

SURFACE MOUNT SCHOTTKY BARRIER RECTIFIER

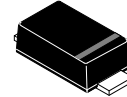
Features

- Guardring for Stress Protection
- Low Leakage
- 150°C Operating Junction Temperature
- Epoxy Meets UL 94 V-0 @ 0.125 in
- Package Designed for Optimal Automated Board Assembly
- ESD Rating:
 - ◆ Human Body Model = 3B
 - ◆ Machine Model = C
- NRVB Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP Capable
- These Devices are Pb-Free and are RoHS Compliant*

Mechanical Characteristics

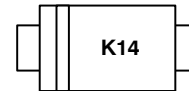
- Device Marking: L2E
- Polarity Designator: Cathode Band
- Weight: 11.7 mg (approximately)
- Case: Epoxy, Molded
- Finish: All External Surfaces Corrosion Resistant and Terminal Leads are Readily Solderable
- Lead and Mounting Surface Temperature for Soldering Purposes: 260°C Max. for 10 Seconds

SCHOTTKY BARRIER RECTIFIER 1.0 AMPERES 20 VOLTS



SOD-123FL
CASE 498

MARKING DIAGRAM



ORDERING INFORMATION

Device	Package	Shipping
MBR120ESFT1G	SOD-123FL (Pb-Free)	3,000/ Tape & Reel
NRVB120ESFT1G	SOD-123FL (Pb-Free)	3,000/ Tape & Reel
MBR120ESFT3G	SOD-123FL (Pb-Free)	3,000 / Tape & Reel
NRVB120ESFT3G	SOD-123FL (Pb-Free)	3,000 / Tape & Reel



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 , $T_L = 140^\circ\text{C}$)	I_O	1.0	A
Peak Repetitive Forward Current (At Rated V_R , Square Wave, 20 kHz, $T_L = 125^\circ\text{C}$)	I_{FRM}	2.0	A
Non-Repetitive Peak Surge Current (Non-Repetitive peak surge current, halfwave, single phase, 60 Hz)	I_{FSM}	40	A
Storage Temperature	T_{stg}	-65 to 150	$^\circ\text{C}$
Operating Junction Temperature	T_J	-65 to 150	$^\circ\text{C}$
Voltage Rate of Change (Rated V_R , $T_J = 25^\circ\text{C}$)	dv/dt	10,000	V/ μs

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.

THERMAL CHARACTERISTICS

Characteristic	Symbol	Value	Unit
Thermal Resistance – Junction-to-Lead (Note 1)	R_{tjl}	26	$^\circ\text{C}/\text{W}$
Thermal Resistance – Junction-to-Lead (Note 2)	R_{tjl}	21	
Thermal Resistance – Junction-to-Ambient (Note 1)	R_{tja}	325	
Thermal Resistance – Junction-to-Ambient (Note 2)	R_{tja}	82	

1. Mounted with minimum recommended pad size, PC Board FR4.
2. Mounted with 1 in. copper pad (Cu area 700 mm²).

ELECTRICAL CHARACTERISTICS

Characteristic	Symbol	Value		Unit
		$T_J = 25^\circ\text{C}$	$T_J = 100^\circ\text{C}$	
Maximum Instantaneous Forward Voltage (Note 3), See Figure 2 ($I_F = 0.1\text{ A}$) ($I_F = 1.0\text{ A}$) ($I_F = 2.0\text{ A}$)	V_F	0.455	0.360	V
		0.530	0.455	
		0.595	0.540	
Maximum Instantaneous Reverse Current (Note 3), See Figure 4 ($V_R = 20\text{ V}$) ($V_R = 10\text{ V}$) ($V_R = 5.0\text{ V}$)	I_R	10	1600	μA
		1.0	500	
		0.5	300	

