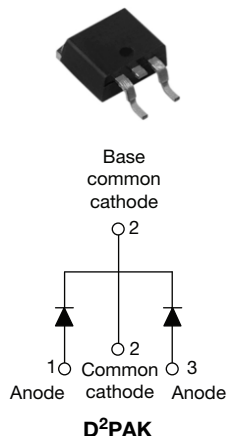
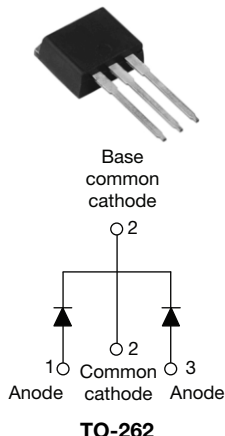


Schottky Rectifier, 2 x 10 A

VS-MBRB20...CTGPbF



VS-MBR20...CTG-1PbF



FEATURES

- 150 °C T_J operation
- Center tap D²PAK and TO-262 packages
- Low forward voltage drop
- High purity, high temperature epoxy encapsulation for enhanced mechanical strength and moisture resistance
- High frequency operation
- Guard ring 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)}	2 x 10 A
V _R	80 V to 100 V

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 _{FRM}	T _C = 133 °C (per leg)	20	A
V _{RRM}		80 to 100	V
I _{FSM}	t _p = 5 μs sine	850	A
V _F	10 Apk, T _J = 125 °C	0.70	V
T _J	Range	- 65 to 150	°C

VOLTAGE RATINGS

PARAMETER	SYMBOL	VS-MBRB2080CTGPbF VS-MBR2080CTG-1PbF	VS-MBRB2090CTGPbF VS-MBR2090CTG-1PbF	VS-MBRB20100CTGPbF VS-MBR20100CTG-1PbF	UNITS
Maximum DC reverse voltage	V _R	80	90	100	V
Maximum working peak reverse voltage	V _{RWM}				

VS-MBRB20...CTGPbF, VS-MBR20...CTG-1PbF Series



Vishay High Power Products Schottky Rectifier, 2 x 10 A

ABSOLUTE MAXIMUM RATINGS				
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES
Maximum average forward current per leg per device	$I_{F(AV)}$	$T_C = 133\text{ }^{\circ}\text{C}$, rated V_R		10
				20
Peak repetitive forward current per leg	I_{FRM}	Rated V_R , square wave, 20 kHz $T_C = 133\text{ }^{\circ}\text{C}$		20
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	850
		Surge applied at rated load conditions half wave, single phase, 60 Hz		150
Peak repetitive reverse surge current	I_{RRM}	2.0 μs , 1.0 kHz		0.5
Non-repetitive avalanche energy per leg	E_{AS}	$T_J = 25\text{ }^{\circ}\text{C}$, $I_{AS} = 2\text{ A}$, $L = 12\text{ mH}$		24

ELECTRICAL SPECIFICATIONS					
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum forward voltage drop	$V_{FM}^{(1)}$	10 A	$T_J = 25\text{ }^{\circ}\text{C}$	0.80	V
		20 A		0.95	
		10 A	$T_J = 125\text{ }^{\circ}\text{C}$	0.70	
		20 A		0.85	
Maximum instantaneous reverse current	$I_{RM}^{(1)}$	$T_J = 25\text{ }^{\circ}\text{C}$	$V_R = \text{Rated } V_R$	0.10	mA
		$T_J = 125\text{ }^{\circ}\text{C}$		6	
Threshold voltage	$V_{F(TO)}$	$T_J = T_J \text{ maximum}$		0.433	V
Forward slope resistance	r_t			15.8	$\text{m}\Omega$
Maximum junction capacitance	C_T	$V_R = 5\text{ V}_{DC}$ (test signal range 100 kHz to 1 MHz), $25\text{ }^{\circ}\text{C}$		400	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	$\text{V}/\mu\text{s}$

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 per leg	R _{thJC}	DC operation	2.0	°C/W
Maximum thermal resistance junction to ambient	R _{thJA}		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 D ² PAK	MBRB2080CTG	
			MBRB2090CTG	
			MBRB20100CTG	
		Case style TO-262	MBR2080CTG-1	
			MBR2090CTG-1	
			MBR20100CTG-1	



