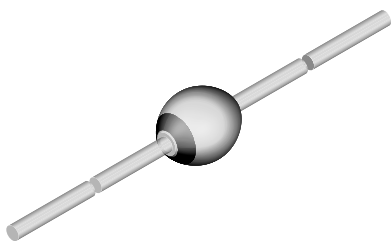


## Standard Avalanche Sinterglass Diode



949539

### 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**

### 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

### 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 ( $T_{amb} = 25\text{ °C}$ , 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                                                    | $\phi = 180\text{ °}$                                               |       | $I_{F(AV)}$     | 2           | A                |
| Pulse avalanche peak power                                                 | $t_p = 20\text{ }\mu\text{s}$ half sine wave, $T_j = 175\text{ °C}$ |       | $P_R$           | 1000        | W                |
| Pulse energy in avalanche mode, non repetitive (inductive load switch off) | $I_{(BR)R} = 1\text{ A}$ , $T_j = 175\text{ °C}$                    |       | $E_R$           | 20          | mJ               |
| $i^2t$ -rating                                                             |                                                                     |       | $i^2t$          | 8           | A <sup>2</sup> s |
| Junction and storage temperature range                                     |                                                                     |       | $T_j = T_{stg}$ | -55 to +175 | °C               |

**MAXIMUM THERMAL RESISTANCE** ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , 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  |

**ELECTRICAL CHARACTERISTICS** ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , 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            |

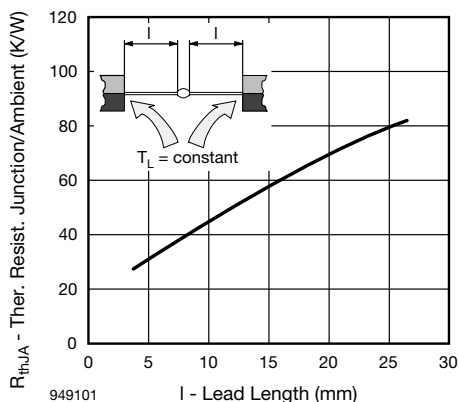
**TYPICAL CHARACTERISTICS** ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)

