FEATURE

- Stronger mount structure with wide electrode.
- Higher rated power than normal termination series.
- High reliability and stability.
- Compatible with reflow and wave soldering
- RoHS and Halogen-free compliance
- Applications:
- Converters, adapters
- Computer, notebook, workstation, tablet, and peripherals
- Lighting
- Consumer electronics.
  - etc.

MANUFACTURER PART NO.

For example: WT0612J100KT5G00-WT0612 ±5% 100KΩ T/R-5000

Series	Size	Tol.	Nominal Resistance Value	PKG	SPQ	Feature	TCR
2 codes	4 codes	1 code	2~5 codes	1 code	1 code	1 code	2 codes
WT	0612	J	100K	T	5	G	00
Wide Termination Thick Film Chip Resistors	0508 0612 1020 1225		1R①=1Ω 4R7=4.7Ω 4K7②=4.7KΩ 100K=100KΩ 1M③=1MΩ	T=T/R④	4=4K 5=5K	G=Std. S=P.C.⑤	00=Refer to table as below.

Note: ① R=Radix, 10^0, Ω ② K=Kilo, 10^3, KΩ ③ M=Mega, 10^6, MΩ
④ T/R=Taping in Reel packing type ⑤ P.C.=Personal and Customized.

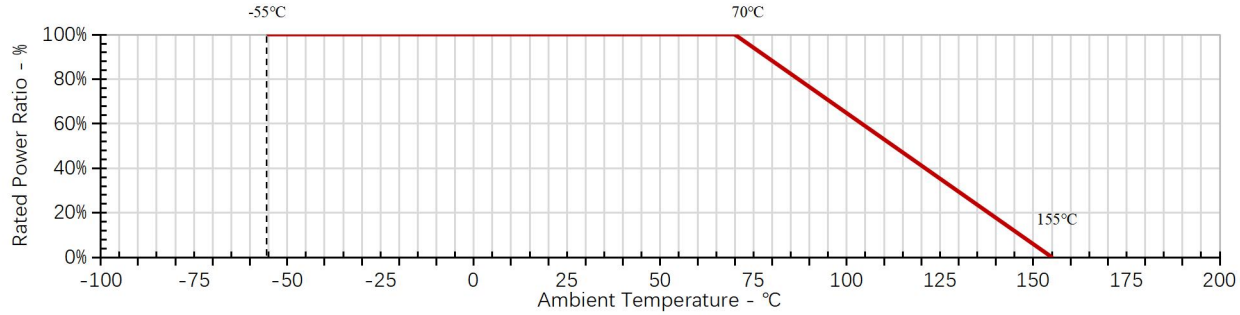
CHARACTERISTICS

Type	Rated Power	MWV①	MOV②	Tolerance	TCR PPM/℃	Resistance Range	Jumper(0Ω)		
							Rated Current	MOC③	Range
WT0508	1/3W	150V	300V	±0.5%, ±1%, ±5%	±400 PPM/℃	10Ω	4A	8A	50mΩ Max.
					±200 PPM/℃	10Ω<R≤100Ω			
					±100 PPM/℃	100Ω<R≤1MΩ			
	2/3W				0~+400 PPM/℃	10mΩ≤R<30mΩ			
					0~+150 PPM/℃	30mΩ≤R < 10Ω			
WT0612	1/2W	200V	400V	±0.5%, ±1%, ±5%	±200 PPM/℃	10Ω<R≤100Ω	5A	10A	50mΩ Max.
					±100 PPM/℃	100Ω<R≤1MΩ			
	1W				0~+200 PPM/℃	10mΩ≤R<100mΩ			
					0~+150 PPM/℃	100mΩ≤R≤10Ω			
WT1020	1W	200V	400V	±0.5%, ±1%, ±5%	±200 PPM/℃	10Ω<R≤100Ω	6A	12A	50mΩ Max.
					±100 PPM/℃	100Ω<R≤1MΩ			
				±5%	±400 PPM/℃	1Ω<R≤10Ω			
				±0.5%, ±1%, ±5%	0~+200PPM/℃	10mΩ≤R < 30mΩ			
					0~+100PPM/℃	30mΩ≤R≤1Ω			
WT1225	2W	200V	400V	±0.5%, ±1%, ±5%	±400 PPM/℃	1Ω<R≤10Ω	6A	15A	50mΩ Max.
					±200 PPM/℃	10Ω<R≤100Ω			
					±100 PPM/℃	100Ω<R≤1MΩ			
	3W				0~+150PPM/℃	10mΩ≤R < 30mΩ			
					0~+100PPM/℃	30mΩ≤R≤1Ω			

