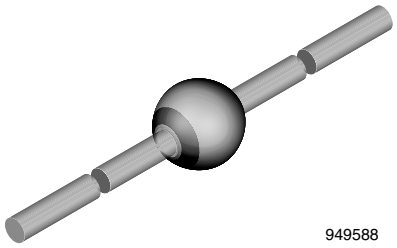
# Fast Avalanche Sinterglass Diode



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## FEATURES

- Glass passivated junction
- Hermetically sealed package
- Low reverse current
- Soft recovery characteristics
- Very fast reverse recovery time
- Material categorization:
  For definitions of compliance please see www.vishay.com/doc?99912

RoHS COMPLIANT

HALOGEN FREE

## MECHANICAL DATA

**Case:** SOD-64

**Terminals:** plated axial leads, solderable per MIL-STD-750, method 2026

**Polarity:** color band denotes cathode end

**Mounting position:** any

**Weight:** approx. 858 mg

## APPLICATIONS

- Ultrafast rectification diode for switching mode power supplies

**ORDERING INFORMATION** (Example)

| DEVICE NAME | ORDERING CODE | TAPED UNITS | MINIMUM ORDER QUANTITY |
|---|---|---|---|
| BYW178 | BYW178-TR | 2500 per 10" tape and reel | 12 500 |
| BYW178 | BYW178-TAP | 2500 per ammopack | 12 500 |

**PARTS TABLE**

| PART | TYPE DIFFERENTIATION | PACKAGE |
|---|---|---|
| BYW178 | $V_R$ = 800 V; $I_{F(AV)}$ = 3 A | SOD-64 |

**ABSOLUTE MAXIMUM RATINGS** ($T_{amb}$ = 25 °C, unless otherwise specified)

| PARAMETER | TEST CONDITION | PART | SYMBOL | VALUE | UNIT |
|---|---|---|---|---|---|
| Reverse voltage = repetitive peak reverse voltage | See electrical characteristics | BYW178 | $V_R = V_{RRM}$ | 800 | V |
| Peak forward surge current | $t_p$ = 10 ms, half sine wave | | $I_{FSM}$ | 80 | A |
| Repetitive peak forward current | | | $I_{FRM}$ | 15 | |
| Average forward current | | | $I_{F(AV)}$ | 3 | |
| Junction and storage temperature range | | | $T_j = T_{stg}$ | - 55 to + 175 | °C |
| Non repetitive reverse avalanche energy | $I_{(BR)R}$ = 1 A | | $E_R$ | 20 | mJ |

**MAXIMUM THERMAL RESISTANCE** ($T_{amb}$ = 25 °C, unless otherwise specified)

| PARAMETER | TEST CONDITION | SYMBOL | VALUE | UNIT |
|---|---|---|---|---|
| Junction lead | Lead length l = 10 mm, $T_L$ = constant | $R_{thJL}$ | 25 | K/W |
| Junction ambient | On PC board with spacing 37.5 mm | $R_{thJA}$ | 70 | K/W |

| ELECTRICAL CHARACTERISTICS ($T_{amb}$ = 25 °C, unless otherwise specified) | | | | | | | |
|---|---|---|---|---|---|---|---|
| PARAMETER | TEST CONDITION | PART | SYMBOL | MIN. | TYP. | MAX. | UNIT |
| Forward voltage | $I_F$ = 3 A | | $V_F$ | - | - | 1.9 | V |
| Reverse current | $V_R = V_{RRM}$ | | $I_R$ | - | - | 1 | µA |
| | $V_R = V_{RRM}$, $T_j$ = 100 °C | | $I_R$ | - | - | 20 | µA |
| Reverse recovery current | $I_F$ = 1 A, $dI_F/dt \leq$ - 50 A/µs, $V_{BATT}$ = 200 V | | $I_{RM}$ | - | 2.2 | - | ns |
| Reverse recovery time | $I_F$ = 1 A, $dI_F/dt \leq$ - 50 A/µs, $V_{BATT}$ = 200 V, $i_R$ = 0.25 x $I_{RM}$ | | $t_{rr}$ | - | 50 | - | |
| Reverse recovery time (JEDEC) | $I_F$ = 0.5 A, $I_R$ = 1 A, $i_R$ = 0.25 | | $t_{rr}$ | - | - | 60 | |

