MBRD620CT, MBRD630CT, MBRD640CT, MBRD650CT, MBRD660CT

MBRD620CT, MBRD640CT and MBRD660CT are Preferred Devices

SWITCHMODE Power Rectifiers

DPAK−3 Surface Mount Package

These state−of−the−art devices are designed for use in switching power supplies, inverters and as free wheeling diodes.

Features

- Extremely Fast Switching
- Extremely Low Forward Drop
- Platinum Barrier with Avalanche Guardrings
- Pb−Free Packages are Available

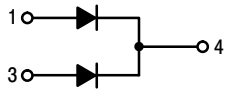
Mechanical Characteristics:

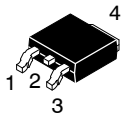
- Case: Epoxy, Molded
- Weight: 0.4 Gram (Approximately)
- Finish: All External Surfaces Corrosion Resistant and Terminal Leads are Readily Solderable
- Lead and Mounting Surface Temperature for Soldering Purposes: 260°C Max. for 10 Seconds

ON Semiconductor®

http://onsemi.com

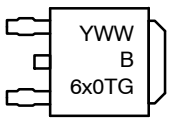
SCHOTTKY BARRIER RECTIFIERS 6.0 AMPERES, 20 − 60 VOLTS





DPAK
CASE 369C

MARKING DIAGRAM



Y	= Year
WW	= Work Week
B6x0T	= Device Code
x	= 2, 3, 4, 5, or 6
G	= Pb−Free Package

ORDERING INFORMATION

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

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

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MAXIMUM RATINGS

Rating		Symbol	MBRD					Unit
			620CT	630CT	640CT	650CT	660CT	
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage		V_{RRM} V_{RWM} V_R	20	30	40	50	60	V
Average Rectified Forward Current T_C = 130°C (Rated V_R)	Per Diode Per Device	$I_{F(AV)}$	3 6					A
Peak Repetitive Forward Current, T_C = 130°C (Rated V_R, Square Wave, 20 kHz) Per Diode		I_{FRM}	6					A
Nonrepetitive Peak Surge Current – (Surge applied at rated load conditions halfwave, single phase, 60 Hz)		I_{FSM}	75					A
Peak Repetitive Reverse Surge Current (2 μs, 1 kHz)		I_{RRM}	1					A
Operating Junction Temperature (Note 1)		T_J	–65 to +175					°C
Storage Temperature		T_{stg}	–65 to +175					°C
Voltage Rate of Change (Rated V_R)		dv/dt	10,000					V/μs

THERMAL CHARACTERISTICS PER DIODE

Rating	Symbol	Value	Unit
Maximum Thermal Resistance, Junction–to–Case	$R_{\theta JC}$	6	°C/W
Maximum Thermal Resistance, Junction–to–Ambient (Note 2)	$R_{\theta JA}$	80	°C/W

ELECTRICAL CHARACTERISTICS PER DIODE

Maximum Instantaneous Forward Voltage (Note 3) i_F = 3 Amps, T_C = 25°C i_F = 3 Amps, T_C = 125°C i_F = 6 Amps, T_C = 25°C i_F = 6 Amps, T_C = 125°C	V_F	 0.7 0.65 0.9 0.85	V
Maximum Instantaneous Reverse Current (Note 3) (Rated dc Voltage, T_C = 25°C) (Rated dc Voltage, T_C = 125°C)	i_R	 0.1 15	mA

1. The heat generated must be less than the thermal conductivity from Junction–to–Ambient: $dP_D/dT_J < 1/R_{\theta JA}$.
2. Rating applies when surface mounted on the minimum pad size recommended.
3. Pulse Test: Pulse Width = 300 μs, Duty Cycle ≤ 2.0%.

