

MBR4015LWT

SWITCHMODE™ Schottky Power Rectifier

TO247 Power Package

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

- Highly Stable Oxide Passivated Junction
- Guardring for Over-Voltage Protection
- Low Forward Voltage Drop
- Monolithic Dual Die Construction. May Be Paralleled for High Current Output.
- Full Electrical Isolation without Additional Hardware

Mechanical Characteristics:

- Case: Molded Epoxy
- Epoxy Meets UL94, V_O at 1/8"
- Weight: 4.3 grams (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 30 Units Per Plastic Tube
- Marking: B4015L

MAXIMUM RATINGS

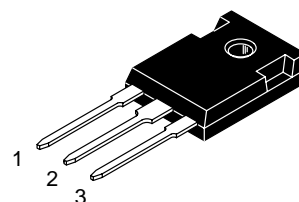
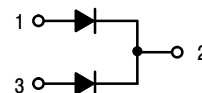
Rating	Symbol	Value	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	V_{RRM} V_{RWM} V_R	15	V
Average Rectified Forward Current (At Rated V_R , $T_C = 95^\circ\text{C}$) Per Leg Per Package	I_O	20 40	A
Peak Repetitive Forward Current, (At Rated V_R , Square Wave, 20 kHz, $T_C = 95^\circ\text{C}$) Per Leg	I_{FRM}	40	A
Non-Repetitive Peak Surge Current (Surge Applied at Rated Load Conditions Halfwave, Single Phase, 60 Hz) Per Package	I_{FSM}	120	A
Storage/Operating Case Temperature	T_{stg}, T_C	-55 to +100	°C
Operating Junction Temperature	T_J	-55 to +100	°C
Voltage Rate of Change (Rated V_R , $T_J = 25^\circ\text{C}$)	dv/dt	10,000	V/ μs



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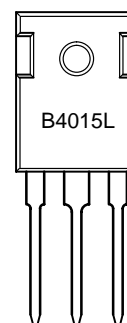
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SCHOTTKY BARRIER RECTIFIER 40 AMPERES 15 VOLTS



TO-247
CASE 340L
STYLE 2

MARKING DIAGRAM



B4015L = Device Code

ORDERING INFORMATION

Device	Package	Shipping
MBR4015LWT	TO-247	30 Units/Rail

MBR4015LWT

THERMAL CHARACTERISTICS

Rating	Symbol	Value	Unit
Thermal Resistance — Junction-to-Case	$R_{\theta JC}$	0.57	$^{\circ}\text{C/W}$
— Junction-to-Ambient	$R_{\theta JA}$	55	$^{\circ}\text{C/W}$

ELECTRICAL CHARACTERISTICS

Maximum Instantaneous Forward Voltage (Note 1.), See Figure 2. ($I_F = 20\text{ A}$) ($I_F = 40\text{ A}$)	Per Leg	V_F	$T_J = 25^{\circ}\text{C}$ $T_J = 100^{\circ}\text{C}$	V
			0.42 0.50	0.36 0.48
Maximum Instantaneous Reverse Current (Note 1.), See Figure 4. ($V_R = 15\text{ V}$) ($V_R = 7.5\text{ V}$)	Per Leg	I_R	$T_J = 25^{\circ}\text{C}$ $T_J = 100^{\circ}\text{C}$	mA
			5.0 2.7	530 370

