

RC(J&F) – Standard Chip Resistor

Features

- Small Size and light weight
- Excellent heat resistance and moisture resistance
- Highly reliable multilayer electrode construction
- Suitable size and packing for surface mount assembly
- Suitable for all soldering process
- Refer to Chip Resistor RC(B-D) family for CTR=100ppm and RCT family for CTR=50ppm

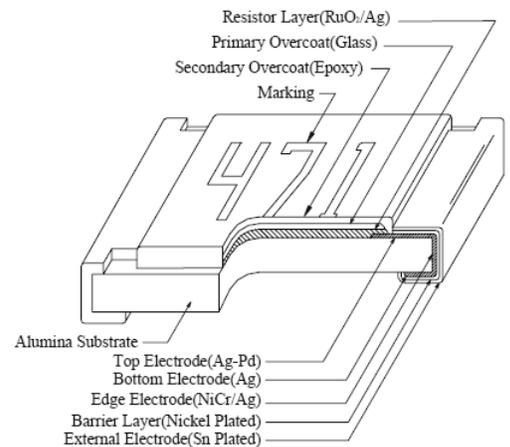


Applications

- For general purpose applications
- For laptop and notebook computer, memory module, digital camera and telecommunication equipment

Constructions

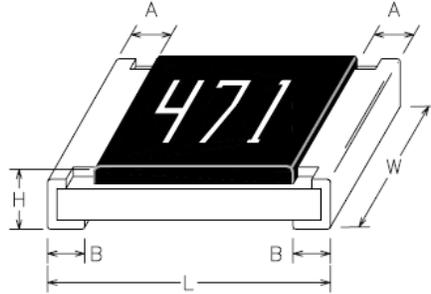
- The resistor is constructed on the alumina substrate body.
- Top electrodes are added to each end and connected with resistive paste on top surface of the alumina substrate.
- The resistive layer is made by resistive paste that is prepared to approach the nominal value.
- Laser trimming process makes the resistance meet the Nominal value
- The resistive layer is protected by primary overcoat and secondary overcoat.
- The barrier layer is added to edge electrodes for plating with external electrode, making the resistor easily mounted on the PCB



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RC0201J/F~ RC2512J/F

Dimensions (in mm)



Type	Size Inch (mm)	L	W	H	A	B	Average Weight
RC0201	0201(0603)	0.60 ± 0.03	0.30 ± 0.03	0.23 ± 0.03	0.15 ± 0.05	0.15 ± 0.05	0.150 mg
RC0402	0402(1005)	1.00 ± 0.05	0.50 ± 0.05	0.35 ± 0.05	0.20 ± 0.10	0.20 ± 0.10	0.620 mg
RC0603	0603(1608)	1.60 ± 0.10	0.80 ± 0.10	0.45 ± 0.10	0.30 ± 0.20	0.30 ± 0.20	2.042 mg
RC0805	0805(2012)	2.00 ± 0.10	1.25 ± 0.10	0.50 ± 0.10	0.35 ± 0.20	0.40 ± 0.20	4.368 mg
RC1206	1206(3216)	3.10 ± 0.10	1.55 ± 0.10	0.55 ± 0.10	0.50 ± 0.25	0.50 ± 0.20	8.947 mg
RC1210	1210(3225)	3.20 ± 0.20	2.60 ± 0.15	0.55 ± 0.10	0.50 ± 0.25	0.50 ± 0.20	15.959 mg
RC2010	2010(5025)	5.00 ± 0.20	2.50 ± 0.15	0.55 ± 0.10	0.60 ± 0.25	0.50 ± 0.20	24.241 mg
RC2512	2512(6432)	6.35 ± 0.20	3.20 ± 0.15	0.55 ± 0.10	0.60 ± 0.25	0.50 ± 0.20	39.448 mg

Marking Information

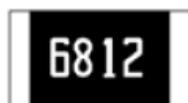
- RC0201&RC0402 is without marking due to the size is too small.
- RC0603~RC2512:
 - E24 series: ±5% (J), 3 digits Code, the first two digits are significant figures; the third digit is number of zeros to follow. Letter "R" is as decimal point;
 - E96 series, ±1% (F), 4 digits Code (except 0603 size), the first three digits are significant figures; the fourth digit is number of zeros. Letter "R" is as decimal point;
 - E96 series with special marking code for 0603 Size, ±1%, see below table (Page 9).
- Jumper marking with "0"



