P_D = 1 W
Transient Voltage Suppressor Diode
SJPZ-K28

Data Sheet

Description

The SJPZ-K28 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

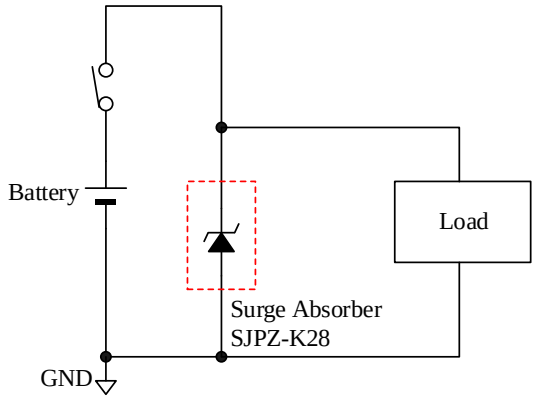
- V_Z ---------- 25 V to 31 V
- P_{RSM} ---------- 50 W (5 ms, single block pulse)
- P_D ---------- 1 W
- AEC-Q101 Qualified
- Meets the Surge Protection Requirements in ISO7637-2 Standard (Pulse 1 to 3)
- Suitable for High Reliability and Automotive Requirement
- High Surge Capability
- Flammability UL94V-0 (Equivalent)
- Bare Lead Frame: Pb-free (RoHS Compliant)

Applications

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

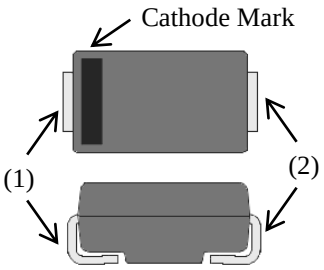
- Engine Control Units
- Electric Control Units
- Braking System
- Power Steering System
- Airbags
- Audio/Infotainment Equipment

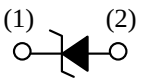
Typical Application



Package

SJP





(1) Cathode
(2) Anode

Not to scale

Absolute Maximum Ratings

Unless otherwise specified, T_A = 25 °C.

Parameter	Symbol	Conditions	Rating	Unit
Power Dissipation[1]	P_D	Lead temperature, T_L[2]	1	W
DC Blocking Voltage	V_{DC}		20	V
Peak Pulse Reverse Power	P_{RSM}	5 ms, single block pulse	50	W
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
Forward Voltage Drop	V_F	I_F = 1 A	—	—	0.95	V
Reverse Leakage Current	I_R	V_R = 20 V	—	—	10	μA
Breakdown Voltage	V_Z	I_Z = 1 mA	25	—	31	V
Breakdown Voltage Temperature Coefficient	r_Z	I_Z = 1 mA	—	25	—	mV/°C
Breakdown Region Equivalent Resistance	R_Z	I_Z = 1 mA to 10 mA	—	26	—	Ω
Thermal Resistance	$R_{th(J-L)}$	[3]	—	—	20	°C/W

Mechanical Characteristics

Parameter	Conditions	Min.	Typ.	Max.	Unit
Package Weight		—	0.072	—	g

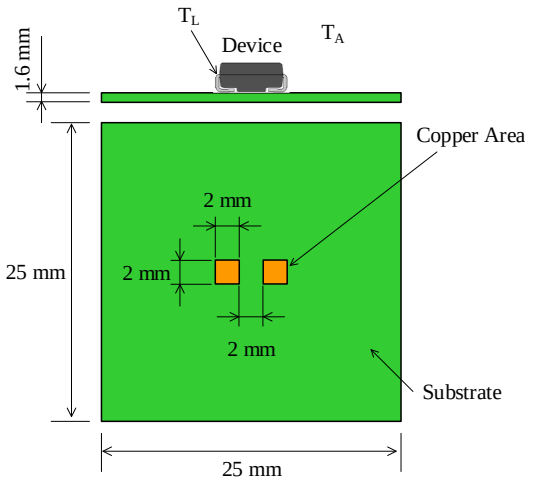


Figure 1. Lead Temperature Measurement Conditions

[1] See Figure 2.
[2] See Figure 1.
[3] $R_{th(J-L)}$ is thermal resistance between junction and lead. Lead temperature is measured as shown in Figure 1.

