MBRB3030CT

Preferred Device

SWITCHMODE™ Power Rectifier

These state−of−the−art devices use the Schottky Barrier principle with a proprietary barrier metal.

Features

- Guardring for Stress Protection
- Maximum Die Size
- 175°C Operating Junction Temperature
- Short Heat Sink Tab Manufactured − Not Sheared
- Pb−Free Packages are Available

Mechanical Characteristics:

- Case: Epoxy, Molded, Epoxy Meets UL 94 V−0
- Weight: 1.7 Grams (Approximately)
- Finish: All External Surfaces Corrosion Resistant and Terminal Leads are Readily Solderable
- Lead and Mounting Surface Temperature for Soldering Purposes: 260°C Max. for 10 Seconds
- Device Meets MSL1 Requirements
- ESD Ratings: Machine Model, C (>400 V)
  Human Body Model, 3B (>8000 V)

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	V_{RRM} V_{RWM} V_R	30	V
Average Rectified Forward Current (At Rated V_R, T_C = 134°C) Per Device Per Leg	$I_{F(AV)}$	 30 15	A
Peak Repetitive Forward Current (At Rated V_R, Square Wave, 20 kHz, T_C = +137°C) Per Leg	I_{FRM}	30	A
Non−Repetitive Peak Surge Current (Surge Applied at Rated Load Conditions, Halfwave, Single Phase, 60 Hz)	I_{FSM}	200	A
Peak Repetitive Reverse Surge Current (2.0 μs, 1.0 kHz)	I_{RRM}	2.0	A
Storage Temperature Range	T_{stg}	−55 to +175	°C
Operating Junction Temperature (Note 1)	T_J	−55 to +175	°C
Voltage Rate of Change (Rated V_R)	dv/dt	10,000	V/μs
Reverse Energy (Unclamped Inductive Surge) (Inductance = 3 mH, T_C = 25°C)	W	100	mJ

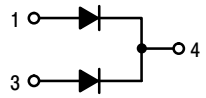
Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur and reliability may be affected.

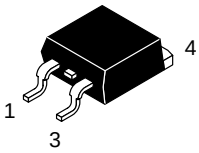
1. The heat generated must be less than the thermal conductivity from Junction−to−Ambient: $dP_D/dT_J < 1/R_{\theta JA}$.

ON Semiconductor®

http://onsemi.com

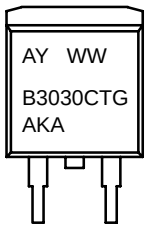
SCHOTTKY BARRIER RECTIFIER 30 AMPERES, 30 VOLTS





D²PAK
CASE 418B
STYLE 3

MARKING DIAGRAM



A	= Assembly Location
Y	= Year
WW	= Work Week
B3030CT	= Device Code
G	= Pb−Free Package
AKA	= Diode Polarity

ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 2 of this data sheet.

Preferred devices are recommended choices for future use and best overall value.

THERMAL CHARACTERISTICS (Per Leg)

Characteristic	Symbol	Value	Unit
Thermal Resistance, − Junction−to−Case − Junction−to−Ambient (Note 2)	$R_{\theta JC}$ $R_{\theta JA}$	1.0 50	°C/W

2. When mounted using minimum recommended pad size on FR−4 board.

ELECTRICAL CHARACTERISTICS (Per Leg)

Characteristic	Symbol	Value	Unit
Maximum Instantaneous Forward Voltage (Note 3), Per Leg (I_F = 15 Amps, T_C = +25°C) (I_F = 15 Amps, T_C = +150°C) (I_F = 30 Amps, T_C = +25°C) (I_F = 30 Amps, T_C = +150°C)	V_F	 0.54 0.47 0.67 0.66	V
Maximum Instantaneous Reverse Current (Note 3), Per Leg (Rated dc Voltage, T_C = +25°C) (Reverse Voltage = 10 V, T_C = +150°C) (Rated dc Voltage, T_C = +150°C)	I_R	 0.6 46 145	mA

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

ORDERING INFORMATION

Device	Package	Shipping†
MBRB3030CT	D^2PAK	50 Units / Rail
MBRB3030CTG	D^2PAK (Pb−Free)	50 Units / Rail
MBRB3030CTT4	D^2PAK	800 Units / Tape & Reel
MBRB3030CTT4G	D^2PAK (Pb−Free)	800 Units / Tape & Reel

