

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

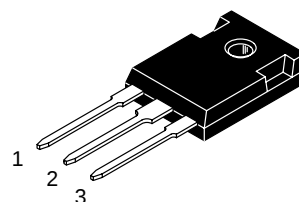
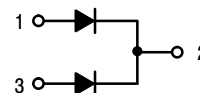
Rating	Symbol	Value	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	V _{RRM} V _{RWM} V _R	15	V
Average Rectified Forward Current (At Rated V _R , T _C = 95°C) Per Leg Per Package	I _O	20 40	A
Peak Repetitive Forward Current, (At Rated V _R , Square Wave, 20 kHz,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



ON Semiconductor™

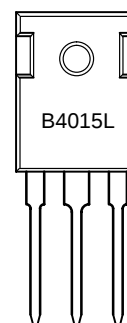
<http://onsemi.com>

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

THERMAL CHARACTERISTICS

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

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

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

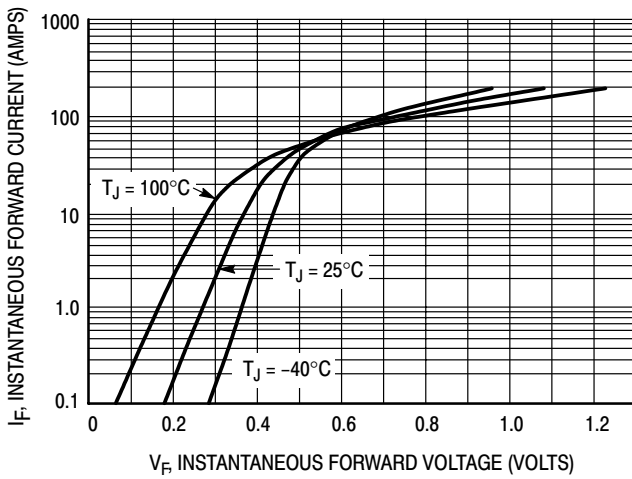


Figure 1. Typical Forward Voltage Per Leg

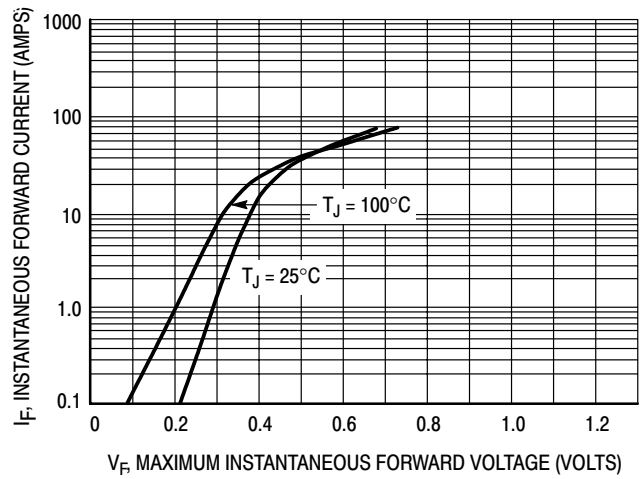


Figure 2. Maximum Forward Voltage Per Leg

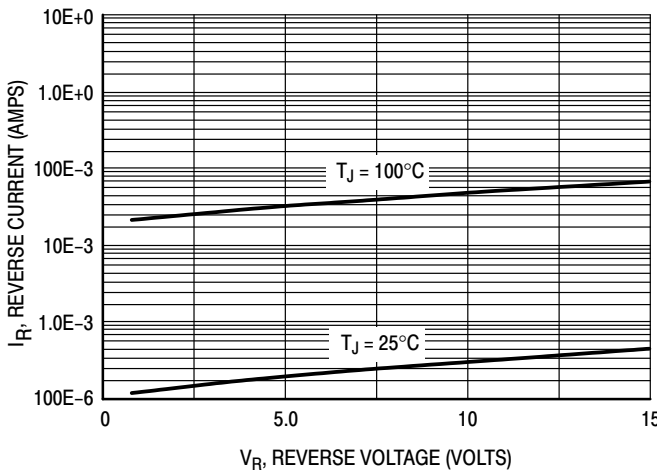


Figure 3. Typical Reverse Current Per Leg

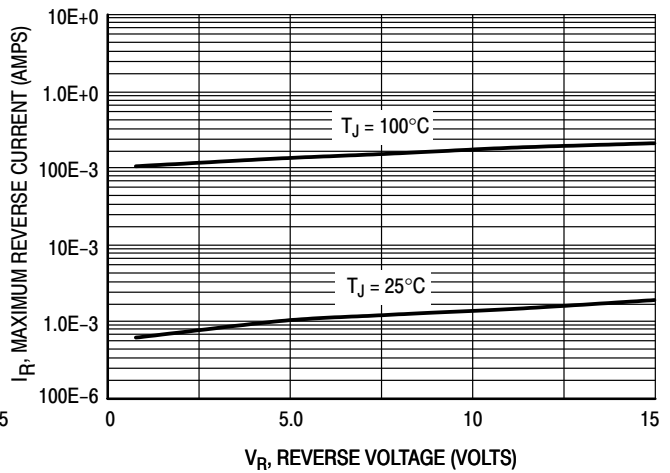


Figure 4. Maximum Reverse Current Per Leg

MBR4015LWT

