

500mW Zener Diode Series

ZD5229ASH thru ZD5267ASH

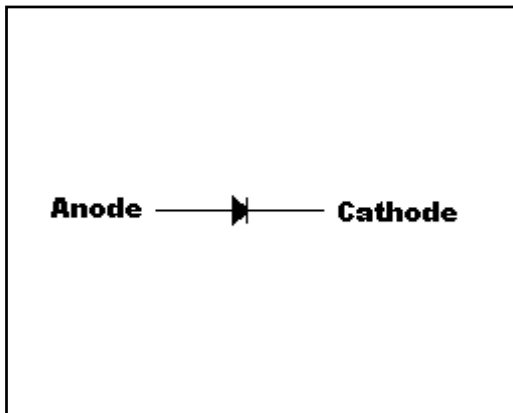
Description

The ZD5229ASH thru ZD5267ASH series covers zener voltage range from 4.3V to 75V, and is encapsulated in SOD-123 package, very suitable for low cost, low power voltage regulation application.

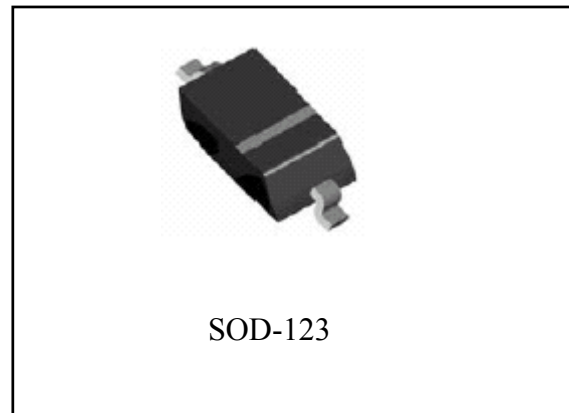
Features

- V_Z tolerance : $\pm 2\%$
- Ultra small surface mount package
- General purpose, medium current
- Planar die construction
- Pb-free lead plating and halogen-free package

Symbol



Outline



Ordering Information

| Device | Package | Shipping |
|------------------|--|------------------------|
| ZD52XXASH-0-T1-G | SOD-123 (Pb-free lead plating and halogen-free package) | 3000 pcs / tape & reel |

- ↑ Product name
- ↑ Product rank, zero for no rank products
- ↑ Packing spec, T1 : 3000 pcs / tape & reel, 7" reel
- ↑ Environment friendly grade : S for RoHS compliant products, G for RoHS compliant and green compound products



Absolute Maximum Ratings(Tj=25°C, unless otherwise specified)

- Maximum Temperatures
 Operating and Storage Temperature Range Tj, Tstg -65~+150 °C
- Maximum Forward Voltage @ If=10mA0.9V
- Maximum Power Dissipation
 Total Power Dissipation @TA=25 °C Ptot (Note 1)500 mW
- Thermal Resistance, Junction to Ambient RθJA250°C/W
 Thermal Resistance, Junction to Case RθJC150°C/W
- Maximum Z-current..... Ptot/Vz mA

Note : 1. Parts mounted on FR-5 board with area of 1inch × 1inch.

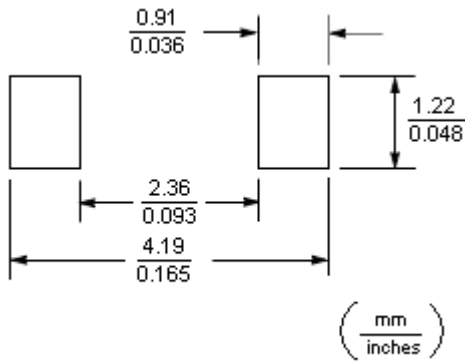
Electrical Characteristic (Ta=25°C, unless otherwise noted)

