

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

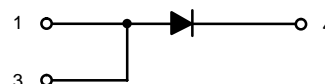
- Case: Epoxy, Molded
- Weight: 0.4 Gram (Approximately)
- Finish: All External Surfaces Corrosion Resistant and Terminal Leads are Readily Solderable
- Lead and Mounting Surface Temperature for Soldering Purposes; 260°C Max. for 10 Seconds
- Shipped 75 Units Per Plastic Tube
- Available in 16 mm Tape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



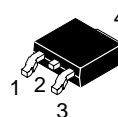
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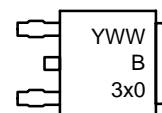
**SCHOTTKY BARRIER
RECTIFIERS
3.0 AMPERES, 20 – 60 VOLTS**



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 μs , 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 | | | | | V/ μs |

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

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 μs , Duty Cycle $\leq 2.0\%$.

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ORDERING INFORMATION

| Device | Package | Shipping† |
|------------|-------------------|------------------|
| MBRD320 | DPAK | 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 |
| 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

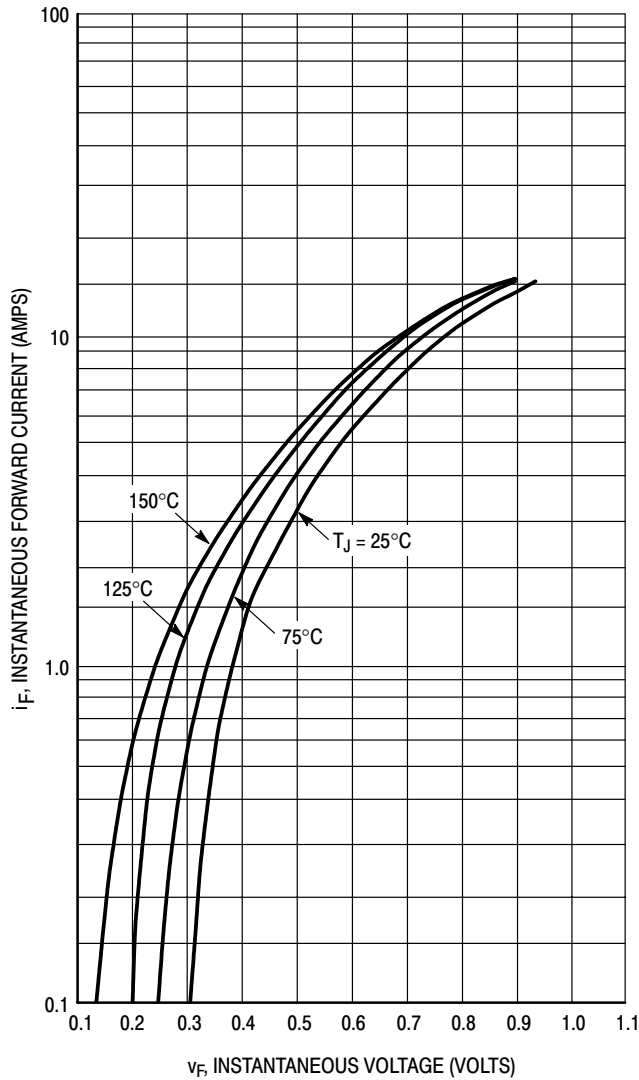
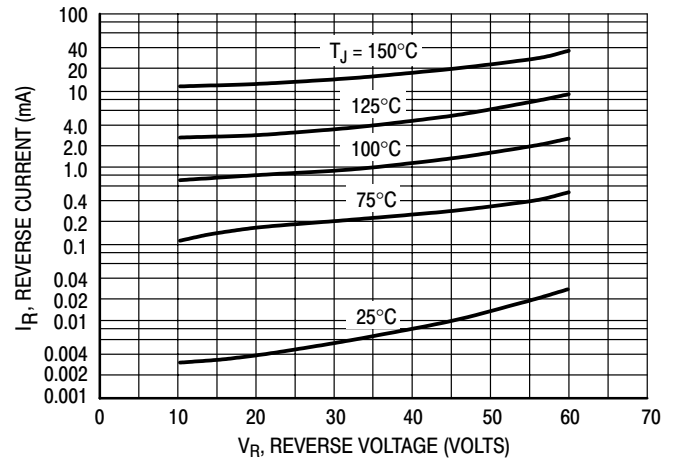


