

**Product Summary** (@ T<sub>A</sub> = +25°C)

V <sub>RRM</sub> (V)	I <sub>O</sub> (A)	V <sub>F</sub> Max (V)	I <sub>R</sub> Max (μA)
200	1	0.95	5

**Description**

The US1DWFQ is a rectifier packaged in the SOD123F package and is suited as a boost diode in power factor correction circuitry. For use in secondary rectification and freewheeling for ultra-fast 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
- Automotive

**Features and Benefits**

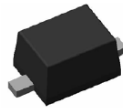
- Low Profile, Small Form Factor Package
- Low Leakage Current
- Glass Passivated Die Construction
- Enhanced Ultrafast Recovery Times for High Efficiency
- Low Forward Voltage, Low Power Loss
- **Lead-Free Finish & RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**
- **PPAP Capable (Note 4)**

**Mechanical Data**

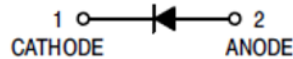
- Case: SOD123F
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Matte Tin Finish Annealed over Copper Leadframe. Solderable per MIL-STD-202, Method 208 (E3)
- Polarity: Cathode Band
- Weight: 0.016 grams (Approximate)

NEW PRODUCT

SOD123F



Top View



Schematic View

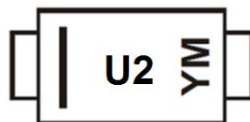
**Ordering Information** (Note 5)

Part Number	Qualification	Case	Packaging
US1DWFQ-7	Automotive	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. Refer to <https://www.diodes.com/quality/>.
  5. For packaging details, go to our website at <http://www.diodes.com/products/packages.html>.

**Marking Information**

SOD123F



U2 = Product Type Marking Code  
 YM = Date Code Marking  
 Y = Year (ex: G = 2019)  
 M = Month (ex: 9 = September)

## Date Code Key

Year	2015	2016	2017	2018	2019	2020	2021	2022
Code	C	D	E	F	G	H	I	J

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<sub>A</sub> = +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 <sub>RRM</sub>	200	V
Working Peak Reverse Voltage	V <sub>RWM</sub>		
DC Blocking Voltage	V <sub>R</sub>		
Average Rectified Output Current	I <sub>O</sub>	1	A
Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load	I <sub>FSM</sub>	30	A

