Advance Information

SWITCHMODE™ Schottky Power Rectifier

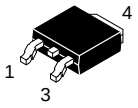
DPAK Power Surface Mount Package

MBRD1035CTL

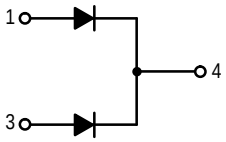
SCHOTTKY BARRIER RECTIFIER 10 AMPERES 35 VOLTS

. . . 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”



CASE 369A–13
DPAK



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

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°C)	Per Leg Per Package	I_O	5 10	Amps
Peak Repetitive Forward Current (At Rated V_R, Square Wave, 20 kHz, T_C = 115°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	°C
Operating Junction Temperature		T_J	–55 to +125	°C
Voltage Rate of Change (Rated V_R, T_J = 25°C)		dv/dt	10,000	V/µs

THERMAL CHARACTERISTICS

Thermal Resistance – Junction to Case	Per Leg	$R_{\theta JC}$	2.43	°C/W
Thermal Resistance – Junction to Ambient (1)	Per Leg	$R_{\theta JA}$	68	°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(2), see Figure 2	Per Leg	V_F		Volts
I_F = 5 Amps, T_J = 25°C			0.47	
I_F = 5 Amps, T_J = 100°C			0.41	
I_F = 10 Amps, T_J = 25°C			0.56	
I_F = 10 Amps, T_J = 100°C			0.55	
Maximum Instantaneous Reverse Current, see Figure 4	Per Leg	I_R		mA
(V_R = 35 V, T_J = 25°C)			2.0	
(V_R = 35 V, T_J = 100°C)			30	
(V_R = 17.5 V, T_J = 25°C)			0.20	
(V_R = 17.5 V, T_J = 100°C)			5.0	

(2) Pulse Test: Pulse Width ≤ 250 μs, Duty Cycle ≤ 2.0%.

