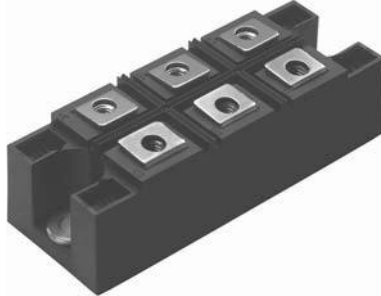



## Three Phase Bridge (Power Modules), 60/70 A



MTK

### FEATURES

- Package fully compatible with the industry standard INT-A-PAK power modules series
- High thermal conductivity package, electrically insulated case
- Excellent power volume ratio, outline for easy connections to power transistor and IGBT modules
- 4000 V<sub>RMS</sub> isolating voltage
- UL E78996 approved 
- Totally lead (Pb)-free
- Designed and qualified for industrial level


**RoHS**  
COMPLIANT

### PRODUCT SUMMARY

$I_o$	60/70 A
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### 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

SYMBOL	CHARACTERISTICS	60MT.K	70MT.K	UNITS
$I_o$		60 (75)	70 (90)	A
	$T_c$	85 (61)	85 (57)	°C
$I_{FSM}$	50 Hz	420	480	A
	60 Hz	440	500	
$I^2t$	50 Hz	870	1150	kA <sup>2</sup> s
	60 Hz	790	1050	
$I^2\sqrt{t}$		8700	11 500	kA <sup>2</sup> √s
$V_{RRM}$	Range	800 to 1600		V
$T_{Stg}$	Range	- 40 to 150		°C
$T_J$				

### ELECTRICAL SPECIFICATIONS

#### VOLTAGE RATINGS

TYPE NUMBER	VOLTAGE CODE	$V_{RRM}$ , MAXIMUM REPETITIVE PEAK REVERSE VOLTAGE V	$V_{RSM}$ , MAXIMUM NON-REPETITIVE PEAK REVERSE VOLTAGE V	$I_{RRM}$ MAXIMUM AT $T_J$ MAXIMUM mA
60-70MT..K	80	800	900	10
	100	1000	1100	
	120	1200	1300	
	140	1400	1500	
	160	1600	1700	

# 60-70MT..KPbF Series



Vishay High Power Products Three Phase Bridge  
(Power Modules), 60/70 A

FORWARD CONDUCTION							
PARAMETER	SYMBOL	TEST CONDITIONS		60MT.K	70MT.K	UNITS	
Maximum DC output current at case temperature	I <sub>O</sub>	120° rect. conduction angle		60 (75)	70 (90)	A	
				85 (61)	85 (57)	°C	
Maximum peak, one-cycle forward, non-repetitive surge current	I <sub>FSM</sub>	t = 10 ms	No voltage reapplied	Initial T <sub>J</sub> = T <sub>J</sub> maximum	420	480	A
		t = 8.3 ms			440	500	
		t = 10 ms	100 % V <sub>RRM</sub> reapplied		350	400	
		t = 8.3 ms			370	420	
Maximum I <sup>2</sup> t for fusing	I <sup>2</sup> t	t = 10 ms	No voltage reapplied	Initial T <sub>J</sub> = T <sub>J</sub> maximum	870	1150	kA <sup>2</sup> s
		t = 8.3 ms			790	1050	
		t = 10 ms	100 % V <sub>RRM</sub> reapplied		610	800	
		t = 8.3 ms			560	730	
Maximum I <sup>2</sup> √t for fusing	I <sup>2</sup> √t	t = 0.1 to 10 ms, no voltage reapplied		8700	11 300	A <sup>2</sup> √s	
Low level value of threshold voltage	V <sub>F(TO)1</sub>	(16.7 % × π × I <sub>F(AV)</sub> ) < I < π × I <sub>F(AV)</sub> , T <sub>J</sub> maximum		0.85	0.86	V	
High level value of threshold voltage	V <sub>F(TO)2</sub>	(I > π × I <sub>F(AV)</sub> ), T <sub>J</sub> maximum		1.07	1.08		
Low level value of forward slope resistance	r <sub>f1</sub>	(16.7 % × π × I <sub>F(AV)</sub> ) < I < π × I <sub>F(AV)</sub> , T <sub>J</sub> maximum		8.04	7.35	mΩ	
High level value of forward slope resistance	r <sub>f2</sub>	(I > π × I <sub>F(AV)</sub> ), T <sub>J</sub> maximum		7.08	6.53		
Maximum forward voltage drop	V <sub>FM</sub>	I <sub>pk</sub> = 100 A, T <sub>J</sub> = 25 °C, t <sub>p</sub> = 400 μs single junction		1.75	1.55	V	
RMS isolation voltage	V <sub>ISOL</sub>	T <sub>J</sub> = 25 °C, all terminal shorted f = 50 Hz, t = 1 s		4000			

