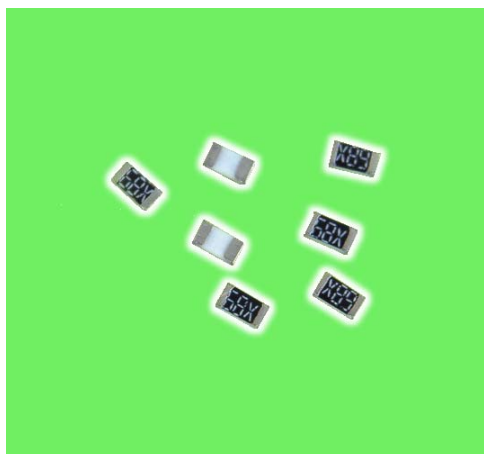
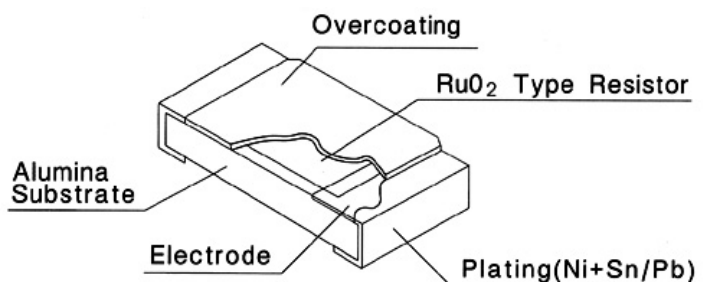


THICK FILM CHIP RESISTOR – CR



Construction



Part Numbering

CR	03	F	T	H	1000
①	②	③	④	⑤	⑥

① Product Type

Product Type	
CR	Thick Film Chip Resistor

② Dimensions (L×W)

Codes	Dimensions (L×W)	EIA
25	6.3×3.2mm	2512
10	5.0×2.5mm	2010
12	3.1×2.5mm	1210
06	3.1×1.55mm	1206
05	2.0×1.25mm	0805
03	1.6×0.8mm	0603
02	1.0×0.5mm	0402

③ Resistance Tolerance

Codes	Resistance Tolerance
D	±0.5 %
F	±1 %
G	±2 %
J	±5 %

④ Packaging

Code	Type
T	Taping Reel

⑤ TCR

Code	Type
E	±100ppm
F	±200ppm
L	±250ppm
H	±400ppm
I	±500ppm
—	No specified

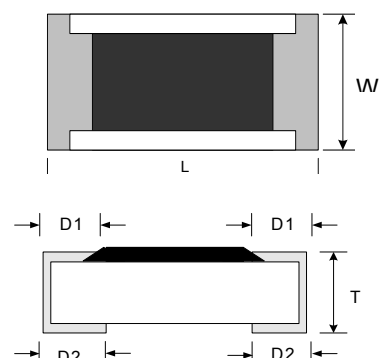
⑥ Resistance

Code	Type
1000	100 Ω
2201	2200 Ω
1002	10000 Ω
4992	49900 Ω
1003	100000 Ω

Dimensions

Unit: mm

SIZE	STYLE	L	W	T	D1	D2
2512	CR25	6.3±0.2	3.2±0.2	0.55±0.1	0.6±0.2	0.5±0.2
2010	CR10	5.0±0.2	2.5±0.2	0.55±0.1	0.60±0.2	0.5±0.2
1210	CR12	3.1±0.1	2.55±0.1	0.55±0.1	0.5±0.2	0.5±0.2
1206	CR06	3.1±0.1	1.55±0.1	0.55±0.1	0.45±0.2	0.4±0.2
0805	CR05	2.0±0.15	1.25±0.10	0.50±0.1	0.35±0.2	0.4±0.2
0603	CR03	1.6±0.15	0.8±0.1	0.45±0.1	0.3±0.2	0.3±0.2
0402	CR02	1.0±0.10	0.5±0.05	0.35±0.05	0.20±0.1	0.25±0.1



