

HIGH VOLTAGE POWER SCHOTTKY RECTIFIER

MBR3100

General Description

The MBR3100 is a high voltage Schottky rectifier suited for switch mode power supplies and other power converters. This device is intended for use in medium voltage operation, and particularly, in high frequency circuits where low switching losses and low noise are required.

The MBR3100 is available in standard DO-214AC and DO-27 packages.

Features

- Low Forward Voltage: 0.70V at 125°C
- High Surge Capacity
- Operating Junction Temperature: 150°C
- Guard-ring for Stress Protection
- Lead Free Packages Available
- Low Thermal Resistance

Main Product Characteristics

$I_{F(AV)}$	3A
V_{RRM}	100V
$T_J(MAX)$	150°C
$V_F(MAX)$	0.7V

Mechanical Characteristics

- Case: Epoxy, Molded
- Epoxy Meets UL 94V-0 @ 0.125in
- Weight (Approximately): 1.9Grams
- Finish: All External Surfaces Corrosion Resistant and Terminal
- Leads are Readily Solderable
- Lead Temperature for Soldering Purpose: 260°C Maximum for 10 Seconds

Applications

- Power Supply – Output Rectification
- Power Management
- Instrumentation



Figure 1. Package Types of MBR3100

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Pin Configuration

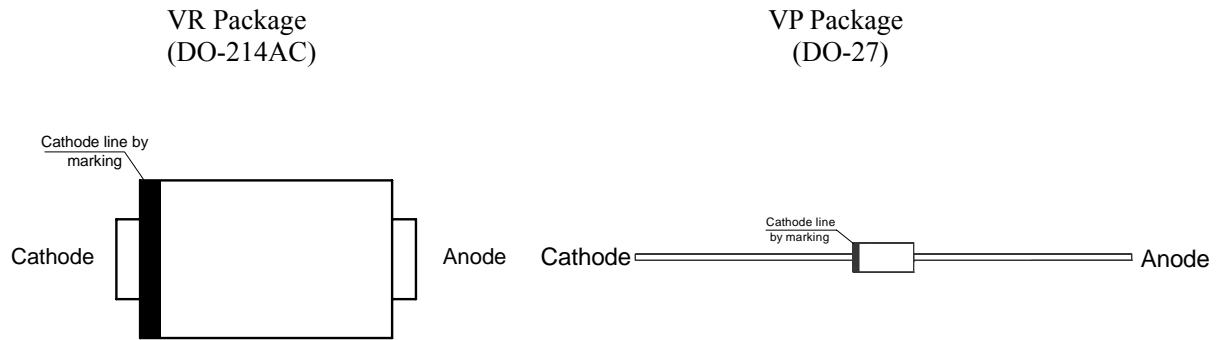
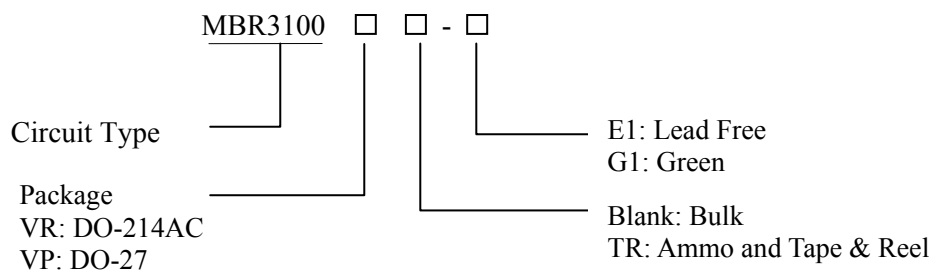


Figure 2. Pin Configuration of MBR3100 (Top View)

Ordering Information



Package	Part Number		Marking ID		Packing Type
	Lead Free	Green	Lead Free	Green	
DO-214AC	MBR3100VRTR-E1	MBR3100VRTR-G1	3100VE	3100VR	Tape & Reel
DO-27	MBR3100VP-E1	MBR3100VP-G1	3100VP	3100VG	Bulk
	MBR3100VPTR-E1	MBR3100VPTR-G1	3100VP	3100VG	Ammo

BCD Semiconductor's Pb-free products, as designated with "E1" suffix in the part number, are RoHS compliant. Products with "G1" suffix are available in green packages.

