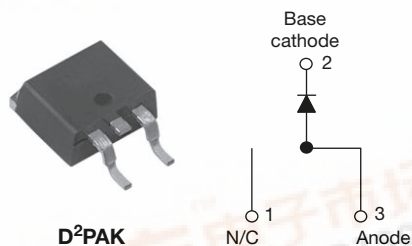


Schottky Rectifier, 16 A



FEATURES

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

PRODUCT SUMMARY

$I_{F(AV)}$	16 A
V_R	35 V/45 V
I_{RM}	40 mA at 125 °C

DESCRIPTION

This VS-MBRB16... 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	16	A
V_{RRM}		35/45	V
I_{FSM}	$t_p = 5 \mu s$ sine	1800	A
V_F	16 Apk, $T_J = 125 \text{ }^\circ\text{C}$	0.57	V
T_J		- 65 to 150	$^\circ\text{C}$

VOLTAGE RATINGS

PARAMETER	SYMBOL	VS-MBRB1635PbF	VS-MBRB1645PbF	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	$I_{F(AV)}$	$T_C = 134 \text{ }^\circ\text{C}$, rated V_R		16	A
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	1800	
		Surge applied at rated load condition halfwave single phase 60 Hz		150	
Non-repetitive avalanche energy	E_{AS}	$T_J = 25 \text{ }^\circ\text{C}$, $I_{AS} = 3.6 \text{ A}$, $L = 3.7 \text{ mH}$		24	mJ
Repetitive avalanche current	I_{AR}	Current decaying linearly to zero in 1 μs Frequency limited by T_J maximum $V_A = 1.5 \times V_R$ typical		3.6	A

VS-MBRB1635PbF, VS-MBRB1645PbF



Vishay Semiconductor Solutions Group, 16 A
www.vishay.com VS-MBRB1635PbF, VS-MBRB1645PbF 快应用

ELECTRICAL SPECIFICATIONS					
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum forward voltage drop	$V_{\text{FM}}^{(1)}$	16 A	$T_{\text{J}} = 25\text{ }^{\circ}\text{C}$	0.63	V
			$T_{\text{J}} = 125\text{ }^{\circ}\text{C}$	0.57	
Maximum instantaneous reverse current	$I_{\text{RM}}^{(1)}$	$T_{\text{J}} = 25\text{ }^{\circ}\text{C}$	Rated DC voltage	0.2	mA
		$T_{\text{J}} = 125\text{ }^{\circ}\text{C}$		40	
Maximum junction capacitance	C_{T}	$V_{\text{R}} = 5\text{ V}_{\text{DC}}$ (test signal range 100 kHz to 1 MHz), $25\text{ }^{\circ}\text{C}$		1400	pF
Typical series inductance	L_{S}	Measured lead 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	R _{thJC}	DC operation	1.50	°C/W
Typical thermal resistance, case to heatsink	R _{thCS}	Mounting surface, smooth and greased	0.50	
Approximate weight			2	g
			0.07	oz.
Mounting torque	minimum		6 (5)	kgf · cm (lbf · in)
	maximum		12 (10)	
Marking device		Case style D ² PAK	MBRB1645	