Note: ① MWV=Max. Working Voltage ② MOV=Max. Overload Voltage ③ MOC=Max. Overload Current

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POWER DERATING CURVE



Note: Operating Temperature Range: -55℃~+155℃

RATED VOLTAGE

Resistors should have a Rated Voltage DC or AC corresponding to Rated Power which can be calculated by formula as below.

The Rated Voltage of certain resistance value should be the calculated result or Max. Working Voltage of product series whichever less.

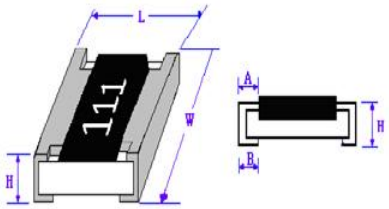
Formula:

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

E=Rated voltage(V)
P=Rated power(W)
R=Nominal resistance(Ω)

DIMENSIONS

Unit: mm

Figure	Type	L	W	H	A	B
	WT0508	1.20±0.10	2.0±0.10	0.55±0.10	0.20±0.10	0.30±0.20
	WT0612	1.60±0.15	3.20±0.15	0.55±0.10	0.30±0.20	0.45±0.20
	WT1020	2.50±0.15	5.00±0.15	0.55±0.10	0.40±0.20	0.60±0.20
	WT1225	3.10±0.15	6.25±0.15	0.55±0.10	0.45±0.20	0.65±0.20

RELIABILITY

Item	Test Method	Acceptable criterion
Temperature Coefficient of Resistance (T.C.R.)	$TCR(PPM/℃)=\frac{(R_2-R_1)}{R_1\times(T_2-T_1)}\times10^6$ R_1=Value in room temperature R_2=Value in test temperature -55℃ or +125℃ T_1 =Room temperature T_2 =Test temperature -55℃ or +125℃ Reference: IEC 60115-1 6.2	Refer to CHARACTERISTICS
Insulation Resistance	Load 100±15V_{DC} between the electrode and substrate for 60 seconds by parallel clamp method. Then measure the insulation impedance between the termination and the back of the specimen. Reference: IEC 60115-1 12.1.3.5	⩾ 1,000MΩ
Dielectric Withstanding Voltage	Load the AC voltage with the effective value of Max Overload Voltage between the electrode and the substrate with 100V/s speed, and stabilize for 60±5 seconds. Then measure the current and observe. Reference: IEC 60115-1 12.2.4	No current more than 10μA Without arcing.