THICK FILM CHIP RESISTOR – CR

Standard electrical specifications

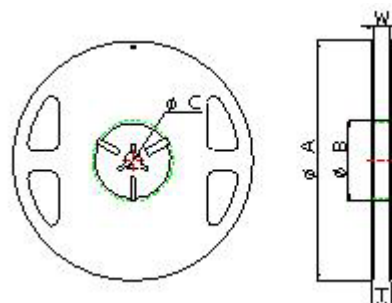
Item Type	Power Rating	Operating Temp. Range	Max Operating Voltage	Max Overloading Voltage	Resistance Tolerance		Resistance Range	TCR
CR25	1W	-55 ~ +125°C	200V	400V	E96	0.5%	10Ω~1MΩ	200
						1%		
					E24	2% 5%	1Ω~10MΩ	400
CR10	1/2W	-55 ~ +125°C	200V	400V	E96	0.5%	10Ω~1MΩ	200
						1%		
					E24	2% 5%	1Ω~10MΩ	400
CR12	1/3W	-55 ~ +125°C	200V	400V	E96	0.5%	10Ω~1MΩ	200
						1%		
					E24	2% 5%	1Ω~10MΩ	400
CR06	1/8W	-55 ~ +125°C	200V	400V	E96	0.5%	10Ω~1MΩ	200
						1%		
					E24	2% 5%	1Ω~10MΩ	400
CR05	1/10W	-55 ~ +125°C	150V	300V	E96	0.5%	10Ω~1MΩ	200
						1%		
					E24	2% 5%	1Ω~10MΩ	400
CR03	1/16W	-55 ~ +125°C	50V	100V	E96	0.5%	10Ω~1MΩ	200
						1%		
					E24	2% 5%	1Ω~10MΩ	400
AR02	1/16W	-55 ~ +125°C	50V	100V	E96	0.5%	10Ω~1MΩ	200
						1%		
					E24	2% 5%	1Ω~10MΩ	500

Packaging

Packaging Quantity

Unit: pcs

Packaging Series	Paper Tape	Embossed Tape
CR25	—	4000
CR10	—	4000
CR12	5,000	—
CR06	5,000	—
CR05	5,000	—
CR03	5,000	—
CR02	10,000	—



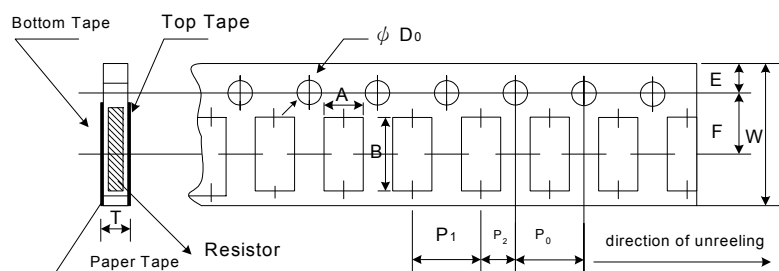
Reel Specifications

Unit: mm

Series	ΦA	ΦB	ΦC	W	T
CR25,10,12,06,05,03,02	180 ⁺⁰ ₋₃	60min.	13.0±1.0	9.0±1.0	11.4±2.0

