

International
IOR Rectifier

MBRB3030CTLpBF

SCHOTTKY RECTIFIER

30 Amp

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

$$V_R = 30\text{V}$$

Major Ratings and Characteristics

Characteristics	Values	Units
$I_{F(AV)}$ Rectangular waveform	30	A
V_{RRM}	30	V
I_{FSM} @ tp = 5 μ s sine	1100	A
V_F @ 15Apk, $T_J = 125^\circ\text{C}$ (per leg)	0.34	V
T_J range	-55 to 150	$^\circ\text{C}$

Description/ Features

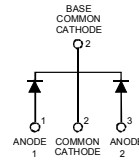
This center tap Schottky rectifier has been optimized for very low forward voltage drop, with moderate leakage. The proprietary barrier technology allows for reliable operation up to 150° C junction temperature. Typical applications are in switching power supplies, converters, free-wheeling diodes, and reverse battery protection.

- 150° C T_J operation
- Center tap configuration
- Very 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



D²PAK



Voltage Ratings

Parameters	MBRB3030CTLpF
V _R Max. DC Reverse Voltage (V)	30
V _{RWM} Max. Working Peak Reverse Voltage (V)	

Absolute Maximum Ratings

Parameters	Values	Units	Conditions
I _{F(AV)} Max. Average Forward Current (Per Leg) * See Fig. 5 (Per Device)	15 30	A	50% duty cycle @ T _C = 121°C, rectangular wave form
I _{FSM} Max. Peak One Cycle Non-Repetitive Surge Current (Per Leg) * See Fig. 7	1100 360	A	5µs Sine or 3µs Rect. pulse 10ms Sine or 6ms Rect. pulse Following any rated load condition and with rated V _{RRM} applied
E _{AS} Non-Repetitive Avalanche Energy (Per Leg)	13	mJ	T _J = 25 °C, I _{AS} = 3 Amps, L = 2.9 mH
I _{AR} Repetitive Avalanche Current (Per Leg)	3	A	Current decaying linearly to zero in 1 µsec Frequency limited by T _J max. V _A = 1.5 x V _R typical

Electrical Specifications

Parameters	Values	Units	Conditions
V _{FM} Max. Forward Voltage Drop (Per Leg) * See Fig. 1 (1)	0.44 0.51 0.34 0.45	V	@ 15A @ 30A @ 15A @ 30A T _J = 25 °C T _J = 125 °C
I _{RM} Max. Reverse Leakage Current (Per Leg) * See Fig. 2 (1)	2 183	mA	T _J = 25 °C T _J = 125 °C V _R = rated V _R
V _{F(TO)} Threshold Voltage	0.22	V	T _J = T _J max.
r _t Forward Slope Resistance	6.76	mΩ	
C _T Max. Junction Capacitance (Per Leg)	2840	pF	V _R = 5V _{DC} (test signal range 100Khz to 1Mhz) 25°C
L _S Typical Series Inductance (Per Leg)	8.0	nH	Measured lead to lead 5mm from package body
dv/dt Max. Voltage Rate of Change	10000	V/ µs	(Rated V _R)

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

Thermal-Mechanical Specifications

Parameters	Values	Units	Conditions
T _J Max. Junction Temperature Range	-55 to 150	°C	
T _{stg} Max. Storage Temperature Range	-55 to 150	°C	
R _{thJC} Max. Thermal Resistance Junction to Case (Per Leg)	2.0	°C/W	DC operation
R _{thJC} Max. Thermal Resistance Junction to Case (Per Package)	1.0	°C/W	DC operation
R _{thCS} Typical Thermal Resistance, Case to Heatsink	0.50	°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)	
Device Marking	MBRB3030CTL		Case style D ² Pak

