

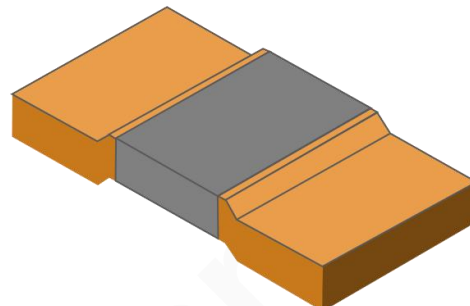
HoLRS5930 (1575) Exposed Alloy Resistor Series Selection Specification

■ Features

High-precision, low TCR, ultra-high power and whole alloy resistors are manufactured utilizing proprietary electron beam welding equipment, independently designed and expertly controlled by Milliohm Electronic.

Through the integration of professional design capabilities, high-precision manufacturing equipment, and stringent process control systems, the products achieve a target accuracy up to $\pm 0.1\%$.

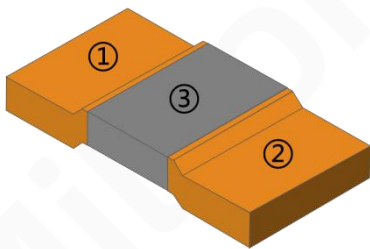
TCR: $\leq \pm 25-100$ ppm/ $^{\circ}\text{C}$ cover a temperature range of -55°C to $+170^{\circ}\text{C}$; Non-inductive design with Inductance < 3 nH and RoHS compliant.



■ Scope of application

- ① Power Supply Modules ② Industrial Instrumentation Equipment ③ Servo Drive Systems
- ④ Variable Frequency Drives ⑤ Automation Control Systems

■ Product Construction

	serial number	Part Name
	1	Copper electrode
	2	Copper electrode
	3	Alloy Resistive



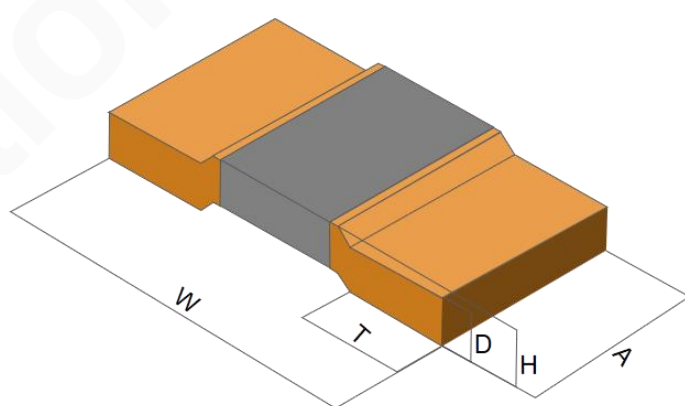
■ Electrical parameters

Size	Resistance Value	Rated Power	Max imum Rated Current	Resistance Tolerance	T.C.R.	Operating Temp. Range
5930 (1575)	0.1mR~6mR	7W	34.15A~264.57A	±0.1% ±0.2% ±0.5% ±1.0% ±5.0%	±25ppm~±100ppm	-55°C~+170°C

■ Product Selection

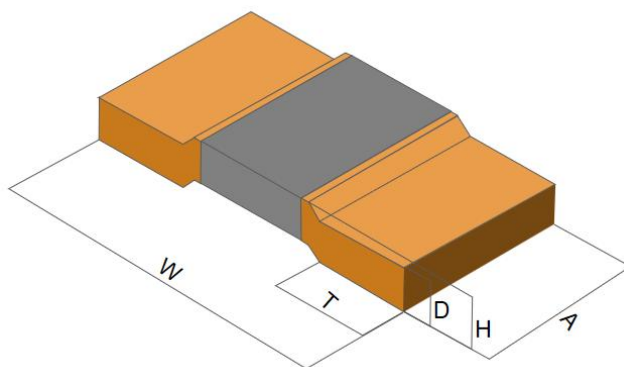
Selection Example: HoLRS5930-7W-2mR-1%-K-25ppm						Exposed Alloy Resistors 5930	
Ho	LRS	5930	7W	2mR	1%	K	25ppm
↓	↓	↓	↓	↓	↓	↓	↓
Manufact urer	Series	Size	Rated Power	Resistance Value	Tolerance	Material	T.C.R.
Milliohm	Bare alloy	5930 (1575)	7W	0.1mR~6mR	±0.1% ±0.2% ±0.5% ±1% ±5%	M=MANGANIN (standard material will not display in P/N) K=Karma T=FeCrAl N=6J16 H=6J06	±25ppm ±50ppm ±75ppm ±100ppm

