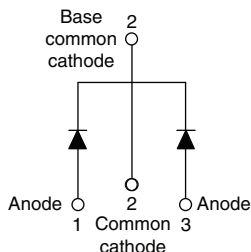


## Schottky Rectifier, 2 x 7.5 A


**TO-220AB**


### 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
- Designed and qualified for industrial level

### DESCRIPTION

The MBR15..CT 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
$V_R$	35/45 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
$I_{FSM}$	$t_p = 5 \mu s$ sine	690	A
$V_F$	7.5 Apk, $T_J = 125 \text{ °C}$	0.57	V
$T_J$	Range	- 65 to 150	°C

### VOLTAGE RATINGS

PARAMETER	SYMBOL	MBR1535CT	MBR1545CT	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	$I_{F(AV)}$	$T_C = 131 \text{ °C}$ , rated $V_R$		7.5	A
				15	
Maximum peak one cycle non-repetitive surge	$I_{FSM}$	5 $\mu s$ sine or 3 $\mu s$ rect. pulse	Following any rated load condition and with rated $V_{RRM}$ applied	690	
		Surge applied at rated load condition half wave single phase 60 Hz		150	
Non-repetitive avalanche energy per leg	$E_{AS}$	$T_J = 25 \text{ °C}$ , $I_{AS} = 2 \text{ A}$ , $L = 3.5 \text{ mH}$		7	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

ELECTRICAL SPECIFICATIONS					
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum forward voltage drop	V <sub>FM</sub> <sup>(1)</sup>	15 A	T <sub>J</sub> = 25 °C	0.84	V
		7.5 A	T <sub>J</sub> = 125 °C	0.57	
		15 A		0.72	
Maximum instantaneous reverse current	I <sub>RM</sub> <sup>(1)</sup>	T <sub>J</sub> = 25 °C	Rated DC voltage	0.1	mA
		T <sub>J</sub> = 125 °C		15	
Maximum junction capacitance	C <sub>T</sub>	V <sub>R</sub> = 5 V <sub>DC</sub> (test signal range 100 kHz to 1 MHz) 25 °C		400	pF
Typical series inductance	L <sub>S</sub>	Measured from top of terminal to mounting plane		8.0	nH
Maximum voltage rate of change	dV/dt	Rated V <sub>R</sub>		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	3.0	°C/W
Typical thermal resistance, case to heatsink		R <sub>thCS</sub>	Mounting surface, smooth and greased	0.50	
Maximum thermal resistance, junction to ambient		R <sub>thJA</sub>	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 TO-220AB	MBR1535CT	
				MBR1545CT	

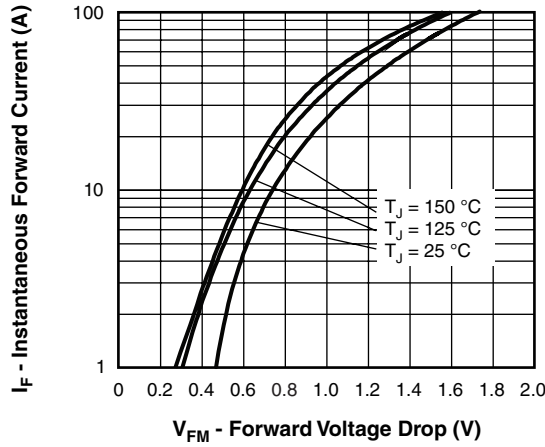


Fig. 1 - Maximum Forward Voltage Drop Characteristics (Per Leg)

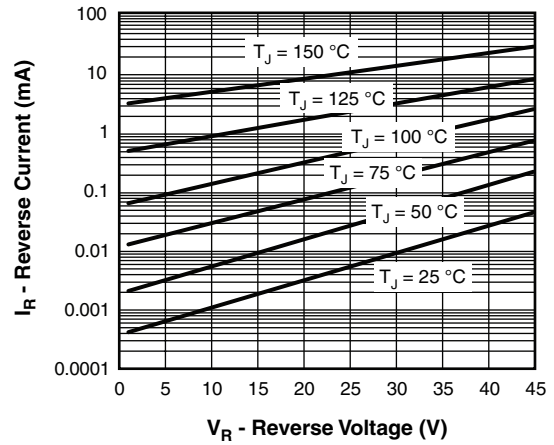


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage (Per Leg)

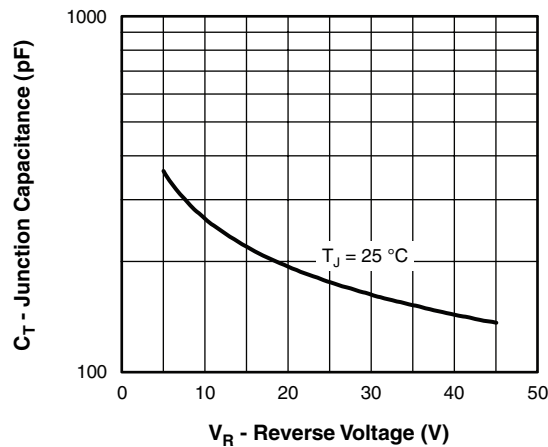


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage (Per Leg)

