

MBRD320, MBRD330, MBRD340, MBRD350, MBRD360

MBRD320, MBRD340 and MBRD360 are Preferred Devices

SWITCHMODE™ Power Rectifiers

DPAK Surface Mount Package

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

Features

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

Mechanical Characteristics:

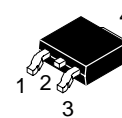
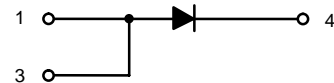
- Case: Epoxy, Molded
- Weight: 0.4 Gram (Approximately)
- Finish: All External Surfaces Corrosion Resistant and Terminal Leads are Readily Solderable
- Lead and Mounting Surface Temperature for Soldering Purposes; 260°C Max. for 10 Seconds



ON Semiconductor®

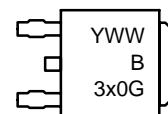
<http://onsemi.com>

SCHOTTKY BARRIER RECTIFIERS 3.0 AMPERES, 20 – 60 VOLTS



DPAK
CASE 369C

MARKING DIAGRAM



Y = Year
WW = Work Week
B3x0 = Device Code
x = 2, 3, 4, 5, or 6
G = Pb-Free Package

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 (Note 1) | T_J | -65 to +175 | | | | | $^\circ\text{C}$ |
| 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

| Rating | Symbol | Value | Unit |
|--|-----------------|-------|--------------------|
| Maximum Thermal Resistance, Junction-to-Case | $R_{\theta JC}$ | 6 | $^\circ\text{C/W}$ |
| Maximum Thermal Resistance, Junction-to-Ambient (Note 2) | $R_{\theta JA}$ | 80 | $^\circ\text{C/W}$ |

ELECTRICAL CHARACTERISTICS

| | | | |
|--|-------|-----------------------------|----|
| Maximum Instantaneous Forward Voltage (Note 3) $i_F = 3$ 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 3) (Rated dc Voltage, $T_C = +25^\circ\text{C}$) (Rated dc Voltage, $T_C = +125^\circ\text{C}$) | i_R | 0.2 20 | mA |

- The heat generated must be less than the thermal conductivity from Junction-to-Ambient: $dP_D/dT_J < 1/R_{\theta JA}$.
- Rating applies when surface mounted on the minimum pad size recommended.
- Pulse Test: Pulse Width = 300 μs , 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 |
| MBRD330G | DPAK (Pb-Free) | 75 Units / Rail |
| MBRD330RL | DPAK | 1800 Tape & Reel |
| MBRD330RLG | DPAK (Pb-Free) | 1800 Tape & Reel |
| MBRD330T4 | DPAK | 2500 Tape & Reel |
| MBRD330T4G | DPAK (Pb-Free) | 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 |
| MBRD350G | DPAK (Pb-Free) | 75 Units / Rail |
| MBRD350RL | DPAK | 1800 Tape & Reel |
| MBRD350RLG | DPAK (Pb-Free) | 1800 Tape & Reel |
| MBRD350T4 | DPAK | 2500 Tape & Reel |
| MBRD350T4G | DPAK (Pb-Free) | 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

