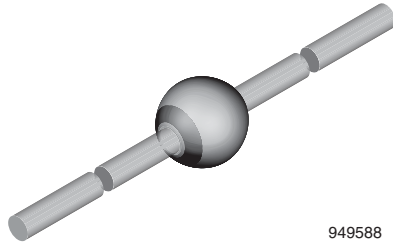




**THE DATASHEET OF  
BYW178-TR**



## Fast Avalanche Sinterglass Diode



949588

### DESIGN SUPPORT TOOLS

[click logo to get started](#)
**3D**  
Models  
Available

### 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

### 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](http://www.vishay.com/doc?99912)


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

### 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 ammpack	12 500

### PARTS TABLE

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

### 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	BYW178	$V_R = V_{RRM}$	800	V
Peak forward surge current	$t_p = 10\text{ ms}$ , 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	$^\circ\text{C}$
Non repetitive reverse avalanche energy	$I_{(BR)R} = 1\text{ A}$		$E_R$	20	mJ

### MAXIMUM THERMAL RESISTANCE ( $T_{amb} = 25\text{ }^\circ\text{C}$ , unless otherwise specified)

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

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

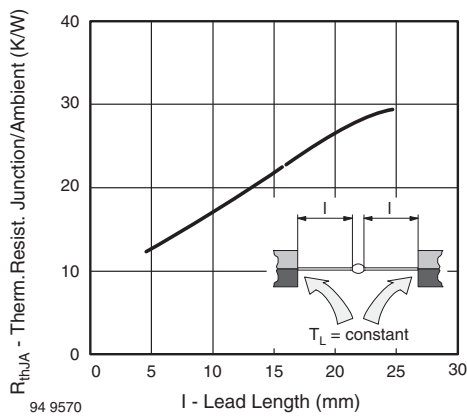
**TYPICAL CHARACTERISTICS** ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)


