Innovative Service Around the Globe YAGEO

PRODUCT SELECTION GUIDE

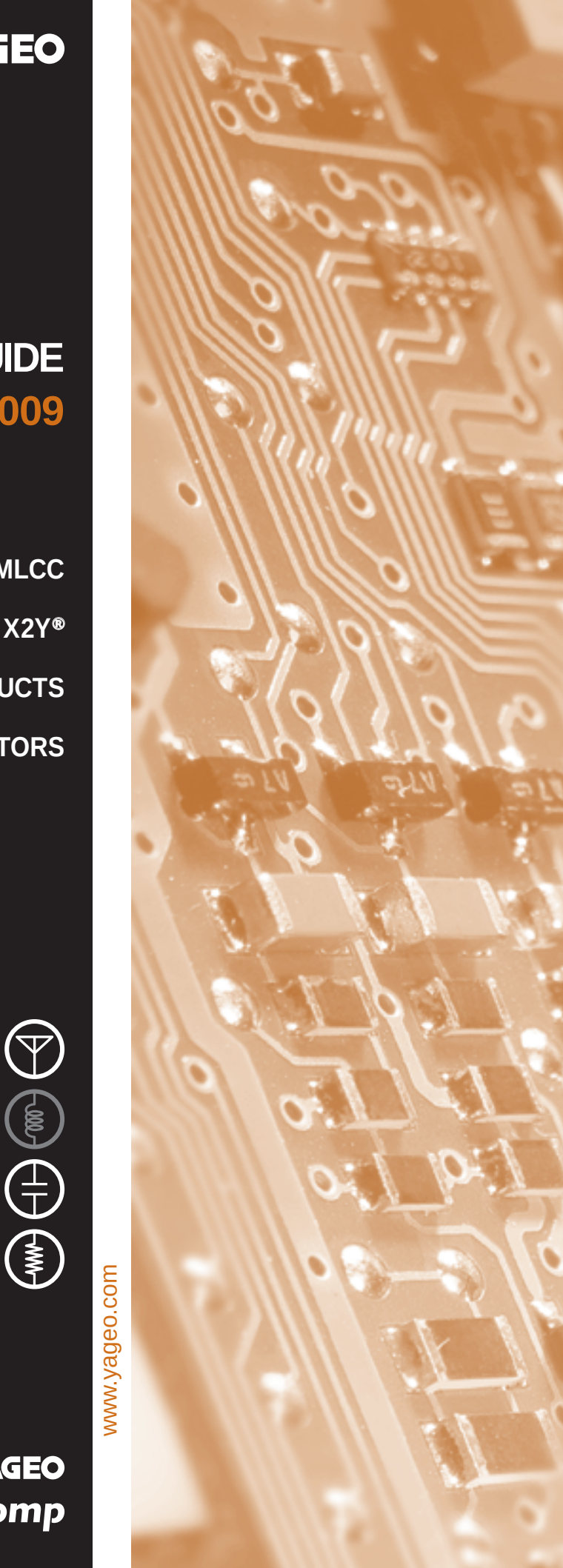
2009

SMD RESISTORS + MLCC

SMD CERAMIC EMI FILTER CAPACITORS - X2Y®

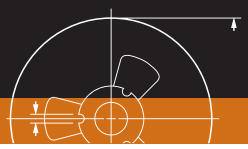
HIGH FREQUENCY PRODUCTS

MULTILAYER CHIP VARISTORS



www.yageo.com

YAGEO Phycomp



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 to 17 digits code (GLOBAL PART NUMBER for both Yageo and Phycomp branded products)
- **12 digits ordering code**
  This unique 12NC number forms the basis of the Phycomp logistic system.
  Please note that 12 digits ordering code will expire at the end of 2010.

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

Minimum shipment quantities, prices and delivering details can be obtained from the Yageo 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 September 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 right next 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 designation and cross-reference					
Inch-based	Metric	Inch-based	Metric	Inch-based	Metric
01005	0402M	0606	1616M	1224	3250M
0201	0603M	0612	1632M	1225	3264M
0202	0605M	0616	1640M	1812	4532M
0402	1005M	0805	2012M	2007	5320M
0404	1010M	1008	2520M	2010	5025M
0408	1020M	1206	3216M	2220	5750M
0508	1220M	1210	3225M	2512	6432M
0603	1608M	1218	3245M	3014	7836M

Contact 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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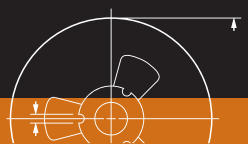

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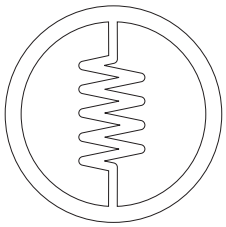
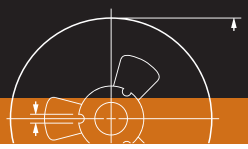


SURFACE-MOUNT RESISTOR CHIPS



Resistor Chip General Information

Specification overview

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

Note: " ! " is the symbol for new product

T. C. R. - RL series

Type	Operating Temp. range	Resistance range	T. C. R.					
			50mΩ - 1Ω					
RL0402	-55°C to +125°C	50mΩ≤R<1Ω	±800 ppm/°C					
			10mΩ - 36mΩ	36mΩ - 91mΩ	91mΩ - 500mΩ			500mΩ - 1Ω
RL0603	-55°C to +125°C	10mΩ≤R<1Ω	±1 500 ppm/°C	±1 200 ppm/°C	±800 ppm/°C			±300 ppm/°C
			10mΩ - 18mΩ	20mΩ - 47mΩ	51mΩ - 91mΩ	100mΩ - 360mΩ	390mΩ - 500mΩ	510mΩ - 1Ω
RL0805	-55°C to +125°C	10mΩ≤R<1Ω	±1 500 ppm/°C	±1 200 ppm/°C	±1 000 ppm/°C	±600 ppm/°C	±300 ppm/°C	±200 ppm/°C
RL1206	-55°C to +125°C	10mΩ≤R<1Ω	±1 500 ppm/°C	±1 200 ppm/°C	±1 000 ppm/°C	±600 ppm/°C	±300 ppm/°C	±200 ppm/°C
RL1210	-55°C to +125°C	10mΩ≤R<1Ω	±1 500 ppm/°C	±1 000 ppm/°C	±800 ppm/°C	±600 ppm/°C	±300 ppm/°C	±200 ppm/°C
			10mΩ - 30mΩ	33mΩ - 56mΩ	60mΩ - 180mΩ	200mΩ - 1Ω		
RL1218	-55°C to +125°C	10mΩ≤R<1Ω	±2 000 ppm/°C	±1 000 ppm/°C	±700 ppm/°C	±250 ppm/°C		
			10mΩ - 18mΩ	20mΩ - 47mΩ	51mΩ - 91mΩ	100mΩ - 360mΩ	390mΩ - 500mΩ	510mΩ - 1Ω
RL2010	-55°C to +125°C	10mΩ≤R<1Ω	±1 500 ppm/°C	±1 200 ppm/°C	±1 000 ppm/°C	±600 ppm/°C	±300 ppm/°C	±200 ppm/°C
RL2512	-55°C to +125°C	10mΩ ≤R<1Ω	±1 500 ppm/°C	±1 200 ppm/°C	±800 ppm/°C	±600 ppm/°C	±300 ppm/°C	±200 ppm/°C

Global part number	Series	Size	Power rating	Max. voltage	Operating Temp. range	Resistance range	Tolerance	T. C. R.
RT0402xRx07xxxxL	RT	0402	1/16W	50V	-55°C to 125°C	10Ω≤ R <121KΩ	±0.05% ±0.1% ±0.25% ±0.5% ±1%	±10 ppm/°C ±15 ppm/°C ±25 ppm/°C ±50 ppm/°C
RT0603xRx07xxxxL		0603	1/10W	75V		5.1Ω≤ R ≤681KΩ		
RT0805xRx07xxxxL		0805	1/8W	150V		5.1Ω≤ R ≤1.5MΩ		
RT1206xRx07xxxxL		1206	1/8W	200V		5.1Ω≤ R ≤1.5MΩ		
RT1210xRx07xxxxL		1210	1/4W			5.1Ω≤ R ≤1MΩ		
RT2010xKx07xxxxL		2010	1/2W			10Ω≤ R ≤1MΩ		
RT2512xKx07xxxxL		2512	3/4W			10Ω≤ R ≤1MΩ		
RJ0402FRE07xxxxL	RJ	0402	1/16W	25V	-55°C to 125°C	10Ω≤ R ≤121KΩ	±1%	±50 ppm/°C
RJ0603FRE07xxxxL		0603	1/16W	50V		5.1Ω≤ R ≤681KΩ		
RJ0805FRE07xxxxL		0805	1/10W	100V		5.1Ω≤ R ≤1.5MΩ		
RJ1206FRE07xxxxL		1206	1/8W	150V		5.1Ω≤ R ≤1.5MΩ		
RJ1210FRE07xxxxL		1210	1/4W			5.1Ω≤ R ≤1MΩ		
RJ2010FKE07xxxxL		2010	1/2W			10Ω≤ R ≤1MΩ		
RJ2512FKE07xxxxL		2512	3/4W			10Ω≤ R ≤1MΩ		
! TA164-xR-07xxxxL	TA	4*0603	1/16W	75V	-55°C to 125°C	10Ω≤ R ≤330KΩ	±0.1% ±0.5% ±1%	±25 ppm/°C ±50 ppm/°C
! TD164-xR-07xxxxL	TD	4*0603	1/16W	75V	-55°C to 125°C	10Ω≤ R ≤330KΩ	±0.1% ±0.5% ±1%	±25 ppm/°C ±50 ppm/°C
PR2010xKx07xxxxL	PR	2010	0.5W	(PxR)^1/2	-55°C to 155°C	2mΩ≤ R ≤6mΩ	±1% ±2% ±5%	2mΩ≤ R ≤6mΩ ±150 ppm/°C
PR2010xKx7WxxxxxL			1W					
PR2512xKx07xxxxL		2512	1W			1mΩ≤ R ≤5mΩ		1mΩ≤ R ≤2mΩ ±200 ppm/°C 2mR <R ±100 ppm/°C
PR2512xKx7WxxxxxL			2W					
PF2512xKx07xxxxL	PF	2512	1W	(PxR)^1/2	-55°C to 155°C	6mΩ≤ R ≤130mΩ	±1% ±2% ±5%	±100 ppm/°C
PF2512xKx7WxxxxxL		2512	2W			6mΩ≤ R ≤130mΩ		
! PT0402xRx07xxxxL	PT	0402	1/16W	(PxR)^1/2	-55°C to 125°C	100mΩ≤ R ≤910mΩ	±1% ±5%	±200 ppm/°C
! PT0603xRx07xxxxL		0603	1/10W					
! PT0805xRx07xxxxL		0805	1/8W					
! PT1206xRx07xxxxL		1206	1/4W					±100 ppm/°C
! PT1210xRx07xxxxL		1210	1/2W					
! PT1218xKx07xxxxL		1218	1W		-55°C to 155°C			
! PT2010xKx07xxxxL		2010	3/4W		-55°C to 125°C			
! PT2512xKx07xxxxL		2512	1W		-55°C to 155°C			
AR0402xR-07xxxxL	AR	0402	1/16W	50V	-55°C to 155°C	1Ω≤ R ≤10MΩ	±1% ±5%	1Ω≤ R ≤10Ω ±200 ppm/°C 10Ω< R ≤10MΩ ±100 ppm/°C
AR0603xR-07xxxxL		0603	1/10W					
AR0805xR-07xxxxL		0805	1/8W	150V				
AR1206xR-07xxxxL		1206	1/4W	200V				
RV0805JR-07xxxxL	RV	0805	1/8W	400V	-55°C to 155°C	100KΩ≤ R ≤10MΩ	±1% ±5%	100KΩ≤ R ≤10MΩ ±200 ppm/°C
RV1206JR-07xxxxL		1206	1/4W	500V	-55°C to 155°C	100KΩ≤ R ≤27MΩ	±5%	100KΩ≤ R ≤27MΩ ±200 ppm/°C
RV1206FR-07xxxxL						100KΩ≤ R ≤10MΩ	±1%	
RV2512JK-07xxxxL		2512	1W		-55°C to 155°C	4.7MΩ≤ R ≤16MΩ	±5%	4.7MΩ≤ R ≤16MΩ ±200 ppm/°C
SR0805xR-07xxxxL	SR	0805	1/8W	150V	-55°C to 155°C	1Ω≤ R ≤100KΩ	±5% ±10% ±20%	1Ω≤ R ≤100KΩ ±200 ppm/°C
SR1206xR-07xxxxL		1206	1/4W	200V		1Ω≤ R ≤100KΩ		
SR1218xK-07xxxxL		1218	1W			1Ω≤ R ≤100KΩ		
SR2512xK-07xxxxL		2512	1W			1Ω≤ R ≤100KΩ		
TR0402xR-07xxxxL	TR	0402	1/16W	50V	-55°C to 125°C	1Ω≤ R ≤10MΩ	+0/-10% +0/-20% +0/-30%	1Ω≤ R ≤10Ω 1MΩ< R ≤10MΩ ±200 ppm/°C
TR0603xR-07xxxxL		0603	1/16W					
TR0805xR-07xxxxL		0805	1/8W	150V	-55°C to 155°C			10Ω< R ≤1MΩ ±100 ppm/°C
TR1206xR-07xxxxL		1206	1/4W	200V				
ATV321xR-07xxxxL	AT	0404	40mW	50V	-55°C to 125°C	1DB to 20D B	±0.3dB ±0.5dB ±1.0dB ±2.0dB	---

Note: " ! " is the symbol for new product

Ordering Information - Global part number

Global part number - Single resistor [3]

R C 0 6 0 3 J R — 0 7 1 0 R (L)

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

Size code (code 3-6)
(inch / metric)
- 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 ordering)
- K = ±10% (for TR = 0/-10%)
- M = ±20% (for TR = 0/-20%)
- N = ±30% (for TR = 0/-30%)

Optional code [1/2] (code 17)

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

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

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

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

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)
3. Global Part Number is the preferred clear text code for ordering Yageo and Phycomp branded products.

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 / PT = Current sensor - low TCR
- Size code (code 3-6) (inch / metric)
  - 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 = ±75 ppm/°C
  - F = ±100 ppm/°C
  - G = ±200 ppm/°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)

Global part number - Arrays & Networks

YC 16 4 — J R — 07 10R (L)

- Series name (code 1-2)
  - YC = Aarray & Network (convex) thick film
  - TC = Array (concave) thick film
  - TA = Array (convex) thin film
  - TD = Multi value array (convex) thin film
- Size code (inch) (code 3-4)
  - 10 = 0201 x 2 (0202)
  - 12 = 0402 x 2 (0404)
  - 0402 x 4 (0408)
  - 15 = 10Pin/8R (0612)
  - 16 = 0603 x 2 (0606)
  - 0603 x 4 (0612)
  - 24 = 0602 x 8 (0616)
  - 32 = 1206 x 4 (1224)
  - 35 = 10Pin/8R (1225)
- Number of resistors (code 5)
  - 2 = 2 resistors
  - 4 = 4 resistors
  - 8 = 8 resistors
- 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
  - 0R1 = 0.1Ω
  - 1R = 1Ω
  - 10R = 10Ω
  - 100R = 100Ω
  - 1K = 1 000Ω
  - 1M = 1 000 000Ω
- Taping reel (code 10-11)
  - 07 = 7 inch Dia. reel
  - 10 = 10 inch Dia. reel
  - 13 = 13 inch Dia. reel
- T.C.R. (code 9)
  - D = ±25 ppm/°C
  - E = ±50 ppm/°C
  - "—" = Based on spec.
- Packing style (code 8)
  - R = Paper tape reel
  - K = Embossed plastic tape reel
- Tolerance (code 7)
  - B = ±0.1%
  - D = ±0.5%
  - F = ±1%
  - J = ±5% (for Jumper ordering)

Ordering information for North America

Phycomp CTC ordering code - Noth America

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

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

Series name (code 1-2)
- 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 (code 7-8)

1A	1/16W	0.063W	90402
1A	1/10W	0.10W	(0603
2A	1/8W	0.125W	(0805)
3A	1/4W	0.25W	(1206)
5A	1/2W	0.5W	(1210)
7A	1/20W	0.05W	(0201)
8A	1/32W	0.03125W	(RN31)
12	3/4W	0.75W	(2010)
1W	1W	1W	(1218/2512)
2W	2W	2W	

Resistance valre (code 9-12)
- 0R00 = Jumper
- R0XX < 0.1Ω
- RXXX = 0.1Ω - 0.976Ω
- XRXX = 1Ω - 9.76Ω
- XXRX = 10Ω - 97.6Ω
- XXX0 = 100Ω - 976Ω
- XXX1 = 1K - 9.76K
- XXX2 = 10K - 97.6K
- XXX3 = 100K - 9.78K
- XXX4 = 1M - 9.76M
- XXX5 = 10M - 97.6M
- XXX6 = 100M+
- XXDB = 1 - 20DB

Packing style (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 (code 15-16)
- 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)
- E = ±0.01%
- A = ±0.05%
- B = ±0.1%; 0.2dB (dB values apply to Attenuators)
- C = ±0.25%; 0.3dB
- D = ±0.5%; 0.5dB
- F = ±1%; 1dB
- G = ±2%; 2dB
- J = ±5%
- N = 0/-20% (Right values apply to trimmable resistors)
- 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	178mm / Ø7" reel		254mm / Ø10" reel	330mm / Ø13" reel		Mass per 100 units	Volume
		Paper	Embossed	Paper	Paper	Embossed	Mass (g)	mm^3
0100	8mm	10 000	---	---	---	---	0.007	0.0104
0201	8mm	10 000	---	20 000	50 000	---	0.016	0.041
0402	8mm	10 000	---	20 000	50 000	---	0.058	0.175
0603	8mm	5 000	---	10 000	20 000	---	0.192	0.576
0805	8mm	5 000	---	10 000	20 000	---	0.450	1.250
1206	8mm	5 000	---	10 000	20 000	---	0.862	2.728
1210	8mm	5 000	---	10 000	20 000	---	1.471	4.030
1218	12mm	---	4 000	---	---	---	2.703	7.590
2010	12mm	---	4 000	---	---	16 000	2.273	6.875
2512	12mm	---	4 000	---	---	---	3.704	10.827
YC102	8mm	10 000	---	---	---	---	0.052	---
YC122	8mm	10 000	---	---	50 000	---	0.100	---
TC122	8mm	10 000	---	---	50 000	---	0.112	---
ATV321	8mm	10 000	--	---	---	---	0.100	---
YC124	8mm	10 000	---	20 000	40 000	---	0.281	---
TC124	8mm	10 000	---	20 000	40 000	---	0.311	---
YC162	8mm	5 000	---	--	---	---	0.376	---
YC164	8mm	5 000	---	10 000	20 000	---	0.833	---
TC164	8mm	5 000	---	10 000	20 000	---	1.030	---
YC158	8mm	5 000	---	---	20 000	---	0.855	---
YC248	12mm	5 000	4 000	---	---	---	0.885	---
YC324	12mm	---	4 000	---	---	---	2.703	---
YC358	12mm	---	4 000	---	---	---	3.333	---

12NC Ordering information

The first 8 or 9 digits of the 12 digit catalogue number are given under section "Phycomp world wide - Traditional type" 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

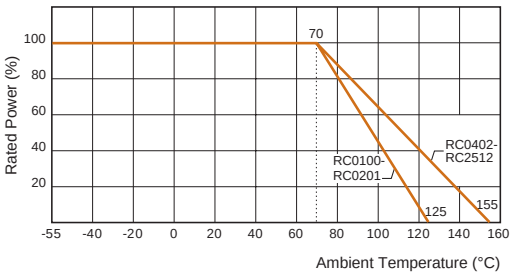
Introduction to thick film genaral purpose and double power resistors

Features

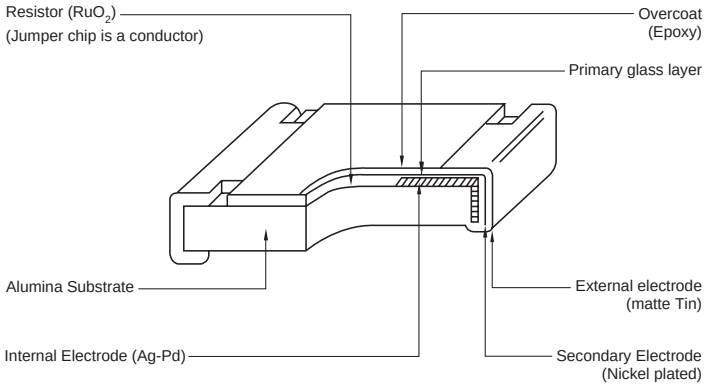
- Extremely thin and light
- Hightly reliable multilayer electrode construction
- Compatible with all soldering process
- Highly stable in auto-placement surface mounting applications
- Barrier layer end termination
- Zero ohm jumper is available
- Available in 8mm tape & reel per EIA RS481

Derating curve

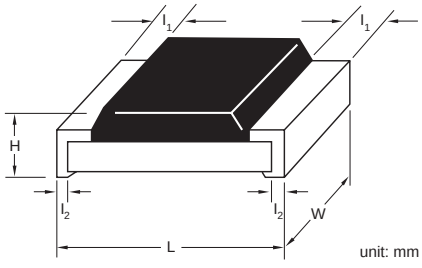
Maximum dissipation (P) in percentage of rated power as a function of the operating ambient temperature (T_{amb}).



Construction



Dimensions



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	0.55 ±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

Introduction to thick film genaral purpose and double power resistors

Electrical characteristics											
Type	Power P_{70}	Operating Temp. range	MWV	RCOV	DWV	Resistance range & tolerance		T. C. R. (ppm/°C)		Jumper criteria (unit: A)	
RC0100	1/32W	-55°C to +125°C	15V	30V	30V	E24 ±5% Zero ohm jumper	10Ω - 1MΩ < 0.05Ω	10Ω ≤ R ≤ 1MΩ	±250	Rated current Max. current	0.5 1.0
RC0201	1/20W	-55°C to +125°C	25V	50V	50V	E24 ±5% E24/E96 ±1% E24/E96 ±0.5% Zero ohm jumper	1Ω - 10MΩ 1Ω - 1MΩ 10Ω - 1MΩ < 0.05Ω	10Ω < R ≤ 10MΩ 1Ω ≤ R ≤ 10Ω	±200 -100/+350	Rated current Max. current	0.5 1.0
RC0402	1/16W	-55°C to +155°C	50V	100V	100V	E24 ±5% E24/E96 ±1% E24/E96 ±0.5% Zero ohm jumper	1Ω - 22MΩ 1Ω - 10MΩ 10Ω - 1MΩ < 0.05Ω	10Ω < R ≤ 10MΩ 1Ω ≤ R ≤ 10Ω 10MΩ < R ≤ 22MΩ	±100 ±200	Rated current Max. current	1.0 2.0
RC0603	1/10W	-55°C to +155°C	50V	100V	100V					Rated current Max. current	1.0 2.0
RC0805	1/8W	-55°C to +155°C	150V	300V	300V					Rated current Max. current	2.0 5.0
RC1206	1/4W	-55°C to +155°C	200V	400V	500V					Rated current Max. current	2.0 10.0
RC1210	1/2W	-55°C to +155°C	200V	500V	500V					Rated current Max. current	2.0 10.0
RC1218	1W	-55°C to +155°C	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 to +155°C	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 to +155°C	200V	500V	500V					Rated current Max. current	2.0 10.0
Double power RC0805	1/4W	-55°C to +155°C	150V	300V	300V	E24 ±5% E24/E96 ±1% Zero ohm jumper	1Ω - 100Ω 1Ω - 100Ω < 0.05Ω	1Ω ≤ R ≤ 100Ω	±200	Rated current Max. current	2.0 5.0
Double power RC1206	1/2W	-55°C to +155°C	200V	400V	500V					Rated current Max. current	3.0 7.5
Double power RC2512	2W	-55°C to +155°C	200V	400V	500V	E24 ±5% E24/E96 ±1% Zero ohm jumper	1Ω - 150Ω 1Ω - 150Ω < 0.05Ω	1Ω ≤ R ≤ 150Ω	±200	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°C 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 temperature / humidity cycle is defined at 8 hours (method 106F), 3 cycles / 24 hours for 10d with 25°C / 65°C 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°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 temperature	±(2%+ 0.05Ω) < 50mΩ for jumper

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								
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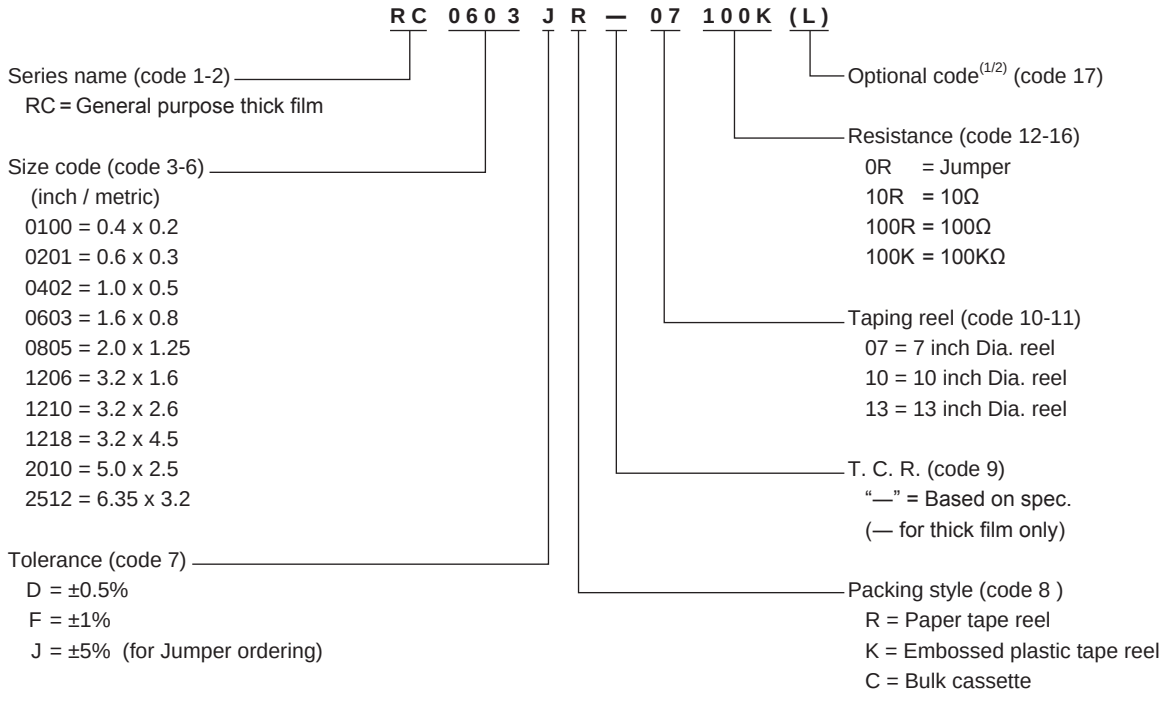
330 kΩ								
470 kΩ								
680 kΩ								
1 MΩ								
1.5 MΩ								
2.2 MΩ								
3.3 MΩ								
4.7 MΩ								
6.8 MΩ								
10 MΩ								
15 MΩ								
22 MΩ								
Remark								

Note: Products with lead free terminations meet RoHS requirements. None 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 for ordering Yageo / Phycomp branded products

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)

Phycomp world wide - Traditional type

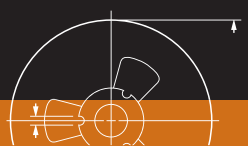
General purpose thick film / RC series

Size: inch (mm)		0201 (0603)		0402 (1005)		0603 (1608)		0805 (2012)	
Power		1/20 W		1/16 W		1/10 W		1/8 W	
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...L	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 13 for E24 / E96 values and the last 4 or 3 digits of the 12NC catalogue number.

