

# ON Semiconductor

## Is Now



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# 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

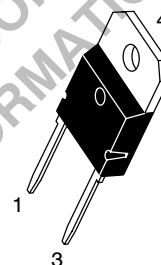
Rating	Symbol	Max	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	$V_{RRM}$ $V_{RWM}$ $V_R$	25	V
Average Rectified Forward Current $T_C = 125^\circ\text{C}$	$I_{F(AV)}$	50	A
Peak Repetitive Forward Current, (Rated $V_R$ , Square Wave, 20 kHz @ $T_C = 90^\circ\text{C}$ ) 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/ $\mu\text{s}$



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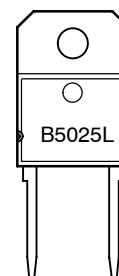
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**SCHOTTKY BARRIER  
RECTIFIER  
LOW  $V_F$   
50 AMPERES  
25 VOLTS**



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.

# THERMAL CHARACTERISTICS

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

# ELECTRICAL CHARACTERISTICS

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

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

## TYPICAL ELECTRICAL CHARACTERISTICS

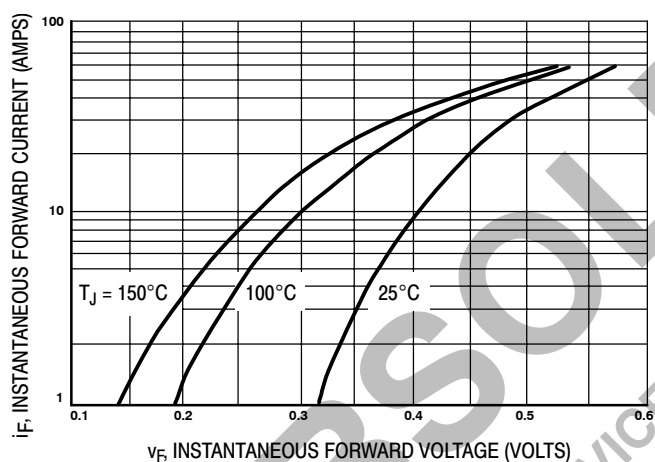


Figure 1. Typical Forward Voltage

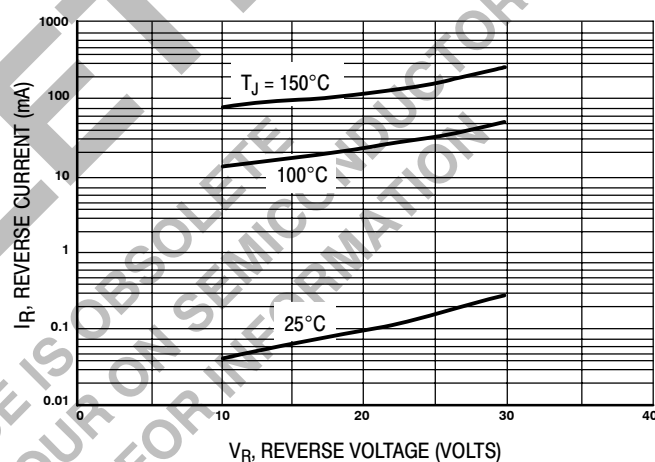


Figure 2. Typical Reverse Current

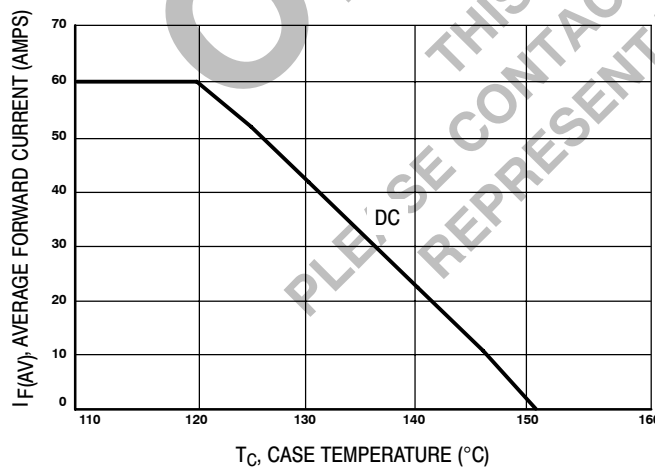


Figure 3. Current Derating, Case

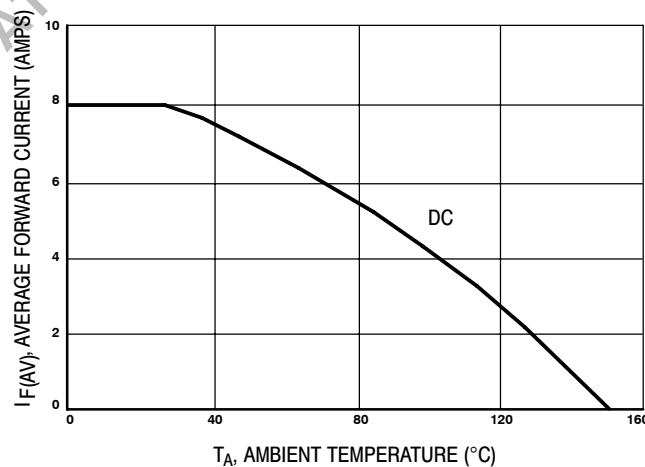
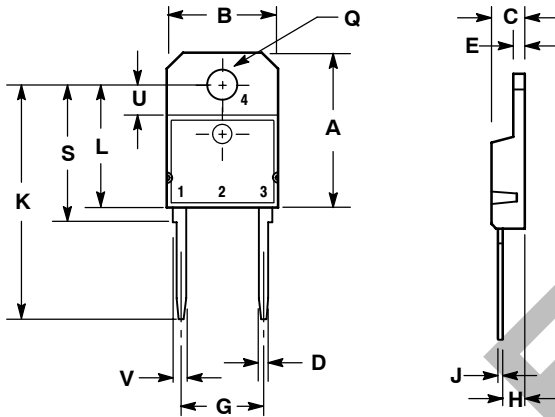


Figure 4. Current Derating, Ambient

# 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

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