

Product Summary (@ TA = +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



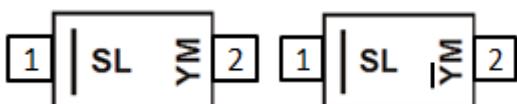
Top View

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/>.

Marking Information

SL = Product Type Marking Code
 YM & YM = Date Code Marking
 Y & 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 (@ $T_A = +25^\circ\text{C}$, 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 DC Blocking Voltage @ $I_R = 1.0\text{mA}$	V_{RRM} V_{RWM} V_R	40	V
Average Rectified Output Current	I_O	1.0	A
Repetitive Peak Forward Current $t_p \leq 1\text{ms}, \delta \leq 0.5$	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

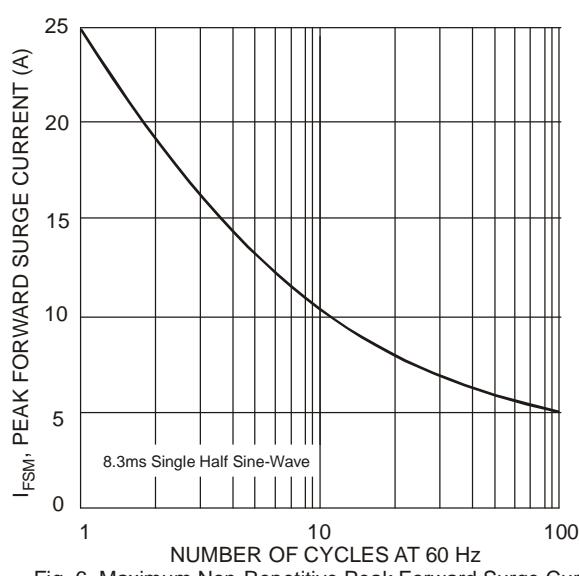
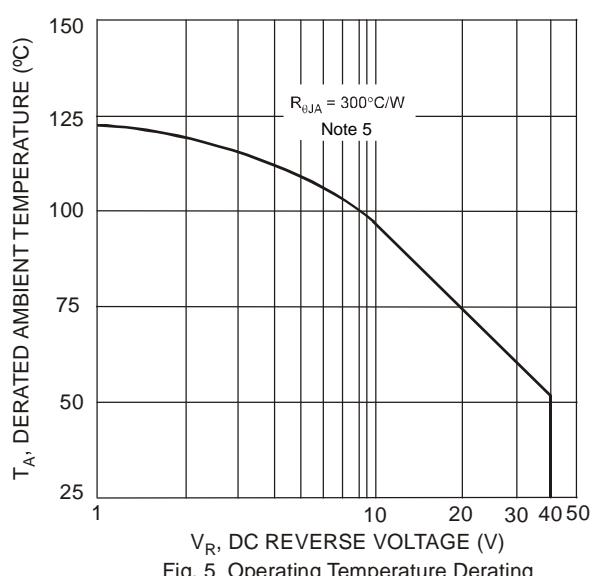
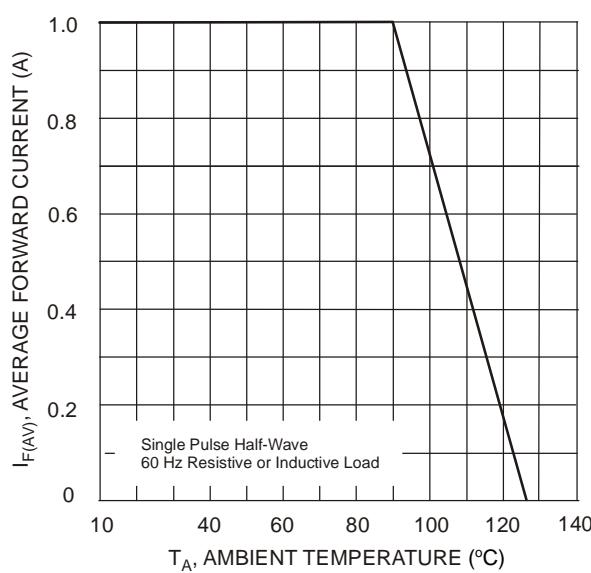
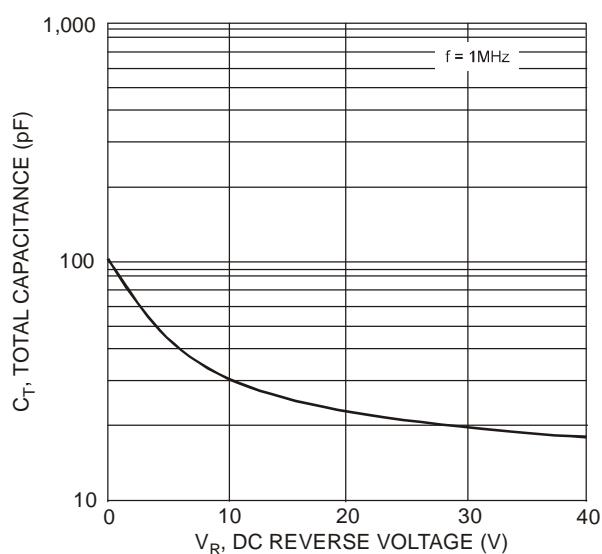
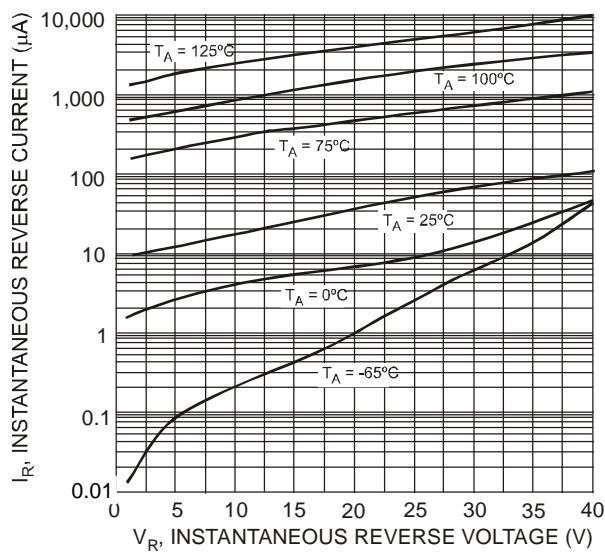
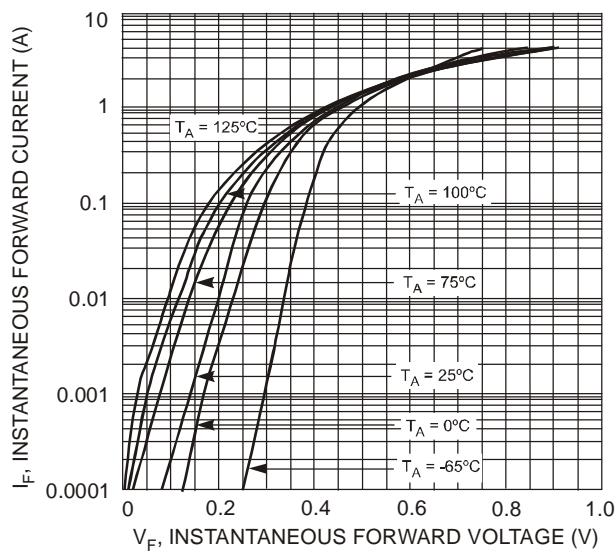
Thermal Characteristics