**HIGH VOLTAGE POWER SCHOTTKY RECTIFIER****MBR3100****Absolute Maximum Ratings (Note 1)**

Parameter	Symbol	Value	Unit
Peak Repetitive Reverse Voltage	V_{RRM}	100	V
Working Peak Reverse Voltage	V_{RWM}		
DC Blocking Voltage	V_R		
Average Rectified Forward Current (Rated V_R , $T_C=141^{\circ}\text{C}$)	$I_{F(AV)}$	3	A
Non Repetitive Peak Surge Current (Surge Applied at Rated Load Conditions Half Wave, Single Phase, 60Hz)	I_{FSM}	80	A
Operating Junction Temperature Range (Note 2)	T_J	-65 to 150	$^{\circ}\text{C}$
Storage Temperature Range	T_{STG}	-65 to 150	$^{\circ}\text{C}$
Voltage Rate of Change (Rated V_R)	dv/dt	10000	V/ μs
ESD (Machine Model=C)		400	V
ESD (Human Body Model=3B)		8000	V

Note 1: Stresses greater than those listed under “Absolute Maximum Ratings” may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated under “Recommended Operating Conditions” is not implied. Exposure to “Absolute Maximum Ratings” for extended periods may affect device reliability.

Note 2: The heat generated must be less than the thermal conductivity from Junction-to-Ambient: $dP_D/dT_J < 1/\theta_{JA}$.

Recommended Operating Conditions

Parameter	Symbol	Condition	Value	Unit	
Thermal Resistance	θ_{JL}	Junction to Lead	DO-214AC	20	$^{\circ}\text{C}/\text{W}$
			DO-27	5	
	θ_{JA}	Junction to Ambient	DO-214AC	70	
			DO-27	35	

**HIGH VOLTAGE POWER SCHOTTKY RECTIFIER****MBR3100****Electrical Characteristics**

Parameter	Symbol	Conditions	Value	Unit
Maximum Instantaneous Forward Voltage Drop (Note 3)	V_F (MAX)	$I_F=3A, T_C=25^\circ C$	0.85	V
		$I_F=3A, T_C=125^\circ C$	0.7	
Maximum Instantaneous Reverse Current (Note 3)	I_R (MAX)	Rated DC Voltage, $T_C=25^\circ C$	0.5	mA
		Rated DC Voltage, $T_C=125^\circ C$	2.0	

Note 3: Pulse Test: Pulse Width=300 μ s, Duty Cycle \leq 2.0%.