## TYPICAL CHARACTERISTICS ($T_{amb}$ = 25 °C, unless otherwise specified)

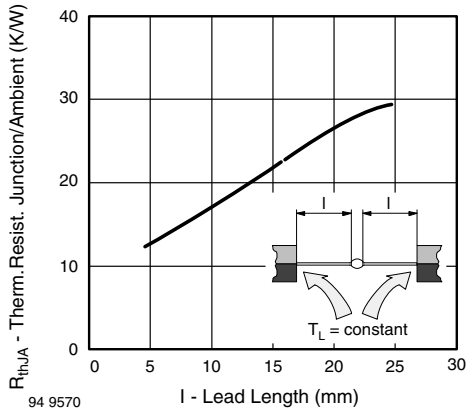



Fig. 1 - Max. Thermal Resistance vs. Lead Length

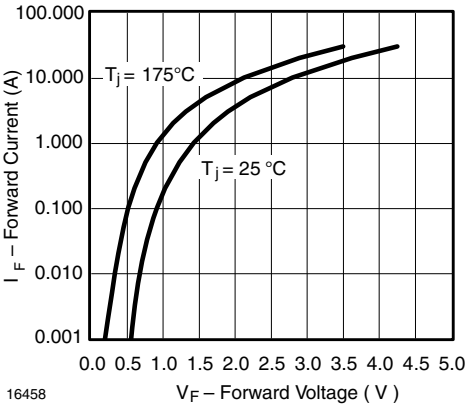



Fig. 3 - Forward Current vs. Forward Voltage

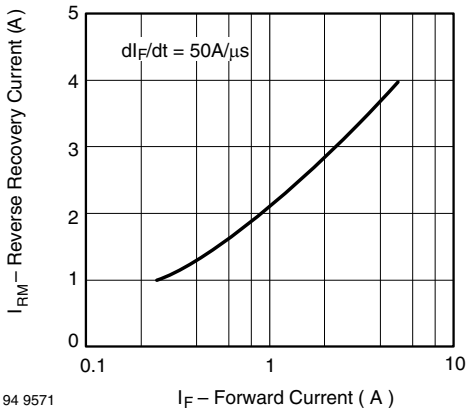



Fig. 2 - Typ. Reverse Recovery Current vs. Forward Voltage

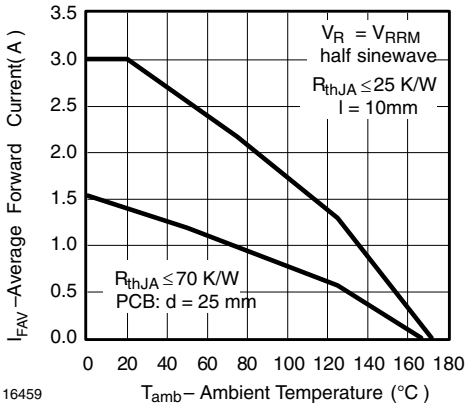



Fig. 4 - Max. Average Forward Current vs. Junction Temperature

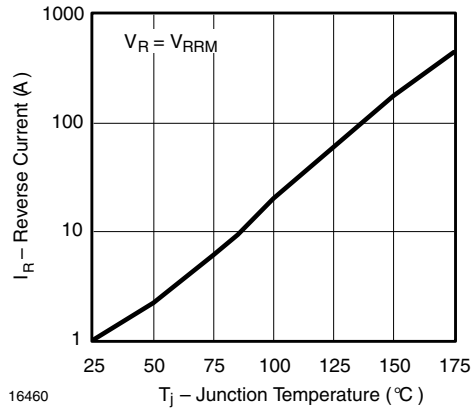



