Innovative Service Around the Globe YAGEO

PRODUCT SELECTION GUIDE
2008

SMD RESISTORS + MLCC

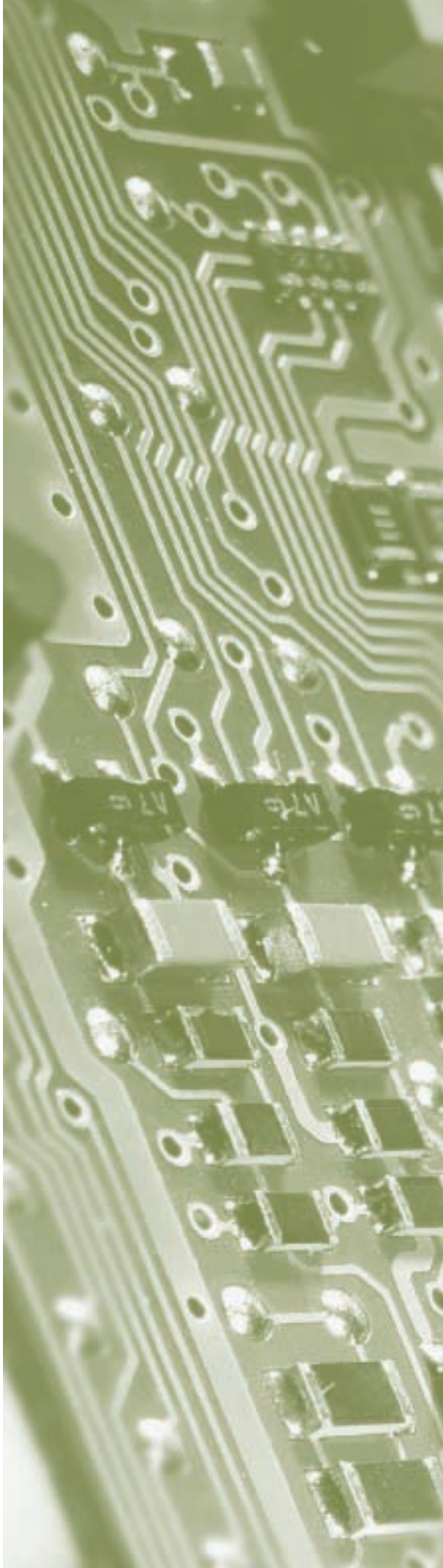
SMD CERAMIC EMI FILTER CAPACITORS - X2Y®

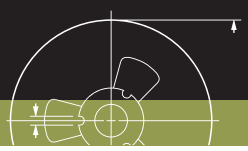
HIGH FREQUENCY PRODUCTS

MULTILAYER CHIP VARISTORS

YAGEO Phycomp

www.yageo.com





Part numbering system and ordering

You can order components from this catalogue in two ways. Both ways give logistic and packing information.

- **Clear text ordering code**
  This unique number is an easily-readable code.
  - 15 digits code (PHYCOMP CTC)
  - 14 ~ 17 digits code (YAGEO CTC)
- **12 digits ordering code**
  This unique 12NC number forms the basis of the Phycomp logistic system.

You will find details for ordering in the *Ordering* section next to each selection chart.

Minimum shipment quantities, prices and delivery details can be obtained from the Phycomp sales organization in your country or from one of our franchised distributors.

Case size codes

Throughout this catalogue, inch-based codes are used for the component sizes. According to IEC 60384-10, amendment 2 of Sept. 2000 for MLCCs, and IEC 60115-8, amendment 1 of July 2000 for R-chip. Values for length and width should be in millimeters rather than in inches. To distinguish between inch-based codes and metric-based codes, metric-based codes will temporarily have the suffix "M". The table below shows the relation between inch-based case sizes versus the recommended metric case size designators. Please note that HF products use metric case size only.

Case size cross-reference					
Case size designation					
Inch-based	Metric	Inch-based	Metric	Inch-based	Metric
01005	0402M	0805	2012M	2007	5320M
0201	0603M	1008	2520M	2010	5025M
0402	1005M	1206	3216M	2220	5750M
0508	1220M	1210	3225M	2512	6432M
0603	1608M	1218	3245M	3014	7836M
0612	1632M	1812	4532M		

Conctact us

Founded in 1977, the Yageo Corporation has become a world-class provider of passive-component services with capabilities on a global scale, including production and sales facilities in Asia, Europe and America. The corporation is uniquely positioned to provide one-stop-shopping, offering its complete product portfolio of resistors, capacitors and inductors in both commodity and specialty versions, plus design-in capability, distribution, e-commerce connection and logistics. Yageo markets its products under the product brand names Yageo, Phycomp and Vitrohm. All products can be obtained from our Yageo sales offices, of which contact details can be found on the backcover of this catalogue. For most up-to-date information, as well as contact details of our franchise distributors, please refer to our website: **www.yageo.com**

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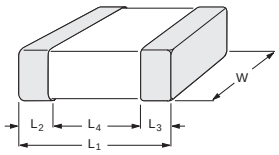
Specification overview					
	TC code	Series	Capacitance range	Voltage range	Size
Discrete	NP0	General purpose	270pF to 33nF	16V	0402, 0603, 0805, 1206
		General purpose	150pF to 22nF	25V	0402, 0603, 0805, 1206, 1210
		General purpose	0.47pF to 22nF	50V	0402, 0603, 0805, 1206, 1210, 1812
		Medium voltage	10pF to 22nF	100V	0603, 0805, 1206, 1210, 1808, 1812
		Medium voltage	10pF to 5.6nF	200V	0603, 0805, 1206, 1210, 1808, 1812
		Medium voltage	10pF to 5.6nF	250V	0603, 0805, 1206, 1210, 1808, 1812
		Medium voltage	10pF to 4.7nF	500V	0603, 0805, 1206, 1210, 1808, 1812
		High voltage	10pF to 2.7nF	1KV, 2KV	1206, 1210, 1808, 1812
		High voltage	10pF to 470pF	3KV, 4KV	1808, 1812
		Microwave	0.47pF to 120pF	50V	0603, 0805, 1206
	X7R	General purpose & High capacitance	4.7nF to 4.7μF	10V, 16V	0402, 0603, 0805, 1206, 1210
		General purpose & High capacitance	3.3nF to 1μF	25V	0402, 0603, 0805, 1206, 1210
		General purpose & High capacitance	100pF to 1μF	50V	0402, 0603, 0805, 1206, 1210, 1812
		Medium voltage	100pF to 680nF	100V	0603, 0805, 1206, 1210, 1808, 1812
		Medium voltage	220pF to 330nF	200V	0805, 1206, 1210, 1808, 1812
		Medium voltage	220pF to 330nF	250V	0805, 1206, 1210, 1808, 1812
		Medium voltage	100pF to 100nF	500V	0805, 1206, 1210, 1808, 1812
		High voltage	470pF to 33nF	1KV to 3KV	1206, 1210 , 1808, 1812
		Low inductance	10nF to 220nF	10V to 50V	0306, 0508, 0612
	X5R	High capacitance	100nF to 100μF	6.3V	0402, 0603, 0805, 1206, 1210 , 1812
		High capacitance	100nF to 22μF	10V	0402, 0603, 0805, 1206, 1210
		High capacitance	100nF ~ 22μF	16V	0402, 0603, 0805, 1206, 1210 , 1812
		High capacitance	470nF to 10μF	25V	0603, 0805, 1206, 1210
	Y5V	General purpose & High capacitance	10nF to 47μF	6.3V to 25V	0402, 0603, 0805, 1206, 1210
		General purpose	10nF to 1μF	50V	0603, 0805, 1206
	Z5U	General purpose	10nF to 470nF	25V and 50V	0603, 0805, 1206, 1210
C-Arrays	NP0	4-C arrays	10pF to 330pF	50V	0508, 0612
	X7R	4-C arrays	220pF to 100nF	16V to 50V	0508, 0612
	Y5V	4-C arrays	100nF	25V	0508, 0612
	X7R	Multi-value capacitor network	100pF, 1nF	16V	0612
Ultra small MLCCs	NP0	Ultra small MLCCs	27pF to 100pF	25V	0201
		Ultra small MLCCs	1pF ~ 22pF	50V	0201
	X5R	Ultra small MLCCs	10nF, 100nF	6.3V to 16V	0201
	X7R	Ultra small MLCCs	47pF to 10nF	10V to 50V	0201
	Y5V	Ultra small MLCCs	100nF	6.3V	0201

Case dimensions

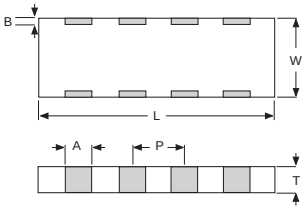
Case dimensions

Discrete capacitors



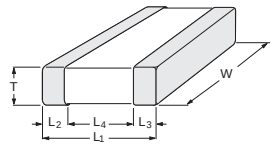
Case size designation		Dimensions in mm				
Inch-based	Metric	L_1	W	L_2, $L_{3\ min}$	L_2, $L_{3\ max}$	$L_{4\ min}$
0201	0603M	0.6±0.03	0.3±0.03	0.10	0.20	0.20
0402	1005M	1.0±0.05	0.5±0.05	0.20	0.30	0.40
0603	1608M	1.6±0.10	0.8±0.07	0.20	0.60	0.40
0805	2012M	2.0±0.10	1.25±0.10	0.25	0.75	0.55
1206	3216M	3.2±0.15	1.6±0.15	0.25	0.75	1.40
1210	3225M	3.2±0.20	2.5±0.20	0.25	0.75	1.40
1812	4532M	4.5±0.20	3.2±0.20	0.25	0.75	2.20
2220	5750M	5.7±0.20	5.0±0.20	0.25	0.75	2.20

4-C arrays



Case size designation		Dimensions in mm						
Inch-based	Metric	L	W	T_{min}	T_{max}	A	B	P
0508 (4 x 0402)	1220M (4 x 1005)	2.0±0.15	1.25±0.15	0.50	0.90	0.28±0.10	0.2±0.10	0.5±0.10
0612 (4 x 0603)	1632M (4 x 1608)	3.2±0.15	1.6±0.15	0.50	1.30	0.4±0.10	0.3±0.20	0.8±0.10

Discrete capacitors (Low-inductance types only)



Case size designation		Dimensions in mm					
Inch-based	Metric	L_1	W	T	L_2, L_{3min}	L_2, L_{3max}	L_{4min}
0306	0816M	0.8±0.15	1.6±0.20	0.50±0.10	0.10	0.30	0.20
0508	1220M	1.25±0.20	2.0±0.20	0.85±0.10	0.13	0.46	0.38
0612	1632M	1.6±0.20	3.2±0.20	0.85±0.10	0.13	0.46	0.50

Yageo part number

Clear text code

CC 0201 K R X7R 8 B B 102

Series name
- CC = Multilayer Chip Cap.
- CA = 4xCap. Array
- CL = Low Inductance Cap.
- CM = Micro-wave Cap.

Size Code
- 0201
- 0402
- 0603
- 0805
- 1206
- 1210
- 1808
- 1812
- 0306
- 0508
- 0612

Capacitance tolerance
- B = ±0.1pF
- C = ±0.25pF
- D = ±0.5pF
- F = ±1%
- G = ±2%
- J = ±5%
- K = ±10%
- M = ±20%
- Z = -20% to +80%

Packing Style
- R = 7" paper taping
- P = 13" paper taping
- K = 7" Embossed taping
- F = 13" Embossed taping

TC Material
- NPO
- X5R
- X7R
- Y5V
- Z5U

Capacitance Value
102 = 1,000 pF,
The 3rd digit signifies the multiplying factor
- 8 = x 10^{-2}
- 9 = x 10^{-1}
- 0 = x 1
- 1 = x 10^{1}
- 2 = x 10^{2}
- 3 = x 10^{3}
- 4 = x 10^{4}
- 5 = x 10^{5}
- 6 = x 10^{6}
- 7 = x 10^{7}

Process Code
- N = Non BME
- B = BME

Termination
- B = NiSn

Rated Voltage
- 5 = 6.3V
- 6 = 10V
- 7 = 16V
- 8 = 25V
- 9 = 50V
- 0 = 100V
- A = 200V
- Y = 250V
- B = 500V
- C = 1KV
- D = 2KV
- E = 3KV
- H = 4KV

Ordering information for North America

Phycomp ordering code CTC								
Clear text code								
02012R102K8B20D (example)								
0201	2R	102	K	8	B	2	0	D
Size code	Temp. char.	Cap. in pF	Tolerance	Voltage	Termination	Packing	Marking	Range identifier
0201 0402 0603 0805 1206 1210 1808 1812 0306 0508 0612	CG = NPO 2B = X5R 2R = X7R 2F = Y5V 2E = Z5U	102 = 1 000 pF The third digit signifies the multiplying factor: 8 = x 0.01 9 = x 0.1 0 = x 1 1 = x 10 2 = x 100 3 = x 1 000 4 = x 10 000 5 = x 100 000 6 = x 1 000 000 7 = x 10 000 000	B = ±0.1pF C = ±0.25pF D = ±0.5pF F = ±1% G = ±2% J = ±5% K = ±10% M = ±20% Z = -20% to +80%	5 = 6.3V 6 = 10V 7 = 16V 8 = 25V 9 = 50V 0 = 100V B = 200V C = 250V D = 500V E = 1KV F = 2KV G = 3KV H = 4KV	B = NiSn	2 = 180 mm / 7" paper 3 = 330 mm / 13" paper B = 180 mm / 7" paper F = 330 mm / 13" paper P = bulk case	0 = no marking	0 = conv. ceramic D = BME L = low inductance M = microwave

Thickness classes and packing quantities								
Description	Size Code	Thickness Classification (mm)	Tape Width Quantity Per Reel	180 mm / 7"		330 mm / 13"		Quantity Per Bulk Case
				Paper	Blister	Paper	Blister	
Discrete Capacitors	0201	0.3±0.03	8 mm	15 000	---	50 000	---	---
	0402	0.5±0.05	8 mm	10 000	---	50 000	---	50 000
	0603	0.8±0.07	8 mm	4 000	---	15 000	---	15 000
		0.8±0.1	8 mm	4 000	---	15 000	---	15 000
	0805	0.6±0.1	8 mm	4 000	---	20 000	---	10 000
		0.8±0.1	8 mm	4 000	---	15 000	---	8 000
		0.85±0.1	8 mm	4 000	---	15 000	---	8 000
		1.25±0.1	8 mm	---	3 000	---	10 000	5 000
	1206	0.6±0.1	8 mm	4 000	---	20 000	---	---
		0.8±0.1	8 mm	4 000	---	15 000	---	---
		0.85±0.1	8 mm	4 000	---	15 000	---	---
		1.00/1.15±0.1	8 mm	---	3 000	---	10 000	---
		1.25±0.2	8 mm	---	3 000	---	---	---
		1.6±0.15	8 mm	---	2 500	---	10 000	---
		1.6±0.2	8 mm	---	2 000	---	10 000	---
	1210	0.6/0.7±0.1	8 mm	---	4 000	---	15 000	---
		0.85±0.1	8 mm	---	4 000	---	10 000	---
		1.15±0.1	8 mm	---	3 000	---	10 000	---
		1.15±0.15	8 mm	---	3 000	---	10 000	---
		1.25±0.2	8 mm	---	3 000	---	---	---
		1.5±0.1	8 mm	---	2 000	---	---	---
		1.6/1.9±0.2	8 mm	---	2 000	---	---	---
		2.0±0.2	8 mm	---	2 000	---	---	---
		2.5±0.2	8 mm	---	1 000	---	---	---
	1808	1.15±0.15	12 mm	---	1 500	---	---	---
		1.35±0.15	12 mm	---	1 000	---	---	---
		1.5±0.1	12 mm	---	1 000	---	---	---
	1812	0.6/0.85±0.1	12 mm	---	2 000	---	---	---
		1.15±0.1	12 mm	---	1 500	---	---	---
		1.15±0.15	12 mm	---	1 500	---	---	---
		1.35±0.15	12 mm	---	1 000	---	---	---
		1.5±0.1	12 mm	---	1 000	---	---	---
		1.6±0.2	12 mm	---	1 000	---	---	---
Low Inductance	0306	0.5±0.1	8 mm	4 000	---	15 000	---	---
	0508	0.85±0.1	8 mm	4 000	---	15 000	---	---
	0612	0.85±0.1	8 mm	4 000	---	15 000	---	---
Arrays	0508	0.6±0.1	8 mm	4 000	---	---	---	---
		0.85±0.1	8 mm	4 000	---	---	---	---
	0612	0.8±0.1	8 mm	4 000	---	---	---	---
		1.2±0.1	8 mm	---	3 000	---	---	---

NP0, 16V, general purpose

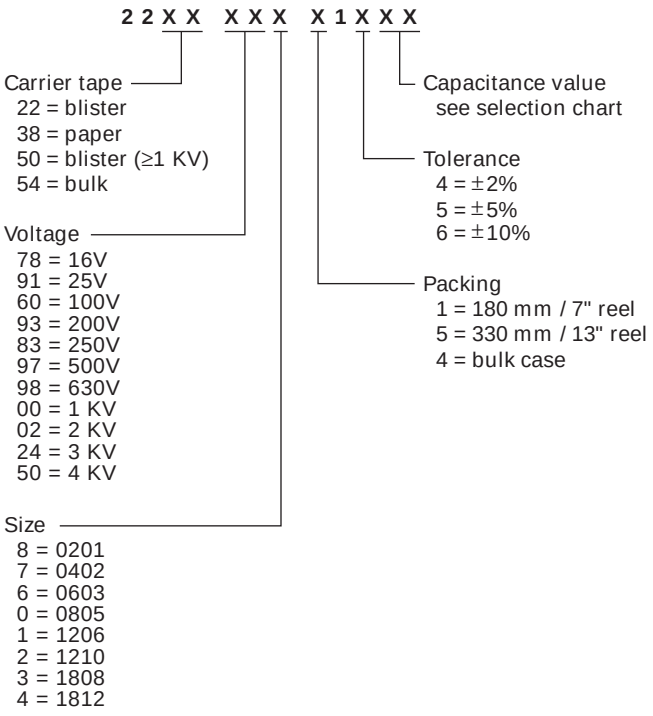
NP0 - 16V					
General purpose					
Capacitance	Last two digits of 12NC	16V			
		0402	0603	0805	1206
270 pF	42	0.5 ±0.05			
330 pF	43				
390 pF	44				
470 pF	45				
1.8 nF	53		0.8 ±0.07		
2.2 nF	54				
2.7 nF	55				
3.3 nF	56				
5.6 nF	59			0.85 ±0.1	
6.8 nF	61				
8.2 nF	62				
10 nF	63				
12 nF	64				0.6 ±0.1
15 nF	65				0.85 ±0.1
18 nF	66				
22 nF	67				
27 nF	68				1.15 ±0.1
33 nF	69				
Tape width		8mm			

Note: Values in shaded cells indicate thickness class (Unit: mm)

NP0 - 25V						
General purpose						
Capacitance	Last two digits of 12NC	25V				
		0402	0603	0805	1206	1210
150 pF	38	0.5 ±0.05				
180 pF	39					
220 pF	41					
470 pF	45		0.8 ±0.07			
560 pF	46					
680 pF	47					
820 pF	48					
1000 pF	49					
1.2 nF	51					
1.5 nF	52					
3.3 nF	56			0.85 ±0.1		
3.9 nF	57			1.25 ±0.1		
4.7 nF	58					
8.2 nF	62				0.85 ±0.1	
10 nF	63					
12 nF	64					0.6 ±0.1
15 nF	65					0.85 ±0.1
18 nF	66					
22 nF	67					1.15 ±0.15
Tape width		8mm				

Note: Values in shaded cells indicate thickness class (Unit: mm)

Ordering code 12NC



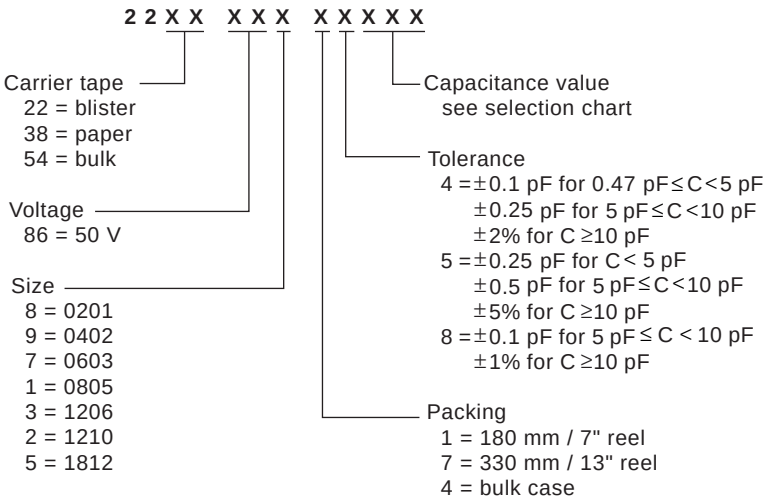
NP0 - 50V							
		General purpose					
Capacitance	Last three digits of 12NC	50V					
		0402	0603	0805	1206	1210	1812
0.47 pF	477	0.5 ±0.05	0.8 ±0.07	0.6 ±0.1	0.6 ±0.1		
0.56 pF	567						
0.68 pF	687						
0.82 pF	827						
1 pF	108						
1.2 pF	128						
1.5 pF	158						
1.8 pF	188						
2.2 pF	228						
2.7 pF	278						
3.3 pF	338						
3.9 pF	398						
4.7 pF	478						
5.6 pF	568						
6.8 pF	688						
8.2 pF	828						
10 pF	109						
12 pF	129						
15 pF	159						
18 pF	189						
22 pF	229						
27 pF	279						
33 pF	339						
39 pF	399						
47 pF	479					0.6 ±0.1	
56 pF	569						
68 pF	689						
82 pF	829						
100 pF	101						
120 pF	121						
150 pF	151						
180 pF	181						
220 pF	221						
270 pF	271						
330 pF	331						0.6 ±0.1
390 pF	391						
470 pF	471						
560 pF	561						
680 pF	681						
820 pF	821						
1000 pF	102						
1.2 nF	122			0.85 ±0.1			
1.5 nF	152						
1.8 nF	182						
2.2 nF	222			1.25 ±0.1			
2.7 nF	272						
3.3 nF	332				0.85 ±0.1		
3.9 nF	392						
4.7 nF	472						
5.6 nF	562				1.15 ±0.1	0.85 ±0.1	
6.8 nF	682						
8.2 nF	822						
10 nF	103						

NP0, 50V, general purpose

NP0 - 50V							
General purpose							
Capacitance	Last three digits of 12NC	50V					
		0402	0603	0805	1206	1210	1812
12 nF	123						0.85 ±0.1
15 nF	153						
18 nF	183						1.15 ±0.15
22 nF	223						
Tape width		8mm					12mm

Note: Values in shaded cells indicate thickness class (Unit: mm)

Ordering code 12NC

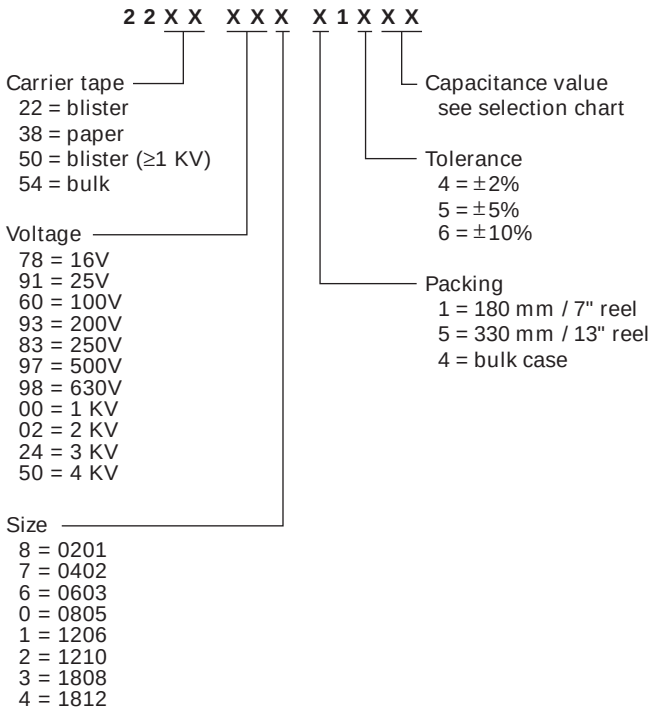


NP0, 100V, medium voltage

NP0 - 100V							
		Medium voltage					
Capacitance	Last two digits of 12NC	100V					
		0603	0805	1206	1210	1808	1812
10 pF	23	0.8 ±0.1	0.6 ±0.1	0.6 ±0.1			
12 pF	24						
15 pF	25						
18 pF	26						
22 pF	27						
27 pF	28						
33 pF	29						
39 pF	31						
47 pF	32						
56 pF	33						
68 pF	34						
82 pF	35						
100 pF	36						
120 pF	37						
150 pF	38						
180 pF	39						
220 pF	41						
270 pF	42						
330 pF	43						
390 pF	44						
470 pF	45						
560 pF	46						
680 pF	47						
820 pF	48						
1000 pF	49				0.6 ±0.1	1.25 ±0.2	1.25 ±0.2
1.2 nF	51		0.85 ±0.1				
1.5 nF	52						
1.8 nF	53						
2.2 nF	54		1.25 ±0.2				
2.7 nF	55						
3.3 nF	56			0.85 ±0.1			
3.9 nF	57						
4.7 nF	58						
5.6 nF	59			1.15 ±0.15	0.85 ±0.1		
6.8 nF	61						
8.2 nF	62			1.25 ±0.2			
10 nF	63						
12 nF	64				1.25 ±0.2		0.85 ±0.1
15 nF	65						
18 nF	66						1.15 ±0.15
22 nF	67						
Tape width		8mm				12mm	

Note: Values in shaded cells indicate thickness class (Unit: mm)

Ordering code 12NC

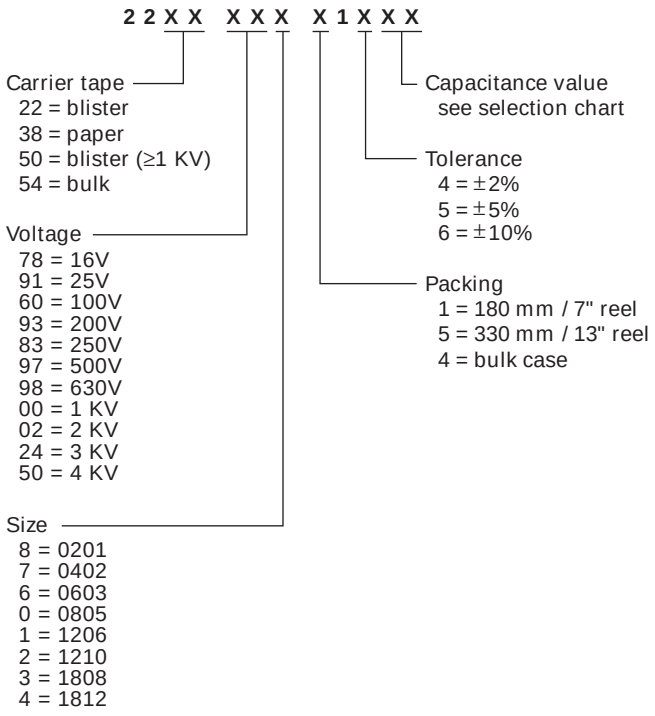


NP0, 200V, medium voltage

NP0 - 200V							
		Medium voltage					
Capacitance	Last two digits of 12NC	200V					
		0603	0805	1206	1210	1808	1812
10 pF	23	0.8 ±0.1	0.6 ±0.1	0.6 ±0.1			
12 pF	24						
15 pF	25						
18 pF	26						
22 pF	27						
27 pF	28						
33 pF	29						
39 pF	31						
47 pF	32						
56 pF	33						
68 pF	34						
82 pF	35						
100 pF	36						
120 pF	37						
150 pF	38						
180 pF	39						
220 pF	41		0.85 ±0.1	0.85 ±0.1			
270 pF	42						
330 pF	43						
390 pF	44						
470 pF	45						
560 pF	46		1.25 ±0.2				
680 pF	47		0.8 ±0.1				
820 pF	48						
1000 pF	49				1.25 ±0.2	1.25 ±0.2	1.25 ±0.2
1.2 nF	51		1.25 ±0.2				
1.5 nF	52			1.15 ±0.15			
1.8 nF	53			0.8 ±0.1	0.85 ±0.1		
2.2 nF	54			1.25 ±0.2			
2.7 nF	55				1.15 ±0.15		
3.3 nF	56						
3.9 nF	57				1.25 ±0.2		0.85 ±0.1
4.7 nF	58						1.15 ±0.15
5.6 nF	59						
Tape width		8mm				12mm	

Note: Values in shaded cells indicate thickness class (Unit: mm)

Ordering code 12NC

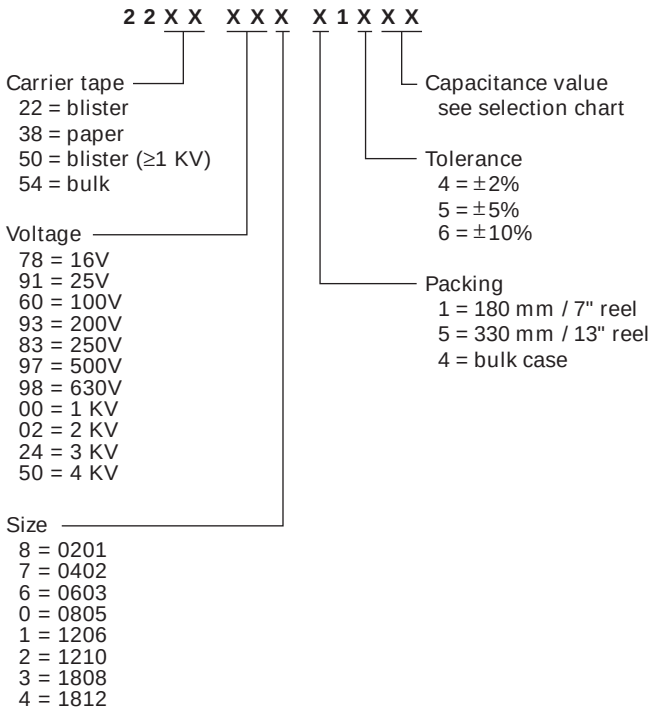


NP0, 250V, medium voltage

NP0 - 250V							
		Medium voltage					
Capacitance	Last two digits of 12NC	250V					
		0603	0805	1206	1210	1808	1812
10 pF	23	0.8 ±0.1	0.6 ±0.1	0.6 ±0.1			
12 pF	24						
15 pF	25						
18 pF	26						
22 pF	27						
27 pF	28						
33 pF	29						
39 pF	31						
47 pF	32						
56 pF	33						
68 pF	34						
82 pF	35						
100 pF	36						
120 pF	37						
150 pF	38						
180 pF	39						
220 pF	41		0.85 ±0.1	0.85 ±0.1			
270 pF	42						
330 pF	43						
390 pF	44						
470 pF	45						
560 pF	46		1.25 ±0.2				
680 pF	46						
820 pF	48		0.8 ±0.1				
1000 pF	49				1.25 ±0.2	1.25 ±0.2	1.25 ±0.2
1.2 nF	51		1.25 ±0.2				
1.5 nF	52			1.15 ±0.1			
1.8 nF	53			0.8 ±0.1	0.85 ±0.1		
2.2 nF	54			1.25 ±0.2			
2.7 nF	55				1.15 ±0.15		
3.3 nF	56						
3.9 nF	57				1.25 ±0.2		0.85 ±0.1
4.7 nF	58						1.15 ±0.15
5.6 nF	59						
Tape width		8mm				12mm	

Note: Values in shaded cells indicate thickness class (Unit: mm)

Ordering code 12NC

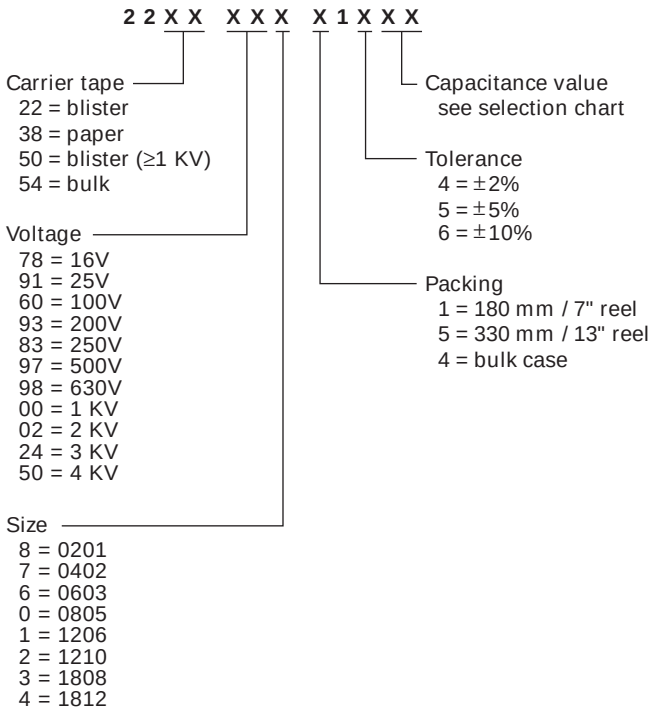


NP0, 500V, medium voltage

NP0 - 500V						
Medium voltage						
Capacitance	Last two digits of 12NC	500V				
		0805	1206	1210	1808	1812
10 pF	23	0.6 ±0.1	0.6 ±0.1			
12 pF	24					
15 pF	25					
18 pF	26					
22 pF	27					
27 pF	28					
33 pF	29					
39 pF	31					
47 pF	32			0.85 ±0.1		
56 pF	33					
68 pF	34					
82 pF	35					
100 pF	36					
120 pF	37					
150 pF	38					
180 pF	39					
220 pF	41	0.85 ±0.1	0.85 ±0.1			
270 pF	42					
330 pF	43					
390 pF	44					
470 pF	45					
560 pF	46	1.25 ±0.2	1.15 ±0.15			
680 pF	47					
820 pF	48					
1000 pF	49			1.15 ±0.15	1.25 ±0.2	1.25 ±0.2
1.2 nF	51		0.8 ±0.1			
1.5 nF	52		1.25 ±0.2			
1.8 nF	53					
2.2 nF	54			1.25 ±0.2		1.15 ±0.15
2.7 nF	55					
3.3 nF	56					
3.9 nF	57					1.25 ±0.2
4.7 nF	58					
Tape width		8mm			12mm	

Note: Values in shaded cells indicate thickness class (Unit: mm)

Ordering code 12NC

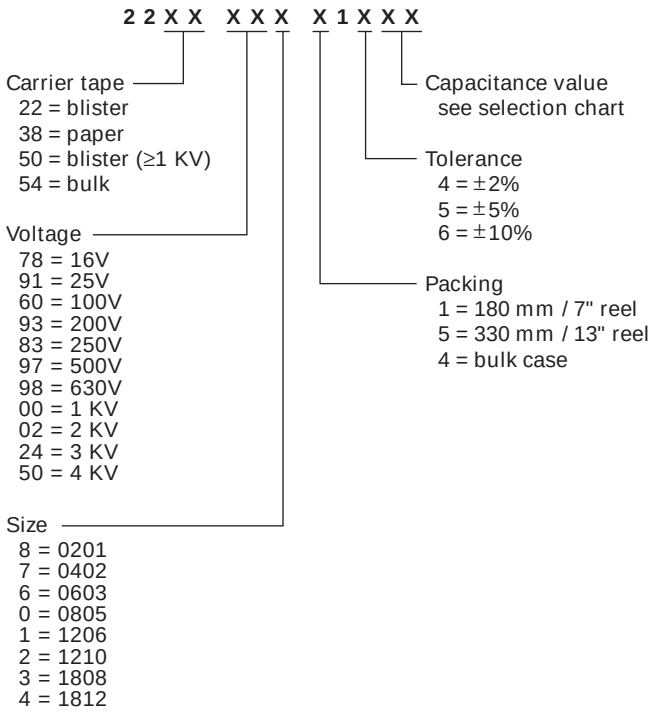


NP0, 630V, medium voltage

NP0 - 630V					
Medium voltage					
Capacitance	Last two digits of 12NC	630V			
		1206	1210	1808	1812
10 pF	23	0.8 ±0.1	1.25 ±0.2	1.25 ±0.2	1.25 ±0.2
15 pF	25				
22 pF	27				
33 pF	29				
47 pF	32				
68 pF	34				
100 pF	36				0.85 ±0.1
150 pF	38	1.0 ±0.1			
220 pF	41				
330 pF	43				
470 pF	45	0.85 ±0.1			
680 pF	47	1.15 ±0.1			
1000 pF	49				1.15 ±0.15
1.5 nF	52				
2.2 nF	55				1.25 ±0.2
Tape width		8mm		12mm	

Note: Values in shaded cells indicate thickness class (Unit: mm)

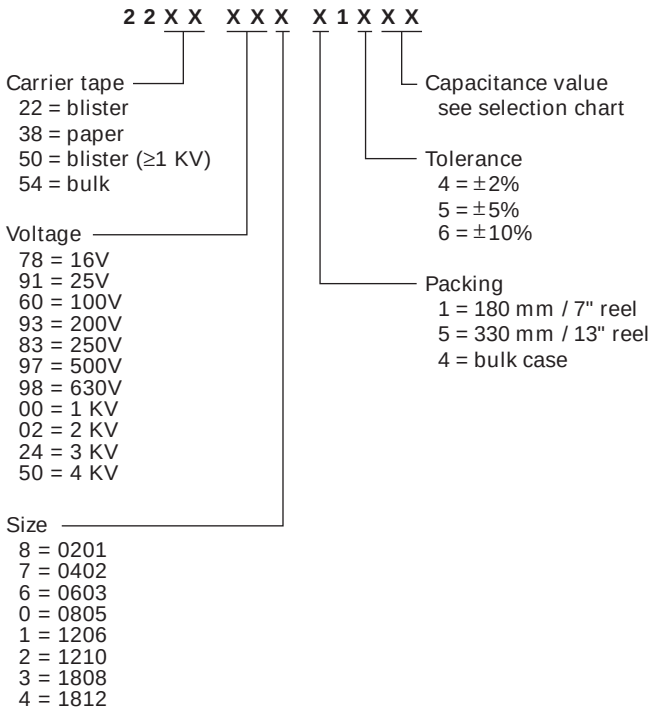
Ordering code 12NC



NP0 - 1kV and 2kV									
High Voltage									
Capacitance	Last two digits of 12NC	1kV				2kV			
		1206	1210	1808	1812	1206	1210	1808	1812
10 pF	23	0.8 ±0.1	1.25 ±0.2	1.25 ±0.2		1.0 ±0.1	1.25 ±0.2	1.25 ±0.2	1.25 ±0.2
12 pF	24								
15 pF	25								
18 pF	26				1.25 ±0.2				
22 pF	27								
27 pF	28								
33 pF	29								
39 pF	31								
47 pF	32								
56 pF	33								
68 pF	34								
82 pF	35								
100 pF	36				0.85 ±0.1				
120 pF	37	1.0 ±0.1				0.8 ±0.1			
150 pF	38								
180 pF	39								
220 pF	41					1.25 ±0.2			
270 pF	42								
330 pF	43								
390 pF	44	1.15 ±0.1							
470 pF	45								
560 pF	46	1.15 ±0.15							
680 pF	47								
820 pF	48								
1000 pF	49				1.15 ±0.15				
1.2 nF	51								
1.5 nF	52								
1.8 nF	53				1.25 ±0.2				
2.2 nF	54								
2.7 nF	55								
Tape Width		8mm		12mm		8mm		12mm	

Note: Values in shaded cells indicate thickness class (Unit: mm)

Ordering code 12NC

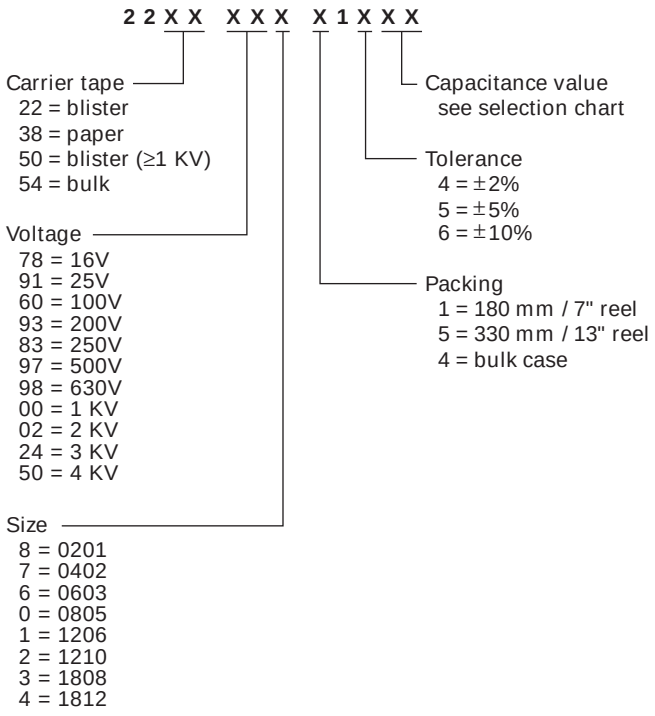


NP0, 3kV and 4kV, high voltage

NP0 - 3kV and 4kV					
		High Voltage			
Capacitance	Last two digits of 12NC	3kV		4kV	
		1808	1812	1808	1812
10 pF	23	1.15 ±0.15	1.15 ±0.15	1.5 ±0.1	1.5 ±0.1
12 pF	24				
15 pF	25				
18 pF	26				
22 pF	27				
27 pF	28				
33 pF	29				
39 pF	31				
47 pF	32				
56 pF	33				
68 pF	34				
82 pF	35				
100 pF	36				
120 pF	37				
150 pF	38	1.6 ±0.2			
180 pF	39	2.0 ±0.2			
220 pF	41				
270 pF	42		1.6 ±0.2		
330 pF	43				
390 pF	44				
470 pF	45				
Tape Width		12mm			

Note: Values in shaded cells indicate thickness class (Unit: mm)

