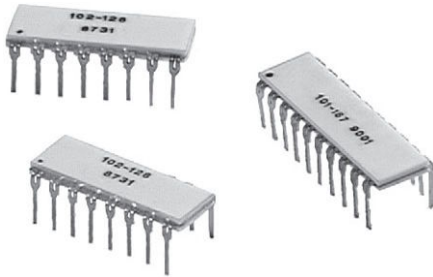


Ceramic Sandwich, Dual-In-Line Thin Film Resistor, Through Hole Network (Custom)



A dual-in-line monolithic ceramic package in a variety of sizes and configurations. A rugged, low cost packaging technique with 4 leads to 20 leads that allows higher resistance integration than chip and wire ceramic packages.

FEATURES

- Gold-to-gold terminations. External leads are attached directly to gold pads on the ceramic substrate by thermo-compression bonding (no internal solder)
- Monolithic construction
- Ceramic package with no cavity. 4 pins to 20 pins.
- Flexibility of lead variations to save PC board space
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912


RoHS*
Available

**HALOGEN
FREE**

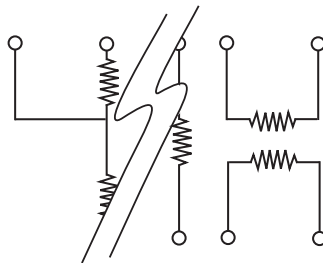
Note

* 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

TYPICAL PERFORMANCE

| | ABSOLUTE | TRACKING |
|-------------|------------|-------------|
| TCR | 10 | 2 |
| | ABSOLUTE | RATIO |
| TOL. | 0.1 | 0.02 |

SCHEMATIC



Custom schematics available.
Please consult factory

| STANDARD ELECTRICAL SPECIFICATIONS | | | |
|---------------------------------------|--------------------------------|---------------------------------|-------------------|
| TEST | SPECIFICATIONS | | CONDITIONS |
| Material | Passivated nichrome | Tantalum nitride ⁽¹⁾ | - |
| Pin/Lead Number | 4 to 20 | | - |
| Resistance Range | 100 Ω to 5 MΩ total | | - |
| TCR: Absolute | ± 10 ppm/°C | ± 25 ppm/°C to ± 100 ppm/°C | -55 °C to +125 °C |
| TCR: Tracking | ± 2 ppm/°C | ± 5 ppm/°C | -55 °C to +125 °C |
| Tolerance: Absolute | ± 0.1 % to ± 1.0 % | | +25 °C |
| Tolerance: Ratio | ± 0.01 % to ± 0.1 % | | +25 °C |
| Power Rating: Resistor | 100 mW (per element (typical)) | | Maximum at +70 °C |
| Power Rating: Package | 500 mW | | Maximum at +70 °C |
| Stability: Absolute | 1000 ppm | | 2000 h at +70 °C |
| Stability: Ratio | 300 ppm | | 2000 h at +70 °C |
| Voltage Coefficient | 0.1 ppm/V | | - |
| Working Voltage | 100 V | | - |
| Operating Temperature Range | -55 °C to +125 °C | | - |
| Storage Temperature Range | -55 °C to +125 °C | | - |
| Noise | < - 30 dB | | - |
| Thermal EMF | < 0.1 μV/°C | | - |
| Shelf Life Stability: Absolute | ΔR ± 0.01 % | | 1 year at +25 °C |
| Shelf Life Stability: Ratio | ΔR ± 0.002 % | | 1 year at +25 °C |

Note

⁽¹⁾ Tantalum nitride film is custom

| DIMENSIONS AND IMPRINTING in inches and millimeters | | | |
|--|------------------|---------------|--------------------|
| | DIMENSION | INCHES | MILLIMETERS |
| | A | 0.260 max. | 6.61 |
| | B | 0.050 | 1.27 |
| | C | 0.160 typical | 4.06 |
| | D | 0.080 | 2.03 |
| | E | 0.125 | 3.18 |
| | F | 0.125 min. | 3.18 |
| | G | 0.01 | 0.254 |
| | H | 0.325 | 8.25 |
| | I | 0.100 | 2.54 |
| | J | 0.020 | 0.51 |
| | L (4 Pins) | 0.220 | 5.59 |
| | L (6 Pins) | 0.320 | 8.13 |
| | L (8 Pins) | 0.420 | 10.67 |
| | L (10 Pins) | 0.520 | 13.21 |
| | L (12 Pins) | 0.620 | 15.75 |
| | L (14 Pins) | 0.720 | 18.29 |
| L (16 Pins) | 0.820 | 20.83 | |
| L (18 Pins) | 0.920 | 23.37 | |
| L (20 Pins) | 1.020 | 25.91 | |

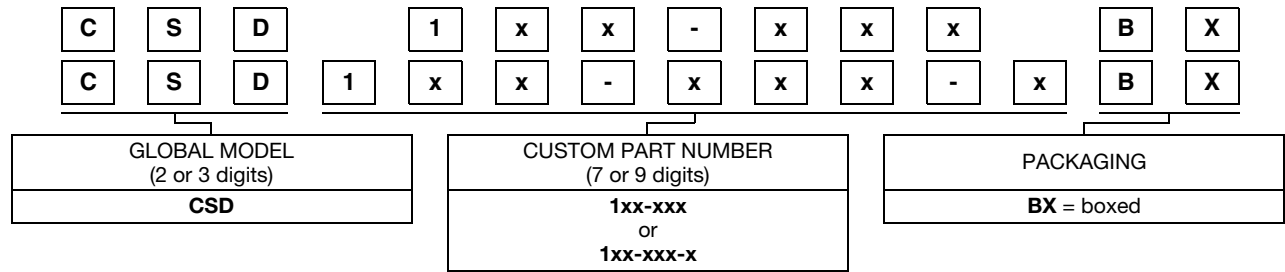
| MECHANICAL SPECIFICATIONS | |
|---|---|
| Resistive Element | Passivated nichrome or tantalum nitride |
| Substrate Material | Alumina |
| Body | Ceramic |
| Terminals | Copper alloy |
| Plating | Gold |
| Tin / Lead Option | Sn63 |
| Lead (Pb)-free Option | Sn96.5, Ag3.0, Cu0.5 |
| Tin / Lead and Lead (Pb)-free Finish | Hot solder dip |

| ORDERING INFORMATION CHECK LIST | |
|---|--|
| Special requirements should be identified in advance, but as a minimum, you should have the following information ready. | |
| ELECTRICAL <ol style="list-style-type: none"> Resistors, by value and tolerance Reference resistor(s) and matching of which resistors to which reference resistors Resistance by ratio Absolute temperature coefficient of resistivity Temperature tracking of subordinate resistors to reference resistor(s) Maximum operating voltage Resistor power ratings Operating temperature range | MECHANICAL <ol style="list-style-type: none"> Maximum allowable seated height (from PC board to top of network) Special marking concerns Schematic pin out of package Specify if lead (Pb)-free |
| For additional assistance refer to Vishay Dale Thin Film's guide to understanding Thin Film precision. Resistor networks or application engineering. All standard products may be ordered directly from Vishay Dale Thin Film. | |

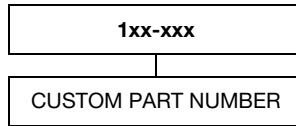


GLOBAL PART NUMBER INFORMATION

New Global Part Numbering: CSD1xx-xxxBX



Historical Part Number Example: 1xx-xxx (for reference purposes only)





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