ROHS compliance

APPROVAL SHEET

WF08P

±1%, ±5%, 0Ω

High Power Chip Resistors

Size 0805 1/4W

Customer :_____

Approval No :_____

Issue Date : _____

Customer Approval :

FEATURE

1. Small size and light weight
2. High reliability and stability
3. Reduced size of final equipment
4. High precision
5. Lead free termination upon customer requested

APPLICATION

- **n** High accuracy dc-power supply
- **n** Digital multi-meter
- **n** Telecommunication
- **n** Computer
- **n** Automotive industry
- **n** Medical and military equipment

DESCRIPTION

The resistors are constructed in a high grade ceramic body (aluminum oxide). Internal metal electrodes are added at each end and connected by a resistive paste that is applied to the top surface of the substrate. The composition of the paste is adjusted to give the approximate resistance required and the value is trimmed to nominated value within tolerance which controlled by laser trimming of this resistive layer.

The resistive layer is covered with a protective coat. Finally, the two external end terminations are added. For ease of soldering the outer layer of these end terminations is a Lead-tin or Tin (lead free) alloy.

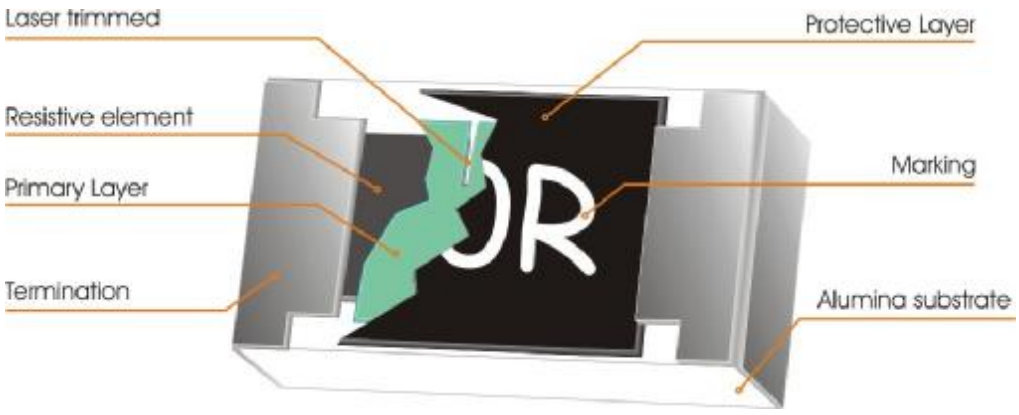


Fig 1. Consctruction of Chip-R

QUICK REFERENCE DATA

Item	General Specification
Series No.	WF08P
Size code	0805 (2012)
Resistance Tolerance	±1%, ±5%
Resistance Range	0Ω, 1Ω ~ 10MΩ (E96+E24 series)
TCR (ppm/°C) -55°C ~ +155°C Ø 10 Ω Ø <= 10 Ω	 ≤ ± 200 ppm/°C - 300 ~ + 500 ppm/°C
Max. dissipation at T_{amb}=70°C	1/4 W
Max. Operation Voltage (DC or RMS)	150V
Climatic category (IEC 60068)	55/155/56
Basic specification	JIS C 5202 / IEC 60115-1

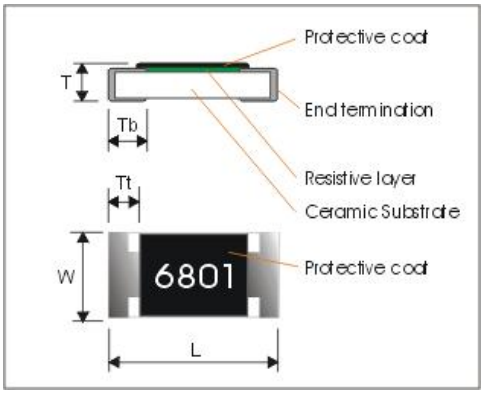
Note :

1. 0Ω 0805,size maximum resistance Rmax < 25mΩ and rated current < 4Amp
2. This is the maximum voltage that may be continuously supplied to the resistor element, see "IEC publication 60115-8"
3. Max. Operation Voltage : So called RCWV (Rated Continuous Working Voltage) is determined by

$$RCWV = \sqrt{\text{Rated Power} \times \text{Resistance Value}}$$ or Max. RCWV listed above, whichever is lower.

Dimensions:

Part No	WF08P
L	2.00 ± 0.10
W	1.25 ± 0.10
Tt	0.40 ± 0.20
Tb	0.40 ± 0.20
t	0.50 ± 0.15



Marking

3-digits marking for 5% resistance

4-digits marking for 1% resistance

FUNCTIONAL DESCRIPTION

Product characterization

Standard values of nominal resistance are taken from the E96 & E24 series for resistors with a tolerance of ±1%, ±5%. The values of the E24/E96 series are in accordance with “IEC publication 60063”.

