

# MBRD320, MBRD330, MBRD340, MBRD350, MBRD360

MBRD320, MBRD340 and MBRD360 are Preferred Devices

## SWITCHMODE™ Power Rectifiers

### DPAK Surface Mount Package

Designed for use as output rectifiers, free wheeling, protection and steering diodes in switching power supplies, inverters and other inductive switching circuits. These state-of-the-art devices have the following features:

#### Features

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

#### Mechanical Characteristics

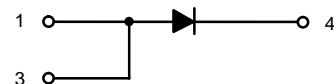
- Case: Epoxy, Molded
- Weight: 0.4 Gram (Approximately)
- Finish: All External Surfaces Corrosion Resistant and Terminal Leads are Readily Solderable
- Lead and Mounting Surface Temperature for Soldering Purposes; 260°C Max. for 10 Seconds
- Shipped 75 Units Per Plastic Tube
- Available in 16 mm Tape and Reel, 2500 Units Per Reel, by Adding a "T4" Suffix to the Part Number



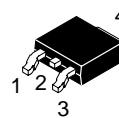
ON Semiconductor®

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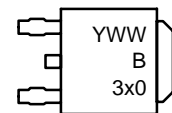
SCHOTTKY BARRIER  
RECTIFIERS  
3.0 AMPERES, 20 – 60 VOLTS



#### MARKING DIAGRAM



DPAK  
CASE 369C



Y = Year  
WW = Work Week  
x = 2, 3, 4, 5 or 6

#### 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.

# MBRD320, MBRD330, MBRD340, MBRD350, MBRD360

## MAXIMUM RATINGS

Rating	Symbol	MBRD					Unit
		320	330	340	350	360	
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 ( $T_C = +125^\circ\text{C}$ , Rated $V_R$ )	$I_{F(AV)}$	3					A
Peak Repetitive Forward Current, $T_C = +125^\circ\text{C}$ (Rated $V_R$ , Square Wave, 20 kHz)	$I_{FRM}$	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 $\mu\text{s}$ , 1 kHz)	$I_{RRM}$	1					A
Operating Junction Temperature Range	$T_J$	-65 to +150					$^\circ\text{C}$
Storage Temperature Range	$T_{stg}$	-65 to +175					$^\circ\text{C}$
Voltage Rate of Change (Rated $V_R$ )	$dv/dt$	10,000					$\text{V}/\mu\text{s}$

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.

## THERMAL CHARACTERISTICS

Maximum Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	6	$^\circ\text{C}/\text{W}$
Maximum Thermal Resistance, Junction-to-Ambient (Note 1)	$R_{\theta JA}$	80	$^\circ\text{C}/\text{W}$

## ELECTRICAL CHARACTERISTICS

Maximum Instantaneous Forward Voltage (Note 2) $i_F = 3$ Amps, $T_C = +25^\circ\text{C}$ $i_F = 3$ Amps, $T_C = +125^\circ\text{C}$ $i_F = 6$ Amps, $T_C = +25^\circ\text{C}$ $i_F = 6$ Amps, $T_C = +125^\circ\text{C}$	$V_F$	0.6 0.45 0.7 0.625	V
Maximum Instantaneous Reverse Current (Note 2) (Rated dc Voltage, $T_C = +25^\circ\text{C}$ ) (Rated dc Voltage, $T_C = +125^\circ\text{C}$ )	$i_R$	0.2 20	mA

- Rating applies when surface mounted on the minimum pad size recommended.
- Pulse Test: Pulse Width = 300  $\mu\text{s}$ , Duty Cycle  $\leq 2.0\%$ .

## MBRD320, MBRD330, MBRD340, MBRD350, MBRD360

### ORDERING INFORMATION

Device	Package	Shipping†
MBRD320	DPAK	75 Units / Rail
MBRD320G	DPAK (Pb-Free)	75 Units / Rail
MBRD320RL	DPAK	1800 Tape & Reel
MBRD320RLG	DPAK (Pb-Free)	1800 Tape & Reel
MBRD320T4	DPAK	2500 Tape & Reel
MBRD320T4G	DPAK (Pb-Free)	2500 Tape & Reel
MBRD330	DPAK	75 Units / Rail
MBRD330RL	DPAK	1800 Tape & Reel
MBRD330T4	DPAK	2500 Tape & Reel
MBRD340	DPAK	75 Units / Rail
MBRD340G	DPAK (Pb-Free)	75 Units / Rail
MBRD340RL	DPAK	1800 Tape & Reel
MBRD340RLG	DPAK (Pb-Free)	1800 Tape & Reel
MBRD340T4	DPAK	2500 Tape & Reel
MBRD340T4G	DPAK (Pb-Free)	2500 Tape & Reel
MBRD350	DPAK	75 Units / Rail
MBRD350RL	DPAK	1800 Tape & Reel
MBRD350T4	DPAK	2500 Tape & Reel
MBRD360	DPAK	75 Units / Rail
MBRD360G	DPAK (Pb-Free)	75 Units / Rail
MBRD360RL	DPAK	1800 Tape & Reel
MBRD360RLG	DPAK (Pb-Free)	1800 Tape & Reel
MBRD360T4	DPAK	2500 Tape & Reel
MBRD360T4G	DPAK (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

