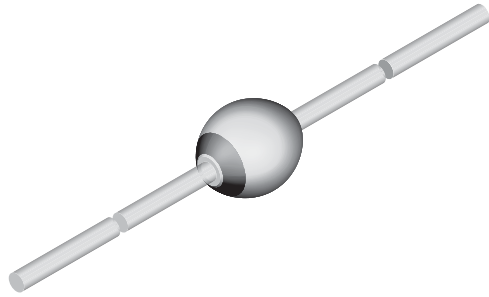




## Standard Avalanche Sinterglass Diode



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

- Controlled avalanche characteristics
- Glass passivated junction
- Hermetically sealed package
- Low reverse current
- High surge current loading
- AEC-Q101 qualified
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



**RoHS**  
COMPLIANT  
HALOGEN  
**FREE**

### APPLICATIONS

- Rectification, general purpose

ORDERING INFORMATION (Example)			
DEVICE NAME	ORDERING CODE	TAPED UNITS	MINIMUM ORDER QUANTITY
BYW56	BYW56-TR	5000 per 10" tape and reel	25 000
BYW56	BYW56-TAP	5000 per ammpack	25 000

PARTS TABLE		
PART	TYPE DIFFERENTIATION	PACKAGE
BYW52	$V_R = 200\text{ V}; I_{F(AV)} = 2\text{ A}$	SOD-57
BYW53	$V_R = 400\text{ V}; I_{F(AV)} = 2\text{ A}$	SOD-57
BYW54	$V_R = 600\text{ V}; I_{F(AV)} = 2\text{ A}$	SOD-57
BYW55	$V_R = 800\text{ V}; I_{F(AV)} = 2\text{ A}$	SOD-57
BYW56	$V_R = 1000\text{ V}; I_{F(AV)} = 2\text{ A}$	SOD-57

ABSOLUTE MAXIMUM RATINGS ( $T_{amb} = 25\text{ }^\circ\text{C}$ , unless otherwise specified)					
PARAMETER	TEST CONDITION	PART	SYMBOL	VALUE	UNIT
Reverse voltage = repetitive peak reverse voltage	See electrical characteristics	BYW52	$V_R = V_{RRM}$	200	V
		BYW53	$V_R = V_{RRM}$	400	V
		BYW54	$V_R = V_{RRM}$	600	V
		BYW55	$V_R = V_{RRM}$	800	V
		BYW56	$V_R = V_{RRM}$	1000	V
Peak forward surge current	$t_p = 10\text{ ms}$ , half sine wave		$I_{FSM}$	50	A
Repetitive peak forward current			$I_{FRM}$	12	A
Average forward current	$\phi = 180^\circ$		$I_{F(AV)}$	2	A
Pulse avalanche peak power	$t_p = 20\text{ }\mu\text{s}$ half sine wave, $T_j = 175\text{ }^\circ\text{C}$		$P_R$	1000	W
Pulse energy in avalanche mode, non repetitive (inductive load switch off)	$I_{(BR)R} = 1\text{ A}$ , $T_j = 175\text{ }^\circ\text{C}$		$E_R$	20	mJ
$i^2t$ -rating			$i^2t$	8	$\text{A}^2\text{s}$
Junction and storage temperature range			$T_j = T_{stg}$	-55 to +175	$^\circ\text{C}$

<b>MAXIMUM THERMAL RESISTANCE</b> ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)				
PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
Junction ambient	Lead length $l = 10\text{ mm}$ , $T_L = \text{constant}$	$R_{thJA}$	45	K/W
	On PC board with spacing 25 mm	$R_{thJA}$	100	K/W

<b>ELECTRICAL CHARACTERISTICS</b> ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)						
PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Forward voltage	$I_F = 1\text{ A}$	$V_F$	-	0.9	1	V
Reverse current	$V_R = V_{RRM}$	$I_R$	-	0.1	1	$\mu\text{A}$
	$V_R = V_{RRM}$ , $T_j = 100\text{ }^{\circ}\text{C}$	$I_R$	-	5	10	$\mu\text{A}$
Breakdown voltage	$I_R = 100\text{ }\mu\text{A}$ , $t_p/T = 0.01$ , $t_p = 0.3\text{ ms}$	$V_{(BR)}$	-	-	1600	V
Diode capacitance	$V_R = 4\text{ V}$ , $f = 1\text{ MHz}$	$C_D$	-	18	-	pF
Reverse recovery time	$I_F = 0.5\text{ A}$ , $I_R = 1\text{ A}$ , $i_R = 0.25\text{ A}$	$t_{rr}$	-	-	4000	ns
	$I_F = 1\text{ A}$ , $di/dt = 5\text{ A}/\mu\text{s}$ , $V_R = 50\text{ V}$	$t_{rr}$	-	-	4000	ns
Reverse recovery charge	$I_F = 1\text{ A}$ , $di/dt = 5\text{ A}/\mu\text{s}$	$Q_{rr}$	-	-	200	nC

