


## Three Phase Bridge (Power Module), 200 A



MT-K

### FEATURES

- Package fully compatible with the industry standard INT-A-PAK power modules series
- High thermal conductivity package, electrically insulated case
- Low power loss
- Excellent power volume ratio, outline for easy connections to power transistor and IGBT modules
- 4000 V<sub>RMS</sub> isolating voltage
- UL E78996 approved 
- Designed and qualified for industrial level
- Material categorization: For definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)


**RoHS**  
COMPLIANT

### PRODUCT SUMMARY

I <sub>O</sub>	200 A
V <sub>RRM</sub>	400 V
Package	MT-K
Circuit	Three phase bridge

### DESCRIPTION

It extends the existing range of MT...KB bridges an 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	VALUES	UNITS
I <sub>O</sub>		200	A
	T <sub>C</sub>	85	°C
I <sub>FSM</sub>	50 Hz	1800	A
	60 Hz	1880	
I <sup>2</sup> <sub>t</sub>	50 Hz	16.2	kA <sup>2</sup> s
	60 Hz	14.7	
I <sup>2</sup> √t		162	kA <sup>2</sup> √s
V <sub>RRM</sub>		400	V
T <sub>Stg</sub>	Range	-40 to 150	°C
T <sub>J</sub>			

### ELECTRICAL SPECIFICATIONS

#### VOLTAGE RATINGS

TYPE NUMBER	V <sub>RRM</sub> , MAXIMUM REPETITIVE PEAK REVERSE VOLTAGE V	V <sub>RSM</sub> , MAXIMUM NON-REPETITIVE PEAK REVERSE VOLTAGE V	I <sub>RRM</sub> MAXIMUM AT T <sub>J</sub> = 150 °C mA
VS-200MT40KPbF	400	500	6

**FORWARD CONDUCTION**

PARAMETER	SYMBOL	TEST CONDITIONS			VALUES	UNITS	
Maximum RMS output current at case temperature	I <sub>O</sub>	120° rect. conduction angle			200	A	
					85	°C	
Maximum peak, one-cycle forward, non-repetitive on state surge current	I <sub>TSM</sub>	t = 10 ms	No voltage reapplied	Initial T <sub>J</sub> = T <sub>J</sub> maximum	1800	A	
		t = 8.3 ms			1880		
		t = 10 ms	100 % V <sub>RRM</sub> reapplied		1520		
		t = 8.3 ms			1590		
Maximum I <sup>2</sup> t for fusing	I <sup>2</sup> t	t = 10 ms	No voltage reapplied		16.2	kA <sup>2</sup> s	
		t = 8.3 ms			14.7		
		t = 10 ms	100 % V <sub>RRM</sub> reapplied		11.6		
		t = 8.3 ms			12.6		
Maximum I <sup>2</sup> √t for fusing	I <sup>2</sup> √t	t = 0.1 ms to 10 ms, no voltage reapplied			162	kA <sup>2</sup> √s	
Value of threshold voltage	V <sub>F(TO)</sub>	T <sub>J</sub> maximum			0.76	V	
Slope resistance	r <sub>t</sub>				2.4	mΩ	
Maximum forward voltage drop	V <sub>FM</sub>	I <sub>pk</sub> = 200 A, T <sub>J</sub> = 25 °C, t <sub>p</sub> = 400 μs single junction			1.40	V	
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	VALUES	UNITS
Maximum junction operating and storage temperature range	$T_J, T_{Stg}$		-40 to 150	°C
Maximum thermal resistance, junction to case	$R_{thJC}$	DC operation per module	0.12	K/W
		DC operation per junction	0.69	
		120° rect. conduction angle per module	0.14	
		120° rect. conduction angle per junction	0.82	
Maximum thermal resistance, case to heatsink per module	$R_{thCS}$	Mounting surface smooth, flat and greased. Heatsink compound thermal conductivity = 0.42 W/mK	0.033	
Mounting torque ± 10 % to heatsink		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
Approximate weight			176	g

