ISO9001 ISO14001 IATF16949 CHILISIN ELECTRONICS CORP.

SPECIFICATION FOR APPROVAL

Customer：

Customer P/N:

Drawing No：

Quantity： **0** **Pcs.** **Date：** **2017/10/3**

Chilisin P/N： **ACRC_Jumper Series**

Automotive Grade Resistor

Halogen Free
RoHS Compliant
REACH Compliant
Lead Free Solders
AEC-Q200

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ACRC Jumper Specification

1 Scope:

1.1 This specification is applicable to lead free and halogen free for zero milli-ohm resistor (Jumper) series metal alloy product only.

1.2 Car electronics industrial application.

1.3 AEC-Q200 qualified available.

2 Part Numbering:

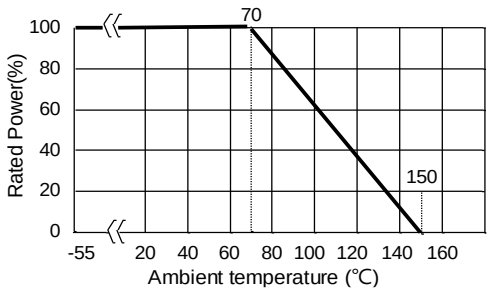
A C R C	0 0	0 8 0 5	C	R 0 0 0 J P	J
Series	**Internal Code**	**Dimension (inch)**	**Rated Power (W)**	**Nominal Resistance**	**Tolerance**
A：Automotive Grade Metal Alloy Low resistance resistor		0805 1206 2512	C = 0.5W 1 = 1W 2 = 2W 3 = 3W	R000JP = Below 0.20 mΩ	J = ± 5%

3 SPECIFICATIONS:

Type	Max. Rating Power	Max. Loading Current	Resistance (mΩ)	Operating Temperature Range
ACRC000805	0.5W	50.0A	< 0.20	-55~+150°C
ACRC001206	1W	70.7A	< 0.20	
ACRC002512	2W	100.0A	< 0.20	
	3W	122.5A	< 0.20	

3.1 Power Derating Curve: Operating Temperature Range: - 55 ~+150 ℃

For resistors operated in ambient temperatures 70°C, power rating shell be derated in accordance with the curve below:



3.2 Rating Current:

The following equation may be used to determine the DC (Direct Current) or AC (Alternating Current) currents (RMS, root mean square value) of normal rated power. However, if the result value exceeds the highest current of regulated standards, the highest normal rated power is to be used.

a. I: Rating Current.(A)

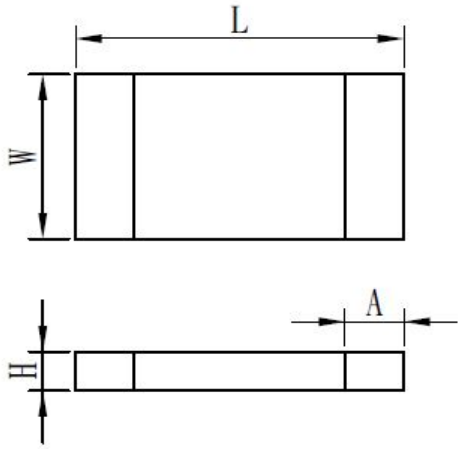
b. P: Rating Power.(W)

c. R: Resistance.(Ω)

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

ACRC Jumper Specification

4 Physical Dimensions:



Type	Rated Power	Resistance Range (mΩ)	Dimensions - in inches (millimeters)			
			L	W	H	A
0805	0.5W	＜0.2	2.03±0.2	1.27±0.2	0.35±0.15	0.40±0.15
1206	1.0W	＜0.2	3.05±0.2	1.52±0.2	0.50±0.2	0.70±0.2
2512	2.0W	＜0.2	6.35±0.2	3.05±0.2	0.60±0.2	1.40±0.2
2512	3.0W	＜0.2	6.35±0.2	3.05±0.2	0.60±0.2	1.40±0.2