TYPICAL CHARACTERISTICS

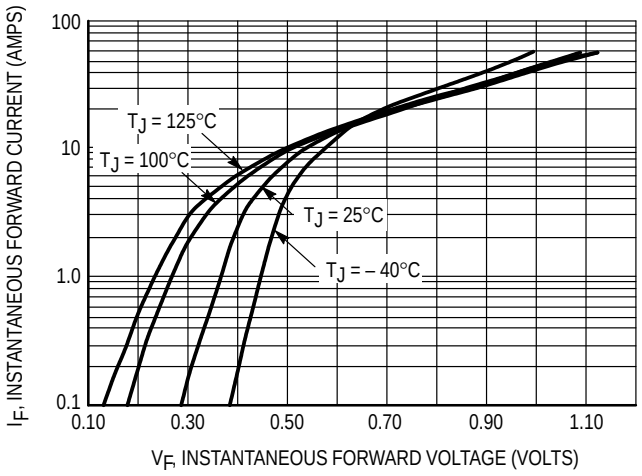


Figure 1. Typical Forward Voltage Per Leg

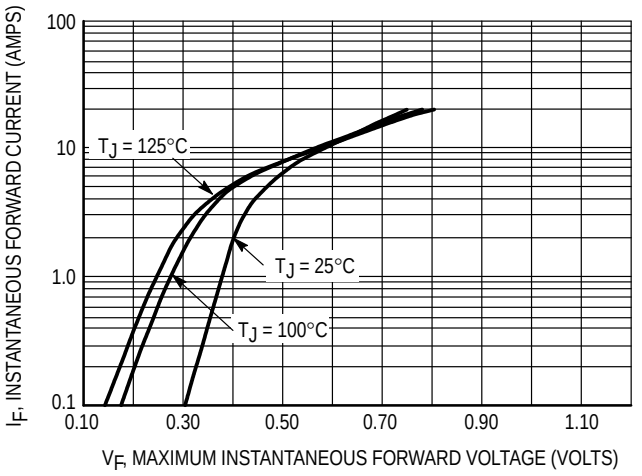


Figure 2. Maximum Forward Voltage Per Leg

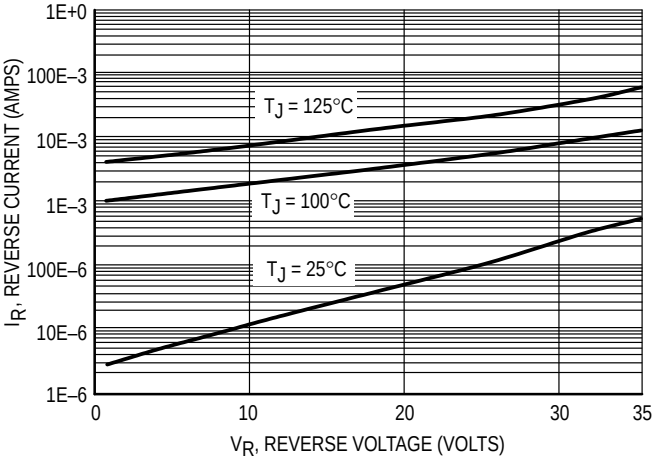


Figure 3. Typical Reverse Current Per Leg

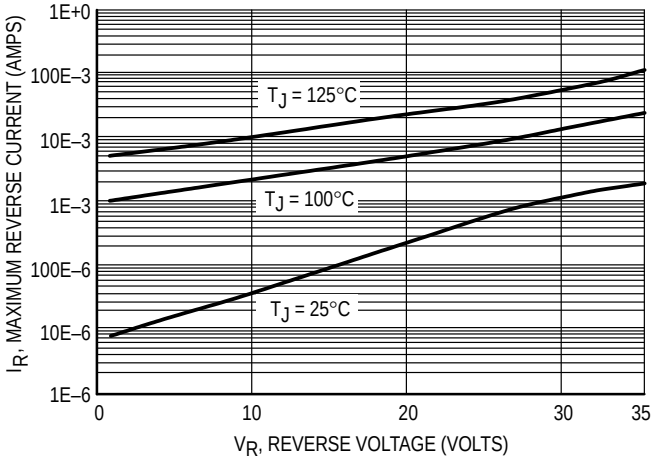


Figure 4. Maximum Reverse Current Per Leg

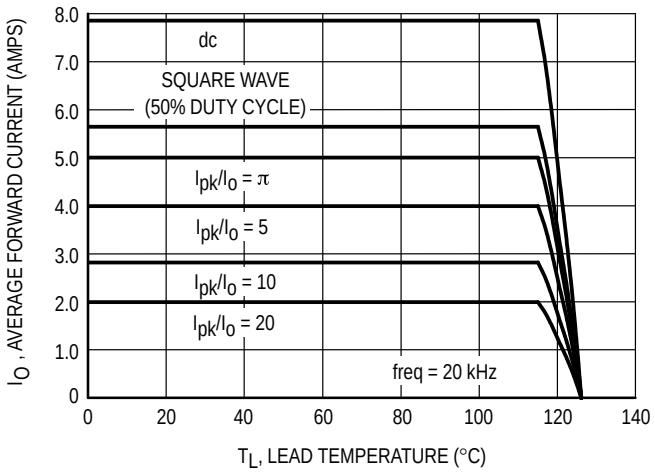


Figure 5. Current Derating Per Leg

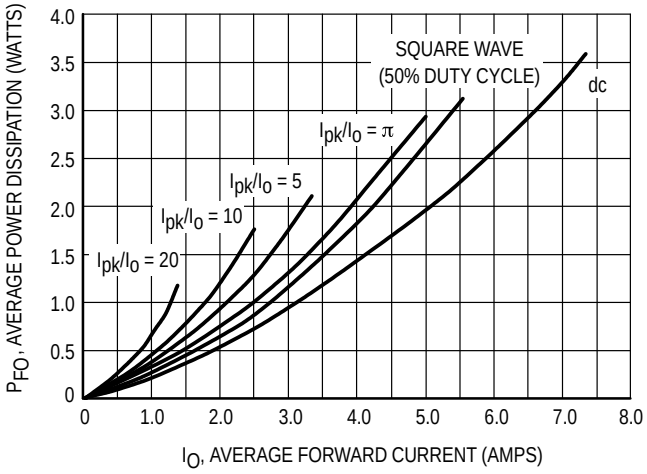


Figure 6. Forward Power Dissipation Per Leg

