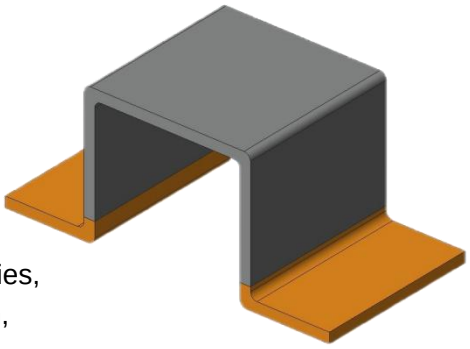
HoLRS3920（1050）Bare Alloy Resistor Series DataSheet

■ Features



High-precision, low-temperature drift, ultra-high power, pure alloy resistors are welded using Milliohm Electronics' independently designed, professional, and independently controllable electron beam welding equipment.

Based on the perfect combination of professional design capabilities, high-precision processing equipment and strict process control system, the product can achieve a target accuracy of up to ±0.5%.

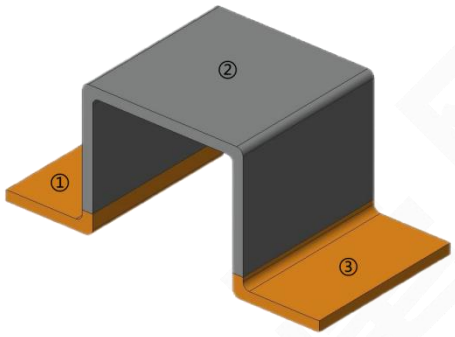
The product has a TCR of ≤±50ppm/°C within the temperature range of -55°C to +170°C. Its non-inductive design allows for an inductance less than 3nH. It is ROHS compliant.

■ Applications

① Power Module ② Industrial instruments and equipment ③ Servo drive system

④ Automation control system ⑤ variable frequency drive

■ Product Structure



No.	Part Name
1	Copper electrode
2	Alloy material
3	Copper electrode

■ Parameters

Package	Resistance	Rated Power	Max. Rated Current	Tolerance	T.C.R	Operating Temperature
3920 (1050)	6mR~15mR	5W	18.25A~28.86A	±0.5% ±1.0% ±5.0%	±50ppm	-55℃~+170℃

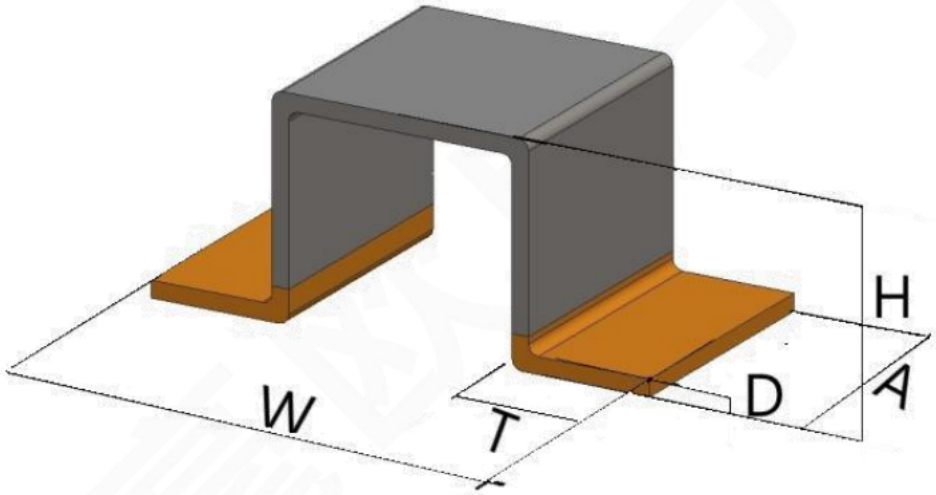
High-tech enterprises IATF16949 ISO9001 RoHS REACH

■ Product Selection

Example: HoLRS3920-5W-8mR-1%-K-JZ	Bare Alloy Resistor 3920

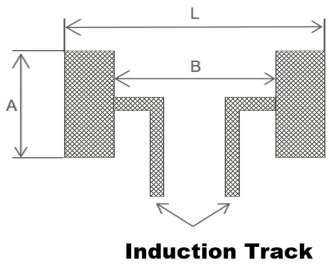
Ho	LRS	3920	5W	8mR	1%	K	JZ
Manufacturer	Series	Package	Rated Power	Resistance	Tolerance	Material	Shape
Milliohm Electronis	Bare Alloy Resistance	3920 (1050)	5W	6mR-15mR	±0.5% ±1% ±5%	K=Karma T=FeCrAl	JZ=几 Shape