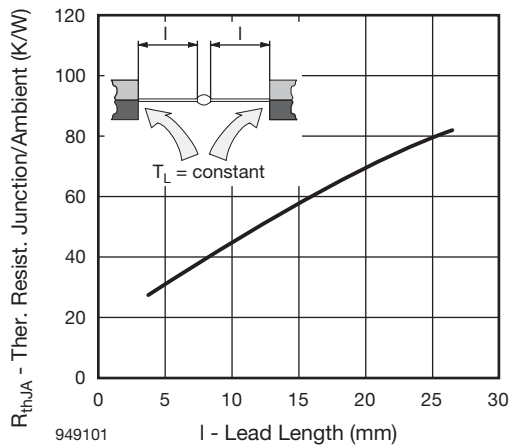
**TYPICAL CHARACTERISTICS** ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)


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

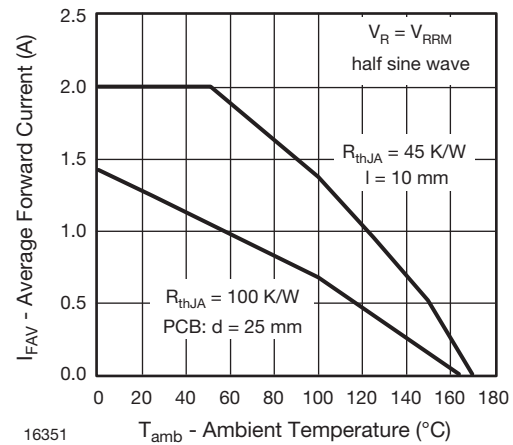


Fig. 3 - Max. Average Forward Current vs. Ambient Temperature

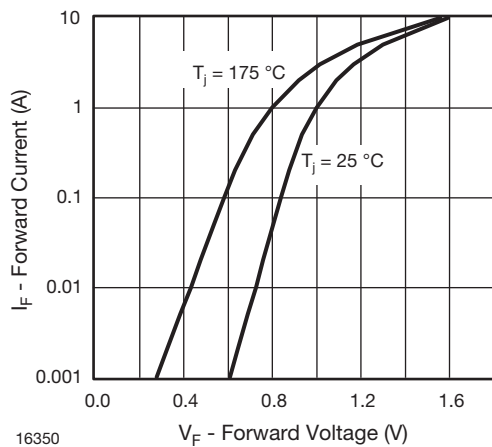


Fig. 2 - Forward Current vs. Forward Voltage

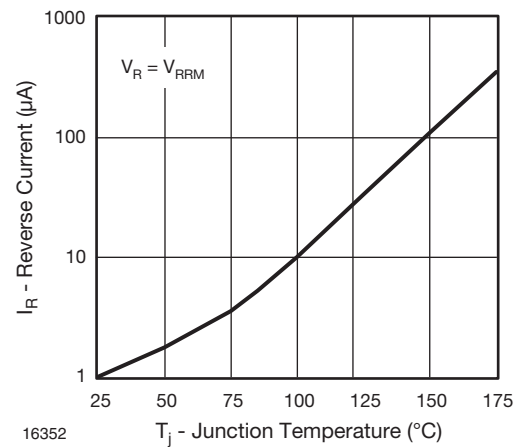


Fig. 4 - Reverse Current vs. Junction Temperature

