

International
IR Rectifier

MBRB25..CTPbF
MBR25..CT-1PbF

SCHOTTKY RECTIFIER

30 Amp

$$I_{F(AV)} = 30\text{Amp}$$

$$V_R = 35 - 45\text{V}$$

Major Ratings and Characteristics

Characteristics	Values	Units
$I_{F(AV)}$ Rectangular waveform (Per Device)	30	A
I_{FRM} @ $T_C = 130^\circ\text{C}$ (Per Leg)	30	A
V_{RRM}	35 - 45	V
I_{FSM} @ $t_p = 5\mu\text{s}$ sine	1060	A
V_F @ 30Apk, $T_J = 125^\circ\text{C}$	0.73	V
T_J range	-65 to 150	$^\circ\text{C}$

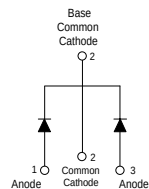
Description/ Features

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, free-wheeling diodes, and reverse battery protection.

- 150°C T_J operation
- Center tap TO-220 and D²Pak packages
- Low forward voltage drop
- High purity, high temperature epoxy encapsulation for enhanced mechanical strength and moisture resistance
- High frequency operation
- Guard ring for enhanced ruggedness and long term reliability
- Lead-Free ("PbF" suffix)

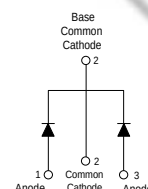
Case Styles

MBRB25..CTPbF



D²PAK

MBR25..CT-1PbF



TO-262

Voltage Ratings

Parameters	MBRB2535CTPbF MBR2535CT-1PbF	MBRB2545CTPbF MBR2545CT-1PbF
V_R Max. DC Reverse Voltage (V)	35	45
V_{RWM} Max. Working Peak Reverse Voltage (V)		

Absolute Maximum Ratings

Parameters	Values	Units	Conditions
$I_{F(AV)}$ Max. Average Forward Current (PerLeg) (PerDevice)	15 30	A	@ $T_C = 130^\circ\text{C}$, (Rated V_R)
I_{FRM} Peak Repetitive Forward Current (Per Leg)	30	A	Rated V_R , square wave, 20kHz $T_C = 130^\circ\text{C}$
I_{FSM} Non Repetitive Peak Surge Current	1060 150	A	5 μs Sine or 3 μs Rect. pulse Following any rated load condition and with rated V_{RWM} applied Surge applied at rated load conditions halfwave, single phase, 60Hz
E_{AS} Non-Repetitive Avalanche Energy	16	mJ	(Per Leg) $T_J = 25^\circ\text{C}$, $I_{AS} = 2\text{Amps}$, $L = 8\text{mH}$
I_{AR} Repetitive Avalanche Current (Per Leg)	2	A	Current decaying linearly to zero in 1 μsec Frequency limited by T_J max. $V_A = 1.5 \times V_R$ typical

Electrical Specifications

Parameters	Values	Units	Conditions
V_{FM} Max. Forward Voltage Drop (1)	0.82 0.73	V	@ 30A $T_J = 25^\circ\text{C}$ $T_J = 125^\circ\text{C}$
I_{RM} Max. Instantaneous Reverse Current (1)	0.2 40	mA	$T_J = 25^\circ\text{C}$ $T_J = 125^\circ\text{C}$ Rated DC voltage
$V_{F(TO)}$ Threshold Voltage	0.355	V	$T_J = T_J$ max.
r_t Forward Slope Resistance	12.3	m Ω	
C_T Max. Junction Capacitance	700	pF	$V_R = 5V_{DC}$ (test signal range 100Khz to 1Mhz) 25°C
L_S Typical Series Inductance	8.0	nH	Measured from top of terminal to mounting plane
dv/dt Max. Voltage Rate of Change	10000	V/ μs	(Rated V_R)

