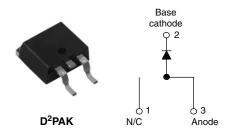


Vishay High Power Products

Schottky Rectifier, 7.5 A



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

FEATURES

- 150 °C T_J operation
- · High frequency operation
- · Low forward voltage drop



RoHS*

- 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 Q101 level

DESCRIPTION

The MBRB7.. Schottky rectifier series 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	7.5	Α		
V _{RRM}		35/45	V		
I _{FSM}	t _p = 5 μs sine	690	Α		
V _F	7.5 Apk, T _J = 125 °C	0.57	V		
T _J	Range	- 65 to 150	°C		

VOLTAGE RATINGS				
PARAMETER	SYMBOL	MBRB735PbF	MBRB745PbF	UNITS
Maximum DC reverse voltage	V_R	35	45	V
Maximum working peak reverse voltage	V_{RWM}	35	45	V

ABSOLUTE MAXIMUM RATINGS					
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum average forward current	I _{F(AV)}	T _C = 131 °C, rated V _R		7.5	
Non-repetitive peak surge current	I _{FSM}	5 μs sine or 3 μs rect. pulse	Following any rated load condition and with rated V _{RRM} applied	690	A
		Surge applied at rated load condition halfwave single phase 60 Hz		150	
Non-repetitive avalanche energy	E _{AS}	$T_J = 25$ °C, $I_{AS} = 2$ A, $L = 3.5$ mH		7	mJ
Repetitive avalanche current	I _{AR}	Current decaying linearly to zero in 1 μ s Frequency limited by T_J maximum $V_A = 1.5 \text{ x } V_R$ typical		2	А

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

MBRB7..PbF

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ELECTRICAL SPECIFICATIONS					
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum forward voltage drop	V _{FM} ⁽¹⁾	15 A	T _J = 25 °C	0.84	
		7.5 A	- T _J = 125 °C	0.57	V
		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	nΗ
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 temperat	ure range	TJ		- 65 to 150	°C
Maximum storage temperate	ure range	T _{Stg}		- 65 to 175	
Maximum thermal resistance junction to case	e,	R _{thJC}	DC operation	3.0	°C/W
Typical thermal resistance, case to heatsink		R _{thCS}	Mounting surface, smooth and greased	0.50	· C/vv
Annewimete weight				2	g
Approximate weight			0.07	OZ.	
Mounting torque ——	minimum			6 (5)	kgf · cm
	maximum			12 (10)	(lbf · in)
Marking device			Case style D ² PAK	MBR	B745



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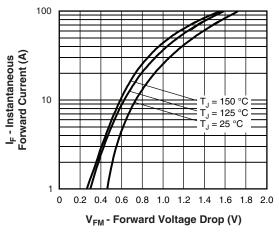


Fig. 1 - Maximum Forward Voltage Drop Characteristics (Per Leg)

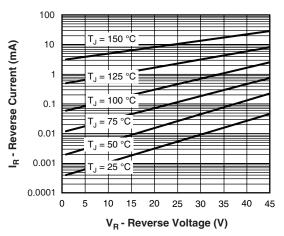


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage (Per Leg)

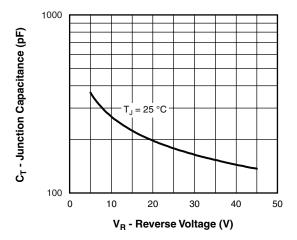


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage (Per Leg)

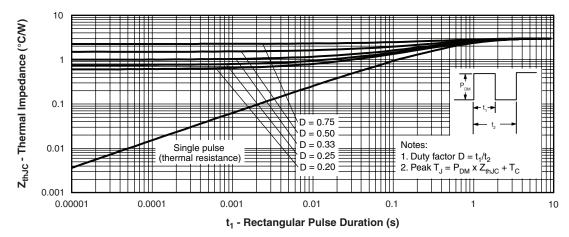


Fig. 4 - Maximum Thermal Impedance Z_{thJC} Characteristics (Per Leg)

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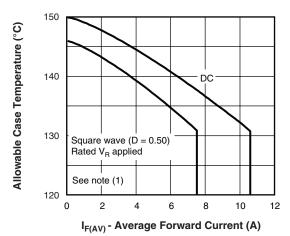


Fig. 5 - Maximum Allowable Case Temperature vs.
Average Forward Current

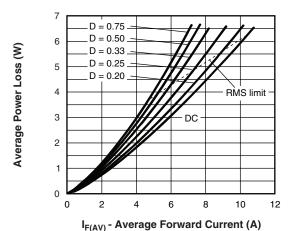


Fig. 6 - Forward Power Loss Characteristics

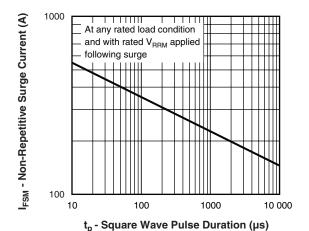


Fig. 7 - Maximum Non-Repetitive Surge Current (Per Leg)

Note

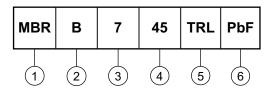
 $\begin{array}{l} \text{(1)} \ \ \text{Formula used:} \ T_C = T_J - (Pd + Pd_{REV}) \ x \ R_{thJC}; \\ Pd = Forward \ power \ loss = I_{F(AV)} \ x \ V_{FM} \ at \ (I_{F(AV)}/D) \ (see \ fig. \ 6); \\ Pd_{REV} = Inverse \ power \ loss = V_{R1} \ x \ I_R \ (1 - D); \ I_R \ at \ V_{R1} = Rated \ V_R \end{array}$



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ORDERING INFORMATION TABLE

Device code



1 - Essential part number

B = Surface mount

None = TO-220

3 - Current rating (7.5 A)

4 - Voltage code = V_{RRM} - 35 = 35 V 45 = 45 V

• None = Tube (50 pieces)

• TRL = Tape and reel (left oriented - for D²PAK only)

• TRR = Tape and reel (right oriented - for D²PAK only)

6 - • None = Standard production

• PbF = Lead (Pb)-free

LINKS TO RELATED DOCUMENTS				
Dimensions http://www.vishay.com/doc?95046				
Part marking information	http://www.vishay.com/doc?95054			
Packaging information	http://www.vishay.com/doc?95032			
SPICE model	http://www.vishay.com/doc?95298			

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Vishay

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