

Product Summary

V_{RRM} (V)	I_o (A)	V_F Max (V) @ +25°C	I_R Max (mA) @ +25°C
60	2	0.51	0.15

Description and Applications

The SBR2U60S1FQ is a single rectifier packaged in SOD123F. Offering ultra-low V_F , low power loss, and high efficiency, this device is ideal for use in general rectification and applications as a:

- DC-DC Conversion
- AC-DC Rectification
- Reverse Polarity Protection
- SMPS

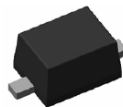
Features and Benefits

- Optimized for Ultra-Low Forward Voltage Drop
- +175°C Operation Junction Temperature
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**
- **PPAP Capable (Note 4)**

Mechanical Data

- Case: SOD123F
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Matte Tin Finish Annealed over Copper Leadframe. Solderable per MIL-STD-202, Method 208 (63)
- Polarity: Cathode Band
- Weight: 0.015 grams (Approximate)

SOD123F



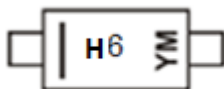
Top View

Ordering Information (Note 5)

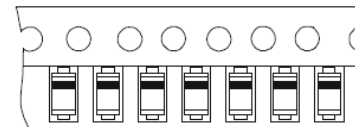
Part Number	Case	Packaging
SBR2U60S1FQ-7	SOD123F	3000/Tape & Reel

- Notes:
1. EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant. All applicable RoHS exemptions applied.
 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. Automotive products are AEC-Q101 qualified and are PPAP capable. Please refer to <https://www.diodes.com/quality/>.
 5. For packaging details, go to our website at <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

Marking Information



H6 = Product Type Marking Code
 YM = Date Code Marking
 Y = Year (ex: F = 2018)
 M = Month (ex: 9 = September)
 Bar Denotes Cathode Pin



Date Code Key

Year	2013	2014	2015	2016	2017	2018	2019	2020
Code	A	B	C	D	E	F	G	H

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	V _{RRM}	60	V
Working Peak Reverse Voltage	V _{RWM}		
DC Blocking Voltage	V _{RM}		
Average Rectified Output Current	I _O	2	A
Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load	I _{FSM}	35	A
Power Dissipation	P _{tot}	1.3	W

Characteristic	Symbol	Ratings	Unit
Human Body Mode ESD Protection	ESD HBM	4000	V
Machine Model ESD Protection	ESD MM	400	V
Charged Device Model	ESD CDM	1	kV

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Typical Thermal Resistance Junction to Ambient (Note 6)	R _{θJA}	115	°C/W
Typical Thermal Resistance Junction to Case (Note 6)	R _{θJC}	40	
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to +175	°C

Notes: 6. Device mounted on FR-4 substrate, 0.4" x 0.5", 2oz, single-sided, PC boards with 0.2" x 0.25" copper pad.
7. T_J = 175°C for operation when reverse dissipation does not lead to reverse leakage runaway. See Figure 4.

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Breakdown Voltage (Note 8)	V _{(BR)R}	60	—	—	V	I _R = 1.0mA
Forward Voltage Drop (Note 8)	V _F	—	0.25	—	V	I _F = 0.1A, T _J = +25°C
		—	0.32	—		I _F = 0.5A, T _J = +25°C
		—	0.37	0.46		I _F = 1A, T _J = +25°C
		—	0.44	0.51		I _F = 2A, T _J = +25°C
		—	0.42	—		I _F = 2A, T _J = +125°C
Leakage Current (Note 8)	I _R	—	15	—	μA	V _R = 10V, T _J = +25°C
		—	50	150	μA	V _R = 60V, T _J = +25°C
		—	11	25	mA	V _R = 60V, T _J = +125°C
Total Capacitance	C _T	—	125	—	pF	V _R = 4V, f = 1MHz
		—	75	—		V _R = 10V, f = 1MHz
		—	35	—		V _R = 60V, f = 1MHz

Notes: 8. Short duration pulse test used to minimize self-heating effect.