ACRC Jumper Specification

5 Reliability Performance

5.1 Electrical Performance

No	Item	Conditions of Test	Test Limits
5-1-1	Short Time Overload	Applied Overload for 5 seconds and release the load for about 30 minutes, then measure its resistance variance rate. (Overload condition refer to below): Type / Power (W) / # of rated power 0805 / 0.5 / 4 times 1206 / 1.0 2512 / 2.0 2512 / 3.0 Refer to JIS C 5201-1 4.13	<0.2mΩ No evidence of mechanical damage
5-1-2	Insulation Resistance	Put the resistor in the fixture, add 100 VDC in + ,- terminal for 60secs then measured the insulation resistance between electrodes and insulating enclosure or between electrodes and base material. Refer to JIS-C5201-1 4.6	$\geqq 10^9\Omega$
1-1-4	Dielectric Withstanding Voltage	Applied 500VAC for 1 minute, and Limit surge current 50 mA (max.) Refer to JIS-C5201-1 4.7	No short or burned on the appearance.

5-2.Mechanical /Constructional Performance

No	Item	Conditions of Test	Test Limits
5-2-1	Resistance to Solder Heat	The tested resistor be immersed 25 mm/sec into molten solder of 260±5℃ for 10±1secs. Then the resistor is left in the room for 1 hour, and measured its resistance variance rate. Refer to JIS-C5201-1 4.18	<0.2mΩ No evidence of mechanical damage
5-2-2	Solderability	Add flux into tested resistors, immersion into solder bath in temperature 245±5℃ for 3±0.5secs. Refer to JIS-C5201-1 4.17	Solder coverage over 95%
5-2-3	Vibration	The resistor shall be mounted by its terminal leads to the supporting terminals on the solid table. The entire frequency range :from 10 Hz to 55 Hz and return to 10 Hz, shall be transferred in 1 min. Amplitude : 1.5mm This motion shall be applied for a period of 4 hours in each 3 mutually perpendicular directions (a total of 12hrs) Refer to JIS-C5201-1 4.22	<0.2mΩ No evidence of mechanical damage
5-2-4	Resistance to solvent	The tested resistor be immersed into isopropyl alcohol of 20~25℃ for 60secs, then the resistor is left in the room for 48 hrs. Refer to JIS-C5201-1 4.29	<0.2mΩ No evidence of mechanical damage

