At Yokohama Denshi Seiko (YDS), we manufacture highly accurate and reliable electronics components that are incorporated into industrial equipment and equipment used in the public sector. Through our 5H targets explained below, our mission is to produce passive components that contribute to society. We challenge new product development with a flexible attitude and creative thinking as well as diligence with the goal of maintaining harmony and independence in this diversified modern society.

High Frequency

New communication technologies such as mobile phones, and satellite communications are not only becoming a part of life but are also changing life. In order to advance these technologies, components that can be used in very high frequency area are necessary. YDS has been developing high frequency electronics components that take advantage of the characteristics of thin films for over 10 years and will continue in the effort to design and manufacture components that can function at even higher frequencies.

High Speed

Today, equipment must be able to function at a very high speed to handle such tasks as maintaining the signal integrity of rapidly changing high speed signals, rapidly processing large amount of data, and instantly sensing temperature change. YDS, using the characteristics of thin films, has been producing high speed electronics components.

High Precision

Controlling precisely, measuring accurately, processing without fail all require highly accurate and precision components. YDS has been designing and manufacturing very precise and highly accurate components that take advantage of thin films. We will continue to develop this capability.

High Reliability

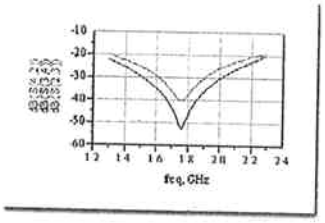
High tech equipment cannot afford break-downs. YDS, with its ISO9000 certified quality system, implemented from designing stage to production, manufactures highly reliable components. In order to improve product reliability even further, we will continue to advance our quality and management system by adopting even more stringent global quality standards.

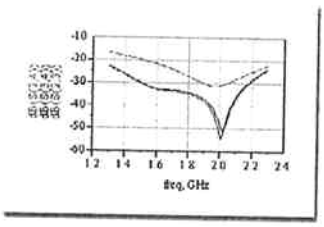
High Density

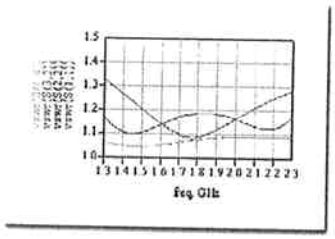
Society is demanding ever smaller and lighter equipment. To realize these trends, component density is becoming higher and higher. YDS has been offering smaller and lighter components represented by the development of the world smallest attenuators(PAT0510).

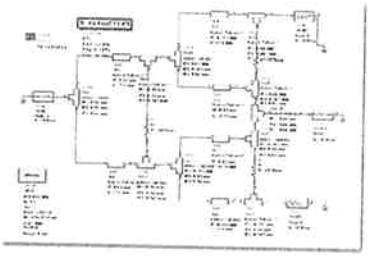
Custom Components

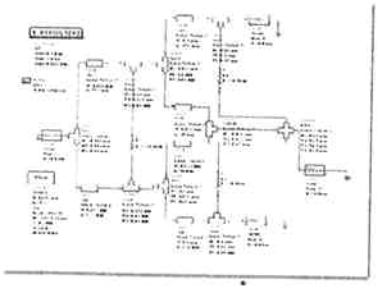
We are willing to design and manufacture custom components. For high frequency components, we conduct electromagnetic field simulation and together with our thin film fine patterning capability, we strive to achieve our customers' desired performance characteristics at a reasonable cost.











Thin Film Resistor

YOKOHAMA DENSHI SEIKO Co., Ltd.

