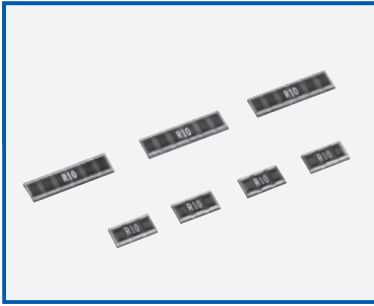


Low resistance chip resistors (long side terminal type)

■ This series includes (some of) former PRL/RL series



Features

- The distinctive structure that encourages heat dissipation and radiation limits the rise of the surface temperature, allows the realization of smaller sizes, and reduces influence of heat on surrounding components. Low ESL contributes to less noise. This product also withstands temperature cycles very well.

Applications

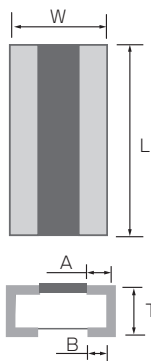
- PCs, power sources, inverters, automotive electronics, adaptors and industrial machining equipment.

Specifications

* All made to order.

Dimensions

unit : mm



Dimension (mm)	PRL0816 (0603)	PRL1220 (0805)	PRL1632 (1206)	PRL3264 (2512)	RL3720W (0815)	RL7520W (0830)
L	1.6±0.2	2.0±0.2	3.2±0.2	6.4±0.2	3.75±0.30	7.50±0.30
W	0.8±0.2	1.25±0.2	1.6±0.2	3.2±0.2	2.00±0.20	2.00±0.20
A	—	—	—	—	0.40±0.20	0.40±0.20
B	0.2±0.1	0.35±0.15	0.45±0.15	0.9±0.15	0.40±0.20	0.40±0.20
T	0.4±0.1	0.5±0.1	0.5±0.1	0.5±0.1	0.5±0.2	0.5±0.2

NOTE Obsolete: RL3720, RL3720W, RL7520W
Alternative P/N: PRL3720, PRL3720W, PRL7520W

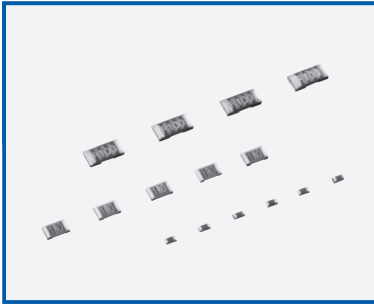
Electrical characteristics

Series name		PRL0816		PRL1220			PRL1632		PRL3264			
Power		1/3W		2/3W			1W		2W			
E series offered		E-24		E-24			E-24		E-24			
				1mΩstep (7m~10mΩ)			1mΩstep (5m~10mΩ)		1mΩstep (3m~10mΩ)			
Initial resistance value (Ω)		0.01 ~ 0.039	0.043 ~ 0.1	0.007 ~ 0.009	0.01 ~ 0.043	0.047 ~ 0.1	0.005 ~ 0.009	0.01~0.1	0.003 ~ 0.004	0.005 ~ 0.009	0.010 ~ 0.043	0.047~0.1
Resistance tolerance (%)	±0.5% (D)	—	○	—	—	○	—	○	—	—	—	○
	±1.0% (F)	○	○	—	○	○	○	○	—	—	○	○
	±2.0% (G)	—	—	○	○	○	○	○	—	○	○	○
	±5.0% (J)	—	—	—	—	—	—	—	○	—	—	—
Temperature coefficient of resistance (ppm/℃)		15mΩ or less 0~350ppm/℃		7m~9mΩ 0~350ppm/℃			9mΩ or less 0~350ppm/℃					
		18m~27mΩ 0~200ppm/℃		10m~18mΩ 0~200ppm/℃			10m~18mΩ 0~200ppm/℃					
		33m~68mΩ ±100ppm/℃		20m~51mΩ ±100ppm/℃			20m~51mΩ ±100ppm/℃					
		75m~100mΩ ±50ppm/℃		56m~100mΩ ±50ppm/℃			56m~100mΩ ±50ppm/℃					
Maximum voltage		$\sqrt{P \cdot R}$										
Operating temperature		-55℃ ~ 125℃										
Packaging	5,000pcs	○										

