

# MBR5025L

Preferred Device

## SWITCHMODE™ Power Rectifier

The SWITCHMODE power rectifier employs the use of the Schottky Barrier principle with a Platinum barrier metal. This state-of-the-art device has the following features:

- Very Low Forward Voltage Drop (Max 0.58 V @ 100°C)
- Guardring for Stress Protection and High dv/dt Capability (> 10 V/ns)
- 150°C Operating Junction Temperature
- Specially Designed for SWITCHMODE Power Supplies with Operating Frequency up to 300 kHz

### Mechanical Characteristics

- Case: Epoxy, Molded
- Weight: 4.3 grams (approximately)
- Finish: All External Surfaces Corrosion Resistant and Terminal Leads are Readily Solderable
- Lead Temperature for Soldering Purposes: 260°C Max. for 10 Seconds
- Shipped 30 Units Per Plastic Tube
- Marking: B5025L

### MAXIMUM RATINGS

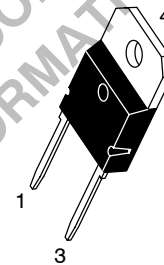
Rating	Symbol	Max	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	$V_{RRM}$ $V_{RWM}$ $V_R$	25	V
Average Rectified Forward Current $T_C = 125^\circ\text{C}$	$I_{F(AV)}$	50	A
Peak Repetitive Forward Current, (Rated $V_R$ , Square Wave, 20 kHz @ $T_C = 90^\circ\text{C}$ ) Per Diode	$I_{FRM}$	150	A
Non-Repetitive Peak Surge Current (Surge Applied at Rated Load Conditions Halfwave, Single Phase, 60 Hz)	$I_{FSM}$	300	A
Peak Repetitive Reverse Current (2.0 $\mu\text{s}$ , 1.0 kHz)	$I_{RRM}$	2.0	A
Storage Temperature Range	$T_{stg}$	-65 to +175	°C
Operating Junction Temperature	$T_J$	-65 to +150	°C
Peak Surge Junction Temperature (Forward Current Applied)	$T_{J(pk)}$	175	°C
Voltage Rate of Change	dv/dt	10,000	V/ $\mu\text{s}$



ON Semiconductor™

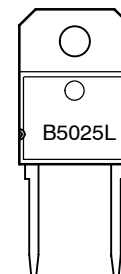
<http://onsemi.com>

**SCHOTTKY BARRIER  
RECTIFIER  
LOW  $V_F$   
50 AMPERES  
25 VOLTS**



TO-218  
CASE 340E  
STYLE 1

### MARKING DIAGRAM



B5025L = Device Code

### ORDERING INFORMATION

Device	Package	Shipping
MBR5025L	TO-218	30 Units/Rail

Preferred devices are recommended choices for future use and best overall value.

# MBR5025L

## THERMAL CHARACTERISTICS

Rating	Symbol	Max	Unit
Thermal Resistance — Junction to Case	$R_{\theta JC}$	0.75	$^{\circ}C/W$

## ELECTRICAL CHARACTERISTICS

Instantaneous Forward Voltage (Note 1.) @ $I_F = 50$ Amps, $T_C = 25^{\circ}C$ @ $I_F = 50$ Amps, $T_C = 125^{\circ}C$ @ $I_F = 30$ Amps, $T_C = 25^{\circ}C$	$V_F$	0.62 0.58 0.54	Volts
Instantaneous Reverse Current (Note 1.) @ Rated DC Voltage, $T_C = 25^{\circ}C$ @ Rated DC Voltage, $T_C = 100^{\circ}C$	$I_R$	0.5 60	mA

