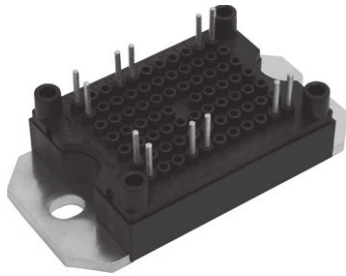


HEXFRED® Ultrafast Diodes, 30 A (Single Phase Bridge MTP Power Modules)



MTP

FEATURES

- Low profile package
- Low t_{rr} and Q_{rr}
- Soft reverse recovery
- Direct mounting to heatsink
- Round pin with PCB solderable terminals
- UL approved file E78996
- Low junction to case thermal resistance
- 3500 V_{RMS} insulation voltage
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912


**RoHS
COMPLIANT**

PRIMARY CHARACTERISTICS	
V_R	1200 V
V_F (typical) at $I_F = 30$ A	2.46 V
I_O at 88 °C	30 A
Q_{rr} (typical)	720 nC
I_{RRM} (typical)	12 A
t_{rr} (typical)	121 ns
$di_{(rec)M}/dt$ (typical)	300 A/ μ s
Package	MTP
Circuit configuration	Single phase bridge

DESCRIPTION

A range of extremely compact single-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.

ABSOLUTE MAXIMUM RATINGS				
PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
Cathode to anode voltage	V_R		1200	V
Continuous forward current per diode	I_F	$T_C = 88$ °C	30	A
Single pulse forward current per diode	I_{FSM}	10 ms sine or 6 ms rectangular pulse, $T_J = 25$ °C	300	
Maximum repetitive forward current per diode	I_{FRM}		200	
Maximum power dissipation per diode	P_D	$T_C = 88$ °C	85	W
Operating junction temperature range	T_J		-40 to +150	°C

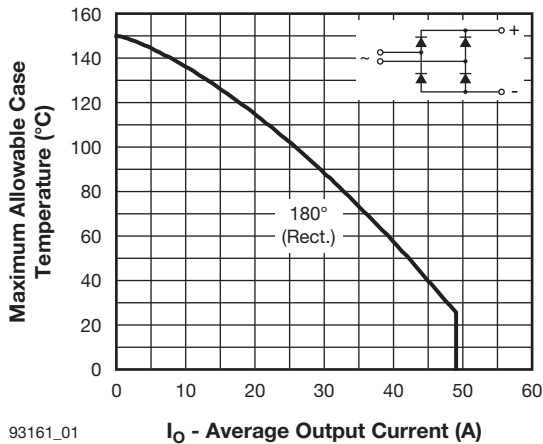
ELECTRICAL SPECIFICATIONS ($T_J = 25$ °C unless otherwise specified)						
PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNITS
Cathode to anode breakdown voltage	V_{BR}	$I_R = 100$ μ A	1200	-	-	V
Forward voltage	V_F	$I_F = 30$ A	-	2.46	3.34	V
		$I_F = 60$ A	-	3.11	4.45	
		$I_F = 30$ A, $T_J = 125$ °C	-	2.32	2.96	
		$I_F = 60$ A, $T_J = 125$ °C	-	3.07	3.96	
Reverse leakage current	I_R	$V_R = 1200$ V	-	2.8	50	μ A
		$V_R = 1200$ V, $T_J = 125$ °C	-	2	10	mA
Junction capacitance	C_T	$V_R = 200$ V	-	50	75	pF



DYNAMIC RECOVERY CHARACTERISTICS ($T_J = 25\text{ }^\circ\text{C}$ unless otherwise specified)							
PARAMETER	SYMBOL	TEST CONDITIONS		MIN.	TYP.	MAX.	UNITS
Reverse recovery time	t_{rr}	$T_J = 25\text{ }^\circ\text{C}$	$I_F = 30\text{ A}$ $di_F/dt = 200\text{ A}/\mu\text{s}$ $V_R = 200\text{ V}$	-	121	170	ns
		$T_J = 125\text{ }^\circ\text{C}$		-	180	260	
Peak recovery current	I_{RR}	$T_J = 25\text{ }^\circ\text{C}$		-	12	16	A
		$T_J = 125\text{ }^\circ\text{C}$		-	17	24	
Reverse recovery charge	Q_{rr}	$T_J = 25\text{ }^\circ\text{C}$		-	720	1350	nC
		$T_J = 125\text{ }^\circ\text{C}$		-	1540	2310	
Peak rate of fall of recovery current during t_b	$dl_{(rec)M}/dt$	$T_J = 25\text{ }^\circ\text{C}$		-	300	-	$\text{A}/\mu\text{s}$
		$T_J = 125\text{ }^\circ\text{C}$		-	265	-	