No Marking
Item1



683 = $68 \times 10^3 \Omega$
= 68K Ω
Item2.1



6812 = 681×10^2
= 68.1K Ω
Item2.2



0=Jumper
Item3



49X = 316×10^{-1}
= 31.6 Ω
Item 2.3

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Absolute Maximum Ratings & Electrical Characteristics

Type	Size Inch (mm)	Tolerance (E24 & E96)	Power Rating @70°C	MAX. Working Voltage	MAX. Overload Voltage	TCR (ppm/°C)	Resistance Range	Operating Temperature Range
RC0201	0201(0603)	J: ±5% F: ±1%	1/20W	25V	50V	±200	1Ω ~ 10MΩ	-55°C~+125°C
RC0402	0402(1005)	J: ±5% F: ±1%	1/16W	50V	100V	±200	1Ω ~ 9.76Ω	-55°C~+155°C
						±100	10Ω ~ 1MΩ	
						±200	1.02MΩ ~ 10MΩ	
RC0603	0603(1608)	J: ±5% F: ±1%	1/10W	50V	100V	±200	1Ω ~ 9.76Ω	-55°C~+155°C
						±100	10Ω ~ 1MΩ	
						±200	1.02MΩ ~ 10MΩ	
RC0805	0805(2012)	J: ±5% F: ±1%	1/8W	150V	300V	±200	1Ω ~ 9.76Ω	-55°C~+155°C
						±100	10Ω ~ 1MΩ	
						±200	1.02MΩ ~ 10MΩ	
RC1206	1206(3216)	J: ±5% F: ±1%	1/4W	200V	400V	±200	1Ω ~ 9.76Ω	-55°C~+155°C
						±100	10Ω ~ 1MΩ	
						±200	1.02MΩ ~ 10MΩ	
RC1210	1210(3225)	J: ±5% F: ±1%	1/3W	200V	400V	±200	1Ω ~ 9.76Ω	-55°C~+155°C
						±100	10Ω ~ 1MΩ	
						±200	1.02MΩ ~ 10MΩ	
RC2010	2010(5025)	J: ±5% F: ±1%	3/4W	200V	400V	±200	1Ω ~ 9.76Ω	-55°C~+155°C
						±100	10Ω ~ 1MΩ	
						±200	1.02MΩ ~ 10MΩ	
RC2512	2512(6432)	J: ±5% F: ±1%	1W	250V	500V	±200	1Ω ~ 9.76Ω	-55°C~+155°C
						±100	10Ω ~ 1MΩ	
						±200	1.02MΩ ~ 10MΩ	

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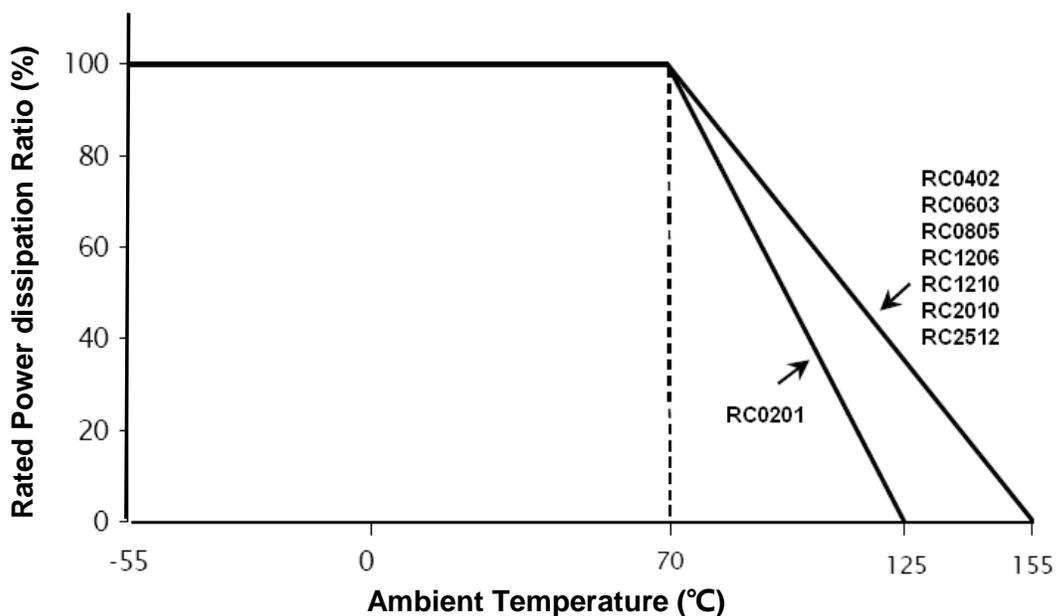
RC0201J/F~ RC2512J/F