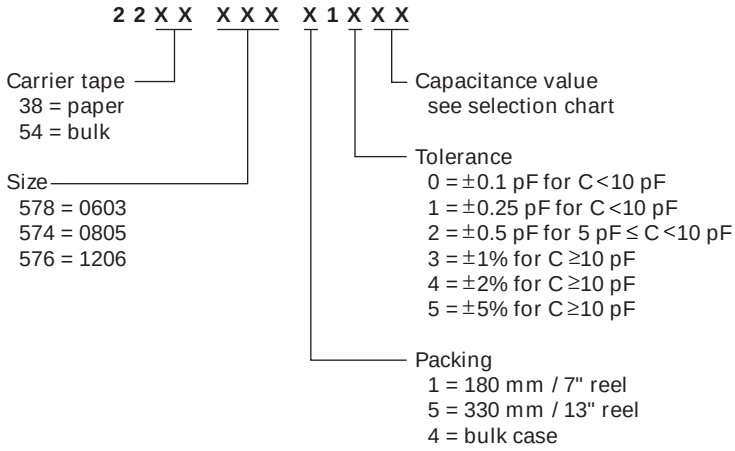
Ordering code 12NC



NP0 - 50V				
		Microwave		
Capacitance	Last two digits of 12NC	50V		
		0603	0805	1206
0.47 pF	05	0.8 ±0.07	0.6 ±0.1	0.6 ±0.1
0.56 pF	06			
0.68 pF	07			
0.82 pF	08			
1 pF	09			
1.2 pF	11			
1.5 pF	12			
1.8 pF	13			
2.2 pF	14			
2.7 pF	15			
3.3 pF	16			
3.9 pF	17			
4.7 pF	18			
5.6 pF	19			
6.8 pF	21			
8.2 pF	22			
10 pF	23			
12 pF	24			
15 pF	25			
18 pF	26			
22 pF	27			
27 pF	28			
33 pF	29			
39 pF	31			
47 pF	32			
56 pF	33			
68 pF	34			
82 pF	35			
100 pF	36			
120 pF	37			
Tape width		8mm		

Note: Values in shaded cells indicate thickness class (Unit: mm)

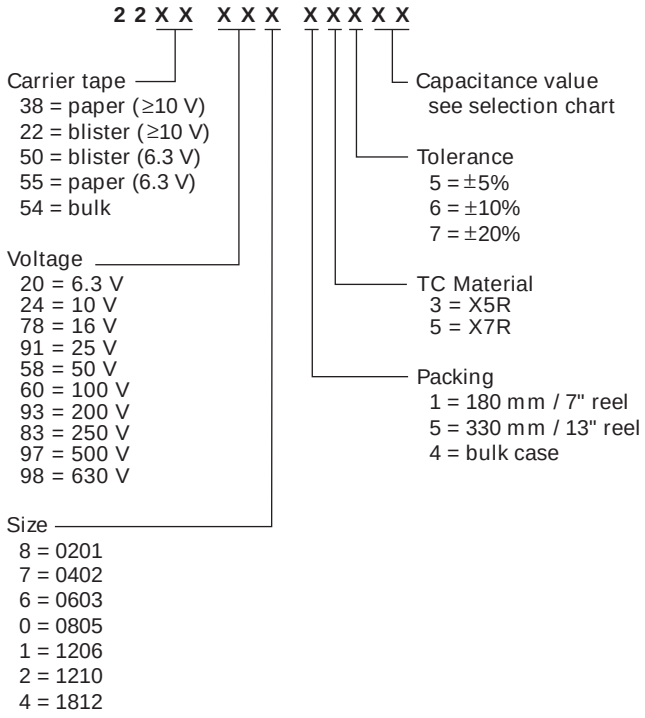
Ordering code 12NC



X7R - 10V,16V										
General Purpose & High Capacitance										
Cpacitance	Last two digits of 12NC	10V				16V				
		0402	0603	0805	1206	0402	0603	0805	1206	1210
4.7 nF	32					0.5 ±0.05				
5.6 nF	33									
6.8 nF	34									
8.2 nF	35									
10 nF	36									
12 nF	37									
15 nF	38									
18 nF	39									
22 nF	41						0.8 ±0.07			
27 nF	42	0.5 ±0.05								
33 nF	43									
39 nF	44									
47 nF	45							0.6 ±0.1		
56 nF	46									
68 nF	47									
82 nF	48							0.85 ±0.1		
100 nF	49		0.8 ±0.07							
120 nF	51									
150 nF	52									
180 nF	53			0.85 ±0.1						
220 nF	54								0.85 ±0.1	
270 nF	55			0.6 ±0.1						
330 nF	56			0.85 ±0.1				1.25 ±0.1		
390 nF	57									
470 nF	58			1.25 ±0.1					1.15 ±0.1	
560 nF	59									
680 nF	61									
820 nF	62									
1000 nF	63				1.15 ±0.1					
2.2 uF	67				1.6 ±0.2				1.6 ±0.2	
4.7 uF	72									1.9 ±0.2
Tape width		8 mm								

Note: Values in shaded cells indicate thickness class (Unit: mm)

Ordering code 12NC

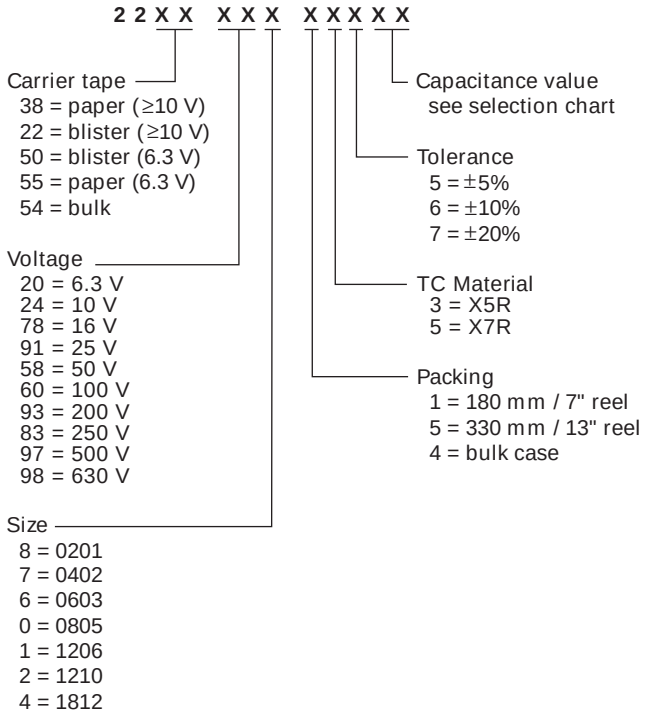


X7R, 25V, high capacitance and general purpose

X7R - 25V						
High Capacitance & General purpose						
Capacitance	Last two digits of 12NC	25V				
		0402	0603	0805	1206	1210
3.3 nF	29	0.5 ±0.05				
3.9 nF	31					
4.7 nF	32					
5.6 nF	33					
6.8 nF	34					
8.2 nF	35					
10 nF	36		0.8 ±0.07	0.6 ±0.1		
12 nF	37					
15 nF	38					
18 nF	39					
22 nF	41					
27 nF	42					
33 nF	43					
39 nF	44			0.85 ±0.1		
47 nF	45					
56 nF	46					
68 nF	47					
82 nF	48					
100 nF	49				0.85 ±0.1	
120 nF	51			0.8		
150 nF	52					
180 nF	53					
220 nF	54					0.85 ±0.1
270 nF	55				1.15 ±0.1	
330 nF	56			1.25 ±0.1		
390 nF	57				0.8	
470 nF	58					1.15 ±0.1
560 nF	59					
680 nF	61				1.15 ±0.1	1.25 ±0.1
820 nF	62					0.85 ±0.1
1000 nF	63					1.6 ±0.2
2.2 uF	67					1.9 ±0.2
4.7 uF	72				1.6 ±0.2	2.5 ±0.2
10 uF	76					
Tape width		8mm				

Note: Values in shaded cells indicate thickness class (Unit: mm)

Ordering code 12NC

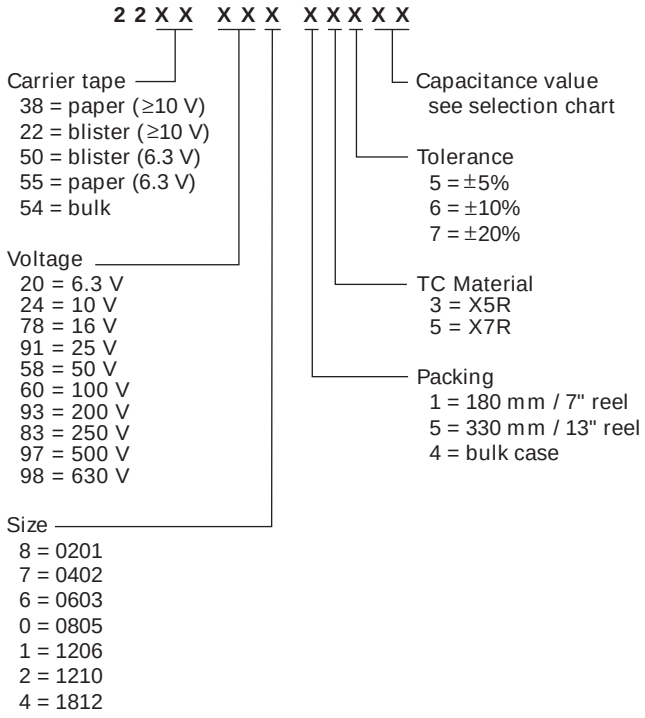


X7R, 50V, high capacitance and general purpose

X7R - 50V							
High Capacitance & General purpose							
Capacitance	Last two digits of 12NC	50V					
		0402	0603	0805	1206	1210	1812
100 pF	09	0.5 ±0.05	0.8 ±0.07				
150 pF	12						
220 pF	14			0.6 ±0.1	0.85 ±0.1		
330 pF	16						
470 pF	18						
680 pF	21						
1000 pF	23						
1.5 nF	25						
2.2 nF	27						
3.3 nF	29						
4.7 nF	32						
6.8 nF	34						
10 nF	36					0.85 ±0.1	
15 nF	38						
22 nF	41						
33 nF	43			0.85 ±0.1			
47 nF	45						
68 nF	47						
100 nF	49						1.15 ±0.1
150 nF	52			0.8	1.15 ±0.1	1.15 ±0.1	
220 nF	54						
330 nF	56				0.8		
470 nF	58				1.0 ±0.1	1.6 ±0.2	
680 nF	61					1.25 ±0.1	1.6 ±0.2
1000 nF	63				1.6 ±0.2		
Tape width		8mm					12mm

Note: Values in shaded cells indicate thickness class (Unit: mm)

Ordering code 12NC

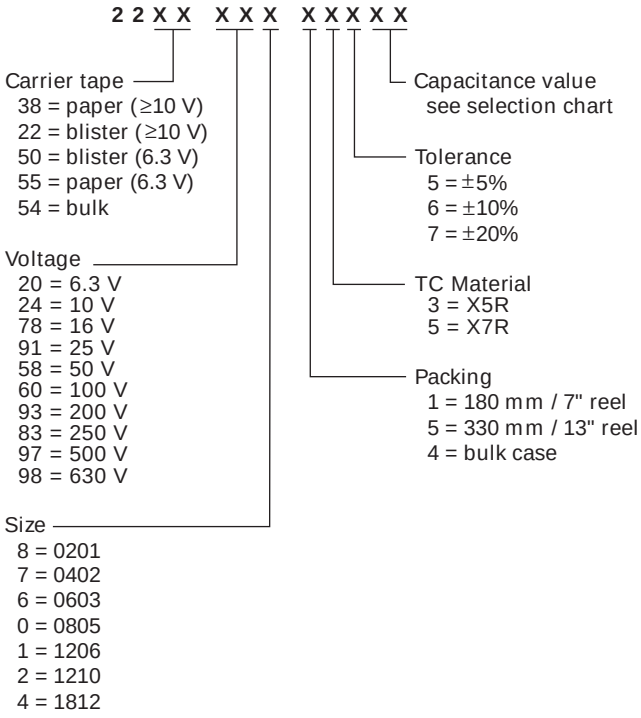


X7R, 100V, medium voltage

X7R - 100V							
Medium voltage							
Capacitance	Last two digits of 12NC	100V					
		0603	0805	1206	1210	1808	1812
100 pF	09	0.8 ±0.1					
150 pF	12						
220 pF	14		0.6 ±0.1	0.85 ±0.1			
330 pF	16						
470 pF	18						
680 pF	21						
1000 pF	23						
1.5 nF	25						
2.2 nF	27						
3.3 nF	29						
4.7 nF	32						
6.8 nF	34						
10 nF	36						
15 nF	38		0.85 ±0.1				
22 nF	41						
33 nF	43		1.25 ±0.2				
47 nF	45				0.85 ±0.1	1.25 ±0.2	0.85 ±0.1
68 nF	47			1.15 ±0.15			
100 nF	49						1.15 ±0.1
150 nF	52				1.15 ±0.1		
220 nF	54				1.6 ±0.2		
330 nF	56						2.0 ±0.2
470 nF	58						
Tape width		8mm				12mm	

Note: Values in shaded cells indicate thickness class (Unit: mm)

Ordering code 12NC

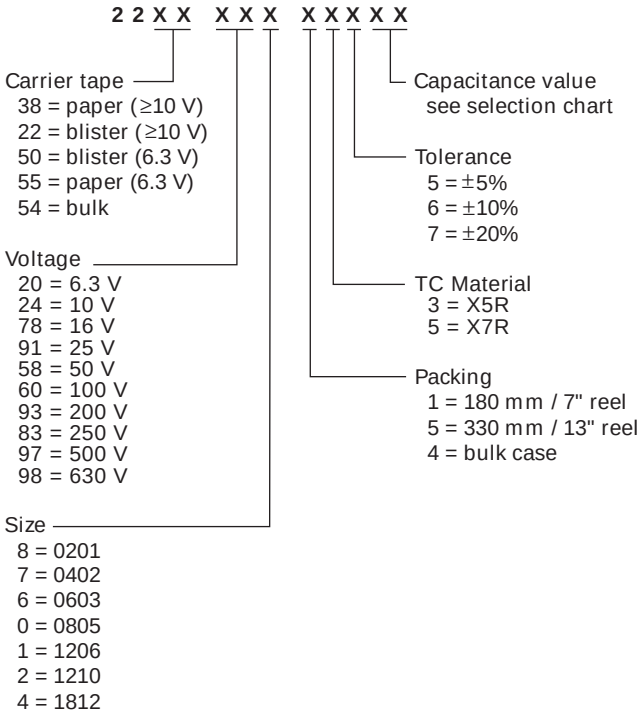


X7R, 200V, medium voltage

X7R - 200V						
Medium voltage						
Capacitance	Last two digits of 12NC	200V				
		0805	1206	1210	1808	1812
220 pF	14	0.85 ±0.1				
330 pF	16					
470 pF	18					
680 pF	21		0.85 ±0.1			
1000 pF	23					
1.5 nF	25					
2.2 nF	27					
3.3 nF	29					
4.7 nF	32					
6.8 nF	34	1.25 ±0.2				
10 nF	36			0.85 ±0.1	1.25 ±0.2	
15 nF	38	0.8 ±0.1				
22 nF	41	1.25 ±0.2	1.15 ±0.15	1.15 ±0.15		
33 nF	43					
47 nF	45		1.25 ±0.2			
68 nF	47			1.25 ±0.2		1.15 ±0.1
100 nF	49					1.15 ±0.15
150 nF	52					
220 nF	54					1.6 ±0.2
330 nF	56					2.0 ±0.2
Tape width		8mm			12mm	

Note: Values in shaded cells indicate thickness class (Unit: mm)

Ordering code 12NC

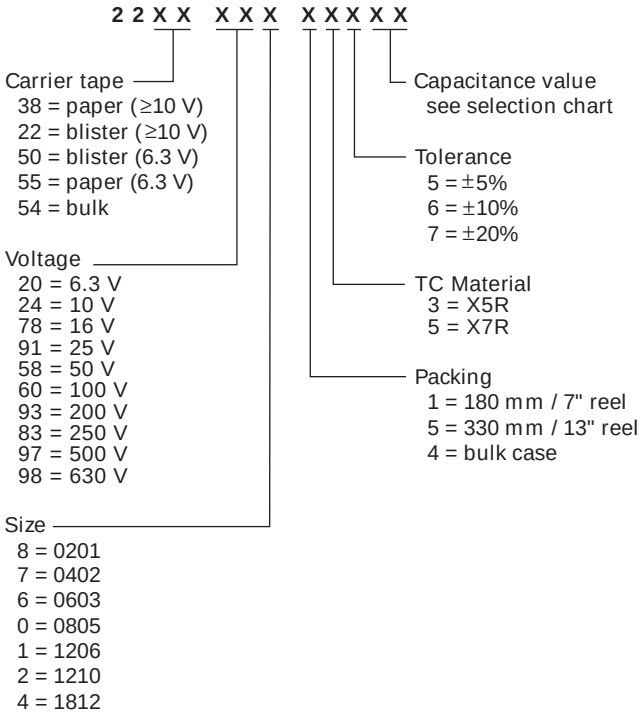


X7R, 250V, medium voltage

X7R - 250V						
Medium voltage						
Capacitance	Last two digits of 12NC	250V				
		0805	1206	1210	1808	1812
220 pF	14	0.85 ±0.1				
330 pF	16					
470 pF	18		0.85 ±0.1			
680 pF	21					
1000 pF	23					
1.5 nF	25					
2.2 nF	27					
3.3 nF	29					
4.7 nF	32					
6.8 nF	34	1.25 ±0.2				
10 nF	36			0.85 ±0.1	1.25 ±0.2	
15 nF	38	0.8 ±0.1				
22 nF	41	1.25 ±0.2	1.15 ±0.15	1.15 ±0.15		
33 nF	43					
47 nF	45		1.25 ±0.2			
68 nF	47			1.25 ±0.2		1.15 ±0.15
100 nF	49					
150 nF	52					
220 nF	54					1.6 ±0.2
330 nF	56					2.0 ±0.2
Tape width		8mm			12mm	

Note: Values in shaded cells indicate thickness class (Unit: mm)

Ordering code 12NC

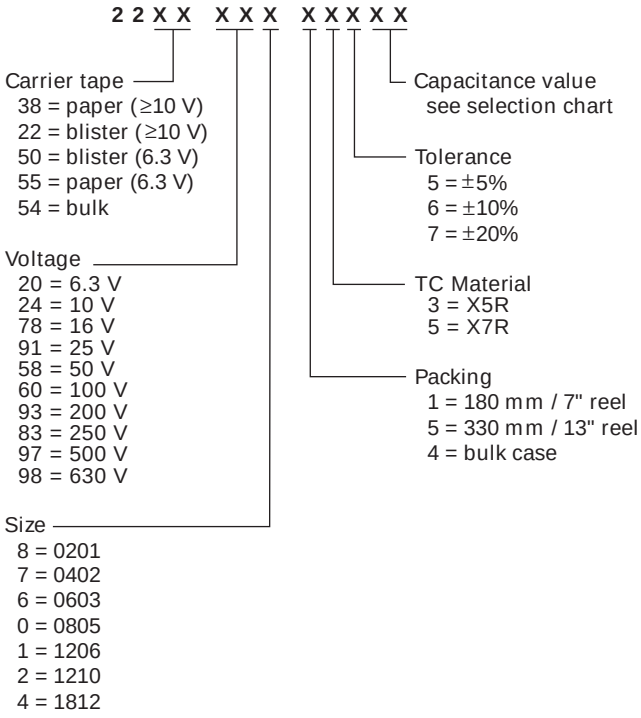


X7R, 500V, medium voltage

X7R - 500 V						
Medium voltage						
Capacitance	Last two digits of 12NC	500V				
		0805	1206	1210	1808	1812
100 pF	09	0.8 ±0.1				
150 pF	12					
220 pF	14					
330 pF	16					
470 pF	18					
680 pF	21					
1000 pF	23		1.15 ±0.15			
1.5 nF	25					
2.2 nF	27					
3.3 nF	29			1.15 ±0.15	1.25 ±0.2	0.85 ±0.1
4.7 nF	32		1.25 ±0.2			
6.8 nF	34					
10 nF	36	1.25 ±0.2		1.25 ±0.2		1.15 ±0.15
15 nF	38					
22 nF	41					1.25 ±0.2
33 nF	43		1.6 ±0.2			
47 nF	45					
68 nF	47					
100 nF	49					1.6 ±0.2
Tape width		8mm			12mm	

Note: Values in shaded cells indicate thickness class (Unit: mm)

Ordering code 12NC

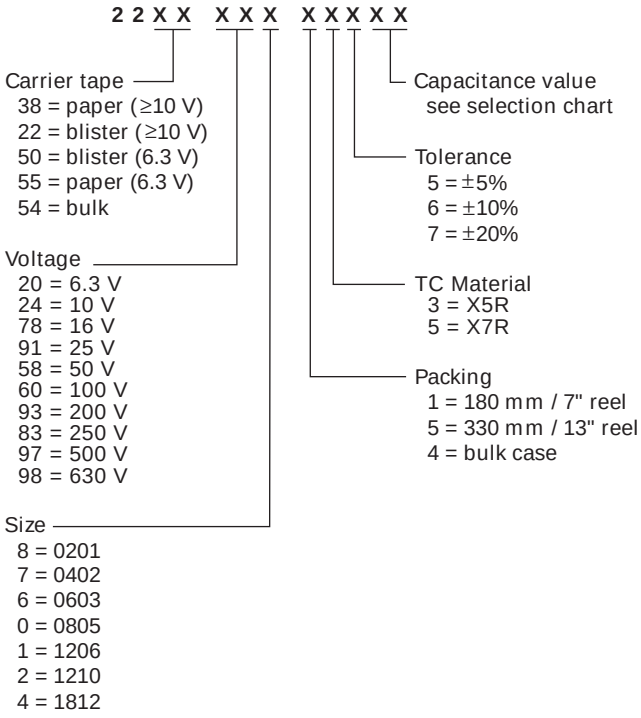


X7R, 630V, medium voltage

X7R - 630 V					
Medium voltage					
Capacitance	Last two digits of 12NC	630V			
		1206	1210	1808	1812
470 pF	18	1.15 ±0.15			
680 pF	22				
1000 pF	23		1.25 ±0.2		1.35 ±0.15
1.5 nF	26				
2.2 nF	27	1.15 ±0.1			
3.3 nF	29				
4.7 nF	32	1.25 ±0.2		1.25 ±0.2	
6.8 nF	34			1.6 ±0.2	
10 nF	36				1.25 ±0.2
15 nF	38				
22 nF	41				
33 nF	43				1.6 ±0.2
Tape width		8mm		12mm	

Note: Values in shaded cells indicate thickness class (Unit: mm)

Ordering code 12NC

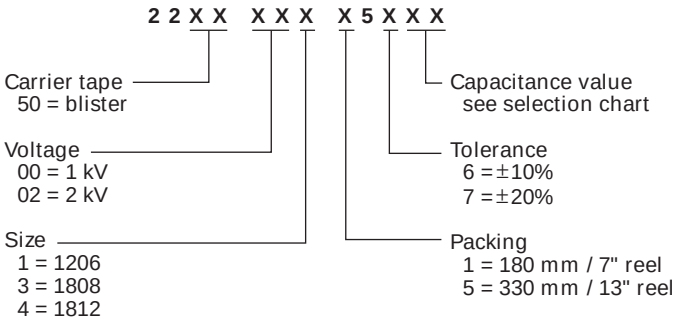


X7R, 1kV to 3kV, high voltage

X7R - 1KV to 3KV										
High voltage										
Capacitance	Last two digits of 12NC	1kV				2kV				3kV
		1206	1210	1808	1812	1206	1210	1808	1812	1808
470 pF	18	1.15 ±0.15				1.25 ±0.2		1.35 ±0.15		1.6 ±0.2
680 pF	21									
1000 pF	23		1.25 ±0.2	1.35 ±0.15	1.35 ±0.15		1.25 ±0.2		1.35 ±0.15	2.0 ±0.2
1.5 nF	25									
2.2 nF	27						1.6 ±0.2			
3.3 nF	29									
4.7 nF	32	1.25 ±0.2		1.25 ±0.2						
6.8 nF	34			1.6 ±0.2					1.6 ±0.2	
10 nF	36								2.0 ±0.2	
15 nF	38				1.25 ±0.2					
22 nF	41		1.6 ±0.2							
33 nF	43		2.0 ±0.2		1.6 ±0.2					
Tape width		8mm		12mm		8mm		12mm		12mm

Note: Values in shaded cells indicate thickness class (Unit: mm)

Ordering code 12NC

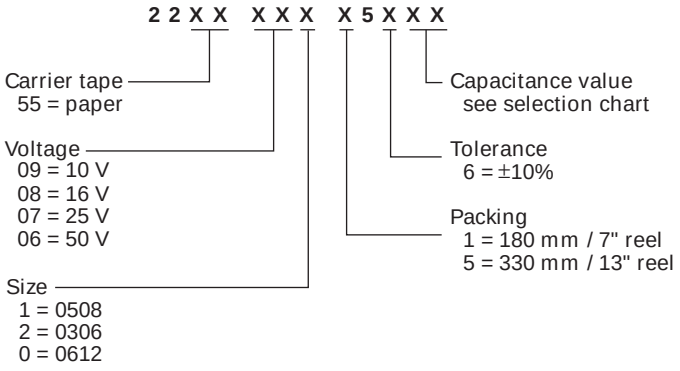


X7R, 10V to 50V, low inductance

X7R - 10V to 50V					
Low inductance					
Capacitance	Last two digits of 12NC	10V	16V	25V	50V
		0306	0508	0508	0612
10 nF	36			0.85 ±0.1	0.85 ±0.1
22 nF	41				
47 nF	45				
100 nF	49	0.5 ±0.1	0.85 ±0.1		
220 nF	54				
Tape width		8mm			

Note: Values in shaded cells indicate thickness class (Unit: mm)

Ordering code 12NC

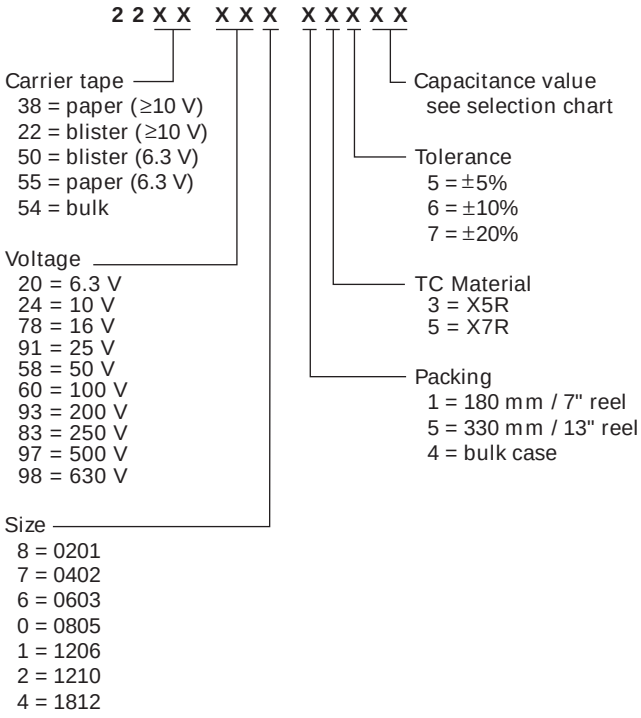


X5R, 6.3V, high capacitance

X5R, 6.3V							
High-Capacitance							
Capacitance	Last two digits of 12NC	6.3V					
		0402	0603	0805	1206	1210	1812
100 nF	49	0.5 ±0.05					
220 nF	54						
470 nF	58						
1000 nF	63		0.8 ±0.1				
2.2 uF	67			1.25 ±0.1			
4.7 uF	72			1.25 ±0.2	1.6 ±0.2		
10 uF	76						
22 uF	81					2.5 ±0.3	2.5 ±0.3
47 uF	85						2.8 ±0.3
100 uF	89						
Tape width		8mm					12mm

Note: Values in shaded cells indicate thickness class (Unit: mm)

Ordering code 12NC

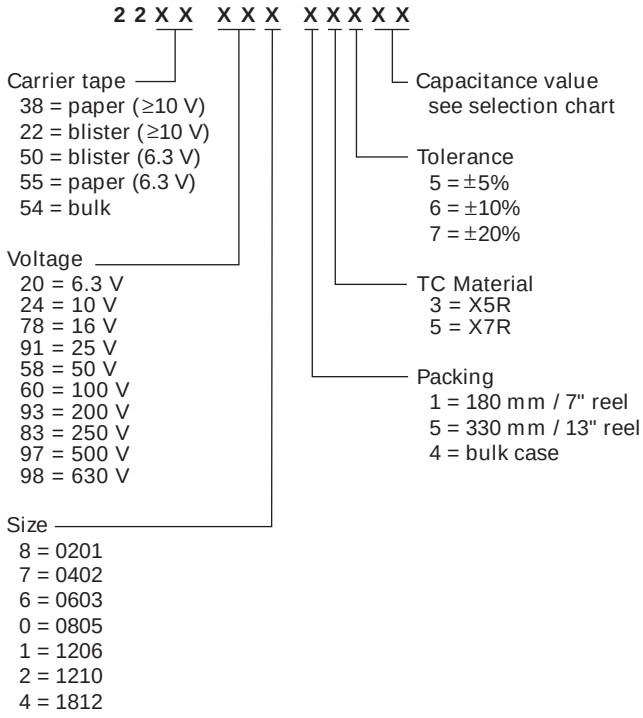


X5R, 10V, high capacitance

X5R, 10V						
High-Capacitance						
Capacitance	Last two digits of 12NC	10V				
		0402	0603	0805	1206	1210
100 nF	49	0.5 ±0.05				
220 nF	54					
1000 nF	63		0.8 ±0.1	0.85 ±0.1		
2.2 uF	67			1.25 ±0.2	0.85 ±0.1	
4.7 uF	72				1.6 ±0.2	
10 uF	76					2.0 ±0.3
22 uF	81					2.5 ±0.3
47 uF	85					
Tape width		8mm				

Note: Values in shaded cells indicate thickness class (Unit: mm)

Ordering code 12NC

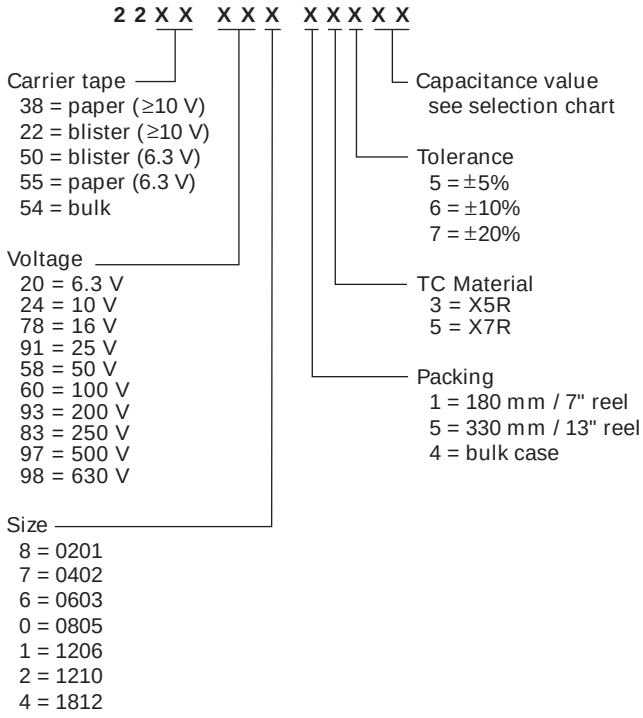


X5R, 16V, high capacitance

X5R, 16V							
High-Capacitance							
Capacitance	Last two digits of 12NC	16V					
		0402	0603	0805	1206	1210	1812
100 nF	49	0.5 ±0.05					
220 nF	54		0.8 ±0.1				
470 nF	58						
1000 nF	63			0.85 ±0.1			
2.2 uF	67			1.25 ±0.2			
4.7 uF	72				1.6 ±0.2	1.9 ±0.2	
10 uF	76						
22 uF	81					2.5 ±0.3	2.5 ±0.3
Tape width		8mm					12mm

Note: Values in shaded cells indicate thickness class (Unit: mm)

Ordering code 12NC

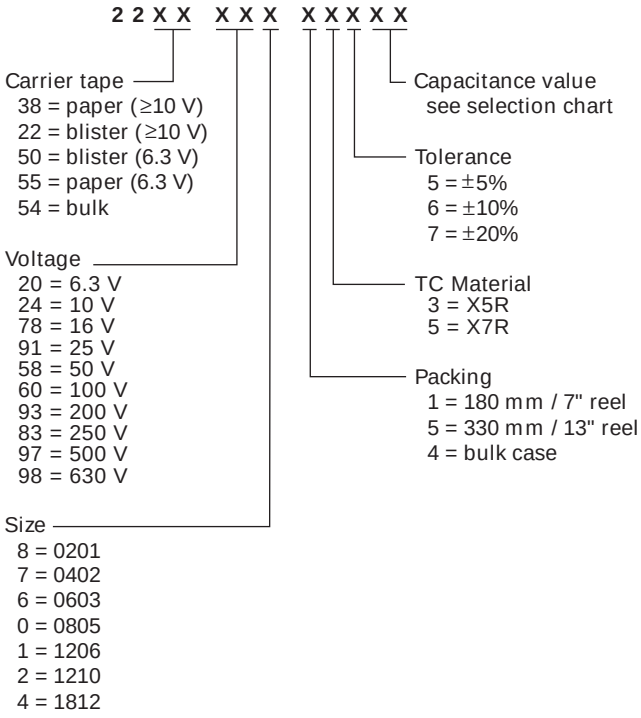


X5R, 25V, high capacitance

X5R, 25V					
High-Capacitance					
Capacitance	Last two digits of 12NC	25V			
		0603	0805	1206	1210
470 nF	58	0.8 ±0.1			
1000 nF	63		1.25 ±0.1	1.6 ±0.2	
2.2 uF	67		1.25 ±0.2		
4.7 uF	72				1.9 ±0.2
10 uF	76				2.5 ±0.3
Tape width		8mm			

Note: Values in shaded cells indicate thickness class (Unit: mm)

Ordering code 12NC

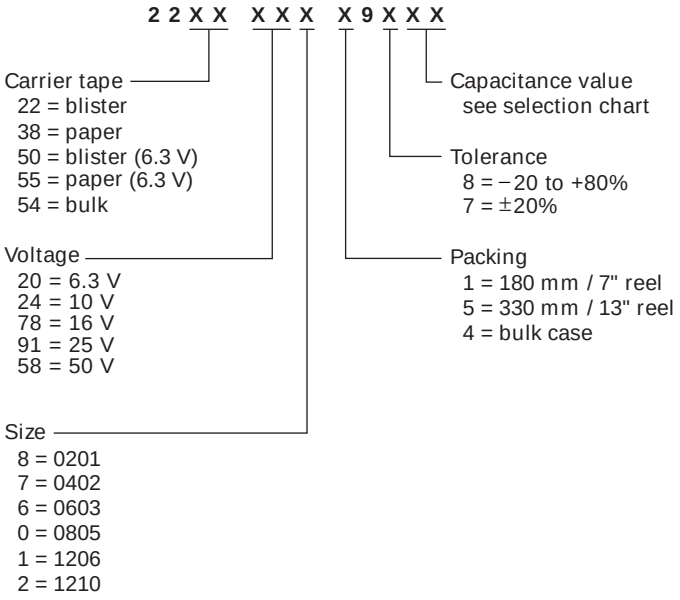


Y5V, 6.3V, general purpose and high capacitance

Y5V - 6.3V						
High-Capacitance & General Purpose						
Capaciance	Last two digits of 12NC	6.3V				
		0402	0603	0805	1206	1210
1000 nF	63	0.5 ±0.05				
2.2 uF	67		0.8 ±0.1			
4.7 uF	72					
10 uF	76			1.25 ±0.1		
22 uF	81				1.6 ±0.2	
47 uF	85					2.0 ±0.2
Tape width		8mm				

Note: Values in shaded cells indicate thickness class (Unit: mm)

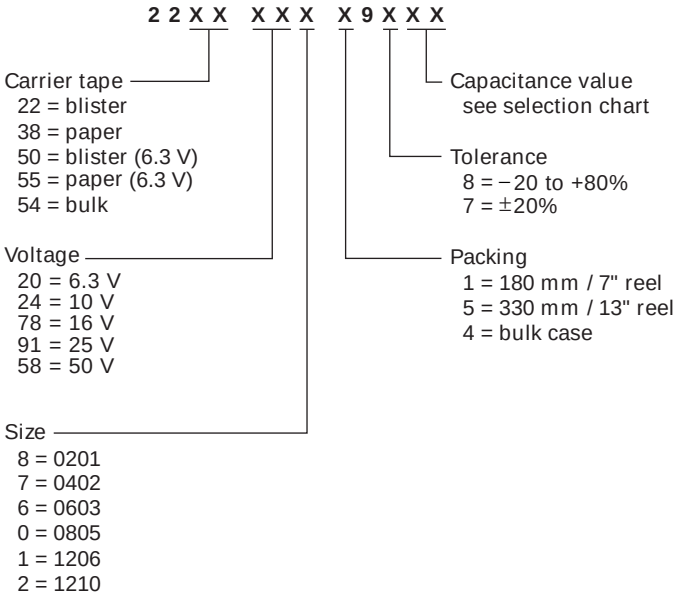
Ordering code 12NC



Y5V - 10V						
High-Capacitance & General Purpose						
Capaciance	Last two digits of 12NC	10V				
		0402	0603	0805	1206	1210
470 nF	58	0.5 ±0.05	0.8 ±0.07	0.8 ±0.1	0.8 ±0.1	
680 nF	61					
1000 nF	63					
2.2 uF	67		0.8 ±0.1			
4.7 uF	72				0.85 ±0.1	
10 uF	76			1.25 ±0.1	0.8 ±0.1	1.5 ±0.1
22 uF	81			1.25 ±0.15	1.6 ±0.2	
47 uF	85					
Tape width		8mm				

Note: Values in shaded cells indicate thickness class (Unit: mm)

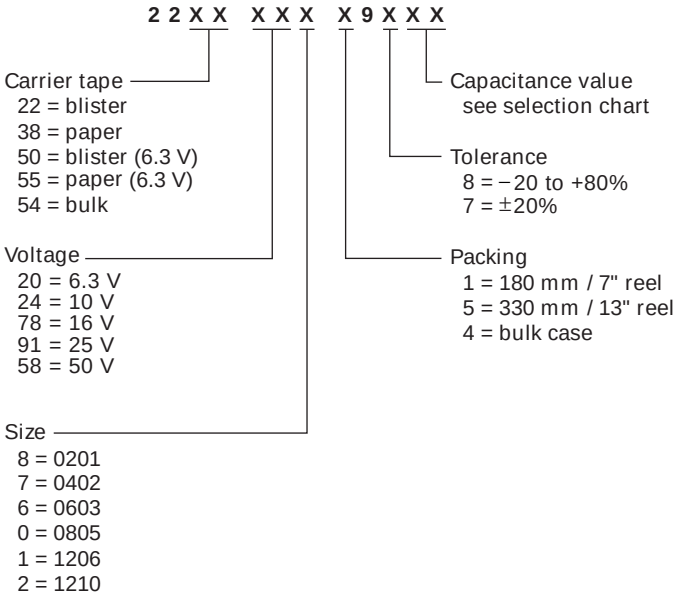
Ordering code 12NC



Y5V - 16V						
High-Capacitance & General Purpose						
Capaciance	Last two digits of 12NC	16V				
		0402	0603	0805	1206	1210
100 nF	49	0.5 ±0.05	0.8 ±0.07	0.85 ±0.1	0.6 ±0.1	
150 nF	52					
220 nF	54					
330 nF	56			0.8 ±0.1		
470 nF	58			0.85 ±0.1	0.85 ±0.1	
680 nF	61		0.8 ±0.1	0.8 ±0.1	0.8 ±0.1	
1000 nF	63				0.85 ±0.1	
2.2 uF	67		0.8 ±0.07	1.25 ±0.1	0.8 ±0.1	
4.7 uF	72			1.25 ±0.2	1.15 ±0.1	1.15 ±0.1
10 uF	76					1.5 ±0.1
22 uF	81				1.6 ±0.2	
Tape width		8mm				

Note: Values in shaded cells indicate thickness class (Unit: mm)

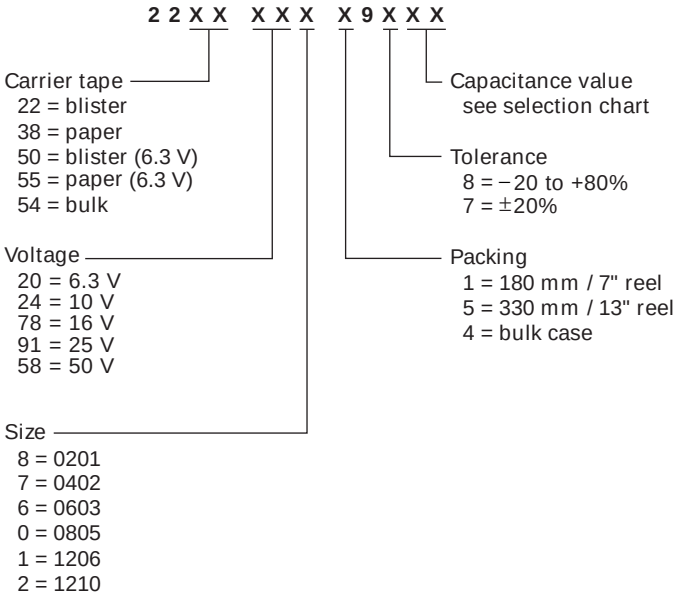
Ordering code 12NC



Y5V - 25V						
High-Capacitance & General Purpose						
Capaciance	Last two digits of 12NC	25V				
		0402	0603	0805	1206	1210
10 nF	36	0.5 ±0.05	0.8 ±0.07	0.6 ±0.1	0.6 ±0.1	
22 nF	41					
47 nF	45					
100 nF	49					
220 nF	54			0.85 ±0.1		
470 nF	58				0.85 ±0.1	
1000 nF	63				1.15 ±0.1	
2.2 uF	67			1.25 ±0.2	0.8 ±0.1	
4.7 uF	72				1.15 ±0.1	
10 uF	76				1.6 ±0.2	1.5 ±0.1
22 uF	81				1.15 ±0.1	
Tape width		8mm				

Note: Values in shaded cells indicate thickness class (Unit: mm)

