

$P_D = 5\text{ W}$
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

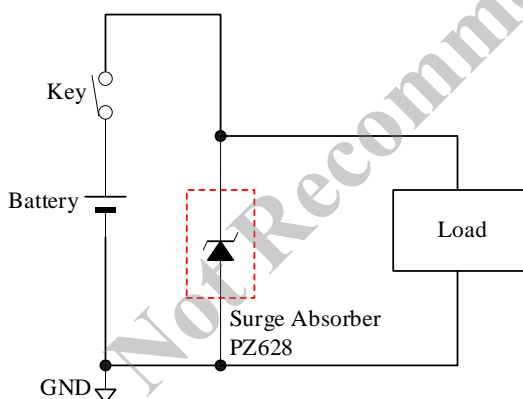
- V_Z ----- 25 V to 31 V
- P_{RSM} ----- 1500 W (5 ms, single block pulse)
- P_D ----- 5 W
- Meets the Surge Protection Requirements in ISO7637-2 Standard (Pulse 1 to 3)
- High Reliability
- High Surge Capability
- Flammability UL94V-0 (Equivalent)
- Bare leads: Pb-free (RoHS compliant)

Applications

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

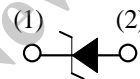
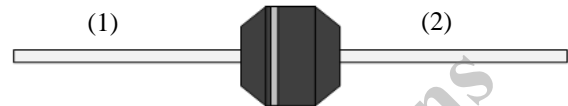
- Engine Control Units
- Electric Control Units
- Braking System
- Power Steering System
- Airbags
- Audio/Infotainment Equipment

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 ⁽¹⁾	P_D		5	W	
Peak Reverse Power	P_{RSM}	5 ms, single block pulse	1500	W	
Peak Surge Reverse Current	I_{RSM}	⁽²⁾	65	A	
Peak Reverse Current	I_{ZM}	$T_L = 25^{\circ}\text{C}$ ⁽³⁾	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	μA	
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	Ω	

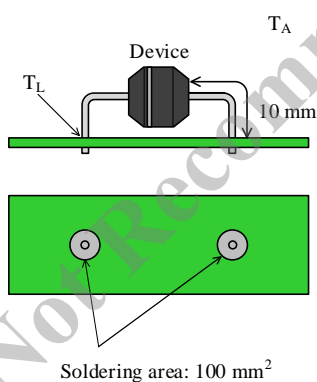


Figure 1. Lead Temperature Measurement Conditions

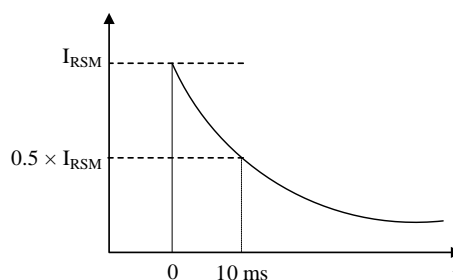


Figure 2. Definition of Peak Surge Reverse Current

⁽¹⁾ See Figure 3.

⁽²⁾ I_{RSM} is defined as shown in Figure 2.

⁽³⁾ Lead temperature is measured as shown in Figure 1.

