MBRS410ET3

Preferred Device

Surface Mount Schottky Power Rectifier

. . . employing 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. Typical applications are ac/dc and dc–dc converters, reverse battery protection, and "Oring" of multiple supply voltages and any other application where performance and size are critical.

- Very Low V_F Accompanied by Low I_R
- 1st in the Market Place with a 10 V_R Schottky Rectifier
- Small Compact Surface Mountable Package with J–Bend Leads
- Rectangular Package for Automated Handling
- Highly Stable Oxide Passivated Junction
- Designed for Low Leakage
- Excellent Ability to Withstand Reverse Avalanche Energy Transients
- Guardring for Stress Protection

Mechanical Characteristics:

- Case: Epoxy, Molded
- 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
- Shipped in 16 mm Tape and Reel, 2500 units per reel
- Polarity: Notch in Plastic Body Indicates Cathode Lead
- ESD Ratings: Machine Model = C
  Human Body Model = 3B
- Marking: B4E1

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	V_{RRM} V_{RWM} V_R	10	V
Average Rectified Forward Current (@ T_L = 130°C)	I_O	4.0	A
Non–Repetitive Peak Surge Current (Surge Applied at Rated Load Conditions Halfwave, Single Phase, 60 Hz)	I_{FSM}	250	A
Operating Junction Temperature	T_J	–65 to +150	°C

ON Semiconductor™

http://onsemi.com

SCHOTTKY BARRIER RECTIFIERS 4.0 AMPERES 10 VOLTS

SMC CASE 403 PLASTIC

MARKING DIAGRAM

Y = Year
WW = Work Week
B4E1 = Device Code

ORDERING INFORMATION

Device	Package	Shipping
MBRS410ET3	SMC	2500/Tape & Reel

Preferred devices are recommended choices for future use and best overall value.

THERMAL CHARACTERISTICS

Characteristic	Symbol	5 mm x 5 mm (Note 2)	1 Inch x 1/2 inch	Unit
Thermal Resistance – Junction–to–Lead	$R_{\theta JL}$	12	7.0	°C/W
Thermal Resistance – Junction–to–Ambient	$R_{\theta JA}$	109	59	

ELECTRICAL CHARACTERISTICS

Maximum Instantaneous Forward Voltage (Note 1)	V_F	**T_J = 25°C**	**T_J = 100°C**	V
(I_F = 2.0 A)		0.475	0.370	
(I_F = 4.0 A)		0.500	0.395	
(I_F = 8.0 A)		0.525	0.430	
Maximum Instantaneous Reverse Current (Note 1)	I_R	**T_J = 25°C**	**T_J = 100°C**	μA
(Rated dc Voltage, V_R = 5.0 V)		50	2000	
(Rated dc Voltage, V_R = 10 V)		150	4000	

1. Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 2%.
2. Mounted with Minimum Recommended Pad Size, PC Board FR4.

