# 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

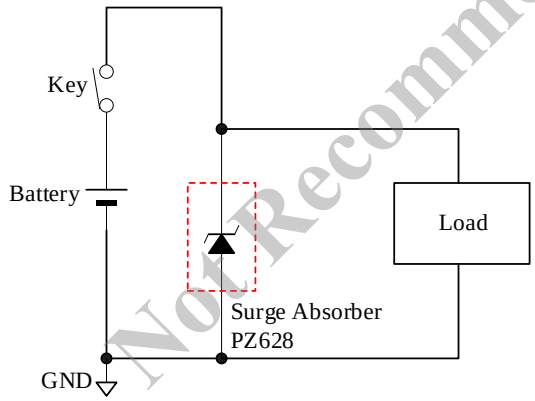
- $V_Z$ ---------- 25 V to 31 V
- $P_{RSM}$ ----------1500 W (5 ms, single block pulse)
- $P_D$ ----------5 W
- Meets the Surge Protection Requirements in ISO7637-2 Standard (Pulse 1 to 3)
- High Reliability
- High Surge Capability
- Flammability UL94V-0 (Equivalent)
- Bare leads: Pb-free (RoHS compliant)

## Applications

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

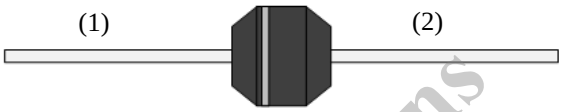
- Engine Control Units
- Electric Control Units
- Braking System
- Power Steering System
- Airbags
- Audio/Infotainment Equipment

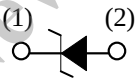
## Typical Application




## Package

Axial (φ10 × 10L / φ1.3)




(1) Cathode
(2) Anode

Not to scale

## Absolute Maximum Ratings

Unless otherwise specified, $T_A$ = 25 °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°C(3) | 165 | mA | |
| Junction Temperature | $T_J$ | | −40 to 150 | °C | |
| Storage Temperature | $T_{STG}$ | | −40 to 150 | °C | |

## Electrical Characteristics

Unless otherwise specified, $T_A$ = 25 °C.

| Parameter | Symbol | Conditions | Min. | Typ. | Max. | Unit | Remarks |
|---|---|---|---|---|---|---|---|
| Forward Voltage Drop | $V_F$ | $I_F$ = 5.0 A | — | — | 0.95 | V | |
| Reverse Leakage Current | $I_R$ | $V_R$ = 20 V | — | — | 10 | μA | |
| Reverse Leakage Current Under High Temperature | H·$I_R$ | $V_R$ = 20 V, $T_J$ = 150 °C | — | — | 0.5 | mA | |
| Breakdown Voltage | $V_Z$ | $I_Z$ = 10 mA | 25 | — | 31 | V | |
| Breakdown Voltage Temperature Coefficient | $r_Z$ | $I_Z$ = 10 mA | — | — | 36 | mV/°C | |
| Breakdown Region Equivalent Resistance | $R_Z$ | $I_Z$ = 1 mA to 10 mA | — | — | 50 | Ω | |

