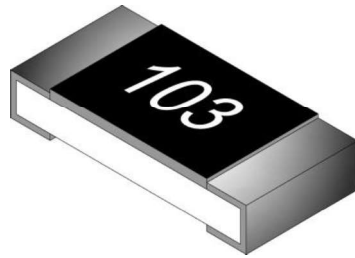
 毫欧电阻 毫欧制造	HoCUH贴片陶瓷电阻系列选型	系列号	HoCUH
		修订日期	2022-05-27
		版本号	Ho-A0

# 规格书 Specification

制造商:深圳市毫欧电子有限公司

适用:本规格书适用于深圳市毫欧电子有限公司HoCUH贴片陶瓷电阻系列产品选型。

## Thick Film Ultra High Power Chip Resistor — CUH Series



### Application

- Consumer electrical
- Home Appliance: Air conditioner, Refrigerator
- Computer & relative products: Main board
- Communication equipment: Cell phone, Fax machine
- Power equipment: Power supply , Illumination equipment
- Measuring instrument: Electric meter, Navigation equipment

### Features


- Small size and light weight
- Reliability, high quality

### Parts Number Explanation

Ho	CUH	2512	3W	200KR	1%
↓	↓	↓	↓	↓	↓
制造商	产品类别	封装	额定功率	阻值	精度
毫欧电子	贴片陶瓷	0402	0.2W	0R=0R00	D=±0.5% F=±1% G=±2% J=±5%
		0603	0.33W	10mR=R010	
		0805	0.5W	100mR=R100	
		1206	0.75W	1R=1R00	
		1210	1W	10R=10R0	
		2010	1.5W	100R=100R	
		2512	3W	1K=1K00 1M=1M00	



地址: 深圳市龙华新区观澜大布头路南通邦高新产业园 A 栋 8 楼

 毫欧电阻 毫欧制造	HoCUH贴片陶瓷电阻系列选型	系列号	HoCUH
		修订日期	2022-05-27
		版本号	Ho-A0

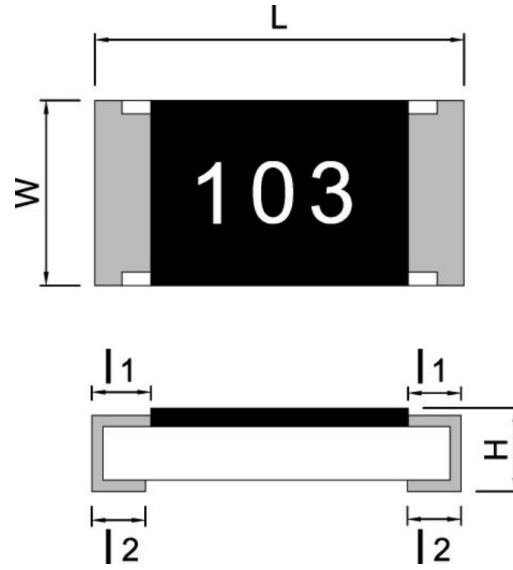
### ■ Standard Electrical Specifications

Item Type	Rated Power at 70°C	Max Working Voltage	Max Overload Voltage	T. C. R. (PPM/°C)	Resistance Range		
					D (±0.5%)	F(±1%) G(±2%)	J(±5%)
CUH0402	0.2W	50V	100V	±400	-	1Ω ≤ R < 10Ω	
				±100	10Ω ≤ R ≤ 1MΩ	10Ω ≤ R ≤ 10MΩ	
CUH0603	0.33W	150V	200V	±400	-	1Ω ≤ R < 10Ω	
				±100	10Ω ≤ R ≤ 1MΩ	10Ω ≤ R ≤ 10MΩ	
CUH 0805	0.5W	200V	300V	±400	-	1Ω ≤ R < 10Ω	
				±100	10Ω ≤ R ≤ 1MΩ	10Ω ≤ R ≤ 10MΩ	
CUH1206	0.75W	200V	400V	±400	-	1Ω ≤ R < 10Ω	
				±100	10Ω ≤ R ≤ 1MΩ	10Ω ≤ R ≤ 10MΩ	
CUH1210	1W			±400	-	1Ω ≤ R < 10Ω	
				±100	10Ω ≤ R ≤ 1MΩ	10Ω ≤ R ≤ 10MΩ	
CUH2010	1.5W			±400	-	1Ω ≤ R < 10Ω	
				±150	10Ω ≤ R ≤ 1MΩ	10Ω ≤ R ≤ 10MΩ	
CUH2512	3W	250V	500V	±400	-	1Ω ≤ R < 10Ω	
				±150	10Ω ≤ R ≤ 1MΩ	10Ω ≤ R ≤ 10MΩ	

