

HIGH VOLTAGE POWER SCHOTTKY RECTIFIER

Product Summary

V _{RRM} (V)	I _O (A)	V _{F (MAX)} (V) @ +25°C	I _{R (MAX)} (mA) @ +25°C
100	3	0.85	0.5

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.

Applications

- Power Supply-Output Rectification
- Power Management
- Instrumentation

Features

- Low Forward Voltage: 0.85V at +25°C
- High Surge Current Capacity
- Operating Junction Temperature: +150°C
- 3A Total
- Guard-Ring for Stress Protection
- DO-214AC and DO-27
 - Lead-Free Finish; RoHS Compliant (Notes 1 & 2)
- Available in "Green" Packages: DO-214AC and DO-27
 - Lead-Free Finish; RoHS Compliant (Notes 1 & 2)
 - Halogen and Antimony Free. "Green" Device (Note 3)

Mechanical Data

- Case: DO-214AC, DO-27
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish Matte Tin Annealed over Copper Leadframe. Solderable per MIL-STD-202, Method 208 (3)
- Weight (Approximately): 1.9Grams



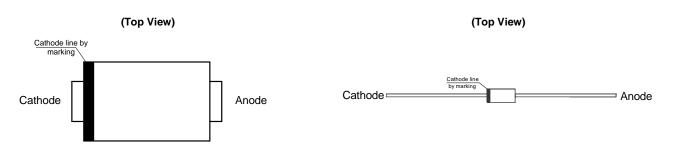
DO-214AC



Notes:

- 1. EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant. All applicable RoHS exemptions applied.
- 2. See http://www.diodes.com/quality/lead_free.html for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
- 3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.

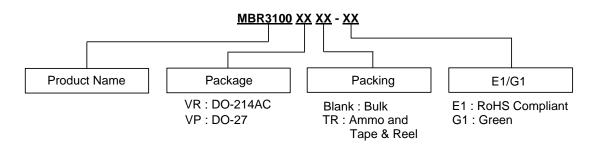
Pin Assignments



DO-214AC DO-27



Ordering Information (Note 4)



Note 4: Diodes Inc'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.

	Package	Part Number	Marking ID	Packing
	DO-214AC	MBR3100VRTR-E1	3100VE	7500 Pieces/Tape & Reel
		MBR3100VRTR-G1	3100VR	7500 Pieces/Tape & Reel
	DO-27	MBR3100VP-E1	3100VP	500 Pieces/Bulk
		MBR3100VP-G1	3100VG	500 Pieces/Bulk
		MBR3100VPTR-E1	3100VP	500 Pieces/Ammo
		MBR3100VPTR-G1	3100VG	500 Pieces/Ammo

Marking Information

(1) DO-214AC

Property Creen Creen Property Creen Creen Property Creen Creen

(Top View)



First Line: Logo and Date Code

Y: Year

WW: Work Week of Molding A: Assembly House Code Second Line: Marking ID (See Ordering Information)



Marking Information (Cont.)

(2) DO-27



First Line: Logo and Date Code

Y: Year

WW: Work Week of Molding A: Assembly House Code Second Line: Marking ID (See Ordering Information)

Maximum Ratings (Note 5)

Characteristic	Symbol	Rating	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	V _{RRM} V _R WM V _R	100	V
Average Rectified Forward Current (Rated V _R , T _C = +141°C)	I _{F(AV)}	3	А
Non Repetitive Peak Surge Current (Surge Applied at Rated Load Conditions Half Wave, Single Phase, 60Hz)	I _{FSM}	80	А
Operating Junction Temperature Range (Note 6)	TJ	-65 to +150	°C
Storage Temperature Range	T _{STG}	-65 to +150	°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

Notes: 5. 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.

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



Thermal Characteristics

Characteristic	Symbol	Rating		Unit
	Rθ _{JL}	DO-214AC	20	°C/W
Thermal Resistance (Junction to Lead) (Note 7)		DO-27	5	
	Rθ _{JA}	DO-214AC	70	
Thermal Resistance (Junction to Ambient) (Note 7)		DO-27	35	

Note 7: Device mounted on heat sink, with minimum recommended pad layout per http://www.diodes.com

Electrical Characteristics

Characteristic	Symbol	Rating	Unit	Test Condition
	V _F (MAX)	0.85	V	I _F = 3A, T _C = +25°C
Maximum Instantaneous Forward Voltage Drop (Note 8)		0.7		I _F = 3A, T _C = +125°C
	I _R (MAX)	0.5	mA	Rated DC Voltage, T _C = +25°C
Maximum Instantaneous Reverse Current (Note 8)		2.0		Rated DC Voltage, T _C = +125°C

Note 8: Short duration pulse test used to minimize self-heating effect, Pulse Test: Pulse Width = 300µs, Duty Cycle ≤ 2.0%.



