

# MBRD620CT, MBRD630CT, MBRD640CT, MBRD650CT, MBRD660CT

MBRD620CT, MBRD640CT and MBRD660CT are Preferred Devices

## SWITCHMODE™ Power Rectifiers

### DPAK Surface Mount Package

... in switching power supplies, inverters and as free wheeling diodes, these state-of-the-art devices have the following features:

- 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
- Marking: B620T, B630T, B640T, B650T, B660T

#### MAXIMUM RATINGS

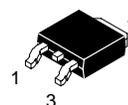
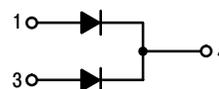
Please See the Table on the Following Page



ON Semiconductor™

<http://onsemi.com>

### SCHOTTKY BARRIER RECTIFIERS 6.0 AMPERES 20 TO 60 VOLTS



DPAK  
CASE 369A  
PLASTIC

#### MARKING DIAGRAM



B6x0T = Device Code  
x = 2, 3, 4, 5 or 6

#### ORDERING INFORMATION

| Device      | Package | Shipping         |
|-------------|---------|------------------|
| MBRD620CTT4 | DPAK    | 2500/Tape & Reel |
| MBRD630CTT4 | DPAK    | 2500/Tape & Reel |
| MBRD640CTT4 | DPAK    | 2500/Tape & Reel |
| MBRD650CT   | DPAK    | 75 Units/Rail    |
| MBRD650CTT4 | DPAK    | 2500/Tape & Reel |
| MBRD660CT   | DPAK    | 75 Units/Rail    |
| MBRD660CTRL | DPAK    | 1800/Tape & Reel |
| MBRD660CTT4 | DPAK    | 2500/Tape & Reel |

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

# MBRD620CT, MBRD630CT, MBRD640CT, MBRD650CT, MBRD660CT

## MAXIMUM RATINGS

| Rating  | Symbol                                 | MBRD        |       |       |       |       | Unit                   |
|---|--|-------------|-------|-------|-------|-------|------------------------|
|   |  | 620CT       | 630CT | 640CT | 650CT | 660CT |                        |
| Peak Repetitive Reverse Voltage<br>Working Peak Reverse Voltage<br>DC Blocking Voltage                      | $V_{RRM}$<br>$V_{RWM}$<br>$V_R$        | 20          | 30    | 40    | 50    | 60    | Volts                  |
| Average Rectified Forward Current<br>$T_C = 130^\circ\text{C}$ (Rated $V_R$ )                               | Per Diode<br>Per Device<br>$I_{F(AV)}$ | 3<br>6      |       |       |       |       | Amps                   |
| Peak Repetitive Forward Current, $T_C = 130^\circ\text{C}$<br>(Rated $V_R$ , Square Wave, 20 kHz) Per Diode | $I_{FRM}$                              | 6           |       |       |       |       | Amps                   |
| Nonrepetitive Peak Surge Current<br>(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 $V_R$ )   | $dv/dt$                                | 10,000      |       |       |       |       | $\text{V}/\mu\text{s}$ |

## THERMAL CHARACTERISTICS PER DIODE

|   |                 |    |                           |
|---|-----------------|----|---------------------------|
| 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 PER DIODE

|   |       |                            |       |
|---|-------|----------------------------|-------|
| Maximum Instantaneous Forward Voltage (Note 2.)<br>$i_F = 3$ Amps, $T_C = 25^\circ\text{C}$<br>$i_F = 3$ Amps, $T_C = 125^\circ\text{C}$<br>$i_F = 6$ Amps, $T_C = 25^\circ\text{C}$<br>$i_F = 6$ Amps, $T_C = 125^\circ\text{C}$ | $V_F$ | 0.7<br>0.65<br>0.9<br>0.85 | Volts |
| Maximum Instantaneous Reverse Current (Note 2.)<br>(Rated dc Voltage, $T_C = 25^\circ\text{C}$ )<br>(Rated dc Voltage, $T_C = 125^\circ\text{C}$ )  | $i_R$ | 0.1<br>15                  | mA    |