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

ELECTRICAL CHARACTERISTICS

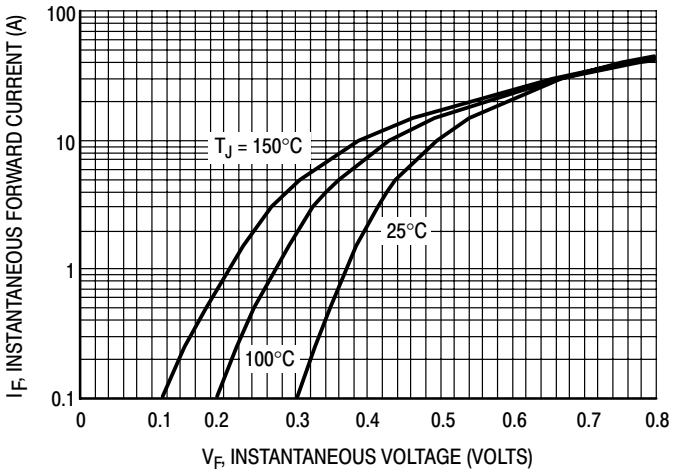


Figure 1. Maximum Forward Voltage, Per Leg

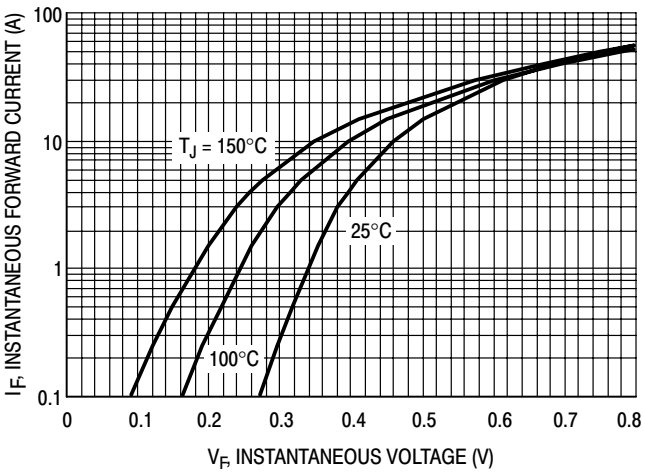


Figure 2. Typical Forward Voltage, Per Leg

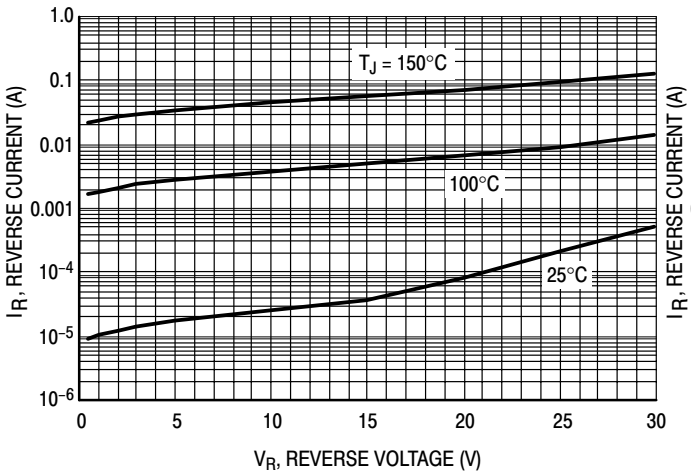


Figure 3. Maximum Reverse Current, Per Leg

