APPROVAL SHEET

WK02H TC200

High Precision Thick Film chip resistors

Size 0201

RoHS 2 Compliant with exemption 7C-I
Halogen free

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

FEATURE

1. SMD Thick film resistor
2. High reliability and stability
3. High precision 0.1%, 0.5%
4. RoHS 2 compliant with exemption 7C-I and Halogen free product

APPLICATION

- Medical equipment
- Measuring instrument
- Communication device
- Computer
- Printer

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 layer that is applied to the top surface of the substrate. The composition of the resistive layer 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 environmental soldering issue, the outer layer of these end terminations is a Lead-free solder .

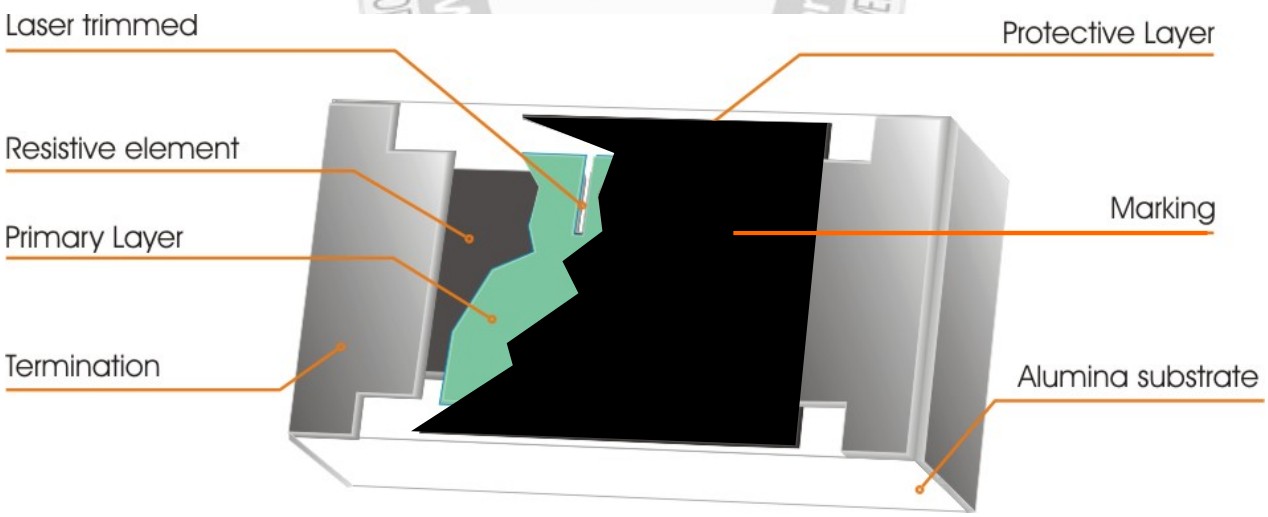


Fig 1. Construction of Chip-R WK02H

QUICK REFERENCE DATA

Item	General Specification
Series No.	WK02H
Size code	0201 (0603)
Resistance value	10 -1Mohm (E24+E96)
Resistance Tolerance	±0.1%, ±0.5%
Resistance Range/ TCR (ppm/°C)	200ppm
Max. dissipation at T_{amb}=70°C	1/20W
Max. Operation Voltage	25V
Max. Overload Voltage	50V
Operation Temperature	-55 ~ +155°C

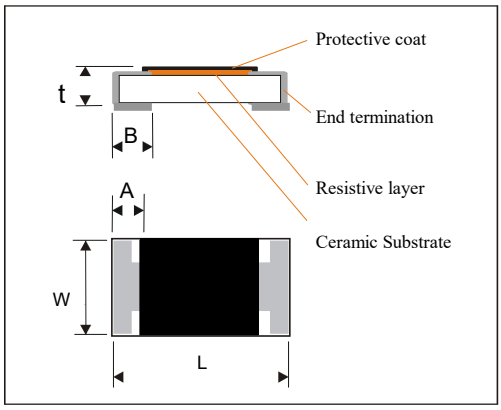
Note :

1. This is the maximum voltage that may be continuously supplied to the resistor element, see "IEC publication 60115-8"
2. Max. Operation Voltage : So called RCWV (Rated Continuous Working Voltage) is determined by

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

DIMENSION (unit : mm)

Type	WK02H
L	0.60 ± 0.03
W	0.30 ± 0.03
t	0.23 ± 0.03
A	0.10 ± 0.05
B	0.15 ± 0.05



MARKING

0201 size has no marking !