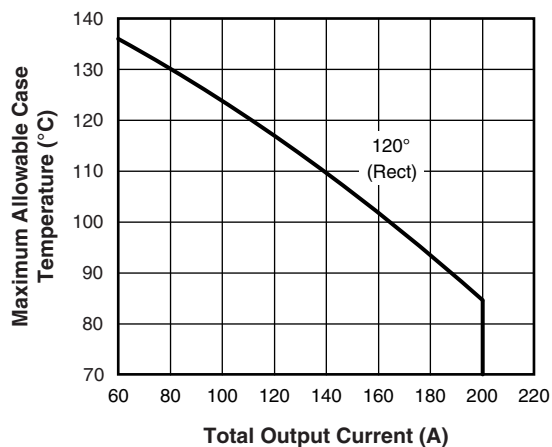


Fig. 1 - Current Rating Characteristics

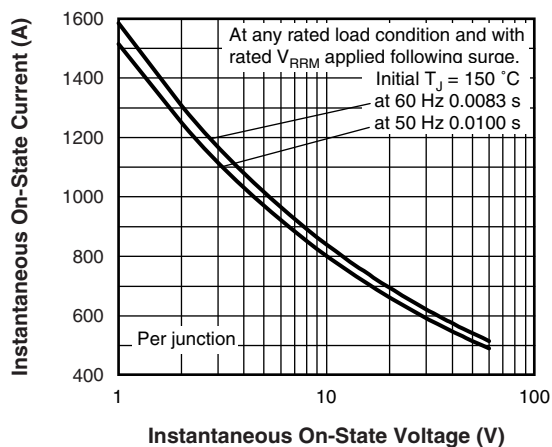


Fig. 3 - Maximum Non-Repetitive Surge Current

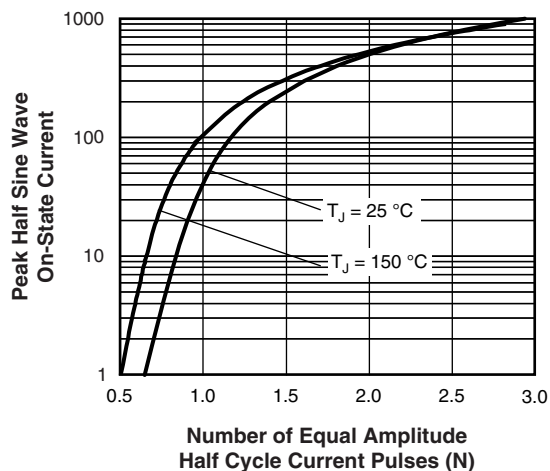


Fig. 2 - On-State Voltage Drop Characteristics

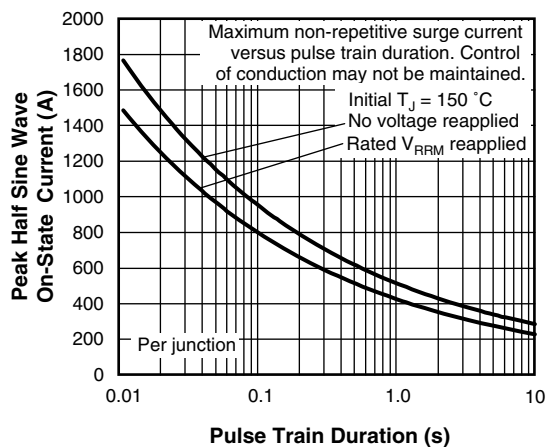


Fig. 4 - Maximum Non-Repetitive Surge Current

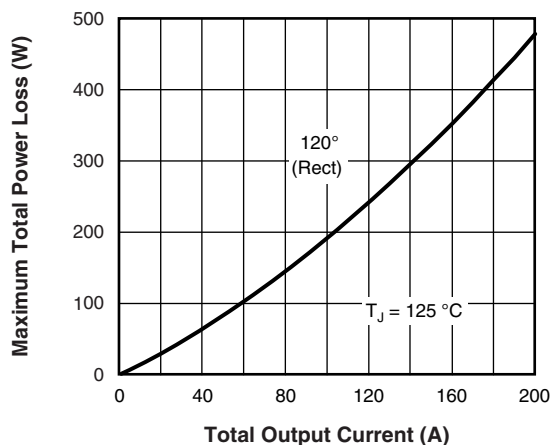
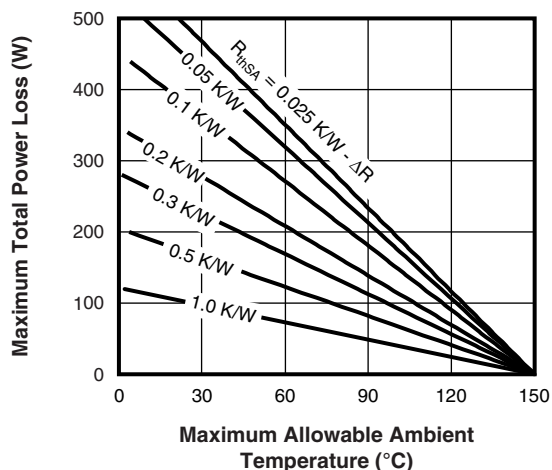


Fig. 5 - Current Rating Nomogram (1 Module Per Heatsink)



