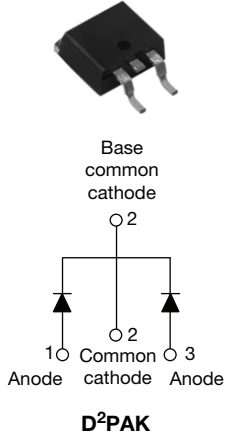




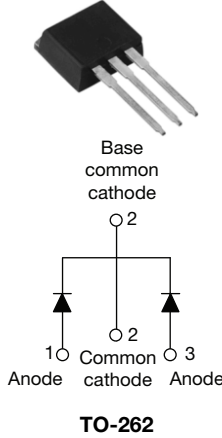
KERSEMI

VS-MBRB15..CTPbF, VS-MBR15..CT-1PbF Series

VS-MBRB15..CTPbF



VS-MBR15..CT-1PbF



FEATURES

- 150 °C T_J operation
- Center tap TO-220 package
- 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
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- Halogen-free according to IEC 61249-2-21 definition
- Compliant to RoHS directive 2002/95/EC
- AEC-Q101 qualified



RoHS
COMPLIANT
HALOGEN
FREE

PRODUCT SUMMARY

I _{F(AV)}	2 x 7.5 A
V _R	35 V/45 V
I _{RM}	15 mA at 125 °C

DESCRIPTION

The VS-MBR(B)15... 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.

MAJOR RATINGS AND CHARACTERISTICS

SYMBOL	CHARACTERISTICS	VALUES	UNITS
I _{F(AV)}	Rectangular waveform	15	A
V _{R(RM)}		35/45	V
I _{FSM}	t _p = 5 μs sine	690	A
V _F	7.5 Apk, T _J = 125 °C	0.57	V
T _J		- 65 to 150	°C

VOLTAGE RATINGS

PARAMETER	SYMBOL	VS-MBRB1535CTPbF VS-MBR1535CT-1PbF	VS-MBRB1545CTPbF VS-MBR1545CT-1PbF	UNITS
Maximum DC reverse voltage	V _R	35	45	V
Maximum working peak reverse voltage	V _{R(WM)}			

ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
Maximum average forward current per leg per device	I _{F(AV)}	T _C = 131 °C, rated V _R	7.5	A
			15	
Maximum peak one cycle non-repetitive surge	I _{FSM}	5 μs sine or 3 μs rect. pulse	690	A
		Surge applied at rated load conditions halfwave, single phase, 60 Hz	150	
Non-repetitive avalanche energy per leg	E _{AS}	T _J = 25 °C, I _{AS} = 2 A, L = 3.5 mH	7	mJ
Repetitive avalanche current per leg	I _{AR}	Current decaying linearly to zero in 1 μs Frequency limited by T _J maximum V _A = 1.5 x V _R typical	2	A



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ELECTRICAL SPECIFICATIONS					
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum forward voltage drop	$V_{FM}^{(1)}$	15 A	$T_J = 25\text{ }^\circ\text{C}$	0.84	V
		7.5 A	$T_J = 125\text{ }^\circ\text{C}$	0.57	
		15 A		0.72	
Maximum instantaneous reverse current	$I_{RM}^{(1)}$	$T_J = 25\text{ }^\circ\text{C}$	Rated DC voltage	0.1	mA
		$T_J = 125\text{ }^\circ\text{C}$		15	
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/ μ s

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	$^\circ\text{C}$
Maximum storage temperature range	T_{Stg}			- 65 to 175	
Maximum thermal resistance, junction to case per leg	R_{thJC}	DC operation		3.0	$^\circ\text{C}/\text{W}$
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		60	
Approximate weight				2	g
				0.07	oz.
Mounting torque	minimum			6 (5)	kgf · cm (lbf · in)
	maximum			12 (10)	
Marking device			Case style D ² PAK	MBRB1545CT	
			Case style TO-262	MBR1545CT-1	