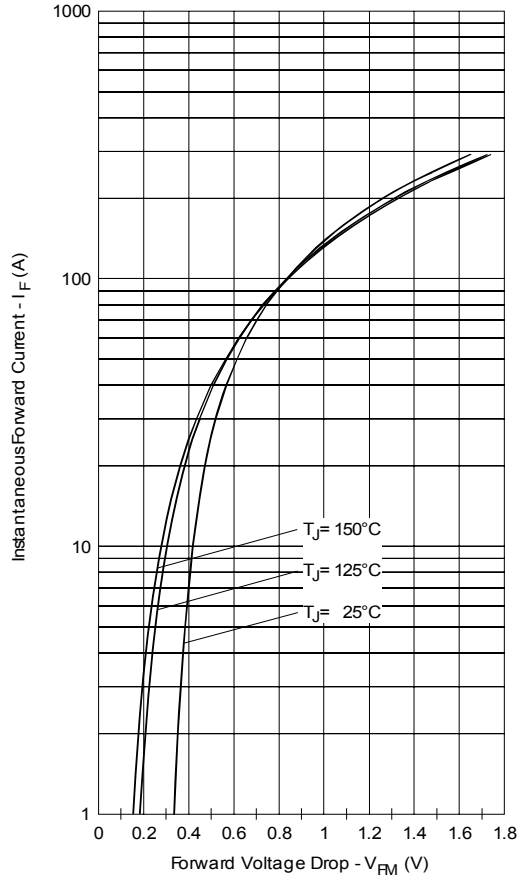


Fig. 1 - Max. Forward Voltage Drop Characteristics (Per Leg)

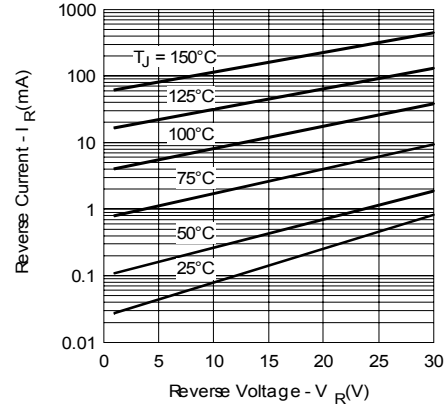


Fig. 2 - Typical Values Of Reverse Current Vs. Reverse Voltage (Per Leg)

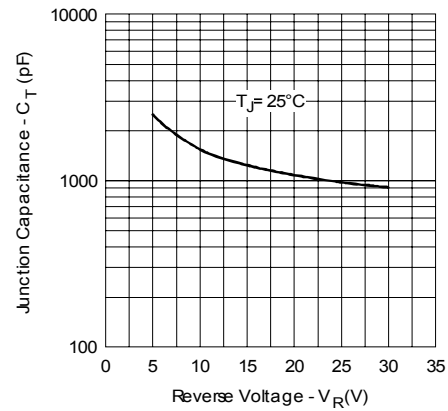


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage (Per Leg)

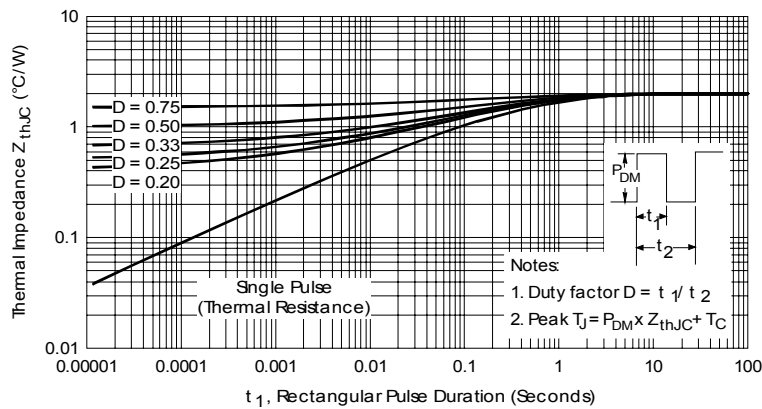


Fig. 4 - Max. Thermal Impedance Z_{thJC} Characteristics (Per Leg)

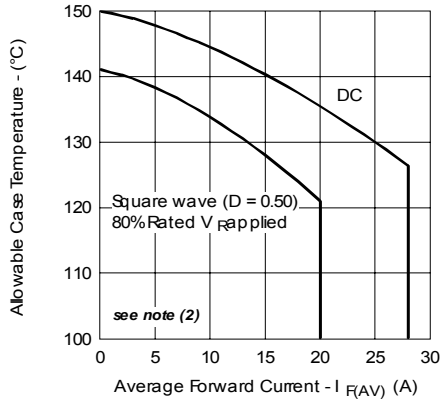


Fig. 5 - Max. Allowable Case Temperature Vs. Average Forward Current (Per Leg)

