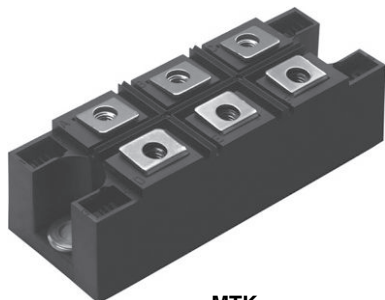


Three Phase Bridge (Power Module), 200 A



MTK

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_{RMS} isolating voltage
- UL E78996 approved 
- Designed and qualified for industrial level
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912


RoHS
COMPLIANT

PRIMARY CHARACTERISTICS

I _O	200 A
V _{RRM}	400 V
Package	MTK
Circuit configuration	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 _O		200	A
	T _C	85	°C
I _{FSM}	50 Hz	1800	A
	60 Hz	1880	
I ² _t	50 Hz	16.2	kA ² s
	60 Hz	14.7	
I ² √t		162	kA ² √s
V _{RRM}		400	V
T _{Stg}	Range	-40 to +150	°C
T _J			

ELECTRICAL SPECIFICATIONS

VOLTAGE RATINGS

TYPE NUMBER	V _{RRM} : MAXIMUM REPETITIVE PEAK REVERSE VOLTAGE V	V _{RSM} : MAXIMUM NON-REPETITIVE PEAK REVERSE VOLTAGE V	I _{RRM} MAXIMUM AT T _J = 150 °C mA
VS-200MT40KPbF	400	500	6

**FORWARD CONDUCTION**

PARAMETER	SYMBOL	TEST CONDITIONS			VALUES	UNITS	
Maximum RMS output current at case temperature	I _O	120° rect. conduction angle			200	A	
					85	°C	
Maximum peak, one-cycle forward, non-repetitive on state surge current	I _{TSM}	t = 10 ms	No voltage reapplied	Initial T _J = T _J maximum	1800	A	
		t = 8.3 ms			1880		
		t = 10 ms	100 % V _{RRM} reapplied		1520		
		t = 8.3 ms			1590		
Maximum I ² t for fusing	I ² t	t = 10 ms	No voltage reapplied		16.2	kA ² s	
		t = 8.3 ms			14.7		
		t = 10 ms	100 % V _{RRM} reapplied		11.6		
		t = 8.3 ms			12.6		
Maximum I ² √t for fusing	I ² √t	t = 0.1 ms to 10 ms, no voltage reapplied			162	kA ² √s	
Value of threshold voltage	V _{F(TO)}	T _J maximum			0.76	V	
Slope resistance	r _t				2.4	mΩ	
Maximum forward voltage drop	V _{FM}	I _{pk} = 200 A, T _J = 25 °C, t _p = 400 μs single junction			1.40	V	
Isolation voltage	V _{ISOL}	T _J = 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 or the spread of the compound. Lubricated threads.	4 to 6	Nm
Approximate weight			176	g

