

Resistor Chip General Information

Ordering Information - Global part number

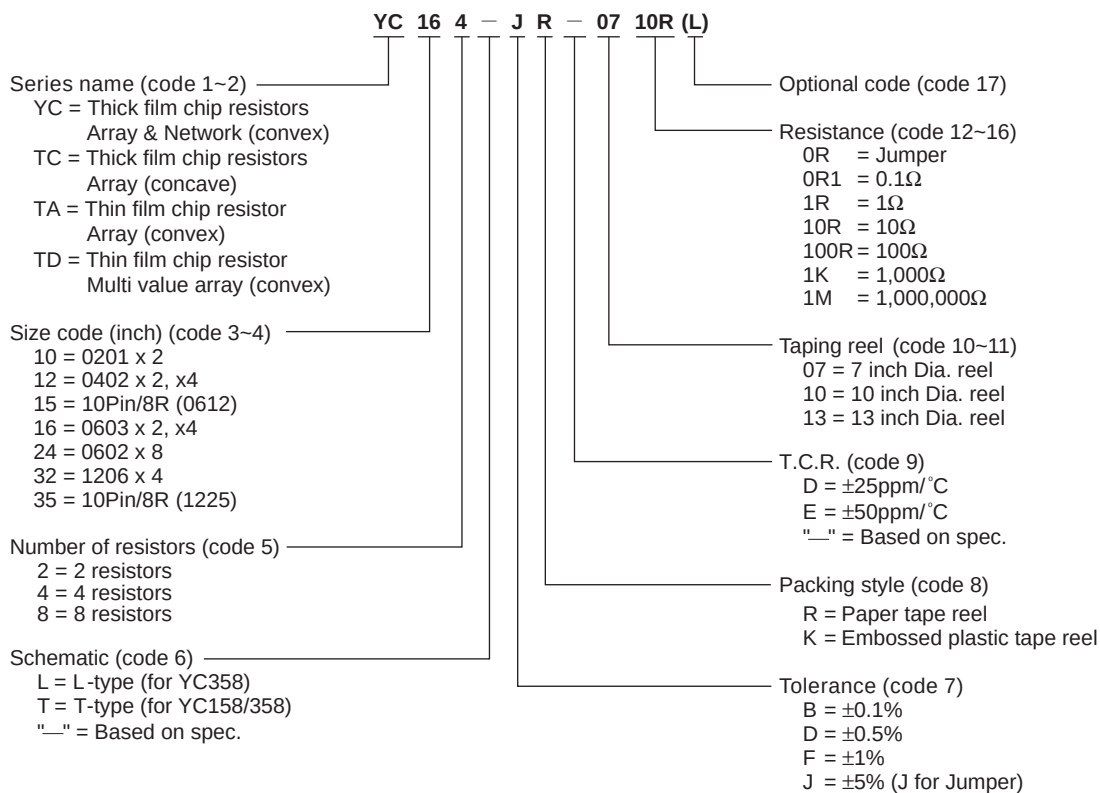
Ordering information - Global part number - Single resistor

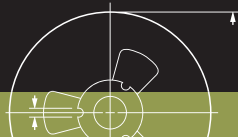
Series name (code 1~2)	RC	0603	J	R	—	07	10R	(L)	Optional code (code 17)
RC = General purpose thick film									
RT = High precision - high stability									
RJ = General purpose thin film									
RL = Low ohmic									
PR/PF = Current sensor - low TCR									
TR = Trimmable									
SR = Surge									
AR = NiAu termination									
RV = High voltage									
Size code (inch / mm) (code 3~6)									Resistance (code 12~16)
0100 = 0.4 x 0.2									0R = Jumper
0201 = 0.6 x 0.3									0R1 = 0.1Ω
0402 = 1.0 x 0.5									1R = 1Ω
0603 = 1.6 x 0.8									10R = 10Ω
0805 = 2.0 x 1.25									100R = 100Ω
1206 = 3.2 x 1.6									1K = 1,000Ω
1210 = 3.2 x 2.6									1M = 1,000,000Ω
1218 = 3.2 x 4.5									100M = 100,000,000Ω
2010 = 5.0 x 2.5									Taping reel (code 10~11)
2512 = 6.35 x 3.2									07 = 7 inch Dia. reel
Tolerance (code 7)									10 = 10 inch Dia. reel
W = ±0.05%									13 = 13 inch Dia. reel
B = ±0.1%									T.C.R. (code 9)
C = ±0.25%									B = ±10ppm/°C (on request)
D = ±0.5%									C = ±15ppm/°C (on request)
F = ±1%									D = ±25ppm/°C
G = ±2%									M = ±75ppm/°C (on request)
J = ±5% (for Jumper)									E = ±50ppm/°C
K = ±10% (for TR=0/-10%)									F = ±100ppm/°C
M = ±20% (for TR=0/-20%)									L = ±150ppm/°C
N = ±30% (for TR=0/-30%)									G = ±200ppm/°C
									"—" = Based on spec.
									(— for thick film only)
									Packing style (code 8)
									R = Paper tape reel
									K = Embossed plastic tape reel
									C = Bulk cassette

