1.0A SURFACE MOUNT SUPER-FAST RECTIFIER

Product Summary (@ T_A = +25°C)

V_{RRM} (V)	I_O (A)	V_F Max (V)	I_R 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.

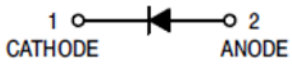
- DC-DC Converters
- AC-DC Adaptors/Chargers
- Inverters

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 (e3)
- Polarity: Cathode Band
- Weight: 0.062 grams (Approximate)

D-FLAT

Top View



Schematic View

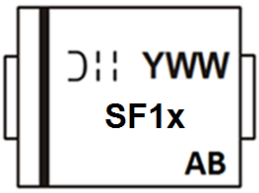
Ordering Information (Note 4)

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_A = +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 Working Peak Reverse Voltage DC Blocking Voltage	V_{RRM} V_{RWM} V_R	200	400	600	V
Average Rectified Output Current @T_T = +110°C (Note 5)	I_O	1.0			A
Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load	I_{FSM}	30			A
Maximum Instantaneous Forward Voltage @ I_F = 1A	V_F	0.98	1.3	1.7	V
Maximum DC Reverse Current @ T_A = +25°C at Rated DC Blocking Voltage @ T_A = +100°C (Note 7)	I_R	5 100			μA
Typical Total Capacitance (Note 8)	C_T	20			pF
Maximum Reverse Recovery Time (Note 9)	t_{RR}	35			ns

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Typical Thermal Resistance Junction to Terminal (Note 6)	$R_{\Theta JT}$	36	°C/W
Typical Thermal Resistance Junction to Ambient (Note 6)	$R_{\Theta JA}$	87	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	°C

Notes:
5.Device mounted on FR-4 substrate, 1" × 1", 2oz, single-sided, PCBs 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.
8. Measured at 1.0MHZ and applied reverse voltage of 4.0V DC.
9. Measured with I_F = 0.5A, I_R = 1A, I_{RR} = 0.25A.

