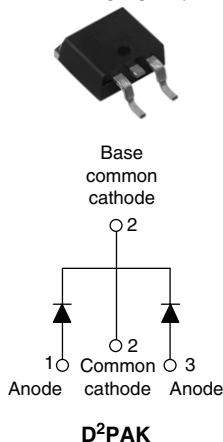
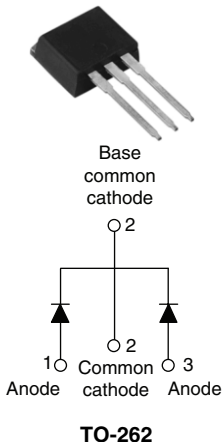


Schottky Rectifier, 2 x 10 A

MBRB20...CTPbF



MBR20 ...CT-1PbF



FEATURES

- 150 °C T_J operation
- Low forward voltage drop
- High frequency operation
- Center tap D²PAK and TO-262 packages
- High purity, high temperature epoxy encapsulation for enhanced mechanical strength and moisture resistance
- Guard ring for enhanced ruggedness and long term reliability
- Compliant to RoHS directive 2002/95/EC
- Halogen-free according to IEC 61249-2-21 definition
- AEC-Q101 qualified



RoHS*
COMPLIANT
HALOGEN
FREE

DESCRIPTION

This center tap Schottky rectifier has been optimized for low reverse leakage at high temperature. The proprietary barrier technology allows for reliable operation up to 150 °C junction temperature. Typical applications are in switching power supplies, converters, freewheeling diodes, and reverse battery protection.

PRODUCT SUMMARY

$I_{F(AV)}$	2 x 10 A
V_R	80 V to 100 V

MAJOR RATINGS AND CHARACTERISTICS

SYMBOL	CHARACTERISTICS	VALUES	UNITS
$I_{F(AV)}$	Rectangular waveform (per device)	20	A
I_{FRM}	$T_C = 133\text{ °C}$ (per leg)	20	
V_{RRM}		80 to 100	V
I_{FSM}	$t_p = 5\text{ }\mu\text{s}$ sine	850	A
V_F	10 Apk, $T_J = 125\text{ °C}$	0.70	V
T_J	Range	- 65 to 150	°C

VOLTAGE RATINGS

PARAMETER	SYMBOL	MBRB2080CTPbF MBR2080CT-1PbF	MBRB2090CTPbF MBR2090CT-1PbF	MBRB20100CTPbF MBR20100CT-1PbF	UNITS
Maximum DC reverse voltage	V_R	80	90	100	V
Maximum working peak reverse voltage	V_{RWM}				

ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
Maximum average forward current	$I_{F(AV)}$	$T_C = 133\text{ °C}$, rated V_R	10	A
			20	
Peak repetitive forward current per leg	I_{FRM}	Rated V_R , square wave, 20 kHz, $T_C = 133\text{ °C}$	20	
Non-repetitive peak surge current	I_{FSM}	5 μs sine or 3 μs rect. pulse	850	
		Following any rated load condition and with rated V_{RRM} applied	150	
Peak repetitive reverse surge current	I_{RRM}	2.0 μs , 1.0 kHz	0.5	
Non-repetitive avalanche energy per leg	E_{AS}	$T_J = 25\text{ °C}$, $I_{AS} = 2\text{ A}$, $L = 12\text{ mH}$	24	mJ

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

ELECTRICAL SPECIFICATIONS						
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS	
Maximum forward voltage drop	$V_{FM}^{(1)}$	10 A	$T_J = 25\text{ }^{\circ}\text{C}$	0.80	V	
		20 A		0.95		
		10 A	$T_J = 125\text{ }^{\circ}\text{C}$	0.70		0.85
		20 A				
Maximum instantaneous reverse current	$I_{RM}^{(1)}$	$T_J = 25\text{ }^{\circ}\text{C}$	Rated DC voltage	0.10	mA	
		$T_J = 125\text{ }^{\circ}\text{C}$		6		
Threshold voltage	$V_{F(TO)}$	$T_J = T_J \text{ maximum}$		0.433	V	
Forward slope resistance	r_t			15.8	mΩ	
Maximum junction capacitance	C_T	$V_R = 5\text{ V}_{DC}$ (test signal range 100 kHz to 1 MHz), $25\text{ }^{\circ}\text{C}$		400	pF	
Typical series inductance	L_S	Measured from top of terminal to mounting plane		8.0	nH	
Maximum voltage rate of change	dV/dt	Rated V_R		10 000	V/μs	