ORDERING INFORMATION

Device	Package	Shipping†
MBRD620CTT4	DPAK	2500 Tape & Reel
MBRD620CTT4G	DPAK (Pb−Free)	2500 Tape & Reel
MBRD630CTT4	DPAK−3	2500 Tape & Reel
MBRD630CTT4G	DPAK (Pb−Free)	2500 Tape & Reel
MBRD640CT	DPAK−3	75 Units / Rail
MBRD640CTG	DPAK−3 (Pb−Free)	75 Units / Rail
MBRD640CTT4	DPAK−3	2500 Tape & Reel
MBRD640CTT4G	DPAK−3 (Pb−Free)	2500 Tape & Reel
MBRD650CT	DPAK−3	75 Units / Rail
MBRD650CTG	DPAK (Pb−Free)	75 Units / Rail
MBRD650CTT4	DPAK−3	2500 Tape & Reel
MBRD650CTT4G	DPAK (Pb−Free)	2500 Tape & Reel
MBRD660CT	DPAK−3	75 Units / Rail
MBRD660CTG	DPAK−3 (Pb−Free)	75 Units / Rail
MBRD660CTRL	DPAK−3	1800 Tape & Reel
MBRD660CTRLG	DPAK−3 (Pb−Free)	1800 Tape & Reel
MBRD660CTT4	DPAK−3	2500 Tape & Reel
MBRD660CTT4G	DPAK−3 (Pb−Free)	2500 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.

TYPICAL CHARACTERISTICS

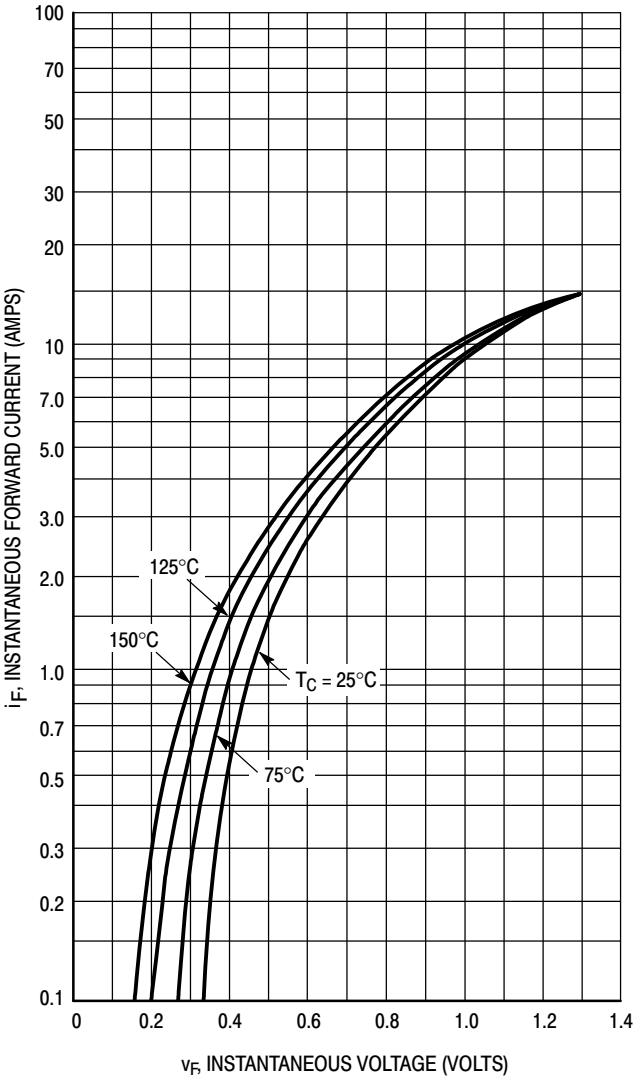
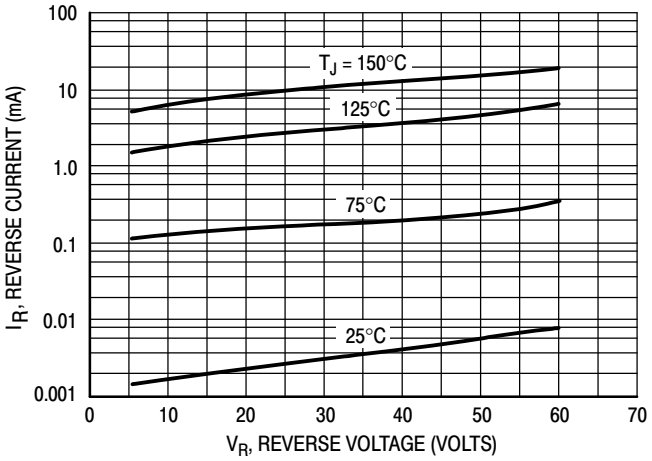


Figure 1. Typical Forward Voltage, Per Leg



*The curves shown are typical for the highest voltage device in the voltage grouping. Typical reverse current for lower voltage selections can be estimated from these curves if V_R is sufficient below rated V_R.