■ Product Dimensions (mm)



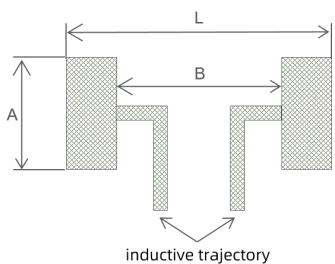
Size	Resistance	W±0.5	A±0.5	H±0.5	D±0.1	T±0.5	Material
5930 (1575)	0.10mR	15.2	7.6	2.5	2.00	4.2	H
	0.15mR	15.2	7.6	1.8	1.29	4.2	H
	0.20mR	15.2	7.6	2.0	1.50	4.2	M

■ Product Dimensions (mm)



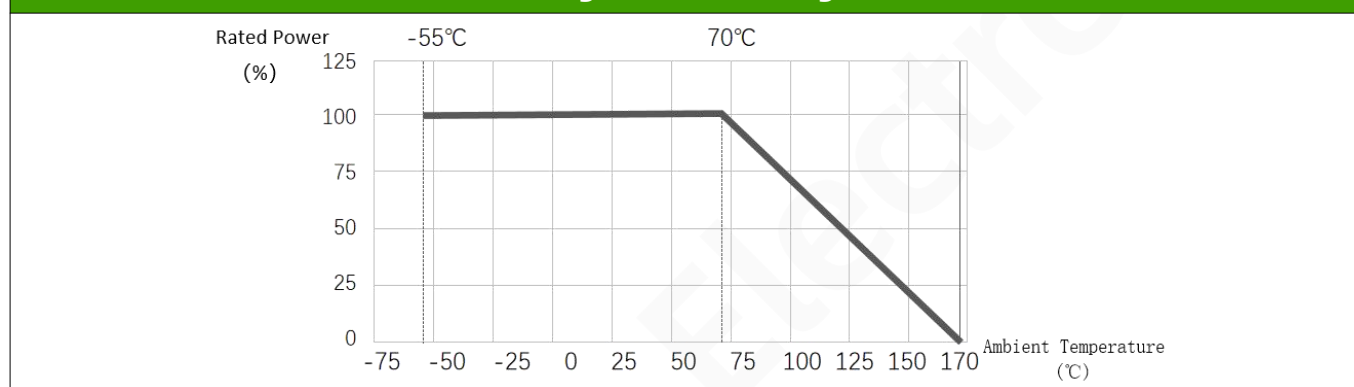
Size	Resistance	W±0.5	A±0.5	H±0.2	D±0.1	T±0.5	Material
5930 (1575)	0.25mR	15.2	7.6	1.7	1.20	4.2	M
	0.3mR	15.2	7.6	1.5	0.92	4.2	M
	0.4mR	15.2	7.6	1.3	0.72	4.2	M
	0.5mR	15.2	7.6	1.7	1.15	4.2	N
	0.5mR	15.2	7.6	1.1	0.56	4.2	M
	0.6mR	15.2	7.6	1.0	0.48	4.2	M
	0.7mR	15.2	7.6	0.9	0.42	4.2	M
	0.75mR	15.2	7.6	0.9	0.42	4.2	N
	0.8mR	15.2	7.6	0.9	0.36	4.2	M
	1mR	15.2	7.6	1.5	0.93	4.2	T
	1mR	15.2	7.6	1.5	0.95	4.2	K
	1.5mR	15.2	7.6	1.2	0.60	4.2	K
	1.5mR	15.2	7.6	1.2	0.65	4.2	T
	2mR	15.2	7.6	1.1	0.48	4.2	T
	2mR	15.2	7.6	1.0	0.43	4.2	K
	2.5mR	15.2	7.6	0.9	0.40	4.2	T
	2.5mR	15.2	7.6	0.9	0.35	4.2	K
	3mR	15.2	7.6	0.8	0.33	4.2	T
	3mR	15.2	7.6	0.8	0.30	4.2	K
	4mR	15.2	7.6	0.8	0.20	4.2	T
	5mR	15.2	7.6	0.8	0.24	4.2	T
	6mR	15.2	7.6	0.8	0.20	4.2	T

