

Version:  
December 1, 2022



**(LRJ) Metal Alloy  
Zero Ohm  
Jumper Chips**

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## ▶ Product Introduction

### New Performance Requirements for True Metal Alloy Zero Ohm Jumper Chip Resistor in High Power Applications.

#### Features :

- High current application with Low profile.
- Ultra-Low resistance values, 0.2 mΩ Max.
- operating temperature range -55°C ~+150°C.
- Wide range package sizes 1206, 2512, 2817, 2725, and 4527.

#### Applications :

- Electrical tools, Power Management
- NB, Mobil Device, Server, Portable Devices
- Automotive, Industrial, Consumer Electronics, Electric Instrument

A zero ohm resistor is often called SMD jumper resistors, milli-ohm resistor, or zero ohm link resistors which are designed to link to circuits to together just like any other wire.

Token's true metal alloy strip zero ohm resistors (LRJ) make options with a lot less space and cost than DIP switches and jumper headers. These high current metal alloy jumper resistor chips (LRJ) SMT series, designed to replace zero ohm resistors without changing board designs or layouts. The devices could also be applied in high power applications to replace jumper wire for better stability or buried copper coin PCB for cost saving.

Five jumpers for the different resistor chip sizes are provided a wide range of standard dimensions 1206, 2512, 2817, 2725, and 4527 to make ease of designs along with footprint template compatibility. Token (LRJ) SMD metal alloy current jumper resistors designed for applications that require high power handling (Up to 5W) with resistance < 0.2mΩ at operating temperature range -55°C ~+150°C. (LRJ). These new products are distinctively suited as true zero ohm resistor replacements.

Token (LRJ) resistor chip jumpers manufactured from metal alloy plate and designed to deliver a extremely low impedance and profile circuit linkage as a zero ohm resistor. Chip jumpers are packaged on tape and reel for compatibility with most vacuum or mechanical pick and place assembly systems. These (LRJ) SMD devices are also suitable for high current, high-density PCB packages on power and aluminum backplanes.

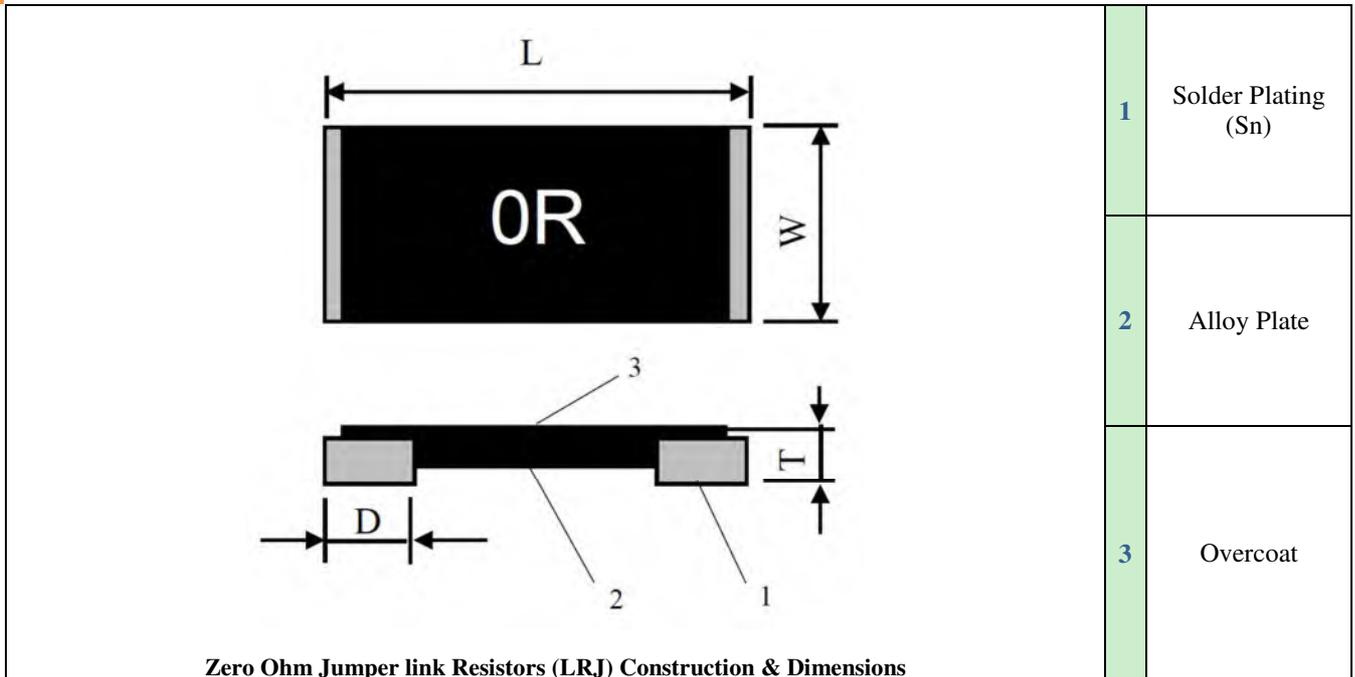
Some circuit boards are designed with multiple functions and configurations in one design. Often these functions and configurations can't coexist in single circuit because they will conflict with each other. To this end, more and more designers use (LRJ) resistor SMD jumpers for single side PCB that has no through-hole but for double-sided PCB. An application is used as a dummy, when through-holes for a not- yet- designed- resistor are prepared by way of precaution, and the holes are short-circuited after all.

