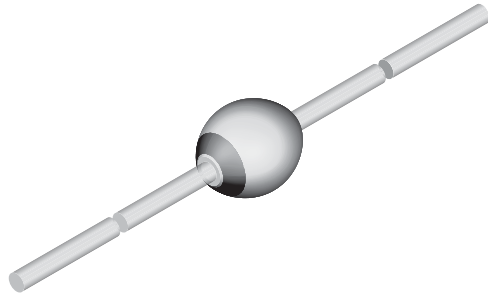




Standard Avalanche Sinterglass Diode



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



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 | A ² s |
| Junction and storage temperature range | | | $T_j = T_{stg}$ | -55 to +175 | $^\circ\text{C}$ |

| 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 | μA |
| | $V_R = V_{RRM}$, $T_j = 100\text{ }^{\circ}\text{C}$ | I_R | - | 5 | 10 | μA |
| 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 |

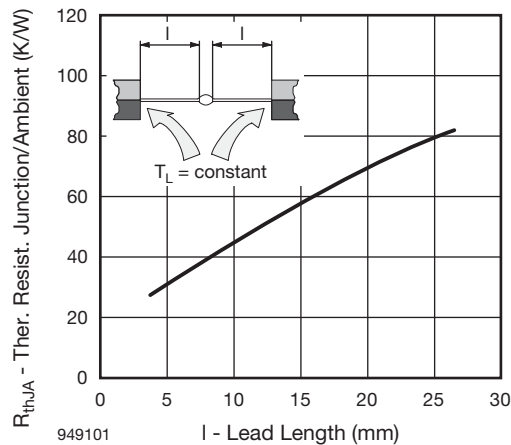
TYPICAL CHARACTERISTICS ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified)