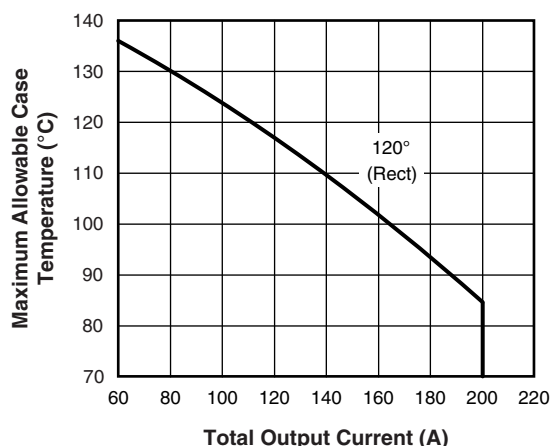


Fig. 1 - Current Rating Characteristics

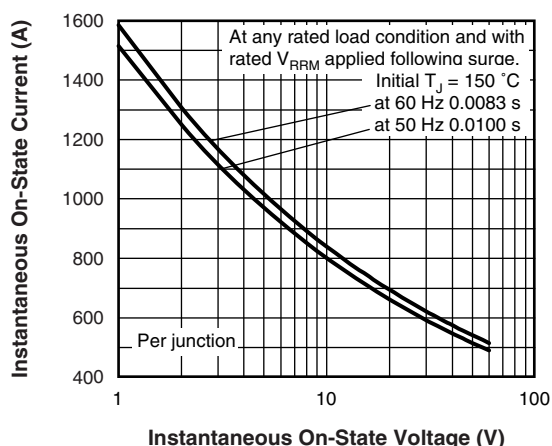


Fig. 3 - Maximum Non-Repetitive Surge Current

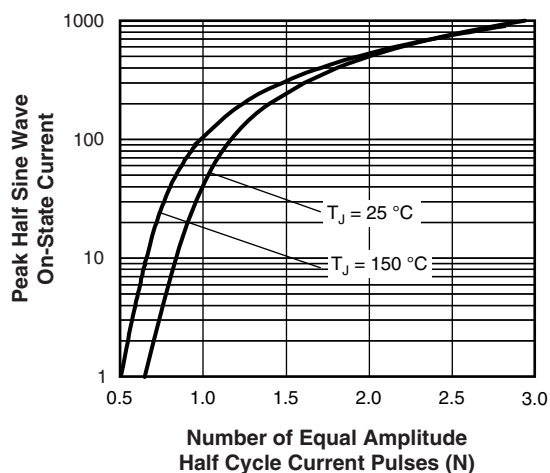


Fig. 2 - On-State Voltage Drop Characteristics

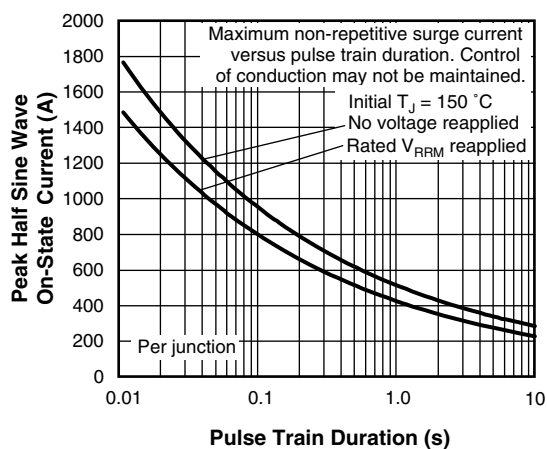


Fig. 4 - Maximum Non-Repetitive Surge Current

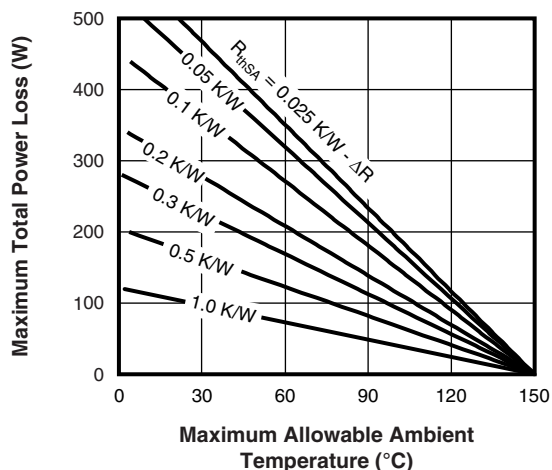
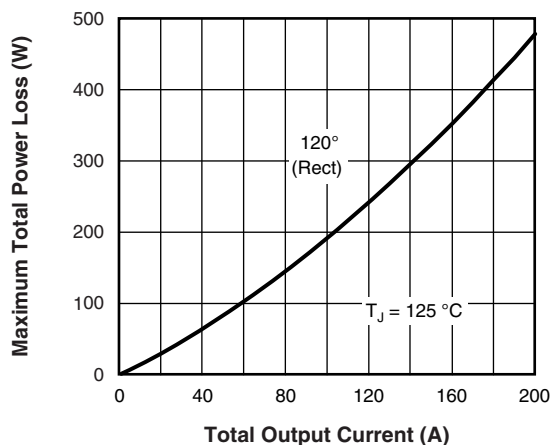


