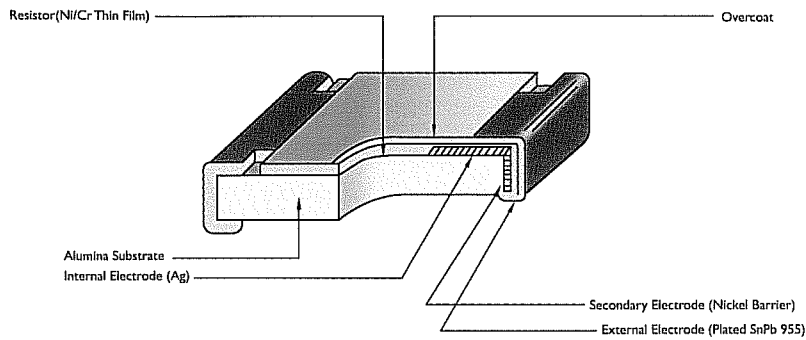


THIN FILM CHIP RESISTORS

RT SERIES



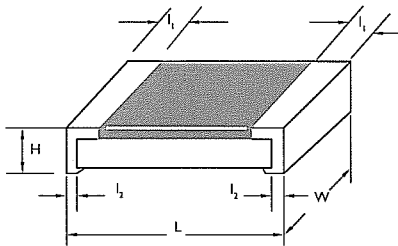
PROFESSIONAL THIN FILM CHIP RESISTORS

- High Stability
- Low TCR 10ppm/K up to 50ppm/K
- Low noise level

High Accuracy from
 $\pm 0.01\%$ up to $\pm 0.5\%$

DIMENSIONS

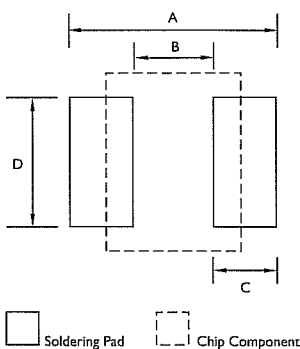
Unit: mm



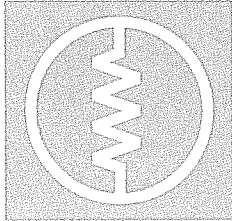
STYLE	L	W	H	l_1	l_2
RT0201	0.60 ± 0.10	0.30 ± 0.05	0.25 ± 0.05	0.15 ± 0.10	0.15 ± 0.10
RT0402	1.00 ± 0.10	0.50 ± 0.05	0.25 ± 0.05	0.20 ± 0.10	0.25 ± 0.10
RT0603	1.60 ± 0.10	0.80 ± 0.10	0.45 ± 0.10	0.25 ± 0.15	0.25 ± 0.15
RT0805	2.00 ± 0.10	1.25 ± 0.10	0.50 ± 0.10	0.35 ± 0.20	0.35 ± 0.20
RT1206	3.10 ± 0.10	1.60 ± 0.10	0.55 ± 0.10	0.45 ± 0.20	0.40 ± 0.20
RT1210	3.10 ± 0.10	2.60 ± 0.15	0.55 ± 0.10	0.50 ± 0.20	0.50 ± 0.20
RT2010	5.00 ± 0.10	2.50 ± 0.15	0.55 ± 0.10	0.60 ± 0.20	0.50 ± 0.20
RT2512	6.35 ± 0.10	3.20 ± 0.15	0.55 ± 0.10	0.60 ± 0.20	0.50 ± 0.20

RECOMMENDED LAND PATTERN DESIGN

Unit: mm



STYLE	A	B	C	D
RT 0201	1.0	0.3	0.35	0.4
RT 0402	1.5	0.5	0.5	0.6
RT 0603	2.6	0.8	0.9	0.8
RT 0805	3.0	1.2	0.9	1.2
RT 1206	4.2	2.2	1.0	1.5
RT 1210	4.2	2.2	1.0	2.4
RT 2010	6.1	3.3	1.4	2.4
RT 2512	8.0	4.4	1.8	3.0