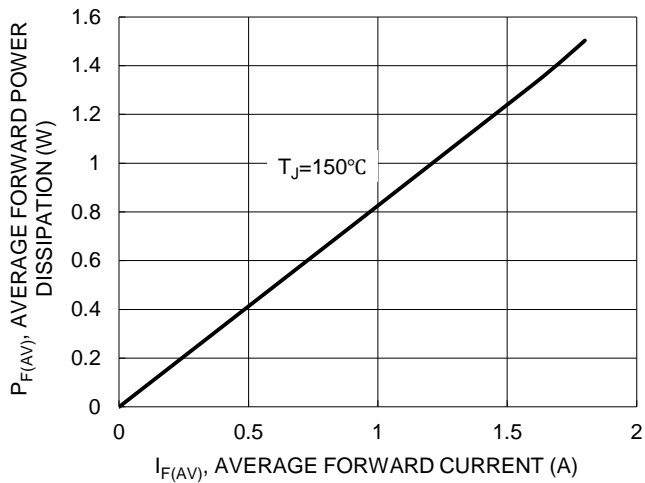
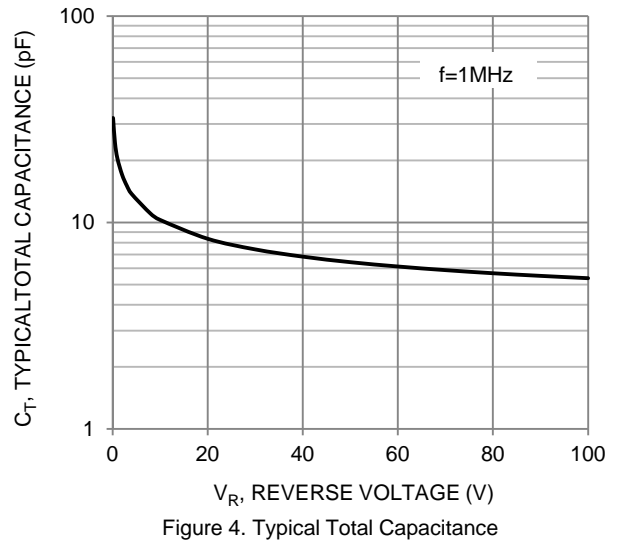
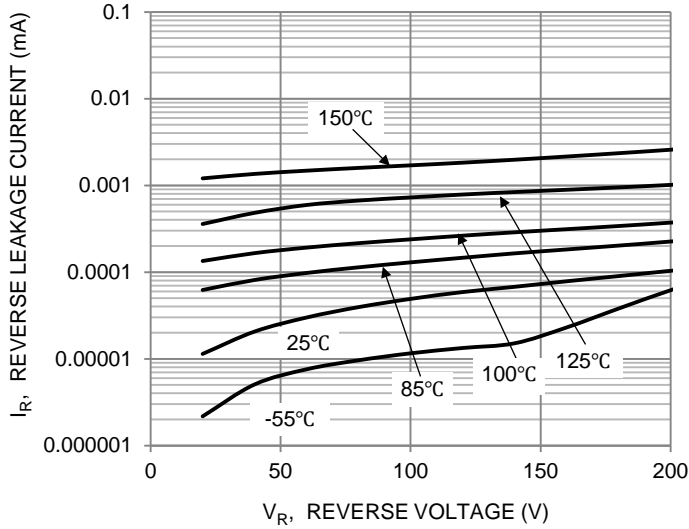
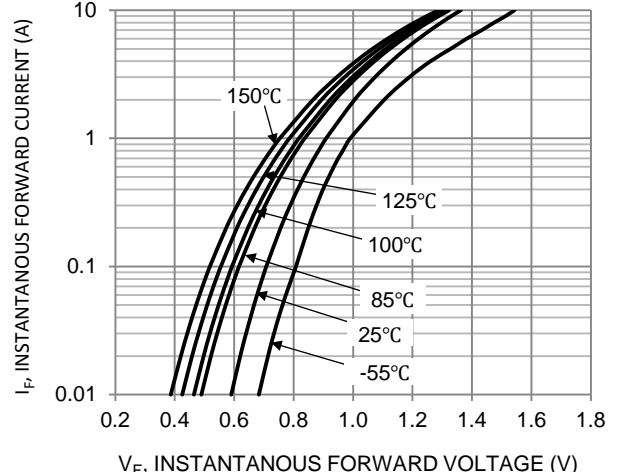
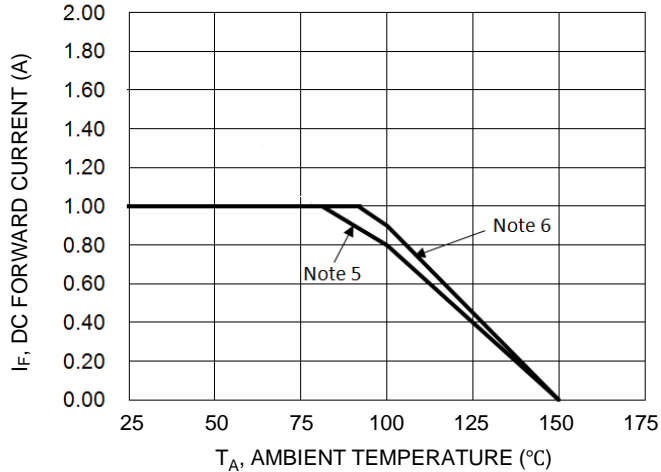
### Thermal Characteristics

