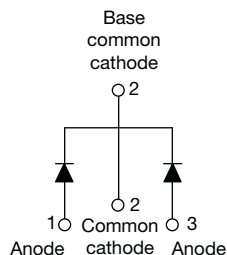
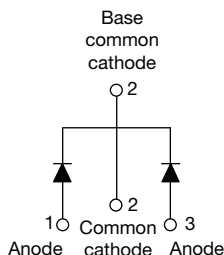


High Performance Schottky Rectifier, 2 x 7.5 A

TO 263AB (D²PAK)

VS-MBRB15..CT-M3

TO-262AA


VS-MBR15..CT-1-M3

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
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- Designed and qualified according to JEDEC®-JESD 47
- Material categorization: for definitions of compliance please see www.vishay.com/doc299912



RoHS
COMPLIANT
HALOGEN
FREE

PRODUCT SUMMARY

I _{F(AV)}	2 x 7.5 A
V _R	35 V, 45 V
V _F at I _F	0.57 V
I _{RM} max.	15 mA at 125 °C
T _J max.	150 °C
E _{AS}	7 mJ
Package	TO-263AB (D ² PAK), TO-262AA
Diode variation	Common cathode

DESCRIPTION

The VS-MBR(B)15... 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	15	A
V _R		35/45	V
I _{FSM}	t _p = 5 μs sine	690	A
V _F	7.5 A _{pk} , T _J = 125 °C	0.57	V
T _J		-65 to +150	°C

VOLTAGE RATINGS

PARAMETER	SYMBOL	VS-MBRB1535CT-M3 VS-MBR1535CT-1-M3	VS-MBRB1545CT-M3 VS-MBR1545CT-1-M3	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	per leg	$I_{F(AV)}$	$T_C = 131\text{ }^{\circ}\text{C}$, rated V_R		7.5	A
	per device				15	
Maximum peak one cycle non-repetitive surge		I_{FSM}	5 μs sine or 3 μs rect. pulse	Following any rated load condition and with rated V_{RRM} applied	690	
			Surge applied at rated load conditions halfwave, single phase, 60 Hz		150	
Non-repetitive avalanche energy per leg		E_{AS}	$T_J = 25\text{ }^{\circ}\text{C}$, $I_{AS} = 2\text{ A}$, $L = 3.5\text{ mH}$		7	mJ
Repetitive avalanche current per leg		I_{AR}	Current decaying linearly to zero in 1 μs 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	$V_{\text{FM}}^{(1)}$	15 A	$T_J = 25\text{ }^{\circ}\text{C}$	0.84	V
		7.5 A	$T_J = 125\text{ }^{\circ}\text{C}$	0.57	
		15 A		0.72	
Maximum instantaneous reverse current	$I_{\text{RM}}^{(1)}$	$T_J = 25\text{ }^{\circ}\text{C}$	Rated DC voltage	0.1	mA
		$T_J = 125\text{ }^{\circ}\text{C}$		15	
Maximum junction capacitance	C_T	$V_R = 5\text{ V}_{\text{DC}}$ (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	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 per leg	R _{thJC}	DC operation	3.0	°C/W
Typical thermal resistance, case to heatsink	R _{thCS}	Mounting surface, smooth and greased	0.50	
Maximum thermal resistance, junction to ambient	R _{thJA}	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 D ² PAK	MBRB1545CT	
		Case style TO-262	MBR1545CT-1	

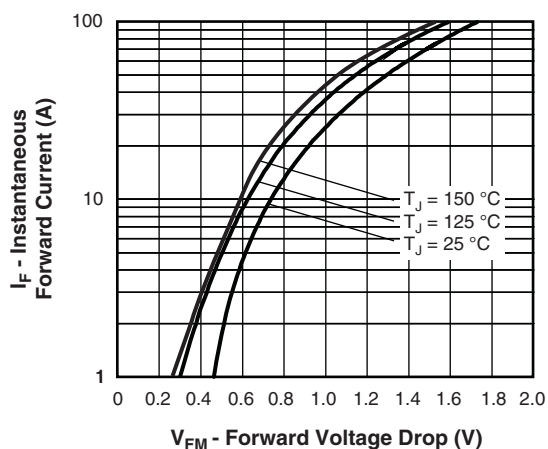


Fig. 1 - Maximum Forward Voltage Drop Characteristics (Per Leg)

