

# MBR3045

## SWITCHMODE™ Power Rectifier

### Features and Benefits

- Dual Diode Construction – Terminals 1 and 3 May Be Connected for Parallel Operation at Full Rating
- 45 V Blocking Voltage
- 30 A Total (15 A Per Diode Leg)
- Low Forward Voltage Drop
- 175°C Operating Junction Temperature

### Applications

- Power Supply – Output Rectification
- Power Management
- Instrumentation

### Mechanical Characteristics

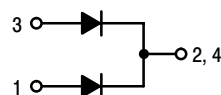
- Case: Epoxy, Molded
- Weight (Approximately): 1.9 Grams (TO-220AB)  
1.5 Grams (TO-262)
- Finish: All External Surfaces Corrosion Resistant and Terminal Leads are Readily Solderable
- Lead Temperature for Soldering Purposes:  
260°C Max. for 10 Seconds
- ESD Rating: Human Body Model 3B  
Machine Model C
- Epoxy Meets UL 94 V-0 @ 0.125 in



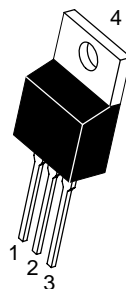
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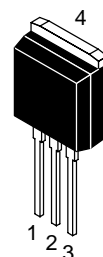
## SCHOTTKY BARRIER RECTIFIER 30 AMPERES, 45 VOLTS



### MARKING DIAGRAMS



TO-220AB  
CASE 221A  
STYLE 6



I²PAK (TO-262)  
CASE 418D  
PLASTIC



A = Assembly Location  
Y = Year  
WW = Work Week  
AKA = Polarity Designator  
G = Pb-Free Device

### ORDERING INFORMATION

Device	Package	Shipping
MBR3045ST	TO-220	50 Units/Rail
MBR3045STG	TO-220 (Pb-Free)	50 Units/Rail
MBRB3045CT-1G	TO-262 (Pb-Free)	50 Units/Rail

# MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	$V_{RRM}$ $V_{RWM}$ $V_R$	45	V
Average Rectified Current Per Device ( $T_C = 130^\circ\text{C}$ ) Per Diode	$I_{F(AV)}$	30 15	A
Peak Repetitive Forward Current, per Diode (Square Wave, $V_R = 45\text{ V}$ , 20 kHz)	$I_{FRM}$	30	A
Non-Repetitive Peak Surge Current (Surge Applied at Rated Load Conditions, Halfwave, Single Phase, 60 Hz)	$I_{FSM}$	150	A
Peak Repetitive Reverse Current, per Diode (2.0 $\mu\text{s}$ , 1.0 kHz)	$I_{RRM}$	2.0	A
Storage Temperature Range	$T_{stg}$	-65 to +175	$^\circ\text{C}$
Operating Junction Temperature (Note 1)	$T_J$	-65 to +175	$^\circ\text{C}$
Peak Surge Junction Temperature (Forward Current Applied)	$T_{J(pk)}$	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 (Per Diode)

Symbol	Characteristic	Condition	Min	Typ	Max	Unit
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case		–	1.5	–	$^\circ\text{C/W}$

## ELECTRICAL CHARACTERISTICS (Per Diode)

$V_F$	Instantaneous Forward Voltage (Note 2)	$I_F = 15\text{ Amp}$ , $T_J = 25^\circ\text{C}$ $I_F = 15\text{ Amp}$ , $T_J = 125^\circ\text{C}$ $I_F = 30\text{ Amp}$ , $T_J = 25^\circ\text{C}$ $I_F = 30\text{ Amp}$ , $T_J = 125^\circ\text{C}$	– – – –	– – – –	0.62 0.57 0.76 0.72	V
$I_R$	Instantaneous Reverse Current (Note 2)	$V_R = 45\text{ Volts}$ , $T_J = 25^\circ\text{C}$ $V_R = 45\text{ Volts}$ , $T_J = 125^\circ\text{C}$	– –	– –	0.2 40	mA

- Pulse Test: Pulse Width = 300  $\mu\text{s}$ , Duty Cycle  $\leq 2.0\%$ .

