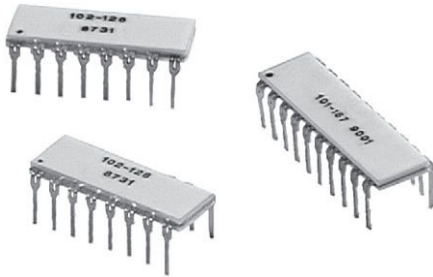


## Ceramic Sandwich, Dual-In-Line Thin Film Resistor, Through Hole Network (Custom)



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](http://www.vishay.com/doc?99912)



**RoHS\***  
Available  
**HALOGEN  
FREE**

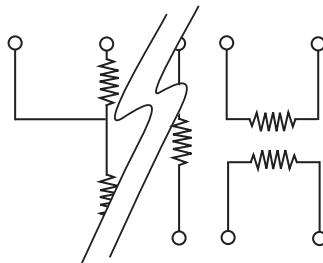
### Note

\* 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
<b>TCR</b>	<b>10</b>	<b>2</b>
	ABSOLUTE	RATIO
<b>TOL.</b>	<b>0.1</b>	<b>0.02</b>

### SCHEMATIC



Custom schematics available.  
Please consult factory

STANDARD ELECTRICAL SPECIFICATIONS			
TEST	SPECIFICATIONS		CONDITIONS
Material	Passivated nichrome	Tantalum nitride <sup>(1)</sup>	-
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

<sup>(1)</sup> Tantalum nitride film is custom

<b>DIMENSIONS AND IMPRINTING</b> in inches and millimeters			
	<b>DIMENSION</b>	<b>INCHES</b>	<b>MILLIMETERS</b>
	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	

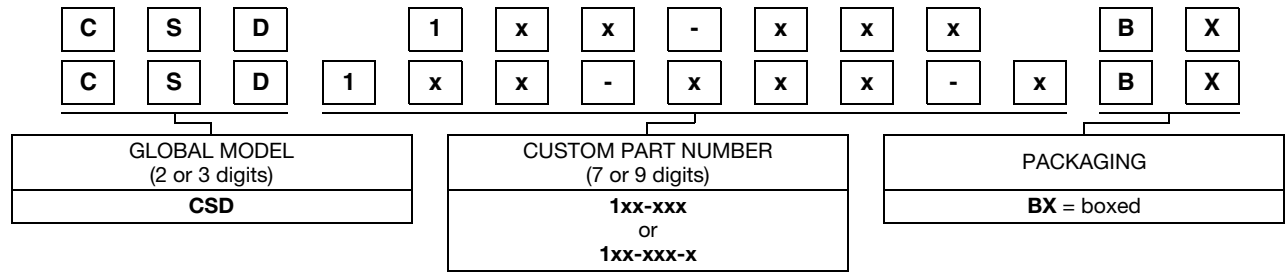
<b>MECHANICAL SPECIFICATIONS</b>	
<b>Resistive Element</b>	Passivated nichrome or tantalum nitride
<b>Substrate Material</b>	Alumina
<b>Body</b>	Ceramic
<b>Terminals</b>	Copper alloy
<b>Plating</b>	Gold
<b>Tin / Lead Option</b>	Sn63
<b>Lead (Pb)-free Option</b>	Sn96.5, Ag3.0, Cu0.5
<b>Tin / Lead and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

<b>ORDERING INFORMATION CHECK LIST</b>	
Special requirements should be identified in advance, but as a minimum, you should have the following information ready.	
<b>ELECTRICAL</b> <ol style="list-style-type: none"> <li>Resistors, by value and tolerance</li> <li>Reference resistor(s) and matching of which resistors to which reference resistors</li> <li>Resistance by ratio</li> <li>Absolute temperature coefficient of resistivity</li> <li>Temperature tracking of subordinate resistors to reference resistor(s)</li> <li>Maximum operating voltage</li> <li>Resistor power ratings</li> <li>Operating temperature range</li> </ol>	<b>MECHANICAL</b> <ol style="list-style-type: none"> <li>Maximum allowable seated height (from PC board to top of network)</li> <li>Special marking concerns</li> <li>Schematic pin out of package</li> <li>Specify if lead (Pb)-free</li> </ol>
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.	

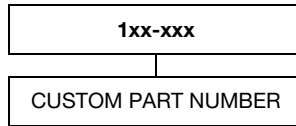


**GLOBAL PART NUMBER INFORMATION**

New Global Part Numbering: CSD1xx-xxxBX



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





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