

# MBRD1035CTL

## SWITCHMODE™ Schottky Power Rectifier

### DPAK Power Surface Mount Package

The MBRD1035CTL employs 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.

#### Features

- Pb-Free Package is Available
- 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 UL 94 V-O @ 0.125 in

#### Mechanical Characteristics

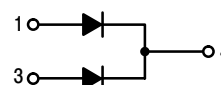
- Case: Epoxy, Molded
- Weight: 0.4 Gram (Approximately)
- Finish: All External Surfaces Corrosion Resistant and Terminal Leads are Readily Solderable
- Lead and Mounting Surface Temperature for Soldering Purposes: 260°C Max. for 10 Seconds
- Shipped in 75 Units Per Plastic Tube
- Available in 16 mm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



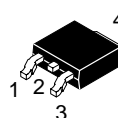
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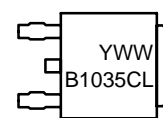
### SCHOTTKY BARRIER RECTIFIER 10 AMPERES 35 VOLTS



#### MARKING DIAGRAM



DPAK  
CASE 369C



Y = Year  
WW = Work Week

#### ORDERING INFORMATION

Device	Package	Shipping†
MBRD1035CTL	DPAK	75 Units/Rail
MBRD1035CTLT4	DPAK	2500/Tape & Reel
MBRD1035CTLT4G	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.

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## MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	$V_{RRM}$ $V_{RWM}$ $V_R$	35	V
Average Rectified Forward Current (At Rated $V_R$ , $T_C = 115^\circ\text{C}$ )	Per Leg Per Package $I_O$	5.0 10	A
Peak Repetitive Forward Current (At Rated $V_R$ , Square Wave, 20 kHz, $T_C = 115^\circ\text{C}$ )	Per Leg $I_{FRM}$	10	A
Non-Repetitive Peak Surge Current (Surge applied at rated load conditions, halfwave, single phase, 60 Hz)	Per Package $I_{FSM}$	50	A
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/ $\mu\text{s}$

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

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

## ELECTRICAL CHARACTERISTICS

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

- Rating applies when using minimum pad size, FR4 PC Board
- Pulse Test: Pulse Width  $\leq 250$   $\mu\text{s}$ , Duty Cycle  $\leq 2.0\%$ .