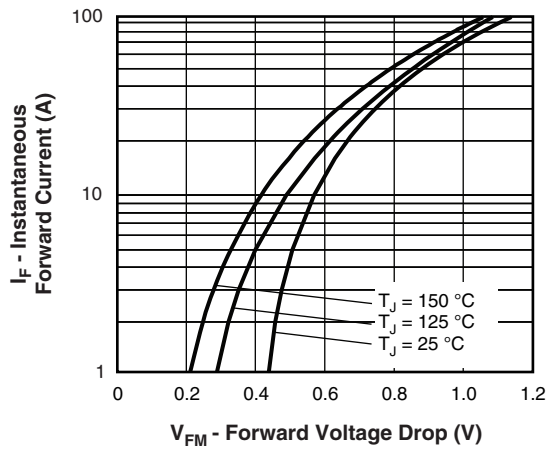


Fig. 1 - Maximum Forward Voltage Drop Characteristics

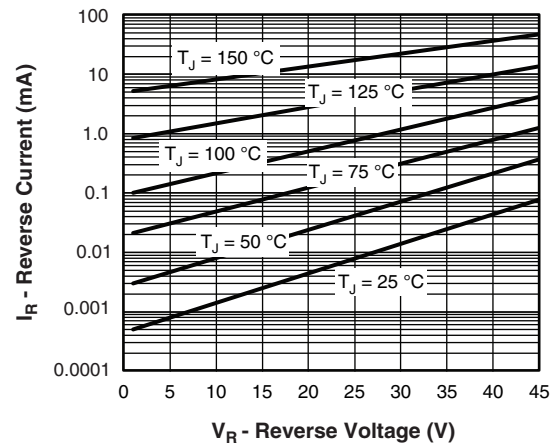


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage

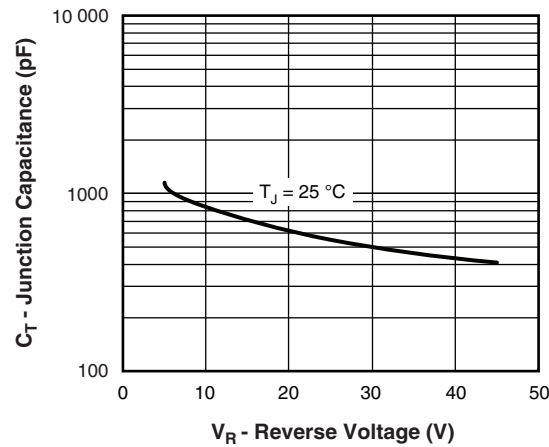


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage

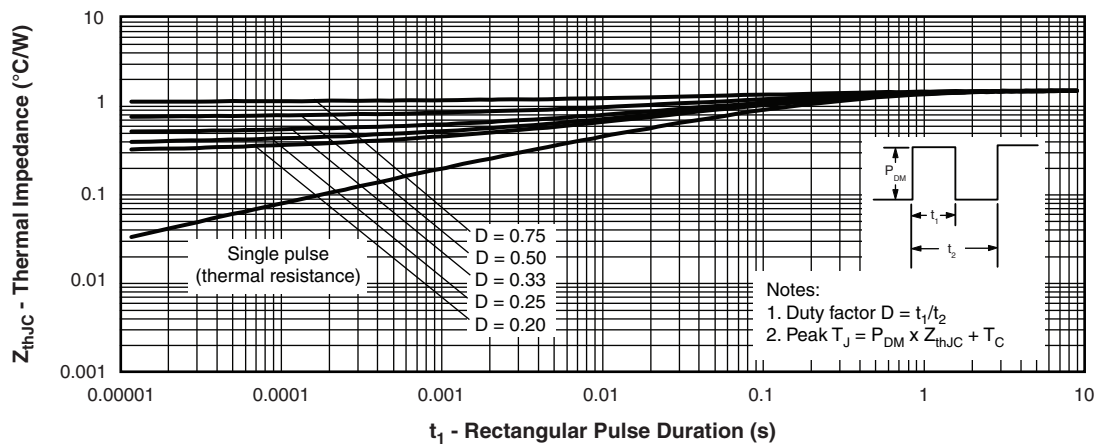


Fig. 4 - Maximum Thermal Impedance Z_{thJC} Characteristics

VS-MBRB1635PbF, VS-MBRB1645PbF



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Schottky Rectifier, 16 A

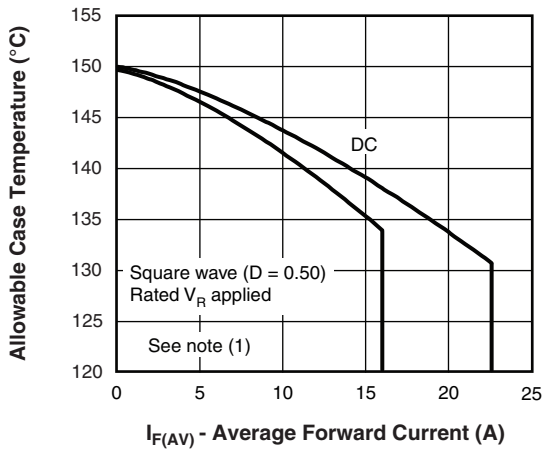


Fig. 5 - Maximum Allowable Case Temperature vs. Average Forward Current

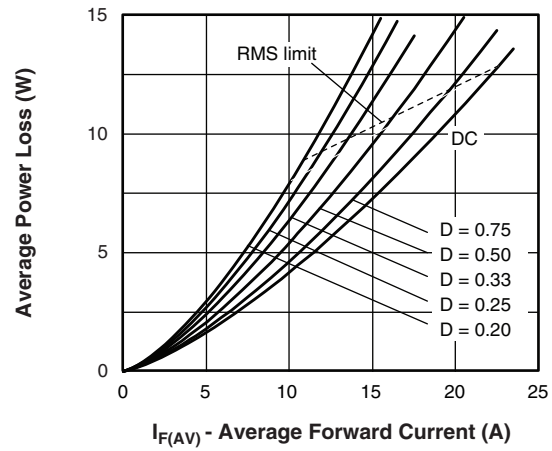


Fig. 6 - Forward Power Loss Characteristics

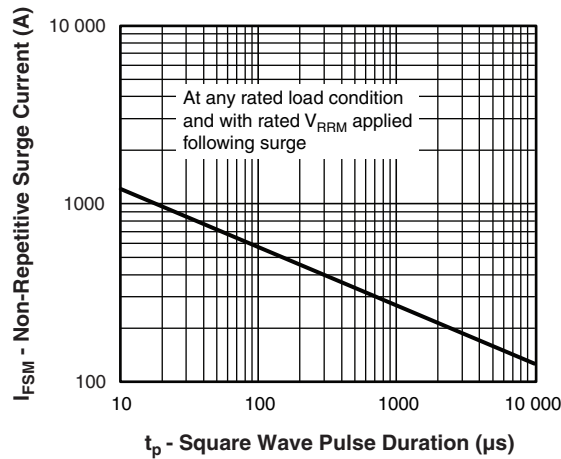


Fig. 7 - Maximum Non-Repetitive Surge Current (Per Leg)