THIN FILM CHIP RESISTORS

RT SERIES

ELECTRICAL CHARACTERISTIC

STYLE	RT0201			RT0402			RT0603			RT0805		
Resistance Range in E24/E96	33 Ω ~ 22K Ω			10 Ω ~ 100K Ω			10 Ω ~ 330K Ω			10 Ω ~ 1M Ω		
(E192; Special Value on Request)	<33 Ω ; 22 ~ 56K Ω on Request			<10 Ω ; 100 ~ 220K Ω on Request			<10 Ω ; 330 ~ 470K Ω on Request			<10 Ω on Request		
Operating Mode	Precision	Standard	Power	Precision	Standard	Power	Precision	Standard	Power	Precision	Standard	Power
Power Rating @ 70°C [W]	0,016	0,05	0,0625	0,016	0,0625	0,10	0,032	0,10	0,125	0,05	0,125	0,20
Operation Temperature Range	-10°C to 85°C for Precision Type; -55°C to +125°C for Standard; -55°C to +155°C for Power Type											
Maximum Working Voltage	5V	15V	15V	12,5V	50V	50V	25V	75V	75V	35V	150V	150V
Maximum Overload Voltage	10V	50V	50V	25V	100V	100V	50V	150V	150V	70V	300V	300V
Dielectric Withstand Voltage	50V	50V	50V	75V	75V	75V	100V	100V	100V	200V	200V	200V
Resistance Tolerance	$\pm 0.1\%$; $\pm 0.25\%$; $\pm 0.5\%$; $\pm 1.0\%$ ($\pm 0.01\%$; ± 0.05 on Request)											
Temperature Coefficient	± 25 ppm/°C; ± 50 ppm/°C (± 10 ppm/°C; 15ppm/°C on Request)											

