


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}	770	950	A
@ 50Hz			
@ 60Hz	810	1000	A
I^2t	3000	4500	A ² s
@ 50Hz			
@ 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

90-110MT..KB Series

Bulletin I27501 rev. A 05/03

International
 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) 90 (61)	110 (150) 90 (57)	A °C	120° Rect conduction angle
I_{FSM} Maximum peak, one-cycle forward, non-repetitive surge current	770	950	A	t = 10ms No voltage reappplied
	810	1000		t = 8.3ms reappplied
	650	800		t = 10ms 100% V_{RRM} reappplied
	680	840		t = 8.3ms reappplied
I^2t Maximum I^2t for fusing	3000	4500	A ² s	t = 10ms No voltage reappplied
	2700	4100		t = 8.3ms reappplied
	2100	3200		t = 10ms 100% V_{RRM} reappplied
	1900	2900		t = 8.3ms reappplied
$I^2\sqrt{t}$ Maximum $I^2\sqrt{t}$ 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% $\times \pi \times I_{F(AV)} < I < \pi \times I_{F(AV)}$), @ T_J max.
$V_{F(TO)2}$ High level value of threshold voltage	1.05	0.99		($I > \pi \times I_{F(AV)}$), @ 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		($I > \pi \times I_{F(AV)}$), @ 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	

Document Number: 93556

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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)

Screws M5 x 0.8 Length 10

All dimensions in millimeters (inches)

NOTE: To order the Optional Hardware see Bulletin I27900

90-110MT..KB Series

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Outline Table (with optional barriers)

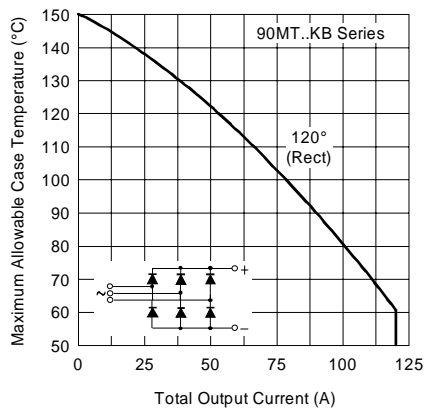
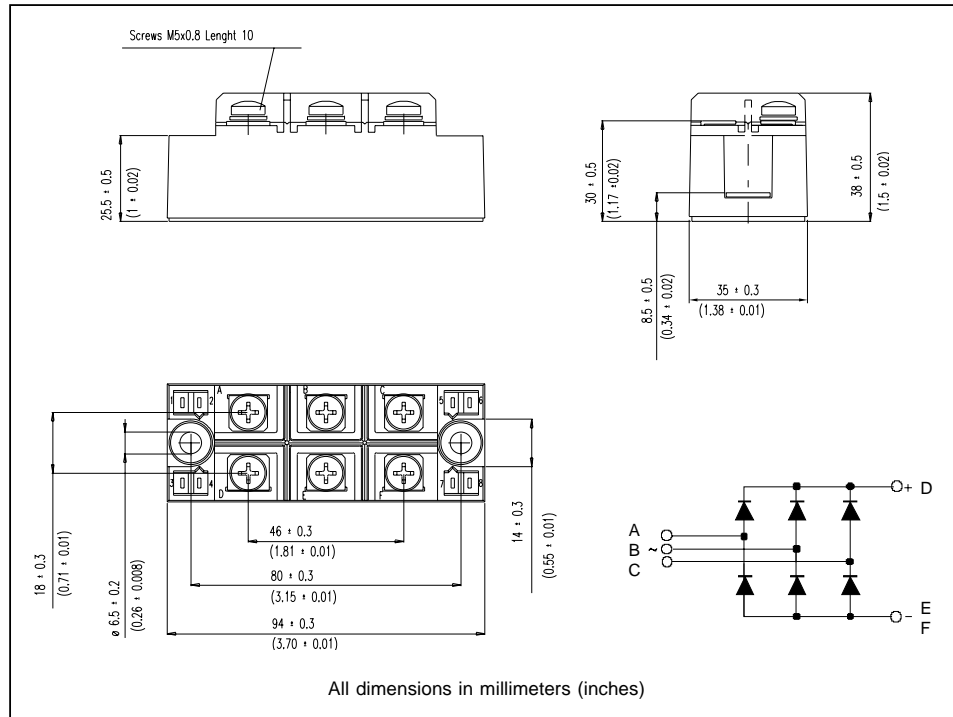


