MBRS320P, MBRS330P, MBRS340P

Surface Mount Schottky Power Rectifier

These devices employ the Schottky Barrier principle in a large area metal-to-silicon power diode. State-of-the-art geometry features epitaxial construction with oxide passivation and metal overlay contact. Ideally suited for low voltage, high frequency rectification, or as free wheeling and polarity protection diodes, in surface mount applications where compact size and weight are critical to the system.

Features

- Small Compact Surface Mountable Package with J-Bend Leads
- Rectangular Package for Automated Handling
- Highly Stable Oxide Passivated Junction
- Very Low Forward Voltage Drop
  (0.5 V Max @ 3.0 A, T_J = 25°C)
- Excellent Ability to Withstand Reverse Avalanche Energy Transients
- Guard-Ring for Stress Protection
- Device Passes ISO 7637 Pulse #1
- These are Pb-Free Packages

Mechanical Characteristics

- Case: Epoxy, Molded, Epoxy Meets UL 94 V−0
- Weight: 217 mg (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
- Cathode Polarity Band
- Device Meets MSL 1 Requirements
- ESD Ratings:
  - Machine Model = C (> 400 V)
  - Human Body Model = 3B (> 8000 V)

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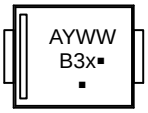
www.onsemi.com

SCHOTTKY BARRIER RECTIFIERS 3.0 AMPERES 20, 30, 40 VOLTS



SMC
CASE 403AC

MARKING DIAGRAM



B3x	= Device Code
x	= 2, 3 or 4
A	= Assembly Location
Y	= Year
WW	= Work Week
▪	= Pb−Free Package

(Note: Microdot may be in either location)

ORDERING INFORMATION

Device	Package	Shipping†
MBRS320PT3G	SMC (Pb−Free)	2,500 / Tape & Reel
MBRS330PT3G	SMC (Pb−Free)	2,500 / Tape & Reel
MBRS340PT3G	SMC (Pb−Free)	2,500 / Tape & Reel

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specification Brochure, BRD8011/D.

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MAXIMUM RATINGS

Rating	Symbol	MBRS320PT3G	MBRS330PT3G	MBRS340PT3G	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	V_{RRM} V_{RWM} V_R	20	30	40	V
Average Rectified Forward Current	$I_{F(AV)}$	3.0 @ T_L = 110°C 4.0 @ T_L = 105°C			A
Nonrepetitive Peak Surge Current (Surge applied at rated load conditions halfwave, single phase, 60 Hz)	I_{FSM}	80			A
Operating Junction Temperature	T_J	− 65 to +150			°C
ISO 7637 Pulse #1 (100 V, 10Ω)		5000			Pulses
ESD Ratings: Machine Model = C Human Body Model = 3B		> 400 > 8000			V

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

THERMAL CHARACTERISTICS

Thermal Resistance, Junction−to−Lead	$R_{\theta JL}$	11	°C/W

ELECTRICAL CHARACTERISTICS

Maximum Instantaneous Forward Voltage (Note 1) (i_F = 3.0 A, T_J = 25°C)	V_F	0.50	V
Maximum Instantaneous Reverse Current (Note 1) (Rated dc Voltage, T_J = 25°C) (Rated dc Voltage, T_J = 100°C)	i_R	2.0 20	mA