Figure 1. Typical Forward Voltage



*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

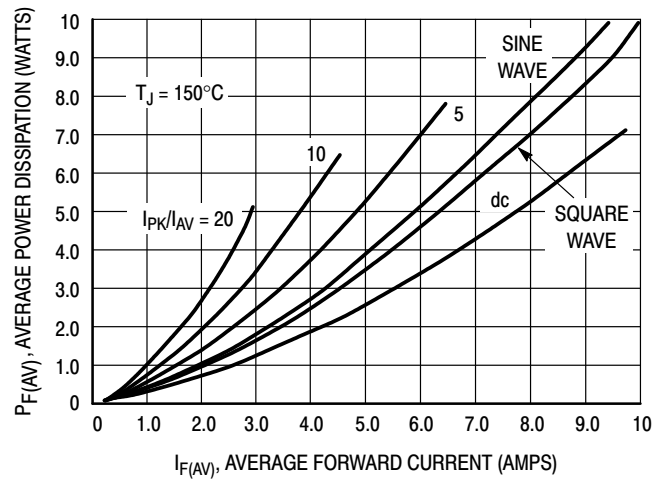


Figure 3. Average Power Dissipation

MBRD320, MBRD330, MBRD340, MBRD350, MBRD360

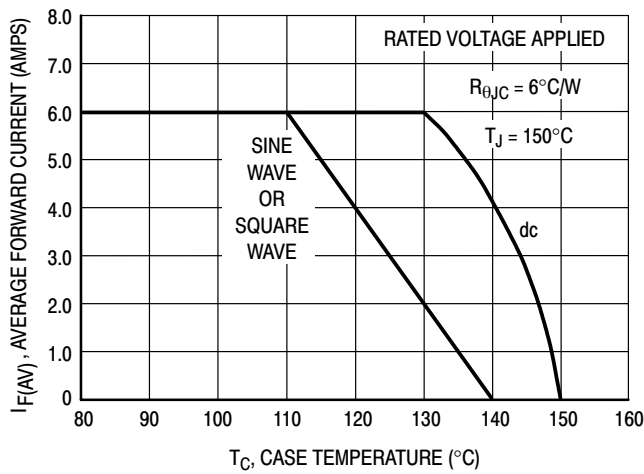


Figure 4. Current Derating, Case

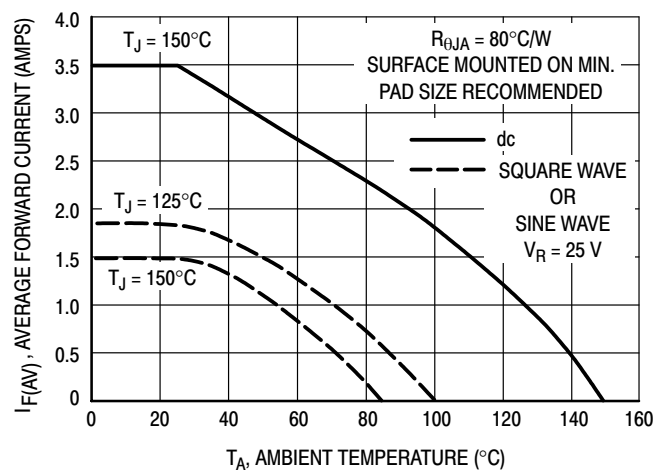


Figure 5. Current Derating, Ambient

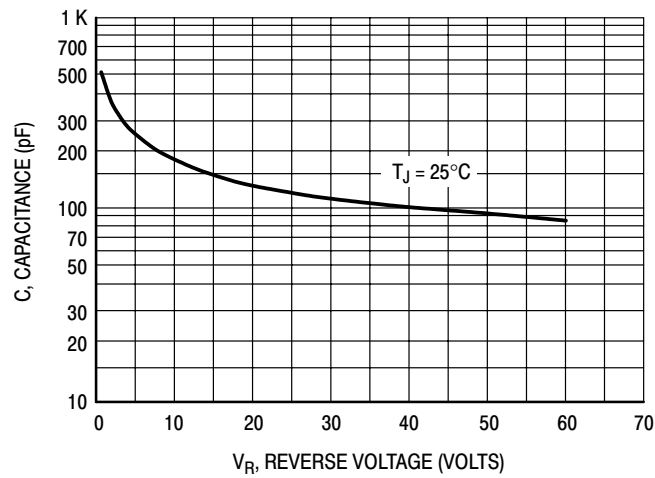
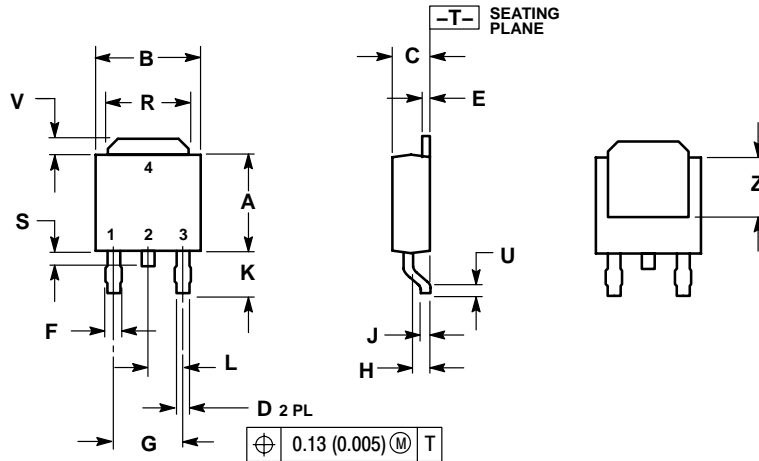


Figure 6. Typical Capacitance

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PACKAGE DIMENSIONS

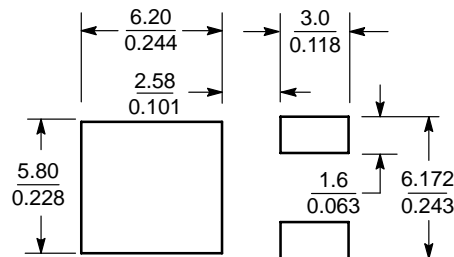
DPAK CASE 369C ISSUE O



- 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 (mm/inches)

*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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