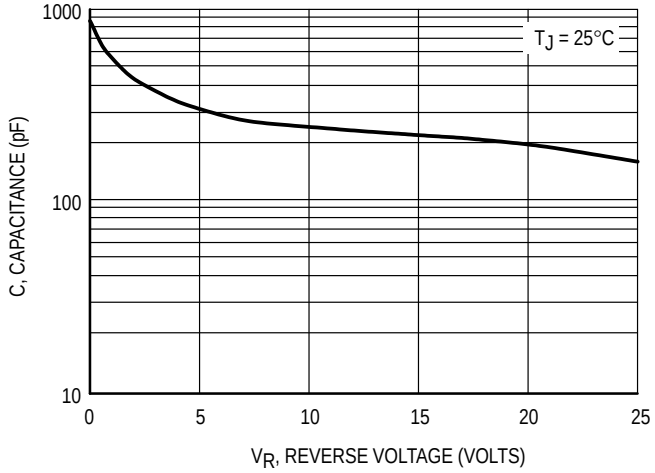


Figure 7. Capacitance Per Leg

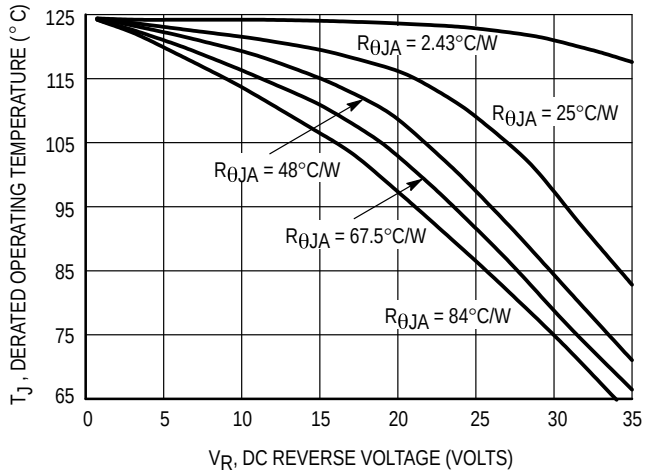


Figure 8. Typical Operating Temperature Derating Per Leg *

* 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: $T_J = T_{Jmax} - r(t)(Pf + Pr)$ where

r(t) = thermal impedance under given conditions,
Pf = forward power dissipation, and
Pr = reverse power dissipation

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

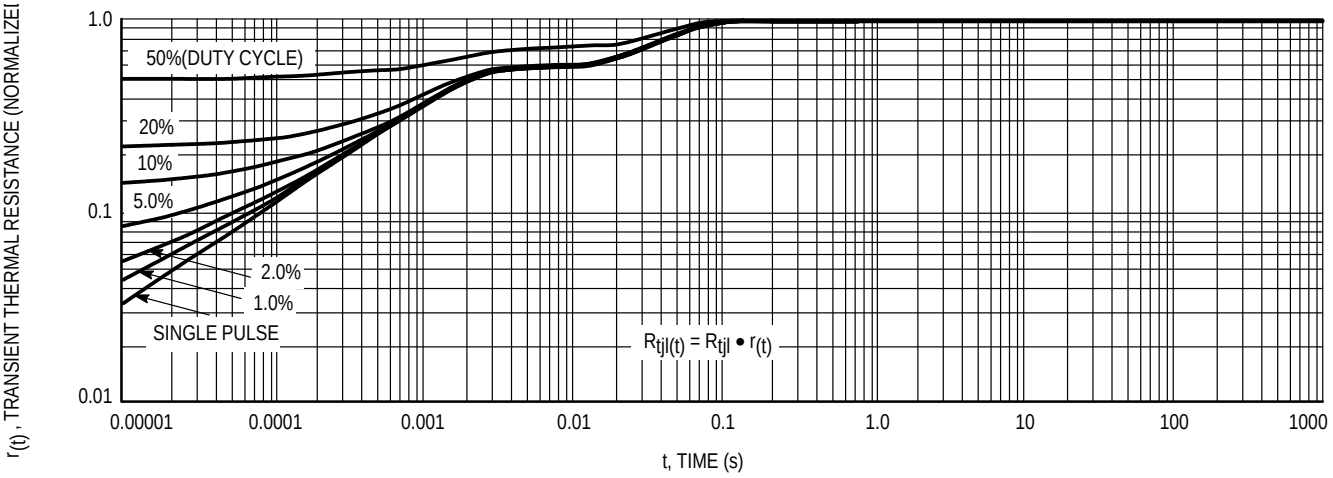


Figure 9. Thermal Response Junction to Case (Per Leg)