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

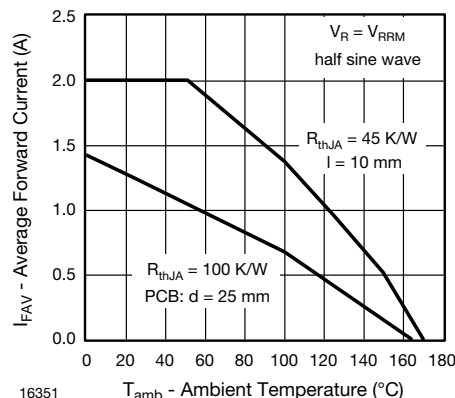


Fig. 3 - Max. Average Forward Current vs. Ambient Temperature

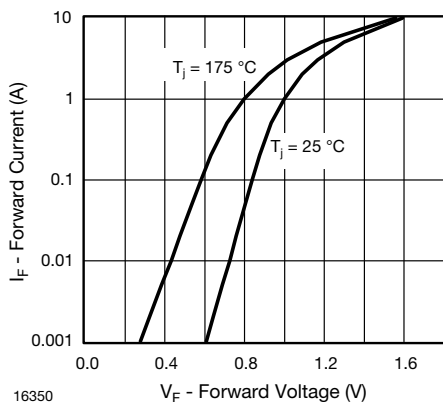


Fig. 2 - Forward Current vs. Forward Voltage

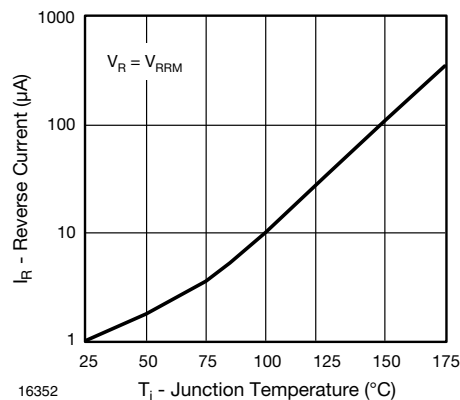


Fig. 4 - Reverse Current vs. Junction Temperature

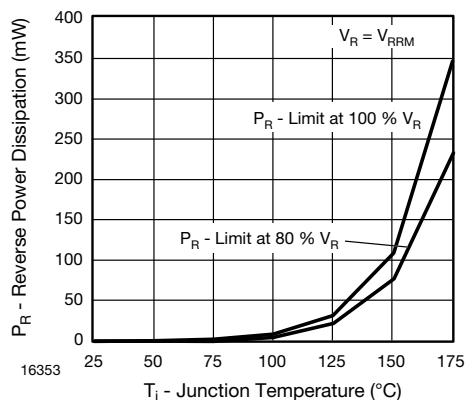


Fig. 5 - Max. Reverse Power Dissipation vs. Junction Temperature

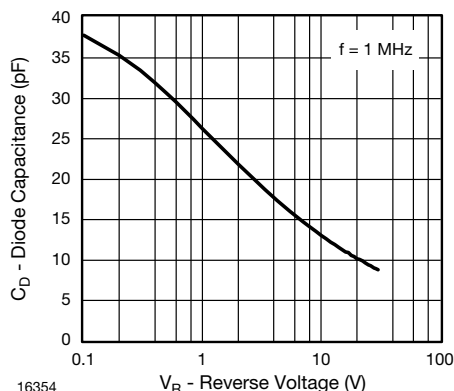


Fig. 6 - Diode Capacitance vs. Reverse Voltage

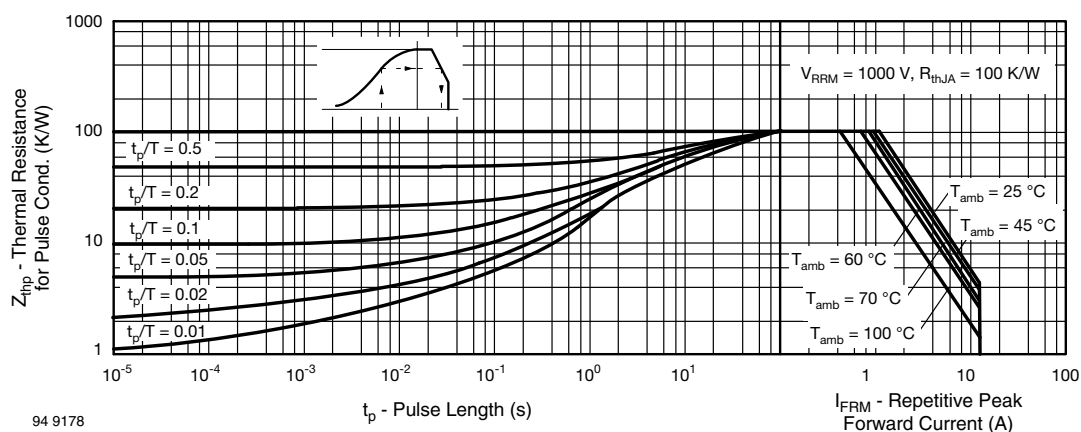
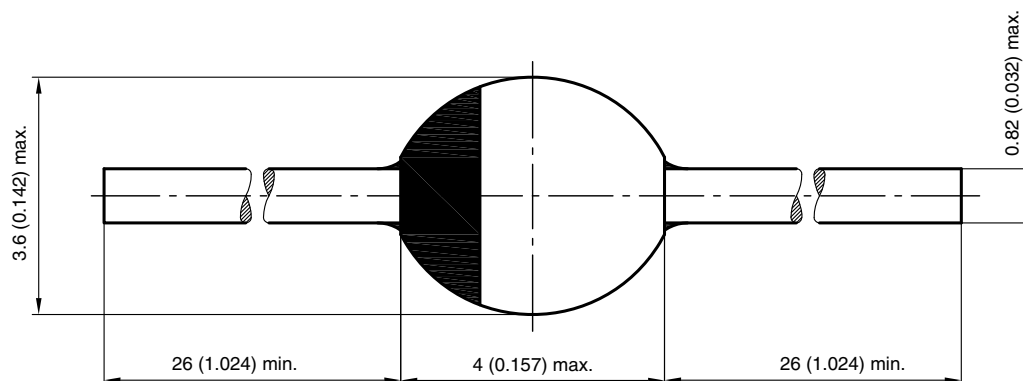


Fig. 7 - Thermal Response

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



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