Fig. 5 - Current Rating Nomogram (1 Module Per Heatsink)

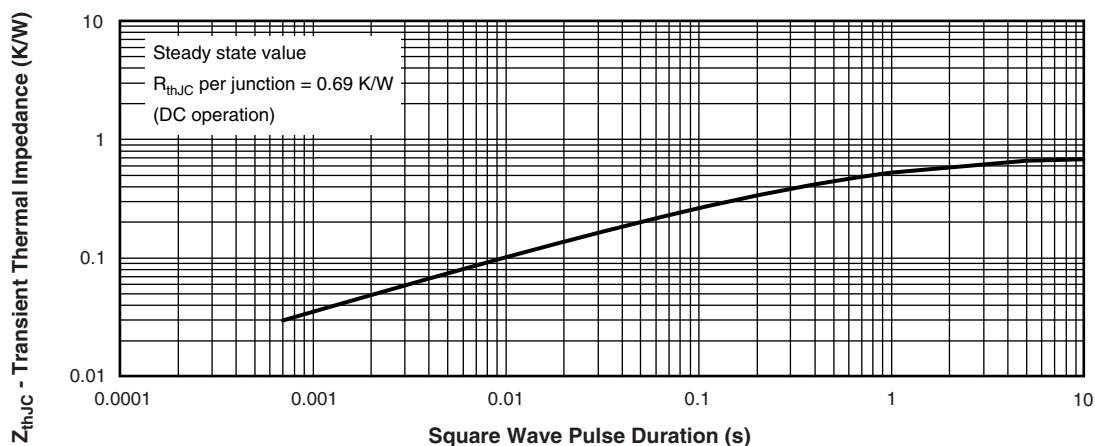


Fig. 6 - Thermal Impedance Z_{thJC} Characteristics

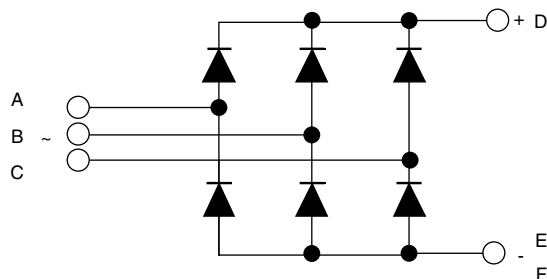
ORDERING INFORMATION TABLE

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

CIRCUIT CONFIGURATION



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

DIMENSIONS WITH OPTIONAL BARRIERS in millimeters (inches)