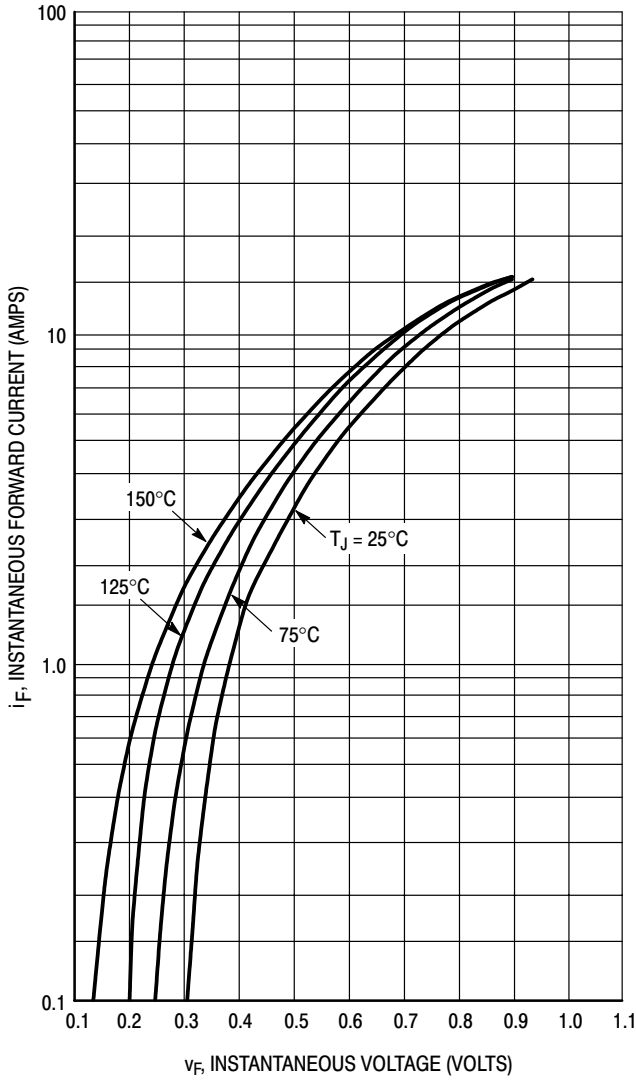
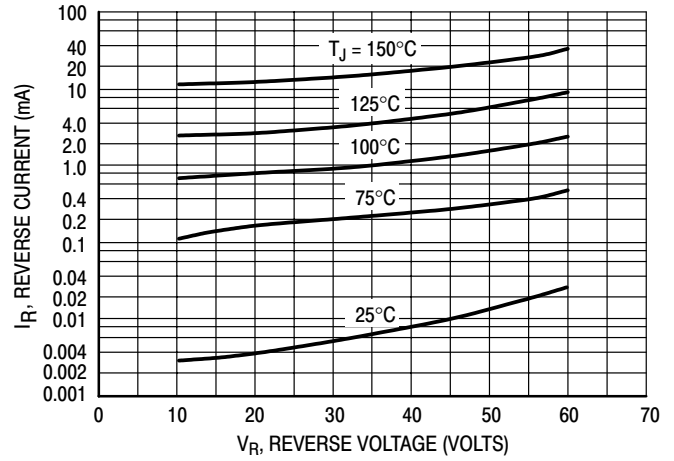


Figure 1. Typical Forward Voltage



\*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

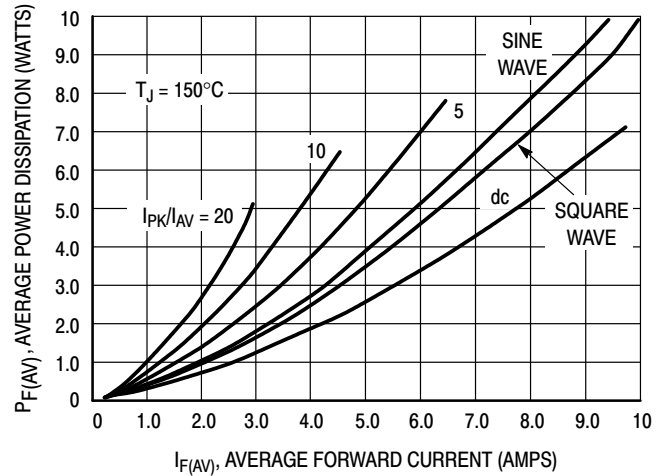
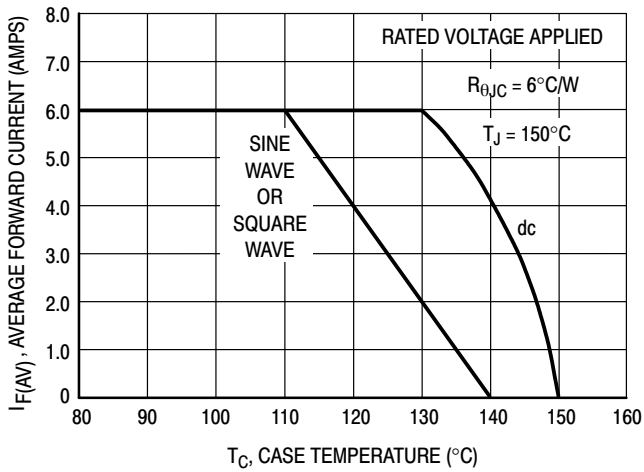
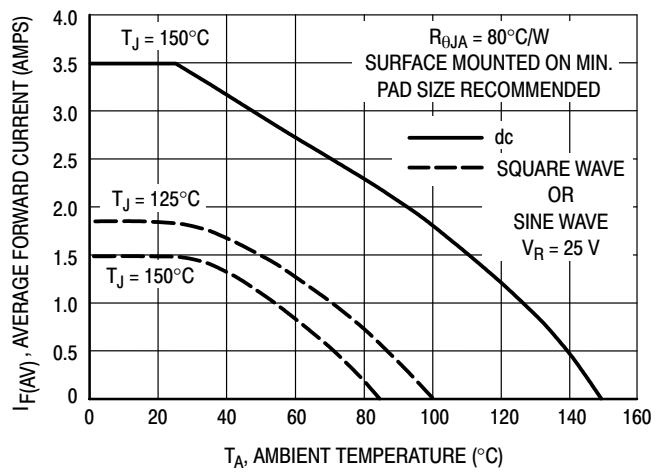


