

# SWITCHMODE™ Power Rectifiers

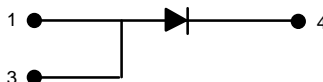
## DPAK Surface Mount Package

... 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:

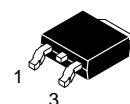
- Case: Epoxy, Molded
- Weight: 0.4 gram (approximately)
- Finish: All External Surfaces Corrosion Resistant and Terminal Leads are Readily Solderable
- Lead and Mounting Surface Temperature for Soldering Purposes: 260°C Max. for 10 Seconds
- Shipped 75 units per plastic tube
- Available in 16 mm Tape 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.

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

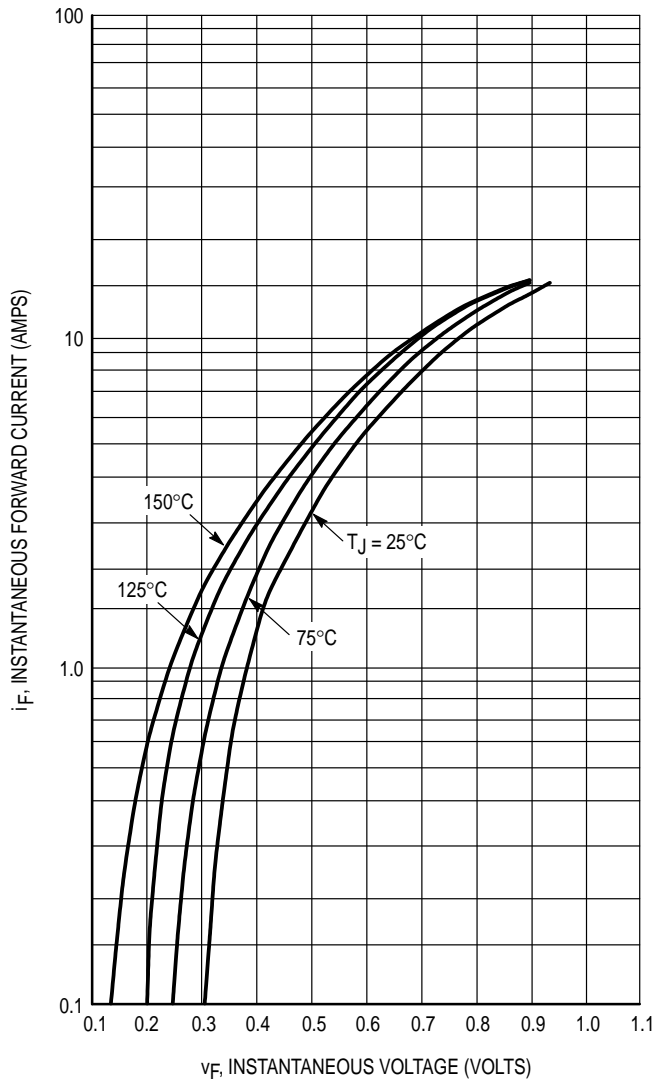


**ELECTRICAL CHARACTERISTICS**

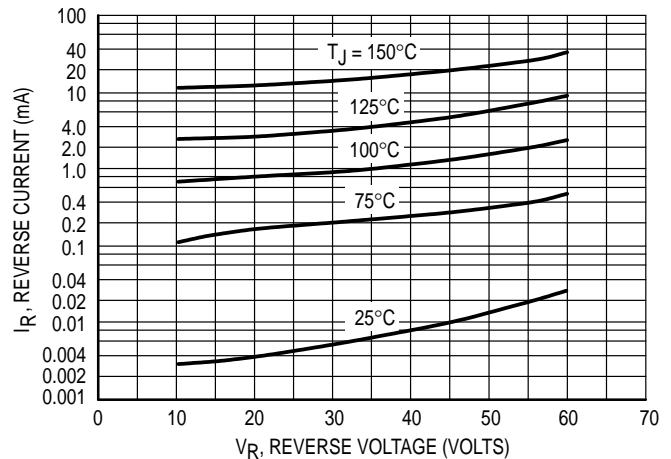
Maximum Instantaneous Forward Voltage (2) $i_F = 3$ Amps, $T_C = +25^\circ\text{C}$ $i_F = 3$ Amps, $T_C = +125^\circ\text{C}$ $i_F = 6$ Amps, $T_C = +25^\circ\text{C}$ $i_F = 6$ Amps, $T_C = +125^\circ\text{C}$	$V_F$	0.6 0.45 0.7 0.625	Volts
Maximum Instantaneous Reverse Current (2) (Rated dc Voltage,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

