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 (Per Device / Per Diode) (T_C = 130°C)	$I_{F(AV)}$	30 15	A
Peak Repetitive Forward Current, per Diode (Square Wave, V_R = 45 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 μs, 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/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.

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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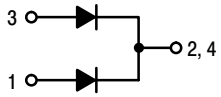
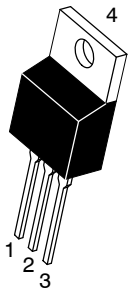
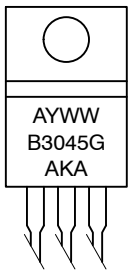
SCHOTTKY BARRIER RECTIFIER 30 AMPERES 45 VOLTS

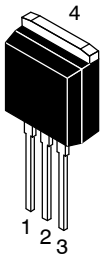


MARKING DIAGRAMS

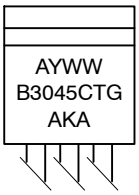


TO−220AB CASE 221A STYLE 6





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.

THERMAL CHARACTERISTICS (Per Diode)

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

ELECTRICAL CHARACTERISTICS (Per Diode)

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

2 Pulse Test: Pulse Width = 300 μs, Duty Cycle ≤ 2.0%

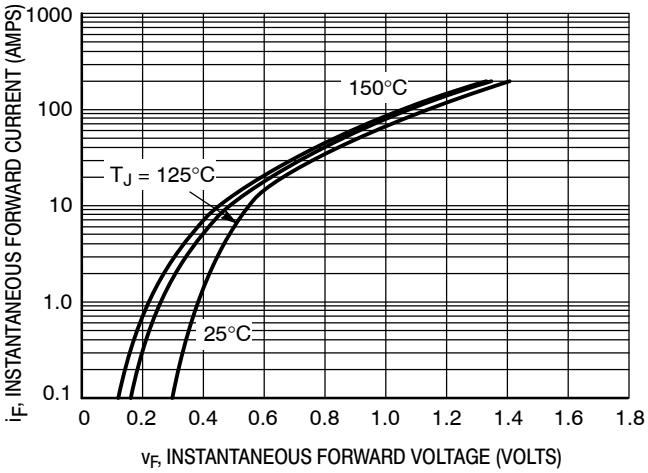


Figure 1. Typical Forward Voltage