+/-0.05% +/-5ppm Low noize and High Precision , High Reliability

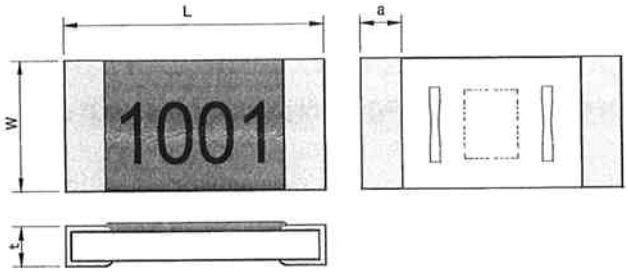
RoHS compliance

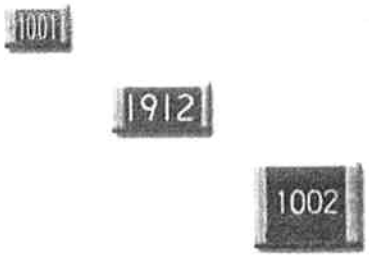
<Specification>

Type	RN73 2X		RR1632				RR2632			
Size	2.0×1.25×0.4mm (0805)		3.2×1.6×0.4mm (1206)				3.2×2.6×0.4mm (1210)			
Rated power	1/10W		1/8W				1/4W			
Resistance tolerance	±0.1%(B) ±0.5%(D)									
Resistance Value Range (Ω)	511～100k	100～100k	100～200k	100～200k	51～1M	10～49.9	100～330k	100～330k	51～2M	10～49.9
TCR (ppm/℃)	±5 (V)	±10 (N)	±5 (V)	±10 (N)	±25 (P)	±50 (Q)	±5 (V)	±10 (N)	±25 (P)	±50 (Q)
Resistance Value series	E-24/E-96		E-24/E-96				E-24/E-96			
Voltage max	100V		150V				200V			
Packaging	1,000・5,000・pcs/reel									

Contact us if you do not find what you need (resistance value, tolerance etc.) in our standard series resistors.

<Dimensions>





Type	Size (mm)		
	RN73*2X	RR1632	RR2632
L	2.0±0.2	3.2±0.2	3.2±0.2
W	1.25±0.2	1.6±0.2	2.6±0.2
a	0.4±0.2	0.5±0.2	0.5±0.2
t	0.4±0.1	0.4±0.1	0.4±0.1

<Schematics>

<Characteristics>

We offer absolute resistive tolerance up to ±0.05%, and a temperature coefficient of resistance up to ±5ppm/C.
Thin film performance with low cost.
Low noise. Helps reduce the noise from the circuits.
Easy to be mounted on the PC boards and highly reliable.

<Part number>

RR 1632 V - 1001 - B - T1(T5)

- RR: Device Type
- 1632: Size
- V: TCR
- 1001: Resistance
- B: Resistance Tolerance
- T1(T5): Packaging form
  - T1: Taping (1,000pcs/reel)
  - T5: Taping (5,000pcs/reel)

Low Resistance Value Chip Resistor

YOKOHAMA DENSHI SEIKO Co.,Ltd.

RoHS compliance

< 0.01 OHM to 4.7 OHM >

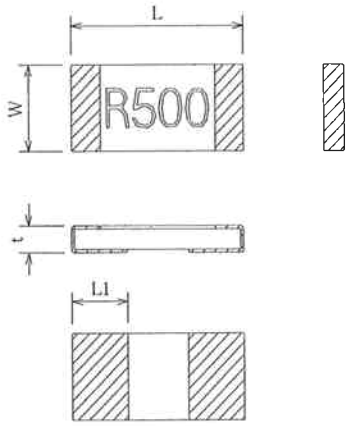
Standard size 1632(1206) , 2550(2010) , 3264(2412)

<Specification>

Type		RL1632	RL2550	RL3264
Size		3.2×1.6×0.5mm (1206)	5.0×2.5×0.5mm (2010)	6.4×3.2×0.5mm (2412)
Rated power		0.5W	0.75W	1.0W
Resistance Value Range		10mΩ～4.7Ω		
Resistance Value series		E-24	E-12	E-12
Resistance tolerance	±2% (G)	10～47mΩ		
	±1% (F)	27mΩ～4.7Ω		
	±0.5% (D)	500mΩ～4.7Ω		
TCR		10～15mΩ (0～+500ppm/℃) : T		
		18～27mΩ (0～+350ppm/℃) : T		
		33～47mΩ (0～+200ppm/℃) : S		
		56mΩ～4.7Ω (±100ppm/℃) : R		
Operating Temperature Range		-40°C～+125°C		
Rated ambient temperature		70℃		

Contact us if you do not find what you need (resistance value, tolerance etc.) in our standard series resistors.

<Dimensions>



Size	RL1632	RL2550	RL3264
L	3.2±0.2	5.0±0.2	6.4±0.2
W	1.6±0.2	2.5±0.2	3.2±0.2
L1	1.0±0.15	1.7±0.15	2.0±0.15
t	0.5±0.15	0.5±0.15	0.5±0.15

<Characteristics>

This film resistor on a ceramic base provides excellent heat dissipation with less tendency to create hot spots and offers safety by becoming completely open with overload.

