MBRA120ET3

Surface Mount Schottky Power Rectifier

SMA Power Surface Mount Package

. . . employing the Schottky Barrier principle in a metal−to−silicon power rectifier. Features epitaxial construction with oxide passivation and metal overlay contact. Ideally suited for low voltage, high frequency switching power supplies; free wheeling diodes and polarity protection diodes.

- Compact Package with J−Bend Leads Ideal for Automated Handling
- Highly Stable Oxide Passivated Junction
- Guardring for Over−Voltage Protection
- Optimized for Low Leakage Current

Mechanical Characteristics:

- Case: Molded Epoxy
- Epoxy Meets UL94, V_O at 1/8″
- Weight: 70 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
- Polarity: Polarity Band Indicates Cathode Lead
- Available in 12 mm Tape, 5000 Units per 13 inch Reel
- Device Meets MSL1 Requirements
- ESD Ratings: Machine Model, C (>400 V)
  Human Body Model, 3B (>8000 V)
- Marking: B1E2

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	V_{RRM} V_{RWM} V_R	20	V
Average Rectified Forward Current (At Rated V_R, T_C = 125°C)	I_O	1.0	A
Non−Repetitive Peak Surge Current (Surge Applied at Rated Load Conditions Halfwave, Single Phase, 60 Hz)	I_{FSM}	40	A
Storage Temperature	T_{stg}	−55 to +150	°C
Operating Junction Temperature	T_J	−55 to +150	°C
Voltage Rate of Change (Rated V_R, T_J = 25°C)	dv/dt	10,000	V/μs

ON Semiconductor®

http://onsemi.com

SCHOTTKY BARRIER RECTIFIER 1 AMPERE 20 VOLTS

SMA
CASE 403D
PLASTIC

MARKING DIAGRAM

B1E2 = Device Code

ORDERING INFORMATION

Device	Package	Shipping†
MBRA120ET3	SMA	5000/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.

THERMAL CHARACTERISTICS

Characteristic	Symbol	5 mm x 5 mm (Note 2)	1 Inch x 1/2 inch (Note 3)	Unit
Thermal Resistance − Junction−to−Lead	$R_{\theta JL}$	34	20	°C/W
Thermal Resistance − Junction−to−Ambient	$R_{\theta JA}$	138	77	

ELECTRICAL CHARACTERISTICS

Maximum Instantaneous Forward Voltage (Note 1), See Figure 2	V_F	**T_J = 25°C**	**T_J = 100°C**	V
(I_F = 0.1 A)		0.455	0.360	
(I_F = 1.0 A)		0.530	0.455	
(I_F = 2.0 A)		0.595	0.540	
Maximum Instantaneous Reverse Current, See Figure 4	I_R	**T_J = 25°C**	**T_J = 100°C**	μA
(V_R = 20 V)		10	1600	
(V_R = 10 V)		1.0	500	
(V_R = 5.0 V)		0.5	300	

1. Pulse Test: Pulse Width ≤ 250 μs, Duty Cycle ≤ 2%.
2. Mounted on a Pad Size of 5 mm x 5 mm, PC Board FR4 (2 pads).
3. Mounted on a Pad Size of 1 inch x 1/2 inch, PC Board FR4 (2 pads).