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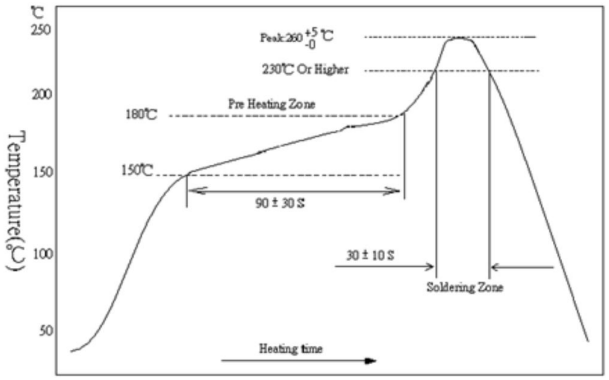
Item	Test Method	Acceptable criterion
Short Time Over Load	Load 2.5 times of rated voltage or maximum overload voltage whichever is less for 5 seconds. Then measure the resistance value change rate. Reference: IEC 60115-1 8.1.4.2	1% and below series:： △R/R=±1.0% 5% series： △R/R=±2.0%
Intermittent Overload	Put the specimens in the thermostat, load 2.5 times of rated voltage with $10{,}000^{+400}_{-0}$ cycles which set up with 1 second power on and 25 seconds power off, then take them out to stabilize for 60 minutes, and measure the resistance value change rate. Reference: IEC 60115-1 8.4.4	△R/R=±5.0%
Resistance to Solvent	Put the specimens in isopropanol solvent at room temperature 23±5℃ for 5 minutes, brush 10 times as a group with a hard toothbrush, 3 times for each group. Then take them out to blow dry, and check their appearance. Reference: IEC 60115-1 11.3.2 method1	Without visible damage, peeling, swelling.
Solderability	Pretreatment: Dry heat +155℃ for 4 hours, or with equivalent test method, PCT aging for 4 hours. Then take the specimens out to stabilize at room temperature for 2 hours. Test method: 1.Put the specimens in a tin furnace at 245±3℃ for 3 seconds, then take them out and check the soldering appearance by microscope. 2.Reflow soldering test with peak temperature 235℃ for 40± 5 seconds. Reference: 1.IEC 60115-1 11.1.4.3 2.IPC-A-610 8.3.2	1. Solder coverage must be 95% minimum. 2. Without welding rejection. And soldering is higher than 1/2 of side termination height.
Leaching	Pretreatment: Dry heat +155℃ for 4 hours, or with equivalent test method, PCT aging for 4 hours. Then take the specimens out to stabilize at room temperature for 2 hours. Test method: 1. Put the specimens in a tin furnace at 260^{+5}_{-0}℃ for 30^{+1}_{-0} seconds, then take them out and clean. 2. Check the soldering appearance by microscope. Reference: IEC-60068-2-58	Without substrate exposed because of electrode eroded.
Resistance to Soldering Heat	Put the specimens in tin furnace at 260^{+5}_{-0}℃ for 10^{+1}_{-0} seconds. Then take them out to stabilize for 1 hour, and measure the resistance value change rate. Reference: IEC 60115-1 11.2.4.3	△R/R=±1.0%
Thermal Shock	Put the specimens in test environment at high or low temperature 500 cycles which stabilize for 30 minutes each temperature, and change to another temperature. Test temperature should be set up according to the upper and lower application temperature limits of various series products. Reference: IEC 60115-1 10.1.4	△R/R=±1.0%
Solder Joint Endurance Test	Put PCBA mounted with the specimens in test machine, press down the PCBA to standard depth with testing block and stabilize for 60 seconds, then measure the resistance value change rate. Size | 0508, 0612 | 1225, 1020 Depth | 3mm | 2mm Reference: IEC 60115-1 9.8.4	△R/R=±1.0%
Resistance to Dry Heat	Put the specimens in an oven at +155±5℃ for 1000^{+48}_{-0} hours, then take them out to stabilize for 1 hour minimum, and measure the resistance value change rate. Reference: IEC 60115-1 7.3	1% and below series:： △R/R=±1.0% 5% series： △R/R=±3.0%
Loading Life in Moisture	Put the specimens applied rated voltage in a constant temperature and humidity champ with +40±2℃ and 93±3%RH for 1,000 hours. Then take them out to stabilize for 60 minutes minimum, and measure the resistance value change rate. Reference: IEC 60115-1 10.4	1% and below series:： △R/R=±1.0% 5% series： △R/R=±3.0%
Load Life	Put the specimens applied rated voltage in an oven at 70±2℃ for 1,000 hours with cycles which set up with 90 minutes power on and 30 minutes power off, then take them out to stabilize for 60 minutes minimum, and measure the resistance value change rate. Reference: IEC 60115-1 7.1	1% and below series:： △R/R=±1.0% 5% series： △R/R=±3.0%