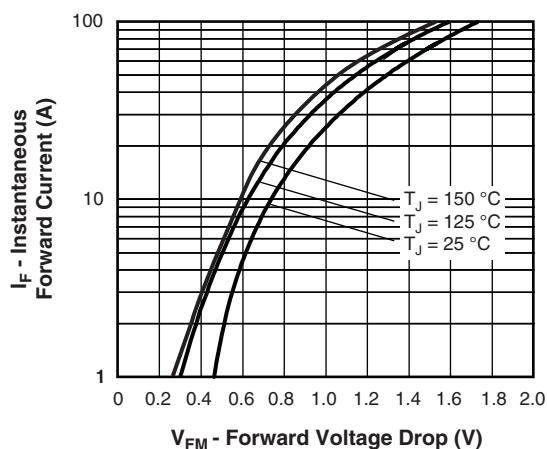


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage (Per Leg)

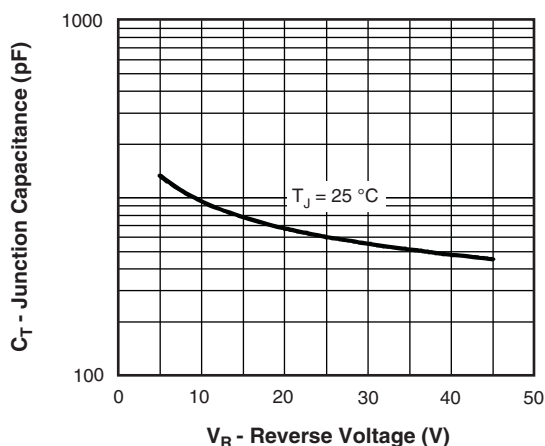


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage (Per Leg)

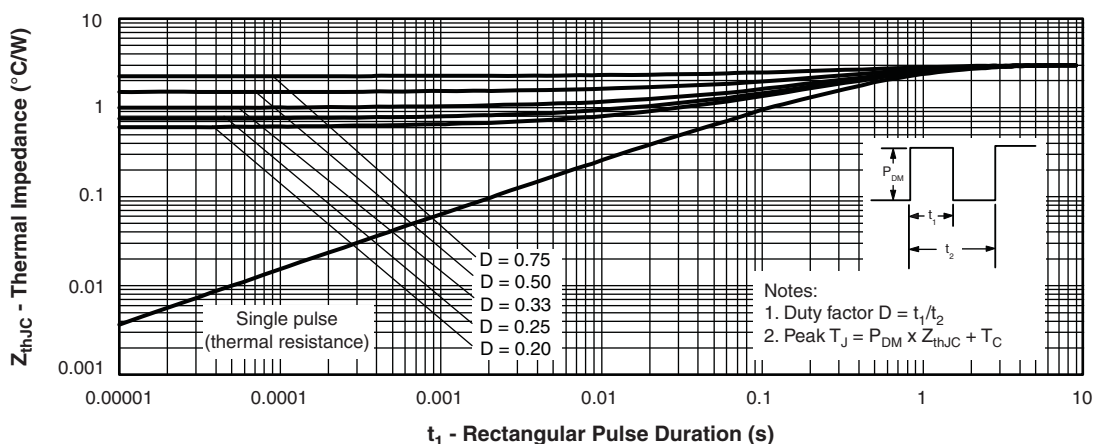


Fig. 4 - Maximum Thermal Impedance Z_{thJC} Characteristics (Per Leg)

