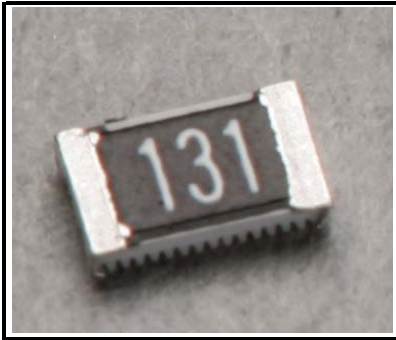


Ultra Precision  $\pm 0.01\%$  Tol,  $\pm 2\text{ppm}$  TCR Thin Film Chip Resistors



**FEATURES**

- Unmatched Reliability and Excellent Stability at different environmental conditions
- Low noise, THIN FILM (NiCr) construction
- EIA Standard case size(0603, 0805, 1206)
- RoHS Compliance and 100% Lead-Free (Matte Sn termination finished)

**APPLICATIONS**

- Automotive
- Scale, Test & Measurement
- Optical & Telecommunication
- Medical and Industrial Equipment

**Electrical Specification**

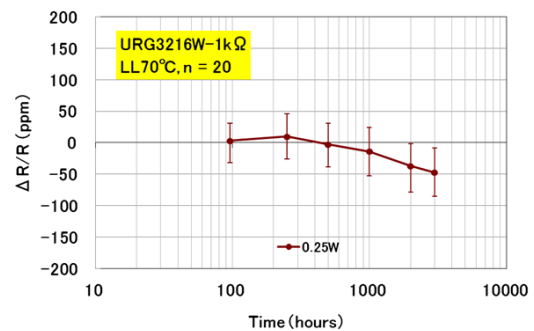
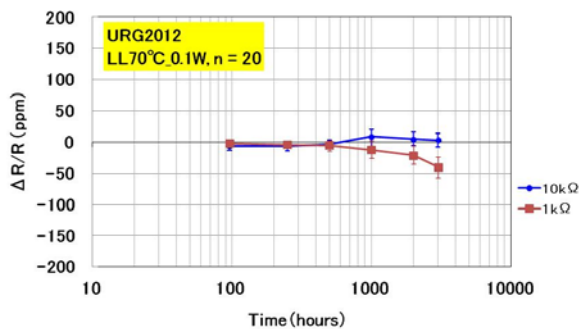
Type	Size (in inch)	Power Rating at 70 °C	Resistance Tolerance (Code)	Resistance Range (ohm)	Temperature Coefficient (Code) *1)	Max. operating Voltage	Resistance Values (E-series)	Packaging (Code)
					(ppm/°C)			
URG1608	0603	1/16W	$\pm 0.01\%$ (L) $\pm 0.02\%$ (P)	100 - 7.5K	$\pm 2$ (L)	100V	E-24, E-96	Tape & Reel (T&R) T1 = 1000pcs T05 = 500pcs
URG2012	0805	1/10W		100 - 36K	$\pm 2$ (L)	150V		
URG3216	1206	1/4W		100 - 68K	$\pm 2$ (L)	200V		

\*1) Assurance temperature range:  $-20^{\circ}\text{C} \sim 125^{\circ}\text{C}$

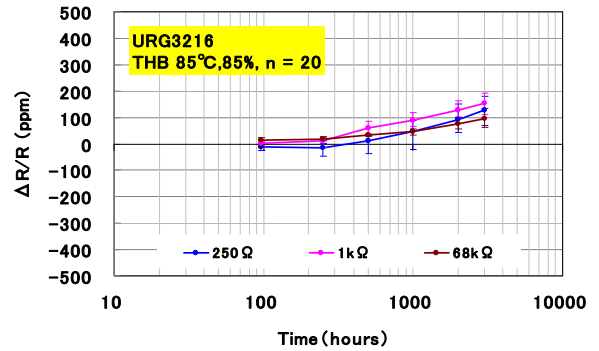
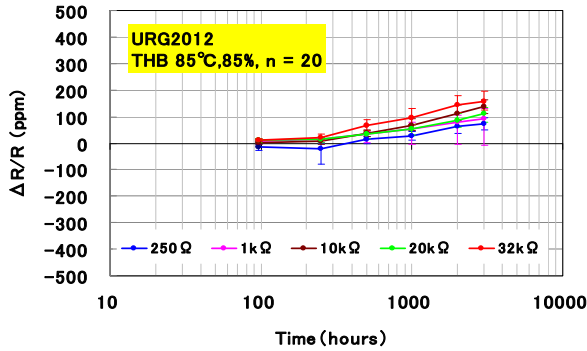
**Reliability Test Data**