THICK FILM CHIP RESISTOR—CR

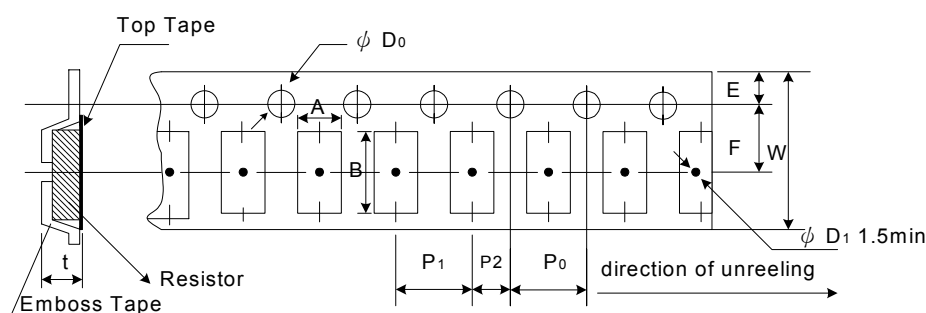
Paper Tape Specifications



Unit: mm

Series	A	B	W	F	E	P ₁	P ₂	P ₀	ΦD ₀	T
CR12	2.8±0.2	3.6±0.2	8.0 ±0.2	3.50 ±0.05	1.75 ±0.01	4.00 ±0.01	2.00 ±0.05	4.00 ±0.10	1.50 ^{+0.01} ₋₀	0.75 ±0.1
CR06	2.00±0.15	3.6±0.2								0.75 ±0.1
CR05	1.6±0.15	2.4±0.2								0.75 ±0.1
CR03	1.1±0.1	1.9±0.1								0.64 ±0.1
CR02	0.65±0.15	1.15±0.2				2.00 ±0.01	2.00 ±0.05			0.5 ±0.1

Emboss Plastic Tape Specifications



Unit: mm

Series	A	B	W	F	E	P ₁	P ₂	P ₀	ΦD ₀	t
CR25	3.60±0.20	6.90±0.20	12.00	5.50	1.75	4.00	2.00	4.00	1.50	0.85
CR10	2.80±0.20	5.30±0.20	±0.3	±0.05	±0.01	±0.01	±0.05	±0.10	+0.10, -0	±0.15

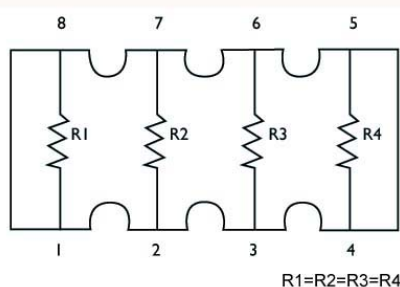
Environmental Characteristics

Item	Specification	Test Method
1 Temperature Coefficient of Resistance	As Spec.	MIL-STD-202, Method 304 +25/-55/+25/+125/+25°C
2 Thermal Shock	±(1.0%+0.05Ω)	MIL-STD-202, Method 107 -55°C~125°C, 100 cycles
3 Short Time Overload	±(2.0%+0.05Ω)	MIL-R-55342D 4.7.5 RCWV*2.5 or Max Overloading Voltage, 5 seconds
4 High Temperature Exposure	±(2.0%+0.05Ω)	MIL-R-55342D 4.7.6 1000 hours @ +125°C without load
5 Load Life	±(2.0%+0.05Ω)	MIL-STD-202 M108 RCWV, 70°C, 1.5 hours on, 0.5 hours off 1000~1048 hours
6 Resistance to Soldering Heat	±(1.0%+0.05Ω)	MIL-R-55342D 4.7.7 260±5°C, 10±1second
7 Moisture Resistance	±(2.0%+0.05Ω)	MIL-STD-202, Method 103 40°C, 90~95%RH, 1000 hours
8 Low Temperature Operation	±(1.0%+0.05Ω)	MIL-R-55342D 4.7.4 1hour, -55°C, followed by 45minutes of RCWV
9 Bending Strength	±(1.0%+0.05Ω)	JIS C 5202 6.1.4 5 mm deflection in either direction, 10 seconds

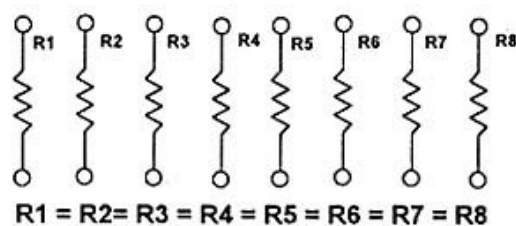
THICK FILM CHIP RESISTORS ARRAY – RA



Schematics



L Circuits

Part Numbering
for 8P4R

RA	03	F	T	F	100
①	②	③	④	⑤	⑦

① Product Type

Product Type	
RA	Thick Film Chip Resistors Array

② Dimensions (L×W)