(1) Pulse Width < 300 μs , Duty Cycle <2%

Thermal-Mechanical Specifications

Parameters	Values	Units	Conditions
T_J Max. Junction Temperature Range	-65 to 150	$^\circ\text{C}$	
T_{stg} Max. Storage Temperature Range	-65 to 175	$^\circ\text{C}$	
R_{thJC} Max. Thermal Resistance Junction to Case (Per Leg)	1.5	$^\circ\text{C/W}$	DC operation
R_{thCS} Typical Thermal Resistance Case to Heatsink	0.50	$^\circ\text{C/W}$	Mounting surface, smooth and greased Only for TO-220
wt Approximate Weight	2(0.07)	g(oz.)	
T Mounting Torque	Min. 6(5) Max. 12(10)	Kg-cm (lbf-in)	Non-lubricated threads
Device Marking	MBRB25..CT MBR25..CT-1		Case style D ² Pak Case style TO-262

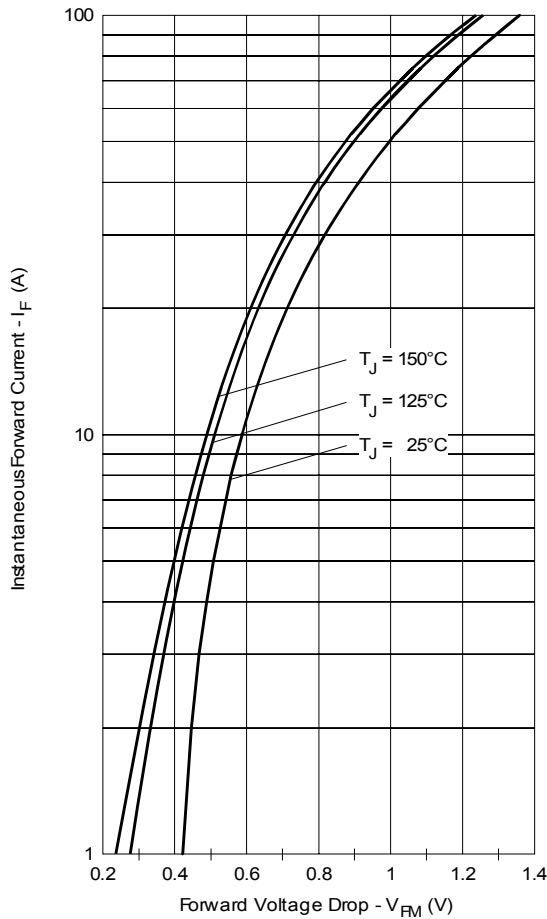


Fig. 1 - Max. Forward Voltage Drop Characteristics (Per Leg)

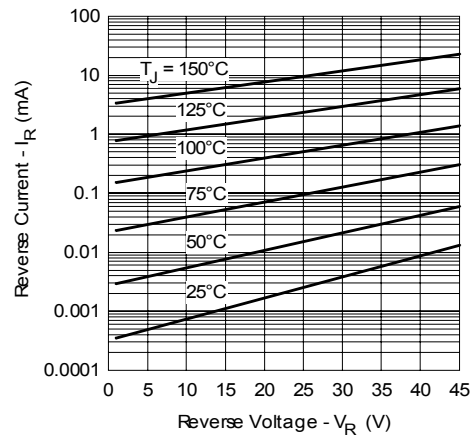


Fig. 2 - Typical Values Of Reverse Current Vs. Reverse Voltage (Per Leg)

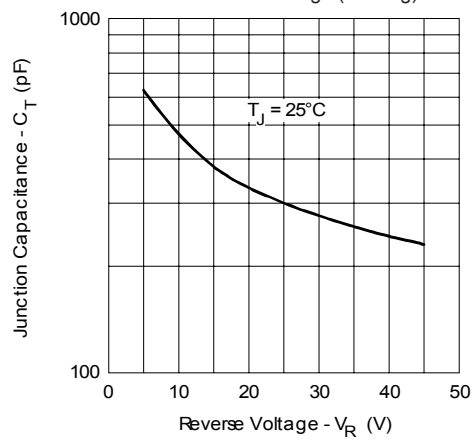


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage (Per Leg)

