

MBR3045ST, MBRB3045CT-1

Switch-mode 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
- These are Pb-Free Devices

Applications

- Power Supply – Output Rectification
- Power Management
- Instrumentation

Mechanical Characteristics

- Case: Epoxy, Molded
- Weight (Approximately): 1.9 Grams (TO–220)
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	V_{RRM}	45	V
Working Peak Reverse Voltage	V_{RWM}		
DC Blocking Voltage	V_R		
Average Rectified Current	$I_{F(AV)}$	30	A
($T_C = 130^\circ\text{C}$)	Per Diode	15	
Peak Repetitive Forward Current, per Diode	I_{FRM}	30	A
(Square Wave, $V_R = 45\text{ V}$, 20 kHz)			
Non-Repetitive Peak Surge Current	I_{FSM}	150	A
(Surge Applied at Rated Load Conditions, Halfwave, Single Phase, 60 Hz)			
Peak Repetitive Reverse Current, per Diode	I_{RRM}	2.0	A
(2.0 μs , 1.0 kHz)			
Storage Temperature Range	T_{stg}	–65 to +175	°C
Operating Junction Temperature (Note 1)	T_J	–65 to +175	°C
Peak Surge Junction Temperature	$T_{J(pk)}$	175	°C
(Forward Current Applied)			
Voltage Rate of Change (Rated V_R)	dv/dt	10,000	V/ μs

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

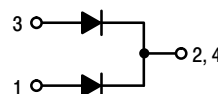
1. The heat generated must be less than the thermal conductivity from Junction-to-Ambient: $dP_D/dT_J < 1/R_{\theta JA}$.



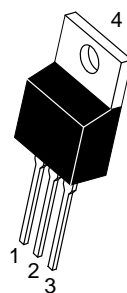
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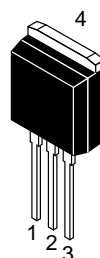
SCHOTTKY BARRIER RECTIFIER 30 AMPERES 45 VOLTS



MARKING DIAGRAMS



TO–220
CASE 221A
STYLE 6



I²PAK (TO–262)
CASE 418D
STYLE 3



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	$^{\circ}\text{C}/\text{W}$

ELECTRICAL CHARACTERISTICS (Per Diode)