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

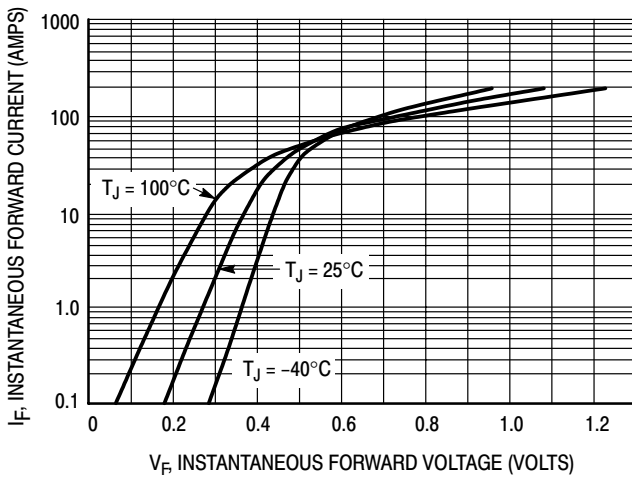


Figure 1. Typical Forward Voltage Per Leg

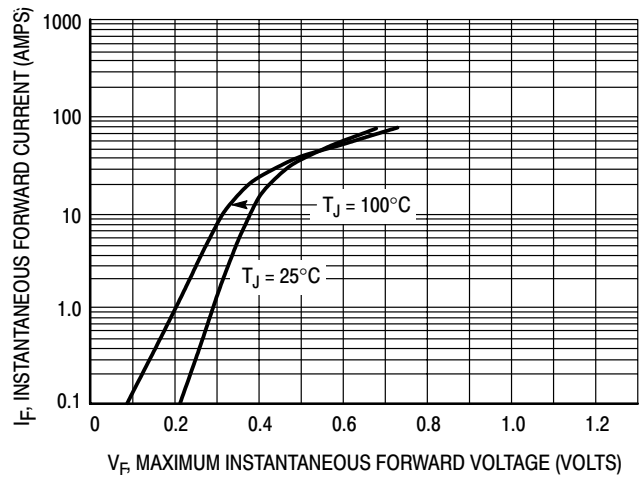


Figure 2. Maximum Forward Voltage Per Leg

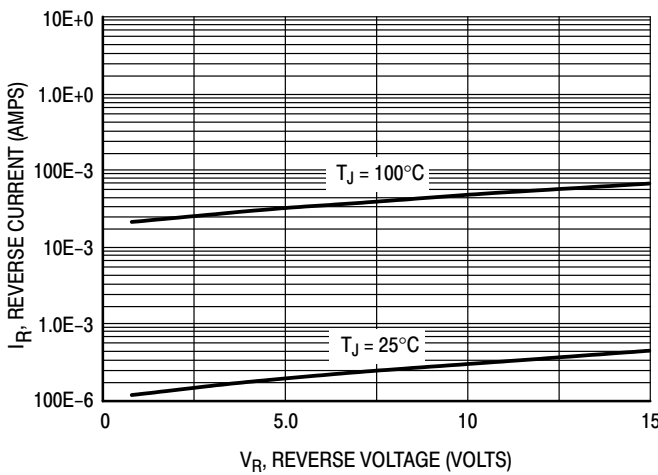


Figure 3. Typical Reverse Current Per Leg

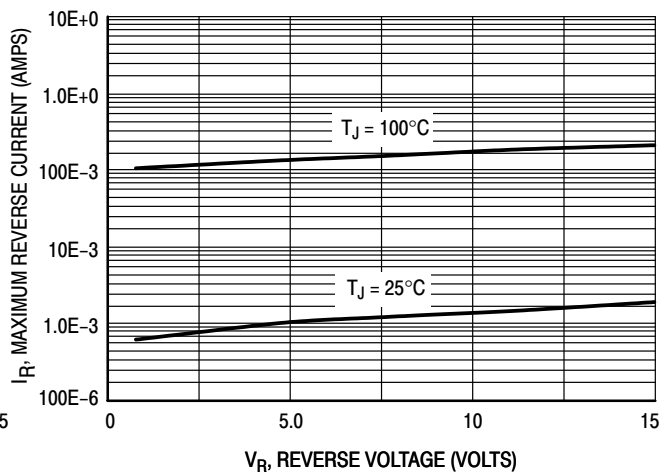


Figure 4. Maximum Reverse Current Per Leg

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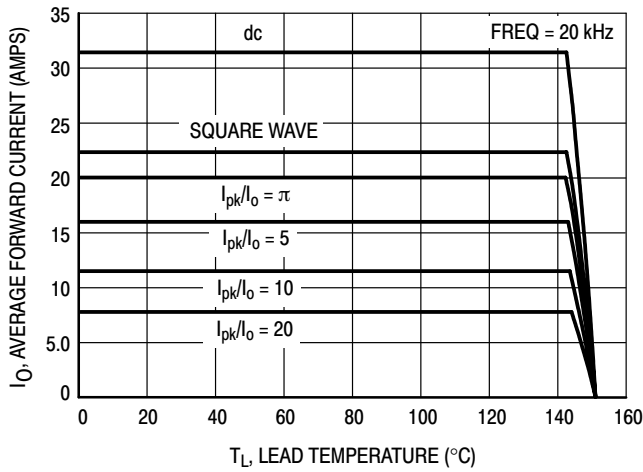