Phycomp CTC ordering code - Traditional type - North America

Regional code for ordering Phycomp branded products. Please see page 12 for details.



Resistor Chip Selection Charts

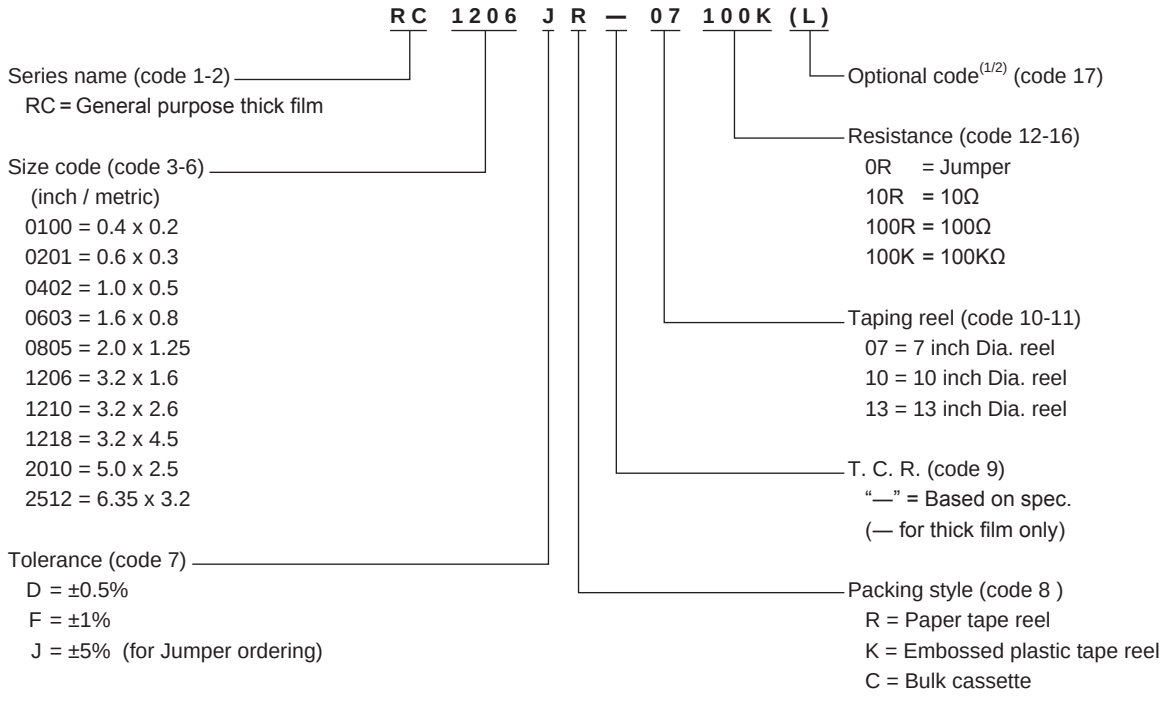
1206 to 2512

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										
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										
Remark										

Note: Products with lead free terminations meet RoHS requirements. None 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 for ordering Yageo / Phycomp branded products

Ordering example: RC1206JR-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)

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		1/4 W		1/2 W		1 W		3/4 W		1 W	
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		blister tape		blister tape		blister 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 13 for E24 / E96 values and the last 4 or 3 digits of the 12NC catalogue number.

Phycomp CTC ordering code - Traditional type - North America

Regional code for ordering Phycomp branded products. Please see page 12 for details.

Features

RT series

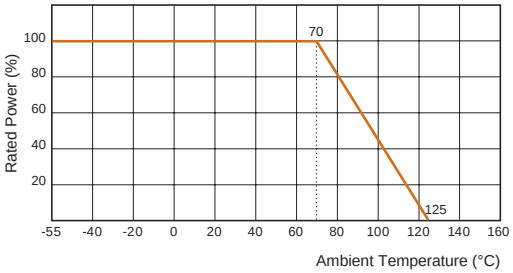
- High precision - high stability
- Low TCR / low noise
- High accuracy (±0.05%, ±0.1%, ±0.25%, ±0.5%, ±1%)

RJ series

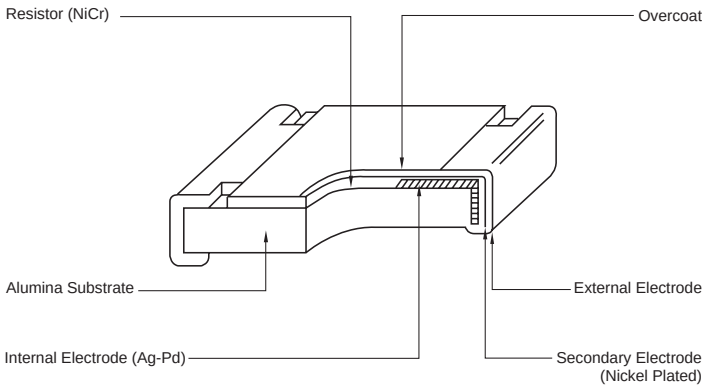
- General purpose
- TCR: ±50 ppm/°C
- Tolerance: ±1%

Derating curve

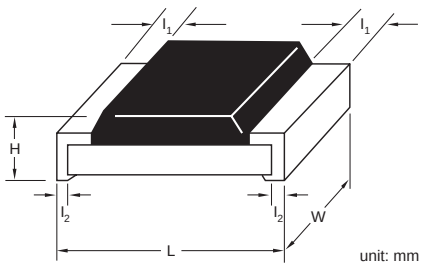
Maximum dissipation (P) in percentage of rated power as a function of the operating ambient temperature (T_{amb}).



Construction



Dimensions

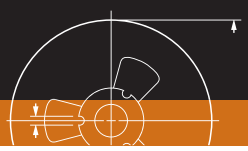


unit: mm

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 / RJ 0805	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	0.55 ±0.15	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								
Type	Power P_{70}	Operating Temp. range	MWV	RCOV	DWV	Resistance range & tolerance		T. C. R. (ppm/°C)
RT0402	1/16W	-55°C to +125°C	50V	100V	75V	E24/E96 ±0.05%, ±0.1%, ±0.25%, ±0.5%, ±1%	10Ω ≤ R ≤ 121KΩ	±50 ±25 ±15 ±10
RT0603	1/10W		75V	150V	100V		10Ω ≤ R ≤ 681KΩ	
RT0805	1/8W		150V	300V	200V		10Ω ≤ R ≤ 1.5MΩ	
RT1206	1/8W		200V	400V	300V			
RT1210	1/4W		200V	400V	400V		10Ω ≤ R ≤ 1MΩ	
RT2010	1/2W		200V	400V	400V		10Ω ≤ R ≤ 1MΩ	
RT2512	3/4W		200V	400V	400V			
RJ0402	1/16W		25V	100V	100V	E24/E96 ±1%	10Ω ≤ R ≤ 121KΩ	±50
RJ0603	1/16W		50V	100V	100V		5.1Ω ≤ R ≤ 681KΩ	
RJ0805	1/10W		100V	200V	250V		5.1Ω ≤ R ≤ 1.5MΩ	
RJ1206	1/8W		150V	250V	250V			
RJ1210	1/4W		150V	250V	250V		10Ω ≤ R ≤ 1MΩ	
RJ2010	1/2W		150V	300V	400V			
RJ2512	3/4W		150V	300V	400V			

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	±(0.25% +0.05Ω) for RT ±(0.5% +0.05Ω) for 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 temperature / humidity cycle is defined at 8 hours (method 106F), 3 cycles / 24 hours for 10d with 25°C / 65°C 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 temperature	
Solderability	Resistance to soldering heat	MIL-STD-202G-method 210F	Leadfree solder, 270°C, 10 seconds immersion time	±(0.25% +0.05Ω) for RT ±(0.5% +0.05Ω) for RJ
	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)



Resistor Chip Selection Charts

High precision - High stability, 0402 / 0603

High precision - High stability								
Size: inch (mm)	0402 (1005)				0603 (1608)			
Power P_{70}	1/16W				1/10W			
Temp. range (°C)	-55 to +125				-55 to +125			
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								
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								
Remark								

Note:
1. Resistance range is upper to 2 MΩ (depends on size) on request
2. Value in "Resistance" means the minimum one
3. Resistance E192; special value on request
4. Tolerance = ±0.05%, T.C.R. = ±10 ppm/°C; ±15 ppm/°C on request
5. Products with lead free terminations meet RoHS requirements. None 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 / T.C.R."

Global part number - Preferred type for ordering Yageo / Phycomp branded products

Ordering example: RT0603DRE07100K(L)

RT 0603 D R E 07 100K (L)

Series name (code 1-2)
RT = High precision - High stability thin film

Size code (code 3-6)
(inch / metric)
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
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%

Optional code (1/2) (code 17)

Resistance (code 12-16)
10R = 10Ω
100R = 100Ω
10K = 10KΩ
100K = 100KΩ

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

T. C. R. (code 9)
B = ±10 ppm/°C (on request)
C = ±15 ppm/°C (on request)
D = ±25 ppm/°C
E = ±50 ppm/°C

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

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)

Phycomp world wide - Traditional type

High precision - High stability								
Size: inch (mm)	**0402 (1005)**				**0603 (1608)**			
Power	1/16 W				1/10 W			
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 13 for E24 / E96 values and the last 4 or 3 digits of the 12NC catalogue number.

Phycomp CTC ordering code - Traditional type - North America

Regional code for ordering Phycomp branded products. Please see page 12 for details.

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

High precision - High stability												
Size: inch (mm)	0805 (2012)				1206 (3216)				1210 (3225)			
Power P_{70}	1/8W				1/8W				1/4W			
Temp. range (°C)	-55 to +125				-55 to +125				-55 to +125			
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. T.C.R. = ±10 ppm/°C; ±15 ppm/°C on request
4. Tolerance = ±0.01%; ±0.05% on Request
5. Products with lead free terminations meet RoHS requirements. None 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 / T.C.R."

Global part number - Preferred type for ordering Yageo / Phycomp branded products

Ordering example: RT0805DRE07100K(L)

RT 0805 D R E 07 100K (L)

Series name (code 1-2)
RT = High precision - High stability thin film

Size code (code 3-6)
(inch / metric)
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
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%

Optional code (1/2) (code 17)

Resistance (code 12-16)
10R = 10Ω
100R = 100Ω
10K = 10KΩ
100K = 100KΩ

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

T. C. R. (code 9)
B = ±10 ppm/°C (on request)
C = ±15 ppm/°C (on request)
D = ±25 ppm/°C
E = ±50 ppm/°C

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

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)

Phycomp world wide - Traditional type

High precision - High stability												
Size: inch (mm)	**0805 (2012)**				**1206 (3216)**				**1210 (3225)**			
Power	1/8 W				1/4 W				1/2 W			
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 801 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 701 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 712 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 412 4....L

For ordering rules: See page 13 for E24 / E96 values and the last 4 or 3 digits of the 12NC catalogue number.

Phycomp CTC ordering code - Traditional type - North America

Regional code for ordering Phycomp branded products. Please see page 12 for details.

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

High precision - High stability, 2010 / 2512

High precision - high stability								
Size: inch (mm)	2010 (5025)				2512 (6432)			
Power P_{70}	1/2W				3/4W			
Temp. range (°C)	-55 to +125				-55 to +125			
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. T.C.R. = ±10 ppm/°C; ±15 ppm/°C on request
4. Tolerance = ±0.01%; ±0.05% on request
5. Products with lead free terminations meet RoHS requirements. None 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 / T.C.R."

Global part number - Preferred type for ordering Yageo / Phycomp branded products

Ordering example: RT2010DRE07100K(L)

RT 2010 D R E 07 100K (L)

Series name (code 1-2)
RT = High precision - High stability thin film

Size code (code 3-6)
(inch / metric)
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
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%

Optional code (1/2) (code 17)

Resistance (code 12-16)
10R = 10Ω
100R = 100Ω
10K = 10KΩ
100K = 100KΩ

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

T. C. R. (code 9)
B = ±10 ppm/°C (on request)
C = ±15 ppm/°C (on request)
D = ±25 ppm/°C
E = ±50 ppm/°C

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

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)

Phycomp world wide - Traditional type

High precision - High stability								
Size: inch (mm)	**2010 (5025)**				**2512 (6432)**			
Power	1/2 W				3/4 W			
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 13 for E24 / E96 values and the last 4 or 3 digits of the 12NC catalogue number.

Phycomp CTC ordering code - Traditional type - North America

Regional code for ordering Phycomp branded products. Please see page 12 for details.

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

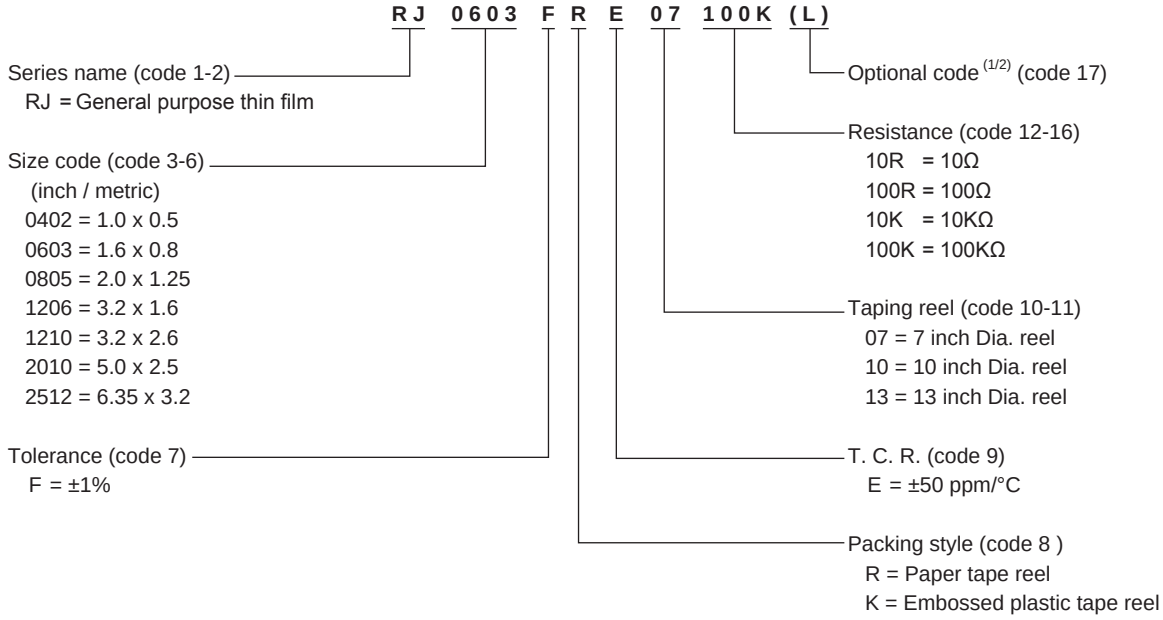
Tolerance	±0.05% (W)			±0.1% (B)				±0.25% (C)				±0.5% (D)		±1% (F)
T.C.R. (ppm/°C)	±10 (B)	±15 (C)	±25 (D)	±10 (B)	±15 (C)	±25 (D)	±50 (E)	±10 (B)	±15 (C)	±25 (D)	±50 (E)	±25 (D)	±50 (E)	±50 (E)
RT0402	--	--	--	10R - 100K	10R - 100K	10R - 121K	10R - 121K	10R - 100K	10R - 100K	10R - 121K	10R - 121K	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

General purpose thin film / RJ Series							
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
Tolerance	±1%	±1%	±1%	±1%	±1%	±1%	±1%
Temperature Coefficient of Resistance	±50 ppm/°C	±50 ppm/°C	±50 ppm/°C	±50 ppm/°C	±50 ppm/°C	±50 ppm/°C	±50 ppm/°C
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. None 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 for ordering Yageo / Phycomp branded products

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)

Phycomp world wide - Traditional type

General purpose thin film / RJ series							
Size: inch (mm)	**0402 (1005)**	**0603 (1608)**	**0805 (2012)**	**1206 (3216)**	**1210 (3225)**	**2010 (5025)**	**2512 (6432)**
Power	1/16 W	1/16 W	1/10 W	1/8 W	1/4 W	1/2 W	3/4 W
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 13 for E24 / E96 values and the last 4 or 3 digits of the 12NC catalogue number.

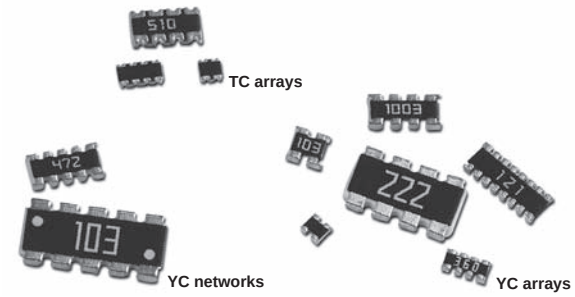
Phycomp CTC ordering code - Traditional type - North America

Regional code for ordering Phycomp branded products. Please see page 12 for details.

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

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	10R - 1M
RJ2010	10R - 1M
RJ2512	10R - 1M

Introduction to thick film array / network resistors

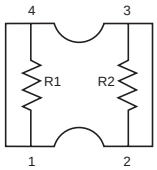


Features

- 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

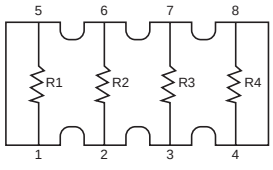
Schematics

YC102/122/162



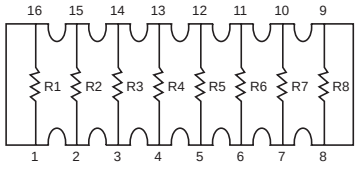
R1 = R2

YC124/164/324



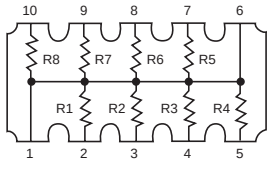
R1 = R2 = R3 = R4

YC248



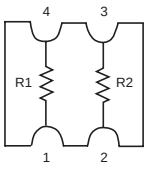
R1 = R2 = R3 = R4 = R5 = R6 = R7 = R8

YC358 (L-Type)



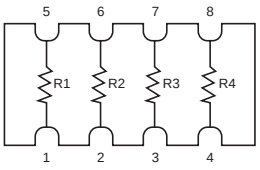
R1 = R2 = R3 = R4 = R5 = R6 = R7 = R8

TC122



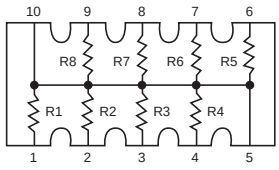
R1 = R2

TC124/164



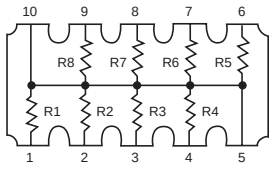
R1 = R2 = R3 = R4

YC158



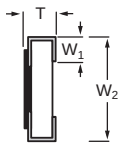
R1 = R2 = R3 = R4 = R5 = R6 = R7 = R8

YC358 (T-Type)



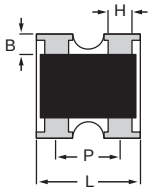
R1 = R2 = R3 = R4 = R5 = R6 = R7 = R8

Dimensions

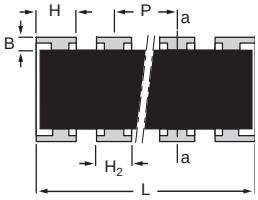


Side view for all types

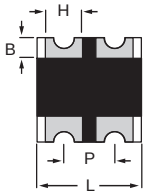
YC 102/122/162



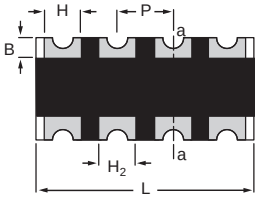
YC 124/164/324
158/358/248



TC 122



TC 124/164



Type	H / H_2	B	P	L	T	W_1	W_2
YC102	H: 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	H: 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	H: 0.30 ±0.10	0.30 ±0.10	0.80 ±0.05	1.60 ±0.10	0.40 ±0.10	0.30 ±0.10	1.60 ±0.10
YC124	H: 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	H: 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	H: 1.10 ±0.15 H_2: 0.90 ±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	H: 0.45 ±0.05 H_2: 0.30 ±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	H: 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	H: 0.30 ±0.10 H_2: 0.25 ±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	H: --- H_2: 0.60 ±0.15	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	H: 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	H: 1.10 ±0.15 H_2: 0.90 ±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

Note: "H_2" is valued on button view unit: mm

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

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 temperature / 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 temperature	±(2% +0.05Ω) < 50mΩ for jumper

Arrays											
Series	YC / TC 122 series		YC / TC 124 series		YC248 series		YC / TC 164 series			YC324 series	
Size: inch (mm)	2 x 0402 (1 x 1)		4 x 0402 (2 x 1)		8 x 0602 (4.0 x 1.6)		4 x 0603 (3.2 x 1.6)			4 x 1206 (5.2 x 3.1)	
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 Ω
2. Value in "Resistance" means the minimum one
3. 4 x 0603 (Concave) 1% on request
4. Products with lead free terminations meet RoHS requirements. None 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 - Arrays & Networks

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

YC 12 2 — J R — 07 100K (L)

Series name (code 1-2)
- YC = Aarray & Network (convex) thick film
- TC = Array (concave) thick film
- TA = Array (convex) thin film
- TD = Multi value array (convex) thin film

Size code (inch) (code 3-4)
- 10 = 0201 x 2 (0202)
- 12 = 0402 x 2 (0404)
- 0402 x 4 (0408)
- 15 = 10Pin/8R (0612)
- 16 = 0603 x 2 (0606)
- 0603 x 4 (0612)
- 24 = 0602 x 8 (0616)
- 32 = 1206 x 4 (1224)
- 35 = 10Pin/8R (1225)

Number of resistors (code 5)
- 2 = 2 resistors
- 4 = 4 resistors
- 8 = 8 resistors

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
- 10R = 10Ω
- 100R = 100Ω
- 100K = 100KΩ

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

T.C.R. (code 9)
- "—" = Based on spec.

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

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)

Phycomp world wide - Traditional type

Array thick film chip resistors

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 X1206 / 5.2 X 3.1
Power		1/16 W		1/16 W		1/16 W		1/16 W			1/8 W
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 13 for E24 / E96 values and the last 4 or 3 digits of the 12NC catalogue number.

Phycomp CTC ordering code - Traditional type - North America

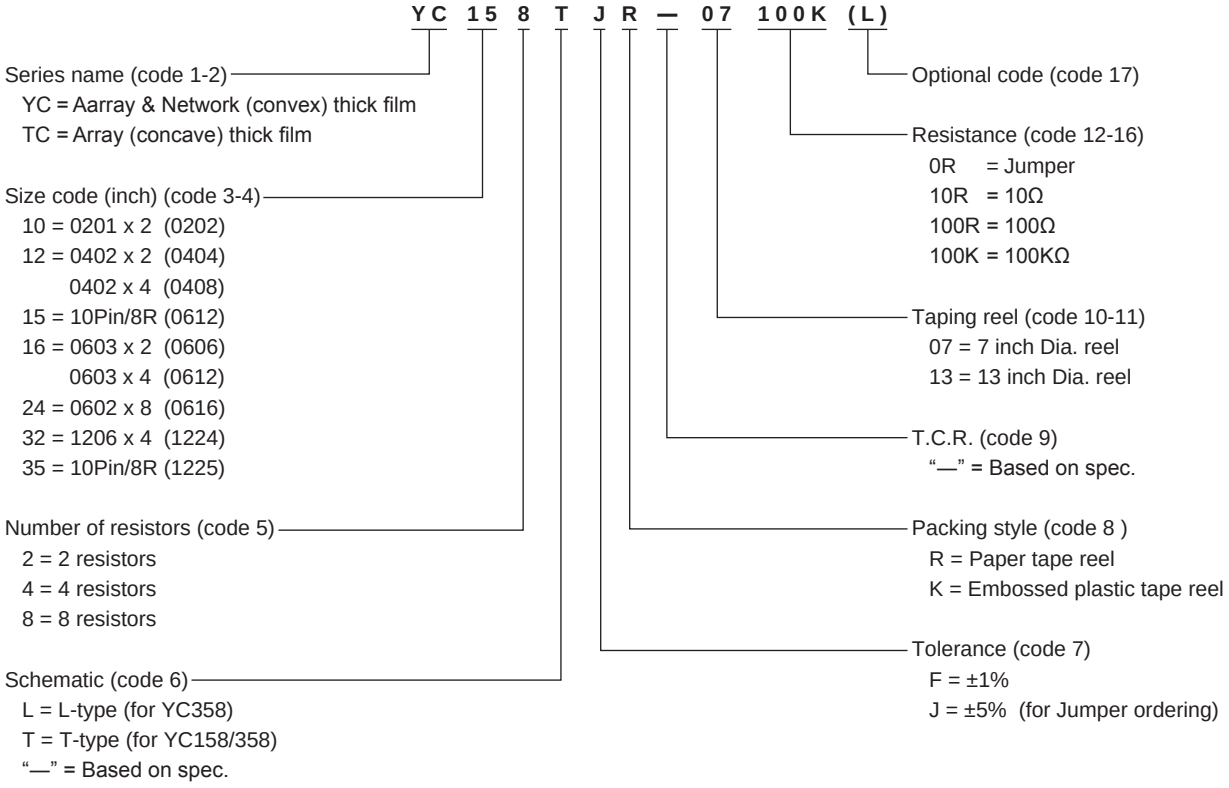
Regional code for ordering Phycomp branded products. Please see page 12 for details.

