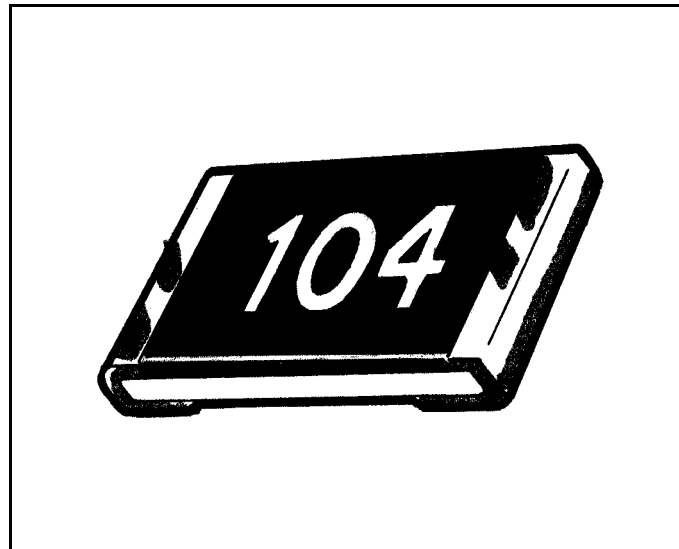


## Thick Film Chip Resistors



### TYPE CRG SERIES

Precious metal terminations are screen printed onto a ceramic base and fired. The resistive element is screen printed and fired and the passivation layer added. Each resistor is trimmed to tolerance by laser. The pre-scribed tile is broken into strips, the end plating is fired on and the strips broken into individual components. Final termination is made by electroplating.

### KEY FEATURES

- Thick film resistors with a high power to size ratio, ideally suited to industrial and general purpose use. A range from 1 ohm to 10 Mohms and tolerances of 1% and 5%. Also including zero ohm links.
- CRG chip resistors are suitable for most applications, including high frequency operation, owing to the short lead structure and low capacitance.

### STOCKISTS:

This product is stocked by RS and Micromark.

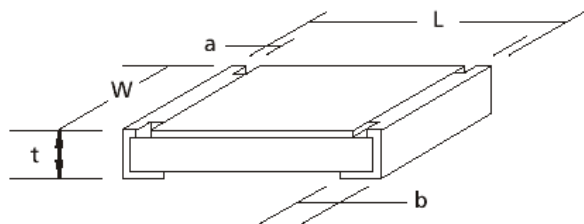
## TYPE CRG SERIES

### SPECIFICATIONS

	UNITS	0402			0603			0805		
Rated Power @ 70 °C	Watts	0.063			0.1			0.125		
Resistance Range	Min	10	1	10	10	1	10	10	1	10
	Max	1M0	9R1	3M3	1M0	9R1	10M	1M0	9R1	10M
Tolerance	%	1	5	5	1	5	5	1	5	5
Code letter		F	J	J	F	J	J	F	J	J
Selection Series		E24	E24	E24	E24 E96	E24	E24	E24 E96	E24	E24
Temperature Coefficient	ppm/°C	±100	±350	±200	±100	±350	±200	±100	±350	±200
		1206			2010			2512		
Rated Power @ 70 °C	Watts	0.25			0.5			1		
Resistance Range	Min	10	1	10	10	1	10	10	1	10
	Max	1M0	9R1	10M	1M0	9R1	10M	1M0	9R1	10M
Tolerance	%	1	5	5	1	5	5	1	5	5
Code letter		F	J	J	F	J	J	F	J	J
Selection Series		E24 E96	E24	E24	E24 E96	E24	E24	E24 E96	E24	E24
Temperature Coefficient	ppm/°C	±100	±350	±200	±100	±350	±200	±100	±350	±200

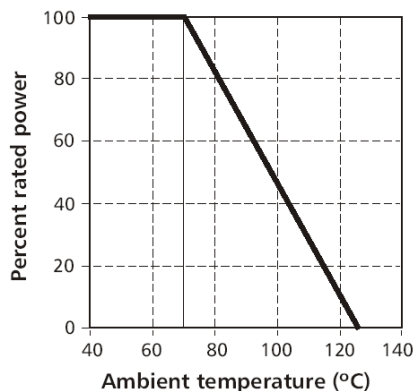
	UNITS	0402	0603	0805	1206	2010	2512
Working Voltage	Volts	50	75	150	200	200	200
Maximum Overload Voltage	Volts	100	150	300	400	400	400
Operating Temperature Range	°C	-55 to +125					
Climatic Category		55/125/56					
Insulation Resistance Dry Min	Mohms	1,000					
Stability	%	3					
Surface Temp Rise Max	°C/W	400					
Zerohm Current Max	Amps	1	1	2	2	2	2
Resistance Max		<20 mohm					

### DIMENSIONS



STYLE	L	W	t	a	b
0402	1.0 ± 0.1	0.5 ± 0.1	0.35 ± 0.05	0.2 ± 0.1	0.25 ± 0.1
0603	1.6 ± 0.1	0.8 ± 0.1	0.45 ± 0.1	0.3 ± 0.2	0.2 ± 0.1
0805	2.1 ± 0.2	1.3 ± 0.1	0.5 ± 0.1	0.4 ± 0.2	0.3 ± 0.2
1206	3.1 ± 0.2	1.55 ± 0.1	0.55 ± 0.1	0.45 ± 0.2	0.4 ± 0.2
2010	5.0 ± 0.2	2.5 ± 0.2	0.6 ± 0.1	0.6 ± 0.2	0.6 ± 0.2
2512	6.4 ± 0.2	3.2 ± 0.2	0.6 ± 0.1	0.7 ± 0.2	0.7 ± 0.2

### DERATING CURVE



**TYPE CRG SERIES**

1<sup>st</sup> April 2003  
ISSUE 2

**MOUNTING**

The resistors are suitable for processing on automatic placement equipment.

