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Switch-mode Power Rectifiers

DPAK−3 Surface Mount Package

MBRD620CTT4G Series

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
- NRVBD and SBRV Prefixes for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC−Q101 Qualified and PPAP Capable
- These Devices are Pb−Free and are RoHS Compliant

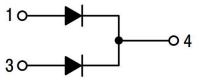
Mechanical Characteristics:

- 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
- ESD Ratings:
  - Machine Model = C
  - Human Body Model = 3B

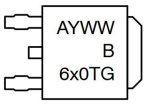
SCHOTTKY BARRIER RECTIFIERS 6.0 AMPERES, 20 − 60 VOLTS



DPAK
CASE 369C



MARKING DIAGRAM



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

ORDERING INFORMATION

Device	Package	Shipping†
MBRD620CTT4G	DPAK (Pb−Free)	2500 / Tape & Reel
MBRD630CTT4G		2500 / Tape & Reel
MBRD640CTT4G		2500 / Tape & Reel
MBRD650CTT4G		2500 / Tape & Reel
MBRD660CTT4G		2500 / Tape & Reel

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MAXIMUM RATINGS

Rating	Symbol	MBRD/NRVBD/SBRV					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 Per Diode Per Device	$I_{F(AV)}$			3 6			A
Peak Repetitive Forward Current, T_C = 130°C (Square Wave, Duty = 0.5) 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

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: $dP_D/dT_J < 1/R_{\theta JA}$.

THERMAL CHARACTERISTICS PER DIODE

Characteristic	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

2. Rating applies when surface mounted on the minimum pad size recommended.

ELECTRICAL CHARACTERISTICS PER DIODE

Characteristic	Symbol	Value	Unit
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

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.

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

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TYPICAL CHARACTERISTICS

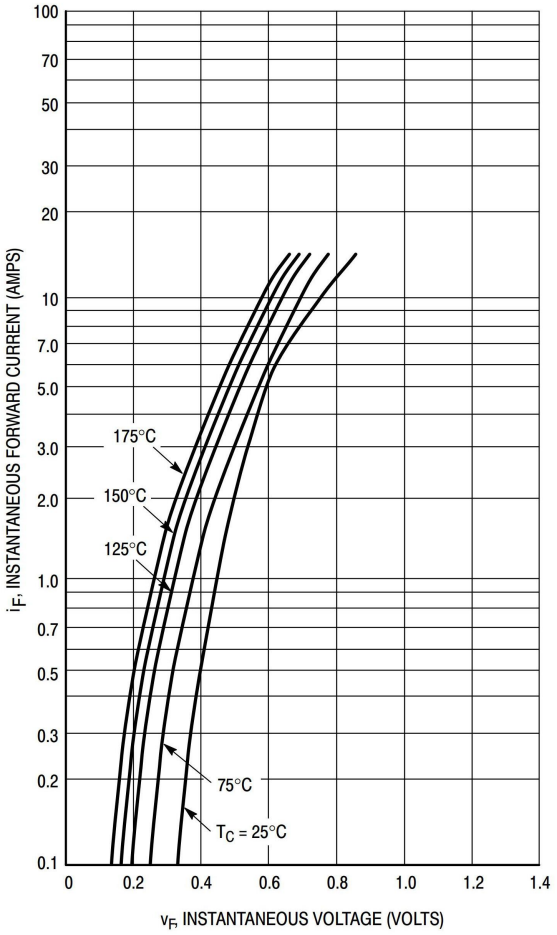
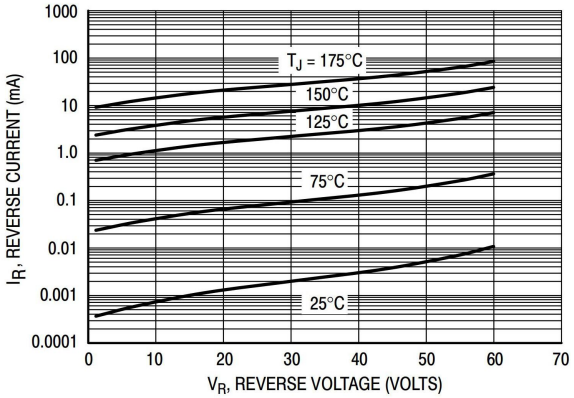