Network			
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 Ω
3. Value in "Resistance" means the minimum one.
4. Products with lead free terminations meet RoHS requirements. None 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 - Arrays & Networks

Ordering example: YC158TJR-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)

Phycomp world wide - Traditional type

Network thick film chip resistors			
Size: inch (mm)	**0612 (1632)**	**1225 (3264)**	
Power	1/32 W	1/16 W	
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
5 000	2350 230 10...L	---	---

For ordering rules: See page 13 for E24 / E96 values and the last 4 or 3 digits of the 12NC catalogue number.

Phycomp CTC ordering code - Traditional type - North America

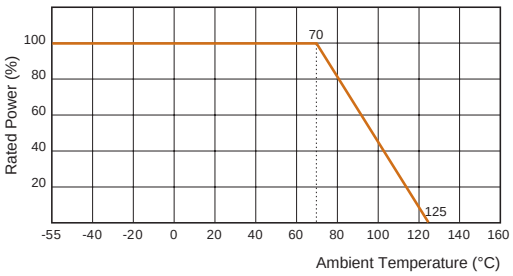
Regional code for ordering Phycomp branded products. Please see page 12 for details.

Features

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

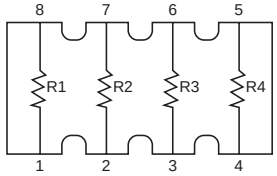
Derating curve

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



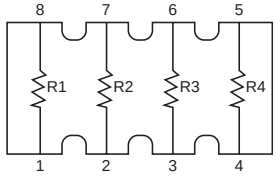
Schematics

TA164



R1 = R2 = R3 = R4

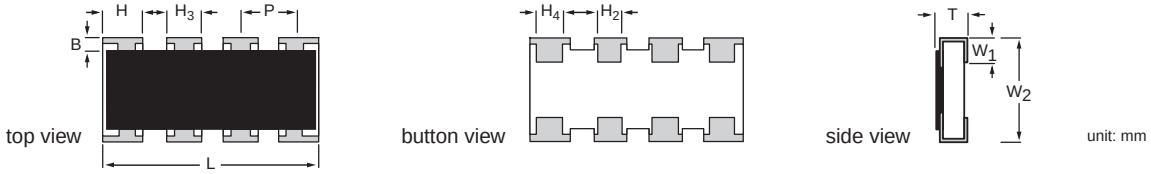
TD164



R1 ≠ R2 ≠ R3 ≠ R4

Dimensions

TA/TD 164



Type	H	H_3	B	P	L	H_2	H_4	T	W_1	W_2
TA164	0.65 ±0.05	0.50 ±0.15	0.30 ±0.15	0.80 ±0.05	3.20 ±0.15	0.50 ±0.15	0.65 ±0.05	0.50 ±0.10	0.30 ±0.15	1.60 ±0.15
TD164	0.65 ±0.10	0.50 ±0.10	0.30 ±0.15	0.80 ±0.15	3.20 ±0.20	0.40 ±0.10	0.50 ±0.10	0.50 ±0.10	0.30 ±0.15	1.60 ±0.10

Electrical characteristics								
Type	Power P_{70}	Operating Temp. range	MWV	RCOV	DWV	Resistance range & tolerance		T. C. R. (ppm/°C)
TA164	1/16W	-55°C to +125°C	75V	150V	150V	E24/E96 ±0.1%, ±0.5%, ±1%	10Ω ≤ R ≤ 330KΩ	±25 ±50
TD164	1/16W	-55°C to +125°C	75V	150V	150V	E24/E96 ±0.1%, ±0.5%, ±1%	10Ω ≤ R ≤ 330KΩ	

Note: See page 11 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°C 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 characteristic
Moisture resistance		MIL-STD-202G-method 106F	Each temperature / humidity cycle is defined at 8 hours (method 106F), 3 cycles / 24 hours for 10d with 25°C / 65°C 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°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	Satisfy electrical and physical characteristic
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 temperature	±(0.25% +0.05Ω) for TD164 ±(0.5% +0.05Ω) for TA164

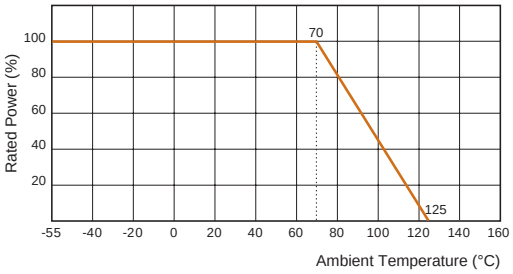
Introduction to low ohmic / low ohmic high power chip resistors

Features

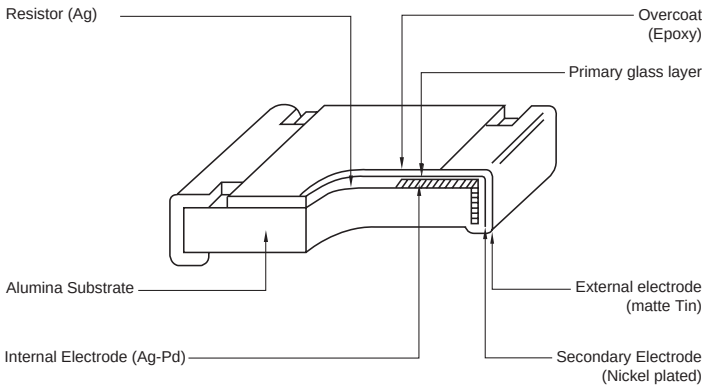
- Current sensing of desktop & notebook PC
- Resistance values down to 0.010Ω
- Highly reliable multilayer electrode construction
- Low inductance
- High speed logic circuits

Derating curve

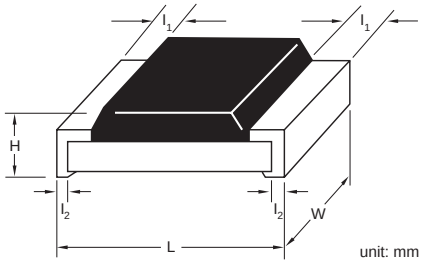
Maximum dissipation (P) in percentage of rated power as a function of the operating ambient temperature (T_{amb}).



Construction



Dimensions

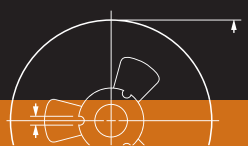


Type	L	W	H	I_1	I_2
RL0402	1.00 ±0.10	0.50 ±0.05	0.35 ±0.05	0.20 ±0.10	0.25 ±0.10
RL0603	1.60 ±0.10	0.80 ±0.10	0.45 ±0.10	0.25 ±0.15	0.25 ±0.15
RL0805	2.00 ±0.10	1.25 ±0.10	0.50 ±0.10	0.35 ±0.20	0.35 ±0.20
RL1206	3.10 ±0.10	1.60 ±0.10	0.55 ±0.10	0.45 ±0.20	0.45±0.20
RL1210	3.10 ±0.10	2.60 ±0.15	0.50 ±0.10	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					
Type	Power P_{70}	Operating Temp. range	Resistance range & tolerance		T. C. R. (ppm/°C)
RL0402	1/16W	-55°C to +125°C	E24 ±1%, ±2%, ±5%	0.05Ω ≤ R < 1Ω	See following table "T.C.R.- RL series"
RL0603	1/10W	-55°C to +125°C		0.01Ω ≤ R < 1Ω	
RL0805	1/8W	-55°C to +125°C			
RL1206	1/4W	-55°C to +125°C			
RL1210	1/2W	-55°C to +125°C			
RL1218	1W	-55°C to +125°C			
RL2010	3/4W	-55°C to +125°C			
RL2512	1W	-55°C to +125°C			
High power RL0805	1/4W	-55°C to +125°C		0.015Ω ≤ R < 1Ω	
High power RL1206	1/2W	-55°C to +125°C			

T. C. R. - RL series								
Type	Operating Temp. range	Resistance range	T. C. R.					
			50mΩ - 1Ω					
RL0402	-55°C to +125°C	50mΩ≤R<1Ω	±800 ppm/°C					
			10mΩ - 36mΩ	36mΩ - 91mΩ	91mΩ - 500mΩ			500mΩ - 1Ω
RL0603	-55°C to +125°C	10mΩ≤R<1Ω	±1 500 ppm/°C	±1 200 ppm/°C	±800 ppm/°C			±300 ppm/°C
			10mΩ - 18mΩ	20mΩ - 47mΩ	51mΩ - 91mΩ	100mΩ - 360mΩ	390mΩ - 500mΩ	510mΩ - 1Ω
RL0805	-55°C to +125°C	10mΩ≤R<1Ω	±1 500 ppm/°C	±1 200 ppm/°C	±1 000 ppm/°C	±600 ppm/°C	±300 ppm/°C	±200 ppm/°C
RL1206	-55°C to +125°C	10mΩ≤R<1Ω	±1 500 ppm/°C	±1 200 ppm/°C	±1 000 ppm/°C	±600 ppm/°C	±300 ppm/°C	±200 ppm/°C
RL1210	-55°C to +125°C	10mΩ≤R<1Ω	±1 500 ppm/°C	±1 000 ppm/°C	±800 ppm/°C	±600 ppm/°C	±300 ppm/°C	±200 ppm/°C
			10mΩ - 30mΩ	33mΩ - 56mΩ	60mΩ - 180mΩ	200mΩ - 1Ω		
RL1218	-55°C to +125°C	10mΩ≤R<1Ω	±2 000 ppm/°C	±1 000 ppm/°C	±700 ppm/°C	±250 ppm/°C		
			10mΩ - 18mΩ	20mΩ - 47mΩ	51mΩ - 91mΩ	100mΩ - 360mΩ	390mΩ - 500mΩ	510mΩ - 1Ω
RL2010	-55°C to +125°C	10mΩ≤R<1Ω	±1 500 ppm/°C	±1 200 ppm/°C	±1 000 ppm/°C	±600 ppm/°C	±300 ppm/°C	±200 ppm/°C
RL2512	-55°C to +125°C	10mΩ ≤R<1Ω	±1 500 ppm/°C	±1 200 ppm/°C	±800 ppm/°C	±600 ppm/°C	±300 ppm/°C	±200 ppm/°C

Environmental characteristics				
Performance test		Test method	Procedure	Requirements
Life		MIL-STD-202G-method 108A	1 000 hours at 70°C ±5°C 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 tempperature / humidity cycle is defined at 8 hours (method 106F), 3 cycles / 24 hours for 10d with 25°C / 65°C 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°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%
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 temperature	±2%



Resistor Chip Selection Charts

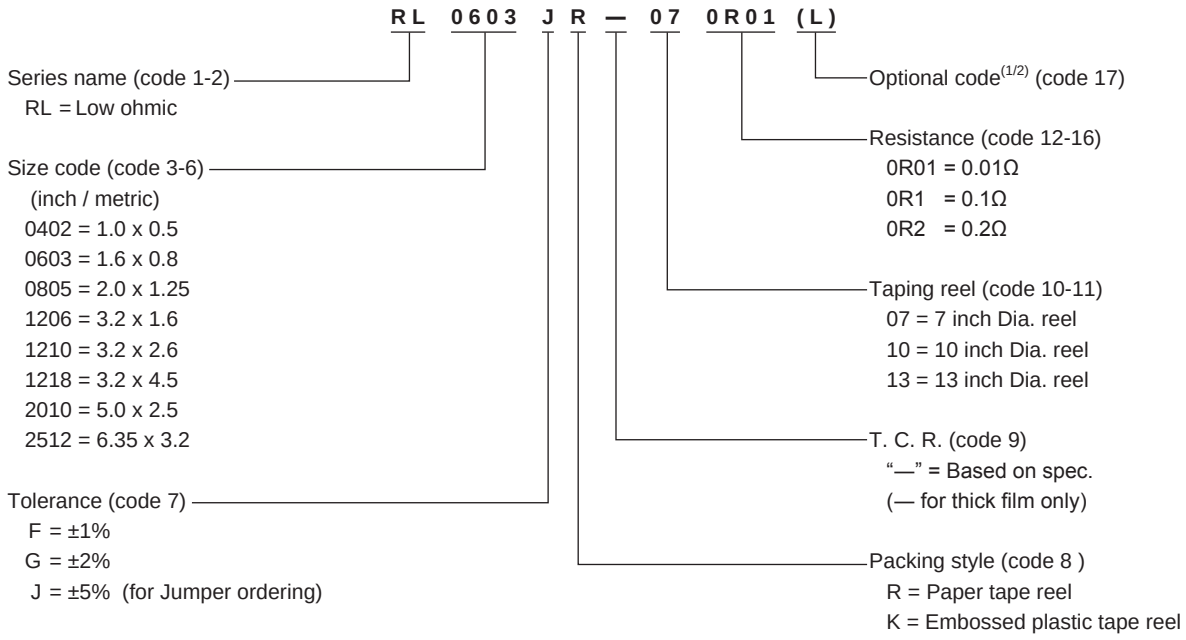
Low ohmic, 0201 to 1206

Low ohmic / RL 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	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 / 500 mΩ are also available
4. Products with lead free terminations meet RoHS requirements. None 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)

Phycomp world wide - Traditional type

Low ohmic chip resistors								
Size: inch (mm)	**0402 (1005)**		**0603 (1608)**		**0805 (2012)**		**1206 (3216)**	
Power	1/16 W		1/10 W		1/8 W		1/4 W	
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	2350 513 22…L	---	---	---	---	---	---

For ordering rules: See page 13 for E24 / E96 values and the last 4 or 3 digits of the 12NC catalogue number.

Phycomp CTC ordering code - Traditional type - North America

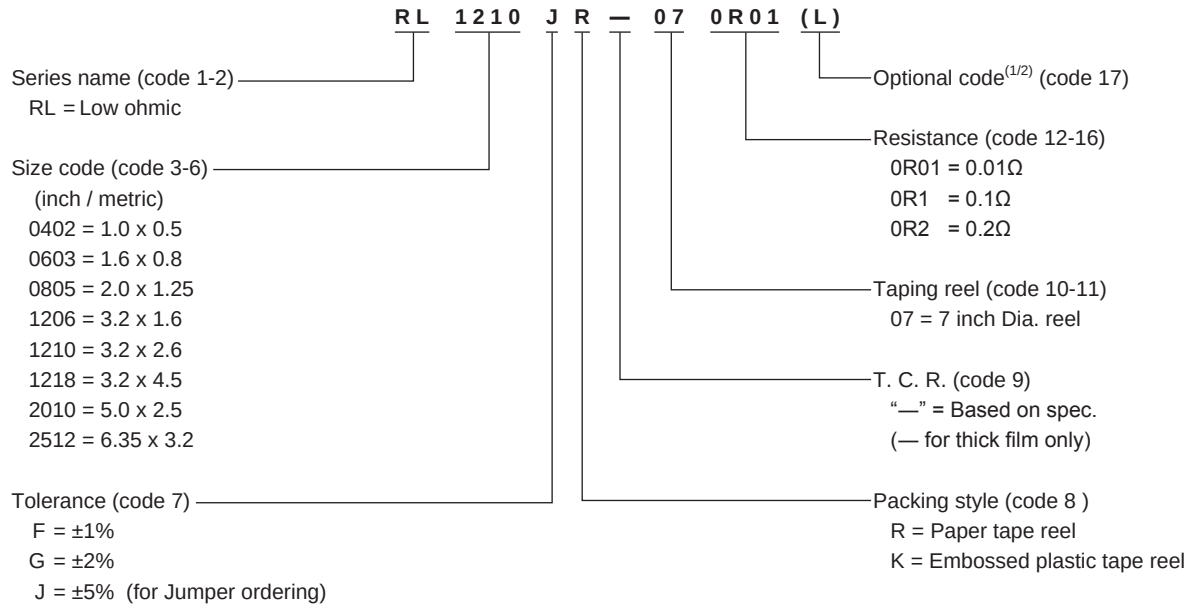
Regional code for ordering Phycomp branded products. Please see page 12 for details.

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 / 500 mΩ are also available
4. Products with lead free terminations meet RoHS requirements. None 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)

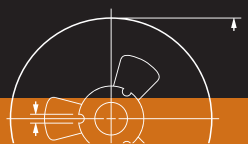
Phycomp world wide - Traditional type

Low ohmic chip resistors								
Size: inch (mm)	**1210 (3225)**		**1218 (3248)**		**2010 (5025)**		**2512 (6432)**	
Power	1/2 W		1 W		3/4 W		1 W	
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 13 for E24 / E96 values and the last 4 or 3 digits of the 12NC catalogue number.

Phycomp CTC ordering code - Traditional type - North America

Regional code for ordering Phycomp branded products. Please see page 12 for details.



Resistor Chip Selection Charts

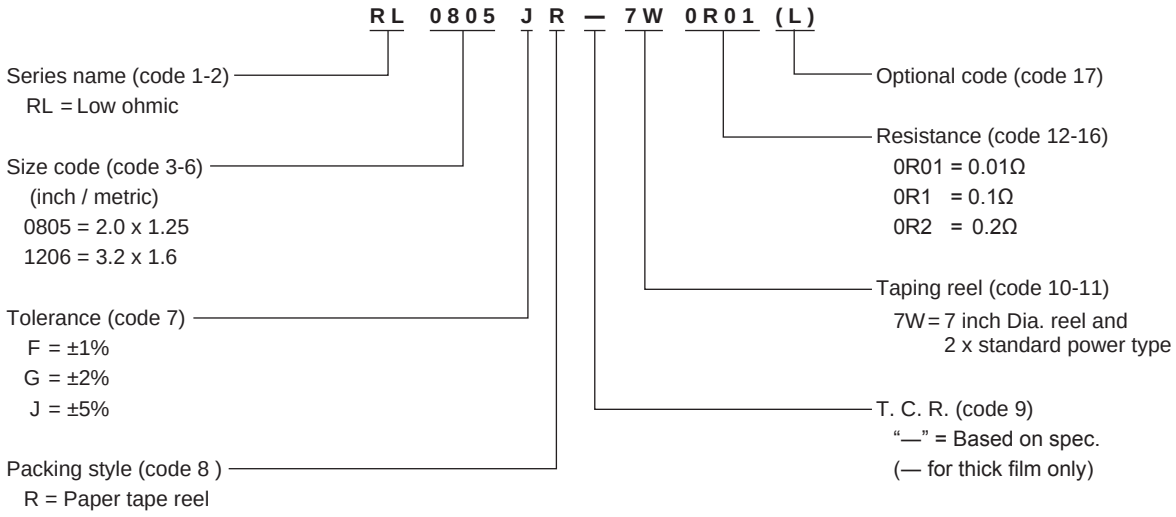
Low ohmic, high power, 0805 / 1206

Low ohmic high power / 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				
Remark				

Note: 1. E48/E96 on request
2. The partial values of 25 / 40 / 50 / 60 / 250 / 400 / 500 mΩ are also available
3. Products with lead free terminations meet RoHS requirements. None 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)

Phycomp world wide - Traditional type

Low ohmic high power chip resistors				
Size: inch (mm)	**0805 (2012)**		**1206 (3216)**	
Power	1/4 W		1/2 W	
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 13 for E24 / E96 values and the last 4 or 3 digits of the 12NC catalogue number.

Phycomp CTC ordering code - Traditional type - North America

Regional code for ordering Phycomp branded products. Please see page 12 for details.

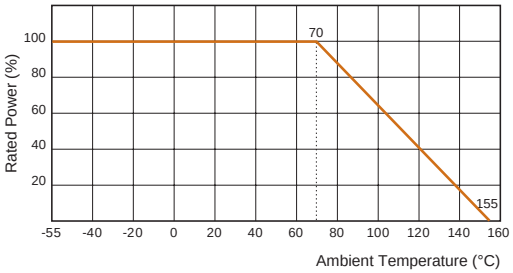
Introduction to high ohmic chip resistors

Features

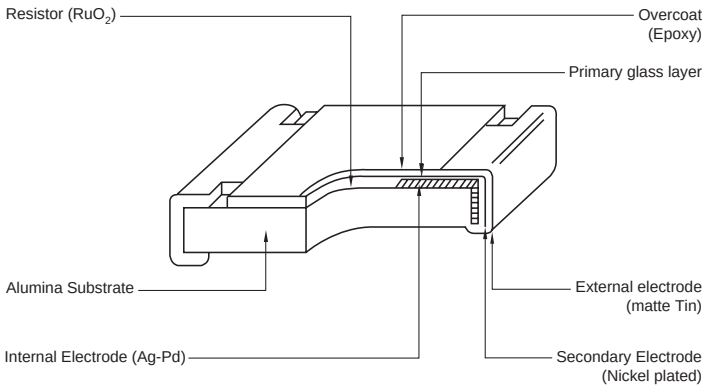
- Reduced size of final equipment
- Low assembly costs
- Higher component and equipment reliability
- High ohmic values up to 100MW
- Suitable for power supplies in small equipments

Derating curve

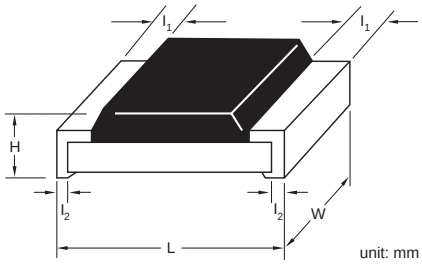
Maximum dissipation (P) in percentage of rated power as a function of the operating ambient temperature (T_{amb}).



Construction



Dimensions



Type	L	W	H	I_1	I_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								
Type	Power P_{70}	Operating Temp. range	MWV	RCOV	DWV	Resistance range & tolerance		T. C. R. (ppm/°C)
RC0805	1/8W	-55°C to +155°C	150V	300V	300V	E24 ±5%, ±10%, ±20%	24MΩ ≤ R ≤ 100MΩ	±300
RC1206	1/4W	-55°C to +155°C	200V	400V	500V			

Note: See page 10 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°C applied RCWV 1.5 hours on, 0.5 hours off, still air required	±(2% +0.05Ω)
High temperature exposure		MIL-STD-202G-method 108A	1 000 hours at maximum operating temperature depending on specification, unpowered	±(1% +0.05Ω)
Moisture resistance		MIL-STD-202G-method 106F	Each temperature / 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)
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) ±(1% +0.05Ω)
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)
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 temperature	±(2% +0.05Ω)

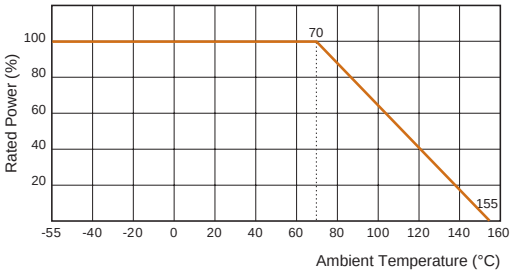
Introduction to Ni/Au terminations chip resistors

Features

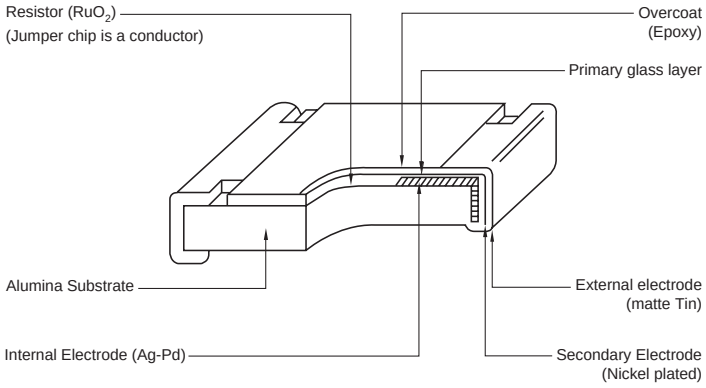
- New Ni/Au terminations provide special application for hybrid board gluing
- Competitive with AgPd terminations
- Special use in high temperature environment
- Higher component and equipment reliability

Derating curve

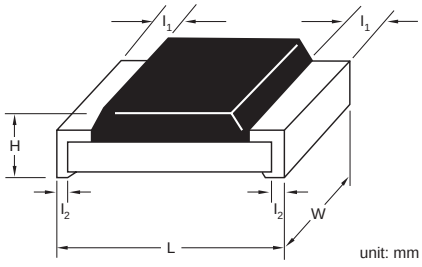
Maximum dissipation (P) in percentage of rated power as a function of the operating ambient temperature (T_{amb}).