Ordering code 12NC

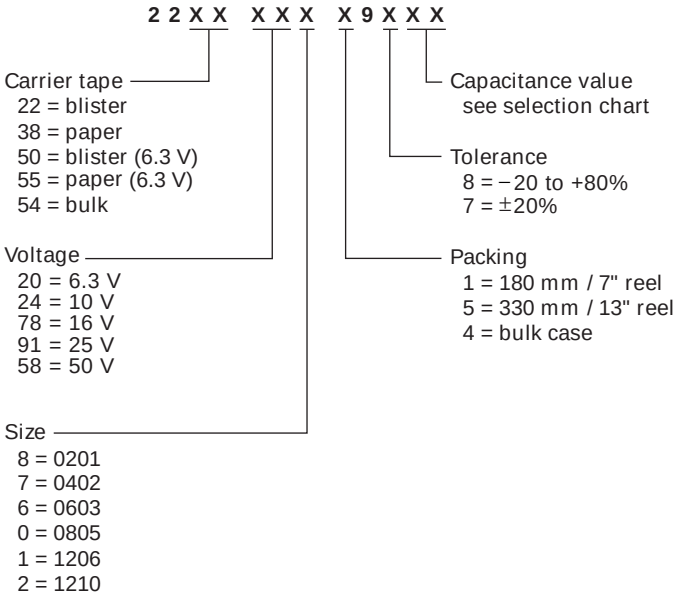


Y5V, 50V, general purpose

Y5V - 50V				
General purpose				
Capacitance	Last two digits of 12NC	50V		
		0603	0805	1206
10 nF	05	0.8 ±0.07	0.6 ±0.1	0.6 ±0.1
15 nF	06			
22 nF	07			
33 nF	08			
47 nF	09			
68 nF	11			
100 nF	12			
150 nF	13		0.85 ±0.1	
220 nF	14			
330 nF	15		1.25 ±0.1	
470 nF	16		0.85 ±0.1	0.85 ±0.1
680 nF	17		1.25 ±0.1	0.8
1000 nF	18			0.85 ±0.1
Tape width		8mm		

Note: Values in shaded cells indicate thickness class (Unit: mm)

Ordering code 12NC

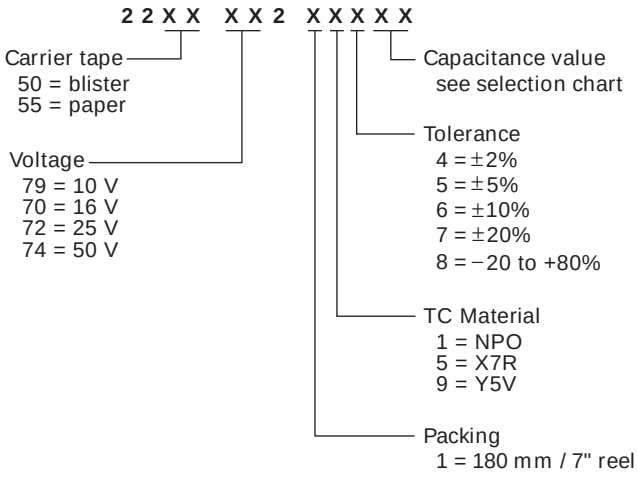


X7R, 16V, 2-C arrays

X7R - 16V		
4-C arrays		2-C arrays
Capacitance	Last two digits of 12NC	16V
		0405
10 nF	36	0.6 ±0.1
12 nF	37	
15 nF	38	
18 nF	39	
22 nF	41	
27 nF	42	
33 nF	43	
39 nF	44	
47 nF	45	
56 nF	46	
68 nF	47	
82 nF	48	
100 nF	49	
Tape width		8mm

Note: Values in shaded cells indicate thickness class (Unit: mm)

Ordering code 12NC

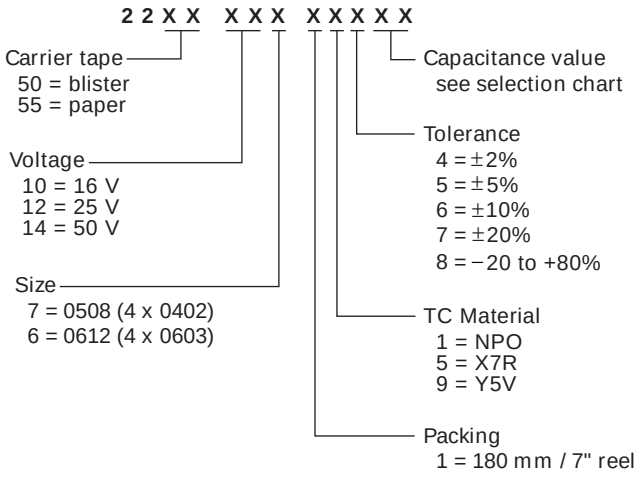


NP0, 50V, 4-C arrays

NP0 - 50V			
		4-C arrays	
Capacitance	Last two digits of 12NC	50V	
		0508	0612
10 pF	23	0.6 ±0.1	0.8 ±0.1
15 pF	25		
18 pF	26		
22 pF	27		
27 pF	28		
47 pF	32		
100 pF	36		
150 pF	38		
180 pF	39		
220 pF	41		
270 pF	42		
Tape width		8mm	

Note: Values in shaded cells indicate thickness class (Unit: mm)

Ordering code 12NC

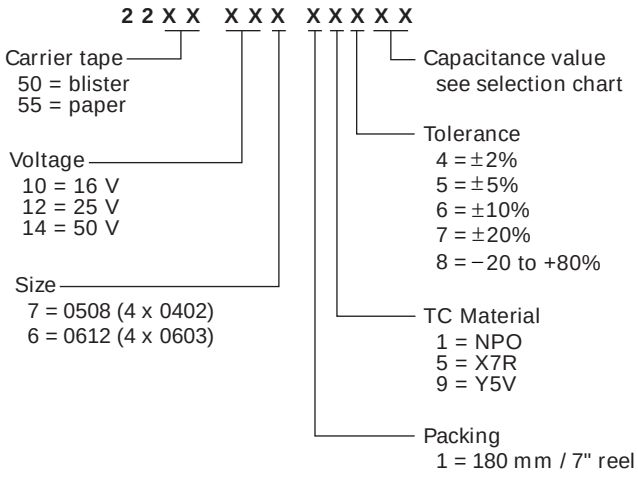


X7R, 16V to 50V, 4-C arrays

X7R - 16V, 25V and 50V					
4-C arrays					
Capacitance	Last two digits of 12NC	16V		25V	50V
		0508	0612	0612	0612
220 pF	14				0.8 ±0.1
470 pF	18				
1000 pF	23				
2.2 nF	27				
4.7 nF	32				
10 nF	36	0.8 ±0.1	0.8 ±0.1	0.8 ±0.1	
22 nF	41				
47 nF	45				
100 nF	49				
Tape width		8mm			

Note: Values in shaded cells indicate thickness class (Unit: mm)

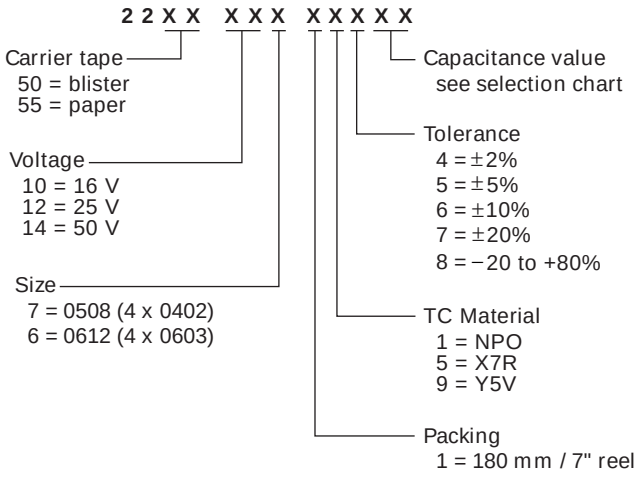
Ordering code 12NC



Y5V - 25V			
4-C arrays			
Capacitance	Last two digits of 12NC	25V	
		0612	0508
100 nF	49	0.6 ±0.1	0.6 ±0.1
Tape width		8mm	

Note: Values in shaded cells indicate thickness class (Unit: mm)

Ordering code 12NC

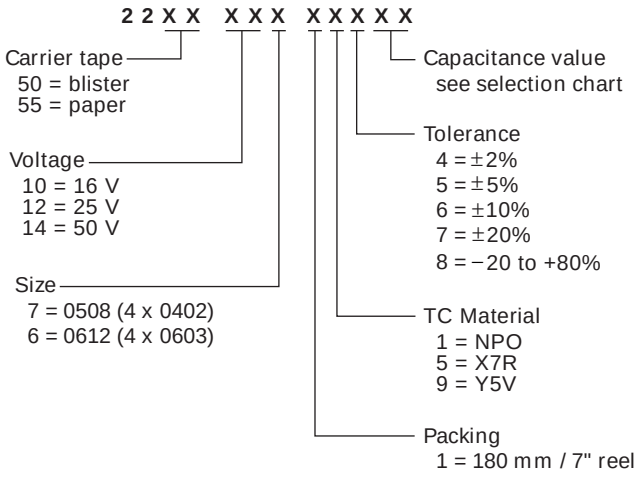


X7R, Multi-value capacitor network

X7R - 16V	
Multi-value network (4-caps)	
Capacitance	0612
	16V
100 pF	0.8 ±0.1
1000 pF	
Tape width	8mm

Note: 1. Values in shaded cells indicate thickness class (Unit: mm)
2. Capacitance value displayed is the lower value of network

Ordering code 12NC

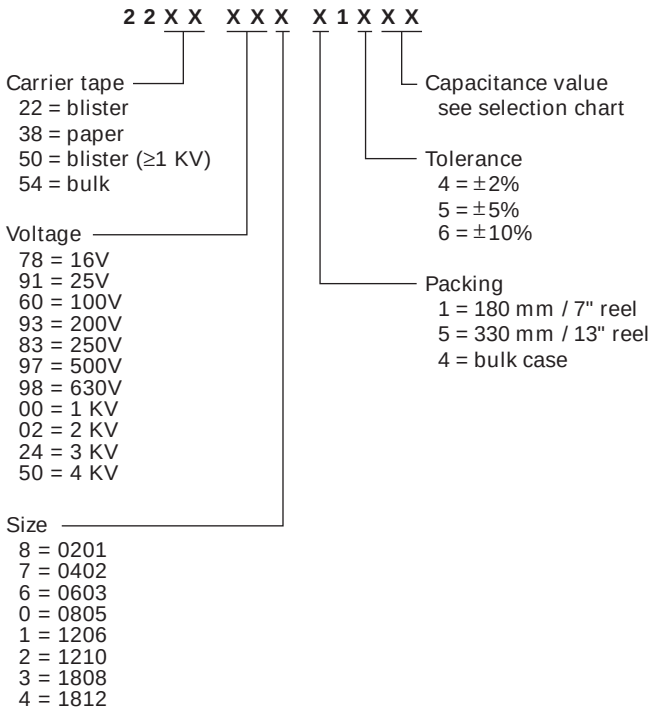


NP0, 25V, ultra small MLCCs

NP0 - 25V and 50V		
Ultra small MLCCs		
Capacitance	Last two digits of 12NC	25V
		0201
27 pF	28	0.3 ±0.03
33 pF	29	
39 pF	31	
47 pF	32	
56 pF	33	
68 pF	34	
82 pF	35	
100 pF	36	
Tape width		8mm

Note: Values in shaded cells indicate thickness class (Unit: mm)

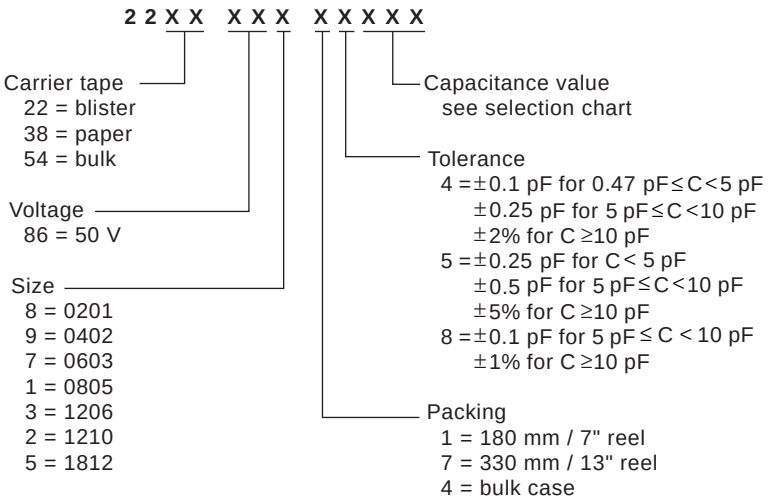
Ordering code 12NC



NP0 - 50V		
		Ultra small MLCCs
Capacitance	Last three digits of 12NC	50V
		0201
1 pF	108	0.3 ±0.03
1.2 pF	128	
1.5 pF	158	
1.8 pF	188	
2.2 pF	228	
2.7 pF	278	
3.3 pF	338	
3.9 pF	398	
4.7 pF	478	
5.6 pF	568	
6.8 pF	688	
8.2 pF	828	
10 pF	109	
12 pF	129	
15 pF	159	
18 pF	189	
22 pF	229	
Tape width		8mm

Note: 1. Values in shaded cells indicate thickness class (Unit: mm)
2. On request 1pF to 10pF also available in E24.

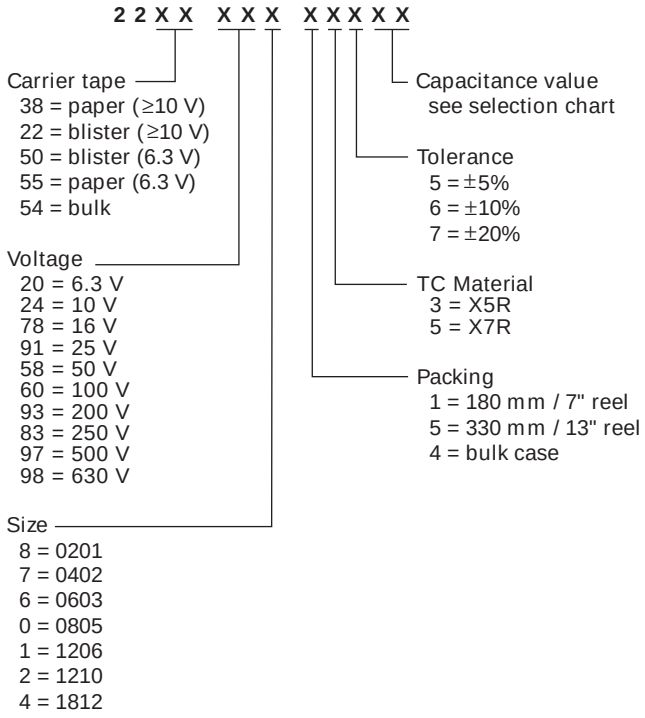
Ordering code 12NC



X7R - 10V to 50V					
Ultra small MLCCs					
Capacitance	Last two digits of 12NC	0201			
		10V	16V	25V	50V
47 pF	05				0.3 ±0.03
56 pF	06				
68 pF	07				
82 pF	08				
100 pF	09				
120 pF	11				
150 pF	12				
180 pF	13				
220 pF	14				
270 pF	15				
330 pF	16				
390 pF	17				
470 pF	18				
560 pF	19			0.3 ±0.03	
680 pF	21				
820 pF	22				
1000 pF	23				
1.2 nF	24				
1.5 nF	25		0.3 ±0.03		
1.8 nF	26				
2.2 nF	27				
2.7 nF	28				
3.3 nF	29				
3.9 nF	31	0.3 ±0.03			
4.7 nF	32				
5.6 nF	33				
6.8 nF	34				
8.2 nF	35				
10 nF	36				
Tape width		8mm			

Note: Values in shaded cells indicate thickness class (Unit: mm)

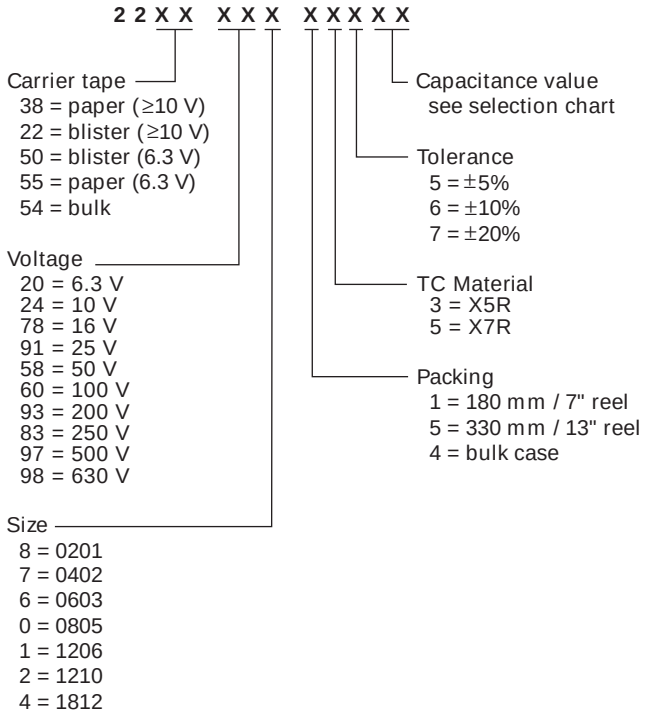
Ordering code 12NC



X5R - 6.3V to 16V				
Ultra small MLCCs				
Capacitance	Last two digits of 12NC	0201		
		6.3V	10V	16V
10 nF	36	0.3 ±0.03	0.3 ±0.03	0.3 ±0.03
100 nF	49			
Tape width		8mm		

Note: Values in shaded cells indicate thickness class (Unit: mm)

Ordering code 12NC

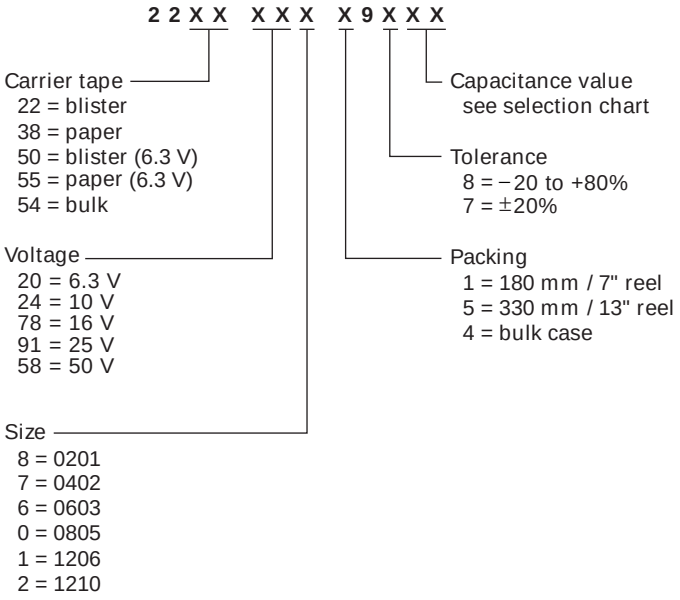


Y5V, 6.3V, ultra small MLCCs

Y5V - 6.3V		
Ultra small MLCCs		
Capacitance	Last two digits of 12NC	0201
		6.3V
100 nF	49	0.3 ±0.03

Note: Values in shaded cells indicate thickness class (Unit: mm)

Ordering code 12NC



Sample kits for 0201 and 0402

0201 sample kit			
NP0 50 V		**NP0 25 V**	
Capacitance (pF)	Tolerance	Capacitance (pF)	Tolerance
1	±0.25 pF	27	±5%
1.2	±0.25 pF	33	±5%
1.5	±0.25 pF	39	±5%
1.8	±0.25 pF	47	±5%
2.2	±0.25 pF	56	±5%
2.7	±0.25 pF	68	±5%
3.3	±0.25 pF	82	±5%
3.9	±0.25 pF	100	±5%
4.7	±0.25 pF	**X7R 50 V**	
5.6	±0.50 pF	Capacitance (pF)	Tolerance
6.8	±0.50 pF	47	±10%
8.2	±0.50 pF	68	±10%
10	±5%	100	±10%
12	±5%	150	±10%
15	±5%	220	±10%
18	±5%	330	±10%
22	±5%	470	±10%
X7R 25 V		**X7R 16 V**	
Capacitance (pF)	Tolerance	Capacitance (pF)	Tolerance
680	±10%	1 500	±10%
1 000	±10%	2 200	±10%
		3 300	±10%

100 pieces per value; Ordering code: 432204407111 for Phycomp brand; CC020100000000000 for Yageo brand.

0402 sample kit			
NP0 50 V		**X7R 50 V**	
Capacitance (pF)	Tolerance	Capacitance (pF)	Tolerance
0.47	±0.25 pF	100	±10%
0.68	±0.25 pF	150	±10%
1	±0.25 pF	220	±10%
1.5	±0.25 pF	330	±10%
2.2	±0.25 pF	470	±10%
3.3	±0.25 pF	680	±10%
4.7	±0.25 pF	1 000	±10%
6.8	±0.50 pF	1 500	±10%
10	±5%	2 200	±10%
15	±5%	3 300	±10%
22	±5%	**X7R 25 V**	
33	±5%	Capacitance (pF)	Tolerance
47	±5%	4 700	±10%
68	±5%	**X7R 16 V**	
100	±5%	Capacitance (pF)	Tolerance
150	±5%	6 800	±10%
220	±5%	10 000	±10%
Y5V 16 V		15 000	±10%
Capacitance (pF)	Tolerance	22 000	±10%
10 000	±20%		
22 000	±20%		
47 000	±20%		
100 000	±20%		

95 pieces pervalue; Ordering code: 432204409911 for Phycomp brand; CC040200000000000 for Yageo brand.

0603 sample kit

NP0 50 V		NP0 25 V		X7R 16 V	
Capacitance (pF)	Tolerance	Capacitance (pF)	Tolerance	Capacitance (pF)	Tolerance
0.47	±0.25 pF	1 000	± 5%	33 000	±10%
0.68	±0.25 pF	1 500	± 5%	47 000	±10%
1	±0.25 pF	X7R 50 V		68 000	±10%
1.5	±0.25 pF	Capacitance (pF)	Tolerance	100 000	±10%
2.2	±0.25 pF	100	±10%	Y5V 50 V	
3.3	±0.25 pF	150	±10%	Capacitance (pF)	Tolerance
4.7	±0.25 pF	220	±10%	10 000	± 20%
6.8	±0.50 pF	330	±10%	22 000	± 20%
10	± 5%	470	±10%	47 000	± 20%
15	± 5%	680	±10%	100 000	± 20%
22	± 5%	1 000	±10%	Y5V 16 V	
33	± 5%	1 500	±10%	Capacitance (pF)	Tolerance
47	± 5%	2 200	±10%	220 000	± 20%
68	± 5%	3 300	±10%	470 000	± 20%
100	± 5%	4 700	±10%		
150	± 5%	6 800	±10%		
220	± 5%	10 000	±10%		
330	± 5%	X7R 25 V			
470	± 5%	Capacitance (pF)	Tolerance		
680	± 5%	15 000	±10%		
		22 000	±10%		

48 pieces per value; Ordering code: 432204407121 for Phycomp brand; CC060300000000000 for Yageo brand.

0805 sample kit

NP0 50 V		NP0 25 V		X7R 16 V	
Capacitance (pF)	Tolerance	Capacitance (pF)	Tolerance	Capacitance (pF)	Tolerance
0.47	±0.25 pF	3 300	±5%	150 000	±10%
0.68	±0.25 pF	4 700	±5%	220 000	±10%
1	±0.25 pF	X7R 50 V		330 000	±10%
1.5	±0.25 pF	Capacitance (pF)	Tolerance	470 000	±10%
2.2	±0.25 pF	220	±10%	Y5V 50 V	
3.3	±0.25 pF	330	±10%	Capacitance (pF)	Tolerance
4.7	±0.25 pF	470	±10%	10 000	± 20%
6.8	±0.50 pF	680	±10%	22 000	± 20%
10	±5%	1 000	±10%	47 000	± 20%
15	±5%	1 500	±10%	100 000	± 20%
22	±5%	2 200	±10%	220 000	± 20%
33	±5%	3 300	±10%	Y5V 16 V	
47	±5%	4 700	±10%	Capacitance (pF)	Tolerance
68	±5%	6 800	±10%	470 000	± 20%
100	±5%	10 000	±10%	1 000 000	± 20%
150	±5%	15 000	±10%		
220	±5%	22 000	±10%		
330	±5%	33 000	±10%		
470	±5%	47 000	±10%		
680	±5%	68 000	±10%		
1 000	±5%	100 000	±10%		
1 500	±5%				
2 200	±5%				

48 pieces per value; Ordering code: 432204407131 for Phycomp brand; CC080500000000000 for Yageo brand.

Sample kits for 1206

1206 sample kit					
NP0 50 V		**NP0 25 V**		**X7R 16 V**	
Capacitance (pF)	Tolerance	Capacitance (pF)	Tolerance	Capacitance (pF)	Tolerance
0.47	±0.25 pF	10 000	± 5%	330 000	±10%
0.68	±0.25 pF	**X7R 50 V**		470 000	±10%
1	±0.25 pF	Capacitance (pF)	Tolerance	680 000	±10%
1.5	±0.25 pF	220	±10%	1 000 000	±10%
2.2	±0.25 pF	330	±10%	**Y5V 50 V**	
3.3	±0.25 pF	470	±10%	Capacitance (pF)	Tolerance
4.7	±0.25 pF	680	±10%	100 000	± 20%
6.8	±0.50 pF	1 000	±10%	220 000	± 20%
10	± 5%	1 500	±10%	470 000	± 20%
15	± 5%	2 200	±10%	1 000 000	± 20%
22	± 5%	3 300	±10%		
33	± 5%	4 700	±10%		
47	± 5%	6 800	±10%		
68	± 5%	10 000	±10%		
100	± 5%	15 000	±10%		
150	± 5%	22 000	±10%		
220	± 5%	33 000	±10%		
330	± 5%	47 000	±10%		
470	± 5%	68 000	±10%		
680	± 5%	100 000	±10%		
1 000	± 5%	150 000	±10%		
1 500	± 5%	220 000	±10%		
2 200	± 5%				
3 300	± 5%				
4 700	± 5%				
6 800	± 5%				

48 pieces per value; Ordering code: 432204407141 for Phycomp brand; CC120600000000000 for Yageo brand.

High capacitance sample kit					
X5R 0402			**Y5V 0402**		
Capacitance	Rated voltage	Tolerance	Capacitance	Rated voltage	Tolerance
220 nF	10 V	±10%	220 nF	10 V	-20% / +80%
470 nF	6.3 V	±10%	470 nF	10 V	-20% / +80%
1 µF	6.3 V	±10%	1 µF	10 V	-20% / +80%
X5R 0603			**Y5V 0603**		
Capacitance	Rated voltage	Tolerance	Capacitance	Rated voltage	Tolerance
1 µF	10 V	±10%	1 µF	16 V	-20% / +80%
2.2 µF	6.3 V	±10%	2.2 µF	16 V	-20% / +80%
4.7 µF	6.3 V	±20%	4.7 µF	6.3 V	-20% / +80%
X5R 0805			**Y5V 0805**		
Capacitance	Rated voltage	Tolerance	Capacitance	Rated voltage	Tolerance
4.7 µF	10 V	±10%	2.2 µF	16 V	-20% / +80%
10 µF	6.3 V	±10%	4.7 µF	10 V	-20% / +80%
X5R 1206			10 µF	10 V	-20% / +80%
Capacitance	Rated voltage	Tolerance	**Y5V 1206**		
4.7 µF	10 V	±10%	Capacitance	Rated voltage	Tolerance
4.7 µF	16 V	±10%	4.7 µF	16 V	-20% / +80%
10 µF	10 V	±10%	10 µF	16 V	-20% / +80%
22 µF	6.3 V	±20%	22 µF	16 V	-20% / +80%
X5R 1210			**Y5V 1210**		
Capacitance	Rated voltage	Tolerance	Capacitance	Rated voltage	Tolerance
4.7 µF	25 V	±10%	10 µF	25 V	-20% / +80%
10 µF	25 V	±10%	22 µF	16 V	-20% / +80%
22 µF	10 V	±10%			
X5R 1812					
Capacitance	Rated voltage	Tolerance			
22 µF	16 V	±20%			
X7R 0402					
Capacitance	Rated voltage	Tolerance			
100 nF	16 V	±10%			
X7R 0805					
Capacitance	Rated voltage	Tolerance			
1 µF	16 V	±10%			
2.2 µF	10 V	±10%			
X7R 1206					
Capacitance	Rated voltage	Tolerance			
2.2 µF	10 V	±10%			
2.2 µF	16 V	±10%			
X7R 1210					
Capacitance	Rated voltage	Tolerance			
1 µF	25 V	±10%			
2.2 µF	25 V	±10%			

50 pieces per value; Ordering code: 432204510001 for Phycomp brand; CC888800000000000 for Yageo brand.

High voltage sample kits for PCs segment

High voltage sample kits for PCs segment					
NPO 1808			**NPO 1812**		
Capacitance	Rated Voltage	Tolerance	Capacitance	Rated Voltage	Tolerance
10 pF	3 KV	±5%	10 pF	3 KV	±5%
15 pF	3 KV	±5%	15 pF	3 KV	±5%
22 pF	3 KV	±5%	22 pF	3 KV	±5%
33 pF	3 KV	±5%	33 pF	3 KV	±5%
47 pF	3 KV	±5%	47 pF	3 KV	±5%
68 pF	3 KV	±5%	68 pF	3 KV	±5%
100 pF	3 KV	±5%	100 pF	3 KV	±5%
150 pF	3 KV	±5%	150 pF	3 KV	±5%
220 pF	3 KV	±5%	220 pF	3 KV	±5%
330 pF	3 KV	±5%	330 pF	3 KV	±5%
470 pF	3 KV	±5%	470 pF	3 KV	±5%
X7R 1808			**X7R 1206**		
Capacitance	Rated Voltage	Tolerance	Capacitance	Rated Voltage	Tolerance
470 pF	3 KV	±10%	1 nF	2 KV	±10%
680 pF	3 KV	±10%	1.5 nF	2 KV	±10%
1 nF	3 KV	±10%			
1.5 nF	3 KV	±10%			
470 pF	2 KV	±10%			
680 pF	2 KV	±10%			
1 nF	2 KV	±10%			
1.5 nF	2 KV	±10%			
2.2 nF	2 KV	±10%			
3.3 nF	2 KV	±10%			

50 pieces per value; Ordering code: 432204510001 for Phycomp brand; CC888800000000000 for Yageo brand.

High voltage sample kits for inverter segment		
NPO 1808		
Capacitance	Rated Voltage	Tolerance
5 pF	3 KV	±5%
10 pF	3 KV	±5%
12 pF	3 KV	±5%
15 pF	3 KV	±5%
18 pF	3 KV	±5%
22 pF	3 KV	±5%
27 pF	3 KV	±5%
33 pF	3 KV	±5%
39 pF	3 KV	±5%
47 pF	3 KV	±5%
56 pF	3 KV	±5%
68 pF	3 KV	±5%
82 pF	3 KV	±5%
100 pF	3 KV	±5%
120 pF	3 KV	±5%
150 pF	3 KV	±5%
220 pF	3 KV	±5%
330 pF	3 KV	±5%
470 pF	3 KV	±5%

50 pieces per value; Ordering code: 432204510001 for Phycomp brand; CC888800000000000 for Yageo brand.

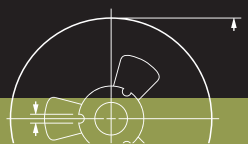
High voltage sample kits for general application

High voltage sample kits for general application					
NPO 1206			**NPO 1210**		
Capacitance	Rated Voltage	Tolerance	Capacitance	Rated Voltage	Tolerance
10 pF	1 KV	±5%	10 pF	1 KV	±5%
100 pF	1 KV	±5%	100 pF	1 KV	±5%
1 nF	1 KV	±5%	1 nF	1 KV	±5%
10 pF	2 KV	±5%	10 pF	2 KV	±5%
100 pF	2 KV	±5%	100 pF	2 KV	±5%
NPO 1808			**NPO 1812**		
Capacitance	Rated Voltage	Tolerance	Capacitance	Rated Voltage	Tolerance
10 pF	1 KV	±5%	10 pF	2 KV	±5%
100 pF	1 KV	±5%	100 pF	2 KV	±5%
1 nF	1 KV	±5%	1 nF	2 KV	±5%
10 pF	3 KV	±5%	10 pF	1 KV	±5%
100 pF	3 KV	±5%	100 pF	1 KV	±5%
10 pF	4 KV	±5%	1 nF	1 KV	±5%
10 pF	2 KV	±5%	10 pF	3 KV	±5%
100 pF	2 KV	±5%	100 pF	3 KV	±5%
X7R 1206			10 nF	4 KV	±5%
Capacitance	Rated Voltage	Tolerance	**X7R 1210**		
10 nF	1 KV	±10%	Capacitance	Rated Voltage	Tolerance
1 nF	2 KV	±10%	1 nF	1 KV	±10%
1 nF	1 KV	±10%	10 nF	1 KV	±10%
X7R 1808			1 nF	2 KV	±10%
Capacitance	Rated Voltage	Tolerance	**X7R 1812**		
10 nF	1 KV	±10%	Capacitance	Rated Voltage	Tolerance
1 nF	3 KV	±10%	10 nF	2 KV	±10%
1 nF	1 KV	±10%	1 nF	1 KV	±10%
1 nF	2 KV	±10%	10 nF	1 KV	±10%

50 pieces per value; Ordering code: 432204510001 for Phycomp brand; CC888800000000000 for Yageo brand.

High voltage sample kits for safety certification MLCCs		
NPO 1808_TUV		
Capacitance	Safety Cretification	Tolerance
10 pF	X1/Y2	±5%
22 pF	X1/Y2	±5%
47 nF	X1/Y2	±5%
100 pF	X1/Y2	±5%
150 pF	X1/Y2	±5%
220 pF	X1/Y2	±5%
330 pF	X1/Y2	±5%
NPO 1812_TUV		
Capacitance	Safety Cretification	Tolerance
10 pF	X2/Y3	±5%
22 pF	X2/Y3	±5%
47 pF	X2/Y3	±5%
100 pF	X2/Y3	±5%
150 pF	X2/Y3	±5%
220 pF	X2/Y3	±5%
X7R 1808_TUV		
Capacitance	Safety Cretification	Tolerance
470 pF	X2/Y3	±10%
680 pF	X2/Y3	±10%
1 nF	X2/Y3	±10%
1.5 nF	X2/Y3	±10%
X7R 1812_TUV		
Capacitance	Safety Cretification	Tolerance
1 nF	X2/Y3	±10%
1.5 nF	X2/Y3	±10%
2.2 nF	X2/Y3	±10%
3.3 nF	X2/Y3	±10%
4.7 nF	X2/Y3	±10%
NPO 1808_UL		
Capacitance	Safety Cretification	Tolerance
10 pF	X1/Y2	±5%
22 pF	X1/Y2	±5%
47 pF	X1/Y2	±5%
100 pF	X1/Y2	±5%
150 pF	X1/Y2	±5%
220 pF	X1/Y2	±5%
330 pF	X1/Y2	±5%
X7R 1808_UL		
Capacitance	Safety Cretification	Tolerance
150 pF	X1/Y2	±10%
220 pF	X1/Y2	±10%
330 pF	X1/Y2	±10%
470 pF	X1/Y2	±10%
680 pF	X1/Y2	±10%
1 nF	X1/Y2	±10%
X7R 1812_TUV		
Capacitance	Safety Cretification	Tolerance
10 pF	X1/Y2	±5%
22 pF	X1/Y2	±5%
47 nF	X1/Y2	±5%
100 pF	X1/Y2	±5%
150 pF	X1/Y2	±5%
220 pF	X1/Y2	±5%
330 pF	X1/Y2	±5%
470 pF	X1/Y2	±5%
X7R 1808_TUV		
Capacitance	Safety Cretification	Tolerance
150 pF	X1/Y2	±5%
220 pF	X1/Y2	±5%
330 pF	X1/Y2	±5%
470 pF	X1/Y2	±5%
680 pF	X1/Y2	±5%
1 nF	X1/Y2	±5%
X7R 1812_TUV		
Capacitance	Safety Cretification	Tolerance
220 pF	X1/Y2	±10%
330 pF	X1/Y2	±10%
470 pF	X1/Y2	±10%
680 pF	X1/Y2	±10%
1 nF	X1/Y2	±10%
1.5 nF	X1/Y2	±10%
NPO 1812_UL		
Capacitance	Safety Cretification	Tolerance
10 pF	X1/Y2	±5%
22 pF	X1/Y2	±5%
47 pF	X1/Y2	±5%
100 pF	X1/Y2	±5%
150 pF	X1/Y2	±5%
220 pF	X1/Y2	±5%
X7R 1808_UL		
Capacitance	Safety Cretification	Tolerance
1.5 nF	X2/Y3	±10%
X7R 1812_UL		
Capacitance	Safety Cretification	Tolerance
220 pF	X1/Y2	±10%
330 pF	X1/Y2	±10%
470 pF	X1/Y2	±10%
680 pF	X1/Y2	±10%
1 nF	X1/Y2	±10%
1.5 nF	X1/Y2	±10%

50 pieces per value; Ordering code: 432204510001 for Phycomp brand; CC888800000000000 for Yageo brand.



MLCC Engineering Design Kits

Sample kits for all sizes, all types, E1 series only

All sizes, all types, E1 series only	
0402	
NP0 50 V	
Capacitance (Fp)	Tolerance
1	± 0.25 pF
10	± 5%
100	± 5%
X7R 50 V	
Capacitance (Fp)	Tolerance
100	±10%
1 000	±10%
X7R 16 V	
Capacitance (Fp)	Tolerance
10 000	±10%
Y5V 16 V	
Capacitance (Fp)	Tolerance
100 000	± 20%

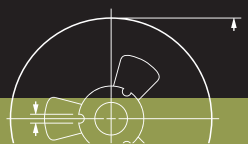
0805	
NP0 50 V	
Capacitance (Fp)	Tolerance
1	± 0.25 pF
10	± 5%
100	± 5%
1 000	± 5%
X7R 50 V	
Capacitance (Fp)	Tolerance
1 000	± 10%
10 000	± 10%
100 000	± 10%
X7R 10 V	
Capacitance (Fp)	Tolerance
1 000 000	± 10%
Y5V 10 V	
Capacitance (Fp)	Tolerance
4 700 000	-20 /+80%

0603	
NP0 50 V	
Capacitance (Fp)	Tolerance
1	± 0.25 pF
10	± 5%
100	± 5%
X7R 50 V	
Capacitance (Fp)	Tolerance
100	± 10%
1 000	± 10%
10 000	± 10%
X7R 16 V	
Capacitance (Fp)	Tolerance
100 000	± 10%
Y5V 10 V	
Capacitance (Fp)	Tolerance
1 000 000	-20 /+80%

1206	
NP0 50 V	
Capacitance (Fp)	Tolerance
1	± 0.25 pF
10	± 5%
100	± 5%
1 000	± 5%
X7R 50 V	
Capacitance (Fp)	Tolerance
1 000	±10%
10 000	±10%
100 000	±10%
X7R 16 V	
Capacitance (Fp)	Tolerance
1 000 000	± 10%
Y5V 10 V	
Capacitance (Fp)	Tolerance
10 000 000	-20 /+80%

Microwave 50 V				
Capacitance (pF)	Tolerance	Voltage	Size	Dilectric
1	± 0.25 pF	50 V	0603	NP0
10	± 5%	50 V	0805	NP0
100	± 5%	50 V	1206	NP0
Array (4 x 0603)				
Capacitance (pF)	Tolerance	Voltage	Size	Dilectric
100	± 5%	50 V	1206	NP0
1 000	± 5%	50 V	1206	NP0
10 000	±10%	25 V	1206	X7R
100 000	±10%	16 V	1206	X7R
High voltage				
Capacitance (pF)	Tolerance	Voltage	Size	Dilectric
10	± 5%	3 kV	1808	NP0
100	± 5%	3 kV	1812	NP0
10 000	±10%	1 kV	1812	X7R

48 Pieces per value (95 pieces for 0402 and 25 pieces for 1812); Ordering code: 432204500581 for Phycomp brand; CC999900000000000 for Yageo brand.