- For non-standard parts, please contact our sales dept.
- Operating Temperature Range : -55°C ~ +155°C.

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系列号	HoCUH
修订日期	2022-05-27
版本号	Ho-A0

**■ Type Dimension**


CUH0402 / CUH0603 / CUH0805 / CUH1206 CUH1210 / CUH1812 / CUH2010 / CUH2512

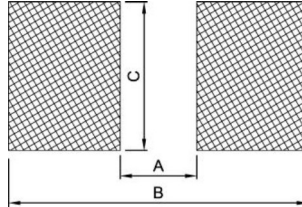
TYPE	L	W	H	l <sub>1</sub>	l <sub>2</sub>
CUH0402	1.00 ± 0.05	0.50 ± 0.05	0.30 ± 0.05	0.15 ± 0.10	0.20 ± 0.10
CUH0603	1.60 ± 0.10	0.80 ± 0.10	0.40 ± 0.10	0.30 ± 0.20	0.30 ± 0.10
CUH0805	2.00 ± 0.10	1.25 ± 0.10	0.50 ± 0.15	0.30 ± 0.15	0.40 ± 0.15
CUH1206	3.05 ± 0.10	1.60 ± 0.10	0.55 ± 0.15	0.40 ± 0.20	0.50 ± 0.20
CUH1210	3.05 ± 0.10	2.50 ± 0.15	0.55 ± 0.15	0.50 ± 0.20	0.50 ± 0.20
CUH2010	5.00 ± 0.20	2.50 ± 0.15	0.55 ± 0.10	0.60 ± 0.20	0.60 ± 0.20
CUH2512	6.30 ± 0.20	3.20 ± 0.15	0.68 ± 0.15	0.60 ± 0.20	0.60 ± 0.20

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系列号	HoCUH
修订日期	2022-05-27
版本号	Ho-A0

## ● General Information

### ■ Recommend Land Pattern Design



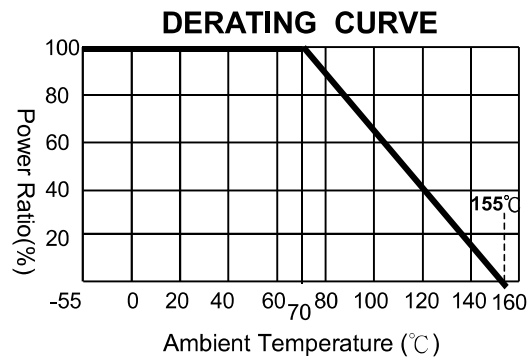
### ■ Dimension

Unit: mm

Type	0402	0603	0805	1206	1210	1812	2010	2512
A	0.60	0.80	1.30	2.20	2.00	3.11	3.80	4.90
B	1.60	2.40	2.90	4.20	4.40	5.91	6.60	8.10
C	0.70	1.00	1.40	1.70	2.70	3.00	2.70	3.40

## ■ Performance Characteristics

### ■ Power Derating Curve



Power rating or current rating is in the case based on continuous full-load at ambient temperature of 70°C .  
For operation at ambient temperature in excess of 70°C , the load should be derated in accordance with figure of derating Curve.