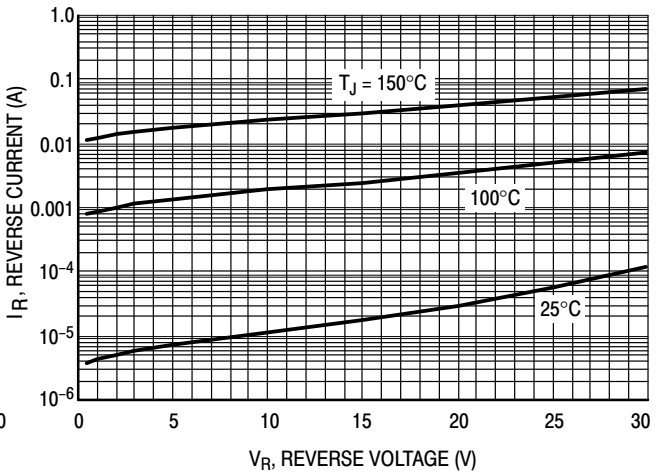


Figure 4. Typical Reverse Current, Per Leg

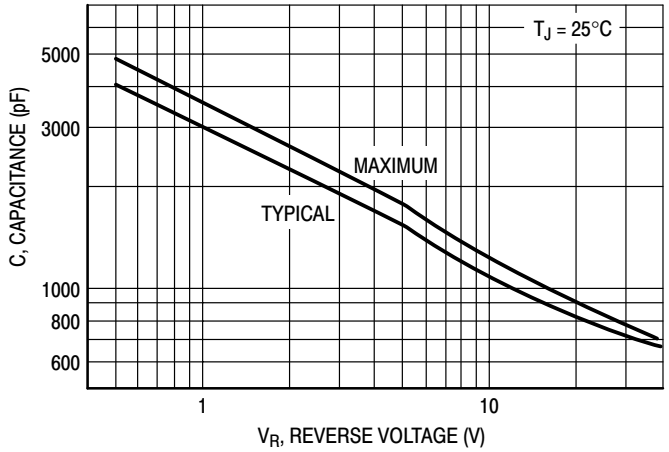


Figure 5. Capacitance

TYPICAL CHARACTERISTICS

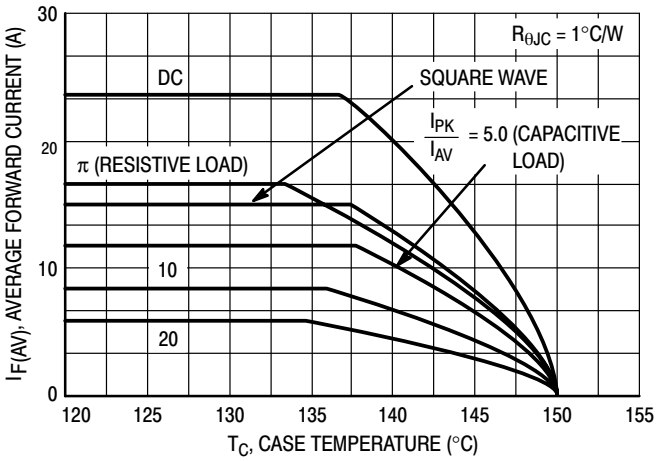


Figure 6. Current Derating, Infinite Heatsink

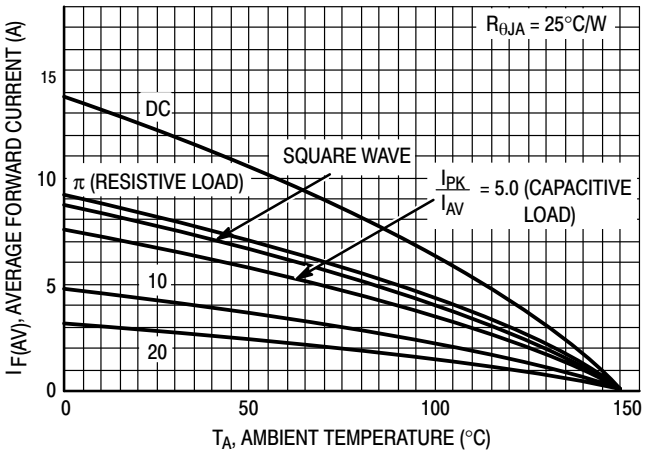


Figure 7. Current Derating