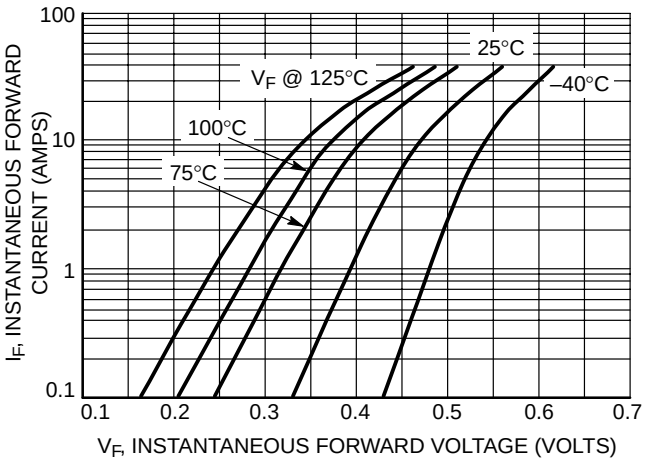


Figure 1. Typical Forward Voltage

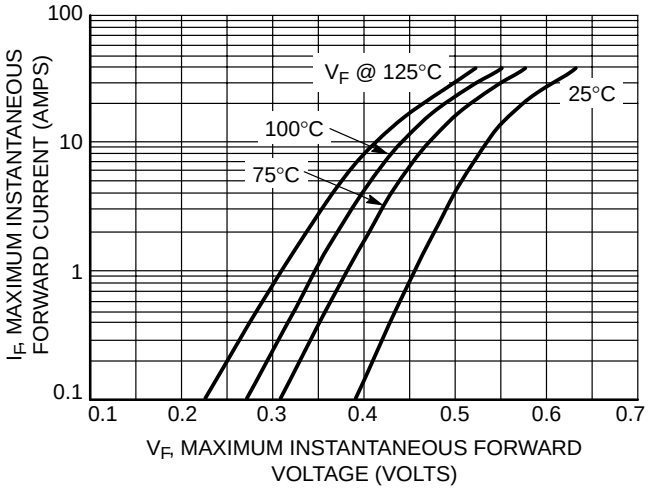


Figure 2. Maximum Forward Voltage

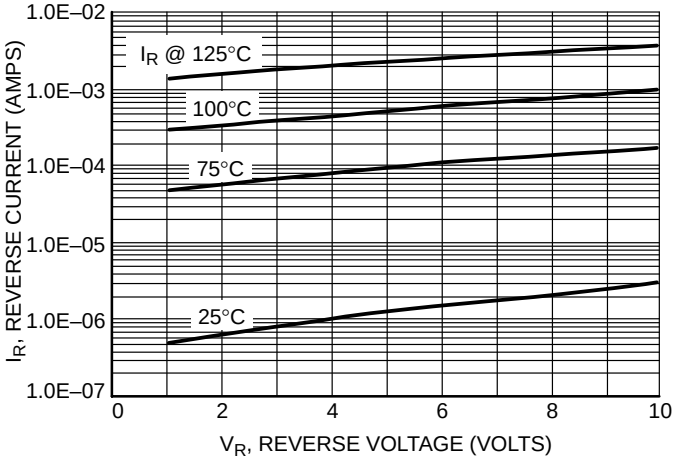


Figure 3. Typical Reverse Current

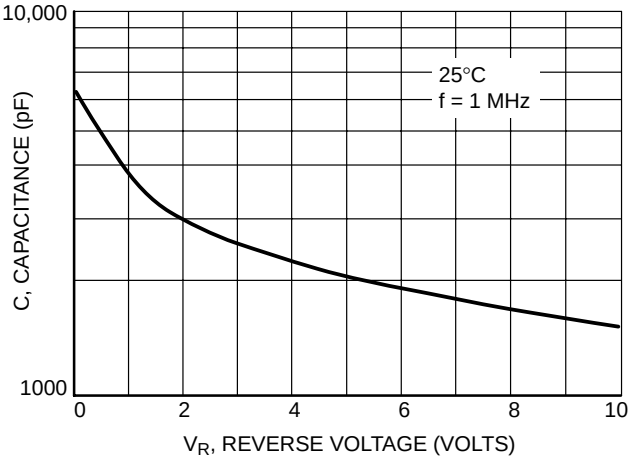