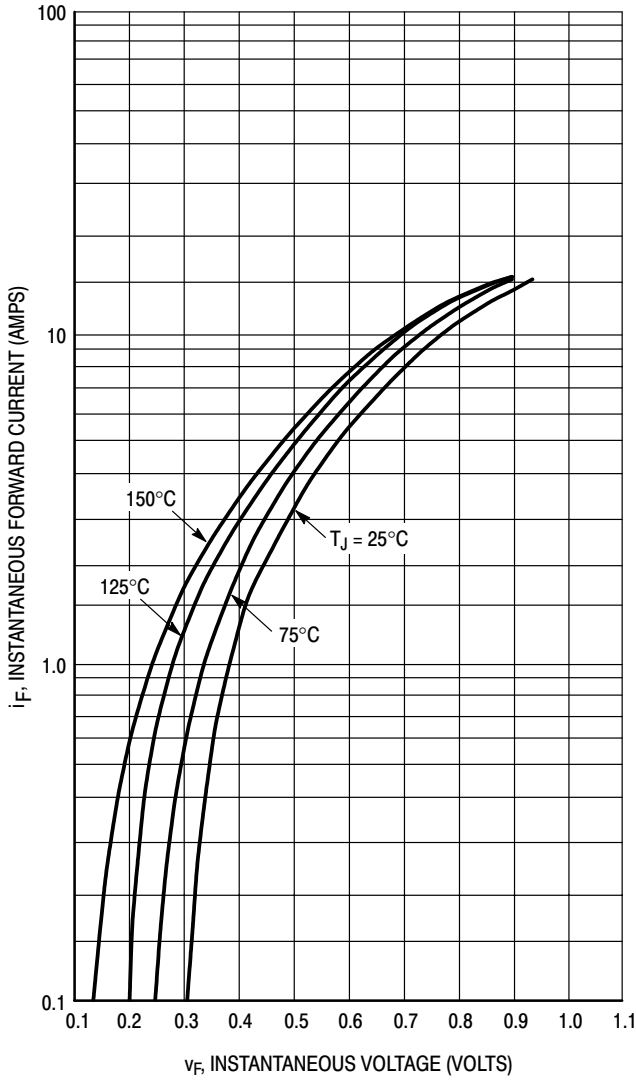
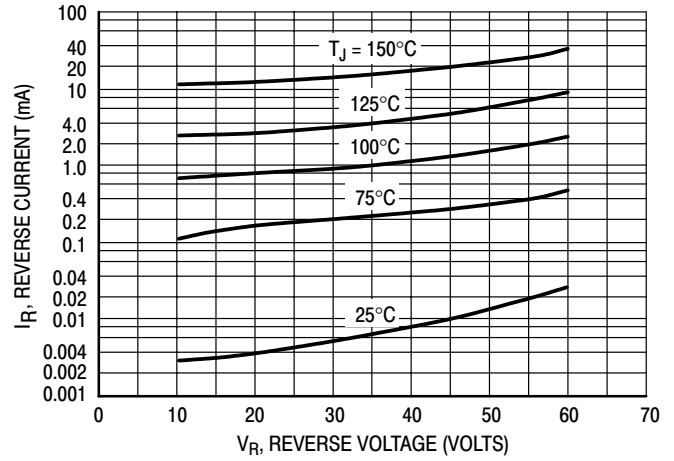


Figure 1. Typical Forward Voltage



*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

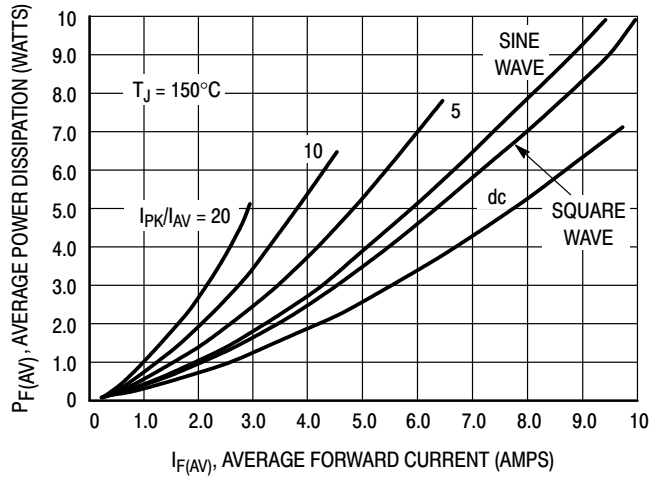


Figure 3. Average Power Dissipation

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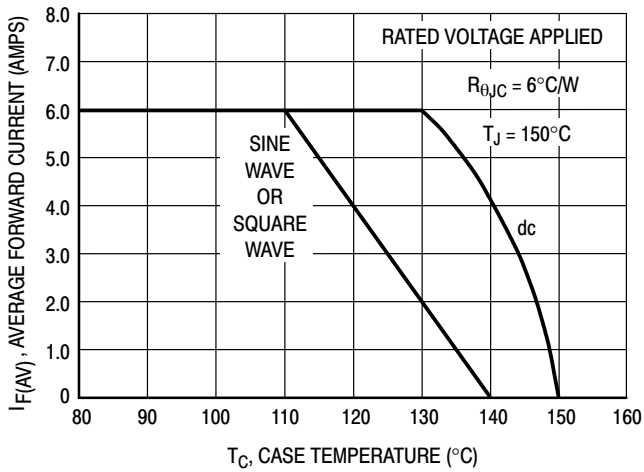


