

## Advance Information

### SWITCHMODE™

## Schottky Power Rectifier

### DPAK Power Surface Mount Package

... employing the Schottky Barrier principle in a large area metal-to-silicon power diode. State of the art geometry features epitaxial construction with oxide passivation and metal overlay contact. Ideally suited for low voltage, high frequency switching power supplies, free wheeling diode and polarity protection diodes.

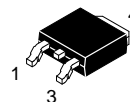
- Highly Stable Oxide Passivated Junction
- Guardring for Stress Protection
- Matched dual die construction – May be Paralleled for High Current Output
- High dv/dt Capability
- Short Heat Sink Tap Manufactured – Not Sheared
- Very Low Forward Voltage Drop
- Epoxy Meets UL94, VO at 1/8"

#### Mechanical Characteristics:

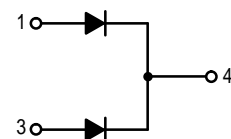
- Case: Epoxy, Molded
- Weight: 0.4 gram (approximately)
- Finish: All External Surfaces Corrosion Resistant and Terminal Leads are Readily Solderable
- Lead and Mounting Surface Temperature for Soldering Purposes:  
260°C Max. for 10 Seconds
- Shipped in 75 units per plastic tube
- Available in 16 mm Tape and Reel, 2500 units per Reel,  
Add "T4" to Suffix part #
- Marking: B1035CL

**MBRD1035CTL**

**SCHOTTKY BARRIER  
RECTIFIER  
10 AMPERES  
35 VOLTS**



**CASE 369A-13  
DPAK**



#### MAXIMUM RATINGS

| Rating   | Symbol                          | Value       | Unit             |
|--|---------------------------------|-------------|------------------|
| Peak Repetitive Reverse Voltage<br>Working Peak Reverse Voltage<br>DC Blocking Voltage                       | $V_{RRM}$<br>$V_{RWM}$<br>$V_R$ | 35          | Volts            |
| Average Rectified Forward Current<br>(At Rated $V_R$ , $T_C = 115^\circ\text{C}$ )                           | $I_O$                           | 5<br>10     | Amps             |
| Peak Repetitive Forward Current<br>(At Rated $V_R$ , Square Wave, 20 kHz, $T_C = 115^\circ\text{C}$ )        | $I_{FRM}$                       | 10          | Amps             |
| Non-Repetitive Peak Surge Current<br>(Surge applied at rated load conditions, halfwave, single phase, 60 Hz) | $I_{FSM}$                       | 50          | Amps             |
| Storage / Operating Case Temperature   | $T_{stg}, T_C$                  | -55 to +125 | $^\circ\text{C}$ |
| Operating Junction Temperature   | $T_J$                           | -55 to +125 | $^\circ\text{C}$ |
| Voltage Rate of Change (Rated $V_R$ , $T_J = 25^\circ\text{C}$ )   | dv/dt                           | 10,000      | V/ $\mu\text{s}$ |

#### THERMAL CHARACTERISTICS

|  |         |                 |      |                    |
|--|---------|-----------------|------|--------------------|
| Thermal Resistance – Junction to Case        | Per Leg | $R_{\theta JC}$ | 2.43 | $^\circ\text{C/W}$ |
| Thermal Resistance – Junction to Ambient (1) | Per Leg | $R_{\theta JA}$ | 68   | $^\circ\text{C/W}$ |

(1) Rating applies when using minimum pad size, FR4 PC Board

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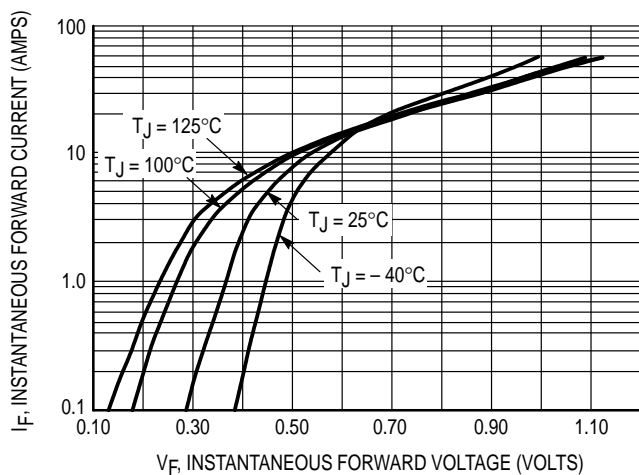
This document contains information on a new product. Specifications and information herein are subject to change without notice.