*Jumper

Type	Jumper Rated Current	Resistance	Operating Temperature Range
RC0201	1A	50mΩ (Max.)	-55°C~+125°C
RC0402			-55°C~+155°C
RC0603			
RC0805	2A		
RC1206			
RC1210	2.5A		
RC2010	3.5A		
RC2512	4A		

Power Derating Curve

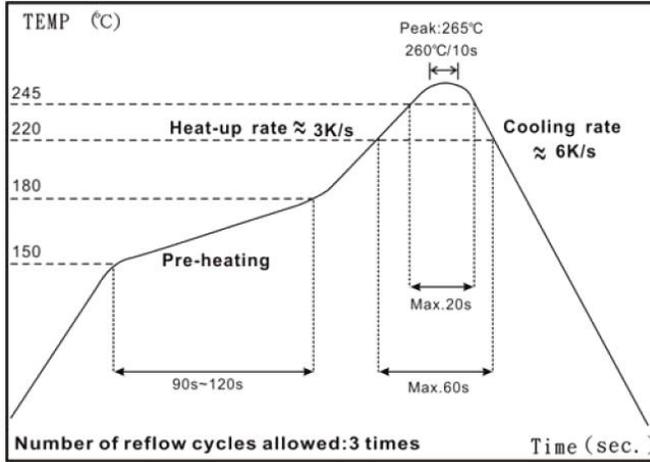
For resistors operate in the ambient temperature over 70°C, loading power ratio will derate in accordance with following curve.



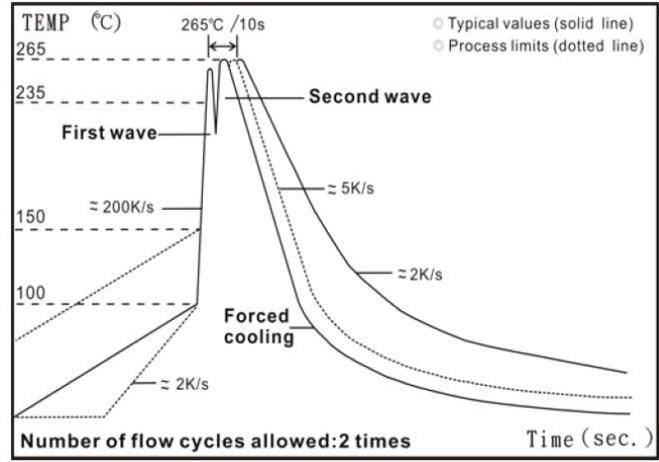
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Soldering Condition



IR Reflow soldering



Wave soldering (flow soldering)