Characteristic	Symbol	Value	Unit
Typical Thermal Resistance Junction to Case	R <sub>θJC</sub>	34	°C/W
Typical Thermal Resistance Junction to Ambient (Note 6)	R <sub>θJA</sub>	96	°C/W
Typical Thermal Resistance Junction to Ambient (Note 7)	R <sub>θJA</sub>	87	°C/W
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +150	°C

### Electrical Characteristics (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Breakdown Voltage (Note 8)	V <sub>(BR)R</sub>	200	—	—	V	I <sub>R</sub> = 10μA
Forward Voltage	V <sub>F</sub>	—	0.9 0.8	0.95 —	V	I <sub>F</sub> = 1A, T <sub>J</sub> = +25°C I <sub>F</sub> = 1A, T <sub>J</sub> = +125°C
Reverse Leakage Current (Note 8)	I <sub>R</sub>	—	0.1 1.0	5 100	μA	V <sub>R</sub> = 200V, T <sub>J</sub> = +25°C V <sub>R</sub> = 200V, T <sub>J</sub> = +125°C
Reverse Recovery Time	t <sub>RR</sub>	—	30	35	ns	I <sub>F</sub> = 0.5A, I <sub>R</sub> = 1.0A, I <sub>RR</sub> = 0.25A
Typical Total Capacitance	C <sub>T</sub>	—	14	—	pF	V <sub>R</sub> = 4V, f=1MHz

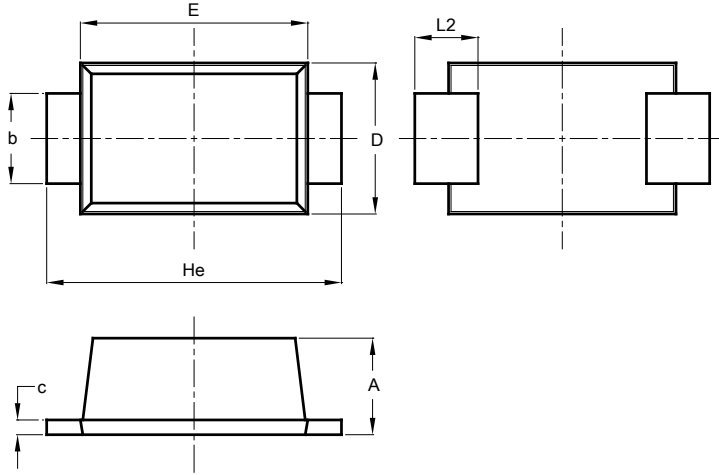
- Notes:
6. Device mounted on FR-4 substrate, 25.4mm x 25.4mm, 2oz, single-sided, PC boards with 2.1mm x 2.1mm copper pad.
  7. Device mounted on FR-4 substrate, 0.4" x 0.5", 2oz, single-sided, PC boards with 0.2" x 0.25" copper pad.
  8. Short duration pulse test used to minimize self-heating effect.



## Package Outline Dimensions

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

SOD123F

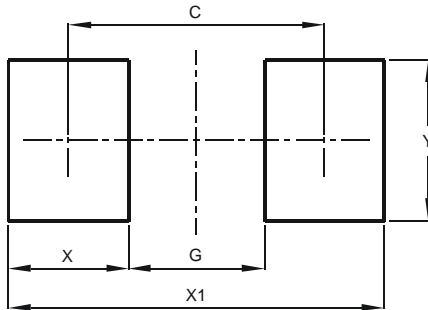


SOD123F			
Dim	Min	Max	Typ
A	0.81	1.15	–
b	0.80	1.35	–
c	0.05	0.30	–
D	1.70	1.90	1.80
E	2.60	2.80	2.70
He	3.30	3.70	3.50
L2	0.35	0.85	–
<b>All Dimensions in mm</b>			

## 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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