VS-MBRB15..CTPbF, VS-MBR15..CT-1PbF Series

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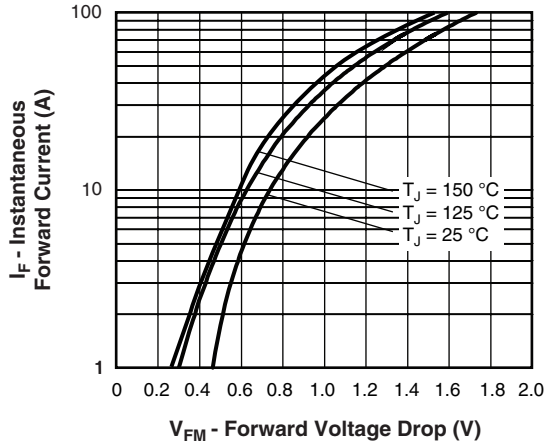


Fig. 1 - Maximum Forward Voltage Drop Characteristics (Per Leg)

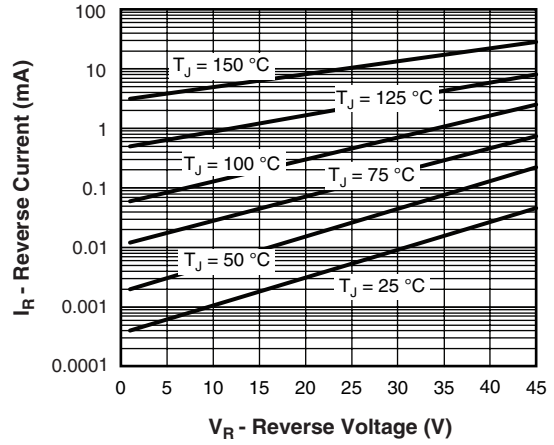


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage (Per Leg)

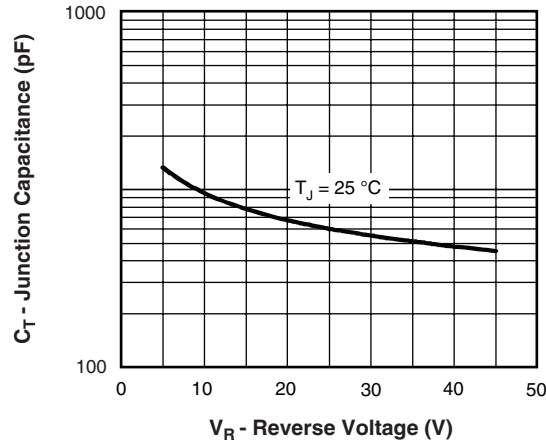


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage (Per Leg)

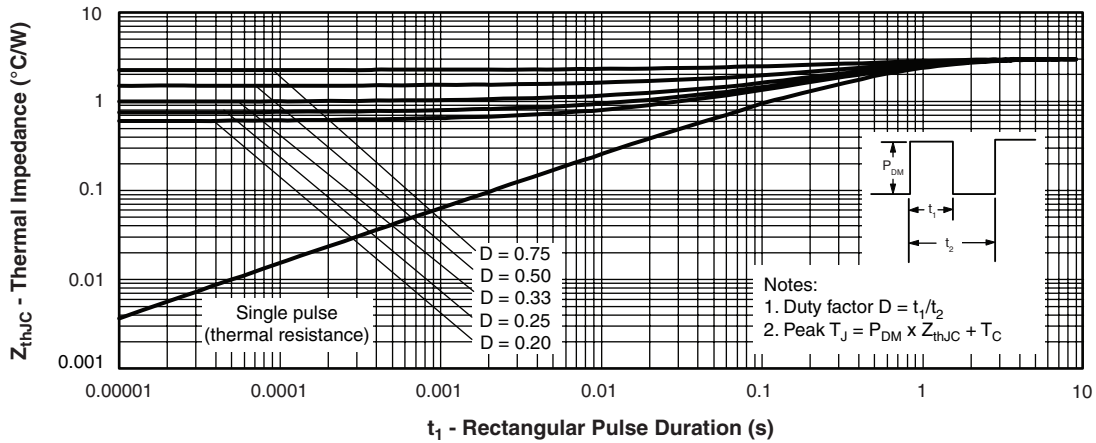


Fig. 4 - Maximum Thermal Impedance Z_{thJC} Characteristics (Per Leg)