### ■ Voltage Rating or Current Rating


Resistance Range:  $\geq 1\Omega$

Rated Voltage: The resistor shall have a DC continuous working voltage or a RMS AC continuous working voltage at commercial-line frequency and wave form corresponding to the power rating, as determined formula as following:

$$E(RCWV) = \sqrt{P \times R}$$

E=Rated voltage(V)  
 P=Power rating(W)  
 R=Nominal resistance( $\Omega$ )

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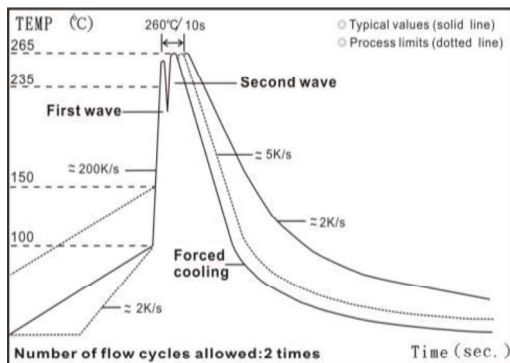
 毫欧电阻 毫欧制造	HoCUH贴片陶瓷电阻系列选型	系列号	HoCUH
		修订日期	2022-05-27
		版本号	Ho-A0

## ● Reliability Test and Requirement

Test Item	Test Method	Procedure	Requirements
Temperature Coefficient of Resistance (T.C.R)	JIS-C-5201-1 4.8 IEC-60115-1 4.8	At 25°C / -55°C and 25°C /+155°C, 25°C is the reference temperature	As Spec
Short Time Overload	JIS-C-5201-1 4.13 IEC-60115-1 4.13	Ultra Power : 5 × Rated power or Max Overload Voltage whichever is less for 5 seconds	1% and below : ±(1.0%+0.05Ω) 2%、5% : ±(2.0%+0.10Ω)
Leaching	JIS-C-5201-1 4.18 IEC-60068-2-58 8.2.1	260±5°C for 30 seconds.	Individual leaching area ≤5% Total leaching area ≤ 10%
Resistance to Soldering Heat	JIS-C-5201-1 4.18 IEC-60115-1 4.18	260±5°C for 10 seconds.	1% and below : ±(0.5%+0.05Ω) 2%、5% : ±(1.0%+0.05Ω)
Rapid Change of Temperature	JIS-C-5201-1 4.19 IEC-60115-1 4.19	-55°C to +155°C,5 cycles	1% and below : ±(0.5%+0.05Ω) 2%、5% : ±(1.0%+0.10Ω)
Resistance to Solvent	JIS-C-5201-1 4.29	The tested resistor be immersed into isopropyl alcohol of 20~25°C for 60 secs. Then the resistor is left in the room for 48 hrs.	1% and below : ±(0.5%+0.05Ω) 2%、5% : ±(0.5%+0.05Ω)
Damp Heat with Load	JIS-C-5201-1 4.24 IEC-60115-1 4.24	40±2°C, 90~95% R.H. RCWV or Max. working voltage whichever is less for 1000 hrs with 1.5 hrs "ON" and 0.5 hrs "OFF" .	1% and below : ±(1.0%+0.05Ω) 2%、5% : ±(2.0%+0.05Ω) Value <1Ω : ±(2.0%+0.05Ω)
Load Life (Endurance)	JIS-C-5201-1 4.25 IEC-60115-1 4.25.1	70±2°C, RCWV or Max. working voltage whichever is less for 1000 hrs with 1.5 hrs "ON" and 0.5 hr "OFF" .	1% and below : ±(1.0%+0.05Ω) 2%、5% : ±(3.0%+0.10Ω) Value <1Ω : ±(3.0%+0.10Ω)
Insulation Resistance	JIS-C-5201-1 4.6 IEC-60115-1 4.6	Apply 100VDC for 1 minute.	≥10GΩ
Bending Strength	JIS-C-5201-1 4.33 IEC-60115-1 4.33	Bending once for 5 seconds D : 0402、0603、0805=5mm 1206、1210、1812=3mm 2010、2512=2mm	1% and below : ±(1.0%+0.05Ω) 2%、5% : ±(1.0%+0.05Ω)