VS-MBRB20...CTGPbF, VS-MBR20...CTG-1PbF Series

Schottky Rectifier, 2 x 10 A Vishay High Power Products

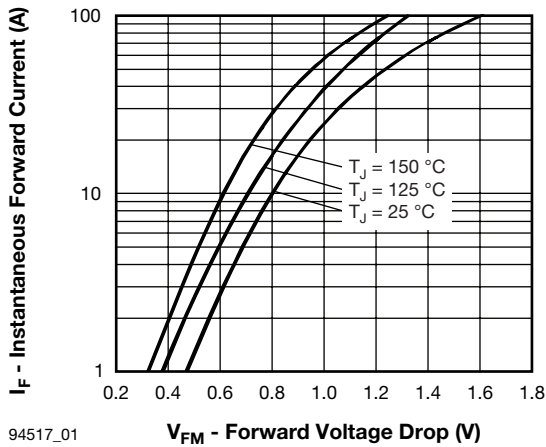


Fig. 1 - Maximum Forward Voltage Drop Characteristics (Per Leg)

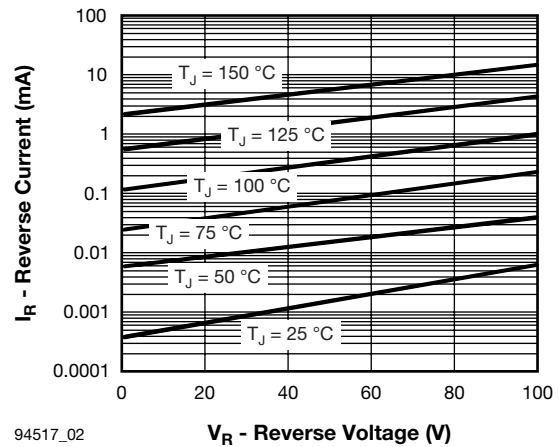


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage (Per Leg)

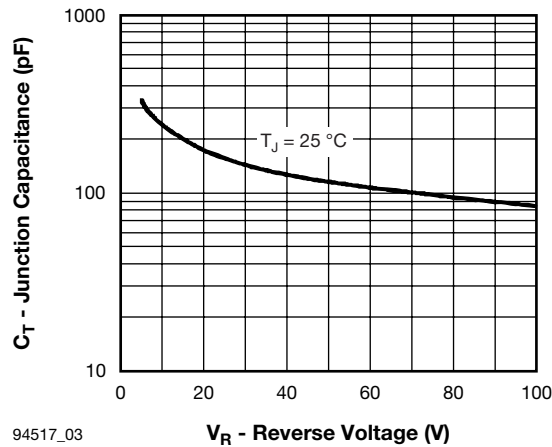


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage (Per Leg)

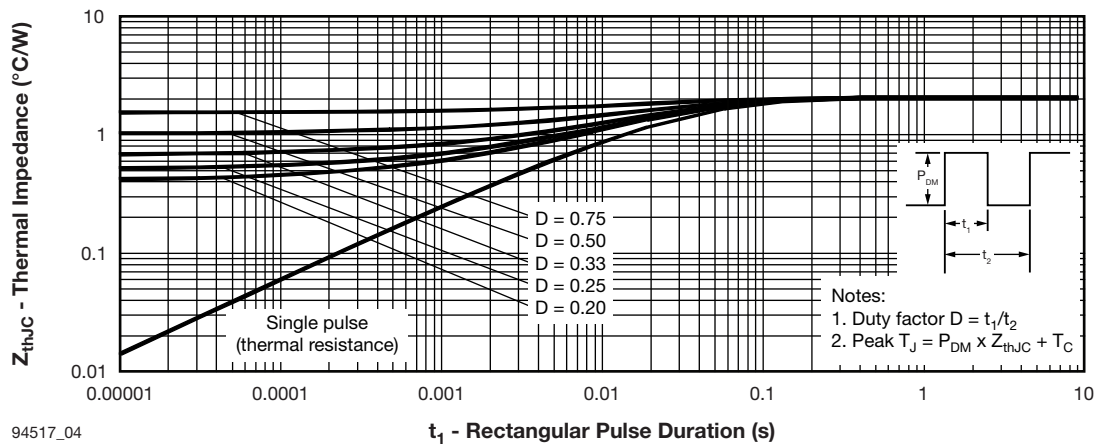


Fig. 4 - Maximum Thermal Impedance Z_{thJC} Characteristics (Per Leg)

