

Three Phase Bridge, 130 A (Power Modules)


MTC
FEATURES

- Blocking voltage up to 1800 V
- High surge capability
- High thermal conductivity package, electrically insulated case
- Excellent power volume ratio
- 3600 V_{RMS} isolating voltage
- UL pending
- Designed for industrial level
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912


RoHS
COMPLIANT

PRODUCT SUMMARY	
I_O	130 A at 120 °C
V_{RRM}	1600 V to 1800 V
Package	MTC
Circuit	Three phase bridge

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	VALUES	UNITS
$I_O^{(1)}$		218	A
	T_C	85	°C
I_{FSM}	50 Hz	1270	A
	60 Hz	1330	
I^2t	50 Hz	8095	A ² s
	60 Hz	7390	
$I^2\sqrt{t}$		80 955	A ² √s
V_{RRM}	Range	1600 to 1800	V
T_{Stg}	Range	-40 to +125	°C
T_J	Range	-40 to +150	°C

Note

(1) Maximum output current must be limited to 220 A to do not exceed the maximum temperature of terminals

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
VS-130MT...C	160	1600	1700	12
	180	1800	1900	



FORWARD CONDUCTION						
PARAMETER	SYMBOL	TEST CONDITIONS			VALUES	UNITS
Maximum DC output current at case temperature	I _O	120° rect. conduction angle			130	A
					120	°C
Maximum peak, one-cycle forward, non-repetitive surge current	I _{FSM}	t = 10 ms	No voltage reappplied	Initial T _J = T _J maximum	1270	A
		t = 8.3 ms				
		t = 10 ms	100 % V _{RRM} reappplied		1070	
		t = 8.3 ms			1120	
Maximum I ² t for fusing	I ² t	t = 10 ms	No voltage reappplied	Initial T _J = T _J maximum	8095	A ² s
		t = 8.3 ms				
		t = 10 ms	100 % V _{RRM} reappplied		5725	
		t = 8.3 ms			5225	
Maximum I ² √t for fusing	I ² √t	t = 0.1 ms to 10 ms, no voltage reappplied			80 955	A ² √s
Low level value of threshold voltage	V _{FT(TO)1}	(16.7 % × π × I _{F(AV)} < I < π × I _{F(AV)}), T _J maximum			0.79	V
High level value of threshold voltage	V _{FT(TO)2}	(I > π × I _{F(AV)}), T _J maximum			0.96	
Low level value of forward slope resistance	r _{f1}	16.7 % × π × I _{F(AV)} < I < π × I _{F(AV)} , T _J maximum			4.97	mΩ
High level of forward slope resistance	r _{f2}	(I > π × I _{F(AV)}), T _J maximum			4.63	
Maximum forward voltage drop	V _{FM}	I _{pk} = 300 A, T _J = 25 °C, per junction			2.05	V
RMS isolation voltage	V _{ISOL}	T _J = 25 °C, all terminal shorted f = 50 Hz, t = 1 s			3600	

THERMAL AND MECHANICAL SPECIFICATIONS						
PARAMETER	SYMBOL	TEST CONDITIONS			VALUES	UNITS
Maximum junction operating	T _J				-40 to +150	°C
Maximum storage temperature	T _{Stg}				-40 to +125	
Maximum thermal resistance, junction to case	R _{thJC}	DC operation per module			0.068	°C/W
		DC operation per junction			0.41	
Typical thermal resistance, case to heatsink	R _{thCS}	Per module Mounting surface smooth, flat, and greased			0.03	
Mounting torque ± 15 %	to heatsink	A mounting compound is recommended and the torque should be rechecked after a period of 3 h to allow for the spread of the compound. Lubricated threads.			5	Nm
	to terminal				5	
Approximate weight						

ΔR CONDUCTION PER JUNCTION											
DEVICES	SINE HALF WAVE CONDUCTION					RECTANGULAR WAVE CONDUCTION					UNITS
	180°	120°	90°	60°	30°	180°	120°	90°	60°	30°	
VS-130MT...C Series	0.052	0.06	0.075	0.106	0.164	0.038	0.063	0.081	0.109	0.165	°C/W

