



Zener Diodes CDZ55B-T Series



FEATURES

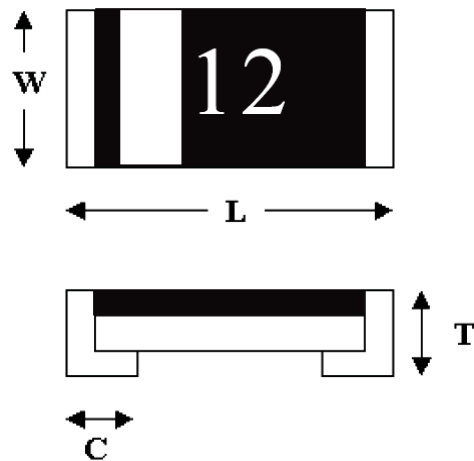
- Silicon planar power zener diodes
- SMD chip pattern, available in various dimension included 1206(CDZ55B series) & 0805(CDZ55B-S series)
- Leadfree and RoHS compliance components

MECHANICAL CHARACTERISTICS

- Size: 0603
- Weight: approx. 4mg
- Marking: Zener voltage & cathode terminal

DIMENSIONS

| Dimension/mm | 0603 |
|--------------|----------|
| L | 1.55±0.1 |
| W | 0.80±0.1 |
| T | 0.65±0.1 |
| C | 0.35±0.1 |



MAXIMUM RATING & THERMAL CHARACTERISTICS¹⁾

| Parameter at T _{amb} =25°C ¹⁾ | Symbol | Value | Unit |
|---|-----------------------|------------|------|
| Power Dissipation | P _{tot} | 200 | mW |
| Repetitive Peak Forward Current | I _{FRM} | 200 | mA |
| Junction Temperature | T _j | 150 | °C |
| Thermal Resistance Junction to Ambient air | R _{θJA} | 300 | °C/W |
| Operating & Storage Temperature range | T _{opr. sta} | -55 to 150 | °C |

1) Valid provided that electrodes are kept at ambient temperature.



ELECTRICAL CHARACTERISTICS¹⁾

| Parameter at $T_{amb}=25^{\circ}C^{1)}$ | Symbol | Value | Unit |
|---|--------|--------------------|------|
| Forward Voltage at $I_F=200mA$ | V_F | 1.5 _{MAX} | V |
| Zener Voltage Tolerance, $B=\pm 2\%$ | | | |

1) Valid provided that electrodes are kept at ambient temperature.

