

# MBR3045ST, MBRB3045CT-1

## 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
- Low Forward Voltage Drop
- 175°C Operating Junction Temperature
- Pb-Free Packages are Available

### 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
- Epoxy Meets UL 94 V-0 @ 0.125 in

### 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 ( $T_C = 130^\circ\text{C}$ )	Per Device 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	°C
Operating Junction Temperature (Note 1)	$T_J$	-65 to +175	°C
Peak Surge Junction Temperature (Forward Current Applied)	$T_{J(pk)}$	175	°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.

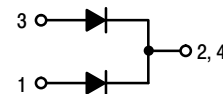
1. The heat generated must be less than the thermal conductivity from Junction-to-Ambient:  $dP_D/dT_J < 1/R_{\theta JA}$ .



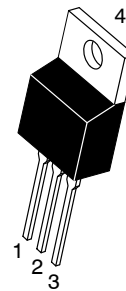
ON Semiconductor™

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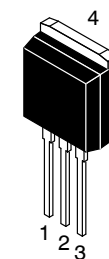
## SCHOTTKY BARRIER RECTIFIER 30 AMPERES 45 VOLTS



### 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

See detailed ordering and shipping information in the package dimensions section on page 3 of this data sheet.

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## THERMAL CHARACTERISTICS (Per Diode)

Characteristic	Symbol	Value	Unit
Thermal Resistance, Junction to Case	$R_{\theta JC}$	1.5	$^{\circ}C/W$

## ELECTRICAL CHARACTERISTICS (Per Diode)

Instantaneous Forward Voltage (Note 2)	( $i_F = 15$ Amp, $T_C = 25^{\circ}C$ )	$v_F$	0.62	Volts
	( $i_F = 15$ Amp, $T_C = 125^{\circ}C$ )		0.57	
	( $i_F = 30$ Amp, $T_C = 25^{\circ}C$ )		0.76	
	( $i_F = 30$ Amp, $T_C = 125^{\circ}C$ )		0.72	
Instantaneous Reverse Current (Note 2)	( $V_R = 45$ Volts, $T_C = 25^{\circ}C$ )	$I_R$	0.2	mA
	( $V_R = 45$ Volts, $T_C = 125^{\circ}C$ )		40	