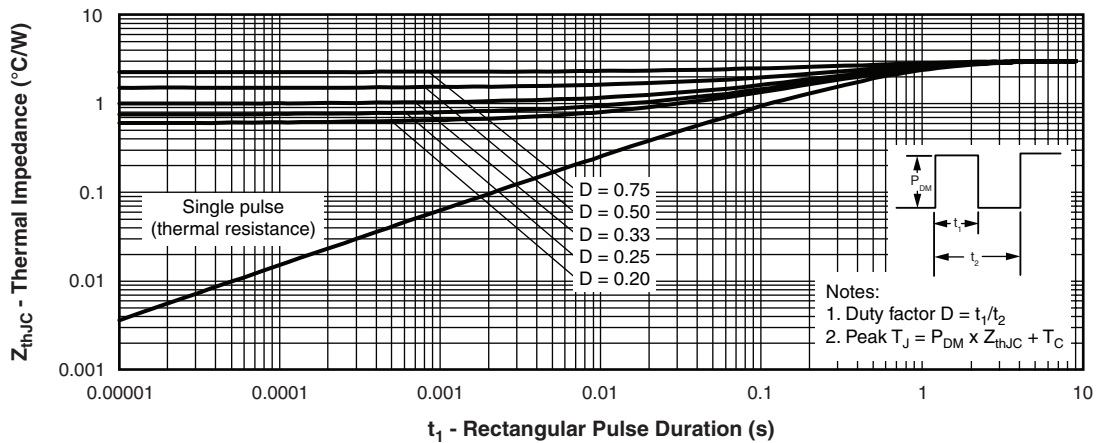


Fig. 4 - Maximum Thermal Impedance  $Z_{thJC}$  Characteristics (Per Leg)

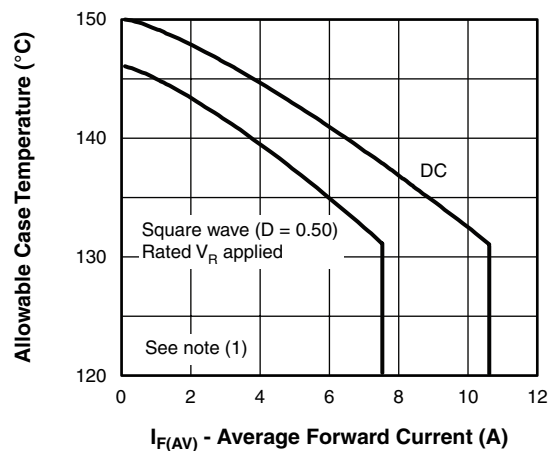


Fig. 5 - Maximum Allowable Case Temperature vs. Average Forward Current

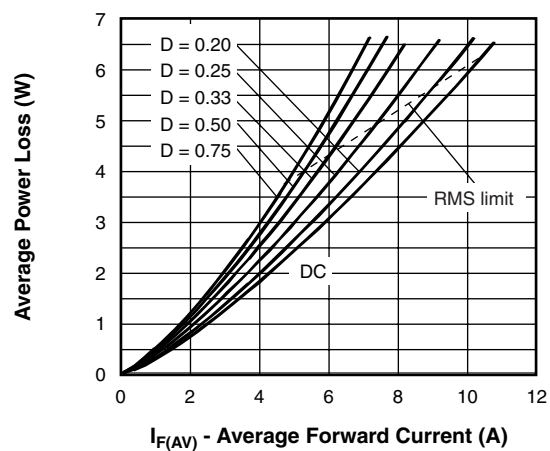


Fig. 6 - Forward Power Loss Characteristics

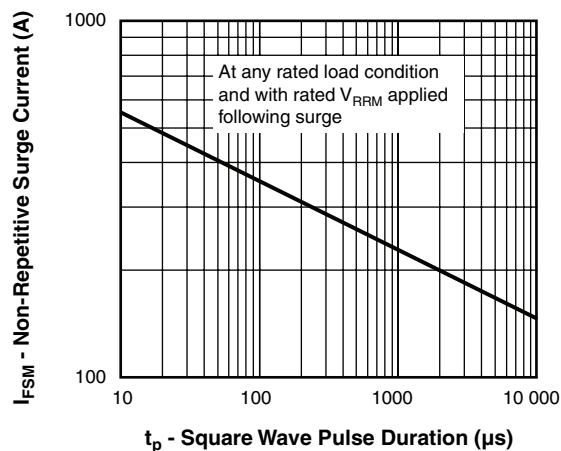


Fig. 7 - Maximum Non-Repetitive Surge Current (Per Leg)

## Note

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



## ORDERING INFORMATION TABLE

Device code	MBR	15	45	CT	-
	1	2	3	4	5
1	- Schottky MBR series				
2	- Current rating (15 = 15 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>
SPICE model	<a href="http://www.vishay.com/doc?95294">http://www.vishay.com/doc?95294</a>



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