VS-MBRB20...CTGPbF, VS-MBR20...CTG-1PbF Series

Vishay High Power Products Schottky Rectifier, 2 x 10 A

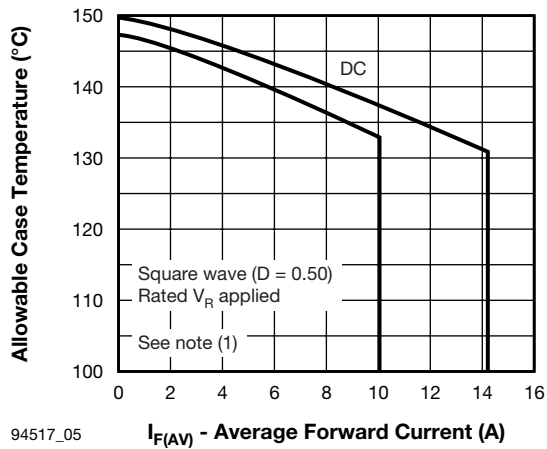


Fig. 5 - Maximum Allowable Case Temperature vs. Average Forward Current (Per Leg)

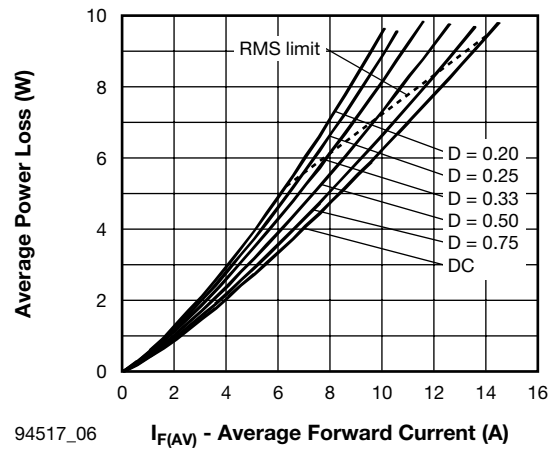


Fig. 6 - Forward Power Loss Characteristics (Per Leg)

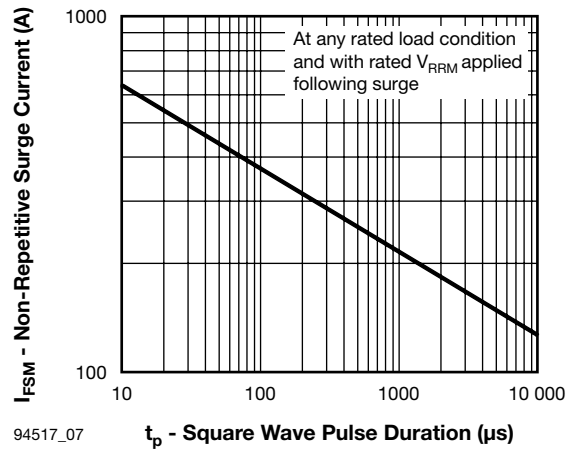


Fig. 7 - Maximum Non-Repetitive Surge Current (Per Leg)

Note

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



VS-MBRB20...CTGPbF, VS-MBR20...CTG-1PbF Series

Schottky Rectifier, 2 x 10 A Vishay High Power Products

ORDERING INFORMATION TABLE

Device code	VS-	MBR	B	20	100	CT	G	-1	TL	PbF
	1	2	3	4	5	6	7	8	9	10

- | | | | | | | |
|-------------|---|--|---|-----------|-----------|-------------|
| 1 | - | HPP product suffix | | | | |
| 2 | - | Essential part number | | | | |
| 3 | - | • B = D ² PAK
• None = TO-262 | | | | |
| 4 | - | Current rating (20 = 20 A) | <table border="1"><tr><td>80 = 80 V</td></tr><tr><td>90 = 90 V</td></tr><tr><td>100 = 100 V</td></tr></table> | 80 = 80 V | 90 = 90 V | 100 = 100 V |
| 80 = 80 V | | | | | | |
| 90 = 90 V | | | | | | |
| 100 = 100 V | | | | | | |
| 5 | - | Voltage ratings | | | | |
| 6 | - | CT = Essential part number | | | | |
| 7 | - | G = Schottky generation | | | | |
| 8 | - | • None = D ² PAK
• -1 = TO-262 | | | | |
| 9 | - | • None = Tube (50 pieces)
• TL = Tape and reel (left oriented - for D ² PAK only)
• TR = Tape and reel (right oriented - for D ² PAK only) | | | | |
| 10 | - | • PbF = Lead (Pb)-free (for D ² PAK tube)
• P = Lead (Pb)-free (for D ² PAK TL/TR, and TO-262) | | | | |

