Data Sheet

Customer:	
Product:	**Automotive Grade Chip Shunt Resistor — LRSW..A Series**
Sizes.:	**0630 / 1050 / 1575**
Issued Date:	**01-Nov-24**
Edition:	**REV.A5**

RoHS Compliant

HONG KONG HELISTO INDUSTRIAL LIMITED
香港海利斯特实业有限公司

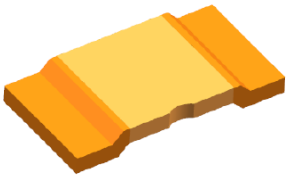
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Automotive Grade Chip Shunt Resistor

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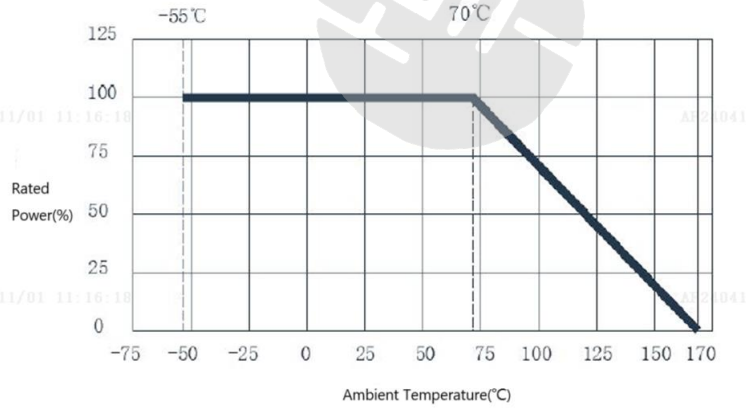
■Features

- Nudity E-beam welded metal strip resistors, pure copper Electrodes are the ideal solution for current sensing applications
- Excellent reliability, stability, Auti-pulse capability
- Special welding process, all-metal construction, Supports low resistance, The surface is pickled and passivated for strong weather resistance
- High temperature silicon molded for sever working Environment
- Very low EMF (<1u V/C)
- Ultra-low parasitic inductance(< 2nH), Fast response, Can be used for high frequency AC current detection
- AEC-Q200 Reliability Testing passed

■Part Numbering

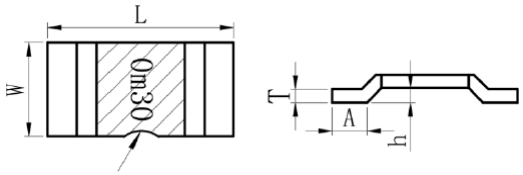
LRSW	1050	F	T	W	R	R005	K	A
Product Type	Dimensions	Resistance Tolerance	Packaging Code	TCR (PPM/℃)	Power Rating	Resistance	Material Code	Function Code
	0630: 6.4x3.2 1050: 10.0x5.2 1575: 15.0x7.5	F: ±1% J: ±5%	T: Taping Reel	D: ±50 W: ±75 E: ±100 K: ±150	B: 2.5W R: 3W H: 4W D: 5W I: 6W E: 7W 8: 8W 9: 9W J: 10W 12:12W 15:15W	0M20: 0.2mΩ 0M30: 0.3mΩ 0M40: 0.4mΩ 0M50: 0.5mΩ 0M70: 0.7mΩ R001: 1mΩ R002: 2mΩ R003: 3mΩ R004: 4mΩ R005: 5mΩ	M: Manganin F: FeCrAl K: Karma	A: Automotive Grade

■Derating Curve



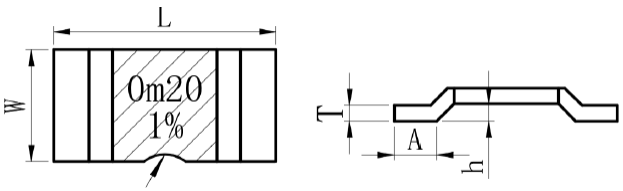
■Dimensions

LRSW0630



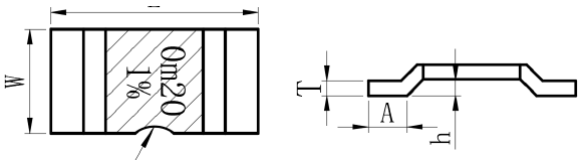
The side arc is a notch for the resistance process

