

MBRS360T3, MBRS360BT3G

Surface Mount Schottky Power Rectifier

This device employs 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
- Excellent Ability to Withstand Reverse Avalanche Energy Transients
- Guard-Ring for Stress Protection
- Pb-Free Package is Available

Mechanical Characteristics

- Case: Epoxy, Molded, Epoxy Meets UL 94 V-0
- Weight: 217 mg (Approximately), SMC
95 mg (Approximately), SMB
- 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
- Polarity: Notch in Plastic Body Indicates Cathode Lead
- Device Meets MSL 1 Requirements
- ESD Ratings: Machine Model, C
Human Body Model, 3B

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	V_{RRM} V_{RWM} V_R	60	V
Average Rectified Forward Current	$I_{F(AV)}$	3.0 @ $T_L = 137^\circ\text{C}$ 4.0 @ $T_L = 127^\circ\text{C}$	A
Nonrepetitive Peak Surge Current (Surge applied at rated load conditions halfwave, single phase, 60 Hz)	I_{FSM}	125	A
Storage Temperature Range	T_{stg}	- 65 to +175	°C
Operating Junction Temperature (Note 1)	T_J	- 65 to +175	°C

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

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



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SCHOTTKY BARRIER RECTIFIERS 3.0 AMPERES, 60 VOLTS

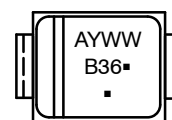


SMC
CASE 403
PLASTIC



SMB
CASE 403A
PLASTIC

MARKING DIAGRAMS



B36 = Specific Device Code
A = Assembly Location
Y = Year
WW = Work Week
▪ = Pb-Free Package
(Note: Microdot may be in either location)

ORDERING INFORMATION

Device	Package	Shipping†
MBRS360T3	SMC	2500/Tape & Reel
MBRS360T3G	SMC (Pb-Free)	2500/Tape & Reel
MBRS360BT3G	SMB (Pb-Free)	2500/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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THERMAL CHARACTERISTICS

Characteristic		Symbol	Value	Unit
Thermal Resistance, Junction-to-Lead (Note 2)	SMC Package	$R_{\theta JL}$	11	$^{\circ}C/W$
	SMB Package		15	
Thermal Resistance, Junction-to-Ambient (Note 2)	SMC Package	$R_{\theta JA}$	136	$^{\circ}C/W$
	SMB Package		145	
Thermal Resistance, Junction-to-Ambient (Note 3) (Note 4)	SMC Package	$R_{\theta JA}$	71	$^{\circ}C/W$
	SMB Package		73	

ELECTRICAL CHARACTERISTICS

Maximum Instantaneous Forward Voltage (Note 5) ($i_F = 3.0$ A, $T_J = 25^{\circ}C$)	V_F	0.740	V
Maximum Instantaneous Reverse Current (Note 5) (Rated dc Voltage, $T_J = 25^{\circ}C$) (Rated dc Voltage, $T_J = 100^{\circ}C$)	i_R	0.15 10	mA

- Mounted with minimum recommended pad size, PC Board FR4.
- 1 inch square pad size (1 x 0.5 inch for each lead) on FR4 board.
- Typical Value; 1 inch square pad size (1 x 0.5 inch for each lead) on FR4 board.
- Pulse Test: Pulse Width = 300 μ s, Duty Cycle \leq 2.0%.