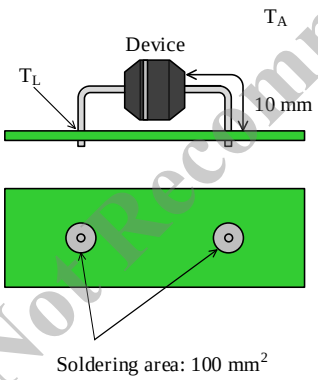



Figure 1. Lead Temperature Measurement Conditions

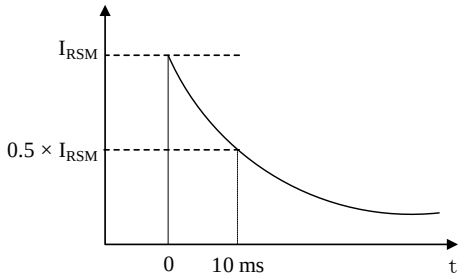



Figure 2. Definition of Peak Surge Reverse Current

(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

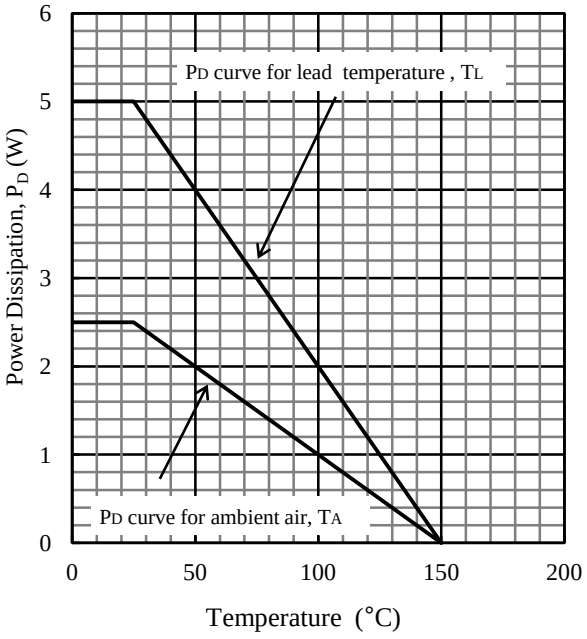



Figure 3. Power Dissipation Curves[4]

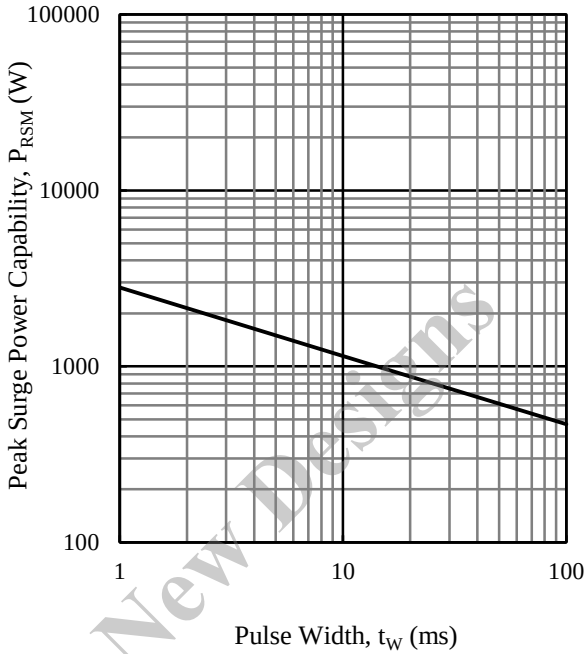



Figure 4. Peak Surge Reverse Power Capability[5]

