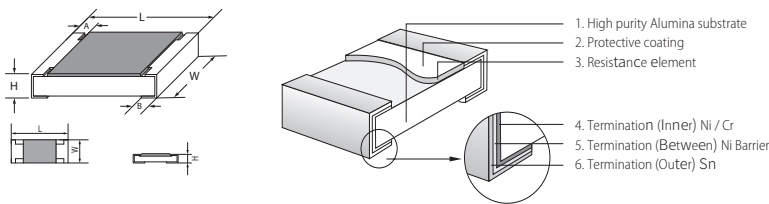


## Feature

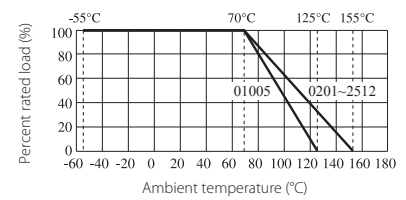
- Small size & light weight
- Save assembly cost.
- Suitable for both wave & re-flow soldering.
- Applications: Navigator, Mobile Phone, Telecom, PDA, Setbox, Meter.



## Figures



## Derating Curve & Specification



Type	01005	0201	0402	0603	0805	1206	1210	1812	2010	2512
Size	0402	0603	1005	1608	2012	3216	3225	4532	5025	6432
Max. Working Voltage	15V	25V	50V	75V	150V	200V	200V	200V	200V	200V
Max. Overload Voltage	30V	50V	100V	150V	300V	400V	500V	500V	500V	500V
Dielectric withstanding Voltage	-	-	100V	300V	500V	500V	500V	500V	500V	500V
Operating Temperature	-55~+125°C	-55~+155°C	-55~+155°C	-55~+155°C	-55~+155°C	-55~+155°C	-55~+155°C	-55~+155°C	-55~+155°C	-55~+155°C

Type	01005	0201	0402	0603	0805	1206	1210	1812	2010	2512	
Dimension	L(mm)	0.40±0.02	0.60±0.03	1.00±0.10	1.60±0.10	2.00±0.15	3.10±0.15	3.10±0.10	4.50±0.20	5.00±0.10	6.35±0.10
	W(mm)	0.20±0.02	0.30±0.03	0.50±0.05	0.80±0.10	1.25 <sup>+0.15</sup> <sub>-0.10</sub>	1.55 <sup>+0.15</sup> <sub>-0.10</sub>	2.60±0.20	3.20±0.20	2.50±0.20	3.20±0.20
	H(mm)	0.13±0.02	0.23±0.03	0.35±0.05	0.45±0.10	0.55±0.10	0.55±0.10	0.55±0.10	0.55±0.20	0.55±0.10	0.55±0.10
	A(mm)	0.10±0.03	0.10±0.05	0.20±0.10	0.30±0.20	0.40±0.20	0.45±0.20	0.50±0.25	0.50±0.20	0.60±0.25	0.60±0.25
	B(mm)	0.10±0.03	0.15±0.05	0.25±0.10	0.30±0.20	0.40±0.20	0.45±0.20	0.50±0.20	0.50±0.20	0.50±0.20	0.50±0.20
Resistance Value of Jumper	<50mΩ										
Rated Current of Jumper	0.5A	0.5A	1A	1A	2A	2A	2A	2A	2A	2A	
Max.Overload Current of Jumper	1A	1A	2A	2A	5A	10A	10A	10A	10A	10A	

Type	01005	0201	0402	0603	0805	1206	1210	1812	2010	2512	
Power Rating at 70°C	1/32W	1/20W	1/16W	1/10W	1/8W	1/4W	1/4W	1/3W	1/2W	3/4W	1W
Resistance Range of 0.5%(E-96)	-	-	1Ω~10MΩ	1Ω~10MΩ	1Ω~10MΩ	-	1Ω~10MΩ	-	1Ω~10MΩ	1Ω~10MΩ	1Ω~10MΩ
Resistance Range of 1%,2%(E-96)	10Ω ~ 10MΩ	1Ω~ 10MΩ	0.01Ω~ 10MΩ	0.1Ω≤R <10MΩ	0.01Ω ≤R <0.1 Ω	0.1Ω≤R <10MΩ	0.01Ω≤R <0.1Ω		0.01Ω~10MΩ		
Resistance Range of 5%(E-24)		1Ω~10MΩ	0.01Ω~ 10MΩ	0.1Ω≤R <10MΩ	0.01Ω ≤R <0.1 Ω	0.1Ω≤R <10MΩ	0.01Ω≤R <0.1Ω		0.01Ω~10MΩ		

## Marking on the Resistors Body

- For 01005, 0201, 0402 size, no marking on the body due to the small size of the resistor.
- $\pm 5\%$  tolerance product: the marking is 3 digits, the first 2 digits are the significant of the resistance and the 3rd digit denotes number of zeros following.
- 0805, 1206, 1210, 2010, 2512  $\leq \pm 1\%$ : the marking is 4 digits, the first 3 digits are the significant of the resistance and the 4th digit denotes number of zeros following.
- Standard E-96 series values of 0603  $\leq \pm 1\%$ : due to the small size of the resistor's body, 3 digits marking will be used to indicate the accurate resistance value by using the following Multiplier & Resistance Code.