Note

(1) Pulse width < 300 μ s, duty cycle < 2 %

THERMAL - MECHANICAL SPECIFICATIONS					
PARAMETER		SYMBOL	TEST CONDITIONS	VALUES	UNITS
Maximum junction temperature range		T _J		- 65 to 150	°C
Maximum storage temperature range		T _{Stg}		- 65 to 175	
Maximum thermal resistance, junction to case per leg		R _{thJC}	DC operation	2.0	°C/W
Typical thermal resistance, case to heatsink		R _{thCS}	Mounting surface, smooth and greased	0.50	
Maximum thermal resistance, junction to ambient		R _{thJA}	DC operation	50	
Approximate weight				2	g
				0.07	oz.
Mounting torque	minimum		Non-lubricated threads	6 (5)	kgf · cm (lbf · in)
	maximum			12 (10)	
Marking device			Case style D ² PAK	MBRB20100CT	
			Case style TO-262	MBR20100CT-1	

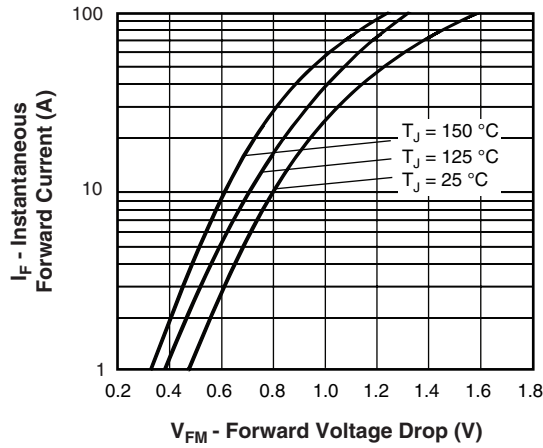


Fig. 1 - Maximum Forward Voltage Drop Characteristics (Per Leg)

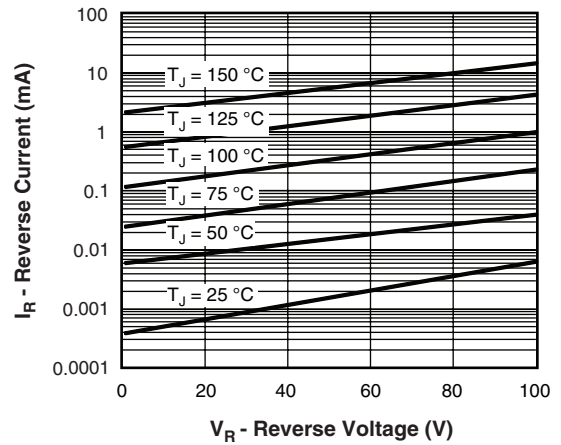


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage (Per Leg)

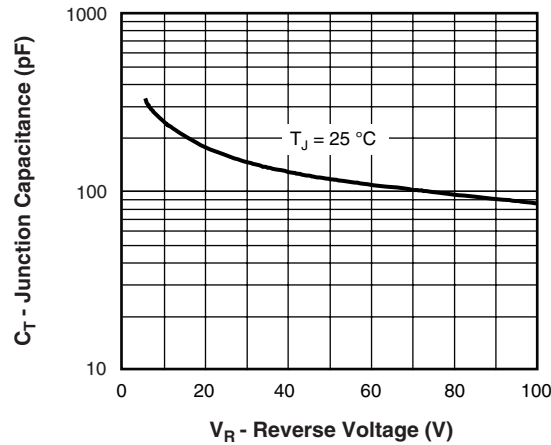


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage (Per Leg)

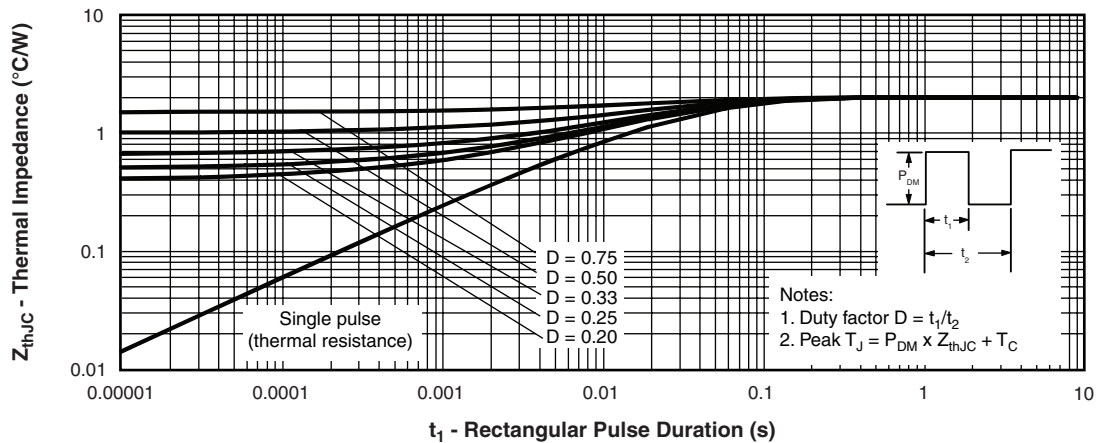


Fig. 4 - Maximum Thermal Impedance Z_{thJC} Characteristics (Per Leg)

