



UNI-ROYAL  
厚聲集團

# DATA SHEET

**Product Name** Thick Film Chip Resistors

**Part Name** Chip Common Series

01005/0201/0402/0603/0805/1206/1210/1812/2010/2512

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## 1. Scope

- 1.1 This specification for approve relates to the Thick Film Chip Resistors manufactured by UNI-ROYAL.
- 1.2 There no lead exists terminal of resistors and lead which exist in glass of resistor layer meets ROHS exemption.
- 1.3 Small size& light weight Suitable for both wave & re-flow soldering.

## 2. Explanation of Part No. System

Part No. includes 14 codes shown as below:

2.1 1<sup>st</sup>~4<sup>th</sup> codes: Part name. E.g.: 01005, 0201, 0402, 0603, 0805, 1206 ,1210, 2010,1812, 2512.

2.2 5<sup>th</sup>~6<sup>th</sup> codes: Power rating.

E.g.: W=Normal Size		“1~G” = “1~16”									
Wattage	1/32	3/4	1/2	1/3	1/4	1/8	1/10	1/16	1/20	1	
Normal Size	WH	07	W2	W3	W4	W8	WA	WG	WM	1W	

If power rating is lower or equal than 1 watt, 5<sup>th</sup> code would be “W” and 6<sup>th</sup> code would be a number or letter.

E.g.: WA=1/10W W4=1/4W

2.3 7<sup>th</sup> code: Tolerance. E.g.: D=±0.5% F=±1% G=±2% J=±5% K= ±10%

2.4 8<sup>th</sup>~11<sup>th</sup> codes: Resistance Value.

2.4.1 If value belongs to standard value of 5% series, 8<sup>th</sup> code would be zero,9<sup>th</sup>~10<sup>th</sup> codes are significant figures of the resistance and 11<sup>th</sup> code is the power of ten.

2.4.2 If value belongs to standard value of 2% series, 8<sup>th</sup>~10<sup>th</sup> codes are significant figures of the resistance, and 11<sup>th</sup> code is the power of ten.

2.4.3 11<sup>th</sup> codes listed as following:

0=10<sup>0</sup> 1=10<sup>1</sup> 2=10<sup>2</sup> 3=10<sup>3</sup> 4=10<sup>4</sup> 5=10<sup>5</sup> 6=10<sup>6</sup> J=10<sup>-1</sup> K=10<sup>-2</sup> L=10<sup>-3</sup> M=10<sup>-4</sup>

2.5 12<sup>th</sup>~14<sup>th</sup> codes.

2.5.1 12<sup>th</sup> code: Packaging Type. E.g.: C=Bulk T=Tape/Reel

2.5.2 13<sup>th</sup> code: Standard Packing Quantity.

4=4000pcs 5=5000pcs C=10000pcs D=20000pcs E=15000pcs

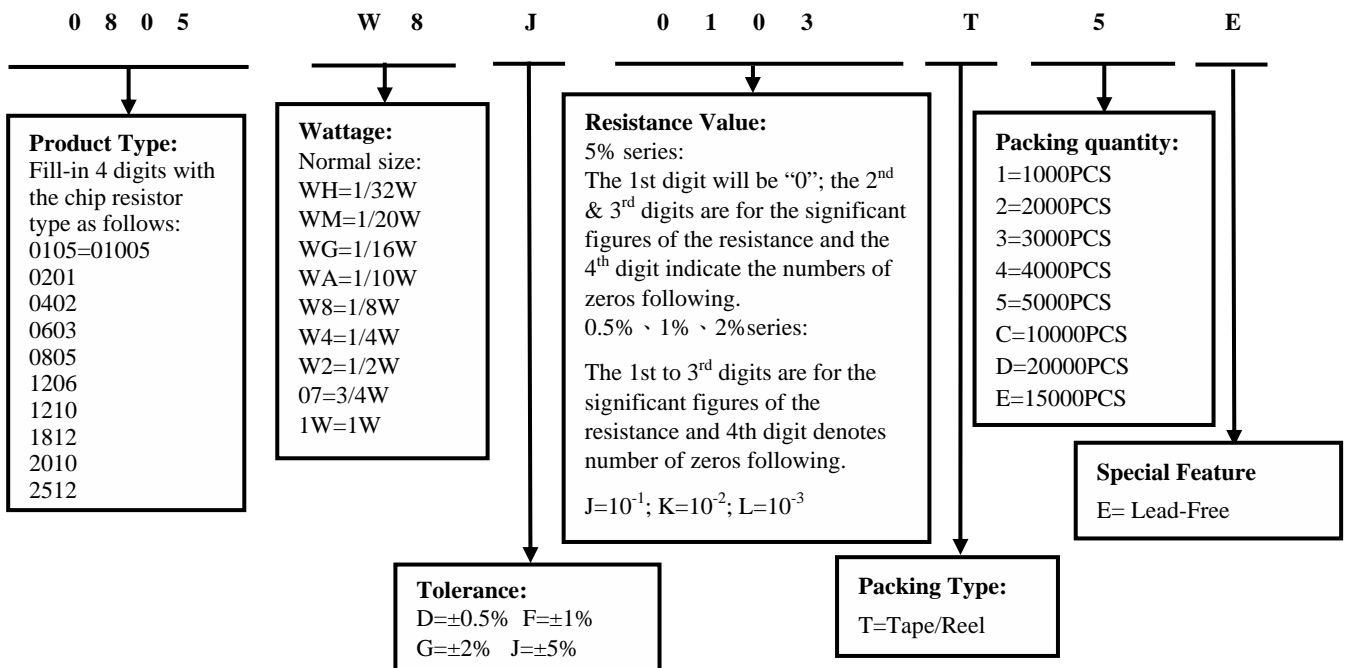
Chip Product: BD=B/B-20000pcs TC=T/R-10000pcs