Figure 4. Typical Capacitance

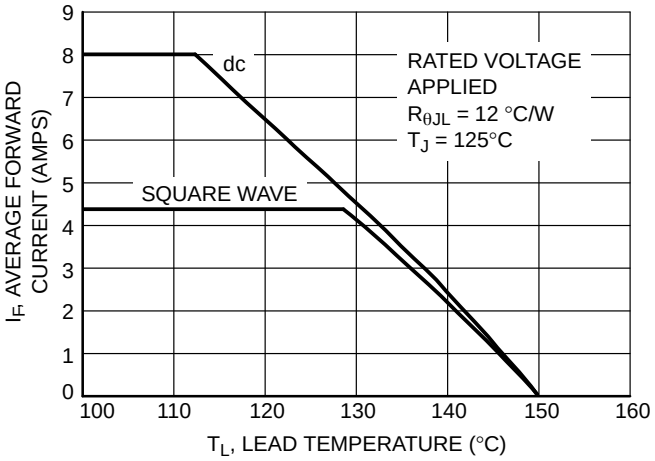


Figure 5. Current Derating – Junction to Lead

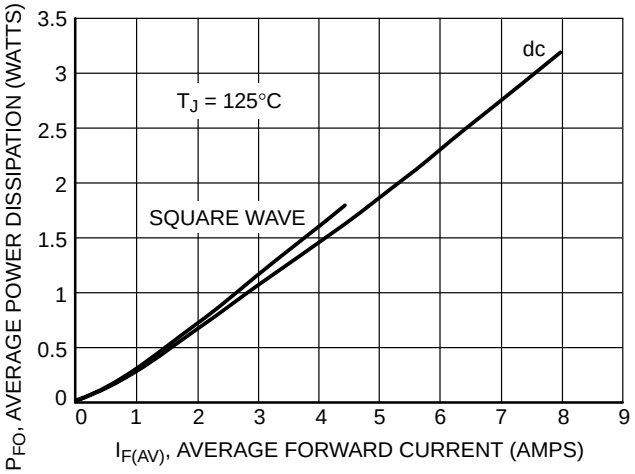


Figure 6. Forward Power Dissipation

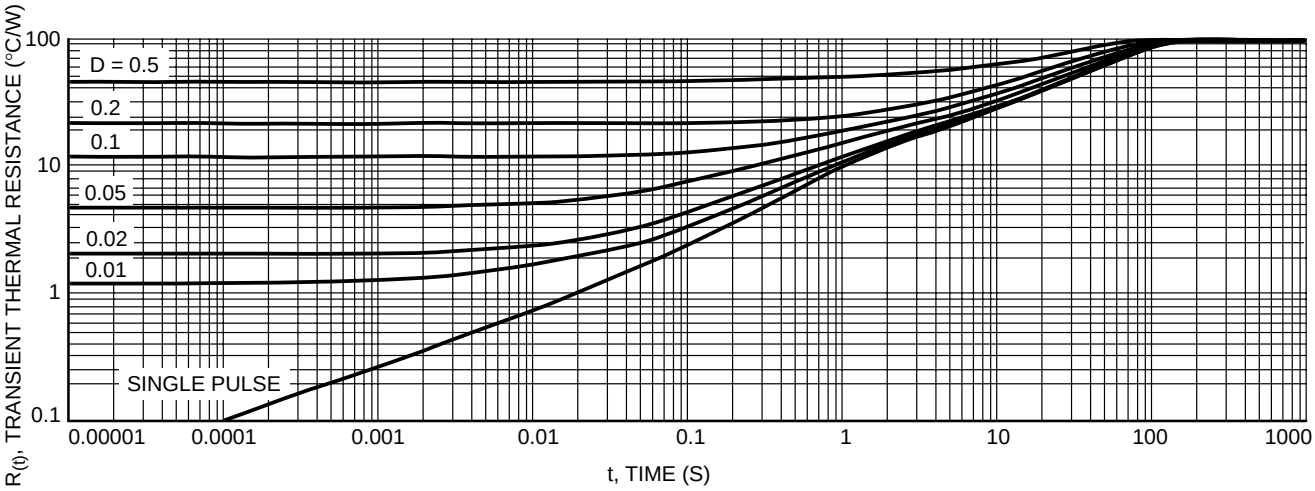


Figure 7. Thermal Response, Junction to Ambient (min pad)