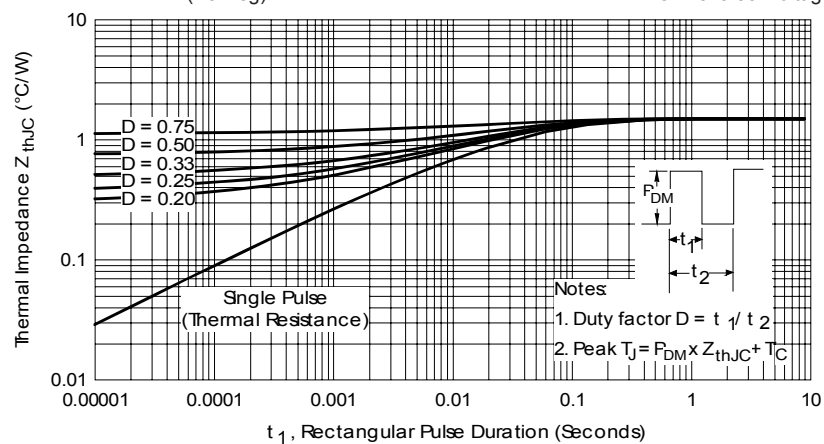


Fig. 4 - Max. Thermal Impedance Z_{thJC} Characteristics (Per Leg)

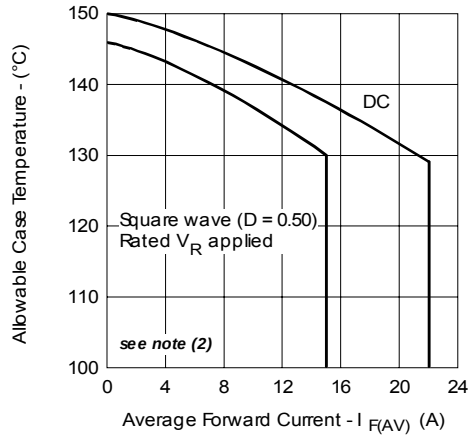


Fig. 5 - Max. Allowable Case Temperature Vs. Average Forward Current (Per Leg)

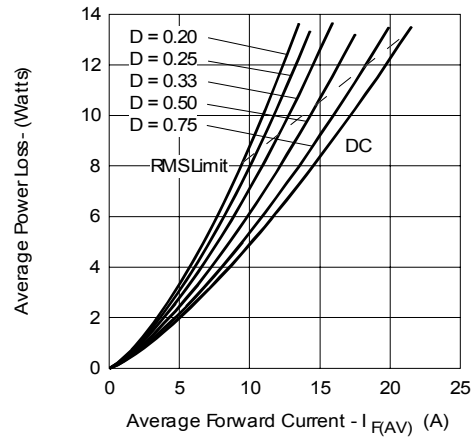


Fig. 6 - Forward Power Loss Characteristics (Per Leg)