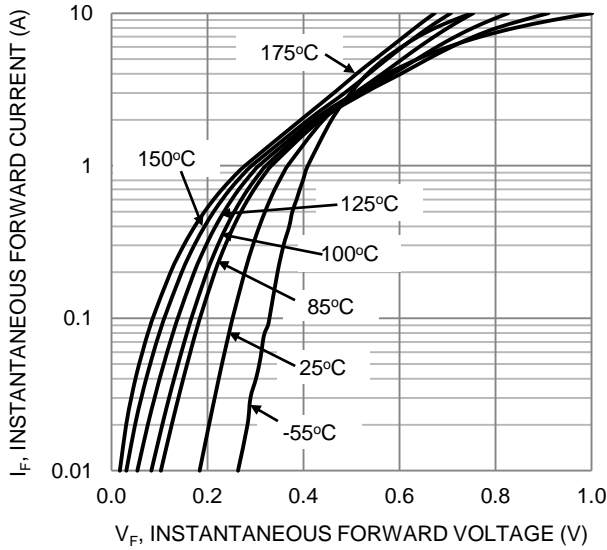


Figure 1. Typical Forward Characteristics

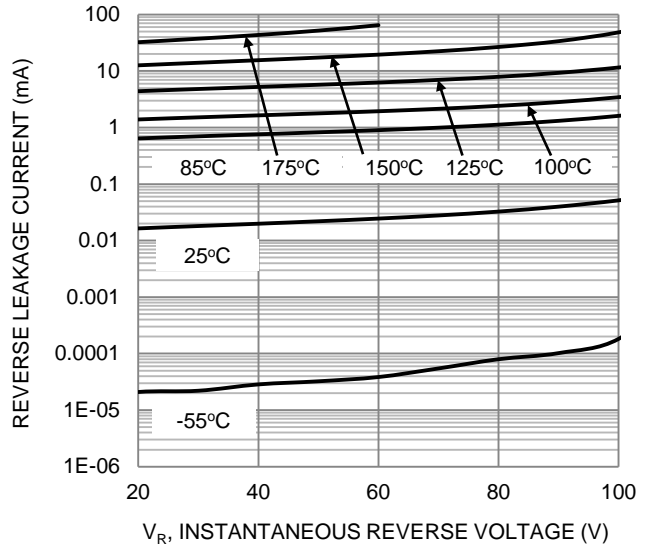


Figure 2. Typical Reverse Characteristics

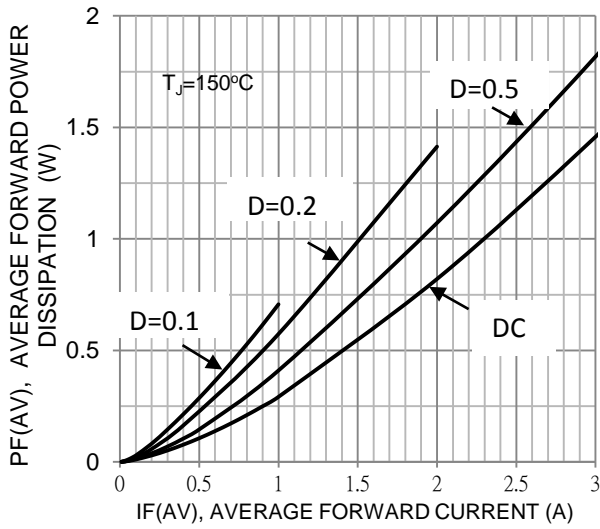


Figure 3 Forward Power Dissipation

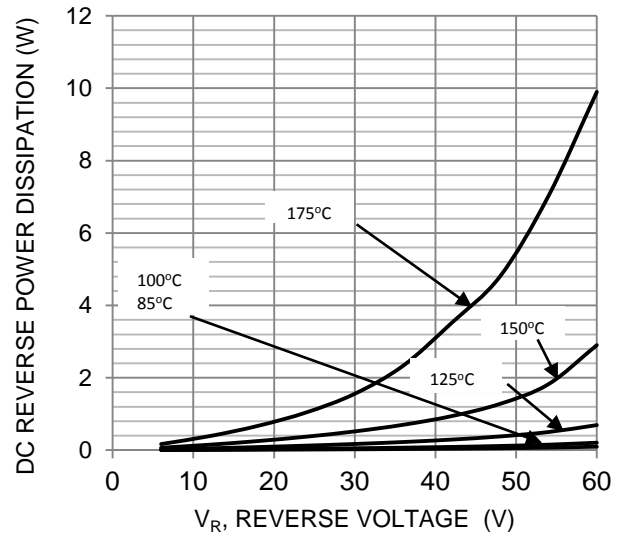


Figure 4 DC Reverse Power Dissipation

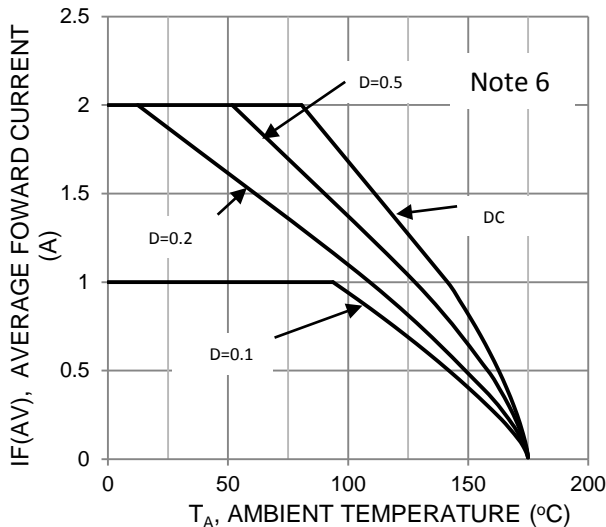


Figure 5 Forward Current Derating

