

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

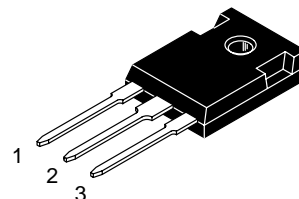
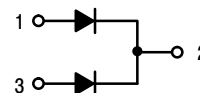
Rating	Symbol	Value	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	V _{RRM} V _{RWM} V _R	15	V
Average Rectified Forward Current (At Rated V _R , T _C = 95°C) Per Leg Per Package	I _O	20 40	A
Peak Repetitive Forward Current, (At Rated V _R , Square Wave, 20 kHz, T _C = 95°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°C)	dv/dt	10,000	V/μs



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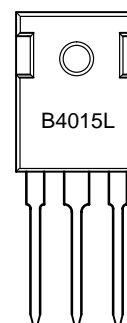
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SCHOTTKY BARRIER RECTIFIER 40 AMPERES 15 VOLTS



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 — Junction-to-Ambient	Per Leg	$R_{\theta JC}$	0.57	$^{\circ}C/W$
	Per Leg	$R_{\theta JA}$	55	

ELECTRICAL CHARACTERISTICS

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

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

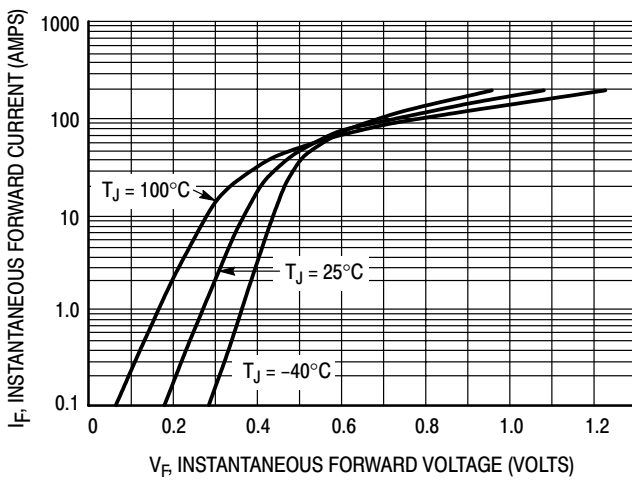


Figure 1. Typical Forward Voltage Per Leg

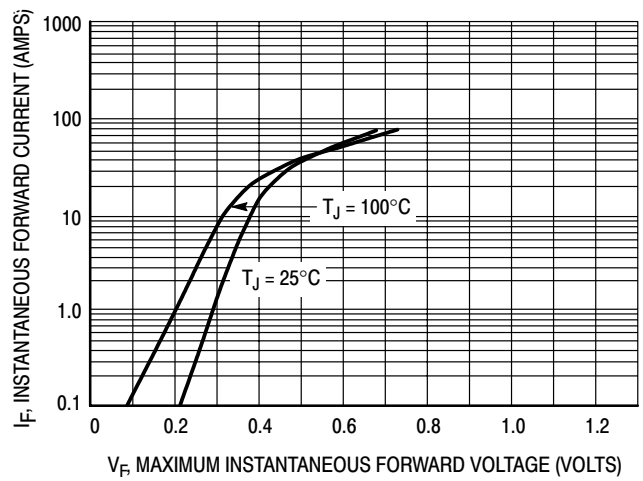


Figure 2. Maximum Forward Voltage Per Leg

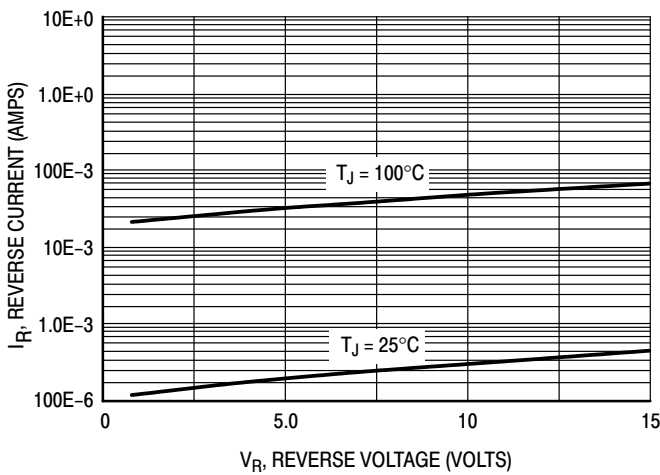


Figure 3. Typical Reverse Current Per Leg

