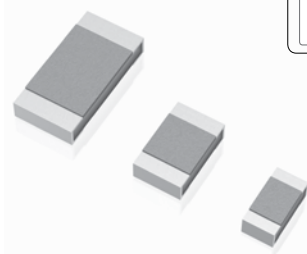


## Precision SMD Bulk Metal® Foil Resistor (Wraparound)



RoHS  
COMPLIANT

### FEATURES

- High precision and stable Bulk Metal® Foil resistor with 0603, 0805 and 1206 package
- TCR:  $0 \pm 2$  ppm/°C,  $0 \pm 5$  ppm/°C
- Resistance tolerance: up to  $\pm 0.01\%$
- Load-life stability:  $\pm 0.005\%$  (typical, 70°C, 2000 hrs., rated power)
- No standard resistance value (example: 1K234Ω)
- MOQ: 100 pieces

### COMPOSITION OF TYPE NUMBER

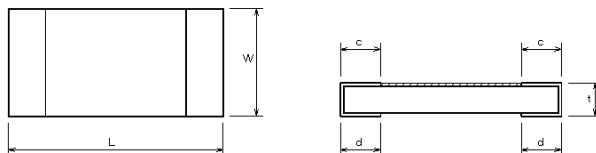
Example:

**RWC 10K00 Q L**

\_\_\_\_\_ Tape and Reel Package  
 \_\_\_\_\_ Resistance Tolerance  
 \_\_\_\_\_ Resistance Value  
 \_\_\_\_\_ Type

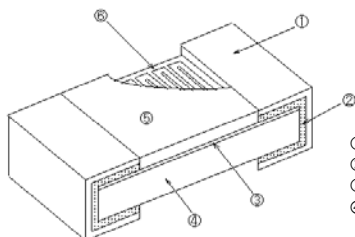
Resistance value is expressed by 4 numbers and 1 alphabet. R or K is a dual-purpose letter that designates both the value range (R for ohmic, K for kilohm) and the location of decimal point.

### CONFIGURATION—DIMENSIONS IN inches (mm)



Type	RWA	RWB	RWC
$L \pm 0.008$ (0.2)	0.063 (1.6)	0.079 (2.0)	0.126 (3.2)
$W \pm 0.008$ (0.2)	0.031 (0.8)	0.049 (1.25)	0.063 (1.6)
$t \pm 0.004$ (0.1)	0.020 (0.5)	0.020 (0.5)	0.020 (0.5)
$c \pm 0.010$ (0.25)	0.012 (0.3)	0.016 (0.4)	0.020 (0.5)
$d \pm 0.010$ (0.25)	0.012 (0.3)	0.016 (0.4)	0.020 (0.5)

### CONSTRUCTION

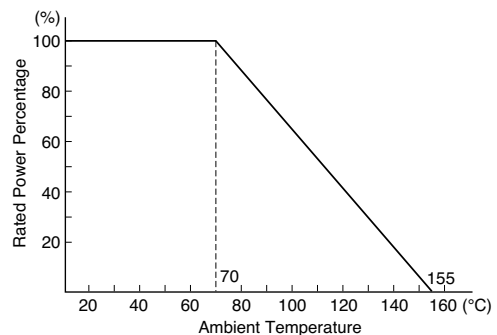


- ① External terminal (Sn)
- ② Internal terminal (Cu+Ni)
- ③ Bonding layer (polyimide)
- ④ Ceramic substrate (high-purity alumina)
- ⑤ Solder resist
- ⑥ Bulk Metal Foil

### TCR, RESISTANCE RANGE, TOLERANCE, RATED POWER

Type	TCR -25°C to +125°C (ppm/°C)	Resistance Range (Ω)	Resistance Tolerance (%)	Rated Power at 70°C (W)
RWA	0±5	100 to 1k	±0.1(B)	0.1
		1k to 5k	±0.05(A)	
RWB	0±5	10 to 30	±0.5(D)	0.2
		30 to 100	±0.1(B)	
		100 to 1k	±0.05(A), ±0.1(B)	
RWC	0±2	1k to 10k	±0.02(Q), ±0.05(A)	0.3
		5 to 30	±0.5(D)	
		30 to 100	±0.1(B)	
		100 to 1k	±0.02(Q), ±0.05(A), ±0.1(B)	
RWC	0±2	1k to 30k	±0.01(T), ±0.02(Q), ±0.05(A)	0.3
		1k to 10k	±0.02(Q), ±0.05(A)	

