SF4001, SF4002, SF4003, SF4004, SF4005, SF4006, SF4007

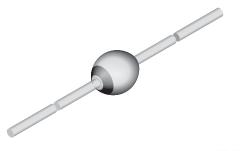


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**Vishay Semiconductors** 

RoHS

# **Ultra-Fast Avalanche Sinterglass Diode**



949539

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## **DESIGN SUPPORT TOOLS**



## **MECHANICAL DATA**

Case: SOD-57 Terminals: plated axial leads, solderable per MIL-STD-750, method 2026 Polarity: color band denotes cathode end Mounting position: any Weight: approx. 369 mg

### **FEATURES**

- Glass passivated
- Hermetically sealed axial leaded glass envelope
- Low reverse current
- High reverse voltage
- Material categorization: COMPLIANT for definitions of compliance please see Www.vishay.com/doc?99912

## **APPLICATIONS**

- · Switched mode power supplies
- High-frequency inverter circuits

ORDERING INFORMATION (Example)					
DEVICE NAME	DEVICE NAME ORDERING CODE TAPED UNITS MINIMUM ORDER QUANTI				
SF4007	SF4007-TR	5000 per 10" tape and reel	25 000		
SF4007	SF4007-TAP	5000 per ammopack	25 000		

PARTS TABLE		
PART	TYPE DIFFERENTIATION	PACKAGE
SF4001	$V_{R} = 50 \text{ V}; \text{ I}_{F(AV)} = 1 \text{ A}$	SOD-57
SF4002	V <sub>R</sub> = 100 V; I <sub>F(AV)</sub> = 1 A	SOD-57
SF4003	V <sub>R</sub> = 200 V; I <sub>F(AV)</sub> = 1 A	SOD-57
SF4004	V <sub>R</sub> = 400 V; I <sub>F(AV)</sub> = 1 A	SOD-57
SF4005	$V_{R} = 600 \text{ V}; \text{ I}_{F(AV)} = 1 \text{ A}$	SOD-57
SF4006	V <sub>R</sub> = 800 V; I <sub>F(AV)</sub> = 1 A	SOD-57
SF4007	V <sub>R</sub> = 1000 V; I <sub>F(AV)</sub> = 1 A	SOD-57

ABSOLUTE MAXIMUM RATINGS (T <sub>amb</sub> = 25 °C, unless otherwise specified)							
PARAMETER	TEST CONDITION	PART	SYMBOL	VALUE	UNIT		
	See electrical characteristics	SF4001	$V_{R} = V_{RRM}$	50	V		
		SF4002	$V_{R} = V_{RRM}$	100	V		
<b>_</b>		SF4003	$V_{R} = V_{RRM}$	200	V		
Reverse voltage = repetitive peak reverse voltage		SF4004	$V_{R} = V_{RRM}$	400	V		
voltage		SF4005	$V_{R} = V_{RRM}$	600	V		
		SF4006	$V_{R} = V_{RRM}$	800	V		
		SF4007	$V_{R} = V_{RRM}$	1000	V		
Peak forward surge current	t <sub>p</sub> = 10 ms, half sine wave		I <sub>FSM</sub>	30	А		
Average forward current	Lead length I = 10 mm		I <sub>FAV</sub>	1	А		
Junction and storage temperature range			$T_j = T_{stg}$	-55 to +175	°C		
Non repetitive reverse avalanche energy	$I_{(BR)R} = 0.4 A$		E <sub>R</sub>	10	mJ		

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Document Number: 86060

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MAXIMUM THERMAL RESISTANCE (T <sub>amb</sub> = 25 °C, unless otherwise specified)					
PARAMETER TEST CONDITION		SYMBOL VALUE		UNIT	
Junction ambient	Lead length I = 10 mm, $T_L$ = constant	R <sub>thJA</sub>	45	K/W	
	On PC board with spacing 25 mm	R <sub>thJA</sub>	100	K/W	

