

Vishay High Power Products

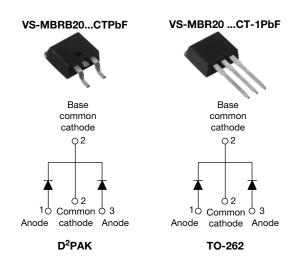
RoHS

COMPLIANT

HALOGEN

FREE

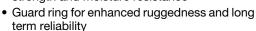
Schottky Rectifier, 2 x 10 A

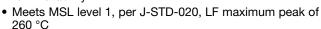


PRODUCT SUMMARY				
I _{F(AV)}	2 x 10 A			
V_R	80 V to 100 V			

FEATURES

- 150 °C T_J operation
- Low forward voltage drop
- High frequency operation
- Center tap D²PAK and TO-262 packages
- High purity, high temperature epoxy encapsulation for enhanced mechanical strength and moisture resistance





- Halogen-free according to IEC 61249-2-21 definition
- Compliant to RoHS directive 2002/95/EC
- AEC-Q101 qualified

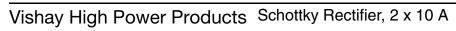
DESCRIPTION

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)	20	Δ.			
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			
TJ	Range	- 65 to 150	°C			

VOLTAGE RATINGS						
PARAMETER SYMBOL VS-MBRB2080CTPbF VS-MBRB2090CTPbF VS-MBR20100CTPbF VS-MBR2090CT-1PbF VS-MBR20100CT-1PbF VS-						
Maximum DC reverse voltage	V_{R}	80	90	100	V	
Maximum working peak reverse voltage	V_{RWM}	00	90	100	V	

ABSOLUTE MAXIMUM RATINGS					
PARAMETER	SYMBOL	BOL TEST CONDITIONS		VALUES	UNITS
Maximum average per leg		T _ 122 °C rotos	T _C = 133 °C, rated V _R		
forward current per device	I _{F(AV)}	$T_C = 133$ C, rated			
Peak repetitive forward current per leg	I _{FRM}	I _{FRM} Rated V _R , square wave, 20 kHz, T _C = 133 °C		20	
Non repetitive peak ourge ourrent		5 µs sine or 3 µs rect. pulse	Following any rated load ondition and with rated V _{RRM} applied	850	Α
Non-repetitive peak surge current	I _{FSM}	Surge applied at r single phase, 60 H	ated load conditions halfwave, dz	150	
Peak repetitive reverse surge current	I _{RRM}	2.0 μs, 1.0 kHz		0.5	
Non-repetitive avalanche energy per leg	E _{AS}	$T_{J} = 25 ^{\circ}\text{C}, I_{AS} = 2$? A, L = 12 mH	24	mJ





ELECTRICAL SPECIFICATIONS					
PARAMETER	SYMBOL	TEST CO	ONDITIONS	VALUES	UNITS
		10 A	T _{.1} = 25 °C	0.80	V
Maximum forward voltage drop	V _{FM} ⁽¹⁾	20 A	11 = 23 0	0.95	
Maximum forward voltage drop	VFM (7	10 A	T _{.1} = 125 °C	0.70	
		20 A	- IJ = 125 C	0.85	
Maximum instantaneous	I _{RM} ⁽¹⁾	T _J = 25 °C	Data d DO valta as	0.10	- mA
reverse current		T _J = 125 °C	Rated DC voltage	6	
Threshold voltage	V _{F(TO)}	T _J = T _J maximum		0.433	V
Forward slope resistance	r _t	ıj=ıjınaxımum		15.8	mΩ
Maximum junction capacitance	C _T	V _R = 5 V _{DC} (test signal ra	nge 100 kHz to 1 MHz), 25 °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	V/µs

Note

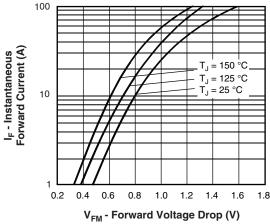
 $^{^{(1)}\,}$ Pulse width < 300 $\mu s,$ duty cycle < 2 %