Figure 5. Current Derating Per Leg

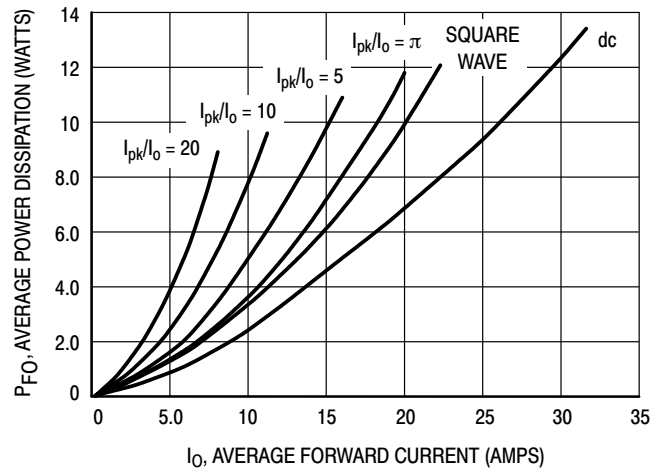


Figure 6. Forward Power Dissipation Per Leg

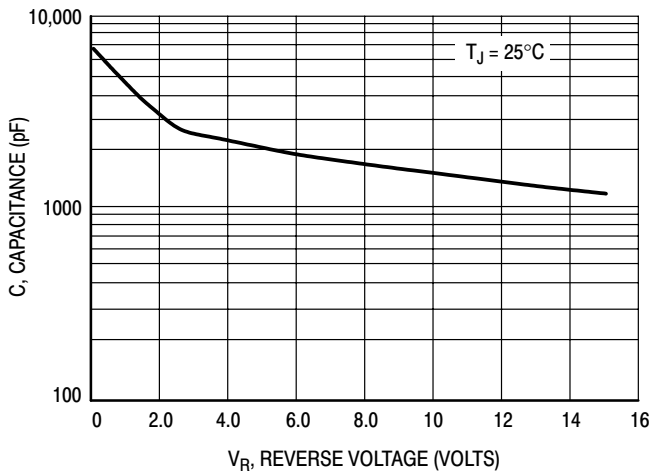


Figure 7. Capacitance Per Leg

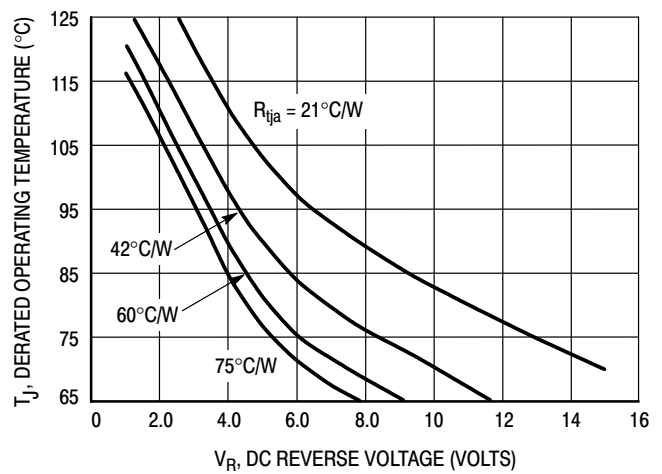


Figure 8. Typical Operating Temperature Derating Per Leg*

* 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 $r(t) = R_{\theta JA}$. For other power applications further calculations must be performed.