Figure 3. Average Power Dissipation

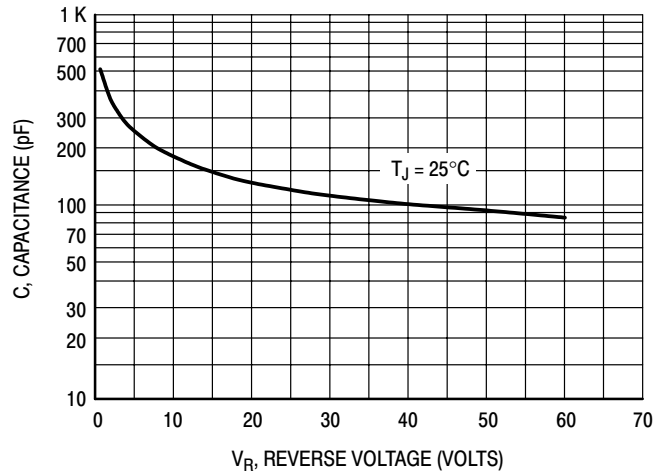
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**Figure 4. Current Derating, Case**



**Figure 5. Current Derating, Ambient**

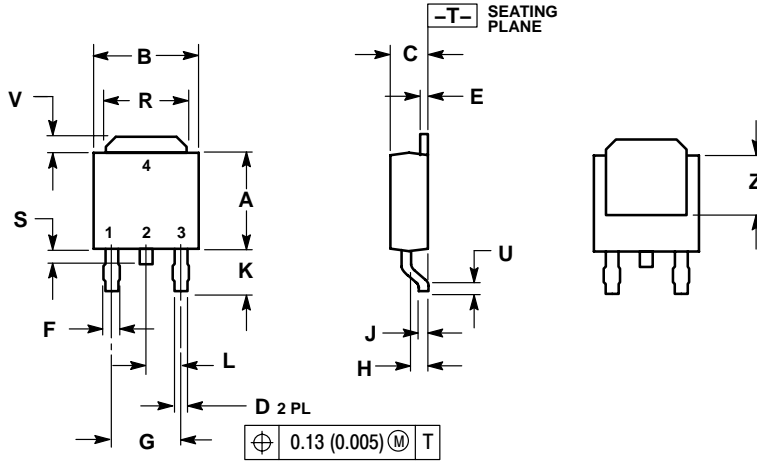


**Figure 6. Typical Capacitance**

# MBRD320, MBRD330, MBRD340, MBRD350, MBRD360

## PACKAGE DIMENSIONS

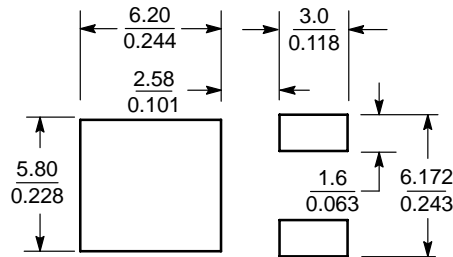
### DPAK CASE 369C ISSUE O



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

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.235	0.245	5.97	6.22
B	0.250	0.265	6.35	6.73
C	0.086	0.094	2.19	2.38
D	0.027	0.035	0.69	0.88
E	0.018	0.023	0.46	0.58
F	0.037	0.045	0.94	1.14
G	0.180 BSC		4.58 BSC	
H	0.034	0.040	0.87	1.01
J	0.018	0.023	0.46	0.58
K	0.102	0.114	2.60	2.89
L	0.090 BSC		2.29 BSC	
R	0.180	0.215	4.57	5.45
S	0.025	0.040	0.63	1.01
U	0.020	---	0.51	---
V	0.035	0.050	0.89	1.27
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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