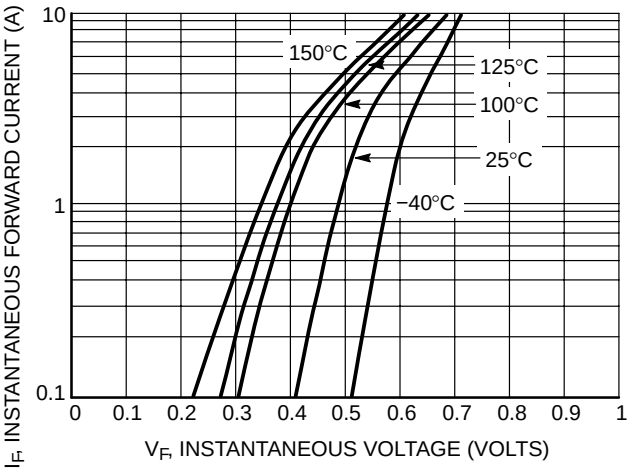


Figure 1. Typical Forward Voltage

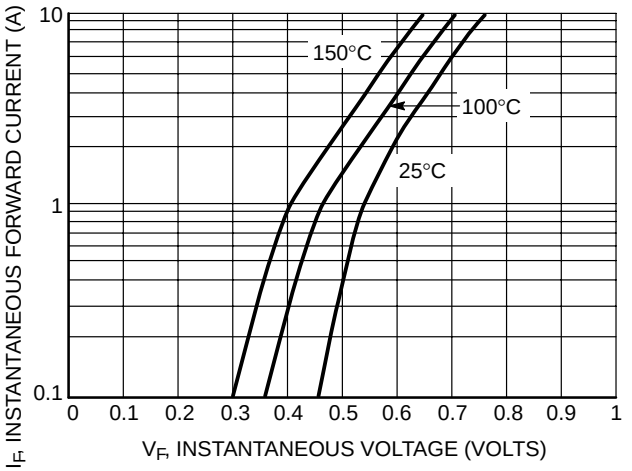


Figure 2. Maximum Forward Voltage

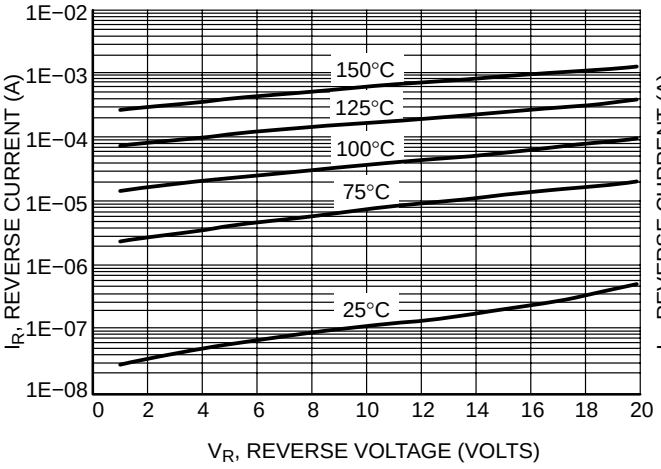


Figure 3. Typical Reverse Current

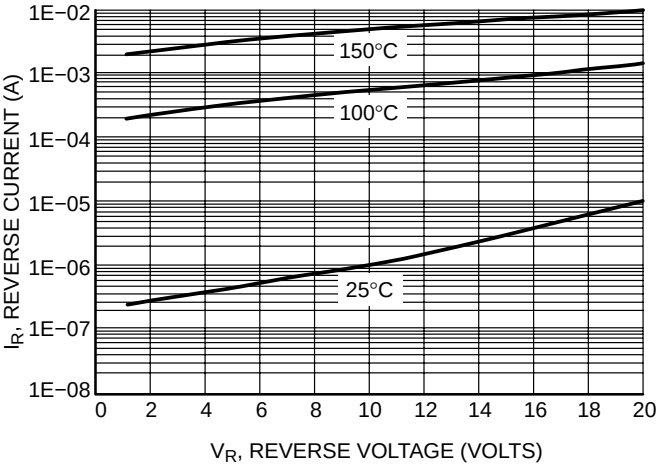


Figure 4. Maximum Reverse Current

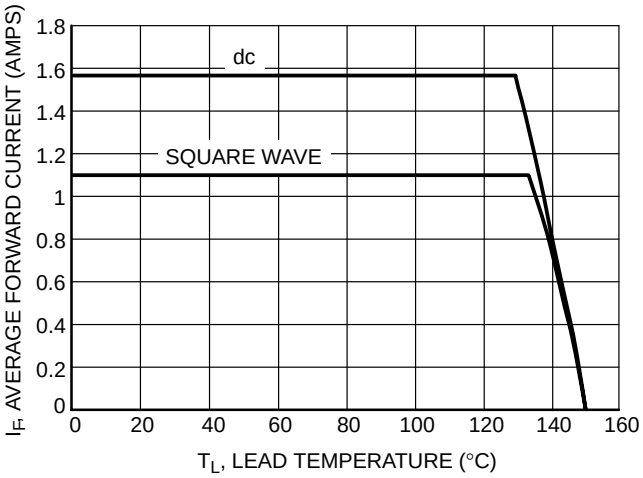


Figure 5. Current Derating

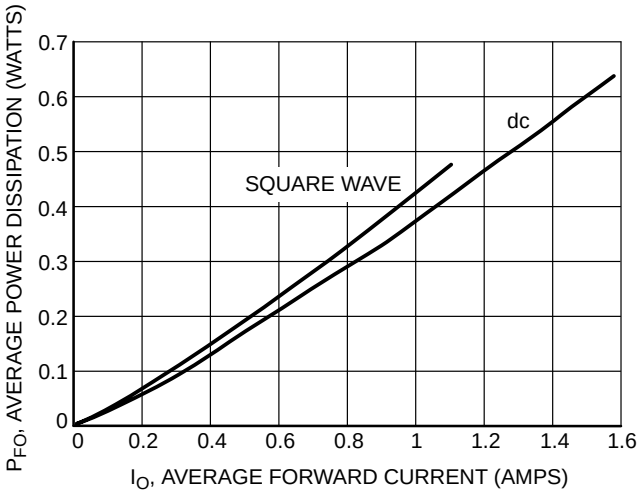


Figure 6. Forward Power Dissipation

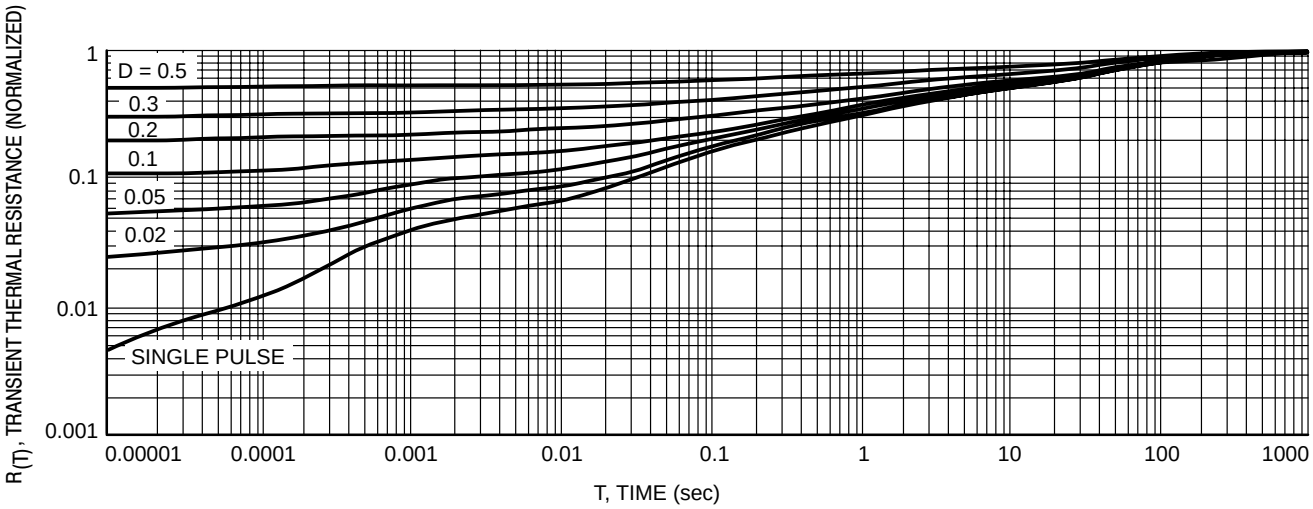


Figure 7. Thermal Resistance

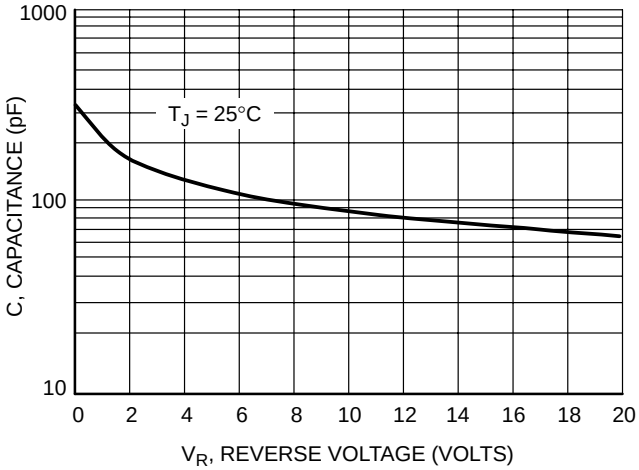
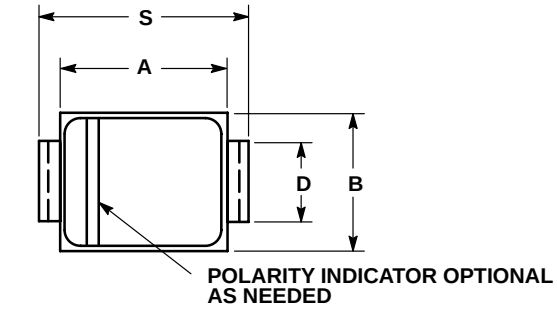


Figure 8. Typical Junction Capacitance