Derating

The power that the resistor can dissipate depends on the operating temperature; see Fig.2

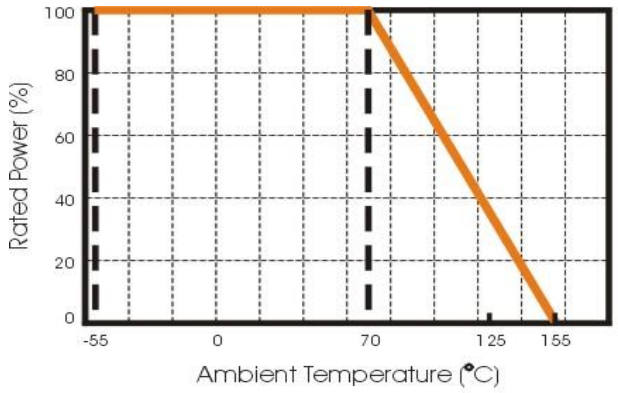


Fig.2 Maximum dissipation in percentage of rated power
As a function of the ambient temperature

MOUNTING

Due to their rectangular shapes and small tolerances, Surface Mountable Resistors are suitable for handling by automatic placement systems.

Chip placement can be on ceramic substrates and printed-circuit boards (PCBs).

Electrical connection to the circuit is by individual soldering condition.

The end terminations guarantee a reliable contact.

SOLDERING CONDITION

The robust construction of chip resistors allows them to be completely immersed in a solder bath of 260°C for one minute. Therefore, it is possible to mount Surface Mount Resistors on one side of a PCB and other discrete components on the reverse (mixed PCBs).

Surface Mount Resistors are tested for solderability at 230°C during 2 seconds. The test condition for no leaching is 260°C for 60 seconds. Typical examples of soldering processes that provide reliable joints without any damage are given in Fig 3.

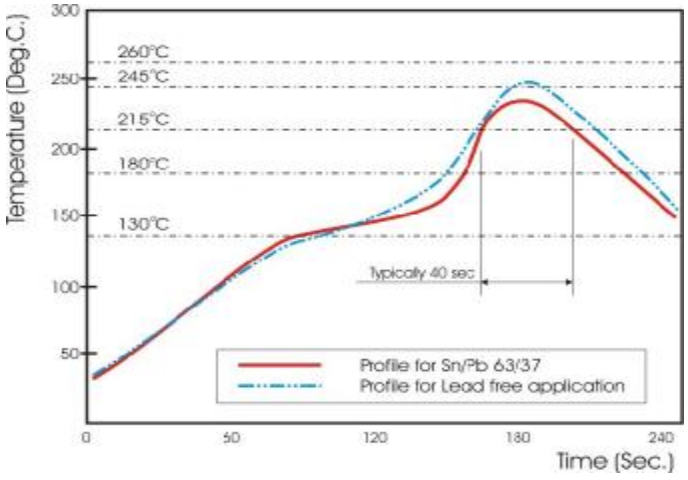


Fig 3. Infrared soldering profile for Chip Resistors

CATALOGUE NUMBERS

The resistors have a catalogue number starting with .

WF08	P	4702	D	T	_
Size code WF08 : 0805	**Type code** **P** : 1/4W	**Resistance code** E96 +E24: 3 significant digits followed by no. of zeros 102Ω =1020 37.4KΩ =3742 220Ω =2200	**Tolerance** J : ±5% F : ±1% P : 0Ω	**Packaging code** T : 7" Reeled taping	**Termination code** _ = SnPb base ("_" means a blank) L = Sn base (lead free)

n Reeled tape packaging : 8mm width paper taping 5000pcs per 7" reel.