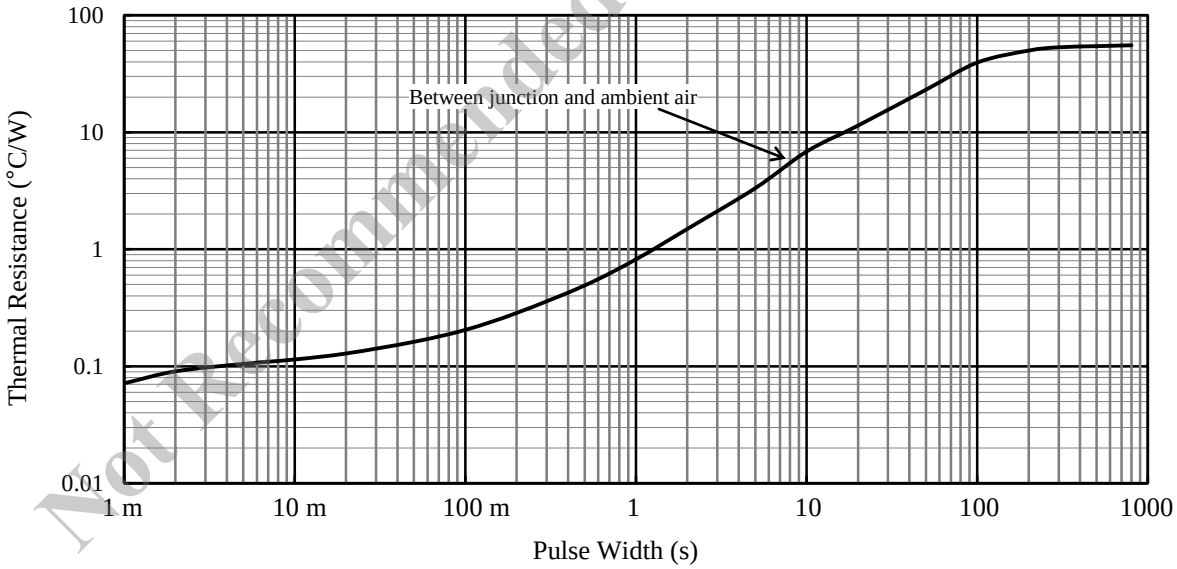



Figure 5. Typical Transient Thermal Resistance



[4] See Figure 1 for the measurement conditions.
[5] The pulse is single block pulse.

