APPROVAL SHEET

WW25Y

±0.5%, ±1%

Metal Foil Power Low Ohm Chip Resistor
Wide Termination
Size 1225 4xTerminals

RoHS Exemption free and Lead free products
Halogen free

*Contents in this sheet are subject to change without prior notice.

FEATURES

1. High power rating and compact size
2. High reliability and stability
3. Reduced size of final equipment
4. RoHS compliant and Halogen free products

APPLICATIONS

- Power supply
- PDA
- Digital meter
- Computer
- Automotives
- Battery charger
- DC-DC power converter

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 at longer sides. For ease of soldering the outer layer of these end terminations is Tin (lead free) alloy.

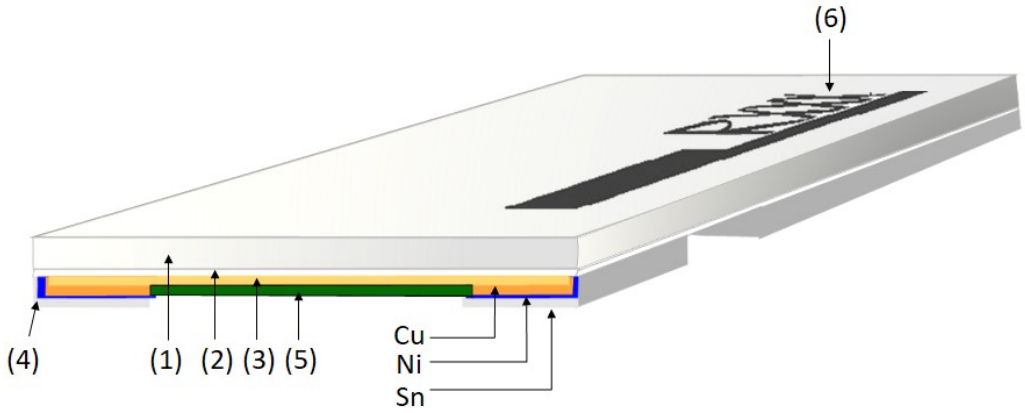


Fig 2. Construction of Chip-R

(1) 基板 / Substrate : 氧化鋁陶瓷基板 / Alumina Ceramic

(2) 粘著層 / Adhesion layer : 環氧樹脂 / Epoxy

(3) 電阻本體 / Resistive element : 銅合金 / Cu-alloy

(4) 端電極 / Terminal electrode : 錫, 鎳,銅 / Sn, Ni, Cu without side electrode

(5) 保護層 / Protective coating : 防火級環氧樹脂,符合UL- 94-V0 要求(綠色) / Flame-retardant epoxy, meets UL- 94-V0 requirements(green)

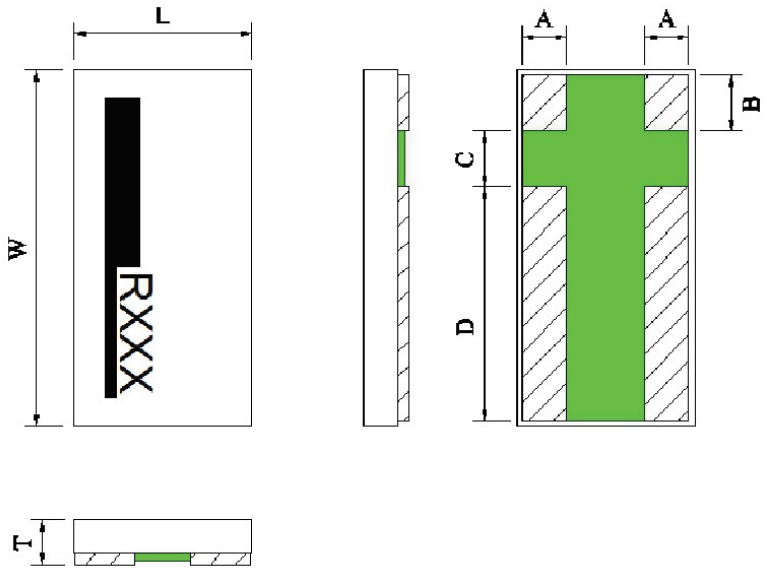
(6) 字碼 / Marking coating : 防火級環氧樹脂,符合UL- 94-V0 要求(黑色) / Flame-retardant epoxy, meets UL- 94-V0 requirements (black)