Derating Curves

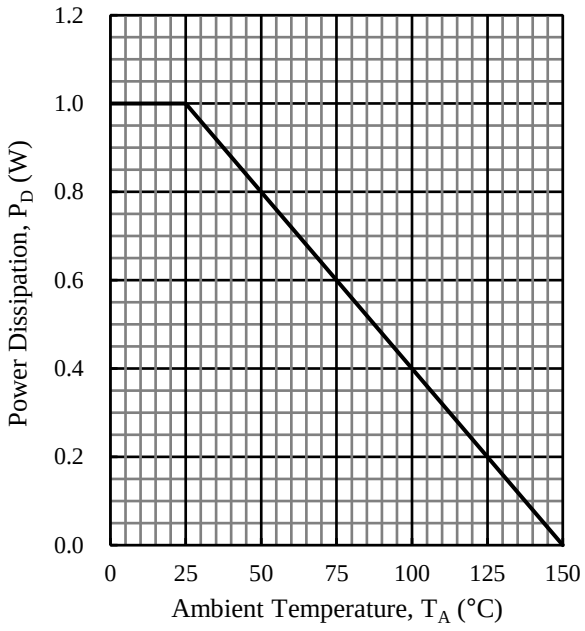


Figure 2. Power Dissipation Curve[4]

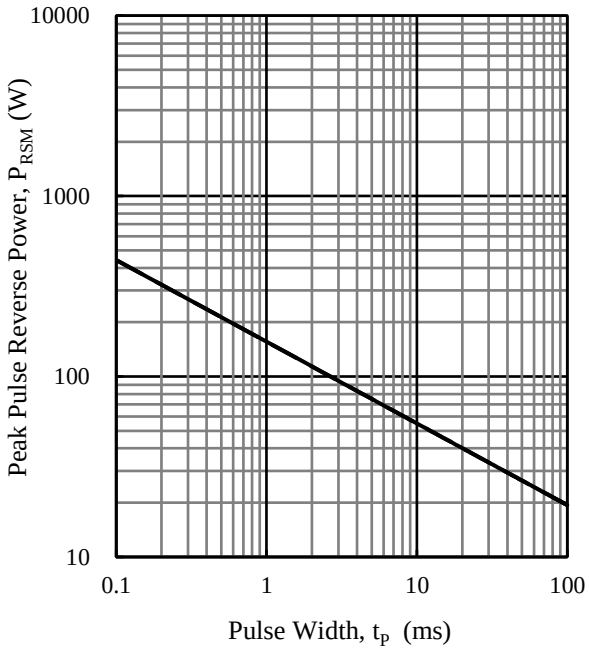


Figure 3. Peak Pulse Reverse Power[5]

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

Characteristic Curves

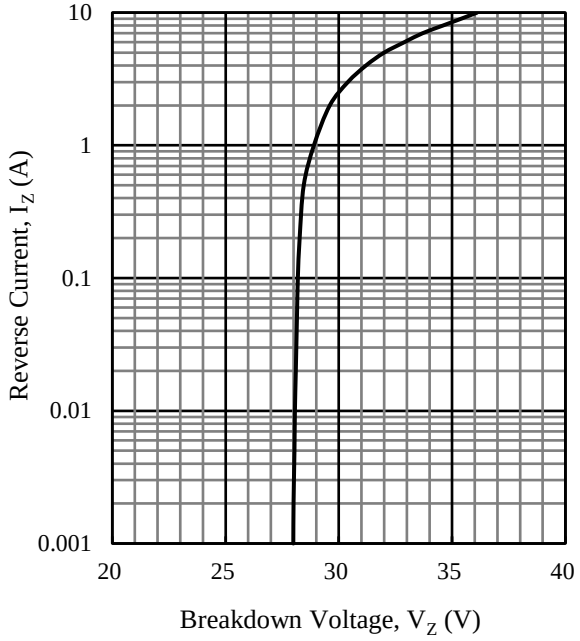


Figure 4. Typical Characteristics: I_Z vs. V_Z (T_J = 25 °C, t = 0.4 ms)

