

# SWITCHMODE™ Power Rectifiers

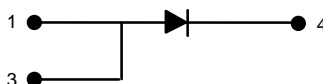
## DPAK Surface Mount Package

... 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:

- Extremely Fast Switching
- Extremely Low Forward Drop
- Platinum Barrier with Avalanche Guardrings
- Guaranteed Reverse Avalanche

### Mechanical Characteristics:

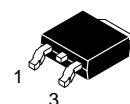
- Case: Epoxy, Molded
- Weight: 0.4 gram (approximately)
- Finish: All External Surfaces Corrosion Resistant and Terminal Leads are Readily Solderable
- Lead and Mounting Surface Temperature for Soldering Purposes: 260°C Max. for 10 Seconds
- Shipped 75 units per plastic tube
- Available in 16 mm Tape and Reel, 2500 units per reel, by adding a "T4" suffix to the part number
- Marking: B320, B330, B340, B350, B360



**MBRD320**  
**MBRD330**  
**MBRD340**  
**MBRD350**  
**MBRD360**

MBRD320, MBRD340 and MBRD360 are  
Motorola Preferred Devices

**SCHOTTKY BARRIER  
RECTIFIERS  
3 AMPERES  
20 TO 60 VOLTS**



**CASE 369A-13  
PLASTIC**

### 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	Volts
Average Rectified Forward Current ( $T_C = +125^\circ\text{C}$ , Rated $V_R$ )	$I_{F(AV)}$	3					Amps
Peak Repetitive Forward Current, $T_C = +125^\circ\text{C}$ (Rated $V_R$ , Square Wave, 20 kHz)	$I_{FRM}$	6					Amps
Nonrepetitive Peak Surge Current (Surge applied at rated load conditions halfwave, single phase, 60 Hz)	$I_{FSM}$	75					Amps
Peak Repetitive Reverse Surge Current (2 $\mu\text{s}$ , 1 kHz)	$I_{RRM}$	1					Amp
Operating Junction Temperature	$T_J$	-65 to +150					$^\circ\text{C}$
Storage Temperature	$T_{stg}$	-65 to +175					$^\circ\text{C}$
Voltage Rate of Change (Rated $V_R$ )	$dv/dt$	10000					$\text{V}/\mu\text{s}$

### THERMAL CHARACTERISTICS

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

(1) Rating applies when surface mounted on the minimum pad size recommended.

SWITCHMODE is a trademark of Motorola, Inc.

