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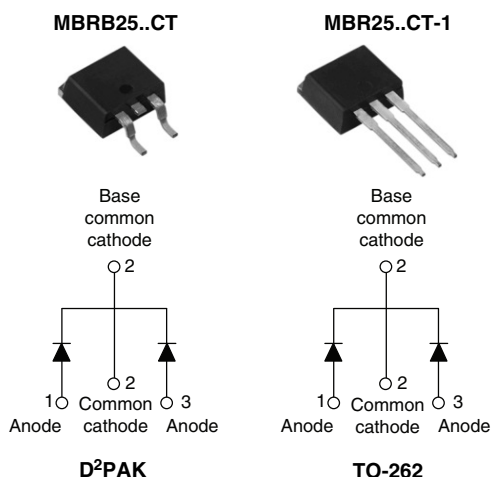
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## MBRB25..CT/MBR25..CT-1

Vishay High Power Products

### Schottky Rectifier, 2 x 15 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 frequency operation
- High purity, high temperature epoxy encapsulation for enhanced mechanical strength and moisture resistance
- Guard ring for enhanced ruggedness and long term reliability
- Designed and qualified for 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 15 A
V <sub>R</sub>	35/45 V
I <sub>RM</sub>	40 mA at 125 °C

#### MAJOR RATINGS AND CHARACTERISTICS

SYMBOL	CHARACTERISTICS	VALUES	UNITS
I <sub>F(AV)</sub>	Rectangular waveform (per device)	30	A
I <sub>FRM</sub>	T <sub>C</sub> = 130 °C (per leg)	30	
V <sub>RRM</sub>		35/45	V
I <sub>FSM</sub>	t <sub>p</sub> = 5 μs sine	1060	A
V <sub>F</sub>	30 Apk, T <sub>J</sub> = 125 °C	0.73	V
T <sub>J</sub>	Range	- 65 to 150	°C

#### VOLTAGE RATINGS

PARAMETER	SYMBOL	MBRB2535CT MBR2535CT-1	MBRB2545CT MBR2545CT-1	UNITS
Maximum DC reverse voltage	V <sub>R</sub>	35	45	V
Maximum working peak reverse voltage	V <sub>RWM</sub>			

#### ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
Maximum average forward current	I <sub>F(AV)</sub>	T <sub>C</sub> = 130 °C, rated V <sub>R</sub>	15	A
			30	
Peak repetitive forward current per leg	I <sub>FRM</sub>	Rated V <sub>R</sub> , square wave, 20 kHz, T <sub>C</sub> = 130 °C	30	
Non-repetitive peak surge current	I <sub>FSM</sub>	5 μs sine or 3 μs rect. pulse	1060	A
		Surge applied at rated load conditions halfwave, single phase, 60 Hz	150	
Non-repetitive avalanche energy per leg	E <sub>AS</sub>	T <sub>J</sub> = 25 °C, I <sub>AS</sub> = 2 A, L = 8 mH	16	mJ
Repetitive avalanche current per leg	I <sub>AR</sub>	Current decaying linearly to zero in 1 μs Frequency limited by T <sub>J</sub> maximum V <sub>A</sub> = 1.5 x V <sub>R</sub> typical	2	A

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ELECTRICAL SPECIFICATIONS					
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum forward voltage drop	$V_{FM}^{(1)}$	30 A	$T_J = 25\text{ }^\circ\text{C}$	0.82	V
			$T_J = 125\text{ }^\circ\text{C}$	0.73	
Maximum instantaneous reverse current	$I_{RM}^{(1)}$	Rated DC voltage	$T_J = 25\text{ }^\circ\text{C}$	0.2	mA
			$T_J = 125\text{ }^\circ\text{C}$	40	
Threshold voltage	$V_{F(TO)}$	$T_J = T_J$ maximum		0.355	V
Forward slope resistance	$r_t$			12.3	m $\Omega$
Maximum junction capacitance	$C_T$	$V_R = 5\text{ }V_{DC}$ (test signal range 100 kHz to 1 MHz) 25 $^\circ\text{C}$		700	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 %

THERMAL - MECHANICAL SPECIFICATIONS					
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum junction temperature range	$T_J$			- 65 to 150	$^\circ\text{C}$
Maximum storage temperature range	$T_{Stg}$			- 65 to 175	
Maximum thermal resistance, junction to case per leg	$R_{thJC}$	DC operation		1.5	$^\circ\text{C/W}$
Typical thermal resistance, case to heatsink	$R_{thCS}$	Mounting surface, smooth and greased (Only for TO-262)		0.50	
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		MBRB2535CT	
				MBRB2545CT	
		Case style TO-262		MBR2535CT-1	
				MBR2545CT-1	



