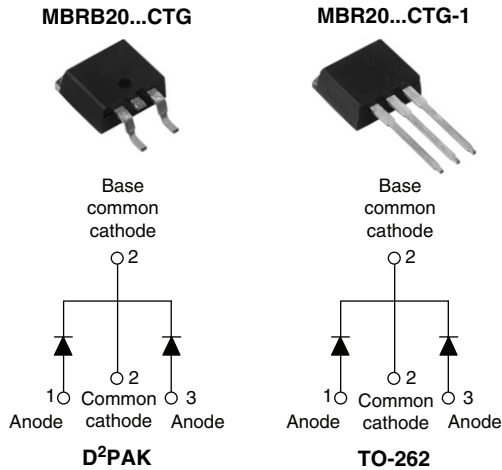


## Schottky Rectifier, 2 x 10 A



### FEATURES

- 150 °C T<sub>J</sub> operation
- Center tap D<sup>2</sup>PAK and TO-262 packages
- Low forward voltage drop
- High purity, high temperature epoxy encapsulation for enhanced mechanical strength and moisture resistance
- High frequency operation
- Guard ring enhanced ruggedness and long term reliability
- Designed and qualified for AEC Q101 level

### 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 <sub>F(AV)</sub>	2 x 10 A
V <sub>R</sub>	80 to 100 V

### MAJOR RATINGS AND CHARACTERISTICS

SYMBOL	CHARACTERISTICS	VALUES	UNITS
I <sub>FRM</sub>	T <sub>C</sub> = 133 °C (per leg)	20	A
V <sub>R(RM)</sub>		80 to 100	V
I <sub>FSM</sub>	t <sub>p</sub> = 5 μs sine	850	A
V <sub>F</sub>	10 Apk, T <sub>J</sub> = 125 °C	0.70	V
T <sub>J</sub>	Range	- 65 to 150	°C

### VOLTAGE RATINGS

PARAMETER	SYMBOL	MBRB2080CTG MBR2080CTG-1	MBRB2090CTG MBR2090CTG-1	MBRB20100CTG MBR20100CTG-1	UNITS
Maximum DC reverse voltage	V <sub>R</sub>	80	90	100	V
Maximum working peak reverse voltage	V <sub>R(WM)</sub>				

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ABSOLUTE MAXIMUM RATINGS					
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum average forward current	$I_{F(AV)}$	$T_C = 133\text{ }^\circ\text{C}$ , rated $V_R$		10	A
				per leg	
per device					
Peak repetitive forward current per leg	$I_{FRM}$	Rated $V_R$ , square wave, 20 kHz $T_C = 133\text{ }^\circ\text{C}$		20	
Non-repetitive peak surge current	$I_{FSM}$	5 $\mu\text{s}$ sine or 3 $\mu\text{s}$ rect. pulse	Following any rated load condition and with rated $V_{RRM}$ applied	850	
		Surge applied at rated load conditions half wave, single phase, 60 Hz		150	
Peak repetitive reverse surge current	$I_{RRM}$	2.0 $\mu\text{s}$ , 1.0 kHz		0.5	
Non-repetitive avalanche energy per leg	$E_{AS}$	$T_J = 25\text{ }^\circ\text{C}$ , $I_{AS} = 2\text{ A}$ , $L = 12\text{ mH}$		24	mJ

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	
		20 A		0.85	
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	$V_{F(TO)}$	$T_J = T_J$ maximum		0.433	V
Forward slope resistance	$r_t$			15.8	m $\Omega$
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/ $\mu\text{s}$

**Note**

(1) Pulse width < 300  $\mu\text{s}$ , duty cycle < 2 %



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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
Maximum thermal resistance, junction to ambient	$R_{thJA}$		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 <sup>2</sup> PAK	MBRB2080CTG	
			MBRB2090CTG	
			MBRB20100CTG	
		Case style TO-262	MBR2080CTG-1	
			MBR2090CTG-1	
			MBR20100CTG-1	

