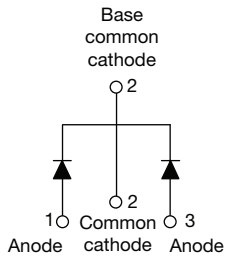
VS-MBRB15..CTPbF, VS-MBR15..CT-1PbF Series

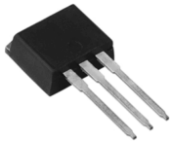
VS-MBRB15..CTPbF

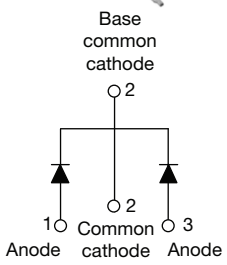




D²PAK

VS-MBR15..CT-1PbF





TO-262

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

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.

PRODUCT SUMMARY	
$I_{F(AV)}$	2 x 7.5 A
V_R	35 V/45 V
I_{RM}	15 mA at 125 °C

MAJOR RATINGS AND CHARACTERISTICS			
SYMBOL	CHARACTERISTICS	VALUES	UNITS
$I_{F(AV)}$	Rectangular waveform	15	A
V_{RRM}		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_{RWM}			

ABSOLUTE MAXIMUM RATINGS						
PARAMETER		SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum average forward current	per leg	$I_{F(AV)}$	T_C = 131 °C, rated V_R		7.5	A
	per device				15	
Maximum peak one cycle non-repetitive surge		I_{FSM}	5 µs sine or 3 µs rect. pulse	Following any rated load condition and with rated V_{RRM} applied	690	
			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

ELECTRICAL SPECIFICATIONS					
PARAMETER	**SYMBOL**	**TEST CONDITIONS**		**VALUES**	**UNITS**
Maximum forward voltage drop	V_{FM} (1)	15 A	T_J = 25 °C	0.84	V
		7.5 A	T_J = 125 °C	0.57	
		15 A		0.72	
Maximum instantaneous reverse current	I_{RM} (1)	T_J = 25 °C	Rated DC voltage	0.1	mA
		T_J = 125 °C		15	
Maximum junction capacitance	C_T	V_R = 5 V_{DC} (test signal range 100 kHz to 1 MHz), 25 °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 µs, 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	3.0	°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	60	
Approximate weight			2	g
			0.07	oz.
Mounting torque minimum			6 (5)	kgf · cm (lbf · in)
Mounting torque maximum			12 (10)	
Marking device		Case style D^2PAK	MBRB1545CT	
		Case style TO-262	MBR1545CT-1	

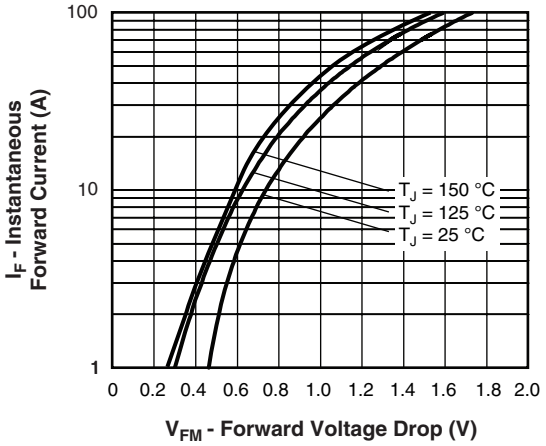


Fig. 1 - Maximum Forward Voltage Drop Characteristics (Per Leg)

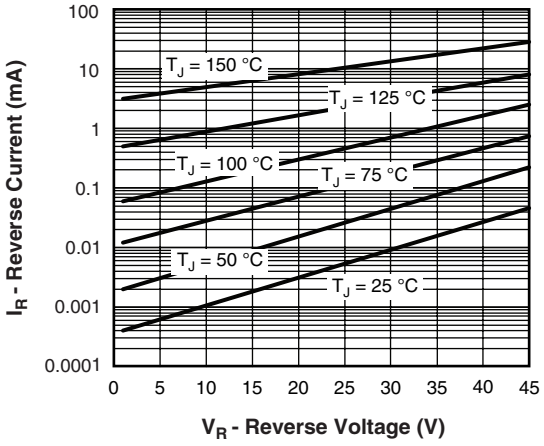


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage (Per Leg)

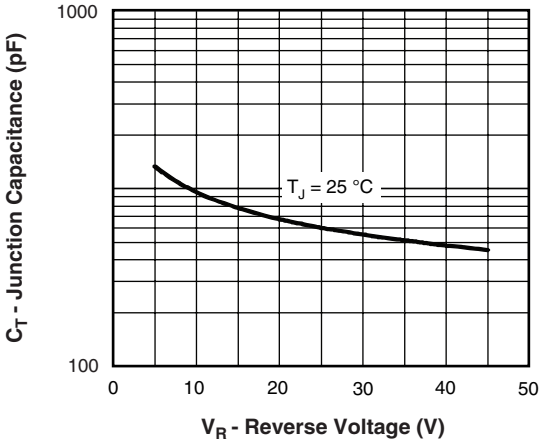


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage (Per Leg)