1. Pulse Test: Pulse Width = 300 μs, Duty Cycle ≤ 2.0%.

TYPICAL ELECTRICAL CHARACTERISTICS

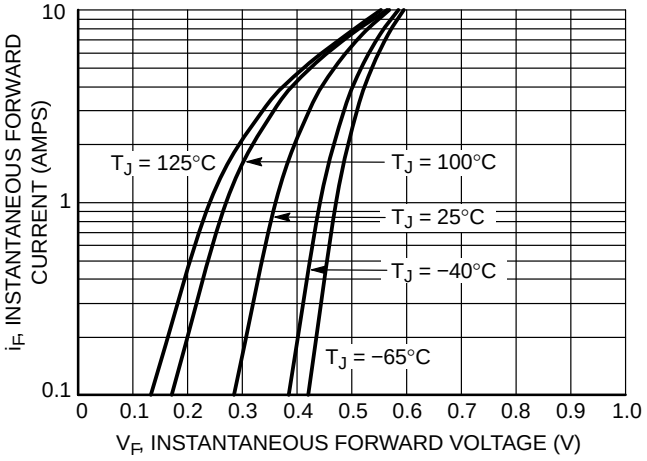


Figure 1. Typical Forward Voltage

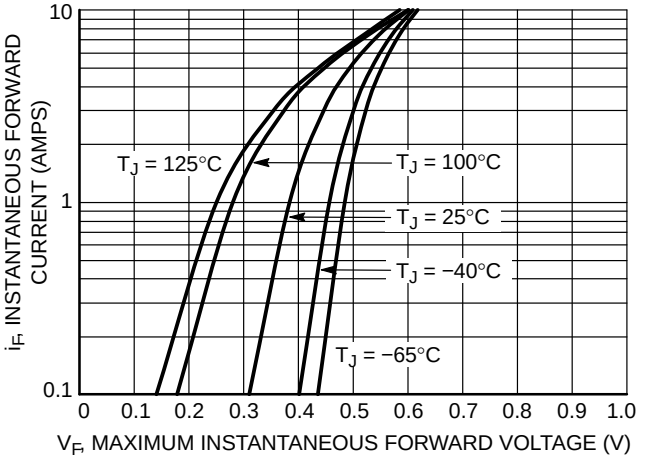


Figure 2. Maximum Forward Voltage

TYPICAL ELECTRICAL CHARACTERISTICS (continued)