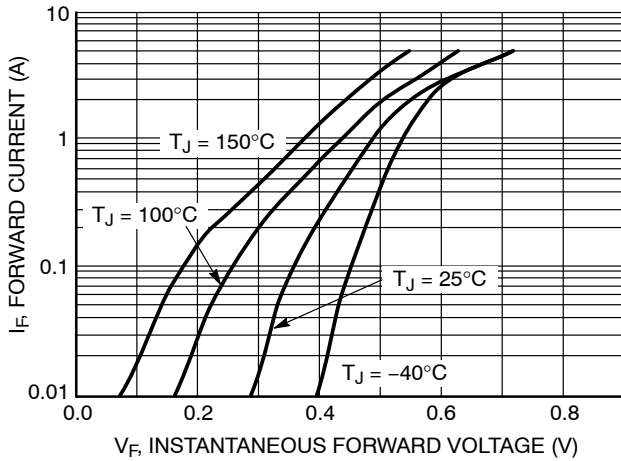


Figure 1. Typical Forward Voltage

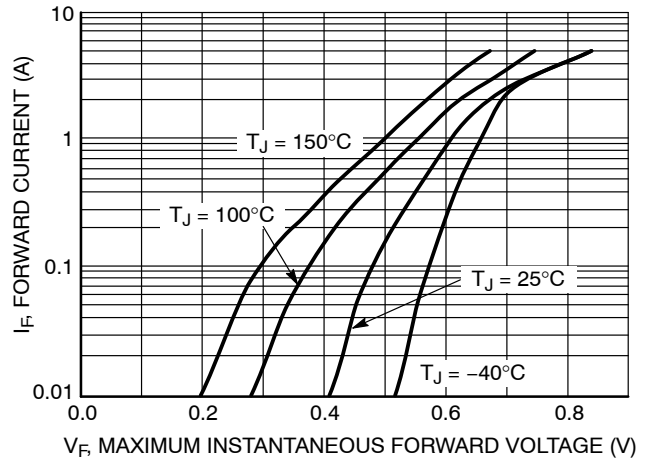


Figure 2. Maximum Forward Voltage

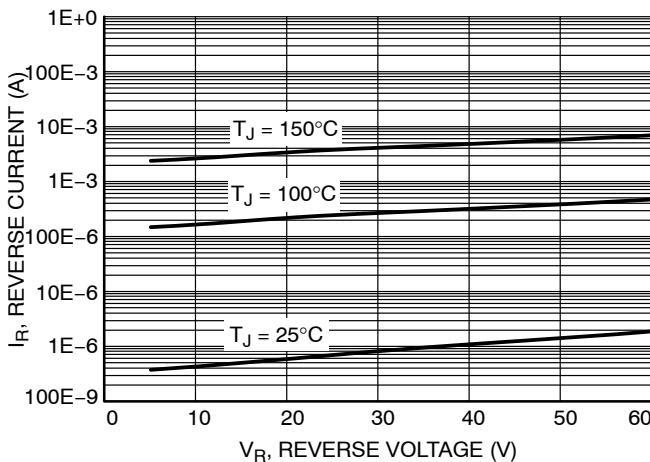


Figure 3. Typical Reverse Current

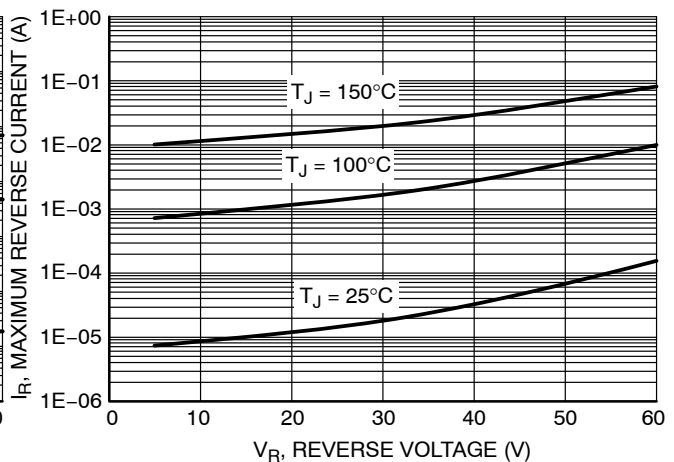


Figure 4. Maximum Reverse Current

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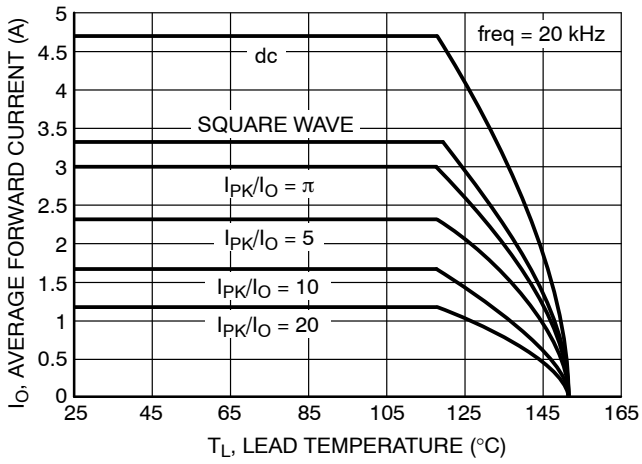