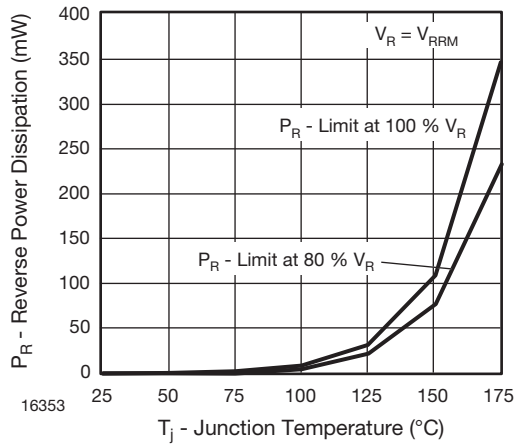


Fig. 5 - Max. Reverse Power Dissipation vs. Junction Temperature

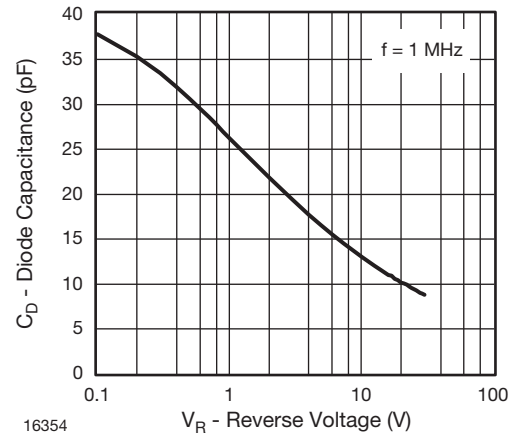


Fig. 6 - Diode Capacitance vs. Reverse Voltage

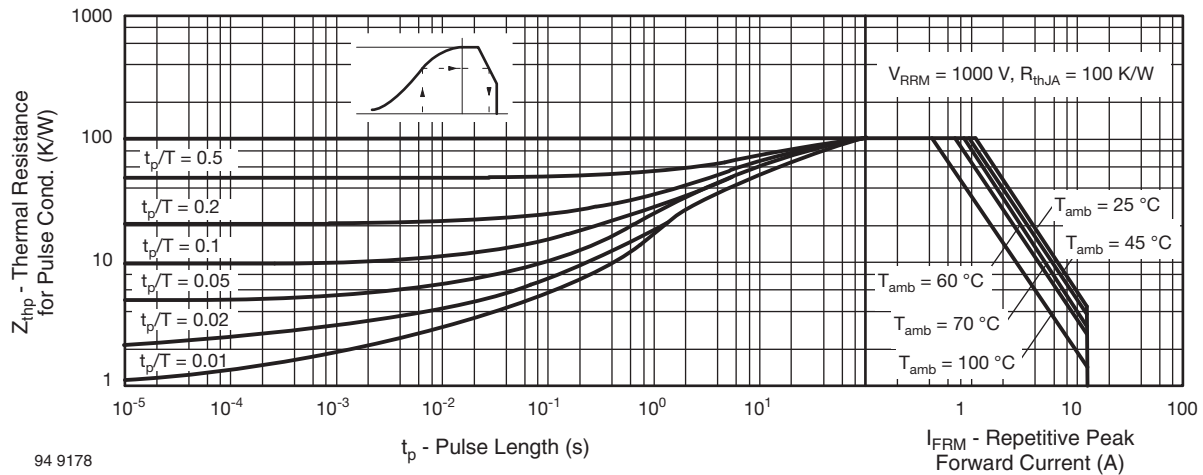
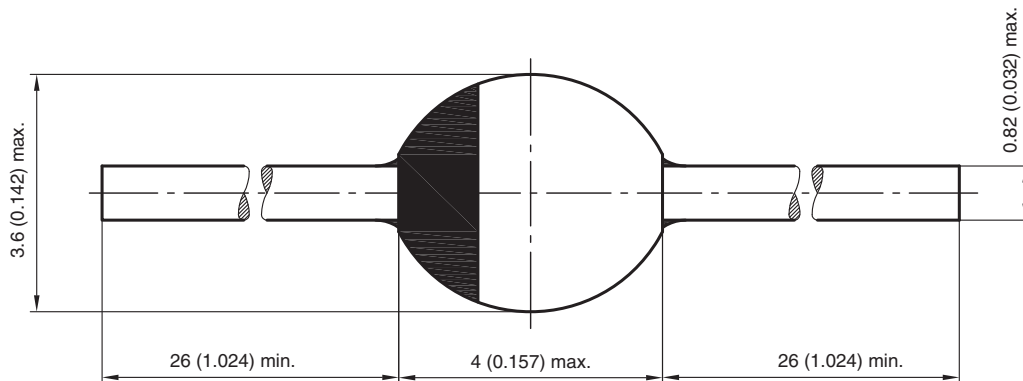


Fig. 7 - Thermal Response

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



20543  
 Rev. 3 - Date: 09.February 2005  
 Document no.:6.563-5006.3-4



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