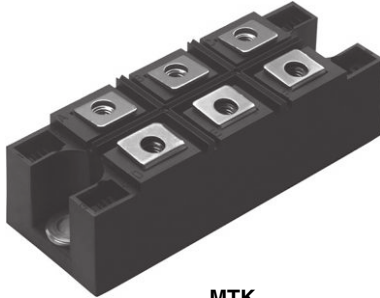


Three Phase Bridge (Power Module), 200 A



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^2t	50 Hz	16.2	kA ² s
	60 Hz	14.7	
$I^2\sqrt{t}$		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 reappplied	1800	A
		t = 8.3 ms		1880	
		t = 10 ms	100 % V_{RRM} reappplied	1520	
		t = 8.3 ms		1590	
Maximum I^2t for fusing	I^2t	t = 10 ms	No voltage reappplied	16.2	kA ² s
		t = 8.3 ms		14.7	
		t = 10 ms	100 % V_{RRM} reappplied	11.6	
		t = 8.3 ms		12.6	
Maximum $I^2\sqrt{t}$ for fusing	$I^2\sqrt{t}$	t = 0.1 ms to 10 ms, no voltage reappplied		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

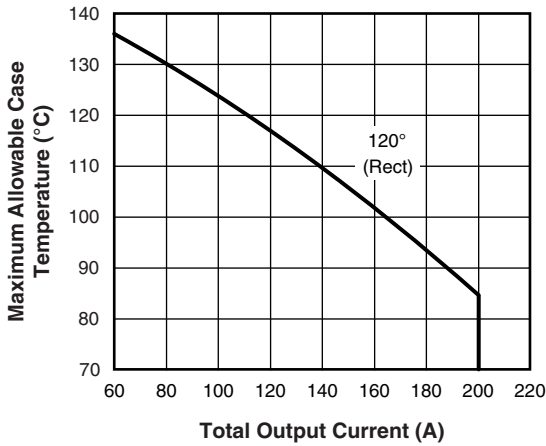