Codes	Dimensions (L×W)	EIA
02	4.00×1.6mm	0402×8
05	5.08×3.2mm	1205×4
03	3.2×1.6mm	0603×4
02	2.0×1.0mm	0402×4

③ Resistance Tolerance

Codes	Resistance Tolerance
F	±1 %
G	±2 %
J	±5 %

for 16P8R

RA	02	F	T	F	L	1000
①	②	③	④	⑤	⑥	⑦

④ Packaging

Code	Type
T	Taping Reel

⑤ TCR

Code	Type
F	±200ppm

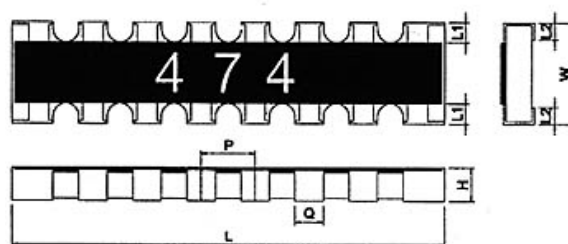
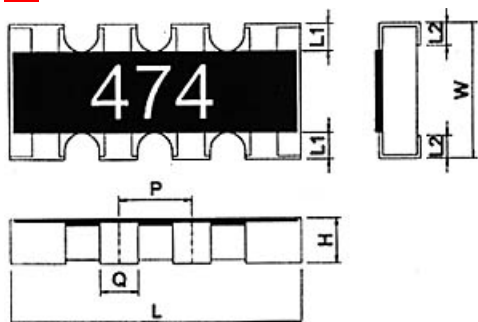
⑥ Schematics

Code	Type
L	16P8R

⑦ Resistance

Code	Type
100	10 Ω
221	220 Ω
102	1000 Ω
492	4900 Ω
103	10000 Ω

Dimensions



Dimensions Type	L	W	H	L1	L2	P	Q
RA05	5.08±0.2	3.2±0.2	0.6±0.1	0.5±0.2	0.5±0.2	1.27±0.05	0.9±0.15
RA03	3.20±0.20	1.60±0.15	0.55±0.10	0.30±0.15	0.30±0.15	0.80±0.10	0.50±0.15
RA02	2.00±0.20	1.0±0.15	0.40±0.10	0.2±0.15	0.2±0.15	0.50±0.10	0.30±0.10
RA02-L	4.00±0.20	1.6±0.15	0.45±0.10	0.3±0.15	0.3±0.15	0.50±0.10	0.30±0.10

THICK FILM CHIP RESISTORS ARRAY – RA

Standard electrical specifications

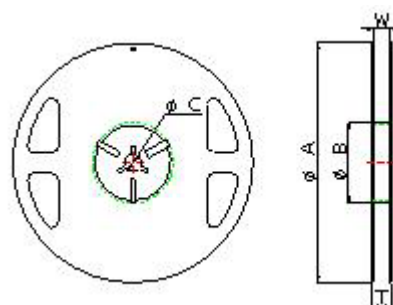
Item Type	Power Rating at 70°C	Operating Temp. Range	Max. Working Voltage	Max. Overload Voltage	Number of Resistors	Resistance Range	Temperature Coefficient	Resistance Tolerance
RA05	1/8W	-55~125°C	200V	400V	4	1Ω~10MΩ	±200ppm/ °C	±1%
RA03	1/16W		50V	100V	4	1Ω~10MΩ		±2%
RA02	1/16W		25V	50V	4	10Ω~1MΩ		±5%
RA02-L	1/16W		25V	50V	8	10Ω~1MΩ		

