

Three Phase Bridge (Power Module), 45 A to 100 A




MT...PA



MT...PB

FEATURES

- Low V_F
- Low profile package
- Direct mounting to heatsink
- Flat pin/round pin versions with PCB solderable terminals
- Low junction to case thermal resistance
- 3500 V_{RMS} insulation voltage
- UL approved file E78996 
- Compliant to RoHS directive 2002/95/EC
- Designed and qualified for industrial level



RoHS
COMPLIANT

APPLICATIONS

- Power conversion machines
- Welding
- UPS
- SMPS
- Motor drives
- General purpose and heavy duty application

PRODUCT SUMMARY

I_o	45 A to 100 A
-------	---------------

DESCRIPTION

A range of extremely compact three-phase rectifier bridges offering efficient and reliable operation. The low profile package has been specifically conceived to maximize space saving and optimize the electrical layout of the application specific power supplies.

MAJOR RATINGS AND CHARACTERISTICS

SYMBOL	CHARACTERISTICS	40MT	70MT	100MT	UNITS
I_o		45	75	100	A
	T_C	100	80	80	$^{\circ}C$
I_{FSM}	50 Hz	270	380	450	A
	60 Hz	280	398	470	
I^2t	50 Hz	365	724	1013	A^2s
	60 Hz	325	660	920	
$I^2\sqrt{t}$		3650	7240	10 130	$A^2\sqrt{s}$
V_{RRM}		1400 to 1600			V
T_{Stg}	Range	- 40 to 125			$^{\circ}C$
T_J		- 40 to 150			

40MT1.0P.PbF, 70MT1.0P.PbF, 100MT1.0P.PbF Series



Vishay High Power Products Three Phase Bridge
(Power Module), 45 A to 100 A

ELECTRICAL SPECIFICATIONS

VOLTAGE RATINGS				
TYPE NUMBER	VOLTAGE CODE REVERSE VOLTAGE V	V _{RRM} , MAXIMUM REPETITIVE PEAK REVERSE VOLTAGE V	V _{RSM} , MAXIMUM NON-REPETITIVE PEAK V	I _{RRM} MAXIMUM AT T _J = 150 °C mA
40MT140P, 70MT140P, 100MT140P	140	1400	1500	5
40MT160P, 70MT160P, 100MT160P	160	1600	1700	

FORWARD CONDUCTION								
PARAMETER	SYMBOL	TEST CONDITIONS		40MT	70MT	100MT	UNITS	
Maximum DC output current at case temperature	I _O	120° rect. to conduction angle		45	75	100	A	
				100	80	80	°C	
Maximum peak, one cycle forward, non-repetitive on state surge current	I _{FSM}	t = 10 ms	No voltage reapplied	Initial T _J = T _J maximum	270	380	450	A
		t = 8.3 ms			280	398	470	
		t = 10 ms	100 % V _{RRM} reapplied		225	320	380	
		t = 8.3 ms			240	335	400	
Maximum I ² t for fusing	I ² t	t = 10 ms	No voltage reapplied	Initial T _J = T _J maximum	365	724	1013	A ² s
		t = 8.3 ms			325	660	920	
		t = 10 ms	100 % V _{RRM} reapplied		253	512	600	
		t = 8.3 ms			240	467	665	
Maximum I ² √t for fusing	I ² √t	t = 0.1 ms to 10 ms, no voltage reapplied		3650	7240	10 130	A ² √s	
Value of threshold voltage	V _{F(TO)}	T _J maximum		0.78	0.82	0.75	V	
Slope resistance	r _t			14.8	9.5	8.1	mΩ	
Maximum forward voltage drop	V _{FM}	T _J = 25 °C; t _p = 400 μs single junction (40MT, I _{pk} = 40 A) (70MT, I _{pk} = 70 A) (100MT, I _{pk} = 100 A)		1.45	1.45	1.51	V	

INSULATION TABLE						
PARAMETER	SYMBOL	TEST CONDITIONS	40MT	70MT	100MT	UNITS
RMS insulation voltage	V _{INS}	T _J = 25 °C, all terminal shorted, f = 50 Hz, t = 1 s	3500			V