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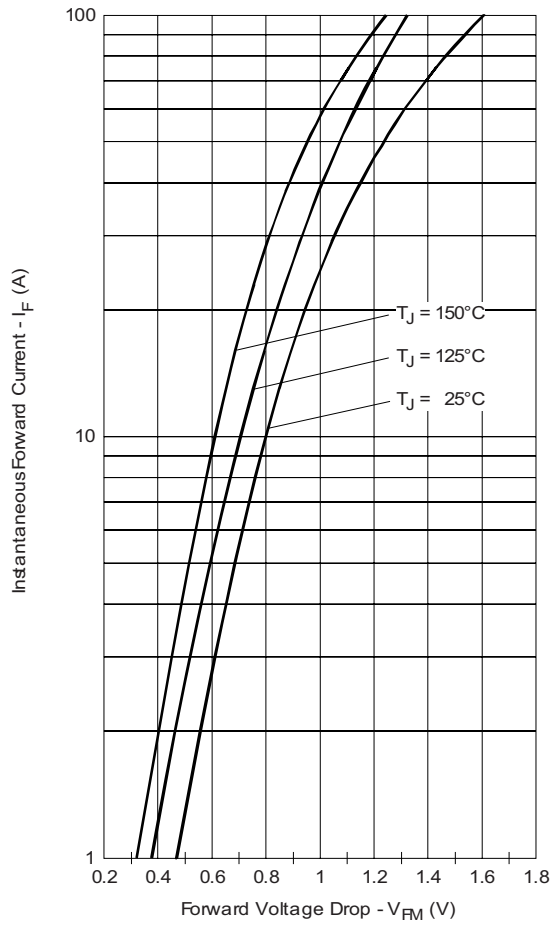


Fig. 1 - Maximum Forward Voltage Drop Characteristics (Per Leg)

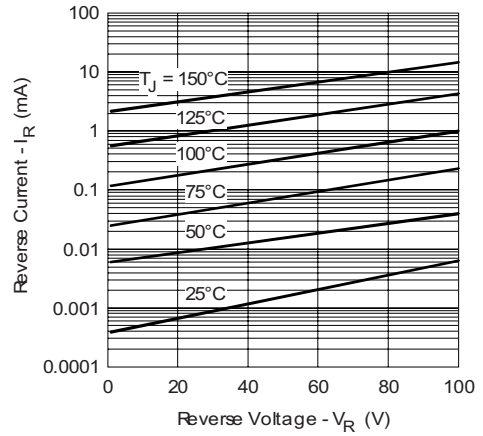


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage (Per Leg)

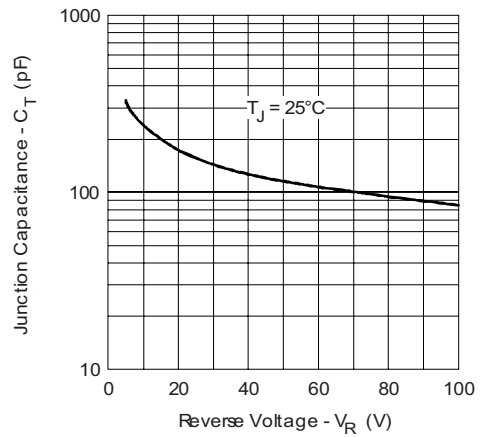


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage (Per Leg)

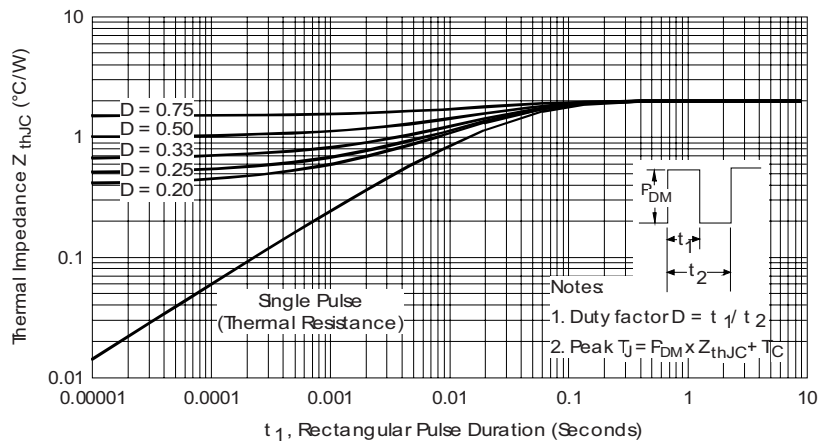


Fig. 4 - Maximum Thermal Impedance  $Z_{thJC}$  Characteristics (Per Leg)



