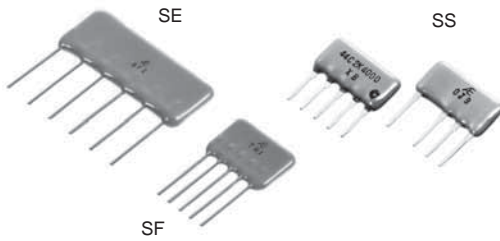


Precision Resistor Network (Conformally Coated)

Composition of Type Number



Example:

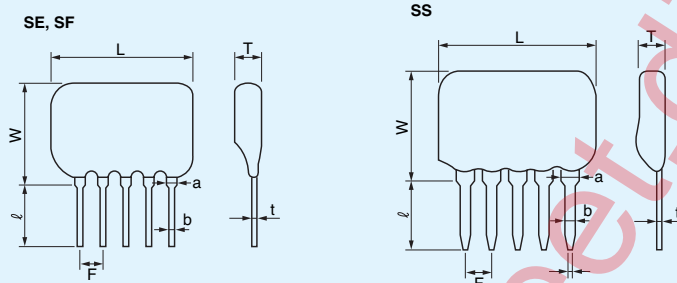
SE 004A 1K000 / 8K000 B A

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

Configuration



Type	SE	SF	SS
L	29.0±0.5	14.0±0.5	7.5±0.5 to 16.5±0.5
W	12.0±0.5	10.0±0.5	7.6±0.5
T	2.7±0.5		2.2±0.5
l	5±1		
t	0.25±0.05		0.3±0.05
a	1.0±0.05		
b	0.5±0.5		0.65±0.05
c	—		0.4±0.05
F	Multiples of 2.54		

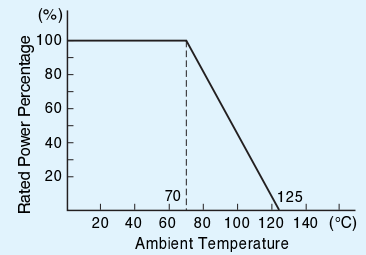
Dimensions in mm

TCR, Resistance Range, Tolerance, Rated Power

Type	TCR (ppm/°C)* -25°C to +125°C	Resistance Range Element (Ω)	Maximum Resistance Value Package (Ω)	Resistance Tolerance (%)**		Rated Power/Package (W) at 70°C
				Absolute	Matching	
SE	0±5	30 to 120k	600k	±0.05 (A)	±0.01 (T) ±0.02 (Q)	1
SF		30 to 120k	240k	±0.1 (B) ±0.5 (D)	±0.05 (A) ±0.1 (B) ±0.5 (D)	0.5
SS		30 to 20k	100k	±1 (F)	±0.5 (D) ±1 (F)	0.5

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

Power Derating Curve



Performance

Parameters	Test Condition	ALPHA Specification		ALPHA Typical Test Data	
		ΔR	ΔRatio	ΔR	ΔRatio
Maximum Rated Operating Temperature Working Temperature Range		70°C -25°C to +125°C			
Temperature Cycling	-25°C/30 min., Room Temperature/5 min., +125°C/30 min., 5 cycles	±0.05%	±0.01%	±0.01%	±0.005%
Low Temperature Storage	-25°C, No Load, 2 hrs.	±0.05%	±0.01%	±0.005%	±0.0025%
Overload	Rated Voltage x 2.5, 5 sec.	±0.05%	±0.01%	±0.0025%	±0.001%
Terminal Strength	0.51kg (1.123 pounds), 10 sec.	±0.05%	±0.01%	±0.005%	±0.0025%
Dielectric Withstanding Voltage Insulation Resistance Resistance to Soldering Heat Moisture Resistance	Atmospheric: AC 300V, 1 min. DC 100V, 1 min.	±0.03%	±0.01%	±0.005%	±0.0025%
	350°C, 3 sec. +65°C to -10°C, 90% RH to 98% RH, Rated Voltage, 10 cycles (240 hrs.)	±0.03%	±0.01%	±0.005%	±0.0025%
Shock Vibration	50G, 11ms., Half-Sine Wave, X, Y, Z, each 3 shocks	±0.03%	±0.01%	±0.005%	±0.0025%
	20G, 10Hz to 55Hz to 10Hz, 1 min., X, Y, Z, each 2 hrs.	±0.03%	±0.01%	±0.005%	±0.0025%
Life (Rated Load)	70°C, Rated Power, 1.5 hrs. – ON, 0.5 hr. – OFF, 1,000 hrs.	±0.1%	±0.05%	±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.	±0.1%	±0.05%	±0.01%	±0.005%
High Temperature Exposure	125°C, No Load, 1,000 hrs.	±0.1%	±0.05%	±0.01%	±0.005%
Storage Life	15°C to 35°C, 15% RH to 75% RH, No Load, 10,000 hrs.	±0.05%	±0.03%	±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