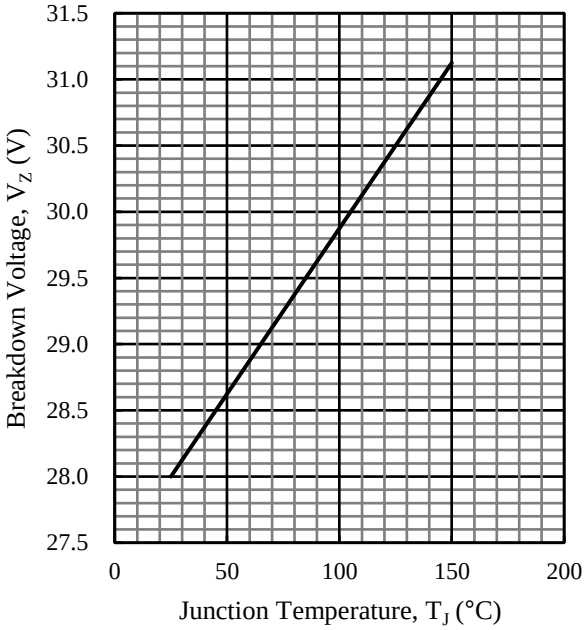


Figure 5. Typical Characteristics: V_Z vs. T_J

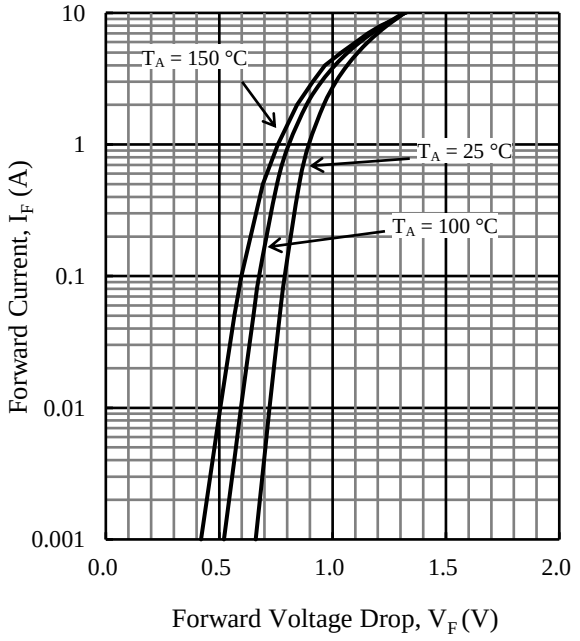


Figure 6. Typical Characteristics: I_F vs. V_F

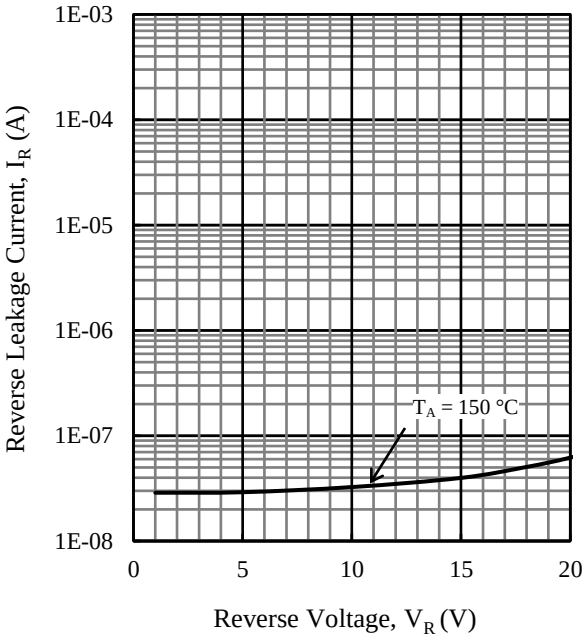


Figure 7. Typical Characteristics: I_R vs. V_R [6]

[6] I_R is less than 10 nA at 100 °C or less.