ACRC Jumper Specification

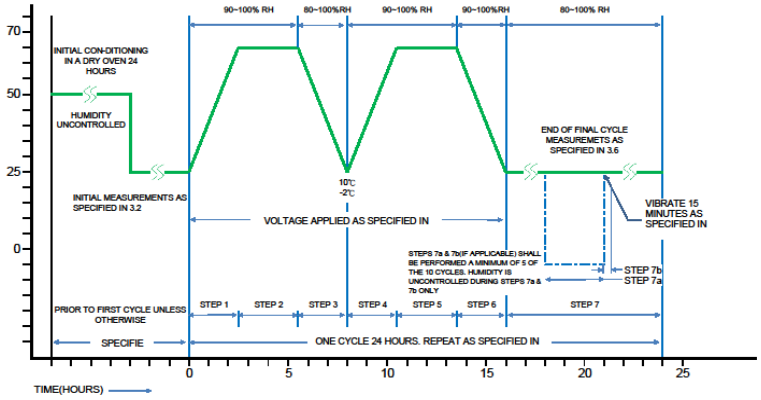
5-3.Environmental Performance

No	Item	Conditions of Test	Test Limits
5-3-1	Low Temperature Exposure (Storage)	Put the tested resistor in chamber under temperature -55±2℃ for 1,000 hours. Then leaving the tested resistor in room temperature for 60 minutes, and measure its resistance variance rate. Refer to JIS-C5201-1 4.23.4	<0.2mΩ No evidence of mechanical damage
5-3-2	High Temperature Exposure (Storage)	Put tested resistor in chamber under temperature 150±5℃ for 1,000 hours. Then leaving the tested resistor in room temperature for 60 minutes , and measure its resistance variance rate. Refer to JIS-C5201-1 4.23.2	<0.2mΩ No evidence of mechanical damage
5-3-3	Temperature Cycling (Rapid Temperature Change)	Put the tested resistor in the chamber under the temperature cycling which shown in the following table shall be repeated 1,000 times consecutively. Then leaving the tested resistor in the room temperature for 60 minutes, and measure its resistance variance rate. Testing Condition Lowest Temperature: -55 +0/-10℃ Highest Temperature: 150 +10/-0℃ Refer to JIS-C5201-1 4.19	<0.2mΩ No evidence of mechanical damage
5-3-4	Moisture Resistance (Climatic Sequence)	Put the tested resistor in chamber and subject to 10 cycles of damp heat and without power. Each one of which consists of the steps 1 to 7 (Figure 1). Then leaving the tested resistor in room temperature for 24 hr, and measure its resistance variance rate. Refer to MIL-STD 202 Method 106	<0.2mΩ No evidence of mechanical damage
5-3-5	Bias Humidity	Put the tested resistor in chamber under 85± 5℃and 85± 5%RH with 10% bias and load the rated current for 90 minutes on, 30 minutes off, total 1,000 hours. Then leaving the tested resistor in room temperature for 60 minutes, and measure its resistance variance rate. Refer to JIS-C5201-1 4.24	<0.2mΩ No evidence of mechanical damage

5-4 Operational Life Endurance

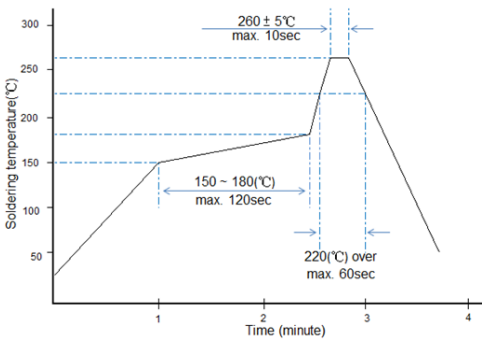
No	Item	Conditions of Test	Test Limits
5-4-1	Load Life	Put the tested resistor in chamber under temperature 70± 2℃ and load the rated current for 90 minutes on 30 minutes off, total 1000 hours. Then leaving the tested resistor in room temperature for 60 minutes, and measure its resistance variance rate. Refer to JIS-C5201-1 4.25	<0.2mΩ No evidence of mechanical damage

ACRC Jumper Specification

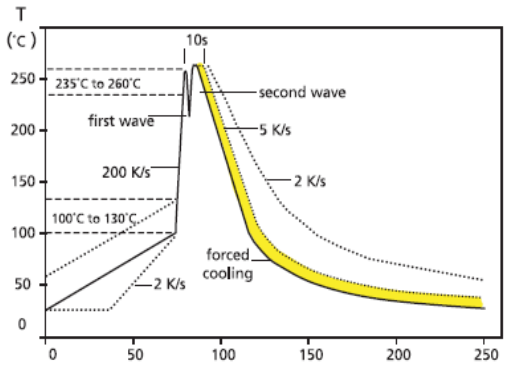


6 Recommend Soldering Conditions

Surface-mount components are tested for solderability at a temperature of 260 °C for 5 seconds.
Typical examples of soldering processes that provide reliable joints without any damage are given in below:



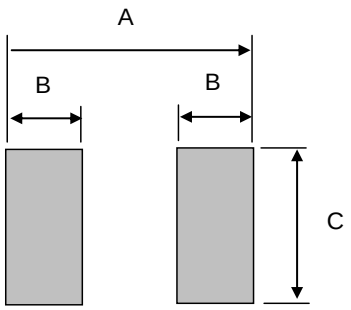
Recommended IR Reflow Soldering Profile



Recommended double-wave Soldering Profile
Typical values (solid line)
Process limits (dotted line)

ACRC Jumper Specification

7 Recommend Land Pattern:

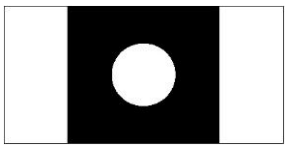


TYPE	Dimensions (mm)		
	A	B	C
0805	3.40	1.30	1.30
1206	4.00	1.50	1.80
2512	7.60	2.60	3.80