THERMAL AND MECHANICAL SPECIFICATIONS						
PARAMETER	SYMBOL	TEST CONDITIONS	40MT	70MT	100MT	UNITS
Maximum junction operating temperature range	T _J		- 40 to 150			°C
Maximum storage temperature range	T _{Stg}		- 40 to 125			
Maximum thermal resistance, junction to case	R _{thJC}	DC operation per module	0.27	0.23	0.19	K/W
		DC operation per junction	1.6	1.38	1.14	
		120° rect. conduction angle per module	0.38	0.29	0.22	
		120° rect. conduction angle per junction	2.25	1.76	1.29	
Maximum thermal resistance, case to heatsink per module	R _{thCS}	Mounting surface smooth, flat and greased Heatsink compound thermal conductivity = 0.42 W/mK	0.1			
Mounting torque to heatsink ± 10 %		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.	4			Nm
Approximate weight		Lubricated threads	65			g



40MT1.0P.PbF, 70MT1.0P.PbF, 100MT1.0P.PbF Series

Three Phase Bridge Vishay High Power Products
(Power Module), 45 A to 100 A

CLEARANCE AND CREEPAGE DISTANCES				
PARAMETER	TEST CONDITIONS	MT...PA	MT...PB	UNITS
Clearance	External shortest distances in air between terminals which are not internally short circuited together	10.9	12.3	mm
Creepage distance				