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## TYPICAL CHARACTERISTICS

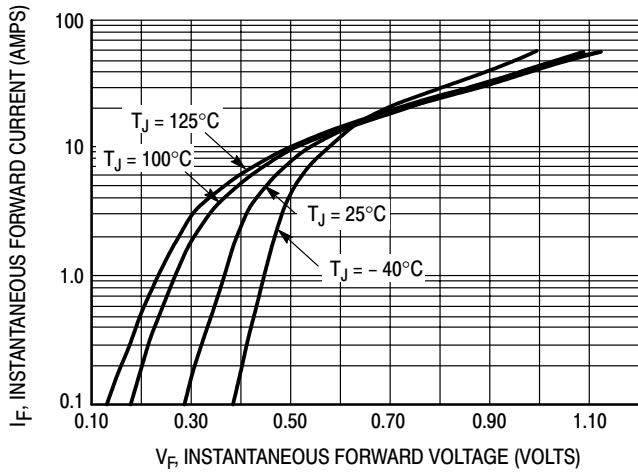


Figure 1. Typical Forward Voltage Per Leg

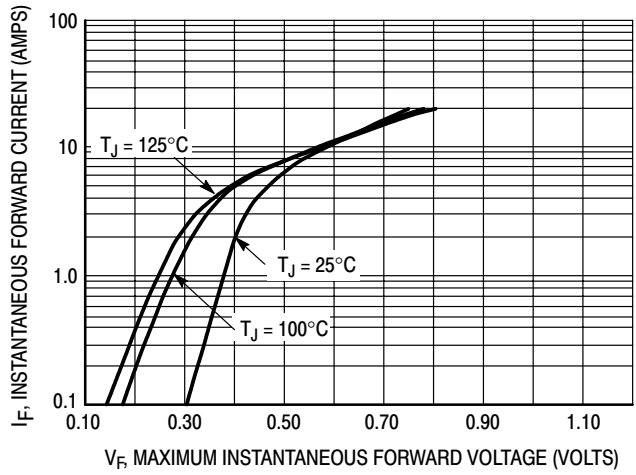


Figure 2. Maximum Forward Voltage Per Leg

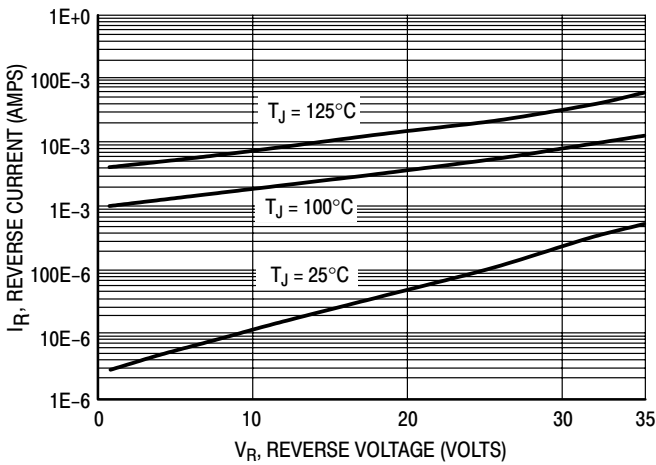


Figure 3. Typical Reverse Current Per Leg

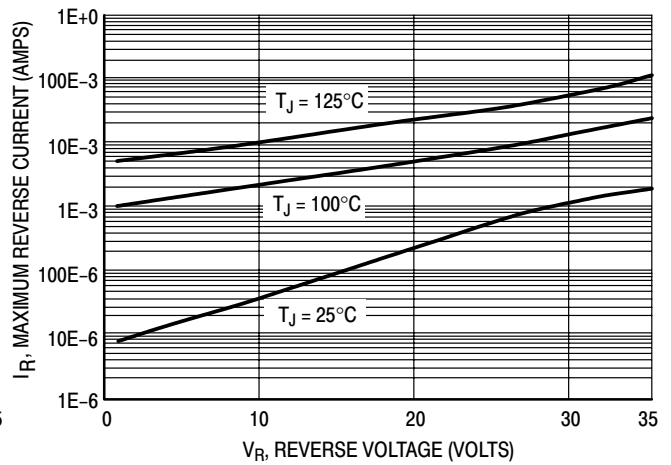
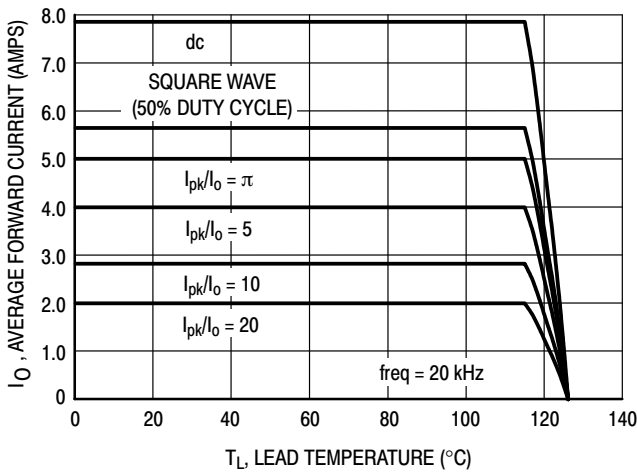
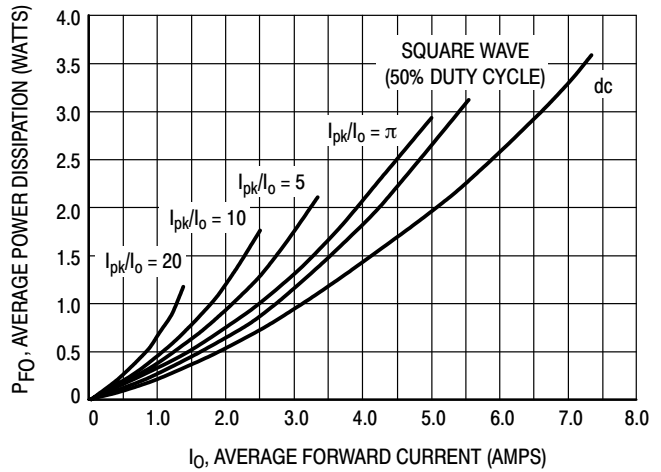