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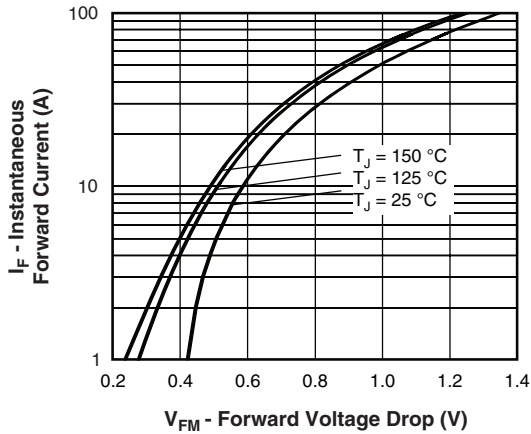


Fig. 1 - Maximum Forward Voltage Drop Characteristics (Per Leg)

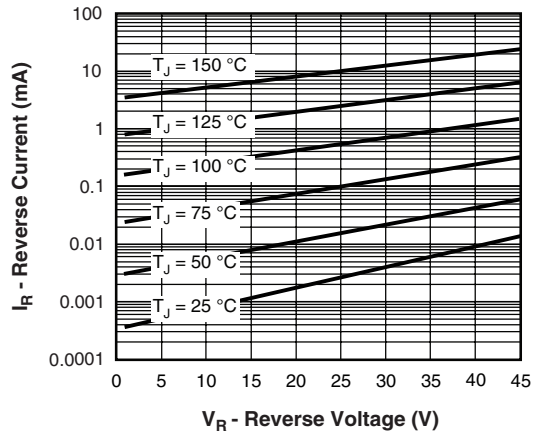


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage (Per Leg)

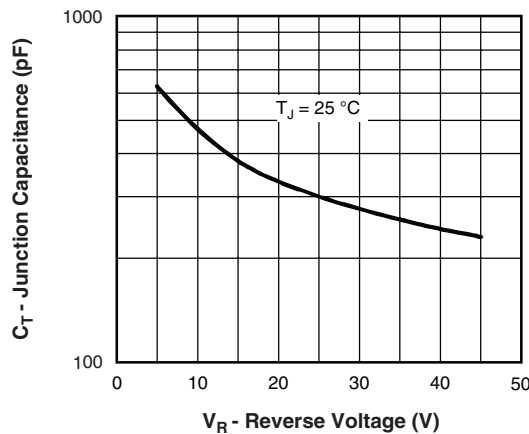


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage (Per Leg)

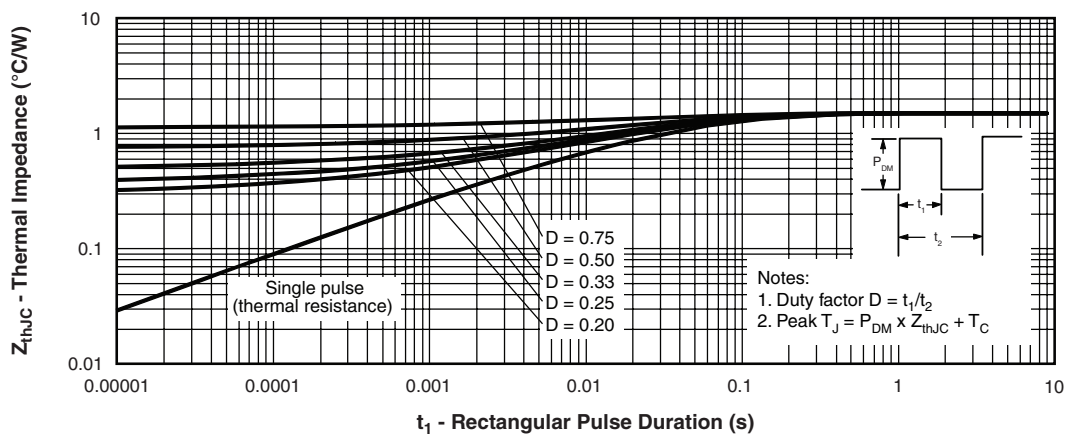


Fig. 4 - Maximum Thermal Impedance  $Z_{thJC}$  Characteristics (Per Leg)

