1.0A SURFACE MOUNT SCHOTTKY BARRIER RECTIFIER

Product Summary (@ T_A = +25°C)

V_{RRM} (V)	I_O (A)	$V_{F(MAX)}$ (mV)	$I_{R(MAX)}$ (µA)
40	1.0	450	50

Description and Applications

The device is a single rectifier offering low V_F and excellent high temperature stability. This device is ideal for use in general rectification applications:

- For Use in Low Voltage, High Frequency Inverters
- Free Wheeling
- Polarity Protection Application

Features and Benefits

- High Surge Capability
- Low Power Loss, High Efficiency
- High Current Capability and Low Forward Voltage Drop
- Guard Ring Die Construction for Transient Protection
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **For automotive applications requiring specific change control (i.e. parts qualified to AEC-Q100/101/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please contact us or your local Diodes representative. https://www.diodes.com/quality/product-definitions/**
- **An Automotive-Compliant Part is Available Under Separate Datasheet (1N5819HWQ)**

Mechanical Data

- Case: SOD123
- Plastic Material: Molded Plastic. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Polarity: Cathode Band
- Leads: Matte Tin Finish Annealed over Alloy 42 Leadframe (Lead Free Plating) Solderable per MIL-STD-202, Method 208 e3
- Weight: 0.01 grams (Approximate)

Device Schematic

Top View

Ordering Information (Note 4)

Part Number	Case	Packaging
1N5819HW-7-F	SOD123	3000/Tape & Reel

Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
2. See https://www.diodes.com/quality/lead-free/ for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
3. Halogen and Antimony free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
4. For packaging details, go to our website at https://www.diodes.com/design/support/packaging/diodes-packaging/.

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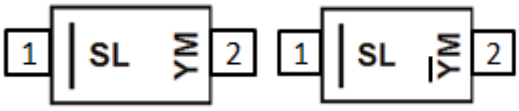
Marking Information



SL = Product Type Marking Code
YM & $\overline{Y}$M = Date Code Marking
Y & $\overline{Y}$ = Year (ex: H = 2020)
M = Month (ex: 9 = September)

Date Code Key

Year	2003	…	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Code	P	…	H	I	J	K	L	M	N	O	P	R

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	O	N	D

Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

Single phase, half wave, 60Hz, resistive or inductive load.
For capacitive load, derate current by 20%.

Characteristic	Symbol	Value	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage @ I_R = 1.0mA DC Blocking Voltage	V_{RRM} V_{RWM} V_R	40	V
Average Rectified Output Current	I_O	1.0	A
Repetitive Peak Forward Current $t_p \leq$ 1ms, $\delta \leq$ 0.5	I_{FRM}	1.5	A
Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load	I_{FSM}	25	A

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	P_D	450	mW
Typical Thermal Resistance Junction to Ambient (Note 5)	$R_{\theta JA}$	222	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-65 to +125	°C

Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Breakdown Voltage (Note 6)	$V_{(BR)R}$	40	—	—	V	I_R = 1.0mA
Forward Voltage	V_F	— — —	— — —	0.320 0.450 0.750	V	I_F = 0.1A I_F = 1.0A I_F = 3.0A
Reverse Leakage Current (Note 6)	I_R	— — — — — —	— — 10 1 15 1.5	1.0 10 50 2 75 3	mA mA µA mA µA mA	V_R = 40V, T_A = +25°C V_R = 40V, T_A = +100°C V_R = 4V, T_A = +25°C V_R = 4V, T_A = +100°C V_R = 6V, T_A = +25°C V_R = 6V, T_A = +100°C
Total Capacitance	C_T	—	50	60	pF	V_R = 4V, f = 1.0MHz

Notes: 5. Device mounted on FR-4 PC Board, 2"x2", 2 oz. copper, single sided, cathode pad dimensions 0.75"x1.0", anode pad dimensions 0.25"x1.0".
6. Short duration pulse test used to minimize self-heating effect.

