

MBRD1035CTL

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

MAXIMUM RATINGS

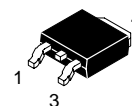
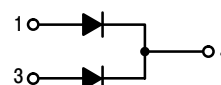
Please See the Table on the Following Page



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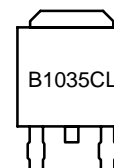
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SCHOTTKY BARRIER RECTIFIER 10 AMPERES 35 VOLTS



DPAK
CASE 369A
PLASTIC

MARKING DIAGRAM



B1035CL = Device Code

ORDERING INFORMATION

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

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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	Volts
Average Rectified Forward Current (At Rated V_R , $T_C = 115^\circ\text{C}$)	Per Leg Per Package I_O	5.0 10	Amps
Peak Repetitive Forward Current (At Rated V_R , Square Wave, 20 kHz, $T_C = 115^\circ\text{C}$)	Per Leg I_{FRM}	10	Amps
Non-Repetitive Peak Surge Current (Surge applied at rated load conditions, halfwave, single phase, 60 Hz)	Per Package 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	$\text{V}/\mu\text{s}$

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	Volts
Maximum Instantaneous Reverse Current (Note 2.) see Figure 4 $(V_R = 35 \text{ V}, T_J = 25^\circ\text{C})$ $(V_R = 35 \text{ V}, T_J = 100^\circ\text{C})$ $(V_R = 17.5 \text{ V}, T_J = 25^\circ\text{C})$ $(V_R = 17.5 \text{ V}, T_J = 100^\circ\text{C})$	Per Leg I_R	2.0 30 0.20 5.0	mA

