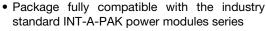


# Three Phase Bridge (Power Module), 200 A



PRODUCT SUMMARY		
lο	200 A	
$V_{RRM}$	400 V	
Package	MT-K	
Circuit	Three phase bridge	

#### **FEATURES**





High thermal conductivity package, electrically insulated case

ROHS COMPLIAN

- · 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 <a href="https://www.vishav.com/doc?99912"><u>www.vishav.com/doc?99912</u></a>

#### **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	
Io		200	А	
	T <sub>C</sub>	85	°C	
I <sub>FSM</sub>	50 Hz	1800	^	
	60 Hz	1880	A	
l <sup>2</sup> t	50 Hz	16.2	kA <sup>2</sup> s	
	60 Hz	14.7	KA <sup>2</sup> S	
I <sup>2</sup> √t		162	kA²√s	
V <sub>RRM</sub>		400	V	
T <sub>Stg</sub>	Dange	40 to 150	°C	
T <sub>J</sub>	Range	-40 to 150		

#### **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	I.	120° rect. conduction angle		200	Α	
at case temperature	I <sub>O</sub>	120 Tect. Col	iduction angle		85	°C
Maximum peak, one-cycle forward. non-repetitive on state surge current	I <sub>TSM</sub>	t = 10 ms	No voltage	leitiel T. T. magainean	1800	A
		t = 8.3 ms	reapplied		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	12+	t = 10 ms	No voltage	Initial $T_J = T_J$ maximum	16.2	- kA <sup>2</sup> s
		t = 8.3  ms	reapplied		14.7	
	1-1	t = 10 ms	100 % V <sub>RRM</sub> reapplied		11.6	
		t = 8.3 ms			12.6	
Maximum $I^2\sqrt{t}$ for fusing	l²√t	t = 0.1 ms to 10 ms, no voltage reapplied		162	kA²√s	
Value of threshold voltage	V <sub>F(TO)</sub>	T <sub>,1</sub> maximum		0.76	V	
Slope resistance	r <sub>t</sub>			2.4	mΩ	
Maximum forward voltage drop	$V_{FM}$	$I_{pk}$ = 200 A, $T_J$ = 25 °C, $t_p$ = 400 $\mu s$ 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		V		

THERMAL AND MECHANICAL SPECIFICATIONS					
PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	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	0.12	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 <sub>thCS</sub>	Mounting surface smooth, flat and greased.  Heatsink compund 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	4 to 6	Nm	
Approximate weight		for the spread of the compound. Lubricated threads.	176	g	



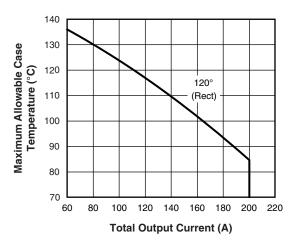


Fig. 1 - Current Rating Characteristics

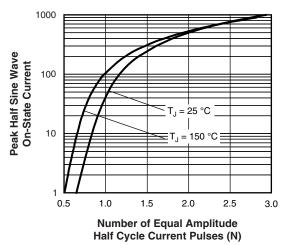
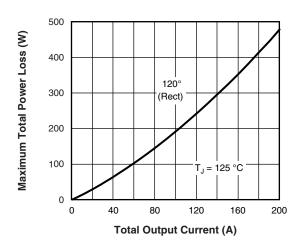


Fig. 2 - On-State Voltage Drop Characteristics



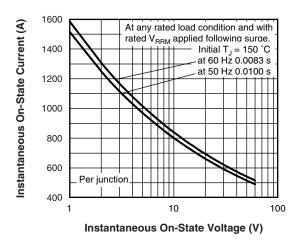


Fig. 3 - Maximum Non-Repetitve Surge Current

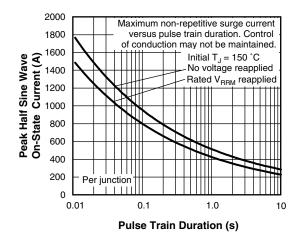


Fig. 4 - Maximum Non-Repetitive Surge Current

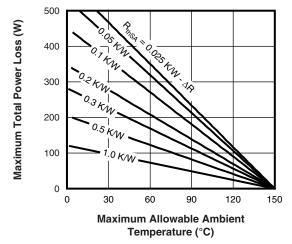


Fig. 5 - Current Rating Nomogram (1 Module Per Heatsink)