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											
Type	Power P_{70}	Operating Temp. range	MWV	RCOV	DWV	Resistance range & tolerance		T. C. R. (ppm/°C)		Jumper criteria (unit: A)	
AR0402	1/16W	-55°C to +155°C	50V	100V	100V	E24 ±5% E24/E96 ±1% Zero ohm jumper	1Ω ≤ R ≤10MΩ < 0.05Ω	10Ω < R ≤ 10MΩ 1Ω ≤ R ≤ 10Ω	±100 ±200	Rated current Max. current	1.0 2.0
AR0603	1/10W	-55°C to +155°C	50V	100V	100V					Rated current Max. current	1.0 2.0
AR0805	1/8W	-55°C to +125°C	150V	300V	300V					Rated current Max. current	2.0 5.0
AR1206	1/4W	-55°C to +125°C	200V	500V	500V					Rated current Max. current	2.0 10.0

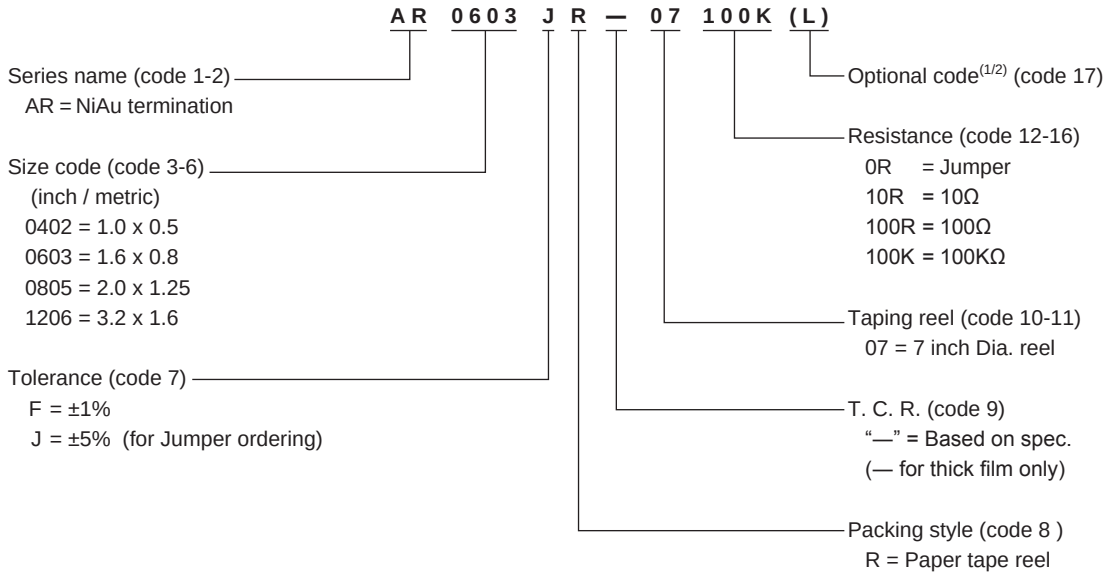
Environmental characteristics				
Performance test		Test method	Procedure	Requirements
Life		MIL-STD-202G-method 108A	1 000 hours at 70 ±5°C applied RCWV 1.5 hours on, 0.5 hours off, still air required	±(2% +0.05Ω) <100mΩ for jumper
High temperature exposure		MIL-STD-202G-method 108A	1 000 hours at maximum operating temperature depending on specification, unpowered	±(1% +0.05Ω) <50mΩ for jumper
Moisture resistance		MIL-STD-202G-method 106F	Each temperature / 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 temperature	±(2% +0.05Ω) <50mΩ for jumper

Chip resistors with 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 Ω
2. Value in "Resistance" means the minimum one
3. Products with lead free terminations meet RoHS requirements. None 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 for ordering Yageo / Phycomp branded products

Ordering example: AR0603JR-07100K



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)

Phycomp world wide - Traditional type

Chip resistors with Ni/Au terminations								
Size: inch (mm)	0402 (1005)		0603 (1608)		0805 (2012)		1206 (3216)	
Power	1/16 W		1/10 W		1/8 W		1/4 W	
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 13 for E24 / E96 values and the last 4 or 3 digits of the 12NC catalogue number.

Phycomp CTC ordering code - Traditional type - North America

Regional code for ordering Phycomp branded products. Please see page 12 for details.

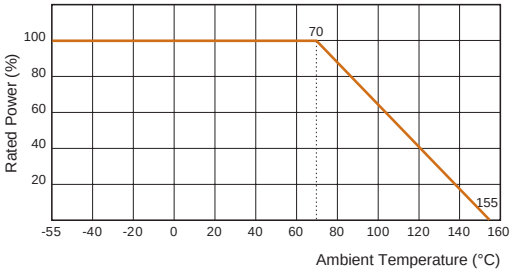
Introduction to Surge chip resistors

Features

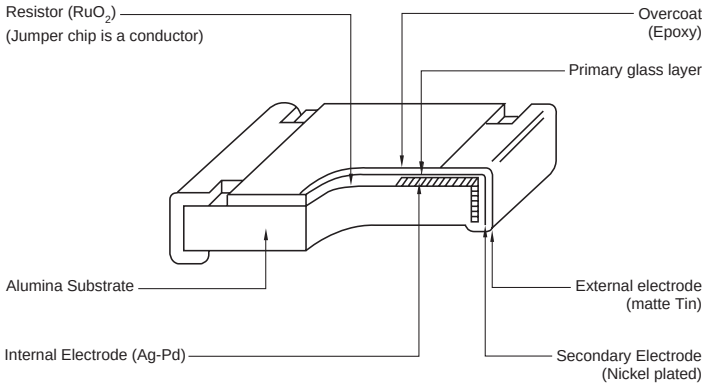
- Reduced size of final equipment
- Low assembly costs
- Higher component and equipment reliability
- Excellent performance at pulse loading

Derating curve

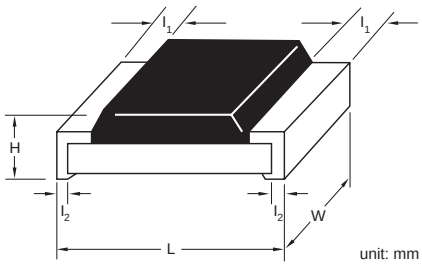
Maximum dissipation (P) in percentage of rated power as a function of the operating ambient temperature (T_{amb}).



Construction



Dimensions



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								
Type	Power P_{70}	Operating Temp. range	MWV	RCOV	DWV	Resistance range & tolerance		T. C. R. (ppm/°C)
SR0805	1/8W	-55°C to +155°C	150V	300V	300V	E24 ±5%, ±10%, ±20%	1Ω ≤ R ≤ 100KΩ	±200
SR1206	1/4W	-55°C to +155°C	150V	400V	500V			
SR1218	1W	-55°C to +155°C	200V	400V	500V			
SR2512	1W	-55°C to +155°C	200V	400V	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)
High temperature exposure		MIL-STD-202G-method 108A	1 000 hours at maximum operating temperature depending on specification, unpowered	±(1% +0.05Ω)
Moisture resistance		MIL-STD-202G-method 106F	Each temperature / 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)
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)
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 temperature	±(2% +0.05Ω)

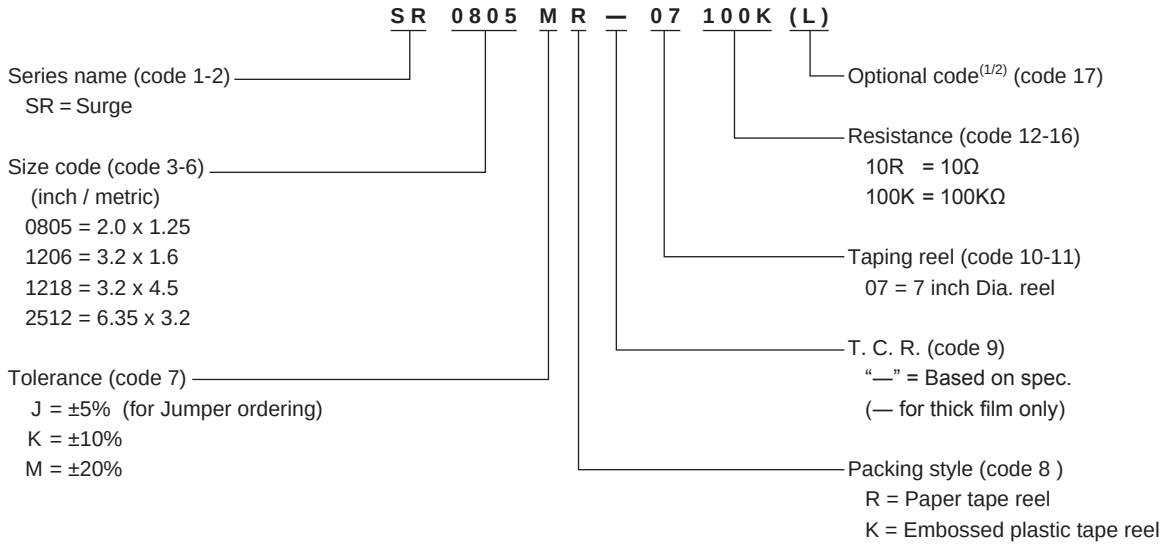
Surge / SR series				
Size: inch (mm)	0805 (2012)	1206 (3216)	1218 (3248)	2512 (6432)
Power P_{70}	1/8W	1/4W	1W	1W
Tolerance	±5%	±5%	±5%	±5%
Resistance Range	E24	E24	E24	E24
1 Ω				
1.5 Ω				
2.2 Ω				
3.3 Ω				
4.7 Ω				
6.8 Ω				
10 Ω				
15 Ω				
22 Ω				
33 Ω				
47 Ω				
68 Ω				
100 Ω				
150 Ω				
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. None 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 for ordering Yageo / Phycomp branded products

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)

Phycomp world wide - Traditional type

Surge chip resistors						
Size: inch (mm)	0805 (2012)	1206 (3216)	1218 (3248)	2512 (6432)		
Power	1/8 W	1/4 W	1 W	1 W		
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 13 for E24 / E96 values and the last 4 or 3 digits of the 12NC catalogue number.

Phycomp CTC ordering code - Traditional type - North America

Regional code for ordering Phycomp branded products. Please see page 12 for details.

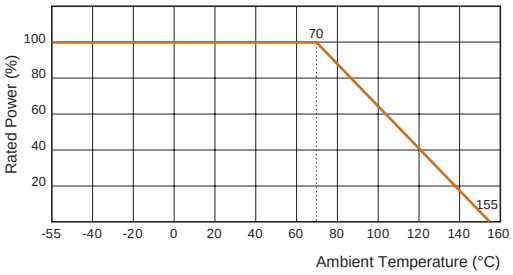
Introduction to high voltage chip resistors

Features

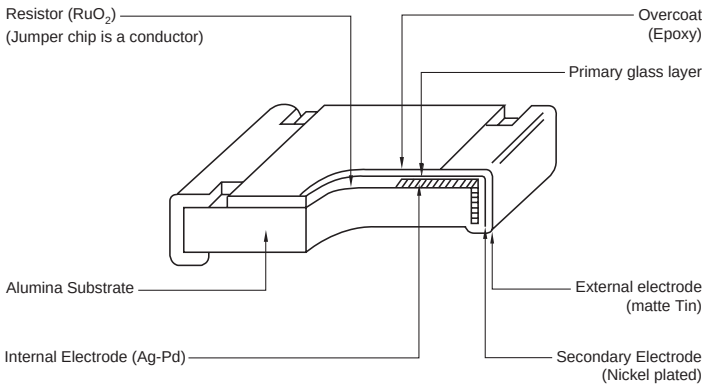
- Higher maximum working voltage to RC series
- Extremely thin and light
- Reliable electrode construction
- Compatible with lead containing and lead free soldering processes
- Highly stable in auto-placement surface mounting

Derating curve

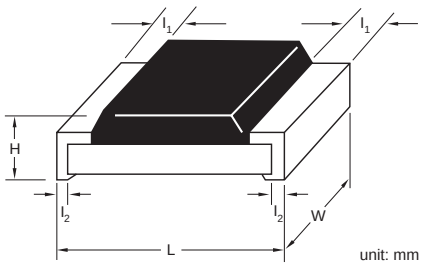
Maximum dissipation (P) in percentage of rated power as a function of the operating ambient temperature (T_{amb}).



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	0.40 ±0.20	0.40 ±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								
Type	Power P_{70}	Operating Temp. range	MWV	RCOV	DWV	Resistance range & tolerance		T. C. R. (ppm/°C)
RV0805	1/8W	-55°C to +155°C	400V	800V	800V	E24 ±5% E24/E96 ±1%	100KΩ ≤ R ≤ 10MΩ	±200
RV1206	1/4W	-55°C to +155°C	500V	1000V	1000V	E24 ±5% E24/E96 ±1%	100KΩ ≤ R ≤ 27MΩ	±200
RV2512	1W	-55°C to +155°C	500V	1000V	1000V	E24 ±5%	4.7MΩ ≤ R ≤ 16MΩ	±200

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)
High temperature exposure		MIL-STD-202G-method 108A	1 000 hours at maximum operating temperature depending on specification, unpowered	±(1% +0.05Ω)
Moisture resistance		MIL-STD-202G-method 106F	Each temperature / 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)
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)
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 temperature	±(2% +0.05Ω)

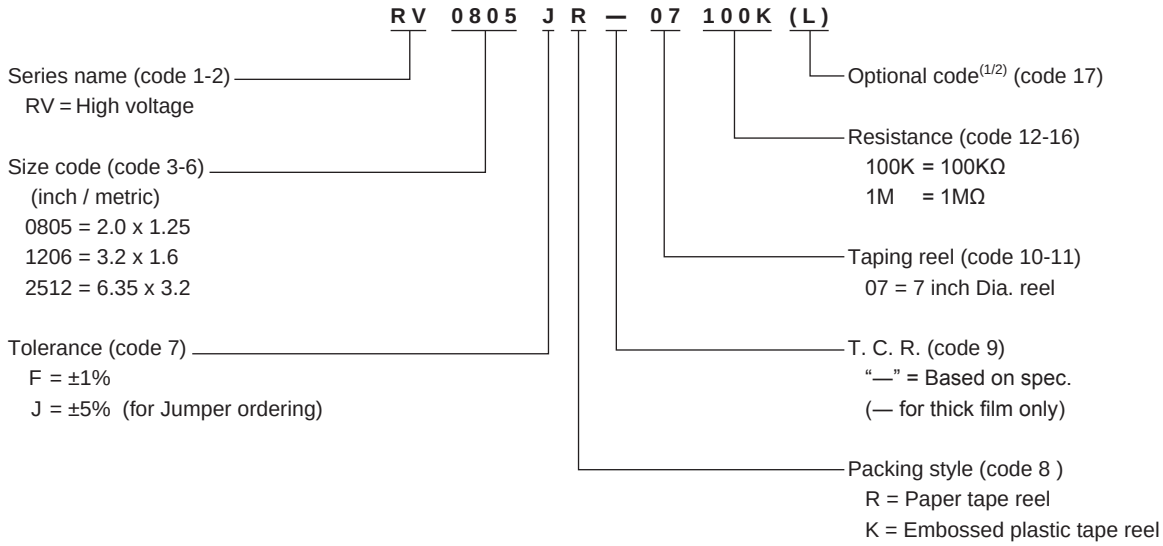
High voltage / RV series					
Size: inch (mm)	0805 (2012)		1206 (3216)		2512 (6432)
Working Voltage	400V		500V		500V
Power P_{70}	1/8W		1/4W		1W
Tolerance	±5%	±1%	±5%	±1%	±5%
Resistance Range	E24	E24/E96	E24	E24/E96	E24
100 kΩ					
150 kΩ					
220 kΩ					
330 kΩ					
470 kΩ					
680 kΩ					
1 MΩ				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

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

2. Products with lead free terminations meet RoHS requirements. None 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 for ordering Yageo / Phycomp branded products

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)

Phycomp world wide - Traditional type

High voltage chip resistors					
Size: inch (mm)	0805 (2012)		1206 (3216)		2512 (6432)
Power	1/8 W		1/4 W		1 W
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
5 000	2322 792 61...L	2322 793 6....L	2322 790 61...L	2322 791 6....L	---

For ordering rules: See page 13 for E24 / E96 values and the last 4 or 3 digits of the 12NC catalogue number.

Phycomp CTC ordering code - Traditional type - North America

Regional code for ordering Phycomp branded products. Please see page 12 for details.

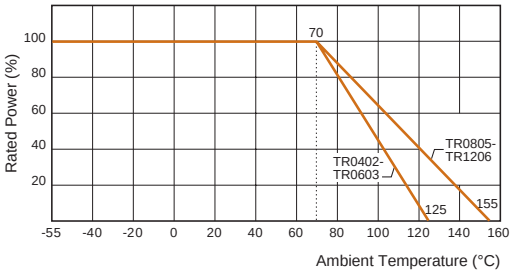
Introduction to trimmable chip resistors

Features

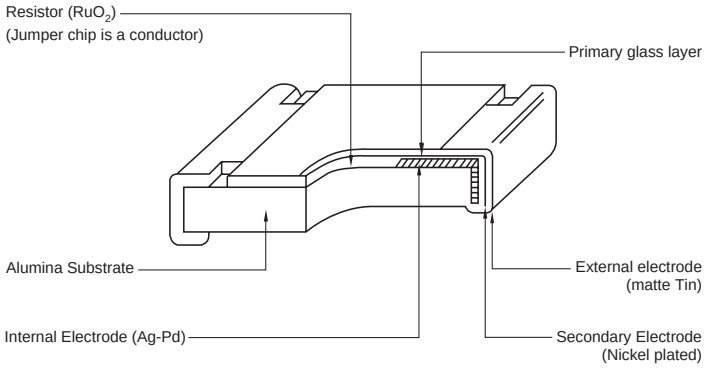
- Reduced size of final equipment
- Low assembly costs
- Higher component and equipment reliability
- Improved performance at high frequency
- Low noise, when not trimmed

Derating curve

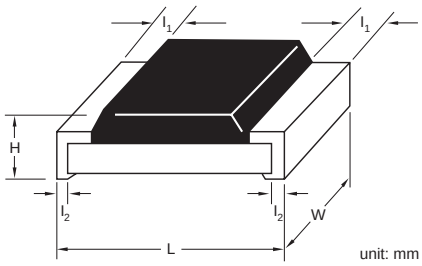
Maximum dissipation (P) in percentage of rated power as a function of the operating ambient temperature (T_{amb}).



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									
Type	Power P_{70}	Operating Temp. range	MWV	RCOV	DWV	Resistance range & tolerance		T. C. R. (ppm/°C)	
TR0402	1/16W	-55°C to +125°C	50V	100V	100V	E24 +0/-10%, +0/-20%, +0/-30%	1Ω ≤ R ≤ 10MΩ	10Ω < R ≤ 1MΩ	±100
TR0603	1/16W	-55°C to +125°C	50V	100V	100V				
TR0805	1/8W	-55°C to +155°C	150V	300V	500V			1Ω ≤ R ≤ 10Ω 1MΩ < R ≤ 10MΩ	±200
TR1206	1/4W	-55°C to +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)
High temperature exposure		MIL-STD-202G-method 108A	1 000 hours at maximum operating temperature depending on specification, unpowered	±(1% +0.05Ω)
Moisture resistance		MIL-STD-202G-method 106F	Each temperature / 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)
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)
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 temperature	±(2% +0.05Ω)

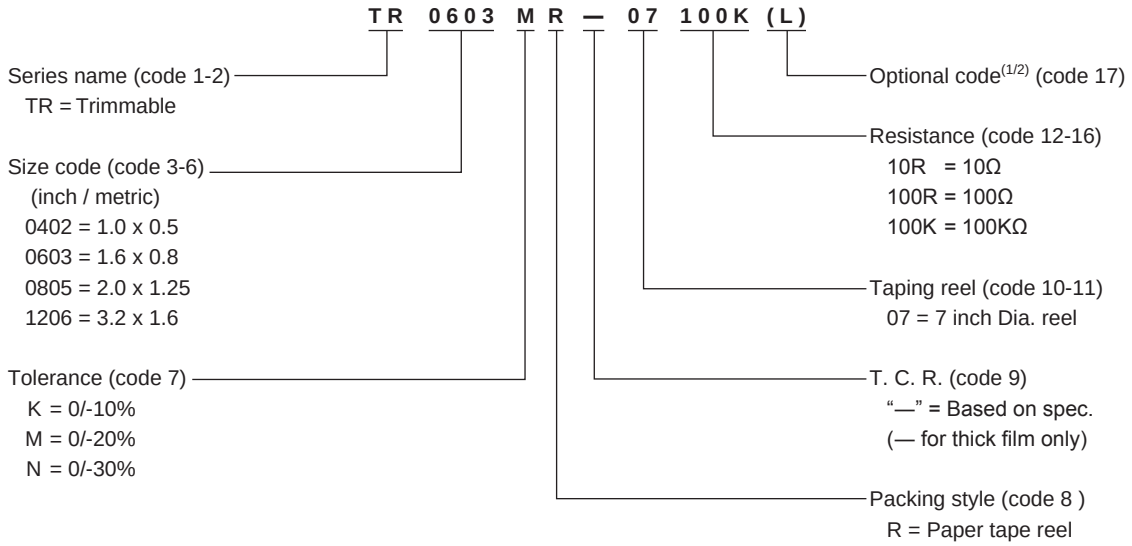
Trimmable / TR series												
Size: inch (mm)	0402 (1005)			0603 (1608)			0805 (2012)			1206 (3216)		
Power P_{70}	1/16W			1/16W			1/8W			1/4W		
Tolerance	0/-10% (Trimmable)	0/-20% (Trimmable)	0/-30% (Trimmable)	0/-10% (Trimmable)	0/-20% (Trimmable)	0/-30% (Trimmable)	0/-10% (Trimmable)	0/-20% (Trimmable)	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. None 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 for ordering Yageo / Phycomp branded products

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)

Phycomp world wide - Traditional type

Trimmable chip resistors				
Size: inch (mm)	0402 (1005)	0603 (1608)	0805 (2012)	1206 (3216)
Power	1/16 W	1/10 W	1/8 W	1/4 W
Tolerance	E24	E24	E24	E24
Resistance	paper tape	paper tape	paper tape	paper tape
Packing	2350 503 21…L	2350 502 11…L	2350 501 11…L	2350 500 11…L
Quantity 5 000 0/-20%	2350 503 20…L	2350 502 10…L	2350 511 10…L	2350 500 10…L
5 000 0/-30%	on request	on request	on request	2322 724 94…L
Europe 5 000	2322 792 61...L	2322 793 6....L	2322 791 6....L	---

For ordering rules: See page 13 for E24 / E96 values and the last 4 or 3 digits of the 12NC catalogue number.

Phycomp CTC ordering code - Traditional type - North America

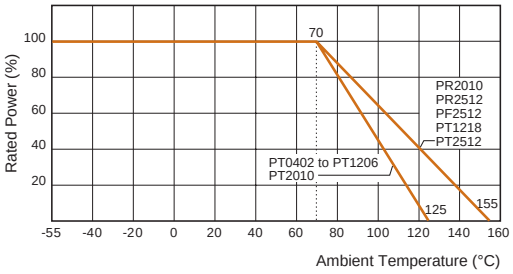
Regional code for ordering Phycomp branded products. Please see page 12 for details.

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

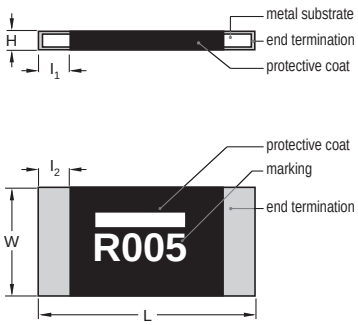
Derating curve

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

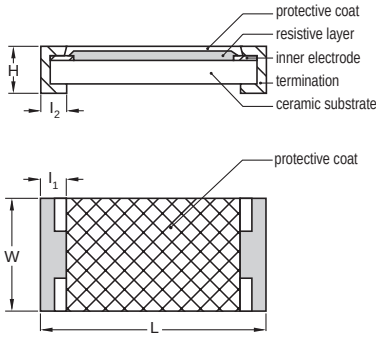


Construction

PR series



PF / PT series



Construction will be adjusted to resistance value

Dimensions

PR seriytts

Type	Resistance range	L	W	H	I_1	I_2
PR2010	2 mΩ - 6 mΩ	5.10 ±0.20	2.50 ±0.20	0.55 ±0.20	0.75 ±0.20	0.75 ±0.20
PR2512	1 mΩ - 2 mΩ	6.30 ±0.20	3.20 ±0.20	0.75 ±0.15	1.20 ±0.20	1.20 ±0.20
	3 mΩ - 5 mΩ	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
PF2512	6 mΩ - 14 mΩ	6.50 ±0.25	3.15 ±0.25	0.60 ±0.25	1.00 ±0.25	1.75 ±0.25
	15 mΩ - 130 mΩ					0.60 ±0.25

Note: For relevant physical dimensions, please refer to above construction outlines
Please contact with sales offices, distributors and representatives in your region before order

PT series

Type	Resistance range	L	W	H	I_1	I_2
PT0402	100 mΩ - 910 mΩ	1.00 ±0.10	0.50 ±0.05	0.35 ±0.05	0.20 ±0.10	0.25 ±0.10
PT0603		1.60 ±0.10	0.80 ±0.10	0.45 ±0.10	0.25 ±0.15	0.25 ±0.15
PT0805		2.00 ±0.10	1.25 ±0.10	0.50 ±0.10	0.35 ±0.20	0.35 ±0.20
PT1206		3.10 ±0.10	1.60 ±0.10	0.55 ±0.10	0.45 ±0.20	0.45 ±0.20
PT1210		3.10 ±0.10	2.60 ±0.15	0.50 ±0.10	0.50 ±0.20	0.50 ±0.20
PT1218		3.05 ±0.15	4.60 ±0.10	0.55 ±0.10	0.45 ±0.25	0.50 ±0.25
PT2010		5.00 ±0.10	2.50 ±0.15	0.55 ±0.10	0.60 ±0.20	0.50 ±0.20
PT2512		6.35 ±0.10	3.20 ±0.15	0.55 ±0.10	0.60 ±0.20	0.50 ±0.20

Note: For relevant physical dimensions, please refer to above construction outlines
Please contact with sales offices, distributors and representatives in your region before order

Electrical characteristics						
Type	Power P_{70}	Operating Temp. range	Max. working voltage	Tolerance	Resistance range & T. C. R.	
PR2010	0.5W	-55°C to +155°C	(P x R)^1/2	±1%, ±2%, ±5% (E24)	2mΩ ≤ R ≤ 6mΩ	±150 ppm/°C
PR2512	1W				1mΩ ≤ R ≤ 2mΩ 3mΩ ≤ R ≤ 5mΩ	±200 ppm/°C ±100 ppm/°C
PF2512	1W				6mΩ ≤ R ≤ 130mΩ	±100 ppm/°C
Power enhancement PR2010	1W	-55°C to +155°C			2mΩ ≤ R ≤ 6mΩ	±150 ppm/°C
Power enhancement PR2512	2W				1mΩ ≤ R ≤ 2mΩ 3mΩ ≤ R ≤ 5mΩ	±200 ppm/°C ±100 ppm/°C
Power enhancement PF2512	2W				6mΩ ≤ R ≤ 130mΩ	±100 ppm/°C
PT0402	1/16W	-55°C to +125°C		±1%, ±5% (E24)	100mΩ ≤ R ≤ 910mΩ	±200 ppm/°C
PT0603	1/10W					
PT0805	1/8W					±100 ppm/°C
PT1206	1/4W					
PT1210	1/2W					
PT1218	1W	-55°C to +155°C				
PT2010	3/4W	-55°C to +125°C				
PT2512	1W	-55°C to +155°C				

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	±(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 temperature / humidity cycle is defined at 8 hours (method 106F), 3 cycles / 24 hours for 10d with 25°C / 65°C 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°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	±(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 temperature	±(0.5% +0.0005Ω)

Current sensors - Low TCR		
Series	PR / PF / PT series	
Size: inch (mm)	2512 (6432)	
Power P_{70}	1W	
Tolerance	±5%	±1%
Resistance Range	E24	E24
0.0010 Ω		
0.0020 Ω		
0.0030 Ω		
0.0040 Ω		
0.0050 Ω		
0.0060 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: For sizes of PR2010 and PT0402 to 2512, please contact with sales offices, distributors and representatives in your region before order

Global part number - Preferred type

Ordering example: PF2512FKF070R01(L)

PF 2512 F K F 07 0R01 (L)

Series name (code 1-2)
PT / PR / PF = Current sensor - low TCR

Size code (code 3-6)
(inch / metric)
0402 = 1.0 x 0.5
0603 = 1.6 x 0.8
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% (for Jumper ordering)

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

Optional code(1/2) (code 17)

Resistance (code 12-16)
0R01 = 0.01Ω
0R1 = 0.1Ω
0R2 = 0.2Ω

Taping reel (code 10-11)
07 = 7 inch Dia. reel
7W = 7 inch Dia. reel and 2 x standard power type

T. C. R. (code 9)
M= ±75 ppm/°C
F = ±100 ppm/°C
L = ±150 ppm/°C
G = ±200 ppm/°C

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)
3. PT series products are available by "Global part number" only

Phycomp world wide - Traditional type

Current Sensor - Low TCR / PR series

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

For ordering rules: See page 13 for E24 / E96 values and the last 4 or 3 digits of the 12NC catalogue number.