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Item	Test Method	Acceptable criterion
Low temperature load test	Put the specimens without powered in -55℃ for 60 minutes, then powered with rated voltage or rated current for 45 minutes, unpowered for 15 minutes. Finally, take them out to stabilize at room temperature for 24 hours, measure the resistance value change rate. Reference: IEC 60115-1 10.2.4	1% and below series: △R/R=±1.0% 5% series: △R/R=±2.0%
Shear force test	Put the specimens mounted on PCB in test machine, push their side termination constantly with force defined as following table for 10 seconds, then stabilize to check the soldering appearance. Size: 0508, 0612 | 1225, 1020 Force: 25N | 45N Reference: IEC 60115-1 9.7	There was no obvious injury

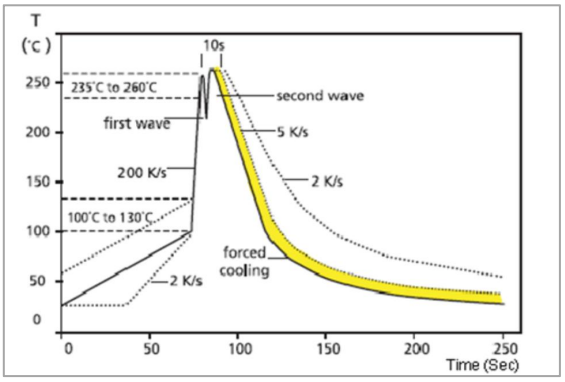
SOLDERING

Lead Free IR Reflow Soldering Profile



- Top temperature should be under 260^{+5}_{-0}℃ ,10Sec.
- Reference: J-STD-020D

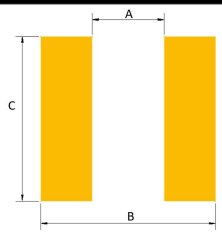
Lead Free Double-Wave Soldering Profile



- 350±10℃ within 3 Sec. if soldering iron.

SOLDERING PAD

Unit: mm

Figure	Type	A	B	C
	WT0508	0.6	2.2	2.3
	WT0612	0.7	2.6	3.5
	WT1020	0.5	3.5	5.3
	WT1225	1.3	4.2	6.4

WORKING ENVIRONMENT

If user intends to use products in special environments or states (including but not limited to the following), it is necessary to approve special characteristics and reliability for the following or other application environments.

A. Hot temperature.
B. Near the sea, or corrosive gas, such as Cl_2, H_2S, NH_3, SO_2 and NO_2, etc.
C. Unverified liquids, such as water, oil, chemical or organic solvent.
D. Unverified resin or paint to cover products.
E. Products should be washed with water soluble cleaner even if non cleaning flux

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STORAGE / CARRY CONDITIONS

A. Temperature: 25±5℃
B. Humidity: 60±15%RH
C. Storage life: 2 years, FIFO
D. Please hold box correct orientation when storing and carrying. It is strictly prohibited to fall or squeeze the box, otherwise the product electrode or body may be damaged.

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6. **Effectiveness:**
   - This disclaimer does not exclude liability for personal injury caused by intentional misconduct or gross negligence, or other liabilities prohibited from exclusion by law.

VERSION HISTORY

Version	Date	Change Item(s)	Description
A	2022/05/25	-	First version
B	2022/12/09	Reliability	Update test items, test method and acceptable criterion.
C	2025/04/08	Legal Disclaimer	Revise the entire text
D	2025/04/25	Feature	RoHS
E	2026/9/15	Manufacturer Part No Characteristics Reliability	Add D=±0.5% Add ± 0.5% Updated the acceptable criterion

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