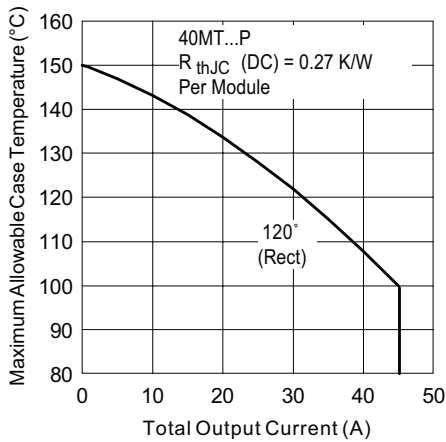


Fig. 1 - Current Rating Characteristics

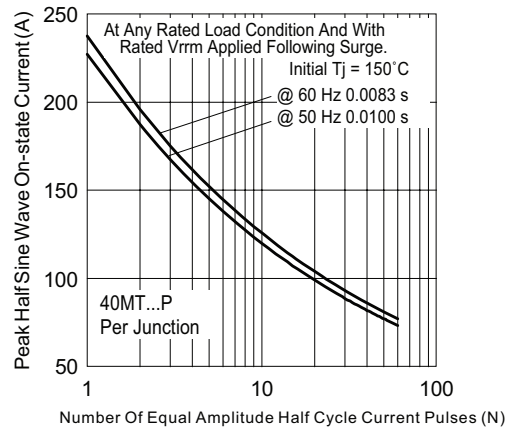


Fig. 3 - Maximum Non-Repetitive Surge Current

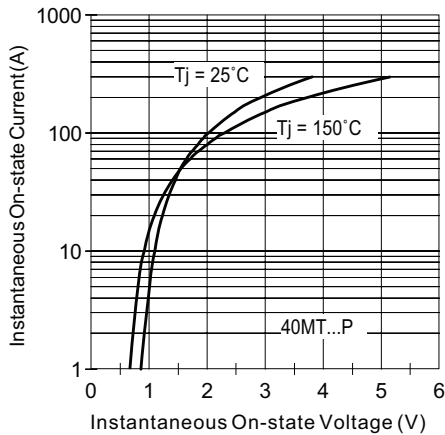


Fig. 2 - On-State Voltage Drop Characteristics

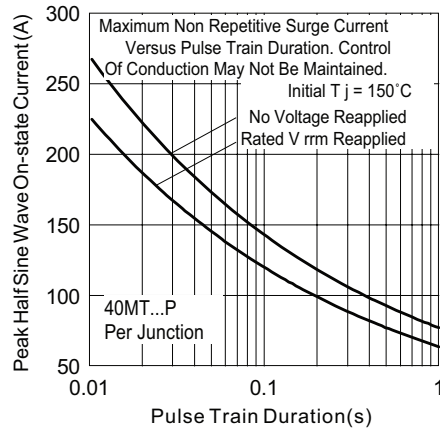


Fig. 4 - Maximum Non-Repetitive Surge Current

40MT1.0P.PbF, 70MT1.0P.PbF, 100MT1.0P.PbF Series



Vishay High Power Products Three Phase Bridge
(Power Module), 45 A to 100 A

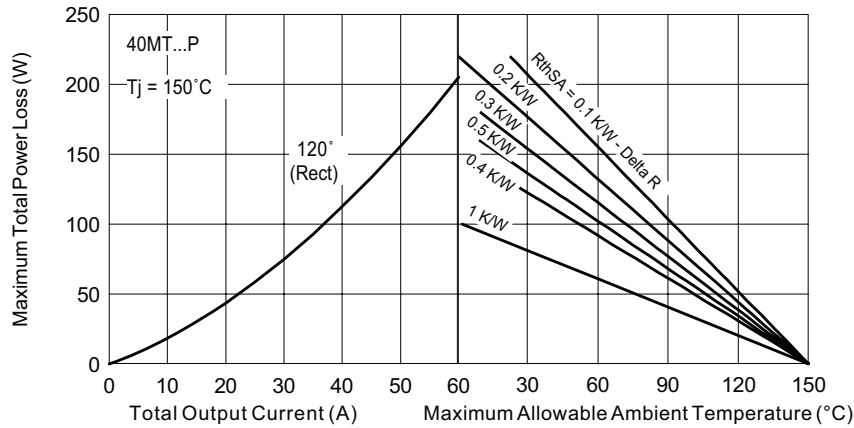


Fig. 5 - Current Rating Nomogram (1 Module Per Heatsink)

