

Bulletin I27500 rev. A 05/03

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 

60 A
70 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	60MT.KB	70MT.KB	Units
I_O	60 (75)	70 (90)	A
@ T_C	85 (61)	85 (57)	°C
I_{FSM}	@ 50Hz 420	480	A
@ 60Hz	440	500	A
I^2t	@ 50Hz 870	1150	A ² s
@ 60Hz	790	1050	A ² s
$I^2\sqrt{t}$	8700	11500	A ² √s
V_{RRM} range	800 to 1600		V
T_{STG} range	- 40 to 150		°C
T_J range	- 40 to 150		°C



60-70MT..KB Series

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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
60-70MT..KB	80	800	900	10
	100	1000	1100	
	120	1200	1300	
	140	1400	1500	
	160	1600	1700	

Forward Conduction

Parameter	60MT.KB	70MT.KB	Units	Conditions
I_O Maximum DC output current @ Case temperature	60 (75) 85 (61)	70 (90) 85 (57)	A °C	120° Rect conduction angle
I_{FSM} Maximum peak, one-cycle forward, non-repetitive surge current	420 440 350 370	480 500 400 420	A	t = 10ms t = 8.3ms t = 10ms t = 8.3ms No voltage reappplied 100% V_{RRM} reappplied Initial $T_J = T_J$ max.
I^2t Maximum I^2t for fusing	870 790 610 560	1150 1050 800 730	A ² s	t = 10ms t = 8.3ms t = 10ms t = 8.3ms No voltage reappplied 100% V_{RRM} reappplied
$I^2\sqrt{t}$ Maximum $I^2\sqrt{t}$ for fusing	8700	11300	A ² √s	t = 0.1 to 10ms, no voltage reappplied
$V_{F(TO)1}$ Low level value of threshold voltage	0.85	0.86	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	1.07	1.08	V	($I > \pi \times I_{F(AV)}$), @ T_J max.
r_{f1} Low level value of forward slope resistance	8.04	7.35	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	7.08	6.53	mΩ	($I > \pi \times I_{F(AV)}$), @ T_J max.
V_{FM} Maximum forward voltage drop	1.75	1.55	V	$I_{pk} = 100A$, $T_J = 25^\circ C$, $t_p = 400\mu s$ 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		60MT.KC	70MT.KC	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	0.37	0.29	K/W	DC operation per module
		2.22	1.75		DC operation per junction
		0.40	0.34		120° Rect conduction angle per module
		2.42	2.01		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 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	