Series name	RL3720W				RL7520W			
power	1W				2W			
E series offered	E-24				E-24			
Initial resistance value (Ω)	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
Resistance tolerance (%)	±1.0% (F)	—	—	—	—	—	—	—
	±2.0% (G)	—	—	—	—	—	—	—
	±5.0% (J)	—	—	—	—	—	—	—
Temperature coefficient of resistance (ppm/°C)	0~+50 (Q)	—	—	—	—	—	—	—
	0~+100 (R)	—	—	—	—	—	—	—
	0~+200 (S)	—	—	—	—	—	—	—
	0~+350 (T)	—	—	—	—	—	—	—
	0~+420 (T)	—	—	—	—	—	—	—
	0~+800 (T)	—	—	—	—	—	—	—
Maximum voltage	$\sqrt{P \cdot R}$							
Operating temperature	-55°C ~ 125°C							
Packaging	4,000pcs							

Low resistance chip resistors (short side terminal)

■ This series includes (some of) former RP and RPH series



* 1 : Except for RL0510、RL1632、RL3264

Features

- The distinctive structure that encourages heat dissipation and radiation limits the rise of the surface temperature, allows the realization of smaller sizes, and reduces the influence of heat on surrounding components.

Applications

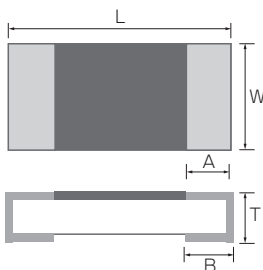
- PCs, power sources, mobile phones, automotive electronics, adaptor and industrial machining equipment.

Specifications

* All made to order.

Dimensions

unit : mm



Dimension (inch)	RL0510 (0402) (OLD:RP1005 included)		RL0816 (0603) (OLD:RP1608,RPH1608 included)		RL1220 (0805) (OLD:RP2012 included)		RL1632 (1206)	RL3264 (2512)
	R≤0.2Ω	R>0.2Ω	R≤0.082Ω	R>0.091Ω	R≤0.068Ω	R>0.075Ω		
L	1.00±0.05		1.60±0.20		2.00±0.20		3.2±0.20	6.4±0.20
W	0.50±0.05		0.80±0.20		1.25±0.20		1.6±0.20	3.2±0.20
A	0.15±0.10		0.20±0.15		0.40±0.20		—	—
B	0.25±0.10	0.15±0.10	0.25±0.20	0.20±0.15	0.40±0.20		1.00±0.15	2.00±0.15
T	0.35±0.15/-0.10	0.35±0.10	0.45±0.15/-0.10	0.45±0.10	0.5±0.20	0.4±0.10	0.5±0.15	0.5±0.15

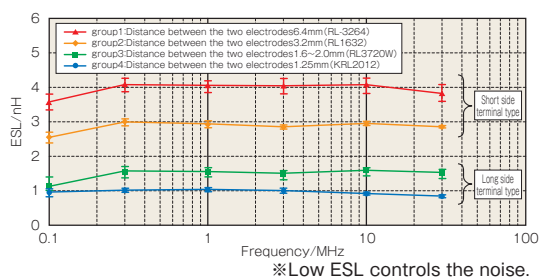
NOTE Obsolete: RP1005, RP1608, RPH1608, RP2012
Alternative P/N: RL0510, RL0816, RL1220

Electrical characteristics

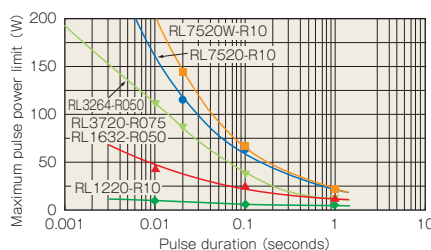
Series name	RL0510 (OLD : RP1005 included)			RL0816 (OLD:RP1608,RPH1608 included)			RL1220 (OLD:RP2012 included)			
Power	1/8W	1/6W (OLD : RP1005 included)		1/4W (OLD : RPH1608)	1/5W (OLD : RP1608)		1/4W		1/3W (OLD : RP2012)	
E series offered	E-24									
Resistance range (Ω)	R<0.05~0.1	0.1~4.7	5.1~47	R<0.01~0.1	0.1~6.8	7.5~68	0.01~0.039	0.043~0.091	0.1~10	11~100
Resistance tolerance (%)	±1.0 (F)	○	○	○	○	○	○	○	○	○
	±2.0 (G)	○	○	○	—	○	○	○	○	○
	±5.0 (J)	—	—	○	○	○	○	○	○	○
Temperature coefficient of resistance (ppm/°C)	0~+100(R)	—	—	—	○	—	—	—	○	—
	0~+200(S)	—	○	○	○	○	—	○	○	○
	0~+350(T)	○	—	—	○	—	○	○	—	—
Maximum voltage	$\sqrt{P \cdot R}$									
Operating temperature	-55~125°C									
Packaging	5,000pcs	—			○					
	10,000pcs	○			—					