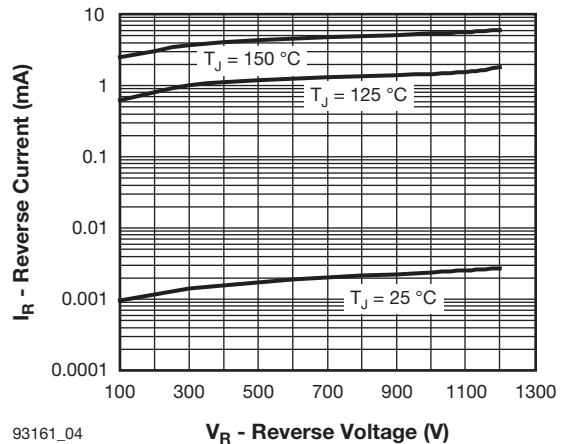
INSULATION TABLE				
PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
RMS insulation voltage	V_{INS}	$T_J = 25\text{ }^\circ\text{C}$, all terminals shorted, $f = 50\text{ Hz}$, $t = 1\text{ s}$	3500	V

THERMAL - MECHANICAL SPECIFICATIONS				
PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
Maximum junction and storage temperature range	T_J, T_{Stg}		-40 to +150	$^\circ\text{C}$
Maximum thermal resistance, $\frac{\text{per module}}{\text{per junction}}$ junction to case	R_{thJC}	DC operation	0.18	$^\circ\text{C}/\text{W}$
			0.73	
Typical thermal resistance, case to heatsink	R_{thCS}	Mounting surface, smooth and greased	0.06	
Approximate weight			65	g
Mounting torque, $\pm 10\%$ to heatsink		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. Lubricated threads.	4	Nm



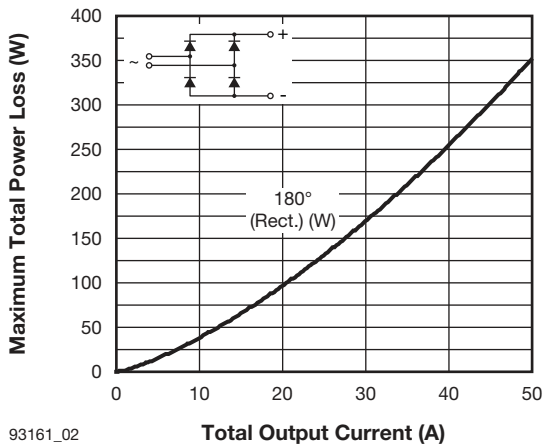
93161_01

Fig. 1 - Output Current Ratings Characteristics



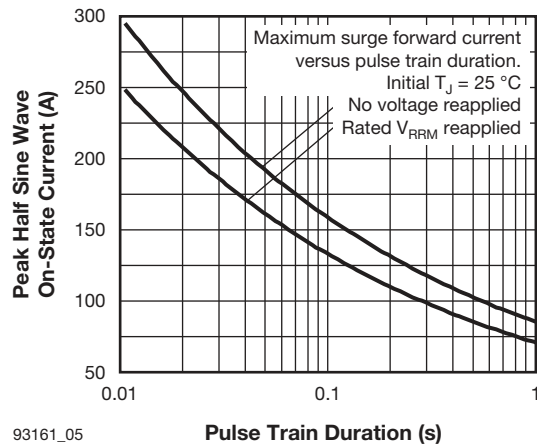
93161_04

Fig. 4 - Typical Values of Reverse Current vs. Reverse Voltage (Per Diode)



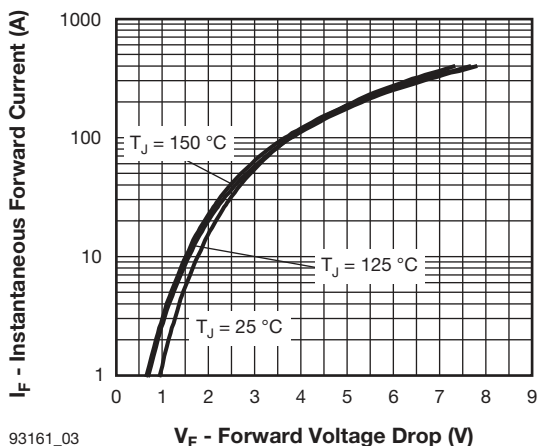
93161_02

Fig. 2 - On-State Power Loss Characteristics



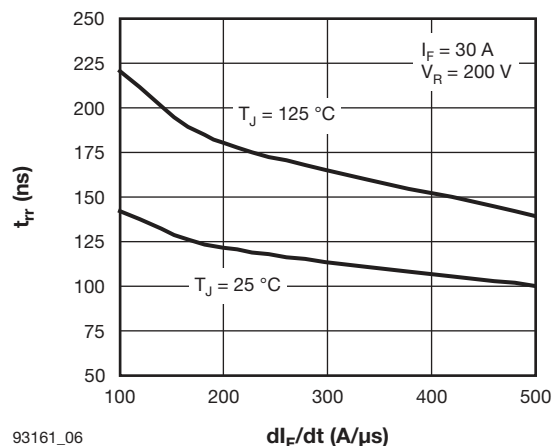
93161_05

Fig. 5 - Maximum Surge Forward Current (Per Diode)