■ Product Size (mm)



Package	Resistance	W±0.5	A±0.5	H±0.5	D±0.1	T±0.5	Material
3920 (1050)	6mR	10	5.2	6.5	0.62	2.0	T/K
	7mR	10	5.2	6.5	0.53	2.0	
	8mR	10	5.2	6.5	0.46	2.0	
	9mR	10	5.2	6.5	0.42	2.0	
	10mR	10	5.2	6.5	0.38	2.0	
	11mR	10	5.2	6.5	0.34	2.0	
	12mR	10	5.2	6.5	0.31	2.0	
	13mR	10	5.2	6.5	0.30	2.0	
	14mR	10	5.2	6.5	0.27	2.0	
	15mR	10	5.2	6.5	0.25	2.0	

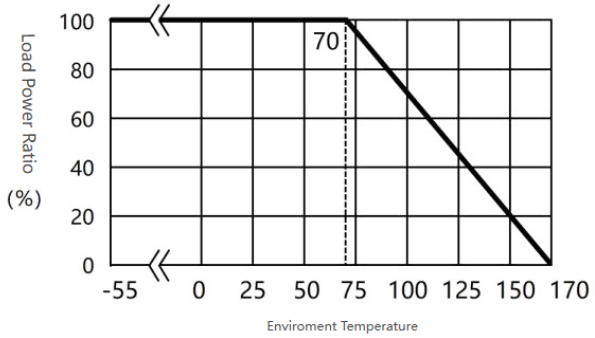
■ Recommended Pad Size (mm)



Resistance	A	L	B
6mΩ~15mΩ	6.2	11	5.6

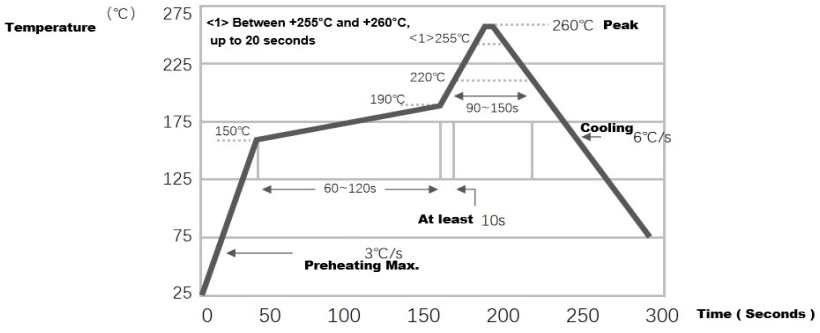
■ Power Curve

Operating temperature range -55 to +170°C Power reduction diagram when the resistor temperature reaches 70°C



■ Recommended welding parameters

Reflow temperature Curve



■ Rated Current Calculation Formula

Rated Current Calculation Formula

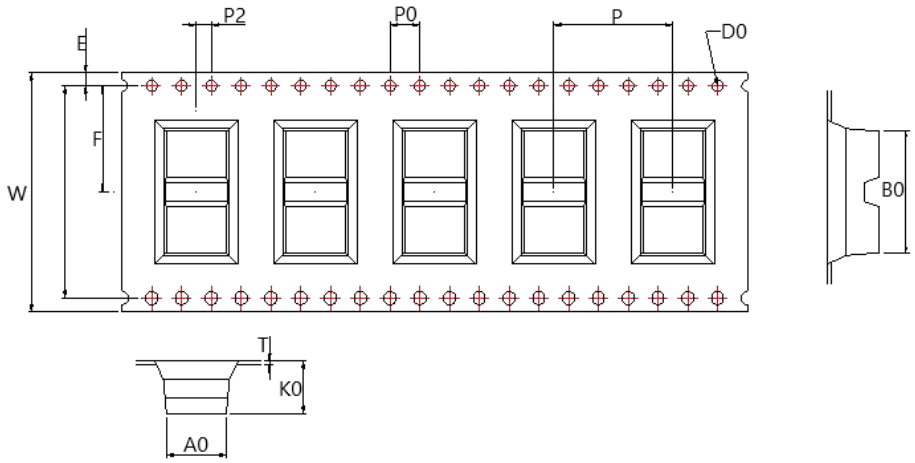
$$I=\sqrt{P/R}$$

I	P	R
Rated Current (A)	Rated Power(W)	Resistance (Ω)