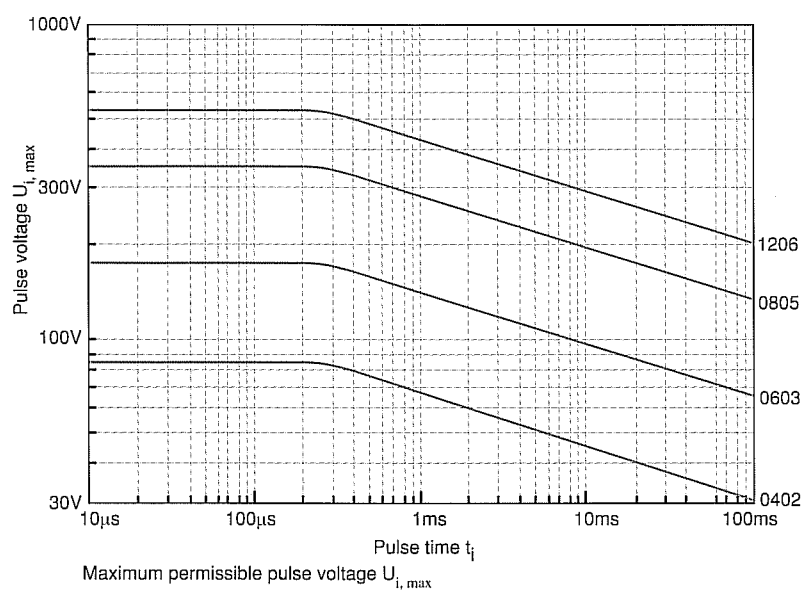
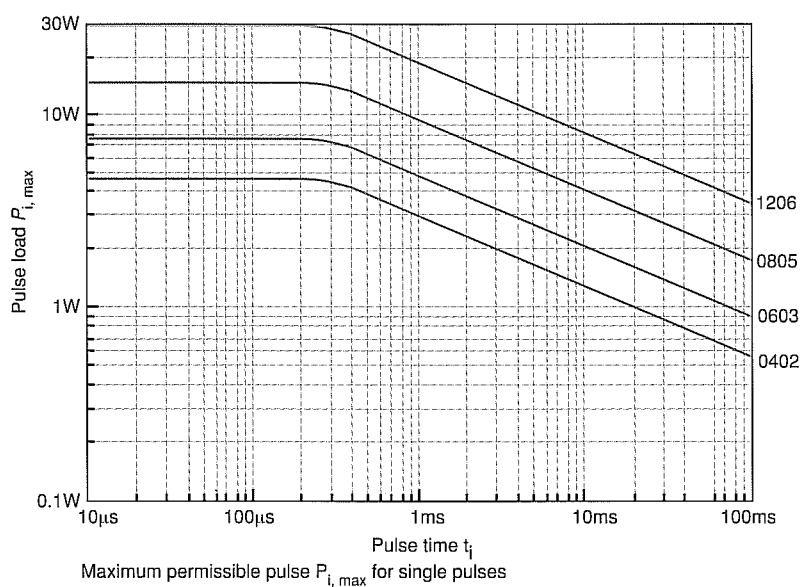
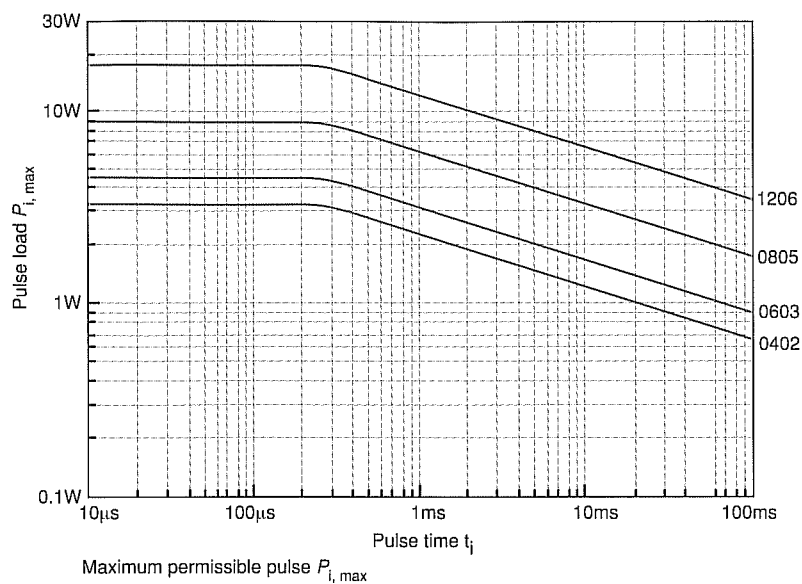
STYLE	RT1206			RT1210			RT2010		RT2512	
Resistance Range in E24/E96	10 Ω ~ 1M Ω			10 Ω ~ 1M Ω			10 Ω ~ 1M Ω		10 Ω ~ 1M Ω	
(E192; Special Value on Request)	<10 Ω on Request			<10 Ω ; 1M ~ 2M Ω on Request			<10 Ω ; 1M ~ 2M Ω on Request		<10 Ω ; 1M ~ 2M Ω on Request	
Operating Mode	Precision	Standard	Power	Precision	Standard	Power	Standard	Power	Standard	Power
Power Rating @ 70°C [W]	0,10	0,125	0,25	0,125	0,25	0,4	0,5	0,75	0,75	1,0
Operation Temperature Range	-10°C to 85°C for Precision Type; -55°C to +125°C for Standard; -55°C to +155°C for Power Type									
Maximum Working Voltage	50V	200V	200V	50V	200V	200V	200V	200V	200V	200V
Maximum Overload Voltage	100V	400V	400V	100V	400V	400V	400V	400V	400V	400V
Dielectric Withstand Voltage	300V	300V	300V	400V	400V	400V	400V	400V	400V	400V
Resistance Tolerance	$\pm 0.1\%$; $\pm 0.25\%$; $\pm 0.5\%$; $\pm 1.0\%$ ($\pm 0.01\%$; ± 0.05 on Request)									
Temperature Coefficient	± 25 ppm/°C; ± 50 ppm/°C (± 10 ppm/°C; ± 15 ppm/°C on Request)									

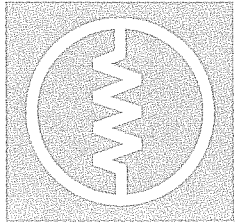
Climatic Category 10/85/21 Precision ; 55/125/56 Standard ; 55/155/56 Power

