



**THE DATASHEET OF  
SF1DDF-13**



**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)
600	1	1.7	5
400	1	1.3	5
200	1	0.98	5

**Features and Benefits**

- Low Profile, Small Form Factor Package
- Low Leakage Current
- Glass Passivated for High Reliability
- Superfast 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)**

**Description and Applications**

The SF1xDF is a rectifier packaged in D-FLAT and is suited as a boost diode in power factor correction circuitry. For use in secondary rectification and freewheeling for superfast switching speed AC-DC and DC-DC converters in high-temperature conditions for consumer applications.

- DC-DC Converters
- AC-DC Adaptors/Chargers
- Inverters

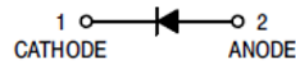
**Mechanical Data**

- Case: D-FLAT
- 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
- Polarity: Cathode Band
- Weight: 0.062 grams (Approximate)

D-FLAT



Top View



Schematic View

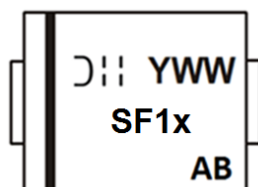
**Ordering Information (Note 4)**

Part Number	Qualification	Case	Packaging
SF1JDF-13	Commercial	D-FLAT	10,000/Tape & Reel
SF1GDF-13	Commercial	D-FLAT	10,000/Tape & Reel
SF1DDF-13	Commercial	D-FLAT	10,000/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. For packaging details, go to our website at <http://www.diodes.com/products/packages.html>.

**Marking Information**

D-FLAT



SF1x = Product Type Marking Code (ie. SF1J for SF1JDF, SF1G for SF1GDF, SF1D for SF1DDF)  
 = Manufacturers' Code Marking  
 YWW = Date Code Marking  
 Y = Last Digit of Year (ex: 6 for 2016)  
 WW = Week Code (01 to 53)  
 AB = Foundry and Assembly Code

## Maximum Ratings and Electrical Characteristics (@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	SF1DDF	SF1GDF	SF1JDF	Unit
Peak Repetitive Reverse Voltage	V <sub>RRM</sub>	200	400	600	V
Working Peak Reverse Voltage	V <sub>RWM</sub>				
DC Blocking Voltage	V <sub>R</sub>				
Average Rectified Output Current @T <sub>T</sub> = +110°C (Note 5)	I <sub>O</sub>	1.0			A
Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load	I <sub>FSM</sub>	30			A
Maximum Instantaneous Forward Voltage @ I <sub>F</sub> = 1A	V <sub>F</sub>	0.98	1.3	1.7	V
Maximum DC Reverse Current @ T <sub>A</sub> = +25°C at Rated DC Blocking Voltage @ T <sub>A</sub> = +100°C (Note 7)	I <sub>R</sub>	5 100			μA
Typical Total Capacitance (Note 8)	C <sub>T</sub>	20			pF
Maximum Reverse Recovery Time (Note 9)	t <sub>RR</sub>	35			ns

## Thermal Characteristics

Characteristic	Symbol	Value	Unit
Typical Thermal Resistance Junction to Terminal (Note 6)	R <sub>θJT</sub>	36	°C/W
Typical Thermal Resistance Junction to Ambient (Note 6)	R <sub>θJA</sub>	87	°C/W
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +150	°C

- Notes:
5. Device mounted on FR-4 substrate, 1" x 1", 2oz, single-sided, PCBs with 0.1" x 0.15" copper pad.
  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. Short duration pulse test used to minimize self-heating effect.
  8. Measured at 1.0MHz and applied reverse voltage of 4.0V DC.
  9. Measured with I<sub>F</sub> = 0.5A, I<sub>R</sub> = 1A, I<sub>RR</sub> = 0.25A.