Item	Test Method ( MIL-PRF-55342/JIS C5201-1)	$\Delta R$ Limits
Short Time Overload	2.5 times of Rated Load X 5sec.	+/- 0.02%
Load Life	70°C Rated Load 90min. On/ 30min. Off per Cycle X 2000	+/- 0.02%
Temp. Hum. Bias	85°C 85% RH 1/10 power loaded 90min. On/ 30min. Off per Cycle X 2000	+/- 0.05%
Thermal Shock	$-65^{\circ}\text{C}$ (30min)/room temp.(2min) / $+150^{\circ}\text{C}$ (30min)/room temp.(2min), 100 cycles, no bias	+/- 0.02%
High Temperature	155°C for 100h, no bias	+/- 0.02%

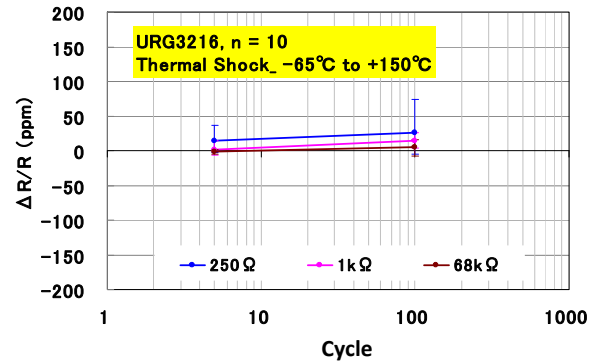
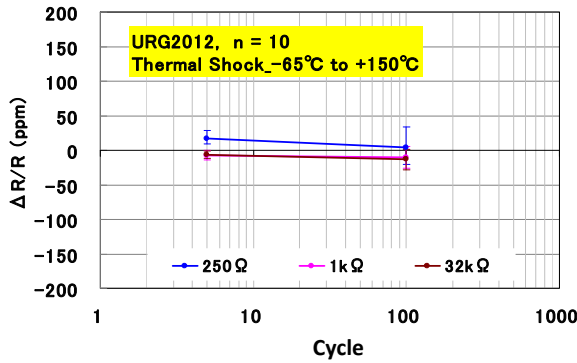
**Load Life Test Data for 3,000Hrs @ 70°C at Rated Power**



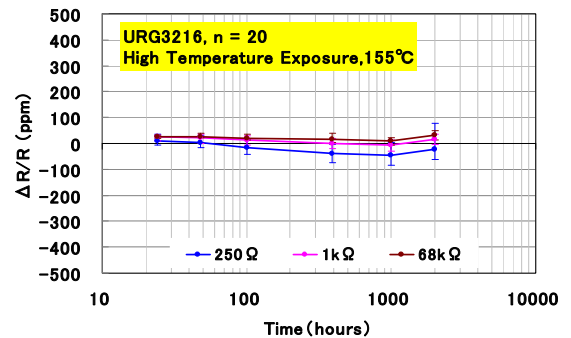
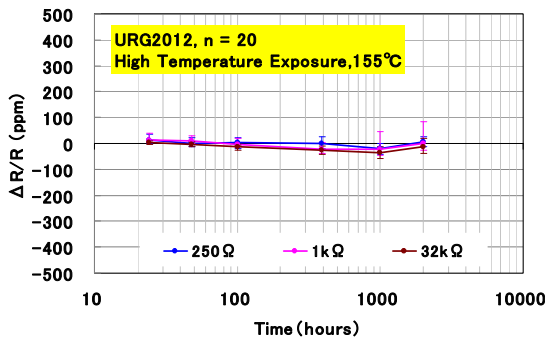
**Temperature Humidity Bias**



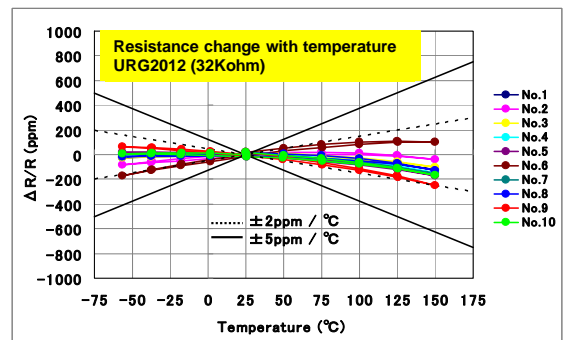
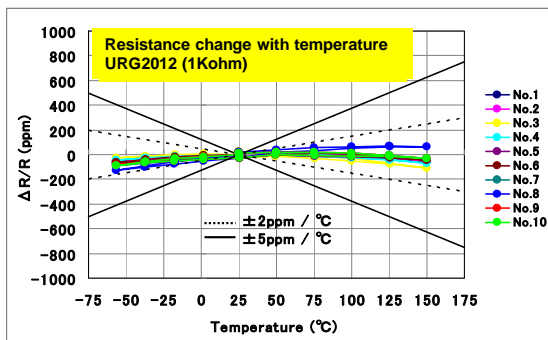
**Thermal Shock**