| Device | Type Code | Nom. Zener Voltage | | | Max. Zener Impedance | | | | Max. Zener Current | Max. Reverse Leakage Current | |
|---------|-----------|--------------------|-------|-------|----------------------|------|------|------|--------------------|------------------------------|-----|
| | | Vz@IzT (V) | | | ZzT | IzT | ZzK | IzK | IzM@Ta | IR | VR |
| | | Nom. | Min. | Max. | (Ω) | (mA) | (Ω) | (mA) | (mA) | (μA) | (V) |
| ZD5229A | G4 | 4.3 | 4.21 | 4.39 | 22 | 20 | 2000 | 0.25 | 106 | 5.0 | 1.0 |
| ZD5230A | G5 | 4.7 | 4.61 | 4.79 | 19 | 20 | 1900 | 0.25 | 97 | 5.0 | 2.0 |
| ZD5231A | E1 | 5.1 | 5.00 | 5.20 | 17 | 20 | 1600 | 0.25 | 89 | 5.0 | 2.0 |
| ZD5232A | E2 | 5.6 | 5.49 | 5.71 | 11 | 20 | 1600 | 0.25 | 81 | 5.0 | 3.0 |
| ZD5233A | E3 | 6.0 | 5.88 | 6.12 | 7.0 | 20 | 1600 | 0.25 | 76 | 5.0 | 3.5 |
| ZD5234A | E4 | 6.2 | 6.08 | 6.32 | 7.0 | 20 | 1000 | 0.25 | 73 | 5.0 | 4.0 |
| ZD5235A | E5 | 6.8 | 6.66 | 6.94 | 5.0 | 20 | 750 | 0.25 | 67 | 3.0 | 5.0 |
| ZD5236A | F1 | 7.5 | 7.35 | 7.65 | 6.0 | 20 | 500 | 0.25 | 61 | 3.0 | 6.0 |
| ZD5237A | F2 | 8.2 | 8.04 | 8.36 | 8.0 | 20 | 500 | 0.25 | 55 | 3.0 | 6.5 |
| ZD5238A | F3 | 8.7 | 8.53 | 8.87 | 8.0 | 20 | 600 | 0.25 | 55 | 3.0 | 6.5 |
| ZD5239A | F4 | 9.1 | 8.92 | 9.28 | 10 | 20 | 600 | 0.25 | 50 | 3.0 | 7.0 |
| ZD5240A | F5 | 10 | 9.80 | 10.20 | 17 | 20 | 600 | 0.25 | 45 | 3.0 | 8.0 |
| ZD5241A | H1 | 11 | 10.78 | 11.22 | 22 | 20 | 600 | 0.25 | 41 | 2.0 | 8.4 |
| ZD5242A | H2 | 12 | 11.76 | 12.24 | 30 | 20 | 600 | 0.25 | 38 | 1.0 | 9.1 |
| ZD5243A | H3 | 13 | 12.74 | 13.26 | 13 | 9.5 | 600 | 0.25 | 35 | 0.5 | 9.9 |
| ZD5245A | H5 | 15 | 14.70 | 15.30 | 16 | 8.5 | 600 | 0.25 | 30 | 0.1 | 11 |
| ZD5246A | J1 | 16 | 15.68 | 16.32 | 17 | 7.8 | 600 | 0.25 | 28 | 0.1 | 12 |
| ZD5248A | J3 | 18 | 17.64 | 18.36 | 21 | 7.0 | 600 | 0.25 | 25 | 0.1 | 14 |
| ZD5250A | J5 | 20 | 19.60 | 20.40 | 25 | 6.2 | 600 | 0.25 | 23 | 0.1 | 15 |
| ZD5251A | K1 | 22 | 21.56 | 22.44 | 29 | 5.6 | 600 | 0.25 | 21 | 0.1 | 17 |
| ZD5252A | K2 | 24 | 23.52 | 24.48 | 33 | 5.2 | 600 | 0.25 | 19.1 | 0.1 | 18 |
| ZD5254A | K4 | 27 | 26.46 | 27.54 | 41 | 5.0 | 600 | 0.25 | 16.8 | 0.1 | 21 |
| ZD5255A | K5 | 28 | 27.44 | 28.56 | 44 | 4.5 | 600 | 0.25 | 16.2 | 0.1 | 21 |
| ZD5256A | M1 | 30 | 29.40 | 30.60 | 49 | 4.2 | 600 | 0.25 | 15.1 | 0.1 | 23 |
| ZD5257A | M2 | 33 | 32.34 | 33.66 | 58 | 3.8 | 700 | 0.25 | 13.8 | 0.1 | 25 |
| ZD5258A | M3 | 36 | 35.28 | 36.72 | 70 | 3.4 | 700 | 0.25 | 12.6 | 0.1 | 27 |
| ZD5259A | M4 | 39 | 38.22 | 39.78 | 80 | 3.2 | 800 | 0.25 | 11.6 | 0.1 | 30 |



