

# RP series, RPH series, high-power metal film chip resistors



Resistors with high power in small size are realized as 1/3W for 2.0×1.25mm(0805) size, 1/5W for 1.6×0.8mm(0603) size and 1/6W for 1.0×0.5mm(0402) size. A tight resistance tolerance at ±1% is achieved.

**NEW** RPH1608 resistors with more high power are realized as 1/4W for 1.6×0.8mm(0603) size.

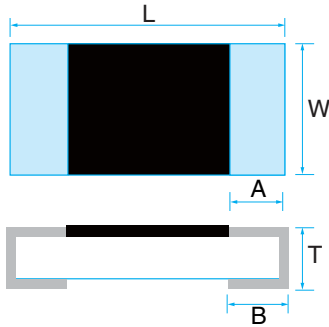
RoHS compliant

Completely lead free



## SPECIFICATIONS

### Mechanical



Dimension (Inch Size)	RP1005 (0402)		RP1608 (0603) RPH1608	RP2012 (0805)
	Single side structure	Double sides structure $R \leq 0.16\Omega$		
L	1.0±0.05		1.6±0.20	2.0±0.2
W	0.5±0.05		0.8±0.10	1.25±0.2
A	0.15±0.10		0.2±0.15	0.4±0.2
B	0.25±0.10	0.15±0.10	0.25±0.20	0.4±0.2
T	0.35±0.10	0.35±0.15/-0.10	0.45±0.10	0.4±0.1

(unit : mm)

### Electrical

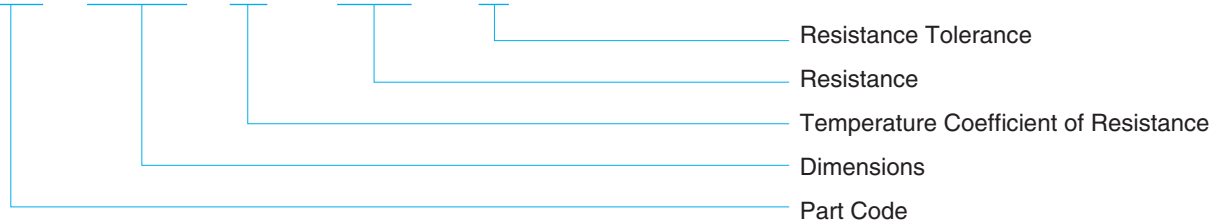
Type	RP1005	RP1608	RPH1608 <b>NEW</b>	RP2012	
Power	1/6W	1/5W	1/4W	1/3W	
Tolerance %(code)	±1 (F), ±2 (G), ±5 (J)	±1 (F), ±2 (G), ±5 (J)	±1 (F), ±2 (G), ±5 (J)	±1 (F), ±2 (G), ±5 (J)	
Resistance Range (Ω)	0.1~47	0.1~68	0.01~0.082	0.1~10	11~100
TCR ppm /°C(code)	0 ~+200 (S)	0 ~+200 (S)	0 ~+350 (T)	0 ~+350 (T)	0 ~+200 (S)
Resistance Value	E-24	E-24	E-12	E-24	
Max Operating Voltage for an element	$\sqrt{P \cdot R}$	$\sqrt{P \cdot R}$		$\sqrt{P \cdot R}$	
Operating Temp. Rating	-40~125°C	-40~125°C		-40~125°C	
Package	10,000pcs/reel	5,000pcs/reel	5,000pcs/reel	5,000pcs/reel	

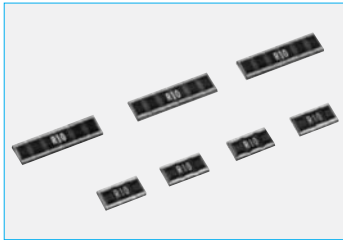
- Please contact us for specific resistance to surge voltage.
- Please contact us for 0.1Ω or lower(TCR 0 - +350ppm/°C) resistance value in RP1005,RP1608,RP2012.