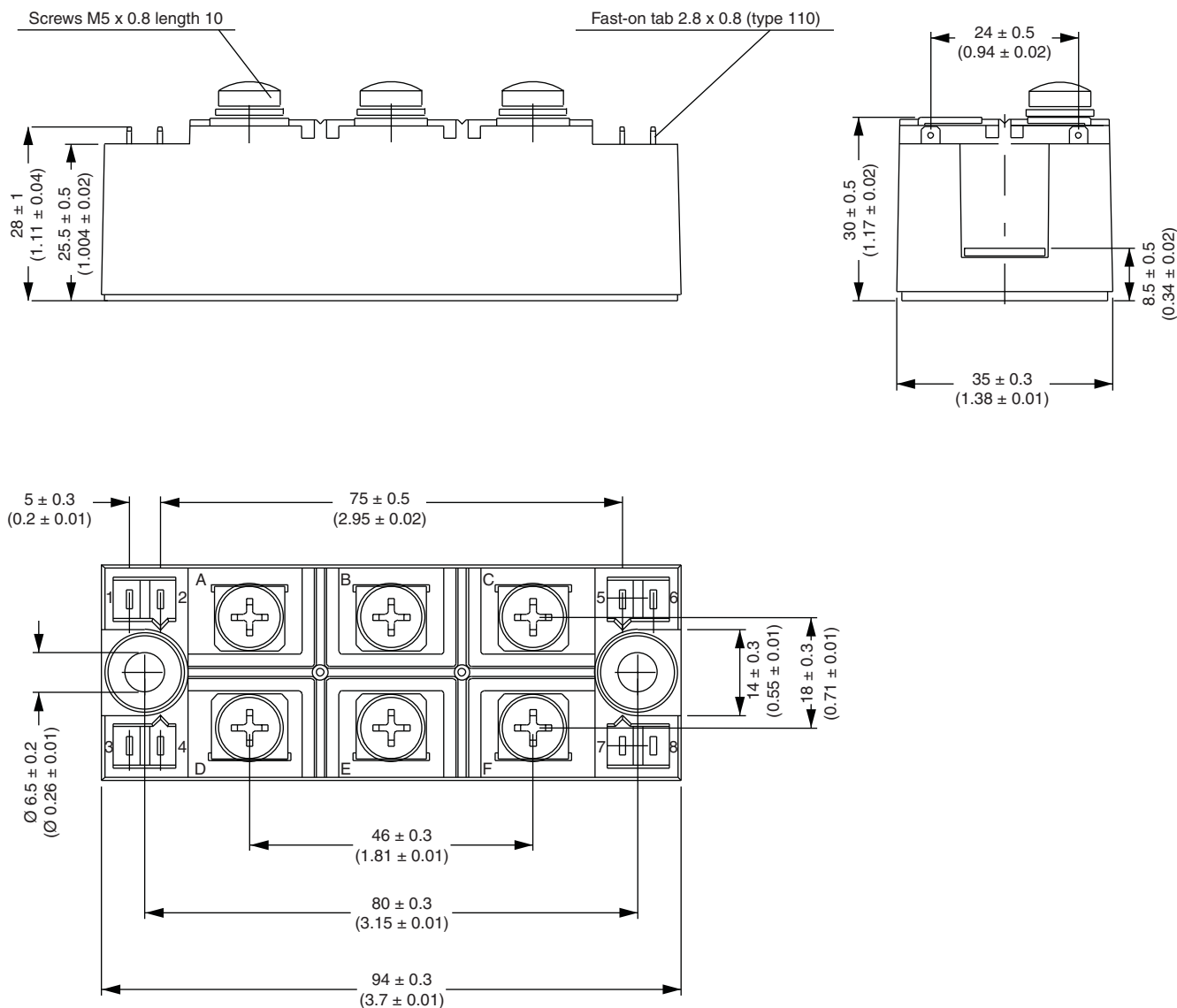


Outline Dimensions

Vishay Semiconductors MTK (with and without optional barrier)



DIMENSIONS WITHOUT OPTIONAL BARRIERS in millimeters (inches)





Disclaimer

ALL PRODUCT, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Vishay"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained in any datasheet or in any other disclosure relating to any product.

Vishay makes no warranty, representation or guarantee regarding the suitability of the products for any particular purpose or the continuing production of any product. To the maximum extent permitted by applicable law, Vishay disclaims (i) any and all liability arising out of the application or use of any product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.

Statements regarding the suitability of products for certain types of applications are based on Vishay's knowledge of typical requirements that are often placed on Vishay products in generic applications. Such statements are not binding statements about the suitability of products for a particular application. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Parameters provided in datasheets and / or specifications may vary in different applications and performance may vary over time. All operating parameters, including typical parameters, must be validated for each customer application by the customer's technical experts. Product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein.

Except as expressly indicated in writing, Vishay products are not designed for use in medical, life-saving, or life-sustaining applications or for any other application in which the failure of the Vishay product could result in personal injury or death. Customers using or selling Vishay products not expressly indicated for use in such applications do so at their own risk. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay. Product names and markings noted herein may be trademarks of their respective owners.