FUNCTIONAL DESCRIPTION

Derating

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

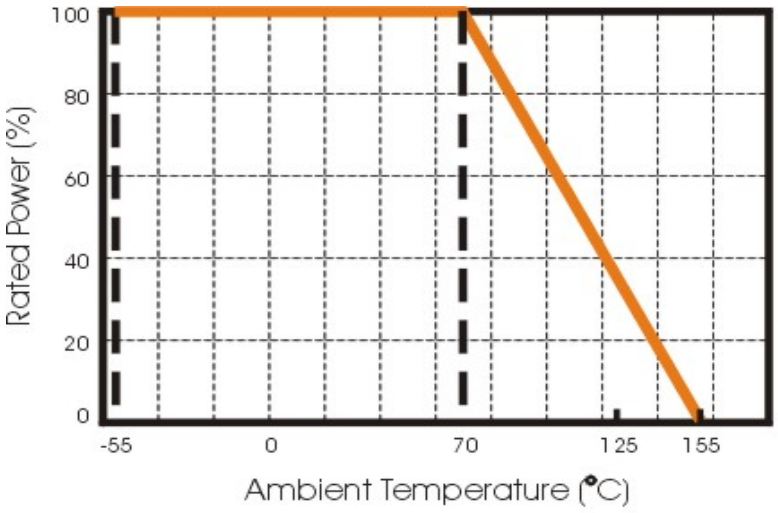
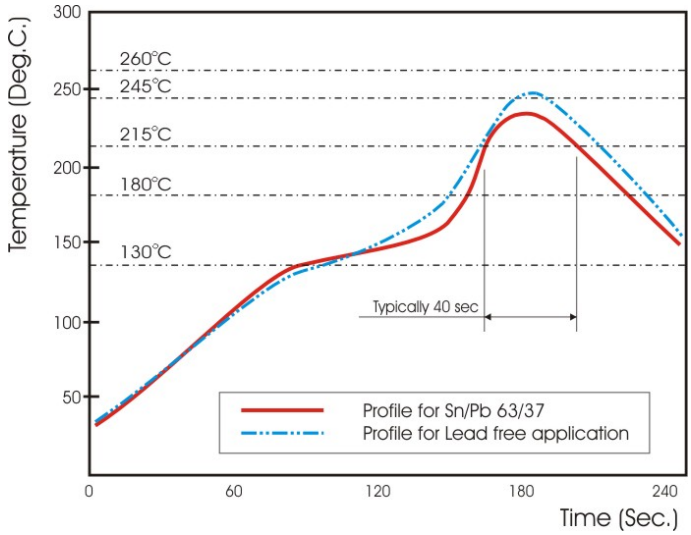


Fig.2 Maximum dissipation in percentage of rated power
As a function of the ambient temperature

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 within lead-free solder bath. 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 3.



CATALOGUE NUMBERS

The resistors have a catalogue number starting with .

WK02	H	3003	B	T	L
Size code WK02: 0201	**Type code** TCR 200ppm	**Resistance code** 3 significant digits followed by no. of zeros 100Ω = 1000 300Kohm = 3003	**Tolerance** B : ±0.1% D : ±0.5%	**Packaging code** A : 7" Reeled 15kpcs T : 7" Reeled 10kpcs	**Termination code** L : lead free

1. Reeled tape packaging: 8mm width paper taping.

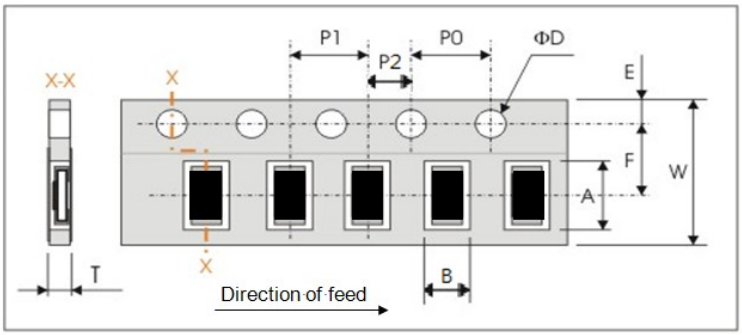
TEST AND REQUIREMENTS(JIS C 5201-1 : 1998)