Resistor Chip General Information

Specification overview

Global part number	Series	Size	Power rating	Max. voltage	Operating Temp. range	Product range	Tolerance	TCR
! RC0100xR-07xxxxL	RC	01005	1/32W	15V	-55 to 125 °C	10Ω≤R≤1MΩ	±5%	10Ω≤R≤1MΩ ±250 ppm/°C
RC0201xR-07xxxxL		0201	1/20W	25V	-55 to 125 °C	1Ω≤R≤10MΩ	Max.: 1MΩ ±1% Max.: 10MΩ ±5%	1Ω≤R≤10Ω -100/+350 ppm/°C 10Ω<R≤10MΩ ±200 ppm/°C
RC0402xR-07xxxxL		0402	1/16W	50V	-55 to 155 °C	1Ω≤R≤22MΩ	Max./Min.: 1MΩ/10Ω ±0.5% Max.: 10MΩ ±1% Max.: 22MΩ ±5%	1Ω≤R≤10Ω 10MΩ<R≤22MΩ ±200 ppm/°C 10Ω<R≤10MΩ ±100 ppm/°C
RC0603xR-07xxxxL		0603	1/10W	50V	-55 to 155 °C	1Ω≤R≤22MΩ		
RC0805xR-07xxxxL		0805	1/8W	150V	-55 to 155 °C	1Ω≤R≤22MΩ		
RC1206xR-07xxxxL		1206	1/4W	200V	-55 to 155 °C	1Ω≤R≤22MΩ		
RC1210xR-07xxxxL		1210	1/2W	200V	-55 to 155 °C	1Ω≤R≤22MΩ		
RC1218xK-07xxxxL		1218	1W	200V	-55 to 155 °C	1Ω≤R≤1MΩ		
RC2010xK-07xxxxL		2010	3/4W	200V	-55 to 155 °C	1Ω≤R≤22MΩ		
RC2512xK-07xxxxL		2512	1W	200V	-55 to 155 °C	1Ω≤R≤22MΩ		
! RC0805xR-7WxxxxL		0805	1/4W	150V	-55 to 155 °C	1Ω≤R≤100Ω	±1%, ±5%	±200 ppm/°C
! RC1206xR-7WxxxxL		1206	1/2W	200V	-55 to 155 °C	1Ω≤R≤100Ω		
! RC2512xK-7WxxxxL		2512	2W	200V	-55 to 155 °C	1Ω≤R≤150Ω		
! RC0805xR-07xxxxL		0805	1/8W	150V	-55 to 155 °C	24MΩ<R≤100MΩ	±5%, ±10%, ±20%	±300 ppm/°C
! RC1206xR-07xxxxL		1206	1/4W	200V	-55 to 155 °C	24MΩ<R≤100MΩ		
! YC102-xR-07xxxxL	YC	2*0201	1/32W	15V	-55 to 125 °C	10Ω≤R≤1MΩ	Min.: 10Ω ±1% Min.: 1Ω ±5%	±200 ppm/°C
YC122-xR-07xxxxL		2*0402	1/16W	50V	-55 to 125 °C	1Ω≤R≤1MΩ		
YC124-xR-07xxxxL		4*0402	1/16W	50V	-55 to 155 °C	10Ω≤R≤1MΩ		
! YC162-xR-07xxxxL		2*0603	1/16W	50V	-55 to 155 °C	10Ω≤R≤1MΩ	±5%	
YC164-xR-07xxxxL		4*0603	1/16W	50V	-55 to 155 °C	1Ω≤R≤1MΩ	±1%, ±5%	
YC248-xR-07xxxxL		8*0602	1/16W	50V	-55 to 155 °C	10Ω≤R≤1MΩ		
YC324-xR-07xxxxL		4*1206	1/8W	200V	-55 to 155 °C	10Ω≤R≤1MΩ		
! TC122-xR-07xxxxL	TC	2*0402	1/16W	25V	-55 to 125 °C	10Ω≤R≤1MΩ	Min.: 10Ω ±1% Min.: 1Ω ±5%	
! TC124-xR-07xxxxL		4*0402	1/16W	50V	-55 to 125 °C	10Ω≤R≤1MΩ		
TC164-xR-07xxxxL		4*0603	1/16W	50V	-55 to 155 °C	1Ω≤R≤1MΩ		
YC158TJR-07xxxxL	YC158	10P8R (0612)	1/16W	25V	-55 to 155 °C	10Ω≤R≤100KΩ	±5%	10Ω≤R≤100KΩ ±200 ppm/°C
YC358xJK-07xxxxL	YC358	10P8R (1225)	1/16W	50V	-55 to 155 °C	10Ω≤R≤330KΩ	±5%	10Ω≤R≤330KΩ ±200 ppm/°C
RL0402xR-07xxxxL		0402	1/16W	(PxR)^1/2	-55 to 125 °C	0.05Ω≤R≤1Ω	±1%, ±2%, ±5%	See below table of T.C.R.- RL series
RL0603xR-07xxxxL		0603	1/10W	(PxR)^1/2	-55 to 125 °C	0.01Ω≤R<1Ω		
RL0805xR-07xxxxL		0805	1/8W	(PxR)^1/2	-55 to 125 °C			
RL1206xR-07xxxxL		1206	1/4W	(PxR)^1/2	-55 to 125 °C			
RL1210xR-07xxxxL		1210	1/2W	(PxR)^1/2	-55 to 125 °C			
RL1218xK-07xxxxL		1218	1W	(PxR)^1/2	-55 to 125 °C			
RL2010xK-07xxxxL		2010	3/4W	(PxR)^1/2	-55 to 125 °C			
RL2512xK-07xxxxL		2512	1W	(PxR)^1/2	-55 to 125 °C			
! RL0805xR-7WxxxxL		0805	1/4W	(PxR)^1/2	-55 to 125 °C	0.015Ω≤R<1Ω		
! RL1206xR-7WxxxxL		1206	1/2W	(PxR)^1/2	-55 to 125 °C			

Note: " ! " is the symbol for new product

T.C.R. - RL series

Type	Operating temperature range	Resistance range	50mΩ ~ 91mΩ			100mΩ~300mΩ	330mΩ~500mR	510mΩ~1Ω
RL0402	-55 °C to +125 °C	50mΩ≤R<1Ω	±1000ppm/°C			±800ppm/°C		
RL0603	-55 °C to +125 °C	10mR≤R<1Ω	±1500ppm/°C		±1000ppm/°C	±800ppm/°C	±600ppm/°C	±300ppm/°C
			10mΩ~18mΩ	20mΩ~47mΩ	51mΩ~91mΩ	100mΩ~360mΩ	390mΩ~500mΩ	510mΩ~1Ω
RL0805	-55 °C to +125 °C	10mR≤R<1Ω	±1500ppm/°C	±1200ppm/°C	±1000ppm/°C	±600ppm/°C	±300ppm/°C	±200ppm/°C
RL1206	-55 °C to +125 °C	10mR≤R<1Ω	±1500ppm/°C	±1200ppm/°C	±1000ppm/°C	±600ppm/°C	±300ppm/°C	±200ppm/°C
RL1210	-55 °C to +125 °C	10mR≤R<1Ω	±1500ppm/°C	±1000ppm/°C	±800ppm/°C	±600ppm/°C	±300ppm/°C	±200ppm/°C
			10mΩ~30mΩ	33mΩ~56mΩ	60mΩ~180mΩ	200mΩ~1Ω		
RL1218	-55 °C to +125 °C	10mR≤R<1Ω	±2000ppm/°C	±1000ppm/°C	±700ppm/°C	±250ppm/°C		
			10mΩ~18mΩ	20mΩ~47mΩ	51mΩ~91mΩ	100mΩ~360mΩ	390mΩ~500mΩ	510mΩ~1Ω
RL2010	-55 °C to +125 °C	10mR≤R<1Ω	±1500ppm/°C	±1200ppm/°C	±1000ppm/°C	±600ppm/°C	±300ppm/°C	±200ppm/°C
RL2512	-55 °C to +125 °C	10mR≤R<1Ω	±1500ppm/°C	±1200ppm/°C	±800ppm/°C	±600ppm/°C	±300ppm/°C	±200ppm/°C

Global part number	Series	Size	Power rating	Max. voltage	Operating Temp. range	Product range	Tolerance	TCR
RT0402xRx07xxxxL	RT	0402	1/16W	50V	-55 to 125 °C	10Ω≤R<121KΩ	±0.1% ±0.25% ±0.5% ±1% ±0.05%	±10ppm/°C ±15ppm/°C ±25ppm/°C ±50ppm/°C
RT0603xRx07xxxxL		0603	1/10W	75V	-55 to 125 °C	5.1Ω≤R≤681KΩ		
RT0805xRx07xxxxL		0805	1/8W	150V	-55 to 125 °C	5.1Ω≤R≤1.5MΩ		
RT1206xRx07xxxxL		1206	1/8W	200V	-55 to 125 °C	5.1Ω≤R≤1.5MΩ		
RT1210xRx07xxxxL		1210	1/4W	200V	-55 to 125 °C	5.1Ω≤R≤1MΩ		
RT2010xKx07xxxxL		2010	1/2W	200V	-55 to 125 °C	10Ω≤R≤1MΩ		
RT2512xKx07xxxxL		2512	3/4W	200V	-55 to 125 °C	10Ω≤R≤1MΩ		
RJ0402FRE07xxxxL	RJ	0402	1/16W	25V	-55 to125 °C	10Ω≤R≤121KΩ	±1%	±50ppm/°C
RJ0603FRE07xxxxL		0603	1/16W	50V	-55 to 125 °C	5.1Ω≤R≤681KΩ		
RJ0805FRE07xxxxL		0805	1/10W	100V	-55 to 125 °C	5.1Ω≤R≤1.5MΩ		
RJ1206FRE07xxxxL		1206	1/8W	150V	-55 to 125 °C	5.1Ω≤R≤1.5MΩ		
RJ1210FRE07xxxxL		1210	1/4W	150V	-55 to 125 °C	5.1Ω≤R≤1MΩ		
RJ2010FKE07xxxxL		2010	1/2W	150V	-55 to 125 °C	10Ω≤R≤1MΩ		
RJ2512FKE07xxxxL		2512	3/4W	150V	-55 to 125 °C	10Ω≤R≤1MΩ		
PR2010xKx07xxxxxL	PR	2010	0.5W/1W	(PxR)^1/2	-55 to 155 °C	2mΩ≤R≤6mΩ	±1% ±2% ±5%	2mΩ≤R≤6mΩ ±150ppm/°C
PR2512xKx07xxxxxL		2512	1W/2W	(PxR)^1/2	-55 to 155 °C	1mΩ≤R≤5mΩ		1mΩ≤R≤2mΩ ±200ppm/°C
				(PxR)^1/2				2mR<R ±100ppm/°C
■ PF1206xRx07xxxxxL	PF	1206	0.25W	(PxR)^1/2	-55 to 155 °C	7mΩ≤R≤200mΩ	±1% ±2% ±5%	±100ppm/°C
■ PF2010xKx07xxxxxL		2010	0.5W	(PxR)^1/2	-55 to 155 °C	7mΩ≤R≤200mΩ		
PF2512xKx07xxxxxL		2512	1W	(PxR)^1/2	-55 to 155 °C	6mΩ≤R≤130mΩ		
■ PF1206xRx7WxxxxxL		1206	0.5W	(PxR)^1/2	-55 to 155 °C	7mΩ≤R≤200mΩ		
■ PF2010xKx7WxxxxxL		2010	1W	(PxR)^1/2	-55 to 155 °C	7mΩ≤R≤200mΩ		
PF2512xKx7WxxxxxL		2512	2W	(PxR)^1/2	-55 to 155 °C	6mΩ≤R≤130mΩ		
AR0402xR-07xxxxL	AR	0402	1/16W	50V	-55 to 155 °C	1Ω≤R≤10MΩ	±1% ±5%	1Ω≤R≤10Ω ±200ppm/°C 10Ω<R≤10MΩ ±100ppm/°C
AR0603xR-07xxxxL		0603	1/10W	50V	-55 to 155 °C			
AR0805xR-07xxxxL		0805	1/8W	150V	-55 to 155 °C			
AR1206xR-07xxxxL		1206	1/4W	200V	-55 to 155 °C			
RV0805JR-07xxxxL	RV	0805	1/8W	400V	-55 to 155 °C	100KΩ≤R≤10MΩ	±1% ±5%	100KΩ≤R≤10MΩ ±200ppm/°C
RV1206JR-07xxxxL		1206	1/4W	500V	-55 to 155 °C	100KΩ≤R≤27MΩ	±5%	100KΩ≤R≤27MΩ ±200ppm/°C
RV1206FR-07xxxxL						100KΩ≤R≤10MΩ	±1%	
RV2512JK-07xxxxL		2512	1W	500V	-55 to 155 °C	4.7MΩ≤R≤16MΩ	±5%	4.7MΩ≤R≤16MΩ ±200ppm/°C
SR0805xR-07xxxxL	SR	0805	1/8W	150V	-55 to 155 °C	1Ω≤R≤100KΩ	±5% ±10% ±20%	1Ω≤R≤100KΩ ±200ppm/°C
SR1206xR-07xxxxL		1206	1/4W	200V	-55 to 155 °C	1Ω≤R≤100KΩ		
SR1218xK-07xxxxL		1218	1W	200V	-55 to 155 °C	1Ω≤R≤100KΩ		
SR2512xK-07xxxxL		2512	1W	200V	-55 to 155 °C	1Ω≤R≤100KΩ		
TR0402xR-07xxxxL	TR	0402	1/16W	50V	-55 to 125 °C	1Ω≤R≤10MΩ	+0/-10% +0/-20% +0/-30%	1Ω≤R≤10Ω 1MΩ<R≤10MΩ ±200ppm/°C 10Ω<R≤1MΩ ±100ppm/°C
TR0603xR-07xxxxL		0603	1/16W	50V	-55 to 125°C			
TR0805xR-07xxxxL		0805	1/8W	150V	-55 to 155 °C			
TR1206xR-07xxxxL		1206	1/4W	200V	-55 to 155 °C			
ATV321xR-07xxxxL	ATV	0404	40mW	50V	-55 to 125 °C	1dB to 20dB	±0.3dB ±0.5dB ±1.0dB ±2.0dB	---
! TA164-xR-07xxxxL	TA	4*0603	1/16W	75V	-55 to 125 °C	10Ω≤R≤220KΩ	±1% ±2% ±5%	±25ppm/°C ±50ppm/°C
! TD164-xR-07xxxxL	TD	4*0603	1/16W	75V	-55 to 125 °C	10Ω≤R≤330KΩ	±0.1% ±0.5% ±1%	±25ppm/°C ±50ppm/°C

Note: " ! " is the symbol for new product

" ■ " is the symbol for developing product

Ordering Information - Global part number

Ordering information - Global part number - Single resistor

RC 0603 J R — 07 10R (L)

Series name (code 1~2)
- RC = General purpose thick film
- RT = High precision - high stability
- RJ = General purpose thin film
- RL = Low ohmic
- PR/PF = Current sensor - low TCR
- TR = Trimmable
- SR = Surge
- AR = NiAu termination
- RV = High voltage

Size code (inch / mm) (code 3~6)
- 0100 = 0.4 x 0.2
- 0201 = 0.6 x 0.3
- 0402 = 1.0 x 0.5
- 0603 = 1.6 x 0.8
- 0805 = 2.0 x 1.25
- 1206 = 3.2 x 1.6
- 1210 = 3.2 x 2.6
- 1218 = 3.2 x 4.5
- 2010 = 5.0 x 2.5
- 2512 = 6.35 x 3.2

Tolerance (code 7)
- W = ±0.05%
- B = ±0.1%
- C = ±0.25%
- D = ±0.5%
- F = ±1%
- G = ±2%
- J = ±5% (for Jumper)
- K = ±10% (for TR=0/-10%)
- M = ±20% (for TR=0/-20%)
- N = ±30% (for TR=0/-30%)

Packing style (code 8)
- R = Paper tape reel
- K = Embossed plastic tape reel
- C = Bulk cassette

T.C.R. (code 9)
- B = ±10ppm/°C (on request)
- C = ±15ppm/°C (on request)
- D = ±25ppm/°C
- M = ±75ppm/°C (on request)
- E = ±50ppm/°C
- F = ±100ppm/°C
- L = ±150ppm/°C
- G = ±200ppm/°C
- "—" = Based on spec.
- (— for thick film only)

Taping reel (code 10~11)
- 07 = 7 inch Dia. reel
- 10 = 10 inch Dia. reel
- 13 = 13 inch Dia. reel

Resistance (code 12~16)
- 0R = Jumper
- 0R1 = 0.1Ω
- 1R = 1Ω
- 10R = 10Ω
- 100R = 100Ω
- 1K = 1,000Ω
- 1M = 1,000,000Ω
- 100M = 100,000,000Ω

Optional code (code 17)

Ordering information - Global part number - Power enhancement

RL 0805 J R — 7 W 0R015 (L)

Series name (code 1~2)
- RC= General purpose thick film
- RL = Low ohmic
- PR/PF = Current sensor - low TCR

Size code (inch / mm) (code 3~6)
- 0805 = 2.0 x 1.25
- 1206 = 3.2 x 1.6
- 2010 = 5.0 x 2.5
- 2512 = 6.35 x 3.2

Tolerance (code 7)
- F = ±1%
- G = ±2%
- J = ±5%

Packing style (code 8)
- R = Paper tape reel
- K = Embossed plastic tape reel

T.C.R. (code 9)
- M = ±75ppm/°C
- F = ±100ppm/°C
- G = ±200ppm/°C
- "—" = Based on spec.
- (— for thick film only)

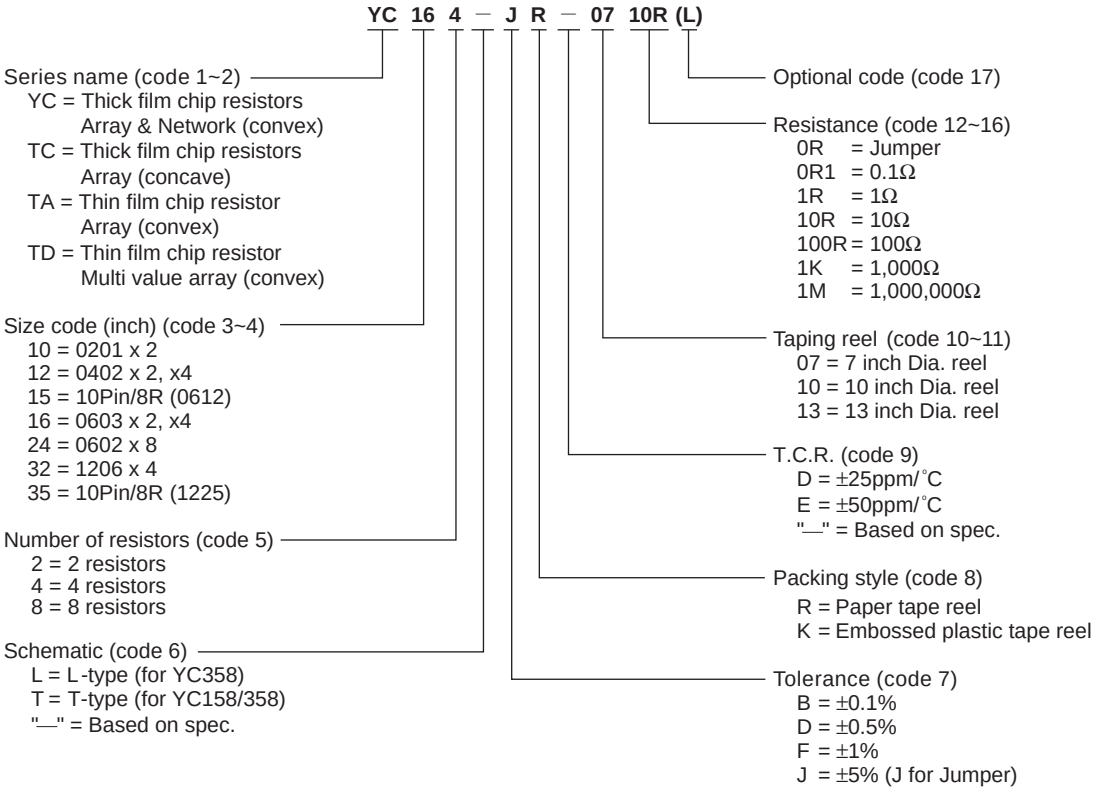
Taping reel (code 10)
- 7 = 7 inch Dia. reel

Power rating (code 11)
- W = 2 x standard power

Resistance (code 12~16)
- 0R01 = 0.01Ω
- 0R1 = 0.1Ω
- 1R = 1Ω
- 10R = 10Ω
- 100R = 100Ω
- 1K = 1,000Ω
- 1M = 1,000,000Ω

Optional code (code 17)

Ordering information - Global part number - Arrays & Networks



Ordering information for North America

Ordering information - Clear text code (North America only)

Ordering example: 9C06031A10R0FKHFT = R-chip 0603, 10R0, 1%, 5K reel

1-2	3-6	7-8	9-12	13	14	15-16	17
X X	X X X X	X X	X X X X	X	X	X X	X

Series / Name(code1-2)

Series	Name(code1-2)
9C	Phycomp Thick film chip resistors
9T	Phycomp Thin film chip resistors

Size code(standard resistors, code 3-6)

0201	0201 (0603)
0402	0402 (1005)
0603	0603 (1608)
0805	0805 (2012)
1206	1206 (3216)
1210	1210 (3225)
1218	1218 (3248)
2010	2010 (5025)
2512	2512 (6432)
AC34	0603 (1608) 4R concave array
AV34	0603 (1608) 4R convex array
AV22	0402 (1005) 2R convex array
AV24	0402 (1005) 4R convex array
AV28	0402 (1005) 8R convex array
RN31	10P8R in 1206 convex network
FR01	1206 (3216) Fusible
FR21	0603 (1608) Fusible
SR01	1206 (3216) Surge
VR01	1206 (3216) High voltage 5%
VR02	1206 (3216) High voltage 1%
VR11	0805 (2012) High voltage 5%
VR12	0805 (2012) High voltage 1%
VR21	2512 (6432) High voltage 5%
MR22	2512 (6432) Current sensor - low TCR
MF22	2512 (6432) Current sensor - low TCR
V321	0404 (1010) RF attenuator

Power rating (code7-8)

1A	1/16 W	0.063 W	(0402)
1A	1/10 W	0.10 W	(0603)
2A	1/8 W	0.125 W	(0805)
3A	1/4 W	0.25 W	(1206)
5A	1/2 W	0.5 W	(1210)
7A	1/20 W	0.05 W	(0201)
8A	1/32 W	0.03125 W	(RN31)
12	3/4 W	0.75 W	(2010)
1W	1 W	1 W	(1218/2512)
2W	2 W	2 W	

Resistance value (code9-12)

0R00	Jumper
R0XX	< 0.1R
RXXX	0.1R - 0.976R
XRXX	1R - 9.76R
XXRX	10R - 97.6R
XXX0	100R - 976R
XXX1	1K - 9.76K
XXX2	10K - 97.6K
XXX3	100K - 976K
XXX4	1M - 9.76M
XXX5	10M - 97.6M
XXX6	100M+
XXdB	1 -20 dB

Packing (code 17)

T	5K paper
3	10K paper
4	20K paper
5	4K blister
6	5K blister
7	50K paper
P	25K bulk case

Special coding (code15-16)

HF	SnPb
PF	Lead free
AF	NiAu

T.C.R. (code 14)

C	±10 ppm/°C
D	±15 ppm/°C
A	±25 ppm/°C
B	±50 ppm/°C
K	±100 ppm/°C
L	±200 ppm/°C
E	±250 ppm/°C
M	±300 ppm/°C
G	±500 ppm/°C
F	0/+500 ppm/°C
R	600 ppm/°C
Q	-100/+600 ppm/°C
P	±750 ppm/°C
H	±1000 ppm/°C
I	±1500 ppm/°C
J	±2000 ppm/°C
N	±3000 ppm/°C

Tolerance (code 13)

dB values apply to Attenuators

Right values apply to trimmable resistors

E	±0.01%
A	±0.05%
B	±0.1%; ±0.2 dB
C	±0.25%; ±0.3 dB
D	±0.5%; ±0.5 dB
F	±1%; ±1 dB
G	±2%; ±2 dB
J	±5%
N	0/-20%
R	0/-30%

Standard of values in a decade according to ''IEC publication 63''												
E6 series:	10	15	22	33	47	68						
E12 series:	10	12	15	18	22	27	33	39	47	56	68	82
E24 series:	10	11	12	13	15	16	18	20	22	24	27	30
	33	36	39	43	47	51	56	62	68	75	82	91
E96 series:	100	102	105	107	110	113	115	118	121	124	127	130
	133	137	140	143	147	150	154	158	162	165	169	174
	178	182	187	191	196	200	205	210	215	221	226	232
	237	243	249	255	261	267	274	280	287	294	301	309
	316	324	332	340	348	357	365	374	383	392	402	412
	422	432	442	453	464	475	487	499	511	523	536	549
	562	576	590	604	619	634	649	665	681	698	715	732
	750	768	787	806	825	845	866	887	909	931	953	976

Packing quantities								
Size code	Tape width	Φ180mm;7"		Φ254mm;10"	Φ330mm;13"		Mass per 100 units	Volume
		Paper	Embossed	Paper	Paper	Embossed	Mass(g)	mm^3
0100	8 mm	10 000	--	--	--	--	0.007	0.0104
0201	8 mm	10 000	--	20 000	50 000	--	0.016	0.041
0402	8 mm	10 000	--	20 000	50 000	--	0.058	0.175
0603	8 mm	5 000	--	10 000	20 000	--	0.192	0.576
0805	8 mm	5 000	--	10 000	20 000	--	0.450	1.250
1206	8 mm	5 000	--	10 000	20 000	--	0.862	2.728
1210	8 mm	5 000	--	10 000	20 000	--	1.471	4.030
1218	12 mm	--	4 000	--	--	--	2.703	7.590
2010	12 mm	--	4 000	--	--	16 000	2.273	6.875
2512	12 mm	--	4 000	--	--	--	3.704	10.827
YC122	8 mm	10 000	--	--	50 000	--	0.100	--
TC122	8 mm	10 000	--	--	--	--	0.112	--
ATV321	8 mm	10 000	--	--	--	--	0.100	--
YC124	8 mm	10 000	--	20 000	40 000	--	0.281	--
TC124	8 mm	10 000	--	20 000	40 000	--	0.311	--
YC162	8 mm	5 000	--	--	--	--	0.376	--
YC164	8 mm	5 000	--	10 000	20 000	--	0.833	--
TC164	8 mm	5 000	--	10 000	20 000	--	1.030	--
YC158	8 mm	5 000	--	--	20 000	--	0.855	--
YC248	12 mm	5 000	4 000	--	--	--	0.885	--
YC324	12 mm	--	4 000	--	--	--	2.703	--
YC358	12 mm	--	4 000	--	--	--	3.333	--

Ordering information 12NC

The first 8 or 9 digits of the 12 digit catalogue number are given under "Ordering information - Preferred types" on following pages.
The remaining 4 or 3 digits represent the resistance value with the last digit indicating the multiplier as shown in right table.

Example:
0.001 Ω = 0010 or 010
0.02 Ω = 0200 or 200
0.3 Ω = 3007 or 307
1 Ω = 1008 or 108
33 kΩ = 3303 or 333
10 MΩ = 1006 or 106

Last digit of 12NC	
Resistance	Last digit
0.001 to 0.0976 Ω	0
0.1 to 0.976 Ω	7
1 to 9.76 Ω	8
10 to 97.6 Ω	9
100 to 976 Ω	1
1 to 9.76 kΩ	2
10 to 97.6 kΩ	3
100 to 976 kΩ	4
1 to 9.76 MΩ	5
10 to 97.6 MΩ	6

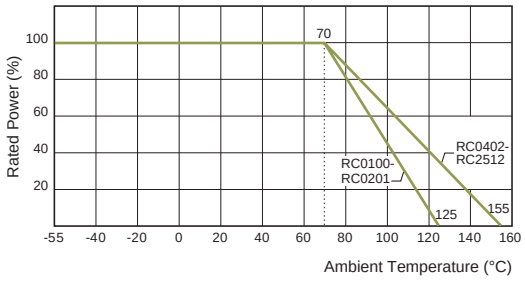
Introduction

FEATURES

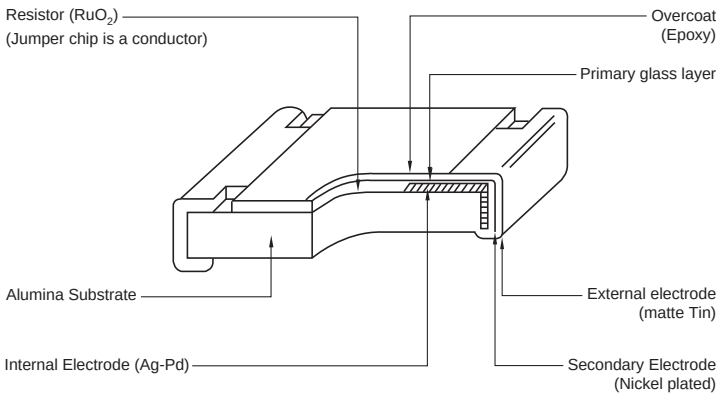
- Extremely thin and light
- Hightly reliable multilayer electrode construction
- Compatible with all soldering process
- Highly stable in auto-placement surface mounting applications
- Barrier layer end termination
- Zero ohm jumper is available
- Available in 8mm tape & reel per EIA RS481

Derating curve

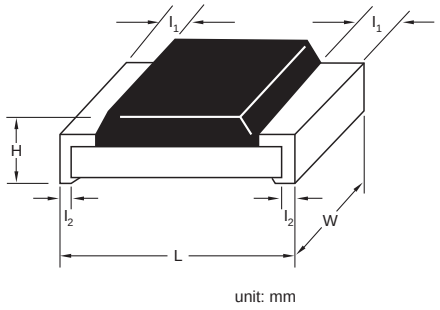
Maximum dissipation (P) in percentage of rated power as a function of the operating ambient temperature (T_{amb})



Construction



Dimensions



unit: mm

TYPE	L	W	H	I_1	I_2
RC0100	0.40 ±0.03	0.20 ±0.03	0.13 ±0.03	0.10 ±0.03	0.10 ±0.03
RC0201	0.60 ±0.03	0.30 ±0.03	0.23 ±0.03	0.10 ±0.05	0.15 ±0.05
RC0402	1.00 ±0.05	0.50 ±0.05	0.32 ±0.05	0.20 ±0.10	0.25 ±0.10
RC0603	1.60 ±0.10	0.80 ±0.10	0.45 ±0.10	0.25 ±0.15	0.25 ±0.15
RC0805	2.00 ±0.10	1.25 ±0.10	0.50 ±0.10	0.35 ±0.20	0.35 ±0.20
RC1206	3.10 ±0.10	1.60 ±0.10	0.55 ±0.10	0.45 ±0.20	0.40 ±0.20
RC1210	3.10 ±0.10	2.60 ±0.15	0.50 ±0.10	0.45 ±0.15	0.50 ±0.20
RC1218	3.10 ±0.10	4.60 ±0.10	0.55 ±0.10	0.45 ±0.20	0.40 ±0.20
RC2010	5.00 ±0.10	2.50 ±0.15	0.55 ±0.10	0.45 ±0.15	0.50 ±0.20
RC2512	6.35 ±0.10	3.10 ±0.15	0.55 ±0.10	0.60 ±0.20	0.50 ±0.20

Electrical characteristics											
Style	Power P_{70}	Operating Temp. range	MWV	RCOV	DWV	Resistance range & tolerance		TCR (ppm/℃)		Jumper criteria (unit:A)	
RC0100	1/32W	-55°C ~ +125℃	15V	30V	30V	E24 ±5% Zero ohm jumper	10Ω~1MΩ < 0.05Ω	±250	10Ω ≤ R ≤ 1MΩ	Rated current Max. current	0.5 1.0
RC0201	1/20W	-55°C ~ +125℃	25V	50V	50V	E24 ±5% E24/E96 ±1% E24/E96 ±0.5% Zero ohm jumper	1Ω~10MΩ 1Ω~1MΩ 10Ω~1MΩ < 0.05Ω	±200 -100/+350	10Ω < R ≤ 10MΩ 1Ω ≤ R ≤ 10Ω	Rated current Max. current	0.5 1.0
RC0402	1/16W	-55°C ~ +155℃	50V	100V	100V	E24 ±5% E24/E96 ±1% E24/E96 ±0.5% Zero ohm jumper	1Ω~22MΩ 1Ω~10MΩ 10Ω~1MΩ < 0.05Ω	±100 ±200	10Ω < R ≤ 10MΩ 1Ω ≤ R ≤ 10Ω, 10MΩ < R ≤ 22MΩ	Rated current Max. current	1.0 2.0
RC0603	1/10W	-55°C ~ +155℃	50V	100V	100V					Rated current Max. current	1.0 2.0
RC0805	1/8W	-55°C ~ +155℃	150V	300V	300V					Rated current Max. current	2.0 5.0
RC1206	1/4W	-55°C ~ +155℃	200V	400V	500V					Rated current Max. current	2.0 10.0
RC1210	1/2W	-55°C ~ +155℃	200V	500V	500V					Rated current Max. current	2.0 10.0
RC1218	1W	-55°C ~ +155℃	200V	500V	500V	E24 ±5% E24/E96 ±1% E24/E96 ±0.5% Zero ohm jumper	1Ω~1MΩ 1Ω~1MΩ 10Ω~1MΩ < 0.02Ω			Rated current Max. current	6.0 10.0
RC2010	3/4W	-55°C ~ +155℃	200V	500V	500V	E24 ±5% E24/E96 ±1% E24/E96 ±0.5% Zero ohm jumper	1Ω~22MΩ 1Ω~10MΩ 10Ω~1MΩ < 0.05Ω			Rated current Max. current	2.0 10.0
RC2512	1W	-55°C ~ +155℃	200V	500V	500V					Rated current Max. current	2.0 10.0
Double power RC0805	1/4W	-55°C ~ +180℃	150V	300V	300V	E24 ±5% E24/E96 ±1% Zero ohm jumper	1Ω~100Ω 1Ω~100Ω < 0.05Ω	±200	1Ω ~100Ω	Rated current Max. current	2.0 5.0
Double power RC1206	1/2W	-55°C ~ +180℃	200V	400V	500V					Rated current Max. current	3.0 7.5
Double power RC2512	2W	-55°C ~ +180℃	200V	400V	500V	E24 ±5% E24/E96 ±1% Zero ohm jumper	1Ω~150Ω 1Ω~150Ω < 0.05Ω	±200	1Ω ~150Ω	Rated current Max. current	6.0 15.0

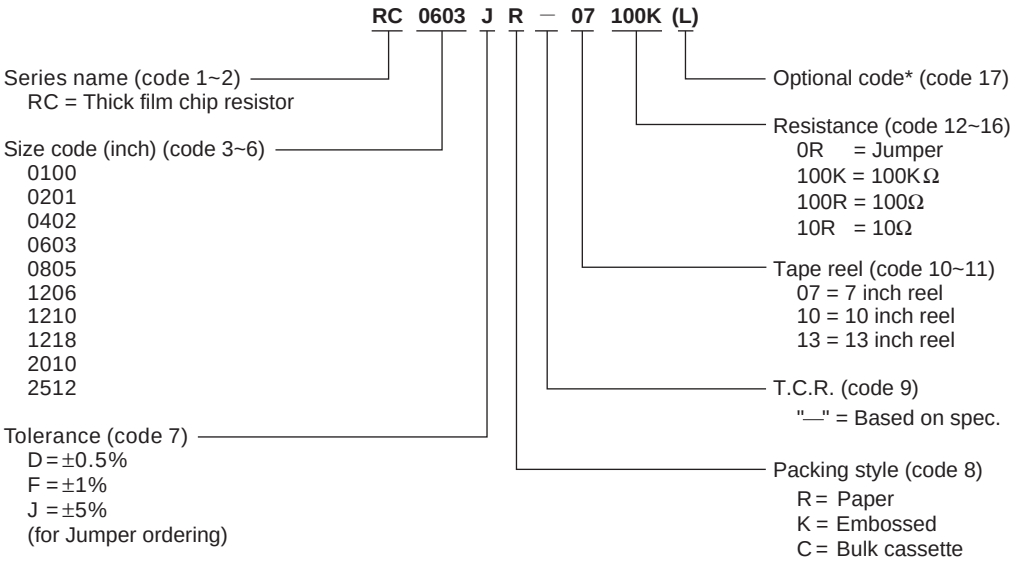
Environmental characteristics				
Performance test		Test method	Procedure	Requirements
Life		MIL-STD-202G-method 108A	1,000 hours at 70±5℃ applied RCWV 1.5 hours on, 0.5 hours off, still air required	±(3%+ 0.05Ω) for 01005 ±(2%+ 0.05Ω) for others <100MΩ for jumper
High temperature exposure		MIL-STD-202G-method 108A	1,000 hours at maximum operating temperature depending on specification, unpowered	±(1%+ 0.05Ω) <50MΩ for jumper
Moisture resistance		MIL-STD-202G-method 106F	Each temp. / humidity cycle is defined at 8 hours (method 106F), 3 cycles / 24 hours for 10d with 25℃ / 65℃ 95% R.H	±(3%+ 0.05Ω) for 01005 ±(2%+ 0.05Ω) for others <100MΩ for jumper
Thermal shock		MIL-STD-202G-method 107G	LCT / UCT Number of cycles required is 300. Maximum transfer time is 20 seconds.	±(0.5%+ 0.05Ω) for 10K to 10M ±(1%+ 0.05Ω) for others
Solderability	Wetting	IPC/JEDECJ-STD-002B testB	Electrical test not required. magnification 50X. Leadfree solder bath at 245±3℃, Dipping time: 3±0.5 seconds	Well tinned (≥95% covered)
	Resistance to soldering heat	MIL-STD-202G-method 210F	Leadfree solder, 270℃, 10 seconds immersion time	±(1%+ 0.05Ω) <50MΩ for jumper
Short time overload		MIL-R-55342D-para 4.7.5	2.5 times RCWV or maximum overload voltage whichever is less for 5 seconds at room temp.	±(2%+ 0.05Ω) <50MΩ for jumper

R-chip General Purpose Thick Film / RC series								
General purpose Thick Film / RC series								
Size: inch (mm)	0201 (0603)		0402 (1005)		0603 (1608)		0805 (2012)	
Power P_{70}	1/20W		1/16W		1/10W		1/8W	
Tolerance	±5%	±1%	±5%	±1%	±5%	±1%	±5%	±1%
Resistance Range	E24	E24/E96	E24	E24/E96	E24	E24/E96	E24	E24/E96
Jumper								
1 Ω								
1.5 Ω								
2.2 Ω								
3.3 Ω								
4.7 Ω								
6.8 Ω								
10 Ω								
15 Ω								
22 Ω								
33 Ω								
47 Ω								
68 Ω								
100 Ω								
150 Ω								
220 Ω								
330 Ω								
470 Ω								
680 Ω								
1 kΩ								
1.5 kΩ								
2.2 kΩ								
3.3 kΩ								
4.7 kΩ								
6.8 kΩ								
10 kΩ								
15 kΩ								
22 kΩ								
33 kΩ								
47 kΩ								
68 kΩ								
100 kΩ								
150 kΩ								
220 kΩ								
330 kΩ								
470 kΩ								
680 kΩ								
1 MΩ								
1.5 MΩ								
2.2 MΩ								
3.3 MΩ								
4.7 MΩ								
6.8 MΩ								
10 MΩ								
15 MΩ								
22 MΩ								

Note: Products with lead free terminations meet RoHS requirements.(Non of the forbidden materials are used in products / production) The Pb-glass contained in electrodes , resistor element and glass is exempted by RoHS.

Global part number - Preferred type

Ordering example: RC0603JR-07100K(L)



***Note:** 1. All our RSMD products meet RoHS compliant. "LFP" of the internal 2D reel label mentions "Lead Free Process"
2. On customized label, "LFP" or specific symbol printed and the optional "L" at the end of CTC / 12NC can be added (both are on customer request)

Ordering information - Phycomp world wide - Traditional type

General purpose thick film / RC series

Size: inch (mm)		0201 (0603)		0402 (1005)		0603 (1608)		0805 (2012)	
Power		1/20W		1/16W		1/10W		1/8W	
Tolerance		+5%	+1%	+5%	+1%	+5%	+1%	+5%	+1%
Resistance		E24	E24/E96	E24	E24/E96	E24	E24/E96	E24	E24/E96
Packing		paper tape		paper tape		paper tape		paper tape	
Quantity	5 000	---	---	---	---	2322 702 60...L	2322 704 6....L	2322 730 61...L	2322 734 6....L
	10 000	2322 803 70...L	2322 806 7....L	2322 705 70...L	2322 706 7....L	2322 702 70...L	2322 704 7....L	2322 730 71...L	2322 734 7....L
	20 000	2322 806 80...L	2322 806 8....L	---	---	2322 702 81...L	2322 704 8....L	2322 730 81...L	2322 734 8....L
	50 000	2322 803 60...L	2322 806 6....L	2322 705 87...	2322 706 8....L	---	---	---	---
Jumper	5 000	---	---	---	---	2322 702 96001L	---	2322 730 91002L	---
	10 000	2322 803 91001L	---	2322 705 91001L	---	2322 702 97001L	---	2322 730 91003L	---
	20 000	---	---	---	---	2322 702 92002L	---	2322 730 92002L	---
	50 000	---	---	2322 705 91007L	---	---	---	---	---

For ordering rules: See page 107 for E24/E96 values and the last 4 or 3 digits of the 12NC catalogue number.

Ordering information - Phycomp North America - Traditional type

Refer to page 106.

R-Chip General Purpose Thick Film / RC series										
General Purpose Thick Film / RC series										
Size: inch (mm)	1206 (3216)		1210 (3225)		1218 (3248)		2010 (5025)		2512 (6432)	
Power P_{70}	1/4W		1/2W		1W		3/4W		1W	
Tolerance	±5%	±1%	±5%	±1%	±5%	±1%	±5%	±1%	±5%	±1%
Resistance Range	E24	E24/E96	E24	E24/E96	E24	E24/E96	E24	E24/E96	E24	E24/E96
Jumper										
1 Ω										
1.5 Ω										
2.2 Ω										
3.3 Ω										
4.7 Ω										
6.8 Ω										
10 Ω										
15 Ω										
22 Ω										
33 Ω										
47 Ω										
68 Ω										
100 Ω										
150 Ω										
220 Ω										
330 Ω										
470 Ω										
680 Ω										
1 kΩ										
1.5 kΩ										
2.2 kΩ										
3.3 kΩ										
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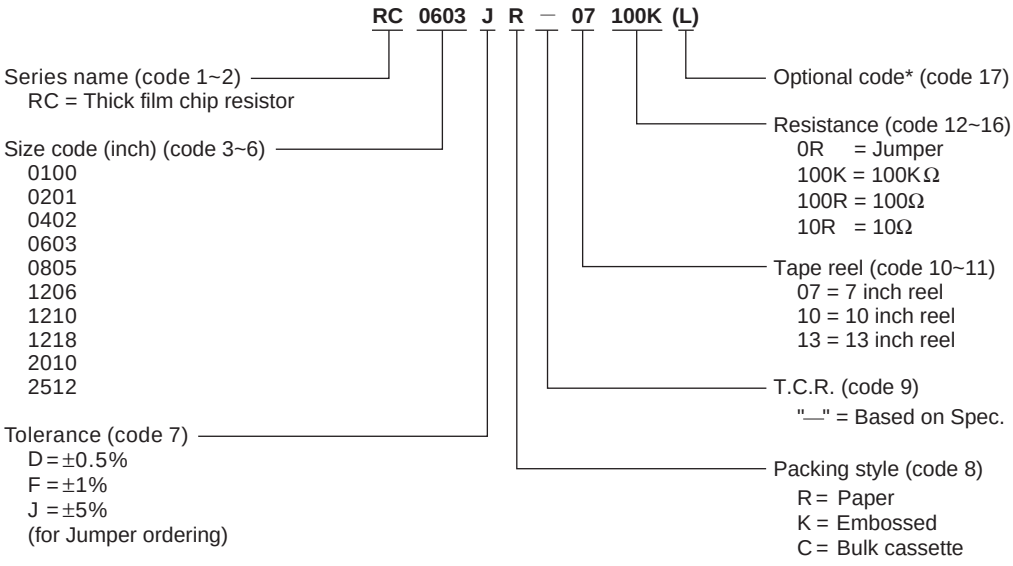
68 kΩ										
100 kΩ										
150 kΩ										
220 kΩ										
330 kΩ										
470 kΩ										
680 kΩ										
1 MΩ										
1.5 MΩ										
2.2 MΩ										
3.3 MΩ										
4.7 MΩ										
6.8 MΩ										
10 MΩ										
15 MΩ										
22 MΩ										
Remark										

Note: Products with lead free terminations meet RoHS requirements.(Non of the forbidden materials are used in products / production) The Pb-glass contained in electrodes , resistor element and glass is exempted by RoHS.