Token electronics delivers the right chip for your low range, current-sense applications. For more detailed product information and data sheets or to discuss your specific requirements please contact Token electronics. Or link to Token official website "[Current Sense Resistors](http://www.token.com.tw)".



## Dimensions

### Zero Ohm Resistors (LRJ) Construction & Dimensions



Type	Power Rating at 70°C (W)	Dimensions (Unit: mm)			
		L	W	T	D
LRJ1206	1	3.200±0.254	1.650±0.254	0.670±0.254	0.508±0.254
LRJ2512	2	6.350±0.254	3.050±0.254	0.670±0.254	1.100±0.254
LRJ2817	3	7.100±0.254	4.200±0.254	0.770±0.254	1.500±0.254
LRJ2725	4	6.800±0.254	6.350±0.254	0.770±0.254	1.800±0.254
LRJ4527	5	11.300±0.500	6.600±0.500	0.770±0.254	2.000±0.254

## Electrical Specifications

### Zero Ohm Chip Resistors (LRJ) Electrical Specifications

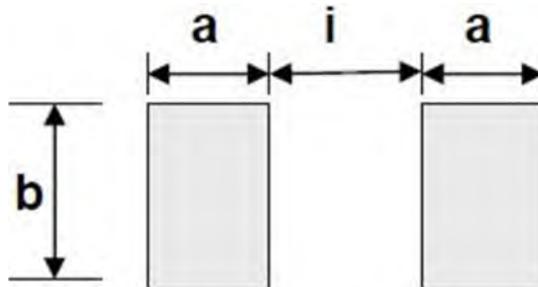
Type	Power Rating at 70°C	Max. Rating Current (A)*	Resistance (mΩ)	Operating Temperature °C
LRJ1206	1	70.7	< 0.2	-55~+150°C
LRJ2512	2	100	< 0.2	
LRJ2817	3	122	< 0.2	
LRJ2725	4	140	< 0.2	
LRJ4527	5	158	< 0.2	

● Note: Rating Current  $I = \sqrt{(P/R)}$  or Max. Rating Current whichever is lower.

Special tolerance and range of resistance are under requested. **Land Pattern**

### Zero Ohm Chips (LRJ) Recommend Land Pattern

Type	Maximum Power Rating (Watts)	Dimensions (Unit: mm)		
		a	b	i
LRJ1206	1	1.00	1.90	1.40
LRJ2512	2	2.11	3.68	3.18
LRJ2817	3	2.45	4.60	3.11
LRJ2725	4	2.34	6.86	3.00
LRJ4527	5	3.40	8.74	6.43

