

MBR2030CTL

SWITCHMODE™ Dual Schottky Power Rectifier

Features and Benefits

- Highly Stable Oxide Passivated Junction
- Very Low Forward Voltage Drop (0.4 Max @ 10 A, $T_C = 150^\circ\text{C}$)
- High Junction Temperature
- High dv/dt Capability
- Excellent Ability to Withstand Reverse Avalanche Energy Transients
- Low Power Loss / High Efficiency
- High Surge Capacity
- 175°C Operating Junction Temperature
- 20 A Total (10 A Per Diode Leg)
- Pb-Free Package is Available*

Applications

- Power Supply – Output Rectification
- Power Management – ORING
- Instrumentation

Mechanical Characteristics

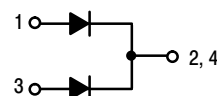
- Case: Epoxy, Molded
- Epoxy Meets UL 94 V-0 @ 0.125 in
- Weight: 1.9 Grams (Approximately)
- Finish: All External Surfaces Corrosion Resistant and Terminal Leads are Readily Solderable
- Lead Temperature for Soldering Purposes: 260°C Max. for 10 Sec
- ESD Rating: Human Body Model 3B
Machine Model C



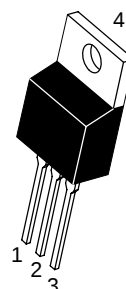
ON Semiconductor®

<http://onsemi.com>

SCHOTTKY BARRIER RECTIFIER 20 AMPERES, 30 VOLTS



MARKING DIAGRAM



TO-220AB
CASE 221A
PLASTIC



A = Assembly Location
Y = Year
WW = Work Week
B2030L = Device Code
G = Pb-Free Package
AKA = Diode Polarity

ORDERING INFORMATION

Device	Package	Shipping
MBR2030CTL	TO-220	50 Units/Rail
MBR2030CTLG	TO-220 (Pb-Free)	50 Units/Rail

*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

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MAXIMUM RATINGS (Per Leg)

Rating	Symbol	Value	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	V_{RRM} V_{RWM} V_R	30	V
Average Rectified Forward Current ($T_C = 167^\circ\text{C}$) Per Diode Per Device	$I_{F(AV)}$	10 20	A
Nonrepetitive Peak Surge Current (Surge applied at rated load conditions halfwave, single phase, 60 Hz)	I_{FSM}	150	A
Peak Repetitive Forward Current (Square Wave, 20 kHz, $T_C = 166^\circ\text{C}$)	I_{FRM}	10	A
Peak Repetitive Reverse Surge Current (2.0 μs , 1.0 kHz)	I_{RRM}	1.0	A
Operating Junction Temperature (Note 1)	T_J	- 65 to +175	$^\circ\text{C}$
Storage Temperature	T_{stg}	- 65 to +175	$^\circ\text{C}$
Voltage Rate of Change (Rated V_R)	dv/dt	1000	V/ μs

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

THERMAL CHARACTERISTICS (Per Leg)

Rating	Symbol	Value	Unit
Maximum Thermal Resistance, Junction-to-Case (Min. Pad)	$R_{\theta JC}$	2.0	$^\circ\text{C/W}$
Maximum Thermal Resistance, Junction-to-Ambient (Min. Pad)	$R_{\theta JA}$	60	$^\circ\text{C/W}$

ELECTRICAL CHARACTERISTICS (Per Leg)

Characteristic	Symbol	Min	Typ	Max	Unit
Maximum Instantaneous Forward Voltage (Note 2) ($I_F = 10$ Amps, $T_J = 25^\circ\text{C}$) ($I_F = 10$ Amps, $T_J = 150^\circ\text{C}$) ($I_F = 20$ Amps, $T_J = 25^\circ\text{C}$) ($I_F = 20$ Amps, $T_J = 150^\circ\text{C}$)	V_F	- - - -	0.45 0.32 0.51 0.41	0.52 0.40 0.58 0.48	V
Maximum Instantaneous Reverse Current (Note 2) (Rated dc Voltage, $T_J = 25^\circ\text{C}$) (Rated dc Voltage, $T_J = 100^\circ\text{C}$) (Rated dc Voltage, $T_J = 125^\circ\text{C}$)	I_R	- - -	0.11 10 -	5.0 40 75	mA

- The heat generated must be less than the thermal conductivity from Junction-to-Ambient: $dP_D/dT_J < 1/R_{\theta JA}$.
- Pulse Test: Pulse Width = 5.0 ms, Duty Cycle $\leq 10\%$.