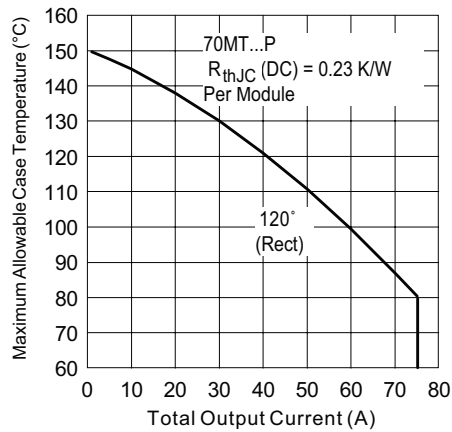


Fig. 6 - Current Rating Characteristics

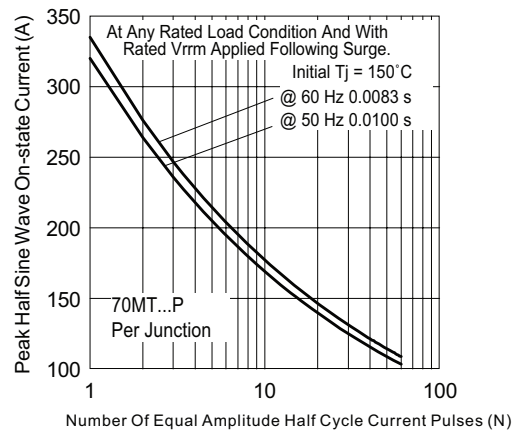


Fig. 8 - Maximum Non-Repetitive Surge Current

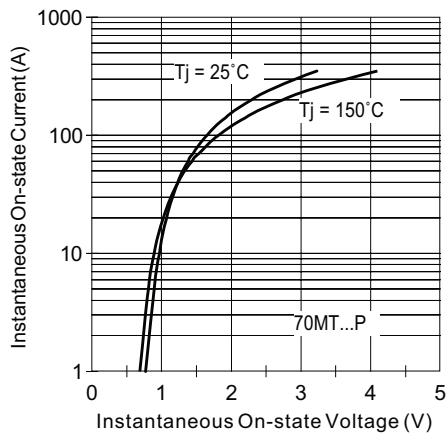


Fig. 7 - On-State Voltage Drop Characteristics

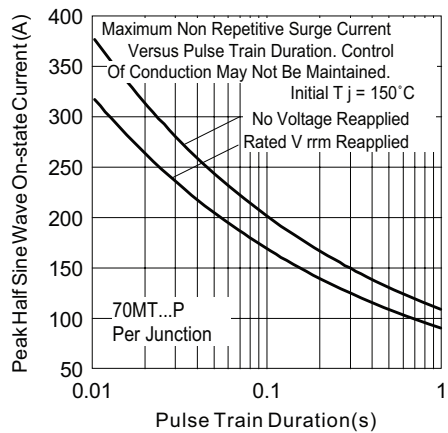


Fig. 9 - Maximum Non-Repetitive Surge Current



40MT1.0P.PbF, 70MT1.0P.PbF, 100MT1.0P.PbF Series

Three Phase Bridge Vishay High Power Products
(Power Module), 45 A to 100 A

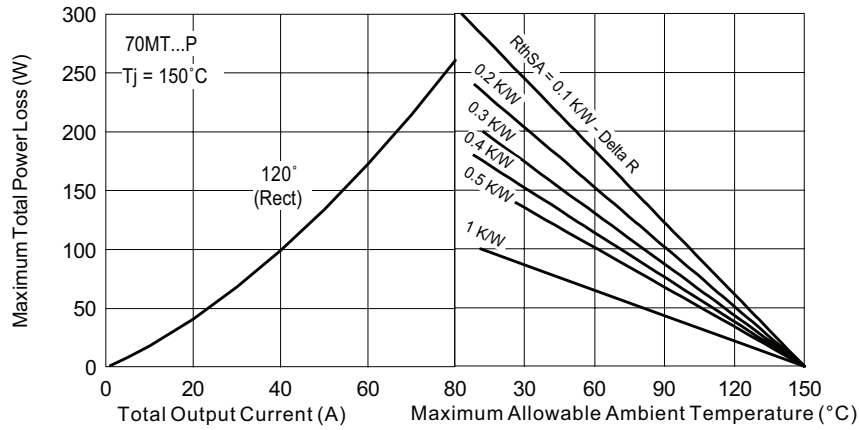


Fig. 10 - Current Rating Nomogram (1 Module Per Heatsink)