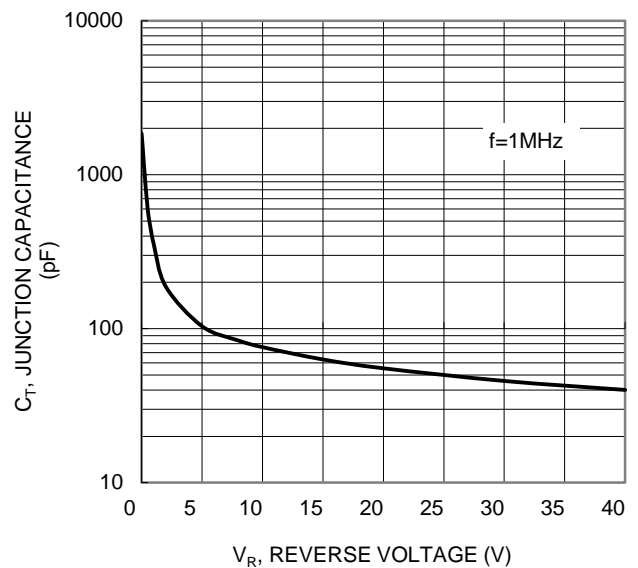


Figure 6. Typical Junction Capacitance

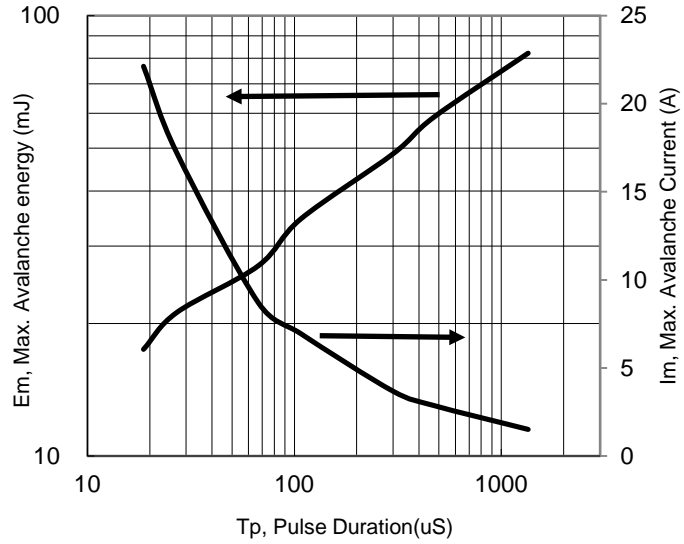


Figure 7: Single pulse Max. Avalanche Energy and Current

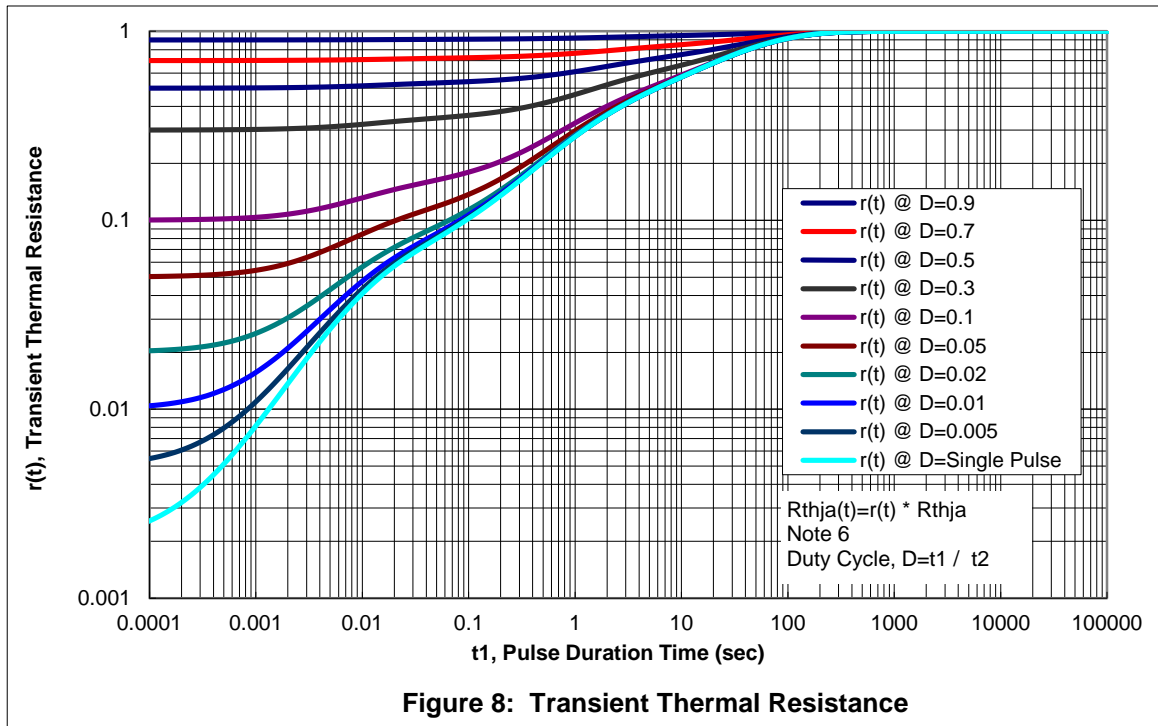
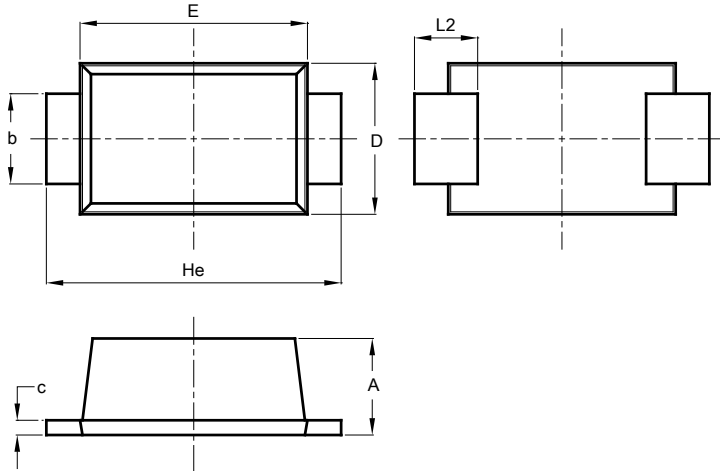


Figure 8: Transient Thermal Resistance

Package Outline Dimensions

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

SOD123F

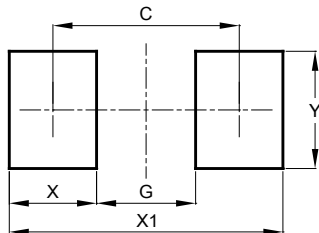


SOD123F			
Dim	Min	Max	Typ
A	0.81	1.15	—
b	0.80	1.05	—
c	0.05	0.30	—
D	1.70	1.90	1.80
E	2.60	2.80	2.70
He	3.30	3.70	3.50
L2	0.35	0.85	—
All Dimensions in mm			

Suggested Pad Layout

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

SOD123F



Dimensions	Value (in mm)
C	2.86
G	1.52
X	1.34
X1	4.20
Y	1.80

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