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

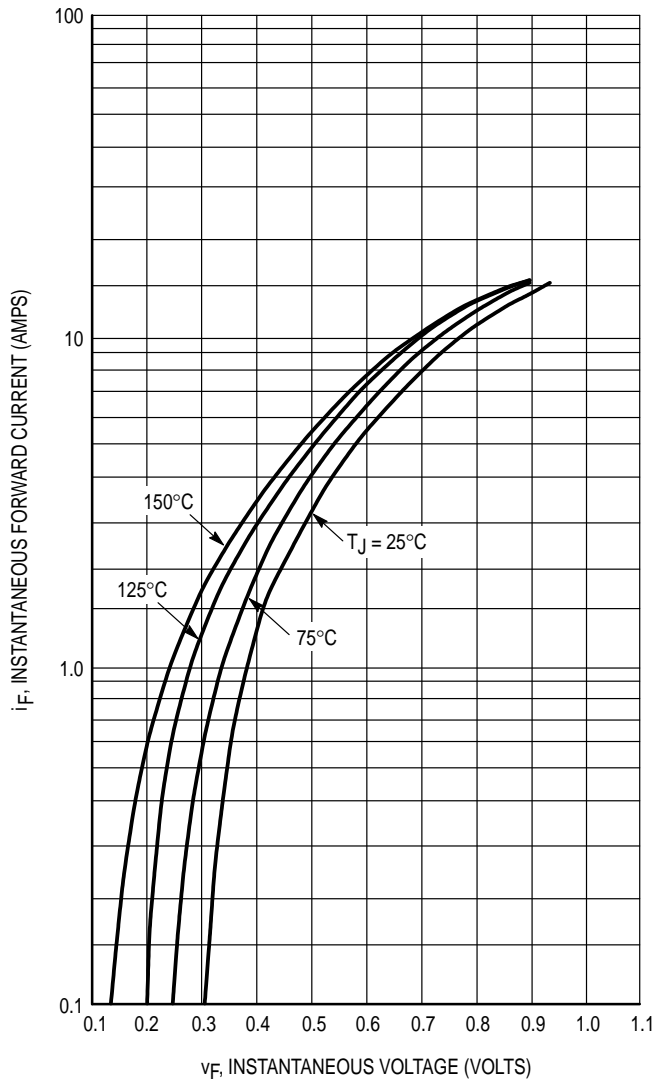


**ELECTRICAL CHARACTERISTICS**

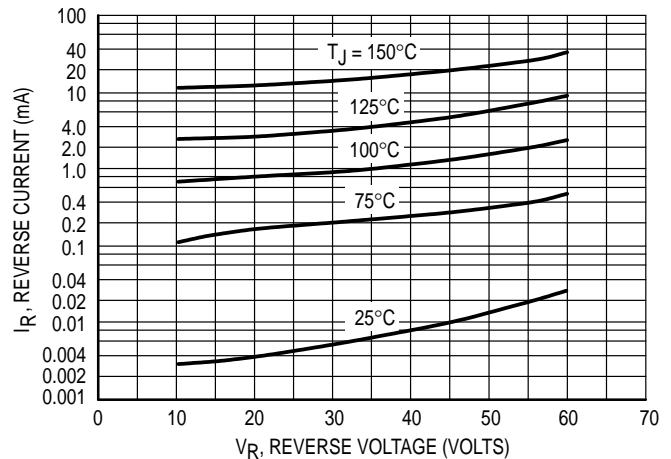
Maximum Instantaneous Forward Voltage (2) $i_F = 3$ Amps, $T_C = +25^\circ\text{C}$ $i_F = 3$ Amps, $T_C = +125^\circ\text{C}$ $i_F = 6$ Amps, $T_C = +25^\circ\text{C}$ $i_F = 6$ Amps, $T_C = +125^\circ\text{C}$	$V_F$	0.6 0.45 0.7 0.625	Volts
Maximum Instantaneous Reverse Current (2) (Rated dc Voltage,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

(2) Pulse Test: Pulse Width = 300  $\mu\text{s}$ , Duty Cycle  $\leq 2.0\%$ .

**TYPICAL CHARACTERISTICS**

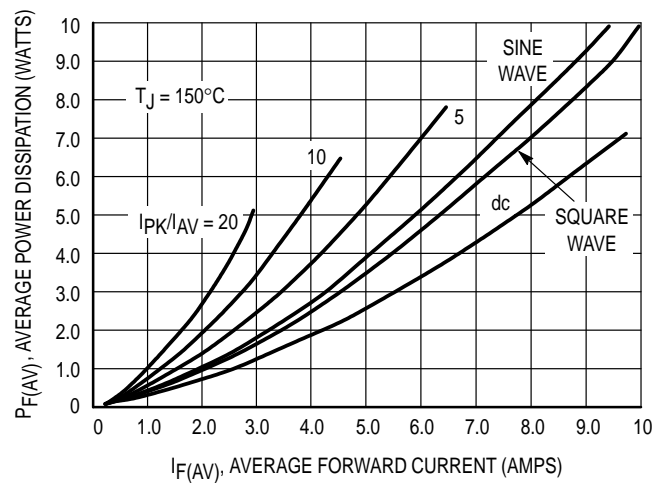


**Figure 1. Typical Forward Voltage**

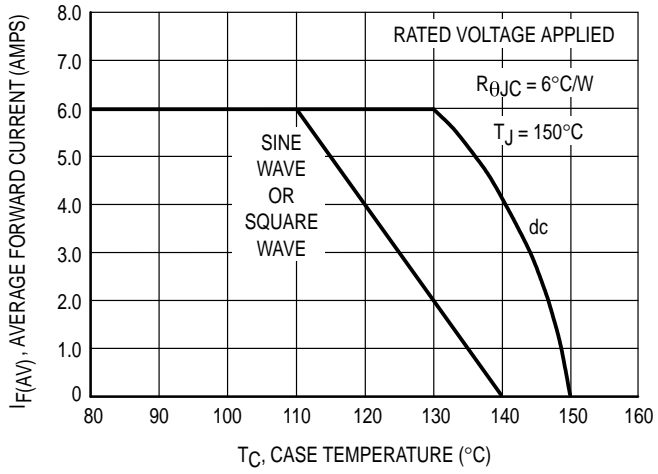


\*The curves shown are typical for the highest voltage device in the voltage grouping. Typical reverse current for lower voltage selections can be estimated from these curves if  $V_R$  is sufficient below rated  $V_R$ .