Figure 5. Current Derating

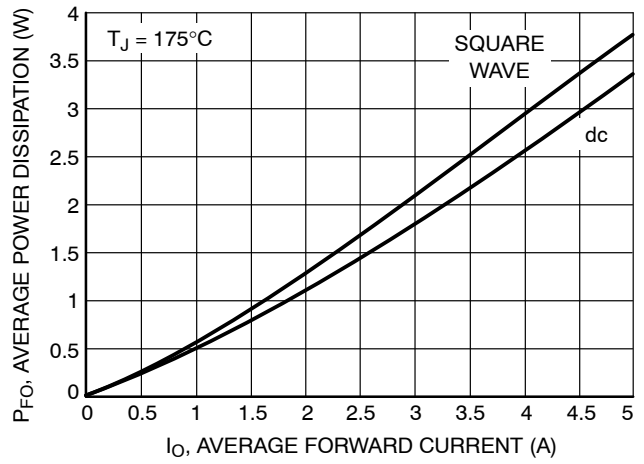


Figure 6. Forward Power Dissipation

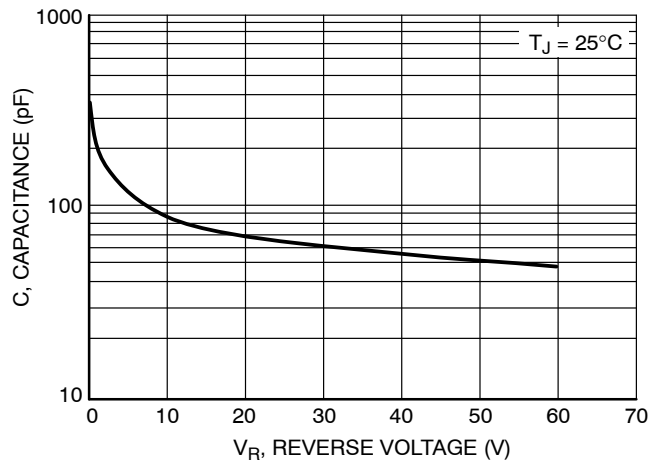


Figure 7. Typical Capacitance