Rating and Characteristics Curves

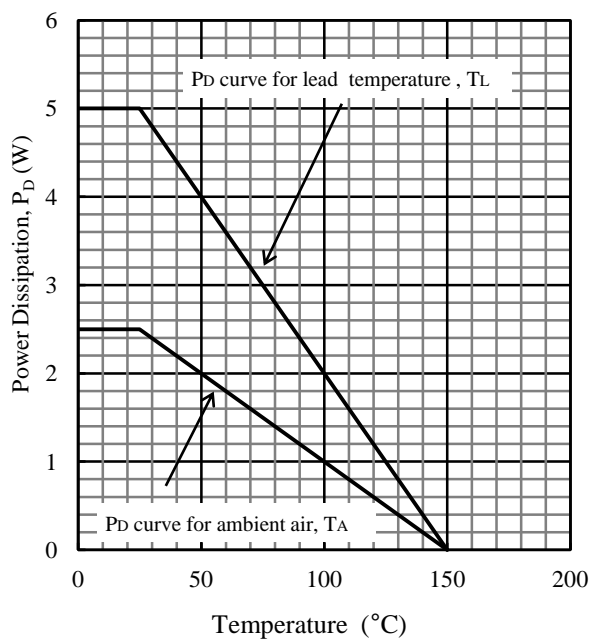
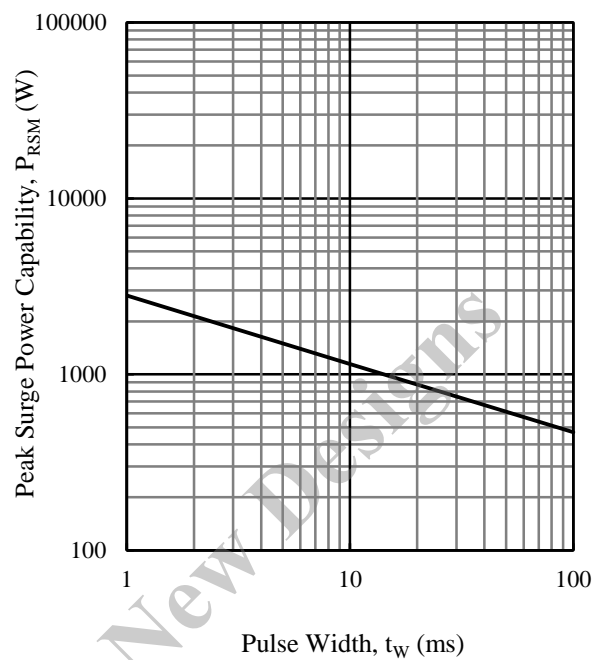
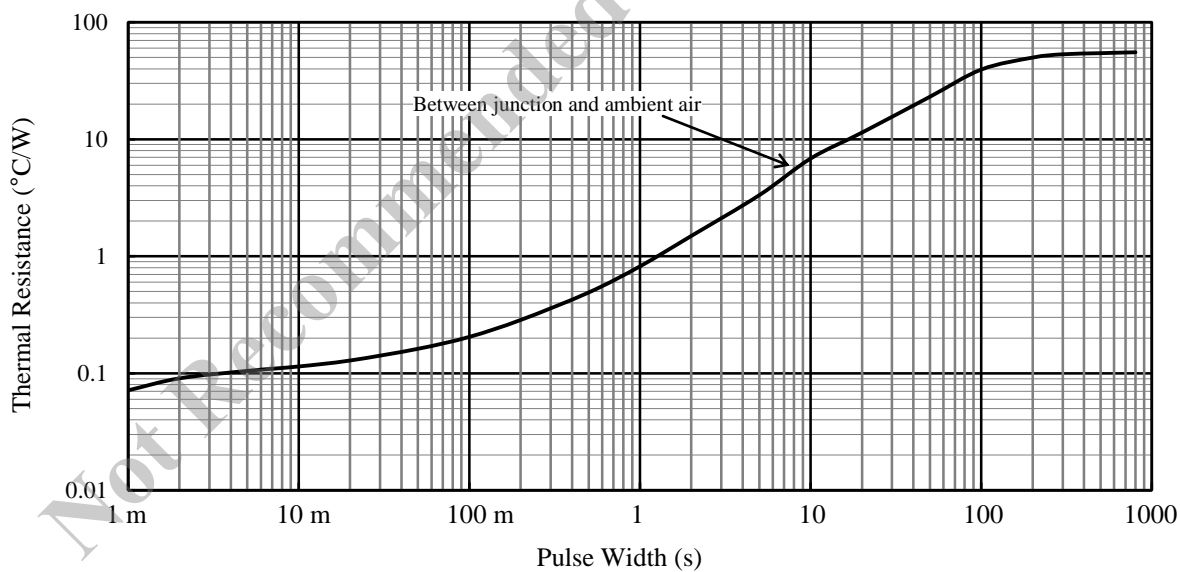
Figure 3. Power Dissipation Curves⁽⁴⁾Figure 4. Peak Surge Reverse Power Capability⁽⁵⁾

Figure 5. Typical Transient Thermal Resistance

⁽⁴⁾ See Figure 1 for the measurement conditions.