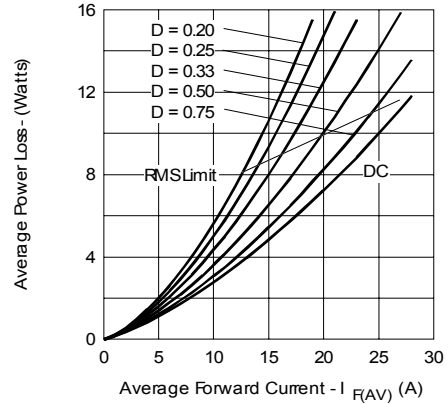


Fig. 6 - Forward Power Loss Characteristics (Per Leg)

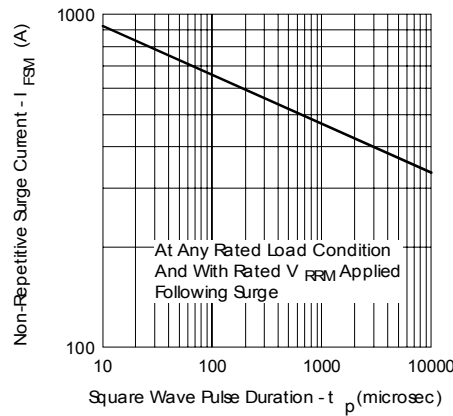


Fig. 7 - Max. Non-Repetitive Surge Current (Per Leg)

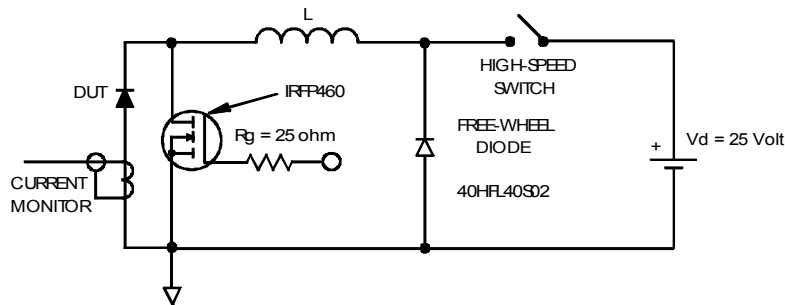


Fig. 8 - Unclamped Inductive Test Circuit

(2) Formula used: $T_c = T_j - (P_d + P_{d_{REV}}) \times R_{INJC}$;

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

$P_{d_{REV}}$ = Inverse Power Loss = $V_{R1} \times I_R (1 - D)$; $I_R @ V_{R1} = 10V$

Outline Table

NOTES:
 1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M-1994
 2. DIMENSIONS ARE SHOWN IN MILLIMETERS [INCHES].
 3. DIMENSION D & E DO NOT INCLUDE MOLD FLASH. MOLD FLASH SHALL NOT EXCEED 0.127 [.005"] PER SIDE. THESE DIMENSIONS ARE MEASURED AT THE OUTMOST EXTREMES OF THE PLASTIC BODY.
 4. DIMENSION b1 AND c1 APPLY TO BASE METAL ONLY.
 5. CONTROLLING DIMENSION: INCH.

SYMBOL	DIMENSIONS				NOTES
	MILLIMETERS		INCHES		
	MIN.	MAX.	MIN.	MAX.	
A	4.06	4.83	.160	.190	
A1	0.00	0.254	.000	.010	
b	0.51	0.99	.020	.039	
b1	0.51	0.89	.020	.035	4
b2	1.14	1.78	.045	.070	
c	0.38	0.74	.015	.029	
c1	0.38	0.58	.015	.023	4
c2	1.14	1.65	.045	.065	
D	8.51	9.65	.335	.380	3
D1	6.86		.270		
E	9.65	10.67	.380	.420	3
E1	6.22		.245		
e	2.54 BSC		.100 BSC		
H	14.61	15.88	.575	.625	
L	1.78	2.79	.070	.110	
L1		1.65		.065	
L2	1.27	1.78	.050	.070	
L3	0.25 BSC		.010 BSC		
L4	4.78	5.28	.188	.208	
m	17.78		.700		
m1	8.89		.350		
n	11.43		.450		
o	2.08		.082		
p	3.81		.150		
R	0.51	0.71	.020	.028	
θ	90°	93°	90°	93°	