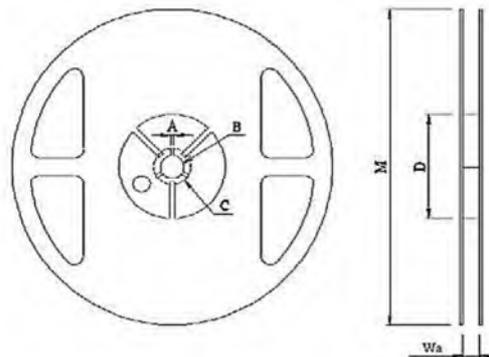


Zero Ohm Chips (LRJ) Recommend Land Pattern

## ▶ Reel & Type

### Reel Specifications (LRJ) (Unit: mm)

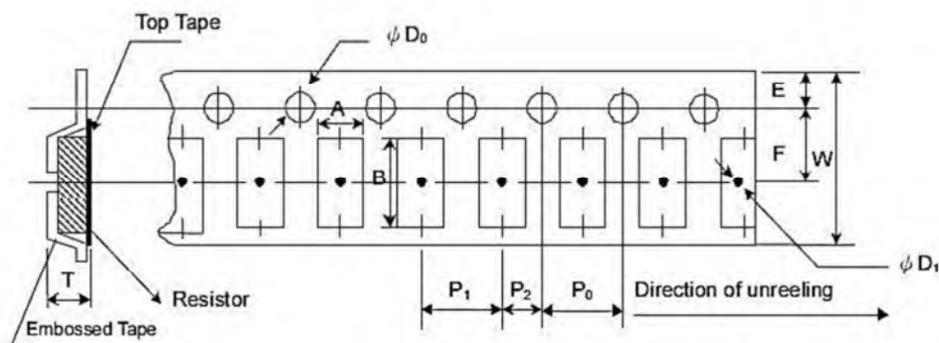
Reel Type / Tape	W	M	A	B	C	D
7" reel for 8 mm embossed (LRJ1206 series only)	12.00± 0.5	178 ± 1.0	2.0 ± 0.5	13.2 ± 0.5	17.7 ± 0.5	60.0 ± 0.5
7" reel for 12 mm embossed LRJ2512, LRJ2725, LRJ2817	16.2 ± 0.5	178 ± 1.0	2.5 ± 0.5	13.5 ± 0.5	17.7 ± 0.5	60.0 ± 0.5
7" reel for 24 mm embossed (LRJ4527 series only)	24.4 +2/-0	178 ± 1.0	2.0 ± 0.5	13.2 ± 0.5	17.7 ± 0.5	60.0 ± 0.5



Reel Specifications Dimensions

### Emboss Plastic Tape Specifications (LRJ) (Unit: mm)

Type	A±0.1	B±0.1	W±0.3	E±0.1	F±0.1	P0±0.1	P1±0.3	P2±0.1	ΦD0±0.05	ΦD1±0.1	T±0.1
LRJ1206	2.03	3.55	8.0	1.75	3.5	4.0	4.0	2.0	1.55	1.00	1.00
LRJ2512	3.50	6.75	12.0	1.75	5.5	4.0	4.0	2.0	1.55	1.55	0.90
LRJ2725	6.81	7.16	12.0	1.75	5.5	4.0	8.0	2.0	1.55	1.55	1.05
LRJ2817	4.60	7.50	12.0	1.75	5.5	4.0	8.0	2.0	1.55	1.55	1.20
LRJ4527	7.38	12.0	24.0	1.75	11.5	4.0	12.0	2.0	1.55	1.55	1.05



Emboss Plastic Tape Specifications (Unit: mm)