8 Marking (All the products marking are 1 digit):

8.1 0805:

《EX》Marking→●＝0mΩ



8.2 1206 / 2512:

《EX》Marking→0＝0mΩ

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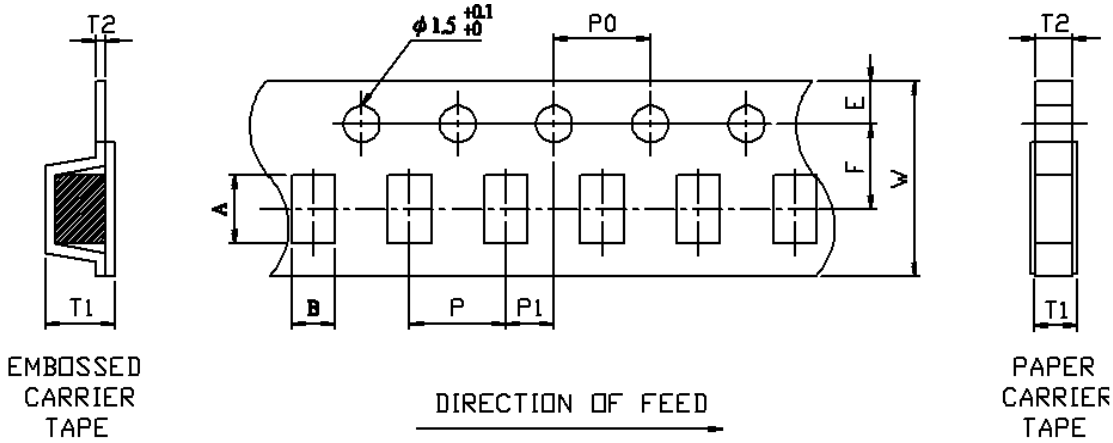
ACRC Jumper Specification

9 Taping specifications:

9.1 Tape Dimensions:



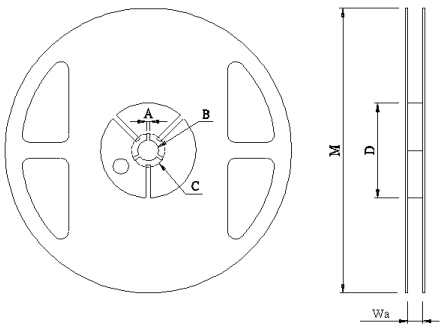
Unit: mm

DIM / Size	A	B	W	E	F	T1	T2	P	P0	10*P0	P1
0805	2.30±0.10	1.55±0.10	8.0±0.20	1.75±0.10	3.5±0.05	0.40+0.2/-0	0.40±0.10	4.0±0.10	4.0±0.10	40.0±0.20	2.0±0.05
1206	3.50±0.20	1.90±0.20	8.0±0.20	1.75±0.10	3.5±0.05	0.75+0.20/-0	0.75±0.10	4.0±0.10	4.0±0.10	40.0±0.20	2.0±0.05
2512	6.70±0.20	3.40±0.20	12.0±0.20	1.75±0.10	5.5±0.05	1.10±0.15	0.23±0.05	4.0±0.10	4.0±0.10	40.0±0.20	2.0±0.10

9.2 Packing Quantity:

Type	Tape Width	Packaging Quantity (pcs/reel)	
		4 mm Pitch	12 mm Pitch
0805	8 mm	5,000 pcs	--
1206	8 mm	4,000 pcs	--
2512	12 mm	4,000 pcs	--

9.3 Reel Dimensions:



Unit: mm

Reel Type / Tape	Wa	M	A	B	C	D
7" reel for 8mm tape	12.0± 0.5	178 ± 1.0	2.0 ± 0.5	13.2 ± 0.5	17.7 ± 0.5	60.0 ± 0.5
7" reel for 12mm tape	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 24mm tape	24.0+2/-0	178 ± 1.0	2.0 ± 0.5	13.2 ± 0.5	17.7 ± 0.5	60.0 ±1.0