Series name	RL1632						
Power	1/ 2W						
E series offered	E-24						
Resistance range (Ω)	0.01~0.016	0.018~0.024	0.027~0.03	0.033~0.051	0.056~0.47	0.51~4.7	
Resistance tolerance (%)	±0.5 (D)	—	—	—	—	○	
	±1.0 (F)	—	—	○	○	○	
	±2.0 (G)	○	○	○	○	—	
Temperature coefficient of resistance (ppm/°C)	0~+100(R)	—	—	—	○	○	
	0~+200(S)	—	—	—	○	—	
	0~+350(T)	—	○	○	—	—	
	0~+500(T)	○	—	—	—	—	
Maximum voltage	$\sqrt{P \cdot R}$						
Operating temperature	-55~125°C						
Packaging	5,000pcs	○					

ESL



Resistance to power pulse



Test procedure

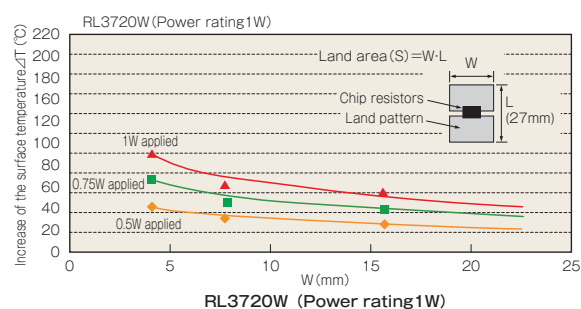
Voltage pulse is applied to the test samples mounted on the test board.

After each pulse, resistance drift is measured. Pulse voltage is increased until the drift exceeds $\pm 0.5\%$. The power at that voltage is defined as the maximum pulse power.

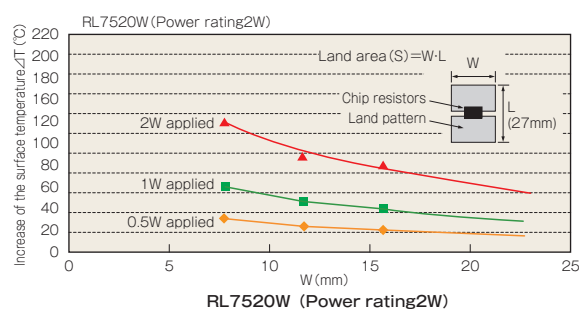
Surface temperature data

The high power type land pattern and surface temperature

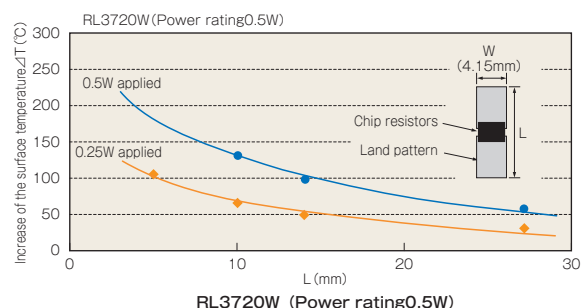
These high-power low resistance chip resistors are designed to dissipate heat efficiently through the land patterns on circuit boards. The actual temperature of the surface of the resistor is dependent upon the dimensions and the shape of the land patterns.