Figure 4. Current Derating, Case

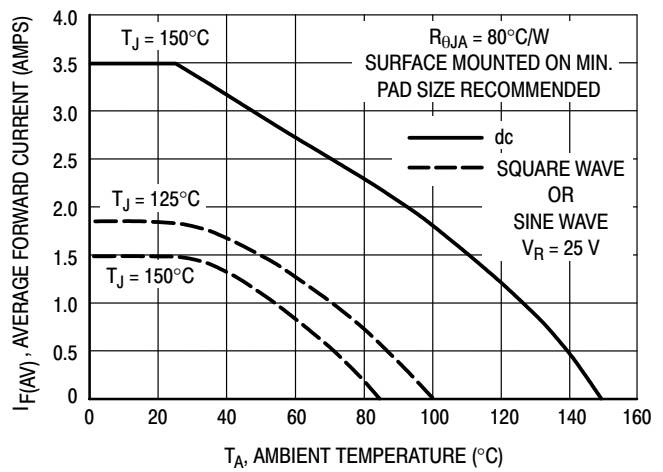


Figure 5. Current Derating, Ambient

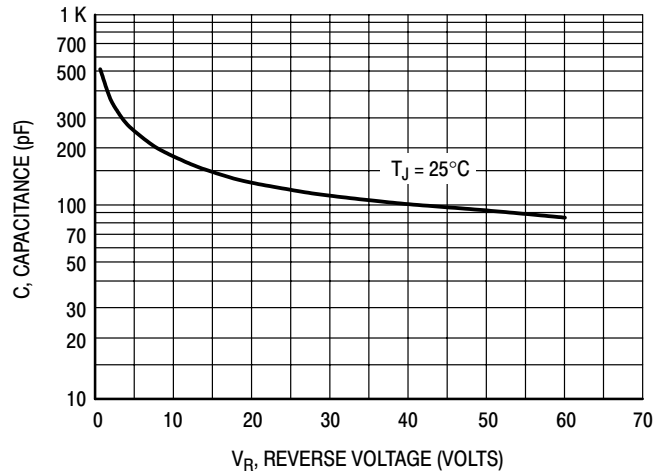
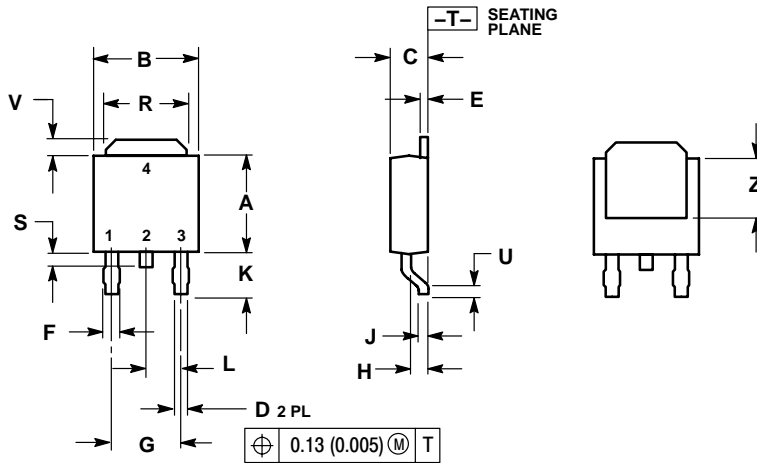


Figure 6. Typical Capacitance

MBRD320, MBRD330, MBRD340, MBRD350, MBRD360

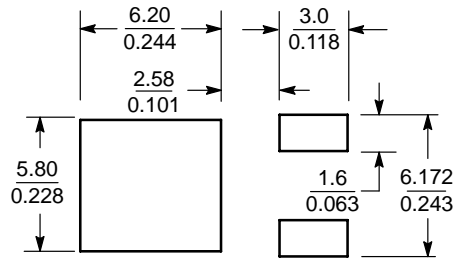
PACKAGE DIMENSIONS

DPAK (SINGLE GAUGE) CASE 369C ISSUE O



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

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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