



US1GWF

1.0A SURFACE MOUNT ULTRA-FAST RECTIFIER

Product Summary (@ TA = +25°C)

V _{RRM} (V)	I _O (A)	V _F Max (V)	I _R Max (μA)
400	1	1.25	1

Description

The US1GWF is a rectifier packaged in the SOD123F (Standard) package and is suited as a boost diode in power factor correction circuitry. For use in secondary rectification and freewheeling for ultrafast switching speed AC-AC and DC-DC converters in high-temperature conditions for consumer applications.

Applications

- Flat Panel Display
- Switching Power Supplies/Chargers
- LED Lighting
- Freewheeling Diode

Features and Benefits

- Low Profile, Small Form Factor Package
- Very Low Leakage Current
- Glass Passivate Die Construction
- Enhanced Ultrafast Recovery Times for High Efficiency
- Low Forward Voltage, Low Power Loss
- Lead-Free Finish & RoHS Compliant (Notes 1 & 2)
- Halogen and Antimony Free. "Green" Device (Note 3)
- Qualified to AEC-Q101 Standards for High Reliability

Mechanical Data

- Case: SOD123F (Standard)
- 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 ³
- Polarity: Cathode Band
- Weight: 0.016 grams (Approximate)

SOD123F (Standard)



Top View



Schematic View

Ordering Information (Note 4)

Part Number	Qualification	Case	Packaging
US1GWF-7	AEC-Q101	SOD123F (Standard)	3,000/Tape & Reel

Notes:

- 1. EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant. All applicable RoHS exemptions applied.
- 2. See http://www.diodes.com/quality/lead_free.html 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

SOD123F (Standard)



U4 = Product Type Marking Code YM = Date Code Marking Y = Year (ex: E = 2017) M = Month (ex: 9 = September)

Date Code Key

Γ	Year	2	2015	2016	201	7	2018	201	9	2020	2021		2022
I	Code		С	D	Е		F	G		Н			J
Γ	Month	Jan	Feb	Mar	Apr	Mav	Jun	Jul	Aua	Sep	Oct	No	v Dec



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 DC Blocking Voltage	V _{RRM} V _R WM V _R	400	V
Average Rectified Output Current	lo	1	Α
Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load	I _{FSM}	30	А

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Typical Thermal Resistance Junction to Case (Note 6)	$R_{ heta JC}$	63	°C/W
Typical Thermal Resistance Junction to Ambient (Note 5)	$R_{\theta JA}$	118	°C/W
Typical Thermal Resistance Junction to Ambient (Note 6)	R _{0JA}	95	°C/W
Operating and Storage Temperature Range	T_J , T_{STG}	-55 to +150	°C

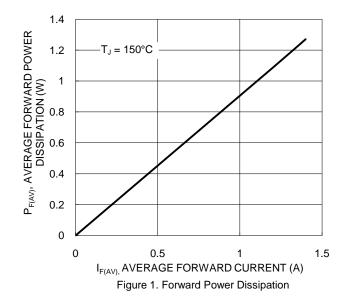
Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

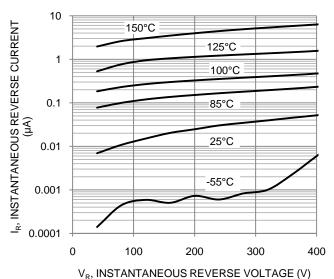
Characteristic	Symbol	Min	Тур	Max	Unit	Test Condition
Reverse Breakdown Voltage (Note 7)	$V_{(BR)R}$	400	_	_	V	$I_R = 10\mu A$
Forward Voltage	V _F	_	1.1 0.9	1.25 —	V	I _F = 1A, T _J = +25°C I _F = 1A, T _J = +125°C
Reverse Leakage Current (Note 7)	I _R	_	0.1 2	1 10	μA	V _R = 400V, T _J = +25°C V _R = 400V, T _J = +100°C
Reverse Recovery Time	t _{RR}	_	28	35	ns	$I_F = 0.5A$, $I_R = 1.0A$, $I_{RR} = 0.25A$
Typical Total Capacitance	C _T	_	9	_	pF	$V_R = 4V$, $f=1MHz$

Notes:

- 5. Device mounted on FR-4 substrate, 1"*1", 2oz, single-sided, PC boards with 0.1"*0.15" copper pad. 6. Device mounted on FR-4 substrate, 0.4"*0.5", 2oz, single-sided, PC boards with 0.2"*0.25" copper pad.
- 7. Short duration pulse test used to minimize self-heating effect.







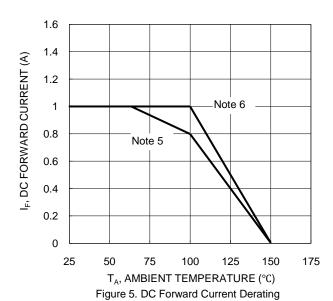
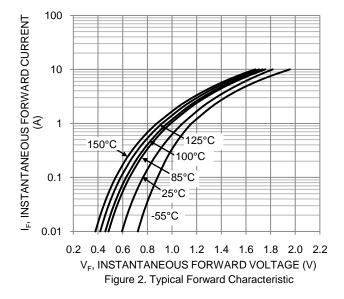


Figure 3. Typical Reverse Characteristic



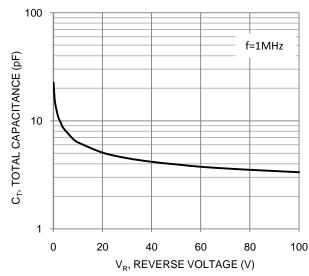


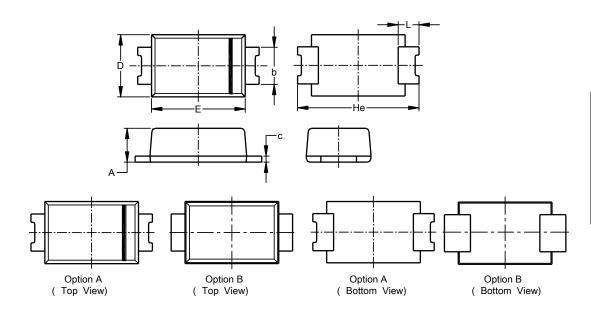
Figure 4. Total Capacitance vs. Reverse Voltage



Package Outline Dimensions

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

SOD123F (Standard)

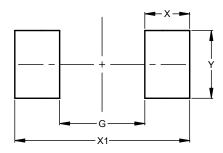


SOD123F (Standard)							
Dim	Min	Max	Тур				
Α	0.81	1.15	-				
b	0.80	1.35	-				
C	0.05	0.30	-				
ם	1.70	1.90	1.80				
Е	2.60	2.80	2.70				
He	3.30	3.70	3.50				
J	0.35	0.85	-				
All Dimensions in mm							

Suggested Pad Layout

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

SOD123F (Standard)



Dimensions	Value (in mm)
G	1.90
Х	1.00
X1	3.90
Y	1.50



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