| Part Number | Marking Code | Nominal Zener Voltage | | Max Zener Impedance | | | | Max Reverse Leakage Current | |
|-------------|--------------|-----------------------|-------|---------------------|-----|-------------------|-----|-----------------------------|------|
| | | $V_Z @ I_{ZT}$ | | $Z_{ZT} @ I_{ZT}$ | | $Z_{ZK} @ I_{ZK}$ | | $I_R @ V_R$ | |
| | | Min V | Max V | Ω | mA | Ω | mA | μA | V |
| CDZ55B2V4T | B4 | 2.35 | 2.45 | 85 | 5 | 600 | 1 | 50 | 1 |
| CDZ55B2V7T | B7 | 2.65 | 2.75 | 85 | 5 | 600 | 1 | 10 | 1 |
| CDZ55B3V0T | C | 2.94 | 3.06 | 85 | 5 | 600 | 1 | 4 | 1 |
| CDZ55B3V3T | C3 | 3.23 | 3.37 | 85 | 5 | 600 | 1 | 2 | 1 |
| CDZ55B3V6T | C6 | 3.53 | 3.67 | 85 | 5 | 600 | 1 | 2 | 1 |
| CDZ55B3V9T | C9 | 3.82 | 3.98 | 85 | 5 | 600 | 1 | 2 | 1 |
| CDZ55B4V3T | D3 | 4.21 | 4.39 | 80 | 5 | 600 | 1 | 1 | 1 |
| CDZ55B4V7T | D7 | 4.61 | 4.79 | 70 | 5 | 600 | 1 | 0.5 | 1 |
| CDZ55B5V1T | E1 | 5.00 | 5.20 | 50 | 5 | 550 | 1 | 0.1 | 1 |
| CDZ55B5V6T | E6 | 5.49 | 5.71 | 30 | 5 | 450 | 1 | 0.1 | 1 |
| CDZ55B6V2T | F2 | 6.08 | 6.32 | 10 | 5 | 200 | 1 | 0.1 | 2 |
| CDZ55B6V8T | F8 | 6.66 | 6.94 | 8 | 5 | 150 | 1 | 0.1 | 3 |
| CDZ55B7V5T | G5 | 7.35 | 7.65 | 7 | 5 | 50 | 1 | 0.1 | 5 |
| CDZ55B8V2T | H2 | 8.04 | 8.36 | 7 | 5 | 50 | 1 | 0.1 | 6.2 |
| CDZ55B9V1T | I1 | 8.92 | 9.28 | 10 | 5 | 50 | 1 | 0.1 | 6.8 |
| CDZ55B10T | 10 | 9.80 | 10.20 | 15 | 5 | 70 | 1 | 0.1 | 7.5 |
| CDZ55B11T | 11 | 10.78 | 11.22 | 20 | 5 | 70 | 1 | 0.1 | 8.2 |
| CDZ55B12T | 12 | 11.76 | 12.24 | 20 | 5 | 90 | 1 | 0.1 | 9.1 |
| CDZ55B13T | 13 | 12.74 | 13.26 | 26 | 5 | 110 | 1 | 0.1 | 10 |
| CDZ55B15T | 15 | 14.70 | 15.30 | 30 | 5 | 110 | 1 | 0.1 | 11 |
| CDZ55B16T | 16 | 15.68 | 16.32 | 40 | 5 | 170 | 1 | 0.1 | 12 |
| CDZ55B18T | 18 | 17.64 | 18.36 | 50 | 5 | 170 | 1 | 0.1 | 13 |
| CDZ55B20T | 20 | 19.60 | 20.40 | 55 | 5 | 220 | 1 | 0.1 | 15 |
| CDZ55B22T | 22 | 21.56 | 22.44 | 55 | 5 | 220 | 1 | 0.1 | 16 |
| CDZ55B24T | 24 | 23.52 | 24.48 | 80 | 5 | 220 | 1 | 0.1 | 18 |
| CDZ55B27T | 27 | 26.46 | 27.54 | 80 | 5 | 220 | 1 | 0.1 | 20 |
| CDZ55B30T | 30 | 29.40 | 30.60 | 80 | 5 | 220 | 1 | 0.1 | 22 |
| CDZ55B33T | 33 | 32.34 | 33.66 | 80 | 5 | 220 | 1 | 0.1 | 24 |
| CDZ55B36T | 36 | 35.28 | 36.72 | 80 | 5 | 220 | 1 | 0.1 | 27 |
| CDZ55B39T | 39 | 38.22 | 39.78 | 90 | 2.5 | 500 | 0.5 | 0.1 | 29.3 |
| CDZ55B43T | 43 | 42.14 | 43.86 | 90 | 2.5 | 600 | 0.5 | 0.1 | 32.3 |
| CDZ55B47T | 47 | 46.06 | 47.94 | 110 | 2.5 | 700 | 0.5 | 0.1 | 35.3 |
| CDZ55B51T | 51 | 49.98 | 52.02 | 125 | 2.5 | 700 | 0.5 | 0.1 | 38.3 |
| CDZ55B56T | 56 | 54.88 | 57.12 | 135 | 2.5 | 1000 | 0.5 | 0.1 | 42 |
| CDZ55B62T | 62 | 60.76 | 63.24 | 150 | 2.5 | 1000 | 0.5 | 0.1 | 46.5 |



| | | | | | | | | | |
|-----------|----|-------|-------|-----|-----|------|-----|-----|------|
| CDZ55B68T | 68 | 66.64 | 69.36 | 200 | 2.5 | 1000 | 0.5 | 0.1 | 51 |
| CDZ55B75T | 75 | 73.50 | 76.50 | 250 | 2.5 | 1500 | 0.5 | 0.1 | 56.3 |

TYPICAL CHARACTERISTICS

Figure 1. Forward current vs Forward Voltage

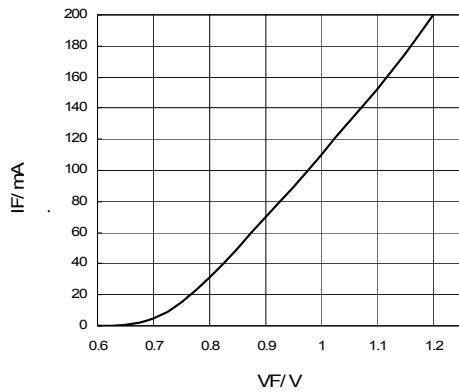
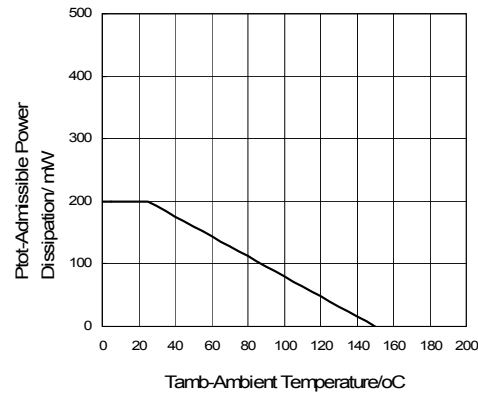