THERMAL AND MECHANICAL SPECIFICATIONS						
PARAMETER	SYMBOL	TEST CONDITIONS		60MT.K	70MT.K	UNITS
Maximum junction operating and storage temperature range	T <sub>J</sub> , T <sub>Stg</sub>			- 40 to 150		°C
Maximum thermal resistance, junction to case	R <sub>thJC</sub>	DC operation per module		0.37	0.29	K/W
		DC operation per junction		2.22	1.75	
		120° rect. conduction angle per module		0.40	0.34	
		120° rect. conduction angle per junction		2.42	2.01	
Maximum thermal resistance, case to heatsink per module	R <sub>thCS</sub>	Mounting surface smooth, flat and greased		0.03		
Mounting torque ± 10 %	to heatsink to terminal	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.		4 to 6		Nm
				3 to 4		
Approximate weight						176

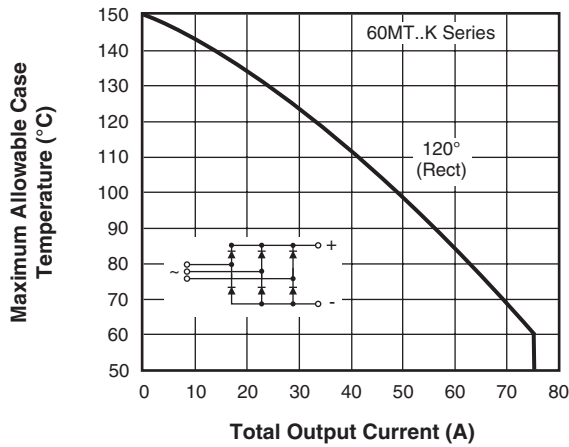


Fig. 1 - Current Ratings Characteristics

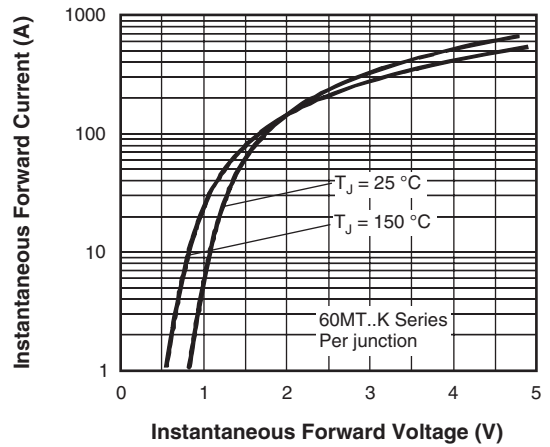


Fig. 2 - Forward Voltage Drop Characteristics

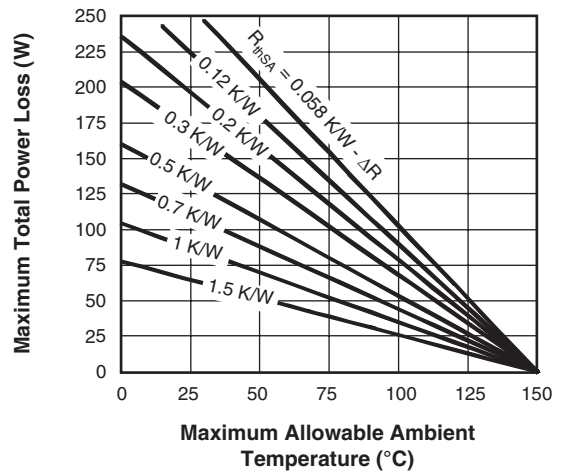
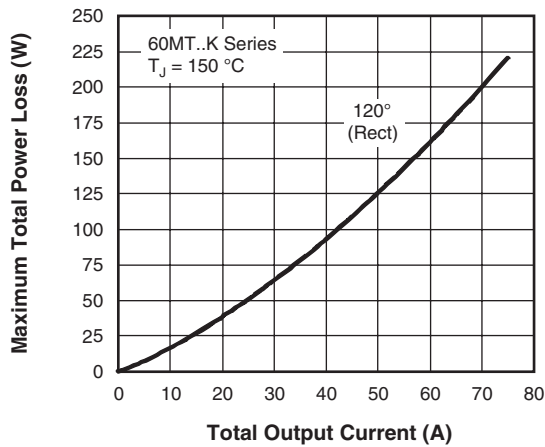


