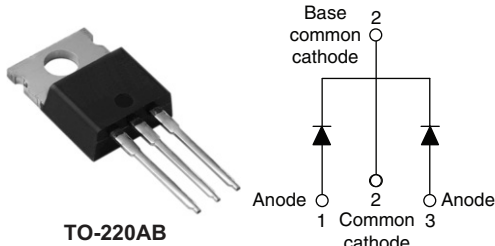


## Schottky Rectifier, 2 x 15 A



### 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

### PRODUCT SUMMARY

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

### 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
$I_{FSM}$	$t_p = 5$ $\mu$ s 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	$I_{F(AV)}$	$T_C = 130$ °C, rated $V_R$	15	A
			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 $\mu$ s sine or 3 $\mu$ s rect. pulse	1060	
		Following any rated load condition and with rated $V_{RRM}$ applied	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 $\mu$ s 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

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	$I_{RM}^{(1)}$	$T_J = 25\text{ }^{\circ}\text{C}$	Rated DC voltage	0.2	mA
		$T_J = 125\text{ }^{\circ}\text{C}$		40	
Threshold voltage	$V_{F(TO)}$	$T_J = T_J \text{ maximum}$		0.355	V
Forward slope resistance	$r_t$			12.3	mΩ
Maximum junction capacitance	$C_T$	$V_R = 5\text{ V}_{DC}$ (test signal range 100 kHz to 1 MHz) 25 °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/μs

### Note

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

THERMAL - MECHANICAL SPECIFICATIONS					
PARAMETER		SYMBOL	TEST CONDITIONS	VALUES	UNITS
Maximum junction temperature range		T <sub>J</sub>		- 65 to 150	°C
Maximum storage temperature range		T <sub>Stg</sub>		- 65 to 175	
Maximum thermal resistance, junction to case per leg		R <sub>thJC</sub>	DC operation	1.5	°C/W
Typical thermal resistance, case to heatsink		R <sub>thCS</sub>	Mounting surface, smooth and greased	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 TO-220AB	MBR2535CT		
			MBR2545CT		

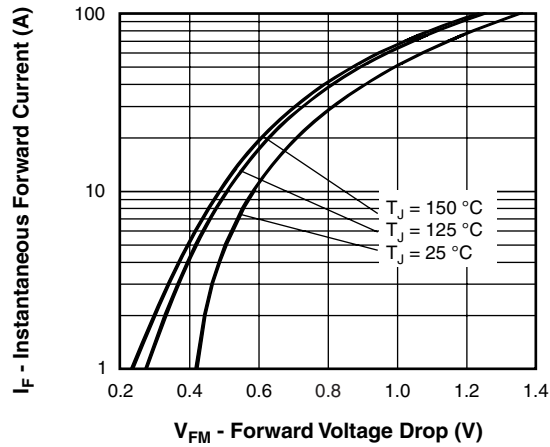


Fig. 1 - Maximum Forward Voltage Drop Characteristics (Per Leg)

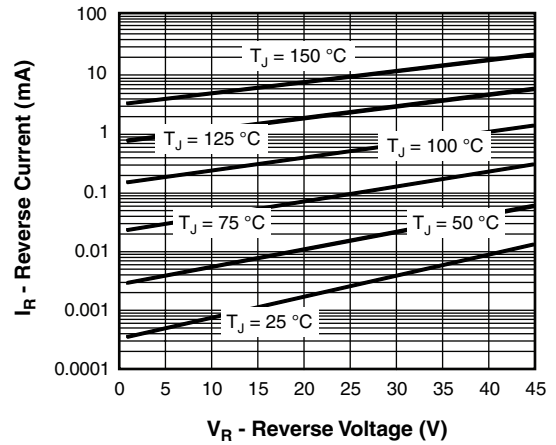


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage (Per Leg)

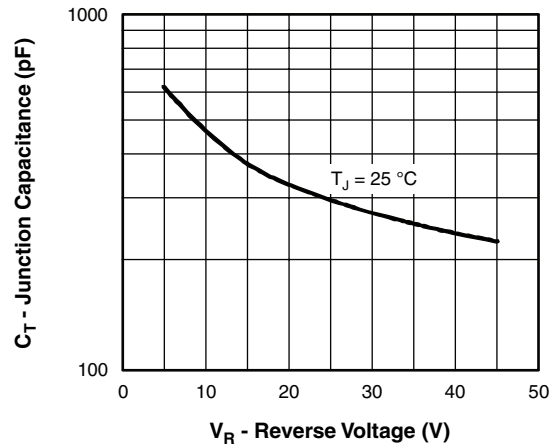


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage (Per Leg)