Phycomp world wide - Traditional type

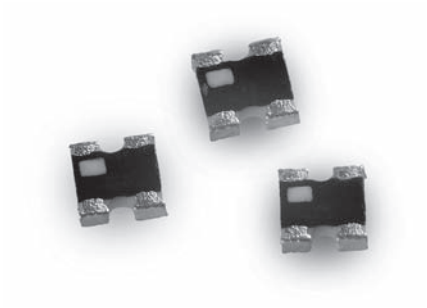
Current Sensor - Low TCR / PF series

Size: inch (mm)		2512 (6432)			
Power		1 W		2 W	
Tolerance		+5%	+1%	+5%	+1%
Packing		blister tape			
Quantity	4 000	2322 764 96..L	2322 764 97..L	2322 764 10..L	2322 764 30..L
	5 000	---	---	---	---

For ordering rules: See page 13 for E24 / E96 values and the last 4 or 3 digits of the 12NC catalogue number.

Phycomp CTC ordering code - Traditional type - North America

Regional code for ordering Phycomp branded products. Please see page 12 for details.

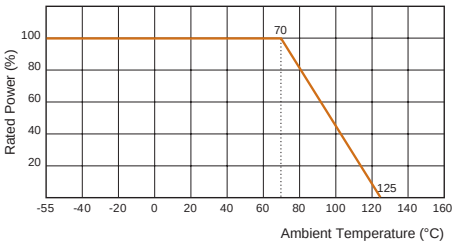


Features

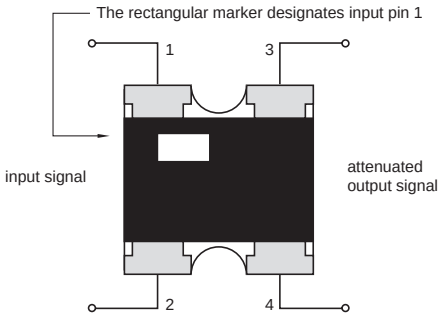
- Mobile phone
- Receivers
- Battery charger
- Palmtop computers
- PDAs

Derating curve

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

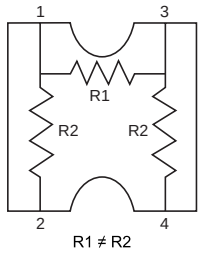


Construction



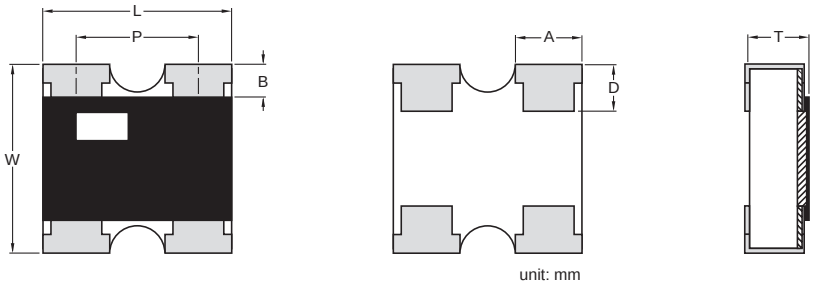
Schematics

ATV 321



R1 ≠ R2

Dimensions



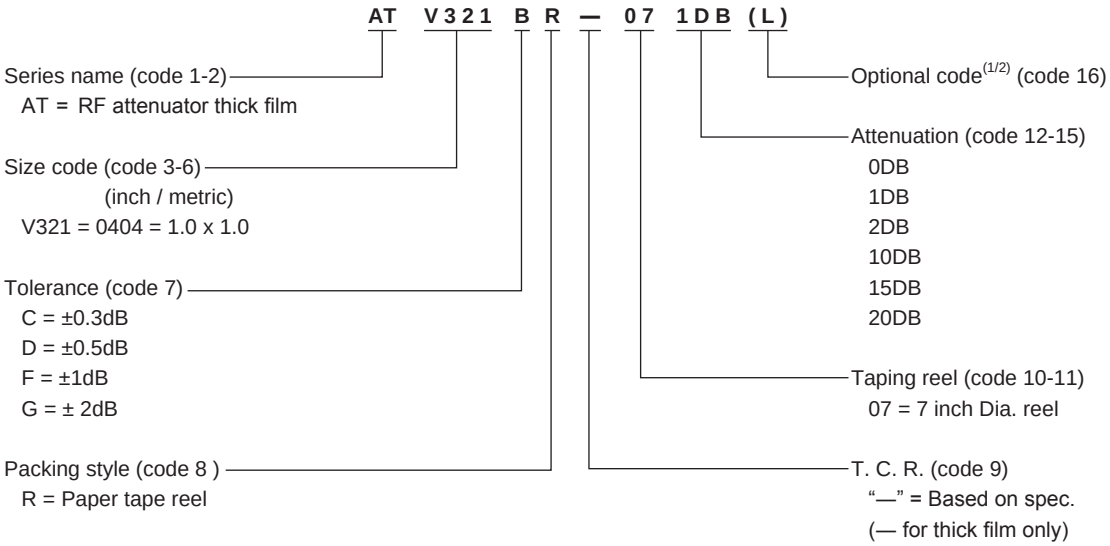
unit: mm

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								
Type	Power P_{70}	Operating Temp. range	MPV	VSWR (Max.)	Impedance	Resistance range & tolerance		Frequency range
ATV321	40mW	-55°C to +125°C	50V	1.3	50Ω	1DB - 5DB	±0.3 dB	1DB - 10DB DC to 2.5 GHz
						6DB - 10DB	±0.5 dB	
						15DB	±1.0 dB	15DB - 20DB DC to 2.0 GHz
						20DB	±2.0 dB	

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	Max.: ±0.3 dB
Humidity (steady state)		JIS C 5202 7.5	1 000 hours, 40 ±2°C, 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 temperature / humidity cycle is defined at 8 hours (method 106F), 3 cycles / 24 hours for 10d with 25°C / 65°C 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°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	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 temperature	Max.: ±0.3 dB

Global part number - Preferred type for ordering Yageo / Phycomp branded products
Ordering example: ATV321BR-071DB(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)

Phycomp world wide - Traditional type	
Packing	paper tape
Quantity 10 000	2350 703 11…L
Remark	For last three digits, see table of Attenuation codes below

Note: L = An optional code

Phycomp CTC ordering code - Traditional type - North America	
Packing	paper tape
Quantity 10 000	9CV3218AXXXXX-PF3
Remark	For last 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

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

Thick film array chip resistors (convex)							
Global CTC (Preferred)	Description	Size	Tolerance	Max. power	Resistance range	Resistor pieces	Min. items
YC12X-JR-SK001L	YC124 / YC122, ±5%, +Jumper, RoHS compliant, refer to below table	0402 X 2 0402 X 4	J	1/16 W	10 - 1M	100	75

Global CTC	Description	Q'ty
2R - Array series		
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

Global CTC	Description	Q'ty
4R - Array series		
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

Engineering design kit for current sensing application							
Global CTC (Preferred)	Description	Size	Tolerance	Max. power	Resistance range	Resistor pieces	Min. items
CS0402-R-SK001L	0402 - 2512, ±1% & ±5%, RoHS compliant	0402 - 2512	F / J	---	100m - 910m	30	160

Engineering design kit for mobil application							
Global CTC (Preferred)	Description	Size	Tolerance	Max. power	Resistance range	Resistor pieces	Min. items
MD0402-R-SK001L	Chip resistors / MLCC / Attenuators, refer to below table	---	---	---	---	50 - 100	44

Global CTC	Description	Q'ty
Low ohmic series		
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

Global CTC	Description	Q'ty
C - Array series		
CA0508KRNPO9BN100	0508, ±10%, 10pF, NP0, 50V	50
CA0508KRNPO9BN150	0508, ±10%, 15pF, NP0, 50V	50
CA0508KRNPO9BN180	0508, ±10%, 18pF, NP0, 50V	50
CA0508KRNPO9BN220	0508, ±10%, 22pF, NP0, 50V	50
CA0508KRNPO9BN330	0508, ±10%, 33pF, NP0, 50V	50
Attenuiator series		
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

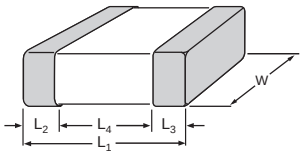
Note: Before ordering, please contact with sales force for detail of resistance

SMD CERAMIC MILTILAYER CAPACITORS

Specification overview					
Description	TC code	Series	Capacitance range	Voltage range	Size
Discrete	NP0	General purpose	0.22 pF to 33 nF	16 V to 25 V	0201, 0402, 0603, 0805, 1206, 1210
		General purpose	0.22 pF to 390 pF	50 V	0201, 0402, 0603, 0805, 1206, 1210, 1812
		Medium voltage	10 pF to 22 nF	100 V to 630 V	0603, 0805, 1206, 1210, 1808, 1812
		High voltage	10 pF to 2.7 nF	1 kV, 2 kV, 3 kV, 4 kV	1206, 1210, 1808, 1812
		Microwave	0.47 pF to 120 pF	50 V	0603, 0805, 1206
	X7R	General purpose & High capacitance	100 pF to 22 µF	6.3 V to 50 V	0201, 0402, 0603, 0805, 1206, 1210, 1812
		Medium voltage	100 pF to 470 nF	100 V to 630 V	0603, 0805, 1206, 1210, 1808, 1812
		High voltage	100 pF to 33 nF	1 kV to 3 kV	1206, 1210, 1808, 1812
		Low inductance	10 nF to 220 nF	10 V to 50 V	0306, 0508, 0612
	X5R	General purpose & High capacitance	10 nF to 100 µF	6.3 V to 50 V	0201, 0402, 0603, 0805, 1206, 1210, 1812
	Y5V	General purpose & High capacitance	10 nF to 47 µF	6.3 V to 50 V	0201, 0402, 0603, 0805, 1206, 1210
Safety certification product	NP0	High voltage SC type	10 pF to 1 nF	X1/Y2, X2/Y3	1808, 1812
	X7R	High voltage SC type	150 pF to 1.5 nF	X1/Y2, X2/Y3	1808, 1812
C-Arrays	NP0	4-C arrays	10 pF to 1 nF	50 V	0508, 0612
	X7R	2-C arrays	10 nF to 100 nF	16 V	0405
		4-C arrays	220 pF to 100 nF	16 V to 50 V	0508, 0612
	Y5V	4-C arrays	10 nF to 100 nF	25 V	0508, 0612
High frequency	NP0	High frequency	0.22 pF to 10 pF	50 V	0402, 0603

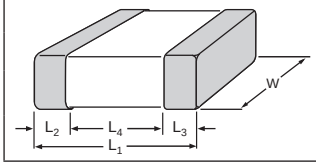
Case dimensions

Discrete capacitors



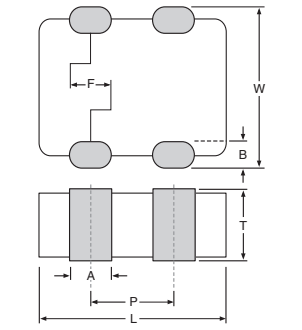
Case size designation		Dimensions in mm				
Inch-based	Metric	L_1	W	L_2 / L_3 min	L_2 / L_3 max	L_4 min
0201	0603M	0.6 ±0.03	0.3 ±0.03	0.10	0.20	0.20
0402	1005M	1.0 ±0.05	0.5 ±0.05	0.20	0.30	0.40
0603	1608M	1.6 ±0.10	0.8 ±0.07	0.20	0.60	0.40
0805	2012M	2.0 ±0.10	1.25 ±0.10	0.25	0.75	0.55
1206	3216M	3.2 ±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
1808	4520M	4.5 ±0.40	2.0 ±0.30	0.25	0.75	2.20
1812	4532M	4.5 ±0.20	3.2 ±0.20	0.25	0.75	2.20

Discrete capacitors - High voltage SC type



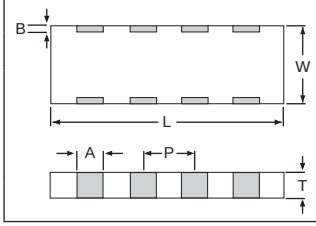
Case size designation		Dimensions in mm				
Inch-based	Metric	L_1	W	L_2 / L_3 min	L_2 / L_3 max	L_4 min
1808	4520M	4.8 ±0.30	2.0 ±0.30	0.25	0.75	3.20
1812	4532M	4.8 ±0.30	3.2 ±0.30	0.25	0.75	4.00

2-C arrays



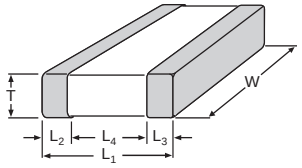
Case size designation		Demensions in mm						
Inch-based	Metric	L	W	T_{min}	T_{max}	A	B	P
0405 (2 x 0402)	1013M (2 x 1005)	1.37 ±0.15	1.0 ±0.15	0.5	0.7	0.36 ±0.1	0.2 ±0.1	0.64 ±0.1

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	0.70	0.28 ±0.10	0.2 ±0.10	0.5 ±0.10
0612 (4 x 0603)	1632M (4 x 1608)	3.2 ±0.15	1.60 ±0.15	0.70	0.90	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_3 min	L_2 / L_3 max	L_4 min
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

Ordering Information - Global part number

Global part number

Ordering example: CC0201KRX7R8BB102

CC 0201 K R X7R 8 B B 102

Series name (code 1-2)
- CA = 4 x Capacitance array
- CB = 2 x Capacitance array
- CC = Multilayer chip capacitance
- CL = Low inductance capacitance
- CM = Micro-wave capacitance
- CH = High frequency
- SC = Safety certification capacitance

Size code (code 3-6)
- 0201
- 0402
- 0603
- 0805
- 1206
- 1210
- 1808
- 1812
- 0306
- 0405
- 0508
- 0612

Capacitance tolerance (code 7)
- B = ±0.1 pF
- C = ±0.25 pF
- D = ±0.5 pF
- F = ±1%
- G = ±2%
- J = ±5%
- K = ±10%
- M = ±20%
- Z = -20% to +80%

Packing style (code 8)
- R = Paper tape reel Ø7 inch
- P = Paper tape reel Ø13 inch
- K = Embossed plastic tape reel Ø7 inch
- F = Embossed plastic tape reel Ø13 inch

TC material (code 9-11)
- NP0
- X5R
- X7R
- Y5V

Capacitance value (code 15-17)
- 102 = 1 000 pF
- (2 significant digits+number of zeros; the 3rd digit signifies the multiplying factor, and letter R is decimal point)
- 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
- X X R = Special capacitance
- (X X: capacitance before decimal point)

Process code (code 14)
- N = NP0
- B = Class 2 product

Termination (code 13)
- B = Ni-Barrier

Rated voltage (code 12)
- 4 = 4 V
- 5 = 6.3 V
- 6 = 10 V
- 7 = 16 V
- 8 = 25 V
- 9 = 50 V
- 0 = 100 V
- A = 200 V
- B = 500 V
- C = 1 kV
- D = 2 kV
- E = 3 kV
- G = 35 V
- H = 4 kV
- S = 2.5 kV
- T = X2 / Y3
- W = X1 / Y2
- Y = 250 V
- Z = 630 V

Ordering information for North America

Phycomp CTC ordering code - Noth America								
Ordering example: 02012R102K8B20D								
0201	**2R**	**102**	**K**	**8**	**B**	**2**	**0**	**0**
Size code	Temperature characteristic	Capacitance (pF)	Tolerance	Voltage	Termination	Packing	Marking	Range identifier
0201 0402 0603 0805 1206 1210 1808 1812 0306 0405 0508 0612	CG = NP0 2B = X5R 2R = X7R 2F = Y5V	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 = ±0.1 pF C = ±0.25 pF D = ±0.5 pF F = ±1% G = ±2% J = ±5% K = ±10% M = ±20% Z = -20% to +80%	5 = 6.3 V 6 = 10 V 7 = 16 V 8 = 25 V 9 = 50 V 0 = 100 V B = 200 V C = 250 V D = 500 V E = 1 kV F = 2 kV G = 3 kV H = 4 kV Z = 630 V S = 2.5 kV T = X2/Y3 W = X1/Y2	B = NiSn	2 = 180mm / 7” paper 3 = 330 mm / 13” paper B = 180mm / 7” blister F = 330 mm / 13” blister P = Bulk case	0 = No marking	0 = Conventional ceramic D = Class 2 MLCC L = Low inductance M = Microwave S = Safty certification capacitance

Thickness classes and packing quantities for all series

Thickness classes and packing quantities								
Description	Size code	Thickness classification (mm)	Quantity per reel					Quantity per bulk case
			Tape width	180 mm / 7”		330 mm / 13”		
				Paper	Blister	Paper	Blister	
Discrete capacitors	0201	0.3 ±0.03	8 mm	15 000	---	50 000	---	---
	0402	0.5 ±0.05		10 000	---	50 000	---	50 000
	0603	0.8 ±0.1		4 000	---	15 000	---	15 000
	0805	0.6 ±0.1		4 000	---	20 000	---	10 000
		0.85 ±0.1		4 000	---	15 000	---	8 000
		1.25 ±0.2		---	3 000	---	10 000	5 000
	1206	0.6 ±0.1		4 000	---	20 000	---	---
		0.85 ±0.1		4 000	---	15 000	---	---
		1.00 / 1.15 ±0.1		---	3 000	---	10 000	---
		1.25 ±0.2		---	3 000	---	10 000	---
		1.6 ±0.15		---	2 500	---	10 000	---
		1.6 ±0.2		---	2 000	---	10 000	---
	1210	0.6 / 0.7 ±0.1		---	4 000	---	15 000	---
		0.85 ±0.1		---	4 000	---	10 000	---
		1.15 ±0.1		---	3 000	---	10 000	---
		1.15 ±0.15		---	3 000	---	10 000	---
		1.25 ±0.2		---	3 000	---	---	---
		1.5 ±0.1		---	2 000	---	---	---
		1.6 / 1.9 ±0.2		---	2 000	---	---	---
		2.0 ±0.2		---	2 000 / 1 000	---	---	---
		2.5 ±0.2		---	1 000 / 500	---	---	---
	1808	1.15 ±0.15	12 mm	---	3 000	---	---	---
		1.25 ±0.2		---	3 000	---	---	---
		1.35 ±0.15		---	2 000	---	---	---
		1.5 ±0.1		---	2 000	---	---	---
		1.6 ±0.2		---	2 000	---	---	---
		2.0 ±0.2		---	2 000	---	---	---
	1812	0.6 / 0.85 ±0.1		---	2 000	---	---	---
		1.15 ±0.1		---	1 500	---	---	---
		1.15 ±0.15		---	1 500	---	---	---
		1.35 ±0.15		---	1 000	---	---	---
		1.5 ±0.1		---	1 000	---	---	---
		1.6 ±0.2		---	1 000	---	---	---
		2.0 ±0.2		---	1 000	---	---	---
Low inductance	0306	0.5 ±0.1	8 mm	4 000	---	15 000	---	---
	0508	0.85 ±0.1		4 000	---	15 000	---	---
	0612	0.85 ±0.1		4 000	---	15 000	---	---
Arrays	0405	0.6 ±0.1		4 000	---	---	---	---
	0508	0.6 ±0.1		4 000	---	---	---	---
	0612	0.8 ±0.1		4 000	---	---	---	---

NP0						
General purpose						
Capacitance	Last 2-digit of 12NC	0201	0402		0603	
		25V	16V	25V	16V	25V
10 pF	23			0.5 ±0.05		
12 pF	24					
15 pF	25					
18 pF	26					
22 pF	27					
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					
120 pF	37					
150 pF	38					
180 pF	39					
220 pF	41					
270 pF	42		0.5 ±0.05			
330 pF	43					
390 pF	44					
470 pF	45					0.8 ±0.1
560 pF	46					
680 pF	47					
820 pF	48					
1000 pF	49					
1.2 nF	51					
1.5 nF	52					
1.8 nF	53				0.8 ±0.1	
2.2 nF	54					
2.7 nF	55					
3.3 nF	56					
Tape width		8 mm				

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

NP0 - General purpose 16 to 25V, 0805 to 1210

NP0						
General purpose						
Capacitance	Last 2-digit of 12NC	0805		1206		1210
		16V	25V	16V	25V	25V
3.3 nF	56		1.25 ±0.2			
3.9 nF	57					
4.7 nF	58					
5.6 nF	59	1.25 ±0.2				
6.8 nF	61					
8.2 nF	62				1.25 ±0.2	
10 nF	63					
12 nF	64			1.25 ±0.2		1.25 ±0.2
15 nF	65					1.6 ±0.2
18 nF	66					
22 nF	67					2.0 ±0.2
27 nF	68			1.6 ±0.2		
33 nF	69					
Tape width		8 mm				

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

Global part number - Preferred type

Global Part Number is the preferred clear text code for ordering Yageo and Phycomp branded products.
For details, please see page 76.

12NC ordering code - Phycomp branded product only

2 2 X X X X X X 1 X X X

Carrier tape
- 50 = Blister (≥ 1kV)
- 22 = Blister
- 38 = Paper
- 54 = Bulk

Voltage
- 78 = 16 V
- 91 = 25 V
- 60 = 100 V
- 93 = 200 V
- 83 = 250 V
- 97 = 500 V
- 98 = 630 V
- 00 = 1 kV
- 02 = 2 kV
- 99 = 2.5 kV
- 04 = 3 kV
- 50 = 4 kV
- 52 = X2 / Y3
- 53 = X1 / Y2

Size
- 8 = 0201
- 7 = 0402
- 6 = 0603
- 0 = 0805
- 1 = 1206
- 2 = 1210
- 3 = 1808
- 4 = 1812

Packing
- 1 = 180 mm / 7” reel
- 5 = 330 mm / 13” reel
- 4 = Bulk case

TC material
- 1 = NP0

Tolerance
- 4 = ±2%
- 5 = ±5%
- 6 = ±10%

Capacitance value
- See selection chart

Phycomp CTC ordering code - North America

Regional code for ordering Phycomp branded products. For details, please see page 77.

NP0 - Gerneral purpose 50V, 0201 to 1812

NP0								
General purpose								
Capacitance	Last 3-digit of 12NC	0201	0402	0603	0805	1206	1210	1812
		50V	50V	50V	50V	50V	50V	50V
0.47 pF	477		0.5 ±0.05	0.8 ±0.1	0.6 ±0.1	0.6 ±0.1		
0.56 pF	567							
0.68 pF	687							
0.82 pF	827							
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							
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 ±0.2			
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		
6.8 nF	682						0.85 ±0.1	
8.2 nF	822							
10 nF	103							

NP0								
General purpose								
Capacitance	Last 3-digit of 12NC	0201	0402	0603	0805	1206	1210	1812
		50V	50V	50V	50V	50V	50V	50V
12 nF	123							0.85 ±0.1
15 nF	153							
18 nF	183							1.15 ±0.15
22 nF	223							
Tape width		8 mm						12 mm

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

Global part number - Preferred type

Global Part Number is the preferred clear text code for ordering Yageo and Phycomp branded products.
For details, please see page 76.

12NC ordering code - Phycomp branded product only

2 2 X X X X X X X X X

Carrier tape
- 22 = Blister
- 38 = Paper
- 54 = Bulk

Voltage
- 86 = 50 V

Size
- 8 = 0201
- 9 = 0402
- 7 = 0603
- 1 = 0805
- 3 = 1206
- 2 = 1210
- 5 = 1812

Capacitance value
- See selection chart

Tolerance
- 4 = ±0.1 pF for 0.47 pF ≤ C < 5 pF
  ±0.25 pF for 5 pF ≤ C < 10 pF
  ±2% for C ≥ 10 pF
- 5 = ±0.25 pF for C < 5 pF
  ±0.5 pF for 5 pF ≤ C < 10 pF
  ±5% for C ≥ 10 pF
- 8 = ±0.1 pF for 5 pF ≤ C < 10 pF
  ±1% for C ≥ 10 pF

Packing
- 1 = 180 mm / 7” reel
- 7 = 330 mm / 13” reel
- 4 = Bulk case

Phycomp CTC ordering code - North America

Regional code for ordering Phycomp branded products. For details, please see page 77.

