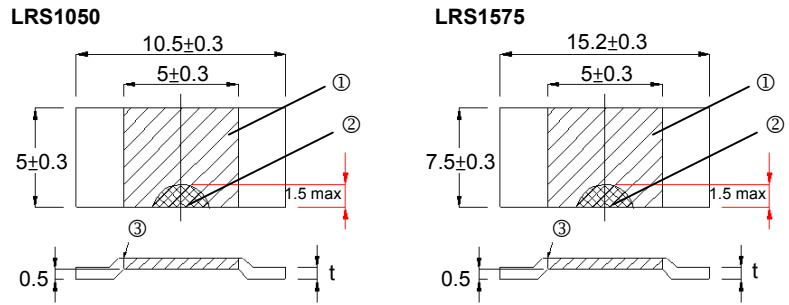
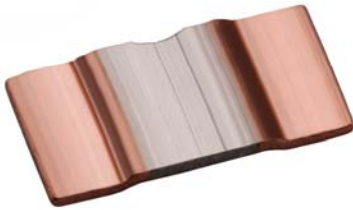


# Chip Shunt Resistor—LRS Series

## Construction



① Resistance Material	② Trimming Area	③ Electron Beam Welding
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## Features

- LRS1050 3W up to 77A at 0.5mΩ
- LRS1575 5W up to 100A at 0.5mΩ
- Maximum soldering temperatures of up to 350°C / 30 sec. or 250°C / 10 min
- Heavy copper connectors
- Excellent long-term stability and low inductance
- Mounting using re-flow soldering or welding on copper

## Applications

- Current Sensors for Hybrid Power Sources
- Frequency Converters
- High Current Automotive

## Dimensions

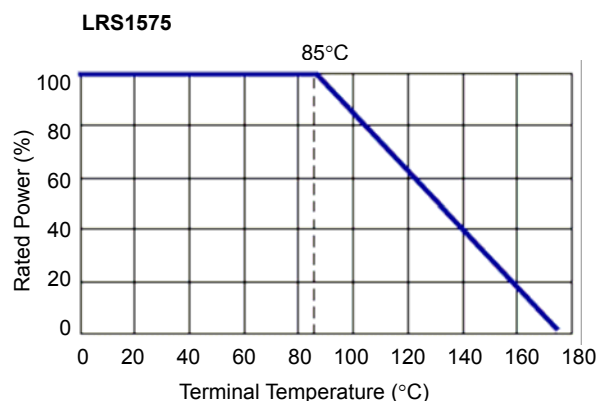
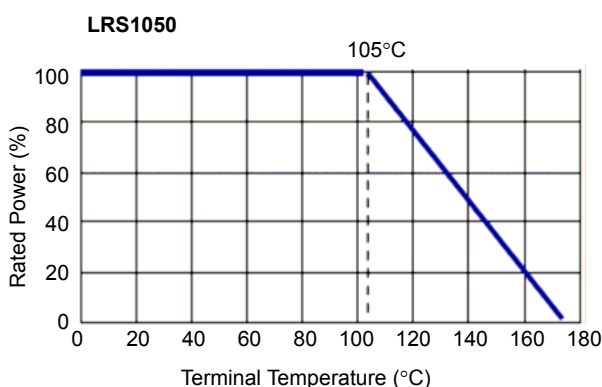
Unit: mm

Type	Size (Inch)	Value	Material	Thickness (t)	Weight (g) (1000pcs)
LRS1050	1050	0.5mΩ	Manganin	0.88 mm±0.05	420
LRS1050	1050	1mΩ	Manganin	0.43 mm±0.05	220
LRS1050	1050	2mΩ	NiCr alloy	0.64 mm±0.05	310
LRS1050	1050	3mΩ	NiCr alloy	0.43 mm±0.05	210
LRS1050	1050	4mΩ	NiCr alloy	0.32 mm±0.05	160
LRS1575	1575	0.5mΩ	Manganin	0.56 mm±0.05	590
LRS1575	1575	1mΩ	NiCr alloy	0.90 mm±0.05	940
LRS1575	1575	2mΩ	NiCr alloy	0.45 mm±0.05	470
LRS1575	1575	3mΩ	NiCr alloy	0.30 mm±0.05	320