Note

- Table shows the increment of thermal resistance R_{thJC} when devices operate at different conduction angles than DC

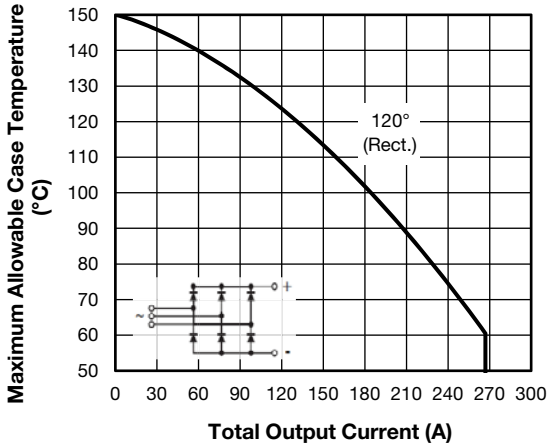


Fig. 1 - Current Ratings Characteristics

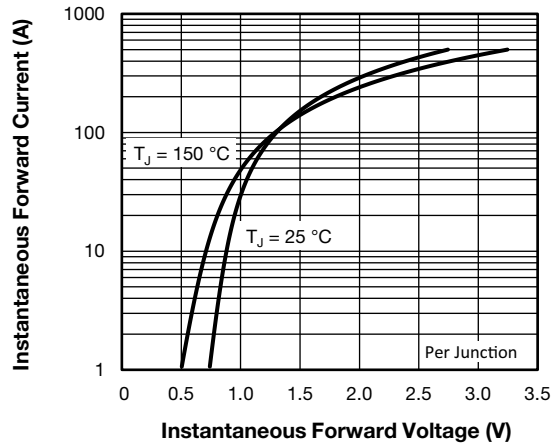


Fig. 2 - Forward Voltage Drop Characteristics

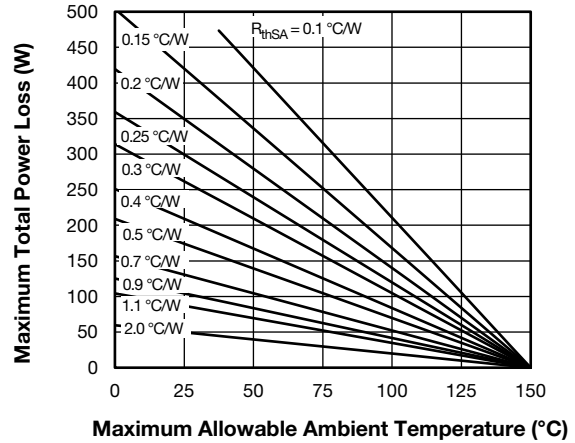
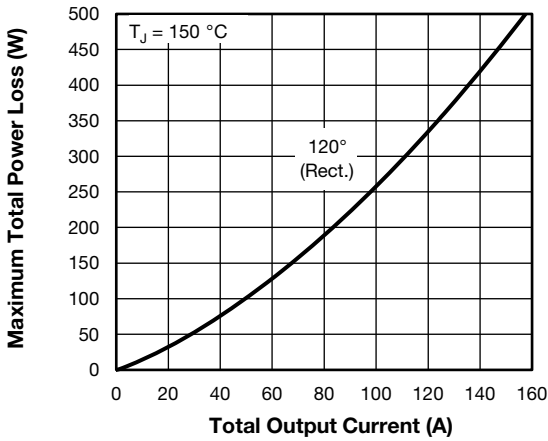


