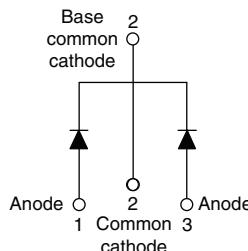


Schottky Rectifier, 2 x 15 A



PRODUCT SUMMARY

$I_{F(AV)}$	2 x 15 A
V_R	35/45 V
I_{RM}	40 mA at 125 °C

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
- Lead (Pb)-free ("PbF" suffix)
- Designed and qualified for industrial level


RoHS*
COMPLIANT

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.

MAJOR RATINGS AND CHARACTERISTICS

SYMBOL	CHARACTERISTICS	VALUES	UNITS
$I_{F(AV)}$	Rectangular waveform (per device)	30	A
V_{RRM}		35/45	V
I_{FRM}	$T_C = 130$ °C (per leg)	30	A
I_{FSM}	$t_p = 5$ µs sine	1060	
V_F	30 Apk, $T_J = 125$ °C	0.73	V
T_J	Range	- 65 to 150	°C

VOLTAGE RATINGS

PARAMETER	SYMBOL	MBR2535CTPbF	MBR2545CTPbF	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	$I_{F(AV)}$	$T_C = 130$ °C, rated V_R	15	A
per device			30	
Peak repetitive forward current per leg	I_{FRM}	Rated V_R , square wave, 20 kHz, $T_C = 130$ °C	30	
Non-repetitive peak surge current	I_{FSM}	5 µs sine or 3 µs rect. pulse	1060	A
		Following any rated load condition and with rated V_{RRM} applied		
		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, $L = 8$ mH	16	mJ
Repetitive avalanche current per leg	I_{AR}	Current decaying linearly to zero in 1 µs Frequency limited by T_J maximum $V_A = 1.5 \times V_R$ typical	2	A

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

MBR25..CTPbF Series

Vishay High Power Products Schottky Rectifier, 2 x 15 A



ELECTRICAL SPECIFICATIONS

PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS	
Maximum forward voltage drop	$V_{FM}^{(1)}$	30 A	$T_J = 25^\circ C$	0.82	V	
			$T_J = 125^\circ C$	0.73		
Maximum instantaneous reverse current	$I_{RM}^{(1)}$	$T_J = 25^\circ C$	Rated DC voltage	0.2	mA	
		$T_J = 125^\circ C$		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	$V_R = 5 V_{DC}$ (test signal range 100 kHz to 1 MHz) $25^\circ C$		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/ 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	$^\circ C$	
Maximum storage temperature range	T_{Stg}			- 65 to 175		
Maximum thermal resistance, junction to case per leg	R_{thJC}	DC operation		1.5	$^\circ C/W$	
Typical thermal resistance, case to heatsink	R_{thCS}			0.50		
Approximate weight				2	g	
				0.07	oz.	
Mounting torque	minimum		Non-lubricated threads	6 (5)	$kgf \cdot cm$ (lbf · in)	
	maximum			12 (10)		
Marking device			Case style TO-220AB	MBR2535CT		
				MBR2545CT		

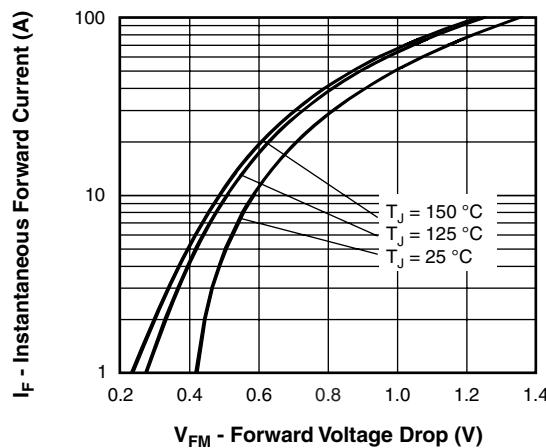


Fig. 1 - Maximum Forward Voltage Drop Characteristics (Per Leg)

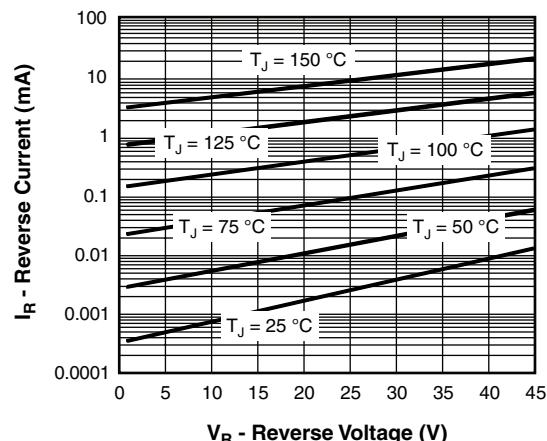


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage (Per Leg)

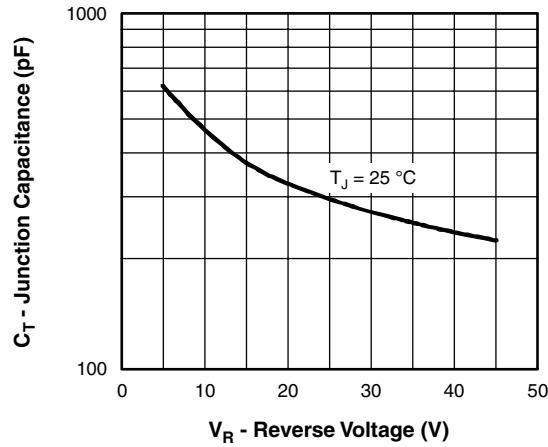


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage (Per Leg)