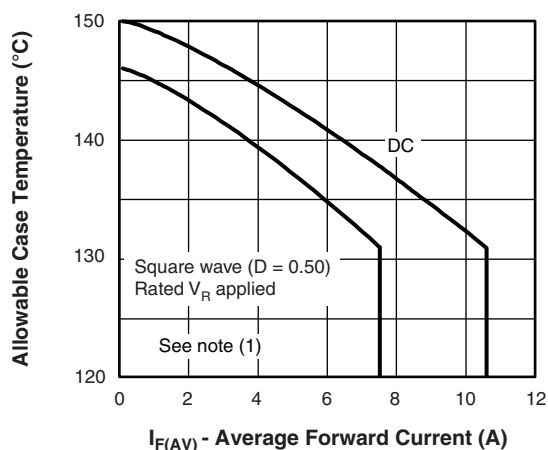


Fig. 5 - Maximum Allowable Case Temperature vs. Average Forward Current

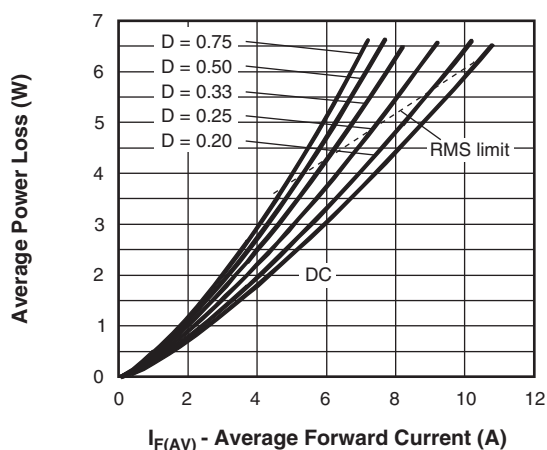


Fig. 6 - Forward Power Loss Characteristics

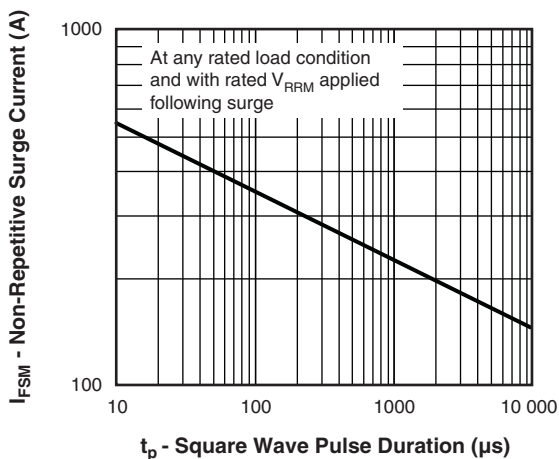


Fig. 7 - Maximum Non-Repetitive Surge Current (Per Leg)

Note

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

**ORDERING INFORMATION TABLE**

Device code	VS-	MBR	B	15	45	CT	-1	L	-M3
	1	2	3	4	5	6	7	8	9
1	- Vishay Semiconductors product								
2	- Essential part number								
3	- • B = D ² PAK 7 None • None = TO-262 7 = -1								
4	- Current rating (15 = 15 A)								
5	- Voltage ratings 35 = 35 V 45 = 45 V								
6	- CT = essential part number								
7	- • None = D ² PAK 3 = B • -1 = TO-262 3 None								
8	- • None = tube • L = tape and reel (left oriented - for D ² PAK only) • R = tape and reel (right oriented - for D ² PAK only)								
9	- -M3 = halogen-free, RoHS-compliant, and termination lead (Pb)-free								

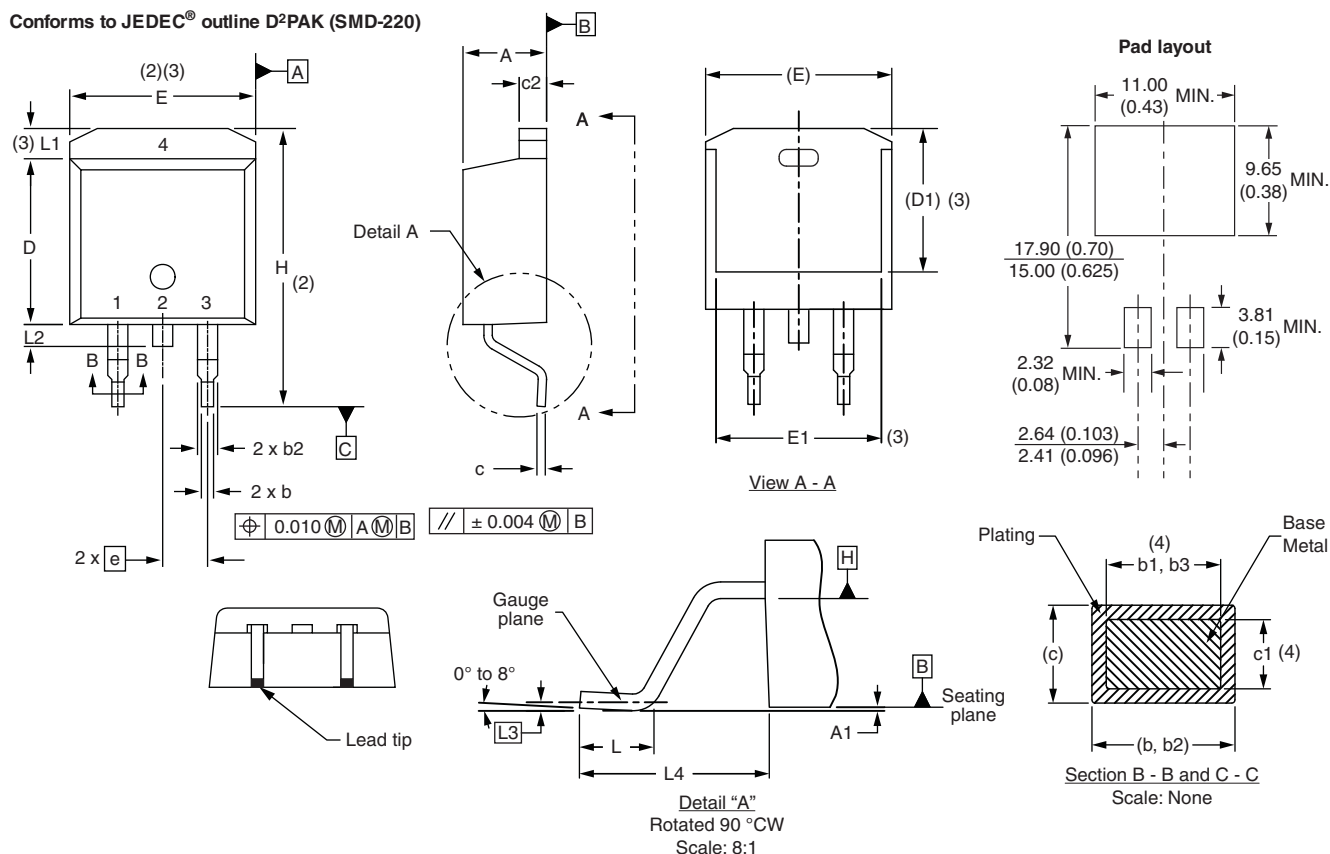
ORDERING INFORMATION			
PREFERRED P/N	QUANTITY PER T/R	MINIMUM ORDER QUANTITY	PACKAGING DESCRIPTION
VS-MBRB1535CT-M3	50	1000	Antistatic plastic tubes
VS-MBRB1535CTR-M3	800	800	13" diameter reel
VS-MBRB1535CTL-M3	800	800	13" diameter reel
VS-MBR1535CT-1-M3	50	1000	Antistatic plastic tubes
VS-MBRB1545CT-M3	50	1000	Antistatic plastic tubes
VS-MBRB1545CTR-M3	800	800	13" diameter reel
VS-MBRB1545CTL-M3	800	800	13" diameter reel
VS-MBR1545CT-1-M3	50	1000	Antistatic plastic tubes