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

TYPICAL CHARACTERISTICS

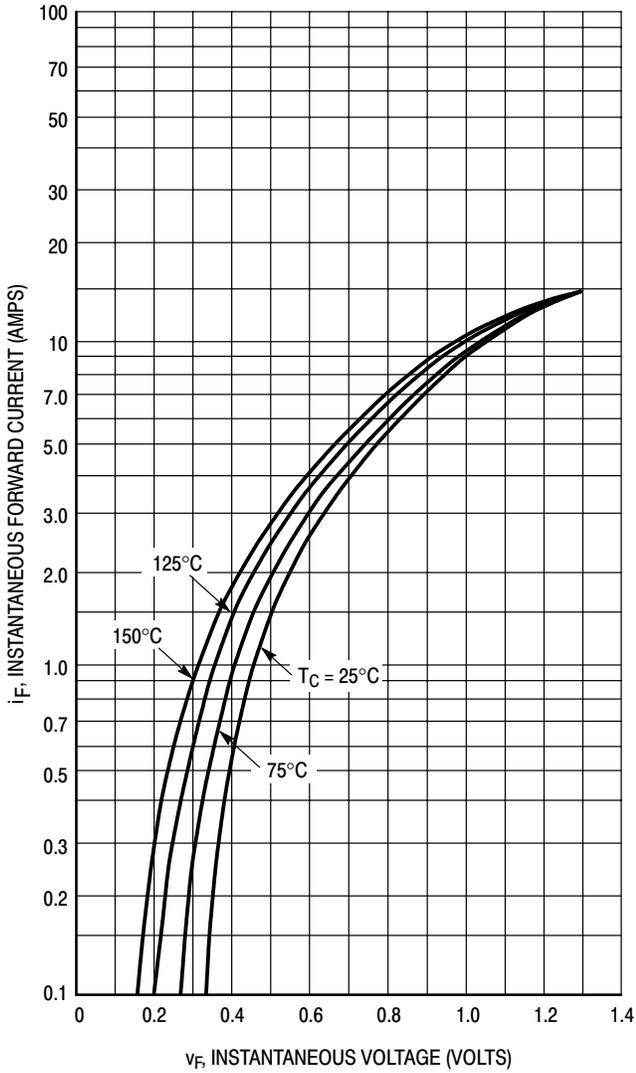
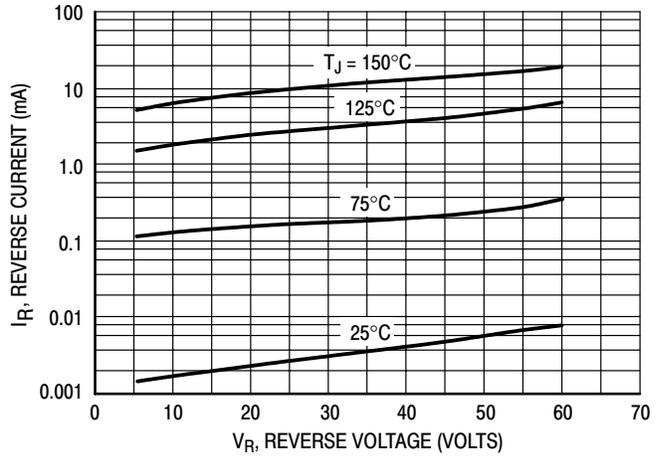