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

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

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

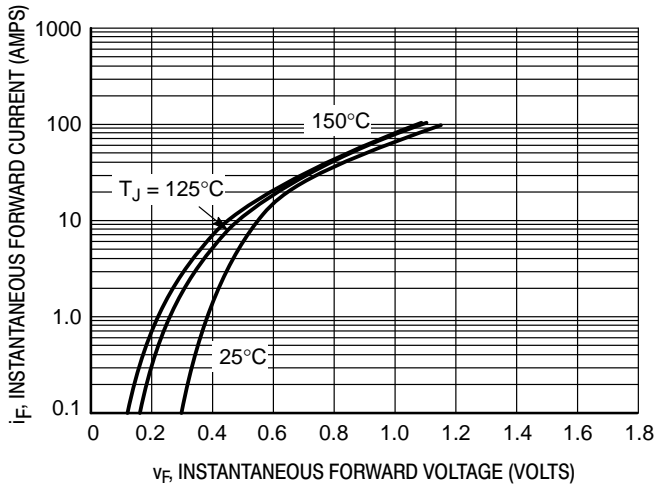


Figure 1. Typical Forward Voltage

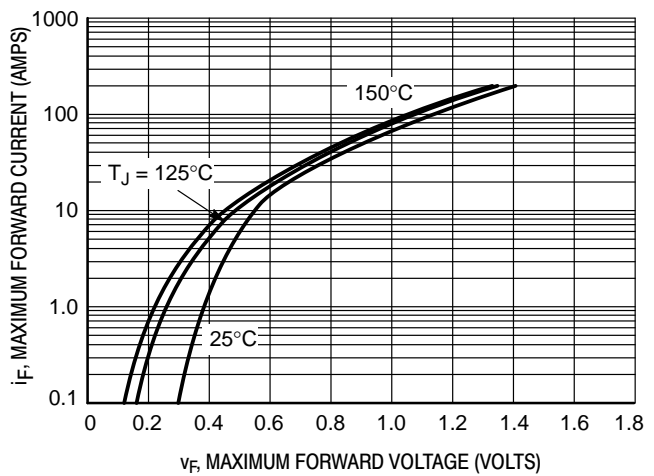


Figure 2. Maximum Reverse Current

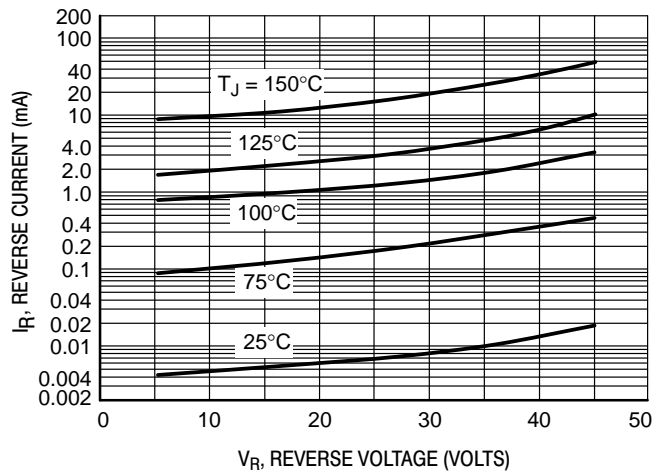


Figure 3. Typical Reverse Current

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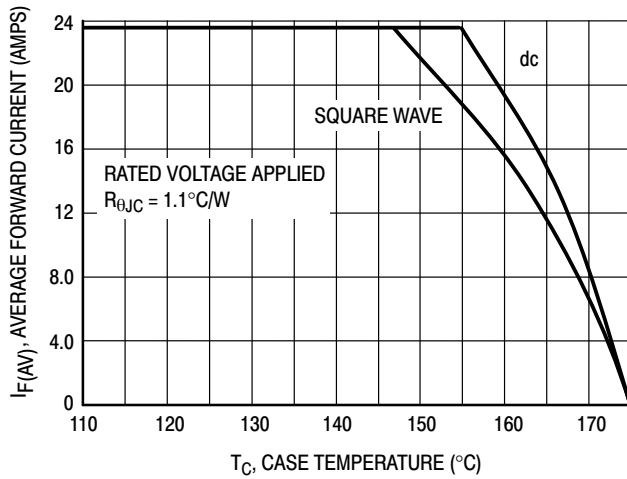