Fig. 1 - Current Rating Characteristics

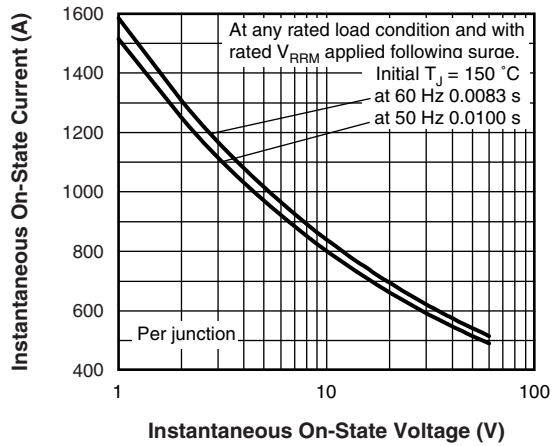


Fig. 3 - Maximum Non-Repetitive Surge Current

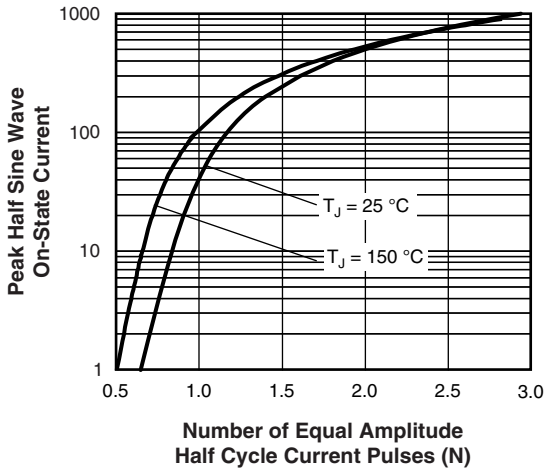


Fig. 2 - On-State Voltage Drop Characteristics

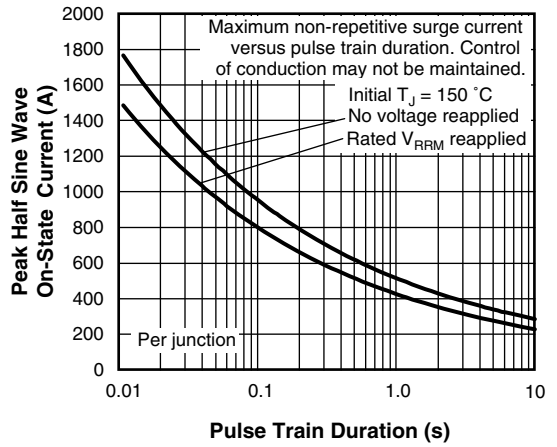


Fig. 4 - Maximum Non-Repetitive Surge Current

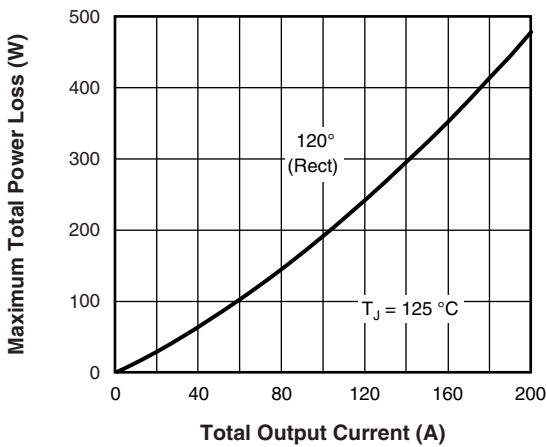
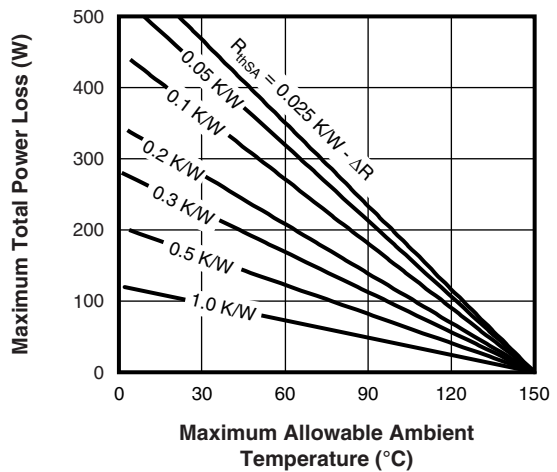


Fig. 5 - Current Rating Nomogram (1 Module Per Heatsink)



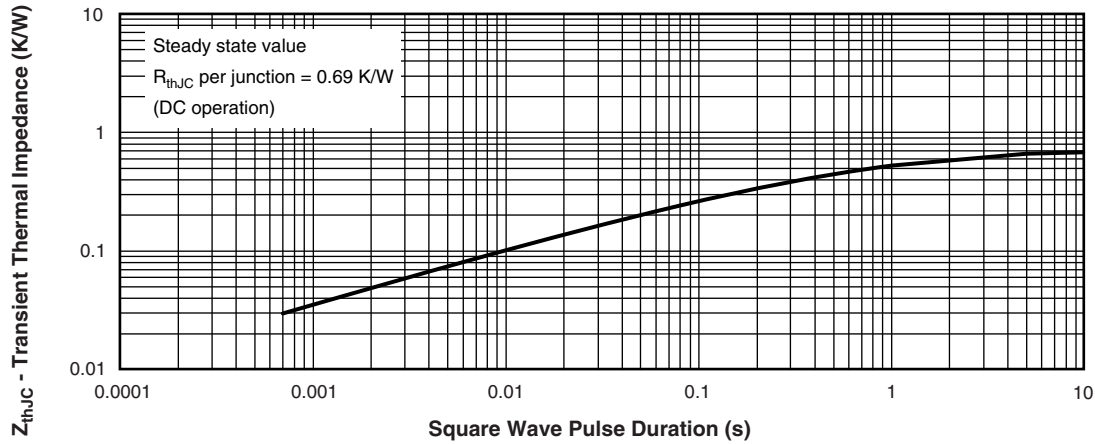


Fig. 6 - Thermal Impedance Z_{thJC} Characteristics

ORDERING INFORMATION TABLE

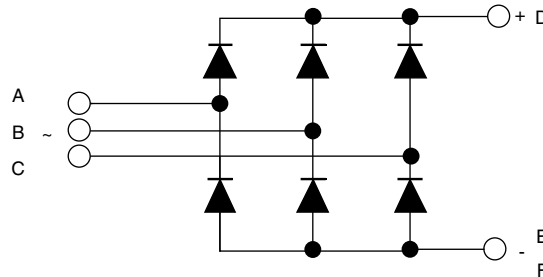
Device code	VS-	20	0	MT	40	K	PbF
	①	②	③	④	⑤		⑥