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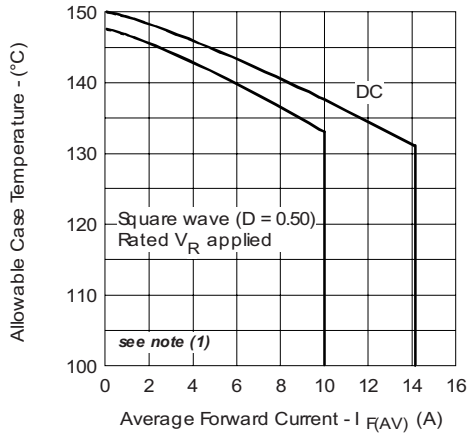


Fig. 5 - Maximum Allowable Case Temperature vs. Average Forward Current (Per Leg)

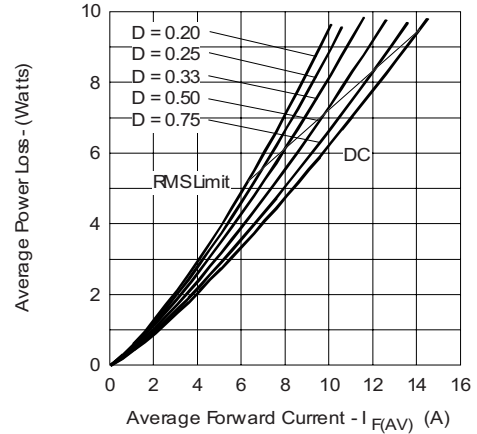


Fig. 6 - Forward Power Loss Characteristics (Per Leg)

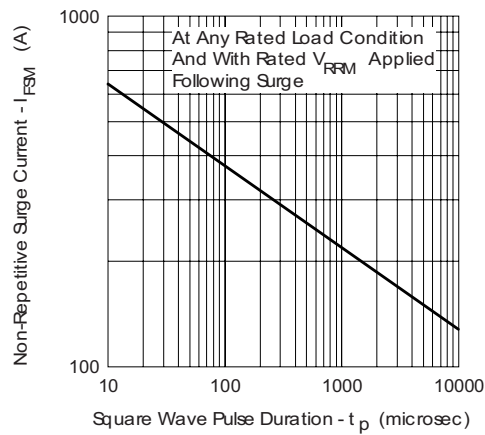


Fig. 7 - Maximum Non-Repetitive Surge Current (Per Leg)

**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  $V_R$

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## ORDERING INFORMATION TABLE

Device code	<b>MBR</b>	<b>B</b>	<b>20</b>	<b>100</b>	<b>CT</b>	<b>G</b>	<b>-1</b>	<b>TRL</b>	<b>-</b>
	①	②	③	④	⑤	⑥	⑦	⑧	⑨

- 1** - Essential part number
- 2** -
  - B = D<sup>2</sup>PAK
  - None = TO-262
- 3** - Current rating (20 = 20 A)
- 4** - Voltage ratings
 

80 = 80 V
90 = 90 V
100 = 100 V
- 5** - CT = Essential part number
- 6** - G = Schottky generation
- 7** -
  - None = D<sup>2</sup>PAK
  - -1 = TO-262
- 8** -
  - None = Tube (50 pieces)
  - TRL = Tape and reel (left oriented - for D<sup>2</sup>PAK only)
  - TRR = Tape and reel (right oriented - for D<sup>2</sup>PAK only)
- 9** -
  - None = Standard production
  - PbF = Lead (Pb)-free (D<sup>2</sup>PAK tube)
  - P = Lead (Pb)-free (for D<sup>2</sup>PAK TRR and TRL, and TO-262)

LINKS TO RELATED DOCUMENTS	
Dimensions	<a href="http://www.vishay.com/doc?95014">http://www.vishay.com/doc?95014</a>
Part marking information	<a href="http://www.vishay.com/doc?95057">http://www.vishay.com/doc?95057</a>
Packaging information	<a href="http://www.vishay.com/doc?95032">http://www.vishay.com/doc?95032</a>



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