Failure rate (Total) 10⁻⁹ h⁻¹ 0,5 ; 1 ; 5

PERFORMANCE TEST	TEST METHOD	Precision	Standard	Power
Thermal Shock MIL-STD-202F, Method 107	5 Cycles, LCT to UCT (Step by Step 2 min.)	$\pm(0.25+0.05\Omega)$	$\pm(0.5+0.05\Omega)$	$\pm(1.0+0.05\Omega)$
Low Temperature Operation MIL-R-55342D, Para.4.7.4	One Hour at LCT Followed by 45 Minutes RCWV	$\pm(0.25+0.05\Omega)$	$\pm(0.5+0.05\Omega)$	$\pm(1.0+0.05\Omega)$
Short Time Overload MIL-R-55342D, Para.4.7.5	2.5 Times RCWV for 5 Seconds	$\pm(0.25+0.05\Omega)$	$\pm(0.5+0.05\Omega)$	$\pm(1.0+0.05\Omega)$
Insulation Resistance MIL-STD-202F, Method 302	RCOV for 1 Minute	>10G Ω	>10G Ω	>10G Ω
Dielectric Withstand Voltage MIL-STD-202F, Method 301	R.M.S. for 1 Minute	see table above		
Resistance to Soldering Heat MIL-STD-202F, Method 210C	Soldered to Test Board at 260°C for 10 Seconds	$\pm(0.25+0.05\Omega)$	$\pm(0.5+0.05\Omega)$	$\pm(0.5+0.05\Omega)$
Moisture Resistance MIL-STD-202F, Method 106F	42 Cycles, Total 1000 Hours	$\pm(0.25+0.05\Omega)$	$\pm(0.5+0.05\Omega)$	$\pm(1.0+0.05\Omega)$
Life MIL-STD-202F, Method 108A	1000 Hours at 70°C RCWV Intermittent	$\pm(0.25+0.05\Omega)$	$\pm(0.5+0.05\Omega)$	$\pm(1.5+0.05\Omega)$
Solderability MIL-STD-202F, Method 208G	230°C for 5 Seconds	>95%	>95% Coverage	>95%
Bending Strength JIS-C-5202, Para.6.1.4	Mounted on 90mm Board 0201/0402/0603/0805 3mm 1206/1200/2010/2512 2mm	$\pm(0.25+0.05\Omega)$	$\pm(0.25+0.05\Omega)$	$\pm(0.25+0.05\Omega)$

Thin film Pulse load Diagrams





THIN FILM CHIP RESISTORS

RT SERIES

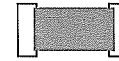
MARKING



1%, 0.5% marking
Value=10K Ω
RT
0805/1206
1210/2010/2512



1% marking
Value=12.4K Ω
RT
0603
EIA-96 marking



no marking
RT
0201/0402

EIA-96 MARKING

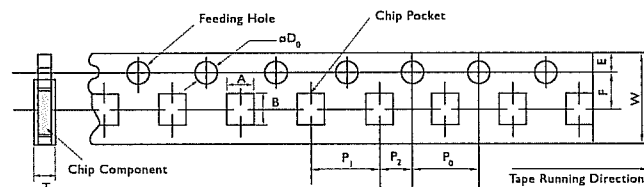
code R Value	code R Value	code R Value	code R Value	code R Value	code R Value	code R Value	code R Value
01	100	13	133	25	178	37	237
02	102	14	137	26	182	38	243
03	105	15	140	27	187	39	249
04	107	16	143	28	191	40	255
05	110	17	147	29	196	41	261
06	113	18	150	30	200	42	267
07	115	19	154	31	205	43	274
08	118	20	158	32	210	44	280
09	121	21	162	33	215	45	287
10	124	22	165	34	221	46	294
11	127	23	169	35	226	47	301
12	130	24	174	36	232	48	309

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

The third character is a letter multiplier: Y=10⁻² X=10⁻¹ A=10⁰ B=10¹ C=10² D=10³ E=10⁴ F=10⁵