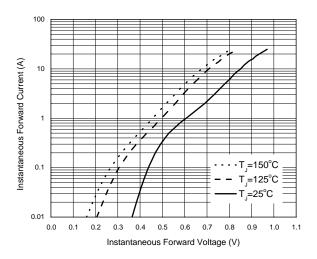


Figure 1. Typical Forward Characteristics

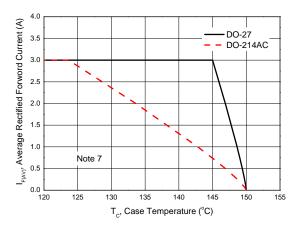


Figure 3. Average Rectified Forward Current vs.

Case Temperature

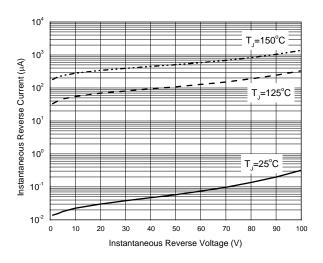


Figure 2. Typical Reverse Characteristics

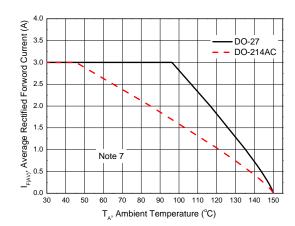


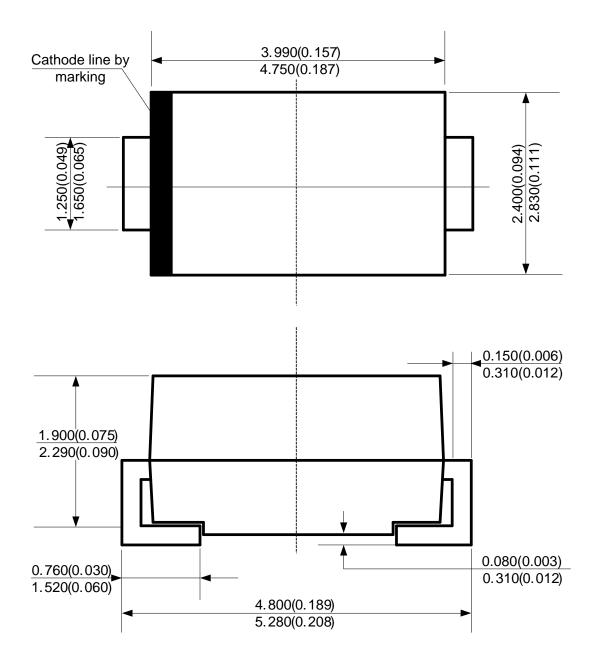
Figure 4. Average Rectified Forward Current vs.

Ambient Temperature



Package Outline Dimensions (All dimensions in mm(inch).)

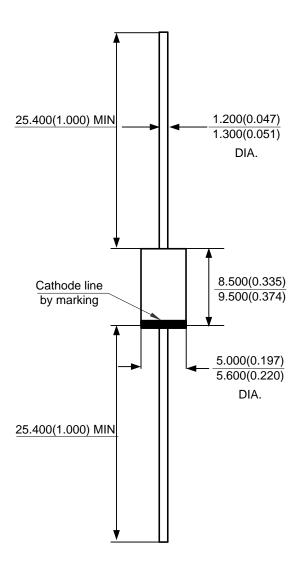
(1) Package Type: DO-214AC





Package Outline Dimensions (Cont. All dimensions in mm(inch).)

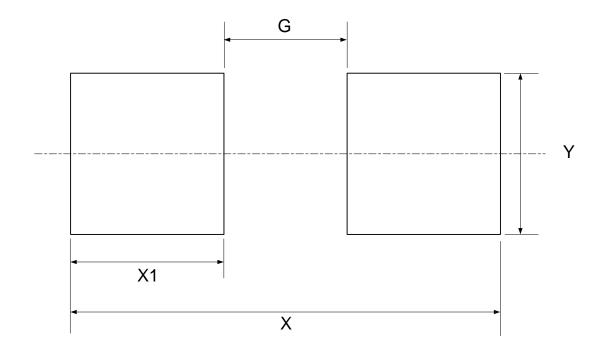
(2) Package Type: DO-27





Suggested Pad Layout

(1) Package Type: DO-214AC



Dimensions	Y	X1	G	X
	(mm)/(inch)	(mm)/(inch)	(mm)/(inch)	(mm)/(inch)
Value	2.100/0.083	2.000/0.079	1.600/0.063	5.600/0.220

July 2014



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Офис по работе с юридическими лицами:

105318, г. Москва, ул. Щербаковская д. 3, офис 1107, 1118, ДЦ «Щербаковский»

Телефон: +7 495 668-12-70 (многоканальный)

Факс: +7 495 668-12-70 (доб.304)

E-mail: info@moschip.ru

Skype отдела продаж:

moschip.ru moschip.ru_6 moschip.ru_4 moschip.ru_9