The resistive material is an anti-corrosion metal alloy offering strong environmental protection and high reliability

Small reactance decreases the risk of causing impedance change or wave form distortion against rush loads or pulse loads.

The same electrode structure as regular chip resistors and offers size consistency which allows easy and reliable mounting on PC boards.

<Schematics>

<Part number>

RL 1632 R - R050 - F - T1(T5)

- RL: Device Type
- 1632: Size
- R: TCR
- R050: Resistance example 10mΩ:R010, 47mΩ:R047
- F: Resistance Tolerance
- T1(T5): Packaging form T1:Taping(1,000pcs/reel) T5:Taping(5,000pcs/reel)

Low Resistance Value Chip Resistor PRL

YOKOHAMA DENSHI SEIKO Co.,Ltd.

< Small & High Power >

RoHS compliance

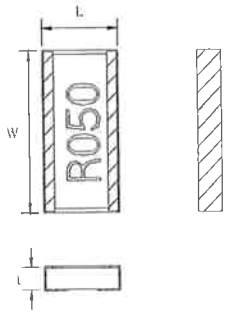
0816(0603) 330mW ,,, 1220(0805) 660mW ,,, 1632(1206) 1W ,,,3264(2412)2W,,,

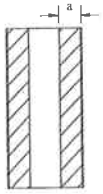
<Specification>

Type		PRL0816	PRL1220	PRL1632	PRL3264
Size		1.6×0.8×0.5mm (0603)	2.0×1.25×0.5mm (0805)	3.2×1.6×0.5mm (1206)	6.4×3.2×0.5mm (2412)
Rated power		330 mW	660 mW	1.0 W	2.0 W
Resistance Value Range		10 to 100mΩ	7 to 100mΩ	5 to 100mΩ	3 to 100mΩ
Resistance Value series		E-24 (10mΩ under : 1mΩ step)			
Resistance Tolerance	±5%	---	---	---	3 to 4mΩ
	±2%	---	7 to 9mΩ	5 to 9mΩ	5 to 9mΩ
	±1%	10 to 100mΩ	10 to 100mΩ	10 to 100mΩ	10 to 100mΩ
	±0.5%	47 to 100mΩ	47 to 100mΩ	47 to 100mΩ	47 to 100mΩ
TCR (ppm/°C)	0to350	---	7 to 9mΩ	5 to 9mΩ	3 to 9mΩ
	0to200	10 to 18mΩ	10 to 18mΩ	10 to 18mΩ	10 to 18mΩ
	±100	20 to 51mΩ	20 to 51mΩ	20 to 51mΩ	20 to 51mΩ
	±50	56 to 100mΩ	56 to 100mΩ	56 to 100mΩ	56 to 100mΩ
Rated ambient temperature		70°C			
Operating Temperature Range		-40°C to +125°C			

Contact us if you do not find what you need (resistance value, tolerance etc..) in our standard series resistors.

<Dimensions>





TYPE	PRL0816	PRL1220	PRL1632	PRL3264
W	1.6±0.2	2.0±0.2	3.2±0.2	6.4±0.2
L	0.8±0.2	1.25±0.2	1.6±0.2	3.2±0.2
a	0.2±0.1	0.35±0.15	0.45±0.15	0.8±0.15
t	0.4±0.1	0.5±0.1	0.5±0.1	0.5±0.1

(mm)

<Characteristics>

Exceptional heat dissipation - smaller size for the rated power (maximum 25% smaller than our own conventional products)

This film resistor on a ceramic base provides excellent heat dissipation with less tendency to create hot spots and offers safety by becoming completely open with overload.

Low thermal emf allows accurate measurement of the current.

Small reactance decreases the risk of causing impedance change or wave form distortion against rush loads or pulse loads.

<Schematics>

<Part number>

PRL 1632 - R050 - F - T1(T5)

Device Type	Size	Resistance	Resistance Tolerance	Packaging form
		example 10mΩ:R010 47mΩ:R047		T1:Taping(1,000pcs/reel) T5:Taping(5,000pcs/reel)

4 terminals High Precision Current Sensor

YOKOHAMA DENSHI SEIKO Co.,Ltd.