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

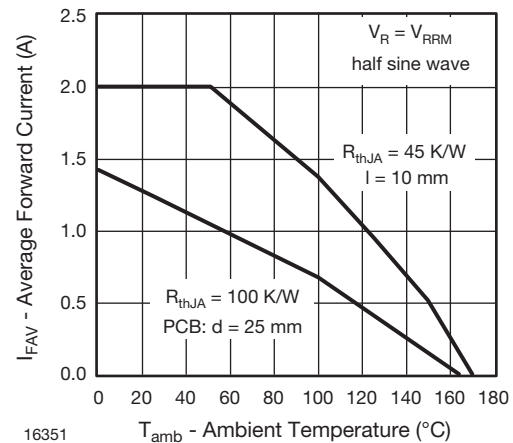


Fig. 3 - Max. Average Forward Current vs. Ambient Temperature

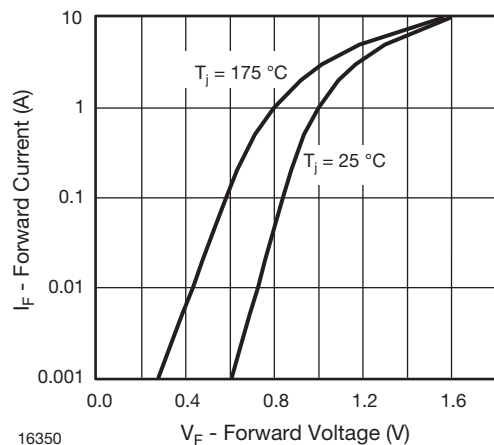


Fig. 2 - Forward Current vs. Forward Voltage

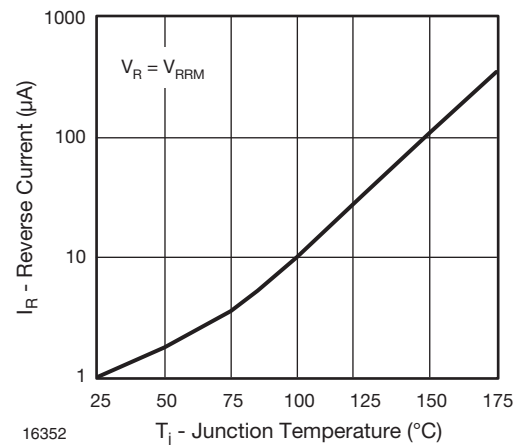


Fig. 4 - Reverse Current vs. Junction Temperature

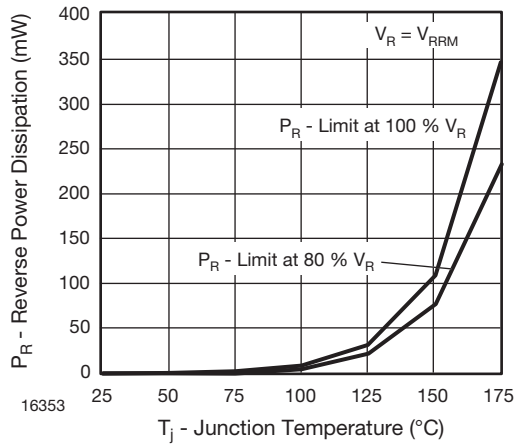


Fig. 5 - Max. Reverse Power Dissipation vs. Junction Temperature

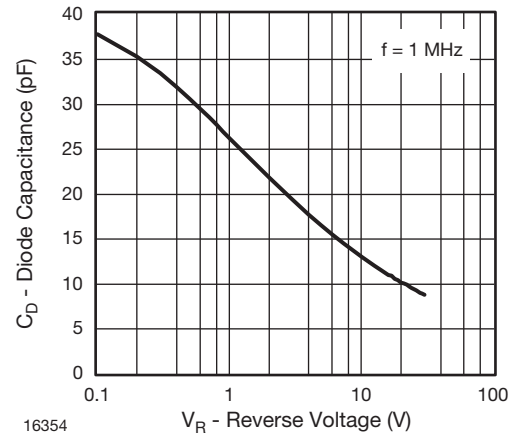


Fig. 6 - Diode Capacitance vs. Reverse Voltage

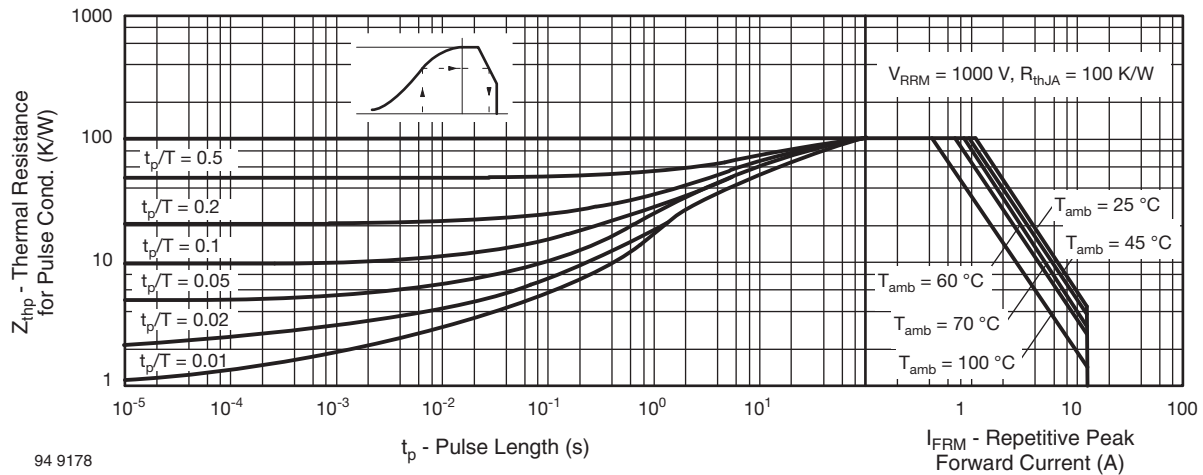
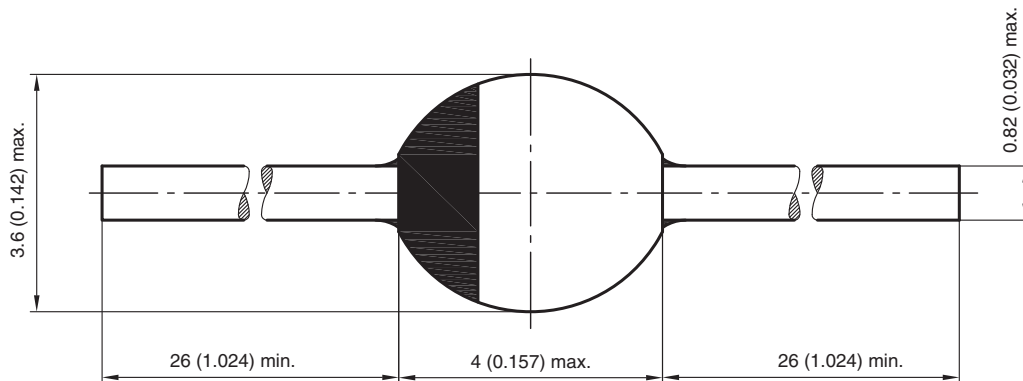


Fig. 7 - Thermal Response

PACKAGE DIMENSIONS in millimeters (inches): SOD-57



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