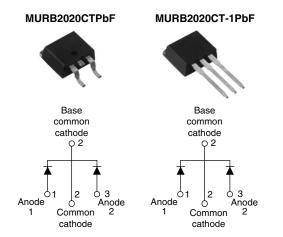


Vishay High Power Products

Ultrafast Rectifier, 2 x 10 A FRED Pt[™]



D²PAK

TO-262

PRODUCT SUMMARY		
t _{rr}	25 ns	
I _{F(AV)}	2 x 10 A	
V _R	200 V	

FEATURES

- Ultrafast recovery time
- Low forward voltage drop
- Low leakage current
- 175 °C operating junction temperature
- Lead (Pb)-free ("PbF" suffix)
- · Designed and qualified for AEC Q101 level

DESCRIPTION/APPLICATIONS

MUR.. series are the state of the art ultrafast recovery rectifiers specifically designed with optimized performance of forward voltage drop and ultrafast recovery time.

The planar structure and the platinum doped life time control, guarantee the best overall performance, ruggedness and reliability characteristics.

These devices are intended for use in the output rectification stage of SMPS, UPS, dc-to-dc converters as well as freewheeling diode in low voltage inverters and chopper motor drives.

Their extremely optimized stored charge and low recovery current minimize the switching losses and reduce over dissipation in the switching element and snubbers.

ABSOLUTE MAXIMUM RATINGS					
PARAMETER Peak repetitive reverse voltage		SYMBOL	TEST CONDITIONS	MAX.	UNITS
		V _{RRM}		200	V
Average rectified forward current	per leg			10	•
	total device		Rated V _R , T _C = 145 °C	20	
Non-repetitive peak surge current per leg		I _{FSM}		100	A
Peak repetitive forward current per leg		I _{FM}	Rated V _R , square wave, 20 kHz, T _C = 145 °C	20	
Operating junction and storage temperatures		T _J , T _{Stg}		- 65 to 175	°C

ELECTRICAL SPECIFICATIONS (T _J = 25 °C unless otherwise specified)							
PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNITS	
Breakdown voltage, blocking voltage	V _{BR} , V _R	I _R = 100 μA	200	-	-		
Forward voltage V _F	I _F = 8 A, T _J = 125 °C	-	-	0.85	v		
	V _F	I _F = 16 A	-	-	1.15		
	I _F = 16 A, T _J = 125 °C	-	-	1.05			
Reverse leakage current		$V_{R} = V_{R}$ rated	-	-	15		
	I _R	$T_J = 150 \ ^{\circ}C, \ V_R = V_R \ rated$	-	-	250	μΑ	
Junction capacitance	CT	V _R = 200 V - 5		55	-	pF	
Series inductance	L _S	Measured lead to lead 5 mm from package body	-	8.0	-	nH	

* Pb containing terminations are not RoHS compliant, exemptions may apply



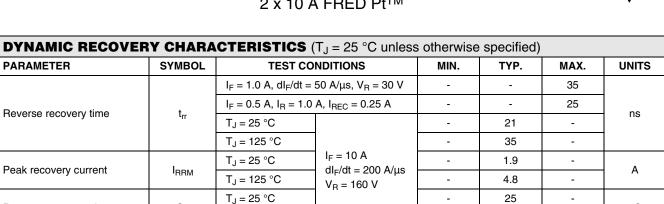
Qrr

T_J = 125 °C

Vishay High Power Products

Reverse recovery charge

Ultrafast Rectifier, 2 x 10 A FRED Pt^{TM}



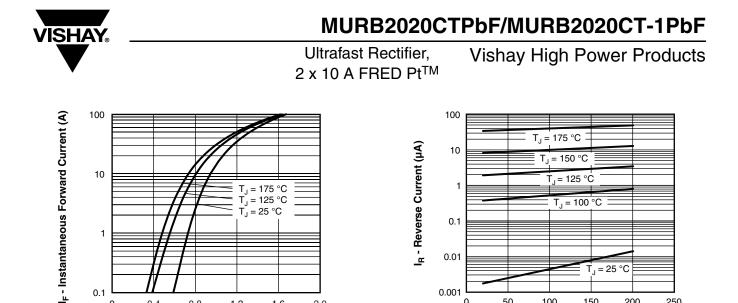
PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNITS
Maximum junction and storage temperature range	T _J , T _{Stg}		- 65	-	175	°C
Thermal resistance, junction to case per leg	R _{thJC}		-	-	2.5	
Thermal resistance, junction to ambient per leg	R _{thJA}		-	-	50	°C/W
Thermal resistance, case to heatsink	R _{thCS}	Mounting surface, flat, smooth and greased	-	0.5	-	
Weight		-	2.0	-	g	
		-	0.07	-	oz.	
Mounting torque			6.0 (5.0)	-	12 (10)	kgf ⋅ cm (lbf ⋅ in)
Marking device		Case style D ² PAK		MURB	2020CT	•
		Case style TO-262	MURB2020CT-1			

nC

78

-

-



0.01

0.001

0

50

100

V_R - Reverse Voltage (V)