2 Pulse Test: Pulse Width = 300  $\mu s$ , Duty Cycle  $\leq 2.0\%$

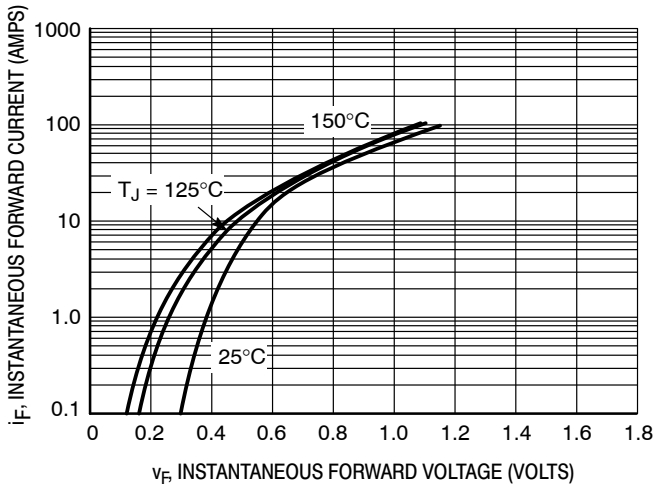


Figure 1. Typical Forward Voltage

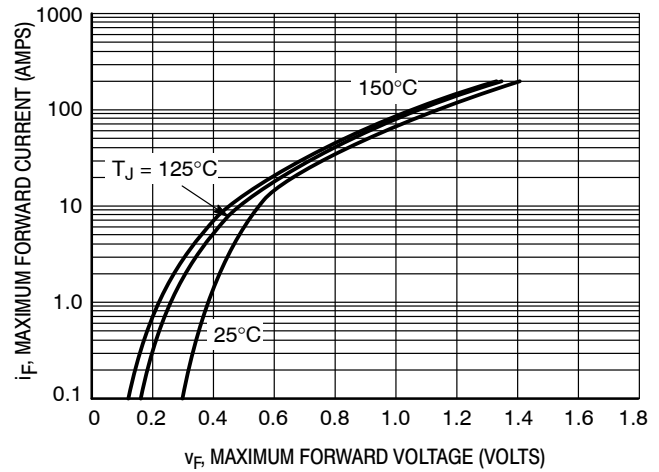


Figure 2. Maximum Reverse Current

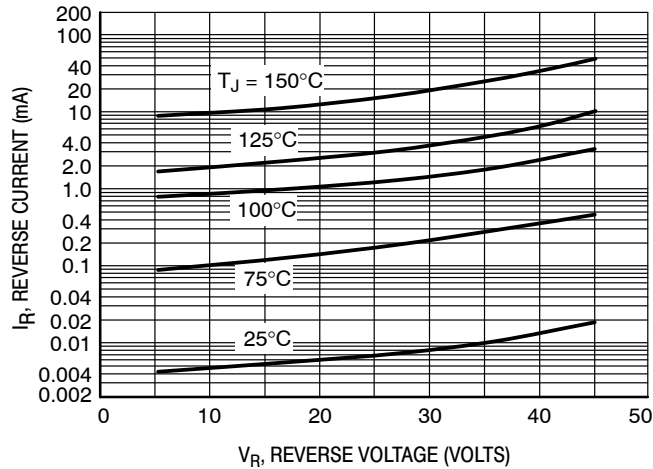


Figure 3. Typical Reverse Current

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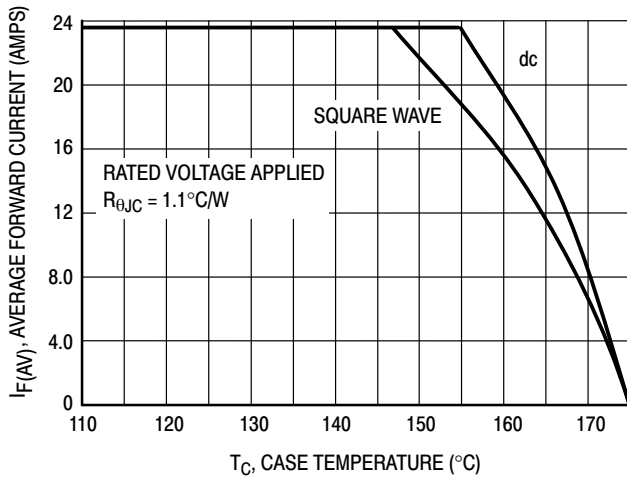