■ Performance Test

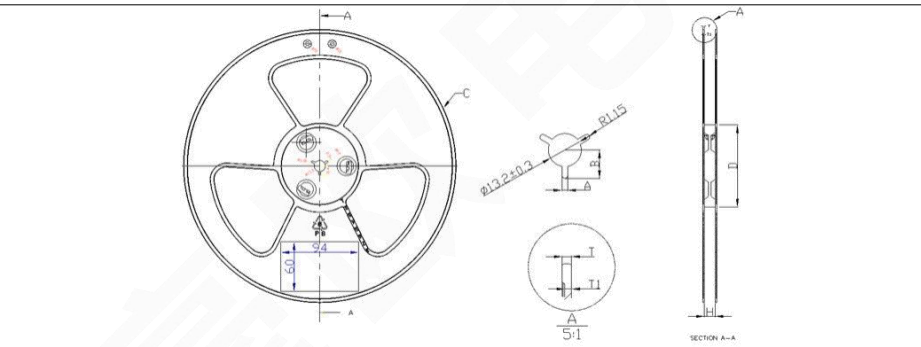
Test items	Testing Conditions	Standard	Testing Limited
Short-term overload	5 times rated power for 5 seconds	JIS-C-5201	△R≤±0.5%
T.C.R	TCR(ppm/°C)=(R2-R1/R1*(T2-T1))X10^6 R1: Resistance measured at room temperature (Ω) R2: Resistance measured at 125°C (Ω) T1: Room temperature (°C) T2: 125°C	JIS-C-5201	See measured curve
Flexural Strength Test	2mm judgment specification, at least 60 seconds of support time	AEC Q200-005	△R≤±0.5 %
Solderability	Immerse in a furnace at 245±5°C for 3±0.5 seconds	AEC-Q200 TEST18 J-STD-002	The electrode area covered with new tin must be greater than 95%
Solvent resistance	Immerse in 20~25°C isopropyl alcohol for 60±5 seconds	AEC-Q200 TEST 12 MIL-STD-202 Method 215	△R≤±0.5 %
Resistance to soldering heat	Immerse the resistor in a 260±5°C tin pot for 10±1 seconds , remove it, and let it rest for at least 60 minutes before me asuring the resistance change rate.	AEC-Q200 TEST 15 MIL-STD-202 Method 210	△R≤±0.5 %
Temperature Cycle	1000 cycles (-55°C to 155°C) with a 30-minute dwell time at each temperature and a transition time of 15°C/min. Electric al testing was performed within 24 hours of the test.	AEC-Q200 TEST 4 JESD22 Method JA- 104	△R≤±0.5%, Appearance No damaged
High temperature storage	1000h at 155°C, no power applied. Measure the resistance change rate within 24±4h after the test.	AEC-Q200 TEST 3 MIL-STD-202 Method 108	△R≤±0.5 %
High humidity	1000 hours, 85°C, 85% relative humidity, 10% rated power	AEC-Q200 TEST 7 MIL-STD-202 Method 103	△R≤±0.5 %
Load Life	Rated current, Ta = 125°C, 100% load, 0.5 hours off, 1.5 hours on, test time: 1000 hours	AEC-Q200 TEST 8 MIL-STD-202 Method 108	△R≤±0.5 %
Low temperature storage	Test conditions: -55°C, storage: 1000H	EC60115-1- 4.23.4 JIS-C5201-4.23.4	△R≤±0.5 %
Mechanical shock	Shock in X, Y, and Z directions, half-sine puls e, duration 0.5ms, peak acceleration 100g's	AEC-Q200 TEST 13 MIL-STD-202 Method 213	△R≤±0.5 %
Vibration	The entire frequency range from 10 to 2000 Hz must be traversed within 20 minutes, returning to 10 Hz. This loop should be performed 12 times in each of three mutually perpendicular directions (36 times in total).	AEC-Q200 TEST 14 MIL-STD-202 Method 204	△R≤±0.5 %