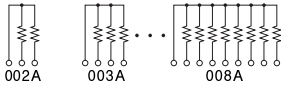
- ① Temperature Characteristics of Resistance: $0 \pm 5 \text{ ppm}/^\circ\text{C}$
- ② TCR Tracking: $\pm 1 \text{ ppm}/^\circ\text{C}$
- ③ Resistance Ratio Matching: $\pm 0.01\%$
- ④ Resistance Stability: $\pm 0.005\%$ /year

Standard Circuit

Circuit A

(Array)

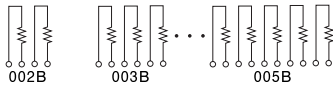
Circuit Symbol



Circuit B

(Independent)

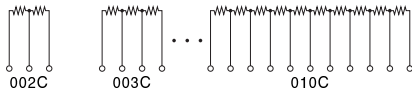
Circuit Symbol



Circuit C

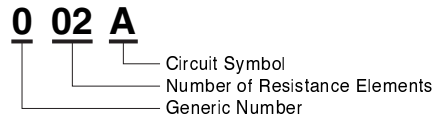
(Divider)

Circuit Symbol



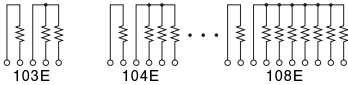
Composition of Circuit Symbol

Example :

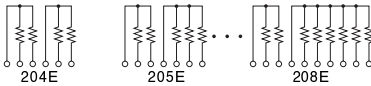


Circuit E (A Circuit Divided into Two)

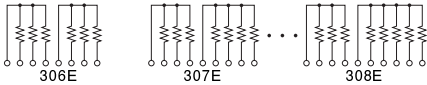
Circuit Symbol



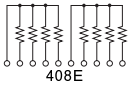
Circuit Symbol



Circuit Symbol

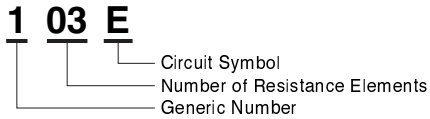


Circuit Symbol



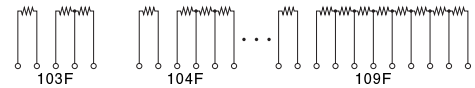
Composition of Circuit Symbol

Example :

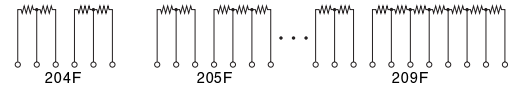


Circuit F (C Circuit Divided into Two)

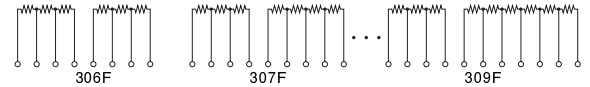
Circuit Symbol



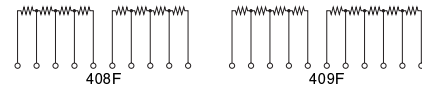
Circuit Symbol



Circuit Symbol

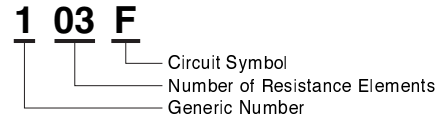


Circuit Symbol



Composition of Circuit Symbol

Example :



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 ($\text{ppm}/^\circ\text{C}$) -55°C to $+125^\circ\text{C}$		
Absolute	Tracking	
	Resistance Ratio (R max./R min.)	TCR Tracking Available
0 \pm 5	$1 \leq R \text{ max.}/R \text{ min.} \leq 10$	± 1
	$10 < R \text{ max.}/R \text{ min.} \leq 100$	± 2
	$100 < R \text{ max.}/R \text{ min.}$	± 3