Figure 1. Typical Forward Voltage, Per Leg



*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

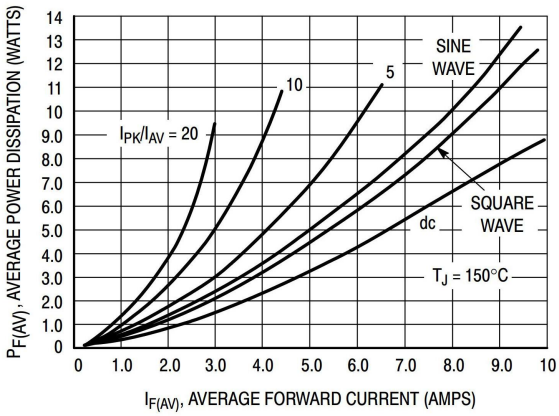


Figure 3. Average Power Dissipation, Per Leg

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TYPICAL CHARACTERISTICS

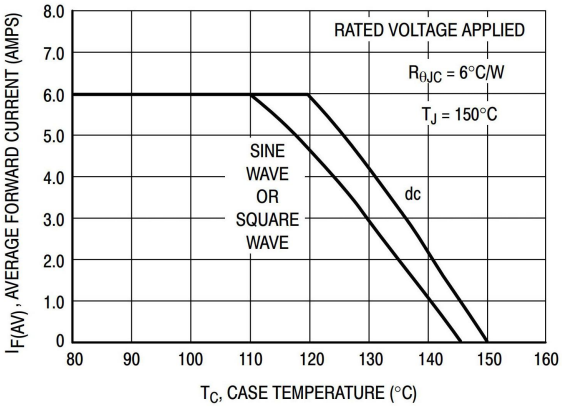

Figure 4. Current Derating, Case, Per Leg

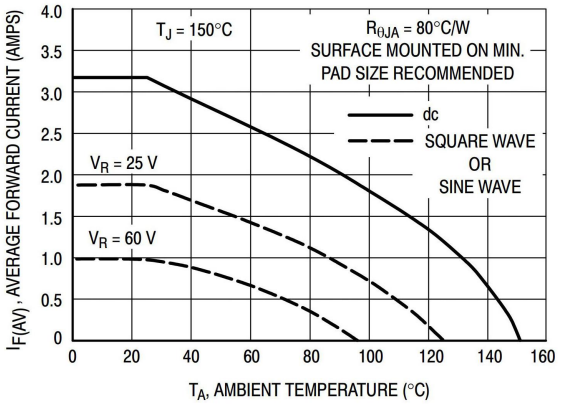

Figure 5. Current Derating, Ambient, Per Leg

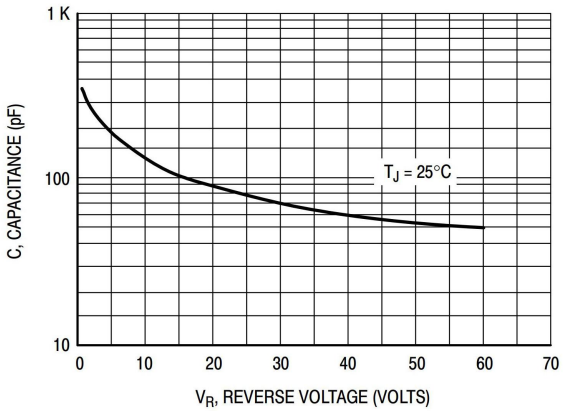

Figure 6. Typical Capacitance, Per Leg

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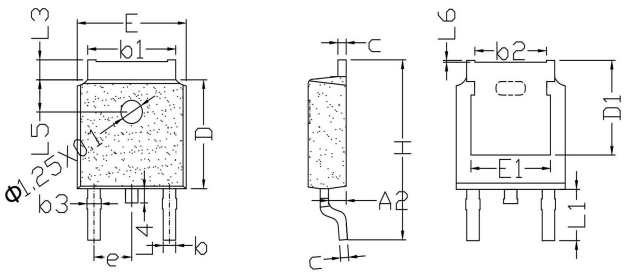
Ordering Information

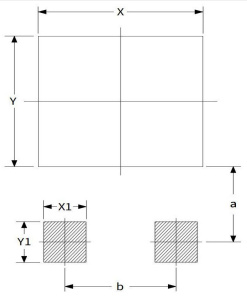
PACKAGE	PACKAGE CODE	UNIT WEIGHT(g)	REEL(pcs)	BOX(pcs)	CARTON(pcs)	DELIVERY MODE
TO-252	R3	0.305	2500	5000	25000	13''

Package Outline Dimensions (TO-252)



Symbol	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A2	0.90	1.10	0.035	0.043
b	0.66	0.86	0.026	0.034
b1	5.10	5.46	0.201	0.215
b2	4.27	4.37	0.168	0.172
b3	0.78	0.90	0.031	0.035
c	0.45	0.55	0.018	0.022
D	5.90	6.30	0.232	0.248
D1	5.35 REF.		0.211REF.	
E	6.30	6.70	0.248	0.264
E1	4.83 REF.		0.190 REF.	
e	2.18	2.38	0.086	0.094
H	9.80	10.4	0.386	0.409
L1	2.70	3.10	0.106	0.122
L3	0.80	1.20	0.031	0.047
L4	0.60	1.00	0.024	0.039
L5	1.8 REF.		0.071 REF.	
L6	-	0.12	-	0.005

Suggested Pad Layout



Symbol	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
a	3.70	-	0.146	-
b	4.37	-	0.172	-
X	-	5.80	-	0.228
X1	-	1.20	-	0.047
Y	-	5.85	-	0.230
Y1	-	2.00	-	0.079