## ■ Recommended Customer Soldering Parameters

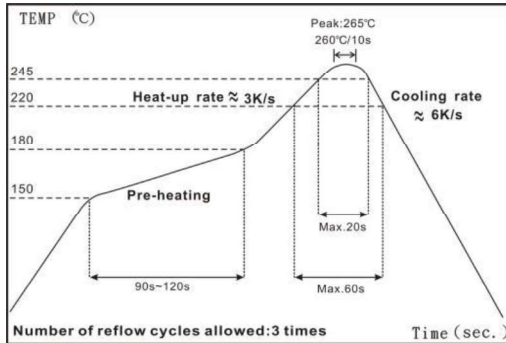
### ■ Wave solder Temperature condition



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系列号	HoCUH
修订日期	2022-05-27
版本号	Ho-A0

### ■ Solder reflow Temperature condition



■ Rework temperature (hot air equipment) : 350°C, 3~5seconds

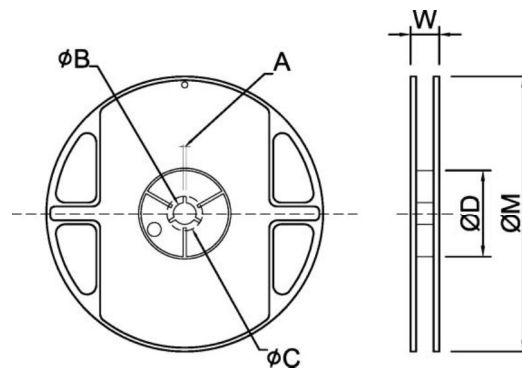
### ■ Recommended reflow methods

IR, vapor phase oven, hot air oven

If reflow temperatures exceed the recommended profile, devices may not meet the performance requirements

## ■ Appendix For SMD Chip Resistor

### ● Packaging Information



### ■ Dimension

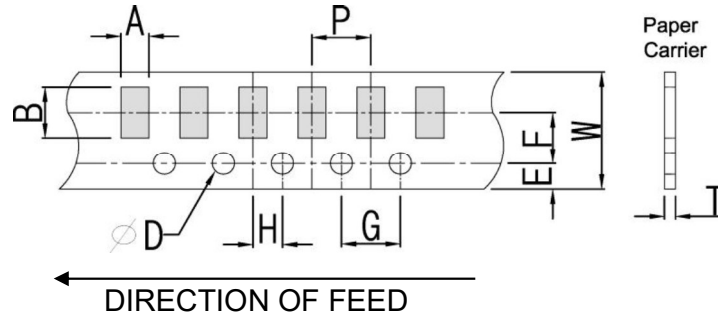
Unit:mm

TYPE	SIZE		A	φB	φC	φD	W	φM
0402	7"	10K/Reel	2.0±0.5	13.5±1.0	21±1.0	60±1.0	11.5±2.0	178±2.0
	13"	40K/50K Reel	2.0±0.5	13.5±1.0	21±1.0	100±1.0	11.5±2.0	330±2.0
0603/0805/1206/1210	7"	5K/Reel	2.0±0.5	13.5±1.0	21±1.0	60±1.0	11.5±2.0	178±2.0
0603/0805 /1206	10"	10K/Reel	2.0±0.5	13.5±1.0	21±1.0	100±1.0	11.5±2.0	254±2.0
	13"	20K/Reel	2.0±0.5	13.5±1.0	21±1.0	100±1.0	11.5±2.0	330±2.0
2010/2512	7"	4K/Reel	2.0±0.5	13.5±1.0	21±1.0	60±1.0	16.0±2.0	178±2.0

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系列号	HoCUH
修订日期	2022-05-27
版本号	Ho-A0