Figure 2. Typical Reverse Current,* Per Leg

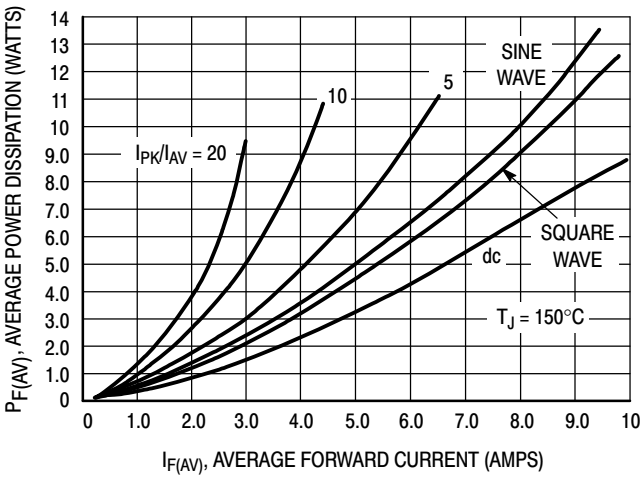


Figure 3. Average Power Dissipation, Per Leg

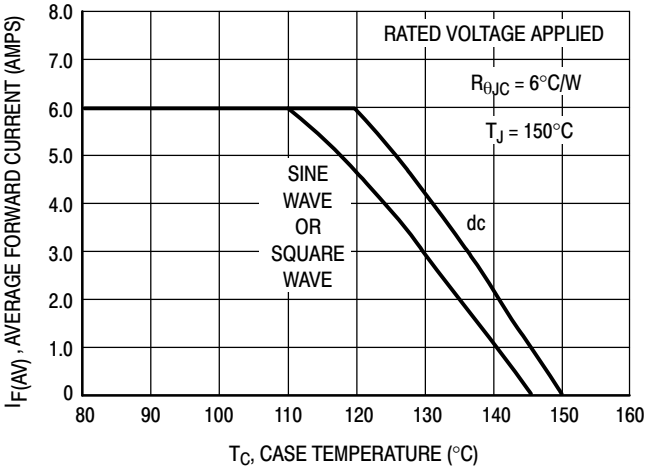


Figure 4. Current Derating, Case, Per Leg

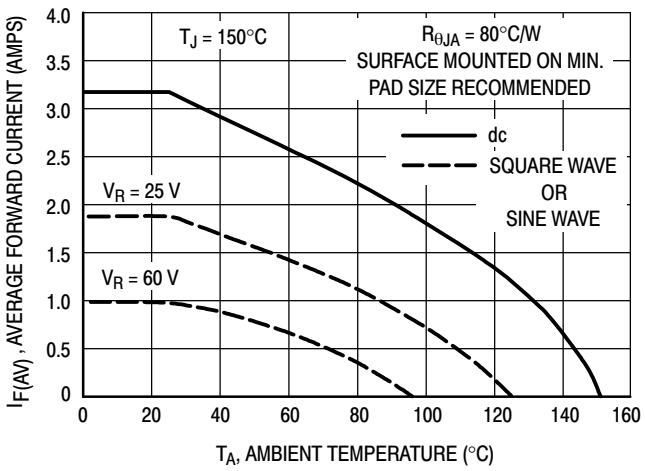


Figure 5. Current Derating, Ambient, Per Leg

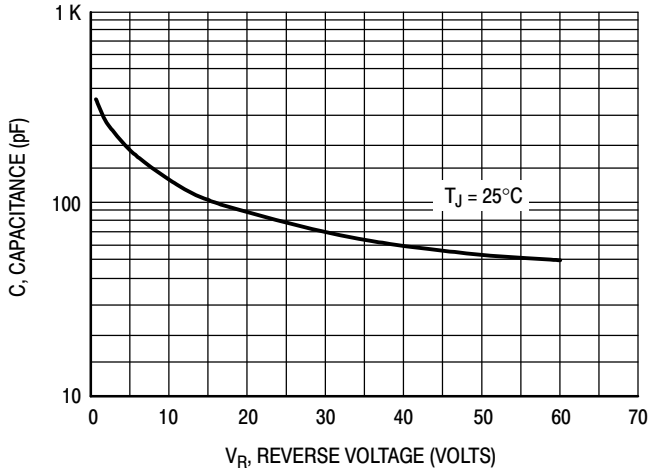
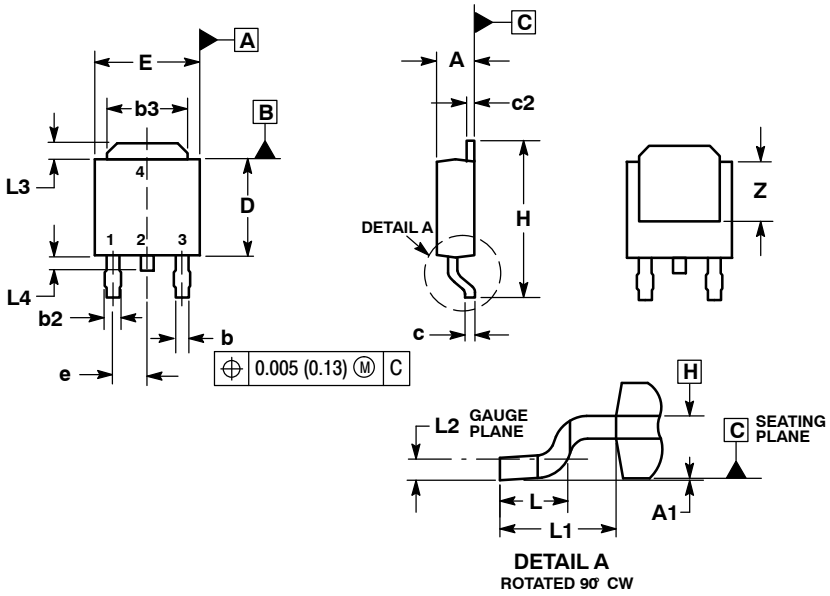


Figure 6. Typical Capacitance, Per Leg

PACKAGE DIMENSIONS

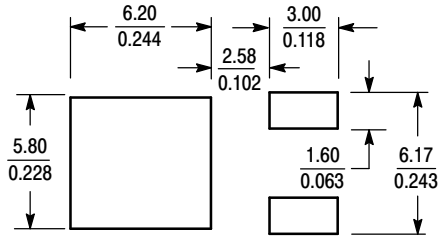
DPAK (SINGLE GAUGE)
CASE 369C−01
ISSUE D



NOTES:
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: INCHES.
3. THERMAL PAD CONTOUR OPTIONAL WITHIN DIMENSIONS b3, L3 and Z.
4. DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH, PROTRUSIONS, OR BURRS. MOLD FLASH, PROTRUSIONS, OR GATE BURRS SHALL NOT EXCEED 0.006 INCHES PER SIDE.
5. DIMENSIONS D AND E ARE DETERMINED AT THE OUTERMOST EXTREMES OF THE PLASTIC BODY.
6. DATUMS A AND B ARE DETERMINED AT DATUM PLANE H.

	INCHES		MILLIMETERS	
DIM	MIN	MAX	MIN	MAX
A	0.086	0.094	2.18	2.38
A1	0.000	0.005	0.00	0.13
b	0.025	0.035	0.63	0.89
b2	0.030	0.045	0.76	1.14
b3	0.180	0.215	4.57	5.46
c	0.018	0.024	0.46	0.61
c2	0.018	0.024	0.46	0.61
D	0.235	0.245	5.97	6.22
E	0.250	0.265	6.35	6.73
e	0.090 BSC		2.29 BSC	
H	0.370	0.410	9.40	10.41
L	0.055	0.070	1.40	1.78
L1	0.108 REF		2.74 REF	
L2	0.020 BSC		0.51 BSC	
L3	0.035	0.050	0.89	1.27
L4	−−−	0.040	−−−	1.01
Z	0.155	−−−	3.93	−−−

SOLDERING FOOTPRINT*



SCALE 3:1 $\left(\frac{\text{mm}}{\text{inches}}\right)$

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

+−

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