Ordering information - Global part number - Power enhancement

Series name (code 1~2)	RL	0805	J	R	—	7	W	0R015	(L)	Optional code (code 17)
RC = General purpose thick film										
RL = Low ohmic										
PR/PF = Current sensor - low TCR										
Size code (inch / mm) (code 3~6)										Resistance (code 12~16)
0805 = 2.0 x 1.25										0R01 = 0.01Ω
1206 = 3.2 x 1.6										0R1 = 0.1Ω
2010 = 5.0 x 2.5										1R = 1Ω
2512 = 6.35 x 3.2										10R = 10Ω
Tolerance (code 7)										100R = 100Ω
F = ±1%										1K = 1,000Ω
G = ±2%										1M = 1,000,000Ω
J = ±5%										Power rating (code 11)
Packing style (code 8)										W = 2 x standard power
R = Paper tape reel										Taping reel (code 10)
K = Embossed plastic tape reel										7 = 7 inch Dia. reel
										T.C.R. (code 9)
										M = ±75ppm/°C
										F = ±100ppm/°C
										G = ±200ppm/°C
										"—" = Based on spec.
										(— for thick film only)

Ordering information - Global part number - Arrays & Networks





Resistor Chip General Information

Ordering information for North America

Ordering information - Clear text code (North America only)

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

		1-2	3-6	7-8	9-12	13	14	15-16	17			
		X	X	X	X	X	X	X	X			
Series	Name(code1-2)										Packing (code 17)	
9C	Phycomp Thick film chip resistors										T	5K paper
9T	Phycomp Thin film chip resistors										3	10K paper
											4	20K paper
											5	4K blister
											6	5K blister
											7	50K paper
											P	25K bulk case
											Special coding (code15-16)	
											HF	SnPb
											PF	Lead free
											AF	NiAu
											T.C.R. (code 14)	
											C	±10 ppm/°C
											D	±15 ppm/°C
											A	±25 ppm/°C
											B	±50 ppm/°C
											K	±100 ppm/°C
											L	±200 ppm/°C
											E	±250 ppm/°C
											M	±300 ppm/°C
											G	±500 ppm/°C
											F	0/+500 ppm/°C
											R	600 ppm/°C
											Q	-100/+600 ppm/°C
											P	±750 ppm/°C
											H	±1000 ppm/°C
											I	±1500 ppm/°C
											J	±2000 ppm/°C
											N	±3000 ppm/°C
											Tolerance (code 13)	
											E	±0.01%
											A	±0.05%
											B	±0.1%; ±0.2 dB
											C	±0.25%; ±0.3 dB
											D	±0.5%; ±0.5 dB
											F	±1%; ±1 dB
											G	±2%; ±2 dB
											J	±5%
											N	0/-20%
											R	0/-30%
											dB values apply to Attenuators	
											Right values apply to trimmable resistors	

Resistor Chip General Information

IEC publication 63, SPQ, last digit of 12NC

Standard of values in a decade according to "IEC publication 63"

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

Packing quantities

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

Ordering information 12NC

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

Example:

0.001 Ω = 0010 or 010

0.02 Ω = 0200 or 200

0.3 Ω = 3007 or 307

1 Ω = 1008 or 108

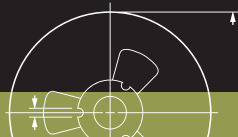
33 kΩ = 3303 or 333

10 MΩ = 1006 or 106

Last digit of 12NC

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





Resistor Chip Selection Charts

Introduction

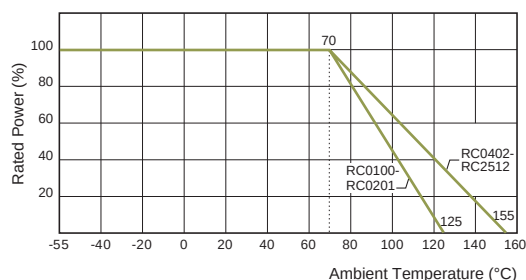


FEATURES

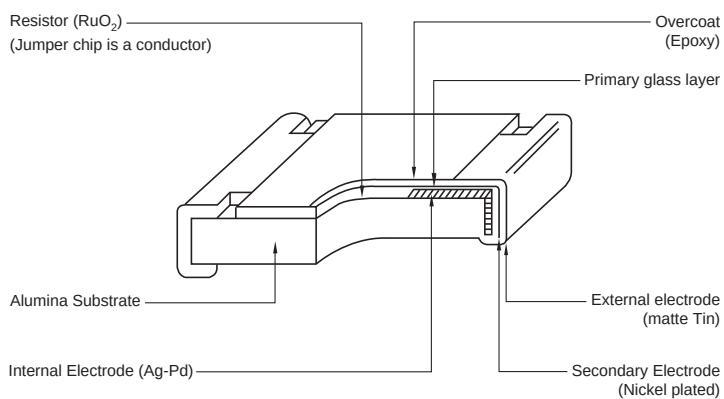
- Extremely thin and light
- Highly reliable multilayer electrode construction
- Compatible with all soldering process
- Highly stable in auto-placement surface mounting applications
- Barrier layer end termination
- Zero ohm jumper is available
- Available in 8mm tape & reel per EIA RS481

Derating curve

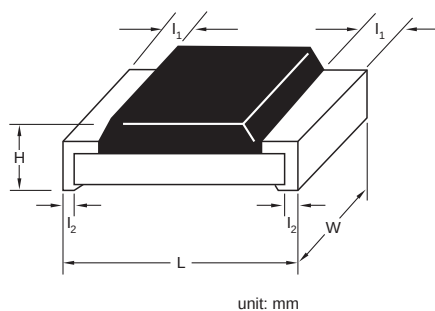
Maximum dissipation (P) in percentage of rated power as a function of the operating ambient temperature (T_{amb})



Construction



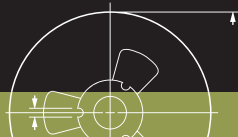
Dimensions



TYPE	L	W	H	l_1	l_2
RC0100	0.40 ± 0.03	0.20 ± 0.03	0.13 ± 0.03	0.10 ± 0.03	0.10 ± 0.03
RC0201	0.60 ± 0.03	0.30 ± 0.03	0.23 ± 0.03	0.10 ± 0.05	0.15 ± 0.05
RC0402	1.00 ± 0.05	0.50 ± 0.05	0.32 ± 0.05	0.20 ± 0.10	0.25 ± 0.10
RC0603	1.60 ± 0.10	0.80 ± 0.10	0.45 ± 0.10	0.25 ± 0.15	0.25 ± 0.15
RC0805	2.00 ± 0.10	1.25 ± 0.10	0.50 ± 0.10	0.35 ± 0.20	0.35 ± 0.20
RC1206	3.10 ± 0.10	1.60 ± 0.10	0.55 ± 0.10	0.45 ± 0.20	0.40 ± 0.20
RC1210	3.10 ± 0.10	2.60 ± 0.15	0.50 ± 0.10	0.45 ± 0.15	0.50 ± 0.20
RC1218	3.10 ± 0.10	4.60 ± 0.10	0.55 ± 0.10	0.45 ± 0.20	0.40 ± 0.20
RC2010	5.00 ± 0.10	2.50 ± 0.15	0.55 ± 0.10	0.45 ± 0.15	0.50 ± 0.20
RC2512	6.35 ± 0.10	3.10 ± 0.15	0.55 ± 0.10	0.60 ± 0.20	0.50 ± 0.20

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

Environmental characteristics			
Performance test		Test method	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
High temperature exposure		MIL-STD-202G-method 108A	1,000 hours at maximum operating temperature depending on specification, unpowered
Moisture resistance		MIL-STD-202G-method 106F	Each temp. / humidity cycle is defined at 8 hours (method 106F), 3 cycles / 24 hours for 10d with 25°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.
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
	Resistance to soldering heat	MIL-STD-202G-method 210F	Leadfree solder, 270°C, 10 seconds immersion time
Short time overload		MIL-R-55342D-para 4.7.5	2.5 times RCWV or maximum overload voltage whichever is less for 5 seconds at room temp.