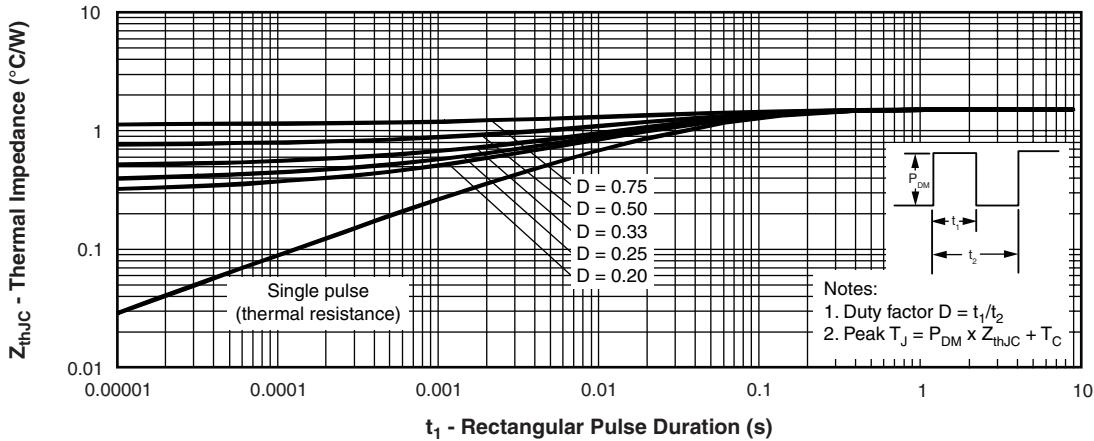


Fig. 4 - Maximum Thermal Impedance Z_{thJC} Characteristics (Per Leg)

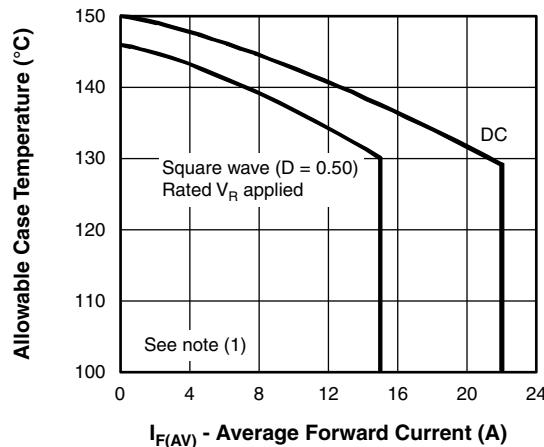


Fig. 5 - Maximum Allowable Case Temperature vs. Average Forward Current (Per Leg)

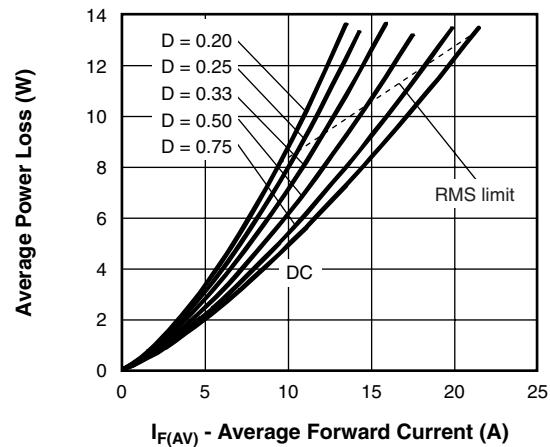


Fig. 6 - Forward Power Loss Characteristics (Per Leg)

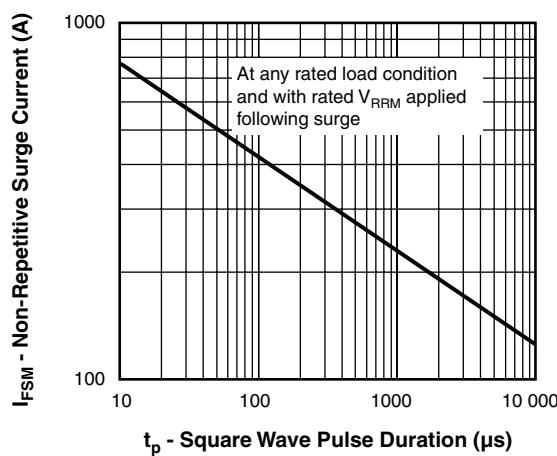


Fig. 7 - Maximum Non-Repetitive Surge Current (Per Leg)

Note

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

ORDERING INFORMATION TABLE

Device code	MBR	25	45	CT	PbF
	1	2	3	4	5
	1	- Schottky MBR series			
	2	- Current rating (30 A)			
	3	- Voltage ratings	35 = 35 V	45 = 45 V	
	4	- CT = Essential part number			
	5	-	• None = Standard production		
			• PbF = Lead (Pb)-free		

LINKS TO RELATED DOCUMENTS	
Dimensions	http://www.vishay.com/doc?95222
Part marking information	http://www.vishay.com/doc?95225

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