Fig. 1 - Current Ratings Characteristics

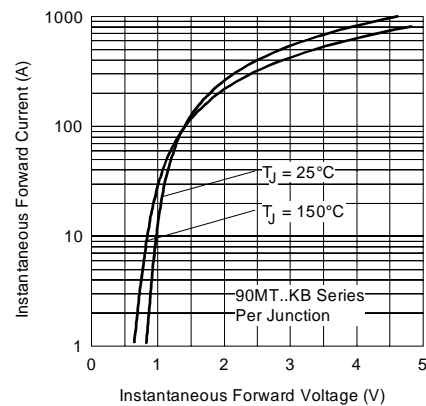


Fig. 2 - Forward Voltage Drop Characteristics

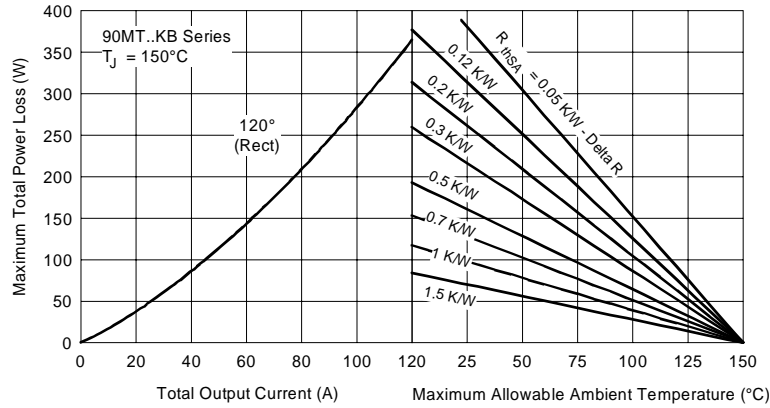


Fig. 3 - Total Power Loss Characteristics

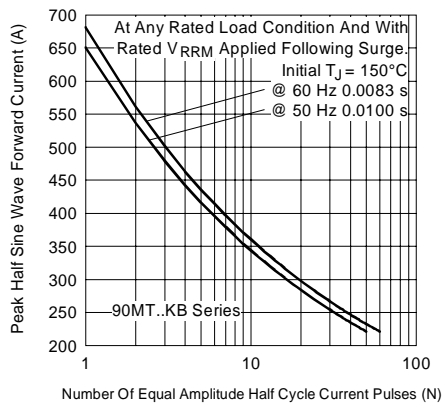


Fig. 4 - Maximum Non-Repetitive Surge Current

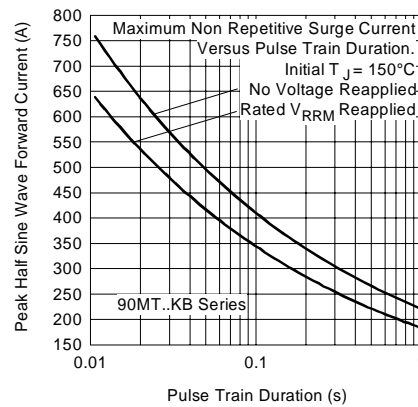


Fig. 5 - Maximum Non-Repetitive Surge Current

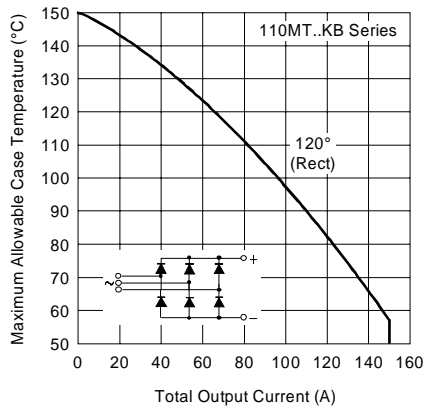


Fig. 6 - Current Ratings Characteristics

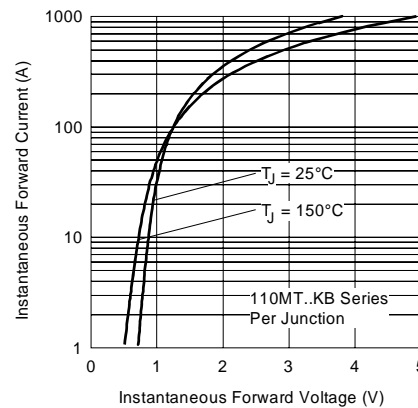


Fig. 7 - Forward Voltage Drop Characteristics

90-110MT..KB Series