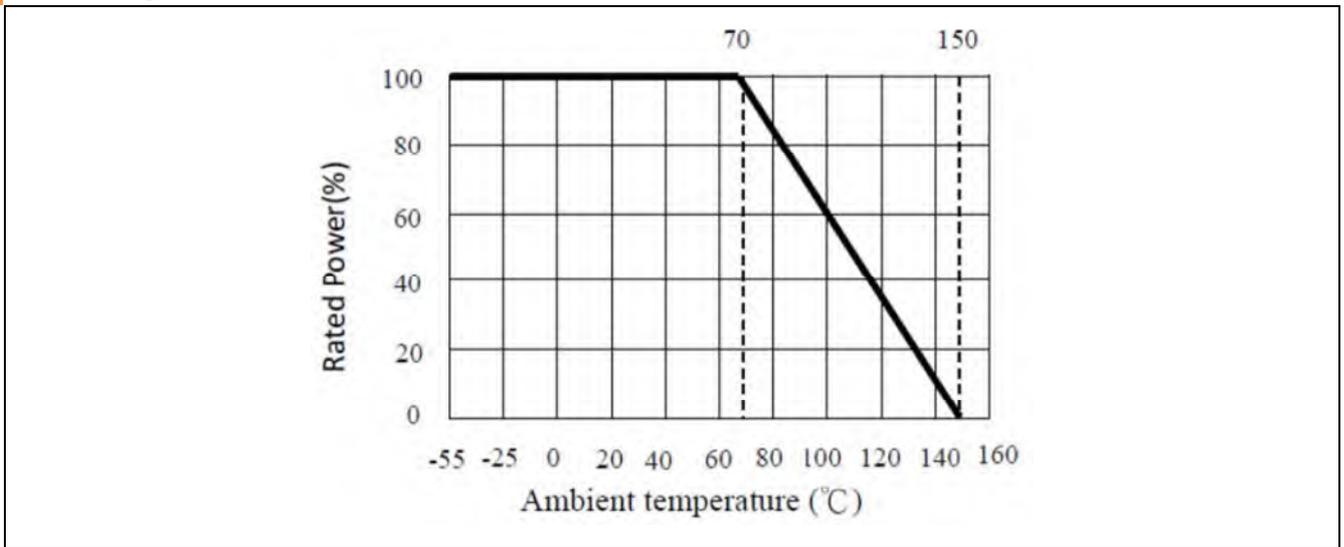
- The cumulative tolerance of 10 sprockets hole pitch is ± 0.2mm.
- Carrier camber shall be not more than 1mm per 100mm through a length of 250mm.
- A & B measured 0.3mm from the bottom of the packet
- T measured at a point on the inside bottom of the packet to the top surface of the carrier.
- Pocket position relative to sprocket hole is measured as the true position of the pocket and not the pocket hole.

## Packaging Quantity (LRJ)

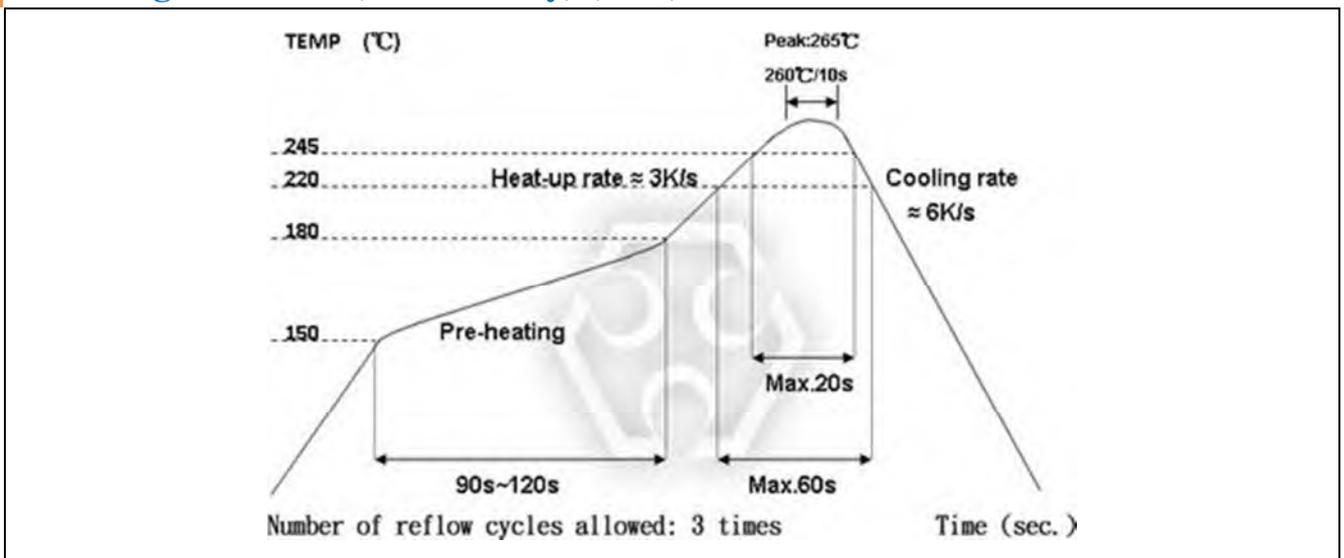
Type	Tape Width	Diameter	Piece/Reel
LRJ1206	8 mm/embossed plastic	178 mm/7"	5,000
LRJ2512	12 mm/embossed plastic	178 mm/7"	4,000
LRJ2725	12 mm/embossed plastic	178 mm/7"	2,000
LRJ2817	12 mm/embossed plastic	178 mm/7"	1,000
LRJ4527	24 mm/embossed plastic	178 mm/7"	1,000