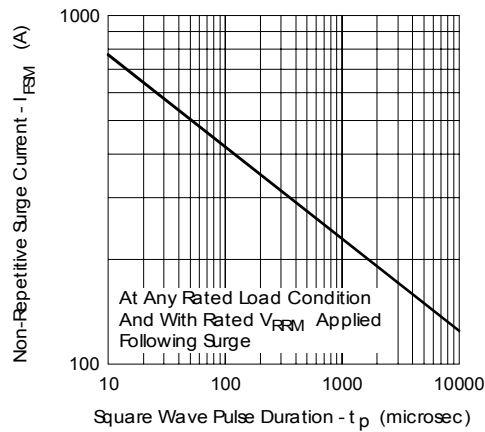


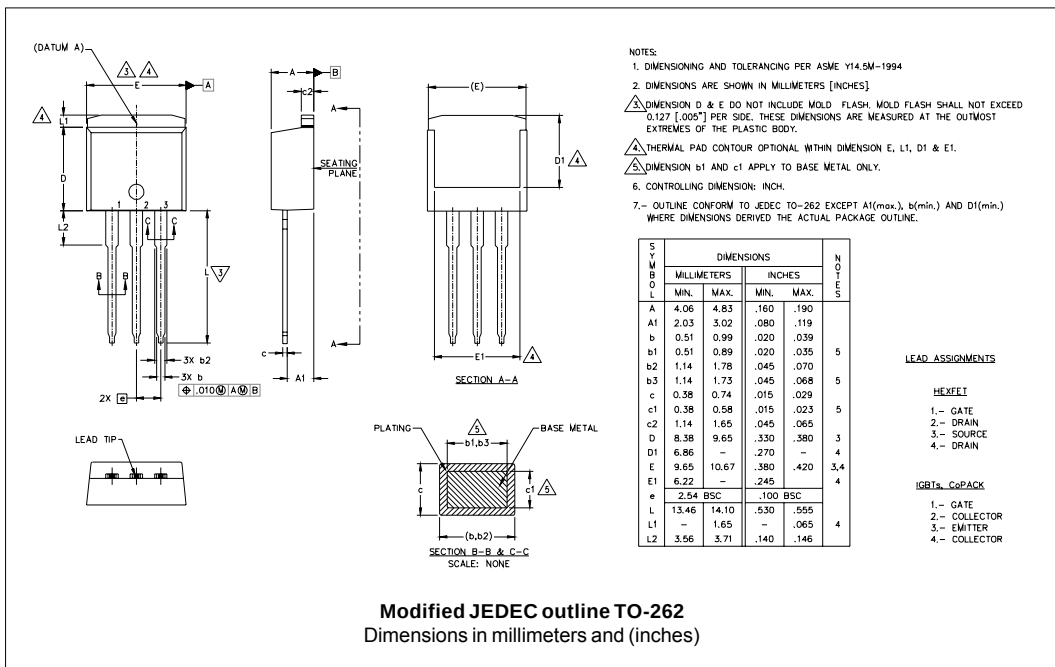
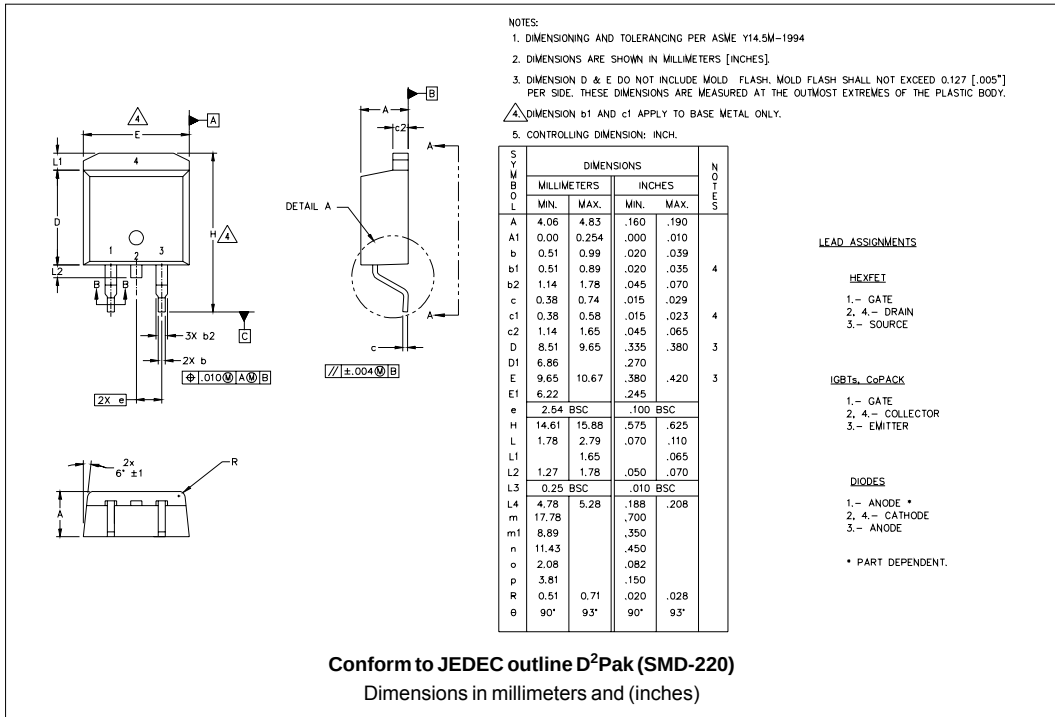
Fig. 7 - Max. Non-Repetitive Surge Current (Per Leg)