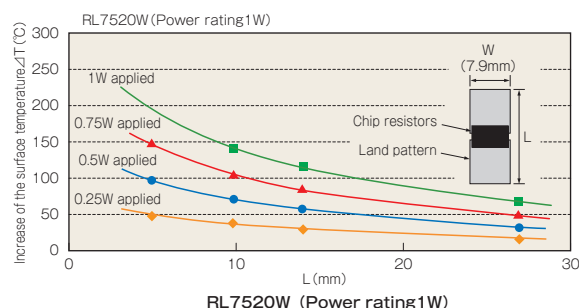
RL3720W (Power rating 1W)



RL7520W (Power rating 2W)

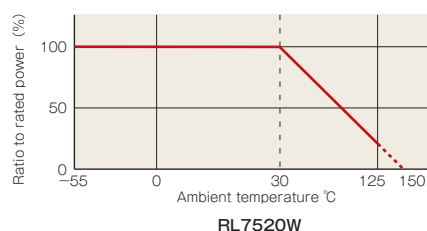
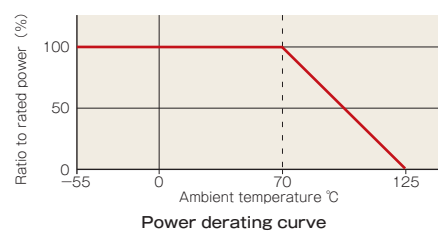


RL3720W (Power rating 0.5W)



RL7520W (Power rating 1W)

Power derating characteristics



RL7520W

Part numbering system

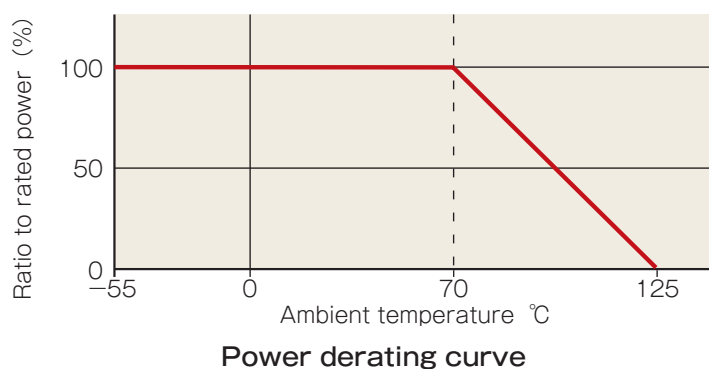
PRL 1220 T-R10-F-(T5)

Packaging: T5 (5000pcs)
Resistance tolerance
Resistance value
Temperature coefficient of resistance
Size
Series code

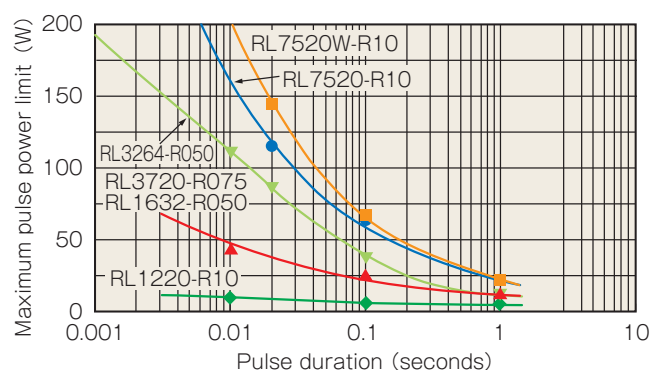
RL 3720W T-R10-F

Series name		RL3264				
Power		1W				
E series offered		Standard stock item : E-24series E-12series				
Resistance range (Ω)		0.01 ~ 0.015	0.018 ~ 0.022	0.027	0.033 ~ 0.047	0.056 ~ 0.47
Resistance tolerance (%)	±0.1 (B)	—	—	—	—	—
	±0.5 (D)	—	—	—	—	—
	±1.0 (F)	—	—	○	○	○
	±2.0 (G)	○	○	○	○	○
	±5.0 (J)	—	—	—	—	—
Temperature coefficient of resistance (ppm/°C)	0 ~ +100 (R)	—	—	—	—	○
	0 ~ +200 (S)	—	—	—	○	—
	0 ~ +350 (T)	—	○	○	—	—
	0 ~ +500 (T)	○	—	—	—	—
Maximum voltage		$\sqrt{P \cdot R}$				
Operating temperature		-55 ~ 125°C				
Packaging	5,000pcs	○				