⁽⁵⁾ The pulse is single block pulse.

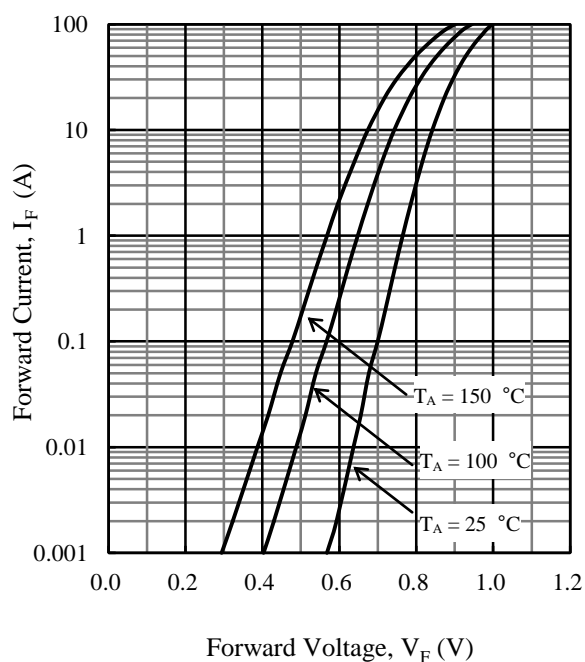


Figure 6. $I_F - V_F$ Typical Characteristics

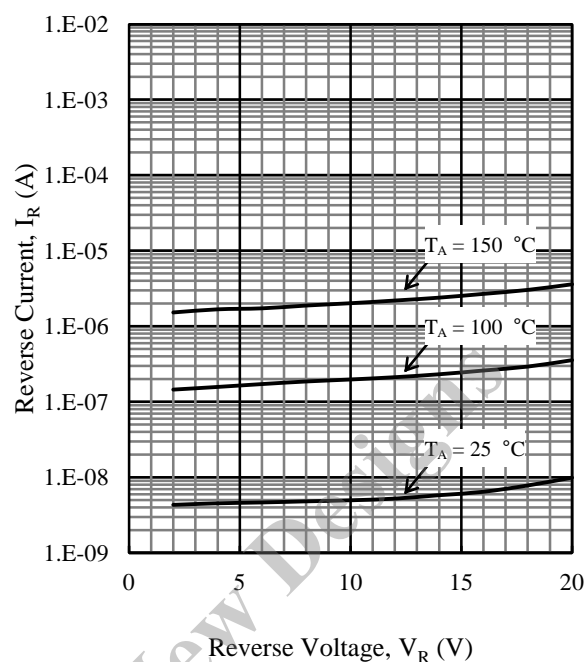


Figure 7. $I_R - V_R$ Typical Characteristics

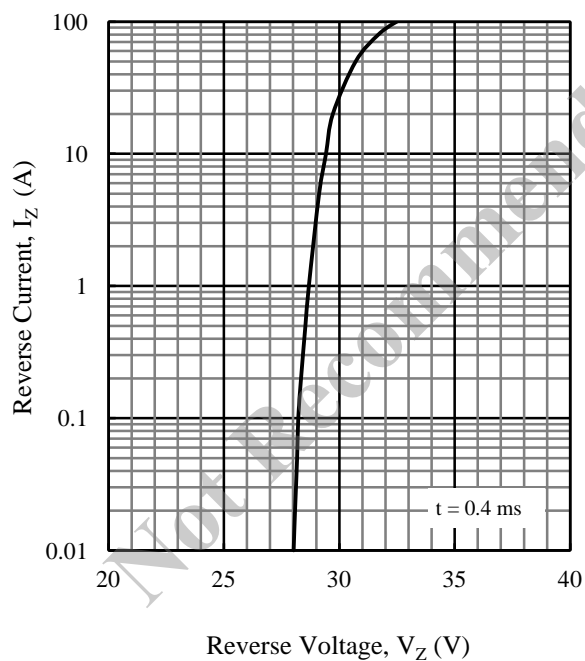


Figure 8. $I_Z - V_Z$ Typical Characteristic

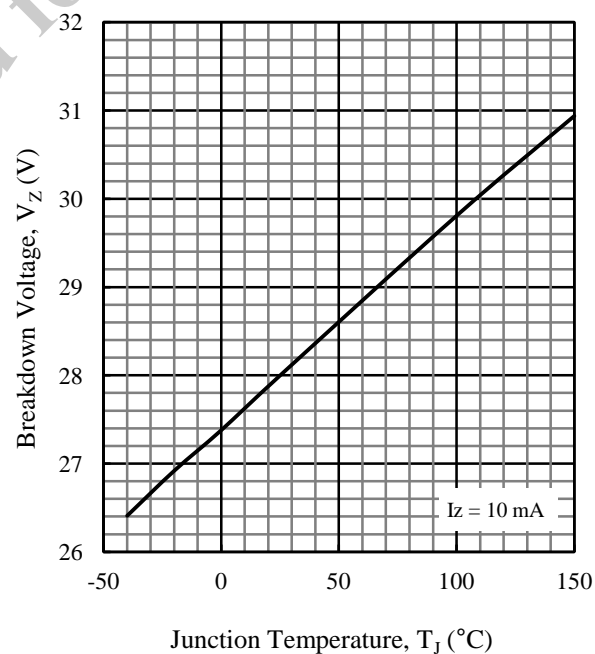
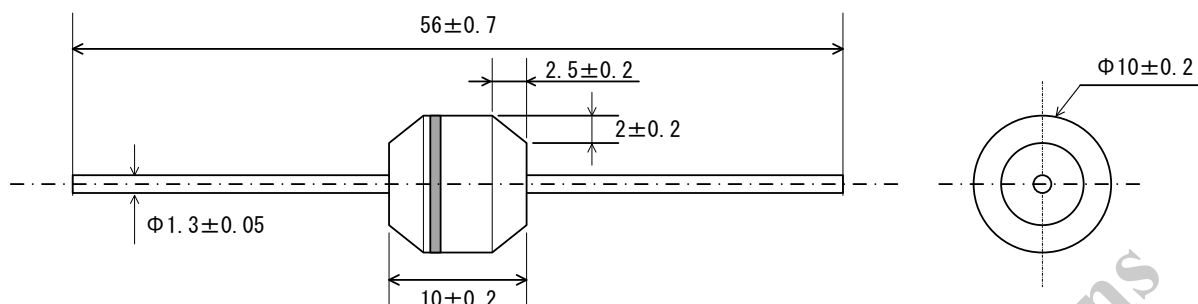


Figure 9. $V_Z - T_J$ Typical Characteristic

Physical Dimensions

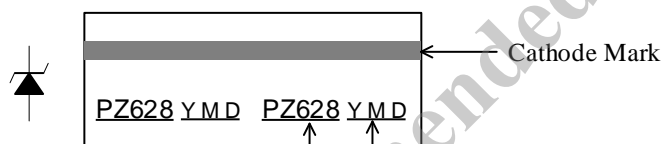
• Axial ($\phi 10 \times 10L / \phi 1.3$)



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: $260 \pm 5 \text{ }^{\circ}\text{C} / 10 \pm 1 \text{ s}$, 2 times
- Soldering Iron: $380 \pm 10 \text{ }^{\circ}\text{C} / 3.5 \pm 0.5 \text{ s}$, 1 time (Soldering should be at a distance of at least 1.5 mm from the body of the product.)

Marking Diagram



Cathode Mark

Part Number

Lot Number:

Y is the last digit of the year of manufacture (0 to 9)

M is the month of the year (1 to 9, O, N, or D)

D is the period of days represented by:

A: the first 10 days of the month (1st to 10th)

B: the second 10 days of the month (11th to 20th)

C: the last 10–11 days of the month (21st to 31st)

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