THERMAL - MECHANICAL SPECIFICATIONS					
PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS	
Maximum junction temperature range	TJ		- 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		
Typical thermal resistance, case to heatsink	R _{thCS}	Mounting surface, smooth and greased	0.50	°C/W	
Maximum thermal resistance, junction to ambient	R _{thJA}	DC operation	50		
Approximate weight			2	g	
Approximate weight			0.07	OZ.	
Mounting torque minimum		Non-lubricated threads	6 (5)	kgf · cm	
Mounting torque maximum		Non-lubricated trireads	12 (10)	(lbf \cdot in)	
Marking daving		Case style D ² PAK	MBRB2	0100CT	
Marking device		Case style TO-262	MBR201	00CT-1	





Schottky Rectifier, 2 x 10 A Vishay High Power Products



V_{FM} - Forward Voltage Drop (V)
Fig. 1 - Maximum Forward Voltage Drop Characteristics (Per Leg)

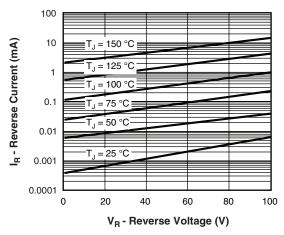


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage (Per Leg)

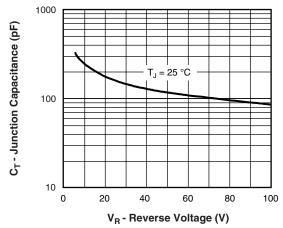


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage (Per Leg)

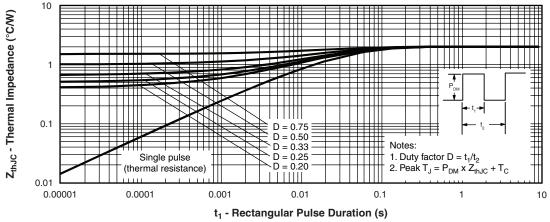


Fig. 4 - Maximum Thermal Impedance Z_{thJC} Characteristics (Per Leg)

Vishay High Power Products Schottky Rectifier, 2 x 10 A



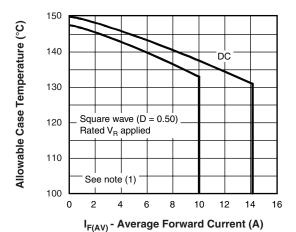


Fig. 5 - Maximum Allowable Case Temperature vs. Average Forward Current (Per Leg)

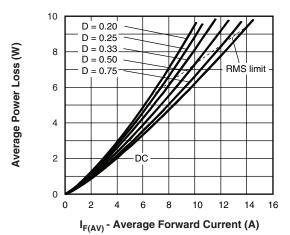
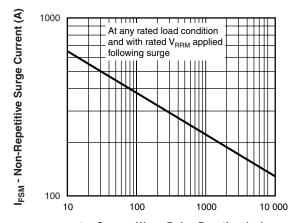


Fig. 6 - Forward Power Loss Characteristics (Per Leg)



 t_p - Square Wave Pulse Duration (μ s) Fig. 7 - Maximum Non-Repetitive Surge Current (Per Leg)

Note

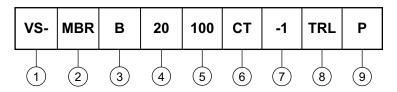
(1) Formula used: T_C = T_J - (Pd + Pd_{REV}) x R_{th,JC};
Pd = Forward power loss = I_{F(AV)} x V_{FM} at (I_{F(AV)}/D) (see fig. 6);
Pd_{REV} = Inverse power loss = V_{R1} x I_R (1 - D); I_R at V_{R1} = Rated V_R



Schottky Rectifier, 2 x 10 A Vishay High Power Products

ORDERING INFORMATION TABLE

Device code



HPP product suffix

Essential part number

• $B = D^2PAK$ None • None = TO-262 7 = -1

Current rating (20 = 20 A)

80 = 80 V 90 = 90 V Voltage ratings -100 = 100 V CT = Essential part number

• None = D^2PAK **3** = B

• -1 = TO-262 3 None

• None = Tube (50 pieces)

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

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

9 • PbF = Lead (Pb)-free (for TO-262 and D²PAK tube)

• P = Lead (Pb)-free (for D²PAK TRR and TRL)