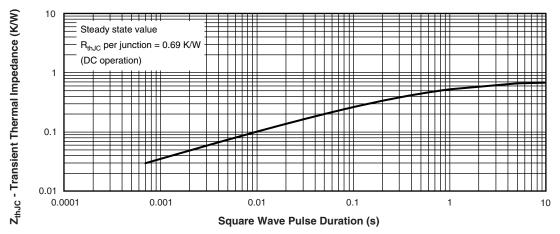
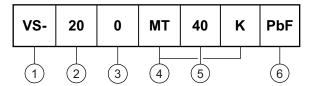


Fig. 6 - Thermal Impedance Z<sub>thJC</sub> Characteristics

#### **ORDERING INFORMATION TABLE**

**Device code** 

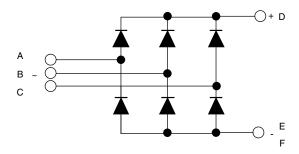


- 1 Vishay Semiconductors product
- 2 Current rating code: 20 = 200 A (average)
- 3 Three phase diodes bridge
- 4 Essential part number
- 5 Voltage code x 10 = V<sub>RRM</sub> (40 = 400 V)
- 6 PbF = Lead (Pb)-free

#### Note

• To order the optional hardware go to <a href="https://www.vishay.com/doc?95172">www.vishay.com/doc?95172</a>

#### **CIRCUIT CONFIGURATION**

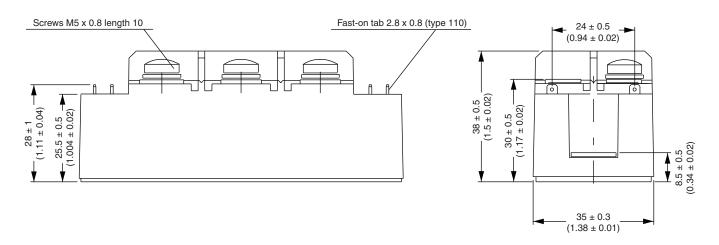


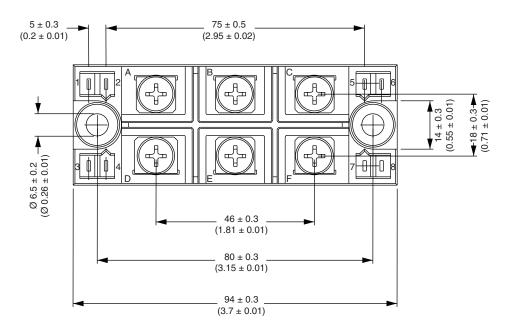
LINKS TO RELATED DOCUMENTS		
Dimensions	www.vishay.com/doc?95004	



## MTK (with and without optional barrier)

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

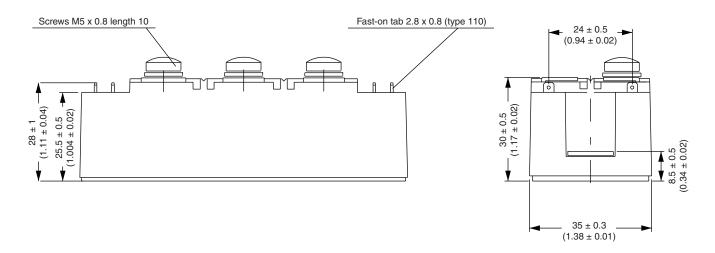


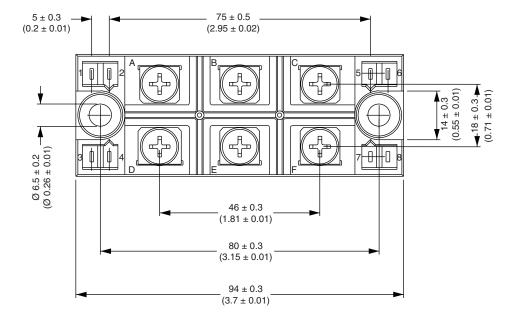


## Vishay Semiconductors MTK (with and without optional barrier)



#### **DIMENSIONS WITHOUT OPTIONAL BARRIERS** in millimeters (inches)







## **Legal Disclaimer Notice**

Vishay

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Revision: 02-Oct-12 Document Number: 91000

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