< 1m to 500mOHM , ±0.5% , ±50ppm/℃ >

RoHS compliance

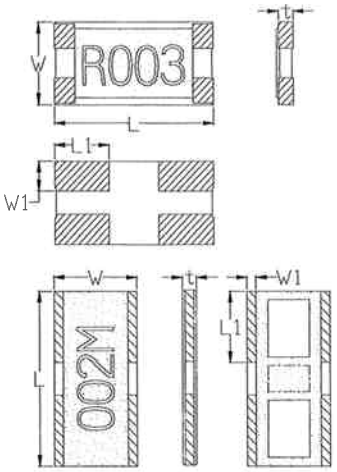
<Specification>

Type	RL1632L4	RL2550L4	RL3264L4	RL3264SW4
Size	3.2×1.6×0.5mm (1206)	5.0×2.5×0.5mm (2010)	6.4×3.2×0.5mm (2412)	3.2×6.4×0.5mm (1224)
Rated power	0.5W	0.75W	1.0W	2.0W
Resistance Value Range	10～500mΩ			1～10mΩ
Resistance tolerance	±0.5%(D) , ±1%(F)			
TCR (ppm/℃)	±50			±300 (1mΩ) ±200 (2～4mΩ) ±100 (5～10mΩ)
Operating Temperature Range	E-12 (50,500mΩ)			1,2,3,4,5,6,7,8,9,10mΩ
Rated ambient temperature	-40℃～+125℃			
Rated ambient temperature	70℃			

R100 R330 R003

Contact us if you do not find what you need (resistance value, tolerance etc..) in our standard series resistors.

<Dimensions>



<Characteristics>

Separating voltage terminals from current terminals makes it possible to measure current precisely.

The error caused by the process of mounting, mounting position, and traces of voltage terminal circuit, especially when detecting resistance is low, are eliminated.

Our proprietary technology allows to control TCR of current sensing resistors (output voltage) and to offer excellent TCR even for very low resistance ranges.

The resistive material is an anti-corrosion metal alloy offering strong environmental protection and high reliability.

Type	RL1632L4	RL2550L4	RL3264L4	RL3264SW4
L	3.2±0.2	5.0±0.2	6.4±0.2	6.4±0.2
W	1.6±0.2	2.5±0.2	3.2±0.2	3.2±0.2
L1	0.5±0.2	1.7±0.2	2.1±0.2	2.7±0.2
W1	0.55±0.2	0.9±0.2	1.2±0.2	0.4±0.2
t	0.5±0.15	0.5±0.15	0.5±0.15	0.5±0.2

(mm)

<Schematics>

V = sensing terminal (voltage)
I = current terminal

<Part number>

RL 1632 L4 - R050 - F - T1(T5)

- RL: Device Type
- 1632: Size
- L4: terminal
- R050: Resistance example 10mΩ:R010 47mΩ:R047
- F: Resistance Tolerance
- T1(T5): Packaging form T1:Taping(1,000pcs/reel) T5:Taping(5,000pcs/reel)

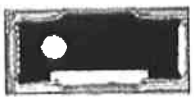
Pair Chip Resistor

Excellent Tracking poformance

YOKOHAMA DENSHI SEIKO Co., Ltd.

RoHS compliance

Guaranteed matching performance: 0.1% absolute resistance, 5ppm/℃ TCR. Small

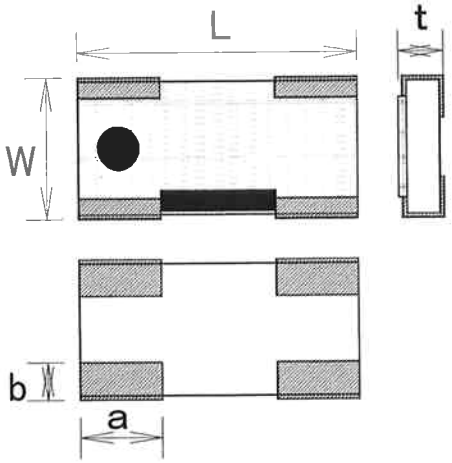


＜Specification＞

Type	RN0816	RN1220	RN1632
Size	1.6 x 0.8 x 0.4mm (0603)	2.0×1.25×0.4mm (0805)	3.2×1.6×0.4mm (1206)
Rated power	32W/ element	50W/ element	64W/ element
Resistance Value Range	50Ω～15KΩ	50Ω～100KΩ	50Ω～200KΩ
Resistance tolerance	±0.5%(D) ， ±0.1%(B)		
Tracking Resistance Tolerance	±0.2%(C) ， ±0.1%(B)		
TCR	±25ppm/℃		
Tracking TCR	±10ppm/℃(N) ， ±5ppm/℃(V)		
Operating Temperature Range	-55～+125℃		
Rated ambient temperature	+70℃		

