

Approval Sheet

for

**Precision Power Wirewound Resistor
Ceramic Carrier & Axial Type**

PPN Series

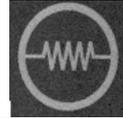
$\pm 0.5\%$ 、 $\pm 1\%$ 、 $\pm 2\%$ & $\pm 5\%$

YAGEO CORPORATION

Headquarters: 3F, No.233-1, Pao Chiao Rd., Xindian, Taipei, Taiwan, R.O.C.

Tel: 886-2-6629-9999 **Fax:** 886-2-6628-8885

URL: www.yageo.com

**1. PRODUCT:**

PRECISION POWER WIREWOUND RESISTORS, CERAMIC CARRIER&CAOTED&AXIAL TYPE

Body colour:

Grey

2. PART NUMBER:

Part number of the precision power wirewound resistor is identified by the name, power, tolerance, packing, temperature coefficient, special type and resistance value.

Example :

PPN	100	J	T	-	52-	10R
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Series Name	Power Rating	Resistance Tolerance	Packing Style	Temperature Coefficient of Resistance	Special Type	Resistance Value

(1) Style: PPN SERIES

(2) Power Rating : 100=1W 、 160=1.6W 、 200=2W 、 250=2.5W 、 300=3W 、 350=3.5W 、 430=4.3W 、 500=5W 、 650=6.5W

(3) Tolerance: D=±0.5% F=±1% G=±2% J=±5%

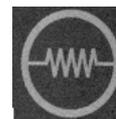
(4) Packaging Type: T=Tape on Box Packing

(5) Temperature Coefficient : ”-“=Base on spec.

(6) Special Type : 52-=52.4mm
73-=73mm

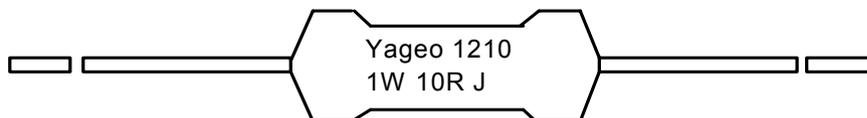
(7) Resistance Value : E24 & E96 & E192 Series

Example : 0.1R 、 1R 、 10R 、 100R 、



3. MARKING:

Printed in clear



4. ELECTRICAL CHARACTERISTICS

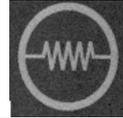
TABLE I

STYLE	PPN100	PPN160	PPN200	PPN250	PPN300	PPN350	PPN430	PPN500	PPN650
Power Rating at 70 °C	1W	1.6W	2W	2.5W	3W	3.5W	4.3W	5W	6.5W
Max. Cont. Work. Voltage	$\sqrt{P70 \times R}$								
Thermal resistance _v (°C/W)	125	100	85	65	55	65	48	45	35
Insulation Resistance	Not insulated								
Tolerances	R _{min.} ~R _{max.} : ±5%, ±2%, ±1%; R ≥ 1R: ±0.5%								
Insulation Voltage (1min.)	Max. 75V								
Operating Temp. Range	- 55 °C to + 350 °C								

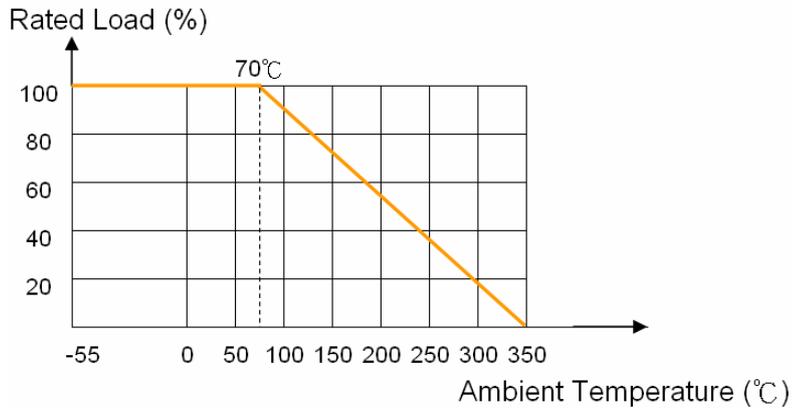
TABLE II Resistance Range and Temperature Coefficient