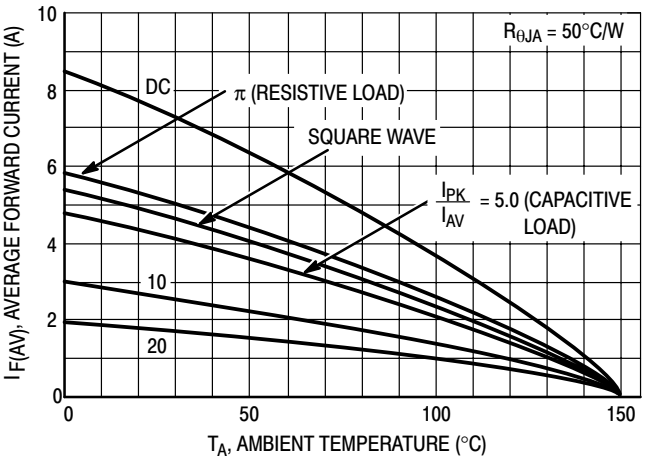


Figure 8. Current Derating, Free Air

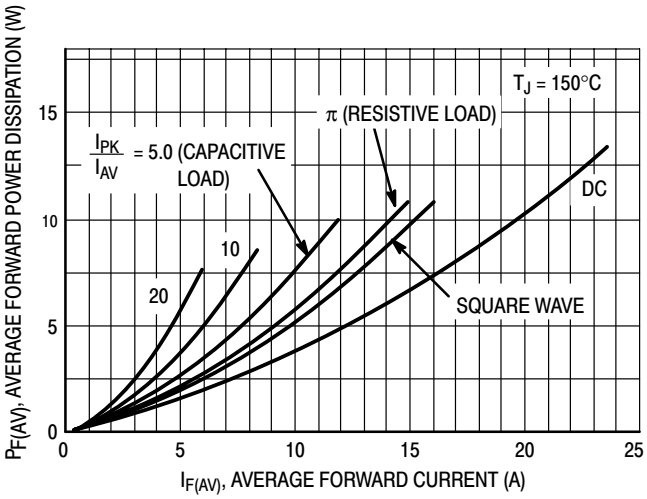


Figure 9. Forward Power Dissipation

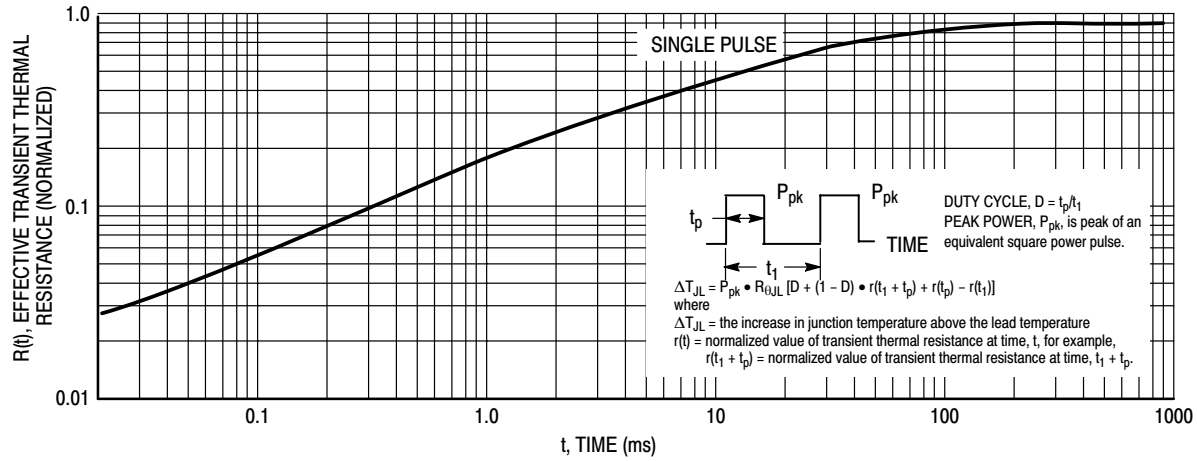


Figure 10. Thermal Response

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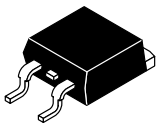

