

# MBR16100CT

## SWITCHMODE™ Power Rectifier

### Features and Benefits

- Low Forward Voltage
- Low Power Loss / High Efficiency
- High Surge Capacity
- 175°C Operating Junction Temperature
- Low Stored Charge Majority Carrier Conduction
- 16 A Total (8.0 A Per Diode Leg)
- Pb-Free Package is Available\*

### Applications

- Power Supply – Output Rectification
- Power Management
- Instrumentation

### Mechanical Characteristics

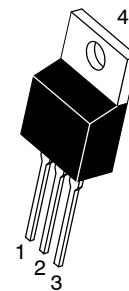
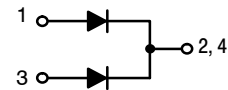
- Case: Epoxy, Molded
- Epoxy Meets UL 94 V-0 @ 0.125 in
- Weight: 1.9 Grams (Approximately)
- Finish: All External Surfaces Corrosion Resistant and Terminal Leads are Readily Solderable
- Lead Temperature for Soldering Purposes:  
260°C Max. for 10 Seconds
- ESD Rating:     Human Body Model = 3B  
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



**ON Semiconductor®**

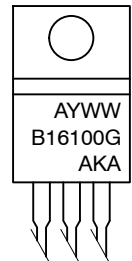
<http://onsemi.com>

## SCHOTTKY BARRIER RECTIFIER 16 AMPERES, 100 VOLTS



TO-220AB  
CASE 221A  
PLASTIC  
STYLE 6

### MARKING DIAGRAM



A     = Assembly Location  
Y     = Year  
WW   = Work Week  
B16100 = Device Code  
G     = Pb-Free Package  
AKA   = Diode Polarity

### ORDERING INFORMATION

Device	Package	Shipping
MBR16100CT	TO-220	50 Units/Rail
MBR16100CTG	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.

# MBR16100CT

## MAXIMUM RATINGS (Per Diode Leg)

Rating	Symbol	Value	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	$V_{RRM}$ $V_{RWM}$ $V_R$	100	V
Average Rectified Forward Current ( $T_C = 166^\circ\text{C}$ ) Per Diode Per Device	$I_{F(AV)}$	8.0 16	A
Peak Repetitive Forward Current (Square Wave, 20 kHz) $T_C = 165^\circ\text{C}$	$I_{FRM}$	16	A
Nonrepetitive Peak Surge Current (Surge applied at rated load conditions halfwave, single phase, 60 Hz)	$I_{FSM}$	150	A
Peak Repetitive Reverse Surge Current (2.0 $\mu\text{s}$ , 1.0 kHz)	$I_{RRM}$	0.5	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 $V_R$ )	$dv/dt$	10,000	V/ $\mu\text{s}$

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.

- The heat generated must be less than the thermal conductivity from Junction-to-Ambient:  $dP_D/dT_J < 1/R_{\theta JA}$ .

## THERMAL CHARACTERISTICS

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

## ELECTRICAL CHARACTERISTICS (Per Diode Leg)

Characteristic	Symbol	Min	Typical	Max	Unit
Maximum Instantaneous Forward Voltage (Note 2) ( $i_F = 8.0\text{ A}$ , $T_J = 125^\circ\text{C}$ ) ( $i_F = 8.0\text{ A}$ , $T_J = 25^\circ\text{C}$ ) ( $i_F = 16\text{ A}$ , $T_J = 125^\circ\text{C}$ ) ( $i_F = 16\text{ A}$ , $T_J = 25^\circ\text{C}$ )	$V_F$	-	0.56 0.68 0.67 0.79	0.60 0.74 0.69 0.84	V
Maximum Instantaneous Reverse Current (Note 2) (Rated dc Voltage, $T_J = 125^\circ\text{C}$ ) (Rated dc Voltage, $T_J = 25^\circ\text{C}$ )	$i_R$	-	0.95 0.0013	5.0 0.1	mA

- Pulse Test: Pulse Width = 300  $\mu\text{s}$ , Duty Cycle  $\leq 2\%$ .