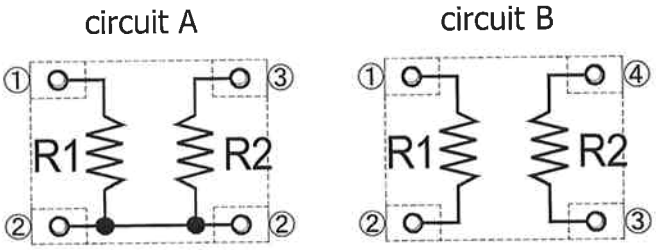
Contact us if you do not find what you need (resistance value, tolerance etc.) in our standard series resistors. Matching resistance +/-0.05% possible.

＜Dimensions＞



Type	RN0816	RN1220	RN1632
L	1.6±0.1	2.0±0.1	3.2±0.2
W	0.8±0.1	1.25±0.1	1.6±0.2
a	0.4±0.15	0.6±0.2	1.0±0.2
b	0.2±0.15	0.35±0.2	0.4±0.2
t	0.4±0.1	0.4±0.1	0.4±0.1 (mm)

＜Schematics＞



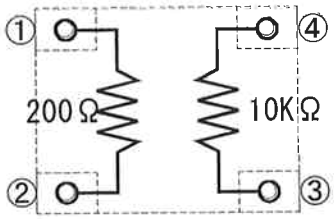
＜Characteristics＞

Two thin film paired resistors are formed on the same ceramic substrate at the same time and exhibits extraordinarily matching characteristics.

In addition to initial resistance value and TCR, excellent matching is maintained with environmental fluctuations and aging, offering a very long term matching performance.

Thin film design offers low noise and high reliability. Wrap-around terminals offer easy and reliable mounting on PC boards.

Example



Ratio : 50
Tracking Tolerance : 0.1% guaranteed
Tracking TCR : 5ppm/C guaranteed
not change tracking very long term

＜Part number＞

RN 0816 - A - 10K/20K - B - V B - T1(T5)

- RN: Device Type
- 0816: Size
- A: Circuit
- 10K/20K: Resistance (R1/R2)
- B: Resistance Tolerance
- V: Tracking TCR
- B: Tracking Tolerance
- T1(T5): Packaging form
  - T1 : Taping(1,000pcs/reel)
  - T5 : Taping(5,000pcs/reel)

Network Chip Resistor *Excellent Tracking performance*

YOKOHAMA DENSHI SEIKO Co.,Ltd.

Guaranteed matching performance: 0.1% absolute resistance, 5ppm/CTCR offering good performance for complicated circuit.

RoHS compliance

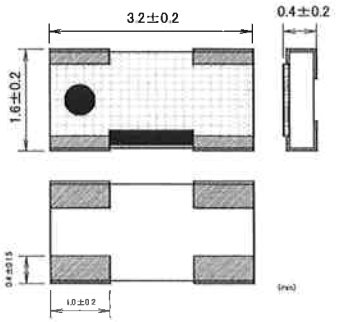
＜Specification＞

Type	RN1632		RN1632W			
Size	3.2×1.6×0.4mm (1206)		3.2×1.6×0.4mm (1206)			
Circuit	C	D	A	B	C	F
Number of terminal	4	4	6	6	6	6
Number of resistor	3	3	5	3	5	custom
Rated Power	42mW/ element	42mW/ element	25mW/element	42mW/element	25mW/element	custom
Resistance Range	50Ω～110KΩ	50Ω～110KΩ	150Ω～33KΩ	50Ω～110KΩ	150Ω～33KΩ	custom
Resistance Tolerance	±0.5%(D) , ±0.1% (B)		±0.5%(D) , ±0.1% (B)			
Tracking Resistance Tolerance	±0.2%(C) , ±0.1% (B)		±0.2%(C) , ±0.1% (B)			
TCR	±25ppm/℃		±25ppm/℃			
Tracking TCR	±10ppm/℃ (N) , ±5ppm/℃ (V)		±10ppm/℃ (N) , ±5ppm/℃ (V)			
Operating Temperature Range	-55～+125℃		-55～+125℃			
Rated ambient temperature	+70℃		+70℃			