■ Recommended Land Pattern (mm)

	Resistance	A	L	B
	0.1mΩ~6mΩ	8.75	16	5.6

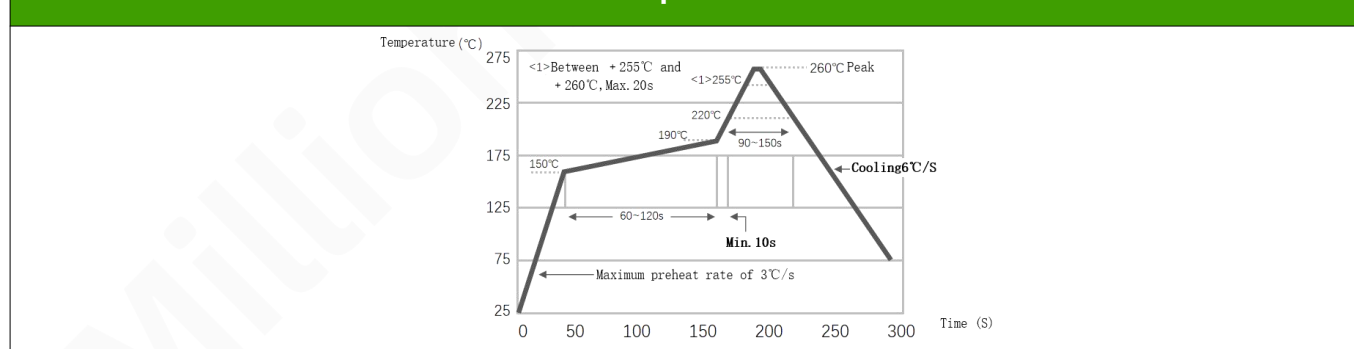
■ Derating Curve

When the resistor is operated at temperatures above 70°C, the rated power must be derated according to the Following curve



■ Soldering Recommendations

Reflow Temperature Profile



■ Rated current calculation formula

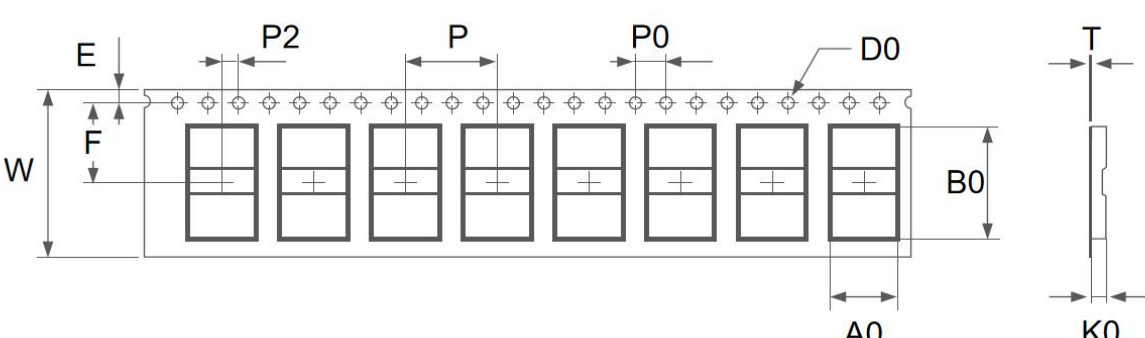
Rated current calculation formula

$I = \sqrt{P/R}$	I	P	R
	Rated Current(A)	Rated Power(W)	Resistance(Ω)