## PART NUMBER

**RP 1608 S - 102 - F**





## RL series, PRL series <sup>NEW</sup> low resistance value chip resistors with long-side electrodes for high-precision current detection.



Excellent performance in resistance tolerance, noise, long term stability and heat dissipation. Our unique structure enables further miniaturization. This low resistance value chip resistor is useful in many current sensing applications. We offer 1/2, 1, 2 watt power handling thin film resistors.

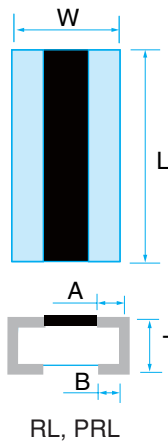
<sup>NEW</sup> PRL1632 are realized as 1W for 3.2×1.6mm(1206)

Very low resistance and low ELS, supplying ripple free signals.

RoHS compliant

### SPECIFICATIONS

#### Mechanical



Dimension (Inch Size)	RL3720 (1508)	RL3720W (1508)	RL7520W (3008)
L	3.75±0.30	3.75±0.30	7.50±0.30
W	2.00±0.20	2.00±0.20	2.00±0.20
A	0.40±0.20	0.40±0.20	0.40±0.20
B	0.40±0.20	0.40±0.20	0.40±0.20
T	0.40±0.10	0.45+0.15/-0.10	0.45+0.15/-0.10

(unit : mm)

Dimension (Inch Size)	PRL0816 (0603)	PRL1220 (0805)	PRL1632 (1206)	PRL3264 (2512)
L	1.6±0.2	2.0±0.2	3.2±0.2	6.4±0.2
W	0.8±0.2	1.25±0.2	1.6±0.2	3.2±0.2
B	0.2±0.1	0.35±0.15	0.45±0.15	0.9±0.15
T	0.4±0.1	0.5±0.1	0.5±0.1	0.5±0.1

(unit : mm)

#### Electrical

Type	RL3720			RL3720W						RL7520W		
Power	1/2W			1W						2W		
Tolerance %(code)	±1%(F) ±2%(G)			<sup>NEW</sup> ±1%(F) ±2%(G)						±1%(F) ±2%(G)		
Resistance Range (Ω)	0.01~0.018	0.022~0.068	0.1~2.2	0.001~0.004	0.005~0.009	0.010~0.091	0.1~1.0	0.001~0.004	0.005~0.009	0.010~0.091	0.1~0.47	
TCR ppm /°C(code)	0~350(T)	0~200(S) 0~350(T)	0~100(R)	0~350(T)	0~200(S) 0~350(T)	0~50(Q) 0~100(R) 0~200(S)	0~200(S)	0~200(S) 0~420(T)	0~100(R) 0~350(T)	0~50(Q) 0~100(R) 0~200(S)		
Resistance Value	E-6			E-24						E-24		
Package	4000pcs/reel											

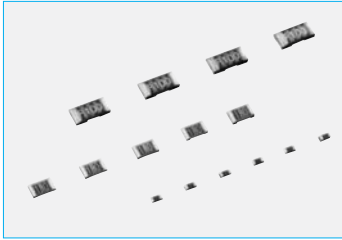
Type	PRL0816		PRL1220			PRL1632		PRL3264			
Power	1/3W		2/3W			1W		2W			
Tolerance %(code)	±1%(F)	±0.5%(D) ±1%(F)	±2%(G)	±1%(F) ±2%(G)	±0.5%(D) ±1%(F)±2%(G)	±1%(F) ±2%(G)	±0.5%(D) ±1%(F)±2%(G)	±5%(J)	±2%(G)	±1%(F) ±2%(G)	±0.5%(D) ±1%(F)±2%(G)
Resistance Range (Ω)	10m~39m,25m	43m~100m,50m	7m~9m	10m~43m	47m~100m	5m~9m	10m~100m,25m	3m~4m	5m~9m	10m~43m,25m	47m~100m,50m
TCR ppm /°C(code)	15mΩ ≥ : 0~350ppm/°C 18m~27mΩ : 0~200ppm/°C 33m~68mΩ : ±100ppm/°C 75m~100mΩ : ±50ppm/°C		7m~9mΩ : 0~350ppm/°C 10m~18mΩ : 0~200ppm/°C 20m~51mΩ : ±100ppm/°C 56m~100mΩ : ±50ppm/°C					9mΩ ≥ : 0~350ppm/°C 10m~18mΩ : 0~200ppm/°C 20m~51mΩ : ±100ppm/°C 56m~100mΩ : ±50ppm/°C			
Resistance Value	E-24										
Package	1,000pcs/reel(T1) 5,000pcs/reel(T5)										