- 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

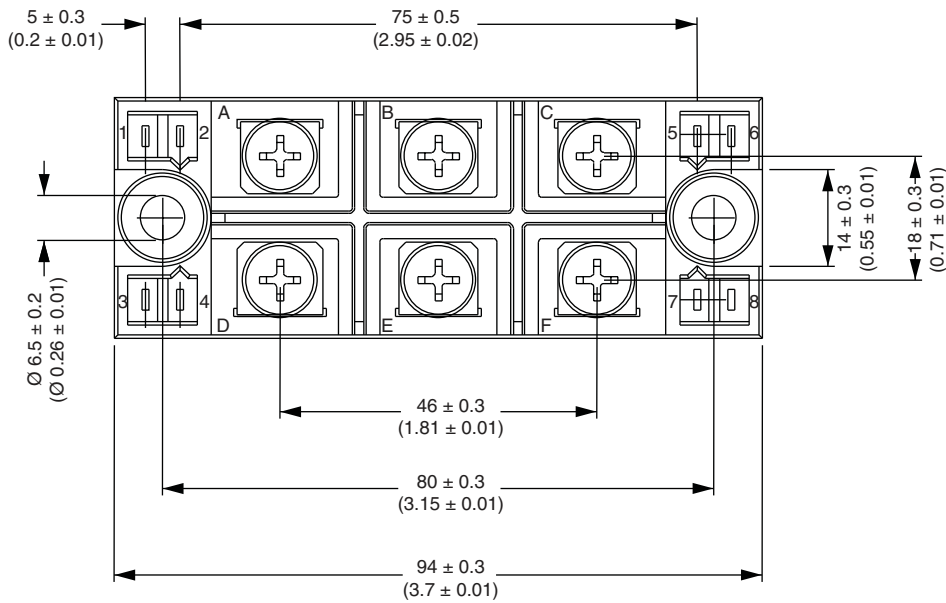
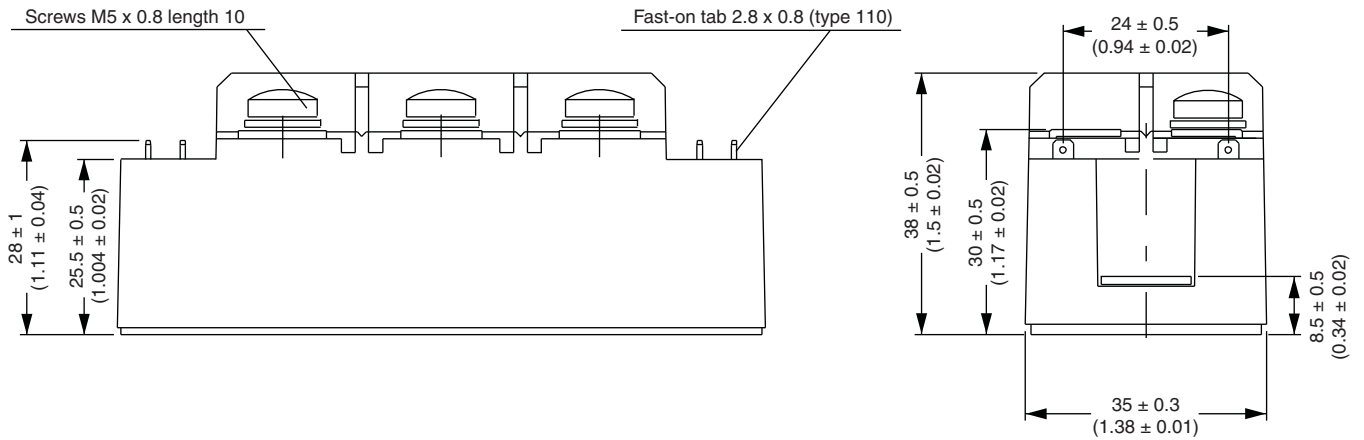
CIRCUIT CONFIGURATION



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

MTK (with and without optional barrier)

DIMENSIONS WITH OPTIONAL BARRIERS in millimeters (inches)