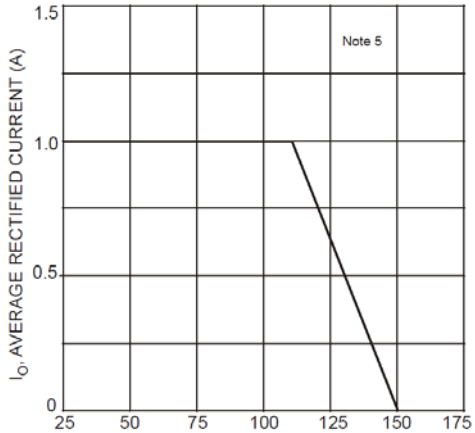


Fig. 1 Forward Current Derating Curve

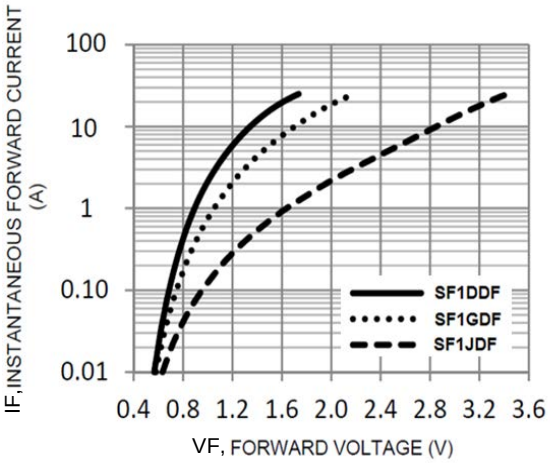


Fig. 2. Typical Forward Characteristics

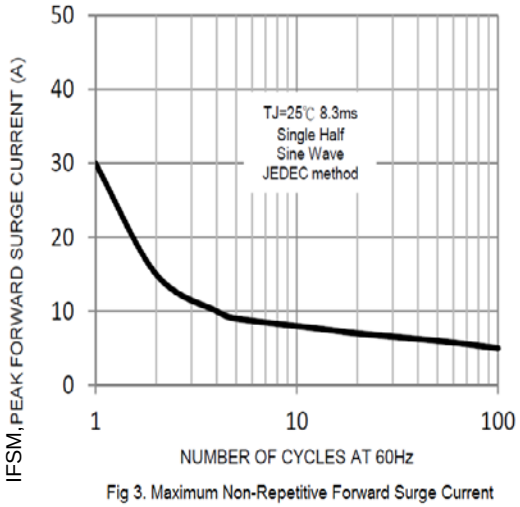


Fig 3. Maximum Non-Repetitive Forward Surge Current

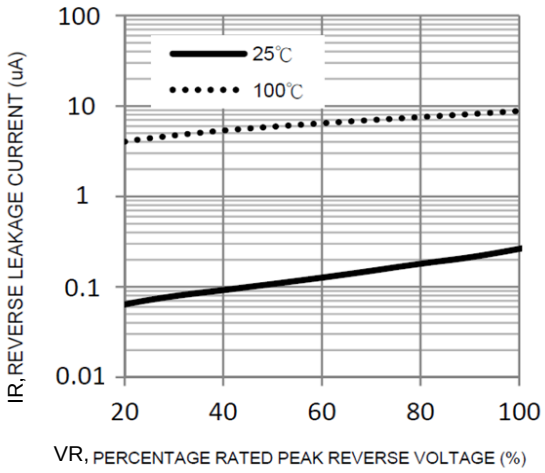


Fig 4. Typical Reverse Characteristics

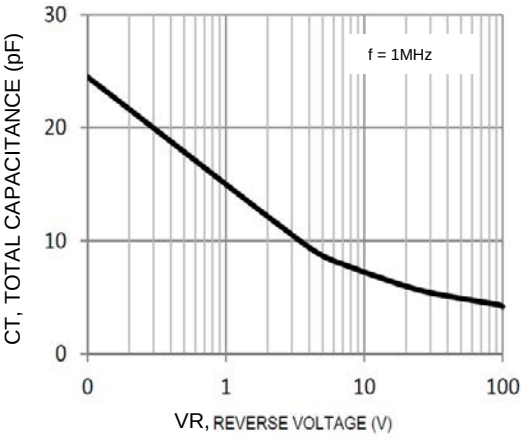


Fig 5. Typical Total Capacitance

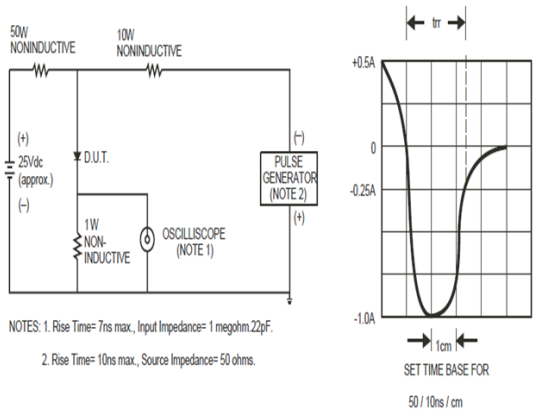
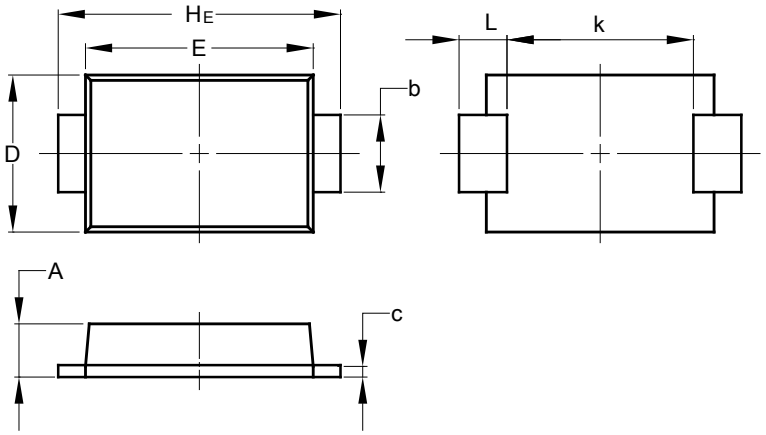


Fig 6. Reverse Recovery Time Characteristic and Test Circuit

Package Outline Dimensions

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

D-FLAT

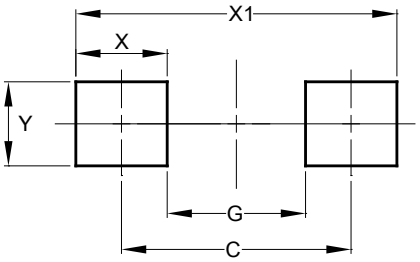


D-FLAT		
Dim	**Min**	**Max**
A	0.90	1.10
b	1.25	1.65
c	0.10	0.40
D	2.25	2.95
E	3.95	4.60
k	2.80	-
H_E	5.00	5.60
L	0.50	1.30
All Dimensions in mm		

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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