

# Thick Film Resistor Networks

## Single-In-Line, Coated SIP 01, 03, 05 Schematics



### FEATURES

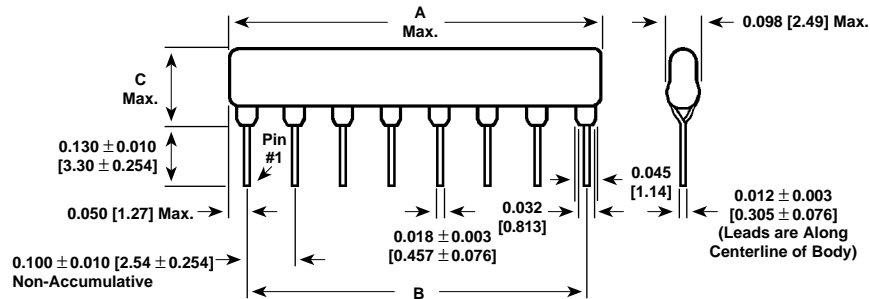
- 0.195" [4.95mm] "A", 0.250" [6.35mm] "B"
- "A" profile standard in 4 thru 12 pins
- Highly stable thick film
- Low temperature coefficient (- 55°C to + 125°C) ± 100ppm/°C
- Reduces total assembly costs
- Resistor elements protected by tough epoxy conformal coating
- Wide resistance range
- Available in bag pack or tube pack

STANDARD ELECTRICAL SPECIFICATIONS							
MODEL/ SCHEMATIC	PROFILE	RESISTOR POWER RATING Max. @ 70°C*	RESISTANCE RANGE Ω	STANDARD TOLERANCE %	TEMPERATURE COEFFICIENT (- 55°C to + 125°C)	TCR TRACKING (- 55°C to + 125°C)	OPERATING VOLTAGE VDC Max.
CSC01	A	0.20 W	10 - 2.2M	± 2	± 100ppm/°C	± 50ppm/°C	100
	B	0.25 W					
	C	0.30 W					
CSC03	A	0.30 W	10 - 2.2M	± 2	± 100ppm/°C	± 50ppm/°C	100
	B	0.40 W					
	C	0.50 W					
CSC05	A	0.20 W	10 - 2.2M	± 2	± 100ppm/°C	± 150ppm/°C	100
	B	0.25 W					
	C	0.30 W					

\* For resistor power ratings @ + 25°C see derating curves.  
 • See derating curves for Package Power Rating. Higher power rated "C" Profile available.

TECHNICAL SPECIFICATIONS		
PARAMETER	UNIT	CSC Series
Voltage Coefficient of Resistance	V <sub>eff</sub>	< 50ppm typical
Dielectric Strength	VAC	200
Isolation Resistance (03 Schematic)	Ω	> 100M
Operating Temperature Range	°C	- 55 to + 125

ORDERING INFORMATION						
<b>01 and 03 Schematics</b>						
CSC MODEL	08 NUMBER OF PINS	A PACKAGE CODE	01 03 SCHEMATIC	101 RESISTANCE VALUE	G TOLERANCE	
		A = 0.195" [4.95mm] Height 0.100" [2.54mm] Lead Spacing B = 0.250" [6.35mm] Height 0.100" [2.54mm] Lead Spacing C = 0.350" [8.89mm] Height 0.100" [2.54mm] Lead Spacing	01 = Pin #1 common to all resistors 03 = Isolated resistors	First 2 digits are significant figures. Last digit specifies number of zeros to follow.	G = ± 2%	
<b>05 Schematic</b>						
CSC MODEL	08 NUMBER OF PINS	A PACKAGE CODE	05 SCHEMATIC	221 RESISTANCE VALUE R <sub>1</sub>	331 RESISTANCE VALUE R <sub>2</sub>	G TOLERANCE
		A = 0.195" [4.95mm] Height 0.100" [2.54mm] Lead Spacing B = 0.250" [6.35mm] Height 0.100" [2.54mm] Lead Spacing C = 0.350" [8.89mm] Height 0.100" [2.54mm] Lead Spacing		First two digits are significant figures. The third digit specifies the number of zeros to follow.		G = ± 2%