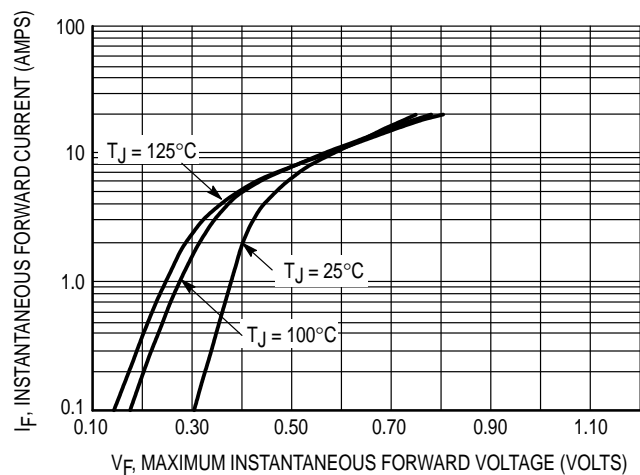
**ELECTRICAL CHARACTERISTICS**

|   |         |       |                              |       |
|---|---------|-------|------------------------------|-------|
| Maximum Instantaneous Forward Voltage <sup>(2)</sup> , see Figure 2<br>$I_F = 5$ Amps, $T_J = 25^\circ\text{C}$<br>$I_F = 5$ Amps, $T_J = 100^\circ\text{C}$<br>$I_F = 10$ Amps, $T_J = 25^\circ\text{C}$<br>$I_F = 10$ Amps, $T_J = 100^\circ\text{C}$       | Per Leg | $V_F$ | 0.47<br>0.41<br>0.56<br>0.55 | Volts |
| Maximum Instantaneous Reverse Current, see Figure 4<br>$(V_R = 35\text{ V}, T_J = 25^\circ\text{C})$<br>$(V_R = 35\text{ V}, T_J = 100^\circ\text{C})$<br>$(V_R = 17.5\text{ V}, T_J = 25^\circ\text{C})$<br>$(V_R = 17.5\text{ V}, T_J = 100^\circ\text{C})$ | Per Leg | $I_R$ | 2.0<br>30<br>0.20<br>5.0     | mA    |

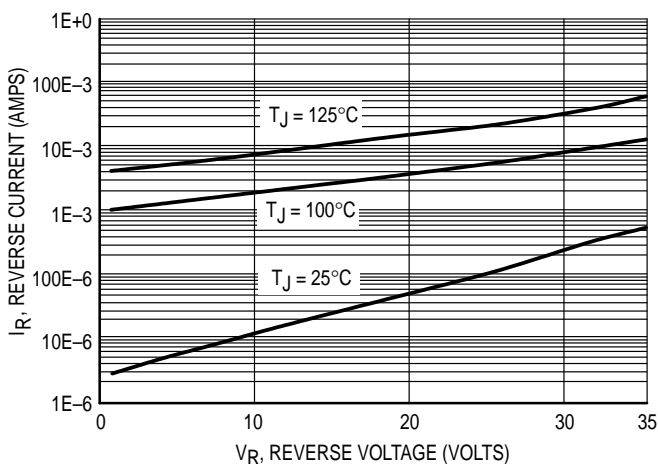
(2) Pulse Test: Pulse Width  $\leq 250\text{ }\mu\text{s}$ , Duty Cycle  $\leq 2.0\%$ .