| | | | | | | | | | | | |
|---------|----|----|-------|-------|-----|-----|------|------|------|-----|----|
| ZD5260A | M5 | 43 | 42.14 | 43.86 | 93 | 3 | 900 | 0.25 | 10.6 | 0.1 | 33 |
| ZD5261A | N1 | 47 | 46.06 | 47.94 | 105 | 2.7 | 1000 | 0.25 | 9.6 | 0.1 | 36 |
| ZD5262A | N2 | 51 | 49.98 | 52.02 | 125 | 2.5 | 1100 | 0.25 | 8.8 | 0.1 | 39 |
| ZD5263A | N3 | 56 | 54.88 | 57.12 | 150 | 2.2 | 1300 | 0.25 | 8.0 | 0.1 | 43 |
| ZD5264A | N4 | 60 | 58.8 | 61.2 | 170 | 2.1 | 1400 | 0.25 | 7.5 | 0.1 | 46 |
| ZD5265A | N5 | 62 | 60.76 | 63.24 | 185 | 2.0 | 1400 | 0.25 | 7.3 | 0.1 | 47 |
| ZD5266A | P1 | 68 | 66.64 | 69.36 | 230 | 1.8 | 1600 | 0.25 | 6.6 | 0.1 | 52 |
| ZD5267A | P2 | 75 | 73.5 | 76.5 | 270 | 1.7 | 1700 | 0.25 | 6.0 | 0.1 | 56 |

