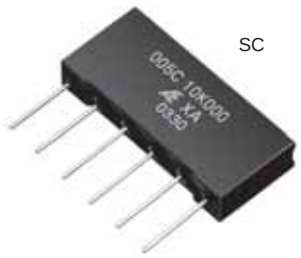
Ultra-Precision Resistor Network (Case-Encapsulated)



SC

Composition of Type Number

Example:

SC 005C 1K000/99K00 B Q

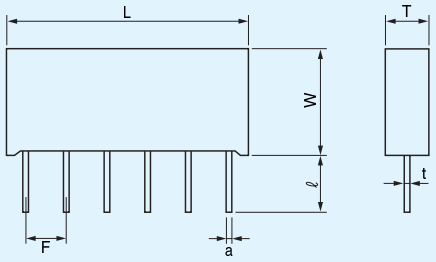
① ② ③ ④ ⑤ ⑥

① Type
② Circuit Symbol
③ Resistance Value (R1)
④ Resistance Value (Rn)
⑤ Resistance Tolerance (Absolute)
⑥ Resistance Tolerance (Matching)

Specify all values for R1 to Rn

Resistance value, in ohm, is expressed by a series of five characters, four of which represent significant digits. The fifth R or K is a dual- purpose letter that designates both the value range (R for ohmic; K for kilo-ohm) and the location of decimal point.

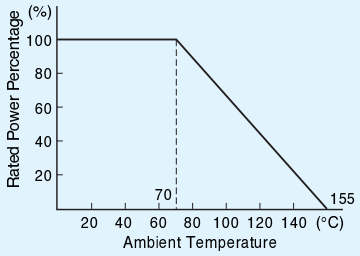
Configuration



Type	SC
L	30.0±0.5
W	13.0±0.5
T	5.0±0.5
ℓ	8±5
a	0.5±0.05
t	0.25±0.05
F	Multiples of 2.54

Dimensions in mm

Power Derating Curve



TCR, Resistance Range, Tolerance, Rated Power

Type	TCR (ppm/°C)* -55°C to +125°C	Resistance Range Element (Ω)	Max. Resistance Value Package (Ω)	Resistance Tolerance (%)**		Rated Power/Package (W) at 70°C
				Absolute	Matching	
SC	0±5	30 to 120k	1,200k	±0.01 (T) ±0.02 (Q) ±0.05 (A) ±0.1 (B) ±0.5 (D) ±1 (F)	±0.01 (T) ±0.02 (Q) ±0.05 (A) ±0.1 (B) ±0.5 (D) ±1 (F)	1.5

*TCR tracking is dependent on resistance ratio. See table 1 on page 32.
**Symbols parenthesized are for type number composition.

Performance

Parameters	Test Condition	ALPHA Specification		ALPHA Typical Test Data	
		ΔR	ΔRatio	ΔR	ΔRatio
Maximum Rated Operating Temperature Working Temperature Range		70°C -55°C to +155°C			
Thermal Shock	-55°C/30 min. ⇔+155°C/30 min., 5 cycles	±0.05%	±0.01%	±0.01%	±0.005%
Low Temperature Storage Overload Terminal Strength	-55°C, No Load, 2 hrs. Rated Voltage x 2.5, 5 sec. 0.51kg (1.123 pounds),10 sec.	±0.05% ±0.05% ±0.05%	±0.01% ±0.01% ±0.01%	±0.005% ±0.0025% ±0.005%	±0.0025% ±0.001% ±0.0025%
Dielectric Withstanding Voltage Insulation Resistance Resistance to Soldering Heat Moisture Resistance	Atmospheric: AC 300V, 1 min. DC 100V, 1 min. 350°C, 3 sec. +65°C to -10°C, 90% RH to 98% RH, Rated Voltage, 10 cycles (240 hrs.)	±0.03% over 10,000MΩ ±0.03% ±0.05%	±0.01% ±0.01% ±0.01%	±0.005% over 10,000MΩ ±0.005% ±0.015%	±0.0025% ±0.0025% ±0.005%
Shock Vibration	100G, 6ms., Sawtooth Wave, X, Y, Z, each 6 shocks 20G, 10Hz to 55Hz to 10Hz, 1 min., X, Y, Z, each 2 hrs.	±0.03% ±0.03%	±0.01% ±0.01%	±0.005% ±0.005%	±0.0025% ±0.0025%
Life (Rated Load)	70°C, Rated Power, 1.5 hrs. – ON, 0.5 hr. – OFF, 1,000 hrs.	±0.05%	±0.01%	±0.01%	±0.005%
Life (Moisture Load)	40°C, 90% RH to 95% RH, Rated Power, 1.5 hrs. – ON, 0.5 hr. – OFF, 1,000 hrs.	±0.05%	±0.01%	±0.01%	±0.005%
High Temperature Exposure	155°C, No Load, 1,000 hrs.	±0.03%	±0.01%	±0.01%	±0.005%
Storage Life	15°C to 35°C, 15% RH to 75% RH, No Load, 10,000 hrs.	±0.03%	±0.01%	±0.005%	±0.0025%