2.5.3 14<sup>th</sup> code: Special features.

E = Environmental Protection, Lead Free, or Standard type.

## 3. Ordering Procedure

(Example: 0805 1/8W ±5% 10K T/R-5000)



## 4. Marking

(1) For 01005 0201 and 0402 size. Due to the very small size of the resistor's body, there is no marking on the body.

Normally, the marking of 0Ω 0603, 0Ω 0805, 0Ω 1206, 0Ω 1210, 0Ω 1812, 0Ω 2010, 0Ω 2512 resistors as following

(2) ±2%, ±5% Tolerance: The first two digits are significant figures of resistance and the third denotes number of zeros following

(3) ±0.5% · ±1% Tolerance: 4 digits, first three digits are significant; fourth digit is number of zeros. Letter r is decimal point.

(4) More than 0805 specifications (including) 4 digits, Product below 1Ω, show as following, the first digit is "R" which is decimal point.



0 → 0Ω



333 → 33KΩ

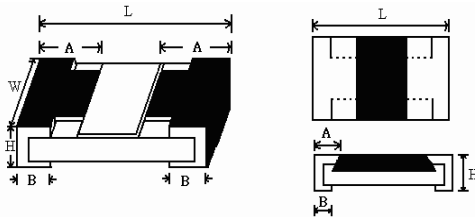


2701 → 2.7KΩ



R300 → 0.3Ω

## 5. Dimension



Type	Dimension(mm)				
	L	W	H	A	B
01005	0.40±0.02	0.20±0.02	0.13±0.02	0.10±0.05	0.10±0.03
0201	0.60±0.03	0.30±0.03	0.23±0.03	0.10±0.05	0.15±0.05
0402	1.00±0.10	0.50±0.05	0.35±0.05	0.20±0.10	0.25±0.10
0603	1.60±0.10	0.80±0.10	0.45±0.10	0.30±0.20	0.30±0.20
0805	2.00±0.15	1.25+0.15/-0.10	0.55±0.10	0.40±0.20	0.40±0.20
1206	3.10±0.15	1.55+0.15/-0.10	0.55±0.10	0.45±0.20	0.45±0.20
1210	3.10±0.10	2.60±0.20	0.55±0.10	0.50±0.25	0.50±0.20
1812	4.50±0.20	3.20±0.20	0.55±0.20	0.50±0.20	0.50±0.20
2010	5.00±0.10	2.50±0.20	0.55±0.10	0.60±0.25	0.50±0.20
2512	6.35±0.10	3.20±0.20	0.55±0.10	0.60±0.25	0.50±0.20