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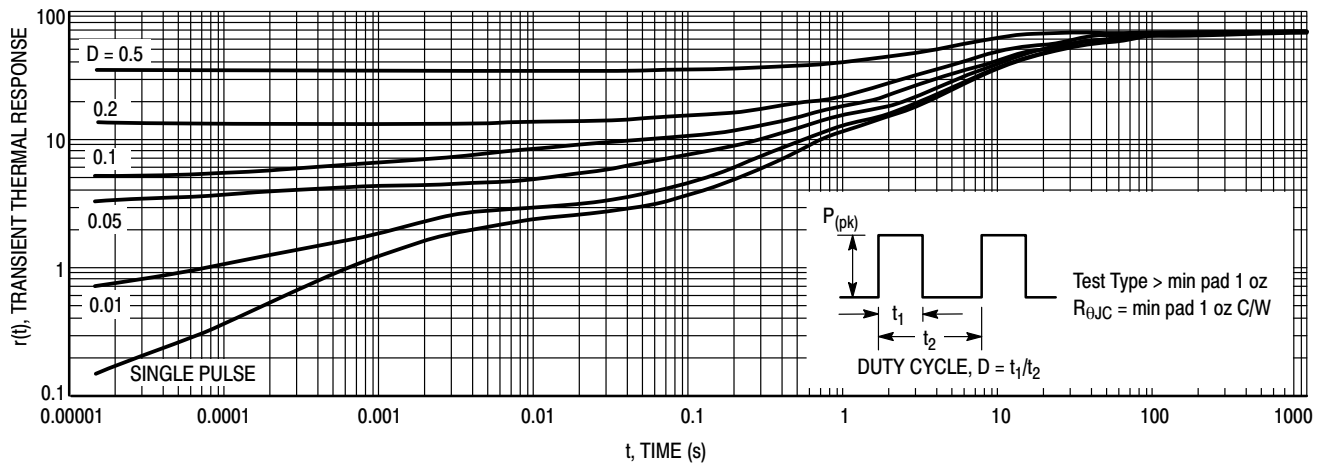


Figure 8. Thermal Response, Junction-to-Ambient, SMC Package

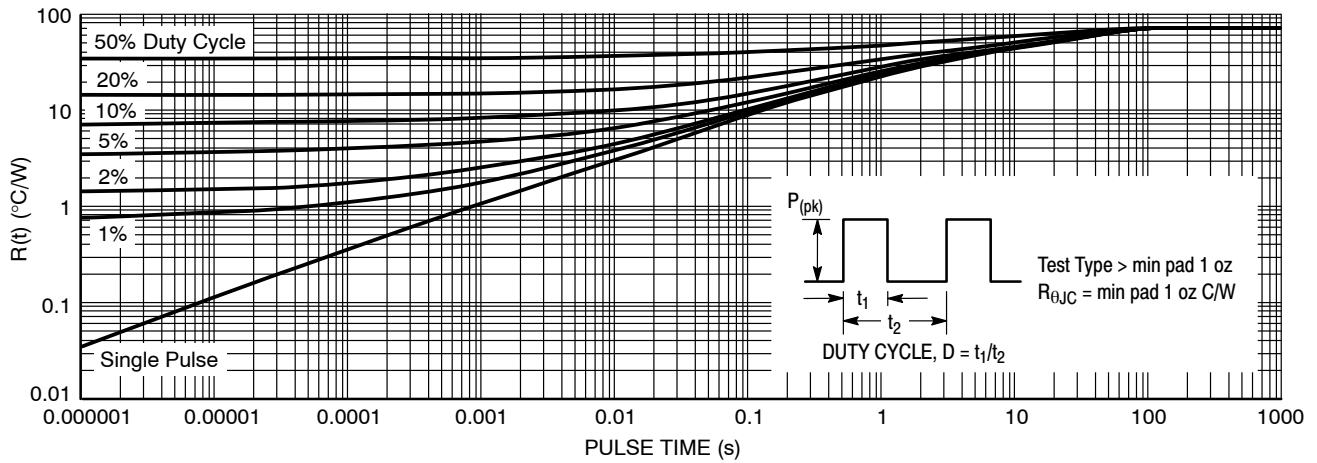
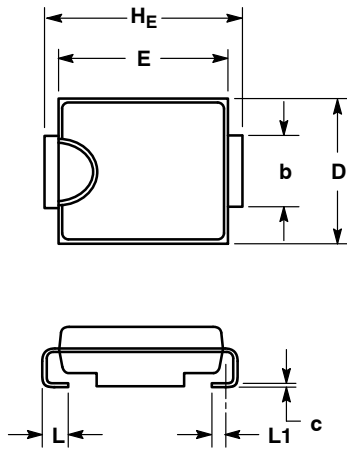