**TYPICAL CHARACTERISTICS**


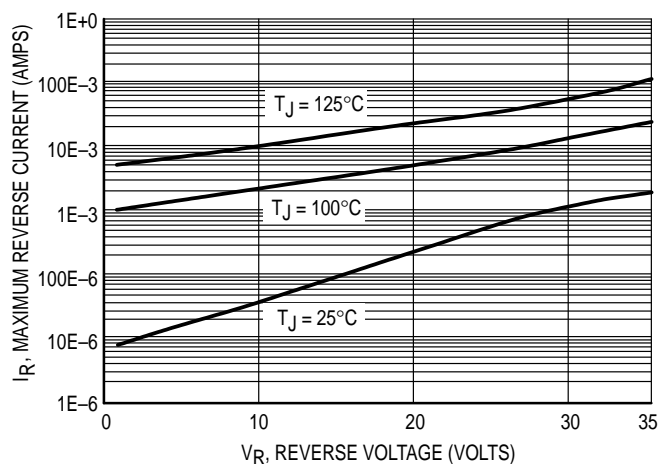
**Figure 1. Typical Forward Voltage Per Leg**



**Figure 2. Maximum Forward Voltage Per Leg**



**Figure 3. Typical Reverse Current Per Leg**



**Figure 4. Maximum Reverse Current Per Leg**

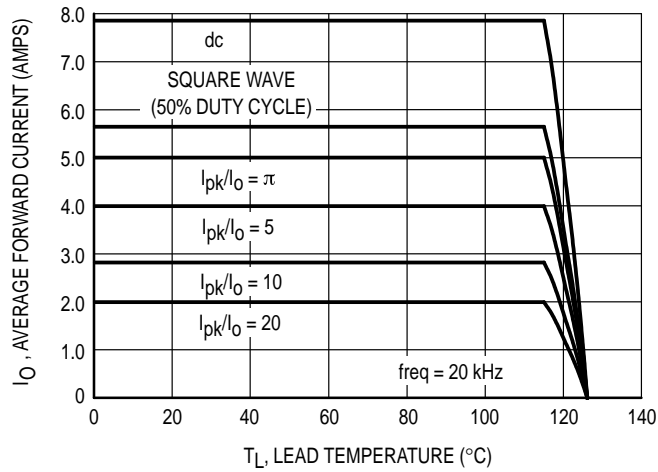


Figure 5. Current Derating Per Leg

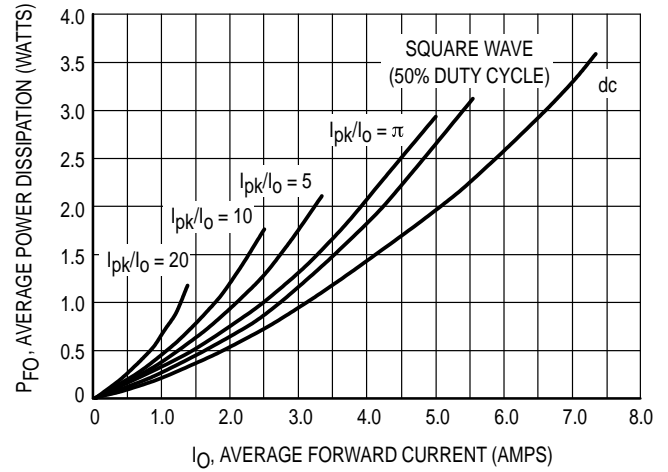


Figure 6. Forward Power Dissipation Per Leg

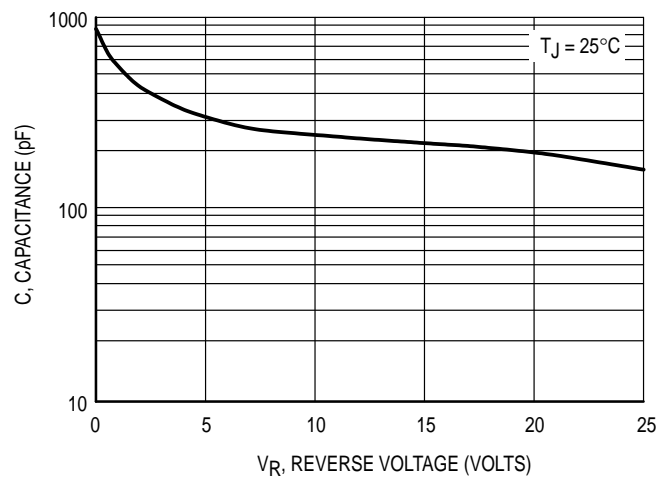


Figure 7. Capacitance Per Leg

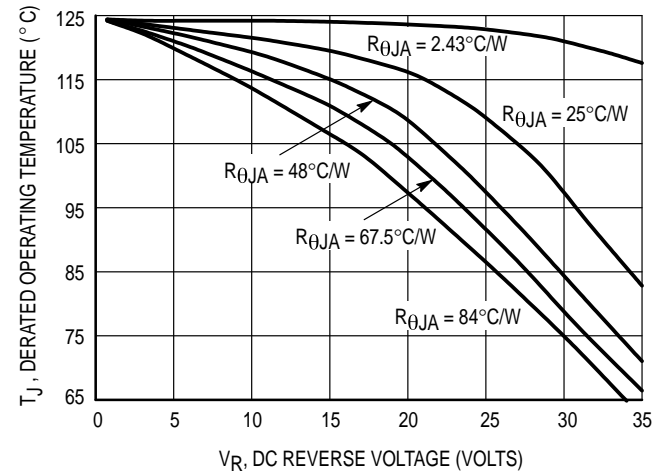


Figure 8. Typical Operating Temperature Derating Per Leg \*

\* Reverse power dissipation and the possibility of thermal runaway must be considered when operating this