MBRS130LT3

Schottky Power Rectifier

Surface Mount Power Package

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

- Very Low Forward Voltage Drop (0.395 Volts Max @ 1.0 A, T_J = 25°C)
- Small Compact Surface Mountable Package with J−Bend Leads
- Highly Stable Oxide Passivated Junction
- Guard−Ring for Stress Protection
- Pb−Free Package is Available

Mechanical Characteristics

- Case: Epoxy, Molded
- Weight: 100 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

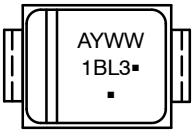
ON Semiconductor®

http://onsemi.com

SCHOTTKY BARRIER RECTIFIER 1.0 AMPERE 30 VOLTS

SMB
CASE 403A
PLASTIC

MARKING DIAGRAM



1BL3 = 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†
MBRS130LT3	SMB	2500/Tape & Reel
MBRS130LT3G	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 Specifications Brochure, BRD8011/D.

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	V_{RRM} V_{RWM} V_R	30	V
Average Rectified Forward Current T_L = 120°C T_L = 110°C	$I_{F(AV)}$	 1.0 2.0	A
Non−Repetitive Peak Surge Current (Surge Applied at Rated Load Conditions Halfwave, Single Phase, 60 Hz)	I_{FSM}	40	A
Operating Junction Temperature	T_J	−65 to +125	°C

THERMAL CHARACTERISTICS

Rating	Symbol	Value	Unit
Thermal Resistance, Junction−to−Lead	Ψ_{JL}	 12	°C/W
Thermal Resistance, Junction−to−Ambient (T_A = 25°C, Min Pad, 1 oz copper) Junction−to−Ambient (T_A = 25°C, 1” Pad, 1 oz copper)	$R_{\theta JA}$	 228.8 71.3	°C/W

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.

ELECTRICAL CHARACTERISTICS

Characteristic	Symbol	Value	Unit
Maximum Instantaneous Forward Voltage (Note 1) (i_F = 1.0 A, T_J = 25°C) (i_F = 2.0 A, T_J = 25°C)	V_F	 0.395 0.445	V
Maximum Instantaneous Reverse Current (Note 1) (Rated dc Voltage, T_J = 25°C) (Rated dc Voltage, T_J = 100°C)	I_R	 1.0 10	mA