Global part number - Preferred type

Ordering example: RC0603JR-07100K(L)



***Note:** 1. All our RSMD products meet RoHS compliant. "LFP" of the internal 2D reel label mentions "Lead Free Process"
2. On customized label, "LFP" or specific symbol printed and the optional "L" at the end of CTC / 12NC can be added (both are on customer request)

Ordering information - Phycomp world wide - Traditional type

General purpose thick film / RC series

Size: inch (mm)		1206 (3216)		1210 (3225)		1218 (3248)		2010 (5025)		2512 (6432)	
Power		1/4W		1/2W		1W		3/4W		1W	
Tolerance		+5%	+1%	+5%	+1%	+5%	+1%	+5%	+1%	+5%	+1%
Resistance		E24	E24/E96	E24	E24/E96	E24	E24/E96	E24	E24/E96	E24	E24/E96
Packing		paper tape		paper tape		paper tape		paper tape		paper tape	
Quantity	4 000	---	---	---	---	2322 735 64...L	2322 735 7....L	2322 760 60...L	2322 761 6....L	2322 762 60...L	2322 763 6....L
	5 000	2322 711 61...L	2322 724 6....L	2390 735 70...L	2390 735 3....L	---	---	---	---	---	---
	10 000	2322 711 51...L	2322 724 7....L	---	---	---	---	---	---	---	---
	20 000	2322 711 81...L	2322 724 8....L	2390 735 71...L	2390 735 5....L	---	---	---	---	---	---
Jumper	4 000	---	---	---	---	2322 735 90007L	---	2322 760 90003L	---	2322 762 90000L	---
	5 000	2322 711 91032L	---	2390 735 90001L	---	---	---	---	---	---	---
	10 000	2322 711 91005L	---	---	---	---	---	---	---	---	---
	20 000	2322 711 92004L	---	---	---	---	---	---	---	---	---

For ordering rules: See page 107 for E24/E96 values and the last 4 or 3 digits of the 12NC catalogue number.

Ordering information - Phycomp North America - Traditional type

Refer to page 106.

FEATURES

RT series

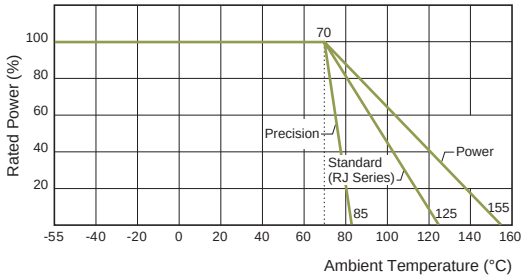
- High precision - high stability
- Low TCR / low noise
- High accuracy (±0.05%, ±0.1%, ±0.25%, ±0.5%)

RJ series

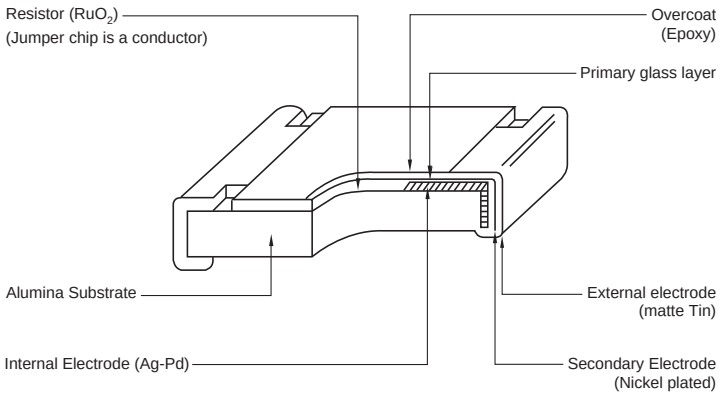
- General purpose
- TCR : ±50ppm/℃
- Tolerance : ±1%

Derating curve

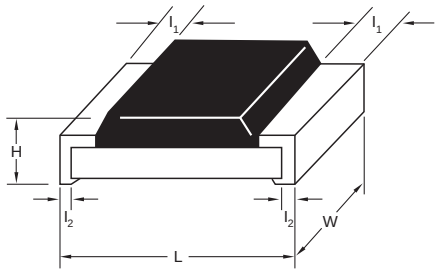
Maximum dissipation (P) in percentage of rated power as a function of the operating ambient temperature (T_{amb})



Construction



Dimensions



unit: mm

TYPE	L	W	H	I_1	I_2
RT/RJ0402	1.00 ±0.10	0.50 ±0.05	0.30 ±0.05	0.20 ±0.10	0.25 ±0.10
RT/RJ0603	1.60 ±0.10	0.80 ±0.10	0.45 ±0.10	0.25 ±0.15	0.25 ±0.15
RT/RJ0805	2.00 ±0.10	1.25 ±0.10	0.50 ±0.10	0.35 ±0.20	0.35 ±0.20
RT/RJ1206	3.10 ±0.10	1.60 ±0.10	0.55 ±0.10	0.45 ±0.20	0.40 ±0.20
RT/RJ1210	3.10 ±0.10	2.60 ±0.15	0.50 ±0.10	0.50 ±0.20	0.50 ±0.20
RT/RJ2010	5.00 ±0.10	2.50 ±0.15	0.55 ±0.10	0.60 ±0.20	0.50 ±0.20
RT/RJ2512	6.35 ±0.10	3.20 ±0.15	0.55 ±0.10	0.60 ±0.20	0.50 ±0.20

Electrical characteristics									
Style	Operating mode	Power P_{70}	Operating Temp. range	MWV	RCOV	DWV	Resistance range & tolerance		TCR (ppm/℃)
RT0402	Precision	1/64W	-10℃ ~ +85℃ for Precision -55℃ ~ +125℃ for Standard -55℃ ~ +155℃ for Power	12.5V	25V	75V	E24/E96 ±0.05%, ±0.1% ±0.25%, ±0.5%, ±1%	10Ω ≤ R ≤ 1MΩ	±50, ±25, ±15, ±10
	Standard	1/16W		50V	100V	75V			
	Power	1/10W		50V	100V	75V			
RT0603	Precision	1/32W		25V	50V	100V		10Ω ≤ R ≤ 1MΩ	
	Standard	1/10W		75V	150V	100V			
	Power	1/8W		15V	30V	30V			
RT0805	Precision	1/20W		15V	30V	30V		10Ω ≤ R ≤ 1MΩ	
	Standard	1/8W		15V	30V	30V			
	Power	1/5W		15V	30V	30V			
RT1206	Precision	1/10W		15V	30V	30V			
	Standard	1/8W		15V	30V	30V			
	Power	1/4W		15V	30V	30V			
RT1210	Precision	1/8W		15V	30V	30V		10Ω ≤ R ≤ 1MΩ	
	Standard	1/4W		15V	30V	30V			
	Power	2/5W		15V	30V	30V			
RT2010	Standard	1/2W		15V	30V	30V		10Ω ≤ R ≤ 1MΩ	
	Power	3/4W		15V	30V	30V			
RT2512	Standard	3/4W		15V	30V	30V			
	Power	1W		15V	30V	30V			
RJ0402	---	1/16W	-55℃ ~ +125℃	15V	30V	30V	E24/E96 ±1%	10Ω ≤ R ≤ 1MΩ	±50
RJ0603	---	1/16W		15V	30V	30V		10Ω ≤ R ≤ 1MΩ	
RJ0805	---	1/10W		15V	30V	30V		10Ω ≤ R ≤ 1MΩ	
RJ1206	---	1/8W		15V	30V	30V			
RJ1210	---	1/4W		15V	30V	30V		10Ω ≤ R ≤ 1MΩ	
RJ2010	---	1/2W		15V	30V	30V			
RJ2512	---	3/4W		15V	30V	30V			

Environmental characteristics				
Performance test		Test method	Procedure	Requirements
Life		MIL-STD-202G-method 108A	1,000 hours at 70±5℃ applied RCWV 1.5 hours on, 0.5 hours off, still air required	±(0.1%+ 0.05Ω) for precision ±(0.25%+ 0.05Ω) for standard ±(0.5%+ 0.05Ω) for power and RJ
High temperature exposure		MIL-STD-202G-method 108A	1,000 hours at maximum operating temperature depending on specification, unpowered	
Moisture resistance		MIL-STD-202G-method 106F	Each temp. / humidity cycle is defined at 8 hours (method 106F), 3 cycles / 24 hours for 10d with 25℃ / 65℃ 95% R.H	
Thermal shock		MIL-STD-202G-method 107G	LCT / UCT Number of cycles required is 300. Maximum transfer time is 20 seconds.	
Short time overload		MIL-R-55342D-para 4.7.5	2.5 times RCWV or maximum overload voltage whichever is less for 5 seconds at room temp.	±(0.1%+ 0.05Ω) for precision ±(0.25%+ 0.05Ω) for standard ±(0.5%+ 0.05Ω) for power and RJ
Solderability	Resistance to soldering heat	MIL-STD-202G-method 210F	Leadfree solder, 270℃, 10 seconds immersion time	
	Wetting	IPC/JEDECJ-STD-002B testB	Electrical test not required. magnification 50X. Leadfree solder bath at 245±3℃, Dipping time: 3±0.5 seconds	Well tinned (≥95% covered) for RT & RJ

R-Chip High precision - high stability								
High precision - high stability								
Size: inch (mm)	0402 (1005)				0603 (1608)			
Operation mode	Precision	Standard	Power		Precision	Standard	Power	
Power P_{70}	1/64W	1/16W	1/10W		1/32W	1/10W	1/8W	
Temp. range (°C)	-10 to+85	-55 to+125	-55 to+155		-10 to+85	-55 to+125	-55 to+155	
Tolerance	±1%	±0.5%	±0.25%	±0.1%	±1%	±0.5%	±0.25%	±0.1%
Resistance range	E24/E96	E24/E96	E24/E96	E24/E96	E24/E96	E24/E96	E24/E96	E24/E96
1 Ω								
1.5 Ω								
2.2 Ω								
3.3 Ω								
4.7 Ω								
6.8 Ω								
10 Ω								
15 Ω								
22 Ω								
33 Ω								
47 Ω								
68 Ω								
100 Ω								
150 Ω								
220 Ω								
330 Ω								
470 Ω								
680 Ω								
1 kΩ								
1.5 kΩ								
2.2 kΩ								
3.3 kΩ								
4.7 kΩ								
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22 kΩ								
33 kΩ								
47 kΩ								
68 kΩ								
100 kΩ								
150 kΩ								
220 kΩ								
330 kΩ								
470 kΩ								
680 kΩ								
Remark								

Note:
1. Resistance range is upper to 2M Ohm (depend on size) on request
2. Value in "Resistance" means the minimum one.
3. Resistance E192; special value on request
4. Tolerance=±0.05%, TCR=±10 ppm/°C; ±15 ppm/°C on Request
5. Products with lead free terminations meet RoHS requirements.(Non of the forbidden materials are used in products / production) The Pb-glass contained in electrodes , resistor element and glass is exempted by RoHS.
6. For detail data please refer to right side "Thin Film Product Range against Tolerance / TCR".

Global part number - Preferred type

Ordering example: RT0603DRE07100K(L)

RT 0603 D R E 07 100K (L)

- Series name (code 1~2)
  - RT = Thick film chip resistor
- Size code (inch) (code 3~6)
  - 0402
  - 0603
  - 0805
  - 1206
  - 1210
  - 2010
  - 2512
- Tolerance (code 7)
  - W = ±0.05%
  - B = ±0.1%
  - C = ±0.25%
  - D = ±0.5%
  - F = ±1%
- Packing style (code 8)
  - R = Paper
  - K = Embossed
- T.C.R. (code 9)
  - B = ±10ppm/°C
  - C = ±15ppm/°C
  - D = ±25ppm/°C
  - E = ±50ppm/°C
- Tape reel (code 10~11)
  - 07 = 7 inch reel
  - 10 = 10 inch reel
  - 13 = 13 inch reel
- Resistance (code 12~16)
  - 100K = 100KΩ
  - 10K = 10KΩ
  - 100R = 100RΩ
  - 10R = 10RΩ
- Optional code* (code 17)

***Note:** 1. All our RSMD products meet RoHS compliant. "LFP" of the internal 2D reel label mentions "Lead Free Process"
2. On customized label, "LFP" or specific symbol printed and the optional "L" at the end of CTC / 12NC can be added (both are on customer request)

Ordering information - Phycomp world wide - Traditional type

High precision - High stability								
Size: inch (mm)	**0402 (1005)**				**0603 (1608)**			
Power	1/16W				1/10W			
Tolerance	±1%	±0.5%	±0.25%	±0.1%	±1%	±0.5%	±0.25%	±0.1%
Resistance	E24/E96				E24/E96			
Packing	paper tape				paper tape			
Quantity TC25 5 000	---	---	---	---	2390 604 7....L	2390 604 6....L	2390 604 5....L	2390 604 4....L
TC50 5 000	---	---	---	---	2390 404 7....L	2390 404 6....L	2390 404 5....L	2390 404 4....L
TC25 10 000	2390 607 7....L	2390 607 6....L	2390 607 5....L	2390 607 4....L	---	---	---	---
TC50 10 000	2390 407 7....L	2390 407 6....L	2390 407 5....L	2390 407 4....L	---	---	---	---

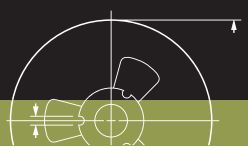
For ordering rules: See page 107 for E24/E96 values and the last 4 or 3 digits of the 12NC catalogue number.

Ordering information - Phycomp North America - Traditional type

Refer to page 106.

Thin film product range against tolerance / T.C.R. (ordering code)

Tolerance	±0.05% (W)			±0.1% (B)				±0.25% (C)				±0.5% (D)		±1% (F)
T.C.R. (ppm/°C)	±10 (B)	±15 (C)	±25 (D)	±10 (B)	±15 (C)	±25 (D)	±50 (E)	±10 (B)	±15 (C)	±25 (D)	±50 (E)	±25 (D)	±50 (E)	±50 (E)
RT0402	---	---	---	10R~100K	10R~100K	10R~121K	10R~121K	10R~100K	10R~100K	10R~121K	10R~121K	10R~121K	10R~121K	10R~121K
RT0603	1k~47k	1k~47k	1k~47k	10R~100K	10R~100K	10R~681K	10R~681K	10R~100K	10R~100K	10R~681K	5R1~681K	10R~681K	5R1~681K	5R1~681K
RT0805	100R~100K	100R~100K	100R~100K	10R~100K	10R~100K	10R~1.5M	10R~1.5M	10R~100K	10R~100K	10R~1.5M	5R1~1.5M	10R~1.5M	5R1~1.5M	5R1~1.5M
RT1206	100R~100K	100R~100K	100R~100K	10R~100K	10R~100K	10R~1.5M	10R~1.5M	10R~100K	10R~100K	10R~1.5M	5R1~1.5M	10R~1.5M	5R1~1.5M	5R1~1.5M
RT1210	100R~100K	100R~100K	100R~100K	10R~100K	10R~100K	10R~1M	10R~1M	10R~100K	10R~100K	10R~1M	5R1~1M	10R~1M	5R1~1M	5R1~1M
RT2010	100R~100K	100R~100K	100R~100K	10R~100K	10R~100K	10R~1M	10R~1M	10R~100K	10R~100K	10R~1M	10R~1M	10R~1M	10R~1M	10R~1M
RT2512	100R~100K	100R~100K	100R~100K	10R~100K	10R~100K	10R~1M	10R~1M	10R~100K	10R~100K	10R~1M	10R~1M	10R~1M	10R~1M	10R~1M



Resistor Chip Selection Charts

High precision - high stability, 0805 to 1210

R-Chip High precision - high stability												
High precision - high stability												
Size: inch (mm)	0805 (2012)				1206 (3216)				1210 (3225)			
Operation mode	Precision	Standard		Power	Precision	Standard		Power	Precision	Standard		Power
Power P_{70}	1/20W	1/8W		1/5W	1/10W	1/8W		1/4W	1/8W	1/4W		2/5W
Temp. range (°C)	-10 to+85	-55 to+125		-55 to+155	-10 to+85	-55 to+125		-55 to+155	-10 to+85	-55 to+125		-55 to+155
Tolerance	±1%	±0.5%	±0.25%	±0.1%	±1%	±0.5%	±0.25%	±0.1%	±1%	±0.5%	±0.25%	±0.1%
Resistance range	E24/E96	E24/E96	E24/E96	E24/E96	E24/E96	E24/E96	E24/E96	E24/E96	E24/E96	E24/E96	E24/E96	E24/E96
1 Ω												
1.5 Ω												
2.2 Ω												
3.3 Ω												
4.7 Ω												
6.8 Ω												
10 Ω												
15 Ω												
22 Ω												
33 Ω												
47 Ω												
68 Ω												
100 Ω												
150 Ω												
220 Ω												
330 Ω												
470 Ω												
680 Ω												
1 kΩ												
1.5 kΩ												
2.2 kΩ												
3.3 kΩ												
4.7 kΩ												
6.8 kΩ												
10 kΩ												
15 kΩ												
22 kΩ												
33 kΩ												
47 kΩ												
68 kΩ												
100 kΩ												
150 kΩ												
220 kΩ												
330 kΩ												
470 kΩ												
680 kΩ												
1 MΩ												
1.5 MΩ												
Remark												

Note:
1. Value in "Resistance" means the minimum one.
2. Jumper; Resistance E192; special value on request
3. TCR=±10ppm/°C; ±15ppm/°C on Request
4. Tolerance=±0.01%; ±0.05% on Request
5. Products with lead free terminations meet RoHS requirements.(Non of the forbidden materials are used in products / production) The Pb-glass contained in electrodes , resistor element and glass is exempted by RoHS.
6. For detail data please refer to right side "Thin Film Product Range against Tolerance / TCR".

Global part number - Preferred type

Ordering example: RT0805DRE07100K(L)

RT 0805 D R E 07 100K (L)

- Series name (code 1~2)
  - RT = Thick film chip resistor
- Size code (inch) (code 3~6)
  - 0402
  - 0603
  - 0805
  - 1206
  - 1210
  - 2010
  - 2512
- Tolerance (code 7)
  - W = ±0.05%
  - B = ±0.1%
  - C = ±0.25%
  - D = ±0.5%
  - F = ±1%
- Packing style (code 8)
  - R = Paper
  - K = Embossed
- T.C.R. (code 9)
  - B = ±10ppm/°C
  - C = ±15ppm/°C
  - D = ±25ppm/°C
  - E = ±50ppm/°C
- Tape reel (code 10~11)
  - 07 = 7 inch reel
  - 10 = 10 inch reel
  - 13 = 13 inch reel
- Resistance (code 12~16)
  - 100K = 100KΩ
  - 10K = 10KΩ
  - 100R = 100RΩ
  - 10R = 10RΩ
- Optional code* (code 17)

***Note:** 1. All our RSMD products meet RoHS compliant. "LFP" of the internal 2D reel label mentions "Lead Free Process"
2. On customized label, "LFP" or specific symbol printed and the optional "L" at the end of CTC / 12NC can be added (both are on customer request)

Ordering information - Phycomp world wide - Traditional type

High precision - High stability

Size: inch (mm)		0805 (2012)				1206 (3216)				1210 (3225)			
Power		1/8W				1/4W				1/2W			
Tolerance		±1%	±0.5%	±0.25%	±0.1%	±1%	±0.5%	±0.25%	±0.1%	±1%	±0.5%	±0.25%	±0.1%
Resistance		E24/E96				E24/E96				E24/E96			
Packing		paper tape				paper tape				paper tape			
Quantity	TC10 5 000	2390 801 7....L	2390 801 6....L	2390 801 5....L	2390 701 4....L	2390 811 7....L	2390 811 6....L	2390 811 5....L	2390 811 4....L	2390 812 7....L	2390 812 6....L	2390 812 5....L	2390 812 4....L
	TC15 5 000	2390 701 7....L	2390 701 6....L	2390 701 5....L	2390 801 4....L	2390 711 7....L	2390 711 6....L	2390 711 5....L	2390 711 4....L	2390 712 7....L	2390 712 6....L	2390 712 5....L	2390 512 4....L
	TC25 5 000	2390 601 7....L	2390 601 6....L	2390 601 5....L	2390 601 4....L	2390 611 7....L	2390 611 6....L	2390 611 5....L	2390 611 4....L	2390 612 7....L	2390 612 6....L	2390 612 5....L	2390 612 4....L
	TC50 5 000	2390 401 7....L	2390 401 6....L	2390 401 5....L	2390 401 4....L	2390 411 7....L	2390 411 6....L	2390 411 5....L	2390 411 4....L	2390 412 7....L	2390 412 6....L	2390 412 5....L	2390 512 4....L

For ordering rules: See page 105 for E24/E96 values and the last 4 or 3 digits of the 12NC catalogue number.

Ordering information - Phycomp North America - Traditional type

Refer to page 106.

Thin film product range against tolerance / TCR

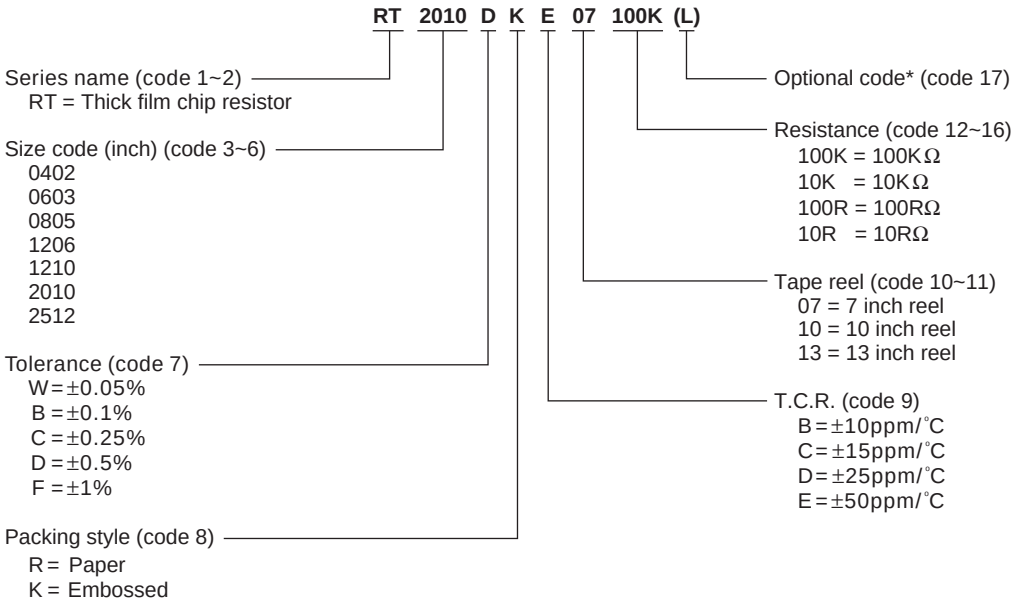
Tolerance	±0.05% (W)			±0.1% (B)				±0.25% (C)				±0.5% (D)		±1% (F)
T.C.R. (ppm/ °C)	±10 (B)	±15 (C)	±25 (D)	±10 (B)	±15 (C)	±25 (D)	±50 (E)	±10 (B)	±15 (C)	±25 (D)	±50 (E)	±25 (D)	±50 (E)	±50 (E)
RT0402	---	---	---	10R~100K	10R~100K	10R~121K	10R~121K	10R~100K	10R~100K	10R~121K	10R~121K	10R~121K	10R~121K	10R~121K
RT0603	1k~47k	1k~47k	1k~47k	10R~100K	10R~100K	10R~681K	10R~681K	10R~100K	10R~100K	10R~681K	5R1~681K	10R~681K	5R1~681K	5R1~681K
RT0805	100R~100K	100R~100K	100R~100K	10R~100K	10R~100K	10R~1.5M	10R~1.5M	10R~100K	10R~100K	10R~1.5M	5R1~1.5M	10R~1.5M	5R1~1.5M	5R1~1.5M
RT1206	100R~100K	100R~100K	100R~100K	10R~100K	10R~100K	10R~1.5M	10R~1.5M	10R~100K	10R~100K	10R~1.5M	5R1~1.5M	10R~1.5M	5R1~1.5M	5R1~1.5M
RT1210	100R~100K	100R~100K	100R~100K	10R~100K	10R~100K	10R~1M	10R~1M	10R~100K	10R~100K	10R~1M	5R1~1M	10R~1M	5R1~1M	5R1~1M
RT2010	100R~100K	100R~100K	100R~100K	10R~100K	10R~100K	10R~1M	10R~1M	10R~100K	10R~100K	10R~1M	10R~1M	10R~1M	10R~1M	10R~1M
RT2512	100R~100K	100R~100K	100R~100K	10R~100K	10R~100K	10R~1M	10R~1M	10R~100K	10R~100K	10R~1M	10R~1M	10R~1M	10R~1M	10R~1M

R-Chip High precision - high stability								
High precision - high stability								
Size: inch (mm)	2010 (5025)				2512 (6432)			
Operation mode	Standard		Power		Standard		Power	
Power P_{70}	1/2W		3/4W		3/4W		1W	
Temp. range (°C)	-55°C to+125°C		-55°C to+155°C		-55°C to+125°C		-55°C to+155°C	
Tolerance	±1%	±0.5%	±0.25%	±0.1%	±1%	±0.5%	±0.25%	±0.1%
Resistance range	E24/E96	E24/E96	E24/E96	E24/E96	E24/E96	E24/E96	E24/E96	E24/E96
10 Ω								
15 Ω								
22 Ω								
33 Ω								
47 Ω								
68 Ω								
100 Ω								
150 Ω								
220 Ω								
330 Ω								
470 Ω								
680 Ω								
1 kΩ								
1.5 kΩ								
2.2 kΩ								
3.3 kΩ								
4.7 kΩ								
6.8 kΩ								
10 kΩ								
15 kΩ								
22 kΩ								
33 kΩ								
47 kΩ								
68 kΩ								
100 kΩ								
150 kΩ								
220 kΩ								
330 kΩ								
470 kΩ								
680 kΩ								
1 MΩ								
Remark								

Note:
1. Jumper; Resistance E192; special value on request
2. Value in "Resistance" means the minimum one.
3. TCR=±10ppm/°C; ±15ppm/°C on Request
4. Tolerance=±0.01%; ±0.05% on Request
5. Products with lead free terminations meet RoHS requirements.(Non of the forbidden materials are used in products / production) The Pb-glass contained in electrodes , resistor element and glass is exempted by RoHS.
6. For detail data please refer to right side "Thin Film Product Range against Tolerance / TCR".

Global part number - Preferred type

Ordering example: RT2010DKE07100K(L)



***Note:** 1. All our RSMD products meet RoHS compliant. "LFP" of the internal 2D reel label mentions "Lead Free Process"
2. On customized label, "LFP" or specific symbol printed and the optional "L" at the end of CTC / 12NC can be added (both are on customer request)

Ordering information - Phycomp world wide - Traditional type

High precision - High stability								
Size: inch (mm)	**2010 (5025)**				**2512 (6432)**			
Power	1/2W				3/4W			
Tolerance	±1%	±0.5%	±0.25%	±0.1%	±1%	±0.5%	±0.25%	±0.1%
Resistance	E24/E96				E24/E96			
Packing	blister tape				blister tape			
Quantity TC10 4 000	2390 815 7....L	2390 815 6....L	2390 815 5....L	2390 815 4....L	2390 818 7....L	2390 818 6....L	2390 818 5....L	2390 818 4....L
TC15 4 000	2390 731 7....L	2390 731 6....L	2390 731 5....L	2390 731 4....L	2390 735 7....L	2390 735 6....L	2390 735 5....L	2390 735 4....L
TC25 4 000	2390 615 7....L	2390 615 6....L	2390 615 5....L	2390 615 4....L	2390 618 7....L	2390 618 6....L	2390 618 5....L	2390 618 4....L
TC50 4 000	2390 415 7....L	2390 415 6....L	2390 415 5....L	2390 415 4....L	2390 418 7....L	2390 418 6....L	2390 418 5....L	2390 418 4....L

For ordering rules: See page 107 for E24/E96 values and the last 4 or 3 digits of the 12NC catalogue number.

Ordering information - Phycomp North America - Traditional type

Refer to page 106.

Thin film product range against tolerance / TCR

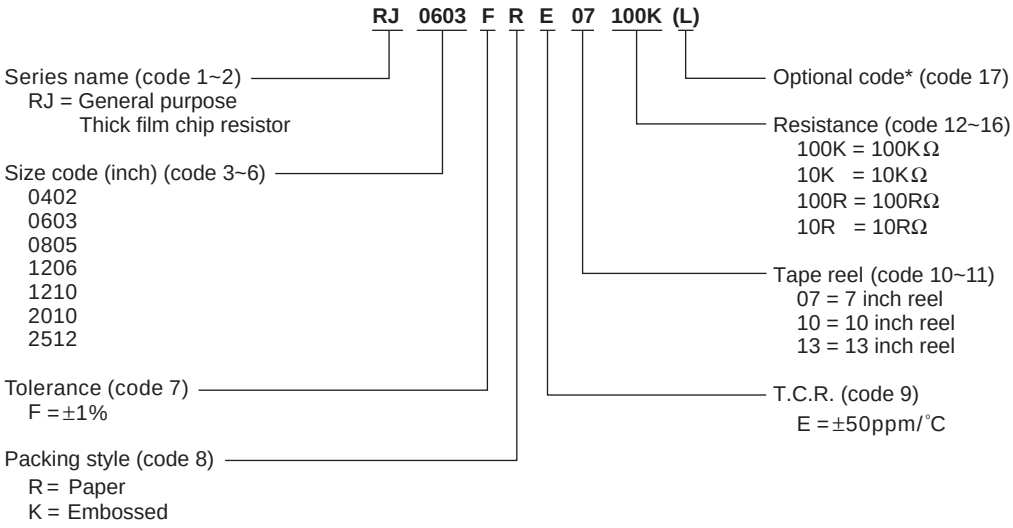
Tolerance	±0.05% (W)			±0.1% (B)				±0.25% (C)				±0.5% (D)		±1% (F)
T.C.R. (ppm/ °C)	±10 (B)	±15 (C)	±25 (D)	±10 (B)	±15 (C)	±25 (D)	±50 (E)	±10 (B)	±15 (C)	±25 (D)	±50 (E)	±25 (D)	±50 (E)	±50 (E)
RT0402	---	---	---	10R~100K	10R~100K	10R~121K	10R~121K	10R~100K	10R~100K	10R~121K	10R~121K	10R~121K	10R~121K	10R~121K
RT0603	1k~47k	1k~47k	1k~47k	10R~100K	10R~100K	10R~681K	10R~681K	10R~100K	10R~100K	10R~681K	5R1~681K	10R~681K	5R1~681K	5R1~681K
RT0805	100R~100K	100R~100K	100R~100K	10R~100K	10R~100K	10R~1.5M	10R~1.5M	10R~100K	10R~100K	10R~1.5M	5R1~1.5M	10R~1.5M	5R1~1.5M	5R1~1.5M
RT1206	100R~100K	100R~100K	100R~100K	10R~100K	10R~100K	10R~1.5M	10R~1.5M	10R~100K	10R~100K	10R~1.5M	5R1~1.5M	10R~1.5M	5R1~1.5M	5R1~1.5M
RT1210	100R~100K	100R~100K	100R~100K	10R~100K	10R~100K	10R~1M	10R~1M	10R~100K	10R~100K	10R~1M	5R1~1M	10R~1M	5R1~1M	5R1~1M
RT2010	100R~100K	100R~100K	100R~100K	10R~100K	10R~100K	10R~1M	10R~1M	10R~100K	10R~100K	10R~1M	10R~1M	10R~1M	10R~1M	10R~1M
RT2512	100R~100K	100R~100K	100R~100K	10R~100K	10R~100K	10R~1M	10R~1M	10R~100K	10R~100K	10R~1M	10R~1M	10R~1M	10R~1M	10R~1M

R-Chip General purpose thin film / RJ Series							
General purpose thin film / RJ series							
Tolerance	±1%						
Temperature Coefficient of Resistance	+-50 ppm/`C						
Size: inch (mm)	0402 (1005)	0603 (1608)	0805 (2012)	1206 (3216)	1210 (3225)	2010 (5025)	2512 (6432)
Power P_{70}	1/16W	1/16W	1/10W	1/8W	1/4W	1/2W	3/4W
Resistance Range	E24/E96	E24/E96	E24/E96	E24/E96	E24/E96	E24/E96	E24/E96
1 Ω							
1.5 Ω							
2.2 Ω							
3.3 Ω							
4.7 Ω							
6.8 Ω							
10 Ω							
15 Ω							
22 Ω							
33 Ω							
47 Ω							
68 Ω							
100 Ω							
150 Ω							
220 Ω							
330 Ω							
470 Ω							
680 Ω							
1 kΩ							
1.5 kΩ							
2.2 kΩ							
3.3 kΩ							
4.7 kΩ							
6.8 kΩ							
10 kΩ							
15 kΩ							
22 kΩ							
33 kΩ							
47 kΩ							
68 kΩ							
100 kΩ							
150 kΩ							
220 kΩ							
330 kΩ							
470 kΩ							
680 kΩ							
1 MΩ							
1.5 MΩ							
Remark							

Note: 1. Value in "Resistance" means the minimum one.
2. Resistance E192; special value on request
3. Products with lead free terminations meet RoHS requirements.(Non of the forbidden materials are used in products / production) The Pb-glass contained in electrodes , resistor element and glass is exempted by RoHS.

Global part number - Preferred type

Ordering example: RJ0603FRE07100K(L)



***Note:** 1. All our RSMD products meet RoHS compliant. "LFP" of the internal 2D reel label mentions "Lead Free Process"
2. On customized label, "LFP" or specific symbol printed and the optional "L" at the end of CTC / 12NC can be added (both are on customer request)

Ordering information - Phycomp world wide - Traditional type

General purpose thick film / RJ series

Size: inch (mm)	0402 (1005)	0603 (1608)	0805 (2012)	1206 (3216)	1210 (3225)	2010 (5025)	2512 (6432)
Power	1/16W	1/16W	1/10W	1/8W	1/4W	1/2W	3/4W
Tolerance	+1%	+1%	+1%	+1%	+1%	+1%	+1%
Resistance	E24/E96	E24/E96	E24/E96	E24/E96	E24/E96	E24/E96	E24/E96
Packing	paper tape	paper tape	paper tape	paper tape	paper tape	blister tape	blister tape
Quantity 4 000	---	---	---	---	---	2390 415 8....L	2390 418 8....L
5 000	---	2390 404 8....L	2390 401 8....L	2390 411 8....L	2390 412 0....L	---	---
10 000	2390 407 8....L	2391 424 8....L	2391 421 8....L	2391 431 8....L	2391 432 8....L	---	---
20 000	2390 427 8....L	2392 444 8....L	2392 441 8....L	2392 451 8....L	2392 412 8....L	---	---
50 000	2390 447 8....L	---	---	---	---	---	---

For ordering rules: See page 107 for E24/E96 values and the last 4 or 3 digits of the 12NC catalogue number.

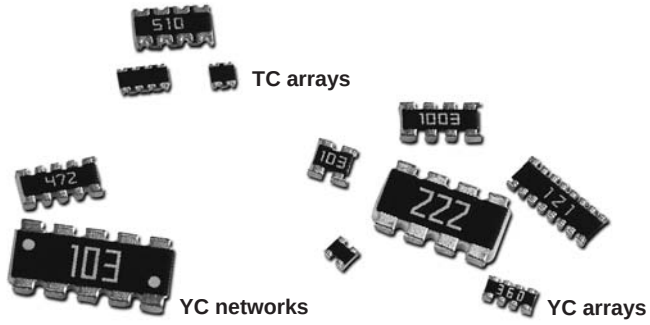
Ordering information - Phycomp North America - Traditional type

Refer to page 106.

Thin film product range against tolerance / TCR

Tolerance	±1% (F)
T.C.R. (ppm/°C)	± 50 (E)
RJ0402	10R~121K
RJ0603	5R1~681K
RJ0805	5R1~1.5M
RJ1206	5R1~1.5M
RJ1210	5R1~1M
RJ2010	10R~1M
RJ2512	10R~1M

Introduction

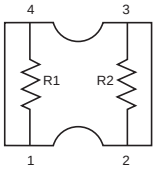


FEATURES

- Integrated discrete chip resistors from 2 to 8 pcs
- More efficient in pick & place application
- Low assembly costs
- Reduced size of final equipment
- Higher component and equipment reliability

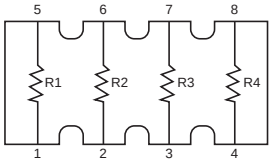
Schematics

YC102/122/162



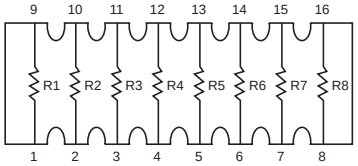
R1 = R2

YC124/164/324



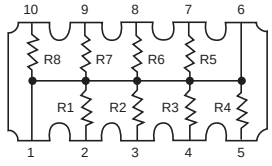
R1 = R2 = R3 = R4

YC248



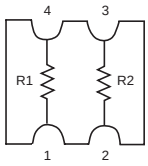
R1 = R2 = R3 = R4 = R5 = R6 = R7 = R8

YC358



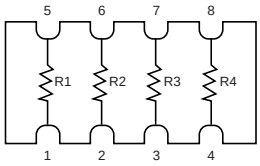
R1 = R2 = R3 = R4 = R5 = R6 = R7 = R8

TC122



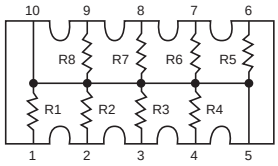
R1 = R2

TC124/164



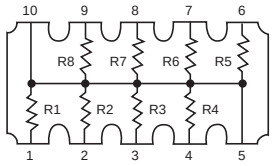
R1 = R2 = R3 = R4

YC158



R1 = R2 = R3 = R4 = R5 = R6 = R7 = R8

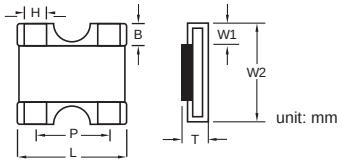
YC358



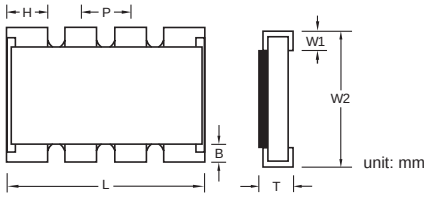
R1 = R2 = R3 = R4 = R5 = R6 = R7 = R8

Dimensions

YC/TC 102/122/162



YC/TC 124/164/324/158/358/248



TYPE	H	B	P	L	T	W_1	W_2
YC102	0.35 ±0.10	0.20 ±0.10	0.50 ±0.05	0.80 ±0.10	0.35 ±0.10	0.15 ±0.10	0.60 ±0.10
YC122	0.21+0.10/–0.05	0.20 ±0.10	0.67 ±0.05	1.00 ±0.10	0.35 ±0.10	0.25 ±0.10	1.00 ±0.10
YC162	0.50 ±0.10	0.30 ±0.10	0.80 ±0.05	1.60 ±0.10	0.60 ±0.10	0.30 ±0.10	1.60 ±0.10
YC124	0.45 ±0.05	0.20 ±0.15	0.50 ±0.05	2.00 ±0.10	0.45 ±0.10	0.30 ±0.15	1.00 ±0.10
YC164	0.65 ±0.05	0.30 ±0.15	0.80 ±0.05	3.20 ±0.15	0.60 ±0.10	0.30 ±0.15	1.60 ±0.15
YC324	1.10 ±0.15	0.50 ±0.20	1.27 ±0.05	5.08 ±0.20	0.60 ±0.10	0.50 ±0.15	3.20 ±0.20
YC248	0.45 ±0.05	0.30 ±0.15	0.50 ±0.05	4.00 ±0.20	0.45 ±0.10	0.40 ±0.15	1.60 ±0.15
TC122	0.30 ±0.05	0.25 ±0.15	0.50 ±0.05	1.00 ±0.10	0.30 ±0.10	0.25 ±0.15	1.00 ±0.10
TC124	0.30 ±0.10	0.20 ±0.10	0.50 ±0.05	2.00 ±0.10	0.40 ±0.10	0.25 ±0.10	1.00 ±0.10
TC164	---	0.30 ±0.15	0.80 ±0.05	3.20 ±0.15	0.60 ±0.10	0.30 ±0.15	1.60 ±0.15
YC158	0.45 ±0.05	0.30 ±0.15	0.64 ±0.05	3.20 ±0.20	0.60 ±0.10	0.35 ±0.15	1.60 ±0.15
YC358	1.10 ±0.15	0.50 ±0.15	1.27 ±0.05	6.40 ±0.20	0.60 ±0.10	0.50 ±0.15	3.20 ±0.20

Electrical characteristics										
Style	Power P_{70}	Operating Temp. range	MWV	RCOV	DWV	Resistance range & tolerance		TCR (ppm/℃)	Jumper criteria (unit:A)	
YC102	1/32W	-55°C ~ +125℃	15V	30V	30V	E24 ±5% E24/E96 ±1% Zero ohm jumper	10Ω ~ 1MΩ 10Ω ~ 1MΩ < 0.05Ω	±200	Rated current Max. current	0.5 1.0
YC122	1/16W	-55°C ~ +125℃	50V	100V	100V	E24 ±5% E24/E96 ±1% Zero ohm jumper	1Ω ~ 1MΩ 10Ω ~ 1MΩ < 0.05Ω		Rated current Max. current	0.5 1.0
YC162	1/16W	-55°C ~ +155℃	50V	100V	100V	E24 ±5% Zero ohm jumper	10Ω ~ 1MΩ < 0.05Ω		Rated current Max. current	1.0 2.0
YC124	1/16W	-55°C ~ +155℃	50V	100V	100V	E24 ±5% E24/E96 ±1% Zero ohm jumper	10Ω ~ 1MΩ 10Ω ~ 1MΩ < 0.05Ω		Rated current Max. current	1.0 2.0
YC164	1/16W	-55°C ~ +155℃	50V	100V	100V	E24 ±5% E24/E96 ±1% Zero ohm jumper	1Ω ~ 1MΩ 1Ω ~ 1MΩ < 0.05Ω		Rated current Max. current	1.0 2.0
YC324	1/8W	-55°C ~ +155℃	200V	500V	500V	E24 ±5% E24/E96 ±1%	10Ω ~ 1MΩ 10Ω ~ 1MΩ		---	---
YC248	1/16W	-55°C ~ +155℃	50V	100V	100V	E24 ±5% E24/E96 ±1% Zero ohm jumper	10Ω ~ 1MΩ 10Ω ~ 1MΩ < 0.05Ω		Rated current Max. current	2.0 10.0
TC122	1/16W	-55°C ~ +125℃	50V	100V	100V	E24 ±5% E24/E96 ±1% Zero ohm jumper	10Ω ~ 1MΩ 10Ω ~ 1MΩ < 0.05Ω		Rated current Max. current	1.0 1.5
TC124	1/16W	-55°C ~ +125℃	50V	100V	100V	E24 ±5% E24/E96 ±1% Zero ohm jumper	10Ω ~ 1MΩ 10Ω ~ 1MΩ < 0.05Ω		Rated current Max. current	1.0 1.5
TC164	1/16W	-55°C ~ +155℃	50V	100V	100V	E24 ±5% E24/E96 ±1% Zero ohm jumper	10Ω ~ 1MΩ 10Ω ~ 1MΩ < 0.05Ω		Rated current Max. current	1.0 2.0
YC158	1/16W	-55°C ~ +155℃	25V	50V	50V	E24 ±5%	10Ω ~ 100K		---	---
YC358	1/16W	-55°C ~ +155℃	50V	100V	100V	E24 ±5%	10Ω ~ 330K		---	---

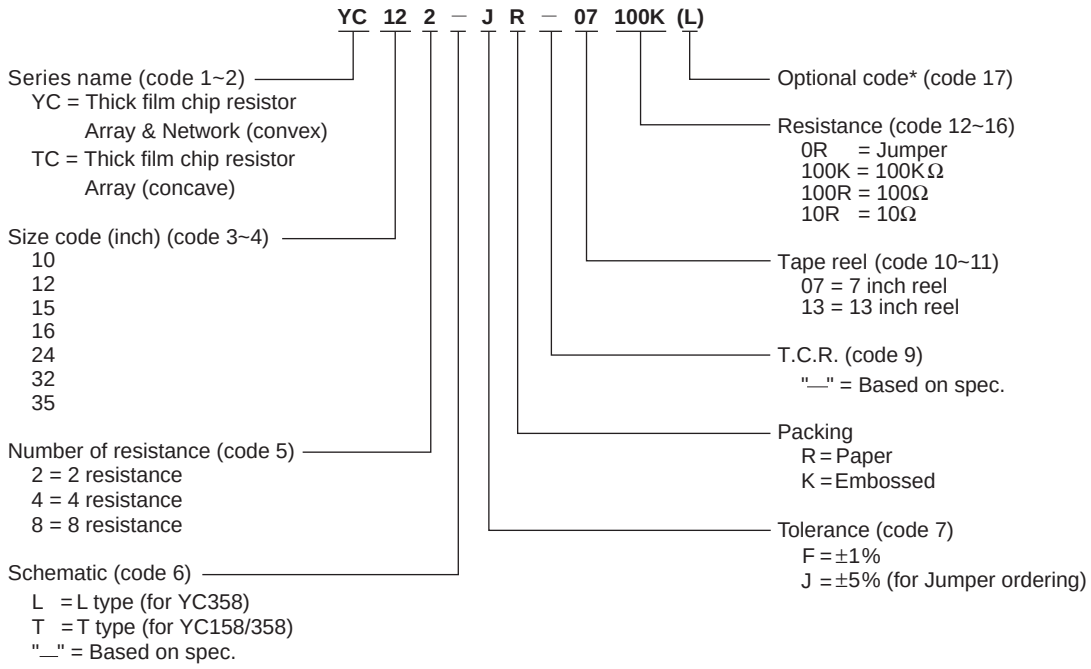
Environmental Characteristics				
Performance test		Test method	Procedure	Requirements
Life		MIL-STD-202G-method 108A	1,000 hours at 70±5℃ applied RCWV 1.5 hours on, 0.5 hours off, still air required	±(2%+ 0.05Ω) <100MΩ for jumper
High temperature exposure		MIL-STD-202G-method 108A	1,000 hours at maximum operating temperature depending on specification, unpowered	±(1%+ 0.05Ω) <50MΩ for jumper
Moisture resistance		MIL-STD-202G-method 106F	Each temp. / humidity cycle is defined at 8 hours (method 106F), 3 cycles / 24 hours for 10d with 25℃ / 65℃ 95% R.H	±(2%+ 0.05Ω) <100MΩ for jumper
Thermal shock		MIL-STD-202G-method 107G	LCT / UCT Number of cycles required is 300. Maximum transfer time is 20 seconds.	±(0.5%+ 0.05Ω) for 10K to 10M ±(1%+ 0.05Ω) for others
Solderability	Wetting	IPC/JEDECJ-STD-002B testB	Electrical test not required. magnification 50X. Leadfree solder bath at 245±3℃, Dipping time: 3±0.5 seconds	Well tinned (≥95% covered)
	Resistance to soldering heat	MIL-STD-202G-method 210F	Leadfree solder, 270℃, 10 seconds immersion time	±(1%+ 0.05Ω) <50MΩ for jumper
Short time overload		MIL-R-55342D-para 4.7.5	2.5 times RCWV or maximum overload voltage whichever is less for 5 seconds at room temp.	±(2%+ 0.05Ω) <50MΩ for jumper

R-Chip Arrays / YC & TC series											
Arrays / YC & TC series	YC 122 series		YC 124 series		YC 248 series		YC/TC164 series			YC 324 series	
Size: inch (mm)	2 x 0402 (1 x 1 mm)		4 x 0402 (2 x 1 mm)		8 x 0602 (4.0 x 1.6 mm)		4 x 0603 (3.2 x 1.6 mm)			4 x 1206 (5.2 x 3.1 mm)	
Power P_{70}	1/16W		1/16W		1/16W		1/16W			1/8W	
Tolerance	±5%	±1%	±5%	±1%	±5%	±1%	±5%	±1%	±5%	±1%	±5%
Type	R-Array/R-Network (convex)	R-Array/R-Network (convex)	R-Array/R-Network (convex)	R-Array/R-Network (convex)	R-Array/R-Network (convex)	R-Array/R-Network (convex)	R-Array/R-Network (convex)	R-Array/R-Network (convex)	R-Array/R-Network (concave)	R-Array/R-Network (convex)	R-Array/R-Network (convex)
Resistance Range	E24	E24/E96	E24	E24/E96	E24	E24/E96	E24	E24/E96	E24	E24/E96	E24
Jumper											
10 Ω											
15 Ω											
22 Ω											
33 Ω											
47 Ω											
68 Ω											
100 Ω											
150 Ω											
220 Ω											
330 Ω											
470 Ω											
680 Ω											
1 kΩ											
1.5 kΩ											
2.2 kΩ											
3.3 kΩ											
4.7 kΩ											
6.8 kΩ											
10 kΩ											
15 kΩ											
22 kΩ											
33 kΩ											
47 kΩ											
68 kΩ											
100 kΩ											
150 kΩ											
220 kΩ											
330 kΩ											
470 kΩ											
680 kΩ											
1 MΩ											
Remark											

Note: 1. Zero Ohm Jumper<0.05 Ohm
2. Value in "Resistance" means the minimum one.
3. 4*0603 (Concave) 1% on request
4. Products with lead free terminations meet RoHS requirements.(Non of the forbidden materials are used in products / production) The Pb-glass contained in electrodes , resistor element and glass is exempted by RoHS.