**MARKING**

**CRG0805, CRG1206, CRG2010, CRG2512**

E24 series resistors are marked with a three digit code.

E96 series resistors are marked with a four digit code.

Zerohm components are marked '0'.

**CRG0603**

E24 5% series are marked with a three digit code.

E24 1% series are marked with a three digit code.

E96 series are marked with the international alphanumeric three character code (available on request).

EXCEPT 10, 11, 13, 15, 20 & 75 decades which are marked as the E24 series.

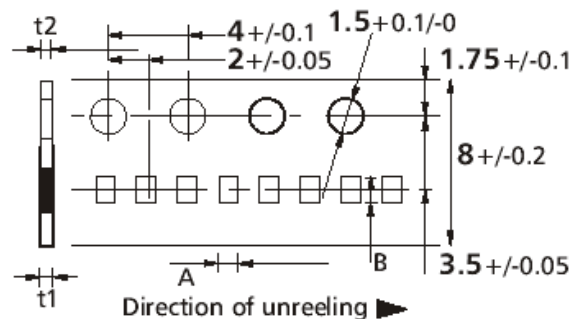
**CRG0402** series unmarked.

**STORAGE**

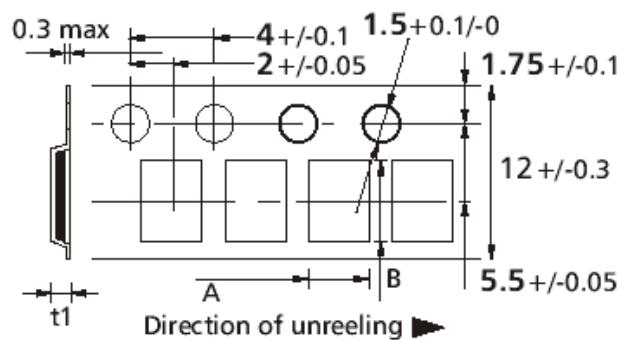
Unopened reels should be stored within a temperature range of +5 °C to +25 °C, separated from any dust, chemicals and solvent based materials. Non-adherence to this procedure could effect the solderability of this product.

**PACKAGING**

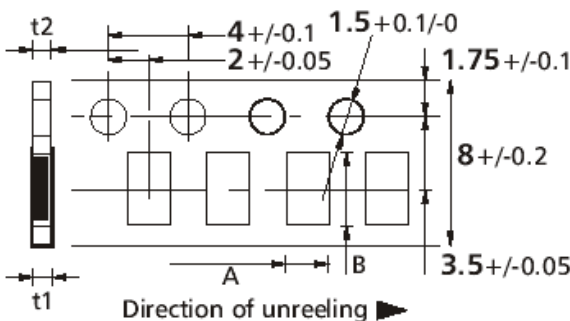
All chip resistors are supplied on reels. For details, see figures 1 - 4. Also available in bulk cassettes.



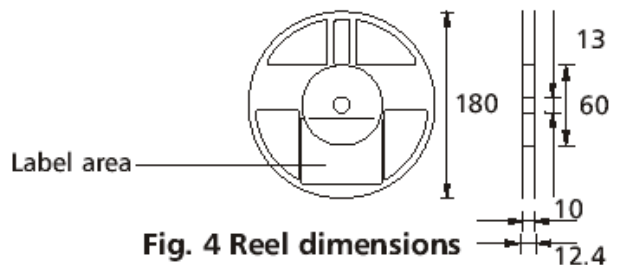
**Fig. 1 - 8mm wide tape - 2mm pitch**



**Fig. 3 - 12mm wide blister tape**



**Fig. 2 - 8mm wide tape - 4mm pitch**



**Fig. 4 Reel dimensions**

## TYPE CRG SERIES

1<sup>st</sup> April 2003  
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### PACKAGING (cont'd)

	<b>0402</b>	<b>0603</b>	<b>0805</b>	<b>1206</b>	<b>2010</b>	<b>2512</b>
Tape Width	8	8	8	8	12	12
Pitch	2	4	4	4	4	4
A	0.63	1.1	1.65	2.0	2.9	3.4
tol	± 0.05	± 0.2	± 0.2	± 0.15	± 0.1	± 0.1
B	1.13	1.9	2.4	3.6	5.3	6.6
tol	± 0.05	± 0.2	± 0.2	± 0.2	± 0.1	± 0.1
t1	0.55	0.7	0.9	0.9	1.0	1.0
tol	± 0.1	± 0.1	± 0.1	± 0.1	± 0.1	± 0.1
t2 max	0.5	0.8	1	1	-	-
Reel qty.	10000	5000	5000	5000	4000	4000

Larger reel sizes available on request.

### PERFORMANCE CHARACTERISTICS

The evaluation of the performance characteristics is carried out with reference to IECQ specifications QC 400 000 and QC 400 100.

TEST REF	Long Term Tests ±(3% + 0.1 ohm)
4.23	Climatic sequence
4.24	Damp heat, steady state
4.25.1	Endurance at 70 °C
4.25.3	Endurance at 125 °C
TEST REF	Short Term Tests ±(1% + 0.05 ohm)
4.13	Overload
4.32	Adhesion
4.33	Bond strength of end face plating
4.19	Rapid change of temperature
4.18	Resistance to soldering heat

### HOW TO ORDER

Orders for these components should include the following information:-  
Type, tolerance code letter and value

e.g. CRG0603 J 1K0 (CRG0603ZR for zerohm links)

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