Packaging

Packaging Quantity

Unit: pcs

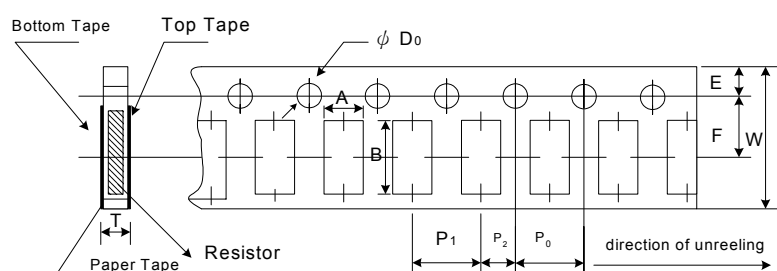
Packaging Series	Paper Tape	Embossed Tape
RA05	—	4000
RA03	5000	—
RA02	10000	—
RA02-L	5000	—



Reel Specifications

Series	ΦA	ΦB	ΦC	W	T
RA05/RA02-L	180 ⁺⁰ ₋₃	60min.	13.0±1.0	13.0±1.0	15.4±2.0
RA03/RA02	180 ⁺⁰ ₋₃	60min.	13.0±1.0	9.0±1.0	11.4±2.0

Paper Tape Specifications

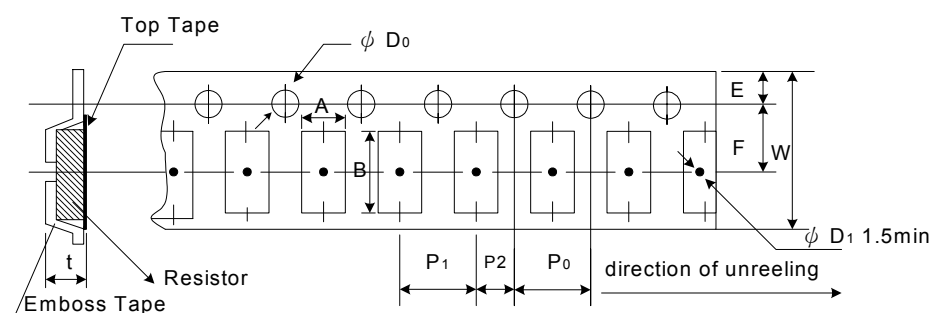


Unit: mm

Series	A	B	W	F	E	P ₁	P ₂	P ₀	ΦD ₀	T
RA03	2.0±0.1	3.6±0.1	8.0 ±0.2	3.50 ±0.05	1.75 ±0.01	4.00 ±0.01	2.00 ±0.05	4.00 ±0.10	1.50 ^{+0.01} ₋₀	0.85 ±0.1
RA02	1.2±0.1	2.2±0.1				2.00 ±0.01	2.00 ±0.05			0.7 ±0.1
RA02-L	1.8±0.2	4.4±0.2	12±0.3	5.5±0.05		4.00 ±0.01	2.00 ±0.05			

THICK FILM CHIP RESISTORS ARRAY – RA

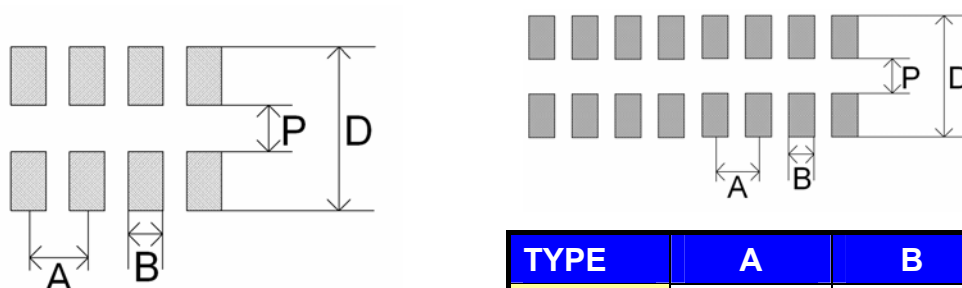
Emboss Plastic Tape Specifications



Unit: mm

Series	A	B	W	F	E	P ₁	P ₂	P ₀	ϕD_0	t
RA05	3.5±0.2	5.6±0.20	12.00 ±0.3	5.50 ±0.05	1.75 ±0.01	4.00 ±0.01	2.00 ±0.05	4.00 ±0.10	1.50 +0.10, -0	1.0 ±0.1