Figure 4. Current Derating, Case

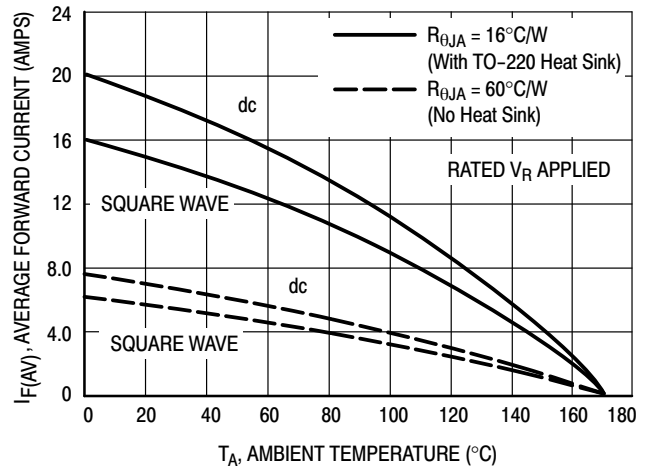


Figure 5. Current Derating, Ambient

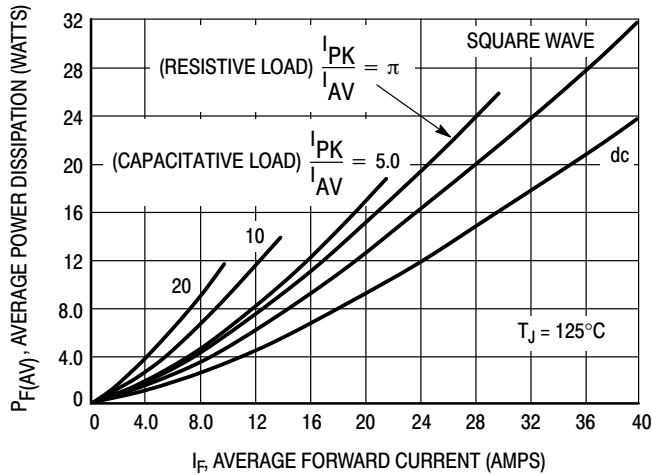


Figure 6. Forward Power Dissipation

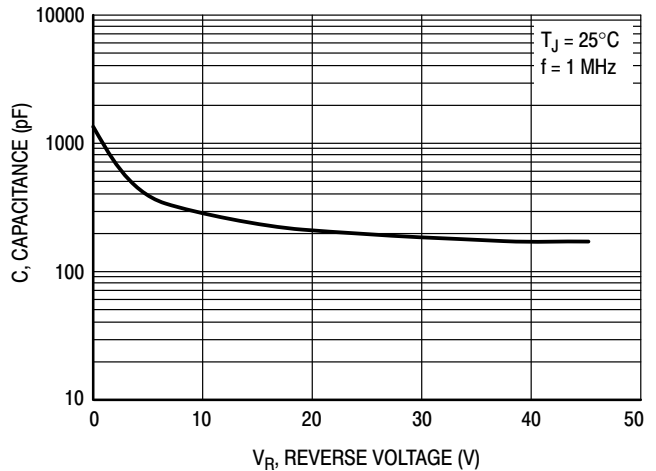
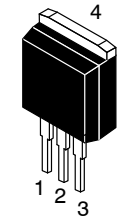


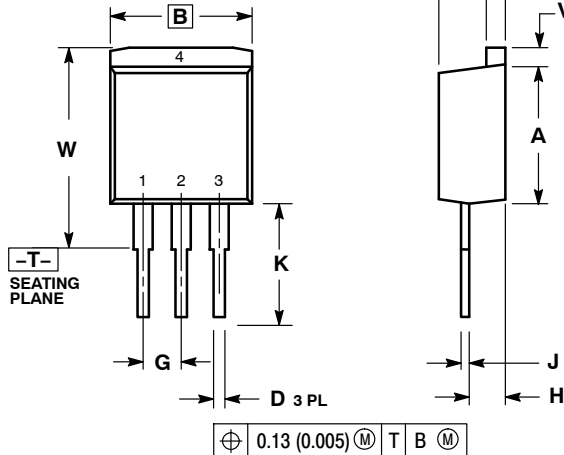
Figure 7. Capacitance

ORDERING INFORMATION

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



SCALE 1:1


STYLE 1:

PIN 1. BASE
2. COLLECTOR
3. EMITTER
4. COLLECTOR

STYLE 2:

PIN 1. GATE
2. DRAIN
3. SOURCE
4. DRAIN

STYLE 3:

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

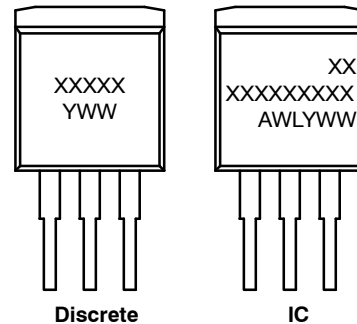
STYLE 4:

PIN 1. GATE
2. COLLECTOR
3. EMITTER
4. COLLECTOR

NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. 418-01 THRU -04 OBSOLETE, NEW STANDARD 418-05.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.340	0.380	8.64	9.65
B	0.380	0.405	9.65	10.29
C	0.160	0.190	4.06	4.83
D	0.020	0.035	0.51	0.89
E	0.045	0.055	1.14	1.40
G	0.100 BSC		2.54 BSC	
H	0.080	0.110	2.03	2.79
J	0.018	0.025	0.46	0.64
K	0.285	0.305	7.493	7.747
V	0.045	0.055	1.14	1.40
W	0.525	0.545	13.335	13.843

GENERIC MARKING DIAGRAMS*

XXXX = Specific Device Code
A = Assembly Location
WL = Wafer Lot
Y = Year
WW = Work Week

*This information is generic. Please refer to device data sheet for actual part marking. Pb-Free indicator, "G" or microdot "▪", may or may not be present. Some products may not follow the Generic Marking.

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