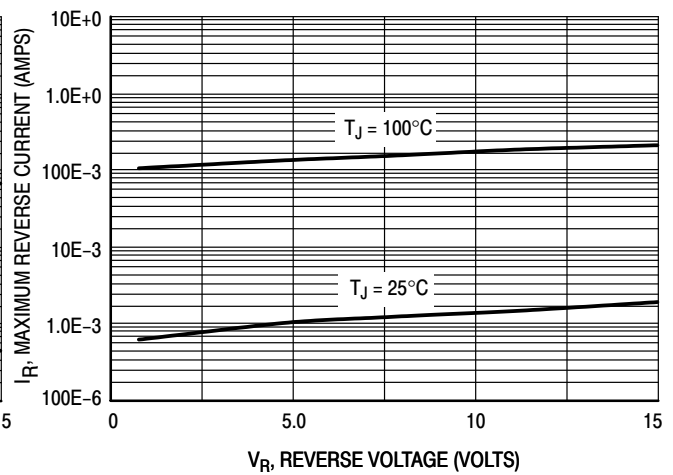


Figure 4. Maximum Reverse Current Per Leg

MBR4015LWT

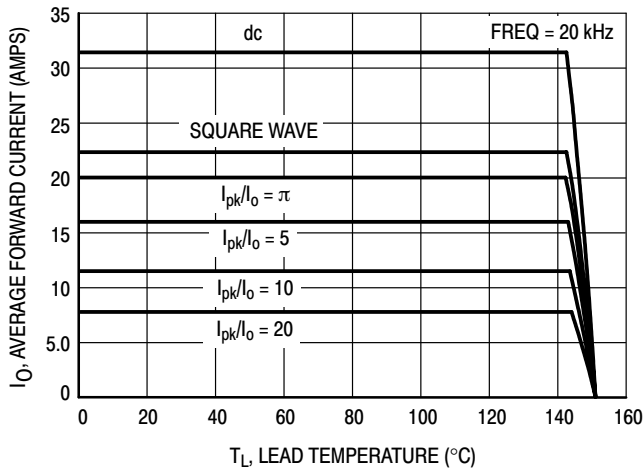


Figure 5. Current Derating Per Leg

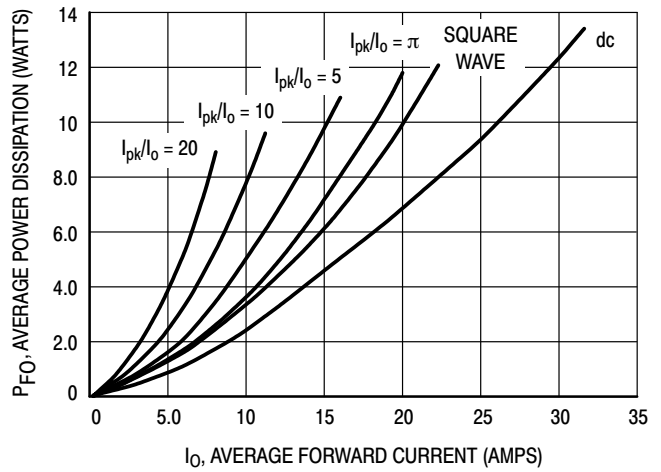


Figure 6. Forward Power Dissipation Per Leg

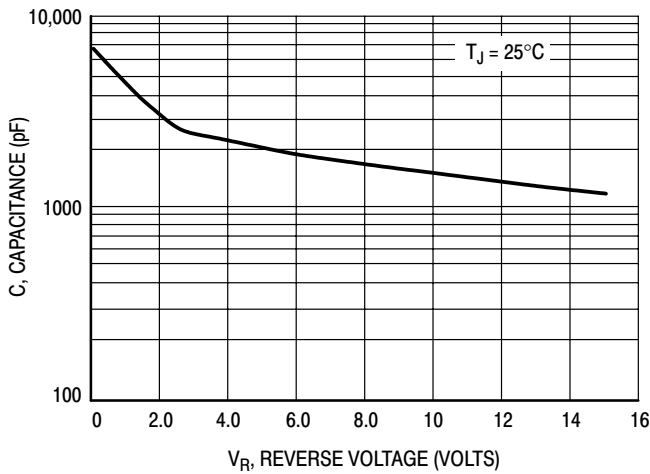


Figure 7. Capacitance Per Leg

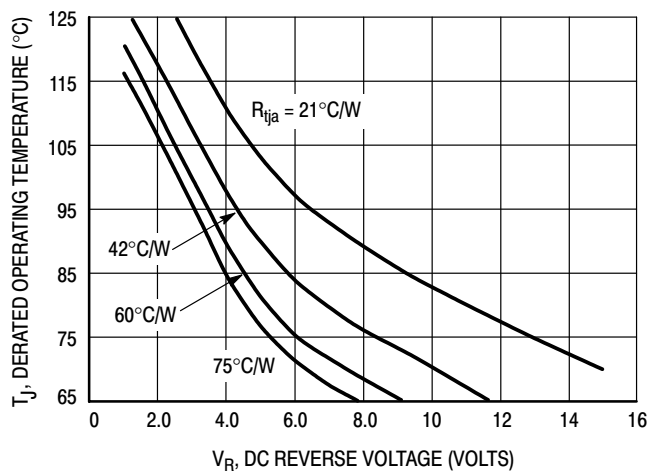


Figure 8. Typical Operating Temperature Derating Per Leg*

* 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.

MBR4015LWT

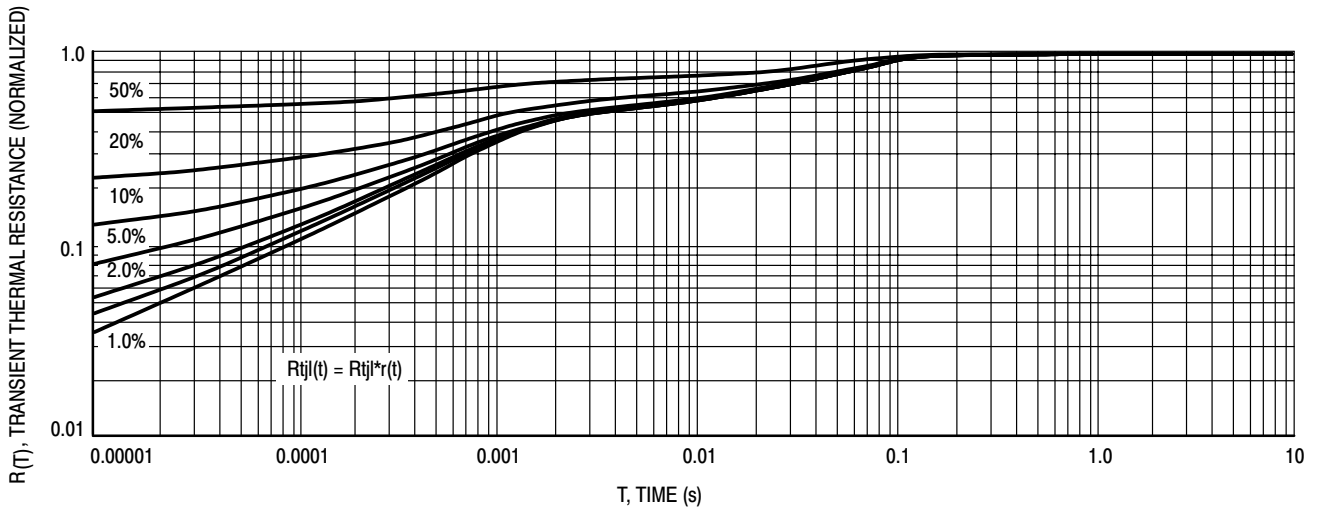


Figure 9. Thermal Response Junction to Lead (Per Leg)