Test and Requirements

Test Item	Test Method	Test Condition	Requirement		
			$\pm 1\%$	$\pm 5\%$	Jumper
Temperature Coefficient of Resistance(T.C.R.)	JIS C 5201 4.8 IEC 60115-1 4.8	-55°C~+125°C/155°C, 20°C is the reference temperature	Within the specification		
Short Time Overload	JIS C 5201 4.13 IEC 60115-1 4.13	2.5 times V_w or max. overload voltage for 5 seconds	$\pm(1.0\%+0.05\Omega)$	$\pm(2.0\%+0.05\Omega)$	<50m Ω
Insulation Resistance	JIS C 5201 4.6 IEC 60115-1 4.6	Max. overload voltage for 1 minute	$\geq 10G$		
Voltage Proof	JIS C 5201 4.7 IEC 60115-1 4.7	1.42 times V_w (RMS) for 1 minute	no breakdown or flashover		
Substrate Bending Test	JIS C 5201 4.33 IEC 60115-1 4.33	Bending once for 5 Seconds, 2010, 2512 Size 2 mm, others 3mm	$\pm(1.0\%+0.05\Omega)$	$\pm(1.0\%+0.05\Omega)$	<50m Ω
Resistance to soldering heat	JIS C 5201 4.18 IEC 60115 4.18	260 $\pm 5^\circ C$ for 10 seconds	$\pm(0.5\%+0.05\Omega)$	$\pm(1.0\%+0.05\Omega)$	<50m Ω
Leaching	JIS C 5201 4.18 IEC 60115 4.18	260 $\pm 5^\circ C$ for 60 seconds	no leaching		
Solderability	JIS C 5201 4.17 IEC 60115-1 4.17	245 $\pm 5^\circ C$ for 3 seconds.	>95% coverage		
Endurance at upper category temperature	JIS C 5201 4.23 IEC 60115-1 2.23.2	at +125°C /155°C for 1000 hrs	$\pm(1.0\%+0.05\Omega)$	$\pm(1.5\%+0.10\Omega)$	<50m Ω
Rapid change of temperature	JIS C 5201 4.19 IEC 60115-1 4.19	-55°C to +125°C/155°C, 5 cycles	$\pm(0.5\%+0.05\Omega)$	$\pm(1.0\%+0.05\Omega)$	<50m Ω

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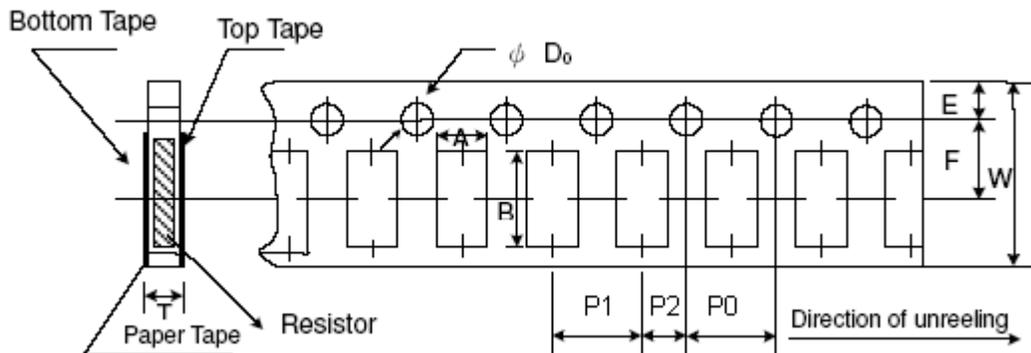
Damp heat with load	JIS 5201 4.24	40±2°C, 90~95% R.H. or max. working voltage for 1000 hrs with 1.5hrs "ON" and 0.5 hrs "OFF"	±(2.0%+0.10Ω)	±(3.0%+0.10Ω)	<100mΩ
Endurance	JIS C 5201 4.25 IEC 60115-1 4.25.1	70±2°C, Vw or Max. working voltage for 1000 hrs with 1.5 hrs "ON" and 0.5 hrs "OFF"	±(2.0%+0.10Ω)	±(3.0%+0.10Ω)	<100mΩ

Note: Vw: Rated Continuous Working Voltage.

$$Vw = \sqrt{\text{Rated power (P)} \times \text{Resistance value (R)}}$$

Packing Information:

Carrier Tape Dimensions (in mm)