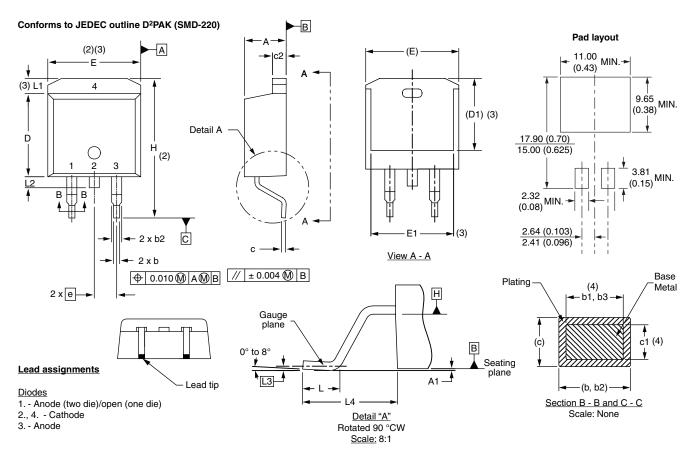
LINKS TO RELATED DOCUMENTS				
Dimensions	www.vishay.com/doc?95014			
Part marking information	www.vishay.com/doc?95008			
Packaging information	www.vishay.com/doc?95032			



Vishay High Power Products

D²PAK, TO-262

DIMENSIONS FOR D²PAK in millimeters and inches



	MILLIMETERS		INCHES		
SYMBOL	MIN.	MAX.	MIN.	MAX.	NOTES
Α	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
С	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	MILLIM	ETERS	INC	HES	NOTES
STINIBUL	MIN.	MAX.	MIN.	MAX.	NOTES
D1	6.86	8.00	0.270	0.315	3
Е	9.65	10.67	0.380	0.420	2, 3
E1	7.90	8.80	0.311	0.346	3
е	2.54 BSC		0.100 BSC		
Н	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

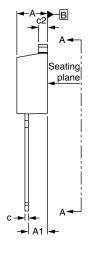
(7) Outline conforms to JEDEC outline TO-263AB

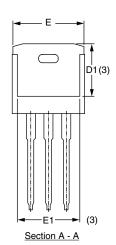
Vishay High Power Products

D²PAK, TO-262



DIMENSIONS FOR TO-262 in millimeters and inches





⊕ 0.010**⋒**|A**⋒**|B

Lead assignments



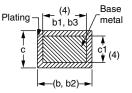
Diodes

-3 x b2 --3 x b

1. - Anode (two die)/open (one die)

2., 4. - Cathode

3. - Anode



Section B - B and C - C Scale: None

SYMBOL	MILLIMETERS		INC	INCHES		
	MIN.	MAX.	MIN.	MAX.	NOTES	
Α	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	
С	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	
Е	9.65	10.67	0.380	0.420	2, 3	
E1	7.90	8.80	0.311	0.346	3	
е	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



Legal Disclaimer Notice

Vishay

Disclaimer

ALL PRODUCT, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Vishay"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained in any datasheet or in any other disclosure relating to any product.

Vishay makes no warranty, representation or guarantee regarding the suitability of the products for any particular purpose or the continuing production of any product. To the maximum extent permitted by applicable law, Vishay disclaims (i) any and all liability arising out of the application or use of any product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.

Statements regarding the suitability of products for certain types of applications are based on Vishay's knowledge of typical requirements that are often placed on Vishay products in generic applications. Such statements are not binding statements about the suitability of products for a particular application. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Parameters provided in datasheets and/or specifications may vary in different applications and performance may vary over time. All operating parameters, including typical parameters, must be validated for each customer application by the customer's technical experts. Product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein.

Except as expressly indicated in writing, Vishay products are not designed for use in medical, life-saving, or life-sustaining applications or for any other application in which the failure of the Vishay product could result in personal injury or death. Customers using or selling Vishay products not expressly indicated for use in such applications do so at their own risk and agree to fully indemnify and hold Vishay and its distributors harmless from and against any and all claims, liabilities, expenses and damages arising or resulting in connection with such use or sale, including attorneys fees, even if such claim alleges that Vishay or its distributor was negligent regarding the design or manufacture of the part. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay. Product names and markings noted herein may be trademarks of their respective owners.

Material Category Policy

Vishay Intertechnology, Inc. hereby certifies that all its products that are identified as RoHS-Compliant fulfill the definitions and restrictions defined under Directive 2011/65/EU of The European Parliament and of the Council of June 8, 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment (EEE) - recast, unless otherwise specified as non-compliant.

Please note that some Vishay documentation may still make reference to RoHS Directive 2002/95/EC. We confirm that all the products identified as being compliant to Directive 2002/95/EC conform to Directive 2011/65/EU.