



ISO9001 & ISO14001 & TS16949 CHILISIN ELECTRONICS CORP.

Form No.: QF-1274
Edition: 2

RoHS & Halogen Free & REACH Compliance.

SPECIFICATION FOR APPROVAL

Customer : _____

Customer P/N: _____

Drawing No : _____

Quantity : **0** Pcs. Date : _____

Chilisin P/N : **BCRC Series**

SPECIFICATION ACCEPTED BY:	
COMPONENT ENGINEER	
ELECTRICAL ENGINEER	
MECHANICAL ENGINEER	
APPROVED	
REJECTED	

奇力新電子股份有限公司
Chilisin Electronics Corp
No. 29, Alley 301, Tehhsin Rd.,
Hukou, Hsinchu 303, Taiwan
TEL : +886-3- 599-2646
FAX : +886-3- 599-9176
E-mail : sales@chilisin.com
http : //www.chilisin.com

東莞奇力新電子(東莞廠)有限公司
Chilisin Electronics (Dongguan) Co., Ltd.
No. 78, Puxing Rd., Yuliangwei Administration Area,
Qingxi Town, Dongguan City, Guangdong, China
TEL : +86-769-8773-0251-3
FAX : +86-769-8773-0232
E-mail : cect@chilisin.com

奇力新電子(越南廠)有限公司
Chilisin Electronics (Vietnam) Limited
No 143 - 145, Road No 10, VSIP Hai Phong,
Lap Le Commune, Thuy Nguyen Dist,
Haiphong City, Vietnam
Tel : 84-316 255 688 Fax : 84-316 255
689
E-mail : sales@chilisin.com

奇力新電子(湖南廠)有限公司
HuNan Chilisin Electronics Technology Co., Ltd
No. 8, Shaziao Liangshuijing Town, Yuanling
County, Huaihua City, Hunan Province 419601,
China
Tel : 86-745-867-5882
E-mail : cect@chilisin.com

Drawn by
賴碧 玉 hebe.lai

Checked by
邱明傑 Joseph.Chiu

Approved by
鍾瑞民 jacky.chung



BCRC Jumper Specification

1 Scope:

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

2 Part Numbering:

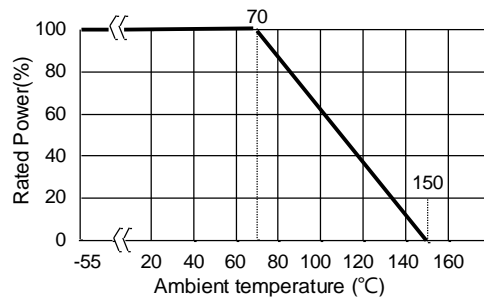
B C R C	0 0	0 6 0 3	C	R 0 0 0 J P	J
Series	Internal Code	Dimension (inch)	Rated Power (W)	Nominal Resistance	Tolerance
BCRC: Metal Alloy Low resistance Resistor		0603	G = 0.25W	R000JP = Below 0.30 mΩ	F = ± 1%
		0805	C = 0.5 W	R000JP = Below 0.20 mΩ	J = ± 5%
		1206	1 = 1 W		
		2512	2 = 2 W 3 = 3 W		

3 SPECIFICATIONS:

Type	Max. Rating Power	Max. Loading Current	Resistance (mΩ)	Operating Temperature Range
0603	0.25 W	28.9 A	< 0.30	-55~+150°C
0805	0.5 W	50.0 A	< 0.20	
1206	0.5W	50.0 A	< 0.20	
	1 W	70.7 A	< 0.20	
2512	2 W	100.0 A	< 0.20	
	3 W	122.5 A	< 0.20	

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

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



3.2 Rating Current:

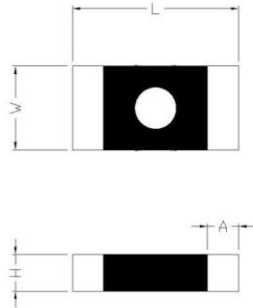
The following equation may be used to determine the DC (Direct Current) or AC (Alternating Current) currents (RMS, root mean square value) of normal rated power. However, if the result value exceeds the highest current of regulated standards, the highest normal rated power is to be used.