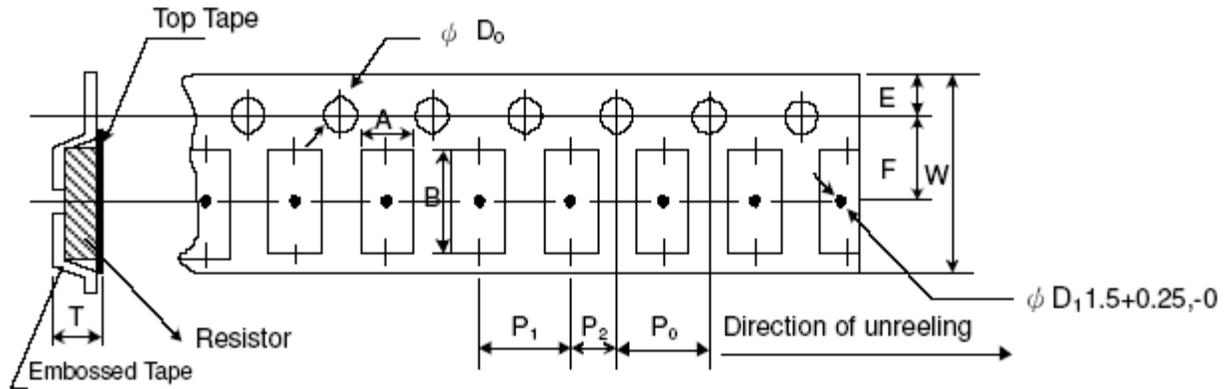


Type	A	B	W	E	F	P0	P1	P2	ψD0	T
RC0201	0.37±0.05	0.67±0.05	8.0±0.2	1.75±0.1	3.5±0.05	4.0±0.1	2.0±0.05	2.0±0.05	1.5+0.1/-0	0.42±0.1
RC0402	0.65±0.1	1.15±0.1	8.0±0.2	1.75±0.1	3.5±0.05	4.0±0.1	2.0±0.05	2.0±0.05	1.5+0.1/-0	0.45±0.1
RC0603	1.10±0.1	1.90±0.1	8.0±0.2	1.75±0.1	3.5±0.05	4.0±0.1	4.0±0.05	2.0±0.05	1.5+0.1/-0	0.70±0.1
RC0805	1.60±0.1	2.40±0.2	8.0±0.2	1.75±0.1	3.5±0.05	4.0±0.1	4.0±0.05	2.0±0.05	1.5+0.1/-0	0.85±0.1
RC1206	1.90±0.1	3.50±0.2	8.0±0.2	1.75±0.1	3.5±0.05	4.0±0.1	4.0±0.05	2.0±0.05	1.5+0.1/-0	0.85±0.1
RC1210	2.80±0.1	3.50±0.2	8.0±0.2	1.75±0.1	3.5±0.05	4.0±0.1	4.0±0.05	2.0±0.05	1.5+0.1/-0	0.85±0.1

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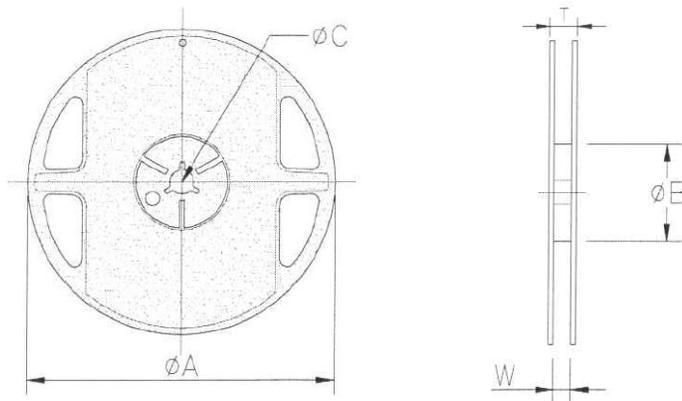
RC0201J/F~ RC2512J/F

Embossed Plastic Tape Dimensions (in mm)



Type	A	B	W	E	F	P0	P1	P2	ψD0	T
RC2010	2.80±0.2	5.50±0.2	12.0±0.3	1.75±0.1	5.5±0.05	4.0±0.1	4.0±0.1	2.0±0.05	1.5+0.1/-0	Max1.2
RC2512	3.50±0.2	6.70±0.2	12.0±0.3	1.75±0.1	5.5±0.05	4.0±0.1	4.0±0.1	2.0±0.05	1.5+0.1/-0	Max1.2

Reel Dimensions (in mm)



Type	Reel Diameter	Reel Quantity	ψA	ψB	ψC	W	T
RC0201	7"	10,000	180+0/-3	60+1/-0	13.0±0.2	9.0±0.5	12.5±0.5
RC0402							
RC0603							
RC0805		5000					
RC1206							
RC1210							
RC2010		4000					
RC2512							

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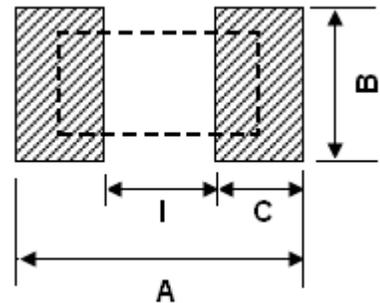
RC0201J/F~ RC2512J/F

