MBRD1035CTLG, MBRD1035CTLT4G, SBRD81035CTLT4G

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

- 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−0 @ 0.125 in
- SBRD8 Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC−Q101 Qualified and PPAP Capable
- These Devices are Pb−Free and are RoHS Compliant*

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
- ESD Rating:
  - Human Body Model = 3B (> 8 kV)
  - Machine Model = C (> 400 V)

ON Semiconductor®

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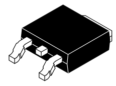
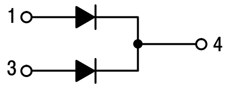
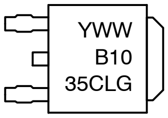
SCHOTTKY BARRIER RECTIFIER 10 AMPERES 35 VOLTS



DPAK
CASE 369C



MARKING DIAGRAM



Y = Year
WW = Work Week
B1035CL = Device Code
G = Pb−Free Package

ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 3 of this data sheet.

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*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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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°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°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 +150	°C
Operating Junction Temperature (Note 1)	T_J	−55 to +150	°C
Voltage Rate of Change (Rated V_R, T_J = 25°C)	dv/dt	10,000	V/μs

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

1. The heat generated must be less than the thermal conductivity from Junction−to−Ambient: $dP_D/dT_J < 1/R_{\theta JA}$.

THERMAL CHARACTERISTICS

Rating	Symbol	Value	Unit
Thermal Resistance, Junction−to−Case Per Leg	$R_{\theta JC}$	 3.0	°C/W
Thermal Resistance, Junction−to−Ambient (Note 2) Per Leg	$R_{\theta JA}$	 137	°C/W

2. Rating applies when using minimum pad size, FR4 PC Board

ELECTRICAL CHARACTERISTICS

Rating	Symbol	Value	Unit
Maximum Instantaneous Forward Voltage (Note 3) (See Figure 2) Per Leg (I_F = 5 Amps, T_J = 25°C) (I_F = 5 Amps, T_J = 100°C) (I_F = 10 Amps, T_J = 25°C) (I_F = 10 Amps, T_J = 100°C)	V_F	 0.47 0.41 0.56 0.55	V
Maximum Instantaneous Reverse Current (Note 3) (See Figure 4) Per Leg (V_R = 35 V, T_J = 25°C) (V_R = 35 V, T_J = 100°C) (V_R = 17.5 V, T_J = 25°C) (V_R = 17.5 V, T_J = 100°C)	I_R	 2.0 30 0.20 5.0	mA

3. Pulse Test: Pulse Width ≤ 250 μs, Duty Cycle ≤ 2.0%

ORDERING INFORMATION

Device	Package	Shipping†
MBRD1035CTLG	DPAK (Pb−Free)	75 Units / Rail
MBRD1035CTLT4G	DPAK (Pb−Free)	2,500 Units / Tape & Reel
SBRD81035CTLT4G	DPAK (Pb−Free)	2,500 Units / 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.