Pattern

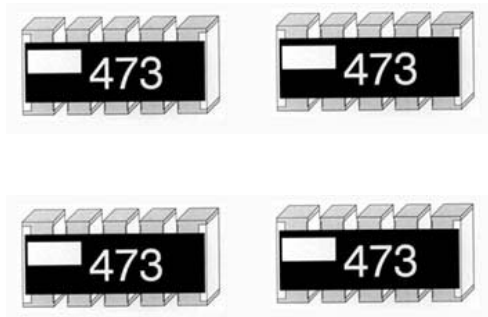


TYPE	A	B	D	P
RA05	1.27±0.05	0.6±0.05	4.5±0.2	2.0±0.1
RA03	0.80±0.05	0.45±0.05	2.8±0.2	0.8±0.1
RA02	0.5±0.05	0.3±0.05	2.2±0.2	0.5±0.1
RA02-L	0.5±0.05	0.3±0.05	2.8±0.2	0.9±0.1

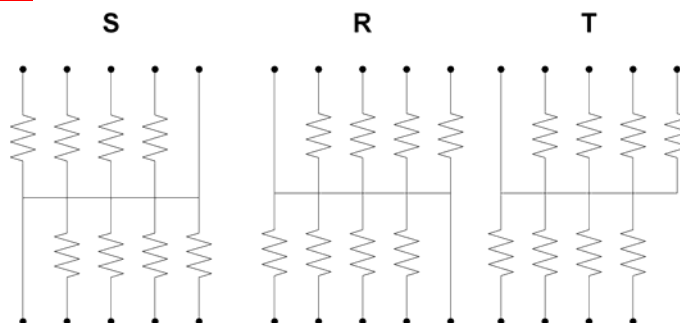
Environmental Characteristics

Item	Specification	Test Method
1 Temperature Coefficient of Resistance	As Spec.	MIL-STD-202, Method 304 +25/-55/+25/+125/+25°C
2 Thermal Shock	±(1.0%+0.05Ω)	MIL-STD-202, Method 107 -55°C~125°C, 100 cycles
3 Short Time Overload	±(2.0%+0.05Ω)	MIL-R-55342D 4.7.5 RCWV*2.5 or Max Overloading Voltage, 5 seconds
4 High Temperature Exposure	±(2.0%+0.05Ω)	MIL-R-55342D 4.7.6 1000 hours @ +125°C without load
5 Load Life	±(3.0%+0.1Ω)	MIL-STD-202 M108 RCWV, 70°C, 1.5 hours on, 0.5 hours off 1000~1048 hours
6 Resistance to Soldering Heat	±(1.0%+0.05Ω)	MIL-R-55342D 4.7.7 260±5°C, 10±1second
7 Moisture Resistance	±(2.0%+0.05Ω)	MIL-STD-202, Method 103 40°C, 90~95%RH, 1000 hours
8 Low Temperature Operation	±(1.0%+0.05Ω)	MIL-R-55342D 4.7.4 1hour, -55°C, followed by 45minutes of RCWV
9 Bending Strength	±(1.0%+0.05Ω)	JIS C 5202 6.1.4 5 mm deflection in either direction, 10 seconds

THICK FILM CHIP RESISTORS ARRAY – RA



Schematics



Part Numbering

RA	12	F	T	F	S	100
①	②	③	④	⑤	⑥	⑦

① Product Type

Product Type	
RA	Thick Film Chip Resistors Array

② Dimensions (LxW)