Power derating characteristics



Resistance to power pulse

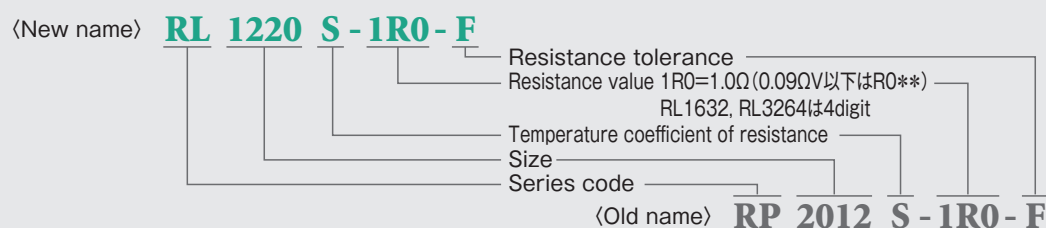


Test procedure

Voltage pulse is applied to the test samples mounted on the test board.

After each pulse, resistance drift is measured. Pulse voltage is increased until the drift exceeds +/-0.5%. The power at that voltage is defined as the maximum pulse power.

Part numbering system



Metal plate low resistance chip resistors

RL series

Features

- Operating temperature: stable up to 170°C
- Resistance tolerance: +/-1%, TCR +/-50ppm/°C
- Protective outer coating is halogen free in consideration of the environment.

Applications

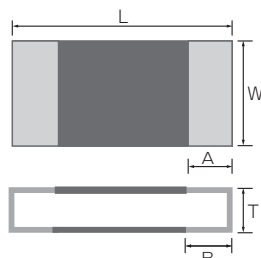
- Power sources, servers, etc.

Specifications

* All made to order.

Dimensions

unit : mm



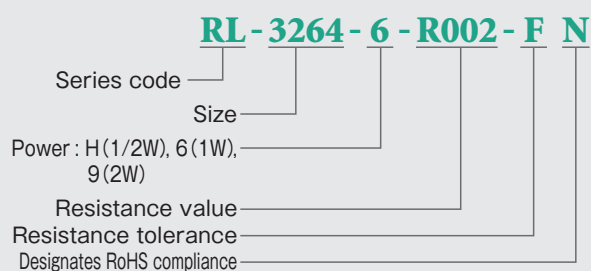
Dimension (inch)	RL1632H (1206)	RL3264-6 (2512)	RL3264-6C (2512)	RL3264-9V (2512)	RL3264-6W, -9C (2512)
L	3.20±0.33(1-4mΩ) 3.20±0.20(5-150mΩ)	6.35±0.25	6.35±0.25	6.35±0.25	6.35±0.25
W	1.60±0.33(1-4mΩ) 1.60±0.20(5-150mΩ)	3.20±0.20	3.20±0.20	3.20±0.20	3.20±0.20
A	—	2.50±0.15(1mΩ) 1.90±0.15(2mΩ)	1.0±0.25(1mΩ)	2.21±0.25(1-4mΩ) 1.19±0.25(5-6mΩ) 0.76±0.25(7-11mΩ)	0.70 ± 0.20
B	1.25±0.20(1mΩ) 0.50±0.20(2-4mΩ) 0.50±0.15(5-150mΩ)	—	—	—	—
T	0.65±0.15(1-2mΩ) 0.50±0.15(3-4mΩ) 0.80±0.15(5-150mΩ)	0.70±0.15(1mΩ) 0.65±0.15(2mΩ)	1.05±0.15(3-5mΩ) 0.80±0.15(≥6mΩ)	1.30±0.25(1mΩ) 1.20±0.25(2-4mΩ) 1.00±0.25(5-11mΩ)	(1mΩ) 2.30 ± 0.15 (2mΩ) 1.45 ± 0.15 (5~20mΩ) 1.15 ± 0.25

Electrical characteristics

Series name	RL1632H				RL3264-6		RL3264-6C			RL3264-9V		
Power	1/2W				1W		1W			2W		
E series offered	1mΩ STEP				1mΩ STEP		1mΩ STEP	E-24		1mΩ STEP		
Resistance range (Ω)	1m	2m	3m~10m	11m~150m	1m	2m	3m~10m	11m~100m		1m~2m	3m~4m	5m~11m
Resistance tolerance (%)	±1.0(F)	—	○	○	—	—	○	○		○	○	○
	±2.0(G)	—	○	—	○	○	—	—		—	—	—
	±5.0(J)	○	○	○	○	○	○	○		○	○	○
Temperature coefficient of resistance (ppm/°C)	±50	—	—	—	○	—	—	○		—	—	○
	±100	—	—	○	—	○	—	—		—	—	—
	±150	—	○	—	—	—	—	—		—	○	—
	±200	—	—	—	—	○	—	—		—	—	—
	±275	○	—	—	—	—	—	—		○	—	—
Maximum voltage	$\sqrt{P \cdot R}$											
Operating temperature	-55 ~ 170 °C											
Packaging	2,000pcs											