Fig. 3 - Total Power Loss Characteristics

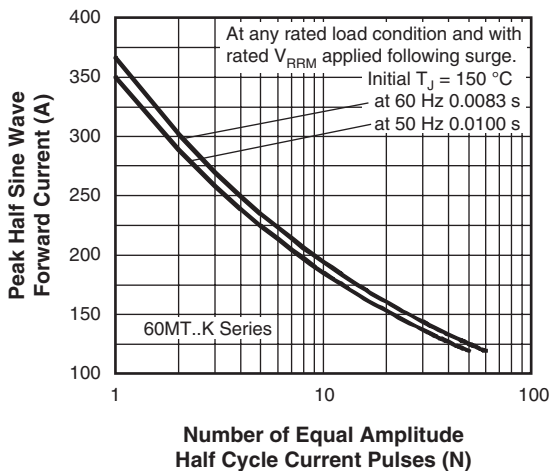


Fig. 4 - Maximum Non-Repetitive Surge Current

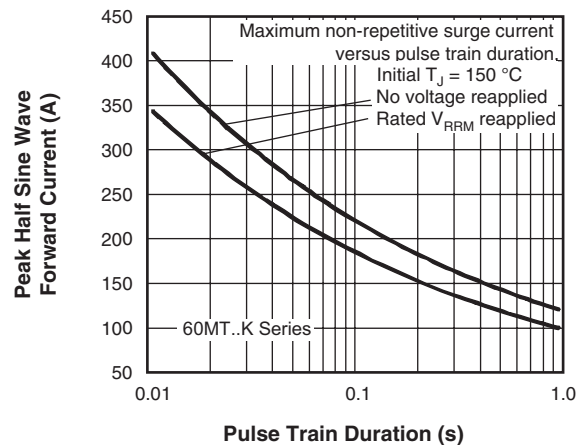


Fig. 5 - Maximum Non-Repetitive Surge Current