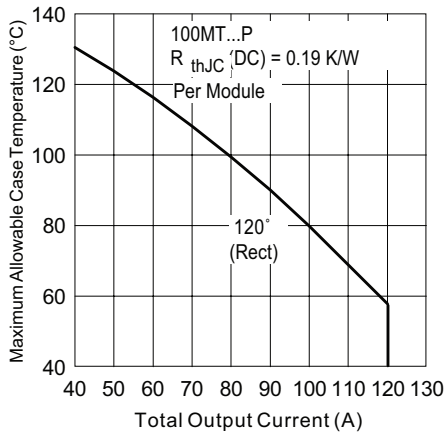


Fig. 11 - Current Rating Characteristics

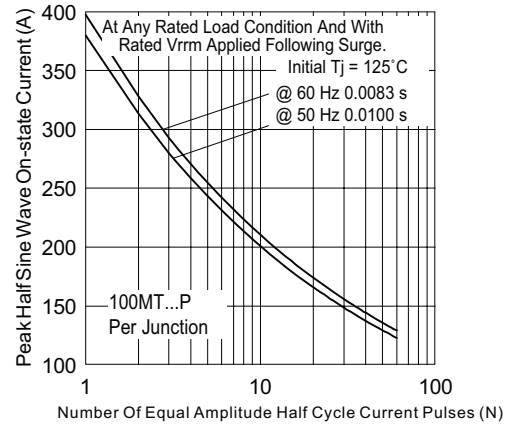


Fig. 13 - Maximum Non-Repetitive Surge Current

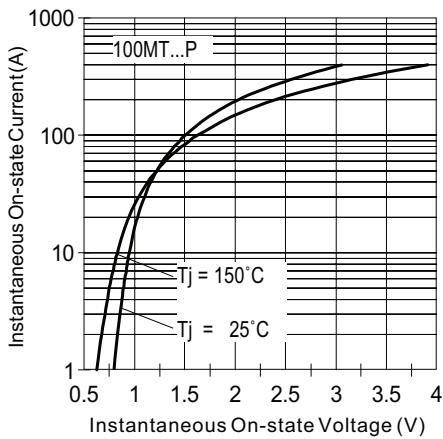


Fig. 12 - On-State Voltage Drop Characteristics

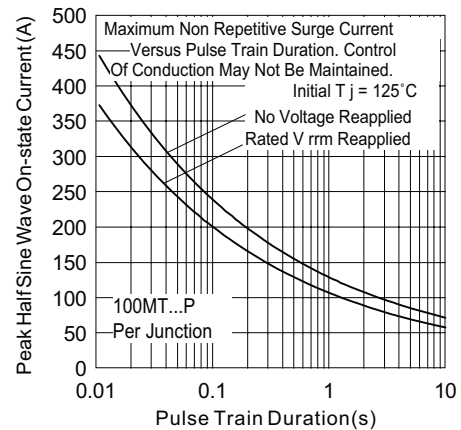


Fig. 14 - Maximum Non-Repetitive Surge Current

40MT1.0P.PbF, 70MT1.0P.PbF, 100MT1.0P.PbF Series



Vishay High Power Products Three Phase Bridge
(Power Module), 45 A to 100 A

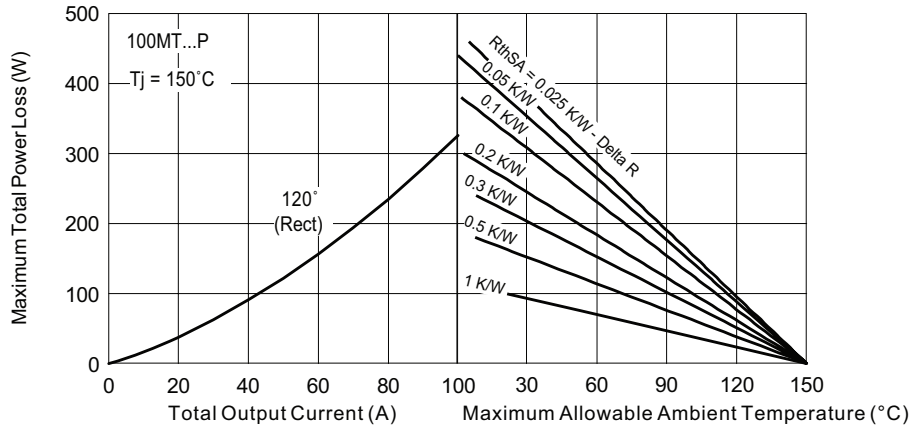


Fig. 15 - Current Rating Nomogram (1 Module Per Heatsink)

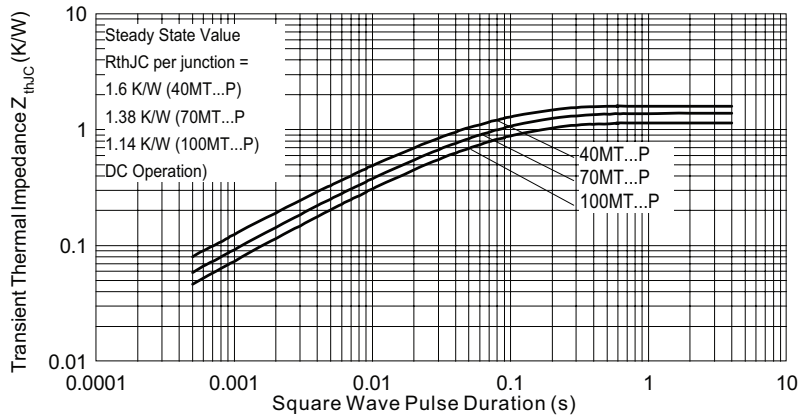


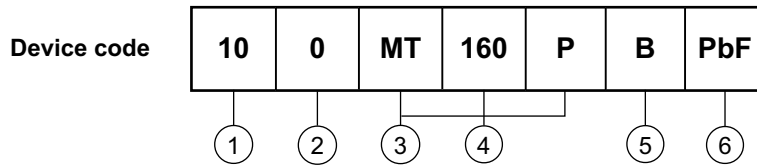
Fig. 16 - Thermal Impedance Z_{thJC} Characteristics



40MT1.0P.PbF, 70MT1.0P.PbF, 100MT1.0P.PbF Series

Three Phase Bridge Vishay High Power Products
(Power Module), 45 A to 100 A

ORDERING INFORMATION TABLE



1

- Current rating code

4 = 45 A
7 = 75 A
10 = 100 A

2

- Circuit configuration code: 0 = 3-Phase rectifier bridge

3

- Essential part number

4

- Voltage code x 10 = V_{RRM} (see Voltage Ratings table)

5

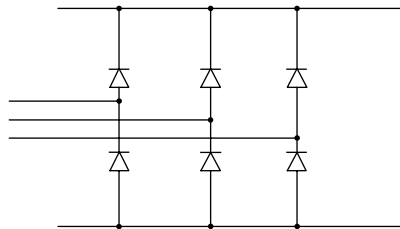
- Pinout code

A = Flat pins
B = Round pins

6

- Lead (Pb)-free

CIRCUIT CONFIGURATION



LINKS TO RELATED DOCUMENTS

Dimensions

www.vishay.com/doc?95244



Disclaimer

All product specifications and data are subject to change without notice.

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 herein or in any other disclosure relating to any product.

Vishay disclaims any and all liability arising out of the use or application of any product described herein or of any information provided herein to the maximum extent permitted by law. The product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein, which apply to these products.

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.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications unless otherwise expressly indicated. Customers using or selling Vishay products not expressly indicated for use in such applications do so entirely at their own risk and agree to fully indemnify Vishay for any damages arising or resulting from such use or sale. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

Product names and markings noted herein may be trademarks of their respective owners.