3. Pulse Test: Pulse Width $\leq 250\ \mu\text{s}$, Duty Cycle $\leq 2\%$.

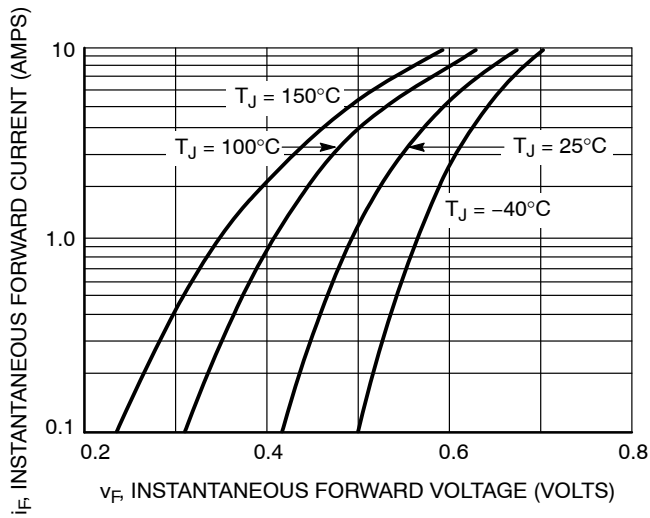


Figure 1. Typical Forward Voltage

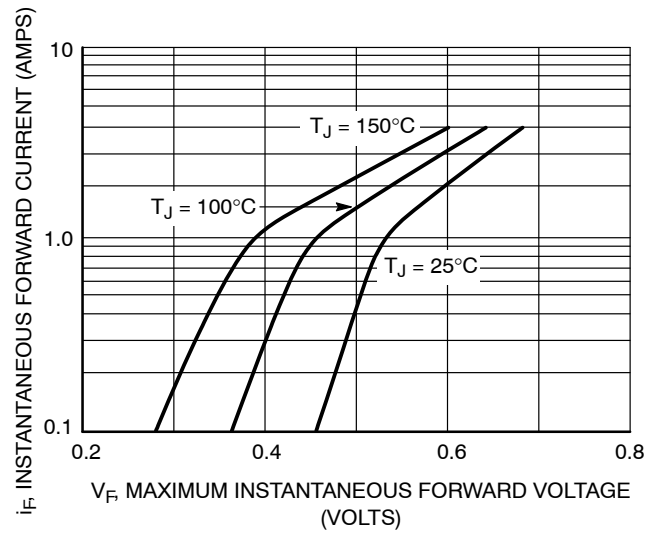


Figure 2. Maximum Forward Voltage

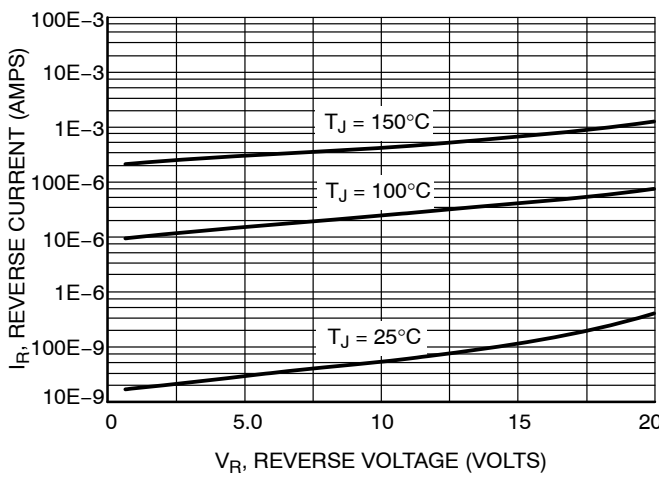


Figure 3. Typical Reverse Current

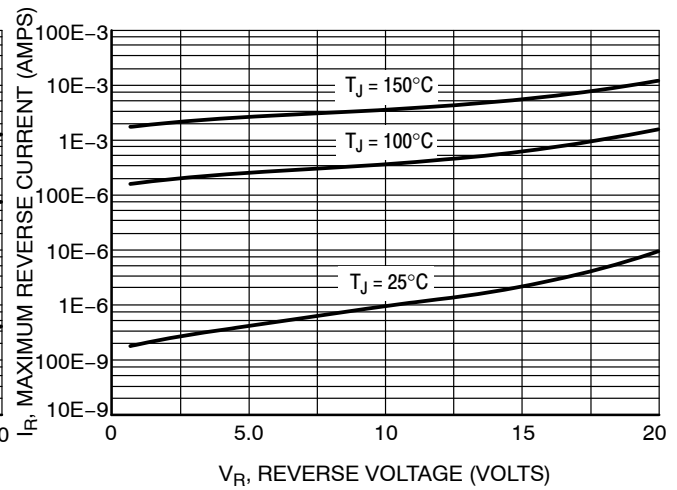


Figure 4. Maximum Reverse Current

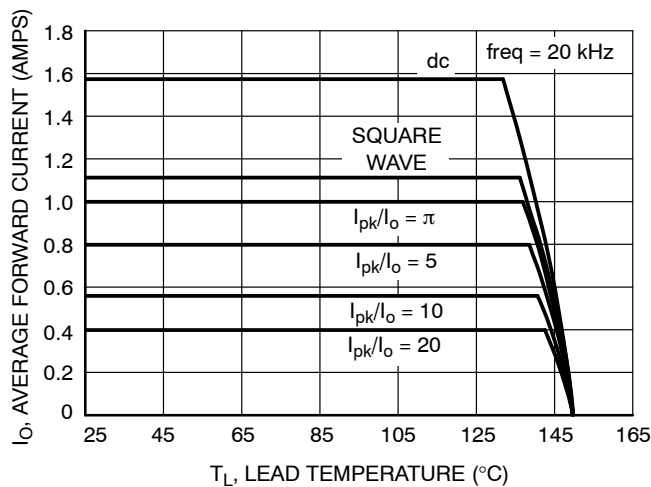


Figure 5. Current Derating

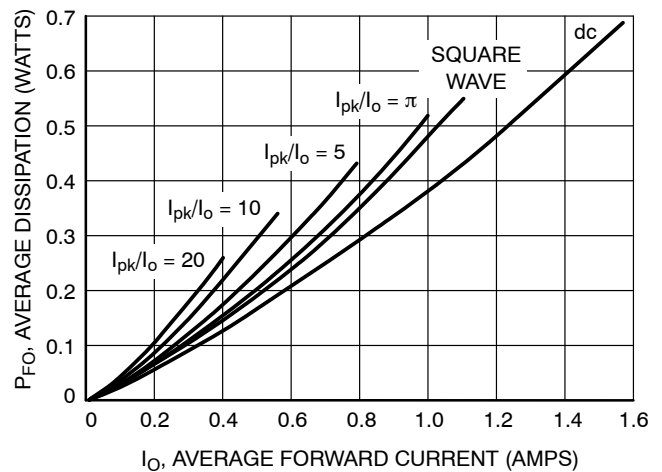


Figure 6. Forward Power Dissipation