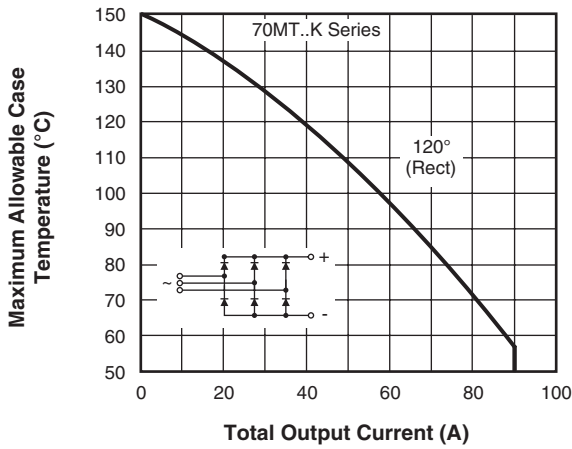


Fig. 6 - Current Ratings Characteristics

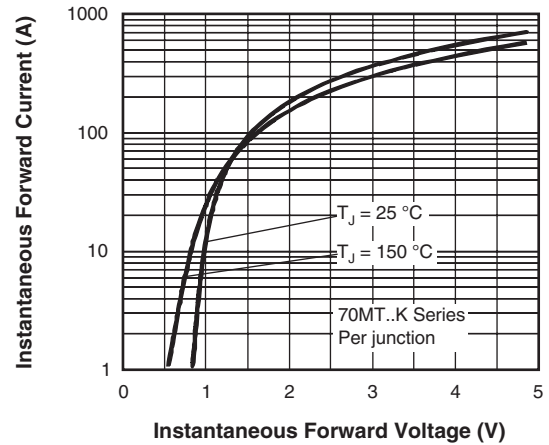


Fig. 7 - Forward Voltage Drop Characteristics

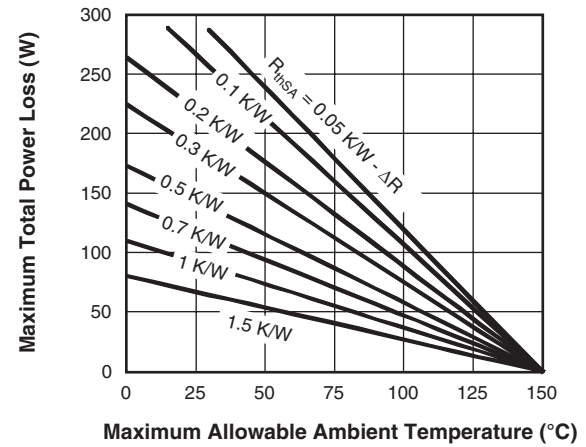
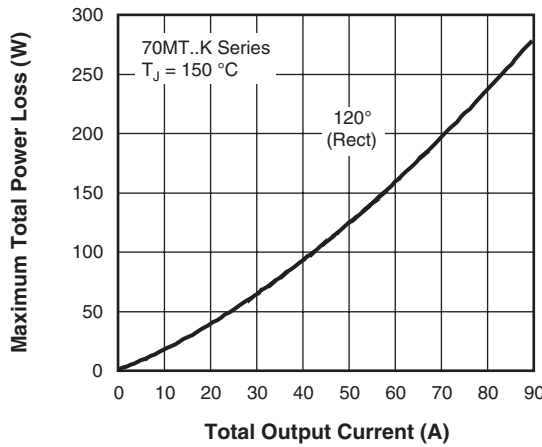