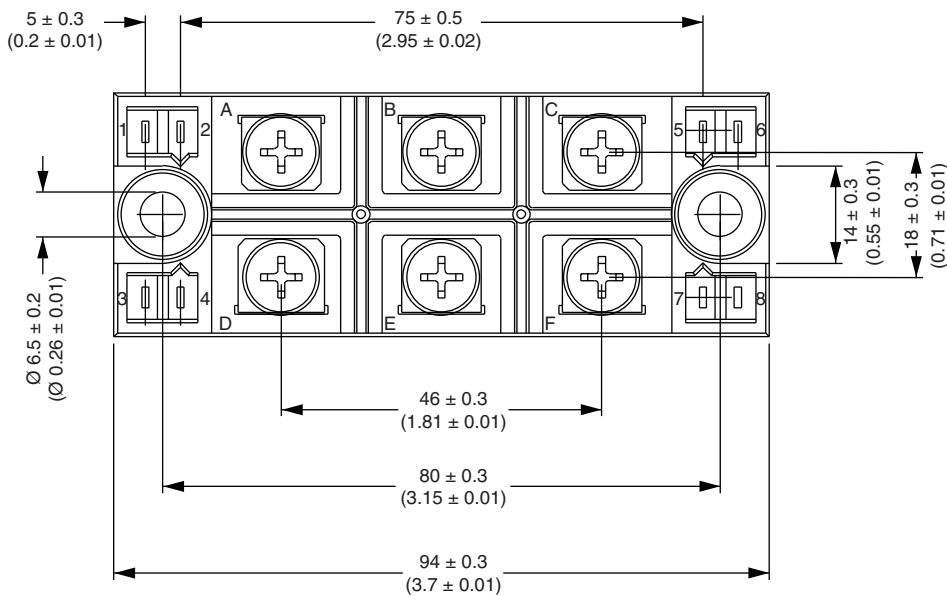
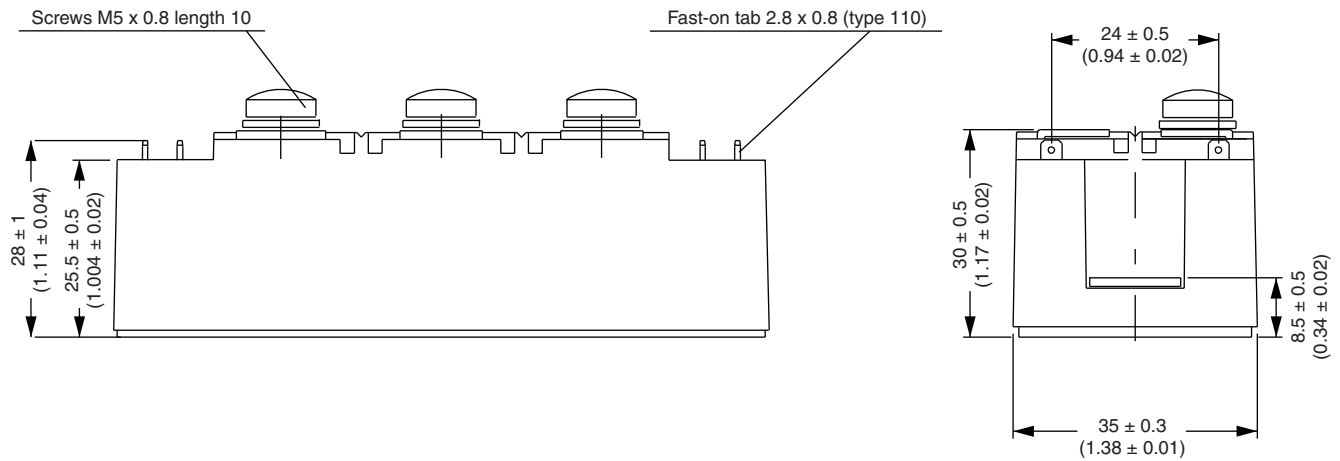


Outline Dimensions

Vishay Semiconductors MTK (with and without optional barrier)



DIMENSIONS WITHOUT OPTIONAL BARRIERS in millimeters (inches)





Disclaimer

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.

Hyperlinks included in this datasheet may direct users to third-party websites. These links are provided as a convenience and for informational purposes only. Inclusion of these hyperlinks does not constitute an endorsement or an approval by Vishay of any of the products, services or opinions of the corporation, organization or individual associated with the third-party website. Vishay disclaims any and all liability and bears no responsibility for the accuracy, legality or content of the third-party website or for that of subsequent links.

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.