QUICK REFERENCE DATA

Item	General Specification	
Series No.	WW25Y	
Size code	1225 (3263)	
Resistance Tolerance	±1%	±0.5%, ±1%
Resistance Range	0.5mΩ ~ 4mΩ	5mΩ ~ 25mΩ
TCR (ppm/°C) : 25 ~ 125°C	±100 ppm/°C	±50 ppm/°C
Max. dissipation at T_{amb}=70°C	2W	
Max current	SQRT (rated power / resistance)	
Operation temperature	-55 ~ +155°C	

MECHANICAL DATA (unit : mm)

	W	L	A	B	C	D	T
WW25Y	6.30±0.20	3.10±0.20	0.50±0.20	0.62±0.20	0.50±0.20	5.12±0.20	0.60±0.20



CATALOGUE NUMBERS

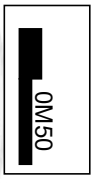
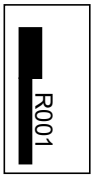
The resistors have a catalogue number starting with .

WW25	Y	R010	F	T	L
Size code WW25 : 1225	**Type code** Y : Metal Foil 4T	**Resistance code** R is first digit followed by 3 significant digits 0.010Ω= R010 0.005Ω= R005 0.5mΩ= R0L5	**Tolerance** D : ±0.5% F : ±1%	**Packaging code** T : 7" Reel PC tape	**Termination code** L = Sn base (lead free)

WW25Y taping quantity: plastic tape 4,000pcs per 7" reel

MARKING

Each resistor is marked with a four-digit code on the protective coating to designate the nominal resistance value.

Part No.	Resistance	Marking digit	Marking
R0L5	0.5 mΩ	Four digits	
R001	1 mΩ	Four digits	
R025	25 mΩ	Four digits	

FUNCTIONAL DESCRIPTION

Derating curve

The power that the resistor can dissipate depends on the operating temperature; see Fig.3

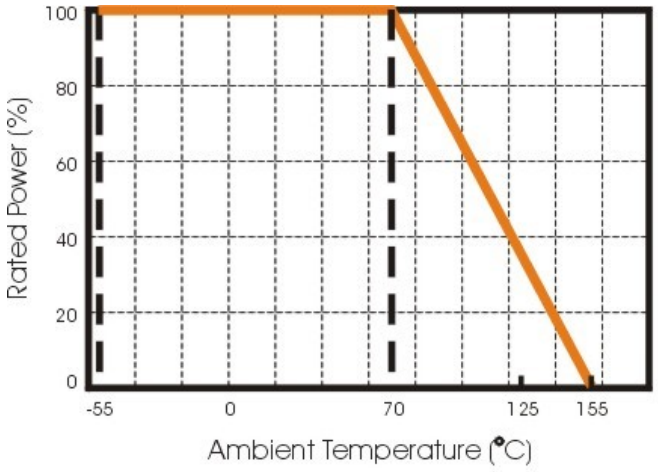


Figure 3. Maximum dissipation in percentage of rated power as a function of the ambient temperature.

MOUNTING

Due to metal foil design, WW25Y is **up-side-down mounting** 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.

Storage and Handling Conditions:

1. Products are recommended to be used up within two years since operation date as ensured shelf life. Check solderability in case shelf life extension is needed.
2. To store products with following condition:

   Temperature : 10 to 40°C

   Humidity : 20 to 75% relative humidity
3. Caution:

   a. Don't store products in a corrosive environment such as sulfide, chloride gas, or acid.