NP0								
Medium voltage								
Capacitance	Last 2-digit of 12NC	0603			0805			
		100V	200V	250V	100V	200V	250V	500V
10 pF	23	0.8 ±0.1	0.8 ±0.1	0.8 ±0.1	0.6 ±0.1	0.6 ±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	0.85 ±0.1
270 pF	42							
330 pF	43							
390 pF	44							
470 pF	45							
560 pF	46					1.25 ±0.2	1.25 ±0.2	1.25 ±0.2
680 pF	47					0.8 ±0.1	0.8 ±0.1	
820 pF	48							
1000 pF	49							
1.2 nF	51				0.85 ±0.1	1.25 ±0.2	1.25 ±0.2	
1.5 nF	52							
1.8 nF	53							
2.2 nF	54				1.25 ±0.2			
2.7 nF	55							
3.3 nF	56							
3.9 nF	57							
4.7 nF	58							
Tape width		8 mm						

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

NP0											
Medium voltage											
Capacitance	Last 2-digit of 12NC	1206					1210				
		100V	200V	250V	500V	630V	100V	200V	250V	500V	630V
10 pF	23	0.6 ±0.1	0.6 ±0.1	0.6 ±0.1	0.6 ±0.1	0.8 ±0.1					1.25 ±0.2
12 pF	24										
15 pF	25										
18 pF	26										
22 pF	27										
27 pF	28										
33 pF	29										
39 pF	31										
47 pF	32						0.6 ±0.1			0.85 ±0.1	
56 pF	33										
68 pF	34										
82 pF	35										
100 pF	36										
120 pF	37					1.0 ±0.1					
150 pF	38										
180 pF	39							1.25 ±0.2	1.25 ±0.2		
220 pF	41										
270 pF	42										
330 pF	43										
390 pF	44					1.15 ±0.1					
470 pF	45										
560 pF	46										
680 pF	47										
820 pF	48		0.85 ±0.1	0.85 ±0.1	0.85 ±0.1						
1000 pF	49									1.15 ±0.15	
1.2 nF	51										
1.5 nF	52										
1.8 nF	53		0.8 ±0.1	0.8 ±0.1	1.25 ±0.2			0.85 ±0.1	0.85 ±0.1		
2.2 nF	54		1.25 ±0.2	1.25 ±0.2						1.25 ±0.2	
2.7 nF	55							1.15 ±0.15	1.15 ±0.15		
3.3 nF	56	0.85 ±0.1									
3.9 nF	57							1.25 ±0.2	1.25 ±0.2		
4.7 nF	58										
5.6 nF	59	1.15 ±0.15									
6.8 nF	61						0.85 ±0.1				
8.2 nF	62	0.8 ±0.1									
10 nF	63										
12 nF	64						1.25 ±0.2				
15 nF	65										
Tape width		8 mm									

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

NP0											
Medium voltage											
Capacitance	Last 2-digit of 12NC	1808					1812				
		100V	200V	250V	500V	630V	100V	200V	250V	500V	630V
10 pF	23					1.25 ±0.2					
12 pF	24										
15 pF	25										
18 pF	26										1.25 ±0.2
22 pF	27									1.25 ±0.2	
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										
150 pF	38										
180 pF	39										
220 pF	41										
270 pF	42										
330 pF	43	1.25 ±0.2	1.25 ±0.2	1.25 ±0.2	1.25 ±0.2		0.6 ±0.1				
390 pF	44										
470 pF	45										
560 pF	46										
680 pF	47										
820 pF	48									1.25 ±0.2	
1000 pF	49						1.25 ±0.2	1.25 ±0.2	1.25 ±0.2		1.15 ±0.15
1.2 nF	51										
1.5 nF	52										
1.8 nF	53										1.25 ±0.2
2.2 nF	54									1.15 ±0.15	
2.7 nF	55										1.6 ±0.2
3.3 nF	56										
3.9 nF	57							0.85 ±0.1	0.85 ±0.1	1.25 ±0.2	
4.7 nF	58							1.15 ±0.15	1.15 ±0.15		
5.6 nF	59										
6.8 nF	61										
8.2 nF	62										
10 nF	63										
12 nF	64						0.85 ±0.1				
15 nF	65										
18 nF	66						1.15 ±0.15				
22 nF	67										
Tape width		12 mm									

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

NP0 - High voltage, 1206 / 1210

NP0					
High voltage					
Capacitance	Last 2-digit of 12NC	1206		1210	
		1kV	2kV	1kV	2kV
10 pF	23	0.8 ±0.1	1.0 ±0.1	1.25 ±0.2	1.25 ±0.2
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	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 ±0.15			
470 pF	45				
560 pF	46				
680 pF	47				
820 pF	48				
1000 pF	49				
Tape width		8 mm			

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

NP0									
High voltage									
Capacitance	Last 2-digit of 12NC	1808				1812			
		1kV	2kV	3kV	4kV	1kV	2kV	3kV	4kV
10 pF	23	1.25 ±0.2	1.25 ±0.2	1.15 ±0.15	1.5 ±0.1		1.25 ±0.2	1.15 ±0.15	1.5 ±0.1
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								
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								
560 pF	46								
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					1.6 ±0.2			
Tape width		12 mm							

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

Global part number - Preferred type

Global Part Number is the preferred clear text code for ordering Yageo and Phycomp branded products.
For details, please see page 76.

12NC ordering code - Phycomp branded product only

2 2 X X X X X X 1 X X X

Carrier tape
- 50 = Blister (≥ 1kV)
- 22 = Blister
- 38 = Paper
- 54 = Bulk

Voltage
- 78 = 16 V
- 91 = 25 V
- 60 = 100 V
- 93 = 200 V
- 83 = 250 V
- 97 = 500 V
- 98 = 630 V
- 00 = 1 kV
- 02 = 2 kV
- 99 = 2.5 kV
- 04 = 3 kV
- 50 = 4 kV
- 52 = X2 / Y3
- 53 = X1 / Y2

Size
- 8 = 0201
- 7 = 0402
- 6 = 0603
- 0 = 0805
- 1 = 1206
- 2 = 1210
- 3 = 1808
- 4 = 1812

Packing
- 1 = 180 mm / 7” reel
- 5 = 330 mm / 13” reel
- 4 = Bulk case

TC material
- 1 = NP0

Tolerance
- 4 = ±2%
- 5 = ±5%
- 6 = ±10%

Capacitance value
- See selection chart

Phycomp CTC ordering code - North America

Regional code for ordering Phycomp branded products. For details, please see page 77.

NP0			
		High frequency	
Capacitance	Last 2-digit of 12NC	0402	0603
		50V	50V
0.47 pF	77	0.5 ±0.05	0.8 ±0.1
0.56 pF	67		
0.68 pF	87		
0.82 pF	27		
1 pF	08		
1.2 pF	28		
1.5 pF	58		
1.8 pF	88		
2.2 pF	28		
2.7 pF	78		
3.3 pF	38		
3.9 pF	98		
4.7 pF	78		
5.6 pF	68		
6.8 pF	88		
8.2 pF	28		
Tape width		8 mm	

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

Global part number - Preferred type

Global Part Number is the preferred clear text code for ordering Yageo and Phycomp branded products.
For details, please see page 76.

12NC ordering code - Phycomp branded product only

2 2 X X X X X X X X X X

Carrier tape
- 22 = Blister
- 38 = Paper
- 54 = Bulk

Voltage
- 84 = 50 V (for high frequency series)

Size
- 9 = 0402
- 7 = 0603

Capacitance value
- See selection chart

Tolerance
- 4 = ±0.1 pF for 0.47 pF ≤ C < 5 pF
  ±0.25 pF for 5 pF ≤ C < 10 pF
  ±2% for C ≥ 10 pF
- 5 = ±0.25 pF for C < 5 pF
  ±0.5 pF for 5 pF ≤ C < 10 pF
  ±5% for C ≥ 10 pF
- 8 = ±0.1 pF for 5 pF ≤ C < 10 pF
  ±1% for C ≥ 10 pF

Packing
- 1 = 180 mm / 7” reel
- 7 = 330 mm / 13” reel
- 4 = Bulk case

Phycomp CTC ordering code - North America

Regional code for ordering Phycomp branded products. For details, please see page 77.

NP0				
		Microwave		
Capacitance	Last 2-digit of 12NC	0603	0805	1206
		50V	50V	50V
0.47 pF	05	0.8 ±0.1	0.8 ±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			0.8 ±0.1
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		8 mm		

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

Global part number - Preferred type

Global Part Number is the preferred clear text code for ordering Yageo and Phycomp branded products.
For details, please see page 76.

12NC ordering code - Phycomp branded product only

22 XX XXX X 1 X XX

Carrier tape
- 38 = Paper
- 54 = Bulk

Size
- 578 = 0603
- 574 = 0805
- 576 = 1206

Packing
- 1 = 180 mm / 7” reel
- 5 = 330 mm / 13” reel
- 4 = Bulk case

Capacitance value
- See selection chart

Tolerance
- 0 = ±0.1 pF for C < 10 pF
- 1 = ±0.25 pF for C < 10 pF
- 2 = ±0.5 pF for 5 pF ≤ C < 10 pF
- 3 = ±1% for C ≥ 10 pF
- 4 = ±2% pF for C ≥ 10 pF
- 5 = ±5% for C ≥ 10 pF

Phycomp CTC ordering code - North America

Regional code for ordering Phycomp branded products. For details, please see page 77.

X7R										
General purpose										
Capacitance	Last 2-digit of 12NC	0201				0402				
		6.3V	10V	16V	25V	6.3V	10V	16V	25V	50V
100 pF	09				0.3 ±0.03			0.5 ±0.05	0.5 ±0.05	0.5 ±0.05
150 pF	12									
220 pF	14									
330 pF	16			0.3 ±0.03						
470 pF	18									
680 pF	21									
1000 pF	23									
1.5 nF	25	0.3 ±0.03	0.3 ±0.03							
2.2 nF	27									
3.3 nF	29									
4.7 nF	32									
6.8 nF	34									
10 nF	36									
15 nF	38									
22 nF	41					0.5 ±0.05	0.5 ±0.05			
33 nF	43									
47 nF	45									
68 nF	47									
100 nF	49									
Tape width		8 mm								

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

X7R - General purpose & High capacitance, 0603 / 0805

X7R											
General purpose & High capacitance											
Capacitance	Last 2-digit of 12NC	0603					0805				
		6.3V	10V	16V	25V	50V	6.3V	10V	16V	25V	50V
100 pF	09		0.8 ±0.1	0.8 ±0.1	0.8 ±0.1	0.8 ±0.1					
150 pF	12										
220 pF	14										0.6 ±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									0.6 ±0.1	
15 nF	38										
22 nF	41										
33 nF	43										0.85 ±0.1
47 nF	45								0.6 ±0.1	0.85 ±0.1	
68 nF	47										
100 nF	49	0.8 ±0.1						0.85 ±0.1	0.85 ±0.1		
150 nF	52						0.85 ±0.1				
220 nF	54										1.25 ±0.2
330 nF	56						1.25 ±0.2	1.25 ±0.2	1.25 ±0.2	1.25 ±0.2	
470 nF	58										
680 nF	61										1.25 ±0.2
1000 nF	63										
2.2 uF	67										
4.7 uF	72										
10 uF	76										
Tape width		8 mm									

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

X7R											
General purpose & High capacitance											
Capacitance	Last 2-digit of 12NC	1206					1210				1812
		6.3V	10V	16V	25V	50V	10V	16V	25V	50V	50V
470 pF	18					0.85 ±0.1					
680 pF	21										
1000 pF	23										
1.5 nF	25										
2.2 nF	27									0.85 ±0.1	
3.3 nF	29										
4.7 nF	32										0.85 ±0.1
6.8 nF	34										
10 nF	36										
15 nF	38										
22 nF	41										
33 nF	43										
47 nF	45										
68 nF	47										1.15 ±0.1
100 nF	49				0.85 ±0.1						
150 nF	52					1.15 ±0.1				1.15 ±0.1	
220 nF	54			0.85 ±0.1					0.85 ±0.1		
330 nF	56				1.15 ±0.1	0.85 ±0.1					
470 nF	58			1.15 ±0.1	0.85 ±0.1	1.0 ±0.1			1.15 ±0.1	1.6 ±0.2	
680 nF	61				1.15 ±0.1	1.15 ±0.1				1.25 ±0.2	1.6 ±0.2
1000 nF	63	1.15 ±0.1	1.15 ±0.1			1.6 ±0.2			1.25 ±0.2		1.25 ±0.2
2.2 uF	67								1.9 ±0.2		
4.7 uF	72	1.6 ±0.2	1.6 ±0.2	1.6 ±0.2	1.6 ±0.2		1.9 ±0.2	1.9 ±0.2			
10 uF	76										
22 uF	81						2.5 ±0.2				
Tape width		8 mm									12mm

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

X7R - Midium voltage, 0603 / 0805

X7R						
Medium voltage						
Capacitance	Last 2-digit of 12NC	0603	0805			
		100V	100V	200V	250V	500V
100 pF	09	0.8 ±0.1				
150 pF	12					0.8 ±0.1
220 pF	14		0.6 ±0.1	0.85 ±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					
2.7 nF	28					
3.3 nF	29					
4.7 nF	32					
5.6 nF	33					
6.8 nF	34			1.25 ±0.2	1.25 ±0.2	
10 nF	36					1.25 ±0.2
15 nF	38		0.85 ±0.1	0.8 ±0.1	0.8 ±0.1	
22 nF	41			1.25 ±0.2	1.25 ±0.2	
33 nF	43		1.25 ±0.2			
47 nF	45					
Tape width		8 mm				

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

X7R											
Medium voltage											
Capacitance	Last 2-digit of 12NC	1206					1210				
		100V	200V	250V	500V	630V	100V	200V	250V	500V	630V
220 pF	14	0.85 ±0.1	1.15 ±0.15	1.15 ±0.15	1.15 ±0.15	1.15 ±0.15					
330 pF	16										
470 pF	18		0.85 ±0.1	0.85 ±0.1							
680 pF	21										
820 pF	22										
1000 pF	23										1.25 ±0.2
1.2 nF	24										
1.5 nF	25										
1.8 nF	26										
2.2 nF	27						0.85 ±0.1	0.85 ±0.1	0.85 ±0.1		
2.7 nF	28									1.15 ±0.15	
3.3 nF	29										
3.9 nF	31				1.25 ±0.2						
4.7 nF	32					1.25 ±0.2					
6.8 nF	34										
10 nF	36									1.25 ±0.2	
12 nF	37										
15 nF	38										
18 nF	39		1.15 ±0.15	1.15 ±0.15							
22 nF	41							1.15 ±0.15	1.15 ±0.15		1.6 ±0.2
33 nF	43				1.6 ±0.2						2.0 ±0.2
47 nF	45		1.25 ±0.2	1.25 ±0.2							
56 nF	46										
68 nF	47	1.15 ±0.15						1.25 ±0.2	1.25 ±0.2		
82 nF	48										
100 nF	49										
120 nF	51						1.15 ±0.1				
150 nF	52										
180 nF	53						1.6 ±0.2				
220 nF	54						1.25 ±0.2				
Tape width		8 mm									

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

X7R - Midium voltage, 1808 / 1812

X7R											
Medium voltage											
Capacitance	Last 2-digit of 12NC	1808					1812				
		100V	200V	250V	500V	630V	100V	200V	250V	500V	630V
1000 pF	23					1.35 ±0.15					1.35 ±0.15
1.5 nF	26										
2.2 nF	28										
3.3 nF	29	1.25 ±0.2	1.25 ±0.2	1.25 ±0.2	1.25 ±0.2					0.85 ±0.1	
4.7 nF	32					1.25 ±0.2	0.85 ±0.1	0.85 ±0.1	0.85 ±0.1		
6.8 nF	34					1.6 ±0.2					
10 nF	36									1.15 ±0.1	
15 nF	38									1.15 ±0.15	1.25 ±0.2
22 nF	41									1.25 ±0.2	
33 nF	43										1.6 ±0.2
47 nF	45							1.15 ±0.15	1.15 ±0.15		
68 nF	47										
100 nF	49						1.15 ±0.1			1.6 ±0.2	
150 nF	52										
220 nF	54							1.6 ±0.2	1.6 ±0.2		
330 nF	56							2.0 ±0.2	2.0 ±0.2		
470 nF	58						2.0 ±0.2				
Tape width		12 mm									

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

X7R					
High voltage					
Capacitance	Last 2-digit of 12NC	1206		1210	
		1kV	2kV	1kV	2kV
220 pF	14	1.15 ±0.15	1.25 ±0.2		
330 pF	16				
470 pF	18				
680 pF	21				
1000 pF	23			1.25 ±0.2	1.25 ±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			
6.8 nF	34				
10 nF	36				
15 nF	38				
22 nF	41			1.6 ±0.2	
33 nF	43			2.0 ±0.2	
Tape width		8 mm			

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

X7R - High voltage, 1808 / 1812

X7R							
High voltage							
Capacitance	Last 2-digit of 12NC	1808			1812		
		1kV	2kV	3kV	1kV	2kV	3kV
150 pF	12			1.6 ±0.2			
220 pF	14					1.25 ±0.2	
330 pF	16						
470 pF	18	1.35 ±0.15	1.35 ±0.15				
680 pF	21						
1000 pF	23			2.0 ±0.2	1.35 ±0.15	1.35 ±0.15	1.6 ±0.2
1.5 nF	25						2.0 ±0.2
2.2 nF	27						
3.3 nF	29						
4.7 nF	32	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						
33 nF	43				1.6 ±0.2		
Tape width		12 mm					

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

Global part number - Preferred type

Global Part Number is the preferred clear text code for ordering Yageo and Phycomp branded products.
For details, please see page 76.

12NC ordering code - Phycomp branded product only

22 XX XX X X X X XX

Carrier tape
- 38 = Paper (≥10 V)
- 22 = Blister (≥10 V)
- 50 = Blister (6.3 V / ≥1 kV)
- 55 = Paper (6.3 V / ≥1 kV)
- 54 = Bulk

Voltage
- 20 = 6.3 V
- 24 = 10 V
- 78 = 16 V
- 91 = 25 V
- 58 = 50 V
- 60 = 100 V
- 93 = 200 V
- 83 = 250 V
- 97 = 500 V
- 98 = 630 V
- 00 = 1 kV
- 02 = 2 kV
- 99 = 2.5 kV
- 04 = 3 kV
- 50 = 4 kV

Size
- 8 = 0201
- 7 = 0402
- 6 = 0603
- 0 = 0805
- 1 = 1206
- 2 = 1210
- 3 = 1808
- 4 = 1812

Packing
- 1 = 180 mm / 7” reel
- 5 = 330 mm / 13” reel
- 4 = Bulk case

TC material
- 5 = X7R

Tolerance
- 5 = ±5%
- 6 = ±10%
- 7 = ±20%

Capacitance value
- See selection chart

Phycomp CTC ordering code - North America

Regional code for ordering Phycomp branded products. For details, please see page 77.

X7R - Low inductance, 0306 to 0612

X7R					
Low inductance					
Capacitance	Last 2-digit 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		8 mm			

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

Global part number - Preferred type

Global Part Number is the preferred clear text code for ordering Yageo and Phycomp branded products.
For details, please see page 76.

12NC ordering code - Phycomp branded product only

2 2 X X X X X X 5 X X X

Carrier tape
- 55 = Paper

Voltage
- 09 = 10 V
- 08 = 16 V
- 07 = 25 V
- 06 = 50V

Size
- 1 = 0508
- 2 = 0306
- 0 = 0612

Packing
- 1 = 180 mm / 7” reel
- 5 = 330 mm / 13” reel

Tolerance
- 6 = ±10%

Capacitance value
- See selection chart

Phycomp CTC ordering code - North America

Regional code for ordering Phycomp branded products. For details, please see page 77.

X5R - General purpose & High capacitance, 0201 / 0402

X5R							
General purpose & High capacitance							
Capacitance	Last 2-digit of 12NC	0201			0402		
		6.3V	10V	16V	6.3V	10V	16V
10 nF	36	0.3 ±0.03	0.3 ±0.03	0.3 ±0.03			
100 nF	49				0.5 ±0.05	0.5 ±0.05	0.5 ±0.05
150 nF	52						
220 nF	54						
470 nF	58						
1000 nF	63						
Tape width		8 mm					

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

X5R									
General purpose & High capacitance									
Capacitance	Last 2-digit of 12NC	0603				0805			
		6.3V	10V	16V	25V	6.3V	10V	16V	25V
330 nF	56			0.8 ±0.1	0.8 ±0.1				
470 nF	58	0.8 ±0.1	0.8 ±0.1						
1000 nF	63					1.25 ±0.2	1.25 ±0.2	1.25 ±0.2	1.25 ±0.2
2.2 uF	67					0.85 ±0.1	0.85 ±0.1	0.85 ±0.1	
4.7 uF	72					1.25 ±0.2	1.25 ±0.2	1.25 ±0.2	
10 uF	76								
22 uF	81								
Tape width		8 mm							

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

X5R - High capacitance, 1206 to 1812

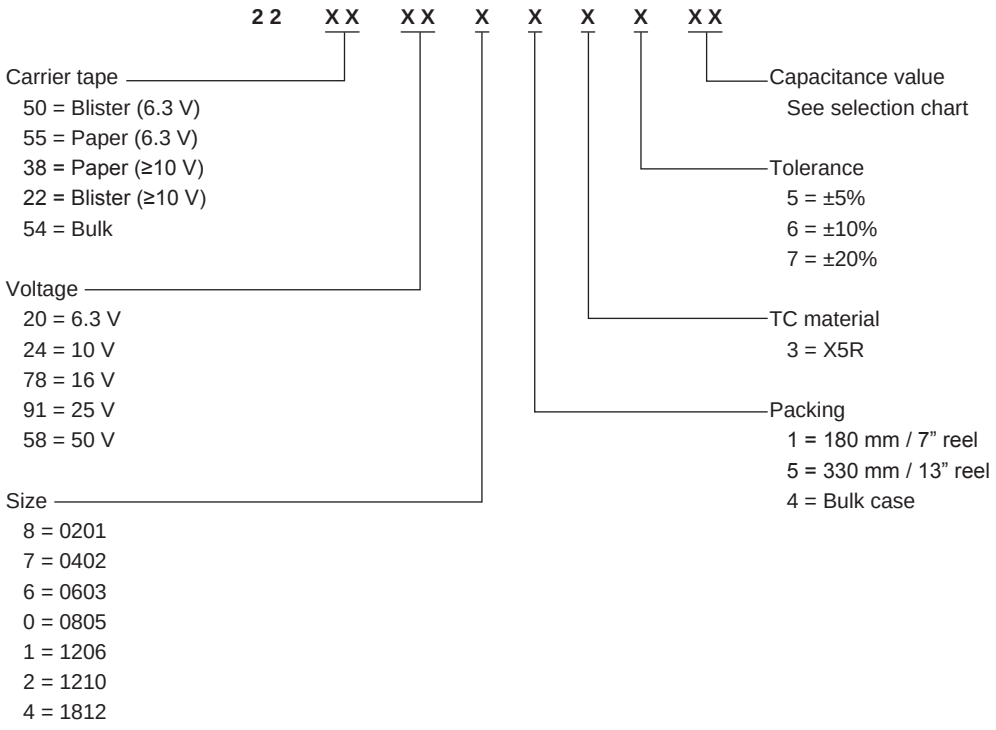
X5R												
High capacitance												
Capacitance	Last 2-digit of 12NC	1206				1210				1812		
		6.3V	10V	16V	25V	6.3V	10V	16V	25V	6.3V	10V	
2.2 uF	67		1.15 ±0.1	1.15 ±0.1	1.15 ±0.1							
4.7 uF	72	1.15 ±0.1			1.6 ±0.2			1.9 ±0.2	1.9 ±0.2			
10 uF	76	1.6 ±0.2	1.6 ±0.2	1.6 ±0.2			1.9 ±0.2					
22 uF	81					2.0 ±0.2	2.0 ±0.2	2.5 ±0.2		2.5 ±0.2	2.5 ±0.2	
47 uF	85					2.5 ±0.2						
100 uF	89									3.2 ±0.3		
Tape width		8 mm								12 mm		

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

Global part number - Preferred type

Global Part Number is the preferred clear text code for ordering Yageo and Phycomp branded products.
For details, please see page 76.

12NC ordering code - Phycomp branded product only



Phycomp CTC ordering code - North America

Regional code for ordering Phycomp branded products. For details, please see page 77.

Y5V - General purpose & High capacitance, 0201 / 0402

Y5V							
General purpose & High capacitance							
Capacitance	Last 2-digit of 12NC	0201		0402			
		6.3V	25V	6.3V	10V	16V	25V
10 nF	36		0.3 ±0.03			0.5 ±0.05	0.5 ±0.05
22 nF	41						
47 nF	45						
100 nF	49	0.3 ±0.03			0.5 ±0.05		
220 nF	54						
470 nF	58						
1000 nF	63			0.5 ±0.05			
Tape width		8 mm					

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

Y5V											
General purpose & High capacitance											
Capacitance	Last 2-digit of 12NC	0603					0805				
		6.3V	10V	16V	25V	50V	6.3V	10V	16V	25V	50V
10 nF	36				0.8 ±0.1	0.8 ±0.1			0.6 ±0.1	0.6 ±0.1	0.6 ±0.1
22 nF	41										
47 nF	45										
100 nF	49			0.8 ±0.1							
220 nF	54							0.85 ±0.1	0.85 ±0.1	0.85 ±0.1	0.85 ±0.1
470 nF	58		0.8 ±0.1								
1000 nF	63										1.25 ±0.2
2.2 uF	67	0.8 ±0.1								1.25 ±0.2	
4.7 uF	72								1.25 ±0.2		
10 uF	76						1.25 ±0.2	1.25 ±0.2			
22 uF	81										
Tape width		8 mm									

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

Y5V - General purpose & High capacitance, 1206 / 1210

Y5V										
General purpose & High capacitance										
Capacitance	Last 2-digit of 12NC	1206					1210			
		6.3V	10V	16V	25V	50V	6.3V	10V	16V	25V
10 nF	36			0.6 ±0.1	0.6 ±0.1	0.6 ±0.1				
22 nF	41									
47 nF	45									
100 nF	49									
220 nF	54		0.6 ±0.1							
470 nF	58		0.85 ±0.1	0.85 ±0.1	0.85 ±0.1	0.85 ±0.1				
1000 nF	63									
2.2 uF	67					1.15 ±0.1				
4.7 uF	72				1.15 ±0.1					
10 uF	76			1.15 ±0.1	1.6 ±0.2			1.5 ±0.1	1.5 ±0.1	1.5 ±0.1
22 uF	81	1.6 ±0.2	1.6 ±0.2	1.6 ±0.2						
47 uF	85						2.0 ±0.2			
Tape width		8 mm								

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

Global part number - Preferred type

Global Part Number is the preferred clear text code for ordering Yageo and Phycomp branded products.
For details, please see page 76.