- a. I: Rating Current.(A)
- b. P: Rating Power.(W)
- c. R: Resistance.(Ω)

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

BCRC Jumper Specification

4 Physical Dimensions:



Type	Rated Power	Resistance Range (mΩ)	Dimensions - in inches (millimeters)			
			L	W	H	A
0603	0.25W	< 0.3	1.60±0.1	0.80±0.1	0.35±0.15	0.30±0.15
0805	0.5 W	< 0.2	2.03±0.2	1.27±0.2	0.35±0.15	0.40±0.15
1206	0.5 W	< 0.2	3.05±0.2	1.52±0.2	0.50±0.2	0.70±0.2
	1.0 W					
2512	2.0 W	< 0.2	6.35±0.2	3.05±0.2	0.60±0.2	1.40±0.2
	3.0 W		6.35±0.2	3.05±0.2	0.60±0.2	1.40±0.2



BCRC Jumper Specification

5 Reliability Performance

5.1 Electrical Performance

No	Item	Conditions of Test	Test Limits															
5-1-1	Short Time Overload	<p>Applied Overload for 5 seconds and release the load for about 30 minutes, then measure its resistance variance rate. (Overload condition refer to below):</p> <table border="1"> <thead> <tr> <th>Type</th> <th>Power (W)</th> <th># of rated power</th> </tr> </thead> <tbody> <tr> <td>0603</td> <td>0.25</td> <td>4 times</td> </tr> <tr> <td>0805</td> <td>0.5</td> <td rowspan="4">4 times</td> </tr> <tr> <td>1206</td> <td>0.5</td> </tr> <tr> <td>2512</td> <td>1.0</td> </tr> <tr> <td>2512</td> <td>3.0</td> </tr> </tbody> </table> <p>Refer to JIS C 5201-1 4.13</p>	Type	Power (W)	# of rated power	0603	0.25	4 times	0805	0.5	4 times	1206	0.5	2512	1.0	2512	3.0	$\leq 0.2 \text{ m}\Omega$ $\leq 0.3 \text{ m}\Omega$ No evidence of mechanical damage
Type	Power (W)	# of rated power																
0603	0.25	4 times																
0805	0.5	4 times																
1206	0.5																	
2512	1.0																	
2512	3.0																	
5-1-2	Insulation Resistance	<p>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.</p> <p>Refer to JIS-C5201-1 4.6</p>	$\geq 10^9 \Omega$															
1-1-4	Dielectric Withstanding Voltage	<p>Applied 500VAC for 1 minute, and Limit surge current 50 mA (max.)</p> <p>Refer to JIS-C5201-1 4.7</p>	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	<p>The tested resistor be immersed 25 mm/sec into molten solder of $260 \pm 5^\circ\text{C}$ for 10 ± 1secs. Then the resistor is left in the room for 1 hour, and measured its resistance variance rate.</p> <p>Refer to JIS-C5201-1 4.18</p>	$\leq 0.2 \text{ m}\Omega$ $\leq 0.3 \text{ m}\Omega$ No evidence of mechanical damage
5-2-2	Solderability	<p>Add flux into tested resistors, immersion into solder bath in temperature $245 \pm 5^\circ\text{C}$ for 3 ± 0.5secs.</p> <p>Refer to JIS-C5201-1 4.17</p>	Solder coverage over 95%
5-2-3	Vibration	<p>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)</p> <p>Refer to JIS-C5201-1 4.22</p>	$\leq 0.2 \text{ m}\Omega$ $\leq 0.3 \text{ m}\Omega$ No evidence of mechanical damage
5-2-4	Resistance to solvent	<p>The tested resistor be immersed into isopropyl alcohol of $20 \sim 25^\circ\text{C}$ for 60secs, then the resistor is left in the room for 48 hrs. Refer to JIS-C5201-1 4.29</p>	$\leq 0.2 \text{ m}\Omega$ $\leq 0.3 \text{ m}\Omega$ No evidence of mechanical damage