Fig. 3 - Total Power Loss Characteristics

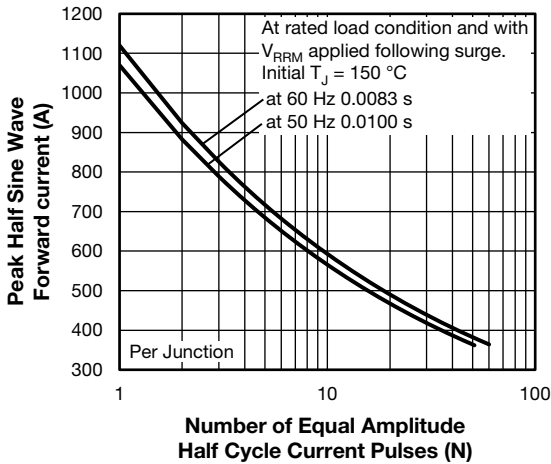


Fig. 4 - Maximum Non-Repetitive Surge Current

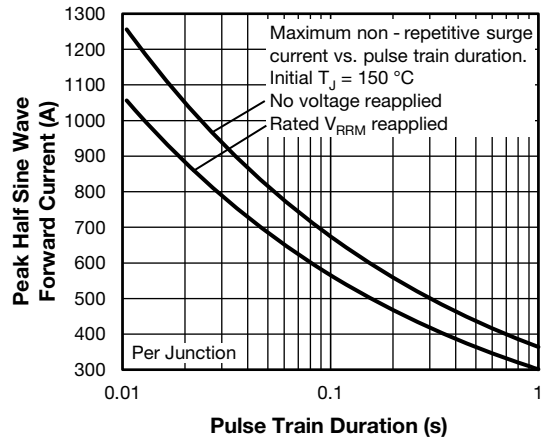


Fig. 5 - Maximum Non-Repetitive Surge Current

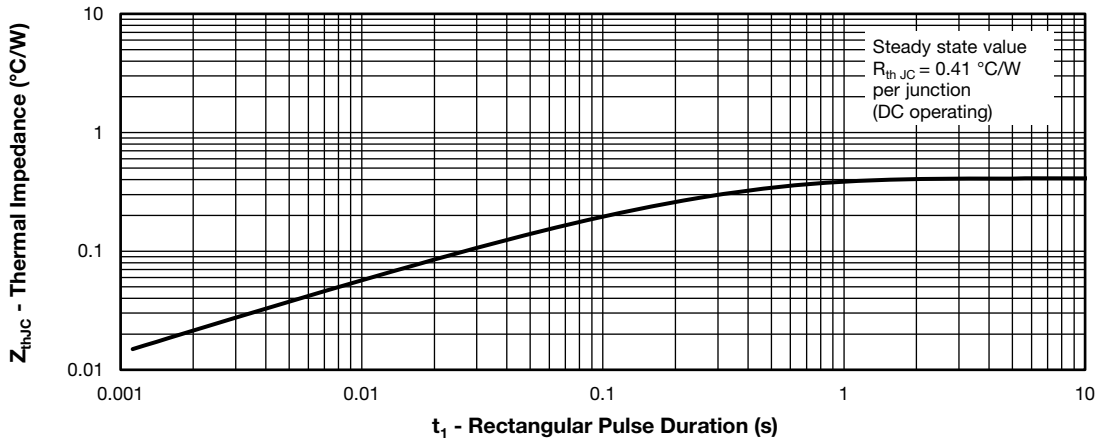


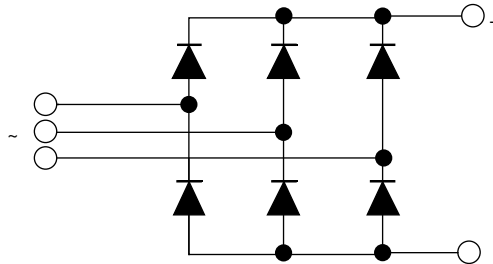
Fig. 6 - Thermal Impedance Z_{thJC} Characteristic

ORDERING INFORMATION TABLE

Device code	VS-	13	0	MT	160	C
	①	②	③	④	⑤	
	1	2	3	4	5	

- 1 - Vishay Semiconductors product
- 2 - Current rating code: 13 = 130 A (average)
- 3 - Circuit configuration (three phase diodes bridge)
- 4 - Package indicator
- 5 - Voltage code x 10 = V_{RRM} (see Voltage Ratings table)