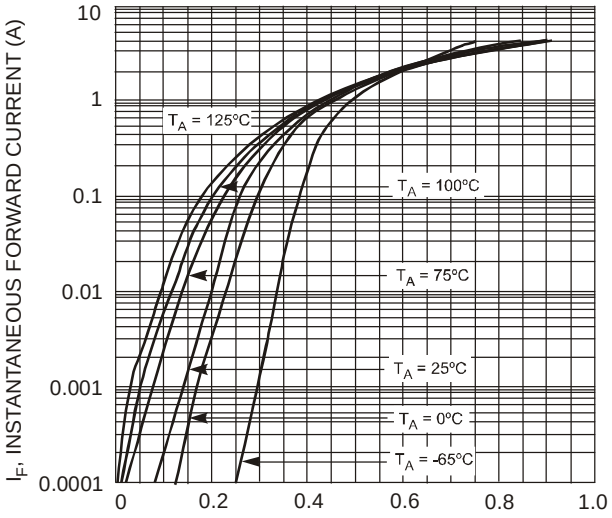


Fig. 1 Typical Forward Characteristics

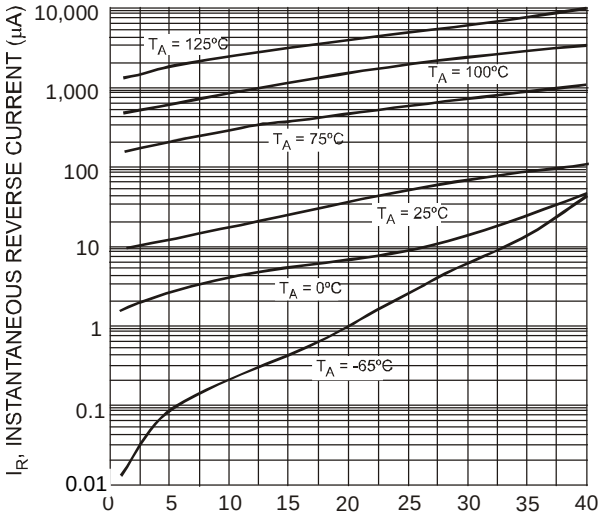


Fig. 2 Typical Reverse Characteristics

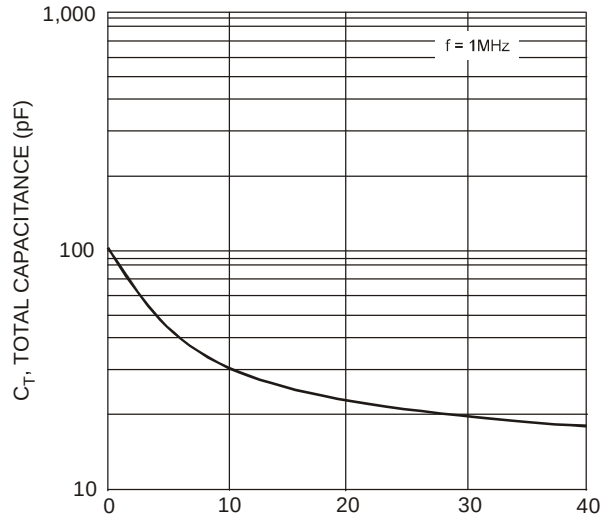


Fig. 3 Total Capacitance vs. Reverse Voltage

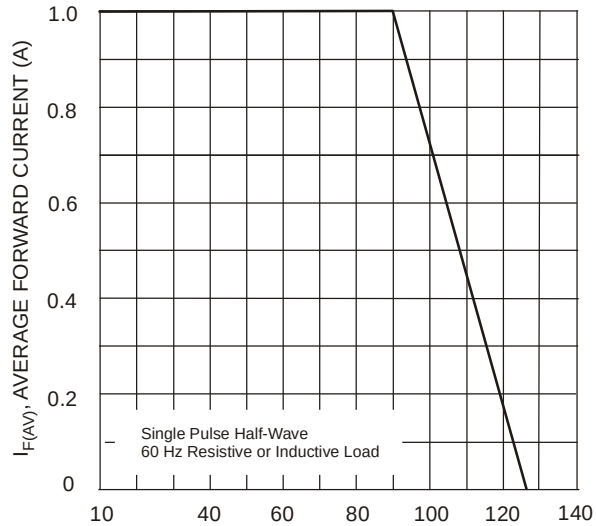


Fig. 4 Forward Current Derating Curve

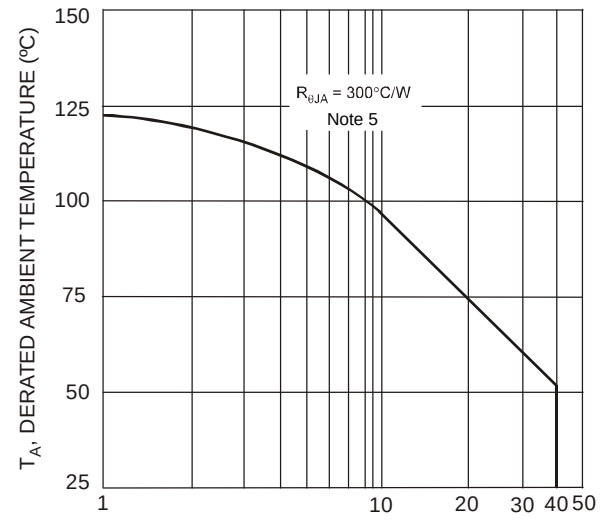


Fig. 5 Operating Temperature Derating

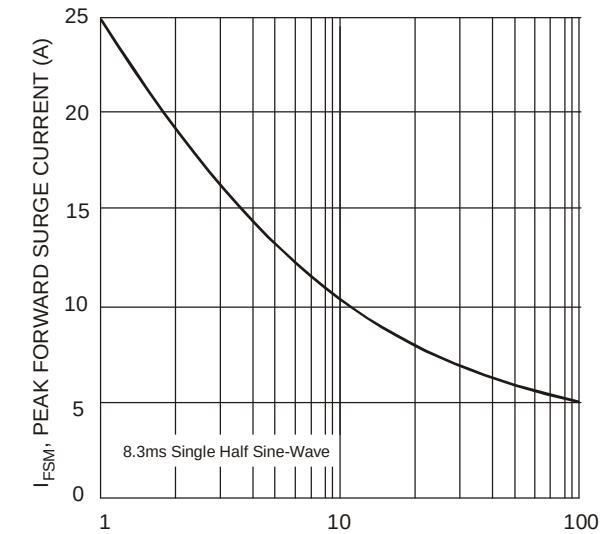
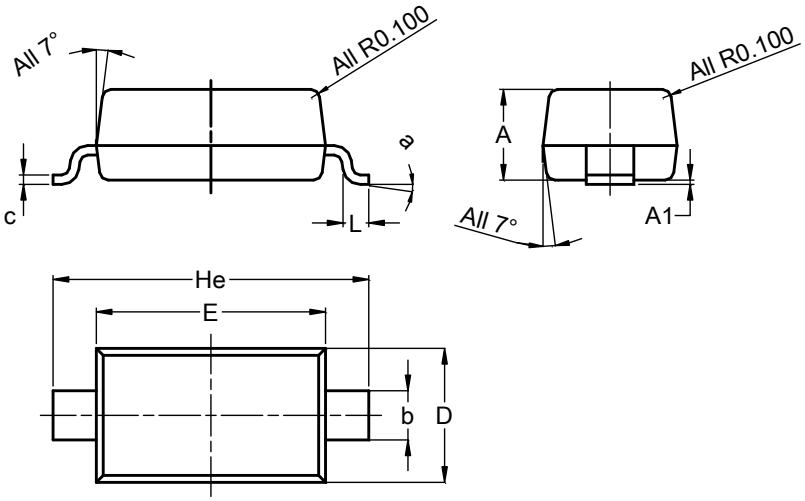


Fig. 6 Maximum Non-Repetitive Peak Forward Surge Current

Package Outline Dimensions

Please see http://www.diodes.com/package-outlines.html for the latest version.

SOD123

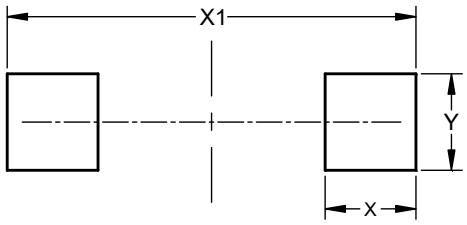


SOD123			
Dim	**Min**	**Max**	**Typ**
A	1.00	1.35	1.05
A1	0.00	0.10	0.05
b	0.52	0.62	0.57
c	0.10	0.15	0.11
D	1.40	1.70	1.55
E	2.55	2.85	2.65
He	3.55	3.85	3.65
L	0.25	0.40	0.30
a	0º	8º	--
All Dimensions in mm			

Suggested Pad Layout

Please see http://www.diodes.com/package-outlines.html for the latest version.

SOD123



Dimensions	Value (in mm)
X	0.900
X1	4.050
Y	0.950

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