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

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TYPICAL CHARACTERISTICS

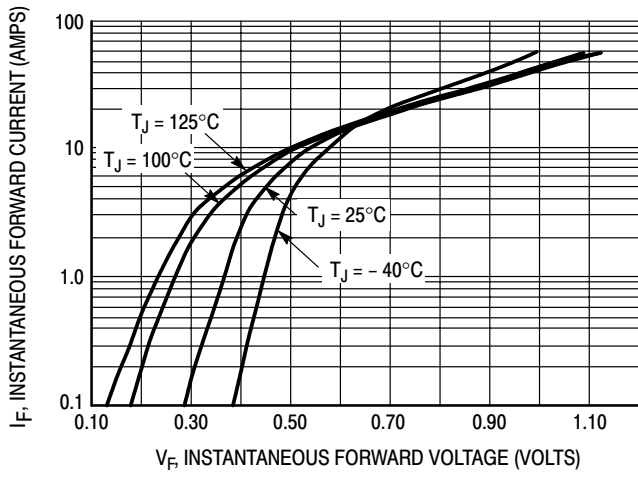


Figure 1. Typical Forward Voltage Per Leg

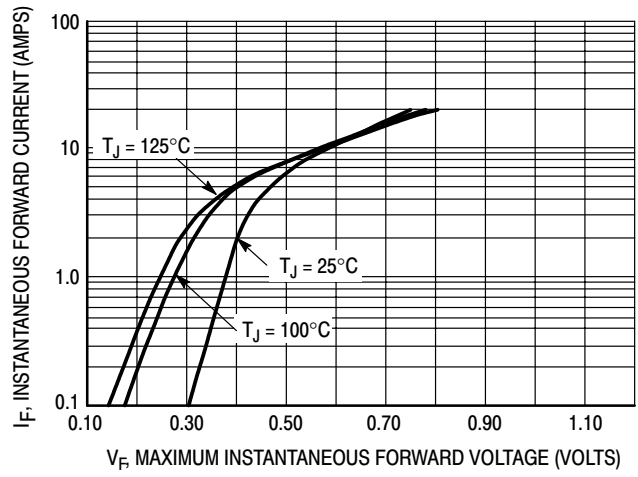


Figure 2. Maximum Forward Voltage Per Leg

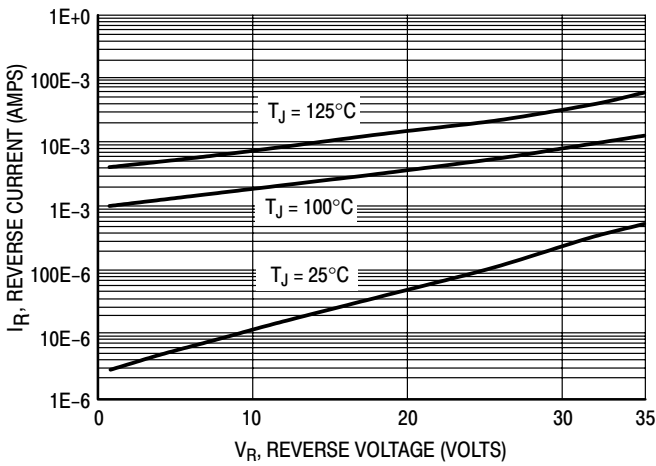


Figure 3. Typical Reverse Current Per Leg

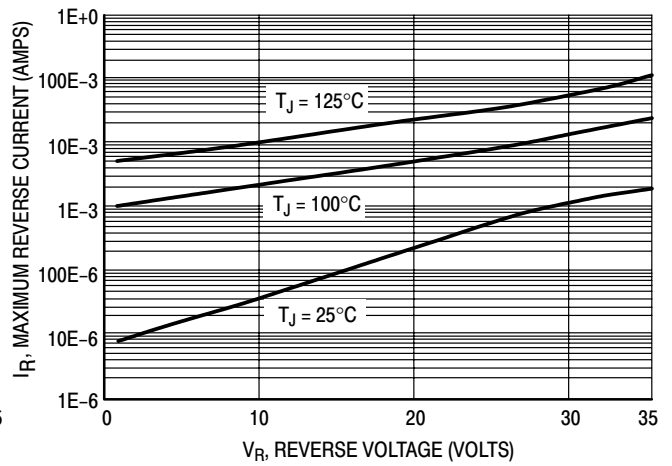


Figure 4. Maximum Reverse Current Per Leg

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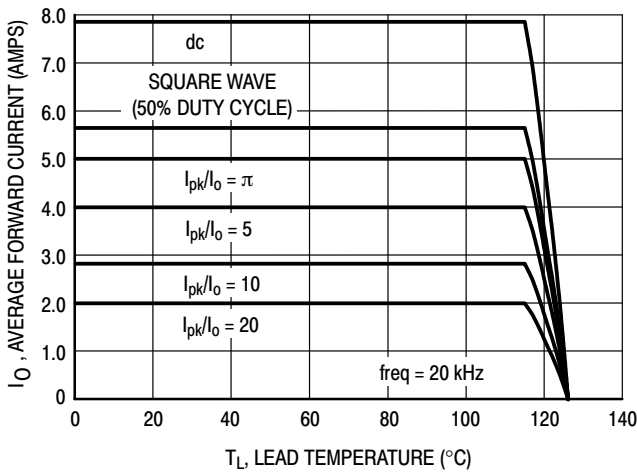