1. Pulse Test: Pulse Width = 300  $\mu s$ , Duty Cycle  $\leq 2.0\%$

## TYPICAL ELECTRICAL CHARACTERISTICS

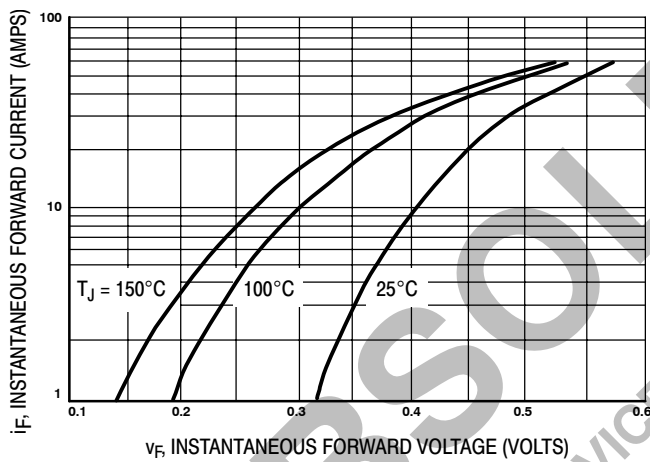


Figure 1. Typical Forward Voltage

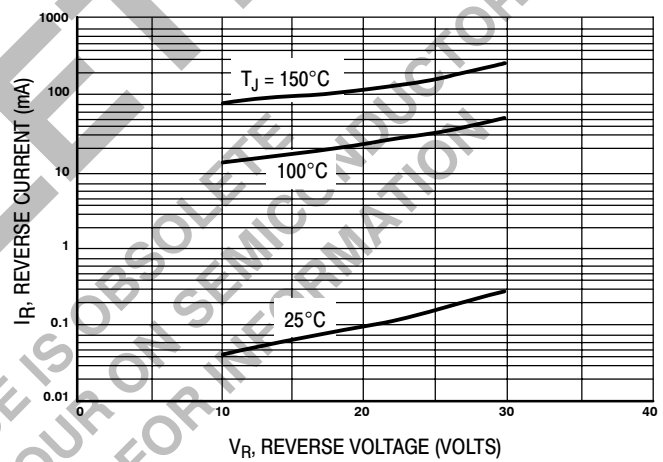


Figure 2. Typical Reverse Current

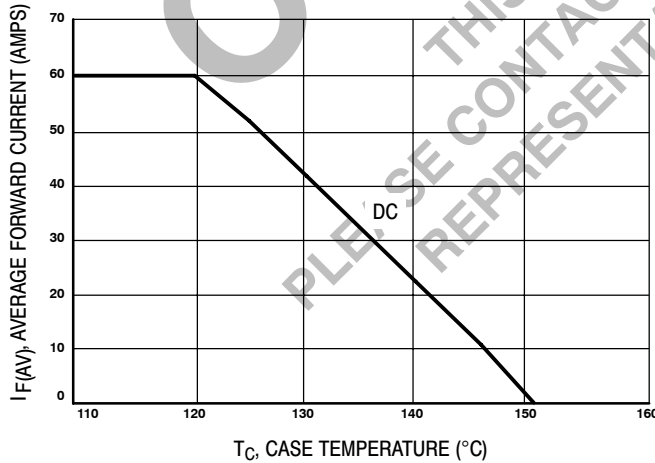


Figure 3. Current Derating, Case

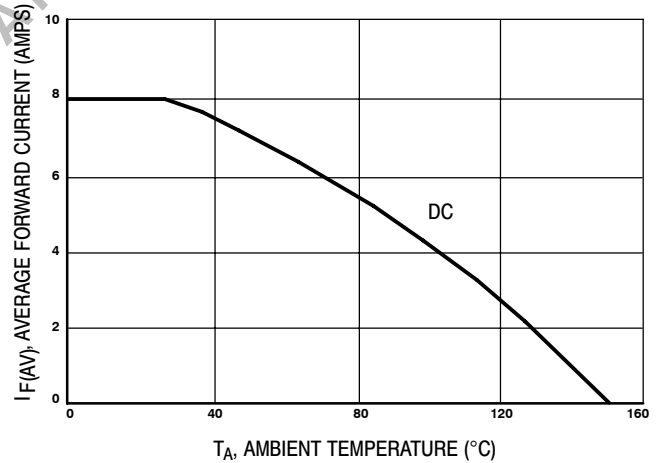
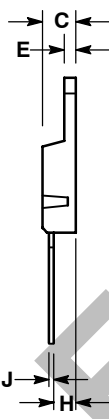
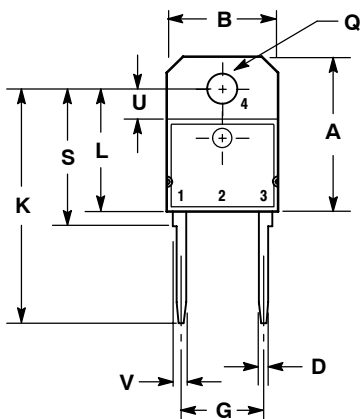


Figure 4. Current Derating, Ambient

# MBR5025L

## PACKAGE DIMENSIONS

TO-218  
PLASTIC  
CASE 340E-02  
ISSUE A



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

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	---	20.35	---	0.801
B	14.70	15.20	0.579	0.598
C	4.70	4.90	0.185	0.193
D	1.10	1.30	0.043	0.051
E	1.17	1.37	0.046	0.054
G	10.80	11.10	0.425	0.437
H	2.00	3.00	0.079	0.118
J	0.50	0.78	0.020	0.031
K	31.00 REF		1.220 REF	
L	---	16.20	---	0.638
Q	4.00	4.10	0.158	0.161
S	17.80	18.20	0.701	0.717
U	4.00 REF		0.157 REF	
V	1.75 REF		0.069	

STYLE 1:  
PIN 1. CATHODE  
3. ANODE  
4. CATHODE

SWITCHMODE is a trademark of Semiconductor Components Industries, LLC.

ON Semiconductor and are registered 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. This literature is subject to all applicable copyright laws and is not for resale in any manner.

### PUBLICATION ORDERING INFORMATION

**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:** orderlit@onsemi.com

**N. American Technical Support:** 800-282-9855 Toll Free  
USA/Canada  
**Europe, Middle East and Africa Technical Support:**  
Phone: 421 33 790 2910  
**Japan Customer Focus Center**  
Phone: 81-3-5773-3850

**ON Semiconductor Website:** [www.onsemi.com](http://www.onsemi.com)  
**Order Literature:** <http://www.onsemi.com/orderlit>

For additional information, please contact your local Sales Representative