   It may cause oxdization of electrode, which easily be resulted in poor soldering.

   b. To store products on the shelf and avoid exposure to moisture.

   c. Don't expose products to excessive shock, vibration, direct sunlight and so

SOLDERING CONDITION

The robust construction of chip resistors allows them to be completely immersed in a solder bath of 260°C for 10 seconds. 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 235°C during 2 seconds. The test condition for no leaching is 260°C for 30 seconds. Typical examples of soldering processes that provide reliable joints without any damage are given in Fig 4.

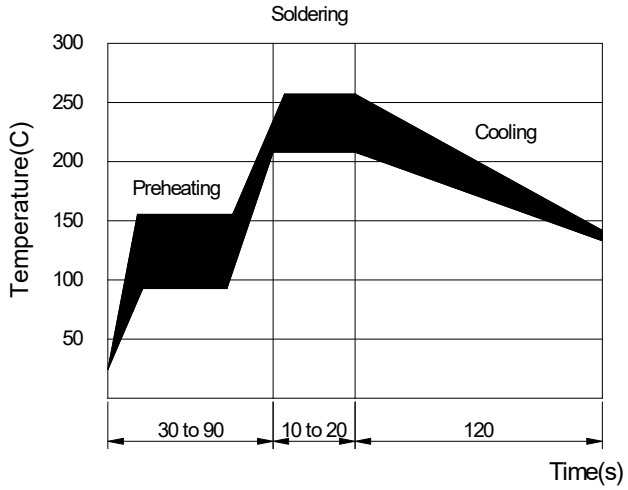
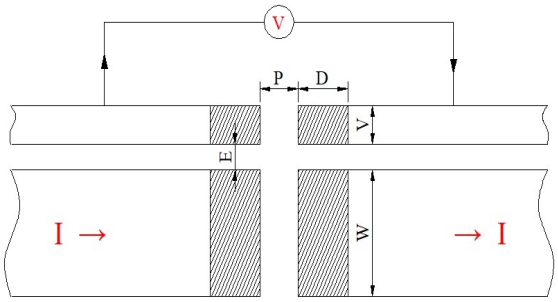


Fig 4. Infrared soldering profile for Chip Resistors

LAND PATTERN (unit: mm)



WW25Y	P	W	D	V	E
	2.00mm	5.10mm	1.00mm	0.70mm	0.50mm

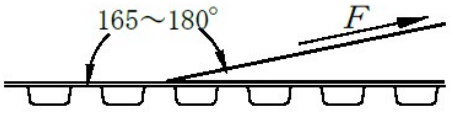
TEST AND REQUIREMENTS (IEC60115)

測試方法 Parameter	條件 Conditions	允收標準 Requirements
瞬間過載測試 / Short Time Over Load	P= 2.5Pr ; T=25±2ºC , t = 5sec.	±(1.0%+0.5mΩ) IEC60115-1 4.13
高溫測試 / High Temp. Exposure	T = +170±2ºC ; t = 1000h	±(1.0%+0.5mΩ) IEC60115-1 4.25
低溫測試 / Low Temp. Storage	T = -55±2ºC ; t = 1000h	±(1.0%+0.5mΩ) IEC60115-1 4.25
濕度負載壽命測試 / Moisture Load Life （60 ºC、95%RH）	Vtest = Vmax ; T=60±2ºC ; RH=95% ; t= 90min ON , 30min OFF , 1000h	±(2.0%+0.5mΩ) IEC60115-1 4.25
冷熱衝擊測試 / Thermal Shock	[-55ºC 30min. → R.T. 3min. → +155ºC 30min. → R.T. 3min], 100 個連續循環 / 100Cycles	±(1.0%+0.5mΩ) IEC60115-1 4.19
在 70ºC 下負載壽命測試 / Load Life at 70ºC	Vtest = Vmax ; T=70±2ºC ;t= 90min ON , 30min OFF,1000h	±(2.0%+0.5mΩ) IEC60115-1 4.25
可焊性測試 / Solderability	浸入錫爐 / Dip into solder at T = 245±5ºC , t = 3±0.5sec.	錫涵蓋面積/The covered area >95% IEC60115-1 4.17
抗焊熱性測試 / Resistance to Solder Heat	經熱風式迴焊爐 / Through Reflow T = 275±2ºC ; t = 20±1sec.	±(1.0%+0.5mΩ) IEC60115-1 4.18
機械衝擊測試 / Mechanical Shock	加速度 a =100G , 振幅時間 t =11ms, 5 個衝擊 a =100G , t =11ms, 5 times shock	±(1.0%+0.5mΩ) IEC60115-1 4.21
基板彎曲測試 / Substrate Bending	兩支撐點間距 / Span between fulcrums ：90mm ; 振幅 / Bend Width：2mm 測試板/Test board：玻璃纖維板/ Glass-Epoxy Board , 厚度 / Thickness =1.6mm	±(1.0%+0.5mΩ) IEC60115-1 4.33