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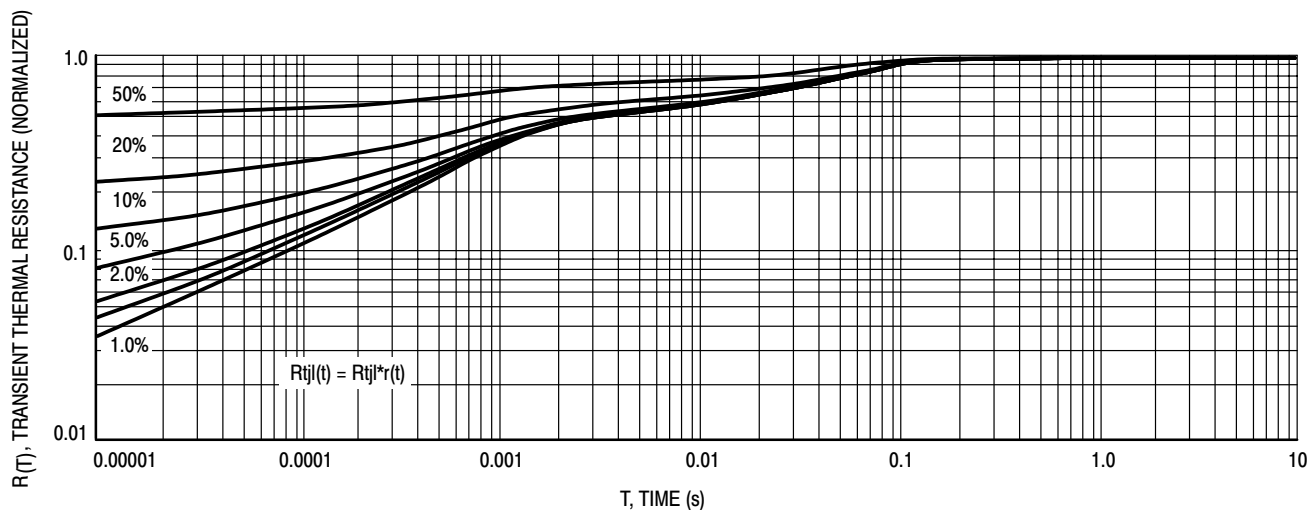


Figure 9. Thermal Response Junction to Lead (Per Leg)