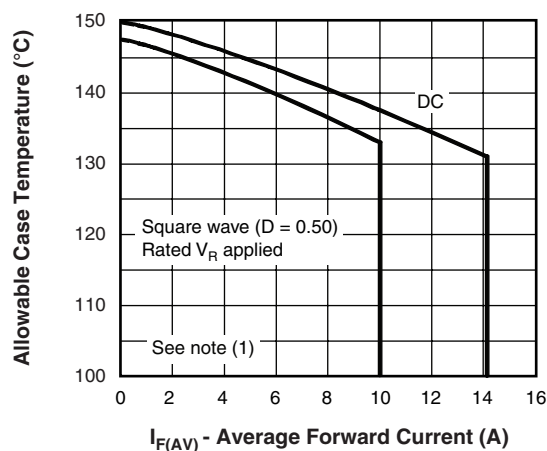


Fig. 5 - Maximum Allowable Case Temperature vs. Average Forward Current (Per Leg)

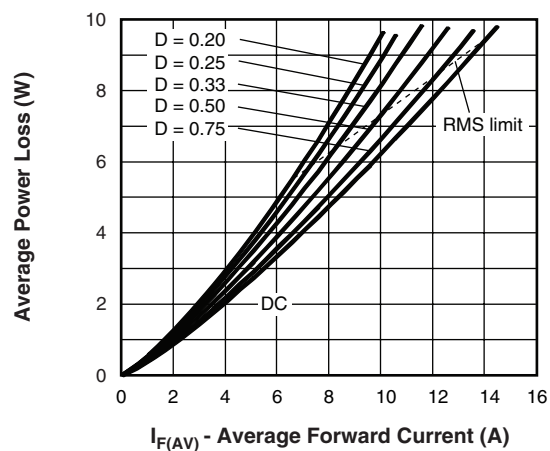


Fig. 6 - Forward Power Loss Characteristics (Per Leg)

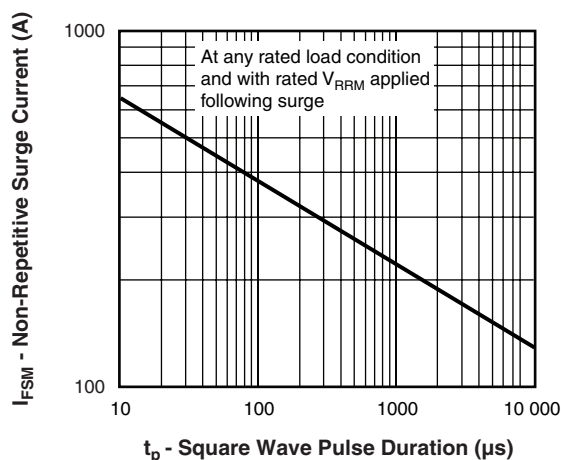


Fig. 7 - Maximum Non-Repetitive Surge Current (Per Leg)

Note

- (1) Formula used: $T_C = T_J - (P_d + P_{d_{REV}}) \times R_{thJC}$;
 P_d = Forward power loss = $I_{F(AV)} \times V_{FM}$ at $(I_{F(AV)}/D)$ (see fig. 6);
 $P_{d_{REV}}$ = Inverse power loss = $V_{R1} \times I_R (1 - D)$; I_R at V_{R1} = Rated V_R



MBRB20...CTPbF, MBR20...CT-1PbF

Schottky Rectifier, 2 x 10 A Vishay High Power Products

ORDERING INFORMATION TABLE

Device code	MBR	B	20	100	CT	-1	TRL	P
	1	2	3	4	5	6	7	8

- 1** - Essential part number
- 2** -
• B = D²PAK **6** None
• None = TO-262 **6** = -1
- 3** - Current rating (20 = 20 A)
- 4** - Voltage ratings
- 5** - CT = Essential part number
- 6** -
• None = D²PAK **2** = B
• -1 = TO-262 **2** None
- 7** -
• None = Tube (50 pieces)
• TRL = Tape and reel (left oriented - for D²PAK only)
• TRR = Tape and reel (right oriented - for D²PAK only)
- 8** -
• None = Standard production
• PbF = Lead (Pb)-free (for TO-262 and D²PAK tube)
• P = Lead (Pb)-free (for D²PAK TRR and TRL)

80 = 80 V
90 = 90 V
100 = 100 V

LINKS TO RELATED DOCUMENTS

Dimensions	www.vishay.com/doc?95014
Part marking information	www.vishay.com/doc?95008
Packaging information	www.vishay.com/doc?95032



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