PARAMETER	TEST CONDITION	PART	SYMBOL	MIN.	TYP.	MAX.	UNIT
	I <sub>F</sub> = 1 A	SF4001	V <sub>F</sub>	-	-	1	V
		SF4002	V <sub>F</sub>	-	-	1	V
		SF4003	V <sub>F</sub>	-	-	1	V
Forward voltage Reverse current		SF4004	V <sub>F</sub>	-	-	1	V
		SF4005	V <sub>F</sub>	-	-	1.7	V
		SF4006	V <sub>F</sub>	-	-	1.7	V
		SF4007	V <sub>F</sub>	-	-	1.7	V
Reverse current	$V_{R} = V_{RRM}$		I <sub>R</sub>	-	-	5	μA
	$V_{R} = V_{RRM}, T_{j} = 125 \text{ °C}$		I <sub>R</sub>	-	-	50	μA
Reverse breakdown voltage	I <sub>R</sub> = 100 μΑ	SF4001	V <sub>(BR)R</sub>	50	-	-	V
		SF4002	V <sub>(BR)R</sub>	100	-	-	V
		SF4003	V <sub>(BR)R</sub>	200	-	-	V
		SF4004	V <sub>(BR)R</sub>	400	-	-	V
		SF4005	V <sub>(BR)R</sub>	600	-	-	V
		SF4006	V <sub>(BR)R</sub>	800	-	-	V
		SF4007	V <sub>(BR)R</sub>	1000	-	-	V
	I <sub>F</sub> = 0.5 A, I <sub>R</sub> = 1 A, i <sub>R</sub> = 0.25 A	SF4001	t <sub>rr</sub>	-	-	50	ns
Reverse recovery time		SF4002	t <sub>rr</sub>	-	-	50	ns
		SF4003	t <sub>rr</sub>	-	-	50	ns
		SF4004	t <sub>rr</sub>	-	-	50	ns
		SF4005	t <sub>rr</sub>	-	-	75	ns
		SF4006	t <sub>rr</sub>	-	-	75	ns
		SF4007	t <sub>rr</sub>	-	-	75	ns

TYPICAL CHARACTERISTICS (T<sub>amb</sub> = 25 °C, unless otherwise specified)

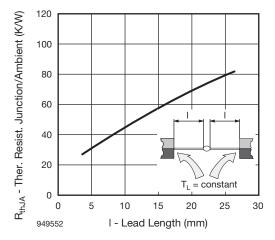


Fig. 1 - Max. Thermal Resistance vs. Lead Length

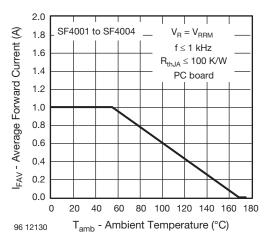


Fig. 2 - Max. Average Forward Current vs. Ambient Temperature

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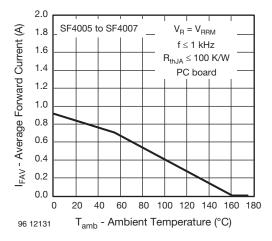


Fig. 3 - Max. Average Forward Current vs. Ambient Temperature

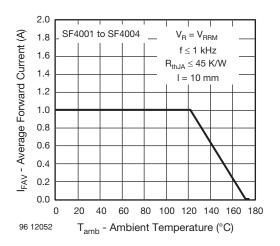


Fig. 4 - Max. Average Forward Current vs. Ambient Temperature

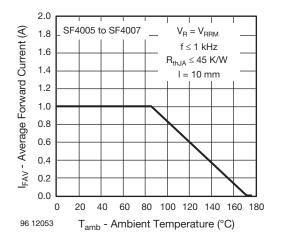


Fig. 5 - Max. Average Forward Current vs. Ambient Temperature

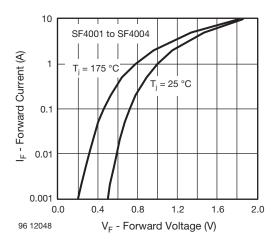


Fig. 6 - Max. Forward Current vs. Forward Voltage

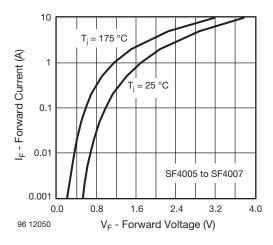


Fig. 7 - Max. Forward Current vs. Forward Voltage

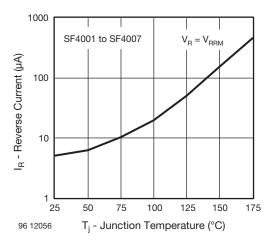


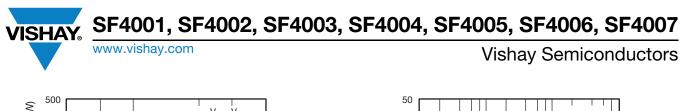
Fig. 8 - Max. Reverse Current vs. Junction Temperature

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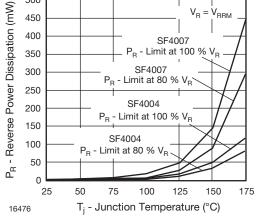


Fig. 9 - Max. Reverse Power Dissipation vs. Junction Temperature

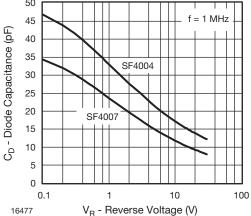
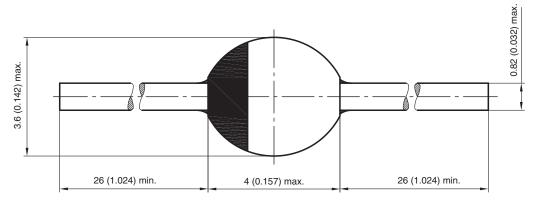


Fig. 10 - Diode Capacitance vs. Reverse Voltage

### PACKAGE DIMENSIONS in millimeters (inches): SOD-57



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