

# Thick Film Chip Attenuator, Surface Mount, Balanced $\pi$ Type



## FEATURES

- Single component reduces board space and component counts - replaces 3 or more components
- Tolerance matching and temperature tracking superior to individual components
- Maximum power dissipation: 0.075 W for CZB06S
- Consult factory for extended values, non-standard tolerances, impedance matching and other attenuation values
- Frequency range: DC to 3 GHz
- Surface mount chip attenuator in a resistor array package
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



### Note

\* This datasheet provides information about parts that are RoHS-compliant and/or parts that are non-RoHS-compliant. For example, parts with lead (Pb) terminations are not RoHS-compliant. Please see the information/tables in this datasheet for details.

## STANDARD ELECTRICAL SPECIFICATIONS

| GLOBAL MODEL | POWER RATING $P_{70\text{ }^\circ\text{C}}$<br>W | IMPEDANCE<br>$\Omega$ | ATTENUATION RANGE AND TOLERANCE |                         |
|--------------|--|-----------------------|---------------------------------|-------------------------|
|              |  |                       | $\pm 0.3\text{ dB (L)}$         | $\pm 0.5\text{ dB (H)}$ |
| CZB06S       | 0.075  | 50/75                 | 0 dB, 1 dB to 5 dB              | 6 dB to 10 dB           |

### Note

• Power rating depends on the maximum temperature at the solder point, the component placement density and the substrate material.

| IMPEDANCE                        | 50 $\Omega$ | 75 $\Omega$ |
|----------------------------------|-------------|-------------|
| Attenuation in dB <sup>(1)</sup> | 1           | 1           |
|                                  | 1.5         | 1.5         |
|                                  | 2           | 2           |
|                                  | 3           | 3           |
|                                  | 4           | 4           |
|                                  | 5           | 5           |
|                                  | 6           | 6           |
|                                  | 10          | 10          |

### Note

<sup>(1)</sup> Consult factory for other attenuations.

## CIRCUIT SCHEMATIC



## TECHNICAL SPECIFICATIONS

| PARAMETER                                | UNIT             | CZB06S      |
|--|------------------|-------------|
| Rated dissipation at 70 $^\circ\text{C}$ | W                | 0.075       |
| VSWR                                     |                  | 1.2 max.    |
| Category temperature range               | $^\circ\text{C}$ | -55 to +150 |
| Frequency range                          |                  | DC to 3 GHz |

## GLOBAL PART NUMBER INFORMATION

New Global Part Numbering: CZB06S04020050LRT (preferred part numbering format)



| MODEL  | PIN COUNT  | ATTENUATION   | IMPEDANCE                              | TOLERANCE  | PACKAGING                                      | SPECIAL  |
|--------|------------|---|--|--|--|--|
| CZB06S | 04 = 4 pin | 010 = 1.0 dB<br>015 = 1.5 dB<br>020 = 2.0 dB<br>100 = 10.0 dB<br>000 = 0 dB | 050 = 50 $\Omega$<br>075 = 75 $\Omega$ | H = $\pm 0.5\text{ dB}$<br>L = $\pm 0.3\text{ dB}$ | EA = Lead (Pb)-free, T/R<br>RT = Tin lead, T/R | (Dash number)<br>Up to 1 digit<br>Blank = Standard |

### Note

• For additional information on packaging, refer to the Surface Mount Network Packaging document ([www.vishay.com/doc?31540](http://www.vishay.com/doc?31540)).

**DIMENSIONS**

4-Terminal device

S - Version



| GLOBAL MODEL | DIMENSIONS in inches (millimeters) |                                |                                |                                |                 |                                |                                |
|--------------|------------------------------------|--------------------------------|--------------------------------|--------------------------------|-----------------|--------------------------------|--------------------------------|
|              | L                                  | W                              | T                              | A                              | P               | B                              | B*                             |
| CZB06S       | 0.063 ± 0.006<br>(1.60 ± 0.15)     | 0.059 ± 0.006<br>(1.50 ± 0.15) | 0.020 ± 0.004<br>(0.51 ± 0.10) | 0.024 ± 0.006<br>(0.61 ± 0.15) | 0.031<br>(0.80) | 0.012 ± 0.006<br>(0.30 ± 0.15) | 0.012 ± 0.006<br>(0.30 ± 0.15) |

  

| GLOBAL MODEL | SOLDER PAD DIMENSIONS in inches (millimeters) |              |              |              |              |
|--------------|---|--------------|--------------|--------------|--------------|
|              | c   | w            | d            | a            | b            |
| CZB06S       | 0.031 (0.80)                                  | 0.122 (3.10) | 0.014 (0.36) | 0.025 (0.63) | 0.045 (1.15) |



| PERFORMANCE                              |   |                                  |               |
|--|---|----------------------------------|---------------|
| TEST                                     | CONDITIONS OF TEST                                    | TEST RESULTS (TYPICAL TEST LOTS) |               |
|  |   | 0.5 dB to 5 dB                   | 6 dB to 10 dB |
| Endurance test at 70 °C per EIA 575-3.14 | 1000 h at 70 °C, 1.5 h "ON", 0.5 h "OFF"              | ± 0.2 dB                         | ± 0.3 dB      |
| Overload per EIA 575-3.6                 | Short time overload                                   | ± 0.2 dB                         | ± 0.3 dB      |
| Thermal shock                            | Per EIA 575-3.5                                       | ± 0.2 dB                         | ± 0.3 dB      |
| Moisture resistance                      | Per EIA 575-3.10                                      | ± 0.2 dB                         | ± 0.3 dB      |
| Resistance to soldering heat             | 10 s at 260 °C solder bath temperature<br>EIA 575 3.8 | ± 0.2 dB                         | ± 0.3 dB      |
| High temperature exposure                | Per EIA 575-3.7                                       | ± 0.2 dB                         | ± 0.3 dB      |
| Low temperature operations               | Per EIA-575-3.6                                       | ± 0.2 dB                         | ± 0.3 dB      |
| Solderability and leaching               | EIA 575-3.12  | 95 % coverage                    |               |



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