153 = 15000 $\Omega$  = 15K $\Omega$



Below 10 $\Omega$ : 6R8 = 6.8 $\Omega$



2372 = 23700 $\Omega$  = 23.7K $\Omega$



Below 10 $\Omega$ : 3R24 = 3.24 $\Omega$

## Multiplier Code (for 0603 $\leq \pm 1\%$ marking)

Code	A	B	C	D	E	F	G	H	X	Y	Z
Power	10 <sup>0</sup>	10 <sup>1</sup>	10 <sup>2</sup>	10 <sup>3</sup>	10 <sup>4</sup>	10 <sup>5</sup>	10 <sup>6</sup>	10 <sup>7</sup>	10 <sup>-1</sup>	10 <sup>-2</sup>	10 <sup>-3</sup>

## Standard E-96 series Resistance Value code (for 0603 $\leq \pm 1\%$ marking)

Value	Code	Value	Code	Value	Code	Value	Code	Value	Code	Value	Code
100	01	147	17	215	33	316	49	464	65	681	81
102	02	150	18	221	34	324	50	475	66	698	82
105	03	154	19	226	35	332	51	487	67	715	83
107	04	158	20	232	36	340	52	499	68	732	84
110	05	162	21	237	37	348	53	511	69	750	85
113	06	165	22	243	38	357	54	523	70	768	86
115	07	169	23	249	39	365	55	536	71	787	87
118	08	174	24	255	40	374	56	549	72	806	88
121	09	178	25	261	41	383	57	562	73	825	89
124	10	182	26	267	42	392	58	576	74	845	90
127	11	187	27	274	43	402	59	590	75	866	91
130	12	191	28	280	44	412	60	604	76	887	92
133	13	196	29	287	45	422	61	619	77	909	93
137	14	200	30	294	46	432	62	634	78	931	94
140	15	205	31	301	47	442	63	649	79	953	95
143	16	210	32	309	48	453	64	665	80	976	96

## So the resistance value are marked as the following examples:



1.96K $\Omega$  = 196  $\times 10^1 \Omega$  = 29B



12.4 $\Omega$  = 124  $\times 10^{-1} \Omega$  = 10X

- Standard E-24 and not belong to E-96 series values ( $\leq \pm 1\%$ ) of 0603 size: the marking is the same as 5% tolerance but marking as underline.