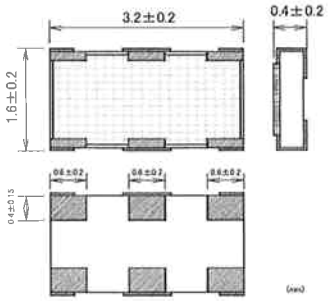
Contact us if you do not find what you need (resistance value, different circuits etc.) in our standard series resistors. Matching resistance +/-0.05% possible

＜Dimensions＞

RN1632



RN1632W



＜Characteristics＞

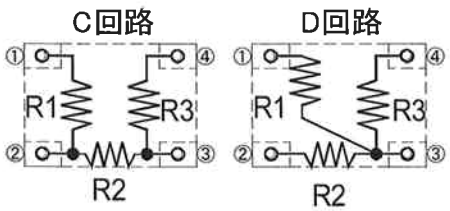
All thin film resistors are formed on the same ceramic substrate at the same time and demonstrates extraordinarily matching characteristics.

In addition to initial resistance value and TCR, excellent matching is maintained with environmental fluctuations and aging, offering a very long-term matching performance.

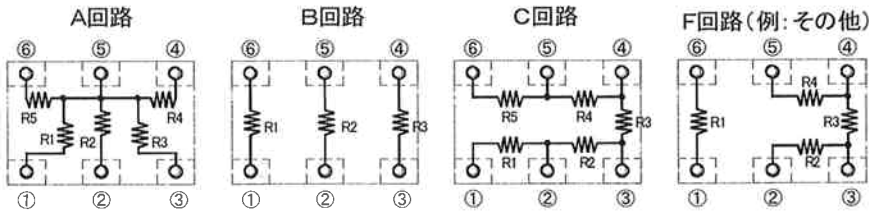
Thin film design offers low noise and high reliability. Wrap around terminals offer easy and reliable mounting on PC boards.

＜Schematics＞

RN1632



RN1632W



＜Part number＞

RN1632W A - 10K - B - V B T1(T5)

- Type: RN1632W
- Ciucuit: A
- Resistance: 10K (Resistance or Part No.)
- Resistance Tolerance: B
- Tracking TCR: V
- Tracking Tolerance: B
- Pakaging: T1(T5)
  - T1 : Taping (1,000pcs/reel)
  - T5 : Taping (5,000pcs/reel)

Network Chip Resistor *Excellent Tracking performance*

YOKOHAMA DENSHI SEIKO Co.,Ltd.

RoHS compliance

< Custom >

Fit for various applications. Guaranteed matching performance: 0.1% absolute resistance, 5ppm/C TCR offering a good performance for complicated circuits.

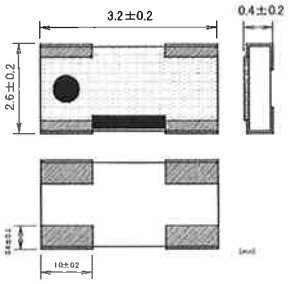
<Specification>

Type	RN2632				RN4556			
Size	3.2×2.6×0.4mm (1210)				5.6×4.5×0.4mm (1206)			
Circuit	A	B	C	D	A	B	C	F
Number of terminal	3	4	4	4	8	8	8	8
Number of resistor	2	2	3	3	6	4	7	custom
Rated Power	250mW/package				500mW/package			
Resistance Range	50Ω～ Total Resistance max1MΩ/package				50Ω～ Total Resistance max2MΩ/package			
Resistance Tolerance	±0.5%(D) , ±0.1%(B)				±0.5%(D) , ±0.1%(B)			
Tracking Resistance Tolerance	±0.2%(C) , ±0.1%(B)				±0.2%(C) , ±0.1%(B)			
TCR	±25ppm/℃				±25ppm/℃			
Tracking TCR	±10ppm/℃(N) , ±5ppm/℃(V)				±10ppm/℃(N) , ±5ppm/℃(V)			
Operating Temperature Range	-55～+125℃				-55～+125℃			
Rated ambient temperature	+70℃				+70℃			