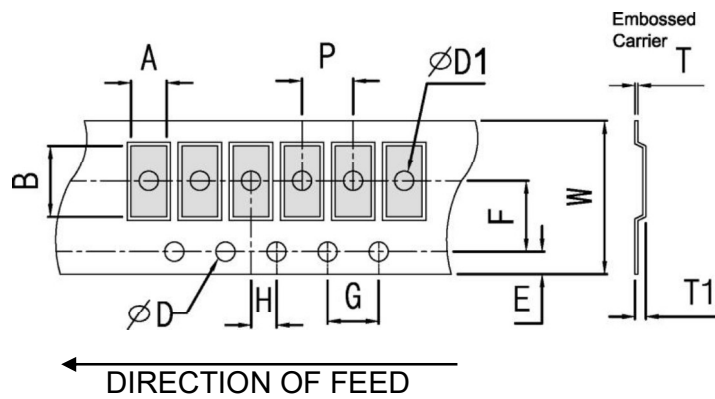
### Tapping Specification



### Dimension

Unit: mm

Packaging	Type	A	B	W	E	F	G	H	T	$\phi D$	P
Paper Type	0402	0.70±0.1	1.20±0.1	8.0±0.2	1.75±0.1	3.5±0.05	4.0±0.1	2.0±0.05	0.45±0.1	1.50 <sup>+0.10</sup> <sub>-0</sub>	2.0±0.1
	0603	1.05±0.2	1.80±0.2	8.0±0.2	1.75±0.1	3.5±0.05	4.0±0.1	2.0±0.05	0.60±0.1		4.0±0.1
	0805	1.55±0.2	2.30±0.2	8.0±0.2	1.75±0.1	3.5±0.05	4.0±0.1	2.0±0.05	0.75±0.1		
	1206	1.90±0.2	3.50±0.2	8.0±0.2	1.75±0.1	3.5±0.05	4.0±0.1	2.0±0.05	0.75±0.1		
	1210	2.85±0.2	3.50±0.2	8.0±0.2	1.75±0.1	3.5±0.05	4.0±0.1	2.0±0.05	0.75±0.1		



### Dimension

Unit: mm

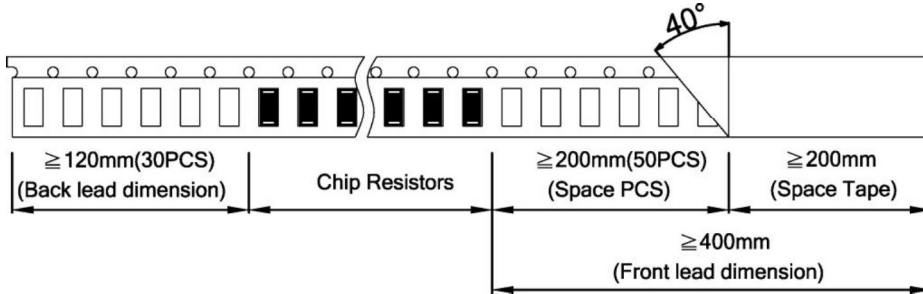
Packaging	Type	A	B	W	E	F	G	H	T	$\phi D$	$\psi D1$	T1	P
Embossed Type	2010	2.80±0.20	5.60±0.20	12±0.10	1.75±0.10	5.5±0.05	4.0±0.10	2.0±0.05	0.23±0.10	1.50 <sup>+0.10</sup> <sub>-0</sub>	1.50±0.10	0.85±0.15	4.0±0.1
	2512	3.40±0.20	6.70±0.20	12±0.10	1.75±0.10	5.5±0.05	4.0±0.10	2.0±0.05	0.23±0.10		1.50±0.10	0.85±0.15	

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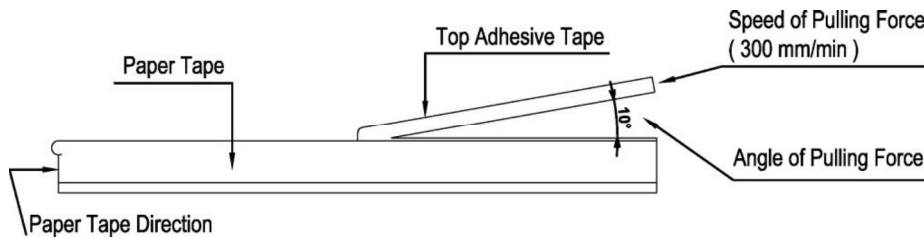
系列号	HoCUH
修订日期	2022-05-27
版本号	Ho-A0

■ Packing Material Data/Storage Data

■ Front & Back Lead Dimension



■ Top Adhesive Peel Off Strength : 10~70g



■ Marking

■ General Resistance Codes



0402: no marking



0603: 3 digits code



0805~2512: 3 digits code(5%)



0805~2512: 4 digits code (1% and below)