TYPICAL CHARACTERISTICS

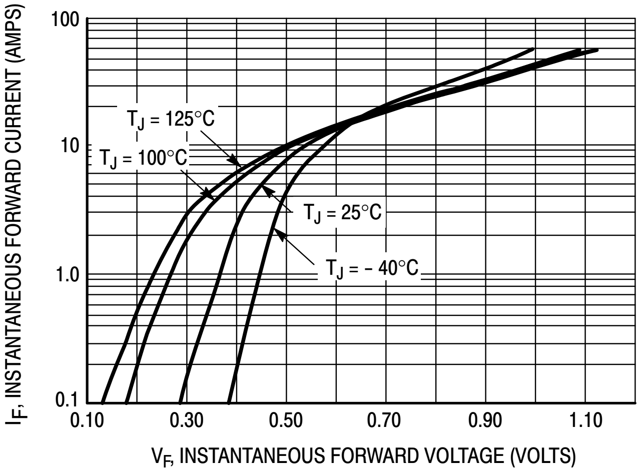


Figure 1. Typical Forward Voltage Per Leg

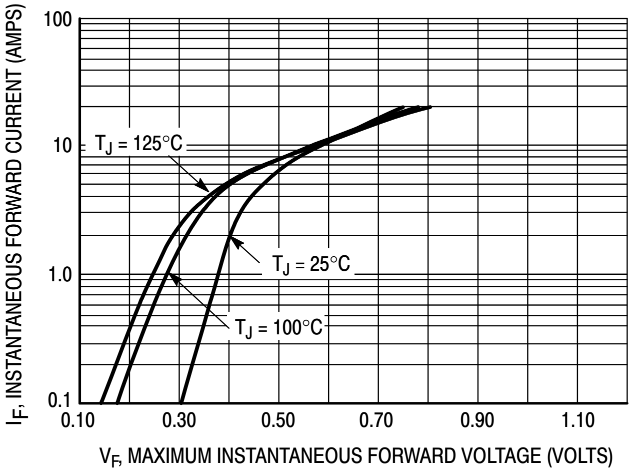


Figure 2. Maximum Forward Voltage Per Leg

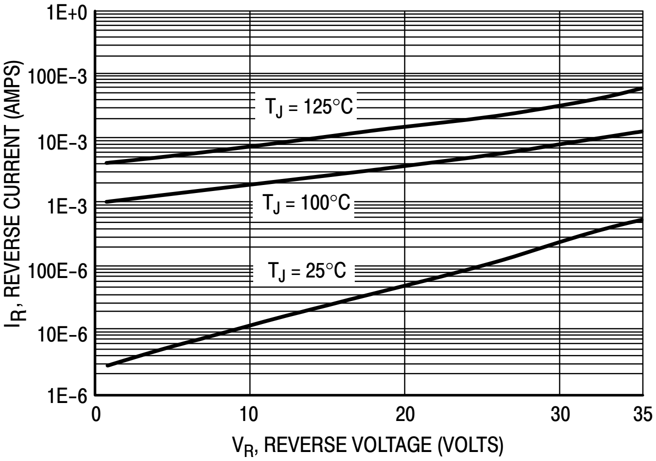


Figure 3. Typical Reverse Current Per Leg

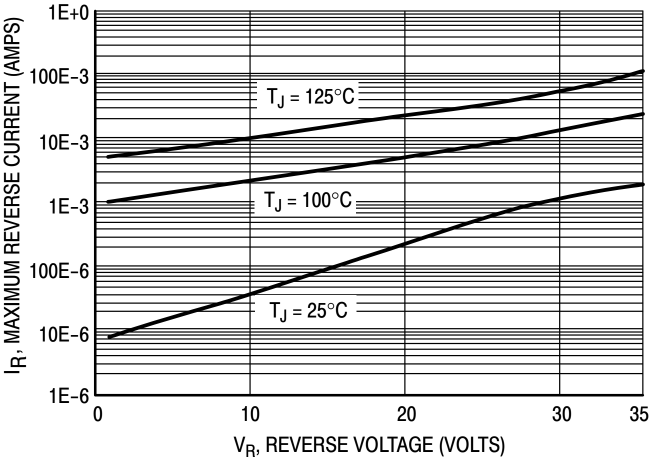


Figure 4. Maximum Reverse Current Per Leg