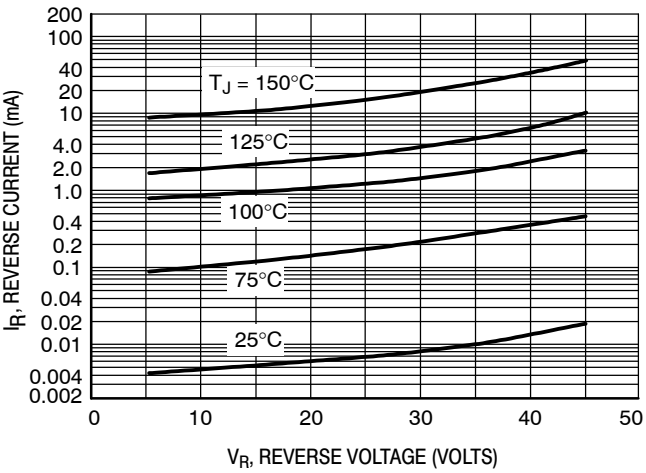


Figure 2. Typical Reverse Current

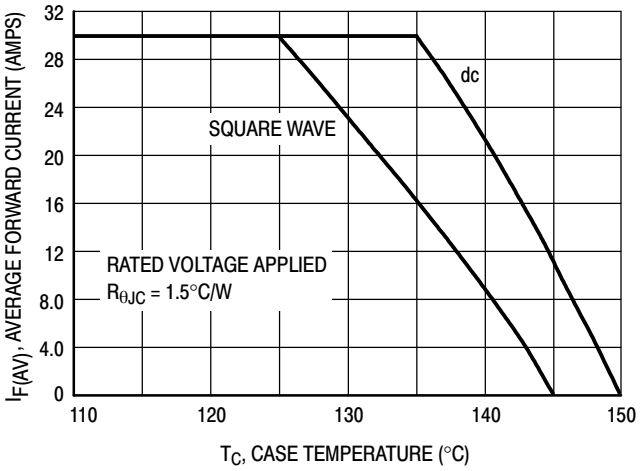


Figure 3. Current Derating, Case

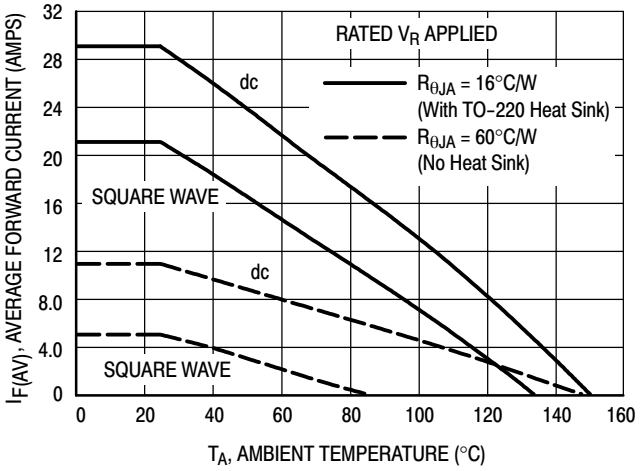


Figure 4. Current Derating, Ambient

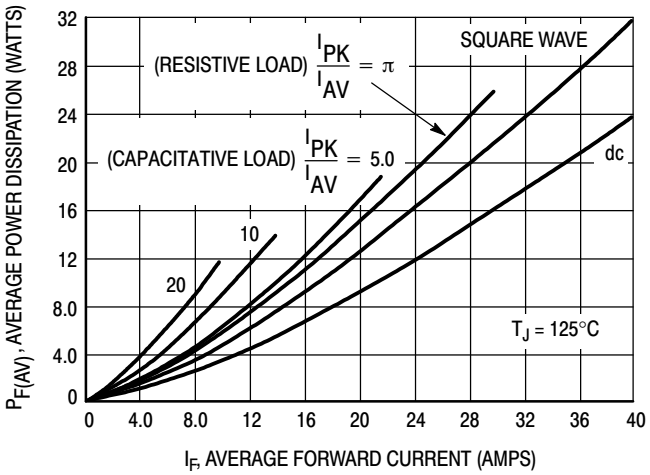


Figure 5. Forward Power Dissipation

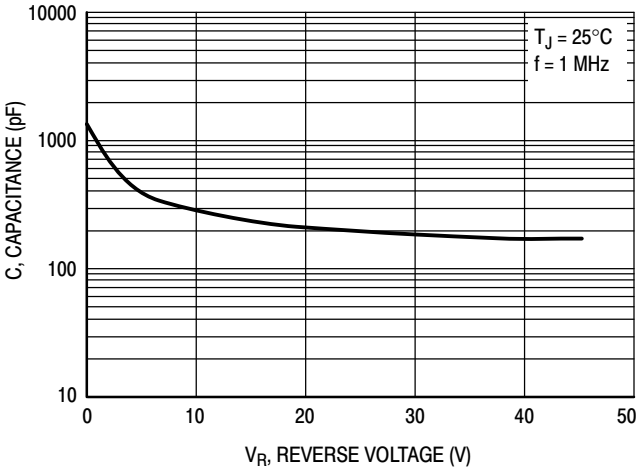


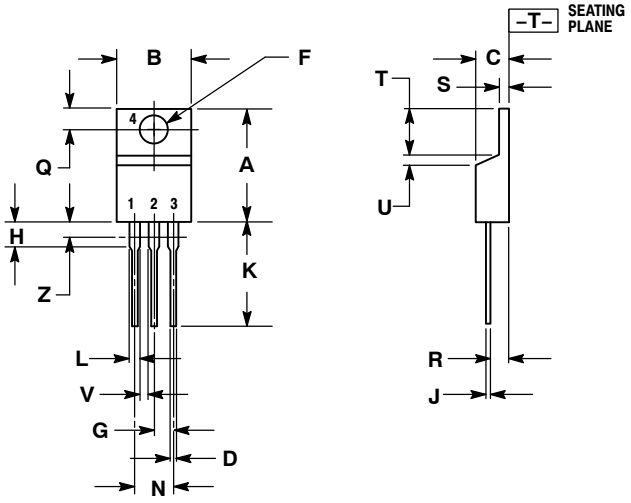
Figure 6. Capacitance

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

PACKAGE DIMENSIONS

TO−220
CASE 221A−09
ISSUE AF



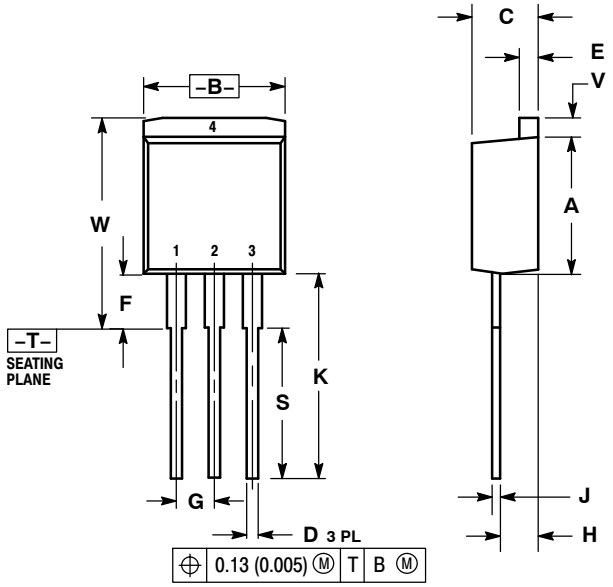
NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. DIMENSION Z DEFINES A ZONE WHERE ALL BODY AND LEAD IRREGULARITIES ARE ALLOWED.

	INCHES		MILLIMETERS	
DIM	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

PACKAGE DIMENSIONS

I²PAK (TO−262)
CASE 418D−01
ISSUE D



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

	INCHES		MILLIMETERS	
DIM	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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PUBLICATION ORDERING INFORMATION

LITERATURE FULFILLMENT:
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