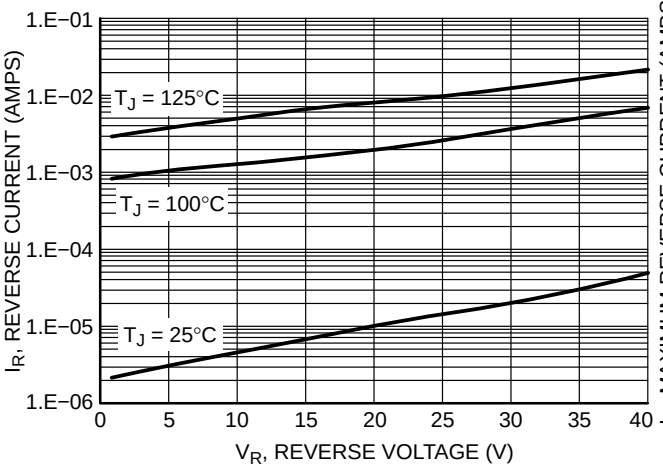


Figure 3. Typical Reverse Current

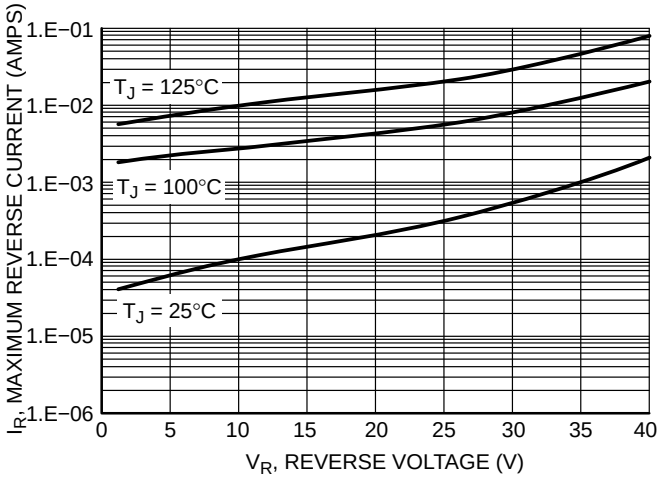


Figure 4. Maximum Reverse Current

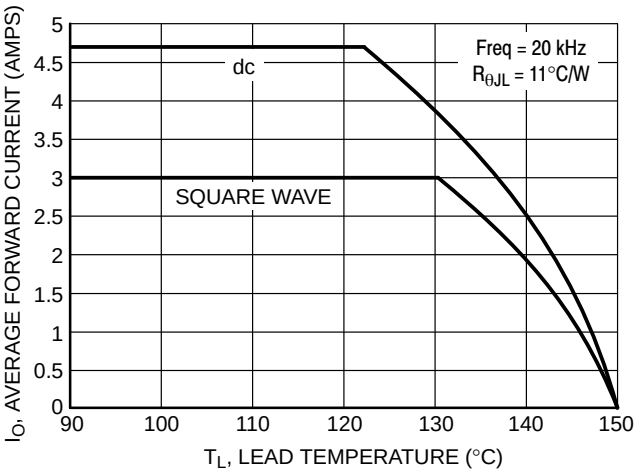


Figure 5. Current Derating

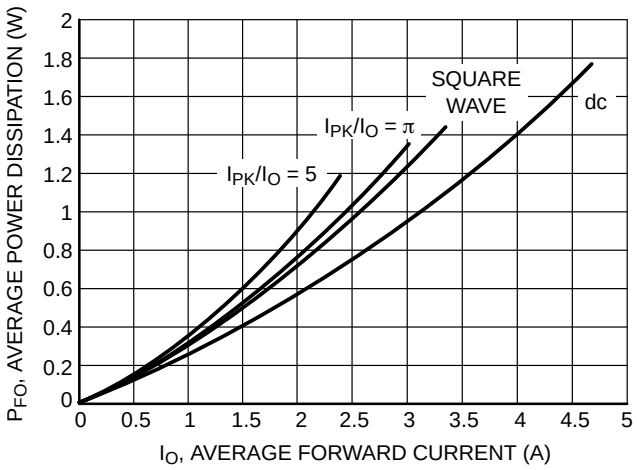


Figure 6. Forward Power Dissipation

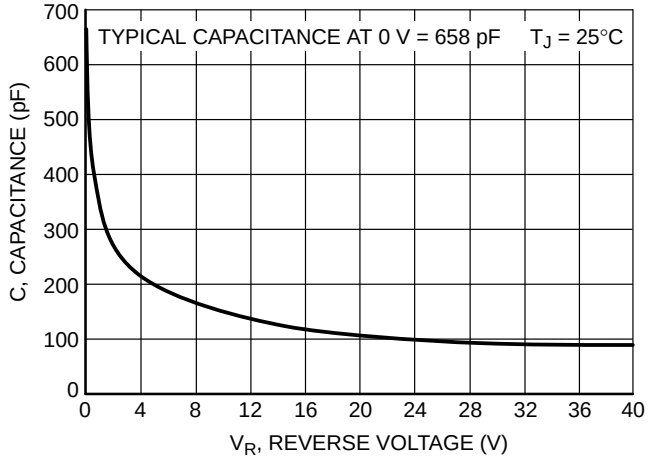
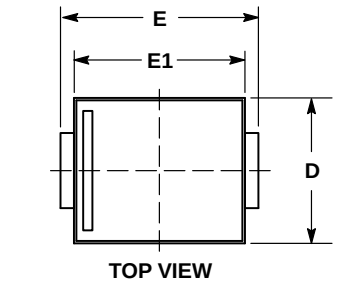
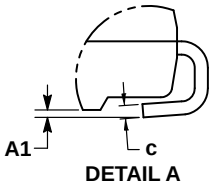


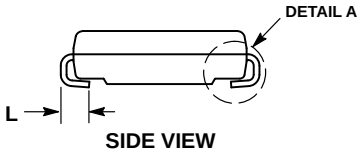
Figure 7. Typical Capacitance

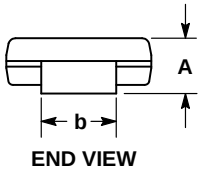
PACKAGE DIMENSIONS

SMC 2−LEAD
CASE 403AC
ISSUE O





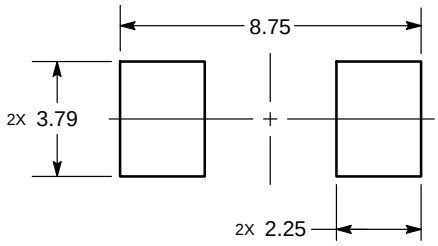




NOTES:
1. DIMENSIONING AND TOLERANCING PER ANME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. DIMENSIONS D AND E1 DO NOT INCLUDE MOLD FLASH. MOLD FLASH SHALL NOT EXCEED 0.13 PER SIDE.
4. DIMENSIONS D AND E1 TO BE DETERMINED AT DATUM H.
5. DIMENSION b SHALL BE MEASURED WITHIN THE AREA DETERMINED BY DIMENSION L.

	MILLIMETERS	
DIM	MIN	MAX
A	1.95	2.65
A1	0.05	0.20
b	2.90	3.20
c	0.15	0.41
D	5.55	6.25
E	7.75	8.15
E1	6.60	7.15
L	0.75	1.60

RECOMMENDED SOLDERING FOOTPRINT*



DIMENSIONS: MILLIMETERS

*For additional information on our Pb−Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

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