12NC ordering code - Phycomp branded product only

2 2 X X X X X X 9 X X X

Carrier tape
- 50 = Blister (6.3 V)
- 55 = Paper (6.3 V)
- 38 = Paper
- 22 = Blister
- 54 = Bulk

Voltage
- 20 = 6.3 V
- 24 = 10 V
- 78 = 16 V
- 91 = 25 V
- 58 = 50 V

Size
- 8 = 0201
- 7 = 0402
- 6 = 0603
- 0 = 0805
- 1 = 1206
- 2 = 1210

Packing
- 1 = 180 mm / 7” reel
- 5 = 330 mm / 13” reel
- 4 = Bulk case

Tolerance
- 7 = ±20%
- 8 = -20 to +80%

Capacitance value
- See selection chart

Phycomp CTC ordering code - North America

Regional code for ordering Phycomp branded products. For details, please see page 77.

NP0 - High voltage SC type, 1808 / 1812

NP0							
Capacitance	Last 2-digit of 12NC	1808		1812		1808	
		X1/Y2 for TUV	X1/Y2 for UL	X1/Y2 for TUV	X1/Y2 for UL	X2/Y3 for TUV	X2/Y3 for UL
10 pF	23	1.6 ±0.2	1.6 ±0.2	1.6 ±0.2	1.6 ±0.2	1.6 ±0.2	1.6 ±0.2
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	2.0 ±0.2	2.0 ±0.2				
120 pF	37			2.0 ±0.2	2.0 ±0.2		
150 pF	38						
180 pF	39					2.0 ±0.2	2.0 ±0.2
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						
Tape Width		12 mm					

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

X7R							
Capacitance	Last 2-digit of 12NC	1808		1812		1808	
		X1/Y2 for TUV	X1/Y2 for UL	X1/Y2 for TUV	X1/Y2 for UL	X2/Y3 for TUV	X2/Y3 for UL
150 pF	12	1.6 ±0.2	1.6 ±0.2			1.6 ±0.2	1.6 ±0.2
180 pF	13						
220 pF	14			1.6 ±0.2	1.6 ±0.2		
270 pF	15	2.0 ±0.2	2.0 ±0.2				
330 pF	16						
390 pF	17			2.0 ±0.2	2.0 ±0.2		
470 pF	18						
560 pF	19						
680 pF	21					2.0 ±0.2	2.0 ±0.2
820 pF	22						
1000 pF	23						
1.2 nF	24						
1.5 nF	25						
Tape width		12 mm					

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

Global part number - Preferred type

Global Part Number is the preferred clear text code for ordering Yageo and Phycomp branded products.
For details, please see page 76.

12NC ordering code - Phycomp branded product only

2 2 X X X X X X X X X X

Carrier tape
- 50 = Blister

Voltage
- 52 = X2/Y3
- 53 = X1/Y2

Size
- 3 = 1808
- 4 = 1812

Packing
- 1 = 180 mm / 7” reel
- 5 = 330 mm / 13” reel

TC material
- 1 = NP0
- 5 = X7R

Tolerance
- 5 = ±5%
- 6 = ±10%

Capacitance value
- See selection chart

Phycomp CTC ordering code - North America

Regional code for ordering Phycomp branded products. For details, please see page 77.

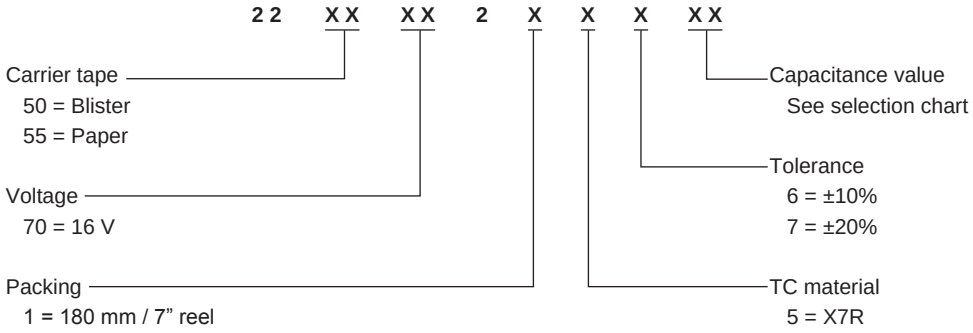
X7R		
2-C arrays		
Capacitance	Last 2-digit of 12NC	0405
		16V
10 nF	36	0.6 ±0.1
12 nF	37	
15 nF	38	
18 nF	39	
22 nF	41	
27 nF	42	
33 nF	43	
39 nF	44	
47 nF	45	
56 nF	46	
68 nF	47	
82 nF	48	
100 nF	49	
Tape width		8 mm

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

Global part number - Preferred type

Global Part Number is the preferred clear text code for ordering Yageo and Phycomp branded products.
For details, please see page 76.

12NC ordering code - Phycomp branded product only



Phycomp CTC ordering code - North America

Regional code for ordering Phycomp branded products. For details, please see page 77.

NP0			
4-C arrays			
Capacitance	Last 2-digit of 12NC	0508	0612
		50V	50V
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		
330 pF	43		
390 pF	44		
470 pF	45		
560 pF	46		
680 pF	47		
820 pF	48		
1000 pF	49		
Tape width		8 mm	

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

X7R - 4C Arrays, 0508 / 0612

X7R					
4-C arrays					
Capacitance	Last 2-digit of 12NC	0508	0612		
		16V	16V	25V	50V
220 pF	16			0.8 ±0.1	0.8 ±0.1
470 pF	21				
1000 pF	23				
2.2 nF	29				
4.7 nF	32				
10 nF	36	0.8 ±0.1	0.8 ±0.1		
22 nF	41				
47 nF	45				
100 nF	49				
Tape width		8 mm			

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

Y5V			
4-C arrays			
Capacitance	Last 2-digit of 12NC	0508	0612
		25V	25V
10 nF	36	0.6 ±0.1	0.6 ±0.1
22 nF	41		
47 nF	45		
100 nF	49		
Tape width		8 mm	

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

Global part number - Preferred type

Global Part Number is the preferred clear text code for ordering Yageo and Phycomp branded products.
For details, please see page 76.

12NC ordering code - Phycomp branded product only

2 2 X X X X X X X X X X

Carrier tape
- 50 = Blister
- 55 = Paper

Voltage
- 10 = 16 V
- 12 = 25 V
- 14 = 50 V

Size
- 6 = 0612 (4 x 0603)
- 7 = 0508 (4 x 0402)

Packing
- 1 = 180 mm / 7” reel

TC material
- 1 = NP0
- 5 = X7R
- 9 = Y5V

Tolerance
- 5 = ±5%
- 6 = ±10%
- 7 = ±20%
- 8 = -20 to +80%

Capacitance value
- See selection chart

Phycomp CTC ordering code - North America

Regional code for ordering Phycomp branded products. For details, please see page 77.

0201 sample kits					
NP0 50 V		NP0 25 V		X7R 50 V	
Capacitance (pF)	Tolerance	Capacitance (pF)	Tolerance	Capacitance (pF)	Tolerance
1	±0.25 pF	27	±5%	47	±10%
1.2	±0.25 pF	33	±5%	68	±10%
1.5	±0.25 pF	39	±5%	100	±10%
1.8	±0.25 pF	47	±5%	150	±10%
2.2	±0.25 pF	56	±5%	220	±10%
2.7	±0.25 pF	68	±5%	330	±10%
3.3	±0.25 pF	82	±5%	470	±10%
3.9	±0.25 pF	100	±5%	X7R 25 V	
4.7	±0.25 pF	Y5V 6.3V		Capacitance (pF)	Tolerance
5.6	±0.50 pF	Capacitance (pF)	Tolerance	680	±10%
6.8	±0.50 pF	100 000	-20% to +80%	1 000	±10%
8.2	±0.50 pF	X5R 6.3V		X7R 16V	
10	±5%	Capacitance (pF)	Tolerance	Capacitance (pF)	Tolerance
12	±5%	100 000	±10%	1 500	±10%
15	±5%			2 200	±10%
18	±5%			3 300	±10%
22	±5%			X7R 10 V	
				Capacitance (pF)	Tolerance
				10 000	±10%

Note: 100 pieces per value. Ordering code 432204407111 for Phycomp brand product, CC020100000000000 for Yageo brand product

0402 sample kits					
NP0 50 V		Y5V 16 V		X7R 50 V	
Capacitance (pF)	Tolerance	Capacitance (pF)	Tolerance	Capacitance (pF)	Tolerance
0.47	±0.25 pF	10 000	±20%	100	±10%
0.68	±0.25 pF	22 000	±20%	150	±10%
1	±0.25 pF	47 000	±20%	220	±10%
1.5	±0.25 pF	100 000	±20%	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%
				15 000	±10%
				22 000	±10%

Note: 95 pieces per value. Ordering code 432204409911 for Phycomp brand product, CC040200000000000 for Yageo brand product

Sample kits for 0603 / 0805

0603 sample kits

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

Note: 48 pieces per value. Ordering code 432204407121 for Phycomp brand product, CC060300000000000 for Yageo brand product

0805 sample kits

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

Note: 48 pieces per value. Ordering code 432204407131 for Phycomp brand product, CC080500000000000 for Yageo brand product

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

Note: 48 pieces per value. Ordering code 432204407141 for Phycomp brand product, CC120600000000000 for Yageo brand product

Sample kits for high capacitance series

High capacitance sample kits

X5R 0402		
Capacitance	Rated voltage	Tolerance
1 µF	6.3 V	±10%
1 µF	10 V	±10%
2.2 µF	6.3 V	±20%

X5R 0603		
Capacitance	Rated voltage	Tolerance
1 µF	16 V	±10%
1 µF	25 V	±10%
2.2 µF	6.3 V	±10%
2.2 µF	10 V	±10%
2.2 µF	16 V	±10%
4.7 µF	6.3 V	±10%
4.7 µF	10 V	±10%
10 µF	6.3 V	±20%

X5R 0805		
Capacitance	Rated voltage	Tolerance
2.2 µF	25 V	±10%
4.7 µF	6.3 V	±10%
4.7 µF	10 V	±10%
4.7 µF	16 V	±10%
10 µF	6.3 V	±10%
10 µF	10 V	±10%
10 µF	16 V	±10%
22 µF	6.3 V	±20%

X5R 1206		
Capacitance	Rated voltage	Tolerance
4.7 µF	16 V	±10%
4.7 µF	25 V	±10%
10 µF	16 V	±10%
10 µF	25 V	±10%
22 µF	6.3 V	±20%

X7R 0603		
Capacitance	Rated voltage	Tolerance
1 µF	16 V	±10%

X7R 0805		
Capacitance	Rated voltage	Tolerance
1 µF	25 V	±10%
2.2 µF	16 V	±10%
2.2 µF	25 V	±10%

X7R 1206		
Capacitance	Rated voltage	Tolerance
1 µF	25 V	±10%
2.2 µF	25 V	±10%
4.7 µF	25 V	±10%
10 µF	16 V	±10%
10 µF	25 V	±10%

Y5V 0402		
Capacitance	Rated voltage	Tolerance
1 µF	6.3 V	-20% to +80%
1 µF	10 V	-20% to +80%

Y5V 0603		
Capacitance	Rated voltage	Tolerance
1 µF	10 V	-20% to +80%
1 µF	16 V	-20% to +80%
2.2 µF	10 V	-20% to +80%
2.2 µF	16 V	-20% to +80%
4.7 µF	6.3 V	-20% to +80%

Y5V 0805		
Capacitance	Rated voltage	Tolerance
1 µF	16 V	-20% to +80%
1 µF	25 V	-20% to +80%
1 µF	50 V	-20% to +80%
2.2 µF	16 V	-20% to +80%
4.7 µF	10 V	-20% to +80%
10 µF	10 V	-20% to +80%

Y5V 1206		
Capacitance	Rated voltage	Tolerance
4.7 µF	16 V	-20% to +80%
10 µF	10 V	-20% to +80%
10 µF	16 V	-20% to +80%
22 µF	16 V	-20% to +80%

Note: 50 pieces per value. Ordering code 432204510001 for Phycomp brand product, CC888800000000000 for Yageo brand product

High voltage sample kits for PCs segment					
NP0 1808			NP0 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%			

Note: 50 pieces per value. Ordering code 432204510011 for Phycomp brand product, HV999900000000000 for Yageo brand product

High voltage sample kits for inverter segment		
NP0 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%

Note: 50 pieces per value. Ordering code 432204510012 for Phycomp brand product, HV888800000000000 for Yageo brand product

High voltage sample kits for general application					
NP0 1206			X7R 1206		
Capacitance	Rated voltage	Tolerance	Capacitance	Rated voltage	Tolerance
10 pF	1 kV	±5%	10 nF	1 kV	±10%
100 pF	1 kV	±5%	1 nF	2 kV	±10%
1 nF	1 kV	±5%	1 nF	1 kV	±10%
10 pF	2 kV	±5%	X7R 1210		
100 pF	2 kV	±5%	Capacitance	Rated voltage	Tolerance
NP0 1210			1 nF	1 kV	±10%
Capacitance	Rated voltage	Tolerance	10 nF	1 kV	±10%
10 pF	1 kV	±5%	1 nF	2 kV	±10%
100 pF	1 kV	±5%	X7R 1808		
1 nF	1 kV	±5%	Capacitance	Rated voltage	Tolerance
10 pF	2 kV	±5%	10 nF	1 kV	±10%
100 pF	2 kV	±5%	1 nF	3 kV	±10%
NP0 1808			1 nF	1 kV	±10%
Capacitance	Rated voltage	Tolerance	1 nF	2 kV	±10%
10 pF	1 kV	±5%	X7R 1812		
100 pF	1 kV	±5%	Capacitance	Rated voltage	Tolerance
1 nF	1 kV	±5%	10 nF	2 kV	±10%
10 pF	3 kV	±5%	1 nF	1 kV	±10%
100 pF	3 kV	±5%	10 nF	1 kV	±10%
10 pF	4 kV	±5%			
10 pF	2 kV	±5%			
100 pF	2 kV	±5%			
NP0 1812					
Capacitance	Rated voltage	Tolerance			
10 pF	2 kV	±5%			
100 pF	2 kV	±5%			
1 nF	2 kV	±5%			
10 pF	1 kV	±5%			
100 pF	1 kV	±5%			
1 nF	1 kV	±5%			
10 pF	3 kV	±5%			
100 pF	3 kV	±5%			
10 nF	4 kV	±5%			

Note: 50 pieces per value. Ordering code 432204510013 for Phycomp brand product, HV777700000000000 for Yageo brand product

High voltage sample kits for safety certification MLCCs

High voltage sample kits for safety certification MLCCs		
NP0 1808 TUV		
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%
NP0 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%
NP0 1812 TUV		
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%
470 pF	X1 / Y2	±5%
NP0 1812 UL		
Capacitance	Safety cretification	Tolerance
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%
NP0 1808 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%
NP0 1808 UL		
Capacitance	Safety cretification	Tolerance
150 pF	X2 / Y3	±5%
330 pF	X2 / Y3	±5%
680 pF	X2 / Y3	±5%
1.5 nF	X2 / Y3	±5%
X7R 1808 TUV		
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 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
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%
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%
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 1808 UL		
Capacitance	Safety cretification	Tolerance
220 pF	X2 / Y3	±10%
470 pF	X2 / Y3	±10%
1 nF	X2 / Y3	±10%
1.5 nF	X2 / Y3	±10%

Note: 50 pieces per value. Ordering code 432204510014 for Phycomp brand product, SC999900000000000 for Yageo brand product

0402 high frequency sample kits		
NP0		
Capacitance	Rated voltage	Tolerance
0.22 pF	50 V	±0.1 pF
0.3 pF	50 V	±0.1 pF
0.4 pF	50 V	±0.1 pF
0.5 pF	50 V	±0.1 pF
0.6 pF	50 V	±0.1 pF
0.7 pF	50 V	±0.1 pF
0.8 pF	50 V	±0.1 pF
0.9 pF	50 V	±0.1 pF
1 pF	50 V	±0.25 pF
1.2 pF	50 V	±0.25 pF
1.5 pF	50 V	±0.25 pF
1.8 pF	50 V	±0.25 pF
2.2 pF	50 V	±0.25 pF
2.7 pF	50 V	±0.25 pF
3.3 pF	50 V	±0.25 pF
3.9 pF	50 V	±0.25 pF
4.7 pF	50 V	±0.25 pF
5.6 pF	50 V	±0.5 pF
6.8 pF	50 V	±0.5 pF
8.2 pF	50 V	±0.5 pF
10 pF	50 V	±0.5 pF

Note: 50 pieces per value. Ordering code 432204409912 for Phycomp brand product, CH040200000000000 for Yageo brand product

0603 high frequency sample kits		
NP0		
Capacitance	Rated voltage	Tolerance
0.22 pF	50 V	±0.1 pF
0.3 pF	50 V	±0.1 pF
0.47 pF	50 V	±0.1 pF
0.5 pF	50 V	±0.1 pF
0.6 pF	50 V	±0.1 pF
0.7 pF	50 V	±0.1 pF
0.8 pF	50 V	±0.1 pF
0.9 pF	50 V	±0.1 pF
1 pF	50 V	±0.25 pF
1.2 pF	50 V	±0.25 pF
1.5 pF	50 V	±0.25 pF
1.8 pF	50 V	±0.25 pF
2.2 pF	50 V	±0.25 pF
2.7 pF	50 V	±0.25 pF
3.3 pF	50 V	±0.25 pF
3.9 pF	50 V	±0.25 pF
4.7 pF	50 V	±0.25 pF
5.6 pF	50 V	±0.5 pF
6.8 pF	50 V	±0.5 pF
8.2 pF	50 V	±0.5 pF
10 pF	50 V	±0.5 pF

Note: 50 pieces per value. Ordering code 432204407122 for Phycomp brand product, CH060300000000000 for Yageo brand product

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

All sizes, all types, E1 series only								
General purpose & High capacitance								
	NP0 50 V		X7R 50 V		X7R 16 V		Y5V 16 V	
	Capacitance (pF)	Tolerance	Capacitance (pF)	Tolerance	Capacitance (pF)	Tolerance	Capacitance (pF)	Tolerance
0402	1	±0.25 pF	100	±10%	10 000	±10%	100 000	±20%
	10	±5%	1 000	±10%				
	100	±5%						
	NP0 50 V		X7R 50 V		X7R 16 V		Y5V 10 V	
	Capacitance (pF)	Tolerance	Capacitance (pF)	Tolerance	Capacitance (pF)	Tolerance	Capacitance (pF)	Tolerance
0603	1	±0.25 pF	100	±10%	100 000	±10%	1 000 000	-20% to +80%
	10	±5%	1 000	±10%				
	100	±5%	10 000	±10%				
	NP0 50 V		X7R 50 V		X7R 10 V		Y5V 10 V	
	Capacitance (pF)	Tolerance	Capacitance (pF)	Tolerance	Capacitance (pF)	Tolerance	Capacitance (pF)	Tolerance
0805	1	±0.25 pF	1 000	±10%	1 000 000	±10%	4 700 000	-20% to +80%
	10	±5%	10 000	±10%				
	100	±5%	100 000	±10%				
	1 000	±5%						
	NP0 50 V		X7R 50 V		X7R 16 V		Y5V 10 V	
	Capacitance (pF)	Tolerance	Capacitance (pF)	Tolerance	Capacitance (pF)	Tolerance	Capacitance (pF)	Tolerance
1206	1	±0.25 pF	1 000	±10%	1 000 000	±10%	10 000 000	-20% to +80%
	10	±5%	10 000	±10%				
	100	±5%	100 000	±10%				
	1 000	±5%						

Microwave		
Size	NP0 50 V	
	Capacitance (pF)	Tolerance
0603	1	±0.25 pF
0805	10	±5%
1206	100	±5%

Array (4 x 0603)						
Size	NP0 50 V		X7R 25 V		X7R 16 V	
	Capacitance (pF)	Tolerance	Capacitance (pF)	Tolerance	Capacitance (pF)	Tolerance
0612	100	±5%	10 000	±10%	100 000	±10%
	1 000	±5%				

High voltage				
Size	NP0 3 kV		X7R 1 kV	
	Capacitance (pF)	Tolerance	Capacitance (pF)	Tolerance
1808	10	±5%		
1812	100	±5%	10 000	±10%

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

HIGH FREQUENCY PRODUCTS

GPS patch antenna and active module

GPS patch antenna (CP)								
Dimensions (mm)	Frequency range	Band width* (MHz)	Gain* (dBic/Max.)	Polarization	Axial ratio	VSWR*	Temp. range (°C)	Packing (Bulk)
12x12x2	1575±2 MHz	4	-1.5	Circular	< 3	< 2.5	-40 to 125	CAN4313422021581B
12x12x4		9	-1					CAN4313422031581B
13x13x4		6	0					CAN 4313422991581B
15x15x2		5	1					CAN4313423021581B
15x15x4		8	2					CAN4313423031581B
18x18x2		5	1					CAN4313424021581B
18x18x4		10	4					CAN4313424031581B
25x25x2		10	5					CAN4313425021581B
25x25x4		20	5.5					CAN4313425031581B

Note: " * " marks that the value depends on the Yageo demoboard

GPS patch antenna (LP)							
Dimensions (mm)	Frequency range	Band width* (MHz)	Gain* (dBi/Max.)	Polarization	VSWR*	Temp. range (°C)	Packing (Bulk)
15x10x4	1575±2 MHz	8	1	Linear	< 2.5	-40 to 125	CAN4313445011581B
16x06x4							CAN4313446011581B

Note: " * " marks that the value depends on the Yageo demoboard

GPS active module							
Dimensions (mm)	Frequency range	Polarization	LNA Gain* (dB/Max.)	Noise Figure* (dB/Typical)	Current Consumption (mA/Max.)	Temp. range (°C)	Packing (Bulk)
13x13x5.5	1575±2 MHz	Circular	17	1.5	5	-30 to 85	CAN4313434881581B
13x13x7.5			17	1.5	5		CAN4313434861581B
15x15x7.5			15.1	2.5	3		CAN4313434621581B
15x15x7.5			15.1	2.5	3		CAN4313435621581B
16x16x7.5			17	1.5	5		CAN4313435921581B
19x19x5.5			30	1.5	6		CAN4313437951581B
19x19x7.5			30	1.5	6		CAN4313437931581B
21x15x7.5			17	1.5	5		CAN4313435951581B
28x28x5.5			30	1.5	6		CAN4313439921581B
28x28x7.5			30	1.5	6		CAN4313439911581B

Note: " * " marks that the value depends on the Yageo demoboard

UHF ceramic antenna									
Dimensions (mm)	Frequency range*	Band width (MHz)	Gain* (dBi/Max.)	Polarization	Azimuth	VSWR*	Temp. range (°C)	Packing	
								Bulk	Tape
4x12x1.5	400-500 MHz	> 20	0.5	Linear	Omni-directional	< 3.0	-40 to 125	---	CAN4311129200431K
6.2x3.0x1.5	1.575 GHz	100	1			< 2.0	-55 to 125	----	CAN4311113011582K
37.5x6.8x0.9	433 MHz	> 20	0.5			< 3.0	-55 to 125	CAN4313121200431B	CAN4311121200431K
	460 MHz							CAN4313121200461B	CAN4311121200461K
	490 MHz							CAN4313121200491B	CAN4311121200491K

TDMA ceramic antenna									
Dimensions (mm)	Frequency range*	Band width (MHz)	Gain* (dBi/Max.)	Polarization	Azimuth	VSWR*	Temp. range (°C)	Packing	
								Bulk	Tape
12x1.6x4	800-900 MHz	> 20	0.5	Linear	Omni-directional	< 2.0	-40 to 125	---	CNA4311129080871K
16.5x14x0.9	850-950 MHz	> 80	-0.25			< 2.5	-55 to 125	CAN4313119000871B	---

DECT/WCDMA ceramic antenna									
Dimensions (mm)	Frequency range*	Band width (MHz)	Gain* (dBi/Max.)	Polarization	Azimuth	VSWR*	Temp. range (°C)	Packing	
								Bulk	Tape
8.8x6.8x0.9	1.88-2.1 GHz	> 100	2.0	Linear	Omni-directional	< 2.0	-55 to 125	---	CAN4311112001881K

Wimax ceramic antenna									
Dimensions (mm)	Frequency range*	Band width (MHz)	Gain* (dBi/Max.)	Polarization	Azimuth	VSWR*	Temp. range (°C)	Packing	
								Bulk	Tape
10x0.6x1.2	2.3-2.7 GHz	> 100	2.0	Linear	Omni-directional	< 3.0	-25 to 85	---	CAN4311861002371K

Dual-band WLAN ceramic antenna									
Dimensions (mm)	Frequency range*	Band width (MHz)	Gain* (dBi/Max.)	Polarization	Azimuth	VSWR*	Temp. range (°C)	Packing	
								Bulk	Tape
8.7x8.0x0.9	2.45 / 5.2 GHz	> 100	3.5 / 1.5	Linear	Omni-directional	< 2.5	-55 to 125	---	CAN4311117002521K

Dual-band ceramic antenna (900/1800 MHz)									
Dimensions (mm)	Frequency range*	Band width (MHz)	Gain* (dBi/Max.)	Polarization	Azimuth	VSWR*	Temp. range (°C)	Packing	
								Bulk	Tape
21x12x0.9	880-960 MHz	> 30	0.5 -1	Linear	Omni-directional	< 2.7	-55 to 125	CAN4313118009181B	---
	1710-1880 MHz	> 170	0.5 -1						

Triple-band metal antenna (900/1800/1900MHz with cable / connector)									
Dimensions (mm)	Frequency range*	Band width (MHz)	Gain * (dBi/Max.)	Polarization	Azimuth	VSWR*	Temp. range (°C)	Packing	
								Bulk	Tape
35x6x0.4	880-960 MHz	> 80	0.5-1.5	Linear	Omni-directional	< 3.5	-40 to 85	CAN4313330009191B	---
	1850-1990 MHz	> 170	1.5-2.5						