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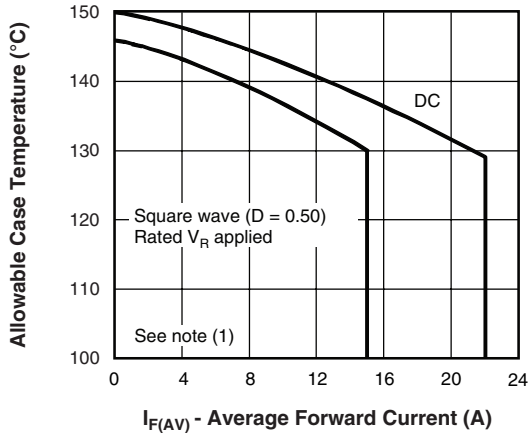


Fig. 5 - Maximum Allowable Case Temperature vs. Average Forward Current (Per Leg)

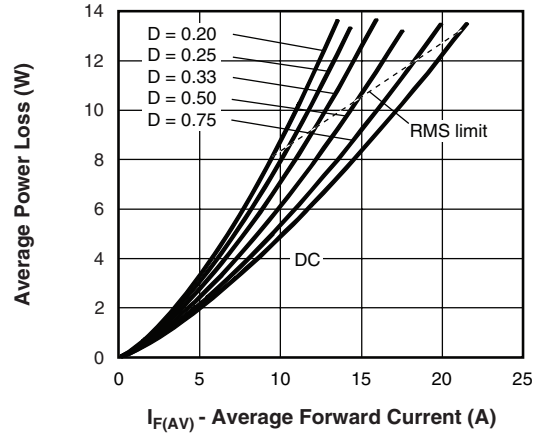


Fig. 6 - Forward Power Loss Characteristics (Per Leg)

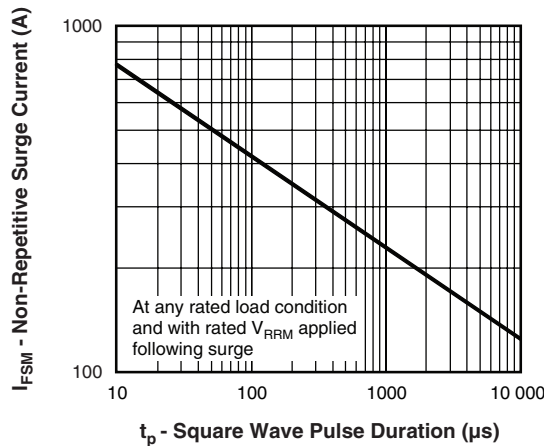


Fig. 7 - Maximum Non-Repetitive Surge Current (Per Leg)

**Note**

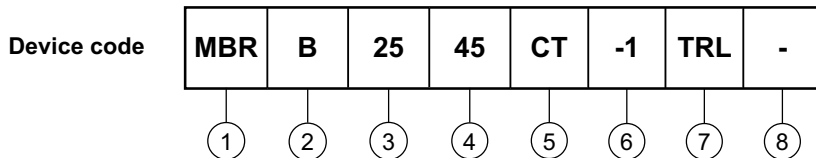
(1) Formula used:  $T_C = T_J - (Pd + Pd_{REV}) \times R_{thJC}$ ;  
 $Pd$  = Forward power loss =  $I_{F(AV)} \times V_{FM}$  at  $(I_{F(AV)}/D)$  (see fig. 6);  
 $Pd_{REV}$  = Inverse power loss =  $V_{R1} \times I_R (1 - D)$ ;  $I_R$  at  $V_{R1}$  = Rated  $V_R$



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## ORDERING INFORMATION TABLE



- 1** - Essential part number
- 2** -
  - B = D<sup>2</sup>PAK **6** None
  - None = TO-262 **6** = -1
- 3** - Current rating (25 = 25 A)
- 4** - Voltage ratings 35 = 35 V  
45 = 45 V
- 5** - CT = Essential part number
- 6** -
  - None = D<sup>2</sup>PAK **2** = B
  - -1 = TO-262 **2** None
- 7** -
  - 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)
- 8** -
  - None = Standard production
  - PbF = Lead (Pb)-free (for TO-262 and D<sup>2</sup>PAK tube)
  - P = Lead (Pb)-free (for D<sup>2</sup>PAK TRR and TRL)

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?95008">http://www.vishay.com/doc?95008</a>
Packaging information	<a href="http://www.vishay.com/doc?95032">http://www.vishay.com/doc?95032</a>



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