Carton Information

Type	PCS per Carton	Carton Size
RC0402	600,000	400X400X200 (in mm)
RC0603	300,000	
RC0805		
RC1206		
RC1210		
RC2010	192,000	
RC2512		

Recommend Soldering PAD (in mm)

Type	A	B	C	I
RC0201	0.80	0.30	0.25	0.30
RC0402	1.40	0.60	0.45	0.50
RC0603	2.10	0.90	0.60	0.90
RC0805	2.60	1.30	0.70	1.20
RC1206	3.80	1.60	0.90	2.00
RC1210	3.80	2.80	0.90	2.00
RC2010	5.60	2.80	0.90	3.80
RC2512	7.00	3.50	1.60	3.80



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Table - E-96 series Special marking code ($\pm 1\%$, .0603 Size)

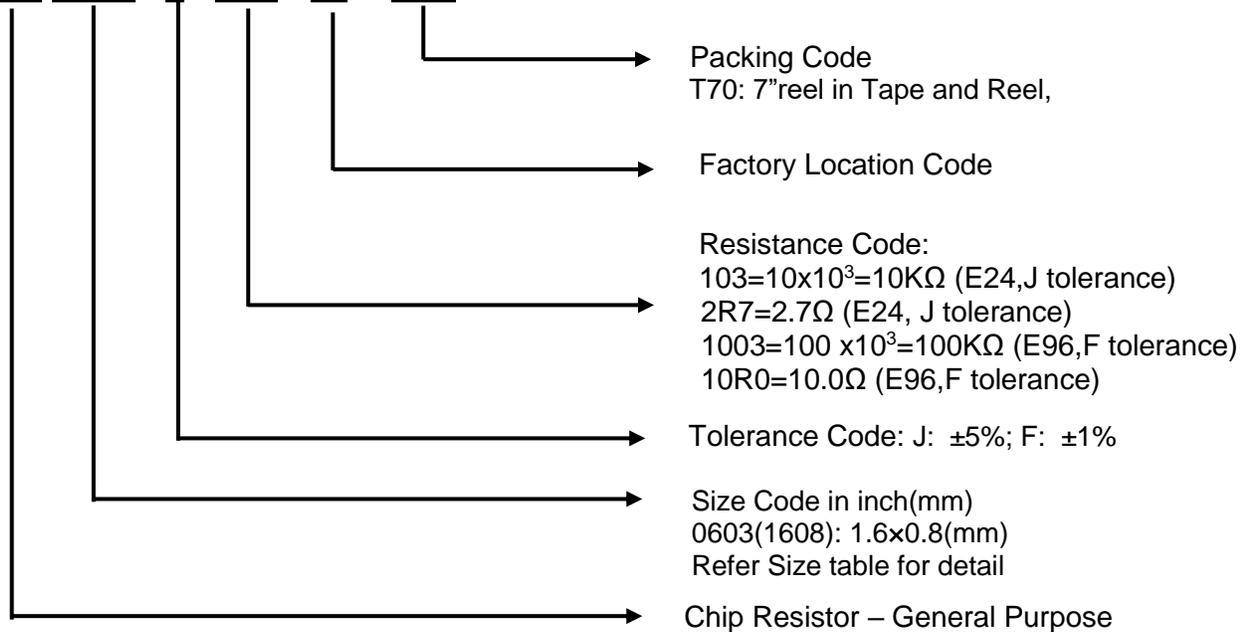
Code	R value	Code	R value	Code	R value	Code	R value	Code	R value	Code	R value	Code	R value	Code	R value
01	100	13	133	25	178	37	237	49	316	61	422	73	562	85	750
02	102	14	137	26	182	38	243	50	324	62	432	74	576	86	768
03	105	15	140	27	187	39	249	51	332	63	442	75	590	87	787
04	107	16	143	28	191	40	255	52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

This table shows the first two digits for the three-digit EIA-96 part marking scheme.

The third character is the letter of multiplier: Y= 10^{-2} X= 10^{-1} A= 10^0 B= 10^1 C= 10^2 D= 10^3 E= 10^4 F= 10^5

How to Order

RC 0603 J 103 - xx - T70



RC(J&F) - Standard Chip Resistor

RC0201J/F~ RC2512J/F

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