LRSW1050



The side arc is a notch for the resistance process

LRSW1575



The side arc is a notch for the resistance process

Type	Size (Inch)	Resistance (mΩ)	Material	L (mm)	W (mm)	T (mm)	A (mm)	h (mm)
LRSW0630	2512	0.3	Manganin	6.40±0.30	3.20±0.25	0.95±0.10	1.20±0.20	0.50±0.10
		0.35	Manganin	6.40±0.30	3.20±0.25	0.80±0.10	1.20±0.20	0.50±0.10
		0.4	Manganin	6.40±0.30	3.20±0.25	0.88±0.10	1.20±0.20	0.50±0.10
		0.5	Manganin	6.40±0.30	3.20±0.25	0.85±0.10	1.20±0.20	0.50±0.10
		0.7	Manganin	6.40±0.30	3.20±0.25	0.60±0.10	1.20±0.20	0.50±0.10
		0.75	Manganin	6.40±0.30	3.20±0.25	0.56±0.10	1.20±0.20	0.50±0.10
		1	Manganin	6.40±0.30	3.20±0.25	0.42±0.10	1.20±0.20	0.50±0.10
		2	FeCrAl	6.40±0.30	3.20±0.25	0.67±0.10	1.20±0.20	0.50±0.10
		3	FeCrAl	6.40±0.30	3.20±0.25	0.45±0.10	1.20±0.20	0.50±0.10
		4, 5	FeCrAl	6.40±0.30	3.20±0.25	0.32±0.10	1.20±0.20	0.50±0.10
		2	Karma	6.40±0.30	3.20±0.25	0.65±0.10	1.20±0.20	0.50±0.10
		2.5	Karma	6.40±0.30	3.20±0.25	0.50±0.10	1.20±0.20	0.50±0.10
		3	Karma	6.40±0.30	3.20±0.25	0.43±0.10	1.20±0.20	0.50±0.10
		4	Karma	6.40±0.30	3.20±0.25	0.32±0.10	1.20±0.20	0.50±0.10
		5	Karma	6.40±0.30	3.20±0.25	0.28±0.10	1.20±0.20	0.50±0.10