1. Pulse Test: Pulse Width = 300 μs, Duty Cycle ≤ 2%.

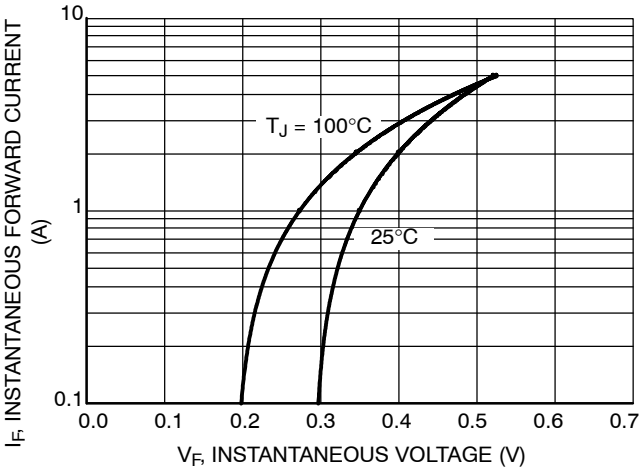


Figure 1. Typical Forward Voltage

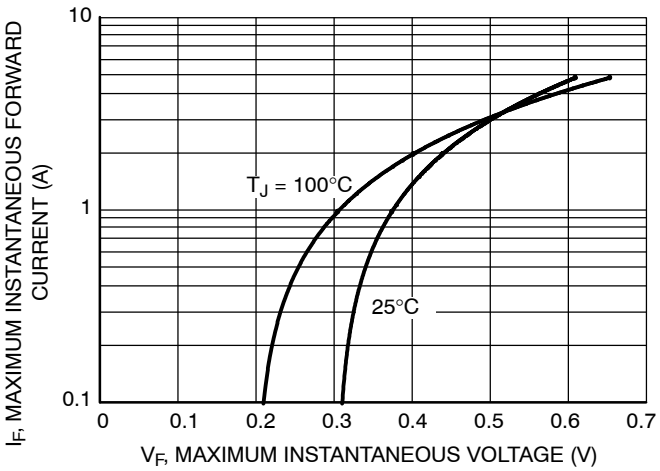


Figure 2. Maximum Forward Voltage

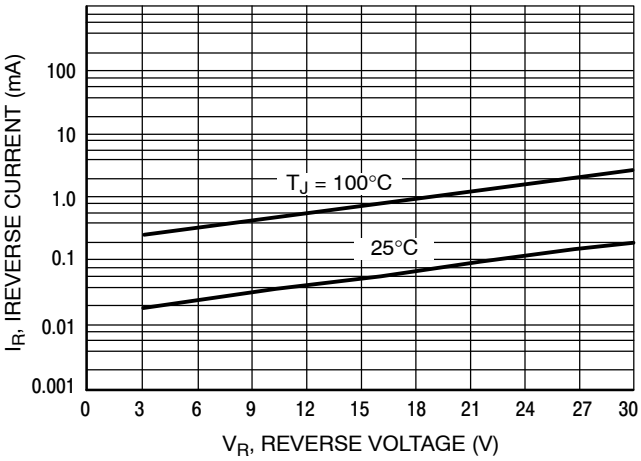


Figure 3. Typical Reverse Leakage Current

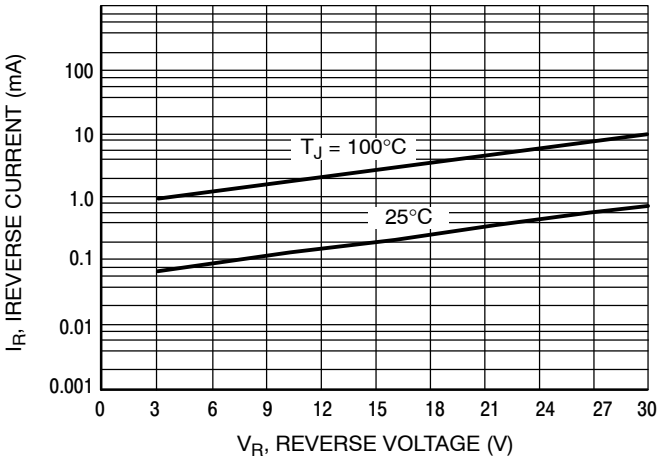


Figure 4. Typical Maximum Reverse Leakage Curent

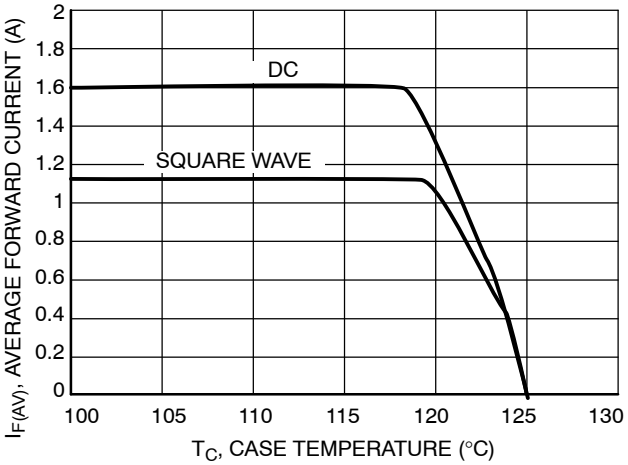


Figure 5. Current Derating (Case)

