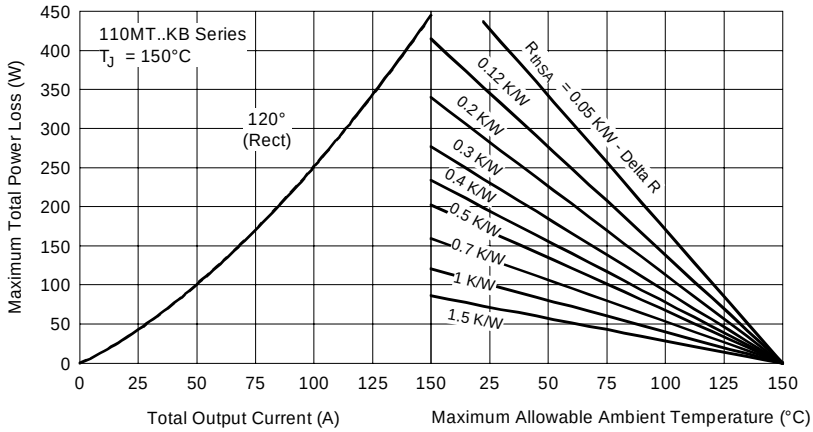


Fig. 8 - Total Power Loss Characteristics

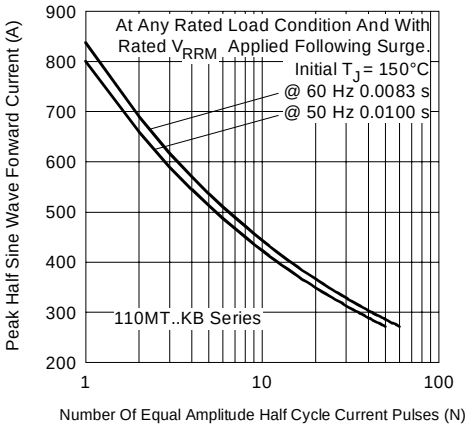


Fig. 9 - Maximum Non-Repetitive Surge Current

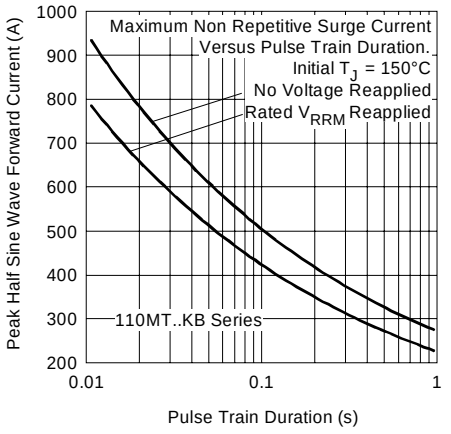


Fig. 10 - Maximum Non-Repetitive Surge Current

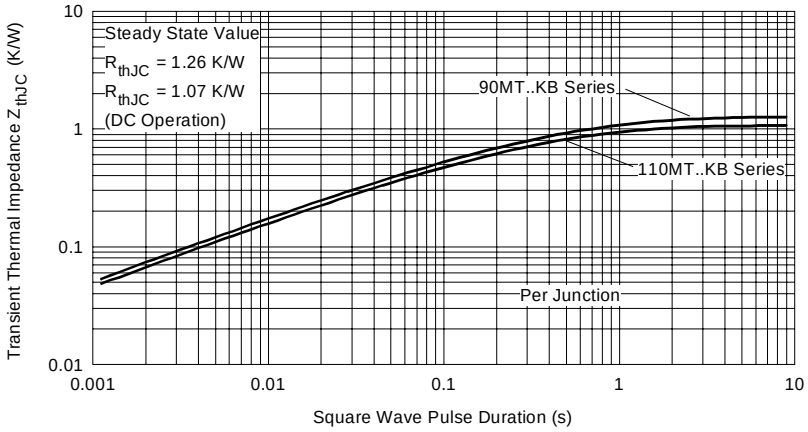


Fig. 11 - Thermal Impedance Z_{thJC} Characteristic

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.

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