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

P_d = Forward Power Loss = $I_{F(AV)} \times V_{FM} @ (I_{F(AV)} / D)$ (see Fig. 6);

$P_{d_{REV}}$ = Inverse Power Loss = $V_{R1} \times I_R (1 - D)$; $I_R @ V_{R1}$ = rated V_R

Outlines Table



Part Marking Information

D²PAK

EXAMPLE: THIS IS A MBRB2545CT
LOT CODE 8024
ASSEMBLED ON WW 02, 2000

Note: "P" in assembly line position indicates "Lead-Free"

INTERNATIONAL RECTIFIER LOGO

ASSEMBLY LOT CODE

PART NUMBER

DATE CODE
YEAR 0 = 2000
WEEK 02
P = LEAD-FREE

TO-262

EXAMPLE: THIS IS A MBR2545CT-1
LOT CODE 1789
ASSEMBLED ON WW 19, 2002

Note: "P" in assembly line position indicates "Lead-Free"

INTERNATIONAL RECTIFIER LOGO

ASSEMBLY LOT CODE

PART NUMBER

DATE CODE
YEAR 2 = 2002
WEEK 19
P = LEAD-FREE

Tape & Reel Information

SECTION Y-Y

NOTES:

- 1.0 10 SPROCKET HOLE PITCH CUMULATIVE TOLERANCE ±.02
- 2.0 CAMBER NOT TO EXCEED 1mm in 100mm
- 3.0 MATERIAL: CONDUCTIVE BLACK STYRENIC ALLOY
- 4.0 K₀ MEASURED FROM A PLANE ON THE INSIDE BOTTOM OF THE POCKET TO THE TOP SURFACE OF THE CARRIER
- 5.0 MEASURED FROM CENTRELINE OF SPROCKET HOLE TO CENTRELINE OF POCKET
- 6.0 VENDOR: (OPTIONAL)
- 7.0 MUST ALSO MEET REQUIREMENTS OF EIA STANDAR #EIA-481A TAPING OF SURFACE MOUNT COMPONENTS FOR AUTOMATIC PLACEMENT
- 8.0 SURFACE RESISTIVITY OF MOLDED MATL. MUST MEASURE LESS OR EQUAL TO 10⁶ OHMS PER SQUARE. MEASURED IN ACCORDANCE TO PROCEDURE GIVEN IN ASTM D-257 & ASTM D-991
- 9.0 TOTAL LENGTH PER REEL MUST BE 45 METERS
- 10.0 © CRITICAL

Dimensions in millimeters and (inches)

Ao	10.50 +/− 0.1
Bo	15.80 +/− 0.1
B2	10.25 +/− 0.1
Ko	4.90 +/− 0.1
F	11.50 +/− 0.1
P1	16.00 +/− 0.1
W	24.00 +/− 0.3

Ordering Information Table

Device Code							
1	2	3	4	5	6	7	8
MBR	B	25	45	CT	-1	TRL	PbF
1	2	3	4	5	6	7	8
1	- Essential Part Number						
2	- B = Surface Mount None = TO-220						
3	- Current Rating (30A)						
4	- Voltage code: Code = V_{RRM}						
5	- CT = Essential Part Number						
6	- "-1" = TO-262						
7	- • none = Tube (50 pieces) • TRL = Tape & Reel (Left Oriented - for D ² Pak only) • TRR = Tape & Reel (Right Oriented - for D ² Pak only)						
8	- • none = Standard Production • PbF = Lead-Free						

Data and specifications subject to change without notice.
This product has been designed and qualified for Industrial Level and Lead-Free.
Qualification Standards can be found on IR's Web site.

International
IR Rectifier

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