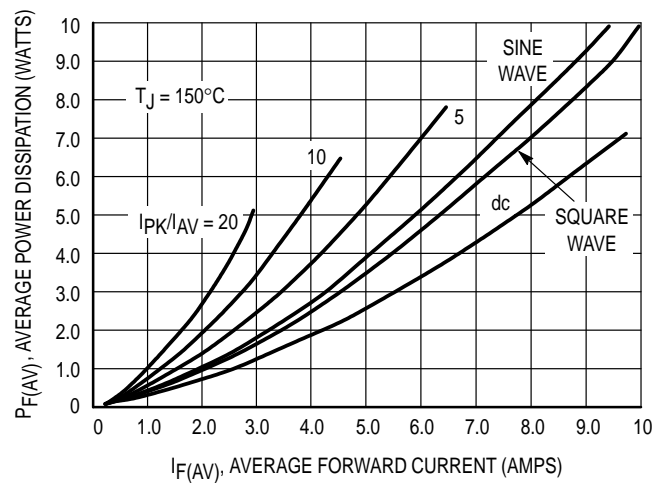


**Figure 1. Typical Forward Voltage**

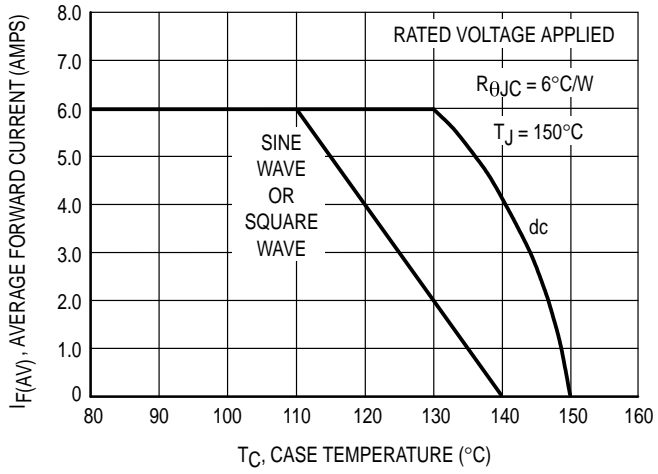


\*The curves shown are typical for the highest voltage device in the voltage grouping. Typical reverse current for lower voltage selections can be estimated from these curves if  $V_R$  is sufficient below rated  $V_R$ .

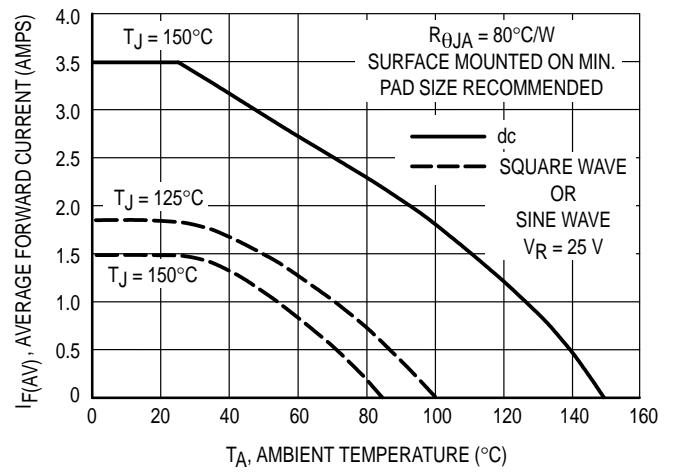
**Figure 2. Typical Reverse Current**



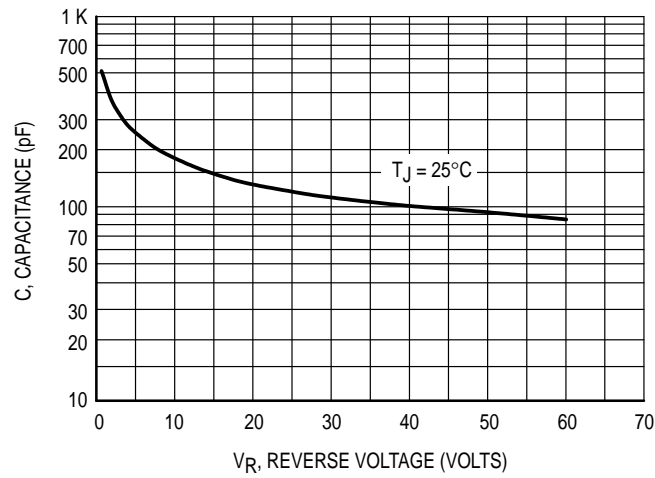
**Figure 3. Average Power Dissipation**



**Figure 4. Current Derating, Case**



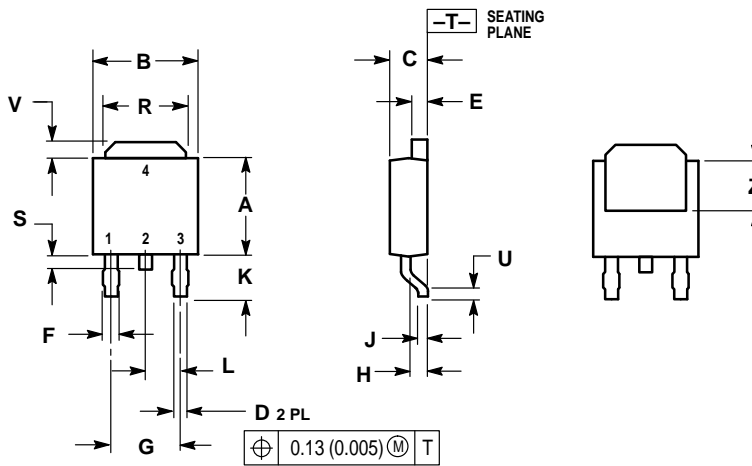
**Figure 5. Current Derating, Ambient**



**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

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Product Quick Links

#### Associated Documents

Item	Short Desc	Siz
<a href="#">Data Sheet</a>	SWITCHMODE Power Rectifier DPAK	98