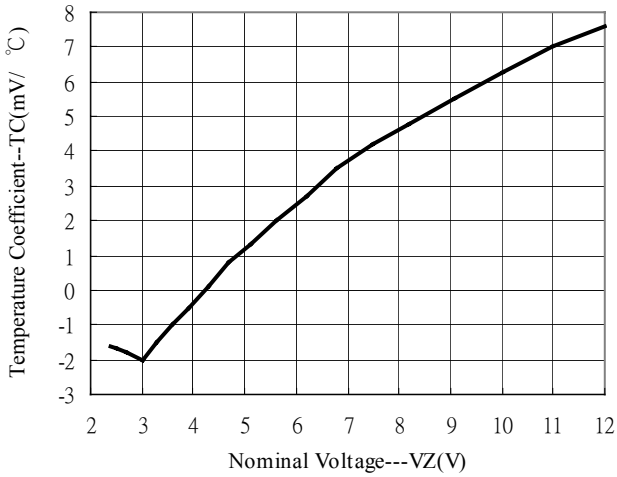
Recommended Soldering Footprint



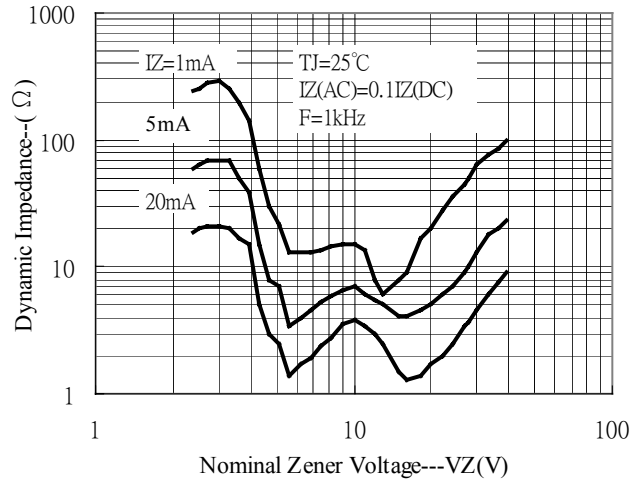


Typical Characteristics

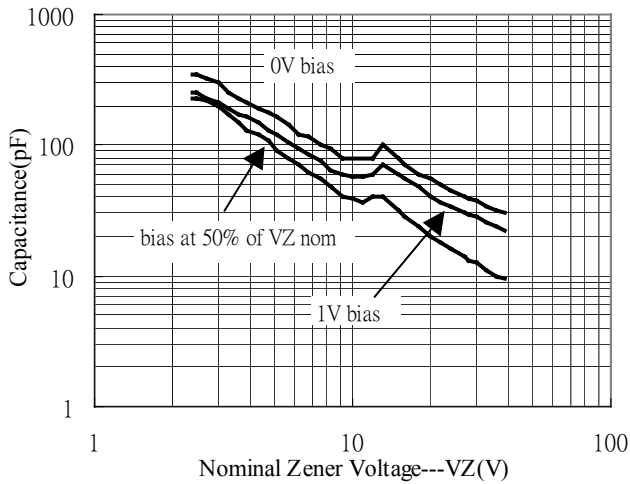
Typical Temperature Coefficient



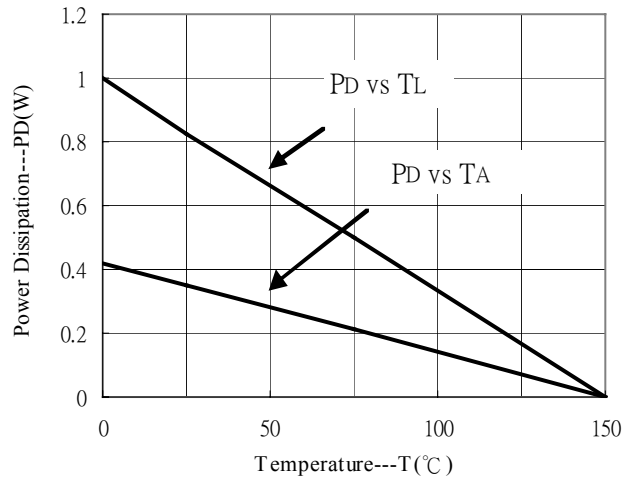
Dynamic Impedance



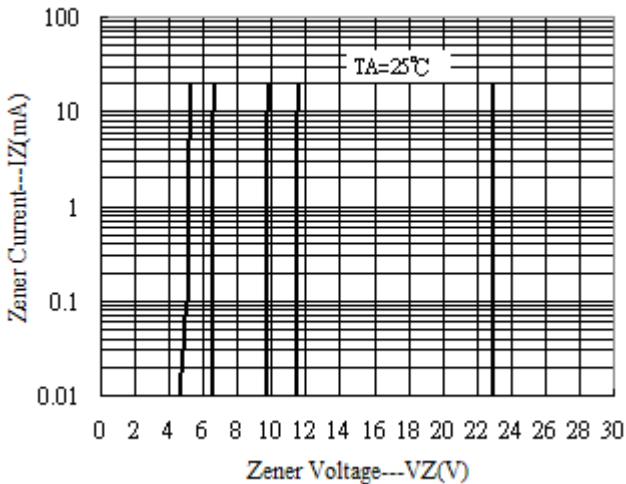
Typical Capacitance



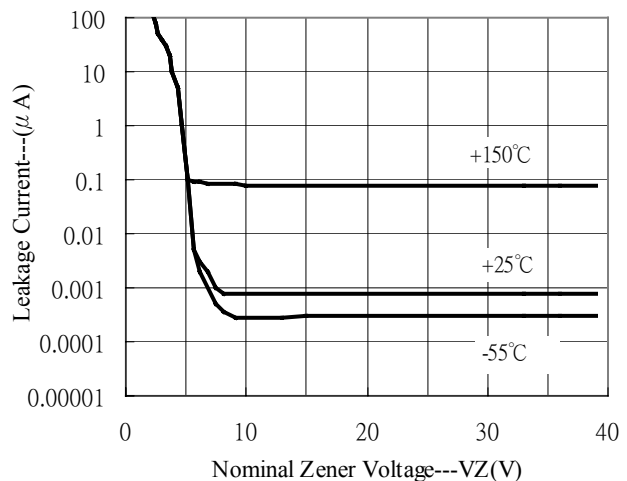
Power Derating Curve



Zener Current vs Zener Voltage



Typical Leakage Current



Recommended wave soldering condition

| | | |
|-----------------|------------------|-----------------|
| Product | Peak Temperature | Soldering Time |
| Pb-free devices | 260 +0/-5 °C | 5 +1/-1 seconds |