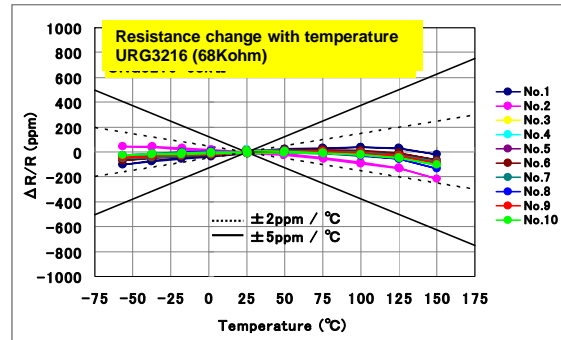
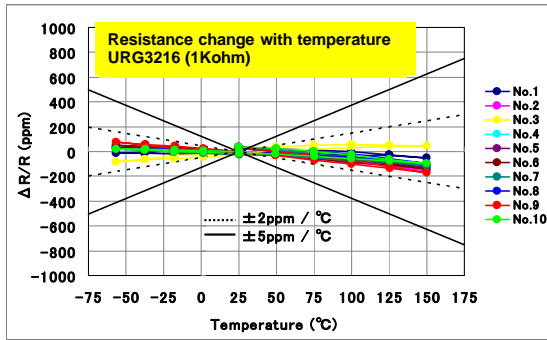
**High Temperature Exposure at 155°C with no power**



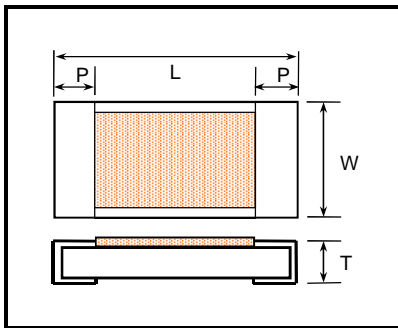
**Typical TCR Curve and Thermal Characteristic of Resistance value**



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

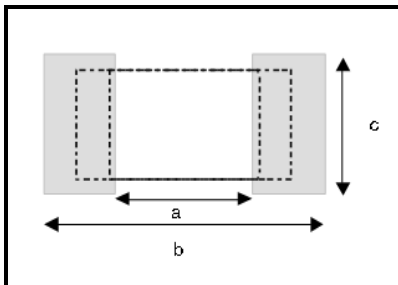


**Dimensions & Footprints**



TYPE	Dimension inch(mm)			
	L	W	P	T
URG1608	.063 ± .004 (1.6 ± 0.1)	.031 ± .006 (0.8 ± 0.15)	.012 ± .006 (0.3 ± 0.15)	0.016 ± .004 (0.4 ± 0.1)
URG2012	.079 ± .008 (2.0 ± 0.2)	.049 ± .008 (1.25 ± 0.2)	.016 ± .008 (0.4 ± 0.2)	0.016 ± .004 (0.4 ± 0.1)
URG3216	.126 ± .008 (3.2 ± 0.2)	.063 ± .008 (1.6 ± 0.2)	.02 ± .01 (0.5 ± 0.25)	0.016 ± .004 (0.4 ± 0.1)