device under any reverse voltage conditions. Calculations of  $T_J$  therefore must include forward and reverse power effects. The allowable operating  $T_J$  may be calculated from the equation:

$$T_J = T_{Jmax} - r(t)(P_f + P_r) \text{ where}$$

$r(t)$  = thermal impedance under given conditions,  
 $P_f$  = forward power dissipation, and  
 $P_r$  = reverse power dissipation

This graph displays the derated allowable  $T_J$  due to reverse bias under DC conditions only and is calculated as  $T_J = T_{Jmax} - r(t)P_r$ , where  $r(t) = R_{thja}$ . For other power applications further calculations must be performed.

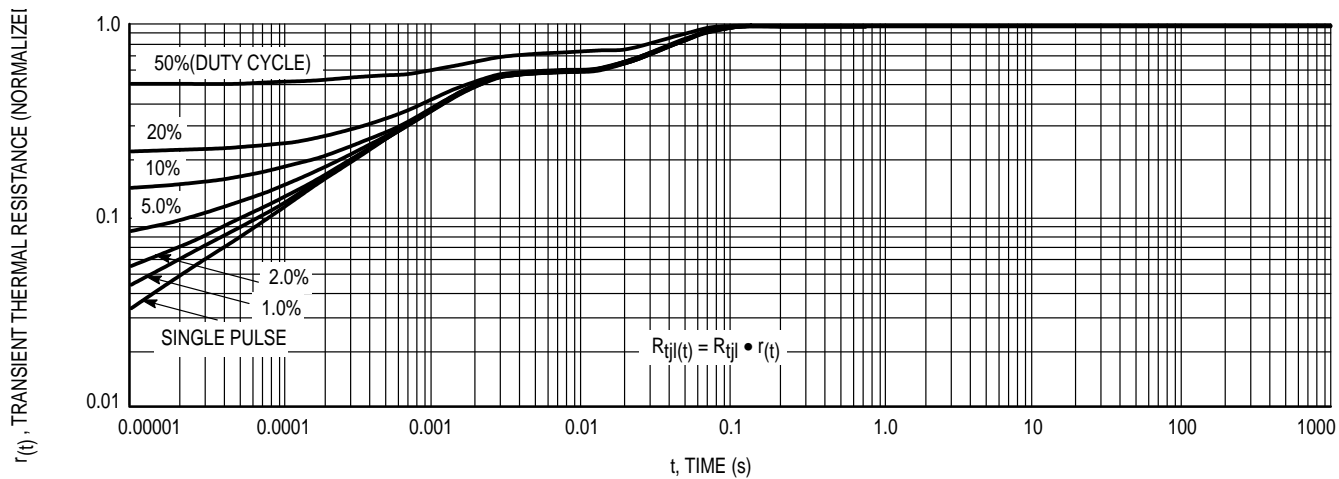


Figure 9. Thermal Response Junction to Case (Per Leg)