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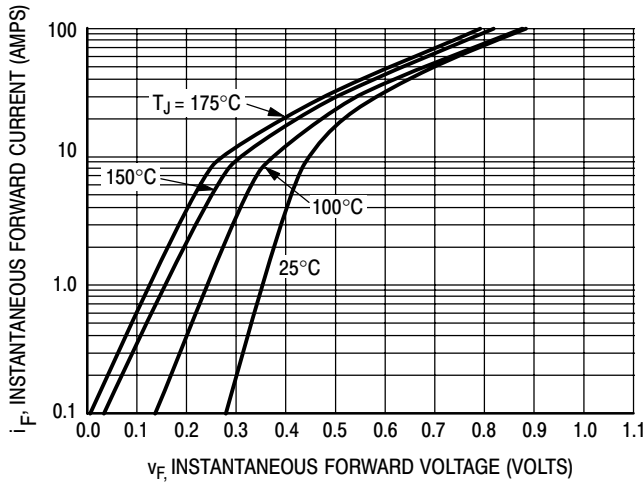


Figure 1. Typical Forward Voltage

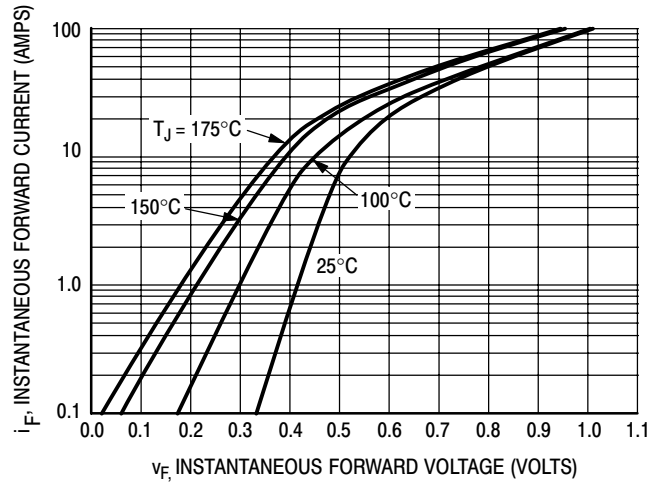


Figure 2. Maximum Forward Voltage

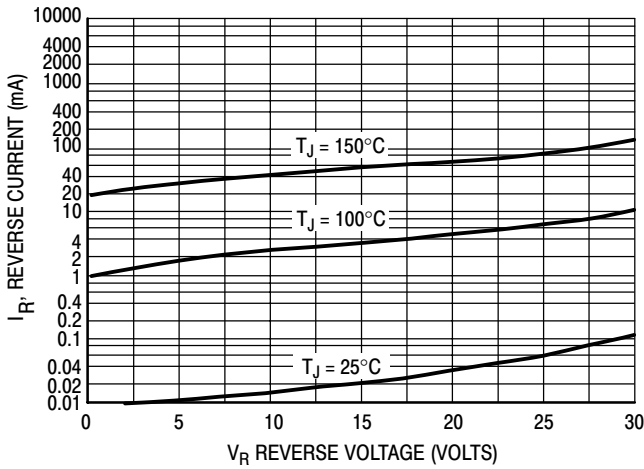


Figure 3. Typical Reverse Current

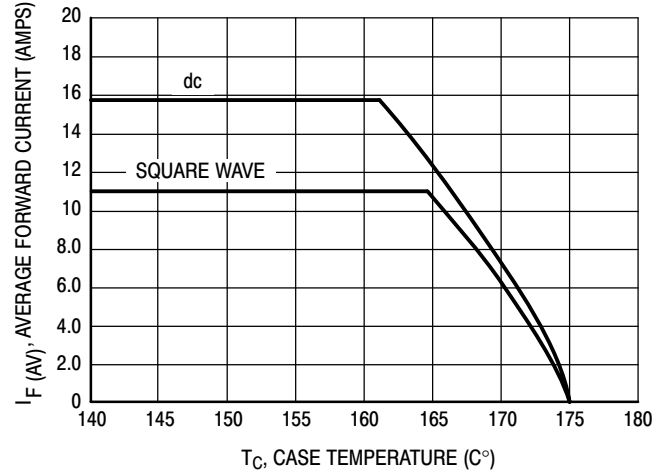


Figure 4. Current Derating, Case Per Leg

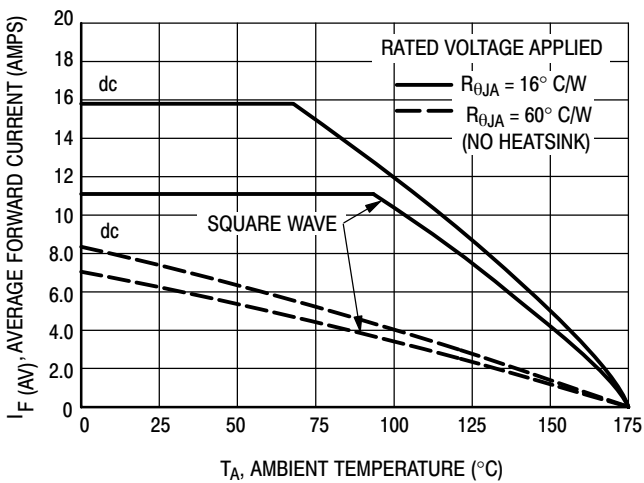


Figure 5. Current Derating, Ambient Per Leg

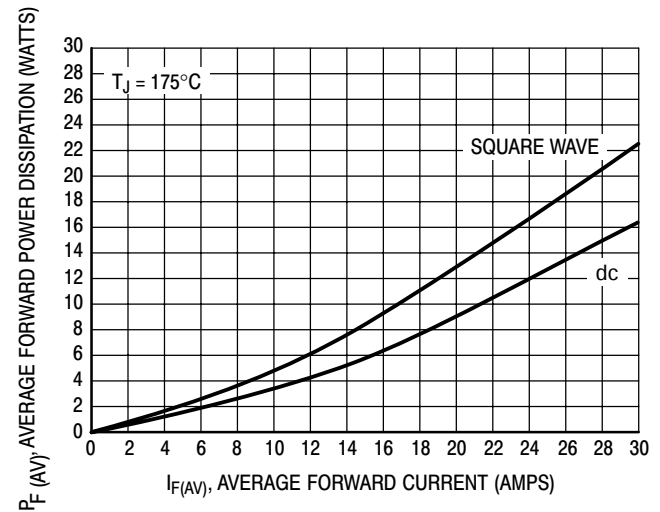


Figure 6. Forward Power Dissipation

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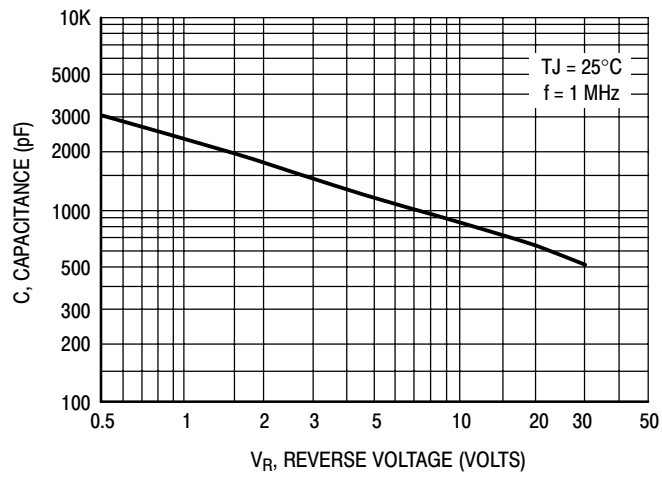
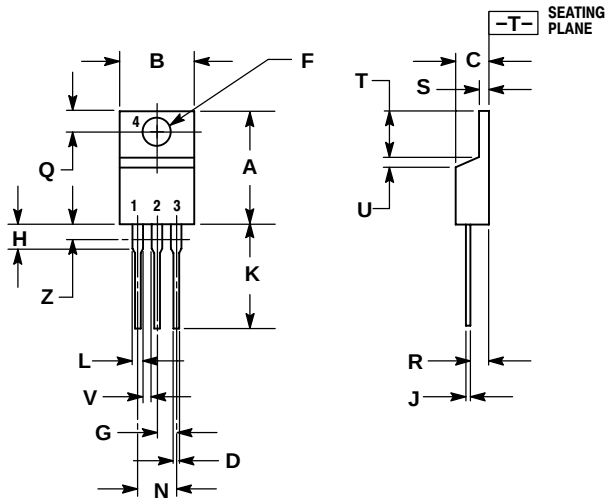


Figure 7. Typical Capacitance

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PACKAGE DIMENSIONS

TO-220AB
CASE 221A-09
ISSUE AA



- NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
 2. CONTROLLING DIMENSION: INCH.
 3. DIMENSION Z DEFINES A ZONE WHERE ALL BODY AND LEAD IRREGULARITIES ARE ALLOWED.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.570	0.620	14.48	15.75
B	0.380	0.405	9.66	10.28
C	0.160	0.190	4.07	4.82
D	0.025	0.035	0.64	0.88
F	0.142	0.147	3.61	3.73
G	0.095	0.105	2.42	2.66
H	0.110	0.155	2.80	3.93
J	0.018	0.025	0.46	0.64
K	0.500	0.562	12.70	14.27
L	0.045	0.060	1.15	1.52
N	0.190	0.210	4.83	5.33
Q	0.100	0.120	2.54	3.04
R	0.080	0.110	2.04	2.79
S	0.045	0.055	1.15	1.39
T	0.235	0.255	5.97	6.47
U	0.000	0.050	0.00	1.27
V	0.045	---	1.15	---
Z	---	0.080	---	2.04

STYLE 6:

1. ANODE
2. CATHODE
3. ANODE
4. CATHODE

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