Codes	Dimensions (LxW)	EIA
12	6.4×3.2mm	2512
06	3.2×1.6mm	1206

③ Resistance Tolerance

Codes	Resistance Tolerance
F	±1 %
G	±2 %
J	±5 %

④ Packaging

Code	Type
T	Taping Reel

⑤ TCR

Code	Type
F	±200ppm

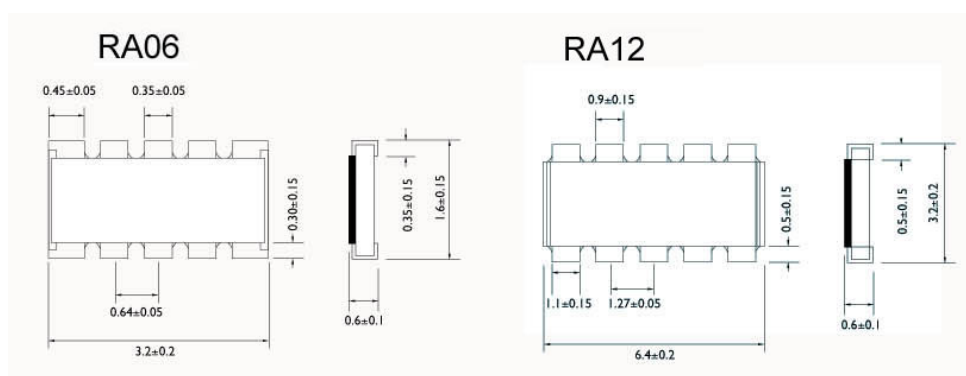
⑥ Schematics

Code	Type
S	10P8R
R	10P8R
T	9P8R

⑦ Resistance

Code	Type
100	10Ω
221	220Ω
102	1000Ω
492	4900Ω
103	10000Ω

Dimensions



Standard electrical specifications

Item Type	Power Rating at 70℃	Operating Temp. Range	Max. Working Voltage	Max. Overload Voltage	Number of Resistors	Resistance Range	Temperature Coefficient	Resistance Tolerance
RA12	1/16W	-55~125℃	50V	100V	8	10Ω~1MΩ	±200ppm/℃	±1%
RA06	1/32W		25V	50V	8	33Ω~1MΩ		±2% ±5%

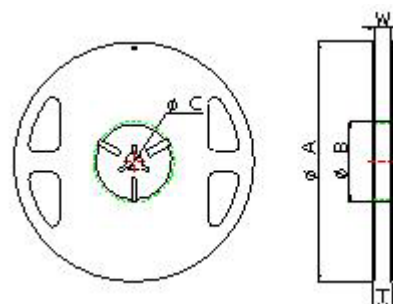
THICK FILM CHIP RESISTORS ARRAY – RA

Packaging

Packaging Quantity

Unit: pcs

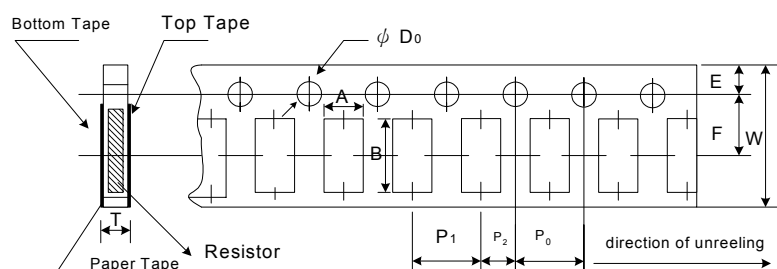
Packaging Series	Paper Tape	Embossed Tape
RA12	—	4000
RA06	5000	—



Reel Specifications

Series	ΦA	ΦB	ΦC	W	T
RA12	180^{+0}_{-3}	60min.	13.0 ± 1.0	13.0 ± 1.0	15.4 ± 2.0
RA06	180^{+0}_{-3}	60min.	13.0 ± 1.0	9.0 ± 1.0	11.4 ± 2.0