Resistor Chip Selection Charts

General purpose, 01005 to 0805

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

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



Resistor Chip Selection Charts

General purpose, 01005 to 0805

Global part number - Preferred type	
Ordering example: RC0603JR-07100K(L)	
Series name (code 1~2) RC = Thick film chip resistor Size code (inch) (code 3~6) 0100 0201 0402 0603 0805 1206 1210 1218 2010 2512 Tolerance (code 7) D = ±0.5% F = ±1% J = ±5% (for Jumper ordering)	Optional code* (code 17) Resistance (code 12~16) 0R = Jumper 100K = 100KΩ 100R = 100Ω 10R = 10Ω Tape reel (code 10~11) 07 = 7 inch reel 10 = 10 inch reel 13 = 13 inch reel T.C.R. (code 9) "—" = Based on spec. Packing style (code 8) R = Paper K = Embossed C = Bulk cassette

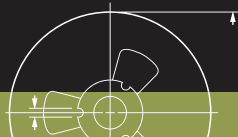
***Note:** 1. All our RSMD products meet RoHS compliant. "LFP" of the internal 2D reel label mentions "Lead Free Process"
2. On customized label, "LFP" or specific symbol printed and the optional "L" at the end of CTC / 12NC can be added (both are on customer request)

Ordering information - Phycomp world wide - Traditional type								
General purpose thick film / RC series								
Size: inch (mm)	0201 (0603)		0402 (1005)		0603 (1608)		0805 (2012)	
Power	1/20W		1/16W		1/10W		1/8W	
Tolerance	+5%	+1%	+5%	+1%	+5%	+1%	+5%	+1%
Resistance	E24	E24/E96	E24	E24/E96	E24	E24/E96	E24	E24/E96
Packing	paper tape		paper tape		paper tape		paper tape	
Quantity 5 000	---	---	---	---	2322 702 60...L	2322 704 6...L	2322 730 61...L	2322 734 6...L
10 000	2322 803 70...L	2322 806 7...L	2322 705 70...L	2322 706 7...L	2322 702 70...L	2322 704 7...L	2322 730 71...L	2322 734 7...L
20 000	2322 806 80...L	2322 806 8...L	---	---	2322 702 81...L	2322 704 8...L	2322 730 81...L	2322 734 8...L
50 000	2322 803 60...L	2322 806 6...L	2322 705 87...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 107 for E24/E96 values and the last 4 or 3 digits of the 12NC catalogue number.

Ordering information - Phycomp North America - Traditional type
Refer to page 106.





Resistor Chip Selection Charts

General purpose, 1206 to 2512

R-Chip General Purpose Thick Film / RC series										
General Purpose Thick Film / RC series										
Size: inch (mm)	1206 (3216)		1210 (3225)		1218 (3248)		2010 (5025)		2512 (6432)	
Power P ₇₀	1/4W		1/2W		1W		3/4W		1W	
Tolerance	±5%	±1%	±5%	±1%	±5%	±1%	±5%	±1%	±5%	±1%
Resistance Range	E24	E24/E96	E24	E24/E96	E24	E24/E96	E24	E24/E96	E24	E24/E96
Jumper										
1 Ω										
1.5 Ω										
2.2 Ω										
3.3 Ω										
4.7 Ω										
6.8 Ω										
10 Ω										
15 Ω										
22 Ω										
33 Ω										
47 Ω										
68 Ω										
100 Ω										
150 Ω										
220 Ω										
330 Ω										
470 Ω										
680 Ω										
1 kΩ										
1.5 kΩ										
2.2 kΩ										
3.3 kΩ										
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. (Non of the forbidden materials are used in products / production) The Pb-glass contained in electrodes , resistor element and glass is exempted by RoHS.



Resistor Chip Selection Charts

General purpose, 1206 to 2512

Global part number - Preferred type										
Ordering example: RC0603JR-07100K(L)										
RC 0603 J R - 07 100K (L) Series name (code 1~2) RC = Thick film chip resistor Size code (inch) (code 3~6) 0100 0201 0402 0603 0805 1206 1210 1218 2010 2512 Tolerance (code 7) D = ±0.5% F = ±1% J = ±5% (for Jumper ordering) Optional code* (code 17) Resistance (code 12~16) 0R = Jumper 100K = 100KΩ 100R = 100Ω 10R = 10Ω Tape reel (code 10~11) 07 = 7 inch reel 10 = 10 inch reel 13 = 13 inch reel T.C.R. (code 9) "-" = Based on Spec. Packing style (code 8) R = Paper K = Embossed 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)

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

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

Ordering information - Phycomp North America - Traditional type
 Refer to page 106.