**DIMENSIONS** in inches [millimeters]


01 Schematic	MODEL	NUMBER OF RESISTORS	A (Maximum)	B	C (Maximum)
	CSC04	3	0.390 [9.90]	0.300 [7.62]	"A" Profile = 0.195 [4.95] "B" Profile = 0.250 [6.35]
	CSC05	4	0.490 [12.45]	0.400 [10.16]	
	CSC06	5	0.590 [14.99]	0.500 [12.70]	
	CSC07	6	0.690 [17.53]	0.600 [15.24]	
	CSC08	7	0.790 [20.07]	0.700 [17.78]	
	CSC09	8	0.890 [22.61]	0.800 [20.32]	
	CSC10	9	0.990 [25.15]	0.900 [22.86]	
	CSC11*	10	1.09 [27.69]	1.00 [25.40]	
	CSC12	11	1.19 [30.23]	1.100 [27.94]	
03 Schematic	MODEL	NUMBER OF RESISTORS	A (Maximum)	B	C (Maximum)
	CSC04	2	0.390 [9.90]	0.300 [7.62]	"A" Profile = 0.195 [4.95] "B" Profile = 0.250 [6.35]
	CSC06	3	0.590 [14.99]	0.500 [12.70]	
	CSC08	4	0.790 [20.07]	0.700 [17.78]	
	CSC10	5	0.990 [25.15]	0.900 [22.86]	
	CSC12	6	1.19 [30.23]	1.100 [27.94]	
05 Schematic	MODEL	NUMBER OF RESISTORS	A (Maximum)	B	C (Maximum)
	CSC04	4	0.390 [9.90]	0.300 [7.62]	"A" Profile = 0.195 [4.95] "B" Profile = 0.250 [6.35]
	CSC05	6	0.490 [12.45]	0.400 [10.16]	
	CSC06	8	0.590 [14.99]	0.500 [12.70]	
	CSC07	10	0.690 [17.53]	0.600 [15.24]	
	CSC08	12	0.790 [20.07]	0.700 [17.78]	
	CSC09	14	0.890 [22.61]	0.800 [20.32]	
	CSC10	16	0.990 [25.15]	0.900 [22.86]	
	CSC11*	18	1.09 [27.69]	1.00 [25.40]	
	CSC12	20	1.19 [30.23]	1.100 [27.94]	

\* "B" and "C" Profiles only.

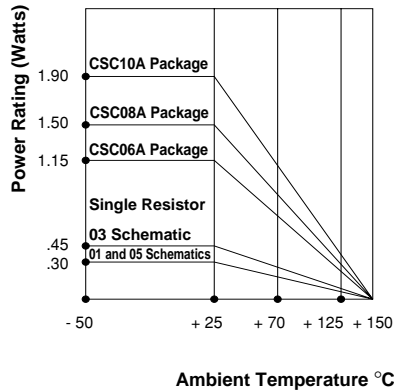
MECHANICAL SPECIFICATIONS	
Marking Resistance to Solvents:	Permanency testing per MIL-STD-202, Method 215.
Solderability:	Per MIL-STD-202, Method 208E, RMA flux.
Body:	High alumina, epoxy coated.
Terminals:	Copper alloy, solder plated.

**STOCKED RESISTANCE VALUES IN OHMS ("G" TOLERANCE)**

Standard E-24 resistance values stocked. Consult factory.

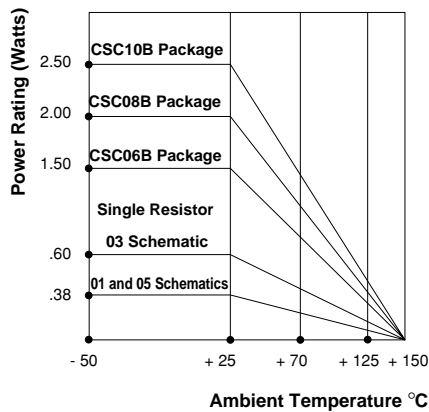
Many dual terminator resistance values stocked. Consult factory