■ No marking on 0402 type

■ 3 digits code for 0603 type

● Standard E96 Values and 0603 Resistance Codes

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

● E96 Multiplier Code

Code	A	B	C	D	E	F	G	H	X	Y	Z
Multiplier	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>

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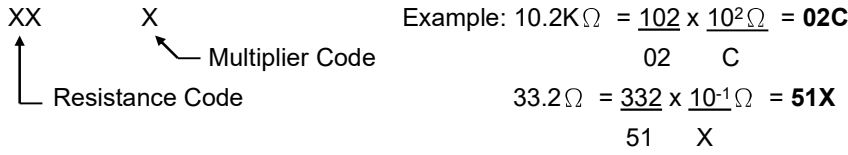


## HoCUH贴片陶瓷电阻系列选型

系列号	HoCUH
修订日期	2022-05-27
版本号	Ho-A0

1. 0603 3 digits coding formula for E96 values as following:

CODING FORMULA



EX.:  $7.5\Omega=85Y$ ;  $11\Omega=05X$ ;  $130\Omega=12A$ ;  $2K\Omega=30B$ ;  $10K\Omega=01C$ ;  $150K\Omega=18D$

<b>E24</b>	10	11	12	13	15	16	18	20	22	24	27	30	33	36	39	43	47	51	56	62	68	75	82	91
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### 0603 ~2512 3 digits for E24 values (±5%)

Examples:

<b>Resistance</b>	4.7Ω	33Ω	470Ω	5.6KΩ	62KΩ	680KΩ
<b>3 digits code</b>	4R7	330	471	562	623	684

("R"= decimal point)

### 4 digits code for 0805 ~ 2512 type

First 3 digits are the significant figures, the 4th digit is the multiplier. "R"= decimal point.

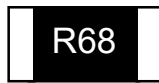
Examples:

<b>Resistance</b>	5.6Ω	10Ω	22.6Ω	100Ω	1.1KΩ	10KΩ	332KΩ	1MΩ
<b>4 digits code</b>	5R60	10R0	22R6	1000	1101	1002	3323	1004

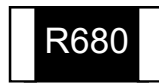
### mΩ Resistance Codes



0402: no marking



0603: 3 digits



0805~2512: 4 digits

### 0402 : No marking

### 0603 : 3 digit marking

1. For E-24 values:

Resistance value	Code	Example
10mΩ ~ 99mΩ	<b>0XX</b>	068 = 68mΩ
100mΩ ~ 990mΩ	<b>RXX</b>	R68 = 680mΩ

<b>E-24</b>	10	11	12	13	15	16	18	20	22	24	27	30	33	36	39	43	47	51	56	62	68	75	82	91
-------------	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

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## HoCUH贴片陶瓷电阻系列选型

系列号	HoCUH
修订日期	2022-05-27
版本号	Ho-A0

### 2. For E-96 values: excluding values 10/11/13/15/20/75 of E-24 series.

#### ● Standard E-96 Values and 0603 Resistance Codes

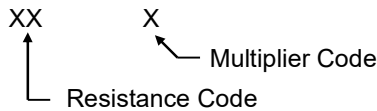
<b>R-Value</b>	100	102	105	107	110	113	115	118	121	124	127	130	133	137	140	143	147	150	154	158	162	165	169	174
<b>Code</b>	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
<b>R-Value</b>	178	182	187	191	196	200	205	210	215	221	226	232	237	243	249	255	261	267	274	280	287	294	301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

#### ● E-96 Multiplier Code

<b>Code</b>	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>F</b>	<b>G</b>	<b>H</b>	<b>X</b>	<b>Y</b>	<b>Z</b>
Multiplier	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>

#### ● 0603 3 digits coding formula for E-96 values as following:

CODING FORMULA



$$\text{Example: } 499 \text{ m}\Omega = \frac{499}{1000} \times 10^{-3} \Omega = \mathbf{68Z}$$

68      Z

### ■ 0805~2512 : 4 digit marking

#### 1. For E-24 values:

Resistance value	Code	Example
10mΩ ~ 990mΩ	<b>RXXX</b>	R680 = 680mΩ

■ Note: jumper zero ohm resistor marking code is one 「0」 (except type below 0402).