Fig. 8 - Total Power Loss Characteristics

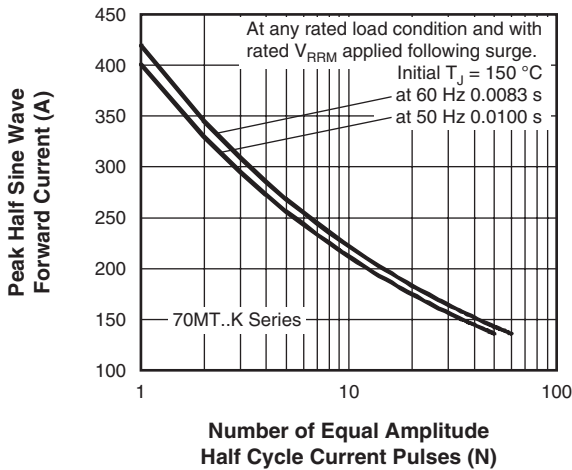


Fig. 9 - Maximum Non-Repetitive Surge Current

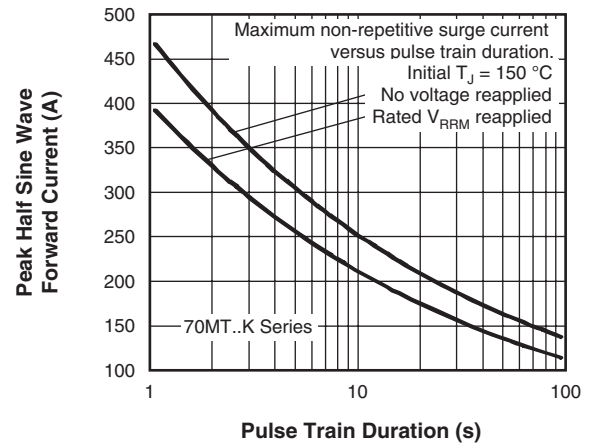


Fig. 10 - Maximum Non-Repetitive Surge Current

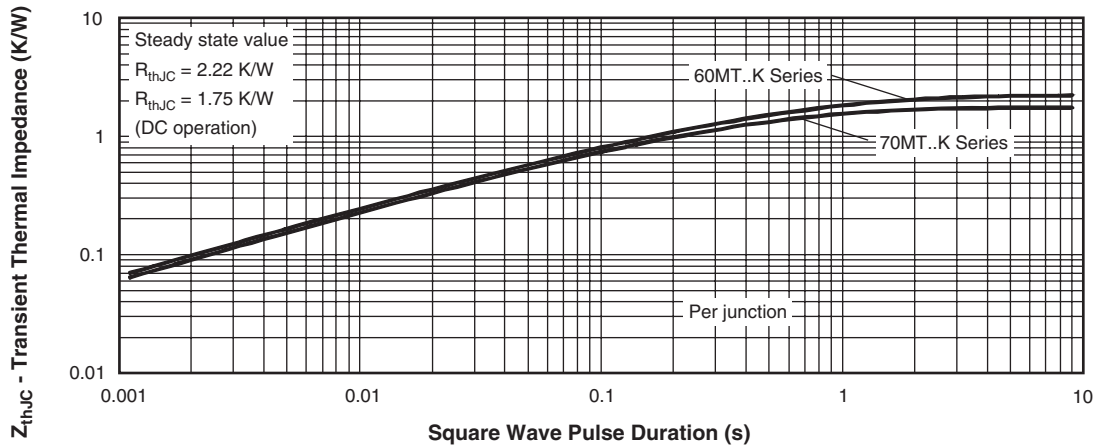


Fig. 11 - Thermal Impedance  $Z_{thJC}$  Characteristics

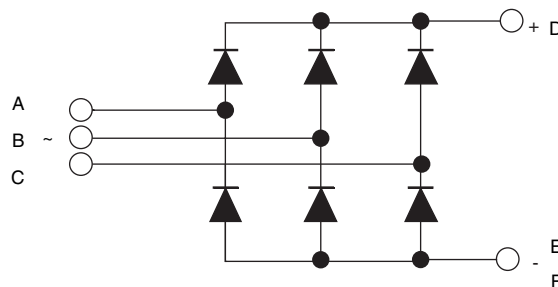
### ORDERING INFORMATION TABLE

Device code	<b>7</b>	<b>0</b>	<b>MT</b>	<b>160</b>	<b>K</b>	<b>PbF</b>
	①	②	③	④	⑤	⑥
	<b>1</b>	-	Current rating code: 6 = 60 A (average) 7 = 70 A (average)			
	<b>2</b>	-	Three phase diodes bridge			
	<b>3</b>	-	Essential part number			
	<b>4</b>	-	Voltage code x 10 = $V_{RRM}$ (see Voltage Ratings table)			
	<b>5</b>	-	PbF = Lead (Pb)-free			

#### Note

- To order the optional hardware go to [www.vishay.com/doc?95172](http://www.vishay.com/doc?95172)

### CIRCUIT CONFIGURATION



#### LINKS TO RELATED DOCUMENTS

Dimensions

<http://www.vishay.com/doc?95004>



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