#### Device MBRD320

Rectifier 3A 20V Schottky

DPAK Surface Mount Package ...designed for use as output rectifier, protection and steering diodes in switching power supplies and other inductive switching circuits. These state-of-the-art devices have the following features:

#### 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 Readily Solderable
- Lead and Mounting Surface Temperature for Soldering: 260°C Max. for 10 Seconds
- Shipped 75 units per plastic tube
- Available in 16 mm Tape and Reel, 2500 units per reel. Add "TR" suffix to the part number
- Marking: B320, B330, B340, B350, B360 1 3

Orderable Parts

Action	Orderable Part	Short Desc.	Package Desc.	Pin Count	Case Outlin
N/A	MBRD320	Rectifier 3A 20V Schottky	DPAK	3	<a href="#">369A</a>
N/A	MBRD320RL	Tape and Reel	DPAK	3	<a href="#">369A</a>
<a href="#">Order Samples</a>	MBRD320T4	Tape and Reel	DPAK	3	<a href="#">369A</a>

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Product Quick Links

#### Associated Documents

Item	Short Desc	Siz
<a href="#">Data Sheet</a>	SWITCHMODE Power Rectifier DPAK	98

#### Device MBRD330

Rectifier 3A 30V Schottky

DPAK Surface Mount Package ...designed for use as output rectifying, protection and steering diodes in switching power inverters and other inductive switching circuits. These state-of-the-art devices have the following features:

#### 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 Leads are Readily Solderable
- Lead and Mounting Surface Temperature for Soldering: 260 °C Max. for 10 Seconds
- Shipped 75 units per plastic tube
- Available in 16 mm Tape and Reel, 2500 units per reel. Add "T4" suffix to the part number
- Marking: B320, B330, B340, B350, B360 1 3

Orderable Parts

Action	Orderable Part	Short Desc.	Package Desc.	Pin Count	Case Outline	Status
N/A	MBRD330	Rectifier 3A 30V Schottky	DPAK	3	<a href="#">369A-13</a>	Activ
N/A	MBRD330RL	Tape and Reel	DPAK	3	<a href="#">369A-13</a>	Activ
N/A	MBRD330T4	Tape and Reel	DPAK	3	<a href="#">369A-13</a>	Activ

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Item	Short Desc	Siz
<a href="#">Data Sheet</a>	SWITCHMODE Power Rectifier DPAK	98

#### Device MBRD350

SWITCHMODE™ Power Rectifiers

DPAK Surface Mount Package ...designed for use as output free wheeling, protection and steering diodes in switching power supplies, inverters and other inductive switching circuits. The state-of-the-art devices have the following features:

#### 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 Leads are Readily Solderable
- Lead and Mounting Surface Temperature for Soldering 260 °C Max. for 10 Seconds
- Shipped 75 units per plastic tube
- Available in 16 mm Tape and Reel, 2500 units per reel a "T4" suffix to the part number
- Marking: B320, B330, B340, B350, B360 1 3

Orderable Parts

Action	Orderable Part	Short Desc.	Package Desc.	Pin Count	Case Outline	Status	F
N/A	MBRD350RL	Tape and Reel	DPAK	3	<a href="#">369A-13</a>	Active	\$
N/A	MBRD350T4	Tape and Reel	DPAK	3	<a href="#">369A-13</a>	Active	\$

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<a href="#">Data Sheet</a>	SWITCHMODE Power Rectifier DPAK	98

#### Device MBRD360

Rectifier 3A 60V Schottky

DPAK Surface Mount Package ...designed for use as output protection and steering diodes in switching power supplies and switching circuits. These state-of-the-art devices have the 1

#### 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 Solderable
- Lead and Mounting Surface Temperature for Soldering: 260°C (5 minutes)
- Shipped 75 units per plastic tube
- Available in 16 mm Tape and Reel, 2500 units per reel
- Marking: B320, B330, B340, B350, B360 1 3

#### Orderable Parts

Action	Orderable Part	Short Desc.	Package Pi Desc.	C
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N/A	MBRD360	SWITCHMODE™	Power Rectifier	3
N/A	MBRD360RL	Tape and Reel	DPAK	3
<a href="#">Order Samples</a>	MBRD360T4	Tape and Reel	DPAK	3

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