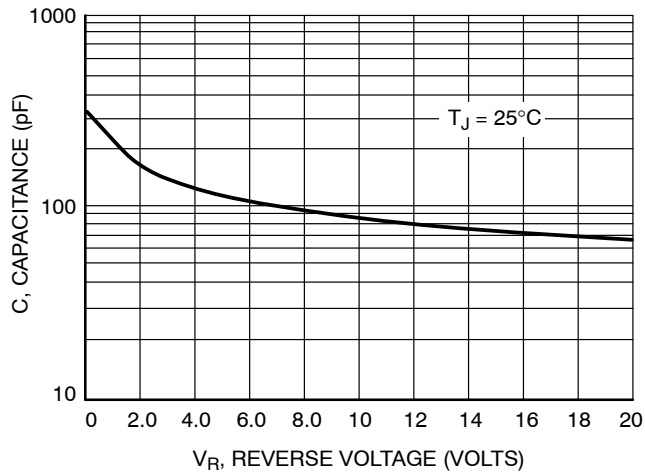


Figure 7. Capacitance

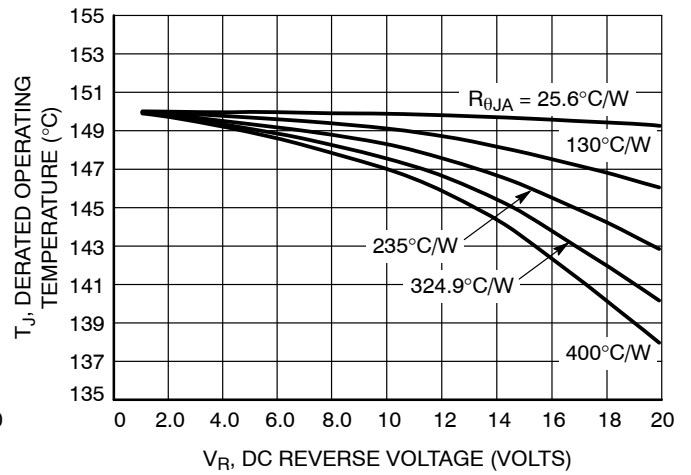


Figure 8. Typical Operating Temperature Derating*

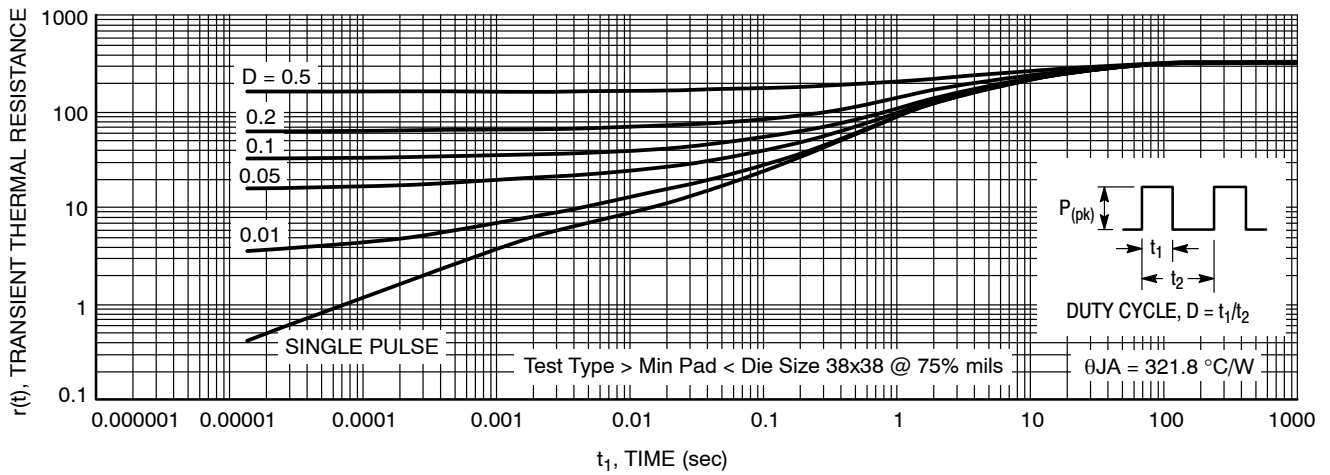
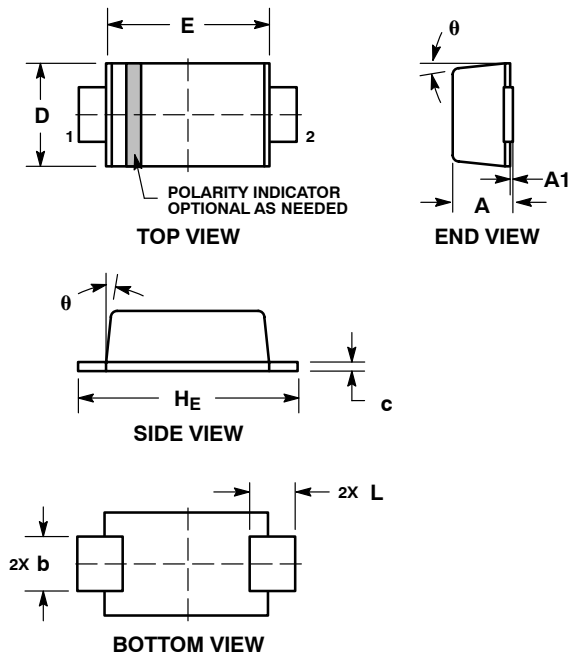


Figure 9. Thermal Response

PACKAGE DIMENSIONS

SOD-123FL
CASE 498
ISSUE D

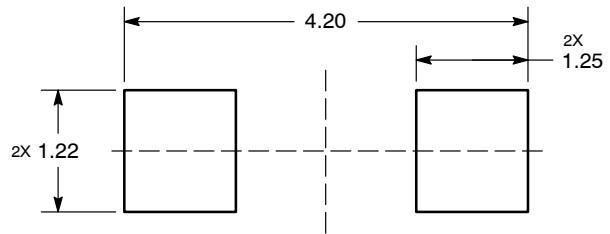


NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETER.
3. DIMENSIONS A AND B DO NOT INCLUDE MOLD FLASH.
4. DIMENSIONS D AND J ARE TO BE MEASURED ON FLAT SECTION OF THE LEAD: BETWEEN 0.10 AND 0.25 MM FROM THE LEAD TIP.

DIM	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.90	0.95	0.98	0.035	0.037	0.039
A1	0.00	0.05	0.10	0.000	0.002	0.004
b	0.70	0.90	1.10	0.028	0.035	0.043
c	0.10	0.15	0.20	0.004	0.006	0.008
D	1.50	1.65	1.80	0.059	0.065	0.071
E	2.50	2.70	2.90	0.098	0.106	0.114
L	0.55	0.75	0.95	0.022	0.030	0.037
HE	3.40	3.60	3.80	0.134	0.142	0.150
θ	0°	-	8°	0°	-	8°

**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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