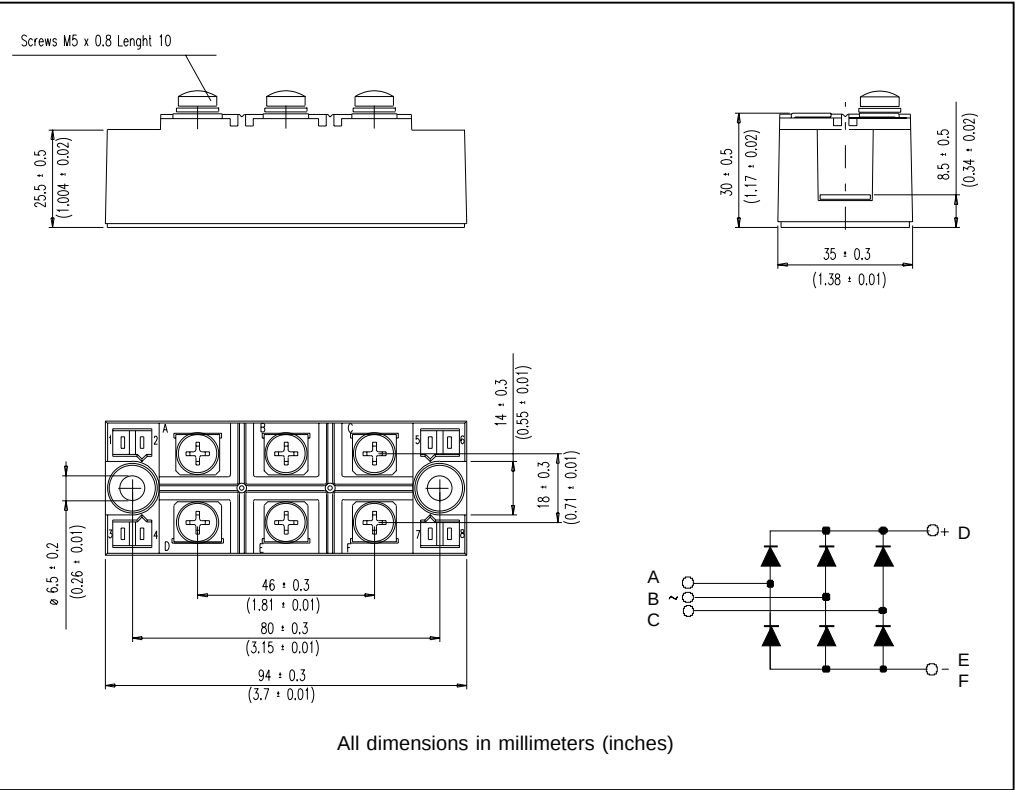
Ordering Information Table

Device Code

7	0	MT	160	K	B
①	②	③	④	⑤	⑥

- 1** - Current rating code: 6 = 60 A Avg.
7 = 70 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

Outline Table (with optional barriers)

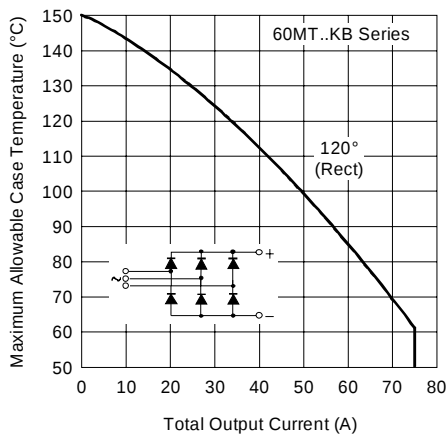
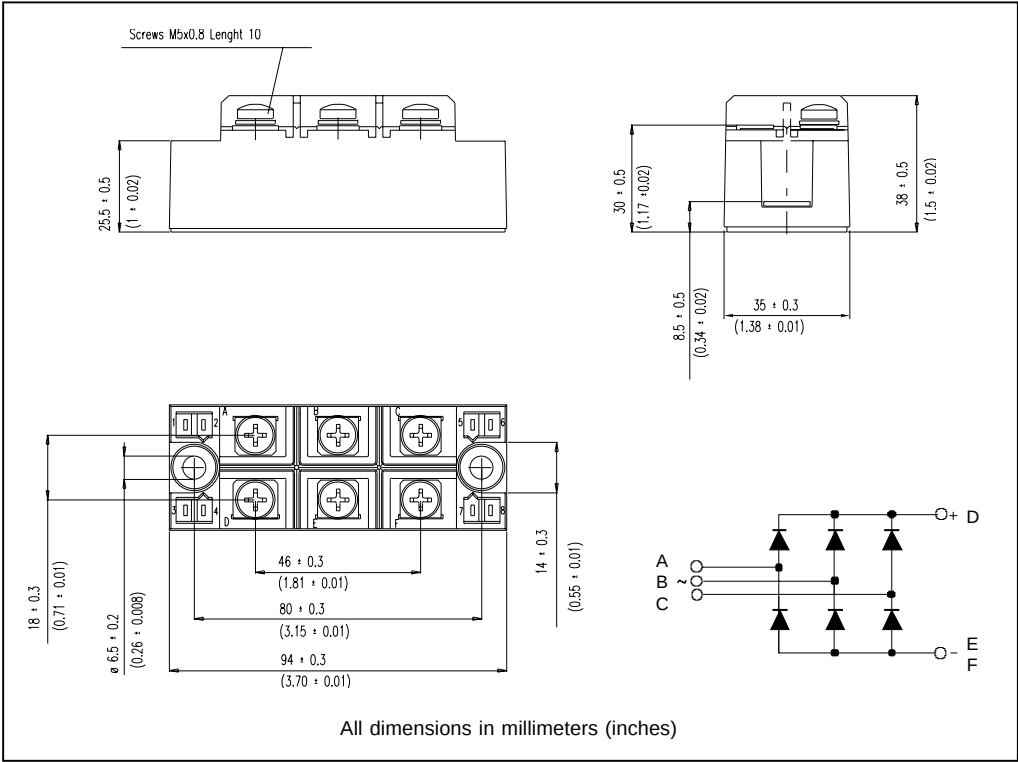