Figure 4. Maximum Reverse Current Per Leg

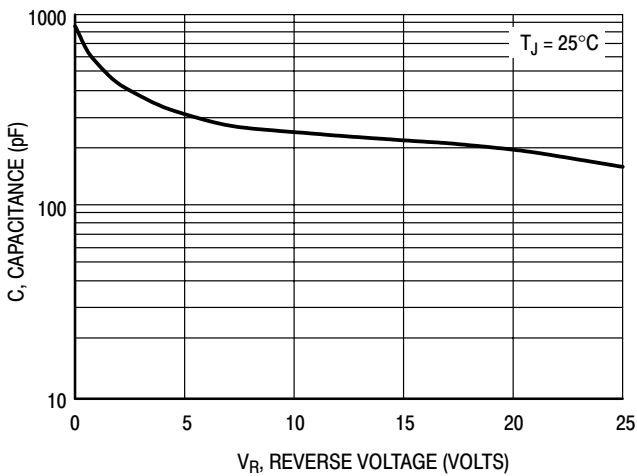
# MBRD1035CTL



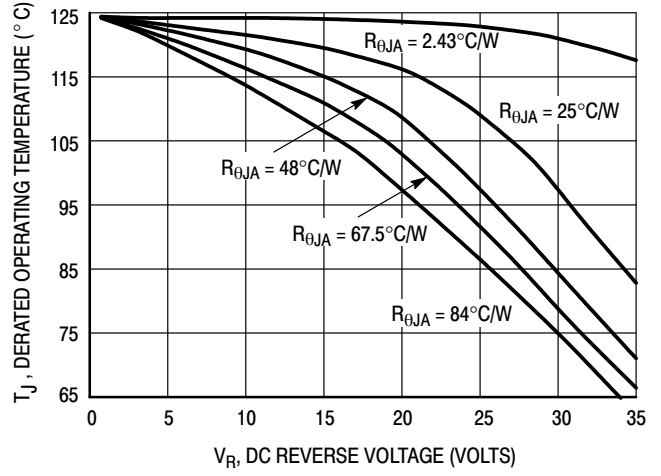
**Figure 5. Current Derating Per Leg**



**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.

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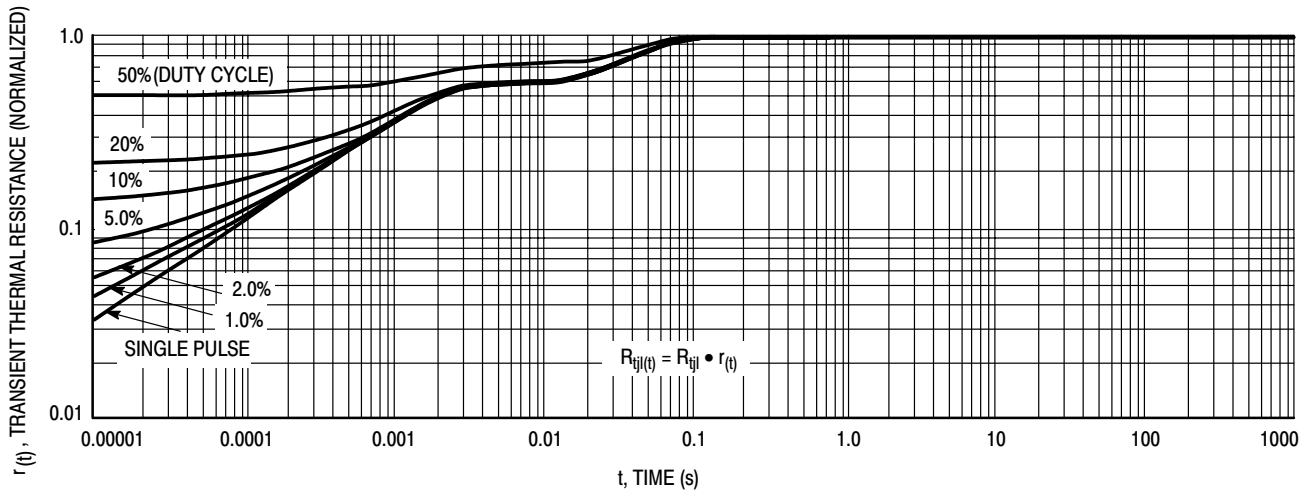