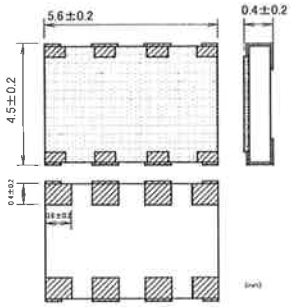
Contact us if you do not find what you need (resistance value, different circuits etc.) in our standard series resistors. Matching resistance +/-0.05% possible

<Dimensions>

RN2632

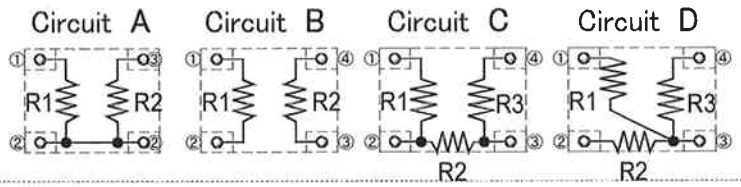


RN4556

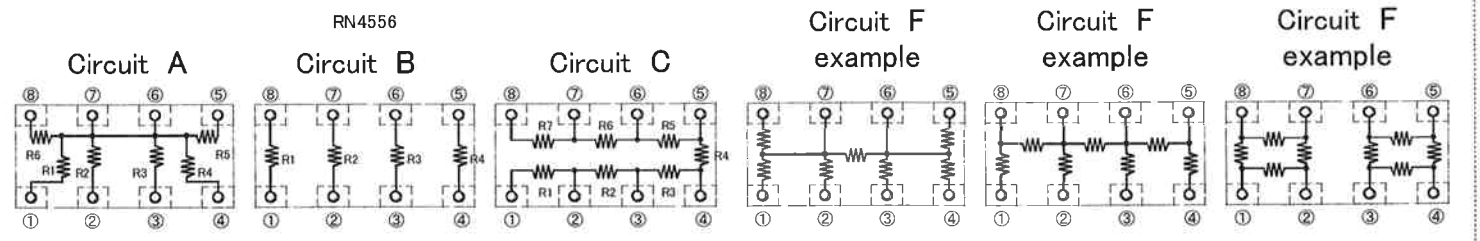


<Schematics>

RN2632



RN4556



<Characteristics>

Offering a slightly larger network package for higher power requirements, combinations of higher resistance values, and packaging complicated network circuits.

All thin film resistors are formed on the same ceramic substrate at the same time and demonstrates extraordinarily matching characteristics (initial characteristics and long term characteristics)

Thin film design offers low noise and high reliability. Wrap around terminals offer easy and reliable mounting on PC boards.

<Part number>

RN2632 A - 10K - B - V B T1(T5)

- RN2632 A: Type
- A: Ciucuit
- 10K: Resistance (Resistance or Part No.)
- B: Resistance Tolerance
- V: Tracking TCR
- B: Tracking Tolerance
- T1(T5): Pakaging
  - T1 : Taping(1,000pcs/reel)
  - T5 : Taping(5,000pcs/reel)

Network Chip Resistor *Excellent Tracking performance*

YDS
YAMA DENSHI SEIKO Co., Ltd.

RoHS compliance

< RA series >

High density multi-resistive element network with gold-plated embossed terminal offering a high precision, high reliability network.

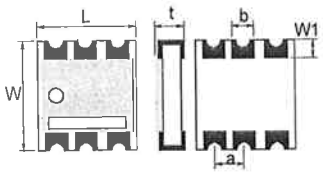
<Specification>

type	RA1632	RA2020	RA2525	RA4556
Size	3.2×1.6×0.5mm (1206)	2.0×2.0×0.4mm (0808)	2.5×2.5×0.4mm (1010)	5.6×4.5×0.8mm (2218)
Number of terminal	8	6	6	8
Number of resistor	4	3	3	4
Resistance Range	50～100 k Ω	100～120 k Ω	100～180 k Ω	50～500kΩ
Rated Power	30mW/element	42mW/element		50mW/element
Resistance Tolerance	±0.1% (B) 、 ±0.5% (D)			
Tracking Resistance Tolerance	±0.1%(B) , ±0.2% (C)			
TCR	±25ppm/°C			
Tracking TCR	±5ppm/°C (V) , ±10ppm/°C (N)			
Operating Temperature Range	-55°C～+125°C			
Rated ambient temperature	+70°C			

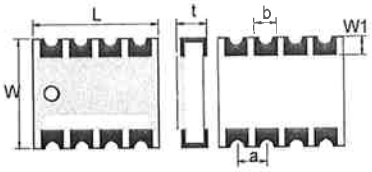
Combination of different resistance values or different circuitry possible. Resistance matching +/-0.05% possible. Please contact us.