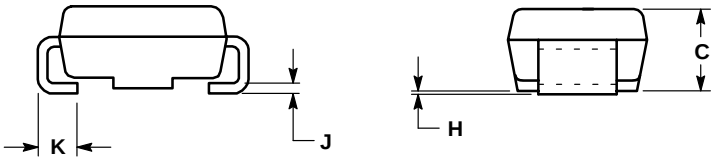
PACKAGE DIMENSIONS

SMA
CASE 403D−02
ISSUE A

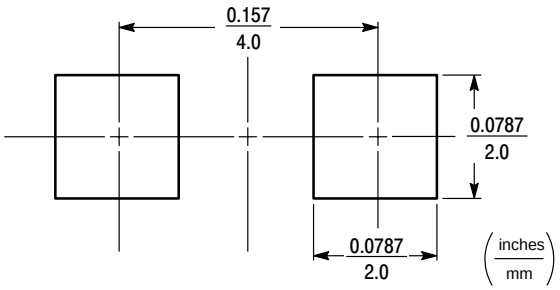


NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. 403D−01 OBSOLETE, NEW STANDARD IS 403D−02.

	INCHES		MILLIMETERS	
DIM	MIN	MAX	MIN	MAX
A	0.160	0.180	4.06	4.57
B	0.090	0.115	2.29	2.92
C	0.075	0.095	1.91	2.41
D	0.050	0.064	1.27	1.63
H	0.002	0.006	0.05	0.15
J	0.006	0.016	0.15	0.41
K	0.030	0.060	0.76	1.52
S	0.190	0.220	4.83	5.59



SOLDERING FOOTPRINT*



SMA 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.

PUBLICATION ORDERING INFORMATION

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