Global part number - Preferred type

Ordering example: YC122-JR-07100K(L)



***Note:** 1. All our RSMD products meet RoHS compliant. "LFP" of the internal 2D reel label mentions "Lead Free Process"
2. On customized label, "LFP" or specific symbol printed and the optional "L" at the end of CTC / 12NC can be added (both are on customer request)

Ordering information - Phycomp world wide - Traditional type

Array thick film resistor chips

Size: inch / mm	2 x 0402 / 1 x 1		4 x 0402 / 2 x 1		8 x 0402 / 4.0 x 1.6		4 x 0603 / 3.2 x 1.3			4 x 1206 / 5.2 x 3.1
Power	1/16W		1/16W		1/16W		1/16W			1/8W
Tolerance	+5%	+1%	+5%	+1%	+5%	+1%	+5%	+1%	+5%	+5%
Type	R-array/ R-network (convex)	R-array/ R-network (convex)	R-array/ R-network (convex)	R-array/ R-network (convex)	R-array/ R-network (convex)	R-array/ R-network (convex)	R-array/ R-network (convex)	R-array/ R-network (convex)	R-array/ R-network (convex)	R-array/ R-network (convex)
Resistance	E24	E24/E96	E24	E24/E96	E24	E24/E96	E24	E24/E96	E24	E24
Packing	paper tape		paper tape		paper tape		paper tape			blister tape
Quantity 4 000	---	---	---	---	---	---	---	---	---	2350 039 10...L
5 000	---	---	---	---	2350 053 10...L	2350 043 1....L	2350 035 10...L	2350 025 1....L	2350 034 10...L	---
10 000	2350 013 11...L	2350 013 2....L	2350 033 11...L	2350 023 2....L	---	---	---	---	---	---
Jumper 5 000	---	---	---	---	2350 053 91001L	---	2350 035 91001L	---	2350 034 91001L	---
10 000	2350 013 91001L	---	2350 033 91001L	---	---	---	---	---	---	---

For ordering rules: See page 107 for E24/E96 values and the last 4 or 3 digits of the 12NC catalogue number.

Ordering information - Phycomp North America - Traditional type

Refer to page 106.

R-Chip Network / YC series			
Network / YC series	YC158 series	YC358 series	
Size: inch (mm)	0612 (1632)	1225 (3264)	
Power P_{70}	1/16W	1/16W	
Tolerance	±5%	±5%	
Type	T-Type 10 Pin , PIN 5 and PIN 10 no resistance	T-Type 10 Pin , PIN 5 and PIN 10 no resistance	L-Type 10 Pin , PIN 1 and PIN 6 no resistance
Resistance Range	E24	E24	E24
10 Ω			
15 Ω			
22 Ω			
33 Ω			
47 Ω			
68 Ω			
100 Ω			
150 Ω			
220 Ω			
330 Ω			
470 Ω			
680 Ω			
1 kΩ			
1.5 kΩ			
2.2 kΩ			
3.3 kΩ			
4.7 kΩ			
6.8 kΩ			
10 kΩ			
15 kΩ			
22 kΩ			
33 kΩ			
47 kΩ			
68 kΩ			
100 kΩ			
150 kΩ			
220 kΩ			
330 kΩ			
Remark			

Note: 1. 8R-Network, Convex termintions
2. Zero Ohm Jumper<0.05 hm
3. Value in "Resistance" means the minimum one.
4. Products with lead free terminations meet RoHS requirements.(Non of the forbidden materials are used in products / production) The Pb-glass contained in electrodes , resistor element and glass is exempted by RoHS.

Global part number - Preferred type

Ordering example: YC158TJR-07100K(L)

YC 15 8 T J R – 07 100K (L)

- Series name (code 1~2)
  - YC = Thick film chip resistor Array & Network (convex)
  - TC = Thick film chip resistor Array (concave)
- Size code (inch) (code 3~4)
  - 10
  - 12
  - 15
  - 16
  - 24
  - 32
  - 35
- Number of resistance (code 5)
  - 2 = 2 resistance
  - 4 = 4 resistance
  - 8 = 8 resistance
- Schematic (code 6)
  - L = L type (for YC358)
  - T = T type (for YC158/358)
  - "—" = Based on spec.
- Optional code* (code 17)
- Resistance (code 12~16)
  - 0R = Jumper
  - 100K = 100KΩ
  - 100R = 100Ω
  - 10R = 10Ω
- Tape reel (code 10~11)
  - 07 = 7 inch reel
  - 13 = 13 inch reel
- T.C.R. (code 9)
  - "—" = Based on spec.
- Packing
  - R = Paper
  - K = Embossed
- Tolerance (code 7)
  - F = ±1%
  - J = ±5% (for Jumper ordering)

***Note:** 1. All our RSMD products meet RoHS compliant. "LFP" of the internal 2D reel label mentions "Lead Free Process"
2. On customized label, "LFP" or specific symbol printed and the optional "L" at the end of CTC / 12NC can be added (both are on customer request)

Ordering information - Phycomp world wide - Traditional type

Network thick film resistor chips			
Size: inch (mm)	**0612 (1632)**	**1225 (3264)**	
Power	1/32W	1/16W	
Tolerance	+5%	+5%	
Type	T-type 10 Pin/8R PIN 5 and PIN 10 no resistance	T-type 10 Pin/8R PIN 5 and PIN 10 no resistance	L-type 10 Pin/8R PIN 1 and PIN 6 no resistance
Resistance	E24	E24	E24
Packing	paper tape	blister tape	
Quantity 4 000	---	2350 201 10...L	2350 200 10...L
Quantity 5 000	2350 230 10...L	---	---

For ordering rules: See page 107 for E24/E96 values and the last 4 or 3 digits of the 12NC catalogue number.

Ordering information - Phycomp North America - Traditional type

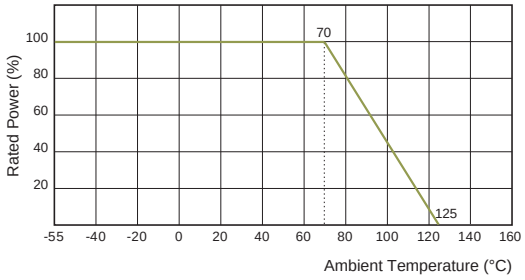
Refer to page 106.

FEATURES

- Precision
- Low TCR
- Reduced size of final equipment
- Lower assembly costs
- Higher component and equipment reliability

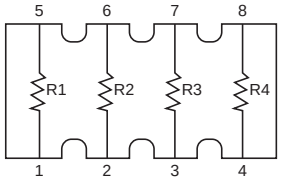
Derating curve

Maximum dissipation (P) in percentage of rated power as a function of the operating ambient temperature (T_{amb})



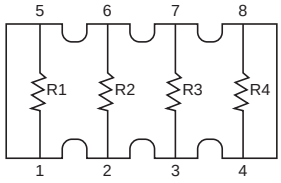
Schematics

TA164



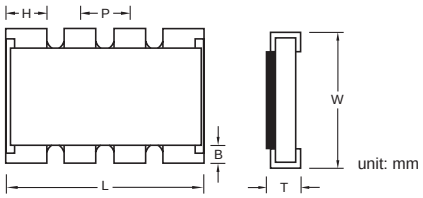
R1 = R2 = R3 = R4

TD164



R1 ≠ R2 ≠ R3 ≠ R4

Dimensions



TYPE	H	B	P	L	T	W
TA164	0.65 ±0.10	0.35 ±0.15	0.80 ±0.15	3.20 ±0.20	0.50 ±0.10	1.60 ±0.10
TD164	0.65 ±0.10	0.35 ±0.15	0.80 ±0.15	3.20 ±0.20	0.50 ±0.10	1.60 ±0.10

Electrical characteristics								
Style	Power P_{70}	Operating Temp. range	MWV	RCOV	DWV	Resistance range & tolerance		TCR (ppm/℃)
TA164	1/16W	-55℃ ~ +125℃	75V	150V	150V	E24 ±2%, ±5% E24/E96 ±1%	10Ω ~ 220KΩ 10Ω ~ 220KΩ	±25, ±50
TD164	1/16W	-55℃ ~ +125℃	75V	150V	150V	E24/E96 ±0.1%, ±0.5%, ±1%	10Ω ~ 330KΩ	±25, ±50

*** Refer to page 105 for ordering code. For more detailed, please contact with sales offices, distributors and representatives in your region.**

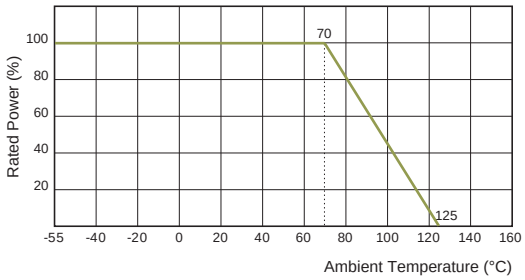
Environmental characteristics				
Performance test		Test method	Procedure	Requirements
Life		MIL-STD-202G-method 108A	1,000 hours at 70±5℃ applied RCWV 1.5 hours on, 0.5 hours off, still air required	±(0.25%+ 0.05Ω) for TD164 ±(0.5%+ 0.05Ω) for TA164
High temperature exposure		MIL-STD-202G-method 108A	1,000 hours at maximum operating temperature depending on specification, unpowered	Satisfy electrical and physical characteristics
Moisture resistance		MIL-STD-202G-method 106F	Each temp. / humidity cycle is defined at 8 hours (method 106F), 3 cycles / 24 hours for 10d with 25℃ / 65℃ 95% R.H	±(0.25%+ 0.05Ω) for TD164 ±(0.5%+ 0.05Ω) for TA164
Thermal shock		MIL-STD-202G-method 107G	LCT / UCT Number of cycles required is 300. Maximum transfer time is 20 seconds.	
Solderability	Wetting	IPC/JEDECJ-STD-002B testB	Electrical test not required. magnification 50X. Leadfree solder bath at 245±3℃, Dipping time: 3±0.5 seconds	Well tinned (≥95% covered)
	Resistance to soldering heat	MIL-STD-202G-method 210F	Leadfree solder, 270℃, 10 seconds immersion time	Satisfy electrical and physical characteristics
Short time overload		MIL-R-55342D-para 4.7.5	2.5 times RCWV or maximum overload voltage whichever is less for 5 seconds at room temp.	±(0.25%+ 0.05Ω) for TD164 ±(0.5%+ 0.05Ω) for TA164

FEATURES

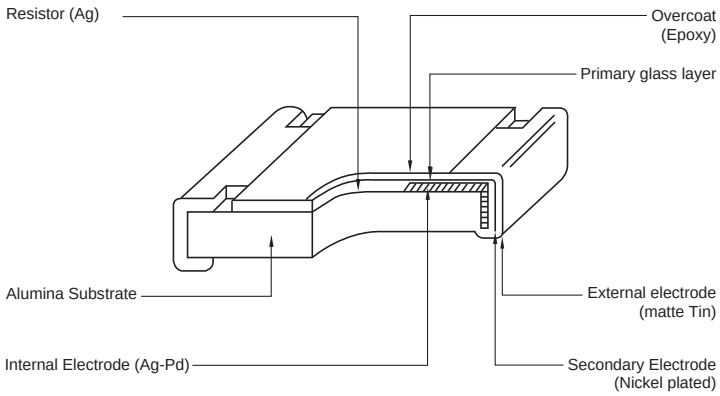
- Current sensing of desktop & notebook PC
- Resistance values down to 0.010Ω
- Highly reliable multilayer electrode construction
- Low inductance
- High speed logic circuits

Derating curve

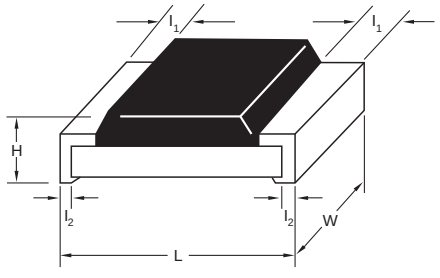
Maximum dissipation (P) in percentage of rated power as a function of the operating ambient temperature (T_{amb})



Construction



Dimensions



unit: mm

TYPE	L	W	H	I_1	I_2
RL0201	0.60 ±0.03	0.30 ±0.03	0.23 ±0.03	0.10 ±0.05	0.15 ±0.05
RL0402	1.00 ±0.10	0.50 ±0.05	0.35 ±0.05	0.20 ±0.10	0.25 ±0.10
RL0603	1.60 ±0.10	0.80 ±0.10	0.45 ±0.10	0.25 ±0.15	0.25 ±0.15
RL0805	2.00 ±0.10	1.25 ±0.10	0.50 ±0.10	0.35 ±0.20	0.35 ±0.20
RL1206	3.10 ±0.10	1.60 ±0.10	0.55 ±0.10	0.45 ±0.20	0.45 ±0.20
RL1210	3.10 ±0.10	2.60 ±0.15	0.50 ±0.10	0.50 ±0.20	0.50 ±0.20
RL1218	3.05 ±0.15	4.60 ±0.10	0.55 ±0.10	0.45 ±0.25	0.50 ±0.25
RL2010	5.00 ±0.10	2.50 ±0.15	0.55 ±0.10	0.60 ±0.20	0.50 ±0.20
RL2512	6.35 ±0.10	3.20 ±0.15	0.55 ±0.10	0.60 ±0.20	0.50 ±0.20

Electrical characteristics					
Style	Power P_{70}	Operating Temp. range	Resistance range & tolerance		TCR (ppm/℃)
RL0201	1/20W	-55℃ ~ +125℃	E24 ±1%, ±2%, ±5%	0.1Ω ~ 0.91Ω	See following table of RL T.C.R.
RL0402	1/16W	-55℃ ~ +125℃		0.05Ω ~ 1Ω	
RL0603	1/10W	-55℃ ~ +125℃		0.01Ω ~ 1Ω	
RL0805	1/8W	-55℃ ~ +125℃			
RL1206	1/4W	-55℃ ~ +125℃			
RL1210	1/2W	-55℃ ~ +125℃			
RL1218	1W	-55℃ ~ +155℃			
RL2010	3/4W	-55℃ ~ +125℃			
RL2512	1W	-55℃ ~ +155℃			
Double power RL0805	1/4W	-55℃ ~ +125℃		0.015Ω ~ 1Ω	
Double power RL1206	1/2W	-55℃ ~ +125℃			

*** See page 104 for ordering code. For more detailed, please contact with sales offices, distributors and representatives in your region.**

RL T.C.R.								
Type	Operating temperature range	Resistance range	50mR~91mR			100mR~300mR	300mR~510mR	510mR~1R
RL0201	-55 C to +125 C	100mR to 1 R	---			1000ppm/C		
RL0402	-55 C to +125 C	5 0mR to 1 R	1000ppm/C			800ppm/C		
RL0603	-55 C to +125 C	10mR to 1R	1500ppm/C		1000ppm/C	800ppm/C	600ppm/C	300ppm/C
			10mR~18mR	20mR~47mR	51mR~91mR	100mR~360mR	390mR~500mR	510mR~1R
RL0805	-55 C to +125 C	10mR to 1R	1500ppm/C	1200ppm/C	1000ppm/C	600ppm/C	300ppm/C	200ppm/C
RL1206	-55 C to +125 C	10mR to 1R	1500ppm/C	1200ppm/C	1000ppm/C	600ppm/C	300ppm/C	200ppm/C
RL1210	-55 C to +125 C	10mR to 1R	1500ppm/C	1000ppm/C	800ppm/C	600ppm/C	300ppm/C	200ppm/C
			10mR~30mR	33mR~56mR	60mR~180mR	200mR~1R		
RL1218	-55 C to +125 C	10mR to 1R	2000ppm/C	1000ppm/C	700ppm/C	250ppm/C		
			10mR~18mR	20mR~47mR	51mR~91mR	100mR~360mR	390mR~500mR	510mR~1R
RL2010	-55 C to +125 C	10mR to 1R	1500ppm/C	1200ppm/C	1000ppm/C	600ppm/C	300ppm/C	200ppm/C
RL2512	-55 C to +125 C	10mR to 1R	1500ppm/C	1200ppm/C	800ppm/C	600ppm/C	300ppm/C	200ppm/C

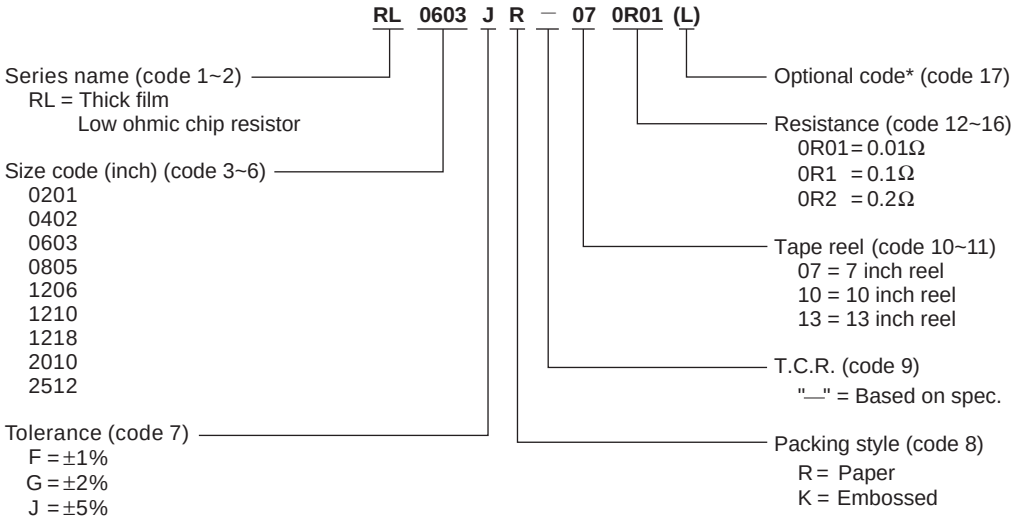
Environmental characteristics				
Performance test		Test method	Procedure	Requirements
Life		MIL-STD-202G-method 108A	1,000 hours at 70±5℃ applied RCWV 1.5 hours on, 0.5 hours off, still air required	±2%
High temperature exposure		MIL-STD-202G-method 108A	1,000 hours at maximum operating temperature depending on specification, unpowered	±1%
Moisture resistance		MIL-STD-202G-method 106F	Each temp. / humidity cycle is defined at 8 hours (method 106F), 3 cycles / 24 hours for 10d with 25℃ / 65℃ 95% R.H	±2%
Thermal shock		MIL-STD-202G-method 107G	LCT / UCT Number of cycles required is 300. Maximum transfer time is 20 seconds.	±1%
Solderability	Wetting	IPC/JEDECJ-STD-002B testB	Electrical test not required. magnification 50X. Leadfree solder bath at 245±3℃, Dipping time: 3±0.5 seconds	Well tinned (≥95% covered)
	Resistance to soldering heat	MIL-STD-202G-method 210F	Leadfree solder, 270℃, 10 seconds immersion time	±1%
Short time overload		MIL-R-55342D-para 4.7.5	2.5 times RCWV or maximum overload voltage whichever is less for 5 seconds at room temp.	±2%

R-Chip _Low Ohmic / RL series										
Low Ohmic / RL series										
Size: inch (mm)	0201 (0603)		0402 (1005)		0603 (1608)		0805 (2012)		1206 (3216)	
Power P_{70}	1/20W		1/16W		1/10W		1/8W		1/4W	
Tolerance	±5%	±1%	±5%	±1%	±5%	±1%	±5%	±1%	±5%	±1%
Resistance Range	E24	E24	E24	E24	E24	E24	E24	E24	E24	E24
0.01 Ω										
0.02 Ω										
0.03 Ω										
0.04 Ω										
0.05 Ω										
0.06 Ω										
0.07 Ω										
0.08 Ω										
0.09 Ω										
0.1 Ω										
0.2 Ω										
0.3 Ω										
0.4 Ω										
0.5 Ω										
0.6 Ω										
0.7 Ω										
0.8 Ω										
0.9 Ω										
Remark										

Note: 1. Value in "Resistance" means the minimum one.
2. E48/E96 on request
3. The partial values of 25/40/50/60/250/400/500m ohm are also available.
4. Products with lead free terminations meet RoHS requirements.(Non of the forbidden materials are used in products / production) The Pb-glass contained in electrodes , resistor element and glass is exempted by RoHS.

Global part number - Preferred type

Ordering example: RL0603JR-070R01(L)



***Note:** 1. All our RSMD products meet RoHS compliant. "LFP" of the internal 2D reel label mentions "Lead Free Process"
2. On customized label, "LFP" or specific symbol printed and the optional "L" at the end of CTC / 12NC can be added (both are on customer request)

Ordering information - Phycomp world wide - Traditional type

Low ohmic resistor chips								
Size: inch (mm)	**0402 (1005)**		**0603 (1608)**		**0805 (2012)**		**1206 (3216)**	
Power	1/16W		1/10W		1/8W		1/4W	
Tolerance	+5%	+1%	+5%	+1%	+5%	+1%	+5%	+1%
Resistance	E24	E24	E24	E24	E24	E24	E24	E24
Packing	paper tape		paper tape		paper tape		paper tape	
Quantity 5 000	---	---	2350 512 10...L	2350 512 12...L	2350 511 10...L	2350 511 12...L	2350 510 10...L	2350 510 12...L
10 000	2350 513 20...L	2351 513 22...L	---	---	---	---	---	---

For ordering rules: See page 107 for E24/E96 values and the last 4 or 3 digits of the 12NC catalogue number.

Ordering information - Phycomp North America - Traditional type

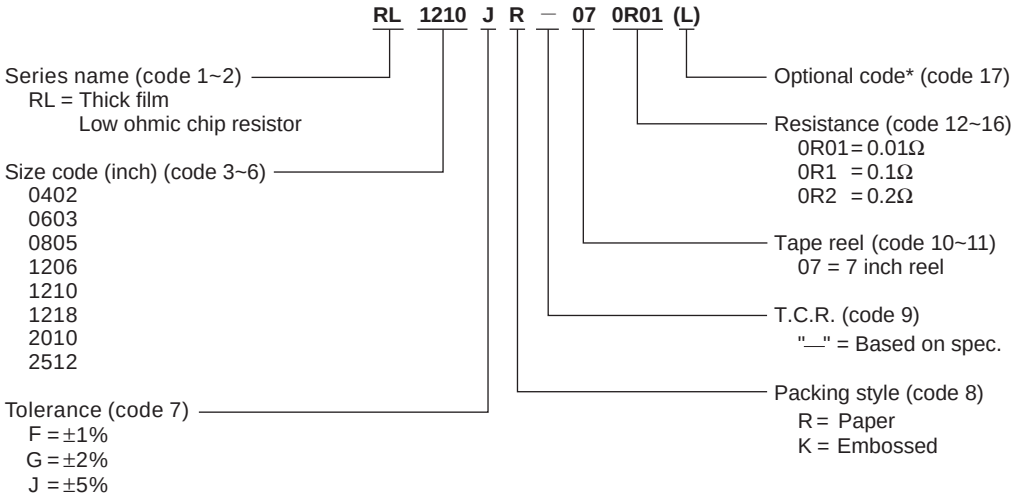
Refer to page 106.

R-Chip_Low Ohmic / RL series								
Low Ohmic / RL series								
Size: inch (mm)	1210 (3225)		1218 (3248)		2010 (5025)		2512 (6432)	
Power P_{70}	1/2W		1W		3/4W		1W	
Tolerance	±5%	±1%	±5%	±1%	±5%	±1%	±5%	±1%
Reisitance Range	E24	E24	E24	E24	E24	E24	E24	E24
0.01 Ω								
0.02 Ω								
0.03 Ω								
0.04 Ω								
0.05 Ω								
0.06 Ω								
0.07 Ω								
0.08 Ω								
0.09 Ω								
0.1 Ω								
0.2 Ω								
0.3 Ω								
0.4 Ω								
0.5 Ω								
0.6 Ω								
0.7 Ω								
0.8 Ω								
0.9 Ω								
Remark								

Note: 1. Value in "Resistance" means the minimum one.
2. E48/E96 on request
3. The partial values of 25/40/50/60/250/400/500m ohm are also available.
4. Products with lead free terminations meet RoHS requirements.(Non of the forbidden materials are used in products / production) The Pb-glass contained in electrodes , resistor element and glass is exempted by RoHS.

Global part number - Preferred type

Ordering example: RL1210JR-070R01(L)



***Note:** 1. All our RSMD products meet RoHS compliant. "LFP" of the internal 2D reel label mentions "Lead Free Process"
2. On customized label, "LFP" or specific symbol printed and the optional "L" at the end of CTC / 12NC can be added (both are on customer request)

Ordering information - Phycomp world wide - Traditional type

Low ohmic resistor chips								
Size: inch (mm)	**1210 (3225)**		**1218 (3248)**		**2010 (5025)**		**2512 (6432)**	
Power	1/2W		1W		3/4W		1W	
Tolerance	+5%	+1%	+5%	+1%	+5%	+1%	+5%	+1%
Resistance	E24	E24	E24	E24	E24	E24	E24	E24
Packing	paper tape		blister tape		blister tape		blister tape	
Quantity 4 000	---	---	2322 735 64...L	2322 735 7...L	2322 760 90..0L/60..7L	2322 761 90..0L/6...7L	2322 762 90..0L/60..7L	2322 763 90..0L/6...7L
5 000	2390 735 90..0L/60..7L	2390 735 3....L	---	---	---	---	---	---

For ordering rules: See page 107 for E24/E96 values and the last 4 or 3 digits of the 12NC catalogue number.

Ordering information - Phycomp North America - Traditional type

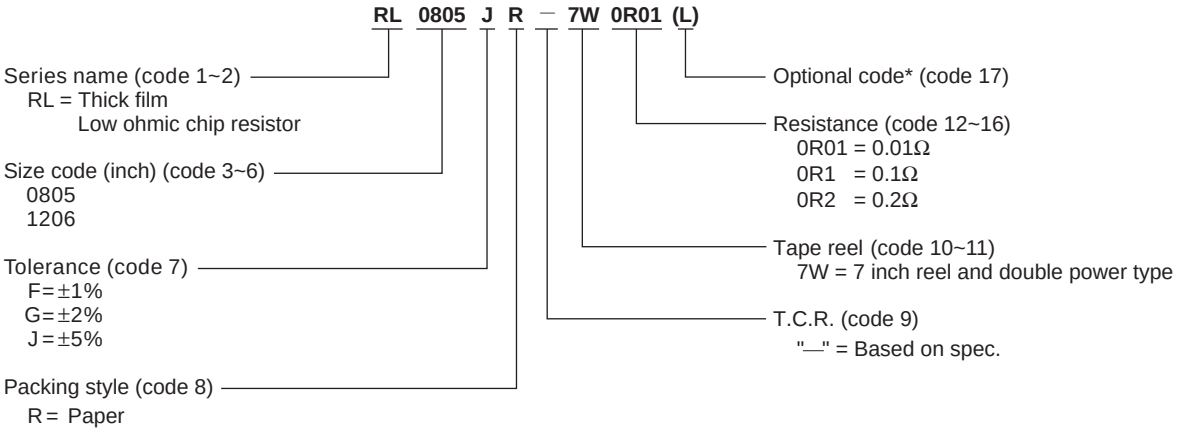
Refer to page 106.

R-Chip _Low Ohmic High Power / RL-High Power Series				
RL-High Power Series				
Size: inch (mm)	0805 (2012)		1206 (3216)	
Power P_{70}	1/4W		1/2W	
Tolerance	±5%	±1%	±5%	±1%
Resistance Range	E24	E24	E24	E24
0.01 Ω				
0.02 Ω				
0.03 Ω				
0.04 Ω				
0.05 Ω				
0.06 Ω				
0.07 Ω				
0.08 Ω				
0.09 Ω				
0.1 Ω				
0.2 Ω				
0.3 Ω				
0.4 Ω				
0.5 Ω				
0.6 Ω				
0.7 Ω				
0.8 Ω				
0.9 Ω				

Note: 1. E48/E96 on request
2. The partial values of 25/40/50/60/250/400/500m ohm are also available.
3. Products with lead free terminations meet RoHS requirements.(Non of the forbidden materials are used in products / production) The Pb-glass contained in electrodes , resistor element and glass is exempted by RoHS.

Global part number - Preferred type

Ordering example: RL0805JR-7W0R01(L)



***Note:** 1. All our RSMD products meet RoHS compliant. "LFP" of the internal 2D reel label mentions "Lead Free Process"
2. On customized label, "LFP" or specific symbol printed and the optional "L" at the end of CTC / 12NC can be added (both are on customer request)

Ordering information - Phycomp world wide - Traditional type

Low ohmic high power resistor chips				
Size: inch (mm)	**0805 (2012)**		**1206 (3216)**	
Power	1/4W		1/2W	
Tolerance	+5%	+1%	+5%	+1%
Resistance	E24	E24/E96	E24	E24/E96
Packing	paper tape		paper tape	
Quantity 5 000	2350 511 15...L	2350 511 17...L	2350 519 01...L	2350 519 1....L

For ordering rules: See page 107 for E24/E96 values and the last 4 or 3 digits of the 12NC catalogue number.

Ordering information - Phycomp North America - Traditional type

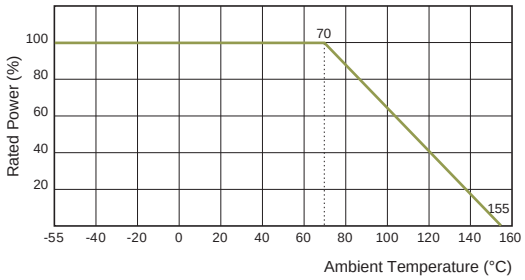
Refer to page 106.

FEATURES

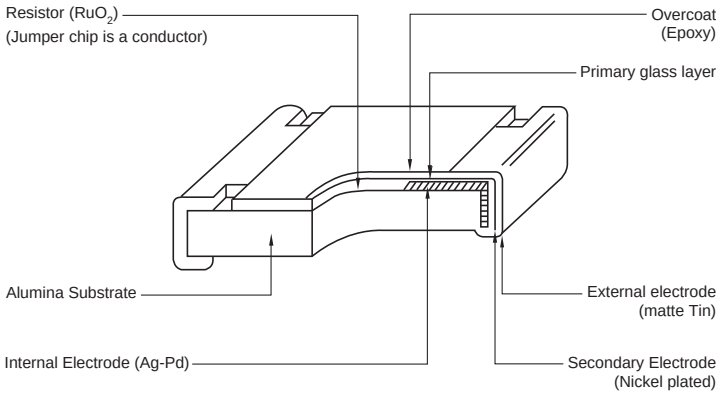
- Reduced size of final equipment
- Low assembly costs
- Higher component and equipment reliability
- High ohmic values up to 100Ω
- Suitable for power supplies in small equipments

Derating curve

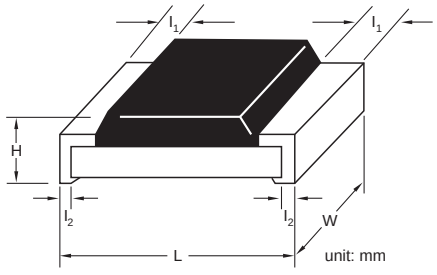
Maximum dissipation (P) in percentage of rated power as a function of the operating ambient temperature (T_{amb})



Construction



Dimensions for high ohmic series



TYPE	L	W	H	l_1	l_2
RC0805	2.00 ±0.10	1.25 ±0.10	0.50 ±0.10	0.35 ±0.20	0.35 ±0.20
RC1206	3.10 ±0.10	1.60 ±0.10	0.55 ±0.10	0.45 ±0.20	0.40 ±0.20

Electrical characteristics								
Style	Power P_{70}	Operating Temp. range	MWV	RCOV	DWV	Resistance range & tolerance		TCR (ppm/℃)
RC0805	1/8W	-55℃ ~ +155℃	150V	300V	300V	E24 ±5%, ±10%, ±20%	24MΩ ~ 100MΩ	±300
RC1206	1/4W	-55℃ ~ +155℃	200V	400V	500V			

*** See page 104 for ordering code. For more detailed, please contact with sales offices, distributors and representatives in your region.**

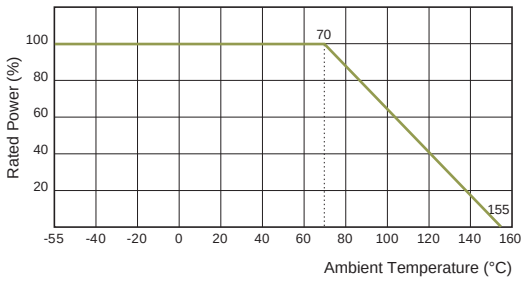
Environmental characteristics				
Performance test		Test method	Procedure	Requirements
Life		MIL-STD-202G-method 108A	1,000 hours at 70±5℃ applied RCWV 1.5 hours on, 0.5 hours off, still air required	±(2%+ 0.05Ω) <100MΩ for jumper
High temperature exposure		MIL-STD-202G-method 108A	1,000 hours at maximum operating temperature depending on specification, unpowered	±(1%+ 0.05Ω) <50MΩ for jumper
Moisture resistance		MIL-STD-202G-method 106F	Each temp. / humidity cycle is defined at 8 hours (method 106F), 3 cycles / 24 hours for 10d with 25℃ / 65℃ 95% R.H	±(2%+ 0.05Ω) <100MΩ for jumper
Thermal shock		MIL-STD-202G-method 107G	LCT / UCT Number of cycles required is 300. Maximum transfer time is 20 seconds.	±(0.5%+ 0.05Ω) for 10K to 10M ±(1%+ 0.05Ω) for others
Solderability	Wetting	IPC/JEDECJ-STD-002B testB	Electrical test not required. magnification 50X. Leadfree solder bath at 245±3℃, Dipping time: 3±0.5 seconds	Well tinned (≥95% covered)
	Resistance to soldering heat	MIL-STD-202G-method 210F	Leadfree solder, 270℃, 10 seconds immersion time	±(1%+ 0.05Ω) <50MΩ for jumper
Short time overload		MIL-R-55342D-para 4.7.5	2.5 times RCWV or maximum overload voltage whichever is less for 5 seconds at room temp.	±(2%+ 0.05Ω) <50MΩ for jumper

FEATURES

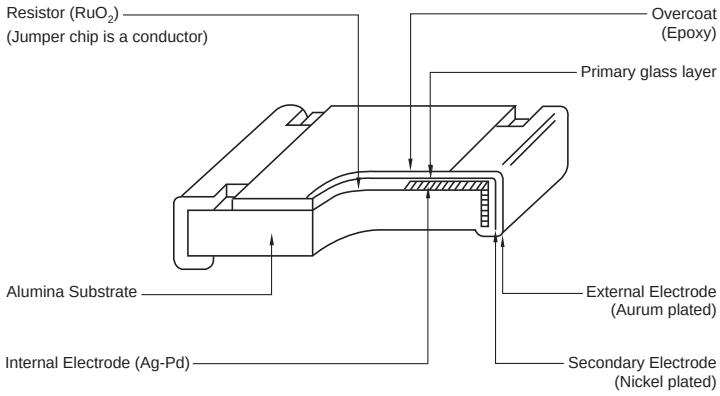
- New Ni/Au terminations provide special application for hybrid board gluing
- Competitive with AgPd terminations
- Special use in high temperature environment
- Higher component and equipment reliability

Derating curve

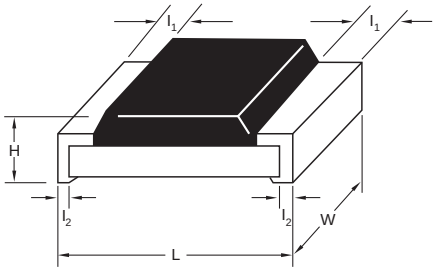
Maximum dissipation (P) in percentage of rated power as a function of the operating ambient temperature (T_{amb})



Construction



Dimensions



unit: mm

TYPE	L	W	H	I_1	I_2
AR0402	1.00 ±0.05	0.50 ±0.05	0.35 ±0.05	0.20 ±0.10	0.25 ±0.10
AR0603	1.60 ±0.10	0.80 ±0.10	0.45 ±0.10	0.25 ±0.15	0.25 ±0.15
AR0805	2.00 ±0.10	1.25 ±0.10	0.50 ±0.10	0.35 ±0.20	0.35 ±0.20
AR1206	3.10 ±0.10	1.60 ±0.10	0.55 ±0.10	0.45 ±0.20	0.40 ±0.20

Electrical characteristics											
Style	Power P_{70}	Operating Temp. range	MWV	RCOV	DWV	Resistance range & tolerance		TCR (ppm/℃)		Jumper criteria (unit:A)	
AR0402	1/16W	-55°C ~ +155℃	50V	100V	175V	E24 ±5% E24/E96 ±1% Zero Ohm Jumper	1Ω ~ 10MΩ 1Ω ~ 10MΩ < 0.05Ω	±100 ±200	10Ω < R ≤ 10MΩ 1Ω < R ≤ 10Ω	Rated current Max. current	1.0 2.0
AR0402	1/10W	-55°C ~ +155℃	50V	100V	175V					Rated current Max. current	1.0 2.0
AR0402	1/8W	-55°C ~ +125℃	150V	300V	325V					Rated current Max. current	2.0 5.0
AR0402	1/4W	-55°C ~ +125℃	200V	400V	450V					Rated current Max. current	2.0 10.0

Environmental characteristics				
Performance test		Test method	Procedure	Requirements
Life		MIL-STD-202G-method 108A	1,000 hours at 70±5℃ applied RCWV 1.5 hours on, 0.5 hours off, still air required	±(2%+ 0.05Ω) <100MΩ for jumper
High temperature exposure		MIL-STD-202G-method 108A	1,000 hours at maximum operating temperature depending on specification, unpowered	±(1%+ 0.05Ω) <50MΩ for jumper
Moisture resistance		MIL-STD-202G-method 106F	Each temp. / humidity cycle is defined at 8 hours (method 106F), 3 cycles / 24 hours for 10d with 25℃ / 65℃ 95% R.H	±(2%+ 0.05Ω) <100MΩ for jumper
Thermal shock		MIL-STD-202G-method 107G	LCT / UCT Number of cycles required is 300. Maximum transfer time is 20 seconds.	±(0.5%+ 0.05Ω) for 10K to 10M ±(1%+ 0.05Ω) for others
Solderability	Wetting	IPC/JEDECJ-STD-002B testB	Electrical test not required. magnification 50X. Leadfree solder bath at 245±3℃, Dipping time: 3±0.5 seconds	Well tinned (≥95% covered)
	Resistance to soldering heat	MIL-STD-202G-method 210F	Leadfree solder, 270℃, 10 seconds immersion time	±(1%+ 0.05Ω) <50MΩ for jumper
Short time overload		MIL-R-55342D-para 4.7.5	2.5 times RCWV or maximum overload voltage whichever is less for 5 seconds at room temp.	±(2%+ 0.05Ω) <50MΩ for jumper

R-Chip NiAu terminations / AR series								
NiAu terminations / AR series								
Size: inch (mm)	0402 (1005)		0603 (1608)		0805 (2012)		1206 (3216)	
Power P_{70}	1/16W		1/10W		1/8W		1/4W	
Tolerance	±5%	±1%	±5%	±1%	±5%	±1%	±5%	±1%
Resistance Range	E24	E24/E96	E24	E24/E96	E24	E24/E96	E24	E24/E96
Jumper								
1 Ω								
1.5 Ω								
2.2 Ω								
3.3 Ω								
4.7 Ω								
6.8 Ω								
10 Ω								
15 Ω								
22 Ω								
33 Ω								
47 Ω								
68 Ω								
100 Ω								
150 Ω								
220 Ω								
330 Ω								
470 Ω								
680 Ω								
1 kΩ								
1.5 kΩ								
2.2 kΩ								
3.3 kΩ								
4.7 kΩ								
6.8 kΩ								
10 kΩ								
15 kΩ								
22 kΩ								
33 kΩ								
47 kΩ								
68 kΩ								
100 kΩ								
150 kΩ								
220 kΩ								
330 kΩ								
470 kΩ								
680 kΩ								
1 MΩ								
1.5 MΩ								
2.2 MΩ								
3.3 MΩ								
4.7 MΩ								
6.8 MΩ								
10 MΩ								
Remark								

Note: 1. Zero Ohm Jumper<0.05 Ohm
2. Value in "Resistance" means the minimum one.
3. Products with lead free terminations meet RoHS requirements.(Non of the forbidden materials are used in products / production) The Pb-glass contained in electrodes , resistor element and glass is exempted by RoHS.