Series name	RL3264-6W		RL3264-9C	
Power	1W		2W	
E series offered	1mΩ STEP		1mΩ STEP	
Resistance range (Ω)	1m~2m	5m~20m	1m~2m	5m~20m
Resistance tolerance (%)	±1.0(F)	○	○	○
	±2.0(G)	○	○	○
	±5.0(J)	○	○	○
Temperature coefficient of resistance (ppm/°C)	±75			
Maximum voltage	$\sqrt{P \cdot R}$			
Operating temperature	-55 ~ 170 °C			
Packaging	2,000pcs			

Part numbering system



Metal foil low resistance chip resistors (long-side and short-side terminals)

KRL series

Features

- The C type utilizes materials that withstand high temperatures and can be operated up to 170°C. The M type utilizes low emf materials that are stable up to 155°C. TCR is very stable for very low resistance: $\pm 150\text{ppm}/^\circ\text{C}$ for 1m Ω , $\pm 100\text{ppm}/^\circ\text{C}$ for 2m Ω , and $\pm 50\text{ppm}/^\circ\text{C}$ for 3m Ω . Face down mounting allows for accurate current measurement. Long and short side terminal types, as well as power ratings from 1/3W to 5W are offered to meet customers' specific requirements. The protective outer coating is halogen free in consideration of the environment.

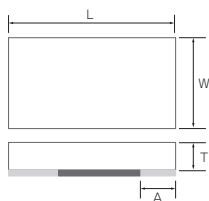
Applications

- PCs, hard drive discs, audio visual equipment.

Specifications

* All made to order.

Dimensions : Short side terminal

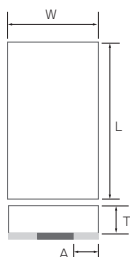


Dimensions (mm)	KRL1220	KRL1632	KRL3264
L	2.0 $\pm$ 0.20	3.2 $\pm$ 0.20	6.3 $\pm$ 0.20
W	1.25 $\pm$ 0.20	1.6 $\pm$ 0.20	3.1 $\pm$ 0.20
T	0.5 $\pm$ 0.20	0.5 $\pm$ 0.20	0.5 $\pm$ 0.20
A (5.0~7.0m Ω)	0.4 $\pm$ 0.20	1.10 $\pm$ 0.20	1.90 $\pm$ 0.20
A (8.0m Ω ~)		0.4 $\pm$ 0.20	1.0 $\pm$ 0.20

Electrical characteristics : Short side terminal

Series name	KRL1220	KRL1632	KRL3264
Power	1/3W	1/2W	1W
E series offered	E-12	1m Ω STEP	E-12
Resistance range (Ω)	10m~100m	5m~9m	10m~100m
Resistance tolerance (%)	± 1.0 (F)	—	± 2.0 (G)
Temperature coefficient of resistance (ppm/ $^\circ\text{C}$)	± 50	—	± 100
Operating temperature	C	—	—
Packaging	1,000pcs	—	—
	5,000pcs	—	—

Dimensions : Long side terminal



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

Electrical characteristics : Long side terminal

Series name	KRL2012	KRL3216	KRL6432	KRL7638	KRL9045	KRL11050
Power	2/3W	1W	2W	3W	4W	5W
E series offered	1m Ω STEP	1m Ω STEP	1m Ω STEP	1m Ω STEP	1m Ω STEP	1m Ω STEP
Resistance range (Ω)	1m 2m 3m~9m 10m~50m	1m 2m 3m~9m 10m~50m	1m 2m 3m~9m 10m~50m	1m 2m 3m~9m 10m~100m	1m 2m 3m~9m 10m~100m	1m 2m 3m~9m 10m~100m
Resistance tolerance (%)	± 1.0 (F)	—	± 2.0 (G)	—	± 5.0 (J)	—
Temperature coefficient of resistance (ppm/ $^\circ\text{C}$)	± 50	—	± 100	—	± 150	—
Operating temperature	C	—	M	—	—	—
Packaging	1,000pcs	—	—	—	—	—
	5,000pcs	—	—	—	—	—

· Contact us for ERL series with wrap round type of termination.