Figure 1. Typical Forward Voltage, Per Leg



\*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, \* Per Leg

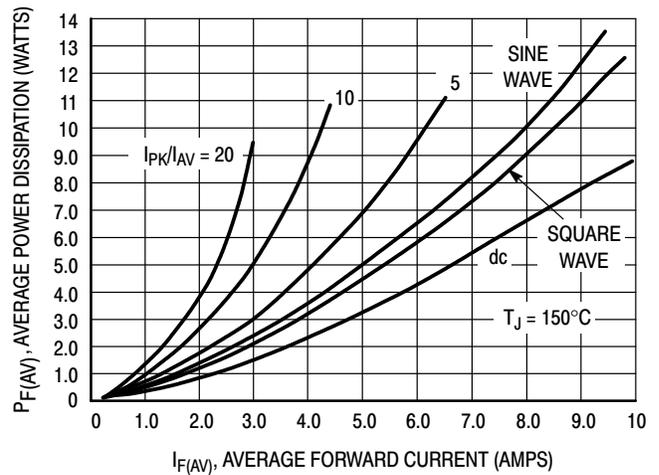
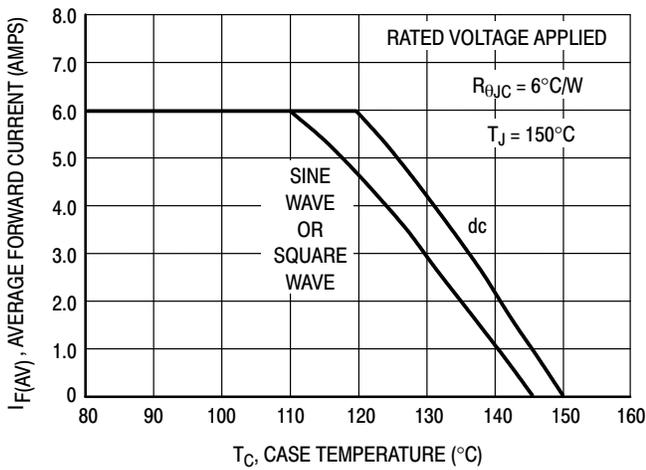
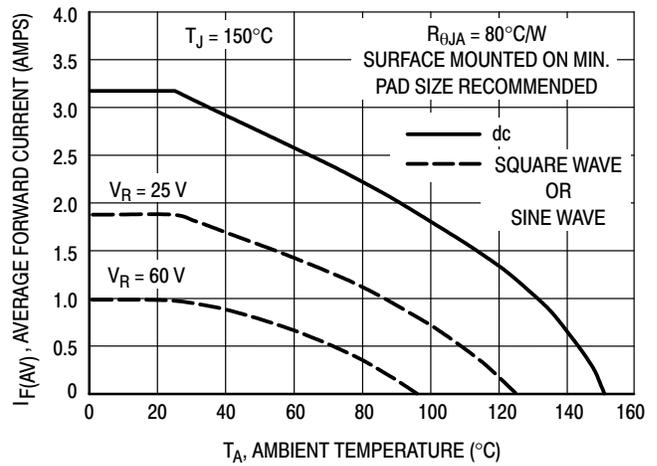


Figure 3. Average Power Dissipation, Per Leg

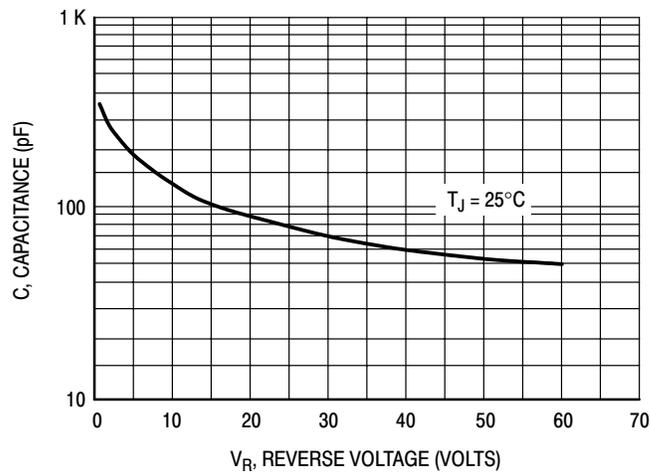
**MBRD620CT, MBRD630CT, MBRD640CT, MBRD650CT, MBRD660CT**



**Figure 4. Current Derating, Case, Per Leg**



**Figure 5. Current Derating, Ambient, Per Leg**

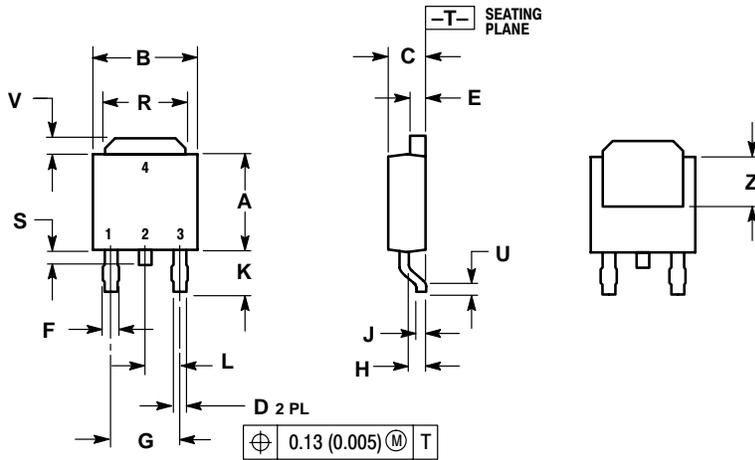


**Figure 6. Typical Capacitance, Per Leg**

# MBRD620CT, MBRD630CT, MBRD640CT, MBRD650CT, MBRD660CT

## PACKAGE DIMENSIONS

DPAK  
 PLASTIC  
 CASE 369A-13  
 ISSUE AA



- 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        | ---  |

**Notes**

**Notes**

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