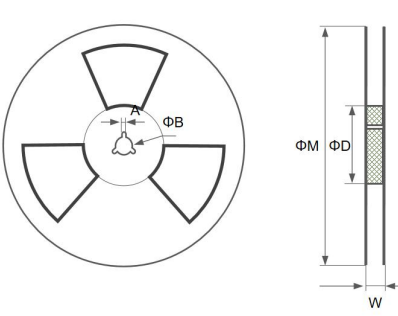
■ Performance Test

Item	Conditions of Tests	Standards	Test Limits
Short time overload	5 Times Rated Power for 5 Second Duration	JIS-C-5201	$\Delta R \leq \pm 0.5\%$
Temperature Coefficient of resistance	TCR (ppm/°C) = $(R_2 - R_1 / R_1 * (T_2 - T_1)) \times 10^6$ R1:Resistance measured at room temperature(Ω) R2:Resistance value measured at 125°C(Ω) T1:Room temperature(°C) T2: 125°C	JIS-C-5201	Refer to the measured curve
Bending strength	2mm judgment specification, at least 60 seconds of support time	AEC Q200-005	$\Delta R \leq \pm 0.5\%$
Solderability	Soldering temperature 245±5°C be immersed: 3±0.5 seconds	AEC-Q200 TEST18 J-STD-002	Solder coverage over than 95%
Solvent resistance	After soaking in 20~25°C isopropyl alcohol solvent for 60+5 seconds, take it out and let it stand for more than 24 hours, and measure the resistance change rate	AEC-Q200 TEST 12 MIL-STD-202 Method 215	$\Delta R \leq \pm 0.5\%$
Solder heat resistance test	Immerse the resistor in a 260±5°C tin furnace for 10±1 seconds, take it out and let it stand for more than 60 minutes, then measure the resistance change rate.	AEC-Q200 TEST 15 MIL-STD-202 Method 210	$\Delta R \leq \pm 0.5\%$
Temperature Cycle	1000 cycles (-55~155°C) The dwell time at each temperature is 30min, and the switching time (15°C/min). Electrical test is performed within 24±4 hours after the test.	AEC-Q200 TEST 4 JESD22 Method JA- 104	$\Delta R \leq \pm 0.5\%$, No damage to appearance
High Temperature Exposure	155°C for 1000h, no power, test the resistance change rate within 24±4h	AEC-Q200 TEST 3 MIL-STD-202 Method 108	$\Delta R \leq \pm 0.5\%$
Biased Humidity Test	1000 hours, 85°C, 85% relative humidity, load 10% rated power	AEC-Q200 TEST 7 MIL-STD-202 Method 103	$\Delta R \leq \pm 0.5\%$
Load Life	Rated current, Ta=125°C, load 100% power, 0.5 hours off, 1.5 hours on, test time: 1000H	AEC-Q200 TEST 8 MIL-STD-202 Method 108	$\Delta R \leq \pm 0.5\%$
Low Temperature Storage	-55°C, storage: 1000H	EC60115-1- 4.23.4 JIS-C5201-4.23.4	$\Delta R \leq \pm 0.5\%$
Mechanical shock	Impact in three directions: X, Y, and Z, half-sine pulse, duration 0.5ms, peak acceleration 100g's	AEC-Q200 TEST 13 MIL-STD-202 Method 213	$\Delta R \leq \pm 0.5\%$
Vibration	Traverse the entire frequency range from 10 to 2000 Hz within 20 minutes and return to 10 Hz; this cycle should be performed 12 times in each of the three mutually perpendicular directions (36 times in total)	AEC-Q200 TEST 14 MIL-STD-202 Method 204	$\Delta R \leq \pm 0.5\%$