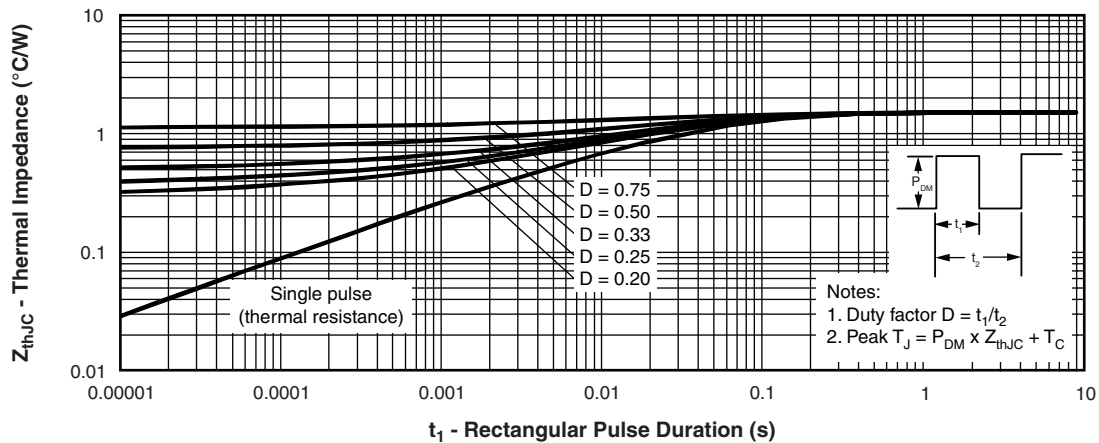


Fig. 4 - Maximum Thermal Impedance  $Z_{thJC}$  Characteristics (Per Leg)

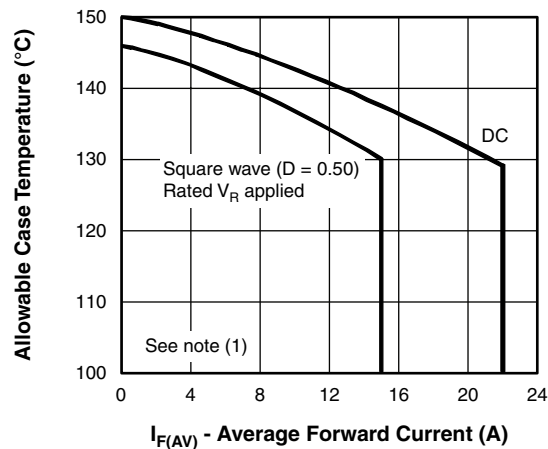


Fig. 5 - Maximum Allowable Case Temperature vs. Average Forward Current (Per Leg)

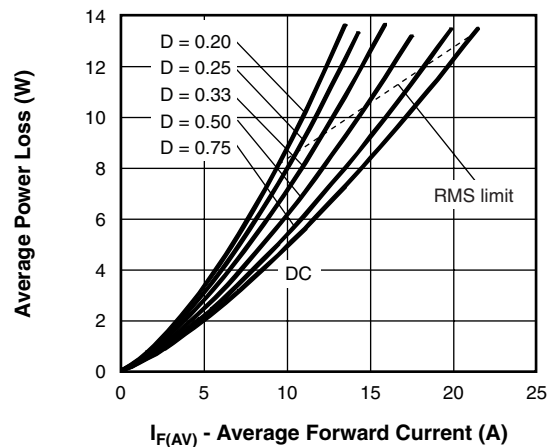


Fig. 6 - Forward Power Loss Characteristics (Per Leg)

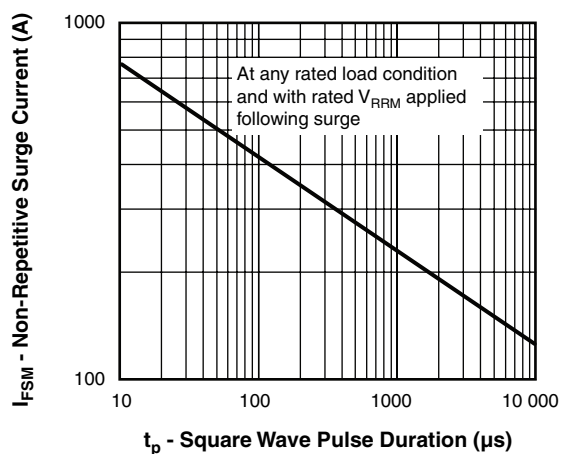


Fig. 7 - Maximum Non-Repetitive Surge Current (Per Leg)

## Note

- (1) Formula used:  $T_C = T_J - (P_d + P_{d_{REV}}) \times R_{thJC}$ ;  
 $P_d$  = 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  $V_R$



## 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			
4	-	CT = Essential part number			
5	-	• None = Standard production			
		• PbF = Lead (Pb)-free			

35 = 35 V  
45 = 45 V

LINKS TO RELATED DOCUMENTS	
Dimensions	<a href="http://www.vishay.com/doc?95222">http://www.vishay.com/doc?95222</a>
Part marking information	<a href="http://www.vishay.com/doc?95225">http://www.vishay.com/doc?95225</a>



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