· PRL series with resistance value more than 100m ohm are also available.

### PART NUMBER

**RL 3720W T - R10 - F - (T1)** — Taping Quantity Unit:PRL:T1(1000pcs) T5(5000pcs)

Resistance Tolerance  
Resistance Value:RLseries:3 digits, PRL series :4 digits  
Temperature Coefficient of Resistace:To be added as for RLseries  
Dimensions  
Part Code



## RL series, low resistance value chip resistors with short-side electrodes for high-precision current detection.



These thin film low resistance value chip resistors are offered in international standard sizes. They exhibit excellent performance in resistance, noise performance, surface heat distribution and a lower surface temperature. Useful in many current sensing applications. Available in 1/10, 1/8, 1/4, 1/2 and 1 watt package.

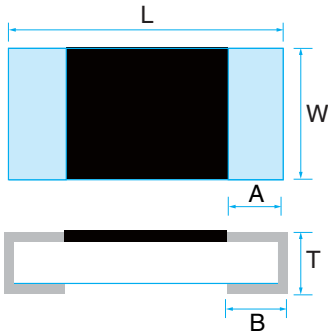
NEW Smallest in the market 0201 low resistance value chip resistor.

RoHS compliant



### SPECIFICATIONS

#### Mechanical



Dimension(Inch Size)	RL0603 (0201)	RL0510 (0402)		RL0816 (0603)	
		Single side structure	Double sides structure R $\leq$ 0.20 $\Omega$	Single side structure	Double sides structure R $\leq$ 0.082 $\Omega$
L	0.60 $\pm$ 0.05	1.00 $\pm$ 0.05		1.60 $\pm$ 0.10	
W	0.30 $\pm$ 0.03	0.50 $\pm$ 0.05		0.80 $\pm$ 0.10	
A	0.12 $\pm$ 0.05	0.15 $\pm$ 0.10		0.20 $\pm$ 0.15	
B	0.15 $\pm$ 0.05	0.25 $\pm$ 0.10	0.15 $\pm$ 0.10	0.25 $\pm$ 0.20	0.20 $\pm$ 0.15
T	0.28+0.03/-0.05	0.35 $\pm$ 0.10	0.35+0.15/-0.10	0.45 $\pm$ 0.10	0.45+0.15/-0.10

(unit : mm)

Dimension(Inch Size)	RL1220 (0805)		RL1632 (1206)	RL3264 (2512)
	Single side structure	Double sides structure R $\leq$ 0.082 $\Omega$		
L	2.00 $\pm$ 0.20		3.20 $\pm$ 0.20	6.40 $\pm$ 0.20
W	1.25 $\pm$ 0.20		1.60 $\pm$ 0.20	3.20 $\pm$ 0.20
A	0.40 $\pm$ 0.20		—	—
B	0.40 $\pm$ 0.20		1.00 $\pm$ 0.15	2.00 $\pm$ 0.15
T	0.40 $\pm$ 0.10	0.40+0.15/-0.10	0.50 $\pm$ 0.15	0.50 $\pm$ 0.15

(unit : mm)