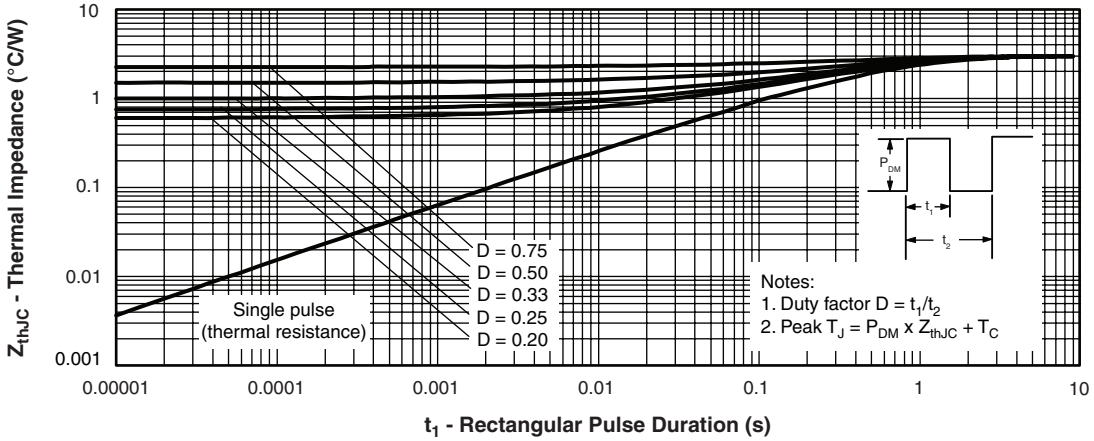


Fig. 4 - Maximum Thermal Impedance Z_{thJC} Characteristics (Per Leg)

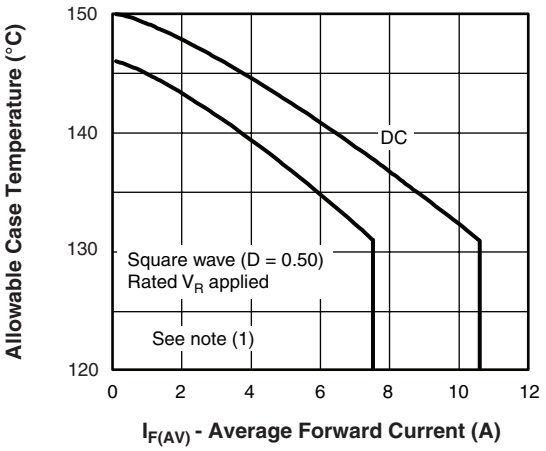


Fig. 5 - Maximum Allowable Case Temperature vs. Average Forward Current

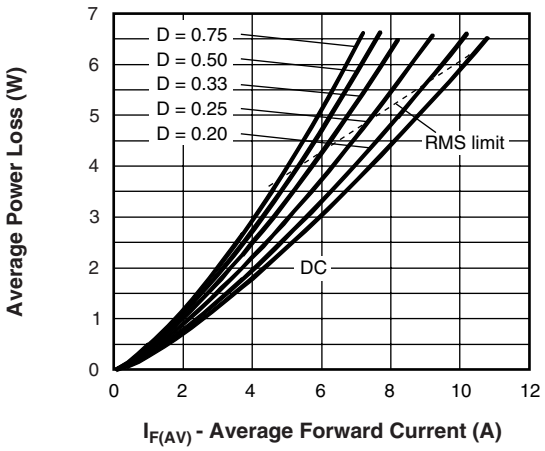


Fig. 6 - Forward Power Loss Characteristics

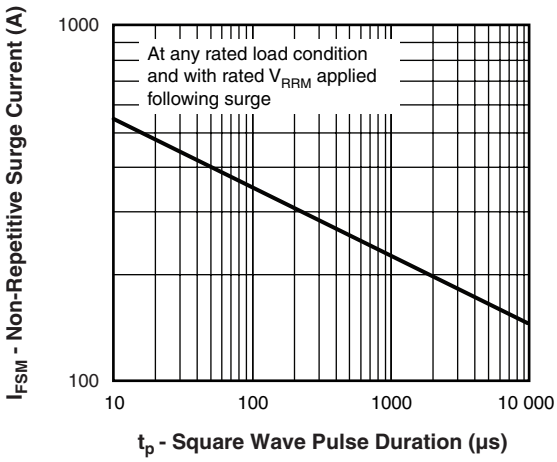
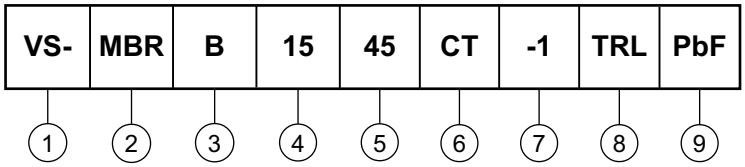


Fig. 7 - Maximum Non-Repetitive Surge Current (Per Leg)

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

Device code



1 - HPP product suffix

2 - Essential part number

3 - • B = D^2PAK 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 = D^2PAK 3 = B
• -1 = TO-262 3 None

8 - • None = Tube (50 pieces)
• TRL = Tape and reel (left oriented - for D^2PAK only)
• TRR = Tape and reel (right oriented - for D^2PAK only)

9 - • PbF = Lead (Pb)-free (for TO-262 and D^2PAK tube)
• P = Lead (Pb)-free (for D^2PAK 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