Fig. 2 - Typical Values of Reverse Current vs. **Reverse Voltage**

= 25 °C

200

250

150

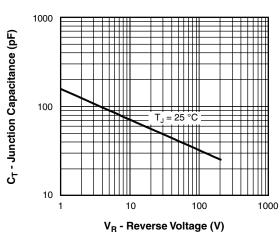


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage

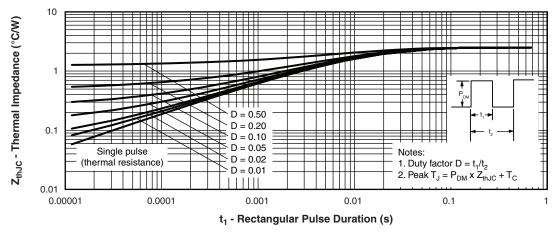


Fig. 4 - Maximum Thermal Impedance ZthJC Characteristics

0.1

0

0.4

0.8

V_F - Forward Voltage Drop (V) Fig. 1 - Typical Forward Voltage Drop Characteristics

1.2

1.6

2.0

Vishay High Power Products

Ultrafast Rectifier, 2 x 10 A FRED Pt[™]

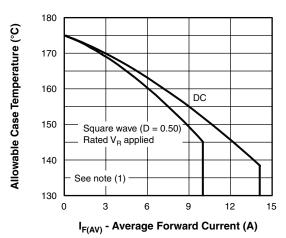
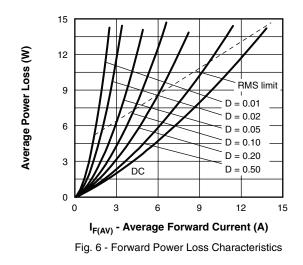
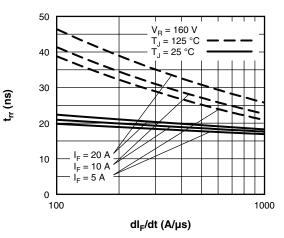


Fig. 5 - Maximum Allowable Case Temperature vs. Average Forward Current



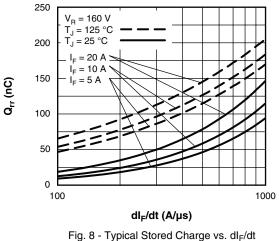
Note

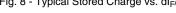
- ⁽¹⁾ Formula used: $T_C = T_J (Pd + Pd_{REV}) \times R_{thJC}$;
- $\begin{array}{l} \mathsf{Pd} = \mathsf{Forward} \ \mathsf{power} \ \mathsf{loss} = \mathsf{I}_{\mathsf{F}(\mathsf{AV})} \ \mathsf{x} \ \mathsf{V}_{\mathsf{FM}} \ \mathsf{at} \ (\mathsf{I}_{\mathsf{F}(\mathsf{AV})}/\mathsf{D}) \ (\mathsf{see} \ \mathsf{fig.} \ \mathsf{6}); \\ \mathsf{Pd}_{\mathsf{REV}} = \mathsf{Inverse} \ \mathsf{power} \ \mathsf{loss} = \mathsf{V}_{\mathsf{R1}} \ \mathsf{x} \ \mathsf{I}_{\mathsf{R}} \ (\mathsf{1} \mathsf{D}); \ \mathsf{I}_{\mathsf{R}} \ \mathsf{at} \ \mathsf{V}_{\mathsf{R1}} = \mathsf{Rated} \ \mathsf{V}_{\mathsf{R}} \end{array}$



VISHAY

Fig. 7 - Typical Reverse Recovery Time vs. dl_F/dt







Ultrafast Rectifier, 2 x 10 A FRED Pt[™] Vishay High Power Products

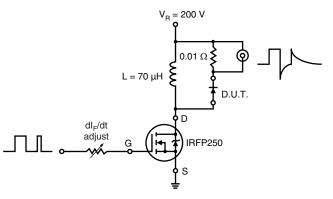


Fig. 9 - Reverse Recovery Parameter Test Circuit

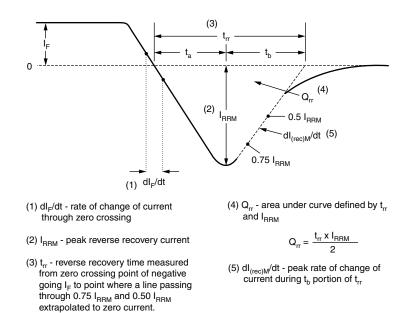


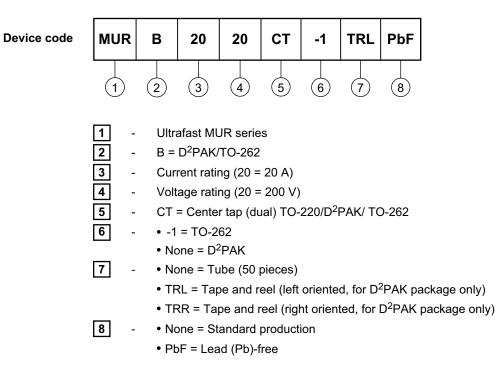
Fig. 10 - Reverse Recovery Waveform and Definitions

VISHAY.

Vishay High Power Products

Ultrafast Rectifier, 2 x 10 A FRED Pt[™]

ORDERING INFORMATION TABLE



LINKS TO RELATED DOCUMENTS		
Dimensions	http://www.vishay.com/doc?95014	
Part marking information	http://www.vishay.com/doc?95008	
Packaging information	http://www.vishay.com/doc?95032	



Vishay

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.