Figure 4. Current Derating, Case

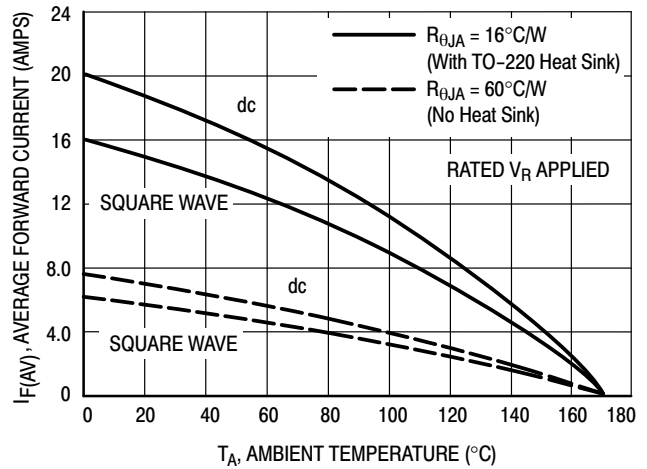


Figure 5. Current Derating, Ambient

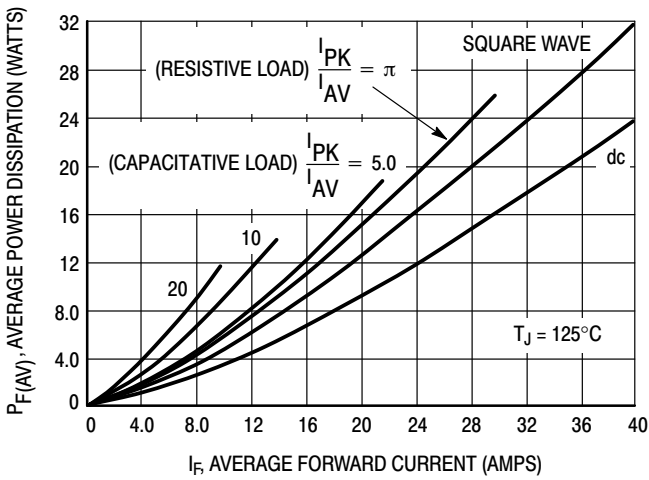


Figure 6. Forward Power Dissipation

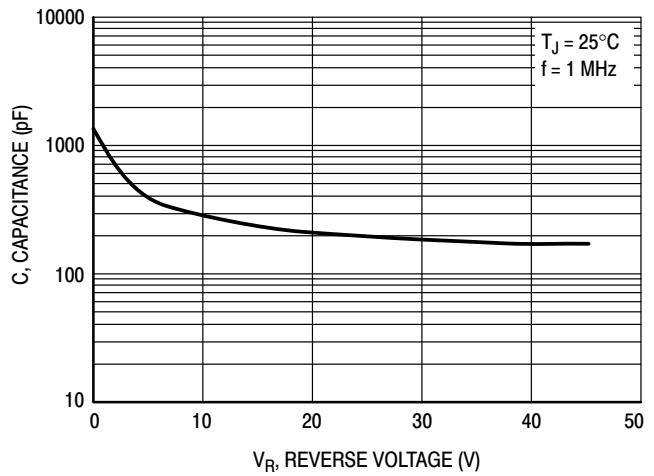


Figure 7. Capacitance

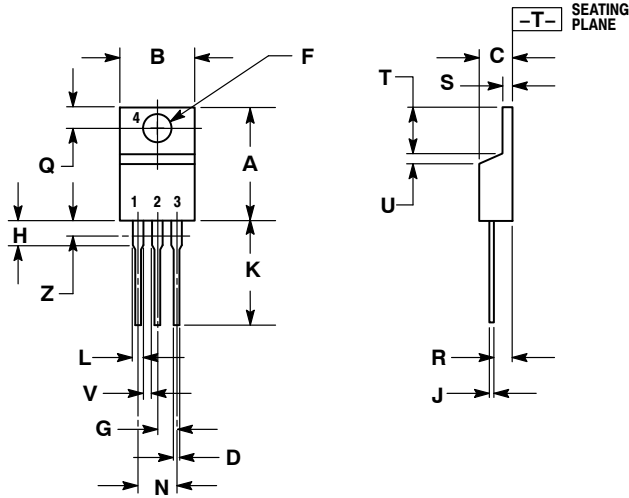
## ORDERING INFORMATION

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

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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

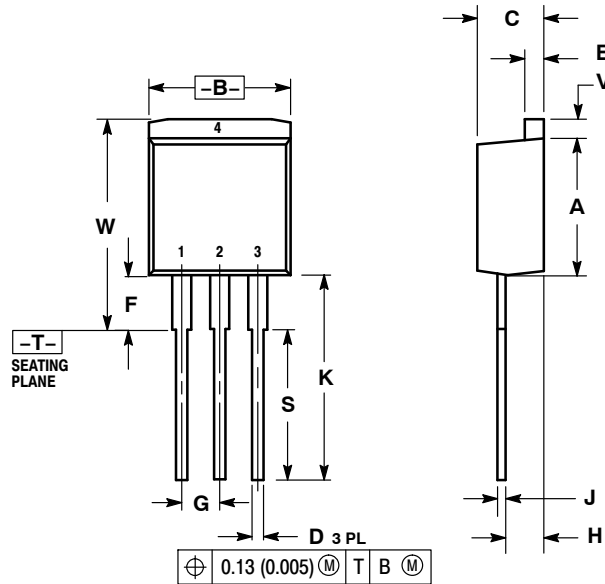
STYLE 6:

- PIN 1. ANODE
- CATHODE
- ANODE
- CATHODE

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## PACKAGE DIMENSIONS


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



- 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	0.89
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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