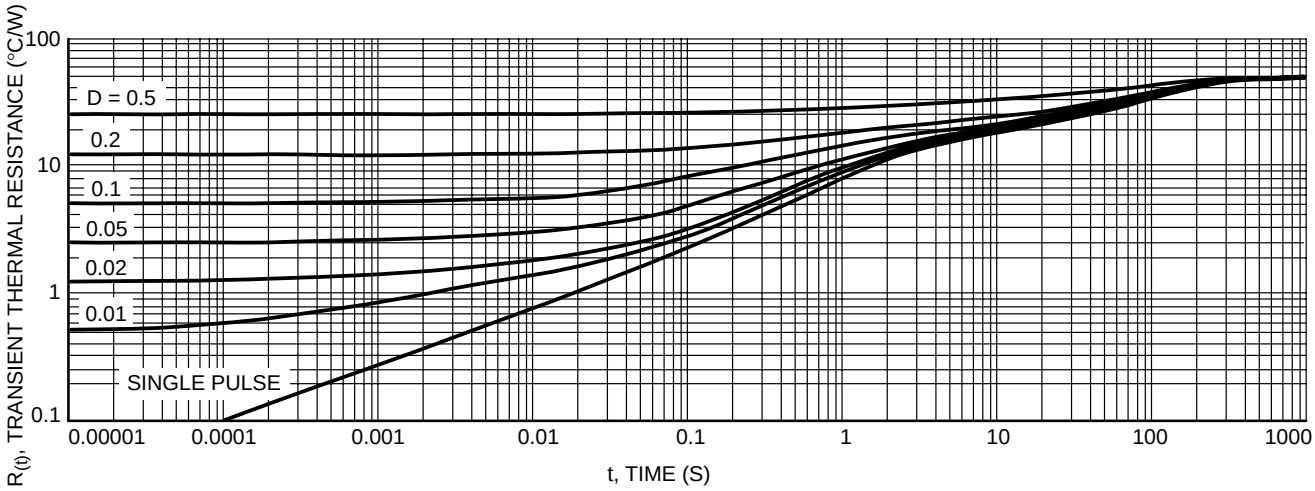
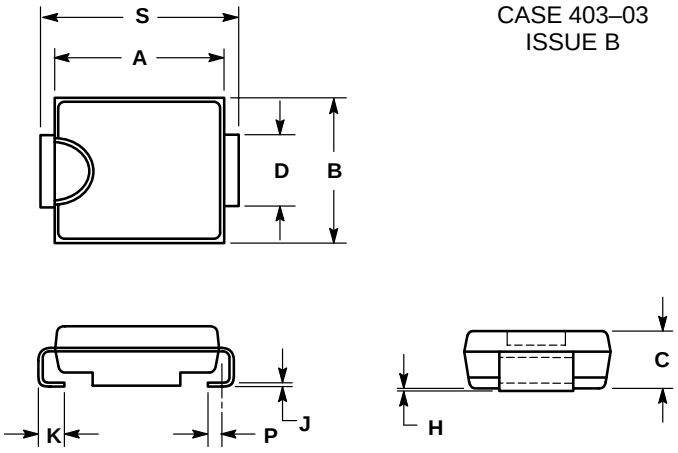


Figure 8. Thermal Response, Junction to Ambient (1 inch pad)

PACKAGE DIMENSIONS

SMC
PLASTIC PACKAGE
CASE 403–03
ISSUE B



NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. D DIMENSION SHALL BE MEASURED WITHIN DIMENSION P.

	INCHES		MILLIMETERS	
DIM	MIN	MAX	MIN	MAX
A	0.260	0.280	6.60	7.11
B	0.220	0.240	5.59	6.10
C	0.075	0.095	1.90	2.41
D	0.115	0.121	2.92	3.07
H	0.0020	0.0060	0.051	0.152
J	0.006	0.012	0.15	0.30
K	0.030	0.050	0.76	1.27
P	0.020 REF		0.51 REF	
S	0.305	0.320	7.75	8.13

PUBLICATION ORDERING INFORMATION

Literature Fulfillment:
Literature Distribution Center for ON Semiconductor
P.O. Box 5163, Denver, Colorado 80217 USA
Phone: 303–675–2175 or 800–344–3860 Toll Free USA/Canada
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