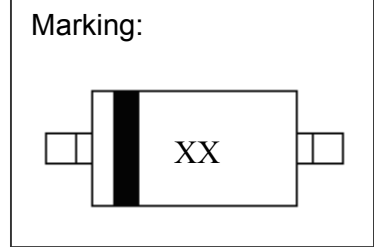
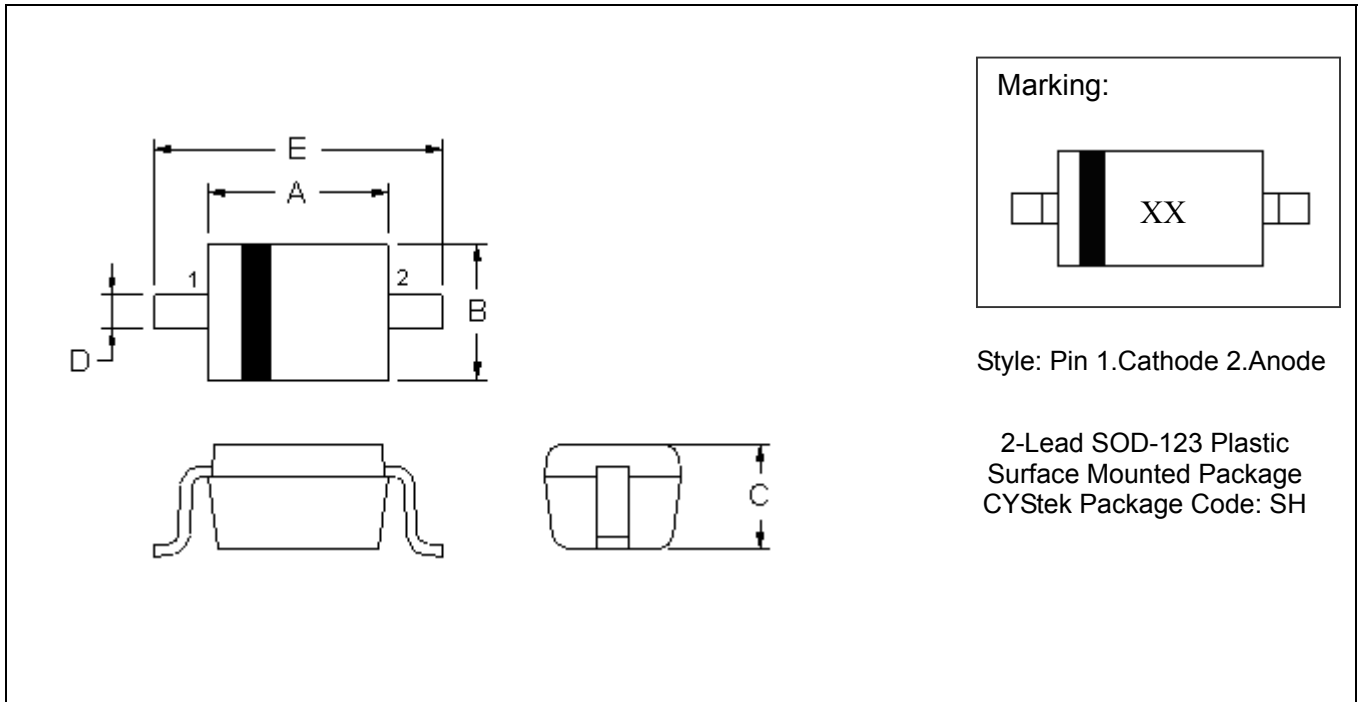
Recommended temperature profile for IR reflow



| Profile feature | Sn-Pb eutectic Assembly | Pb-free Assembly |
|--|-------------------------|------------------|
| Average ramp-up rate (Tsmax to Tp) | 3°C/second max. | 3°C/second max. |
| Preheat | | |
| -Temperature Min(Ts min) | 100°C | 150°C |
| -Temperature Max(Ts max) | 150°C | 200°C |
| -Time(ts min to ts max) | 60-120 seconds | 60-180 seconds |
| Time maintained above: | | |
| -Temperature (Tl) | 183°C | 217°C |
| - Time (tL) | 60-150 seconds | 60-150 seconds |
| Peak Temperature(Tp) | 240 +0/-5 °C | 260 +0/-5 °C |
| Time within 5°C of actual peak temperature(tp) | 10-30 seconds | 20-40 seconds |
| Ramp down rate | 6°C/second max. | 6°C/second max. |
| Time 25 °C to peak temperature | 6 minutes max. | 8 minutes max. |

Note : All temperatures refer to topside of the package, measured on the package body surface.

SOD-123 Dimension



Style: Pin 1.Cathode 2.Anode

2-Lead SOD-123 Plastic Surface Mounted Package
 CYStek Package Code: SH

*: Typical

| DIM | Inches | | Millimeters | | DIM | Inches | | Millimeters | |
|-----|--------|-------|-------------|-------|-----|--------|-------|-------------|-------|
| | Min. | Max. | Min. | Max. | | Min. | Max. | Min. | Max. |
| A | 0.102 | 0.110 | 2.600 | 2.800 | E | 0.140 | 0.152 | 3.550 | 3.850 |
| B | 0.059 | 0.067 | 1.500 | 1.700 | | | | | |
| C | 0.041 | 0.049 | 1.050 | 1.250 | | | | | |
| D | 0.018 | 0.026 | 0.450 | 0.650 | | | | | |

Notes: 1.Controlling dimension : millimeters.
 2.Lead thickness specified per L/F drawing with solder plating.
 3.If there is any question with packing specification or packing method, please contact your local CYStek sales office.

Material:

- Lead: Pure tin plated
- Mold Compound: Epoxy resin family, flammability solid burning class: UL94V-0

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