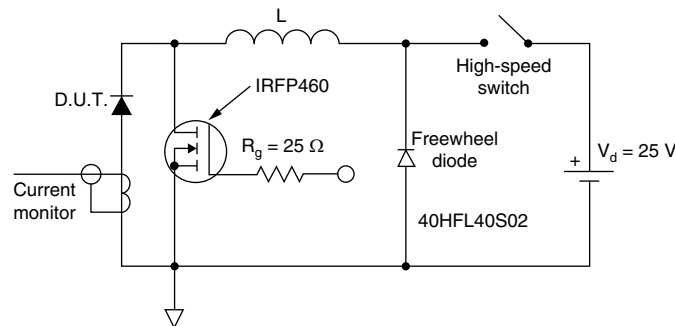


Fig. 8 - Unclamped Inductive Test Circuit

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 applied

ORDERING INFORMATION TABLE

Device code	VS-	MBR	B	16	45	TRL	PbF
	1	2	3	4	5	6	7
1	-	HPP product suffix					
2	-	Essential part number					
3	-	B = Surface mount					
4	-	Current rating (16 = 16 A)					
5	-	Voltage code = V_{RRM}					
6	-	- None = Tube (50 pieces) - TRL = Tape and reel (left oriented) - TRR = Tape and reel (right oriented)					
7	-	PbF = Lead (Pb)-free					

35 = 35 V
45 = 45 V

LINKS TO RELATED DOCUMENTS	
Dimensions	www.vishay.com/doc?95046
Part marking information	www.vishay.com/doc?95054
Packaging information	www.vishay.com/doc?95032
SPICE model	www.vishay.com/doc?95407

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