STYLE	Temperature Coefficient									
	500 +400 ppm/°C		400 ± 50 ppm/°C		Appr.+180 ppm/°C		±20 ppm/°C		±10 ppm/°C	
PPN100	----	----	≥0R01	≤0R024	≥0R027	≤0R091	≥0R1	≤15R	≥16R	≤220R
PPN160	≥0R022	≤0R033	≥0R036	≤0R062	≥0R068	≤0R091	≥0R1	≤160R	≥180R	≤470R
PPN200	≥0R01	≤0R02	≥0R022	≤0R047	≥0R051	≤0R091	≥0R1	≤47R	≥51R	≤750R
PPN250	≥0R01	≤0R027	≥0R03	≤0R075	≥0R082	≤0R091	≥0R1	≤47R	≥51R	≤750R
PPN300	≥0R015	≤0R024	≥0R027	≤0R062	≥0R068	≤0R091	≥0R1	≤68R	≥75R	≤1K
PPN350	≥0R02	≤0R03	≥0R033	≤0R062	≥0R068	≤0R091	≥0R1	≤130R	≥150R	≤1K5
PPN430	≥0R027	≤0R047	≥0R051	≤0R062	≥0R091	≤0R13	≥0R15	≤150R	≥160R	≤2K2
PPN500	≥0R033	≤0R062	≥0R068	≤0R013	≥0R15	≤0R16	≥0R18	≤160R	≥180R	≤2K7
PPN650	≥0R047	≤0R075	≥0R082	≤0R015	≥0R16	≤0R24	≥0R27	≤180R	≥200R	≤3K9

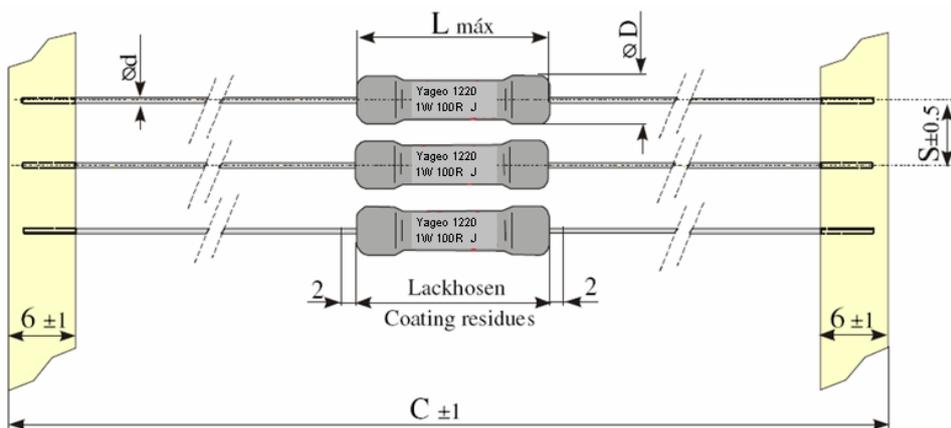
* Below or over this resistance on request.



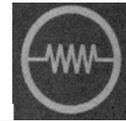
5. DERATING CURVE



6. DIMENSIONS



STYLE	DIMENSIONS (unit: mm)		
	Lmax.	ϕD^* max.	ϕd
PPN100	9.0	3.0	0.65
PPN160	9.7	4.0	0.80
PPN200	14.5	4.5	0.65
PPN250	12.6	5.5	0.80
PPN300	15.0	8.5	0.80
PPN350	17.0	5.5	0.80
PPN430	18.0	8.5	0.80
PPN500	22.0	8.5	0.80
PPN650	27.0	8.5	0.80



7. ENVIRONMENTAL CHARACTERISTICS

(1) Voltage Proof

The resistor shall be clamped in the trough of a 90° metal V Block. Apply the insulation voltage specified in the "Table I" between the terminals connected together with the block for about 60 seconds. The resistor shall be able to withstand without breakdown or flashover.

