



**Thin Film Technology Corp.**

**Product Family:** Ultra Reliable Chip Resistor

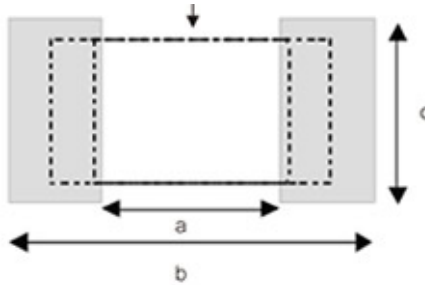
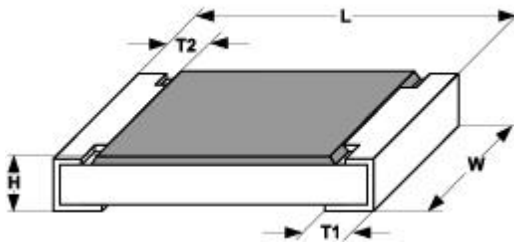
**Part Number Series:** UCR Series (Ultra Tight Tolerance)



	<p><b>Construction:</b></p> <ul style="list-style-type: none"> <li>• High Purity Alumina Substrate</li> <li>• Ni alloy thin-film resistive element</li> <li>• SiO<sub>2</sub> protective barrier</li> <li>• Wrap around electrodes</li> <li>• 100% matte tin over Ni terminations</li> <li>• AEC-Q200 compliant</li> <li>• Anti-Sulfur</li> </ul>	<p><b>Features:</b></p> <ul style="list-style-type: none"> <li>• 0603 ~ 2512 case sizes</li> <li>• TCR's to <math>\pm 1</math> ppm/<math>^{\circ}</math>C</li> <li>• Tolerances to 0.01%</li> <li>• SiO<sub>2</sub> barrier provides exceptional stability and reliability</li> <li>• High volume production suitable for commercial and special applications</li> </ul>
<p><b>Description:</b>          These ultra precision, highly stable precision chip resistors are perfect for demanding applications where high reliability and environmental stability is a must, such as automotive or test and measure applications. The incorporation of a SiO<sub>2</sub> protective barrier protects the products and allows for a very stable product with excellent long term reliability.</p>		

**Product Dimensions and Recommended Land Pattern:**

Dimension	UCR0603 (1608)	UCR0805 (2012)	UCR1206 (3216)	UCR2010 (5025)	UCR2512 (6432)
L	0.063 $\pm$ 0.008	0.079 $\pm$ 0.008	0.126 $\pm$ 0.008	0.197 $\pm$ 0.008	0.252 $\pm$ 0.012
W	0.031 $\pm$ 0.009	0.049 $\pm$ 0.009	0.063 $\pm$ 0.008	0.010 $\pm$ 0.010	0.126 $\pm$ 0.010
T2	0.012 $\pm$ 0.008	0.016 $\pm$ 0.008	0.020 $\pm$ 0.010	0.024 $\pm$ 0.010	0.029 $\pm$ 0.010
T1	0.012 $\pm$ 0.008	0.016 $\pm$ 0.008	0.020 $\pm$ 0.008	0.024 $\pm$ 0.010	0.031 $\pm$ 0.008
H	0.016 $\pm$ 0.005	0.016 $\pm$ 0.005	0.016 $\pm$ 0.005	0.018 $\pm$ 0.004	0.018 $\pm$ 0.004



All dimensions are shown in inches. Metric case sizes are shown in parenthesis.

Dimension	UCR0603 (1608)	UCR0805 (2012)	UCR1206 (3216)	UCR2010 (5025)	UCR2512 (6432)
a	0.039	0.047	0.087	0.150	0.189
b	0.118	0.157	0.197	0.268	0.323
c	0.047	0.065	0.079	0.114	0.142

**Part Numbering:** Ex: UCR0805L2002T-T05

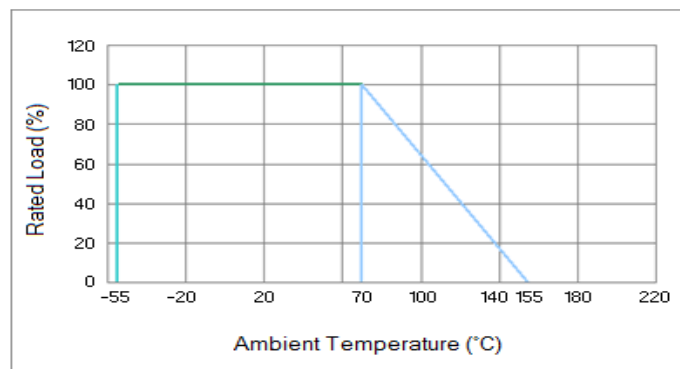
Product Designator	Size W x L (English)	Temp. Coefficient of Resistance (TCR)	Resistance Value	Resistance Tolerance	T&R Packaging Quantity
UCR	0603, 0805, 1206, 2010, 2512	K = $\pm 1$ ppm/ $^{\circ}$ C L = $\pm 2$ ppm/ $^{\circ}$ C M = $\pm 5$ ppm/ $^{\circ}$ C	4 digits with the first 3 being significant. The last digit specifies the number of zeros.	T = $\pm 0.01\%$ Q = $\pm 0.02\%$ A = $\pm 0.05\%$ B = $\pm 0.10\%$ D = $\pm 0.50\%$	-T01 = 100 -T05 = 500 -T1 = 1,000 (see electrical specs table)