Figure 9. Typical Thermal Response, Junction-to-Ambient, SMB Package

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PACKAGE DIMENSIONS

SMC
PLASTIC PACKAGE
CASE 403-03
ISSUE E

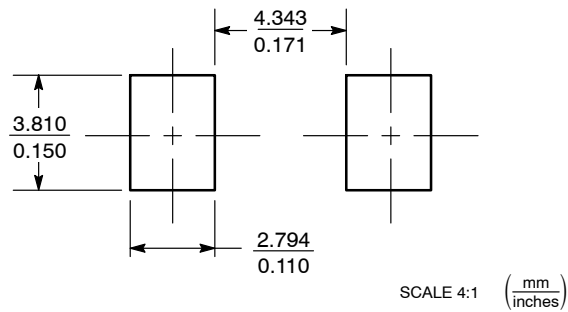


NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. D DIMENSION SHALL BE MEASURED WITHIN DIMENSION P.
4. 403-01 THRU -02 OBSOLETE, NEW STANDARD 403-03.

DIM	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	1.90	2.13	2.41	0.075	0.084	0.095
A1	0.05	0.10	0.15	0.002	0.004	0.006
b	2.92	3.00	3.07	0.115	0.118	0.121
c	0.15	0.23	0.30	0.006	0.009	0.012
D	5.59	5.84	6.10	0.220	0.230	0.240
E	6.60	6.86	7.11	0.260	0.270	0.280
HE	7.75	7.94	8.13	0.305	0.313	0.320
L	0.76	1.02	1.27	0.030	0.040	0.050
L1	0.51 REF			0.020 REF		

SOLDERING FOOTPRINT*

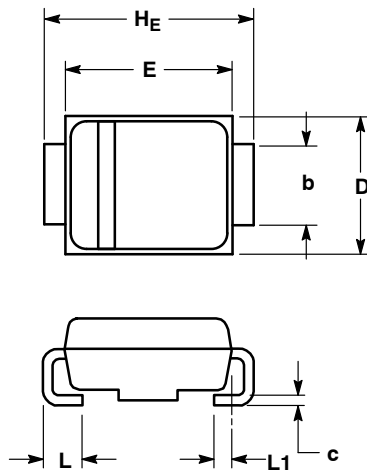


*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

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PACKAGE DIMENSIONS

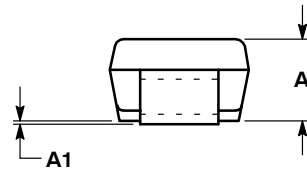
SMB PLASTIC PACKAGE CASE 403A-03 ISSUE E



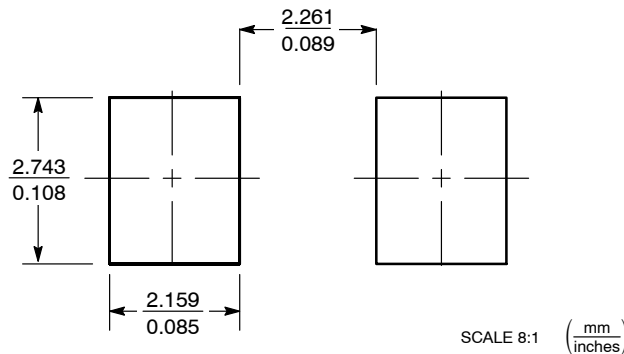
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DIM	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	1.90	2.13	2.41	0.075	0.084	0.095
A1	0.05	0.10	0.15	0.002	0.004	0.006
b	1.96	2.03	2.11	0.077	0.080	0.083
c	0.15	0.23	0.30	0.006	0.009	0.012
D	3.30	3.56	3.81	0.130	0.140	0.150
E	4.06	4.32	4.57	0.160	0.170	0.180
HE	5.21	5.44	5.59	0.205	0.214	0.220
L	0.76	1.02	1.27	0.030	0.040	0.050
L1	0.51 REF			0.020 REF		



SOLDERING FOOTPRINT*



*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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