Typical Performance Characteristics

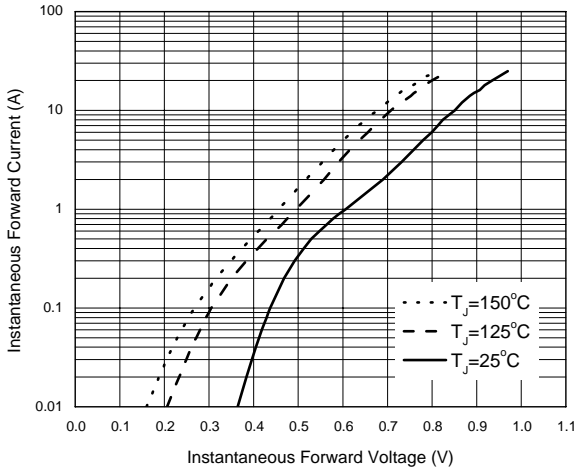


Figure 3. Typical Forward Characteristics

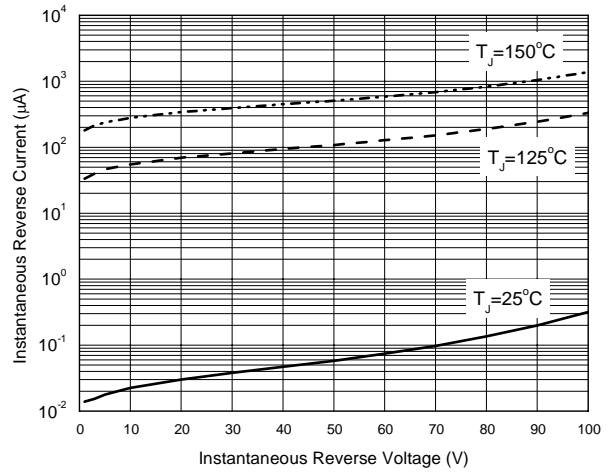


Figure 4. Typical Reverse Characteristics

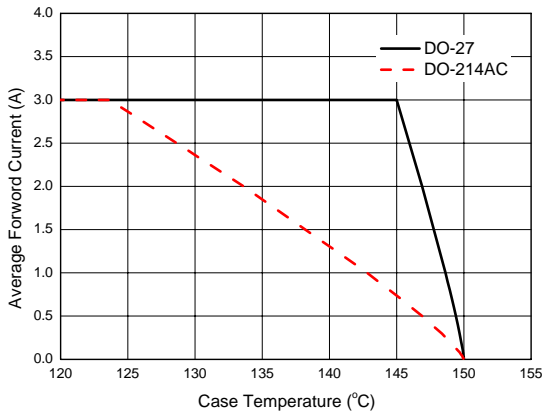


Figure 5. Average Forward Current vs. Case Temperature

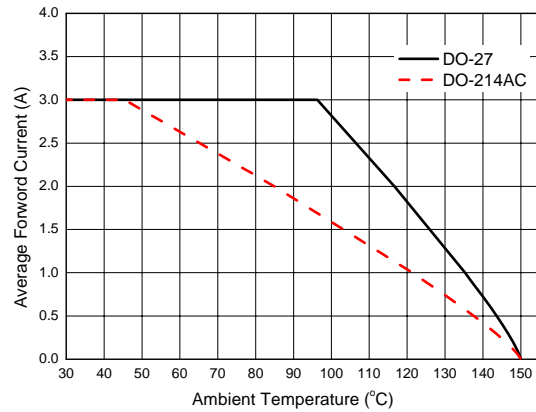


Figure 6. Average Forward Current vs. Ambient Temperature

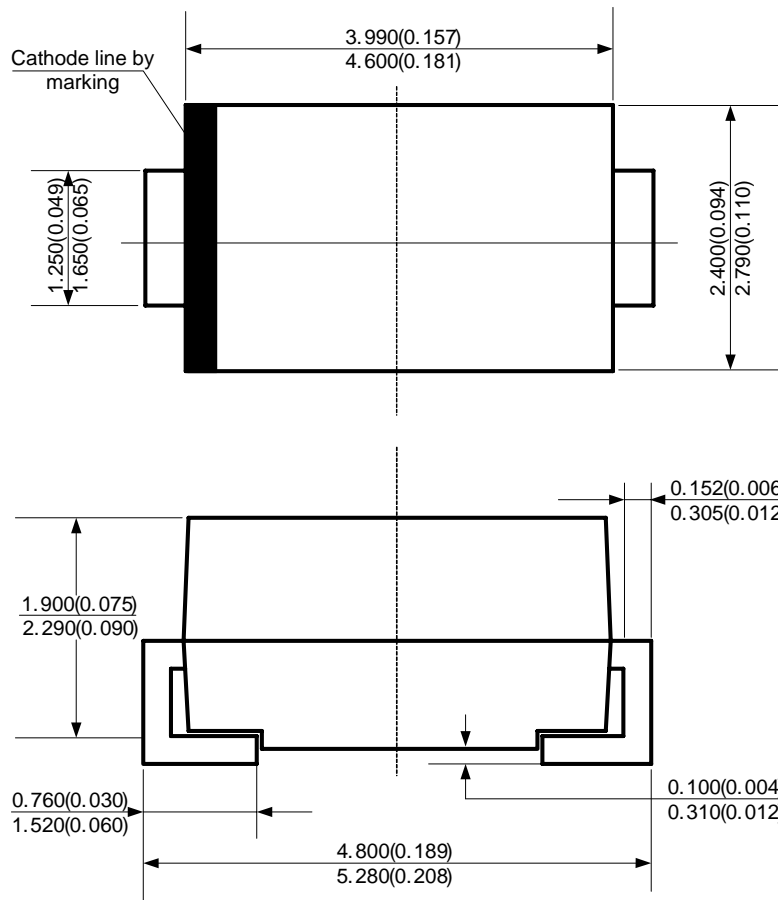
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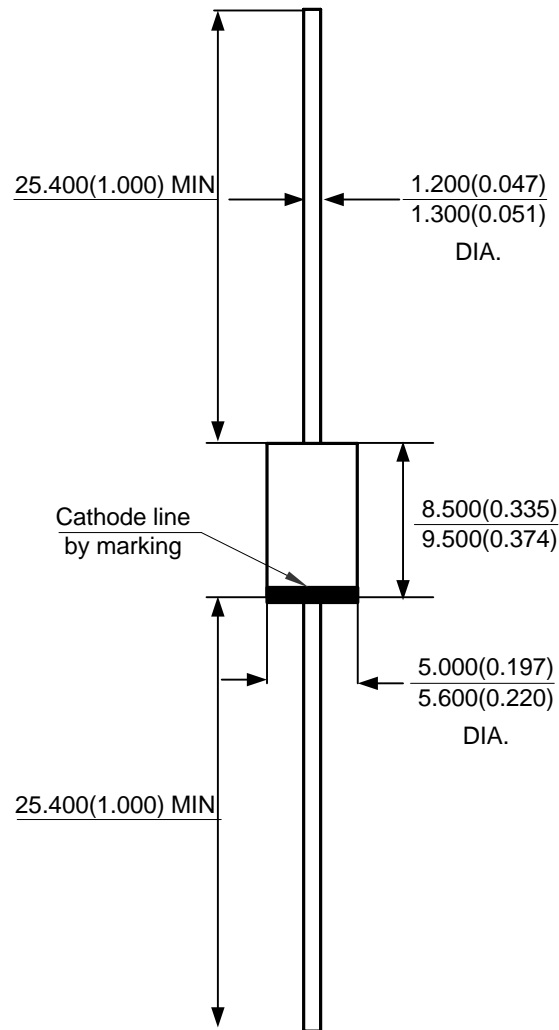
MBR3100