**Electrical Specifications:**

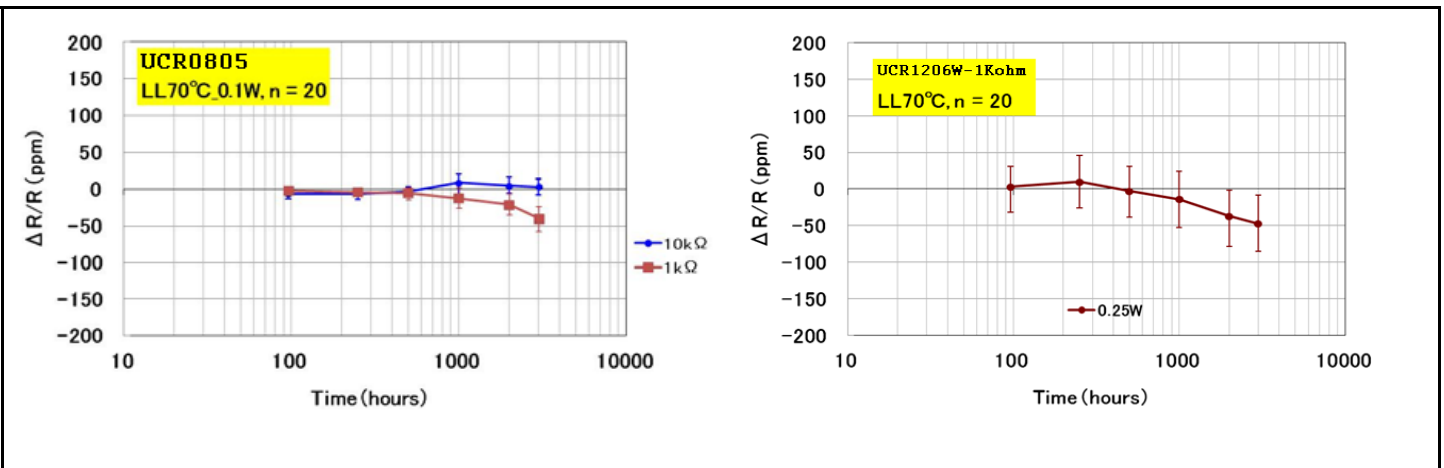
Type	UCR0603	UCR0805	UCR1206	UCR2010	UCR2512
Power Rating @ 70°C	1/16 Watt	1/10 Watt	1/4 Watt	1/2W	3/4W
Tolerance% (code)	±0.01% (T) ±0.02% (Q) ± 0.05% (A) ±0.10% (B) ±0.50% (D)	±0.01% (T) ±0.02% (Q) ± 0.05% (A) ±0.10% (B) ±0.50% (D)	±0.01% (T) ±0.02% (Q) ± 0.05% (A) ±0.10% (B) ±0.50% (D)	±0.01% (T) ±0.02% (Q) ± 0.05% (A) ±0.10% (B) ±0.50% (D)	±0.01% (T) ±0.02% (Q) ± 0.05% (A) ±0.10% (B) ±0.50% (D)
Resistance Range (Ω)	100 ~ 7.5k	100 ~ 36k	100 ~ 68k	100 ~ 150k	100 ~ 200k
Resistance Offering	E-24, E-96 Values				
TCR ppm/°C (code)	±1 (K), ±2 (L), ±5 (M)	±1 (K), ±2 (L), ±5 (M)	±1 (K), ±2 (L), ±5 (M)	±1 (K), ±2 (L), ±5 (M)	±1 (K), ±2 (L), ±5 (M)
Max Operating Voltage	100 V	150 V	200 V	300V	300V
Operating Temperature	-55°C ~ 155°C				
Packaging	100pcs/reel (T01), 500pcs/reel (T05), 1,000pcs/reel (T1)				

**Reliability Specifications:**

Test	Test Method	Typical ΔR Limits
Short Time Overload	Applied voltage: 2.5X rated voltage or 2X maximum operating voltage, whichever is less. Test duration: 5 seconds	±0.02% +0.01Ω
Load Life	Test Temperature: 70°C Applied voltage: rated voltage Test period: 2000 hours with power cycling as follows: 90 min. power ON/30 min. power OFF,	±0.02% +0.01Ω (R≥250Ω)
		±0.05% +0.01Ω (R<250Ω)
Moisture Load Life	Test Condition: 85°C/85% RH Applied voltage: 1/10 rated power Test period: 1000 hours with power cycling as follows: 90 min. power ON/30 min. power OFF	± 0.05% +0.01Ω
Temperature Cycle	Repeat 100 cycles as follows: -65°C(15 min.) ~ +150°C(15 min.)	±0.02% +0.01Ω
High Temperature Exposure	+155°C for 1000 hours, no bias	±0.05% +0.01Ω
Resistance to Soldering Heat	235±5°C, 30 seconds (reflow), (by MIL-PRF-55342)	±0.01% +0.01Ω

**Power Derating Curve:**

**Load Life Test Data for 3,000Hrs @ 70°C at Rated Power:**



**Typical TCR Curve and Thermal Characteristic of Resistance:**

