

**$P_D = 5\text{ W}$**   
**Transient Voltage Suppressor**  
**PZ628**

**Description**

The PZ628 is a power Zener diode designed for the protection of automotive electronic units, especially from the surge generated during load dump conditions and voltage transients induced by inductive loads.

**Features**

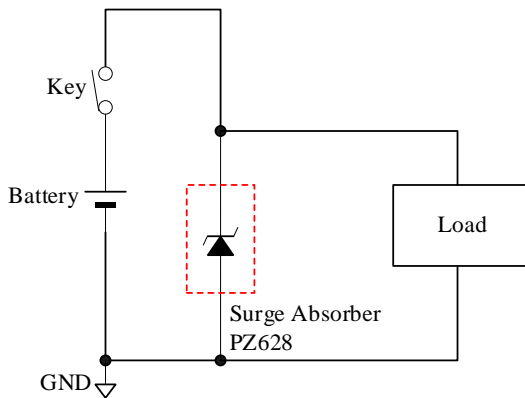
- $V_Z$ ----- 25 V to 31 V
- $P_{RSM}$ -----1500 W (5 ms, single block pulse)
- $P_D$ -----5 W
- Meets the Surge Protection Requirements in ISO7637-2 Standard (Pulse 1 to 3)
- High Reliability
- High Surge Capability
- Flammability UL94V-0 (Equivalent)
- Bare leads: Pb-free (RoHS compliant)

**Applications**

Protection of sensitive electronic equipment in passenger cars, trucks, vans, and buses:

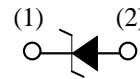
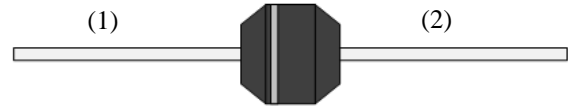
- Engine Control Units
- Electric Control Units
- Braking System
- Power Steering System
- Airbags
- Audio/Infotainment Equipment

**Typical Application**



**Package**

Axial ( $\phi 10 \times 10L / \phi 1.3$ )



(1) Cathode  
 (2) Anode

Not to scale

### Absolute Maximum Ratings

Unless otherwise specified,  $T_A = 25\text{ }^\circ\text{C}$ .

Parameter	Symbol	Conditions	Rating	Unit	Remarks
Power Dissipation <sup>(1)</sup>	$P_D$		5	W	
Peak Reverse Power	$P_{RSM}$	5 ms, single block pulse	1500	W	
Peak Surge Reverse Current	$I_{RSM}$	<sup>(2)</sup>	65	A	
Peak Reverse Current	$I_{ZM}$	$T_L = 25\text{ }^\circ\text{C}$ <sup>(3)</sup>	165	mA	
Junction Temperature	$T_J$		-40 to 150	$^\circ\text{C}$	
Storage Temperature	$T_{STG}$		-40 to 150	$^\circ\text{C}$	

### Electrical Characteristics

Unless otherwise specified,  $T_A = 25\text{ }^\circ\text{C}$ .

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit	Remarks
Forward Voltage Drop	$V_F$	$I_F = 5.0\text{ A}$	—	—	0.95	V	
Reverse Leakage Current	$I_R$	$V_R = 20\text{ V}$	—	—	10	$\mu\text{A}$	
Reverse Leakage Current Under High Temperature	$H \cdot I_R$	$V_R = 20\text{ V}$ , $T_J = 150\text{ }^\circ\text{C}$	—	—	0.5	mA	
Breakdown Voltage	$V_Z$	$I_Z = 10\text{ mA}$	25	—	31	V	
Breakdown Voltage Temperature Coefficient	$r_Z$	$I_Z = 10\text{ mA}$	—	—	36	$\text{mV}/^\circ\text{C}$	
Breakdown Region Equivalent Resistance	$R_Z$	$I_Z = 1\text{ mA to } 10\text{ mA}$	—	—	50	$\Omega$	

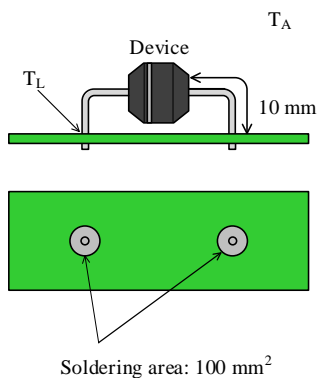


Figure 1. Lead Temperature Measurement Conditions

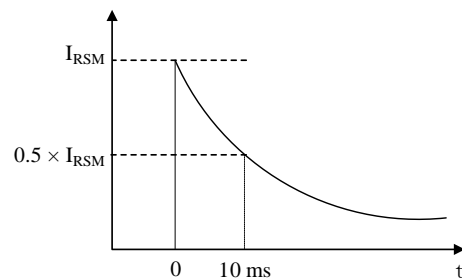


Figure 2. Definition of Peak Surge Reverse Current

<sup>(1)</sup> See Figure 3.