Fig. 5 - Reverse Current vs. Junction Temperature

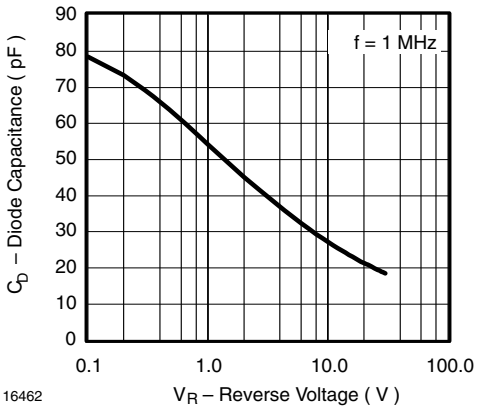



Fig. 7 - Diode Capacitance vs. Reverse Voltage

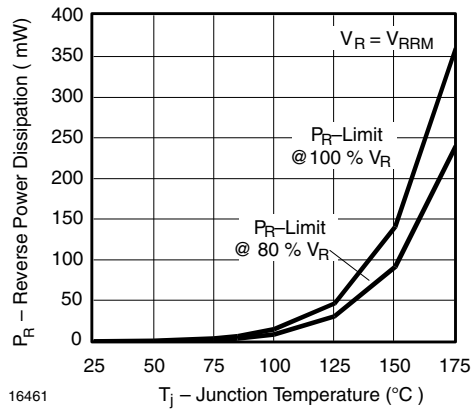



Fig. 6 - Max. Reverse Power Dissipation vs. Junction Temperature

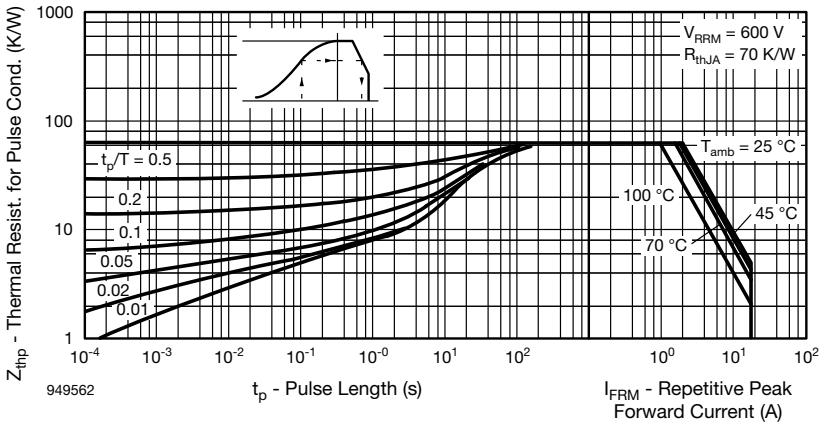
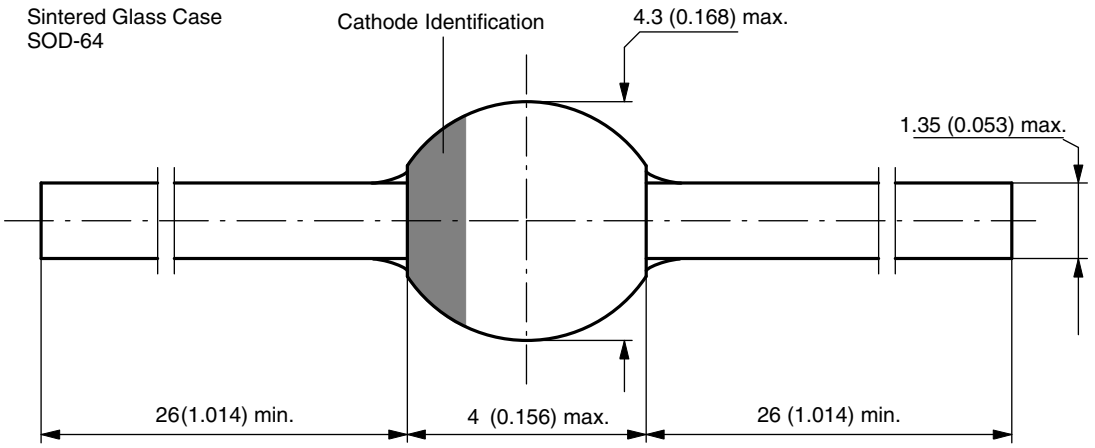



Fig. 8 - Thermal Response

**PACKAGE DIMENSIONS** in millimeters (inches): **SOD-64**

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