#### Electrical

Type	RL0603	RL0510	RL0816		RL1220		
Power	1/10W	1/8W	1/8W		1/4W		
Tolerance %(code)	$\pm$ 2%(G) $\pm$ 5%(J)	$\pm$ 1%(F) $\pm$ 2%(G)	$\pm$ 1%(F) $\pm$ 2%(G)	$\pm$ 1%(F)	$\pm$ 1%(F) $\pm$ 2%(G)		
Resistance Range( $\Omega$ )	0.1~4.7	0.05~4.7	0.02~0.091	0.1~6.8	0.01~0.039	0.043~0.091	0.1~10
TCR ppm / $^{\circ}$ C(code)	0~200(S)		0~200(S)	0~100(R) 0~200(S)	0~350(T)	0~200(S) 0~350(T)	0~100(R) 0~200(S)
Resistance Value	E-24						
Package	10,000pcs/reel			5,000pcs/reel			

· Please contact us for tolerance  $\pm$ 1% in RL0603.

· Please contact us for tolerance  $\pm$ 0.5% for 0.1 $\Omega$  or more in RL0816, as well as  $\pm$ 0.5% for 0.047 $\Omega$  or more in RL1220.

Type	RL1632						RL3264				
Power	1/2W						1W				
Tolerance %(code)	$\pm$ 2%(G)		$\pm$ 1%(F) $\pm$ 2%(G)		$\pm$ 0.5%(D) $\pm$ 1.0%(F)		$\pm$ 2%(G)		$\pm$ 1%(F) $\pm$ 2%(G)		
Resistance Range( $\Omega$ )	0.01~0.016	0.018~0.024	0.027~0.03	0.033~0.051	0.056~0.47	0.51~4.7	0.01~0.015	0.018~0.022	0.027	0.033~0.047	0.056~0.47
TCR ppm / $^{\circ}$ C(code)	0~+500 (T)	0~+350 (T)	0~+200 (S)	$\pm$ 100 (R)			0~+500 (T)	0~+350 (T)	0~+200 (S)	$\pm$ 100 (R)	
Resistance Value	E-24, 0.05 $\Omega$						E-12				
Package	5,000pcs/reel						5,000pcs/reel				



### PART NUMBER

**RL 1220 S - 1R0 - F**

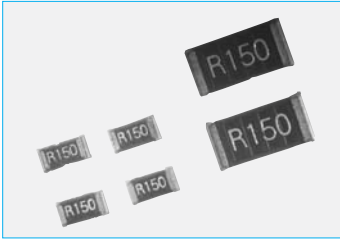
Resistance Tolerance

Resistance  
(1R0=1.0 $\Omega$ , R0\*\*=less than 0.091 $\Omega$ )  
RL1632 series and RL3264 series :  
4 digits

Temperature Coefficient of Resistance

Dimensions

Part Code



Fixed metal foil

## Foil type RL series, low resistance value chip resistors for high-precision current detection.



Operations temperature, -55~170°C high stability.  
Tight resistance tolerance of  $\pm 1\%$ , and TCR of  $\pm 50$ ppm.