(2) Temperature Coefficient Test

Test of resistors above room temperature $100^{\circ}\text{C} \pm 2^{\circ}\text{C}$ (Testing Temperature 115°C to 130°C) at the constant temperature silicon plate for over 5 minutes. Then measure the resistance value. The Temperature Coefficient is calculated by the following equation and its value should be within the range of requested.

$$\text{Resistor Temperature Coefficient} = \frac{R - R_0}{R_0} \times \frac{1}{t - t_0} \times 10^6$$

R = Resistance value under the testing temperature

R₀ = Resistance value at the room temperature

t = The testing temperature

t₀ = Room temperature

(3) Solderability

Immerse the specimen into the solder pot at $235 \pm 5^{\circ}\text{C}$ for 3 ± 0.5 seconds. At least 95% solder coverage on the termination.

(4) Solvent Resistance of Marking

The specimen into the appropriate solvent of IPA condition of ultrasonic machine for 5 ± 0.5 minutes. The specimen is no deterioration of coatings and color code

(5) Robustness of Terminations

Direct Load – Resistors shall be held by one terminal and the load shall be gradually applied in the direction of the longitudinal axis of the resistor unit the applied load reached the requirement. The load shall be held for 10 seconds. The load of weight shall be $\geq 40\text{N}$

(6) Damp Heat Steady State

Place the specimen in a test chamber at $40 \pm 2^{\circ}\text{C}$ and 90 ~ 95 % relative humidity. Apply the 0.1 times rated voltage to the specimen at the 1.5 hours on and 0.5 hour off cycle. The total length of test is 56 days.

The change of the resistance value shall be within $\pm 1.0\%$

(7) Endurance at 70 °C

Placed in the constant temperature chamber of $70 \pm 3^{\circ}\text{C}$ the resistor shall be connected to the lead wire at the point of 25mm. Length with each terminal, the resistors shall be arranged not much effected mutually by the temperature of the resistors and the excessive ventilation shall not be performed, for 90 minutes on and 30 minutes off under this condition the rated D.C. voltage is applied continuously for 1000+48/-0 hours then left at no-load for 1hour, measured at this time the resistance value .

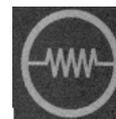
The change of the resistance value shall be within $\pm 3.0\%$

There shall be no remarkable change in the appearance and the color code shall be legible after the test..

(8) Resistance to Soldering Heat

The terminal lead shall be dipped into the solder pot at $260 \pm 3^{\circ}\text{C}$ for 10 ± 1.0 seconds up to 2.5 ~ 3.5 mm.

The change of the resistance value shall be within $\pm 0.2\%$



8. PACKAGING

STYLE	Packaging	Pieces	Pack.-code	C	s
PPN100	taped	1000	T	65	5
PPN160	taped	1000	T	65	5
PPN200	taped	1000	T	85	10
PPN250	taped	1000	T	85	10
PPN300	taped	500	T	85	10
PPN350	taped	1000	T	85	10
PPN430	taped	500	T	85	10
PPN500	taped	500	T	85	10
PPN650	taped	500	T	85	10

9. Plant Address

- A. China Dongguan Plant
7-1, Gaoli Road, Gaoli Industrial Zone
Tangxia Zhen, Dongguan, Guangdong, China
(廣東省東莞市塘廈鎮高麗工業區高麗路 7-1 號)
Tel. 86-769-8772 0275
Fax. 86-769-8772 0275 #4333
- B. China Mudu Plant
No.158, Fengjiang Road,
Mudu New District, Suzhou, Kiangsu, China
(江蘇省蘇州木瀆新區楓江路 158 號)
Tel. 86-512-6651 8889
Fax. 86-512-6651 9889