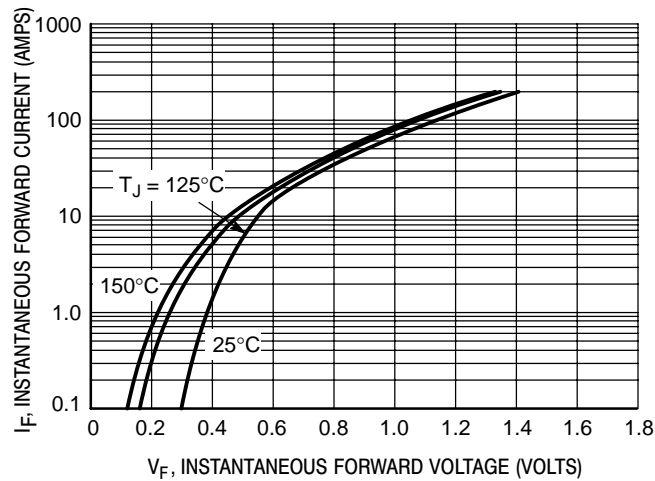


Figure 1. Typical Forward Voltage

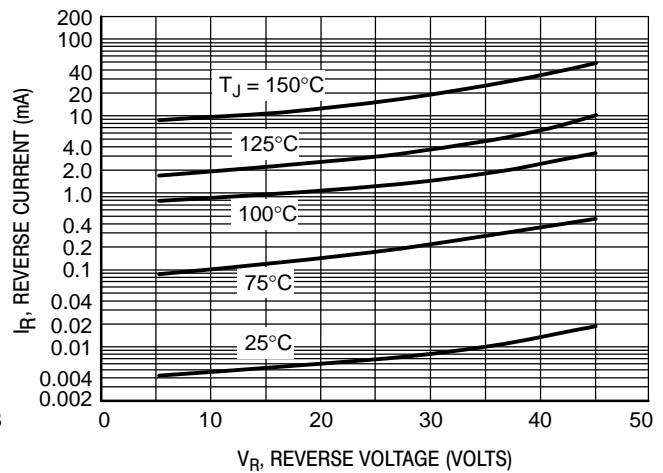


Figure 2. Typical Reverse Current

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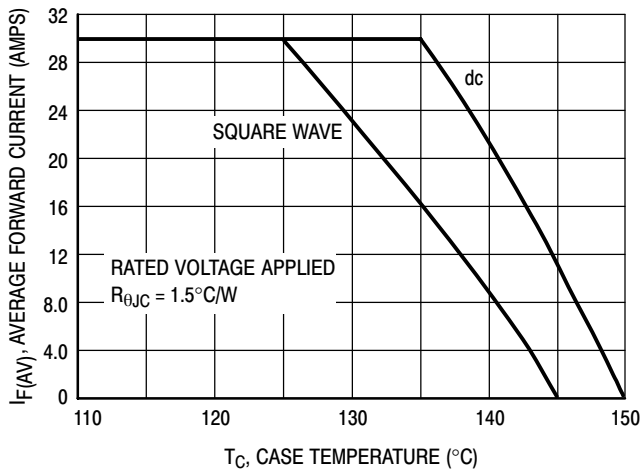