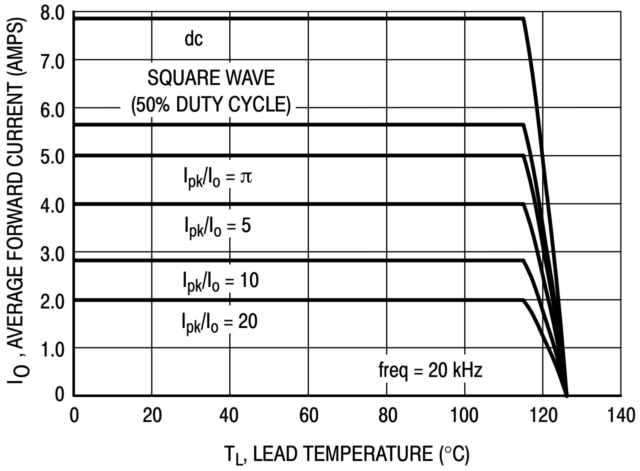


Figure 5. Current Derating Per Leg

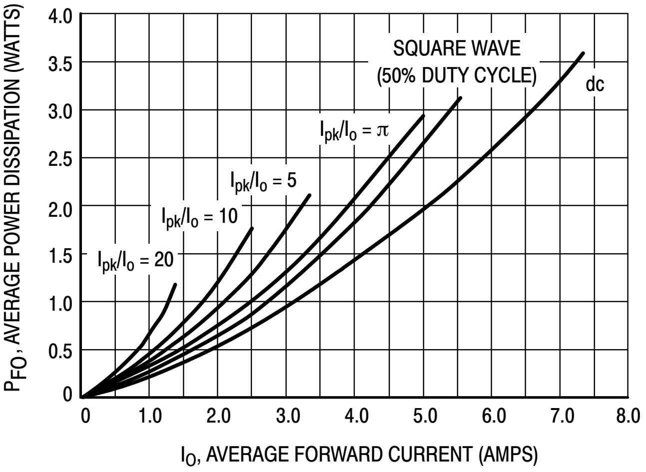


Figure 6. Forward Power Dissipation Per Leg

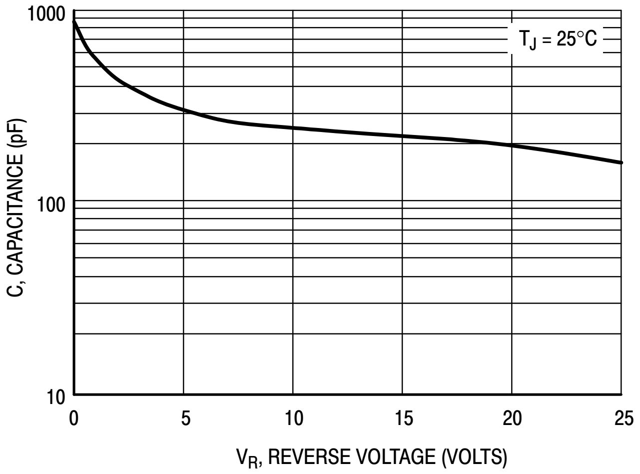


Figure 7. Capacitance Per Leg

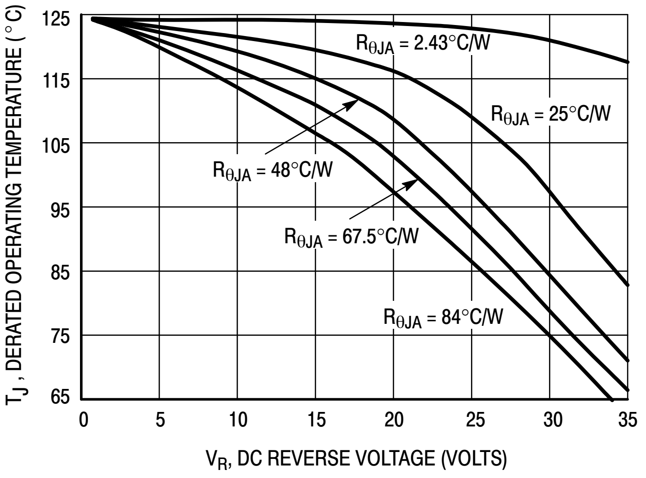


Figure 8. Typical Operating Temperature Derating Per Leg *

* 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.