Figure 5. Current Derating Per Leg

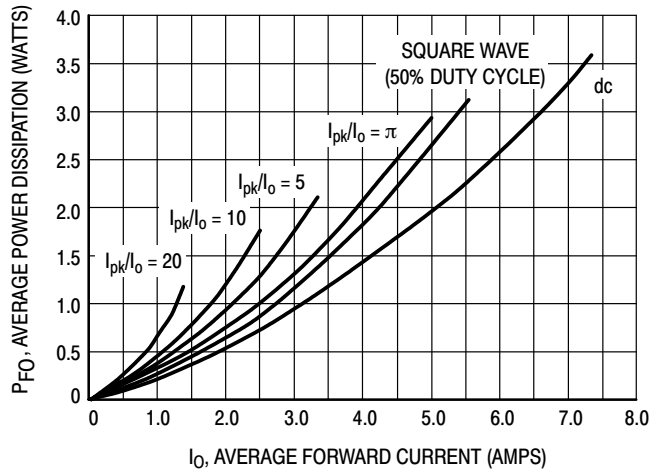


Figure 6. Forward Power Dissipation Per Leg

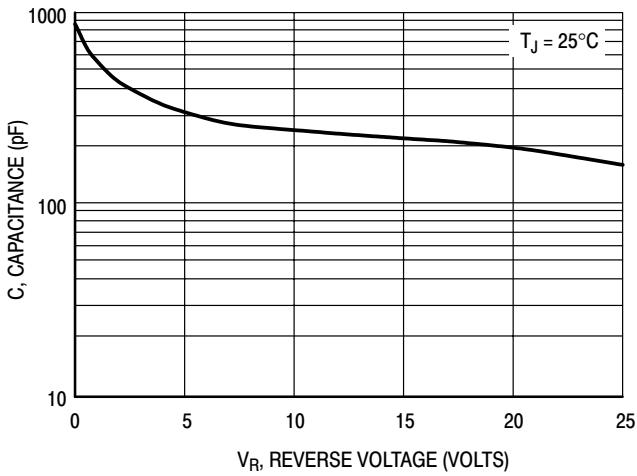


Figure 7. Capacitance Per Leg

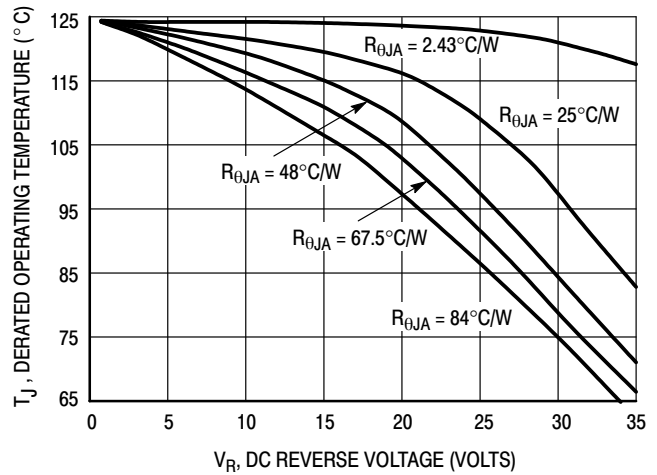


Figure 8. Typical Operating Temperature Derating Per Leg *

* 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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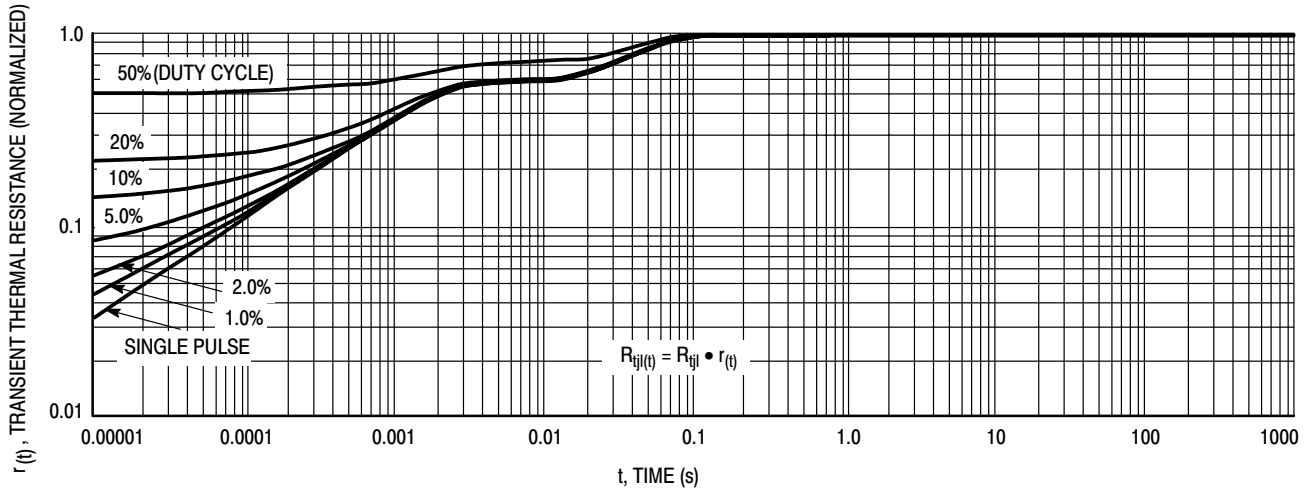


Figure 9. Thermal Response Junction to Case (Per Leg)