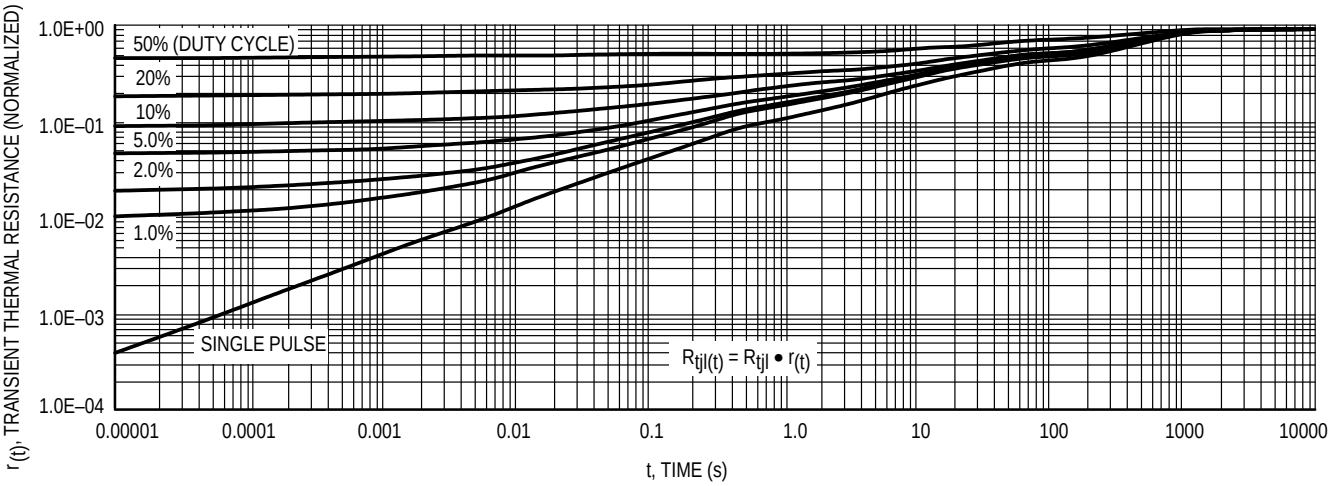
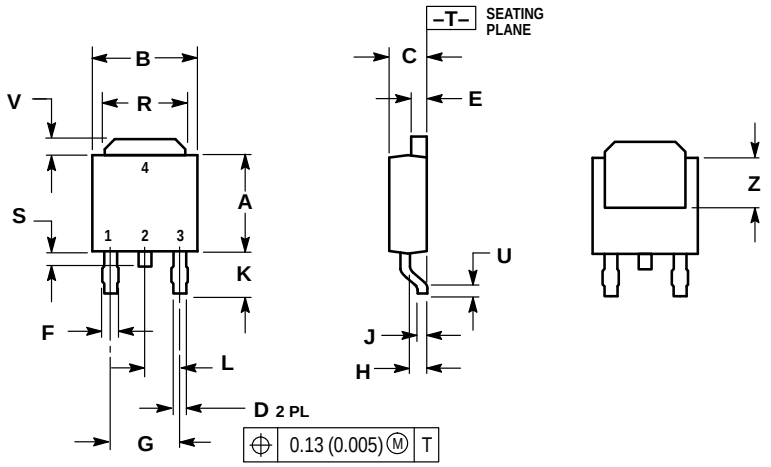


Figure 10. Thermal Response Junction to Ambient (Per Leg)

PACKAGE DIMENSIONS



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

	INCHES		MILLIMETERS	
DIM	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	—

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ISSUE Y

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