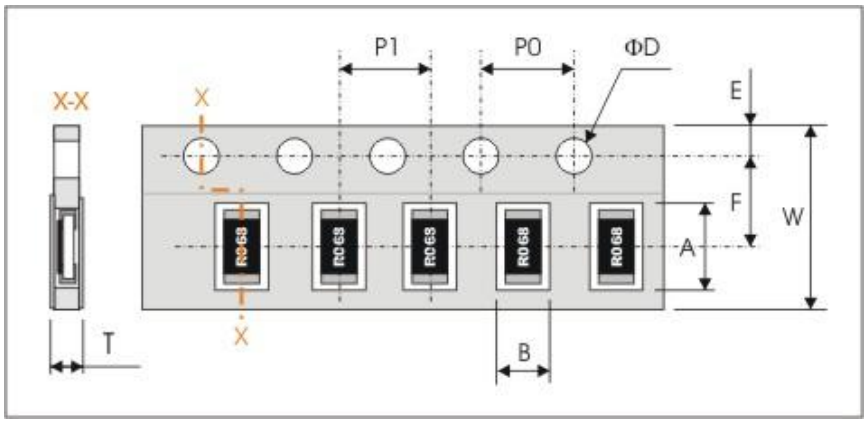
TEST AND REQUIREMENTS

Basic specification : JIS C 5201-1 : 1998

TEST	PROCEDURE	REQUIREMENT
clause 4.8 Temperature Coefficient of Resistance (TCR)	Natural resistance change per change in degree centigrade. $\frac{R_2 - R_1}{R_1(t_2 - t_1)} \times 10^6$ (ppm/°C) R_1 : Resistance at reference temperature R_2 : Resistance at test temperature t_1 : 25°C	Test temperature –55~+155°C >10Ω, ≤ ±200ppm/°C ≦10Ω, -300 ~ +500ppm/°C
clause 4.13 Short time overload	Permanent resistance change after a 5 second application of 5 times rated power or twice of the limiting element voltage, whichever is less.	no visible damage ΔR/R max. ±(2.0%+0.1Ω)
clause 4.17 Solderability	Termination SnPb base : Unmounted chips completely immersed for 2±0.5 sec. in a solder bath at 235±5°C Termination Sn base (lead free) : Unmounted chip completely immersed in a lead free solder bath, 245°C±5°C, 3±1 sec	good tinning (>95% covered) no visible damage
clause 4.18 Resistance to soldering heat	After immersion into the flux, the immersion into solder shall be carried out in solder bath at 5±1 seconds, 260±5°C	no visible damage Δ R/R max. ±(1.0%+0.05Ω)
clause 4.19 Temperature cycling	1. 30 minutes at -55°C±3°C, 2. 2~3 minutes at room temperature, 3. 30 minutes at +125°±3°C, 4. 2~3 minutes at room temperature, Total 5 continuous cycles	no visible damage ΔR/R max. ±(1.0%+0.05Ω)
clause 4.24 Load life in Humidity	1000 hours, at rated continuous working voltage in humidity chamber controller at 40°C±2°C and 90~95% relative humidity, 1.5hours on and 0.5 hours off	no visible damage ΔR/R max. ±(5%+0.1Ω)
clause 4.25.1 Load life (endurance)	70±2°C, 1000 hours, loaded with RCWV or Vmax,1.5 hours on and 0.5 hours off	no visible damage ΔR/R max. ±(5%+0.1Ω)
clause 4.25.3 Endurance at the upper category temperature	125°C, 1000 hours, no load.	no visible damage ΔR/R max. ±(5%+0.1Ω)
clause 4.32 Bending and Termination strength	Resistors mounted on a 90mm glass epoxy resin PCB(FR4); bending : 3 mm, once for 10 seconds Pulling test : 5N, 10 seconds	no visible damage ΔR/R max. ±(1.0%+0.05Ω)

PACKAGING

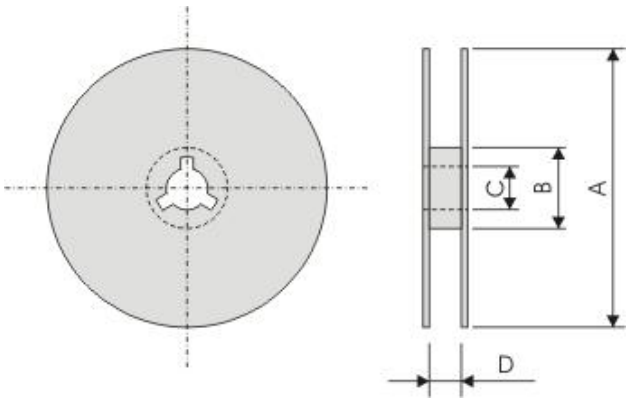
Paper Tape specifications (unit :mm)



Series No.	A	B	W	F	E
WF08P	2.40±0.20	1.65±0.20	8.00±0.30	3.50±0.20	1.75±0.10

Series No.	P1	P0	ΦD	T
WF08P	4.00±0.10	4.00±0.10	$\Phi 1.50^{+0.1}_{-0.0}$	Max. 1.0

Reel dimensions



Symbol	A	B	C	D
(unit : mm)	Φ178.0±2.0	Φ60.0±1.0	13.0±0.2	9.0±0.5

Taping quantity

- Chip resistors 5,000 pcs/reel

Production location in PDC- Tau Yuan within WTC Gro