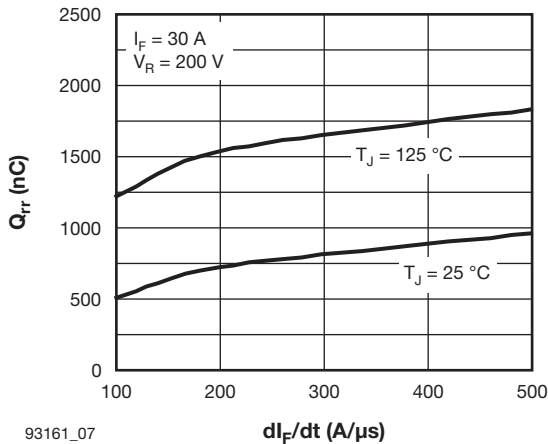
93161_03

Fig. 3 - Typical Forward Voltage Drop Characteristics (Per Diode)



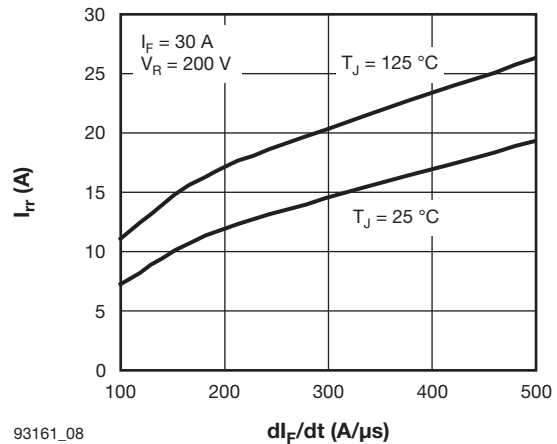
93161_06

Fig. 6 - Typical Reverse Time vs. di_F/dt (Per Diode)



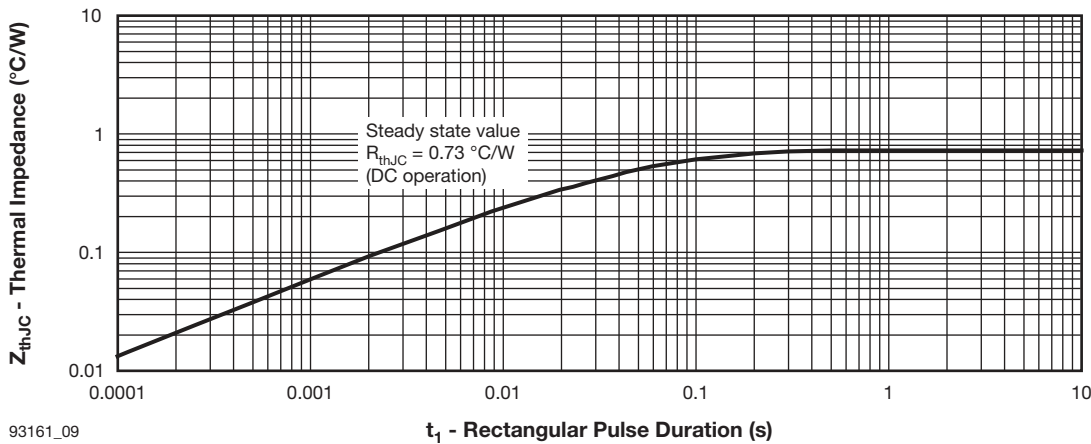
93161_07

Fig. 7 - Typical Stored Charge vs. di/dt (Per Diode)



93161_08

Fig. 8 - Typical Recovery Current vs. di/dt (Per Diode)



93161_09

Fig. 9 - Maximum Thermal Impedance Z_{thJC} Characteristics (Per Diode)

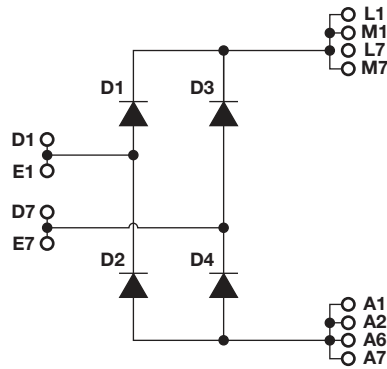
ORDERING INFORMATION TABLE

Device code	VS-	3	5	MT	120	P	B
	①	②	③	④	⑤		⑥

- 1** - Vishay Semiconductors product
- 2** - Current rating (3 = 30 A)
- 3** - Circuit configuration code: 5 = single phase bridge
- 4** - Package indicator: MT = MTP
- 5** - Voltage code: code x 10 (120 = 1200 V)
- 6** - Pinout code: B = round pins