### POWER DERATING CURVE



PERFORMANCE			
PARAMETERS	TEST CONDITION	SPECIFICATION	
		MIL-PRF-55342	ALPHA Typical
Max. Rated Operating Temperature		70°C	
Working Temperature Range		-65°C to +155°C	
Maximum Working Voltage		RWA=22V, RWB=45V, RWC=95V	
Thermal Shock	-65°C/30 min. ↔ +150°C/30 min. 100 cycles	±0.1%	±0.01%
Overloading	Rated Voltage x 2.5, 5 sec.	±0.1%	±0.01%
Low Temperature Storage	-65°C, No Load, 24 hrs. → Rated Power, 45 min.	±0.1%	±0.01%
Resistance to Soldering Heat	+260°C, 10 sec.	±0.2%	±0.01%
Moisture Resistance	+65°C to -10°C, 90% RH to 98% RH, Rated Voltage, 10 cycles (240 hrs.)	±0.2%	±0.02%
Life	70°C, Rated Power, 1.5 hrs. ON, 0.5 hrs. OFF, 2,000 hrs.	±0.5%	±0.005%
High Temperature Exposure	155°C, No Load, 100 hrs.	±0.1%	±0.02%

**TAPE AND REEL PACKAGE (BASED ON EIA-481-1) [DIMENSIONS IN inches (mm)]**

Tape Dimensions										Reel Dimensions						
Type	A	B	C	D	E	F	G	H	J	A	N	B	C	D	W1	W2
	±0.004 (0.1)	±0.004 (0.1)	±0.008 (0.2)	±0.002 (0.05)	±0.004 (0.1)	±0.004 (0.1)	±0.002 (0.05)	±0.004 (0.1)	±0.022 (0.55)	0/-0.059 (0/-1.5)	+0.039/0 (+1/0)	±0.008 (0.2)	±0.031 (0.8)	±0.020 (0.5)	+0.039/0 (+1/0)	±0.039 (1.0)
RWA	0.039 (1.0)	0.071 (1.8)	0.315 (8.0)	0.138 (3.5)	0.069 (1.75)	0.157 (4.0)	0.079 (2.0)	0.157 (4.0)	Dia. 0.061 (1.55)	Dia. 7.087 (180)	Dia. 2.362 (60)	Dia. 0.512 (13)	Dia. 0.827 (21)	0.079 (2)	0.354 (9)	0.512 (13)
RWB	0.057 (1.45)	0.089 (2.25)	0.315 (8.0)	0.138 (3.5)	0.069 (1.75)	0.157 (4.0)	0.079 (2.0)	0.157 (4.0)	Dia. 0.061 (1.55)	Reel Capacity RWA, RWB, RWC: 5,000 pieces/reel (Available at 100 pieces, 500 pieces and 1,000 pieces)						
RWC	0.075 (1.9)	0.138 (3.5)	0.315 (8.0)	0.138 (3.5)	0.069 (1.75)	0.157 (4.0)	0.079 (2.0)	0.157 (4.0)	Dia. 0.061 (1.55)							

**PRECAUTION IN USING FACE-BONDED CHIP RESISTORS**

**1. Storage**

Storage conditions or environment may adversely affect solderability of the exterior terminals. Do not store in high temperature and humidity. The recommended storage environment is lower than 40°C, has less than 70% RH humidity and is free from harmful gases such as sulphur and chlorine.

**2. Caution in Soldering**

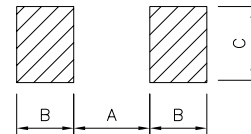
- ① IR and vapor phase reflow are recommended.
- ② Vacuum pick up is recommended for handling.
- ③ If the use of a soldering iron becomes necessary, precautionary measures should be taken to avoid any possible damage / overheating.

**3. Cleaning**

Avoid the use of cleaning agents which could attack epoxy resins, which form part of the resistor construction.

**4. Recommended Land Pattern**

The dimensions of solder land must be determined in conformity with the size of resistors and with the soldering method. They are also subject to the mounting machine and the material of the substrate.



Type	A	B	C
RWA	0.031 (0.8)	0.035 (0.9)	0.039 (1.0)
RWB	0.031 (0.8)	0.047 (1.2)	0.055 (1.4)
RWC	0.063 (1.6)	0.059 (1.5)	0.071 (1.8)