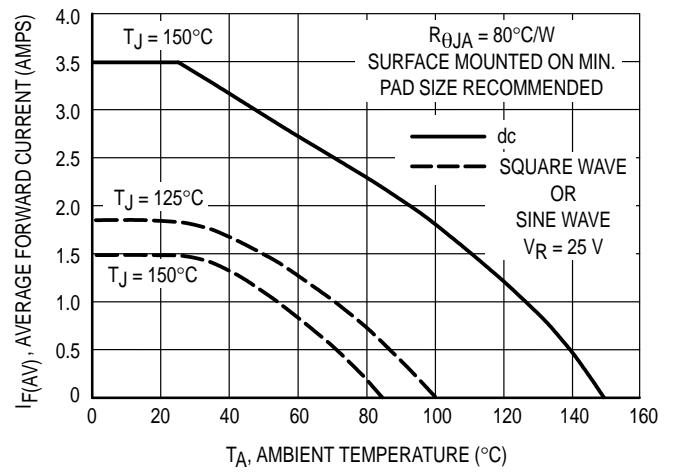
**Figure 2. Typical Reverse Current**



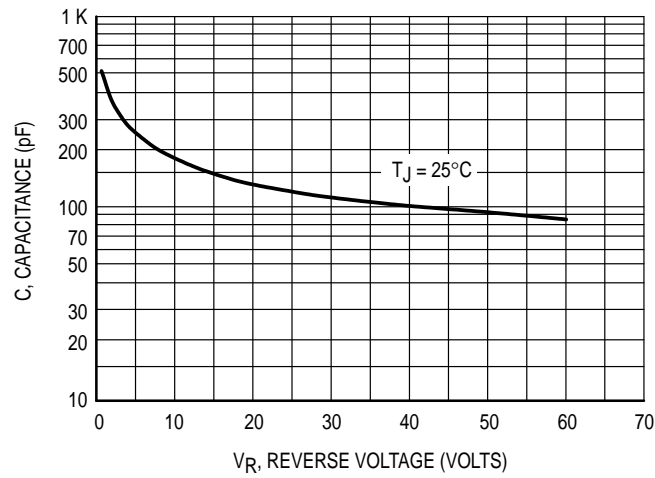
**Figure 3. Average Power Dissipation**



**Figure 4. Current Derating, Case**



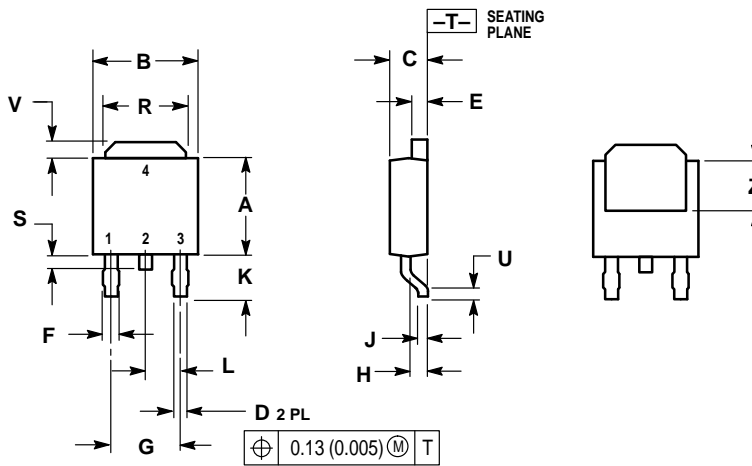
**Figure 5. Current Derating, Ambient**



**Figure 6. Typical Capacitance**

# MBRD320 MBRD330 MBRD340 MBRD350 MBRD360

## PACKAGE DIMENSIONS




### NOTES:

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

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.235	0.250	5.97	6.35
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	0.033	0.040	0.84	1.01
F	0.037	0.047	0.94	1.19
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	0.175	0.215	4.45	5.46
S	0.020	0.050	0.51	1.27
U	0.020	—	0.51	—
V	0.030	0.050	0.77	1.27
Z	0.138	—	3.51	—

CASE 369A-13  
ISSUE Y

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MBRD320/D