Automotive Grade Chip Shunt Resistor

Type	Size (Inch)	Resistance (mΩ)	Material	L (mm)	W (mm)	T (mm)	A (mm)	h (mm)
LRSW1050	3920	0.2	Manganin	10.00±0.20	5.20±0.25	1.70±0.10	2.00±0.20	0.50±0.10
		0.3	Manganin	10.00±0.20	5.20±0.25	1.28±0.10	2.00±0.20	0.50±0.10
		0.4	Manganin	10.00±0.20	5.20±0.25	1.00±0.10	2.00±0.20	0.50±0.10
		0.5	Manganin	10.00±0.20	5.20±0.25	0.80±0.10	2.00±0.20	0.50±0.10
		0.7	Manganin	10.00±0.20	5.20±0.25	0.55±0.10	2.00±0.20	0.50±0.10
		0.8	Manganin	10.00±0.20	5.20±0.25	0.48±0.10	2.00±0.20	0.50±0.10
		1	Manganin	10.00±0.20	5.20±0.25	0.40±0.10	2.00±0.20	0.50±0.10
		1	FeCrAl	10.00±0.20	5.20±0.25	1.25±0.10	2.00±0.20	0.50±0.10
		1.5	FeCrAl	10.00±0.20	5.20±0.25	0.94±0.10	2.00±0.20	0.50±0.10
		2	FeCrAl	10.00±0.20	5.20±0.25	0.62±0.10	2.00±0.20	0.50±0.10
		3	FeCrAl	10.00±0.20	5.20±0.25	0.42±0.10	2.00±0.20	0.50±0.10
		4	FeCrAl	10.00±0.20	5.20±0.25	0.35±0.10	2.00±0.20	0.50±0.10
		5	FeCrAl	10.00±0.20	5.20±0.25	0.28±0.10	2.00±0.20	0.50±0.10
		1	Karma	10.00±0.20	5.20±0.25	1.16±0.10	2.00±0.20	0.50±0.10
		2	Karma	10.00±0.20	5.20±0.25	0.65±0.10	2.00±0.20	0.50±0.10
		3	Karma	10.00±0.20	5.20±0.25	0.43±0.10	2.00±0.20	0.50±0.10
		4	Karma	10.00±0.20	5.20±0.25	0.32±0.10	2.00±0.20	0.50±0.15
		5	Karma	10.00±0.20	5.20±0.25	0.28±0.10	2.00±0.20	0.50±0.15
LRSW1575	5930	0.2	Manganin	15.00±0.20	7.70±0.30	1.50±0.10	4.20±0.20	0.50±0.15
		0.3	Manganin	15.00±0.20	7.70±0.30	0.96±0.10	4.20±0.20	0.50±0.15
		0.4	Manganin	15.00±0.20	7.70±0.30	0.72±0.10	4.20±0.20	0.50±0.15
		0.5	Manganin	15.00±0.20	7.70±0.30	0.58±0.10	4.20±0.20	0.50±0.15
		0.7	Manganin	15.00±0.20	7.70±0.30	0.42±0.10	4.20±0.20	0.50±0.15
		0.75	Manganin	15.00±0.20	7.70±0.30	0.39±0.10	4.20±0.20	0.50±0.15
		0.8	Manganin	15.00±0.20	7.70±0.30	0.36±0.10	4.20±0.20	0.50±0.15
		1	FeCrAl	15.00±0.20	7.70±0.30	0.94±0.10	4.20±0.20	0.50±0.15
		1.5	FeCrAl	15.00±0.20	7.70±0.30	0.62±0.10	4.20±0.20	0.50±0.15
		2	FeCrAl	15.00±0.20	7.70±0.30	0.48±0.10	4.20±0.20	0.50±0.15
		3	FeCrAl	15.00±0.20	7.70±0.30	0.31±0.10	4.20±0.20	0.50±0.15
		1	Karma	15.00±0.20	7.70±0.30	0.88±0.10	4.20±0.20	0.50±0.15
		2	Karma	15.00±0.20	7.70±0.30	0.43±0.10	4.20±0.20	0.50±0.15
		3	Karma	15.00±0.20	7.70±0.30	0.30±0.10	4.20±0.20	0.50±0.15

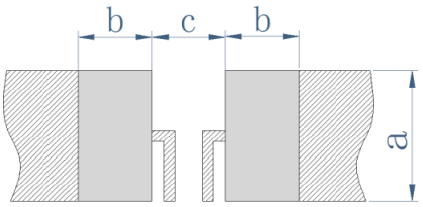
Automotive Grade Chip Shunt Resistor

■Standard Electrical Specifications

Type	Power ($P_{70℃}$)	Material	Resistance Range(mΩ)		TCR (PPM/°C)
			±1%	±5%	
LRSW0630	6W	Manganin	0.3, 0.35, 0.4, 0.5		±150
			0.7, 0.75, 1		±100
	5W	FeCrAl	2		±50
	4W	FeCrAl	3		±50
	3W	FeCrAl	4		±50
	2.5W	FeCrAl	5		±50
	5W	Karma	2		±75
	4W	Karma	2.5, 3		±75
	3W	Karma	4		±75
	2.5W	Karma	5		±75
LRSW1050	12W	Manganin	0.2		±100
	10W	Manganin	0.3		±100
	9W	Manganin	0.4, 0.5		±100
	8W	Manganin	0.7, 0.8		±100
	7W	Manganin	1		±100
	8W	FeCrAl	1		±50
	7W	FeCrAl	1.5		±50
	6W	FeCrAl	2		±50
	5W	FeCrAl	3		±50
	4W	FeCrAl	4		±50
	3W	FeCrAl	5		±50
	8W	Karma	1		±75
	6W	Karma	2		±75
	5W	Karma	3, 4 ,5		±75
LRSW1575	15W	Manganin	0.2,		±150
	10W	Manganin	0.3		±150
	9W	Manganin	0.4		±150
	8W	Manganin	0.5		±100
	7W	Manganin	0.7, 0.75, 0.8		±100
	9W	FeCrAl	1		±50
	8W	FeCrAl	1.5		±50
	7W	FeCrAl	2, 3		±50
	9W	Karma	1		±75
	7W	Karma	2, 3		±75

■Note: Iron-chromium aluminum material is magnetic and affects the inverter current, so please be careful in product selection.