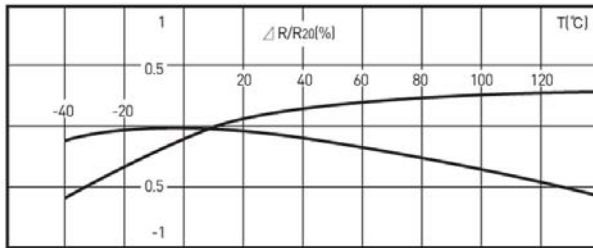
## Part Numbering

LRS	1050	F	T	D	R	0M50	N
Product Type	Dimensions	Resistance Tolerance	Packaging Code	TCR (PPM/°C)	Power Rating	Resistance	Marking Code
	1050: 10.5x5.0 1575: 15.2x7.5	F: ±1% G: ±2% J: ±5%	T: Taping Reel B: Bulk	D: ±50 E: ±100	R: 3W D: 5W	0M50: 0.5mΩ	M: Manganin N: NiCr alloy

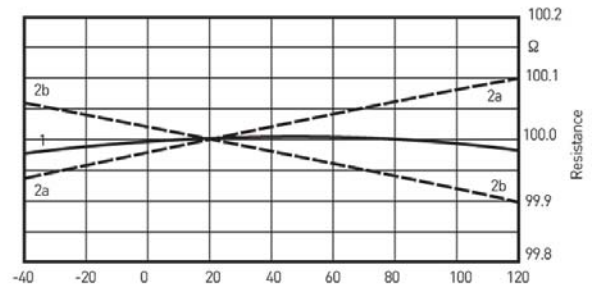
## Derating Curve



## Resistance Change VS Temperature



Resistance Change Versus Temp.(Managnin)



Resistance Change Versus Temp.(Ni-Dr alloy)

## Standard Electrical Specifications

Type	Power Rating	Operating Temp. Range	Resistance Range			TCR (PPM/°C)	Internal Heat Resistance
			±1%	±2%	±5%		
LRS1050	3W	-55°C ~ 170°C	0.5mΩ, 1mΩ, 2mΩ, 3mΩ, 4mΩ			±50 (20°C to 60°C)	Rthi < 10k/W
LRS1575	5W		0.5mΩ, 1mΩ, 2mΩ, 3mΩ			±100 Max.	

Operating Voltage= $\sqrt{P \cdot R}$  or Max. operating voltage listed above, whichever is lower.

Overload Voltage= $2.5 \cdot \sqrt{P \cdot R}$  or Max. overload voltage listed above, whichever is lower.

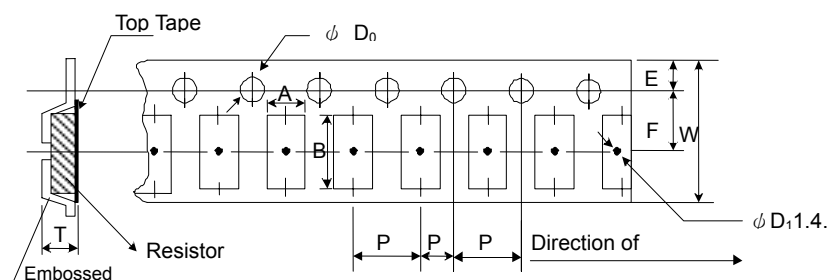
## Environmental Characteristics

Item	Requirement	Test Method
Short time overload	±0.2%	Rated Power × 5 for 5 seconds
Load Life [Terminal temp. max. 105°C]	±1.0%	Power rating 90 min. "ON", 30 min. "OFF" for 2000 hours
Resistance to Soldering Heat	±0.2%	350°C for 30 seconds or 250°C for 10 min.
Thermal Shock	±0.1%	-65°C, 25°C, 125°C, 25°C, 25 cycles
Moisture Resistance	±0.2%	90 ~ 98%RH, +25°C, +65°C, -10°C, 10 cycles
High Temperature Exposure	±0.2%	140°C for 250 hours
Vibration, High Frequency	±0.2%	15g 10~2000Hz, 36 cycles
Inductance	<3nH	—
Thermal EMF [ $\mu V/^\circ C$ ]	2 $\mu V/^\circ C$ max.	0~100°C
Current Noise	±0.01%	MIL-STD-202 Method 308
Voltage Coefficient	Linearity error less than 120 dB	MIL-STD-202 Method 309
Shock	±0.2%	50g's 11ms

**Storage Temperature: 25±3°C; Humidity < 80%RH**

## Packaging

### Embossed Plastic Tape Specifications



Unit: mm

Type	A	B	W	E	F	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	ΦD <sub>0</sub>	T	Quantity (EA)
LRS1050	5.5	10.8	16	1.75	7.5	4	12	6	1.50	1.2	3,000
LRS1575	8.4	15.7	24	1.75	11.5	4	12	6	1.50	1.9	2,000