122 = 1200 = 1.2 K $\Omega$



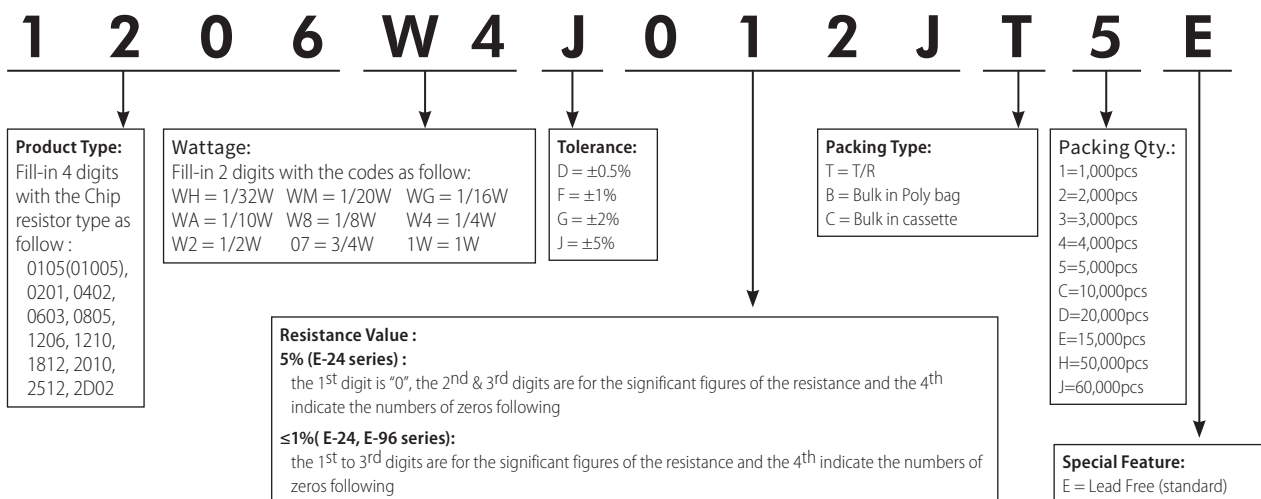
680 = 68 $\Omega$

## Performance Specifications

	01005: $1\Omega \leq R < 10\Omega$ : $-200 \sim +600 \text{ppm}/^\circ\text{C}$ $10\Omega \leq R < 100\Omega$ : $\pm 300 \text{ppm}/^\circ\text{C}$ $100\Omega \leq R \leq 10\text{M}\Omega$ : $\pm 200 \text{ppm}/^\circ\text{C}$	0603: $0.01\Omega \leq R \leq 0.03\Omega$ : $\pm 1500 \text{PPM}/^\circ\text{C}$ $0.03\Omega < R \leq 0.05\Omega$ : $\pm 1000 \text{PPM}/^\circ\text{C}$ $0.05\Omega < R < 1\Omega$ : $\pm 800 \text{PPM}/^\circ\text{C}$	0805, 1206, 1210, 1812, 2010, 2512: $0.01\Omega \leq R \leq 0.015\Omega$ : $\pm 1500 \text{ppm}/^\circ\text{C}$ $0.015\Omega < R \leq 0.03\Omega$ : $\pm 1000 \text{ppm}/^\circ\text{C}$ $0.03\Omega < R < 1\Omega$ : $\pm 800 \text{ppm}/^\circ\text{C}$ $1\Omega \leq R \leq 10\Omega$ : $\pm 200 \text{ppm}/^\circ\text{C}$ $> 10\Omega$ : $\pm 100 \text{ppm}/^\circ\text{C}$
<b>Temperature coefficient</b>	0201: $1\Omega \leq R \leq 10\Omega$ : $-100 \sim +350 \text{ppm}/^\circ\text{C}$ $> 10\Omega$ : $\pm 200 \text{ppm}/^\circ\text{C}$ 0402: $1\Omega \leq R \leq 10\Omega$ : $\pm 200 \text{ppm}/^\circ\text{C}$ $> 10\Omega$ : $\pm 100 \text{ppm}/^\circ\text{C}$	$1\Omega \leq R \leq 10\Omega$ : $\pm 200 \text{PPM}/^\circ\text{C}$ $> 10\Omega$ : $\pm 100 \text{PPM}/^\circ\text{C}$	
<b>Short-time overload</b>	$\pm 5\%$ , $\pm 2\%$ : $\pm(2.0\% + 0.05\Omega)$ $\pm 1\%$ , $\pm 0.5\%$ : $\pm(1.0\% + 0.05\Omega)$ 01005 $\pm 5\% \pm 1\%$ : $\pm(2.0\% + 0.05\Omega)$		
<b>Insulation resistance</b>	$\geq 1,000 \text{M}\Omega$		
<b>Dielectric withstanding voltage</b>	No evidence of flashover, mechanical damage, arcing or insulation breakdown		
<b>Terminal bending</b>	$\pm(1.0\% + 0.05\Omega)$		
<b>Soldering heat</b>	$\pm(1.0\% + 0.05\Omega)$		
<b>Solderability</b>	Coverage must be over 95%.		
<b>Rapid change of temperature</b>	$\pm 5\%$ , $\pm 2\%$ : $\pm(1.0\% + 0.05\Omega)$ $\pm 1\%$ , $\pm 0.5\%$ : $\pm(0.5\% + 0.05\Omega)$ 01005 $\pm 5\% \pm 1\%$ : $\pm(1.0\% + 0.05\Omega)$		
<b>Humidity (Steady State)</b>	$\pm 5\%$ , $\pm 2\%$ : $\pm(3.0\% + 0.05\Omega)$ $\pm 1\%$ , $\pm 0.5\%$ : $\pm(0.5\% + 0.05\Omega)$ 01005 $\pm 5\% \pm 1\%$ ( $-55^\circ\text{C} \sim 125^\circ\text{C}$ ): $\pm(2.0\% + 0.05\Omega)$		
<b>Load life in humidity</b>	$\pm 5\%$ , $\pm 2\%$ : $\pm(3.0\% + 0.05\Omega)$ $\pm 1\%$ , $\pm 0.5\%$ : $\pm(1\% + 0.05\Omega)$ 01005: $\pm(3.0\% + 0.05\Omega)$		
<b>Load life</b>	$\pm 5\%$ , $\pm 2\%$ : $\pm(3.0\% + 0.05\Omega)$ $\pm 1\%$ , $\pm 0.5\%$ : $\pm(1\% + 0.05\Omega)$ 01005: $\pm(3.0\% + 0.05\Omega)$		

• Resistance value which doesn't belong to E-24 and E-96 Series Standard Values is available case by case.

## Ordering Procedure (Example: 1206 1/4W 5% 1.2 $\Omega$ T/R-5000)



**Remark:** For more details, please check page 135, Part No. System