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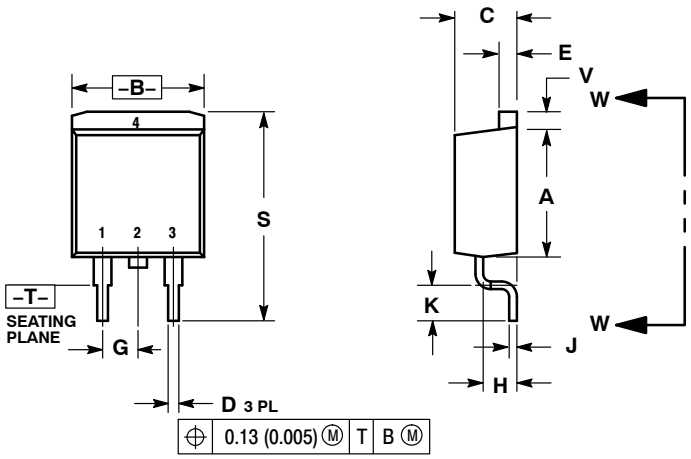
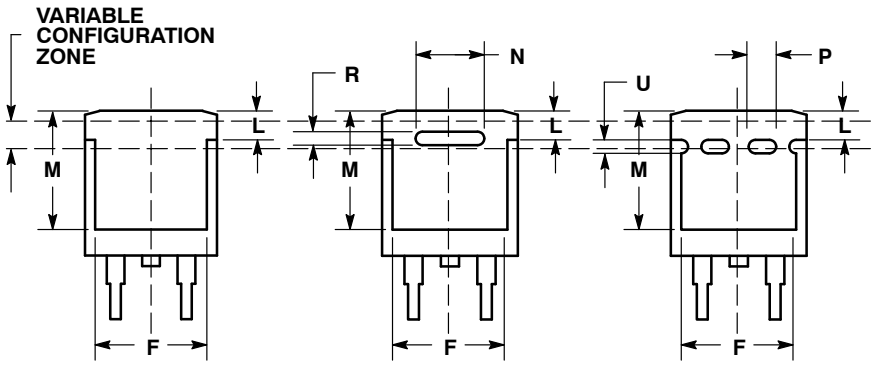
SCALE 1:1



NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. 418B–01 THRU 418B–03 OBSOLETE, NEW STANDARD 418B–04.

	INCHES		MILLIMETERS	
DIM	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
F	0.310	0.350	7.87	8.89
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	0.090	0.110	2.29	2.79
L	0.052	0.072	1.32	1.83
M	0.280	0.320	7.11	8.13
N	0.197 REF		5.00 REF	
P	0.079 REF		2.00 REF	
R	0.039 REF		0.99 REF	
S	0.575	0.625	14.60	15.88
V	0.045	0.055	1.14	1.40



VIEW W–W 1 | VIEW W–W 2 | VIEW W–W 3

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

STYLE 5:
PIN 1. CATHODE
2. ANODE
3. CATHODE
4. ANODE

STYLE 6:
PIN 1. NO CONNECT
2. CATHODE
3. ANODE
4. CATHODE

MARKING INFORMATION AND FOOTPRINT ON PAGE 2

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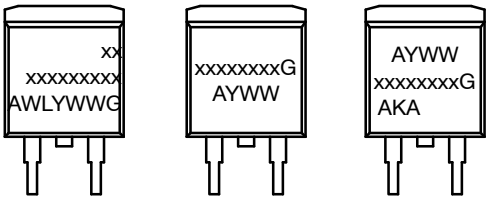
GENERIC MARKING DIAGRAM*

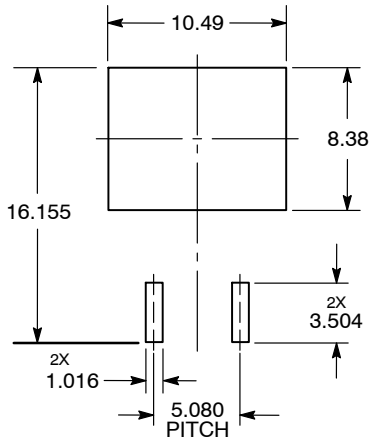


IC **Standard** **Rectifier**

xx	= Specific Device Code
A	= Assembly Location
WL	= Wafer Lot
Y	= Year
WW	= Work Week
G	= Pb−Free Package
AKA	= Polarity Indicator

*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.

SOLDERING FOOTPRINT*



DIMENSIONS: MILLIMETERS

*For additional information on our Pb−Free strategy and soldering details, please download the **onsemi** Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

ADDITIONAL INFORMATION

TECHNICAL PUBLICATIONS:
Technical Library: www.onsemi.com/design/resources/technical−documentation
onsemi Website: www.onsemi.com

ONLINE SUPPORT: www.onsemi.com/support
For additional information, please contact your local Sales Representative at www.onsemi.com/support/sales

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