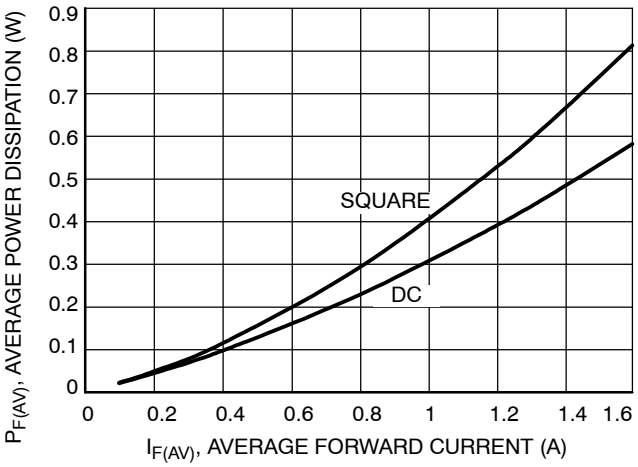


Figure 6. Typical Power Dissipation

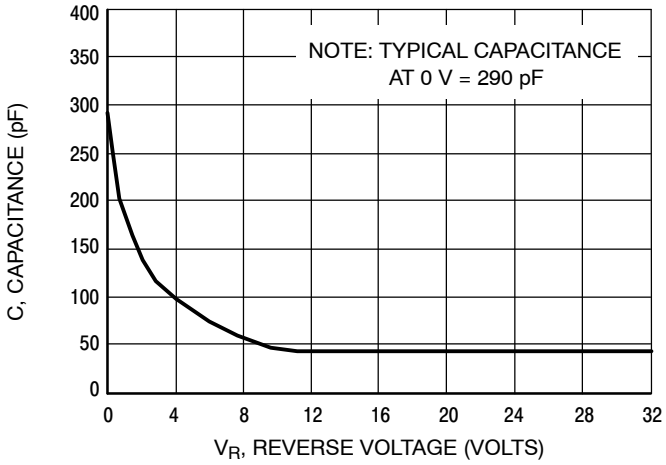


Figure 7. Typical Capacitance

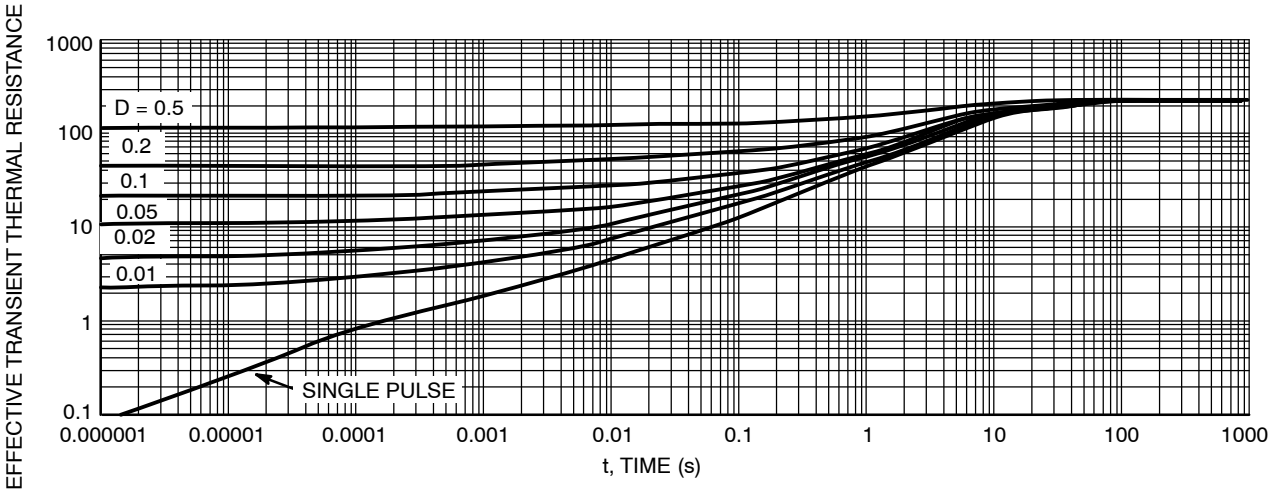


Figure 8. Thermal Response, Min Pad

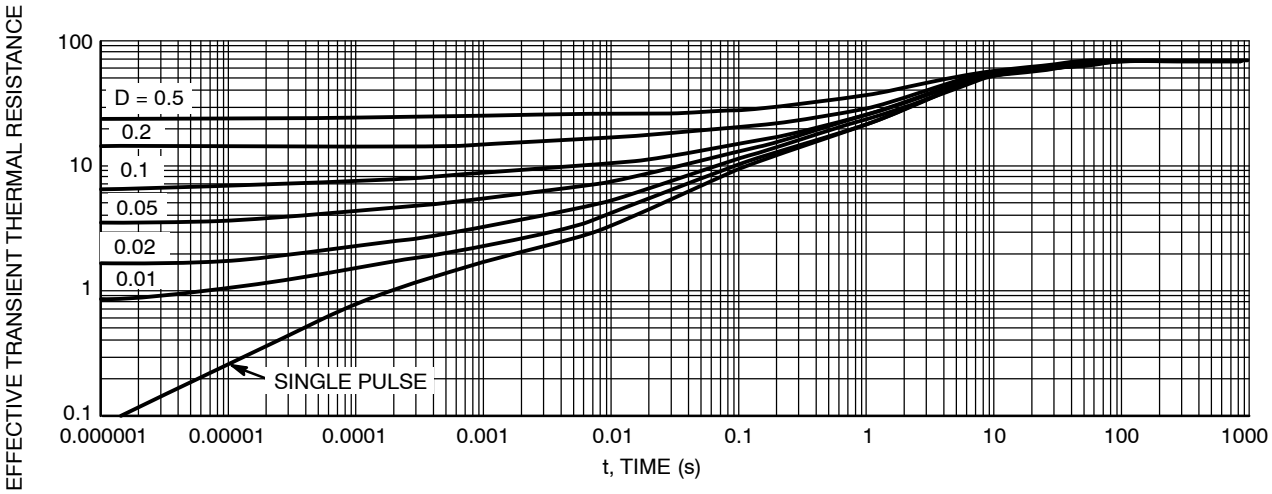


Figure 9. Thermal Response, 1 Inch Pad

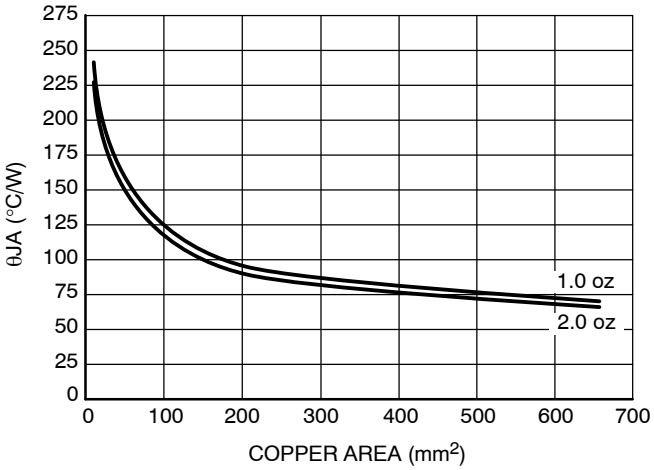


Figure 10. Thermal Resistance vs. Copper Area

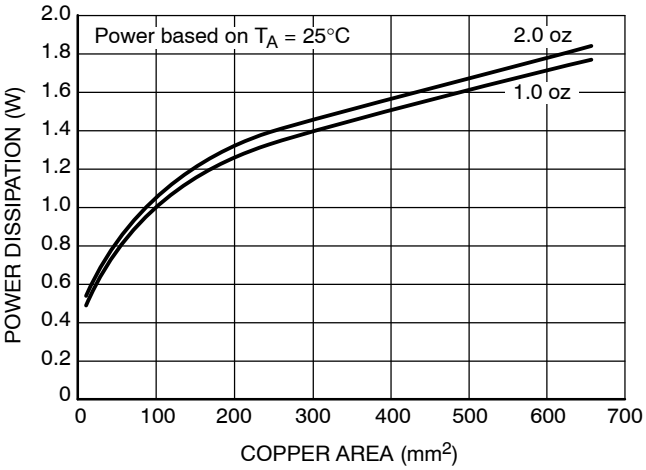
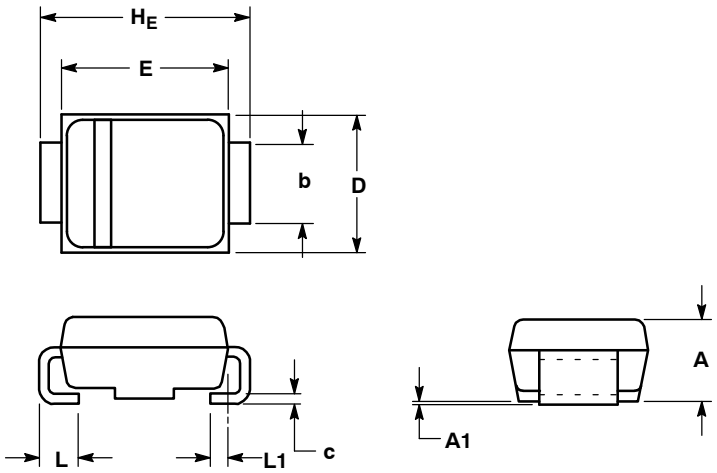


Figure 11. Power Dissipation vs. Copper Area

PACKAGE DIMENSIONS

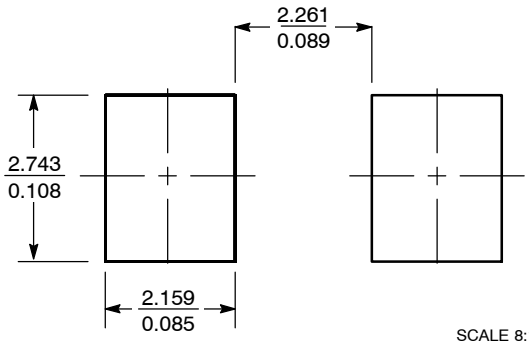
SMB
CASE 403A−03
ISSUE G



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

	MILLIMETERS			INCHES		
DIM	MIN	NOM	MAX	MIN	NOM	MAX
A	1.90	2.13	2.45	0.075	0.084	0.096
A1	0.05	0.10	0.20	0.002	0.004	0.008
b	1.96	2.03	2.20	0.077	0.080	0.087
c	0.15	0.23	0.31	0.006	0.009	0.012
D	3.30	3.56	3.95	0.130	0.140	0.156
E	4.06	4.32	4.60	0.160	0.170	0.181
H_E	5.21	5.44	5.60	0.205	0.214	0.220
L	0.76	1.02	1.60	0.030	0.040	0.063
L1	0.51 REF			0.020 REF		

SOLDERING FOOTPRINT*



SCALE 8:1 $\left(\frac{mm}{inches}\right)$

*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

LITERATURE FULFILLMENT:
Literature Distribution Center for ON Semiconductor
P.O. Box 5163, Denver, Colorado 80217 USA
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