Fig. 1 - Current Ratings Characteristics

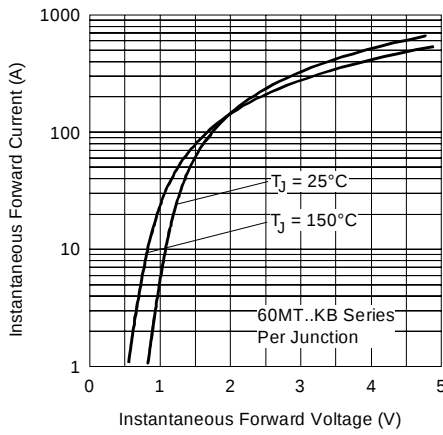


Fig. 2 - Forward Voltage Drop Characteristics

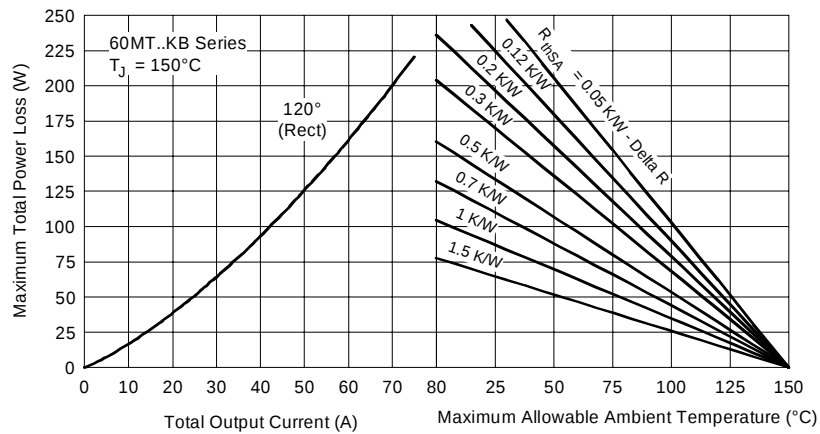


Fig. 3 - Total Power Loss Characteristics

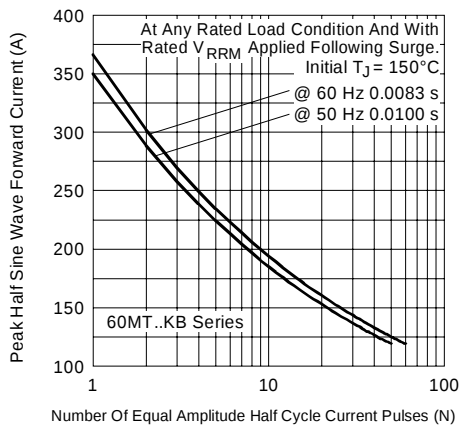


Fig. 4 - Maximum Non-Repetitive Surge Current

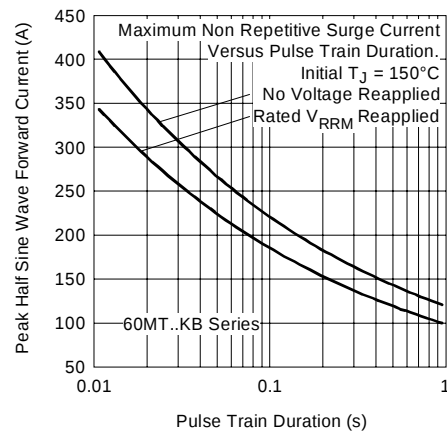


Fig. 5 - Maximum Non-Repetitive Surge Current

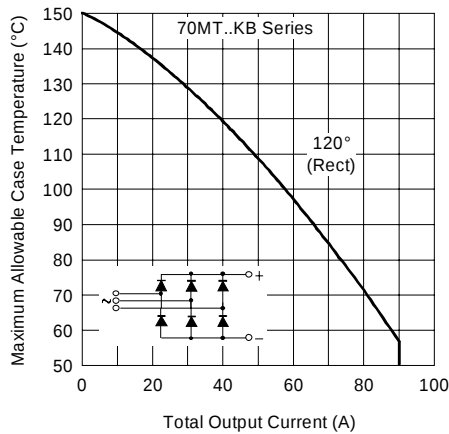


Fig. 6 - Current Ratings Characteristics

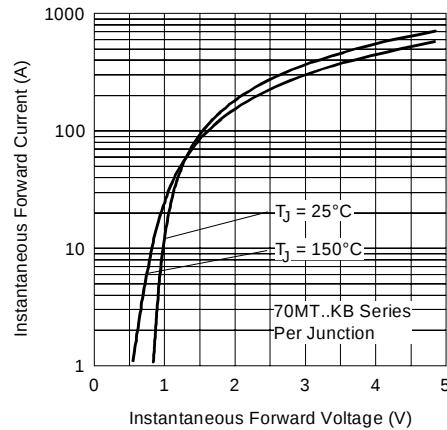


Fig. 7 - Forward Voltage Drop Characteristics

60-70MT..KB Series