<sup>(2)</sup>  $I_{RSM}$  is defined as shown in Figure 2.

<sup>(3)</sup> Lead temperature is measured as shown in Figure 1.

Rating and Characteristics Curves

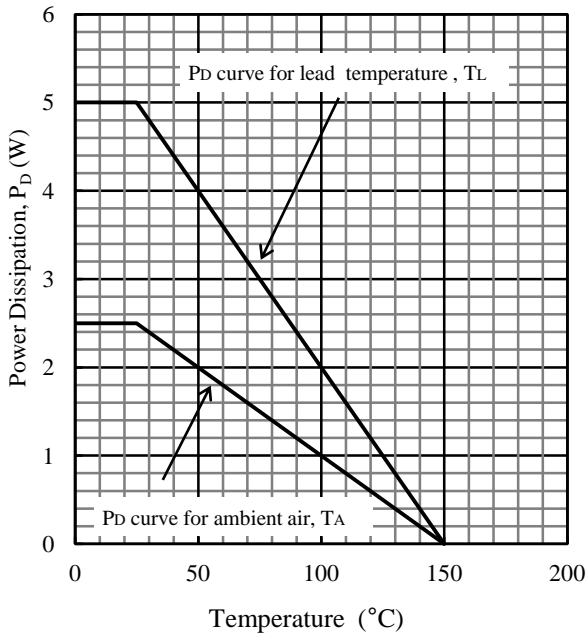


Figure 3. Power Dissipation Curves<sup>(4)</sup>

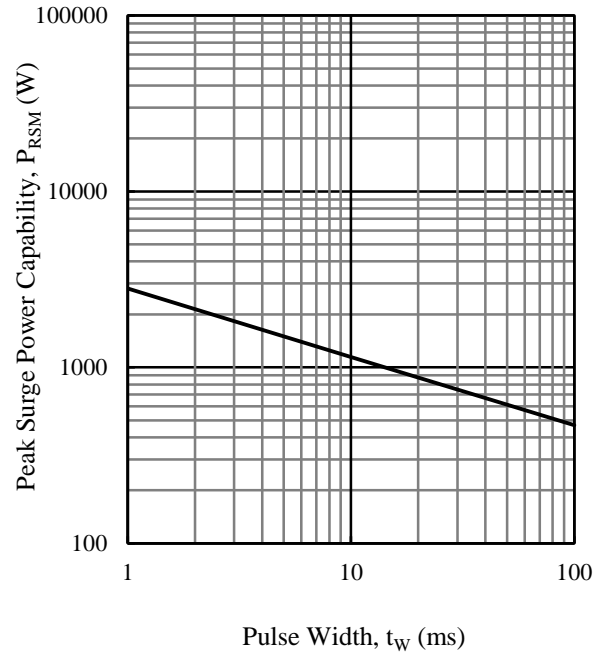


Figure 4. Peak Surge Reverse Power Capability<sup>(5)</sup>

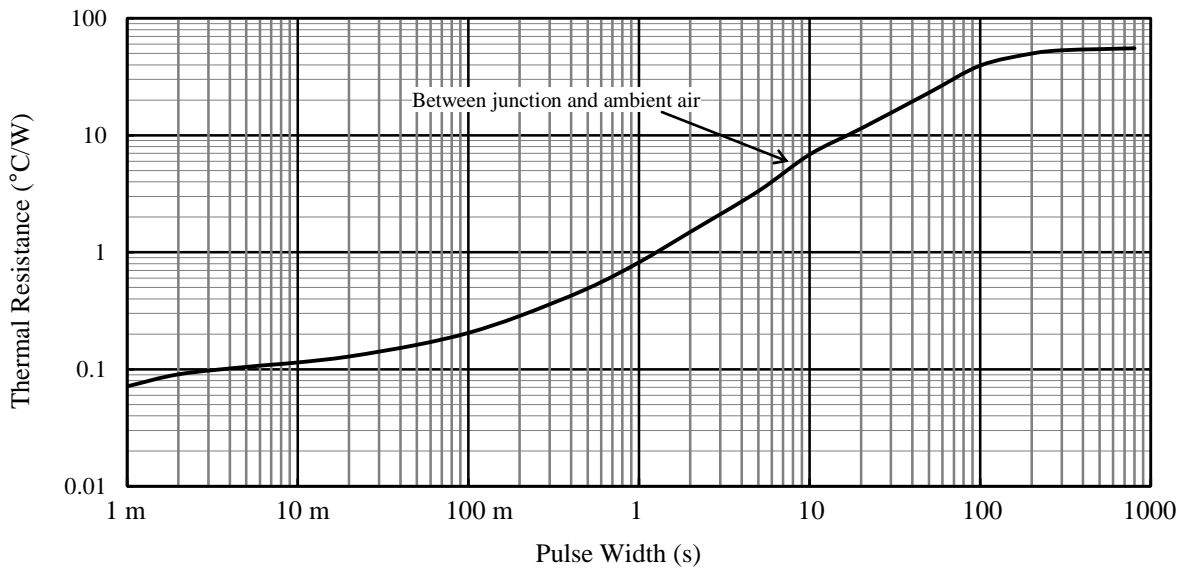


Figure 5. Typical Transient Thermal Resistance

<sup>(4)</sup> See Figure 1 for the measurement conditions.