Note: " * " marks that the value depends on the Yageo demoboard

Bluetooth antennna								
Dimensions (mm)	Frequency range	Band width* (MHz)	Gain* (dBi/Max.)	Polarization	Azimuth	VSWR*	Temp. range (°C)	Packing (Tape)
2.0x1.2x1.1	2.45 GHz	> 70	4	Linear	Omni-directional	< 2.5	-55 to 125	CAN4311714002454K
3.2x1.6x1.2	2.20 GHz	> 100	5			< 2.5	-55 to 125	CAN4311712022453K
	2.30 GHz							CAN4311712032453K
	2.40 GHz							CAN4311712042453K
	2.45 GHz							CAN4311712002453K
	2.50 GHz							CAN4311712052453K
	2.60 GHz							CAN4311712062453K
	2.70 GHz							CAN4311712072453K
	2.80 GHz							CAN4311712082453K
	2.90 GHz							CAN4311712092453K
5.0x1.0x1.0	2.30 GHz		2.45			< 2.0	-25 to 85	CAN4311851032453K
	2.40 GHz							CAN4311851042453K
	2.80 GHz							CAN4311851052453K
	3.10 GHz							CAN4311851062453K
	3.30 GHz							CAN4311851072453K
	3.70 GHz							CAN4311851082453K
5.3x2.0x1.3	2.00 GHz	> 200	5.5			< 2.0	-25 to 85	CAN4311153002001K
	2.10 GHz							CAN4311153002101K
	2.20 GHz							CAN4311153002201K
	2.30 GHz							CAN4311153002301K
	2.40 GHz							CAN4311153002401K
	2.45 GHz							CAN4311153002451K
	2.50 GHz							CAN4311153002501K
7.8x3.6x0.9	2.45 GHz	> 100	4.1			< 2.5	-55 to 85	CAN4311115002451K
	2.60 GHz							CAN4311115002601K
	2.70 GHz							CAN4311115002701K
7.3x5.5x1.3	2.45 GHz		1.2			< 2.0	-55 to 125	CAN4311111002451K
	2.60 GHz							CAN4311111002601K
	2.70 GHz							CAN4311111002701K
	2.80 GHz							CAN4311111002801K
	2.90 GHz							CAN4311111002901K
8.0x1.0x1.0	2.10 GHz		3			< 2.5	-55 to 125	CAN4311881012453K
	2.20 GHz							CAN4311881022453K
	2.30 GHz							CAN4311881032453K
	2.45 GHz							CAN4311881042453K
	2.50 GHz							CAN4311881052453K
	2.60 GHz							CAN4311881062453K
	2.70 GHz							CAN4311881072453K
	2.80 GHz							CAN4311881082453K

Note: " * " marks that the value depends on the Yageo demoboard

Band Pass Filter								
Dimensions (mm)	Frequency range*	Pass band (MHz)	Impedance	Insertion loss	Ripple	VSWR*	Attenuation (Min.)	Packing (Tape)
1.6x0.8x0.65	2.45 GHz	2400-2500	50 ohm	2.2 dB	0.5 dB	< 2.0	25 dB @ 1710-1910 MHz 8.5 dB @ 2100 MHz 20 dB @ 4800-5200 MHz 30 dB @ 7200-7500 MHz	CFL4111715012454K
2.0x1.25x0.85	2.45 GHz	2400-2500		2.0 dB	0.6 dB		40 dB @ 1000-1600 MHz 40 dB @ 4900 MHz 20 dB @ 7200 MHz	CFL4111714032454K
2.0x1.25x0.9	2.45 GHz	2400-2500		2.8 dB	0.5 dB		40 dB @ 1600 MHz 38 dB @ 3200 MHz 20 dB @ 4800 MHz 25 dB @ 7200 MHz	CFL4111714992454K
2.0x1.25x1.0	5 GHz	4900-5950		1.5 dB	0.6 dB		30 dB @ 1280-3000 MHz 25 dB @ 3300-4000 MHz 25 dB @ 9800-11900 MHz	CFL4111714015004K
2.0x1.25x0.85	5 GHz	4900-5900		2.2 dB	0.6 dB		25 dB @ 6850-7150 MHz 20 dB @ 7500-9000 MHz	CFL4111714035004K
2.5x2.0x0.95	2.45 GHz	2400-2500		2.5 dB	0.6 dB		40 dB @ 880-960 MHz 30 dB @ 2100 MHz 30 dB @ 4800-5000 MHz 30 dB @ 7200-7500 MHz	CFL4111713022453K
2.5x2.0x0.95	2.45 GHz	2400-2500		1.5 dB	0.6 dB		40 dB @ 880-960 MHz 30 dB @ 1710-1785 MHz 30 dB @ 1850-1910 MHz 20 dB @ 4800-5000 MHz 30 dB @ 7200-7500 MHz	CFL4111713032453K
2.5x2.0x0.95	2.45 GHz	2400-2500		2.2 dB	0.6 dB		30 dB @ 1600 MHz 35 dB @ 3200 MHz 25 dB @ 4800-5000 MHz 30 dB @ 7200-7500 MHz	CFL4111713182453K
2.5x2.0x1.1	2.45 GHz	2400-2500		1.5 dB	0.6 dB		40 dB @ 880-960 MHz 30 dB @ 1710-1785 MHz 20 dB @ 1850-1910 MHz 30 dB @ 4800-5000 MHz 20 dB @ 7200-7500 MHz	CFL4111713052453K
2.5x2.0x1.2	2.45 GHz	2400-2500		2.5 dB	0.6 dB		20 dB @ 880-960 MHz 20 dB @ 2700 MHz 25 dB @ 4800-5000 MHz 25 dB @ 7200-7500 MHz	CFL4111713072453K

Note: " * " marks that the value depends on the Yageo demoboard

Low Pass Filter								
Dimensions (mm)	Frequency range*	Pass Band (MHz)	Impedance	Insertion loss	Ripple	VSWR*	Attenuation (Min.)	Packing (Tape)
1.6x0.8x0.65	2.45 GHz	2400-2500	50 ohm	0.45 dB	0.6 dB	< 1.5	25 dB @ 5000 MHz 18 dB @ 7500 MHz	CFL4111715502454K
2.0x1.25x0.85	2.45 GHz	2400-2500		0.5 dB	0.6 dB	< 1.8	27 dB @ 5000 MHz 25 dB @ 7500 MHz 25 dB @ 10,000 MHz	CFL4111714502454K
2.0x1.25x0.85	3.5 GHz	3000-4000		0.5 dB	0.6 dB	< 2.0	35 dB @ 6800 MHz 30 dB @ 11,000 MHz (Ref.)	CFL4111714503504K

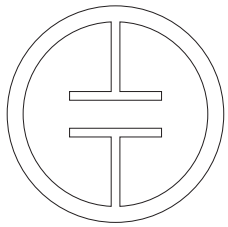
Note: " * " marks that the value depends on the Yageo demoboard

Balun									
Dimensions (mm)	Frequency range*	Pass band (MHz)	Impedance	Insertion loss	Ripple	VSWR*	Amplitude balance	Phase differential	Packing (Tape)
1.6x0.8x0.65	5 GHz	4900-5950	50/100 ohm	< 1.2 dB	0.6 dB	2.0	1.5 dB	180°±10°	CBA4711715015004K
2.0x1.25x0.80	2.45 GHz	2400-2500	50/50 ohm	< 1.0 dB	0.6 dB		2.0 dB		CBA4711714002454K
			50/100 ohm						CBA4711714012454K
			50/200 ohm						CBA4711714022454K
2.0x1.25x0.80	5 GHz	4900-5900	50/100 ohm	< 1.2 dB	0.6 dB		2.0 dB		CBA4711714015004K

Note: " * " marks that the value depends on the Yageo demoboard

Bluetooth balanced filter (Filter & Balun combo)									
Dimensions (mm)	Frequency range*	Pass band (MHz)	Unbalanced impedance	Balanced impedance	Insertion loss	Amplitude balance	Phase differential	Attenuation (MHz/Min.)	Packing (Tape)
2.0x1.2x0.9	2.45 GHz	2400-2500	50 ohm	Conjugate match to CSR BC03/ 04/05 series	< 3.5 dB	< 1.0 dB	180°±10°	40 dB @ 880-960	CBA4711714982454K
								25 dB @ 1300-1600	
								35 dB @ 4800-5000	
								30 dB @ 7200-7500	
								40 dB @ 880-960	CBA4711714772454K
								20 dB @ 1300-1600	
								35 dB @ 4800-5000	
								25 dB @ 7200-7500	
								40 dB @ 880-960	CBA4711714882454K
								25 dB @ 1300-1600	
								35 dB @ 4800-5000	
								30 dB @ 7200-7500	
								40 dB @ 880-960	CBA4711714672454K
								25 dB @ 1300-1600	
								30 dB @ 4800-5000	
								25 dB @ 7200-7500	
								40 dB @ 880-960	CBA4711814572454K
								25 dB @ 1300-1600	
								35 dB @ 4800-5000	
								25 dB @ 7200-7500	
2.5x2.0x1.2	2.45 GHz	2400-2500	50 ohm	Conjugate match to CSR BC02/ 03 series	< 3.5 dB			48 dB @ 880-960	CBA4711713932453K
								48 dB @ 1710-1880	
								40 dB @ 1880-1990	
								20 dB @ 2110-2170	
								20 dB @ 4800-5000	
								20 dB @ 7200-7500	

Diplexer						
Dimensions (mm)	Frequency range	Pass band (MHz)	Insertion loss	VSWR	Attenuation (Min.)	Packing (Tape)
2.0x1.25x0.75	2.4 / 5 GHz	2400-2500	< 0.7 dB	< 2.0	17 dB @ 4800-6000 MHz	CFL4111714822504K
					20 dB @ 7200-7500 MHz	
		4900-5900	< 1.6 dB		17 dB @ 1800-2500 MHz	
					20 dB @ 10300-10700 MHz (Ref.)	
2.0x1.25x0.85		2400-2500	< 0.65 dB		20 dB @ 4800-6000 MHz	CFL4111714832504K
					20 dB @ 7200-7500 MHz	
		4900-5900	< 1.1 dB		15 dB @ 1800-2400 MHz	
					20 dB @ 2400-2500 MHz	
2.0x1.25x0.85		2400-2500	< 0.7 dB		20 dB @ 4900-5900 MHz	CFL4111714852504K
		4900-5900	< 0.9 dB		20 dB @ 2400-2500 MHz	
		2400-2500	< 0.6 dB		20 dB @ 4900-5900 MHz	CFL4111714862504K
		4900-5900	< 0.9 dB		25 dB @ 2400-2500 MHz	
2.0x1.25x0.9		2400-2500	< 0.5 dB		20 dB @ 4800-6000 MHz	CFL4111714882504K
					20 dB @ 7200-7500 MHz	
		4900-5900	< 0.9 dB		25 dB @ 1800-2500 MHz	
					25 dB @ 9800-11800 MHz (Ref.)	



SMD CERAMIC EMI FILTER CAPACITORS

X2Y® PRODUCTS

X5R						
Size	Y-Capacitor		X-Capacitor		Thickness (mm)	Global part number
	Capacitance (nF)	Voltage rating (V)	Capacitance (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

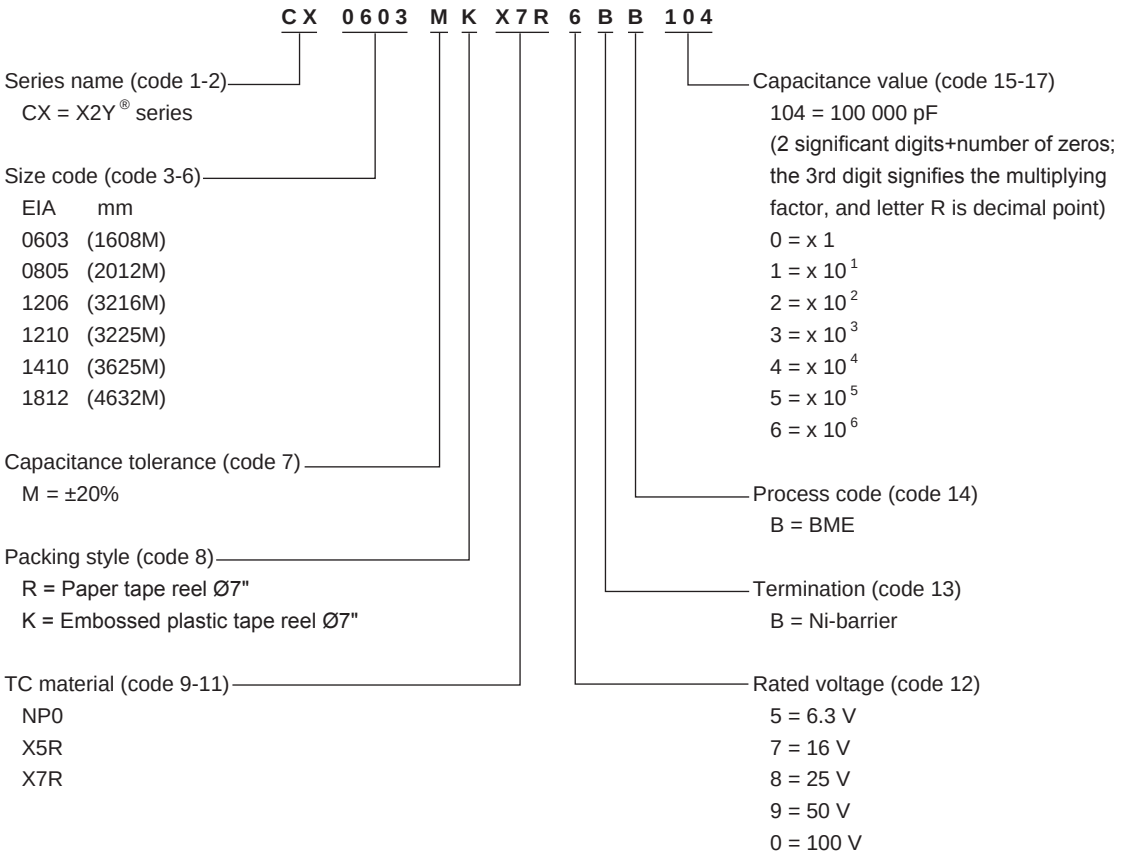
NP0						
Size	Y-Capacitor		X-Capacitor		Thickness (mm)	Global part number
	Capacitance (nF)	Voltage rating (V)	Capacitance (nF)	Voltage rating (V)		
0805	0.022	50	0.011	100	0.85	CX 0805 MR NPO 9BB 220
	0.047	50	0.023	100	0.85	CX 0805 MR NPO 9BB 470

X7R						
Size	Y-Capacitor		X-Capacitor		Thickness (mm)	Global part number
	Capacitance (nF)	Voltage rating (V)	Capacitance (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		CX 0603 MR X7R 0BB 222
	4.7	100	2.4	200		CX 0603 MR X7R 0BB 472
	5.6	50 / 63	2.8	100		CX 0603 MR X7R 9BB 562
	10	50 / 63	5	100		CX 0603 MR X7R 9BB 103
	22	25	11	50		CX 0603 MR X7R 8BB 223
	47	16	24	25		CX 0603 MR X7R 7BB 473
	56	16	28	25		CX 0603 MR X7R 7BB 563
	100	10	50	16		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		CX 0805 MR X7R 0BB 103
	15	50 / 63	8	100		CX 0805 MR X7R 9BB 153
	18	50 / 63	9	100		CX 0805 MR X7R 9BB 183
	22	25	11	50		CX 0805 MR X7R 8BB 223
	39	25	20	50		CX 0805 MR X7R 8BB 393
	47	16	24	25		CX 0805 MR X7R 7BB 473
	100	16	50	25		CX 0805 MR X7R 7BB 104
	180	10	90	16		CX 0805 MR X7R 6BB 184
1206	22	100	11	200	1.20	CX 1206 MK X7R 0BB 223
	47	50 / 63	24	100		CX 1206 MK X7R 9BB 473
	100	50 / 63	50	100		CX 1206 MK X7R 9BB 104
	180	25	90	50		CX 1206 MK X7R 8BB 184
	220	16	110	25		CX 1206 MK X7R 7BB 224
	390	16	195	25		CX 1206 MK X7R 7BB 394
	470	16	235	25		CX 1206 MK X7R 7BB 474
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. Special values are available on request
2. Ordering codes for preferred versions (20% tolerance, 180 mm reel). For packing and tolerance information, see section "Thickness classes and packing quantities" on next page

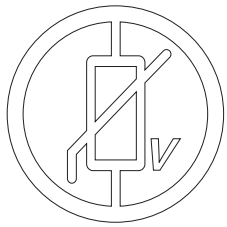
Global part number

Ordering example: CX0603MKX7R6BB104



Thickness classes and packing quantities

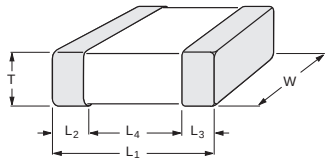
Thickness Classification (mm)	Quantity per reel	
	8 mm tape width	
	Ø180mm / 7”	
	Paper	Blister
0.60 ±0.10	4 000	---
0.85 ±0.10	4 000	---
1.20 ±0.15	---	2 500
1.30 ±0.20	---	2 500
1.60 ±0.15	---	2 500



MULTILAYER CHIP VARISTORS

Case dimensions and specification for 0402

Case dimensions



Case size designation	Dimensions in mm						
Inch-based	L_1	W	T_{min}	T_{max}	L_2 / $L_{3\ min}$	L_2 / $L_{3\ max}$	$L_{4\ min}$
0402	1.0 ±0.10	0.5 ±0.10	0.45	0.55	0.15	0.30	0.40
0603	1.6 ±0.20	0.8 ±0.10	0.70	0.90	0.20	0.60	0.40
0805	2.0 ±0.10	1.25 ±0.10	0.70	0.90	0.25	0.75	0.55
1206	3.2 ±0.15	1.6 ±0.15	0.70	0.90	0.25	0.75	1.40

Size 0402

Global part number	Varistor voltage/ Breakdown voltage	Max. continuous voltage/ Working voltage	Clamping voltage		Peak current	Resistance R.T. (15 to 35°C)		Capacitance @ 1 V (rms)	
	DC @ 1 mA	D.C	8/20 µs		8/20 µs	Voltage	Resistance	(pF)	
	(V)	(V / Max.)	(V / Max.)	(A)	(A / Max.)	(V)	(MΩ / Min.)	1 KHz	1 MHz
VRS0402MR55R651N	7.2 to 10.8	5.5	14		30		1	650	390
VRS0402SR55R601N	10 to 14	5.5	22		65		1	600	360
VRS0402MR55R331N	7.2 to 10.8	5.5	15		30		1	330	200
VRS0402MR55R201N	7.2 to 10.8	5.5	15		20		1	200	130
VRS0402MR55R101N	7.2 to 10.8	5.5	15		20		1	100	60
VRS0402SR55R101N	10 to 14	5.5	23		15		10	100	60
VRS0402SR55R820N	10 to 14	5.5	22		10		1	82	47
VRS0402SR55R680N	10 to 14	5.5	22		8		1	68	40
VRS0402SR55R500N	10 to 14	5.5	23		6		10	50	30
VRS0402SR55R330N	10 to 14	5.5	22		4		1	33	20
VRS0402SR55R220N	10 to 14	5.5	22		2		1	22	12
VRS0402SR55R100N	10 to 14	5.5	22		2		1	10	5.5
VRS0402SR55R030N	50 to 80	5.5	150		2		10	3	---
VRS0402LR090201N	10.2 to 13.8	9	22		20		1	200	120
VRS0402KR090101N	10.2 to 13.8	9	22		20		1	100	60
VRS0402KR090500N	10.2 to 13.8	9	22		20		1	50	30
VRS0402SR090500N	11 to 17	9	25		5		1	50	30
VRS0402SR090330N	11 to 17	9	25		4		1	33	20
VRS0402LR110181N	12.75 to 17.25	11	27		20		1	180	110
VRS0402KR140161N	16.2 to 19.8	14	33		20		1	160	96
VRS0402MR140161N	14.4 to 21.6	14	33	1	20	3	1	160	96
VRS0402LR140161N	15.3 to 20.7	14	33		20		1	160	96
VRS0402SR140121N	18 to 24	14	40		20		10	120	72
VRS0402SR140101N	18 to 24	14	38		15		1	100	60
VRS0402SR140500N	18 to 24	14	38		7		1	50	30
VRS0402KR160121N	19.8 to 24.2	16	40		18		1	120	72
VRS0402SR180121N	24 to 32	18	45		20		1	120	72
VRS0402KR180900N	21.6 to 26.4	18	44		14		1	90	54
VRS0402KR180820N	21.6 to 26.4	18	45		10		1	82	50
VRS0402MR180500N	19.8 to 24.2	18	48		5		1	50	30
VRS0402SR180500N	24 to 32	18	52		5		1	50	30
VRS0402SR180400N	24 to 3s2	18	50		4		1	40	22
VRS0402SR180270N	24 to 32	18	50		4		1	27	15
VRS0402SR180150N	24 to 32	18	50		3		1	15	9
VRS0402SR180120N	24 to 32	18	46		10		10	120	72
VRS0402SR180100N	24 to 32	18	58		3		10	10	6
VRS0402SR180030N	50 to 80	18	150		2		10	3	2
VRS0402KR220820N	24.3 to 29.7	22	49		14		1	82	50
VRS0402KR260550N	29.7 to 36.3	26	60		10		1	55	33
VRS0402KR300400N	35.1 to 42.9	30	71		8		1	40	24
VRS0402SR300030N	48 to 58	30	96		2		10	3	2

Size 0603									
Global part number	Varistor voltage/ Breakdown voltage	Max. continuous voltage/ Working voltage	Clamping voltage		Peak current	Resistance R.T. (15 to 35°C)		Capacitance @ 1 V (rms)	
	DC @ 1 mA	D.C	8/20 µs		8/20 µs	Voltage	Resistance	(pF)	
	(V)	(V / Max.)	(V / Max.)	(A)	(A / Max.)	(V)	(MΩ / Min.)	1 KHz	1 MHz
VRS0603MR55R801N	7.2 to 10.8	5.5	15	1	30	3	1	800	480
VRS0603SR55R801N	10 to 14	5.5	17		30		1	800	480
VRS0603MR55R681N	7.2 to 10.8	5.5	15		30		1	680	410
VRS0603SR55R471N	10 to 14	5.5	19		30		1	470	280
VRS0603MR55R301N	7.2 to 10.8	5.5	15		30		1	300	180
VRS0603SR55R201N	10 to 14	5.5	15		30		1	200	120
VRS0603SR55R181N	10 to 14	5.5	20		30		1	180	100
VRS0603SR55R300N	10 to 14	5.5	25		10		1	30	18
VRS0603SR55R220N	11 to 17	5.5	22		5		1	22	12
VRS0603SR55R030N	50 to 80	5.5	150		3		10	3	---
VRS0603SR070331N	10 to 14	7	22		30		1	330	200
VRS0603LR090681N	10.2 to 13.8	9	22		30		1	680	410
VRS0603MR090351N	9.6 to 14.4	9	22		30		1	350	220
VRS0603LR110481N	12.75 to 17.25	11	22		30		1	480	290
VRS0603SR120150N	24 to 32	12	55		5		10	15	9
VRS0603LR140361N	15.3 to 20.7	14	33		30		1	360	216
VRS0603SR140150N	18 to 24	14	42		5		1	15	9
VRS0603KR180301N	21.6 to 26.4	18	44		30		1	300	180
VRS0603LR180251N	20.4 to 27.6	18	42		30		0.3	250	--
VRS0603SR180121N	24 to 32	18	50		20		1	120	72
VRS0603SR180100N	90 to 160	18	225		5		1	10	6
VRS0603SR180030N	50 to 80	18	150		1		10	3	2
VRS0603KR220241N	24.3 to 29.7	22	46		30		1	240	144
VRS0603KR220101N	24.3 to 29.7	22	46		30		1	100	60
VRS0603KR260251N	29.7 to 36.3	26	58		30		1	250	160
VRS0603KR260201N	29.7 to 36.3	26	60		30		1	200	120
VRS0603KR300121N	35.1 to 42.9	30	70		30		1	120	72
VRS0603KR380101N	42.3 to 51.7	38	85		20		1	100	60
VRS0603KR450800N	50.4 to 61.6	45	100		20		1	80	48
VRS0603SR111300N	130 to 160	110	300		5		1	30	18

Size 0805									
Global part number	Varistor voltage/ Breakdown voltage	Max. continuous voltage/ Working voltage	Clamping voltage		Peak current	Leakage current R.T. (15 to 35°C)		Capacitance @ 1 V (rms)	
	DC @ 1 mA	D.C	8/20 µs		8/20 µs	Voltage	Resistance	(pF)	
	(V)	(V / Max.)	(V / Max.)	(A)	(A / Max.)	(V)	(MΩ / Min.)	1 KHz	1 MHz
VRS0805MR55R162N	6.4 to 9.6	5.5	18	1	80	3	1	1600	--
VRS0805KR180551N	21.6 to 26.4	18	39		100			550	--

Size 1206									
Global part number	Varistor voltage/ Breakdown voltage	Max. continuous voltage/ Working voltage	Clamping voltage		Peak current	Leakage current R.T. (15 to 35°C)		Capacitance @ 1 V (rms)	
	DC @ 1 mA	D.C	8/20 µs		8/20 µs	Voltage	Resistance	(pF)	
	(V)	(V / Max.)	(V / Max.)	(A)	(A / Max.)	(V)	(MΩ / Min.)	1 KHz	1 MHz
VRS1206LR140351N	15.3 to 20.7	14	32	1	30	3	1	350	--
VRS1206LR300401N	33.1 to 44.8	30	67		120		1	400	--
VRS1206KR560251N	61 to 77	56	110		180		10	250	150
VRS1206KR680251N	76 to 90	68	130		180		10	250	150

Ordering information for 0402 to 1206

Global part number
Ordering example: VRS0402KR55R680N

VR S 0402 K R 55R 680 N

Series name (code 1-2)
VR = Varistor

Chip type (code 3)
S = Single chip

Size code (code 4-7)
0402
0603
0805
1206

Capacitance tolerance (code 8)
K = ±10%
L = ±15%
M = ±20 %
S = Special range

Packing style (code 9)
R = paper tape reel Ø7 inch

Working voltage (code 10-12)
55R = 5.5 V
090 = 9 V
110 = 11 V
150 = 15 V
160 = 16 V
180 = 18 V
220 = 22 V
260 = 26 V
300 = 30 V
380 = 38 V
450 = 45 V
560 = 56 V
680 = 68 V
111 = 110 V

Capacitance value (code 13-15)
680 = 68 pF
(2 significant digits+number of zeros; the 3rd digit signifies the multiplying factor, and letter R is decimal point)
0 = x 1
1 = x 10 [1]

Process code (code 16)
N = Normal

Thickness classification and packing quantities

Type	Thickness classification (mm)	8 mm tape width amount per reel
		180 mm / 7”
		Paper
0402	0.50 ±0.05	10 000
0603	0.80 ±0.10	4 000
0805	0.80 ±0.10	4 000
1206	0.80 ±0.10	4 000

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