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 (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

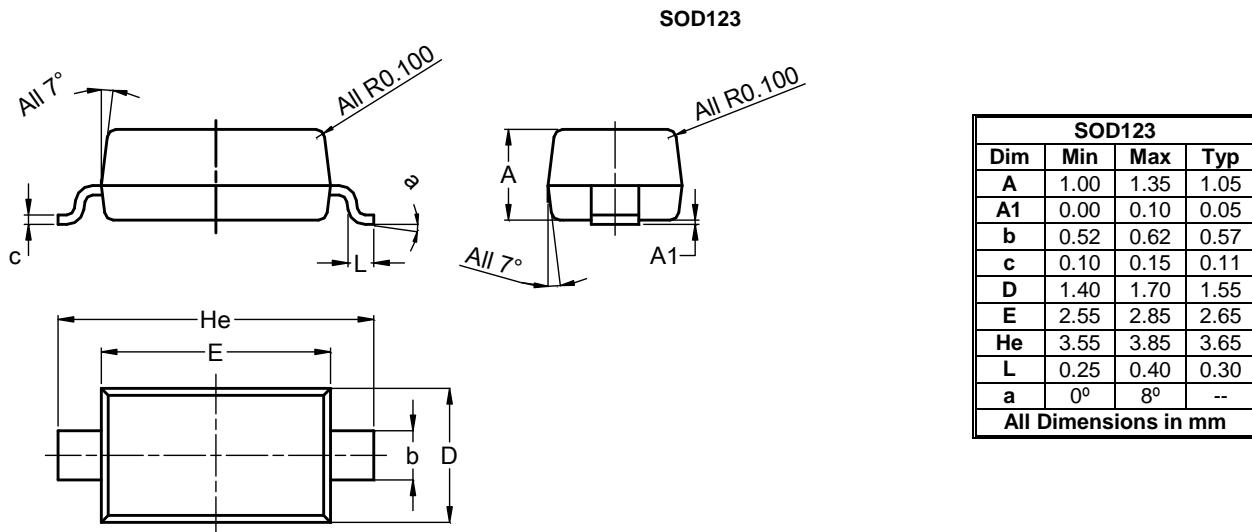
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Breakdown Voltage (Note 6)	$V_{(BR)R}$	40	—	—	V	$I_R = 1.0\text{mA}$
Forward Voltage	V_F	—	—	0.320	V	$I_F = 0.1\text{A}$
		—	—	0.450		$I_F = 1.0\text{A}$
		—	—	0.750		$I_F = 3.0\text{A}$
Reverse Leakage Current (Note 6)	I_R	—	—	1.0	mA	$V_R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

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.



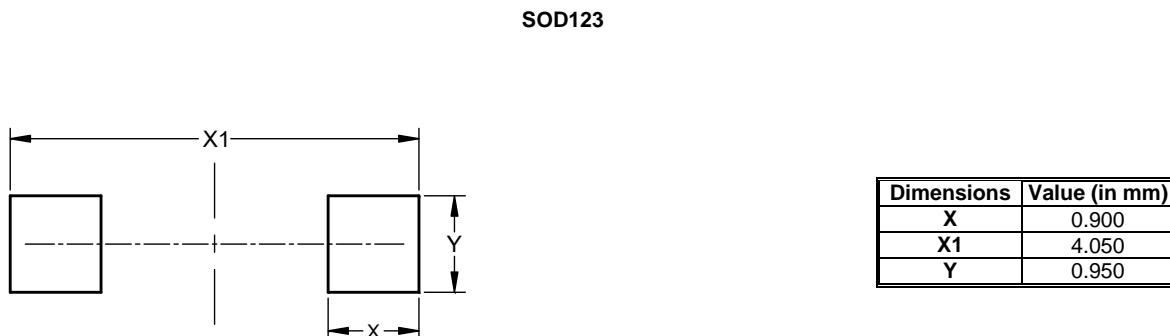
Package Outline Dimensions

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



Suggested Pad Layout

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