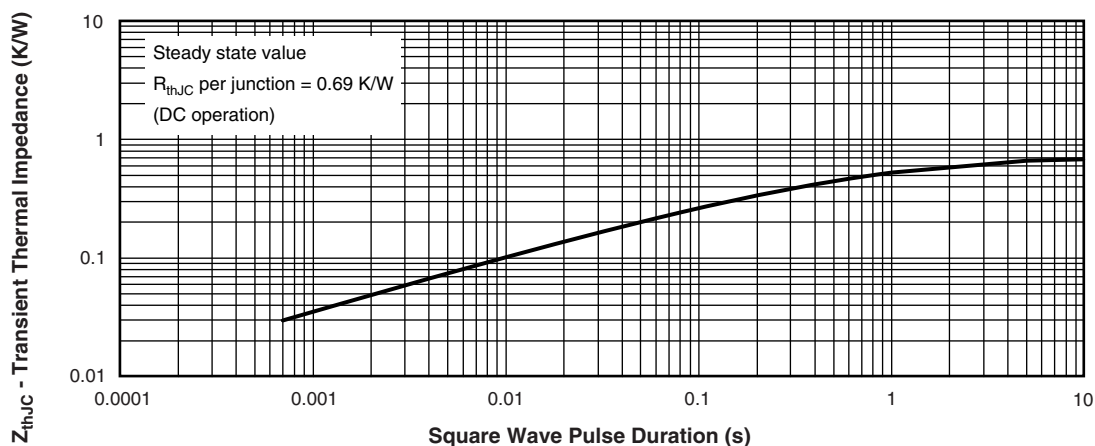


Fig. 6 - Thermal Impedance  $Z_{thJC}$  Characteristics

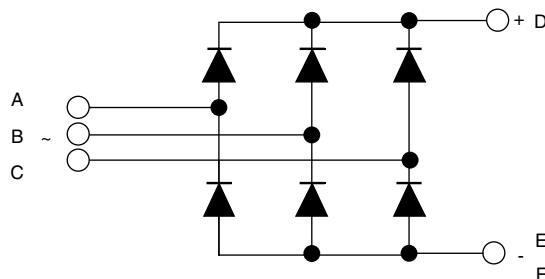
## ORDERING INFORMATION TABLE

Device code	VS-	20	0	MT	40	K	PbF
	①	②	③	④	⑤		⑥
①	Vishay Semiconductors product						
②	Current rating code: 20 = 200 A (average)						
③	Three phase diodes bridge						
④	Essential part number						
⑤	Voltage code x 10 = $V_{RRM}$ (40 = 400 V)						
⑥	PbF = Lead (Pb)-free						