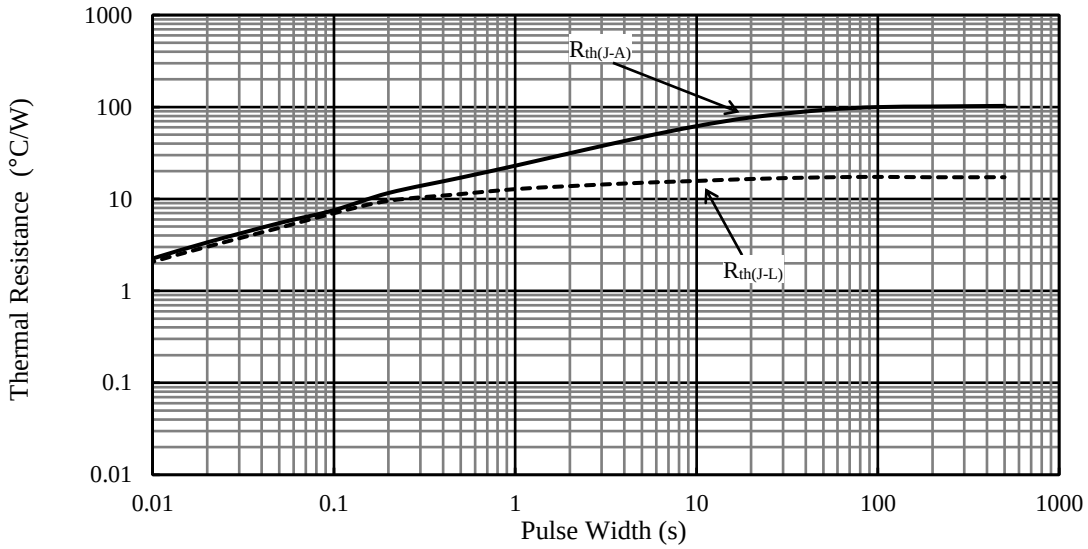
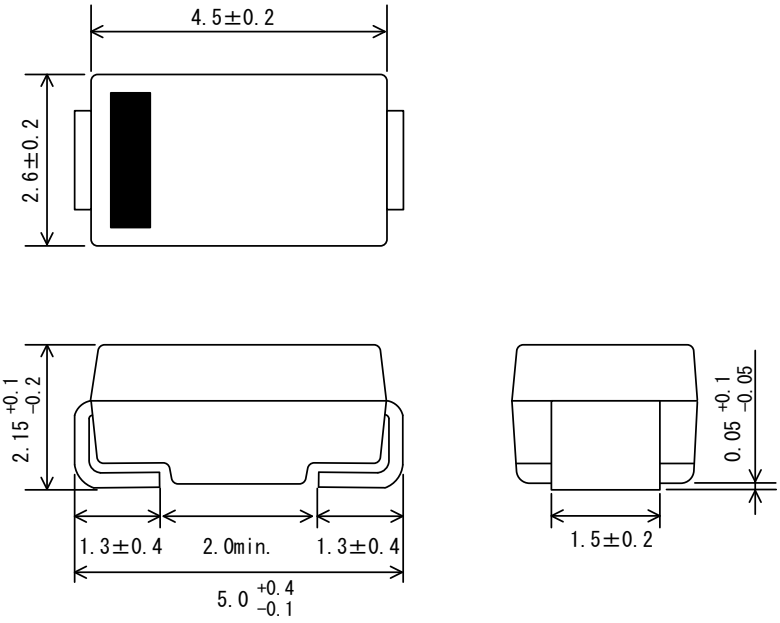


Figure 8. Typical Transient Thermal Resistance Characteristics [7]

[7] Lead temperature is measured as shown in Figure 1.

Physical Dimensions

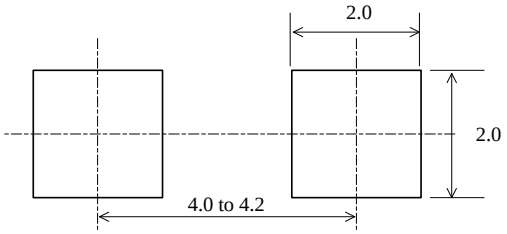
● **SJP Package**



NOTES:

- Dimensions in millimeters
- Bare lead frame: Pb-free (RoHS compliant)
- Moisture Sensitivity Level 1 (MSL 1)
- When soldering the products, it is required to minimize the working time within the following limits:
  Flow: 260 °C / 10 s, 1 time
  Reflow:
  Preheat: 150 °C to 200 °C / 60 s to 120 s
  Solder heating: 255 °C / 30s, 3 times (260 °C peak)
  Soldering Iron: 350 °C / 3.5 s, 1 time

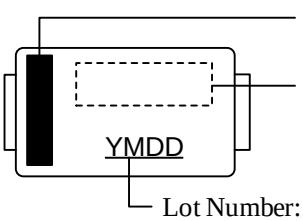
● **SJP Land Pattern Example**



NOTE:

- Dimensions in millimeters

Marking Diagram



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)
DD is the day of the month (01 to 31)

Table 1. Specific Device Code

Specific Device Code	Part Number
ZK28	SJPZ-K28

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DSGN-AEZ-16003