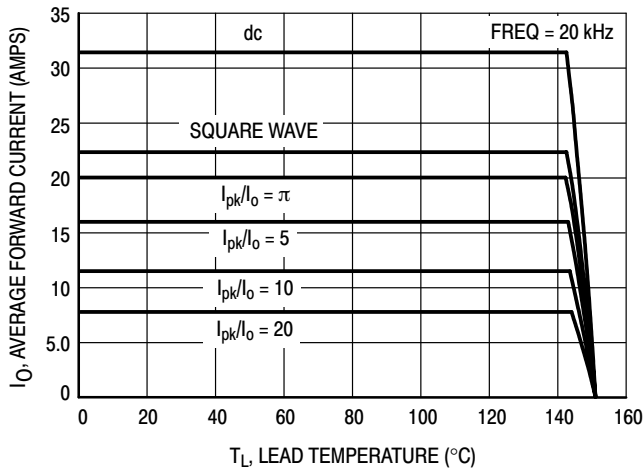


Figure 5. Current Derating Per Leg

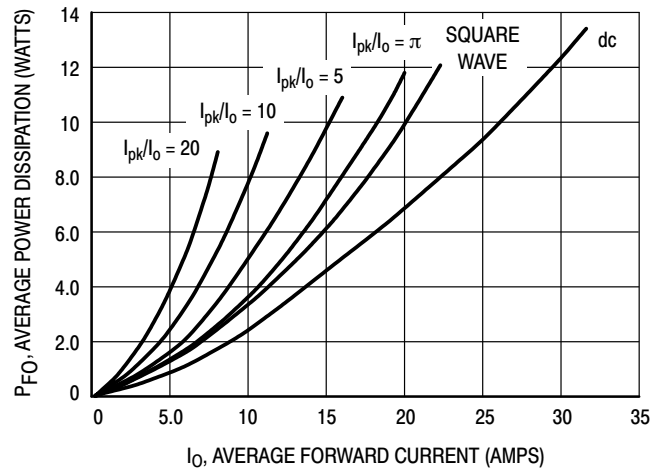


Figure 6. Forward Power Dissipation Per Leg

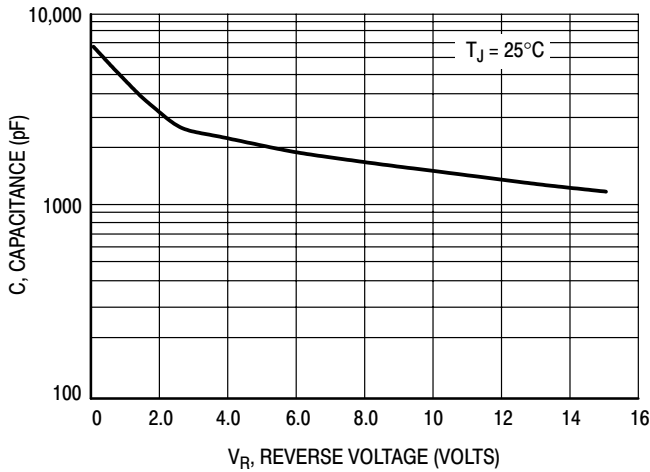


Figure 7. Capacitance Per Leg

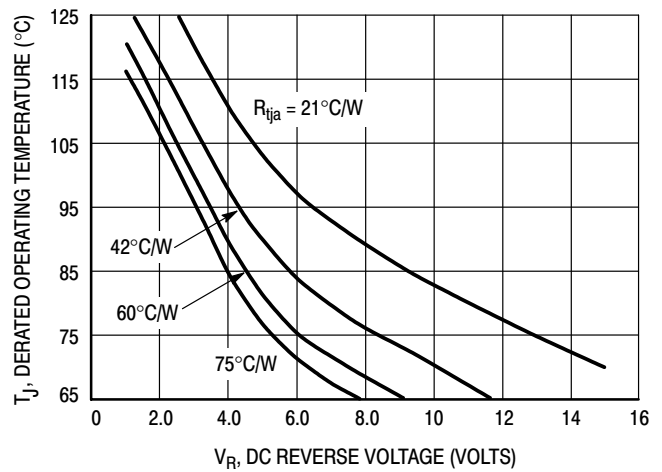


Figure 8. Typical Operating Temperature Derating Per Leg*

* 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

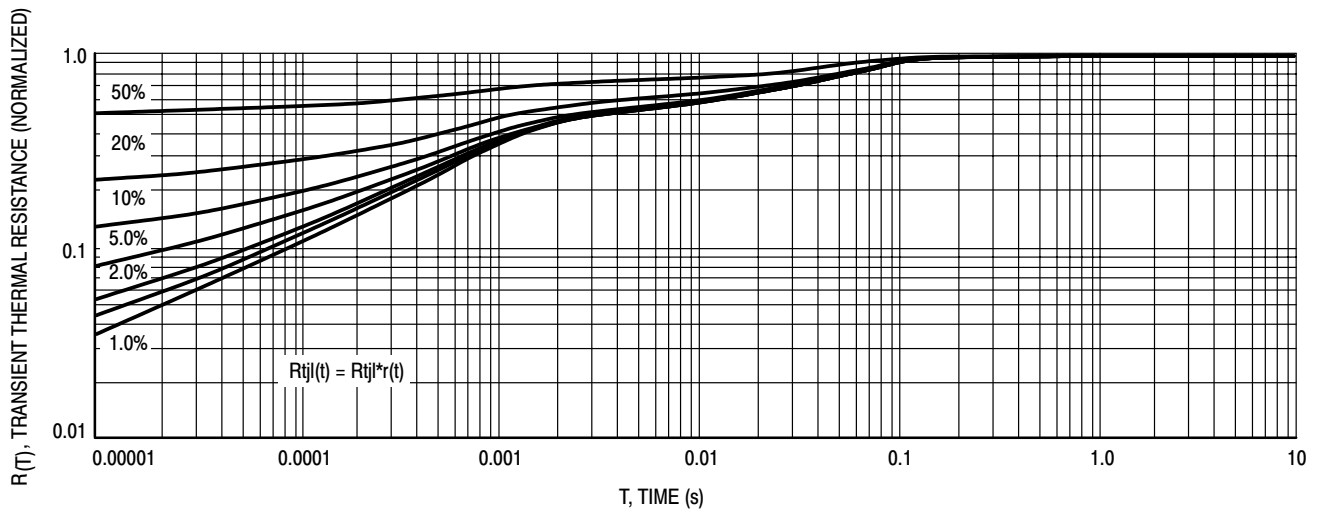


Figure 9. Thermal Response Junction to Lead (Per Leg)

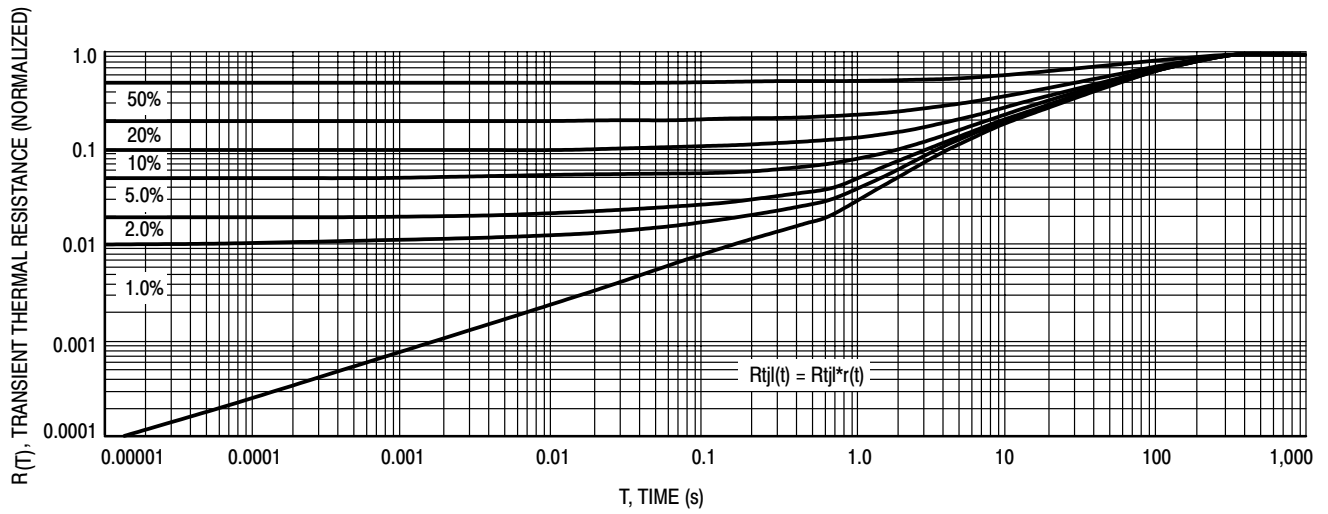
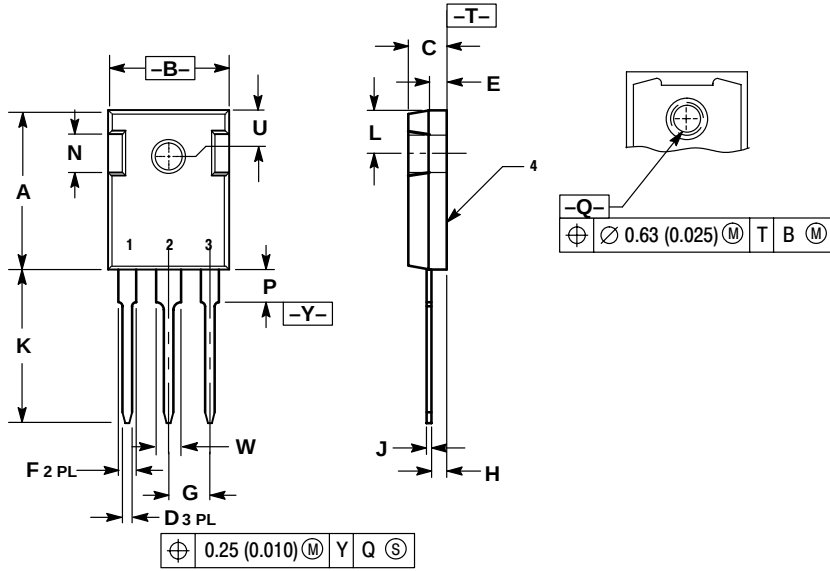