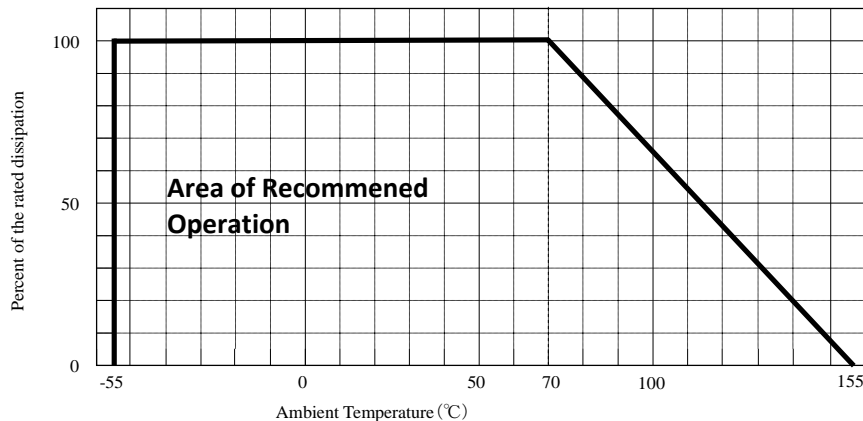
**Recommended Mounting Footprints**



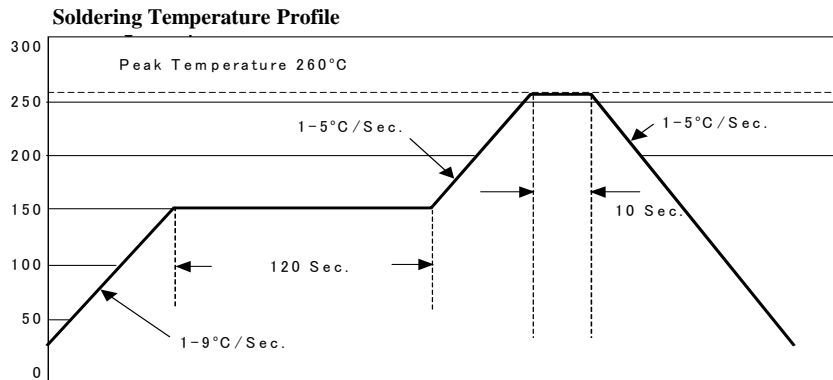
TYPE	Dimension inch(mm)		
	a	b	c
URG1608	.040 (1.0)	.118 (3.0)	.047 (1.2)
URG2012	.047 (1.2)	.157 (4.0)	.067 (1.7)
URG3216	.079 (2.0)	.197 (5.0)	.079 (2.0)

**Power Derating Curve**

For operation above 70degC, power rating must be derated according to the following chart.

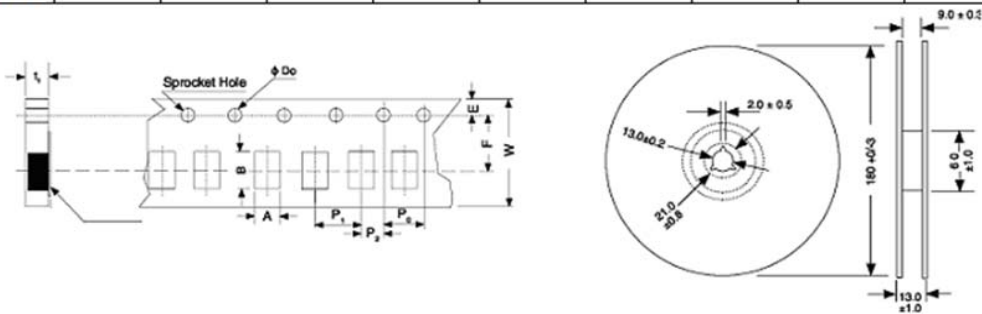


**Recommended Reflow Curve**

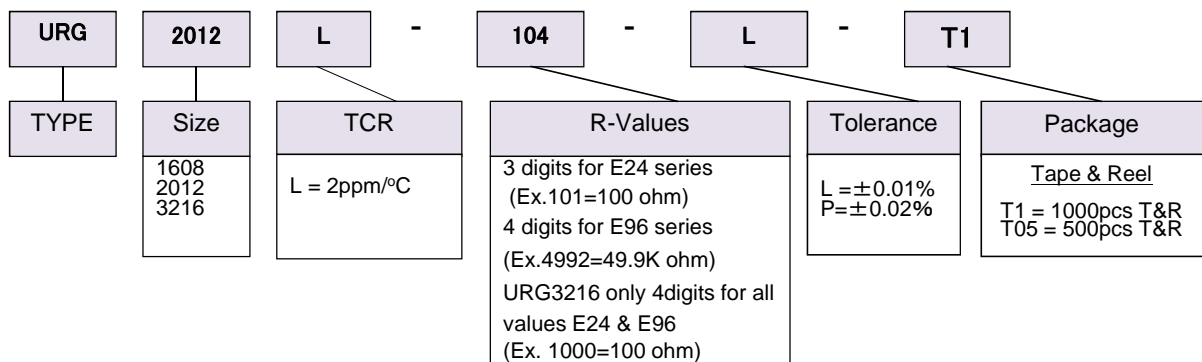


**Tape & Reel Dimensions (mm)**

Type	A	B	E	F	W	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	t <sub>1</sub>
URG1608	1.1 ± 0.1	1.9 ± 0.1	1.75 ± 0.1	3.5 ± 0.05	8.0 ± 0.3	4.0 ± 0.1	4.0 ± 0.1	2.0 ± 0.05	0.6 ± 0.05
URG2012	1.65 ± 0.2	2.4 ± 0.2							0.75 ± 0.05
URG3216	1.9 ± 0.1	3.5 ± 0.1							1.0 ± 0.2



**Ordering information**



**Notice**

For non-standard R-values requests, please contact our technical support.