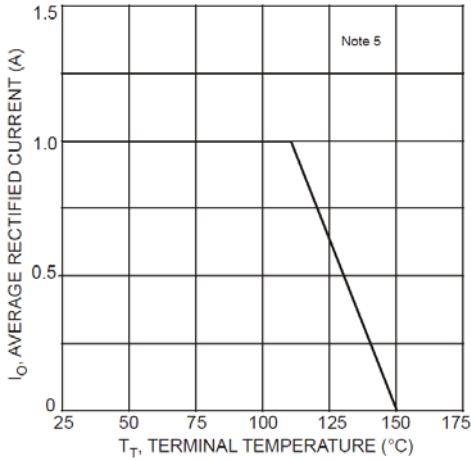


Fig. 1 Forward Current Derating Curve

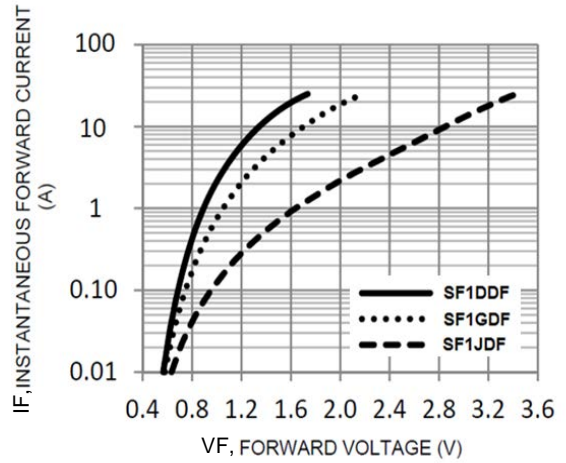


Fig. 2. Typical Forward Characteristics

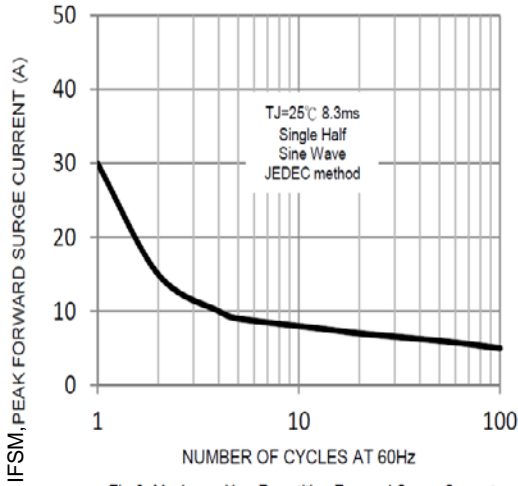


Fig 3. Maximum Non-Repetitive Forward Surge Current

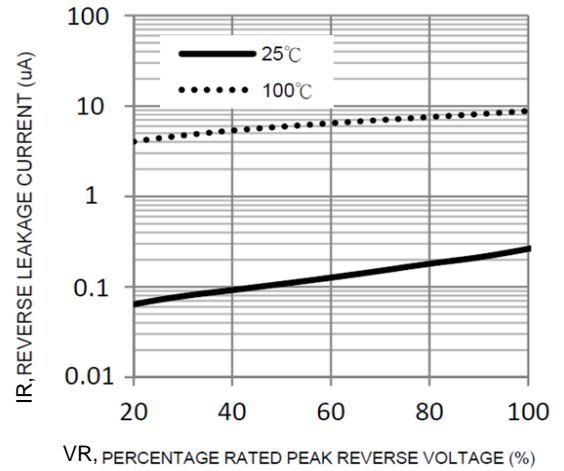


Fig 4. Typical Reverse Characteristics

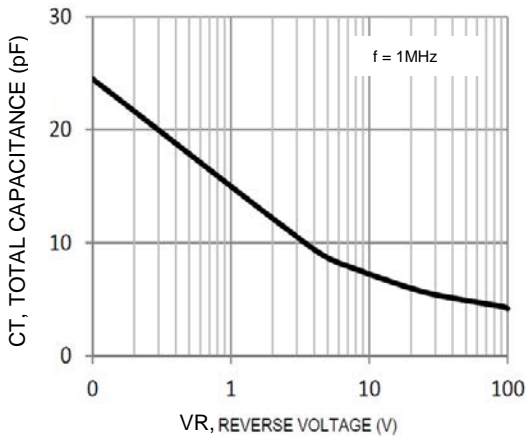


Fig 5. Typical Total Capacitance

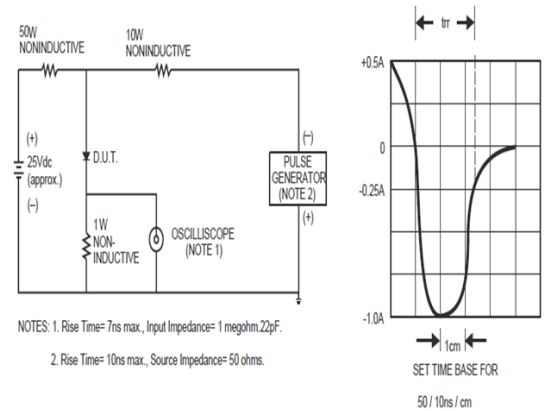
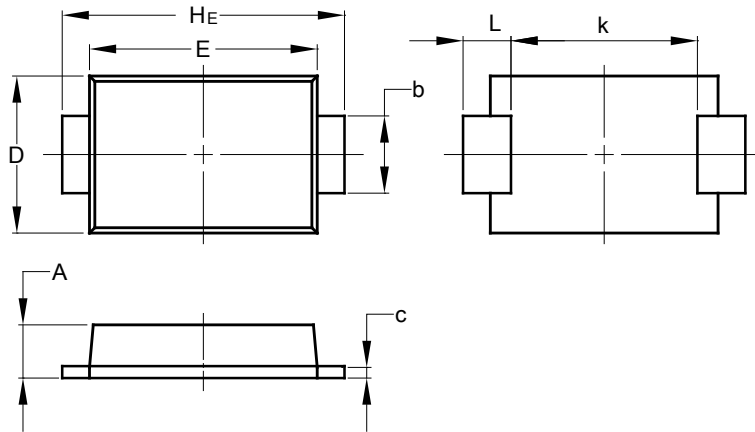


Fig 6. Reverse Recovery Time Characteristic and Test Circuit

**Package Outline Dimensions**

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

**D-FLAT**

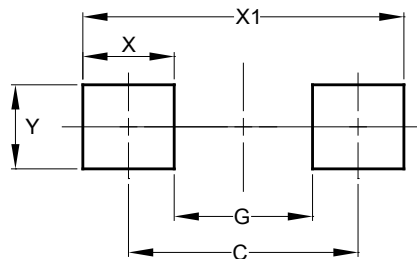


D-FLAT		
Dim	Min	Max
A	0.90	1.10
b	1.25	1.65
c	0.10	0.40
D	2.25	2.95
E	3.95	4.60
k	2.80	-
HE	5.00	5.60
L	0.50	1.30
<b>All Dimensions in mm</b>		

**Suggested Pad Layout**

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

**D-FLAT**



Dimensions	Value (in mm)
C	4.65
G	2.80
X	1.85
X1	6.50
Y	1.70

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