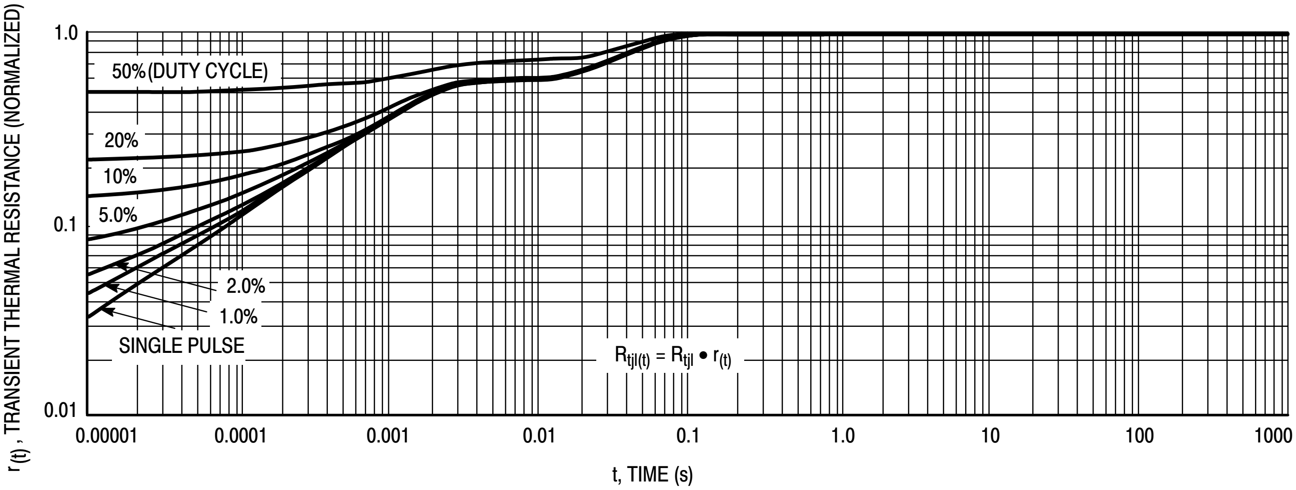


Figure 9. Thermal Response Junction to Case (Per Leg)

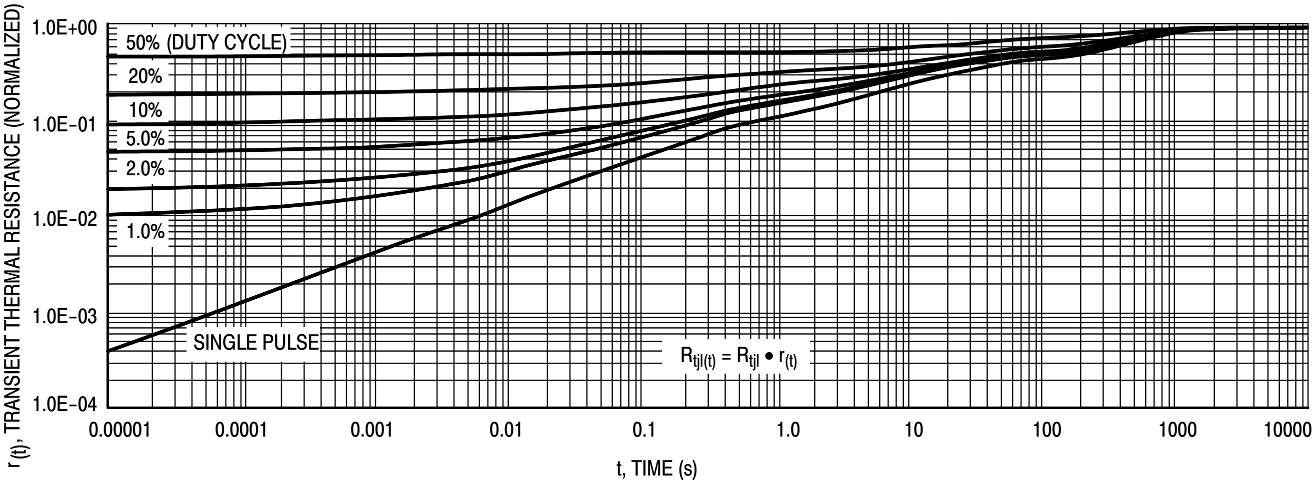
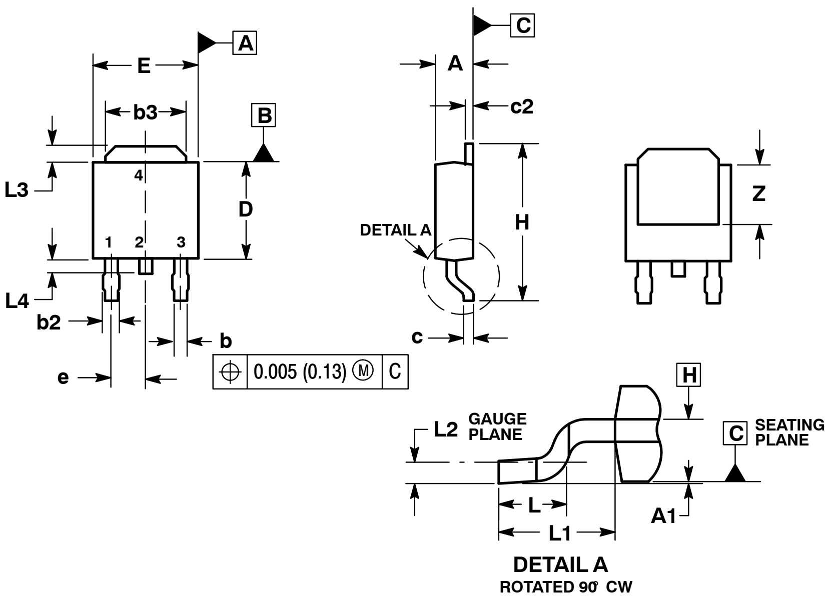