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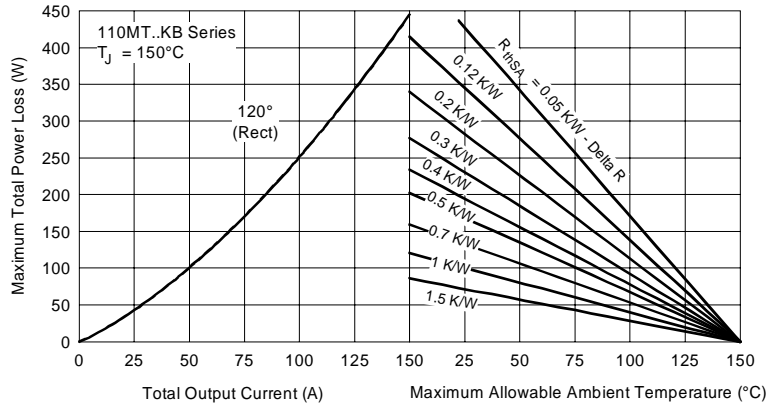


Fig. 8 - Total Power Loss Characteristics

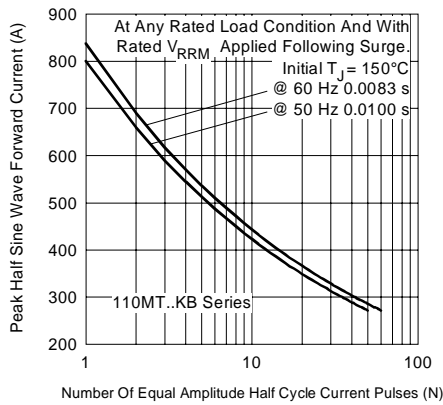


Fig. 9 - Maximum Non-Repetitive Surge Current

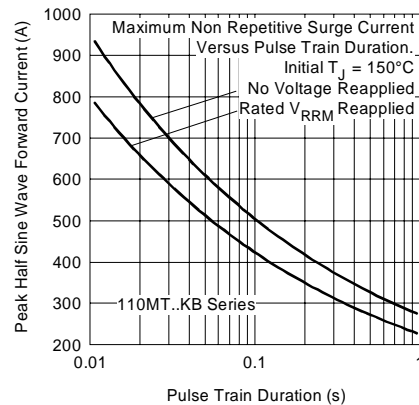


Fig. 10 - Maximum Non-Repetitive Surge Current

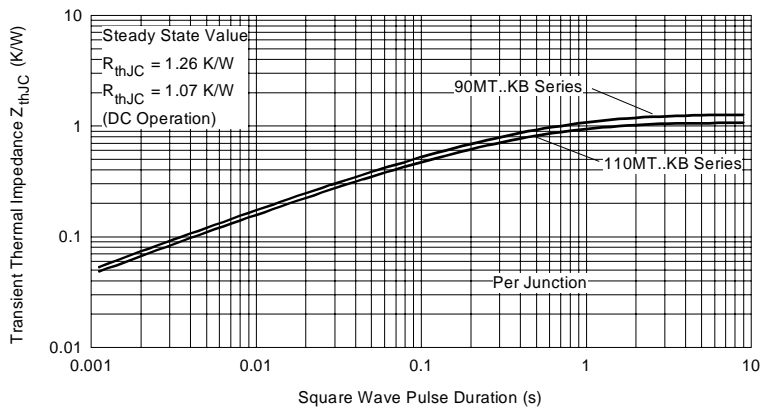


Fig. 11 - Thermal Impedance Z_{thJC} Characteristic

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.

International
IR Rectifier

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05/03



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