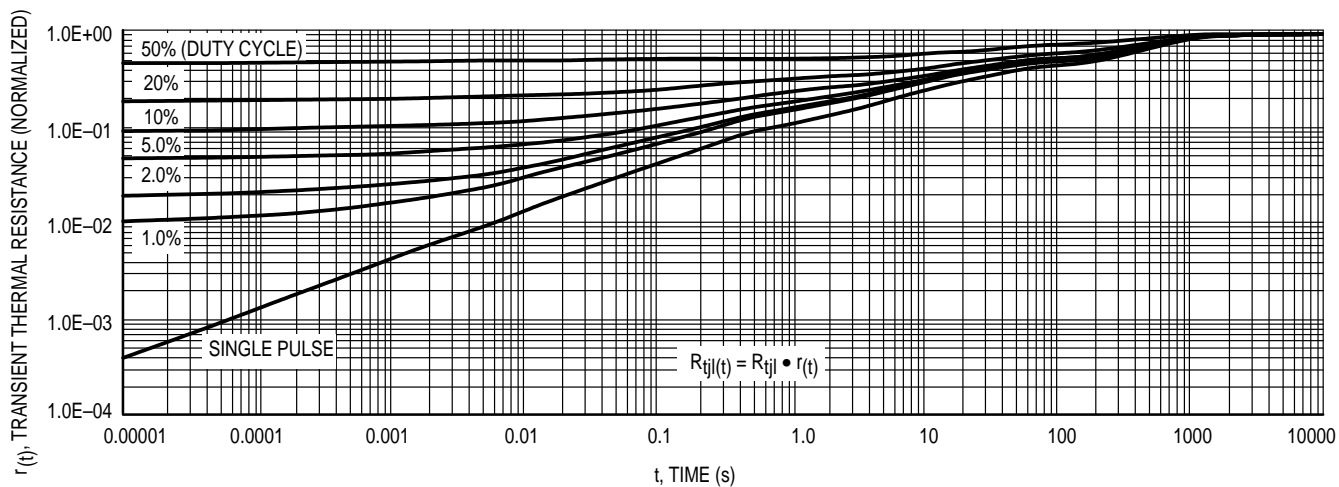
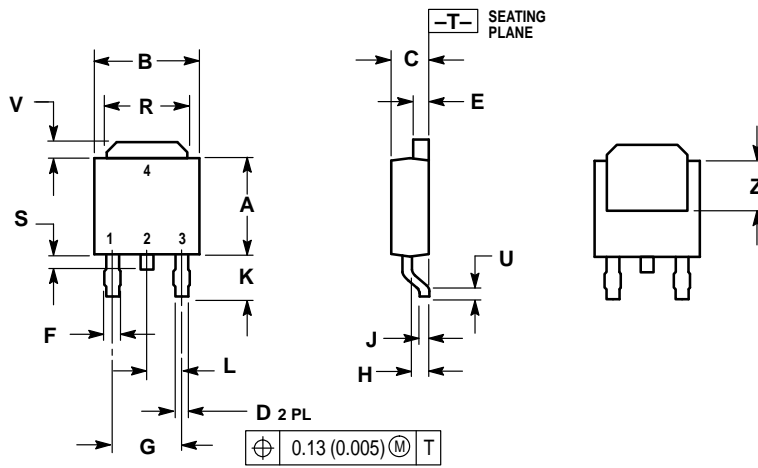


Figure 10. Thermal Response Junction to Ambient (Per Leg)


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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