Mechanical Dimensions

DO-214AC

Unit: mm(inch)



HIGH VOLTAGE POWER SCHOTTKY RECTIFIER**MBR3100****Mechanical Dimensions (Continued)****DO-27****Unit: mm(inch)**



BCD Semiconductor Manufacturing Limited

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MAIN SITE

- Headquarters

BCD (Shanghai) Micro-electronics Limited

No. 1600, Zi Xing Road, Shanghai ZiZhu Science-based Industrial Park, 200241, P. R. C.
Tel: +86-021-2416-2266, Fax: +86-021-2416-2277

- Wafer Fab

Shanghai SIM-BCD Semiconductor Manufacturing Co., Ltd.

800 Yishan Road, Shanghai 200233, China
Tel: +021-6485-1491, Fax: +86-021-5450-0008

REGIONAL SALES OFFICE

Shenzhen Office

Shanghai SIM-BCD Semiconductor Manufacturing Co., Ltd., Shenzhen Office

Unit A Room 1203, Skyworth Bldg., Gaoxin Ave.1.S., Nanshan District
Shenzhen 518057, China

Tel: +86-0755-8660-4900, Fax: +86-0755-8660-4958

Taiwan Office (Taipei)

BCD Semiconductor (Taiwan) Company Limited

3F, No.17, Lane 171, Sec. 2, Jiu-Zong Rd., Nei-Hu Dist., Taipei(114), Taiwan, R.O.C
Tel: +886-2-2656-2808

Fax: +886-2-2656-2806/26562950

Taiwan Office (Hsinchu)

BCD Semiconductor (Taiwan) Company Limited

8F, No.176, Sec. 2, Gong-Dao 5th Road, East District
HsinChu City 300, Taiwan, R.O.C

Tel: +886-3-5160181, Fax: +886-3-5160181

USA Office

BCD Semiconductor Corp.

48460 Kato Road, Fremont, CA 94538, USA
Tel: +1-510-668-1950

Fax: +1-510-668-1990

Korea Office

BCD Semiconductor Limited Korea office.

Room 101-1112, Digital-Empire II, 486 Sin-dong,
Yeongtong-Gu, Suwon-city, Gyeonggi-do, Korea

Tel: +82-31-695-8430