■Recommend Land Pattern



Type	a (mm)	b (mm)	c (mm)
LRSW0630	3.60	1.80	3.80
LRSW1050	6.20	2.70	5.60
LRSW1575	8.75	5.20	5.60

■Environmental Characteristics

Item	Requirement	Test Method
Thermal shock	Within the specified value	**IEC60115-14.8** Measured value 20℃ and +120℃, reference value +20℃
Solderability	No visible damage, weldable area 95% minimum	**IEC60115-14.17** 245℃ Tin slot, hold for 3 sec
Short time overload	No visible damage, ΔR±1.0% maximum	**IEC60115-14.13** 5 times rated voltage, 5 sec
Resistance to solder heat	No visible damage, ΔR±0.5% maximum	**IEC60115-14.18** 260℃ Tin bath, hold for 10 sec
High temperature and humidity	No visible damage, ΔR±1.0% maximum	**AEC-Q200 Test 7** **MIL-SRD-202 Method 103** Temperature 85℃, humidity 85% of the conditions applied 10% of the rated power (current) or component limit current (whichever is less), for 1000 hours
High temperature storage	No visible damage, ΔR±1.0% maximum	**IEC60115-14.25.3** 1000 hrs @ 170℃, without load
Low temperature load	No visible damage, ΔR±0.5% maximum	**IEC60115-14.36** -55℃, No load for 1.5 hour, rated voltage load for 45 min, no load for 15 min
Temperature cycling	No visible damage, ΔR±1.0% maximum	**IEC60115-14.19** -55℃ @ 30 min ~ +155℃ @ 30 min, 1000 cycles
Load life	No visible damage, ΔR±1.0% maximum	**IEC60115-14.25.1** 1000 h @ 70±2℃, rated voltage, 90 min on, 30 min off

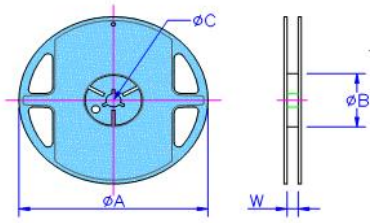
■Operating Temperature range: -55 ~ 170℃

■Storage Temperature: 25±5℃ ; Humidity 40%~70%RH

■Shelf Life: 1 years form production date

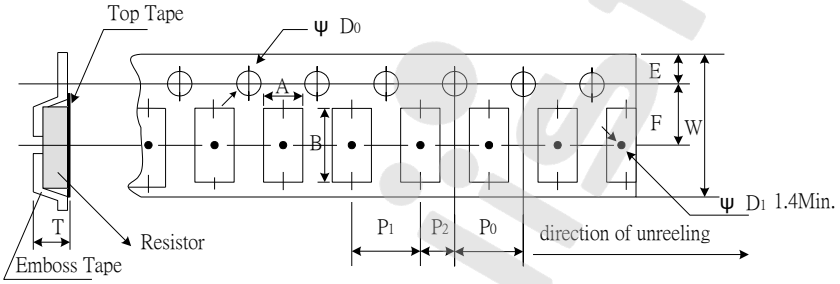
■Packaging

Reel Specifications & Packaging Quantity



Type	Packaging Quantity		Tape Width	Reel Diameter	ΦA (mm)	ΦB (mm)	ΦC (mm)	W (mm)
LRSW0630	Embossed	4K	16mm	13 inch	330±2	60±1	13.5±0.5	17.5±0.5
LRSW1050	Embossed	2K	24mm	13 inch	330±2	99±1	13.5±0.5	25.0±0.5
LRSW1575	Embossed	2K	32mm	13 inch	330±2	60±1	13.5±0.5	33.0±0.5

Embossed Plastic Tape Specifications



Type	A (mm)	B (mm)	W (mm)	E (mm)	F (mm)	P0 (mm)	P1 (mm)	P2 (mm)	ΦD0 (mm)	T (mm)
LRSW0630	3.5	6.8	16	1.75	7.5	4	8	2	1.5	1.8
LRSW1050	5.7	11.2	24	1.75	7.5	4	12	2	1.5	2.5
LRSW1575	8.2	16.1	32	1.75	11.5	4	12	6	1.5	2.5