LINKS TO RELATED DOCUMENTS		
Dimensions	TO-263AB (D ² PAK)	www.vishay.com/doc?95046
Dimensions	TO-262AA	www.vishay.com/doc?95419
Part marking information	TO-263AB (D ² PAK)	www.vishay.com/doc?95444
Part marking information	TO-262AA	www.vishay.com/doc?95443
Packaging information		www.vishay.com/doc?95032
SPICE model		www.vishay.com/doc?95294

D²PAK

DIMENSIONS 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	

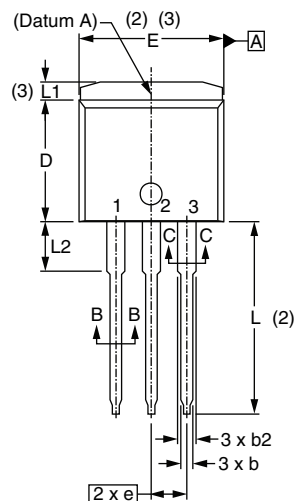
Notes

- Dimensioning and tolerancing per ASME Y14.5 M-1994
- 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
- Thermal pad contour optional within dimension E, L1, D1 and E1
- Dimension b1 and c1 apply to base metal only
- Datum A and B to be determined at datum plane H
- Controlling dimension: inch
- Outline conforms to JEDEC® outline TO-263AB

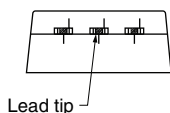
TO-262

DIMENSIONS in millimeters and inches

Modified JEDEC outline TO-262



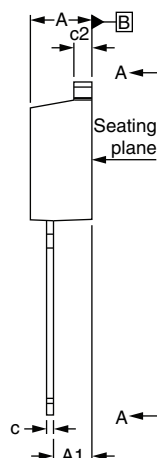
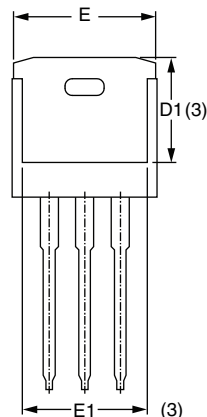
± 0.010 A A B



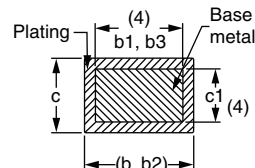
Lead assignments

Diodes

1. - Anode (two die)/open (one die)
2. - Cathode
3. - Anode



Section A - A



Section B - B and C - C

Scale: None

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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