LINKS TO RELATED DOCUMENTS	
Dimensions	www.vishay.com/doc?95014
Part marking information	www.vishay.com/doc?95008
Packaging information	www.vishay.com/doc?95032

D²PAK, TO-262

DIMENSIONS FOR D²PAK in millimeters and inches

Conforms to JEDEC outline D²PAK (SMD-220)



SYMBOL	MILLIMETERS		INCHES		NOTES
	MIN.	MAX.	MIN.	MAX.	
A	4.06	4.83	0.160	0.190	
A1	0.00	0.254	0.000	0.010	
b	0.51	0.99	0.020	0.039	
b1	0.51	0.89	0.020	0.035	4
b2	1.14	1.78	0.045	0.070	
b3	1.14	1.73	0.045	0.068	4
c	0.38	0.74	0.015	0.029	
c1	0.38	0.58	0.015	0.023	4
c2	1.14	1.65	0.045	0.065	
D	8.51	9.65	0.335	0.380	2

SYMBOL	MILLIMETERS		INCHES		NOTES
	MIN.	MAX.	MIN.	MAX.	
D1	6.86	8.00	0.270	0.315	3
E	9.65	10.67	0.380	0.420	2, 3
E1	7.90	8.80	0.311	0.346	3
e	2.54 BSC		0.100 BSC		
H	14.61	15.88	0.575	0.625	
L	1.78	2.79	0.070	0.110	
L1	-	1.65	-	0.066	3
L2	1.27	1.78	0.050	0.070	
L3	0.25 BSC		0.010 BSC		
L4	4.78	5.28	0.188	0.208	

Notes

- (1) Dimensioning and tolerancing per ASME Y14.5 M-1994
- (2) Dimension D and E do not include mold flash. Mold flash shall not exceed 0.127 mm (0.005") per side. These dimensions are measured at the outmost extremes of the plastic body
- (3) Thermal pad contour optional within dimension E, L1, D1 and E1
- (4) Dimension b1 and c1 apply to base metal only
- (5) Datum A and B to be determined at datum plane H
- (6) Controlling dimension: inch

- (7) Outline conforms to JEDEC outline TO-263AB

DIMENSIONS FOR TO-262 in millimeters and inches



SYMBOL	MILLIMETERS		INCHES		NOTES
	MIN.	MAX.	MIN.	MAX.	
A	4.06	4.83	0.160	0.190	
A1	2.03	3.02	0.080	0.119	
b	0.51	0.99	0.020	0.039	
b1	0.51	0.89	0.020	0.035	4
b2	1.14	1.78	0.045	0.070	
b3	1.14	1.73	0.045	0.068	4
c	0.38	0.74	0.015	0.029	
c1	0.38	0.58	0.015	0.023	4
c2	1.14	1.65	0.045	0.065	
D	8.51	9.65	0.335	0.380	2
D1	6.86	8.00	0.270	0.315	3
E	9.65	10.67	0.380	0.420	2, 3
E1	7.90	8.80	0.311	0.346	3
e	2.54 BSC		0.100 BSC		
L	13.46	14.10	0.530	0.555	
L1	-	1.65	-	0.065	3
L2	3.56	3.71	0.140	0.146	

Notes

- (1) Dimensioning and tolerancing as per ASME Y14.5M-1994
- (2) Dimension D and E do not include mold flash. Mold flash shall not exceed 0.127 mm (0.005") per side. These dimensions are measured at the outmost extremes of the plastic body
- (3) Thermal pad contour optional within dimension E, L1, D1 and E1
- (4) Dimension b1 and c1 apply to base metal only
- (5) Controlling dimension: inches

- (6) Outline conform to JEDEC TO-262 except A1 (maximum), b (minimum) and D1 (minimum) where dimensions derived the actual package outline



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