PAPER TAPING - IEC 60286-3

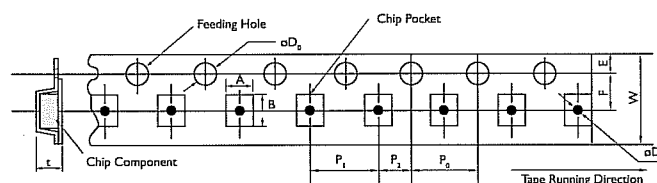
Unit: mm



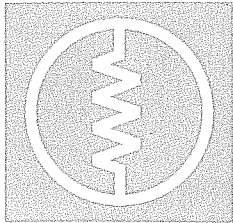
STYLE	A	B	W	E	F	P ₀	P ₁	P ₂	øD ₀	T
RT 0201	0.45±0.1	0.75±0.1	8.0±0.2	1.75±0.1	3.5±0.05	4.0±0.1	2.0±0.05	2.0±0.05	1.5 ^{+0.1} ₀	0.35±0.1
RT 0402	0.65±0.1	1.15±0.1	8.0±0.2	1.75±0.1	3.5±0.05	4.0±0.1	2.0±0.05	2.0±0.05	1.5 ^{+0.1} ₀	0.53±0.1
RT 0603	1.10±0.1	1.90±0.1	8.0±0.2	1.75±0.1	3.5±0.05	4.0±0.1	4.0±0.05	2.0±0.05	1.5 ^{+0.1} ₀	0.70±0.1
RT 0805	1.65±0.1	2.40±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	0.85±0.1
RT 1206	1.90±0.1	3.50±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	0.85±0.1
RT 1210	2.80±0.1	3.50±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	0.85±0.1

EMBOSSED TAPING - IEC 60286-3

Unit: mm



STYLE	A	B	W	E	F	P ₀	P ₁	P ₂	øD ₀	øD ₁	t
RT 2010	2.8±0.2	5.4±0.2	12±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	1.5±0.25	1.0±0.1
RT 2512	3.5±0.2	6.7±0.2	12±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	1.5±0.25	1.0±0.1

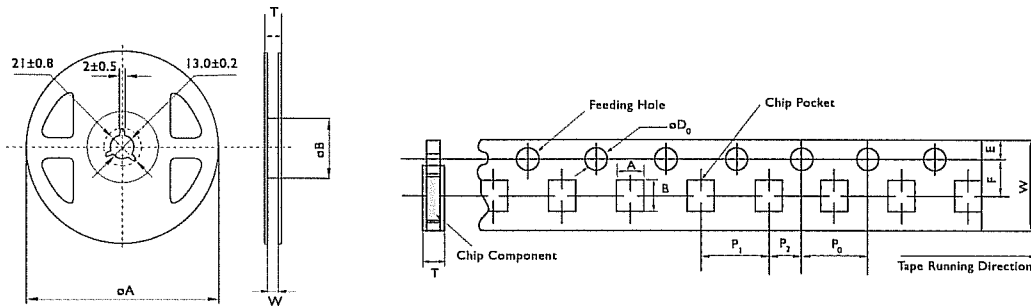


THIN FILM CHIP RESISTORS

RT SERIES

TAPING REEL

Unit: mm



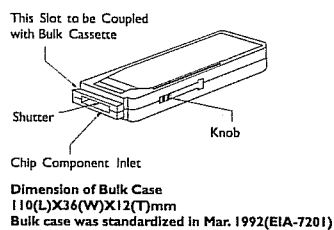
STYLE	PACKAGING	TAPE WIDE	ØA	ØB	W	T
RT 0201/0402/0603/0805/1206/1210	Paper	8mm	See next table	60 ⁺¹⁰ ₋₉	9.0±0.3	11.4±1
RT 2010/2512	Embossed	12mm	See next table	60 ⁺¹⁰ ₋₉	13.0±0.3	15.4±1