CIRCUIT CONFIGURATION

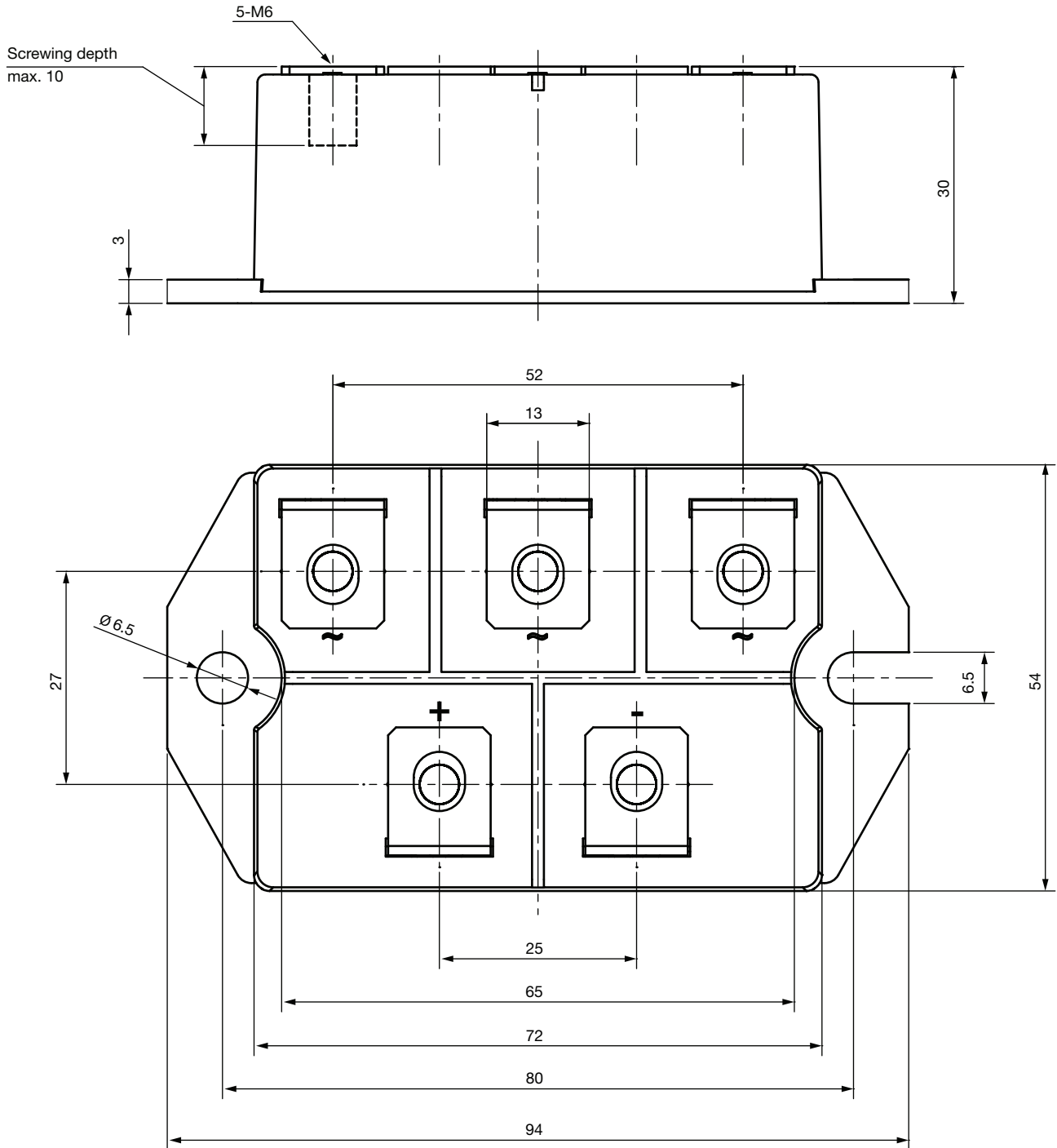


LINKS TO RELATED DOCUMENTS	
Dimensions	www.vishay.com/doc?96003



MTC

DIMENSIONS in millimeters





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.