Global part number - Preferred type

Ordering example: AR0603JR-07100K

AR 0603 J R — 07 100K

- Series name (code 1~2)
  - AR = NiAu termination chip resistor
- Size code (inch) (code 3~6)
  - 0402
  - 0603
  - 0805
  - 1206
- Tolerance (code 7)
  - F = ±1%
  - J = ±5%
  - (J for Jumper)
- Packing style (code 8)
  - R = Paper
- T.C.R. (code 9)
  - "—" = Based on spec.
- Tape reel (code 10~11)
  - 07 = 7 inch reel
- Resistance (code 12~16)
  - 0R = Jumper
  - 100K = 100KΩ
  - 100R = 100Ω
  - 10R = 10Ω

Ordering information - Phycomp world wide - Traditional type

Resistpr chip with Ni/Au terminations

Size: inch (mm)		0402 (1005)		0603 (1608)		0805 (2012)		1206 (3216)	
Power		1/16W		1/10W		1/8W		1/4W	
Tolerance		+5%	+1%	+5%	+1%	+5%	+1%	+5%	+1%
Resistance		E24	E24/E96	E24	E24/E96	E24	E24/E96	E24	E24/E96
Packing		paper tape		paper tape		paper tape		paper tape	
Quantity	5 000	---	---	2322 702 11...	2322 704 1....	2322 730 11...	2322 734 1....	2322 711 11...	2322 729 1....
	10 000	2322 705 12...	2322 706 2....	---	---	---	---	---	---
Jumper	5 000	---	---	2322 702 19001	---	2322 730 19001	---	2322 711 19001	---
	10 000	2322 705 19001	---	---	---	---	---	---	---

For ordering rules: See page 107 for E24/E96 values and the last 4 or 3 digits of the 12NC catalogue number.

Ordering information - Phycomp North America - Traditional type

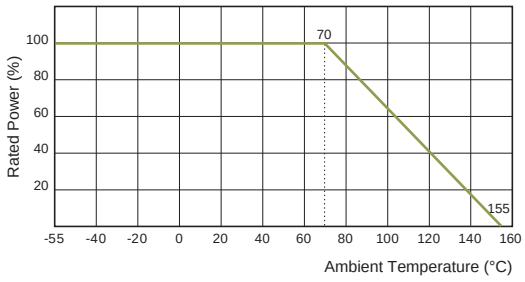
Refer to page 106.

FEATURES

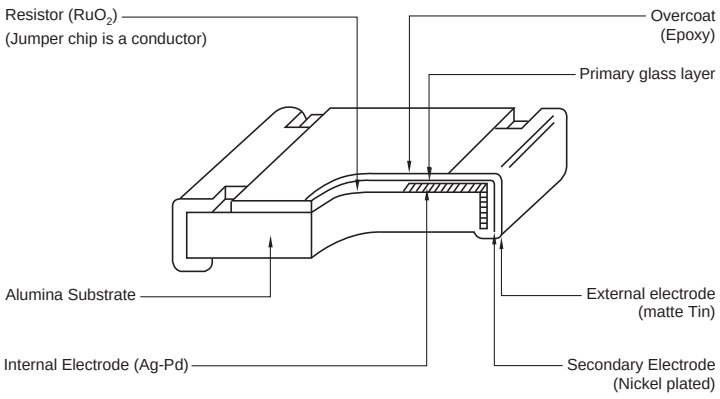
- Reduced size of final equipment
- Low assembly costs
- Higher component and equipment reliability
- Excellent performance at pulse loading

Derating curve

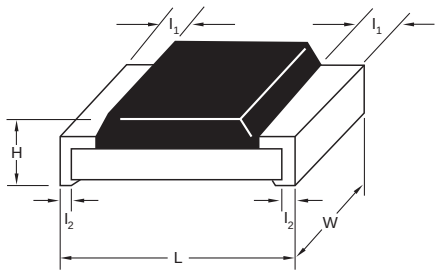
Maximum dissipation (P) in percentage of rated power as a function of the operating ambient temperature (T_{amb})



Construction



Dimensions



unit: mm

TYPE	L	W	H	I_1	I_2
SR0805	2.00 ±0.10	1.25 ±0.10	0.50 ±0.10	0.35 ±0.20	0.35 ±0.20
SR1206	3.10 ±0.10	1.60 ±0.10	0.55 ±0.10	0.45 ±0.20	0.40 ±0.20
SR1218	3.10 ±0.10	4.60 ±0.10	0.55 ±0.10	0.45 ±0.20	0.40 ±0.20
SR2512	6.35 ±0.10	3.10 ±0.15	0.55 ±0.10	0.60 ±0.20	0.50 ±0.20

Electrical characteristics									
Style	Power P_{70}	Operating Temp. range	MWV	RCOV	DWV	Resistance range & tolerance		TCR (ppm/°C)	
SR0805	1/8W	-55℃ ~ +155℃	150V	300V	300V	E24 ±5%, ±10%, ±20%	1Ω ~ 100KΩ	±200	1Ω ≤ R ≤ 100KΩ
SR1206	1/4W	-55℃ ~ +155℃	150V	400V	500V				
SR1218	1W	-55℃ ~ +155℃	200V	400V	500V				
SR2512	1W	-55℃ ~ +155℃	200V	400V	500V				

Environmental characteristics				
Performance test		Test method	Procedure	Requirements
Life		MIL-STD-202G-method 108A	1,000 hours at 70±5℃ applied RCWV 1.5 hours on, 0.5 hours off, still air required	±(2%+ 0.05Ω) <100MΩ for jumper
High temperature exposure		MIL-STD-202G-method 108A	1,000 hours at maximum operating temperature depending on specification, unpowered	±(1%+ 0.05Ω) <50MΩ for jumper
Moisture resistance		MIL-STD-202G-method 106F	Each temp. / humidity cycle is defined at 8 hours (method 106F), 3 cycles / 24 hours for 10d with 25℃ / 65℃ 95% R.H	±(2%+ 0.05Ω) <100MΩ for jumper
Thermal shock		MIL-STD-202G-method 107G	LCT / UCT Number of cycles required is 300. Maximum transfer time is 20 seconds.	±(0.5%+ 0.05Ω) for 10K to 10M ±(1%+ 0.05Ω) for others
Solderability	Wetting	IPC/JEDECJ-STD-002B testB	Electrical test not required. magnification 50X. Leadfree solder bath at 245±3℃, Dipping time: 3±0.5 seconds	Well tinned (≥95% covered)
	Resistance to soldering heat	MIL-STD-202G-method 210F	Leadfree solder, 270℃, 10 seconds immersion time	±(1%+ 0.05Ω) <50MΩ for jumper
Short time overload		MIL-R-55342D-para 4.7.5	2.5 times RCWV or maximum overload voltage whichever is less for 5 seconds at room temp.	±(2%+ 0.05Ω) <50MΩ for jumper

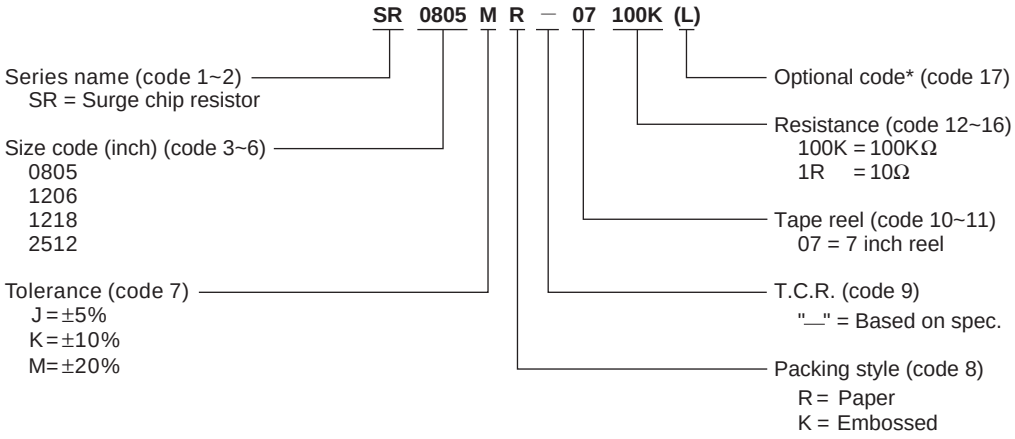
R-Chip Surge/FR series				
Product	Surge Chip Resistors Series			
Size: inch (mm)	0805 (2012)	1206 (3216)	1218 (3248)	2512 (6432)
Power P_{70}	1/8W	1/4W	1W	1W
Tolerance	±5%	±5%	±5%	±5%
Resistance Range	E24	E24	E24	E24
1 Ω				
1.5 Ω				
2.2 Ω				
3.3 Ω				
4.7 Ω				
6.8 Ω				
10 Ω				
15 Ω				
22 Ω				
33 Ω				
47 Ω				
68 Ω				
100 Ω				
150 Ω				
220 Ω				
330 Ω				
470 Ω				
680 Ω				
1 kΩ				
1.5 kΩ				
2.2 kΩ				
3.3 kΩ				
4.7 kΩ				
6.8 kΩ				
10 kΩ				
15 kΩ				
22 kΩ				
33 kΩ				
47 kΩ				
68 kΩ				
100 kΩ				
Remark				

Note: 1. Value in "Resistance" means the minimum one.

2. Products with lead free terminations meet RoHS requirements.(Non of the forbidden materials are used in products / production) The Pb-glass contained in electrodes , resistor element and glass is exempted by RoHS.

Global part number - Preferred type

Ordering example: SR0805MR-07100K(L)



***Note:** 1. All our RSMD products meet RoHS compliant. "LFP" of the internal 2D reel label mentions "Lead Free Process"
2. On customized label, "LFP" or specific symbol printed and the optional "L" at the end of CTC / 12NC can be added (both are on customer request)

Ordering information - Phycomp world wide - Traditional type

Surge resistor chips						
Size: inch (mm)	**0805 (2012)**	**1206 (3216)**	**1218 (3248)**	**2512 (6432)**		
Power	1/8W	1/4W	1W	1W		
Tolerance	+10%	+5%	+10%	+5%	+10%	+20%
Resistance	E24	E24	E24	E24	E24	E24
Packing	paper tape	paper tape	paper tape	paper tape	paper tape	paper tape
Quantity 4 000	---	---	2350 557 10…L	2350 556 11…L	2350 556 10…L	2350 556 13…L
5 000	2350 554 12…L	2350 550 10…L	---	---	---	---

For ordering rules: See page 107 for E24/E96 values and the last 4 or 3 digits of the 12NC catalogue number.

Ordering information - Phycomp North America - Traditional type

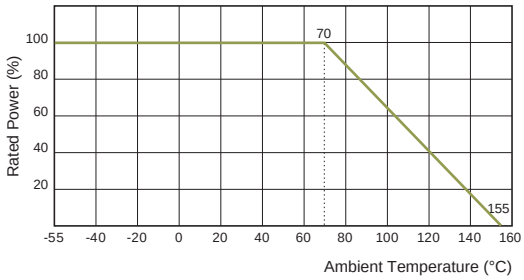
Refer to page 106.

FEATURES

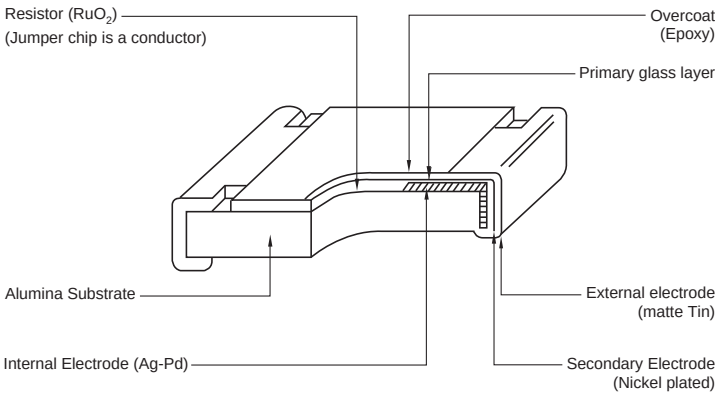
- Higher maximum working voltage to RC series
- Extremely thin and light
- Reliable electrode construction
- Compatible with lead containing and lead free soldering processes
- Highly stable in auto-placement surface mounting

Derating curve

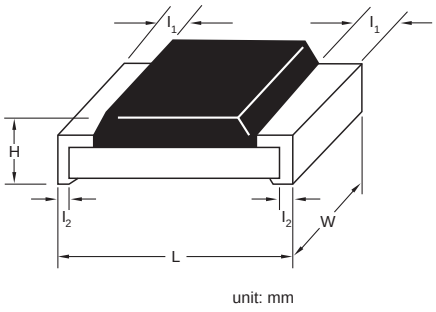
Maximum dissipation (P) in percentage of rated power as a function of the operating ambient temperature (T_{amb})



Construction



Dimensions



unit: mm

TYPE	L	W	H	I_1	I_2
RV0805	2.00 ±0.10	1.25 ±0.10	0.50 ±0.10	0.35 ±0.20	0.35 ±0.20
RV1206	3.10 ±0.10	1.60 ±0.10	0.55 ±0.10	0.45 ±0.20	0.45 ±0.20
RV2512	6.35 ±0.10	3.10 ±0.15	0.55 ±0.10	0.60 ±0.20	0.50 ±0.20

Electrical characteristics									
Style	Power P_{70}	Operating Temp. range	MWV	RCOV	DWV	Resistance range & tolerance		TCR (ppm/℃)	
RV0805	1/8W	-55℃ ~ +155℃	400V	800V	800V	E24 ±5% E24/E96 ±1%	100KΩ ~ 10MΩ 100KΩ ~ 10MΩ	±200	100KΩ ≤ R ≤ 10MΩ
RV1206	1/4W	-55℃ ~ +155℃	500V	1000V	1000V	E24 ±5% E24/E96 ±1%	100KΩ ~ 27MΩ 100KΩ ~ 10MΩ	±200	100KΩ ≤ R ≤ 27MΩ
RV2512	1W	-55℃ ~ +155℃	500V	1000V	1000V	E24 ±5%	4.7MΩ ~ 16MΩ	±200	4.7MΩ ≤ R ≤ 16MΩ

Environmental characteristics				
Performance test		Test method	Procedure	Requirements
Life		MIL-STD-202G-method 108A	1,000 hours at 70±5℃ applied RCWV 1.5 hours on, 0.5 hours off, still air required	±(2%+ 0.05Ω) <100MΩ for jumper
High temperature exposure		MIL-STD-202G-method 108A	1,000 hours at maximum operating temperature depending on specification, unpowered	±(1%+ 0.05Ω) <50MΩ for jumper
Moisture resistance		MIL-STD-202G-method 106F	Each temp. / humidity cycle is defined at 8 hours (method 106F), 3 cycles / 24 hours for 10d with 25℃ / 65℃ 95% R.H	±(2%+ 0.05Ω) <100MΩ for jumper
Thermal shock		MIL-STD-202G-method 107G	LCT / UCT Number of cycles required is 300. Maximum transfer time is 20 seconds.	±(0.5%+ 0.05Ω) for 10K to 10M ±(1%+ 0.05Ω) for others
Solderability	Wetting	IPC/JEDECJ-STD-002B testB	Electrical test not required. magnification 50X. Leadfree solder bath at 245±3℃, Dipping time: 3±0.5 seconds	Well tinned (≥95% covered)
	Resistance to soldering heat	MIL-STD-202G-method 210F	Leadfree solder, 270℃, 10 seconds immersion time	±(1%+ 0.05Ω) <50MΩ for jumper
Short time overload		MIL-R-55342D-para 4.7.5	2.5 times RCWV or maximum overload voltage whichever is less for 5 seconds at room temp.	±(2%+ 0.05Ω) <50MΩ for jumper

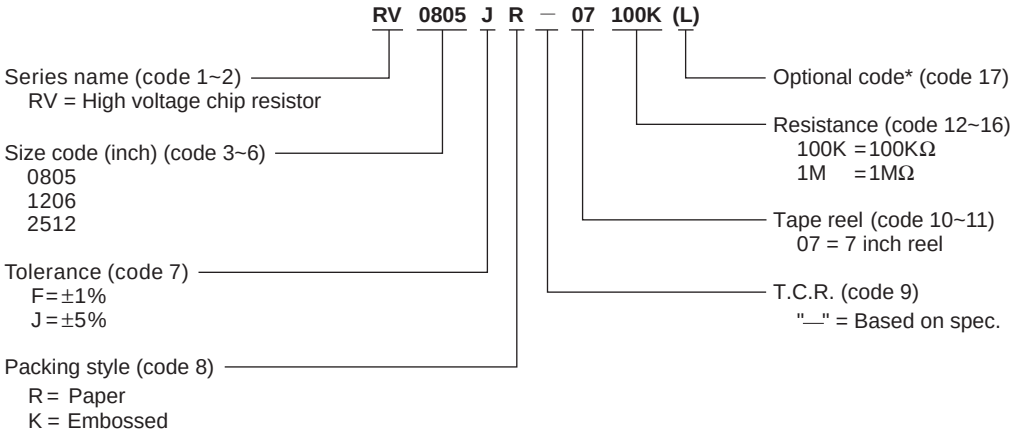
R-Chip High Voltage / RV series					
High Voltage / RV series					
Size: inch (mm)	0805 (2012)		1206 (3216)		2512 (6432)
Working Voltage	400V		500V		500V
Power P_{70}	1/8W		1/4W		1W
Tolerance	±5%	±1%	±5%	±1%	±5%
Resistance Range	E24	E24/E96	E24	E24/E96	E24
100 kΩ					
150 kΩ					
220 kΩ					
330 kΩ					
470 kΩ					
680 kΩ					
1 MΩ					
1.5 MΩ					
2.2 MΩ					
3.3 MΩ					
4.7 MΩ					
6.8 MΩ					
10 MΩ					
15 MΩ					
22 MΩ					
Remark	Max. overload voltage 800V for 1 min		Max. overload voltage 1000V for 1 min		Max. overload voltage

Note: 1. Value in "Resistance" means the minimum one.

2. Products with lead free terminations meet RoHS requirements.(Non of the forbidden materials are used in products / production) The Pb-glass contained in electrodes , resistor element and glass is exempted by RoHS.

Global part number - Preferred type

Ordering example: RV0805JR-07100K(L)



***Note:** 1. All our RSMD products meet RoHS compliant. "LFP" of the internal 2D reel label mentions "Lead Free Process"
2. On customized label, "LFP" or specific symbol printed and the optional "L" at the end of CTC / 12NC can be added (both are on customer request)

Ordering information - Phycomp world wide - Traditional type

High voltage resistor chips					
Size: inch (mm)	**0805 (2012)**		**1206 (3216)**		**2512 (6432)**
Power	1/8W		1/4W		1W
Tolerance	+5%	+1%	+5%	+1%	+5%
Resistance	E24	E24/E96	E24	E24/E96	E24
Packing	paper tape		paper tape		blister tape
Quantity 4 000	---	---	---	---	2322 762 98...L
Quantity 5 000	2322 792 61...L	2322 793 6....L	2322 790 61...L	2322 791 6....L	---

For ordering rules: See page 107 for E24/E96 values and the last 4 or 3 digits of the 12NC catalogue number.

Ordering information - Phycomp North America - Traditional type

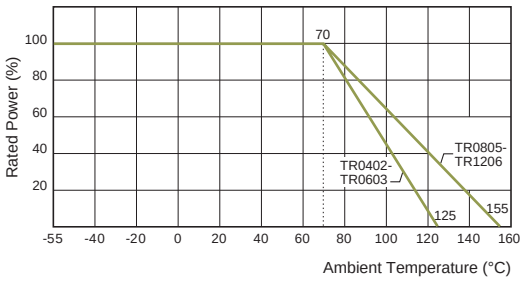
Refer to page 106.

FEATURES

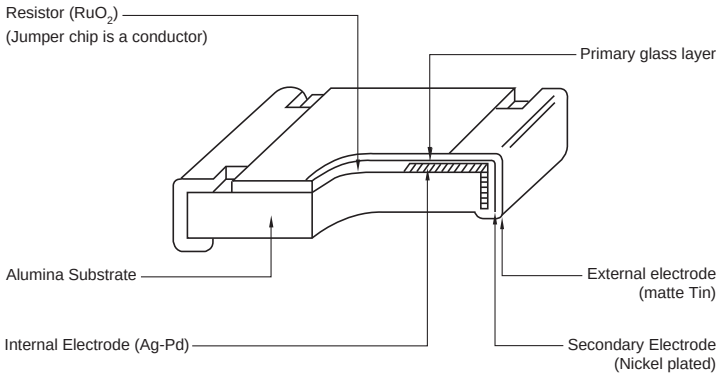
- Reduced size of final equipment
- Low assembly costs
- Higher component and equipment reliability
- Improved performance at high frequency
- Low noise, when not trimmed

Derating curve

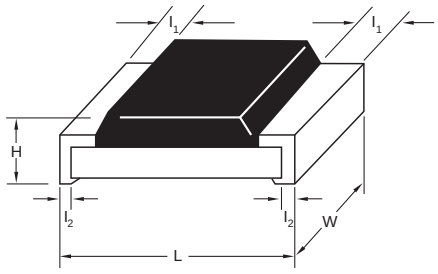
Maximum dissipation (P) in percentage of rated power as a function of the operating ambient temperature (T_{amb})



Construction



Dimensions



unit: mm

TYPE	L	W	H	I_1	I_2
TR0402	1.00 ±0.10	0.50 ±0.05	0.35 ±0.05	0.20 ±0.10	0.25 ±0.10
TR0603	1.60 ±0.10	0.80 ±0.10	0.45 ±0.10	0.25 ±0.15	0.25 ±0.15
TR0805	2.00 ±0.10	1.25 ±0.10	0.50 ±0.10	0.35 ±0.20	0.35 ±0.20
TR1206	3.10 ±0.10	1.60 ±0.10	0.55 ±0.10	0.45 ±0.20	0.40 ±0.20

Electrical characteristics									
Style	Power P_{70}	Operating Temp. range	MWV	RCOV	DWV	Resistance range & tolerance		TCR (ppm/°C)	
TR0402	1/16W	-55°C ~ +125°C	50V	100V	100V	E24 +0/-10%, +0/-20%, +0/-30%	1Ω ~ 10MΩ	±100 ±200	10Ω < R ≤ 1MΩ 1Ω < R ≤ 10Ω 1MΩ < R ≤ 10MΩ
TR0603	1/16W	-55°C ~ +125°C	50V	100V	100V				
TR0805	1/8W	-55°C ~ +155°C	150V	300V	500V				
TR1206	1/4W	-55°C ~ +155°C	200V	500V	500V				

Environmental Characteristics				
Performance test		Test method	Procedure	Requirements
Life		MIL-STD-202G-method 108A	1,000 hours at 70±5°C applied RCWV 1.5 hours on, 0.5 hours off, still air required	±(2%+ 0.05Ω) <100MΩ for jumper
High temperature exposure		MIL-STD-202G-method 108A	1,000 hours at maximum operating temperature depending on specification, unpowered	±(1%+ 0.05Ω) <50MΩ for jumper
Moisture resistance		MIL-STD-202G-method 106F	Each temp. / humidity cycle is defined at 8 hours (method 106F), 3 cycles / 24 hours for 10d with 25°C / 65°C 95% R.H	±(2%+ 0.05Ω) <100MΩ for jumper
Thermal shock		MIL-STD-202G-method 107G	LCT / UCT Number of cycles required is 300. Maximum transfer time is 20 seconds.	±(0.5%+ 0.05Ω) for 10K to 10M ±(1%+ 0.05Ω) for others
Solderability	Wetting	IPC/JEDECJ-STD-002B testB	Electrical test not required. magnification 50X. Leadfree solder bath at 245±3°C, Dipping time: 3±0.5 seconds	Well tinned (≥95% covered)
	Resistance to soldering heat	MIL-STD-202G-method 210F	Leadfree solder, 270°C, 10 seconds immersion time	±(1%+ 0.05Ω) <50MΩ for jumper
Short time overload		MIL-R-55342D-para 4.7.5	2.5 times RCWV or maximum overload voltage whichever is less for 5 seconds at room temp.	±(2%+ 0.05Ω) <50MΩ for jumper

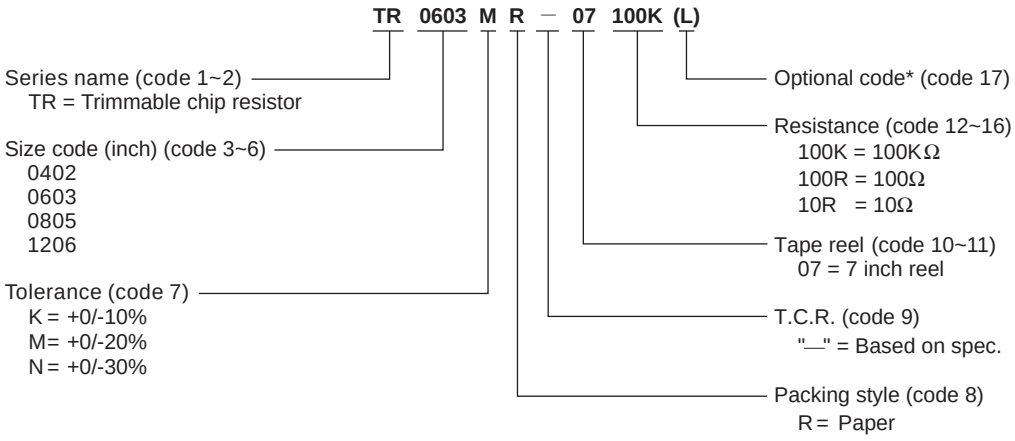
R-Chip Trimmable / TR series												
Trimmable / TR series												
Size: inch (mm)	0402 (1005)			0603 (1608)			0805 (2012)			1206 (3216)		
Power P_{70}	1/16W			1/16W			1/8W			1/4W		
Tolerance	0/-10% (Trimmable)	0/-20% (Trimmable)	0/-30% (Trimmable)	0/-10% (Trimmable)	0/-20% (Trimmable)	0/-30% (Trimmable)	0/-10% (Trimmable)	0/-20% (Trimmable)	0/-30% (Trimmable)	0/-10% (Trimmable)	0/-20% (Trimmable)	0/-30% (Trimmable)
Resistance Range	E24	E24	E24	E24	E24	E24	E24	E24	E24	E24	E24	E24
1 Ω												
1.5 Ω												
2.2 Ω												
3.3 Ω												
4.7 Ω												
6.8 Ω												
10 Ω												
15 Ω												
22 Ω												
33 Ω												
47 Ω												
68 Ω												
100 Ω												
150 Ω												
220 Ω												
330 Ω												
470 Ω												
680 Ω												
1 kΩ												
1.5 kΩ												
2.2 kΩ												
3.3 kΩ												
4.7 kΩ												
6.8 kΩ												
10 kΩ												
15 kΩ												
22 kΩ												
33 kΩ												
47 kΩ												
68 kΩ												
100 kΩ												
150 kΩ												
220 kΩ												
330 kΩ												
470 kΩ												
680 kΩ												
1 MΩ												
1.5 MΩ												
2.2 MΩ												
3.3 MΩ												
4.7 MΩ												
6.8 MΩ												
10 MΩ												
Remark												

Note: 1. Value in "Resistance" means the minimum one.

2. Products with lead free terminations meet RoHS requirements.(Non of the forbidden materials are used in products / production) The Pb-glass contained in electrodes , resistor element and glass is exempted by RoHS.

Global part number - Preferred type

Ordering example: TR0603MR-07100K(L)



***Note:** 1. All our RSMD products meet RoHS compliant. "LFP" of the internal 2D reel label mentions "Lead Free Process"
2. On customized label, "LFP" or specific symbol printed and the optional "L" at the end of CTC / 12NC can be added (both are on customer request)

Ordering information - Phycomp world wide - Traditional type

Trimmable resistor chips				
Size: inch (mm)	**0402 (1005)**	**0603 (1608)**	**0805 (2012)**	**1206(3216)**
Power	1/16W	1/10W	1/8W	1/4W
Resistance	E24	E24	E24	E24
Packing	paper tape	paper tape	paper tape	paper tape
Quantity 5 000 0/-20%	2350 503 21…L	2350 502 11…L	2350 501 11…L	2350 500 11….L
5 000 0/-30%	2350 503 20…L	2350 502 10…L	2350 511 10…L	2350 500 10….L
Europe 5 000	on request	on request	on request	2322 724 94….L

For ordering rules: See page 107 for E24/E96 values and the last 4 or 3 digits of the 12NC catalogue number.

Ordering information - Phycomp North America - Traditional type

Refer to page 106.

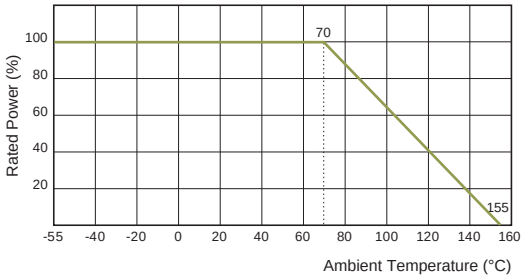
Introduction

FEATURES

- Excellent TCR compare to thick film low ohmic
- Precision current sensing control
- Excellent performance for current sensing applicatIons
- Ultra low ohmic down to 0.001Ω

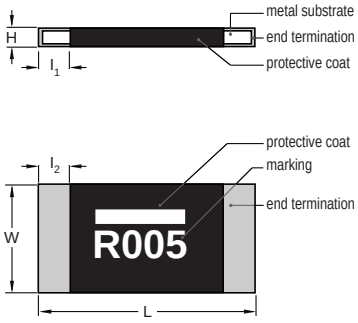
Derating curve

Maximum dissipation (P) in percentage of rated power as a function of the operating ambient temperature (T_{amb})

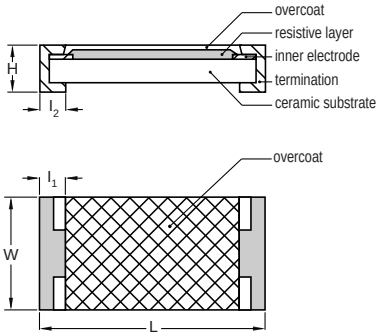


Construction

PR series



PF series



Construction will be adjusted to resistance value

Dimensions

PR series

TYPE	Resistance range	L	W	H	I_1	I_2
PR2010	2mΩ ~ 6mΩ	5.10 ±0.20	2.50 ±0.20	0.55 ±0.20	0.75 ±0.20	0.75 ±0.20
PR2512	1mΩ ~ 2mΩ	6.30 ±0.20	3.20 ±0.20	0.75 ±0.15	1.20 ±0.20	1.20 ±0.20
	3mΩ ~ 5mΩ	6.30 ±0.20	3.20 ±0.20	0.55 ±0.15	0.60 ±0.20	0.60 ±0.20

Note: For relevant physical dimensions, please refer to above construction outlines.

PF series

TYPE	Resistance range	L	W	H	I_1	I_2
PF1206	7mΩ ~ 14mΩ	3.20 ±0.25	1.60 ±0.25	0.60 ±0.25	0.55 ±0.25	0.35 ±0.25
	15mΩ ~ 200mΩ	3.20 ±0.25	1.60 ±0.25	0.60 ±0.25	0.55 ±0.25	0.75 ±0.25
PF2010	7mΩ ~ 14mΩ	5.10 ±0.25	2.54 ±0.25	0.60 ±0.25	1.00 ±0.25	0.45 ±0.25
	15mΩ ~ 200mΩ	5.10 ±0.25	2.54 ±0.25	0.60 ±0.25	1.00 ±0.25	1.55 ±0.25
PF2512	6mΩ ~ 14mΩ	6.50 ±0.25	3.15 ±0.25	0.60 ±0.25	1.00 ±0.25	1.75 ±0.25
	15mΩ ~ 130mΩ	6.50 ±0.25	3.15 ±0.25	0.60 ±0.25	1.00 ±0.25	0.60 ±0.25

Note: For relevant physical dimensions, please refer to above construction outlines.

Electrical characteristics						
Style	Power P_{70}	Operating Temp. range	Max. Working Voltage	Tolerance	Resistance range & TCR(ppm/℃)	
PR2010	0.5W	-55℃ ~ +155℃	(P x R)^1/2	±1%, ±2%, ±5% (E24)	2MΩ ~ 6MΩ	±150 ppm/℃
PR2512	1W	-55℃ ~ +155℃			1MΩ ~ 2MΩ 3MΩ ~ 5MΩ	±200 ppm/℃ ±100 ppm/℃
Double power PR2010	1W	-55℃ ~ +155℃			2MΩ ~ 6MΩ	±150 ppm/℃
Double power PR2512	2W	-55℃ ~ +155℃			1MΩ ~ 2MΩ 3MΩ ~ 5MΩ	±200 ppm/℃ ±100 ppm/℃
PF1206	0.25W	-55℃ ~ +155℃			6MΩ ~ 200MΩ	±100 ppm/℃
PF2010	0.5W	-55℃ ~ +155℃			7MΩ ~ 200MΩ	±100 ppm/℃
PF2512	1W	-55℃ ~ +155℃			6MΩ ~ 130MΩ	±100 ppm/℃
Double power PF1206	0.5W	-55℃ ~ +155℃			6MΩ ~ 200MΩ	±100 ppm/℃
Double power PF2010	1W	-55℃ ~ +155℃			7MΩ ~ 200MΩ	±100 ppm/℃
Double power PF2512	2W	-55℃ ~ +155℃			6MΩ ~ 130MΩ	±100 ppm/℃

Environmental characteristics				
Performance test		Test method	Procedure	Requirements
Life		MIL-STD-202G-method 108A	1,000 hours at 70±5℃ applied RCWV 1.5 hours on, 0.5 hours off, still air required	±(1%+ 0.0005Ω)
High temperature exposure		MIL-STD-202G-method 108A	1,000 hours at maximum operating temperature depending on specification, unpowered	±(1%+ 0.0005Ω)
Moisture resistance		MIL-STD-202G-method 106F	Each temp. / humidity cycle is defined at 8 hours (method 106F), 3 cycles / 24 hours for 10d with 25℃ / 65℃ 95% R.H	±(0.5%+ 0.0005Ω)
Thermal shock		MIL-STD-202G-method 107G	LCT / UCT Number of cycles required is 300. Maximum transfer time is 20 seconds.	±(0.5%+ 0.0005Ω)
Solderability	Wetting	IPC/JEDECJ-STD-002B testB	Electrical test not required. magnification 50X. Leadfree solder bath at 245±3℃, Dipping time: 3±0.5 seconds	Well tinned (≥95% covered)
	Resistance to soldering heat	MIL-STD-202G-method 210F	Leadfree solder, 270℃, 10 seconds immersion time	±(0.5%+ 0.0005Ω)
Short time overload		MIL-R-55342D-para 4.7.5	2.5 times RCWV or maximum overload voltage whichever is less for 5 seconds at room temp.	±(0.5%+ 0.0005Ω)

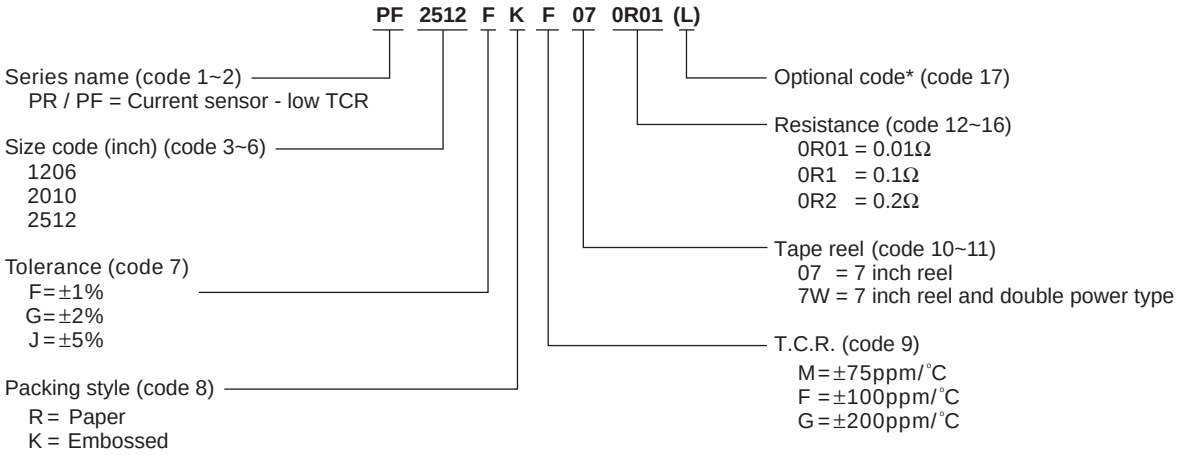
Current sensors - Low TCR		
Current sensors	Current Sensor - Low TCR Chip resistor	
Size: inch (mm)	2512 (6432)	
Power P_{70}	1W	
Tolerance	±5%	±1%
0.0010 Ω		
0.0020 Ω		
0.0030 Ω		
0.0040 Ω		
0.0050 Ω		
0.0060 Ω		
0.0070 Ω		
0.0080 Ω		
0.0090 Ω		
0.01 Ω		
0.02 Ω		
0.03 Ω		
0.04 Ω		
0.05 Ω		
0.06 Ω		
0.07 Ω		
0.08 Ω		
0.09 Ω		
0.1 Ω		
0.2 Ω		
0.3 Ω		
0.4 Ω		
0.5 Ω		
0.6 Ω		
0.7 Ω		
0.8 Ω		
0.9 Ω		
Remark		

Note: 1. 2010,1206 series on request

2. Products with lead free terminations meet RoHS requirements.(Non of the forbidden materials are used in products / production) The Pb-glass contained in electrodes , resistor element and glass is exempted by RoHS.

Global part number - Preferred type

Ordering example: PF2512FKF070R01(L)



***Note:** 1. All our RSMD products meet RoHS compliant. "LFP" of the internal 2D reel label mentions "Lead Free Process"
2. On customized label, "LFP" or specific symbol printed and the optional "L" at the end of CTC / 12NC can be added (both are on customer request)

Ordering information - Phycomp world wide - Traditional type

Current sensor - Low TCR / PR series

Size: inch (mm)		2512 (6432)				2010 (5025)			
Power		1W		2W		1/2W		1W	
Resistance		+5%	+1%	+5%	+1%	+5%	+1%	+5%	+1%
Packing		blister tape				blister tape			
Quantity	4 000	2322 762 94..0L	2322 763 95..0L	2322 762 10..0L	2322 763 10..0L	2322 760 63..0L	2322 761 11..0L	2322 760 65..0L	2322 761 13..0L
	5 000	---	---	---	---	---	---	---	---

For ordering rules: See page 107 for E24/E96 values and the last 4 or 3 digits of the 12NC catalogue number.