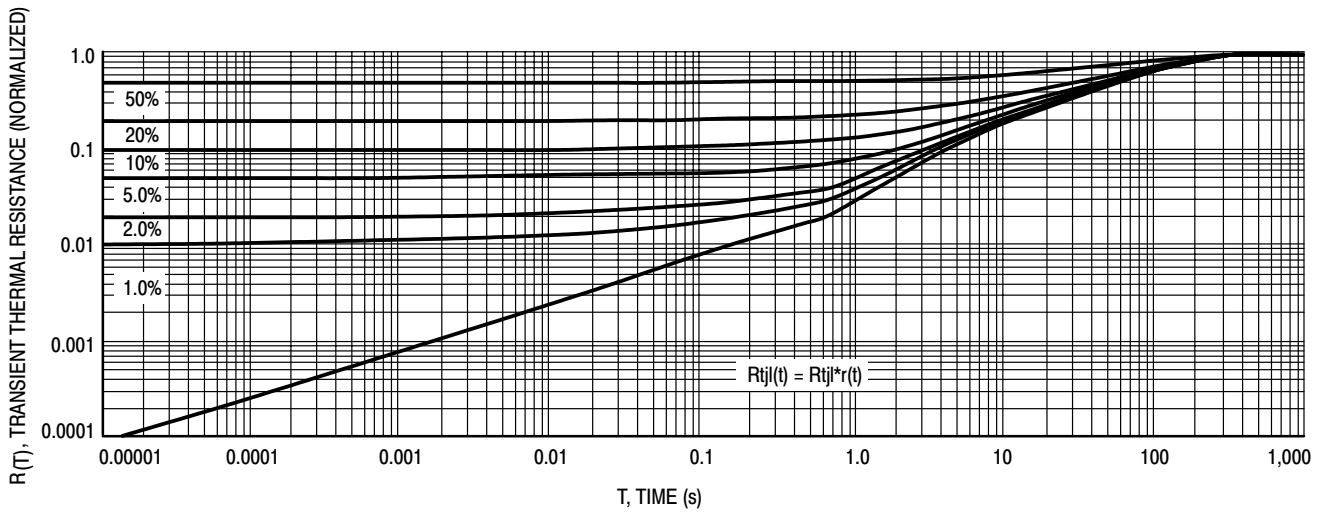
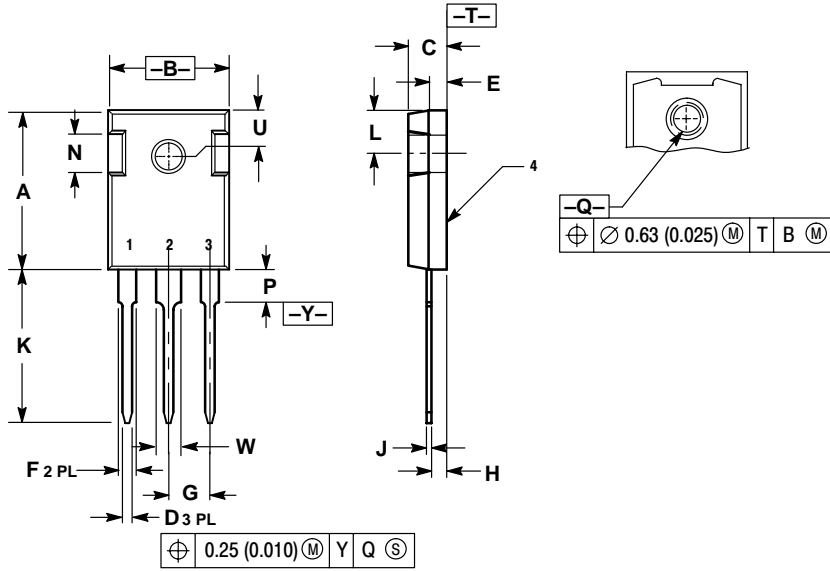


Figure 10. Thermal Response Junction to Ambient (Per Leg)

MBR4015LWT

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

Notes

Notes

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