## Derating & Soldering Condition

### Derating Curve (LRJ)



### Soldering Condition (Reflow Only) (LRJ)



## Environmental Characteristics

### Environmental Characteristics (LRJ)

Item	Requirement	Test Method
Short Time Overload	≤0.2 mΩ	JIS C 5201-1 4.13 4 times rated power duration: 5secs.
Load Life	≤0.2 mΩ	JIS-C5201-1 4.25 70±2°C, RCWV for 1000 Hrs. with 1.5 Hrs. "ON" and 0.5 Hr. "OFF"
Bias Humidity	≤0.2 mΩ	JIS-C5201-1 4.24 +85°C/85%RH for 1,000Hrs. with 1.5Hrs "ON", 0.5Hr "OFF".
High Temperature Exposure (Storage)	≤0.2 mΩ	JIS-C5201-1 4.23.2 +150°C for 1000 Hrs.
Solderability	95% Min. coverage	JIS-C5201-1 4.17 245±5°C for 3 seconds
Temperature Cycling	≤0.2 mΩ	JIS-C5201-1 4.19 -55°C ~ 150°C, 100 cycles

## Order Codes

### Order Codes (LREA)

LRJ	1206	TR	T	R000
Part Number	Dimensions (L×W)(mm)	Package	Power Rating (W)	Resistance (Ω) Ex:
LRJ		TR   Taping Reel	T   1W S   5W R   3W 4   4W 5   5W	R000   < 0.20mΩ
	1206   3.20*1.65 2512   6.35*3.05 2817   7.10*4.20 2725   6.80*6.35 4527   11.30*6.60			

## ► General Information

### Your Current Options - Token Current Sense

As the world becomes more and more technology-driven, the uses for current sensing components will continue to increase. The need for even lower resistance value ranges is already becoming evident, as is the need for these resistors to handle more power. The industry-wide trend is the emergence of smaller and smaller products.

Token Electronics offers a wide variety of current sensing products from the industry to military standards, such as current sense in Thin-Film / Thick-Film Technology, Bare Element Resistors, and Open Air Shunts. This enables Token to present an astounding number of possible solutions for any circuit design needs.

### Applications of Current Detecting Components

Token's TCS and CS Series unique form factor provides automotive designers with several advantages. Both TCS and CS Series are ideal for applications involving window lift motors, fuel pump systems, seat belt pretensioners, and pulse width modulator feedback.

The wider resistive element and lower resistance enables higher current to pass through the device. Token's LRC ultra low Ohmic metal strip chip series provides the inherent ability to flex slightly and offers stress relief during extreme temperature cycling on typical or metal substrates. This LRC series is suitable for switch power supply applications (DC-DC Converter, Charger, and Adaptor) and power management of monitor.

The open air design of bare element resistor LRA and LRB Series provide a far cooler operation by allowing more air flow under the resistive element to keep excess heat from being transmitted to the PC board. They are suitable for high power AC/DC detection of power supply circuit.

Token axial moulded BWL series provides power rating up to 10 watts and lower resistance  $0.005\Omega$ , is ideal for all types of current sensing applications including switching and linear power supplies, instruments and power amplifiers.

Token standard current sensing components can be replacement for Vishay, IRC, Ohmite, KOA, Yageo devices with fast delivery and more competitive price. Contact us with your specific needs.