CIRCUIT CONFIGURATION



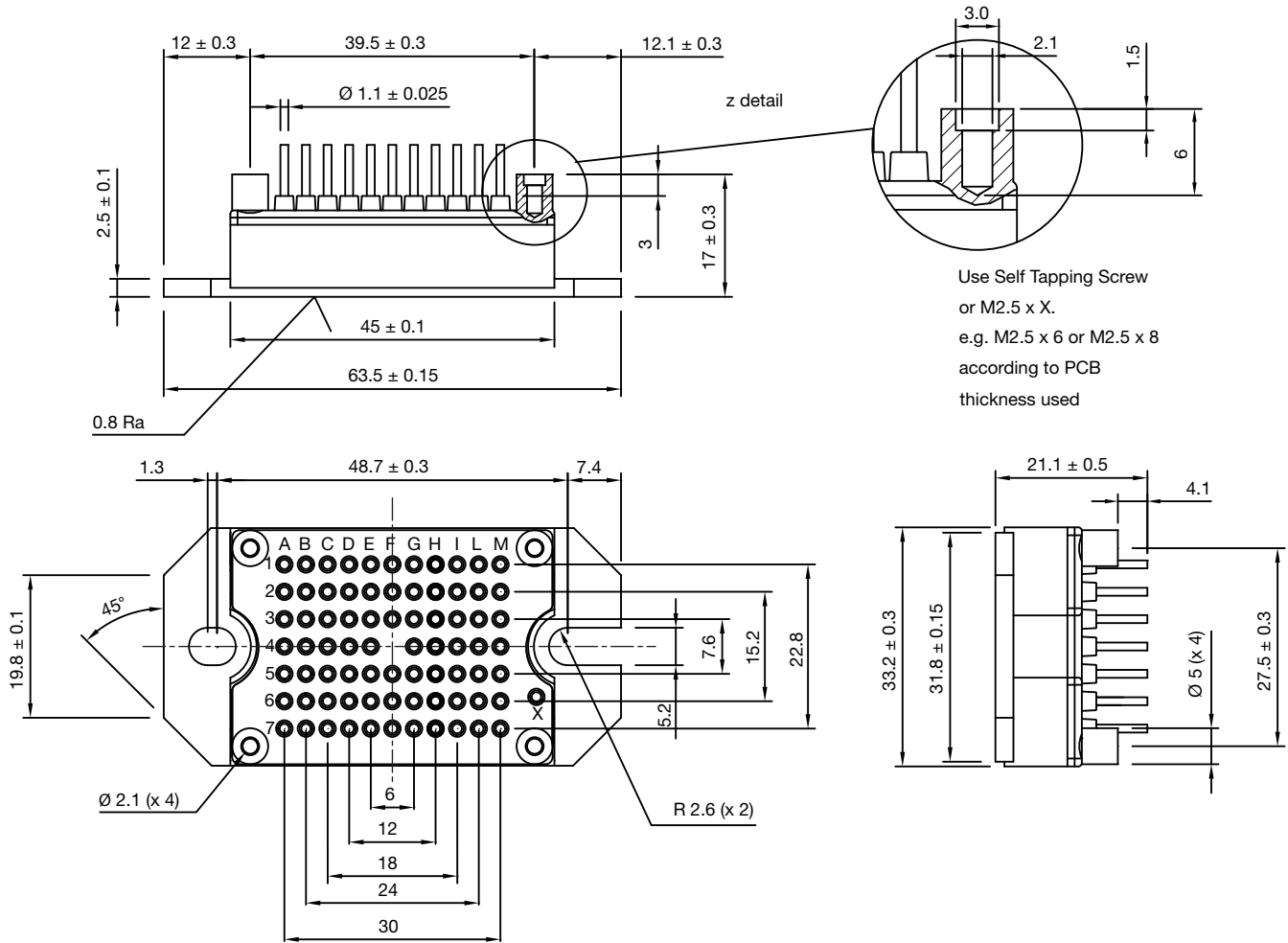
LINKS TO RELATED DOCUMENTS

LINKS TO RELATED DOCUMENTS	
Dimensions	www.vishay.com/doc?95383



MTP - Full Pin

DIMENSIONS in millimeters



Use Self Tapping Screw
or M2.5 x X.
e.g. M2.5 x 6 or M2.5 x 8
according to PCB
thickness used

PINS POSITION
WITH TOLERANCE $\varnothing 0.6$



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.