

# DATA SHEET

ARRAY CHIP RESISTORS  
YC102 (4Pin/2R)

sizes 2 × 0201

RoHS compliant



**SCOPE**

This specification describes YC102 series chip resistor arrays with lead-free terminations made by thick film process.

**APPLICATIONS**

- Terminal for SDRAM and DDRAM
- Computer applications: laptop computer, desktop computer
- Consume electronic equipment: PDAs, PNDs
- Mobile phone, telecom...

**FEATURES**

- RoHS compliant
  - Products with lead free terminations meet RoHS requirements
  - Pb-glass contained in electrodes
  - Resistor element and glass are exempted by RoHS
- Reducing environmentally hazardous wastes
- High component and equipment reliability
- Saving of PCB space
- None forbidden-materials used in products/production
- Halogen Free Epoxy

**ORDERING INFORMATION - GLOBAL PART NUMBER**

Both part numbers are identified by the series, size, tolerance, packing type, temperature coefficient, taping reel and resistance value.

**YAGEO BRAND ordering code**

**GLOBAL PART NUMBER (PREFERRED)**

**YC102 - X X X XX XXXX L**  
 (1) (2) (3) (4) (5) (6)

**(1) TOLERANCE**

F = ±1%  
 J = ±5% (for Jumper ordering, use code of J)

**(2) PACKAGING TYPE**

R = Paper taping reel

**(3) TEMPERATURE COEFFICIENT OF RESISTANCE**

- = Base on spec

**(4) TAPING REEL**

07 = 7 inch dia. Reel

**(5) RESISTANCE VALUE**

There are 2~4 digits indicated the resistor value. Letter R/K/M is decimal point, no need to mention the last zero after R/K/M, e.g.1K2, not 1K20.  
 Detailed resistance rules show in table of "Resistance rule of global part number".

**(6) OPTIONAL CODE**

L = optional symbol (Note)

Resistance rule of global part number	
Resistance code rule	Example
0R	0R = Jumper
XRX	1R = 1 Ω
(1 to 9.76 Ω)	1R5 = 1.5 Ω
	9R76 = 9.76 Ω
XXRX	10R = 10 Ω
(10 to 97.6 Ω)	97R6 = 97.6 Ω
XXXR	100R = 100 Ω
(100 to 976 Ω)	
XKXX	1K = 1,000 Ω
(1 to 9.76 KΩ)	9K76 = 9760 Ω
XMXX	1M = 1,000,000 Ω
(1 to 9.76 MΩ)	9M76 = 9,760,000 Ω

**ORDERING EXAMPLE**

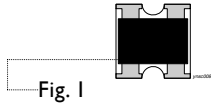
The ordering code of a YC102 convex chip resistor array, value 1,000 Ω with ±5% tolerance, supplied in 7-inch tape reel is: YC102-JR-071K(L).

**NOTE**

1. All our RSMD products meet RoHS compliant. "LFP" of the internal 2D reel label mentions "Lead Free Process"
2. On customized label, "LFP" or specific symbol printed and the optional "L" at the end of GLOBAL PART NUMBER

**MARKING**

YCI02



No marking

For further marking information, please see special data sheet “Chip resistors marking”.

**CONSTRUCTION**

The resistor is constructed on top of a high-grade ceramic body. Internal metal electrodes are added on each end to make the contacts to the thick film resistive element. The composition of the resistive element is a noble metal imbedded into a glass and covered by a second glass to prevent environment influences. The resistor is laser trimmed to the rated resistance value. The resistor is covered with a protective epoxy coat, finally the two external terminations (matte tin on Ni-barrier) are added. See fig.2