BCRC Jumper Specification

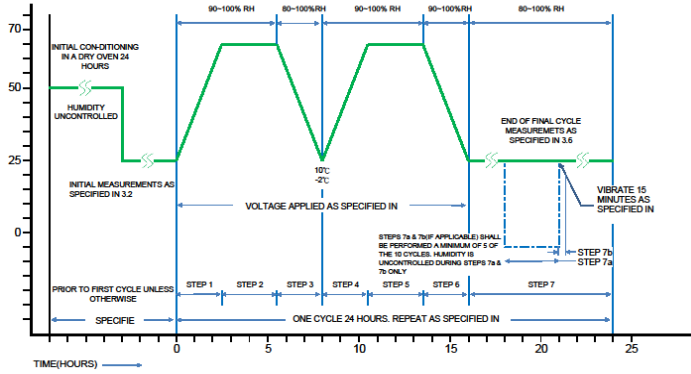
5-3.Environmental Performance

No	Item	Conditions of Test	Test Limits						
5-3-1	Low Temperature Exposure (Storage)	Put the tested resistor in chamber under temperature $-55\pm 2^{\circ}\text{C}$ 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	$\leq 0.2\text{ m}\Omega$ $\leq 0.3\text{m}\Omega$ No evidence of mechanical damage						
5-3-2	High Temperature Exposure (Storage)	Put tested resistor in chamber under temperature $150\pm 5^{\circ}\text{C}$ 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	$\leq 0.2\text{ m}\Omega$ $\leq 0.3\text{m}\Omega$ 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. <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th colspan="2">Testing Condition[Ⓐ]</th> </tr> </thead> <tbody> <tr> <td>Lowest Temperature[Ⓐ]</td> <td>$-55\ +0/-10^{\circ}\text{C}$ [Ⓐ]</td> </tr> <tr> <td>Highest Temperature[Ⓐ]</td> <td>$150\ +10/-0^{\circ}\text{C}$ [Ⓐ]</td> </tr> </tbody> </table> Refer to JIS-C5201-1 4.19	Testing Condition [Ⓐ]		Lowest Temperature [Ⓐ]	$-55\ +0/-10^{\circ}\text{C}$ [Ⓐ]	Highest Temperature [Ⓐ]	$150\ +10/-0^{\circ}\text{C}$ [Ⓐ]	$\leq 0.2\text{ m}\Omega$ $\leq 0.3\text{m}\Omega$ No evidence of mechanical damage
Testing Condition [Ⓐ]									
Lowest Temperature [Ⓐ]	$-55\ +0/-10^{\circ}\text{C}$ [Ⓐ]								
Highest Temperature [Ⓐ]	$150\ +10/-0^{\circ}\text{C}$ [Ⓐ]								
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	$\leq 0.2\text{ m}\Omega$ $\leq 0.3\text{m}\Omega$ No evidence of mechanical damage						
5-3-5	Bias Humidity	Put the tested resistor in chamber under $85\pm 5^{\circ}\text{C}$ and $85\pm 5\%\text{RH}$ 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	$\leq 0.2\text{ m}\Omega$ $\leq 0.3\text{m}\Omega$ No evidence of mechanical damage						

5-4 Operational Life Endurance

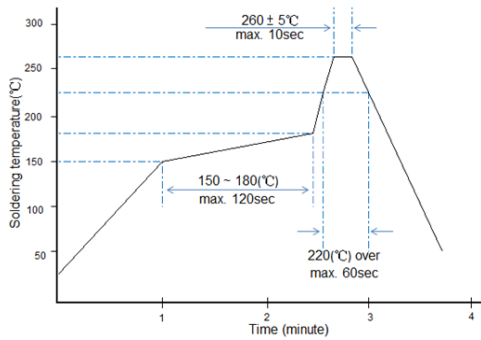
No	Item	Conditions of Test	Test Limits
5-4-1	Load Life	Put the tested resistor in chamber under temperature $70\pm 2^{\circ}\text{C}$ and load the rated current for 90 minutes on 30 minutes off, total 1000 hours. Then leaving the tested resistor in room temperature for 60 minutes, and measure its resistance variance rate. Refer to JIS-C5201-1 4.25	$\leq 0.2\text{ m}\Omega$ $\leq 0.3\text{m}\Omega$ No evidence of mechanical damage

BCRC Jumper Specification

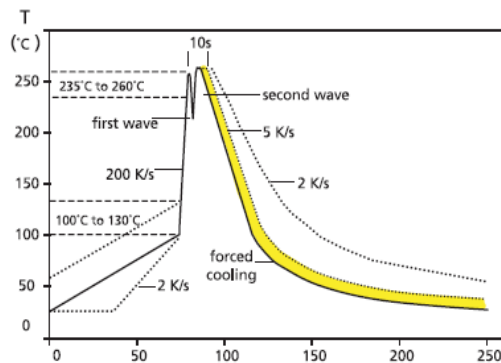


6 Recommend Soldering Conditions

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:



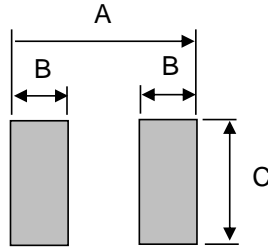
Recommended IR Reflow Soldering Profile



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

BCRC Jumper Specification

7 Recommend Land Pattern:



TYPE	Dimensions (mm)		
	A	B	C
0603	2.6	0.9	0.9
0805	3.4	1.3	1.3
1206	4	1.5	1.8
2512	7.6	2.6	3.8

8 Packaging Quantity:

Type	Tape Width	Packaging Quantity (pcs/reel)
		4 mm Pitch
0603	8 mm	5,000 pcs
0805	8 mm	5,000 pcs
1206	8 mm	4,000 pcs
2512	12 mm	4,000 pcs