<sup>(5)</sup> The pulse is single block pulse.

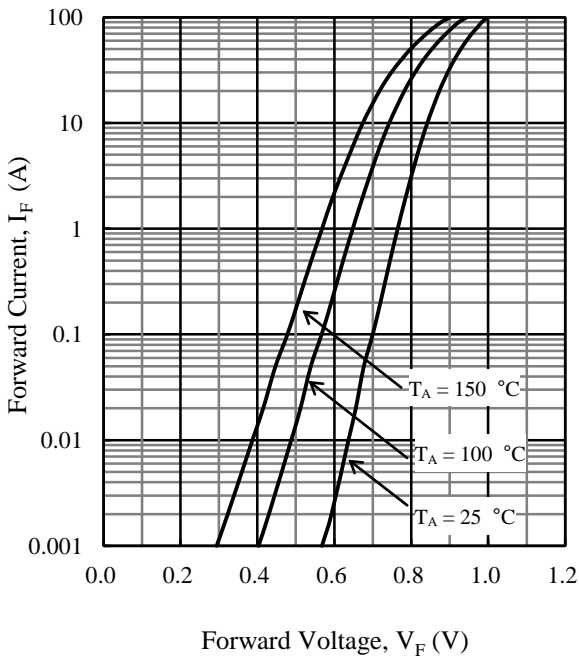


Figure 6.  $I_F - V_F$  Typical Characteristics

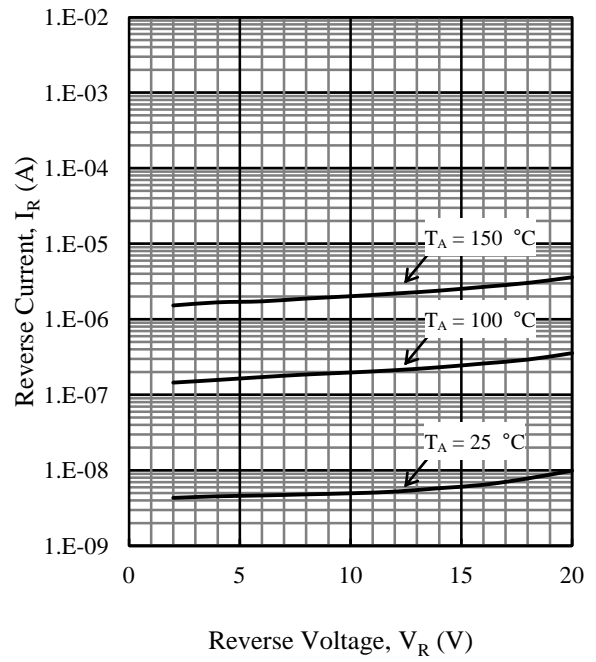


Figure 7.  $I_R - V_R$  Typical Characteristics

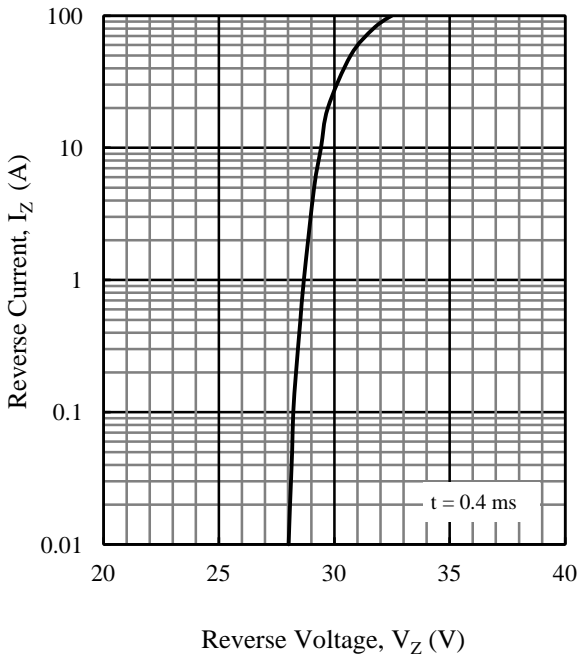


Figure 8.  $I_Z - V_Z$  Typical Characteristic

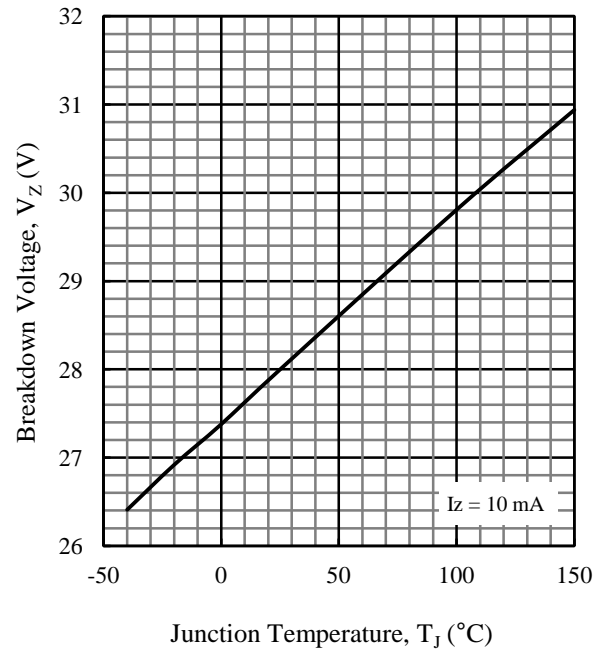
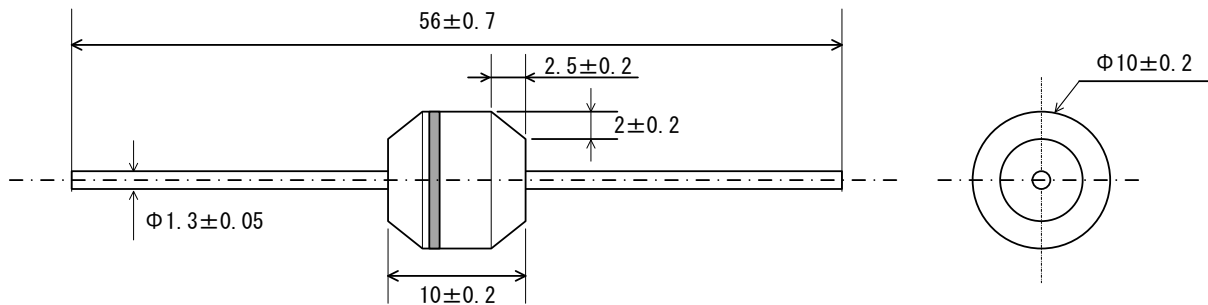


Figure 9.  $V_Z - T_J$  Typical Characteristic

# PZ628

## Physical Dimensions

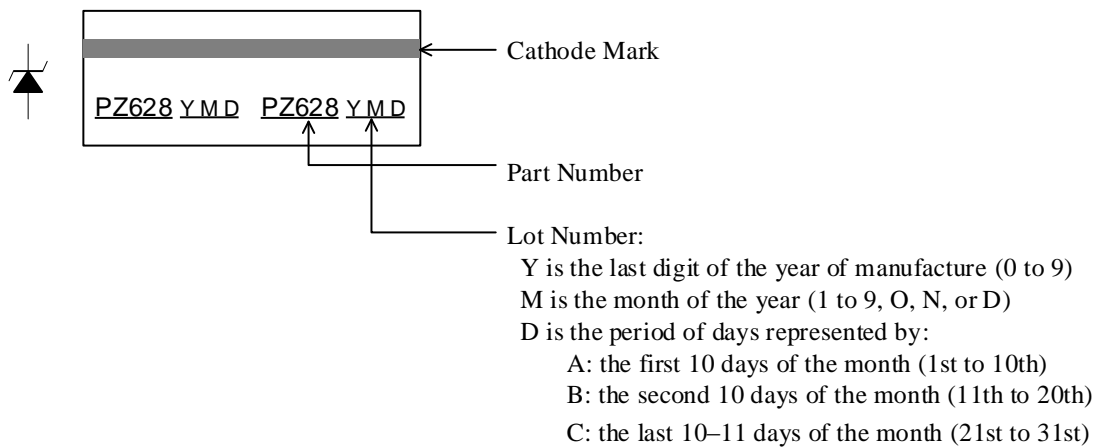
- Axial ( $\phi 10 \times 10L / \phi 1.3$ )



### NOTES:

- Dimensions in millimeters
- Bare leads: Pb-free (RoHS compliant)
- When soldering the products, it is required to minimize the working time, within the following limits:  
Flow:  $260 \pm 5$  °C /  $10 \pm 1$  s, 2 times
- Soldering Iron:  $380 \pm 10$  °C /  $3.5 \pm 0.5$  s, 1 time (Soldering should be at a distance of at least 1.5 mm from the body of the product.)

## Marking Diagram



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