Figure 2. Power De-rating



TEST CHARACTERISTICS

| Test Item | Test Condition | Requirement |
|---------------------------------|--|---|
| Solderability | Sn bath at 245±5°C for 2±0.5s | >95% area tin covered |
| Resistance to Soldering Heat | Sn bath at 260±5°C for 10±2s | V _F , V _Z & I _R within spec; no mechanical damage |
| Humidity Steady State | At 85°C 85%RH for 168hrs | V _F , V _Z & I _R within spec |
| Continue Forward Operating Life | At 25°C I _F = 1.1I _F for 1000hrs | V _F , V _Z & I _R within spec |
| Thermal Shock | -55 ±5°C/5min to 150±5°C/5min for 10cycles | V _F , V _Z & I _R within spec |
| Bending Strength | Bending up to 2mm for 1cycle | V _F , V _Z & I _R within spec; no mechanical damage |

APPLICATIONS



- Function: constant voltage control
- Soldering Condition:

Soldering Condition & Caution

- Recommended Soldering Condition
(Refer to IPC/JEDEC J-STD-020D 4-1&5.2)

| Recommended Profile Condition | Sn-Pb Soldering | Leadfree Soldering | Wave Soldering |
|-------------------------------------|-----------------------|-----------------------|--------------------------------|
| Ramp-up rate (from pre-heat stage) | <3°C/s | <3°C/s | $\Delta T < 150^\circ\text{C}$ |
| Pre-heat Temperature & Time | 100-150 °C 60-120s | 150-200 °C 60-120s | 100-150 °C 60-120s |
| Soldering Temperature & Time | 183 °C 60-150s | 217 °C 60-150s | 260±5°C 5±2s |
| Peak Temperature | 230±5°C <260°C | 245±5°C <260°C | 260±5°C |
| Time within 5°C of peak temperature | 10-20s | 20-30s | - |
| Ramp-down rate | <6°C/s | <6°C/s | <6°C/s |
| Time 25°C to peak temperature | <6min | <8min | - |

Manual Soldering: Approx. 350°C for 3s, avoid solder iron tip direct touch the components body

Recommended Soldering Profile

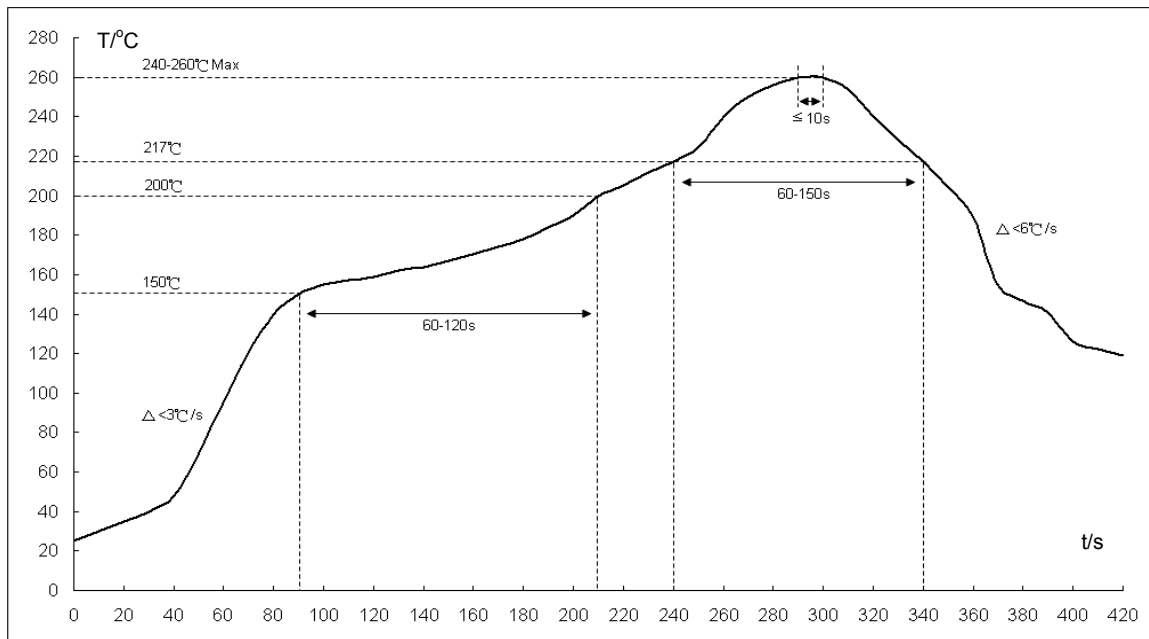


Fig1: Reflow soldering profile for lead-free solder (SnAgCu)