PACKING METHODS

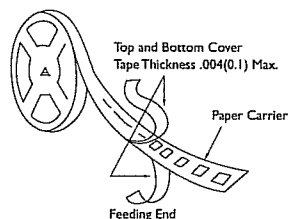
Unit: pcs

STYLE	PACKAGING	PAPER TAPING REEL (R) ØA			EMBOSSSED TAPING REEL (K)	BULK CASSETTE (C)
		7"(178mm)	10"(254mm)	13"(330mm)	7"(178mm)	
RT 0201		10,000	20,000	40,000	—	50,000
RT 0402		10,000	20,000	40,000	—	50,000
RT 0603		5,000	10,000	20,000	—	25,000
RT 0805		5,000	10,000	20,000	—	10,000
RT 1206		5,000	10,000	20,000	—	—
RT 1210		5,000	10,000	20,000	—	—
RT 2010		—	—	—	4,000	—
RT 2512		—	—	—	4,000	—
		7"(178mm)	10"(254mm)	13"(330mm)	7"(178mm)	

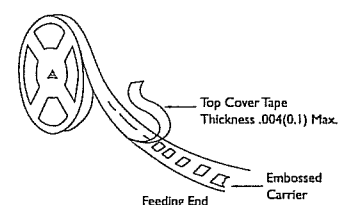
BULK CASSETTE



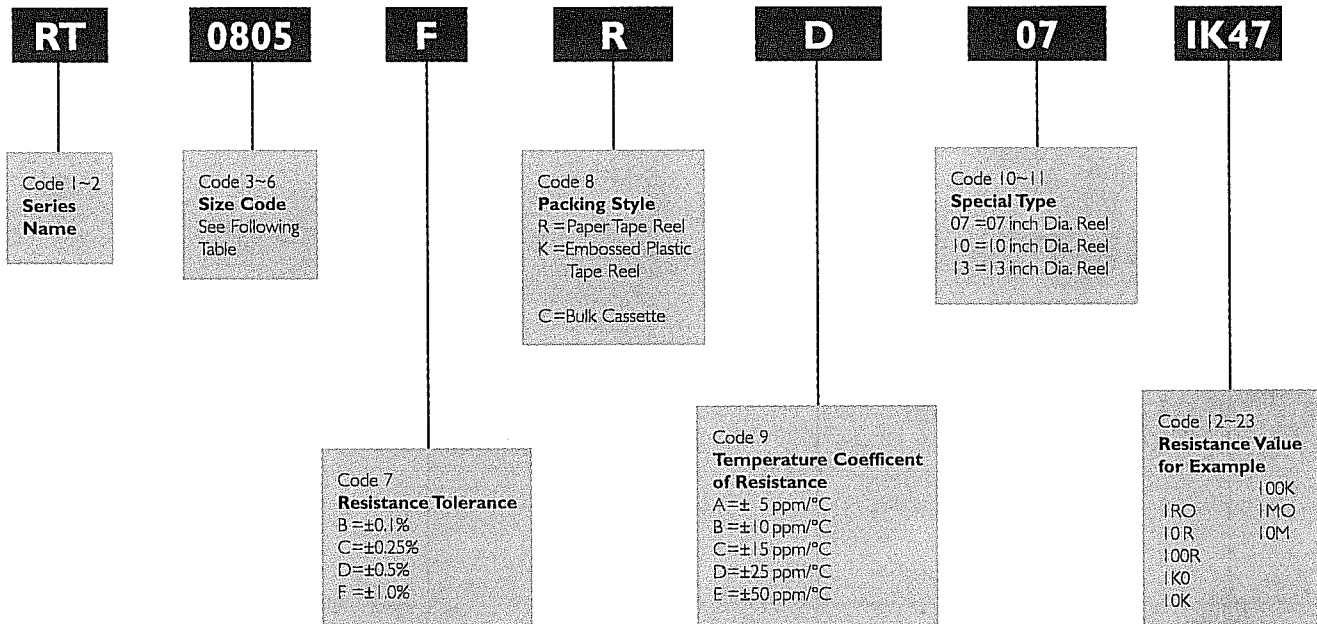
PAPER CARRIER



EMBOSSSED PLASTIC CARRIER



EXPLANATION OF ORDERING CODE



SIZE CODE (UNIT: INCHES)

0201=0.024 x 0.012

0402=0.040 x 0.020

0603=0.063 x 0.033

0805=0.083 x 0.051

1206=0.122 x 0.063

Metric Conversion Table

0201 0603M

0402 1005M 1210 3226M

0603 1608M 2010 5025M

0805 2012M 2512 6332M

1206 3216M

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