Part numbering system

KRL 6432 - C - R010 - F - T1

— Packaging: T1 (1000pieces) T5 (5000pieces)

Resistance tolerance
Resistance value
Operating temperature: C (High temperature type) M (Low emf type)
Size
Series code

Thick film chip resistors

RLT series **NEW**

Features

- Offering a variety of sizes (0510-3264) and power ratings (1/8W-1W)
- Current sensing thick film chip resistors

Applications

- PCs, HDDs, mobile phones, power sources, motors, etc.

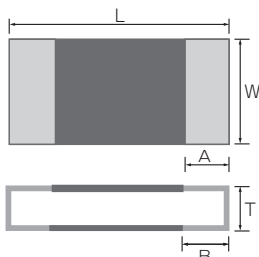


Specifications

* E-24 series are standard stock items. E-96 series are made to order.

unit : mm

Dimensions



Dimension (inch)	RLT 0510-2 (0402)	RLT 0816-3 (0603)	RLT 1220-F (0805)	RLT 1632-4 (1206)	RLT 2550-5 (2010)	RLT 3264-6 (2512)
L	1.00 ±0.10	1.60 ±0.15	2.00 ±0.20	3.20 ± 0.20	5.00 ± 0.15	6.30 ±0.15
W	0.50 ±0.10	0.80 ±0.15	1.25 ±0.20	1.60 ± 0.20	2.50 ± 0.15	3.20 ±0.15
T	0.35±0.15/ -0.10	0.45 ±0.10	0.50 ±0.10	0.60 ± 0.10	0.55 ± 0.15	0.55 ±0.15
A	0.25 ±0.10	0.30 ±0.20	0.40 ±0.20	0.50 ± 0.25	0.60 ± 0.20	0.60 ±0.20
B	0.30 ±0.10	0.30 ±0.20	0.40 ±0.20	0.50 ± 0.25	0.60 ± 0.20	0.60 ±0.20

Electrical characteristics

Series name	RLT0510-2		RLT0816-3		RLT1220-F			RLT1632-4		RLT2550-5		RLT3264-6	
Rated power	1/8W		1/4W		1/3W			1/2W		3/4W		1W	
E series offered	E24	E24, E96	E24	E24, E96	E24	E24, E96	E24, E96	E24	E24, E96	E24	E24, E96	E24	E24, E96
Resistance range (Ω)	0.065~<0.60	0.60~<1.0	0.05~<0.1	0.1~<10	0.02~<0.05	0.05~<0.1	0.1~<10	0.05~<0.1	0.1~<10	0.05~<0.1	0.1~<10	0.05~<0.1	0.1~<10
Resistance tolerance (%)	±1.0% (F)	○	○	○	○	○	○	○	○	○	○	○	○
	±2.0% (G)	○	○	○	○	○	○	○	○	○	○	○	○
	±5.0% (J)	○	○	○	○	○	○	○	○	○	○	○	○
Temperature coefficient of resistance (ppm/°C)	0~150	—	—	—	—	—	—	—	—	—	○	—	○
	0~200	—	○	—	○	—	—	—	○	—	—	—	—
	0~250	—	—	—	—	—	—	○	—	—	—	—	—
	0~300	○	—	○	—	—	○	—	—	—	—	—	—
	0~800	—	—	—	—	○	—	—	—	—	—	—	—
Maximum voltage	$\sqrt{P \cdot R}$												
Operating temperature	-55°C ~ 125°C												
Packaging	2,000pcs	—	—	—	—	—	—	—	—	○	—	○	—
	5,000pcs	—	○	—	—	○	—	○	—	—	—	—	—
	10,000pcs	○	—	—	—	—	—	—	—	—	—	—	—

Part numbering system

RLT 3264-6-R002-F NH

- RLT: Part code
- 3264: Size
- 6: Resistance value
- R002: Resistance tolerance
- F: Power rating: 2(1/8W), 3(1/4W), F(1/3W), 4(1/2W), 6(1W), 9(2W)
- NH: Pb free, halogen free