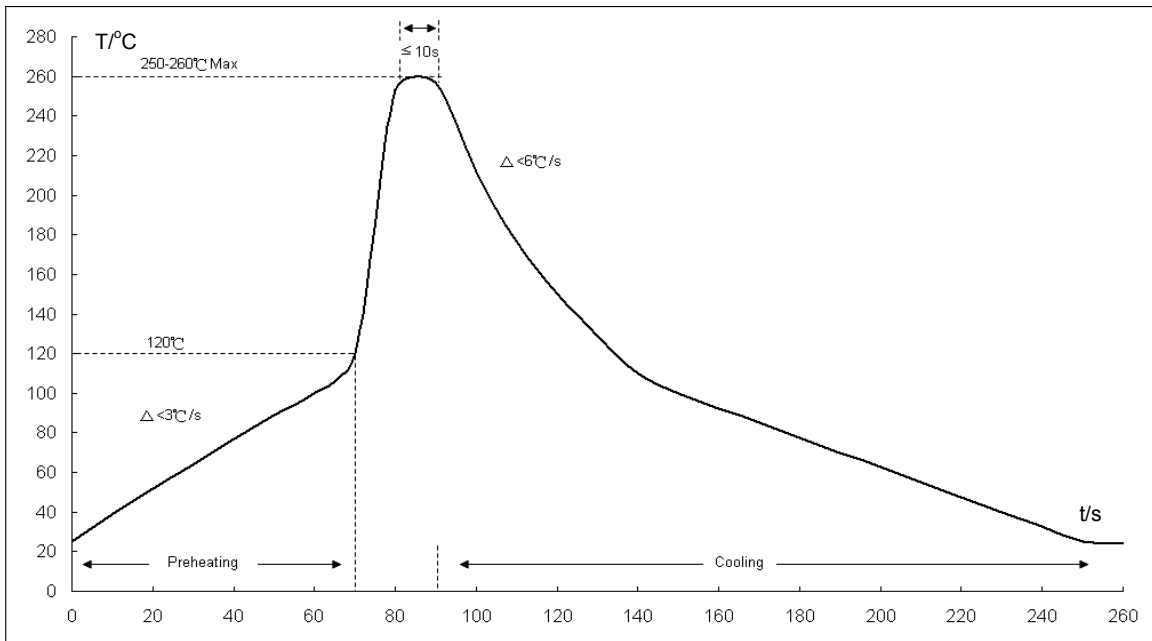
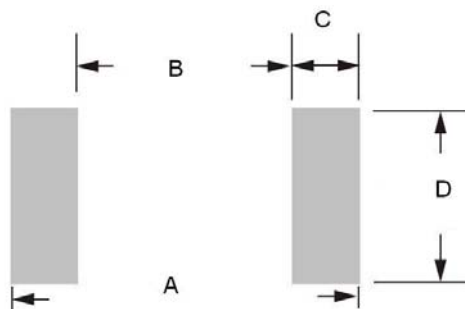


Fig2: Wave soldering profile

- *1. The recommended profiles are referring to IPC/JEDEC J-STD-020D & IEC-60068-2-58
- *2. Chip diodes are able to stand maximum soldering temperature up to 260°C max for 10s, and the soldering cycles with max 3 times, referring to IEC-60068-2-58

■ Recommended Soldering Footprint:



■ Reflow/Wave Soldering

| Product Size | Dimension/ mm | | | |
|--------------|---------------|-----|---------|---------|
| | A | B | C | D |
| 0603 | 1.8-2.6 | 0.8 | 0.5-0.9 | 0.8-1.0 |

- Storage Condition: Product termination solderability can degrade due to high temperature and



humidity or chemical environment. Storage condition must be in an ambient temperature of <40°C and ambient humidity of <75%RH, and free from chemical.

ENVIRONMENTAL CHARACTERISTICS

| Product | Hazardous Substance or Element/ppm | | | | | |
|---------|------------------------------------|------|-------|------------------|-------|-------|
| | Pb | Cd | Hg | Cr ⁶⁺ | PBB | PBDE |
| | <1000 | <100 | <1000 | <1000 | <1000 | <1000 |

| Product | Halogen Substance/ ppm | | | | |
|---------|------------------------|------|------|------|-------|
| | F | Cl | Br | I | Total |
| | <900 | <900 | <900 | <900 | <1500 |

PACKING METHOD

| Product | Quantity/Reel | Reel Size | Tape |
|---------|---------------|-----------|-------|
| | 5,000pcs | 7" | Paper |

DISCLAIMERS

These products are not designed for use in applications where any failure or malfunction may result in personal injury, death or severe property or environmental damage such as medical, military, aircraft, space or life support equipments.