**OUTLINES**

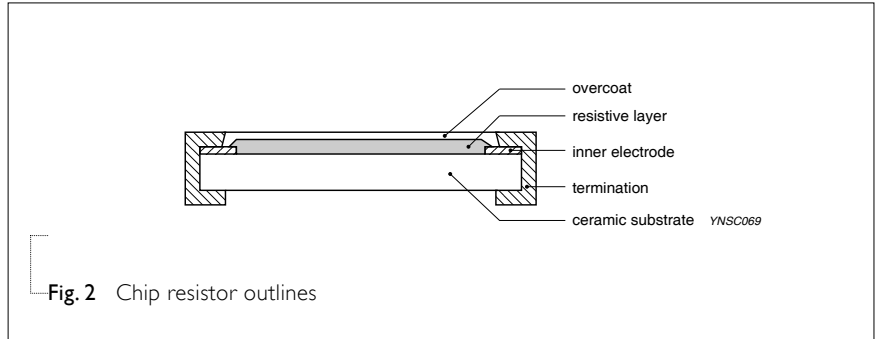


Fig. 2 Chip resistor outlines

**DIMENSIONS**

Table I

TYPE	YCI02
B (mm)	0.20 ±0.10
H (mm)	0.35 ±0.10
P (mm)	0.50 ±0.05
L (mm)	0.80 ±0.10
T (mm)	0.35 ±0.10
W <sub>1</sub> (mm)	0.15 ±0.10
W <sub>2</sub> (mm)	0.60 ±0.10

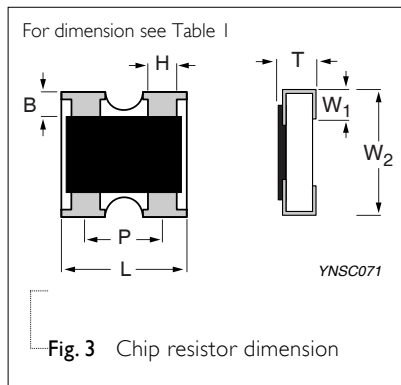


Fig. 3 Chip resistor dimension

**SCHEMATIC**

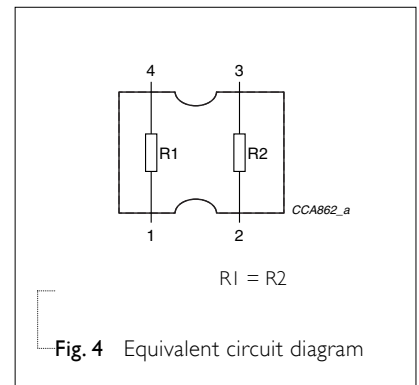


Fig. 4 Equivalent circuit diagram

**ELECTRICAL CHARACTERISTICS**

Table 2

CHARACTERISTICS	YC102 1/32 W	
Operating Temperature Range	-55 °C to +125 °C	
Maximum Working Voltage	15 V	
Maximum Overload Voltage	30 V	
Dielectric Withstanding Voltage	30 V	
Number of Resistors	2	
Resistance Range	5% (E24)	10 Ω to 1 MΩ
	1% (E24/E96)	10 Ω to 1 MΩ
	Zero Ohm Jumper	< 0.05 Ω
Temperature Coefficient	±200 ppm/°C	
Jumper Criteria	Rated Current	0.5 A
	Maximum Current	1.0 A

**FOOTPRINT AND SOLDERING PROFILES**

For recommended footprint and soldering profiles, please see the special data sheet “Chip resistors mounting”.

**PACKING STYLE AND PACKAGING QUANTITY**

Table 3 Packing style and packaging quantity

PRODUCT TYPE	PACKING STYLE	REEL DIMENSION	QUANTITY PER REEL
YC102	Paper Taping Reel (R)	7" (178 mm)	10,000 units

**NOTE**

1. For paper tape and reel specification/dimensions, please see the special data sheet “Chip resistors packing”.

**FUNCTIONAL DESCRIPTION**

**POWER RATING**

YC 102 rated power at 70 °C is 1/32 W

**RATED VOLTAGE**

The DC or AC (rms) continuous working voltage corresponding to the rated power is determined by the following formula:

$$V = \sqrt{P \times R}$$

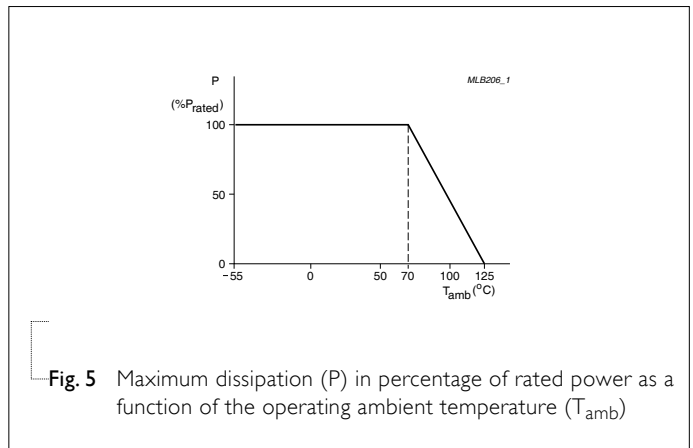
or max. working voltage whichever is less