### Note

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

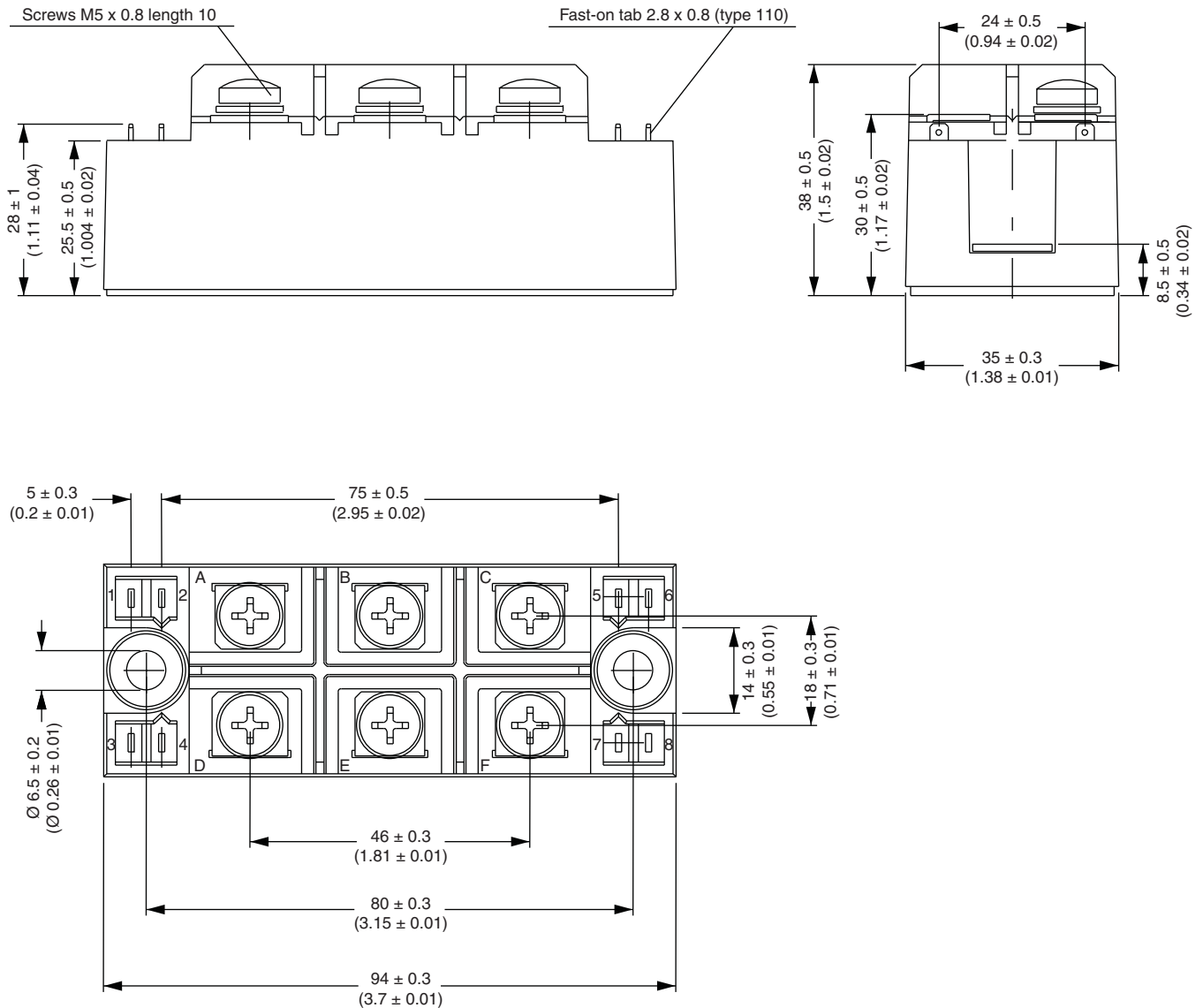
## CIRCUIT CONFIGURATION



LINKS TO RELATED DOCUMENTS	
Dimensions	<a href="http://www.vishay.com/doc?95004">www.vishay.com/doc?95004</a>