Figure 10. Thermal Response Junction to Ambient (Per Leg)

PACKAGE DIMENSIONS

DPAK (SINGLE GAUGE)

CASE 369C
ISSUE D

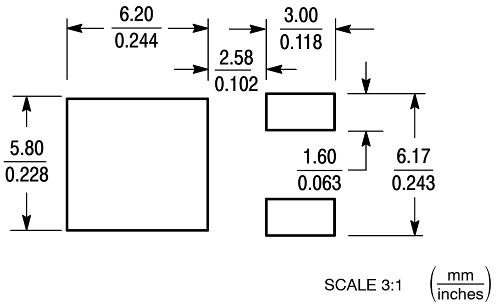


DETAIL A
ROTATED 90° CW

NOTES:
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: INCHES.
3. THERMAL PAD CONTOUR OPTIONAL WITHIN DIMENSIONS b3, L3 and Z.
4. DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH, PROTRUSIONS, OR BURRS. MOLD FLASH, PROTRUSIONS, OR GATE BURRS SHALL NOT EXCEED 0.006 INCHES PER SIDE.
5. DIMENSIONS D AND E ARE DETERMINED AT THE OUTERMOST EXTREMES OF THE PLASTIC BODY.
6. DATUMS A AND B ARE DETERMINED AT DATUM PLANE H.

	INCHES		**MILLIMETERS**	
DIM	**MIN**	**MAX**	**MIN**	**MAX**
A	0.086	0.094	2.18	2.38
A1	0.000	0.005	0.00	0.13
b	0.025	0.035	0.63	0.89
b2	0.030	0.045	0.76	1.14
b3	0.180	0.215	4.57	5.46
c	0.018	0.024	0.46	0.61
c2	0.018	0.024	0.46	0.61
D	0.235	0.245	5.97	6.22
E	0.250	0.265	6.35	6.73
e	0.090 BSC		2.29 BSC	
H	0.370	0.410	9.40	10.41
L	0.055	0.070	1.40	1.78
L1	0.108 REF		2.74 REF	
L2	0.020 BSC		0.51 BSC	
L3	0.035	0.050	0.89	1.27
L4	---	0.040	---	1.01
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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