■ Carrier tape size (mm)



Package	W±0.3	T±0.05	A0±0.1	B0±0.1	K0±0.1	D0+0.1	S±0.1	E±0.1	F±0.1	P±0.1	P0±0.1	P2±0.1
3920 (1050)	24	0.5	5.6	11	7	1.5	0	1.75	11.5	12	4	2

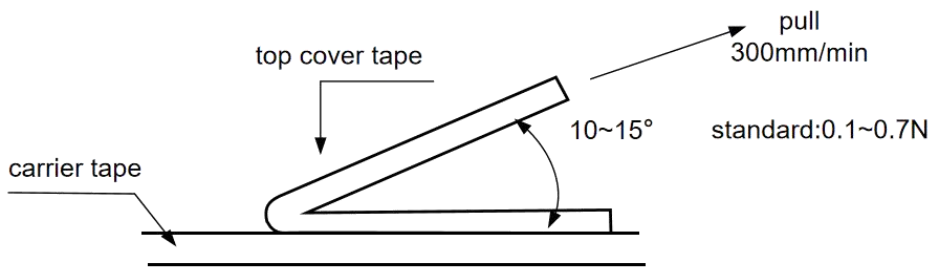
■ Reel specifications （mm)



Package	A	B	D	Packing Q'ty
3920（1050）	32.2	330	180	700PCS

■ Peel strength of top tape

Peel speed: 300 mm/min; peel force between 0.1N and 0.7N



■ Recommendations for Product Use

◆ During the use of the product, pay attention to surface protection to prevent defects such as bumps and scratches 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 mechanical stress on the product.

◆ The long-term operating 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 derating curve for derating application.

◆ If the product is not used immediately after being taken out of the tape packaging, it should be stored in a vacuum to avoid risks such as product oxidation and poor welding.

■ Storage Instructions

◆ The product storage environment temperature is 5~35℃, humidity is less than 65%RH, and the humidity should be kept as low as possible.

◆ The product must be stored in a clean, dry environment without harmful gases.

◆ Avoid removing the product from the tape packaging before use.

◆ Under the above storage conditions, the product can be kept for 1 year.

◆ For products over 1 year old, check for surface oxidation and perform a welding test.

■ Revision Record：

Version	Date of Revised	Content of Revised	Reason of Revised	Revised By	Approved By
Ho-A1	2024-11-14	Update content layout	Unified format	Yongkang Huang	Wenyi Leng

■ Disclaimer

◆All products, specifications and data are subject to change without notice

◆ Shenzhen Milliohm Electronic Co., Ltd. and its affiliated units, agents, and other representatives shall not bear any legal liability for any errors, inaccuracies, and incompleteness of information disclosed under this Agreement or other product-related information

◆ Except as otherwise stated in the purchase terms and conditions, Milliohm Electronic makes no warranties, representations or guarantees

◆ The product specifications do not constitute an extension or revision of the purchasing terms and conditions of Shenzhen Milliohm Electronic Co., Ltd, including but not limited to the warranties under this Agreement

◆ To the extent permitted by applicable law, Shenzhen Milliohm Electronic Co., Ltd makes the following disclaimer: (1) All liability arising from the use of the product.

(2) All implied warranties, including the warranties of fitness for a particular purpose, non-infringement and merchantability.

(3) Including, but not limited to, all liability for special, consequential or incidental damages

◆ The information provided in the datasheet and parameter table may vary in different applications, and the performance of the product may change over time. The recommended applicationdescriptions for the product are based on Shenzhen Milliohm Electronic Co., Ltd's knowledge and experience of typical needs. The customer is obliged to verify whether the product is suitable for a specific application based on the parameters provided in the product manual. Before officiallyinstalling or using the product, you should ensure that you have obtained the latest version of the relevant information,which can be obtained through the website http://www.milliohm.net

◆ The signing of this Agreement does not constitute any express, implied or other form of license to all intellectual property rights of Shenzhen Milliohm Electronic Co., Ltd Products

◆ Unless otherwise expressly stated, the products listed in this Agreement are not intended for life-saving or life- sustaining applications. In the absence of express notice, customers shall bear all risks caused by theirunauthorized use of the above products and agree to fully compensate Millom Electronics for all losses caused by such sales or use. For written terms of products for such special applications, please contact the authorized Millohm Electronics personnel