TEST	PROCEDURE	REQUIREMENT
		Resistor
DC resistance **Clause 4.5**	DC resistance values measured <10Ω@0.1V, <100Ω@0.3V, <1KΩ@1.0V, <10KΩ@3V, <100KΩ@10V,<1MΩ@25V, <10MΩ@30V	Within the specified tolerance
Temperature Coefficient of Resistance(T.C.R) **Clause 4.8**	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 : 20°C+5°C-1°C	Refer to "QUICK REFERENCE DATA"
Short time overload (S.T.O.L) **Clause 4.13**	Permanent resistance change after a 2 second application of a voltage 2.5 times RCWV or the maximum overload voltage specified in the above list, whichever is less.	ΔR/R max. ±(1.0%+0.05Ω)
Resistance to soldering heat(R.S.H) **Clause 4.18**	Un-mounted chips completely immersed for 10±1second in a SAC solder bath at 260℃±5°C	no visible damage Δ R/R max. ±(1.0%+0.05Ω)
Solderability **Clause 4.17**	Un-mounted chips completely immersed for 2±0.5 second in a SAC solder bath at 235℃±5℃	good tinning (>95% covered) no visible damage
Temperature cycling **Clause 4.19**	30 minutes at -55°C±3°C, 2~3 minutes at 20°C+5°C-1°C, 30 minutes at +125°C±3°C, 2~3 minutes at 20°C+5°C-1°C, total 5 continuous cycles	no visible damage ΔR/R max. ±(1.0%+0.05Ω)

TEST	PROCEDURE	REQUIREMENT
		Resistor
Load life (endurance) **Clause 4.25**	70±2°C, 1000 hours, loaded with RCWV or Vmax,1.5 hours on and 0.5 hours off	ΔR/R max. ±(5.0%+0.1Ω) No visual damage
Load life in Humidity **Clause 4.24**	1000 hours, at rated continuous working voltage in humidity chamber controller at 40°C±2°C and 95% relative humidity, 1.5hours on and 0.5 hours off	ΔR/R max. ±(5.0%+0.1Ω) No visual damage
Endurance at high temperature **Clause 4.25**	125°C, no load, 1000hours	ΔR/R max. ±(5.0%+0.1Ω) No visual damage
Bending strength **Clause 4.33**	Resistors mounted on a 90mm glass epoxy resin PCB(FR4); bending : 3 mm, once for 10 seconds.	ΔR/R max. ±(1.0%+0.05Ω)
Adhesion **Clause 4.32**	Pressurizing force: 5N, Test time: 10±1sec.	No remarkable damage or removal of the terminations.
Insulation Resistance **Clause 4.6**	Apply the maximum overload voltage (DC) for 1minute	R≧1GΩ
Dielectric Withstand Voltage **Clause 4.7**	Apply the maximum overload voltage (AC) for 1 minute	No breakdown or flashover

PACKAGING

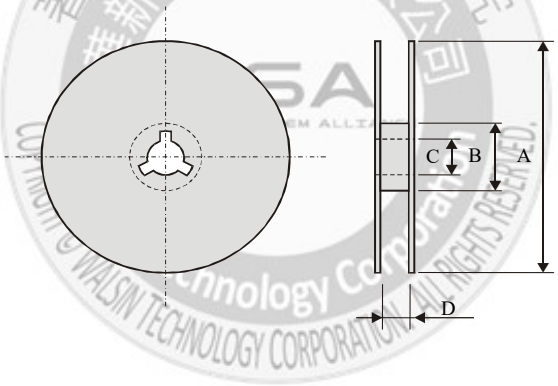
Paper Tape specifications (unit :mm)



Series No.	A	B	W	F	E
WK02H	0.67±0.05	0.37±0.05	8.00±0.20	3.50±0.05	1.75±0.10

Series No.	P1	P0	P2	ΦD	T
WK02H	2.00±0.10	4.00±0.10	2.00±0.05	$\Phi 1.50^{+0.1}_{-0.0}$	0.45±0.05

Reel dimensions



Symbol	A	B	C	D
(unit : mm)	Φ180+0/-1.5	Φ60.0+1/-0	13.0±0.2	9.0+1/-0

Taping quantity

- Chip resistors 15,000pcs per reel !

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

Walsin:

WK02H_BAL