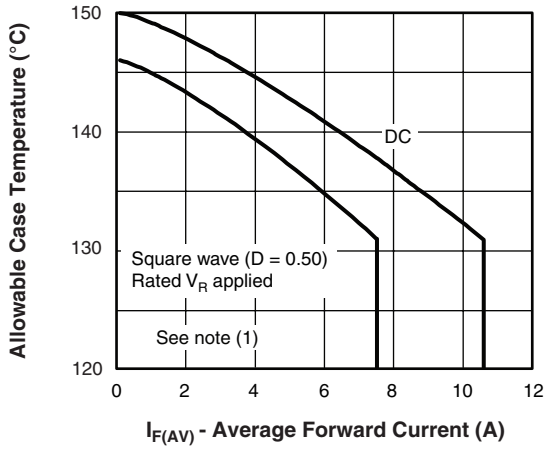


Fig. 5 - Maximum Allowable Case Temperature vs. Average Forward Current

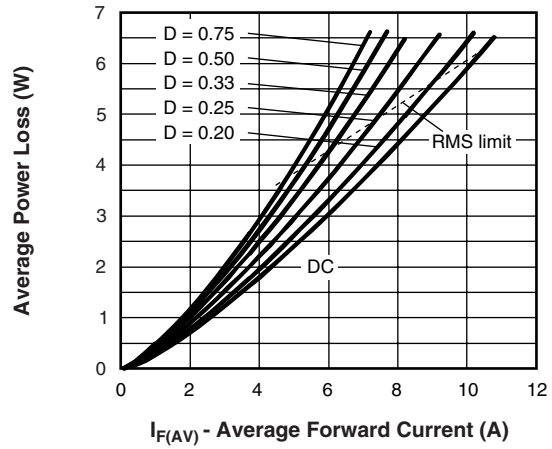


Fig. 6 - Forward Power Loss Characteristics

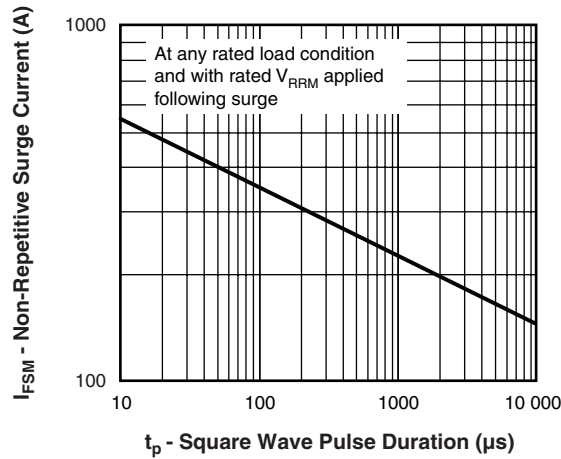


Fig. 7 - Maximum Non-Repetitive Surge Current (Per Leg)

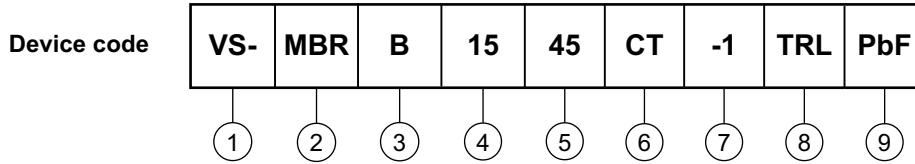
Note

- (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



VS-MBRB15..CTPbF, VS-MBR15..CT-1PbF Series

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- 1** - HPP product suffix
- 2** - Essential part number
- 3** -
 - B = D²PAK **7** None
 - None = TO-262 **7** = -1
- 4** - Current rating (15 = 15 A)
- 5** - Voltage ratings 35 = 35 V
45 = 45 V
- 6** - CT = Essential part number
- 7** -
 - None = D²PAK **3** = B
 - -1 = TO-262 **3** None
- 8** -
 - None = Tube (50 pieces)
 - TRL = Tape and reel (left oriented - for D²PAK only)
 - TRR = Tape and reel (right oriented - for D²PAK only)
- 9** -
 - PbF = Lead (Pb)-free (for TO-262 and D²PAK tube)
 - P = Lead (Pb)-free (for D²PAK TRR and TRL)

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
SPICE model	www.vishay.com/doc?95294