Ordering information - Phycomp world wide - Traditional type

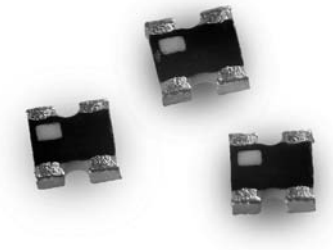
Current sensor - Low TCR / PF series

Size: inch (mm)		2512 (6432)				2010 (5025)				1206 (3216)			
Power		1W		2W		1/2W		1W		1/4W		1/2W	
Resistance		+5%	+1%	+5%	+1%	+5%	+1%	+5%	+1%	+5%	+1%	+5%	+1%
Packing		blister tape				blister tape				paper tape			
Quantity	4 000	2322 764 96..L	2322 764 97..L	2322 764 10..L	2322 764 30..L	2322 760 64..L	2322 761 12..L	2322 760 66..L	2322 761 14..L	2350 510 23..L	2350 510 24..L	2350 510 27..L	2350 510 28..L
	5 000	---	---	---	---	---	---	---	---	---	---	---	---

For ordering rules: See page 107 for E24/E96 values and the last 4 or 3 digits of the 12NC catalogue number.

Ordering information - Phycomp North America - Traditional type

Refer to page 106.

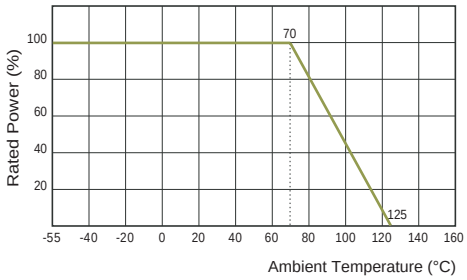


APPLICATIONS

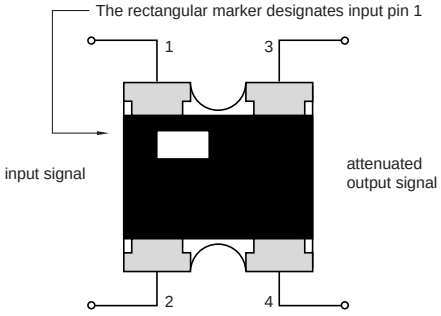
- Mobile phone
- Receivers
- Battery charger
- Palmtop computers
- PDAs

Derating curve

Maximum dissipation (P) in percentage of rated power as a function of the operating ambient temperature (T_{amb})

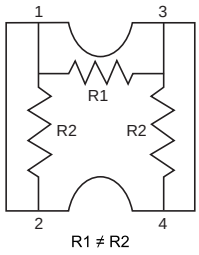


Connection diagram

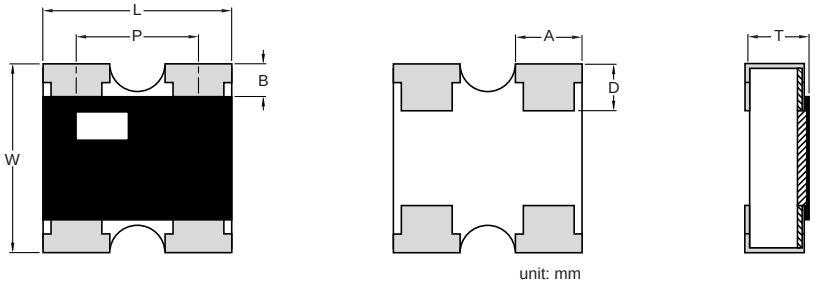


Schematics

ATV 321



Dimensions



TYPE	L	W	T	A	B	P	D
ATV321	1.00 ±0.10	1.00 ±0.10	0.35 ±0.05	0.33 ±0.10	0.15 ±0.10	0.65 ±0.10	0.25 ±0.10

Electrical characteristics									
Style	Power P_{70}	Operating Temp. range	MPV	VSWR	Impedance	Resistance range & tolerance		Frequency range	
ATV321	40mW	-55°C ~ +125℃	50V	1.3 max	50Ω	±0.3DB ±0.5DB ±1DB ±2.0DB	1DB ~ 5DB 6DB ~ 10DB 15DB 20DB	1DB ~ 10DB 15DB ~ 20DB	DC to 2.5 GHz DC to 2.0 GHz

Environmental characteristics				
Performance test		Test method	Procedure	Requirements
Life		MIL-STD-202G-method 108A	1,000 hours at 70±5℃ applied RCWV 1.5 hours on, 0.5 hours off, still air required	Max.: ±0.3 DB
Humidity (steady state)		JIS C 5202 7.5	1,000 hours; 40±2℃; 93(+2/-3)% RH RCWV applied for 1.5 hours on and 0.5 hour off	Max.: ±0.3 DB
Moisture resistance		MIL-STD-202G-method 106F	Each temp. / humidity cycle is defined at 8 hours (method 106F), 3 cycles / 24 hours for 10d with 25℃ / 65℃ 95% R.H	Max.: ±0.3 DB
Thermal shock		MIL-STD-202G-method 107G	LCT / UCT Number of cycles required is 300. Maximum transfer time is 20 seconds.	Max.: ±0.3 DB
Solderability	Wetting	IPC/JEDECJ-STD-002B testB	Electrical test not required. magnification 50X. Leadfree solder bath at 245±3℃, Dipping time: 3±0.5 seconds	Well tinned (≥95% covered)
	Resistance to soldering heat	MIL-STD-202G-method 210F	Leadfree solder, 270℃, 10 seconds immersion time	Max.: ±0.1 DB
Short time overload		MIL-R-55342D-para 4.7.5	2.5 times RCWV or maximum overload voltage whichever is less for 5 seconds at room temp.	Max.: ±0.3 DB

Chip resistors RF attenuator				
Case size	0404			
Attenuation range	1 dB / 20 dB			
Attenuation tolerance	1 to 5 dB	6 to 10 dB	15 dB	20 dB
	±0.3 dB	±0.5 dB	±1.0 dB	±2.0 dB
Frequency range	1 to 10 dB		15 and 20 dB	
	DC to 2.5 GHz		DC to 2.0 GHz	
Max. permissible Vol. (V)	50			
Power rating (mW)	40			
Temp range (°C)	-50 to 125			

Global part number - Preferred type

AT V321 B R — 07 1DB (L)

- Series name (code 1~2): AT = Chip RF attenuator
- Size code (inch) (code 3~6): V321 = 0404
- Tolerance (code 7): C=±0.3dB, D=±0.5dB, F=±1.0dB, G=±2.0dB
- Packing style (code 8): R = Paper tape reel
- T.C.R. (code 9): "—" = Based on spec.
- Tape reel (code 10~11): 07 = 7 inch Dia. reel
- Attenuation (code 12~15): 0DB, 1DB, 2DB, 10DB, 15DB, 20DB
- Optional code* (code 16)

Note: 1. All our RSMD products meet RoHS compliant. "LFP" of the internal 2D reel label mentions "Lead Free Process"
2. On customized label, "LFP" or specific symbol printed and the optional "L" at the end of CTC / 12NC can be added (both are on customer request)

Ordering information - Phycomp world wide - Traditional type		
Packing		paper tape
Quantity	10 000	235070311…L
Remark		For last three digits, see table of Attenuation codes below

Note: L = An optional code

Ordering information - Phycomp North America - Traditional type		
Packing		paper tape
Quantity	10 000	9CV3218Axxxxx-PF3
Remark		For 9th to 13th digits, see table of Attenuation codes below

Attenuation codes			
Standard			
Value (dB)	Tolerance (dB)	Phycomp world wide code (12NC)	Phycomp North America code (NA code)
1	±0.3	012	01DBC
2	±0.3	022	02DBC
3	±0.3	032	03DBC
4	±0.3	042	04DBC
5	±0.3	052	05DBC
6	±0.5	063	06DBD
7	±0.5	073	07DBD
8	±0.5	083	08DBD
9	±0.5	093	09DBD
10	±0.5	103	10DBD
15	±1.0	154	15DBF
20	±2.0	205	20DBG

Think film chip resistors								
Global CTC (Preferred)	Description	Size	Tolerance	Max. Power	Resistance Range	Resistor pieces	Min. items	Price per set (USD)
RC0201-R-SKE24L	0201, ±1% & ±5% , RoHS Compliant, + Jumper	0201	F / J	1/20W	10~1M	100	120	150
RC0402JR-SKE24L	0402, ±5%, RoHS Compliant, +Jumper	0402	J	1/16W	10~1M	100	110	150
RC0402FR-SKE96L	0402, ±1%, RoHS Compliant, +Jumper	0402	F	1/16W	10~1M	100	450	200
RC0603JR-SKE24L	0603, ±5%, RoHS Compliant, +Jumper	0603	J	1/10W	10~1M	50	110	150
RC0603FR-SKE96L	0603, ±1%, RoHS Compliant, +Jumper	0603	F	1/10W	10~1M	50	450	200
RC0805JR-SKE24L	0805, ±5%, RoHS Compliant, +Jumper	0805	J	1/8W	10~1M	50	110	150
RC0805FR-SKE96L	0805, ±1%, RoHS Compliant, +Jumper	0805	F	1/8W	10~1M	50	280	200
RC1206JR-SKE24L	1206, ±5%, RoHS Compliant, +Jumper	1206	J	1/4W	10~1M	50	110	150
RC1206FR-SKE96L	1206, ±1%, RoHS Compliant, +Jumper	1206	F	1/4W	10~1M	50	350	200

Thick film array chip resistors (convex)								
Global CTC (Preferred)	Description	Size	Tolerance	Max. Power	Resistance Range	Resistor pieces	Min. items	Price per set (USD)
YC12X-JR-SK001L	YC124/YC122, ±5%, +Jumper, RoHS Compliant	0402 x2 0402 x4	J	1/16W	10~1M	100	75	100

Engineering design kit for current sensing application								
Global CTC (Preferred)	Description	Size	Tolerance	Max. Power	Resistance Range	Resistor pieces	Min. items	Price per set (USD)
CS0402-R-SK001L	0402 ~ 2512, ±1% & ±5%, RoHS Compliant	0402~2512	F / J	---	100m~910m	30	160	200

Engineering design kit for mobil application								
Global CTC (Preferred)	Description	Size	Tolerance	Max. Power	Resistance Range*	Resistor pieces	Min. items	Price per set (USD)
MD0402-R-SK001L	Chip Resistors & MLCC & Attenuators, refer to below table	---	---	---	---	50~100	44	100

Note: Before ordering, please contact with sales force for detail of resistance

Series	Global CTC	Description	Q'ty
Low ohmic	RL0805FR-070R36L	0805, ±1%, 0R36, 1/8W	50
	RL0805FR-070R4L	0805, ±1%, 0R4, 1/8W	50
	RL0805FR-070R62L	0805, ±1%, 0R62, 1/8W	50
	RL0805FR-7W0R2L	0805, ±1%, 0R2, 1/4W	50
	RL0805FR-7W0R22L	0805, ±1%, 0R22, 1/4W	50
	RL0805FR-7W0R33L	0805, ±1%, 0R33, 1/4W	50
	RL0805FR-7W0R36L	0805, ±1%, 0R36, 1/4W	50
	RL0805FR-7W0R39L	0805, ±1%, 0R39, 1/4W	50
	RC0805FR-7W1RL	0805, ±1%, 1R, 1/4W	50
C-Array	CA0508KRNPO9BN100	0508, ±10%, 10pF, NPO, 50V	50
	CA0508KRNPO9BN150	0508, ±10%, 15pF, NPO, 50V	50
	CA0508KRNPO9BN180	0508, ±10%, 18pF, NPO, 50V	50
	CA0508KRNPO9BN220	0508, ±10%, 22pF, NPO, 50V	50
	CA0508KRNPO9BN330	0508, ±10%, 33pF, NPO, 50V	50
Attenuator	ATV321CR-071DBL	0404, ±0.3dB, 1dB	30
	ATV321CR-073DBL	0404, ±0.3dB, 3dB	30
	ATV321CR-075DBL	0404, ±0.3dB, 5dB	30
	ATV321CR-076DBL	0404, ±0.3dB, 6dB	30

Series	Global CTC	Description	Q'ty
2R-Array	YC122-JR-070RL	0404, ±5%, 1/16W	100
	YC122-JR-0710RL	0404, ±5%, 10R, 1/16W	100
	YC122-JR-0722RL	0404, ±5%, 22R, 1/16W	100
	YC122-JR-0733RL	0404, ±5%, 33R, 1/16W	100
	YC122-JR-0747RL	0404, ±5%, 47R, 1/16W	100
	YC122-JR-07100RL	0404, ±5%, 100R, 1/16W	100
	YC122-JR-07330RL	0404, ±5%, 330R, 1/16W	100
	YC122-JR-07470RL	0404, ±5%, 470R, 1/16W	100
	YC122-JR-071KL	0404, ±5%, 1K, 1/16W	100
	YC122-JR-072K2L	0404, ±5%, 2K2, 1/16W	100
	YC122-JR-073K3L	0404, ±5%, 3K3, 1/16W	100
	YC122-JR-074K7L	0404, ±5%, 4K7, 1/16W	100
	YC122-JR-0710KL	0404, ±5%, 10K, 1/16W	100
4R-Array	YC124-JR-070RL	0408, Jumper, 1/16W	100
	YC124-JR-0710RL	0408, ±5%, 10R, 1/16W	100
	YC124-JR-0722RL	0408, ±5%, 22R, 1/16W	100
	YC124-JR-0733RL	0408, ±5%, 33R, 1/16W	100
	YC124-JR-0747RL	0408, ±5%, 47R, 1/16W	100
	YC124-JR-07100RL	0408, ±5%, 100R, 1/16W	100
	YC124-JR-07330RL	0408, ±5%, 330R, 1/16W	100
	YC124-JR-07470RL	0408, ±5%, 470R, 1/16W	100
	YC124-JR-071KL	0408, ±5%, 1K, 1/16W	100
	YC124-JR-072K2L	0408, ±5%, 2K2, 1/16W	100
	YC124-JR-073K3L	0408, ±5%, 3K3, 1/16W	100
	YC124-JR-074K7L	0408, ±5%, 4K7, 1/16W	100
	YC124-JR-0710KL	0408, ±5%, 10K, 1/16W	100

GPS patch antenna and active module

Description	GPS Patch antenna									
Dimensions (mm)	25x25x4	25x25x2	18x18x4	18x18x2	15x15x4	15x15x2	12x12x4	12x12x2	10x4x4	6.2x3.0x1.5
Frequency range	1.575 GHz									
*Band width (MHz)	20	10	10	5	8	5	9	4	10	100
*Gain (dBi max)	5.5	5	4	1	2.5	1	1	-1	-2	1
Polarization	circular polarization	circular polarization	circular polarization	circular polarization	circular polarization	circular polarization	circular polarization	circular polarization	circular polarization	circular polarization
Axial ratio	<3	<3	<3	<3	<3	<3	<3	<3	---	---
*VSWR	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2	<2
Temp range (°C)	-55 to 125	-55 to 125	-55 to 125	-55 to 125	-55 to 125	-55 to 125	-55 to 125	-55 to 125	-55 to 125	-55 to 125

*Depends On The YAGEO Demoboard.

Packing										
Bulk	CAN43134250315818	CAN43134250215818	CAN43134240315818	CAN43134240215818	CAN43134230315818	CAN43134230215818	CAN43134220315818	CAN43134220215818	---	---
Tape	---	---	---	---	---	---	---	---	CAN4311231021581K	CAN4311113011582K

Description	GPS Active module							
Dimensions (mm)	28x28x7.5	28x28x5.5	19x19x7.5	19x19x5.5	21x15x7.5	16x16x7.5	13x13x7.5	13x13x5.5
Frequency range	1.575 GHz							
*Antenna Gain (dBi max)	5.5	5	4	1	2.5	1	1	-1
Polarization	circular polarization	circular polarization	circular polarization	circular polarization	circular polarization	circular polarization	circular polarization	circular polarization
Axial ratio	<3	<3	<3	<3	<3	<3	<3	<3
*Antenna Gain (dBi max)	<30	<30	<30	<30	<17	<17	<17	<17
*Noise Figure (dB)	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5
Temp range (°C)	-30 to 85	-30 to 85	-30 to 85	-30 to 85	-30 to 85	-30 to 85	-30 to 85	-30 to 85

*Depends On The YAGEO Demoboard.

Packing								
Bulk	CAN 431343991158 1B	CAN 431343992158 1B	CAN 431343793158 1B	CAN 431343795158 1B	CAN 431343595158 1B	CAN 431343592158 1B	CAN 431343486158 1B	CAN 431343488158 1B
Tape	---	---	---	---	---	---	---	---

UHF, Dual-band and Triple-band antenna

Description	UHF ceramic antenna				TDMA antenna ceramic	DECT / WCDMA antenna
Dimensions (mm)	4x12x1.5	37.5x6.8x0.9			16.5x14x0.9	8.8x6.8x0.9
*Frequency range	400-500MHz	433 MHz	460 MHz	490 MHz	850 to 950 MHz	1.88 to 2.1 GHz
Band width (MHz)	>20	>20			>100	>100
*Gain (dBi max)	0.5	0.5			1.5	2
Polarization	Linear	Linear			Linear	Linear
Azimuth	Omni-directional	Omni-directional			Omni-directional	Omni-directional
*VSWR	<3	<2.0			<2.0	<2.0
Temp range (°C)	-40 to 125	-55 to 125			-55 to 125	-55 to 125

*Depends On The YAGEO Demoboard.

Packing									
Bulk	---	CAN43131212004 31B	CAN4313121200461B	CAN43131212004 91B	CAN43131190008 71B	---	CAN43131140015 81B	CAN43134240615 81B	---
Tape 1000 pcs	CAN4311129200431K	---	---	---	---	CAN4311112001881K	---	---	CAN4311231011581K

Description	Dual-band WLAN 2.45 / 5.2 GHz	Dual-band antenna (900/1800MHz) ceramic	Triple-band antenna (900/1800/1900MHz) PCB vertical	Triple-band/WLAN 802.11b/a, 2.45/5.2G FR4 w/cable conn.	Triple-band antenna (900/1800/1900) with cable /connector
Dimensions (mm)	8.7x8.0x0.9	21x12x0.9	30x9.4x0.8	18.2x10.5x0.4 24x14.4x0.4	35x6x0.4
Frequency range	2.45 / 5.2 GHz	880 to 960 MHz 1710 to 1880 MHz	880 to 960 MHz 1710 to 1880 MHz	2.45 to 2.5 GHz 5.1 to 5.3 GHz	880 to 960 MHz 1850 to 1990 MHz
Band width (MHz)	>100	>30 >170	>80 >170	>200 >600	>80 >170
*Gain (dBi max)	3.5 / 1.5	0.5 to 1 0.5 to 1	0.5 to 1 1 to 1.5	3 / 2.45 GHz 6 / 5 GHz	0 to 0.5 MHz / 0.5 to 1 D
Polarization	Linear	Linear	Linear	Linear	Linear
Azimuth	Omni-directional	Omni-directional	Omni-directional	Omni-directional	Omni-directional
*VSWR	<2.5	<2.7	<2.5	<1.8 for 2.45 GHz <2 for 5 GHz	<3.5
Temp range (°C)	-55 to 125	-55 to 125	-55 to 125	-55 to 125	-40 to 85

*Depends On The YAGEO Demoboard.

Packing					
Bulk	---	CAN4313118009181B	CAN4313324009181B	CAN4313335012501B CAN4313325022501B	CAN4313330009191B
Tape 1000 pcs	CAN4311117002521K	---	---	---	---

Bluetooth antenna, 2012 to 5320

Description	Bluetooth antenna							
Dimensions (mm)	2.0x1.2x1.1	5.3x2.0x1.3	5.3x2.0x1.3	5.3x2.0x1.3	5.3x2.0x1.3	5.3x2.0x1.3	5.3x2.0x1.3	5.3x2.0x1.3
*Frequency range	2.45 GHz	2.00 GHz	2.10 GHz	2.20 GHz	2.30 GHz	2.40 GHz	2.45 GHz	2.50 GHz
Band width (MHz)	>70	>100	>100	>100	>100	>100	>100	>100
*Gain (dBi max)	3	4	4	4	4	4	4	4
Polarization	Linear	Linear	Linear	Linear	Linear	Linear	Linear	Linear
Azimuth	Omni-directional	Omni-directional	Omni-directional	Omni-directional	Omni-directional	Omni-directional	Omni-directional	Omni-directional
*VSWR	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5
Temp range (°C)	-25 to 85	-55 to 85	-55 to 85	-55 to 85	-55 to 85	-55 to 85	-55 to 85	-55 to 85

*Depends On The YAGEO Demoboard.

Packing								
Bulk	---	---	---	---	---	---	---	---
Tape 4000 pcs	CAN4311714002454K	CAN4311153002001K	CAN4311153002101K	CAN4311153002201K	CAN4311153002301K	CAN4311153002401K	CAN4311153002451K	CAN4311153002501K

Description	Bluetooth antenna								
Dimensions (mm)	3.2x1.6x1.2	3.2x1.6x1.2	3.2x1.6x1.2	3.2x1.6x1.2	3.2x1.6x1.2	3.2x1.6x1.2	3.2x1.6x1.2	3.2x1.6x1.2	3.2x1.6x1.2
Frequency range	2.45 GHz	2.20 GHz	2.30 GHz	2.40 GHz	2.50 GHz	2.60 GHz	2.70 GHz	2.80 GHz	2.90 GHz
Band width (MHz)	>100	>100	>100	>100	>100	>100	>100	>100	>100
Gain (dBi max)	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
Polarization	Linear	Linear	Linear	Linear	Linear	Linear	Linear	Linear	Linear
Azimuth	Omni-directional	Omni-directional	Omni-directional	Omni-directional	Omni-directional	Omni-directional	Omni-directional	Omni-directional	Omni-directional
VSWR	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5
Temp range (°C)	-25 to 85	-25 to 85	-25 to 85	-25 to 85	-25 to 85	-25 to 85	-25 to 85	-25 to 85	-25 to 85

Packing									
Bulk	---	---	---	---	---	---	---	---	---
Tape 3000 pcs	CAN4311712002453K	CAN4311712022453K	CAN4311712032453K	CAN4311712042453K	CAN4311712052453K	CAN4311712062453K	CAN4311712072453K	CAN4311712082453K	CAN4311712092453K

Description	Bluetooth antenna-long shape			
Dimensions (mm)	7.8x3.6x0.9	7.8x3.6x0.9	7.8x3.6x0.9	7.8x3.6x0.9
*Frequency range	2.30 GHz	2.45 GHz	2.60 GHz	2.70 GHz
Band width (MHz)	>100	>100	>100	>100
*Gain (dBi max)	4.1	4.1	4.1	4.1
Polarization	Linear	Linear	Linear	Linear
Azimuth	Omni-directional	Omni-directional	Omni-directional	Omni-directional
*VSWR	<2.5	<2.5	<2.5	<2.5
Temp range (°C)	-55 to 125	-55 to 125	-55 to 125	-55 to 125

*Depends On The YAGEO Demoboard.

Packing				
Bulk	---	---	---	---
Tape 1000 pcs	CAN4311115002301K	CAN4311115002451K	CAN4311115002601K	CAN4311115002701K

Description	Bluetooth antenna				
Dimensions (mm)	7.3x5.5x1.3	7.3x5.5x1.3	7.3x5.5x1.3	7.3x5.5x1.3	7.3x5.5x1.3
*Frequency range	2.45 GHz	2.60 GHz	2.70 GHz	2.80 GHz	2.90 GHz
Band width (MHz)	>100	>100	>100	>100	>100
*Gain (dBi max)	1.2	1.2	1.2	1.2	1.2
Polarization	Linear	Linear	Linear	Linear	Linear
Azimuth	Omni-directional	Omni-directional	Omni-directional	Omni-directional	Omni-directional
*VSWR	<2.0	<2.0	<2.0	<2.0	<2.0
Temp range (°C)	-55 to 125	-55 to 125	-55 to 125	-55 to 125	-55 to 125

*Depends On The YAGEO Demoboard.

Packing					
Bulk	---	---	---	---	---
Tape 1000 pcs	CAN4311111002451K	CAN4311111002601K	CAN4311111002701K	CAN4311111002801K	CAN4311111002901K

Band pass filter

Description	Band pass filter				
Dimensions (mm)	1.6x0.8x0.65	2.0x1.25x0.85	2.0x1.25x0.85	2.0x1.25x1.0	2.0x1.25x0.85
Frequency range	2.4 GHz	2.4 GHz	2.45 GHz	5 GHz	5 GHz
Pass Band	2400-2500 MHz	2400-2500 MHz	2400-2500 MHz	4900-5950 MHz	4900-5900 MHz
Impedance	50 ohm	50 ohm	50 ohm	50 ohm	50 ohm
Insertion loss (dB)	3.0 dB	2.0 dB	2.0 dB	1.5 dB	2.2 dB
Ripple (dB)	0.6 dB	0.6 dB	0.6 dB	0.6 dB	0.6 dB
VSWR (Max)	2.0	2.0	2.0	2.0	2.0
Attenuation	20dB Min. at 1.6-1.9 GHz	40dB Min@1000-1600 GHz	40dB Min@1000-1600 MHz	30dB Min@1280-3000MHz	25dB Min@6850-7150 MHz
	30dB Min. at 4.8-5.2 GHz	40dB Min@4900 GHz	40dB Min@4900 MHz	25dB Min@3300-4000MHz	20dB Min@7500-9000 MHz
	20dB Min. at 7.2-7.5 GHz	20dB Min@7500 GHz	20dB Min@7500 MHz	25dB Min@9800-11900MHz	

Packing					
Bulk	---	---	---	---	---
Tape 4000 pcs	CFL4111715012454K	CFL4111714022454K	CFL4111714032454K	CFL4111714015004K	CFL4111714035004K

Description	Band pass filter				
Dimensions (mm)	2.5x2.0x0.95	2.5x2.0x0.95	2.5x2.0x1.1	2.5x2.0x1.2	2.5x2.0x0.95
Frequency range	2.45 GHz	2.4 GHz	2.45 GHz	2.45 GHz	2.45 GHz
Pass Band	2400-2500 MHz	2400-2500 MHz	2400-2500 MHz	2400-2500 MHz	2400-2500 MHz
Impedance	50 ohm	50 ohm	50 ohm	50 ohm	50 ohm
Insertion loss (Max)	2.5 dB	1.5 dB	1.5 dB	2.5 dB	2.2 dB
Ripple (Max)	0.6 dB	0.6 dB	0.6 dB	0.6 dB	0.6 dB
VSWR (Max)	2.0	2.0	2.0	2.0	2.0
Attenuation	40dB Min@880-960MHz	40 dB@880-960 MHz	40dB Min@880-960MHz	20dB Min@880-960MHz	30dB Min@1600MHz
	30dB Min@2100MHz	30 dB@1710-1785 MHz	30dB Min@1710-1785MHz	20dB Min@2700MHz	35dB Min@3200MHz
	30dB Min@4800-5000MHz	30 dB@1850-1910 MHz	20dB Min@1850-1910MHz	25dB Min@4800-5000MHz	25dB Min@4800-5000MHz
	30dB Min@7200-7500MHz	20 dB@4800-5000 MHz	30dB Min@4800-5000MHz	25dB Min@7200-7500MHz	30dB Min@7200-7500MHz
		30 dB@7200-7500 MHz	20dB Min@7200-7500MHz		

Packing					
Tape 3000 pcs	CFL4111713022453K	CFL4111713032453K	CFL4111713052453K	CFL4111713072453K	CFL4111713182453K
Tape 4000 pcs	---	---	---	---	---

Description	Low pass filter		
Dimensions (mm)	1.6x0.8x0.65	2.0x1.25x0.85	2.0x1.2x0.85
Frequency range	2.45 GHz	2.45 GHz	3.5 GHz
Pass Band	2.4-2.5 GHz	2.4-2.5 GHz	3000-4000 MHz
Impedance	50 ohm	50 ohm	50 ohm
Insertion loss (Max)	0.6 dB	0.5 dB	0.5 dB
Ripple (Max)	0.6 dB	0.6 dB	0.6 dB
VSWR	1.5 (Max.)	1.8 (Max.)	2.0 (Max.)
Attenuation	25 dB Min@2 fo	27 dB Min@5000 MHz	35.0 dB Min. at 6.8 GHz
	20 dB Min@3 fo	25 dB Min@7500 MHz	30.0 dB Min. at 11.0 GHz (ref)
		25 dB Min@10,000 MHz	

Packing			
Bulk	---	---	---
Tape 4000 pcs	CFL4111715502454K	CFL4111714502454K	CFL4111714503504K

Balun

Description	Balun		
Dimensions (mm)	2.0x1.25x0.8		
Frequency range	2.4 GHz		
Pass Band	2400-2500 MHz		
Impedance	50/50 ohm	50/100 ohm	50/200 ohm
Insertion loss (Max)	1.0 dB		
Ripple	0.6 dB		
VSWR	2		
Amplitute Balance (Max)	2.0 dB		
Phase Differential	180±10 degree		

Packing			
Tape 3000 pcs	---	---	---
Tape 4000 pcs	CBA4711714002454K	CBA4711714012454K	CBA4711714022454K

Description	Balun	
Dimensions (mm)	1.6x0.8x0.65	2.0x1.25x0.8
Frequency range	5 GHz	5 GHz
Pass Band	4900-5950 MHz	4900-5900 MHz
Impedance	50/100 ohm	50/100 ohm
Insertion loss (Max)	1.2 dB	1.2 dB
Ripple (Max)	0.6 dB	0.6 dB
VSWR (Max)	2.0	2.0
Amplitute Balance (Max)	1.5 dB	2.0 dB
Phase Differential	180±10 degree	

Packing		
Tape 3000 pcs	---	---
Tape 4000 pcs	CBA4711715015004K	CBA4711714015004K

Description	Bluetooth balanced filter (Filter/Balun combo)				
Dimensions (mm)	2.0x1.2x0.9				
Frequency range	2.45 GHz				
Unbalanced Impedance	50 ohm				
Balanced Impedance	Conjugate match to CSR BC04/03 series				
Insertion loss (dB)	<3.5	<3.5	<3.5	<3.5	<3.5
Amplitute Balance (dB)	<1	<1	<1	<1	<1
Phase Differential	180±5 degree	180±5 degree	180±5 degree	180±5 degree	180±5 degree
Attenuation	40 dB min@880~960 MHz	40 dB min@880~960 MHz	40 dB min@880~960 MHz	40 dB min@880~960 MHz	40 dB min@880~960 MHz
	25 dB min@1300~1600 MHz	25 dB min@1300~1600 MHz	20 dB min@1300~1600 MHz	25 dB min@1300~1600 MHz	25 dB min@1300~1600 MHz
	30 dB min@4800~5000 MHz	35 dB min@4800~5000 MHz	35 dB min@4800~5000 MHz	35 dB min@4800~5000 MHz	35 dB min@4800~5000 MHz
	25 dB min@7200~7500 MHz	30 dB min@7200~7500 MHz	25 dB min@7200~7500 MHz	30 dB min@7200~7500 MHz	30 dB min@7200~7500 MHz

Packing					
Bulk	---	---	---	---	---
Tape 4000 pcs	CBA4711714972454K	CBA4711714982454K	CBA4711714772454K	CBA4711714882454K	CBA4711714672454K

Description	Combo
Dimensions (mm)	2.5x2.0x1.2
Frequency range	2.4 GHz
Pass Band	2400-2500 MHz
Impedance	50/100 ohm
Insertion loss (Max)	2.0 dB
Ripple (Max)	0.5 dB
Amplitute Balance (Max)	1.0 dB
Phase Differential	180±8 degree
Attenuation	35 dB min@880-960 MHz
	22 dB min@1719-1910 MHz
	20 dB min@5000 MHz
	30 dB min@7500 MHz

Packing	
Tape 3000 pcs	CBA4711713912453K
Tape 4000 pcs	---

Diplexer

Description	Diplexer					
Dimensions (mm)	2.0x1.25x0.75		2.0x1.25x0.75		2.0x1.25x0.85	
Frequency range	2.4 & 5 GHz		2.4 & 5 GHz		2.4 & 5 GHz	
Pass Band	2400-2500 MHz	4900-5900 MHz	2400-2500 MHz	4900-5900 MHz	2400-2500 MHz	4900-5900 MHz
Insertion loss (Max)	0.6 dB	1.1 dB	0.6 dB	1.1 dB	0.7 dB	0.9 dB
VSWR (Max)	2.0	2.0	2.0	2.0	2.0	2.0
Attenuation	18dB Min@4800-6000MHz	18dB Min@1800-2500MHz	17dB Min@4800-6000MHz	17dB Min@1800-2500MHz	20dB Min@4900-5900MHz	20dB Min@2400-2500MHz
	20dB Min@7200-7500MHz	15dB Ref.@10300-10700MHz	20dB Min@7200-7500MHz	20dB Ref.@10300-10700MHz		

Packing			
Tape 3000 pcs	---	---	---
Tape 4000 pcs	CFL4111714802504K	CFL4111714822504K	CFL4111714852504K

SMD Ceramic EMI Filter Capacitors X2Y® series, X7R and X5R

X5R						
SIZE	Y-CAPACITOR		X-CAPACITOR		THICKNESS (mm)	Yageo part number
	CAP. (nF)	VOLTAGE RATING (V)	CAP. (nF)	VOLTAGE RATING (V)		
0603	220	10	110	20	0.60	CX 0603 MR X5R 6BB 224
	330	10	165	20	0.60	CX 0603 MR X5R 6BB 334

X7R						
SIZE	Y-CAPACITOR		X-CAPACITOR		THICKNESS (mm)	Yageo part number
	CAP. (nF)	VOLTAGE RATING (V)	CAP. (nF)	VOLTAGE RATING (V)		
0603	1.5	100	0.75	200	0.60	CX 0603 MR X7R 0BB 152
	2.2	100	1.1	200	0.60	CX 0603 MR X7R 0BB 222
	4.7	100	2.4	200	0.60	CX 0603 MR X7R 0BB 472
	5.6	100	2.8	200	0.60	CX 0603 MR X7R 0BB 562
	10	50 / 63	5	100	0.60	CX 0603 MR X7R 9BB 103
	22	25	11	50	0.60	CX 0603 MR X7R 8BB 223
	47	16	24	25	0.60	CX 0603 MR X7R 7BB 473
	56	16	28	25	0.60	CX 0603 MR X7R 7BB 563
	100	10	50	16	0.60	CX 0603 MR X7R 6BB 104
0805	4.7	100	2.4	200	0.85	CX 0805 MR X7R 0BB 472
	10	100	5	200	0.85	CX 0805 MR X7R 0BB 103
	15	50 / 63	8	100	0.85	CX 0805 MR X7R 9BB 153
	18	50 / 63	9	100	0.85	CX 0805 MR X7R 9BB 183
	22	25	11	50	0.85	CX 0805 MR X7R 8BB 223
	39	25	20	50	0.85	CX 0805 MR X7R 8BB 393
	47	16	24	25	0.85	CX 0805 MR X7R 7BB 473
	100	16	50	25	0.85	CX 0805 MR X7R 7BB 104
	180	10	90	16	0.85	CX 0805 MR X7R 6BB 184
1206	22	100	11	200	1.20	CX 1206 MK X7R 0BB 223
	47	50 / 63	24	100	1.20	CX 1206 MK X7R 9BB 473
	100	50 / 63	50	100	1.20	CX 1206 MK X7R 9BB 104
	180	25	90	50	1.20	CX 1206 MK X7R 8BB 184
	220	16	110	25	1.20	CX 1206 MK X7R 7BB 224
	390	16	195	25	1.20	CX 1206 MK X7R 7BB 394
	470	16	235	25	1.20	CX 1206 MK X7R 7BB 474
	820	10	410	16	1.20	CX 1206 MK X7R 6BB 824
1210	47	100	24	200	1.20	CX 1210 MK X7R 0BB 473
	100	50 / 63	50	100	1.20	CX 1210 MK X7R 9BB 104
	220	50 / 63	110	100	1.60	CX 1210 MK X7R 9BB 224
	470	25	235	50	1.60	CX 1210 MK X7R 8BB 474
	560	25	280	50	1.60	CX 1210 MK X7R 8BB 564
	820	16	410	25	1.60	CX 1210 MK X7R 7BB 824
	1000	16	500	25	1.60	CX 1210 MK X7R 7BB 105
1410	390	50	195	100	1.30	CX 1410 MK X7R 9BB 394

***Note:** 1. Other values available on request.
2. Ordering codes for preferred versions (20% tolerance, 180 mm reel). For other packing and tolerance see section "Ordering Code Information".

Ordering code, thickness classes and packing quantities

Ordering code : Yageo part number

Ordering example: CX0603MKX7R6BB104

CX 0603 M K X7R 6 B B 104

- **CX** — Series name (code 1-2)
  CX = X2Y® series
- **0603** — Size code (code 3-6)
  EIA mm
  0603 (1608M)
  0805 (2012M)
  1206 (3216M)
  1210 (3225M)
  1410 (3625M)
  1812 (4632M)
- **M** — Capacitance tolerance (code 7)
  M = ±20%
- **K** — Packing style (code 8)
  R = paper tape reel ∅7 inch
  K = embossed plastic tape reel ∅7 inch
- **X7R** — TC material (code 9-11)
  X5R
  X7R
- **6** — Rated voltage (code 12)
  5 = 6.3 V
  7 = 16 V
  8 = 25 V
  9 = 50 V
  0 = 100 V
- **B** — Termination (code 13)
  B = Ni-Barrier
- **B** — Process code (code 14)
  B = X7R
- **104** — Capacitance value (code 15-17)
  (2 significant digits + number of zeros.)
  The 3rd digit:
  Letter R is decimal point
  0 = x1
  1 = $x10^1$
  2 = $x10^2$
  3 = $x10^3$
  4 = $x10^4$
  5 = $x10^5$
  6 = $x10^6$

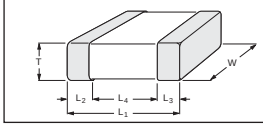
Thickness classes and packing quantities for X7R

Thickness Classification (mm)	Quantity per reel 8 mm tape width ∅180 mm / 7"	
	Paper	Blister
0.6 ± 0.1	4,000	---
0.6 ± 0.1	4,000	---
0.6 ± 0.1	---	2,500
0.6 ± 0.1	---	2,500
0.6 ± 0.1	---	2,500

Size 0402									
Phycomp part number	Varistor voltage/ Breakdown voltage	Max. continuous voltage/ Working voltage	Clamping voltage		Peak current	Resistance		Capacitance	
	DC @1mA	D.C	8/20 µs		8/20 µs	Voltage	Resistance	(pF)	
	(V)	(V) max.	(V) max.	(A)	(A) max.	(V)	(MΩ) min.	1KHz	1MHz
VRS0402MR55R651N	6.4~9.6	5.5	14	1	30	3	1	650	390
VRS0402MR55R331N	6.4~9.6	5.5	15	1	30	3	1	330	200
VRS0402KR090500N	10.2~13.8	9	22	1	20	3	1	50	30
VRS0402KR090101N	10.2~13.8	9	22	1	20	3	1	100	60
VRS0402LR090201N	10.2~13.8	9	22	1	20	3	1	200	120
VRS0402LR110181N	12.75~17.25	11	27	1	20	3	1	180	110
VRS0402LR140161N	15.3~20.7	14	33	1	20	3	1	160	96
VRS0402KR160121N	19.8~24.2	16	40	1	20	3	1	120	72
VRS0402KR180900N	21.6~26.4	18	43	1	15	3	1	90	54
VRS0402KR220820N	24.3~29.7	22	49	1	15	3	1	82	50
VRS0402KR260550N	29.7~36.3	26	60	1	15	3	1	55	33
VRS0402KR300400N	35.1~42.9	30	71	1	15	3	1	40	24
VRS0402SR55R220N	10~14	5.5	22	1	3	3	1	22	13
VRS0402SR55R330N	10~14	5.5	22	1	5	3	1	33	20
VRS0402SR55R500N	10~14	5.5	22	1	10	3	1	50	30
VRS0402SR55R680N	10~14	5.5	22	1	15	3	1	68	41
VRS0402SR55R820N	10~14	5.5	22	1	15	3	1	82	49
VRS0402SR55R101N	10~14	5.5	22	1	20	3	1	100	60
VRS0402SR55R601N	10~14	5.5	22	1	30	3	1	600	360
VRS0402SR140500N	18~24	14	38	1	15	3	1	50	30
VRS0402SR140101N	18~24	14	38	1	20	3	1	100	60
VRS0402SR180120N	24~32	18	45	1	5	3	1	12	7
VRS0402SR180150N	24~32	18	45	1	5	3	1	15	9
VRS0402SR180270N	24~32	18	45	1	10	3	1	27	16
VRS0402SR180121N	24~32	18	45	1	20	3	1	120	72
VRS0402SR180181N	24~32	18	45	1	20	3	1	120	108
VRS0402SR180030N	38~46	18	76	1	3	3	1	3	1.8

Size 0603									
Phycomp part number	Varistor voltage/ Breakdown voltage	Max. continuous voltage/ Working voltage	Clamping voltage		Peak current	Resistance		Capacitance	
	DC @1mA	D.C	8/20 µs		8/20 µs	Voltage	Resistance	(pF)	
	(V)	(V) max.	(V) max.	(A)	(A) max.	(V)	(MΩ) min.	1KHz	1MHz
VRS0603MR55R801N	6.4~9.6	5.5	15	1	30	3	1	800	480
VRS0603MR55R681N	6.4~9.6	5.5	15	1	30	3	1	680	410
VRS0603MR55R301N	6.4~9.6	5.5	15	1	30	3	1	300	180
VRS0603LR090681N	10.2~13.8	9	22	1	30	3	1	680	410
VRS0603LR110481N	12.75~17.25	11	27	1	30	3	1	480	290
VRS0603LR140361N	15.3~20.7	14	33	1	30	3	1	360	216
VRS0603KR180301N	21.6~26.4	18	43	1	30	3	1	300	180
VRS0603KR220241N	24.3~29.7	22	49	1	30	3	1	240	144
VRS0603KR260201N	29.7~36.3	26	60	1	30	3	1	200	120
VRS0603KR300121N	35.1~42.9	30	70	1	30	3	1	120	72
VRS0603KR380101N	42.3~51.7	38	85	1	20	3	1	100	60
VRS0603KR450800N	50.4~61.6	45	100	1	20	3	1	80	48
VRS0603SR180121N	24~32	18	45	1	20	3	1	120	72
VRS0603SR180100N	90~160	18	225	1	5	3	1	10	6

Case dimensions, thickness classes and packing quantities

Case dimensions								
Discrete capacitors								
	Case size designation	Dimensions in mm						
	inch-based	L_1	W	T_{min}	T_{max}	L_2, L_{3min}	L_2, L_{3max}	L_{4min}
	0402	1.0±0.10	0.5±0.10	0.40	0.50	0.15	0.30	0.40
	0603	1.6±0.20	0.8±0.15	0.70	0.90	0.20	0.60	0.40

Thickness classification and packing quantities		
Thickness classification (mm)	8mm tape width amount per reel	
	180 mm / 7"	
	Paper	
0.5±0.05	10 000	
0.8±0.15	4 000	

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