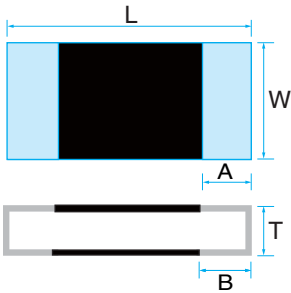
RoHS compliant

Completely lead free



### SPECIFICATIONS

#### Mechanical



Dimension (Inch Size)	RL1632H (1206)	RL-3264-6 (2512)	RL-3264-6C (2512)	RL-3264-9V (2512)
L	3.20 $\pm$ 0.33(1-4m $\Omega$ ) 3.20 $\pm$ 0.20(5-150m $\Omega$ )	6.35 $\pm$ 0.25	6.35 $\pm$ 0.25	6.35 $\pm$ 0.25
W	1.60 $\pm$ 0.33(1-4m $\Omega$ ) 1.60 $\pm$ 0.20(5-150m $\Omega$ )	3.20 $\pm$ 0.20	3.20 $\pm$ 0.20	3.18 $\pm$ 0.25
A	—	2.50 $\pm$ 0.15(1m $\Omega$ ) 1.90 $\pm$ 0.15(2m $\Omega$ )	1.00 $\pm$ 0.25( $\geq$ 6m $\Omega$ )	2.21 $\pm$ 0.25(1-4m $\Omega$ ) 1.19 $\pm$ 0.25(5-6m $\Omega$ ) 0.76 $\pm$ 0.25(7-11m $\Omega$ )
B	1.25 $\pm$ 0.20(1m $\Omega$ ) 0.50 $\pm$ 0.20(2-4m $\Omega$ ) 0.50 $\pm$ 0.15(5-150m $\Omega$ )	—	—	—
T	0.65 $\pm$ 0.15(1-2m $\Omega$ ) 0.50 $\pm$ 0.15(3-4m $\Omega$ ) 0.80 $\pm$ 0.15(5-150m $\Omega$ )	0.70 $\pm$ 0.15(1m $\Omega$ ) 0.65 $\pm$ 0.15(2m $\Omega$ )	1.05 $\pm$ 0.15(3-5m $\Omega$ ) 0.80 $\pm$ 0.15( $\geq$ 6m $\Omega$ )	1.30 $\pm$ 0.25(1m $\Omega$ ) 1.20 $\pm$ 0.25(2-4m $\Omega$ ) 1.00 $\pm$ 0.25(5-11m $\Omega$ )

(unit : mm)

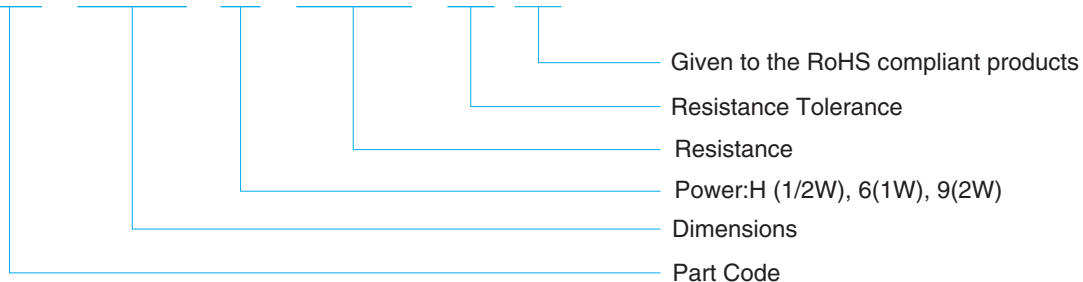
#### Electrical

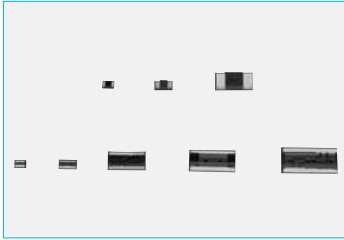
Type	RL1632H					RL-3264-6		RL-3264-6C		RL-3264-9V		
Power	1/2W					1W		1W		2W		
Tolerance %(code)	$\pm 5\%$ (J)	$\pm 2\%$ (G) $\pm 5\%$ (J)	$\pm 1\%$ (F) $\pm 5\%$ (J)			$\pm 2\%$ (G) $\pm 5\%$ (J)		$\pm 1\%$ (F) $\pm 5\%$ (J)		$\pm 1\%$ (F) $\pm 5\%$ (J)		
Resistance Range(m $\Omega$ )	1	2	3~4	5~10	11~150	1	2	3~10	11~100	1~2	3~4	5~11
TCR ppm /°C	$\pm 275$		$\pm 150$	$\pm 100$	$\pm 50$	$\pm 200$	$\pm 100$	$\pm 50$		$\pm 275$	$\pm 150$	$\pm 50$
Resistance Value	1m $\Omega$ step				E-24	1m $\Omega$ step		E-24		1m $\Omega$ step		
Package	2,000pcs/reel					2,000pcs/reel				2,000pcs/reel		
Operating Temp. Range	-55~170°C					-55~170°C				-55~170°C		