Figure 9. Thermal Response Junction to Case (Per Leg)

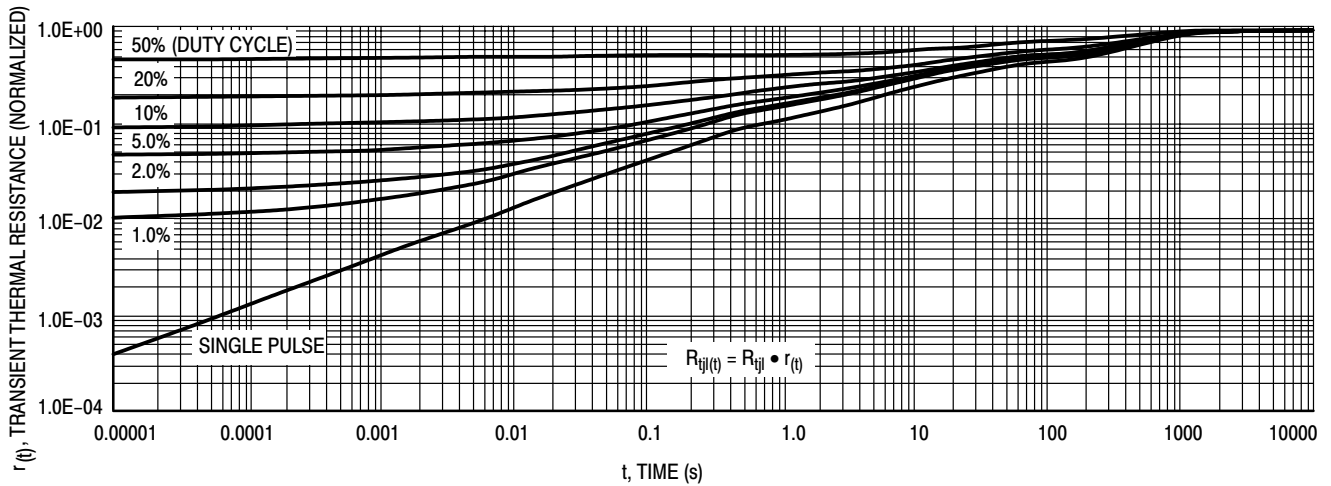
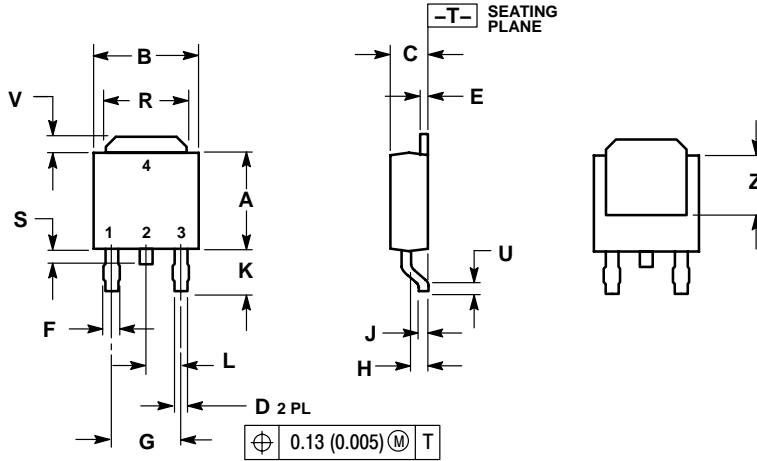


Figure 10. Thermal Response Junction to Ambient (Per Leg)

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## PACKAGE DIMENSIONS

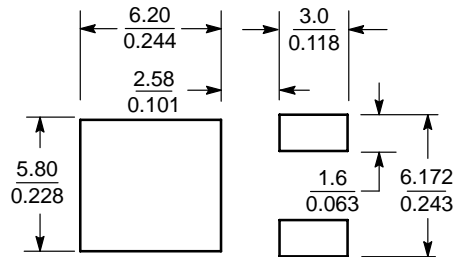
### DPAK CASE 369C ISSUE O



- 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\*



\*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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