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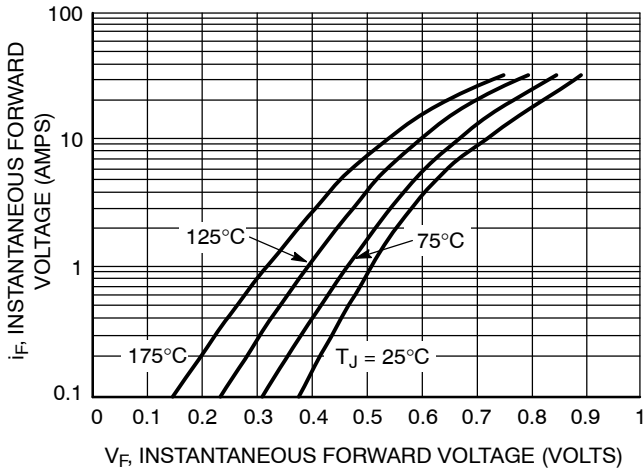


Figure 1. Typical Forward Voltage Per Diode

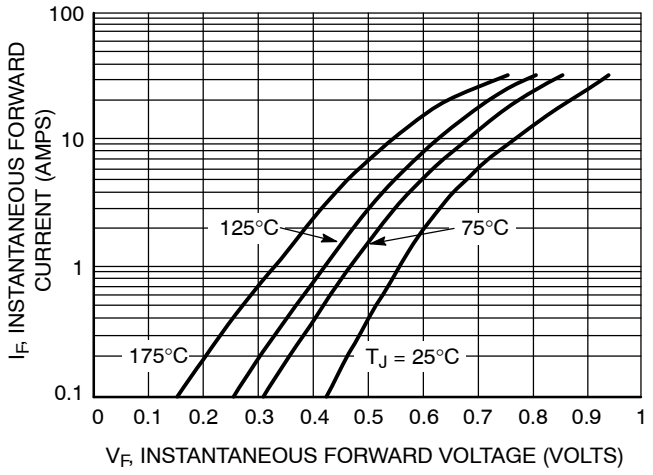


Figure 2. Maximum Forward Voltage Per Diode

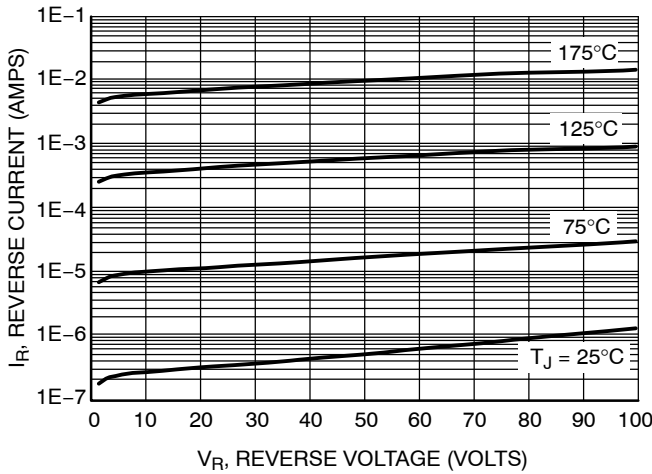


Figure 3. Typical Reverse Current Per Diode

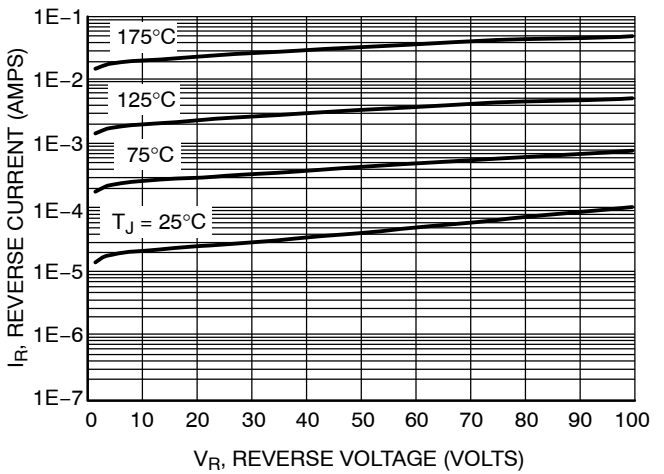


Figure 4. Typical Capacitance Per Diode

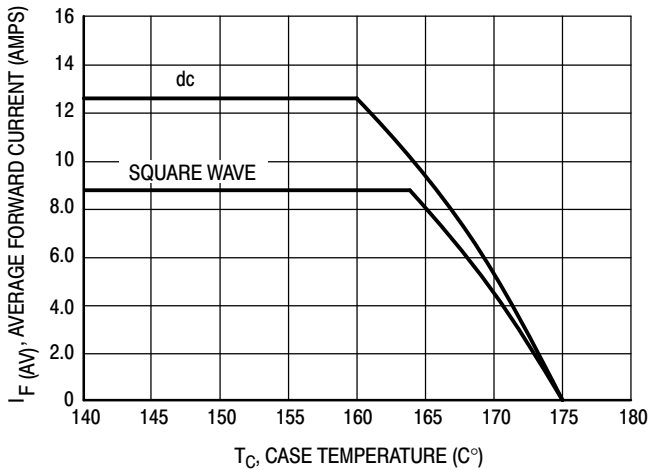


Figure 5. Current Derating, Case Per Leg

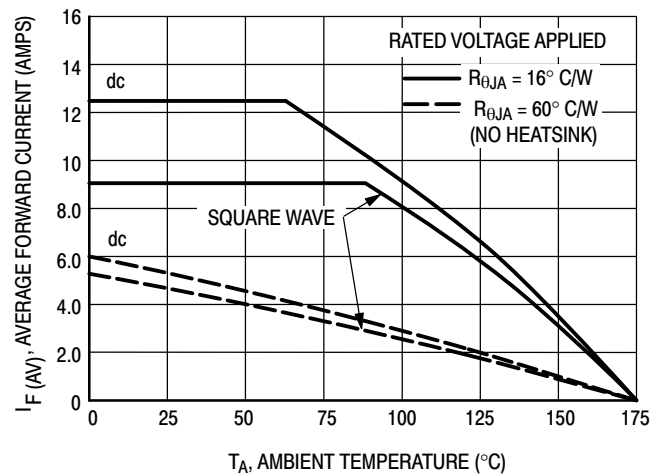


Figure 6. Current Derating, Ambient Per Leg

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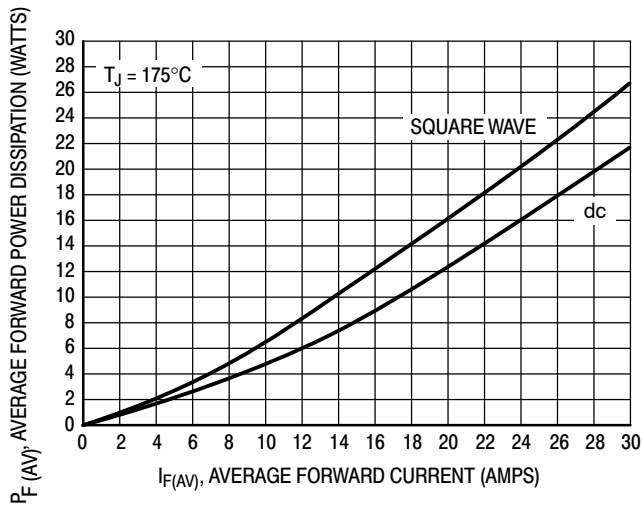


