



WK02H TC200

High Precision Thick Film chip resistors

Size 0201

RoHS 2 Compliant with exemption 7C-1 Halogen free

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

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ASC_WK02H_V04

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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-1 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℃

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.

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MENSIC	N (unit : mm)	ASSIVE	SYSTEM ALLIANC
Туре	WK02H		
L	0.60 ± 0.03	Opt to .	
W	0.30 ± 0.03	Alshirthn	lology CO
t	0.23 ± 0.03	ECHNOLO	OGY CORPORATION
А	0.10 ± 0.05		VUI VVIII V
В	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.



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CATALOGUE NUMBERS

The resistors have a catalogue number starting with .

WK02	Н	3003	В	т	L
Size code	Type code	Resistance code	Tolerance	Packaging code	Termination
WK02: 0201	TCR 200ppm	3 significant digits followed by no. of zeros $100\Omega = 1000$	B:±0.1% D:±0.5%	A : 7" Reeled 15kpcs T : 7" Reeled 10kpcs	code L : lead free

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

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

TEST	PROCEDURE	REQUIREMENT	
TEST	FROCEDORE	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. $\frac{R_2 - R_1}{R_1(t_2 - t_1)} \times 10^6 \text{ (ppm/°C)}$ 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 \pm 1second in a SAC solder bath at $260^{\circ}C \pm 5^{\circ}C$	no visible damage Δ R/R max. \pm (1.0%+0.05 Ω)	
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 Δ R/R max. ±(1.0%+0.05 Ω)	



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



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PACKAGING

Paper Tape specifications (unit :mm)



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

Series No.	F	P0	ΦD	Т
WK02H	2.00±0.10	4.00±0.10	$\Phi 1.50^{+0.1}_{-0.0}$	Max. 0.5
	14Va			Y

Reel dimensions



Symbol	А	В	С	D
(unit : mm)	Ф180+0/-1.5	Ф60.0+1/-0	13.0±0.2	9.0+1/-0

Taping quantity

- Chip resistors 15,000pcs per reel !