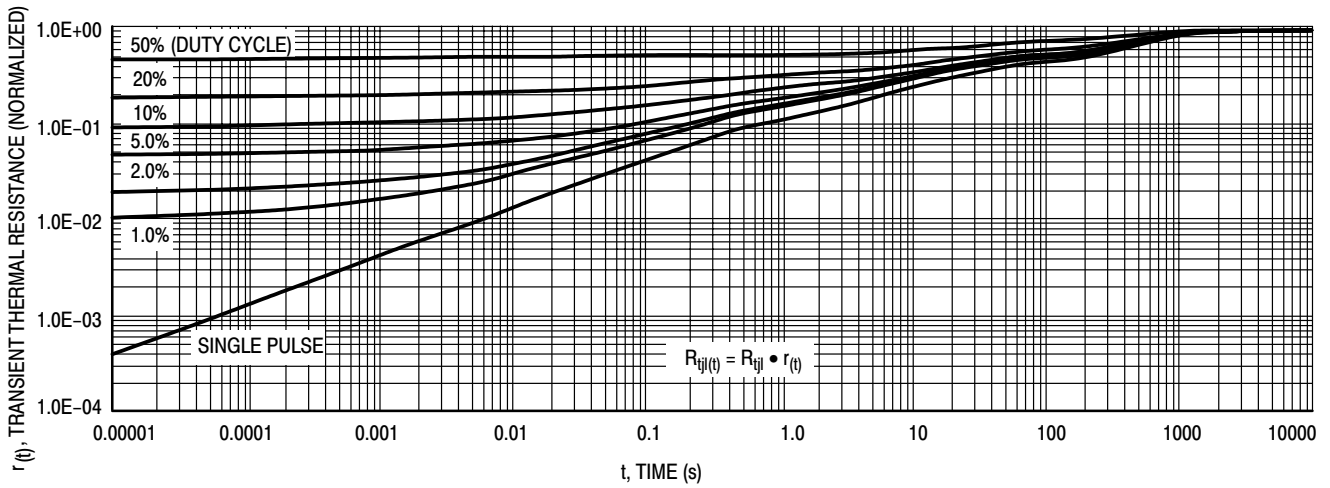
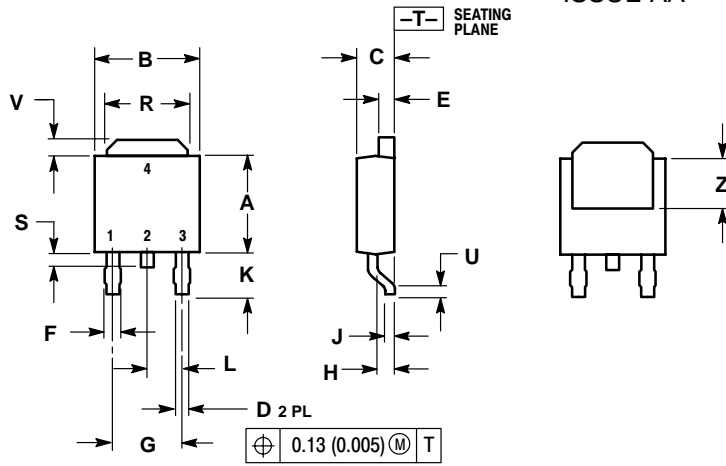


Figure 10. Thermal Response Junction to Ambient (Per Leg)

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PACKAGE DIMENSIONS

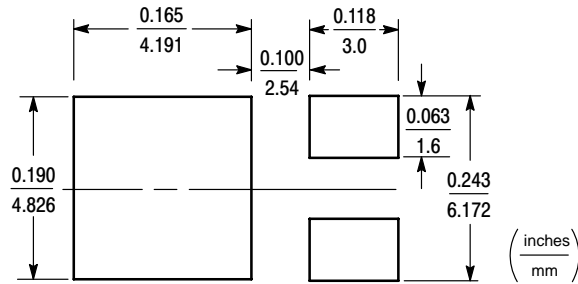
DPAK
PLASTIC
CASE 369A-13
ISSUE AA



- 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	---

- STYLE 3:
PIN 1. ANODE
2. CATHODE
3. ANODE
4. CATHODE



DPAK FOOTPRINT

Notes

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