Figure 7. Forward Power Dissipation

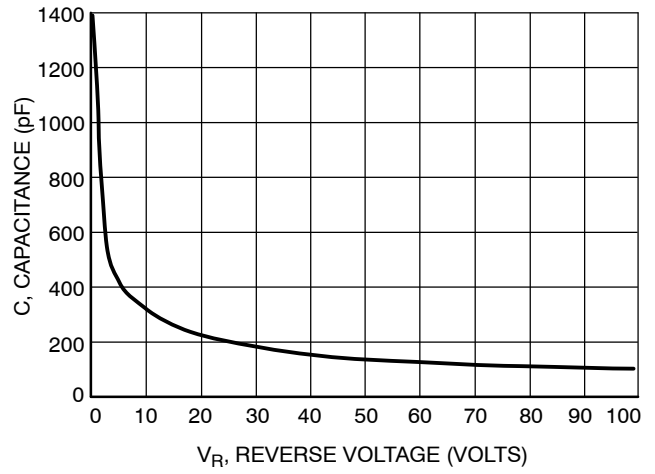
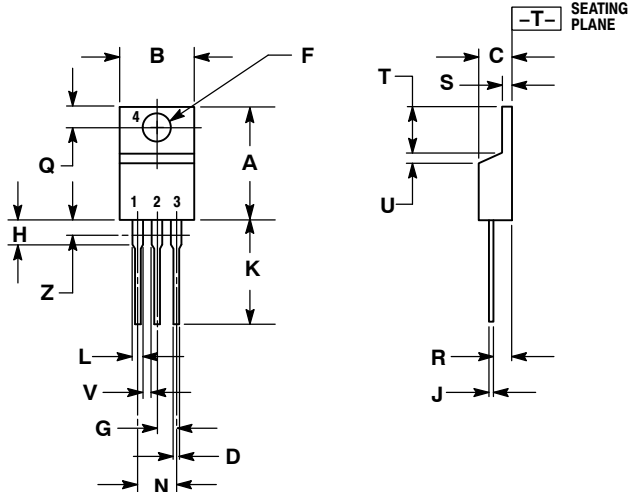


Figure 8. Typical Capacitance Per Diode

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## PACKAGE DIMENSIONS

TO-220  
CASE 221A-09  
ISSUE AF



**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	0.161	3.61	4.09
G	0.095	0.105	2.42	2.66
H	0.110	0.155	2.80	3.93
J	0.014	0.025	0.36	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:**

- PIN 1. ANODE  
2. CATHODE  
3. ANODE  
4. CATHODE

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