Where

$$V = \text{Continuous rated DC or AC (rms) working voltage (V)}$$

$$P = \text{Rated power (W)}$$

$$R = \text{Resistance value (}\Omega\text{)}$$



**TESTS AND REQUIREMENTS**
**Table 4** Test condition, procedure and requirements

TEST	TEST METHOD	PROCEDURE	REQUIREMENTS
Life/ Operational Life/ Endurance	MIL-STD-202G-method 108A	1,000 hours at 70±5 °C applied RCWV	±(2%+0.05 Ω)
	IEC 60115-1 4.25.1	1.5 hours on, 0.5 hour off, still air required	<100 mΩ for Jumper
	JIS C 5202-7.10		
High Temperature Exposure/ Endurance at upper category temperature	MIL-STD-202G-method 108A	1,000 hours at maximum operating temperature	±(1%+0.05 Ω)
	IEC 60115-1 4.25.3	depending on specification, unpowered	<50 mΩ for Jumper
	JIS C 5202-7.11	No direct impingement of forced air to the parts Tolerances: 125±3 °C	
Moisture Resistance	MIL-STD-202G-method 106F	Each temperature / humidity cycle is defined at 8	±(2%+0.05 Ω)
	IEC 60115-1 4.24.2	hours (method 106F), 3 cycles / 24 hours for 10d	<100 mΩ for Jumper
		with 25 °C / 65 °C 95% R.H, without steps 7a & 7b, unpowered Parts mounted on test-boards, without condensation on parts Measurement at 24±2 hours after test conclusion	
Thermal Shock	MIL-STD-202G-method 107G	-55/+125 °C	±(0.5%+0.05 Ω) for 10 KΩ to
		Note: Number of cycles required is 300. Devices	10 MΩ
		unmounted	±(1%+0.05 Ω) for others
		Maximum transfer time is 20 seconds. Dwell time	<50 mΩ for Jumper
		is 15 minutes. Air – Air	
Short time overload	MIL-R-55342D-para 4.7.5	2.5 times RCWV or maximum overload voltage	±(2%+0.05 Ω)
	IEC60115-1 4.13	whichever is less for 5 sec at room temperature	<50 mΩ for Jumper No visible damage
Board Flex/ Bending	IEC60115-1 4.33	Device mounted on PCB test board as described,	±(1%+0.05 Ω)
		only 1 board bending required	<50 mΩ for Jumper
		3 mm bending	No visible damage
		Bending time: 60±5 seconds	
		Ohmic value checked during bending	

TEST	TEST METHOD	PROCEDURE	REQUIREMENTS
<b>Solderability</b> - Wetting	IPC/JEDECJ-STD-002B test B IEC 60068-2-58	Electrical Test not required Magnification 50X SMD conditions: 1 <sup>st</sup> step: method B, aging 4 hours at 155 °C dry heat 2 <sup>nd</sup> step: leadfree solder bath at 245±3 °C Dipping time: 3±0.5 seconds	Well tinned (≥95% covered) No visible damage
- Leaching	IPC/JEDECJ-STD-002B test D IEC 60068-2-58	Leadfree solder, 260 °C, 30 seconds immersion time	No visible damage
- Resistance to Soldering Heat	MIL-STD-202G-method 210F IEC 60068-2-58	Condition B, no pre-heat of samples Leadfree solder, 270 °C, 10 seconds immersion time Procedure 2 for SMD: devices fluxed and cleaned with isopropanol	±(1%+0.05 Ω) <50 mΩ for Jumper No visible damage

REVISION HISTORY

REVISION	DATE	CHANGE NOTIFICATION	DESCRIPTION
Version 0	Sep 24, 2008	-	<ul style="list-style-type: none"> <li>- New datasheet for 2 × 0201 thick film 1% and 5% with lead-free terminations</li> <li>- Description of "Halogen Free Epoxy" added</li> <li>- Define global part number</li> </ul>

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