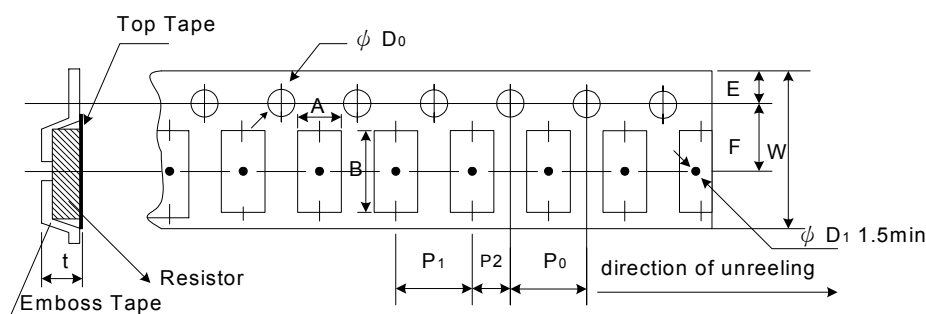
Paper Tape Specifications



Unit: mm

Series	A	B	W	F	E	P ₁	P ₂	P ₀	ΦD_0	T
RA06	2.0 ± 0.1	3.6 ± 0.1	8.0 ± 0.2	3.50 ± 0.05	1.75 ± 0.01	4.00 ± 0.01	2.00 ± 0.05	4.00 ± 0.10	$1.50^{+0.01}_{-0}$	0.85 ± 0.1

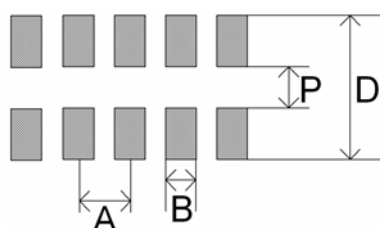
Emboss Plastic Tape Specifications



Unit: mm

Series	A	B	W	F	E	P ₁	P ₂	P ₀	ΦD_0	t
RA12	3.5 ± 0.2	6.7 ± 0.20	12.00 ± 0.3	5.50 ± 0.05	1.75 ± 0.01	4.00 ± 0.01	2.00 ± 0.05	4.00 ± 0.10	$1.50^{+0.10}_{-0}$	1.0 ± 0.1

Pattern



TYPE	A	B	D	P
RA12	1.27 ± 0.05	0.6 ± 0.05	4.5 ± 0.2	2.0 ± 0.1
RA06	0.64 ± 0.05	0.3 ± 0.05	2.8 ± 0.2	0.8 ± 0.1

THICK FILM CHIP RESISTORS ARRAY – RA

Environmental Characteristics

Item		Specification	Test Method
1	Temperature Coefficient of Resistance	As Spec.	MIL-STD-202, Method 304 +25/-55/+25/+125/+25°C
2	Thermal Shock	$\pm(1.0\%+0.05\Omega)$	MIL-STD-202, Method 107 -55°C~125°C, 100 cycles
3	Short Time Overload	$\pm(2.0\%+0.05\Omega)$	MIL-R-55342D 4.7.5 RCWV*2.5 or Max Overloading Voltage, 5 seconds
4	High Temperature Exposure	$\pm(2.0\%+0.05\Omega)$	MIL-R-55342D 4.7.6 1000 hours @ +125°C without load
5	Load Life	$\pm(3.0\%+0.1\Omega)$	MIL-STD-202 M108 RCWV, 70°C, 1.5 hours on, 0.5 hours off 1000~1048 hours
6	Resistance to Soldering Heat	$\pm(1.0\%+0.05\Omega)$	MIL-R-55342D 4.7.7 260 $\pm$ 5°C, 10 $\pm$ 1second
7	Moisture Resistance	$\pm(2.0\%+0.05\Omega)$	MIL-STD-202, Method 103 40°C, 90~95%RH, 1000 hours
8	Low Temperature Operation	$\pm(1.0\%+0.05\Omega)$	MIL-R-55342D 4.7.4 1hour, -55°C, followed by 45minutes of RCWV
9	Bending Strength	$\pm(1.0\%+0.05\Omega)$	JIS C 5202 6.1.4 5 mm deflection in either direction, 10 seconds