### PART NUMBER

## RL 3264 - 6 - R002 - F N





# Precision current sensing low resistance chip resistors Metal foil, long-side terminal/ short-side terminal, face down. KRL series



Two types are available: for high temperature application (up to 170°C) and for low thermal emf application. Excellent TCRs: +/-150ppm/°C for 1mΩ, +/-100ppm/°C for 2mΩ, +/-50ppm/°C for 3mΩ. Face down mounting offers accurate sensing. Depending on customers' applications, we offer long-side terminal type and short-side terminal type ranging from 1/3W to 5W power rating. Protective coating used is halogen free showing our commitment to environment.

RoHS compliant

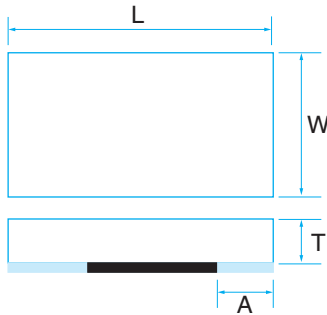
Completely lead free



## SPECIFICATIONS

### Short-side terminal

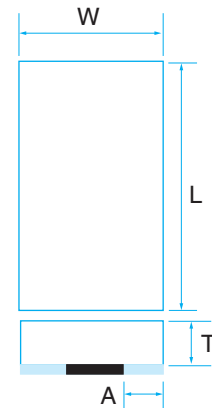
#### Mechanical



Dimensions (mm)	KRL1220	KRL1632	KRL3264
L	2.0±0.20	3.2±0.20	6.3±0.20
W	1.25±0.20	1.6±0.20	3.1±0.20
T	0.5±0.20	0.5±0.20	0.5±0.20
A (5.0~7.0mΩ)	0.4±0.20	1.10±0.20	1.90±0.20
A (8.0mΩ~)		0.4±0.20	1.0±0.20

### Long-side terminal

#### Mechanical



Dimensions (mm)	KRL2012	KRL3216	KRL6432	KRL7638	KRL9045	KRL11050
L	2.0±0.20	3.2±0.20	6.3±0.20	7.6±0.20	8.9±0.20	11.0±0.20
W	1.25±0.20	1.6±0.20	3.1±0.20	3.8±0.20	4.5±0.20	5.0±0.20
T	0.5±0.20	0.5±0.20	0.5±0.20	0.5±0.20	0.5±0.20	0.5±0.20
A (1mΩ)	0.55±0.20	0.60±0.20	1.20±0.20	1.35±0.20	1.60±0.20	1.80±0.20
A (2mΩ)	0.40±0.20	0.40±0.20	0.50±0.20	0.60±0.20	0.70±0.20	0.80±0.20
A (3mΩ~)	0.30±0.20	0.30±0.20				

#### Electrical

Type	KRL1220	KRL1632	KRL3264
Power	0.3W	0.5W	1.0W
Resistance Range(Ω)	10m~100m	5m~100m	
Tolerance % (code)	5~9m : ±2.0 (G) 10m~ : ±1.0 (F)		
TCR ppm /°C	5~9m : ±100 10m~ : ±50		
Operating Temp. Range	C : -55~170°C M : -55~155°C		

· Contact our sales office for wrap around terminal ERL series.