"A" Profile



<b>"A" PROFILE + 70°C PACKAGE RATINGS</b>	
CSC12A	1.5 watts
CSC11A	1.37 watts
CSC10A	1.25 watts
CSC09A	1.12 watts
CSC08A	1.00 watts
CSC07A	0.87 watts
CSC06A	0.75 watts
CSC05A	0.62 watts
CSC04A	0.40 watts

"B" Profile



<b>"B" PROFILE + 70°C PACKAGE RATINGS</b>	
CSC12B	1.90 watts
CSC11B	1.75 watts
CSC10B	1.60 watts
CSC09B	1.45 watts
CSC08B	1.30 watts
CSC07B	1.15 watts
CSC06B	1.00 watts
CSC05B	0.80 watts
CSC04B	0.60 watts

<b>CIRCUIT APPLICATIONS</b>	
<p><b>01 Schematic</b></p>	<p>"A" Profile = 3, 5, 7, 9 and 11 resistors with one pin common</p> <p>The CSCxxx-01 single-in-line resistor networks provide the user with nominally equal resistors, each connected to a common pin (Pin No. 1). Commonly used in the following applications:</p> <ul style="list-style-type: none"> <li>• "Wired OR" Pull-up</li> <li>• Power Gate Pull-up</li> <li>• MOS/ROM Pull-up/Pull-down</li> <li>• Open Collector Pull-up</li> <li>• TTL Input Pull-down</li> <li>• TTL Unused Gate Pull-up</li> </ul> <p>* "B" Profile available. Odd pin available in 5, 7, 9, and 11.</p>
<p><b>03 Schematic</b></p>	<p>"A" Profile = 2 through 6 isolated resistors</p> <p>The CSCxxx-03 single-in-line resistor networks provide the user with nominally equal resistors. Each resistor is isolated from all others. Commonly used in the following applications:</p> <ul style="list-style-type: none"> <li>• "Wired OR" Pull-up</li> <li>• Power Driven Pull-up</li> <li>• Power Gate Pull-up</li> <li>• Line Termination</li> <li>• Long-Line Impedance Balancing</li> <li>• LED Current Limiting</li> <li>• ECL Output Pull-down</li> <li>• TTL Input Pull-down</li> </ul> <p>* "B" Profile available.</p>
<p><b>05 Schematic</b></p>	<p>Pulse squaring and TTL dual-line terminators</p> <p>The CSCxxx-05 circuits contain series pairs of resistors. Each series pair is connected between two common lines. The junction of these resistor pairs is connected to the input terminals. The 05 circuits are designed for TTL dual-line termination and pulse squaring.</p> <p>* "B" Profile available. Odd pin available in 5, 7, 9 and 11.</p>

<b>PERFORMANCE</b>		
TEST	CONDITIONS	MAX. $\Delta R$ (Typical Test Lots)
Thermal Shock	5 cycles between - 65°C and + 125°C	$\pm 0.50\% \Delta R$
Short Time Overload	2.5 x rated working voltage, 5 seconds	$\pm 0.25\% \Delta R$
Low Temperature Operation	45 minutes at full rated working voltage at - 65°C	$\pm 0.25\% \Delta R$
Moisture Resistance	240 hours with humidity ranging from 80% RH to 98% RH	$\pm 1.00\% \Delta R$
Resistance to Soldering Heat	Leads immersed in + 350°C solder to within 1/16" of body for 3 seconds	$\pm 0.25\% \Delta R$
Shock	Total of 18 shocks at 100 G's	$\pm 0.25\% \Delta R$
Vibration	12 hours at maximum of 20 G's between 10 and 2,000 Hz	$\pm 0.25\% \Delta R$
Load Life	1,000 hours at + 70°C, rated power applied 1.5 hours "ON", 0.5 hour "OFF" for full 1000 hour period. Derated according to the curve.	$\pm 1.00\% \Delta R$
Terminal Strength	4.5 pound pull for 30 seconds	$\pm 0.25\% \Delta R$
Insulation Resistance	10,000 Megohm (minimum)	—
Dielectric Withstanding Voltage	No evidence of arcing or damage (200 V RMS for 1 minute)	—