Ultra-Precision Resistor Network

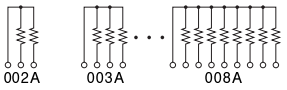
Resistor networks from Alpha Electronics, specialists in precision resistors, featuring metal foil technology, provide excellent performance in TCR tracking, resistance ratio matching and stability.

Characteristics

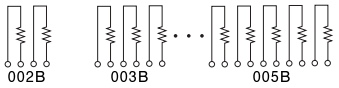
❶ Temperature Characteristics of Resistance: 0±5ppm/°C
❷ TCR Tracking: ±1ppm/°C
❸ Resistance Ratio Matching: ±0.01%
❹ Resistance Stability: ±0.005%/year

Standard Circuit

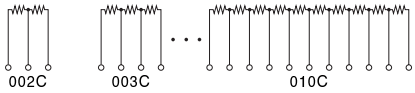
Circuit A (Array)
Circuit Symbol



Circuit B (Independent)
Circuit Symbol



Circuit C (Divider)
Circuit Symbol



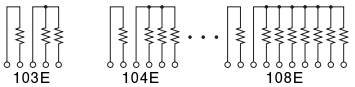
Composition of Circuit Symbol
Example :

0 02 A

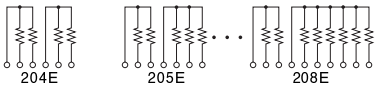
- A — Circuit Symbol
- 02 — Number of Resistance Elements
- 0 — Generic Number

Circuit E (A Circuit Divided into Two)

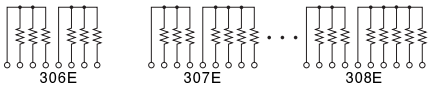
Circuit Symbol



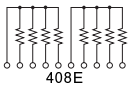
Circuit Symbol



Circuit Symbol



Circuit Symbol



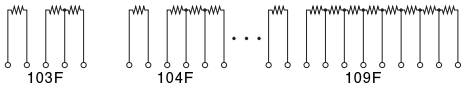
Composition of Circuit Symbol
Example :

1 03 E

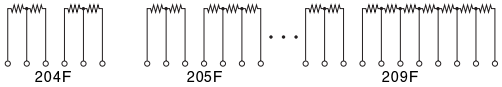
- E — Circuit Symbol
- 03 — Number of Resistance Elements
- 1 — Generic Number

Circuit F (C Circuit Divided into Two)

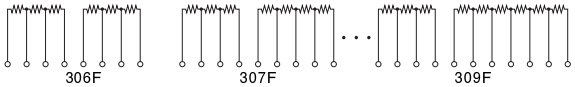
Circuit Symbol



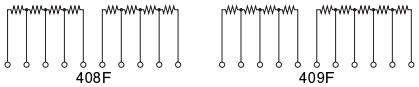
Circuit Symbol



Circuit Symbol



Circuit Symbol



Composition of Circuit Symbol
Example :

1 03 F

- F — Circuit Symbol
- 03 — Number of Resistance Elements
- 1 — Generic Number

Circuits other than listed are available.

Resistance Range and Number of Elements Mountable

Type		Case-Encapsulated Type	Conformally Coated Type		
		SC	SE	SF	SS
Maximum Resistance Value/Element (Ω)		120k	120k	120k	20k
Minimum Resistance Value/Element (Ω)		30	30	30	30
Maximum Resistance Value/Package (Ω)		1,200k	600k	240k	100k
Maximum Number of Network Elements	Circuit A	8	4	—	5
	Circuit B	5	5	2	3
	Circuit C	10	5	2	5
	Circuit E	8	—	—	4
	Circuit F	9	5	—	4

Table 1. Temperature Characteristics of Resistance

TCR (ppm/°C) -55°C to +125°C		
Absolute	Tracking	
	Resistance Ratio (R max./R min.)	TCR Tracking Available
0±5	1≦R max./R min.≦10	±1
	10<R max./R min.≦100	±2
	100<R max./R min.	±3