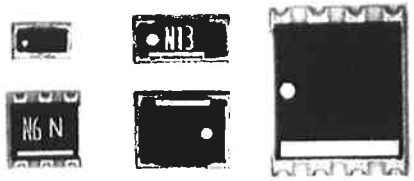
<Dimensions>

RA2020 , RA2525



RA1632 , RA4556



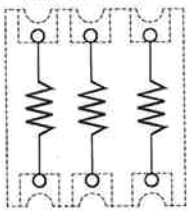


Type	RA2020	RA2525	RA4556	RA1632
L	2.0±0.2	2.54±0.2	5.6±0.2	3.2±0.1
W	2.0±0.2	2.54±0.2	4.5±0.2	1.6±0.1
t	0.4±0.1	0.4±0.1	0.5±0.2	0.5±0.2
b	0.36±0.1	0.43+0.1/−0.05	1.1±0.1	0.6±0.1
a	0.72±0.1	0.86±0.1	1.4±0.1	0.8±0.1
W1	0.4±0.25	0.5±0.25	1.0±0.2	0.4±0.2

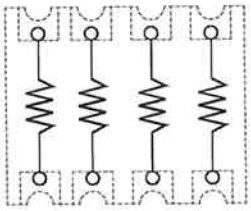
(mm)

<Schematics>

RA2020 , RA2525



RA1632 , RA4556



<Characteristics>

All thin film resistors are formed on the same ceramic substrate at the same time and demonstrate extraordinary matching characteristics: not only initial resistance value and TCR matching but excellent matching maintained with environmental fluctuations and aging offering very long-term matching performance.

Proprietary technology forms highly reliable Cu-Ni-Au (surface) terminals that are free of metal thickness variation often observed with some methods such as barrel plating.

Surface gold is very thin and does not lead to serious issues caused by melting gold changing solder composition. It is more reliable and can be stored longer than tin finished products offering less post-soldering terminal problems.

This film design offers low noise and high reliability.

<Part number>

RA 1632 - 10K - B - V B - T1(T5)

- RA: Device Type
- 1632: Size
- 10K: Resistance
- B: Resistance Tolerance
- V: Tracking TCR
- B: Tracking Resistance
- T1(T5): Packaging form
  - T1: Taping(1,000pcs/reel)
  - T5: Taping(5,000pcs/reel)

Preferred Value E series

Series	Significant Figures
E−6	1.0 1.5 2.2 3.3 4.7 6.8
E−12	1.0 1.2 1.5 1.8 2.2 2.7 3.3 3.9 4.7 5.6 6.8 8.2
E−24	1.0 1.1 1.2 1.3 1.5 1.6 1.8 2.0 2.2 2.4 2.7 3.0 3.3 3.6 3.9 4.3 4.7
	5.1 5.6 6.2 6.8 7.5 8.2 9.1
E−96	1.00 1.02 1.05 1.07 1.10 1.13 1.15 1.18 1.21 1.24 1.27 1.30 1.33 1.37 1.40
	1.43 1.47 1.50 1.54 1.58 1.62 1.65 1.69 1.74 1.78 1.82 1.87 1.91 1.96 2.00
	2.05 2.10 2.15 2.21 2.26 2.32 2.37 2.43 2.49 2.55 2.61 2.67 2.74 2.80 2.87
	2.94 3.01 3.09 3.16 3.24 3.32 3.40 3.48 3.57 3.65 3.74 3.83 3.92 4.02 4.12
	4.22 4.32 4.42 4.53 4.64 4.75 4.87 4.99 5.11 5.23 5.36 5.49 5.62 5.76 5.90
	6.04 6.19 6.34 6.49 6.65 6.81 6.98 7.15 7.32 7.50 7.68 7.87 8.06 8.25 8.45
	8.66 8.87 9.09 9.31 9.53 9.76

Disclaimer

The contents of this catalogue are subject to change without prior notification.

The components listed in this catalogue are for general electronics use. If you intend to use our components in environments or applications that require special reliability such as atomic power application, aerospace machinery, and medical equipment, please contact us prior to use.

This catalogue is current as of January, 2006.

http://www.yds.co.jp