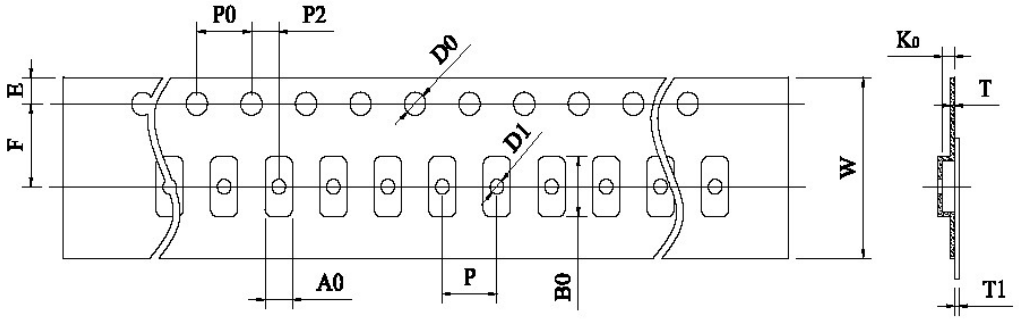
PACKAGING

Peeling Strength of Seal Tape

F = Peeling Strength: 0.1 – 1.0N (10 - 100gf)



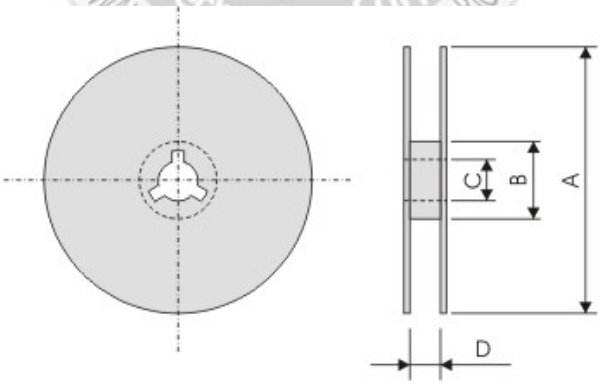
Plastic Tape specifications (unit :mm)



Type	A0	B0	W	F	E
WW25Y	3.40±0.20	6.75±0.20	12.00±0.30	5.50±0.10	1.75±0.10

Type	P	P0	P2	ΦD0	T	T1	K_0
WW25Y	4.00±0.10	4.00±0.10	2.00±0.10	$\Phi 1.50^{+0.1}_{-0.0}$	0.25±0.10	Max 0.1	1.00±0.20

Reel dimensions



(unit : mm)

Symbol	A	B	C	D
7” Reel	Φ178.0±2.0	Φ60.0±1.0	13.0±0.2	9.0±1.00

Taping quantity

WW25Y by plastic tape taping 4,000 pcs per reel!