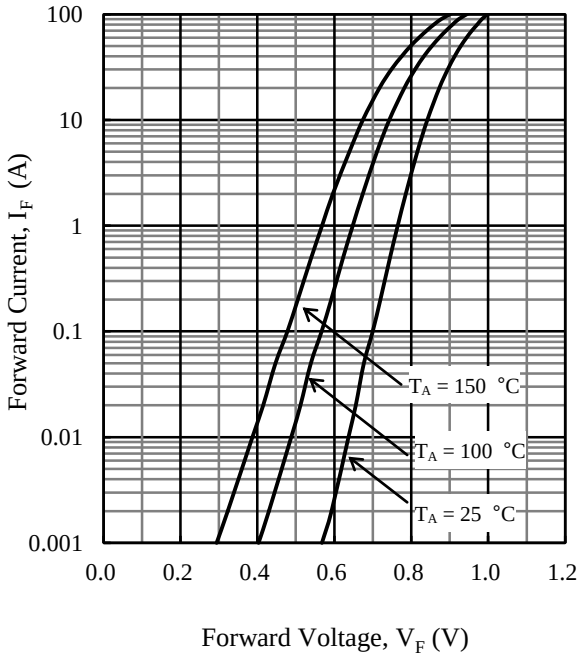



Figure 6. $I_F$－$V_F$ Typical Characteristics

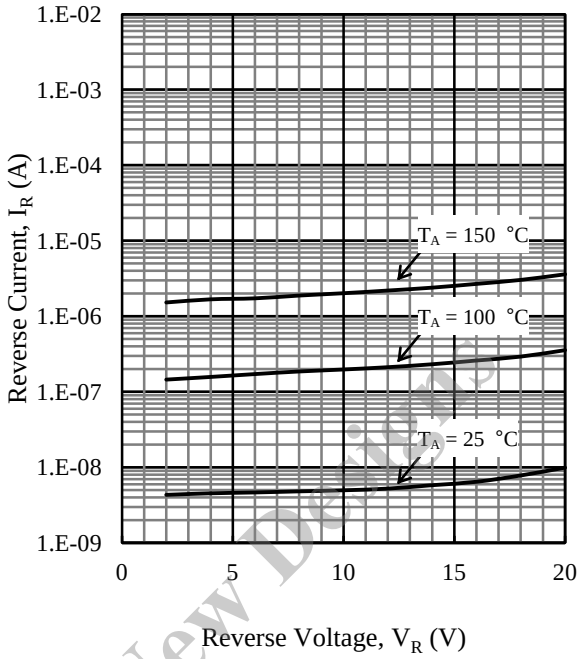



Figure 7. $I_R$－$V_R$ Typical Characteristics

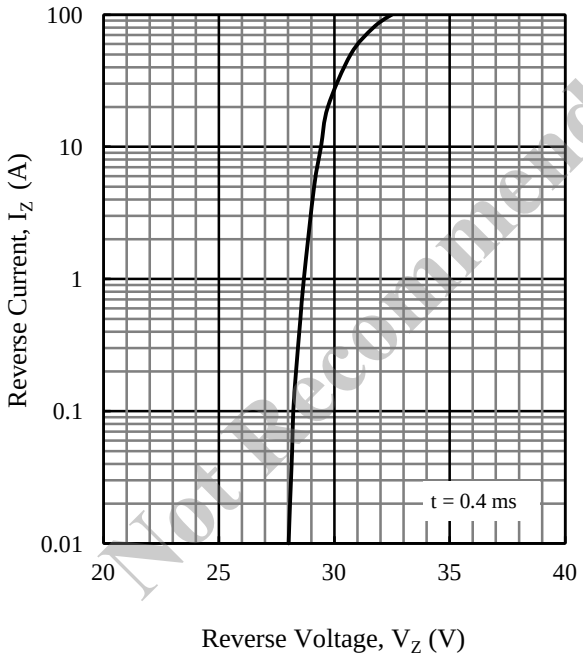



Figure 8. $I_Z$－$V_Z$ Typical Characteristic

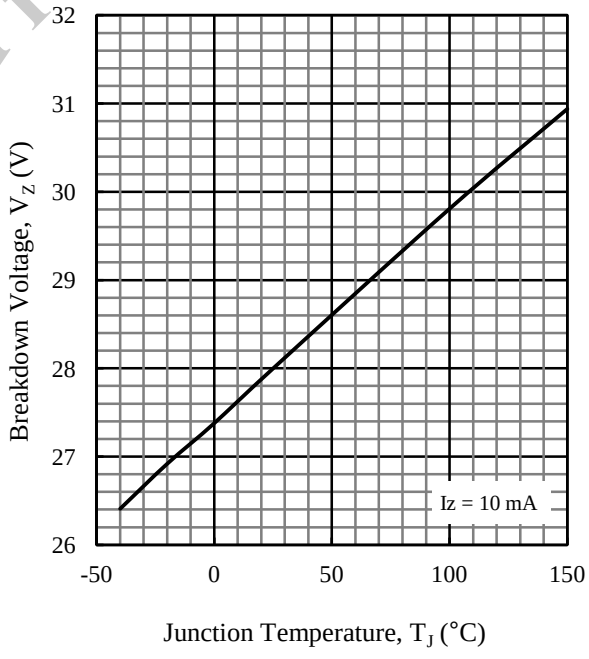
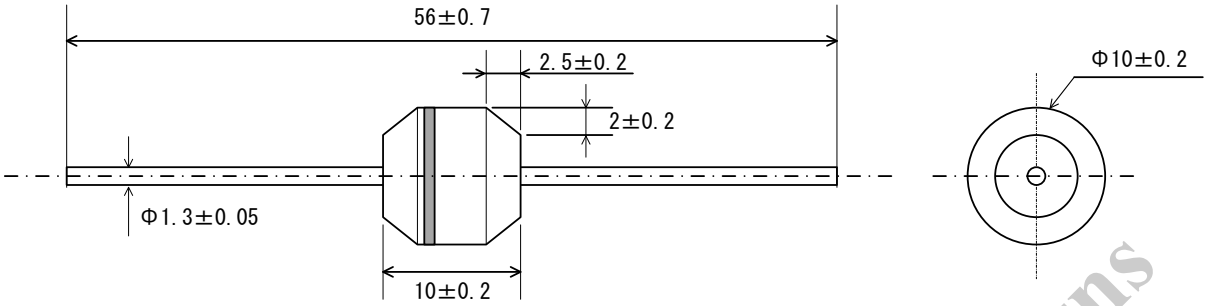



Figure 9. $V_Z$－$T_J$ Typical Characteristic

## Physical Dimensions

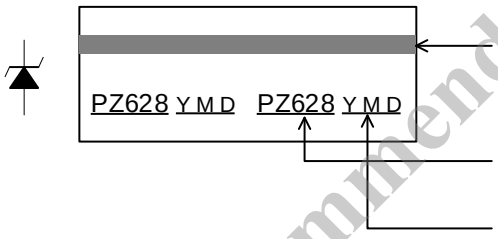
● **Axial (φ10 × 10L / φ1.3)**




**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 ± 5 °C / 10 ± 1 s, 2 times
- Soldering Iron: 380 ± 10 °C / 3.5 ± 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




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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