Figure 10. Thermal Response Junction to Ambient (Per Leg)

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
 - CATHODE (S)
 - ANODE 2
 - CATHODES (S)

Notes

Notes

SWITCHMODE is a trademark of Semiconductor Components Industries, LLC.

ON Semiconductor and  are trademarks of Semiconductor Components Industries, LLC (SCILLC). SCILLC reserves the right to make changes without further notice to any products herein. SCILLC makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does SCILLC assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. "Typical" parameters which may be provided in SCILLC data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. SCILLC does not convey any license under its patent rights nor the rights of others. SCILLC products are not designed, intended, or authorized for use as components in systems intended for surgical implant into the body, or other applications intended to support or sustain life, or for any other application in which the failure of the SCILLC product could create a situation where personal injury or death may occur. Should Buyer purchase or use SCILLC products for any such unintended or unauthorized application, Buyer shall indemnify and hold SCILLC and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that SCILLC was negligent regarding the design or manufacture of the part. SCILLC is an Equal Opportunity/Affirmative Action Employer.

PUBLICATION ORDERING INFORMATION

NORTH AMERICA Literature Fulfillment:

Literature Distribution Center for ON Semiconductor
P.O. Box 5163, Denver, Colorado 80217 USA
Phone: 303-675-2175 or 800-344-3860 Toll Free USA/Canada
Fax: 303-675-2176 or 800-344-3867 Toll Free USA/Canada
Email: ONlit@hibbertco.com
Fax Response Line: 303-675-2167 or 800-344-3810 Toll Free USA/Canada

N. American Technical Support: 800-282-9855 Toll Free USA/Canada

EUROPE: LDC for ON Semiconductor – European Support

German Phone: (+1) 303-308-7140 (Mon-Fri 2:30pm to 7:00pm CET)
Email: ONlit-german@hibbertco.com

French Phone: (+1) 303-308-7141 (Mon-Fri 2:00pm to 7:00pm CET)
Email: ONlit-french@hibbertco.com

English Phone: (+1) 303-308-7142 (Mon-Fri 12:00pm to 5:00pm GMT)
Email: ONlit@hibbertco.com

EUROPEAN TOLL-FREE ACCESS*: 00-800-4422-3781

*Available from Germany, France, Italy, UK, Ireland

CENTRAL/SOUTH AMERICA:

Spanish Phone: 303-308-7143 (Mon-Fri 8:00am to 5:00pm MST)

Email: ONlit-spanish@hibbertco.com

Toll-Free from Mexico: Dial 01-800-288-2872 for Access –
then Dial 866-297-9322

ASIA/PACIFIC: LDC for ON Semiconductor – Asia Support

Phone: 303-675-2121 (Tue-Fri 9:00am to 1:00pm, Hong Kong Time)

Toll Free from Hong Kong & Singapore:

001-800-4422-3781

Email: ONlit-asia@hibbertco.com

JAPAN: ON Semiconductor, Japan Customer Focus Center

4-32-1 Nishi-Gotanda, Shinagawa-ku, Tokyo, Japan 141-0031

Phone: 81-3-5740-2700

Email: r14525@onsemi.com

ON Semiconductor Website: <http://onsemi.com>

For additional information, please contact your local
Sales Representative.