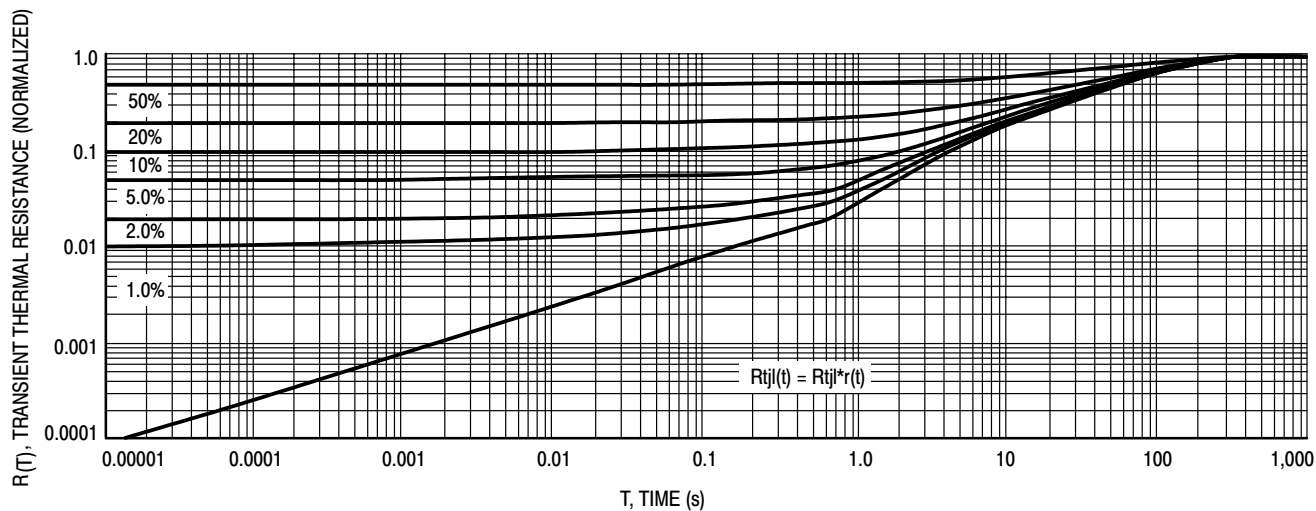
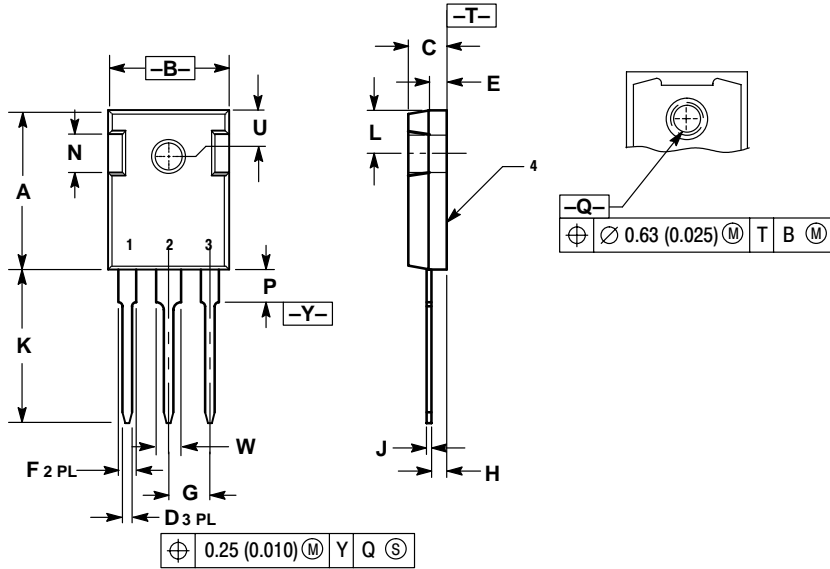


Figure 10. Thermal Response Junction to Ambient (Per Leg)

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PACKAGE DIMENSIONS

TO-247 PSI
PLASTIC
CASE 340L-02
ISSUE D



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

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	20.32	21.08	0.800	0.830
B	15.75	16.26	0.620	0.640
C	4.70	5.30	0.185	0.209
D	1.00	1.40	0.040	0.055
E	2.20	2.60	0.087	0.102
F	1.65	2.13	0.065	0.084
G	5.45 BSC		0.215 BSC	
H	1.50	2.49	0.059	0.098
J	0.40	0.80	0.016	0.031
K	20.06	20.83	0.790	0.820
L	5.40	6.20	0.212	0.244
N	4.32	5.49	0.170	0.216
P	---	4.50	---	0.177
Q	3.55	3.65	0.140	0.144
U	6.15 BSC		0.242 BSC	
W	2.87	3.12	0.113	0.123

- STYLE 2:
1. ANODE
 2. CATHODE (S)
 3. ANODE 2
 4. CATHODES (S)

Notes

Notes

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