LEAD ASSIGNMENTS
 HEXFEET
 1.- GATE
 2, 4.- DRAIN
 3.- SOURCE

IGBTs, CoPACK
 1.- GATE
 2, 4.- COLLECTOR
 3.- EMITTER

DIODES
 1.- ANODE *
 2, 4.- CATHODE
 3.- ANODE

* PART DEPENDENT.

Conform to JEDEC outline D²Pak (SMD-220)
 Dimensions in millimeters and (inches)

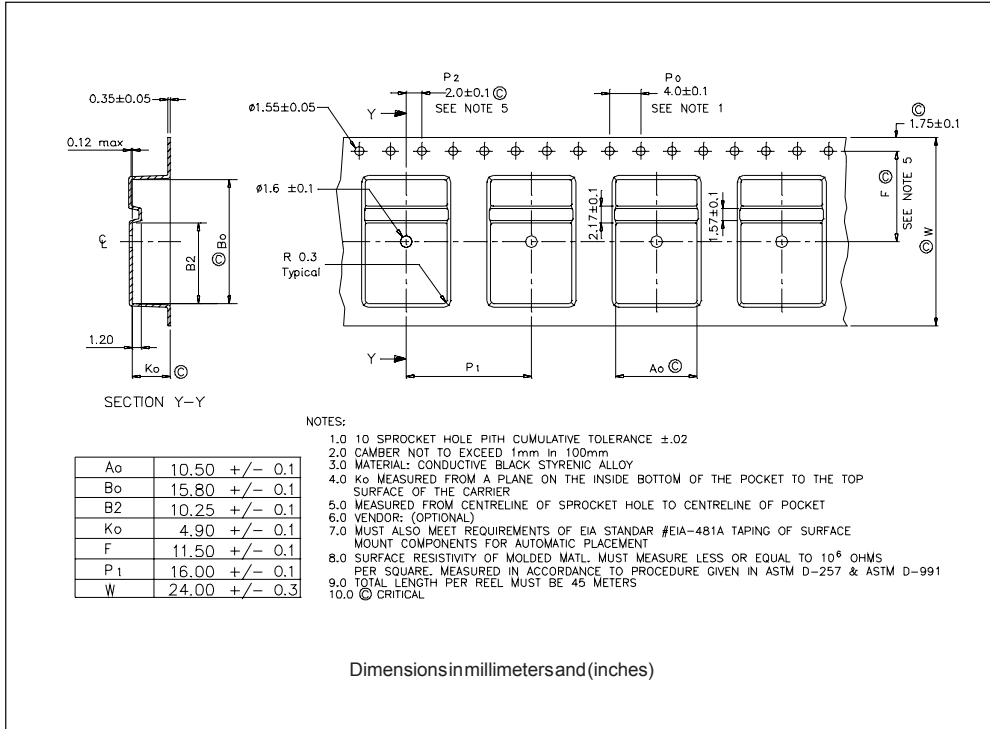
Part Marking Information

EXAMPLE: THIS IS A MBRB3030CTL
 LOT CODE 8024
 ASSEMBLED ON WW 02, 2000

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

INTERNATIONAL RECTIFIER LOGO
 PART NUMBER
 DATE CODE
 YEAR 0 = 2000
 WEEK 02
 P = LEAD-FREE
 ASSEMBLY LOT CODE

Tape & Reel Information



Ordering Information Table

Device Code	
	MBR B 30 30 CT L TRL PbF
	① ② ③ ④ ⑤ ⑥ ⑦ ⑧
1	- Essential Part Number
2	- • B = D ² Pak
3	- Current Rating (30 = 30A)
4	- Voltage Rating (30 = 30V)
5	- CT = Essential Part Number
6	- L = Low V _F
7	- • 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 (for D ² Pak tube) • P = Lead-Free (for D ² Pak TRR and TRL)

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.



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