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

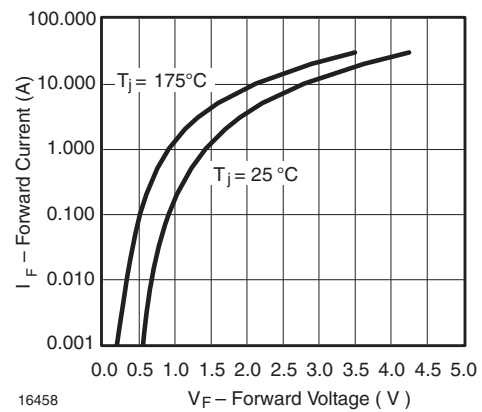


Fig. 3 - Forward Current vs. Forward Voltage

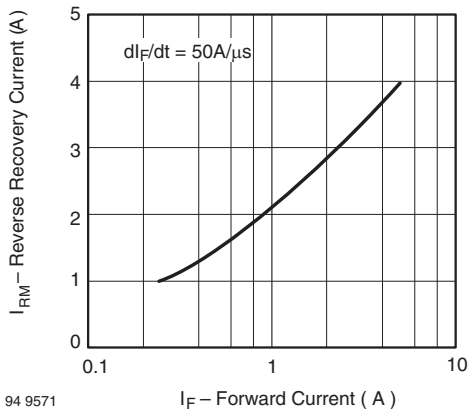


Fig. 2 - Typ. Reverse Recovery Current vs. Forward Voltage

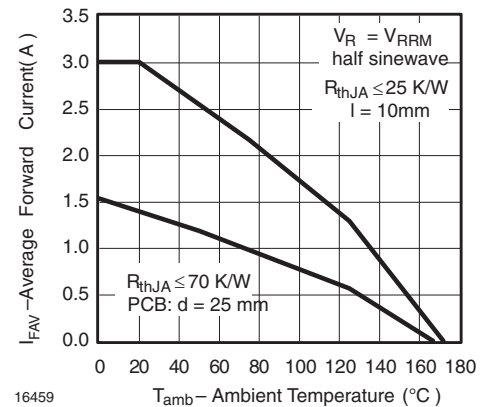


Fig. 4 - Max. Average Forward Current vs. Junction Temperature

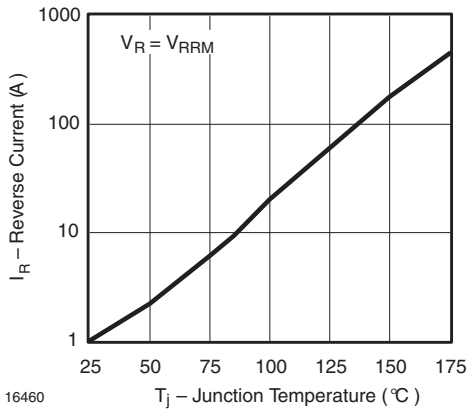


Fig. 5 - Reverse Current vs. Junction Temperature

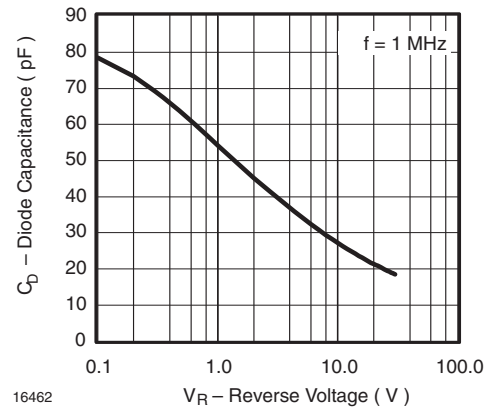


Fig. 7 - Diode Capacitance vs. Reverse Voltage

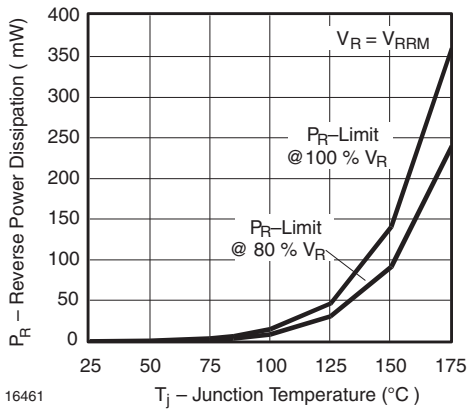


Fig. 6 - Max. Reverse Power Dissipation vs. Junction Temperature

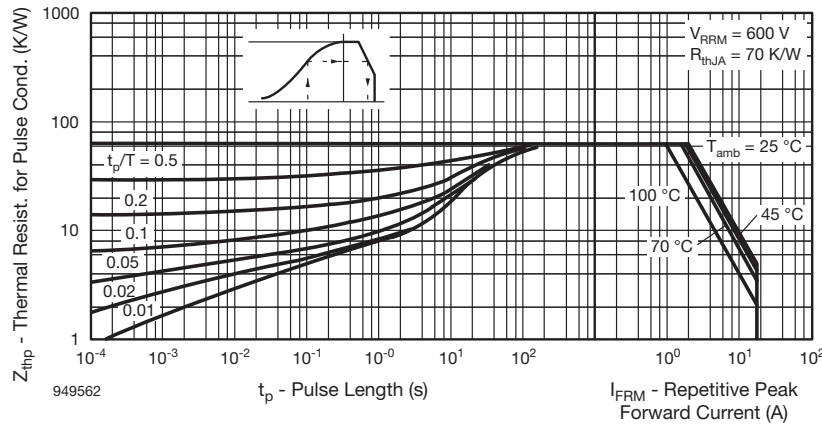
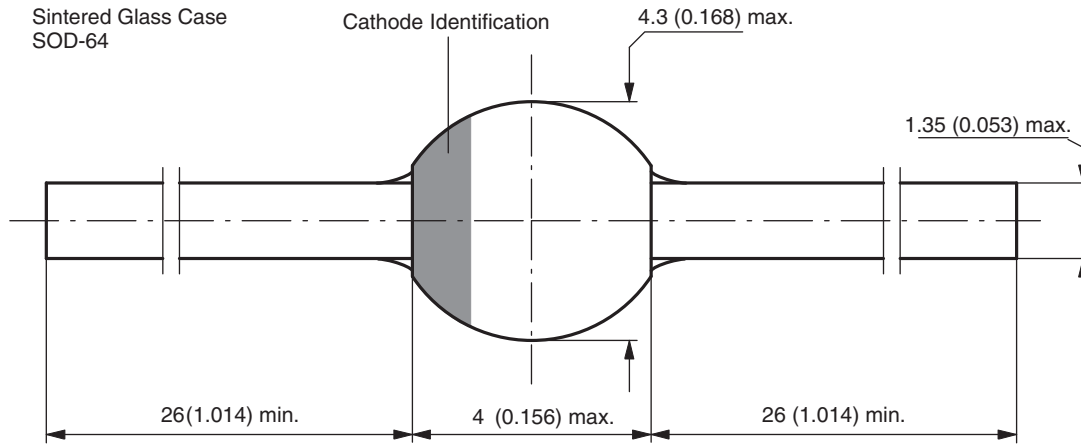


Fig. 8 - Thermal Response

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



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 94 9587



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