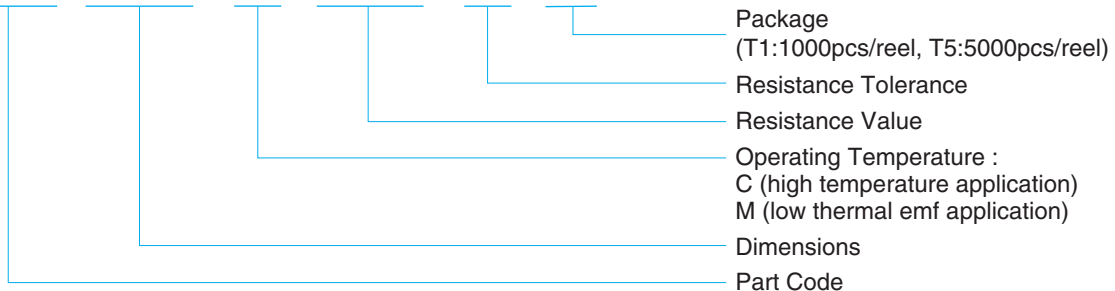
#### Electrical

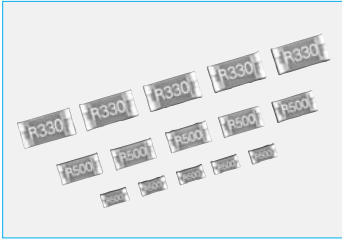
Type	KRL2012	KRL3216	KRL6432	KRL7638	KRL9045	KRL11050
Power	0.66W	1.0W	2.0W	3.0W	4.0W	5.0W
Resistance Range(Ω)	1m~50m		1m~100m			
Tolerance % (code)			1m : ±5.0 (J) 2m : ±2.0 (G) 3m~ : ±1.0 (F)			
TCR ppm /°C			1m : ±150 2m : ±100 3m~ : ±50			
Operating Temp. Range			C : -55~170°C M : -55~155°C			



## PART NUMBER

### KRL 6432 - C - R010 - F - T1





# High-precision current-detection elements

## RL-L series: four-terminal type



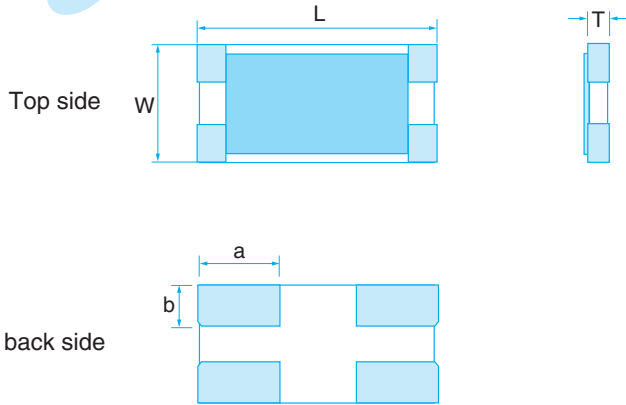
Newly released: A four-terminal structure with separate voltage- and current-terminals assures high-precision TCR of 50ppm/°C and 0.5% tolerance.

RoHS compliant



### SPECIFICATIONS

#### Mechanical



Dimension (Inch Size)	RL1632L4 (1206)	RL2550L4 (2010)	RL3264L4 (2512)
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
a	1.0±0.2	1.7±0.2	2.1±0.2
b	0.55±0.2	0.9±0.2	1.2±0.2
T	0.5±0.15	0.5±0.15	0.5±0.15

(unit : mm)

#### Equivalent circuit



V=Voltage Terminal  
I=Current Terminal

#### Electrical

Type	RL1632L4	RL2550L4	RL3264L4		
Power	1/2W	3/4W	1W		
Tolerance %(code)	±0.5%(D) ±1%(F)				
Resistance Range (Ω)	10~500m		3~5m	6~500m	
TCR ppm /°C(code)	±50ppm/°C		±100ppm/°C	±50ppm/°C	
Terminal Resistance (Ω)	10~47m	50~500m	3~8m	10~47m	50~500m
	5 M or less	20 M or less	1 M or less	5 M or less	20 M or less
Resistance Value (Ω)	E-12 series 50, 500m		E-12 series 3, 4, 5, 6, 7, 8, 50, 500m		
Package	1,000(T1)pcs/reel, 5,000(T5)pcs/reel				

· Contact us for even lower resistance values.



### PART NUMBER

**RL 1632 L4 - R033 - F - T1(T5)**