Figure 3. Current Derating, Case

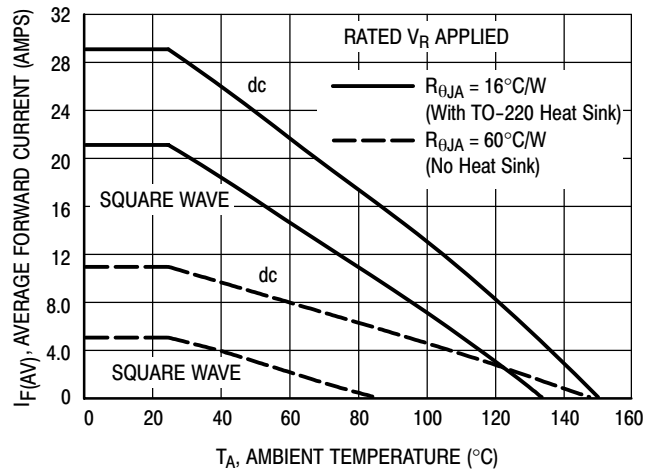


Figure 4. Current Derating, Ambient

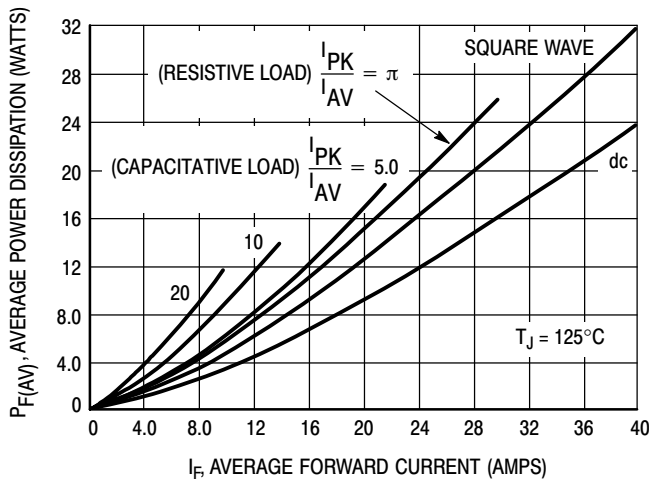


Figure 5. Forward Power Dissipation

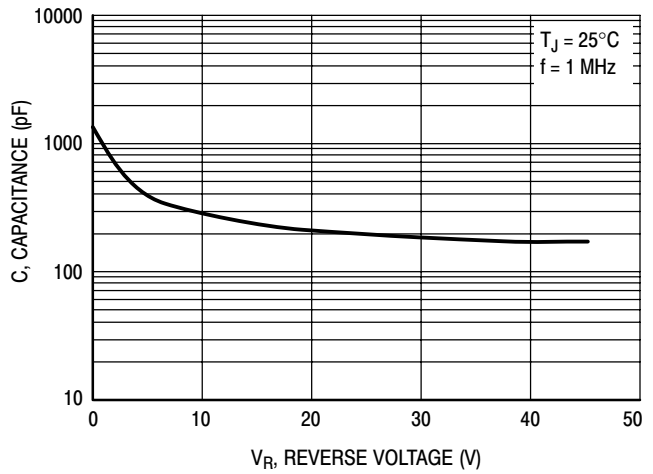
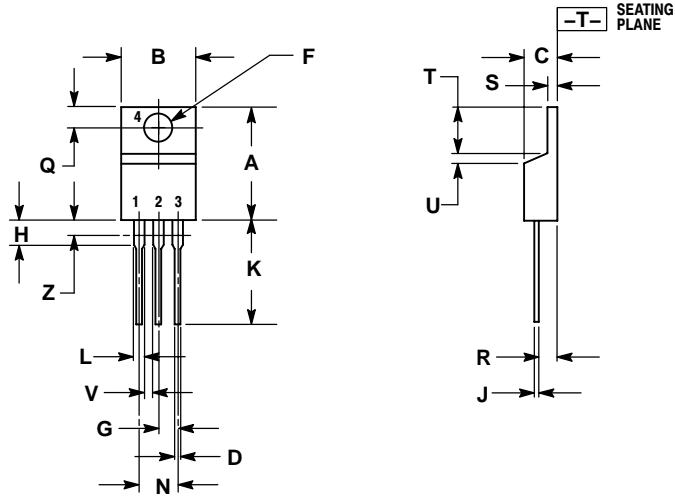


Figure 6. Capacitance

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## PACKAGE DIMENSIONS

TO-220  
PLASTIC  
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.

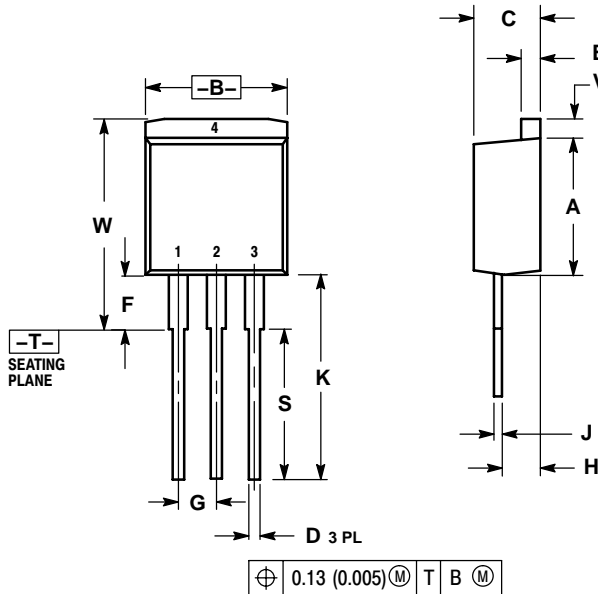
DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.570	0.620	14.48	15.75
B	0.380	0.405	9.66	10.28
C	0.160	0.190	4.07	4.82
D	0.025	0.035	0.64	0.88
F	0.142	0.147	3.61	3.73
G	0.095	0.105	2.42	2.66
H	0.110	0.155	2.80	3.93
J	0.018	0.025	0.46	0.64
K	0.500	0.562	12.70	14.27
L	0.045	0.060	1.15	1.52
N	0.190	0.210	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:  
PIN 1. ANODE  
2. CATHODE  
3. ANODE  
4. CATHODE

# MBR3045

## PACKAGE DIMENSIONS


I<sup>2</sup>PAK (TO-262)  
CASE 418D-01  
ISSUE B



- NOTES:  
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.  
2. CONTROLLING DIMENSION: INCH.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.335	0.380	8.51	9.65
B	0.380	0.406	9.65	10.31
C	0.160	0.185	4.06	4.70
D	0.026	0.035	0.66	0.88
E	0.045	0.055	1.14	1.40
F	0.122 REF		3.10 REF	
G	0.100 BSC		2.54 BSC	
H	0.094	0.110	2.39	2.79
J	0.013	0.025	0.33	0.64
K	0.500	0.562	12.70	14.27
S	0.390 REF		9.90 REF	
V	0.045	0.070	1.14	1.78
W	0.522	0.551	13.25	14.00

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