## MTK (with and without optional barrier)

### DIMENSIONS WITH OPTIONAL BARRIERS in millimeters (inches)

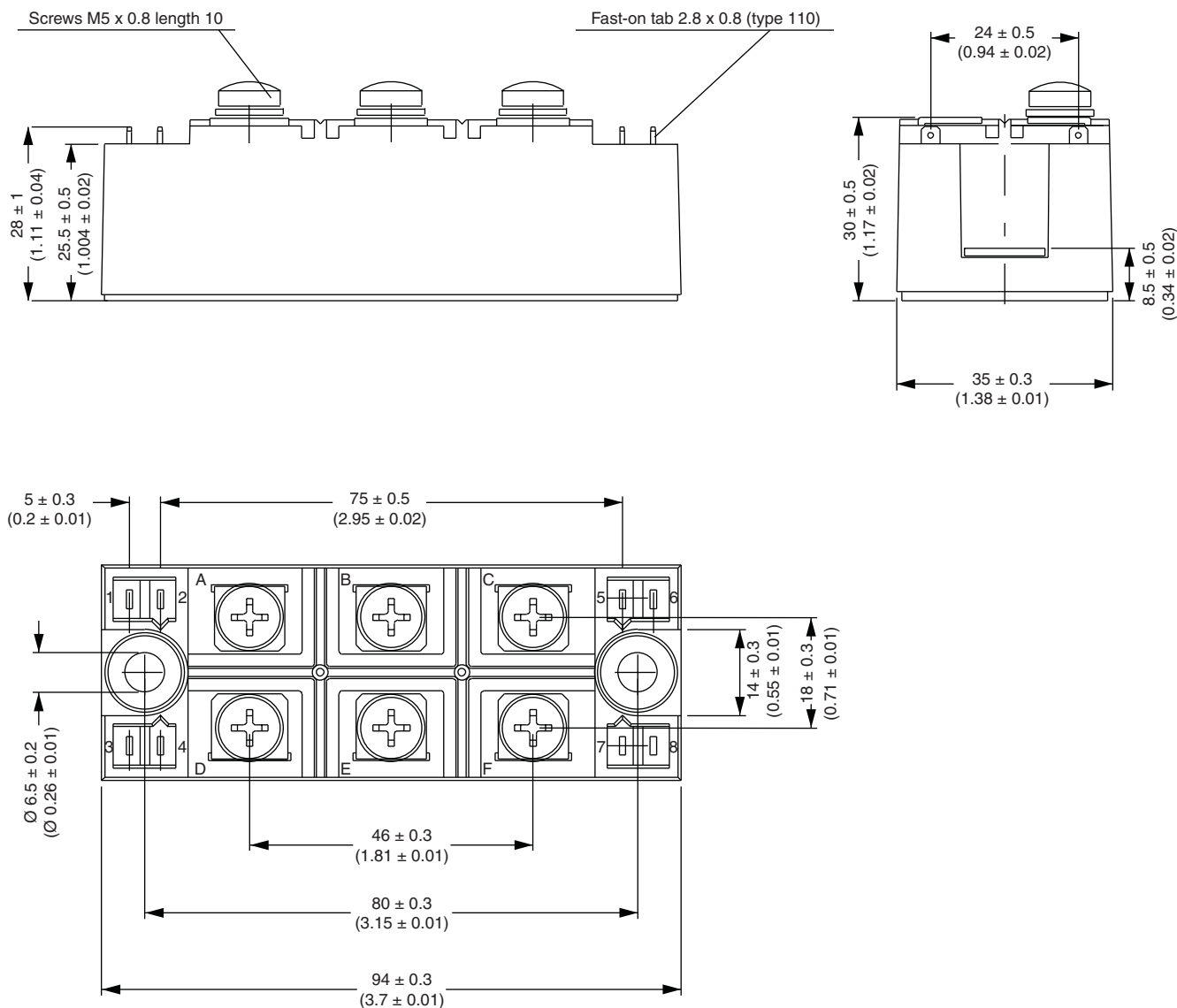


# Outline Dimensions

Vishay Semiconductors MTK (with and without optional barrier)



## DIMENSIONS WITHOUT OPTIONAL BARRIERS in millimeters (inches)





## Disclaimer

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