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International
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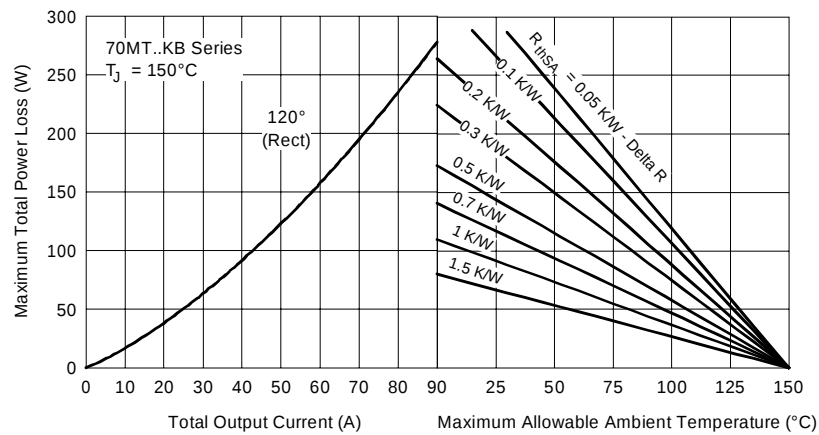


Fig. 8 - Total Power Loss Characteristics

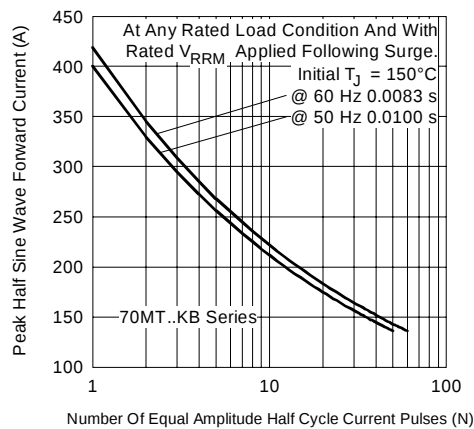


Fig. 9 - Maximum Non-Repetitive Surge Current

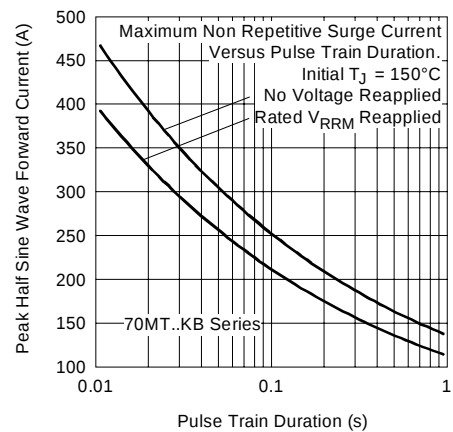


Fig. 10 - Maximum Non-Repetitive Surge Current

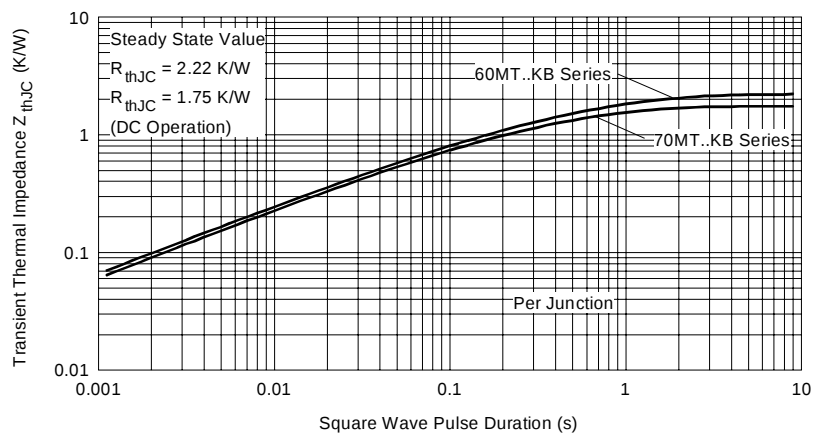


Fig. 11 - Thermal Impedance Z_{thJC} Characteristic

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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