■ Tape Specifications (mm)

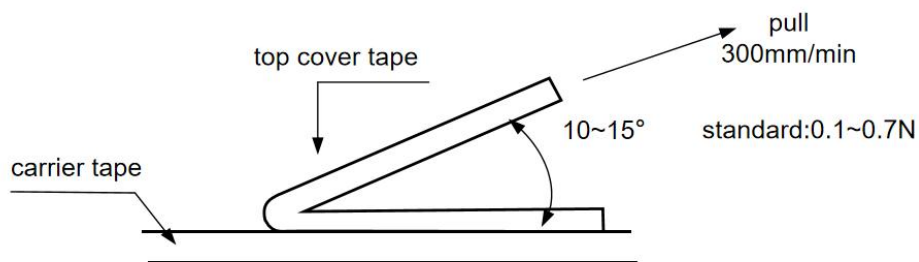
										
Size	$A0 \pm 0.1$	$B0 \pm 0.1$	$W \pm 0.3$	$F \pm 0.1$	$E \pm 0.1$	$T \pm 0.05$	$K0 \pm 0.1$	$P \pm 0.1$	$P0 \pm 0.1$	$P2 \pm 0.1$
5930 (1575)	8.1	15.4	24	11.5	1.75	0.3	1.3	12	4	2
	8.1	15.3	24	11.5	1.75	0.3	2.2	12	4	2
	8.1	15.5	24	11.5	1.75	0.3	2.7	12	4	2

■ Reel Specifications (mm)

						
Size	ΦD	ΦM	ΦB	W	A	Quantity
5930 (1575)	100 ± 2	350 ± 2.0	13.2 ± 0.5	24 ± 0.5	2.3 ± 0.5	2000PCS

■ Peeling Strength of Top Cover Tape:

Peel test: peel speed 300 mm/min; peel force 0.1N-0.7N



■ Product Usage Suggestions

- ◆ During the use of the product, pay attention to surface protection to prevent bumps, scratches, and other defects on the product surface.
- ◆ When taking or placing the product, do not use sharp tools to avoid scratching the product surface and causing resistance value deviation and failure.
- ◆ When installing and using the product, avoid the product being affected by mechanical stress.
- ◆ The long-term power of the product should be less than or equal to the rated power to avoid resistance drift caused by long-term overload.
- ◆ When using the product under high temperature or poor heat dissipation conditions, refer to the power consumption reduction curve for derating.
- ◆ If the product is not taken out of the tape packaging, it should be stored in a vacuum to avoid the risk of poor welding caused by product oxidation.

■ Storage instructions

- ◆ The product storage environment temperature is 5~35°C, humidity is < 65% RH, and the humidity should be kept as low as possible.
- ◆ The product should be stored in a clean, dry environment without harmful gases.
- ◆ Avoid removing the product from the taping package before use.
- ◆ Under the above storage conditions, the product can be kept for 1 year.
- ◆ For products over 1 year old, check whether the surface is oxidized and perform soldering test.

■ Revision of curriculum vitae:

version number	revision date	Content of the modification	Reason for change	change agent	auditor
Ho-B0	2022-06-02	Add pad size recommendation and package size chart	standardised format	Huang ZhongLiang	Huang ZhongLiang
Ho-B1	2024-07-29	Detailed update of resistance values, temperature drift range, and update the layout of the specification	Product Optimisation	Huang ZhongLiang	Huang ZhongLiang
Ho-B2	2024-11-14	update the layout of the specification	Product Optimisation	Huang YongKang	Leng WenYi
Ho-B3	2025-03-15	Resistance value content update	Product Optimisation	Huang YongKang	Leng WenYi

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