## 6. Resistance Range

Type	Power Rating at 70	Resistance Range			
		0.5%	1.0%	2.0%	5.0%
01005	1/32W	---	10Ω-10MΩ	10Ω-10MΩ	1Ω-10MΩ
0201	1/20W	---	1Ω-10MΩ	1Ω-10MΩ	1Ω-10MΩ
0402	1/16W	1Ω-10MΩ	1Ω-10MΩ	1Ω-10MΩ	1Ω-10MΩ
0603	1/10W	1Ω-10MΩ	0.1Ω-10MΩ	0.1Ω-10MΩ	0.1Ω-10MΩ
0805	1/8W	1Ω-10MΩ	0.1Ω≤R∅ 10MΩ	0.1Ω≤R∅ 10MΩ	0.1Ω≤R∅ 10MΩ
	1/4W	---	0.01Ω≤R∅ 0.1Ω	0.01Ω≤R∅ 0.1Ω	0.01Ω≤R∅ 0.1Ω
1206	1/4W	1Ω-10MΩ	0.1Ω≤R∅ 10MΩ	0.1Ω≤R∅ 10MΩ	0.1Ω≤R∅ 10MΩ
	1/3W	---	0.01Ω≤R∅ 0.1Ω	0.01Ω≤R∅ 0.1Ω	0.01Ω≤R∅ 0.1Ω
1210	1/2W	1Ω-10MΩ	0.01Ω-10MΩ	0.01Ω-10MΩ	0.01Ω-10MΩ
1812	3/4W	1Ω-10MΩ	0.01Ω-10MΩ	0.01Ω-10MΩ	0.01Ω-10MΩ
2010	3/4W	1Ω-10MΩ	0.01Ω-10MΩ	0.01Ω-10MΩ	0.01Ω-10MΩ
2512	1W	1Ω-10MΩ	0.01Ω-10MΩ	0.01Ω-10MΩ	0.01Ω-10MΩ





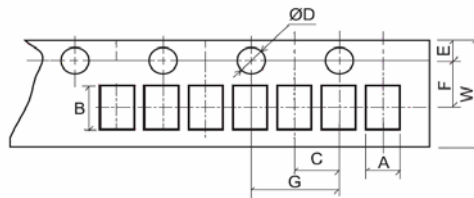
Soldering heat	Resistance change rate must be in $\pm(1.0\%+0.05\Omega)$	4.18 Dip the resistor into a solder bath having a temperature of $260 \pm 5$ and hold it for $10 \pm 1$ seconds.
Terminal bending	$\pm(1.0\%+0.05\Omega)$ Max	4.33 Twist of test board: Y/X = 3/90 mm for 60Seconds
* Insulation resistance	$\geq 1,000$ M $\Omega$	4.6 The measuring voltage shall be ,measured with a direct voltage of $(100 \pm 15)$ V or a voltage equal to the dielectric withstanding voltage., and apply for 1min.
Humidity ( steady state )	$\pm 0.5\%, \pm 1\%$ $\pm(0.5\%+0.1\Omega)$ Max.	4.24 Temporary resistance change after 240 hours exposure in a humidity test chamber controlled at $40 \pm 2$ and 90-95% relative humidity,
	$\pm 2\%, \pm 5\%$ $\pm(3.0\%+0.1\Omega)$ Max.	
*Load life in humidity	$\pm 0.5\%, \pm 1\%$ $\pm(1.0\%+0.1\Omega)$ max.	7.9 Resistance change after 1,000 hours (1.5 hours “ON”,0.5 hour “OFF”) at RCWV in a humidity chamber controlled at $40 \pm 2$ and 90 to 95% relative humidity.
	$\pm 2\%, \pm 5\%$ $\pm(3.0\%+0.1\Omega)$ Max.	
	* <50m $\Omega$	
*Load life	$\pm 0.5\%, \pm 1\%$ $\pm(1.0\%+0.1\Omega)$ Max.	4.25.1 Permanent resistance change after 1,000 hours operating at RCWV with duty cycle 1.5 hours “ON”, 0.5 hour “OFF” at $70 \pm 2$ ambient.
	$\pm 2\%, \pm 5\%$ $\pm(3.0\%+0.1\Omega)$ Max	
	* <50m $\Omega$	
*Low Temperature Storage	$\pm 0.5\%, \pm 1\%$ $\pm(1.0\%+0.1\Omega)$ Max.	4.23.4 Lower limit temperature , for 2H.
	$\pm 2\%, \pm 5\%$ $\pm(3.0\%+0.1\Omega)$ Max	
	* <50m $\Omega$	
*High Temperature Exposure	$\pm 0.5\%, \pm 1\%$ $\pm(1.0\%+0.1\Omega)$ Max.	4.23.2 Upper limit temperature , for 16H.
	$\pm 2\%, \pm 5\%$ $\pm(3.0\%+0.1\Omega)$ Max	
	* <50m $\Omega$	
*Leaching	No visible damage	J-STD-002 Test D Samples completely immersed for 30 sec in solder bath at 260 .

The resistors of 0 $\Omega$  only can do the characteristic noted of \*

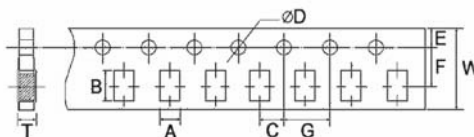
The resistors of 01005 & 0201 only can do the characteristic noted of

## 12. Packing of Surface Mount Resistors

### 12.1 Dimension of Paper Taping :(Unit: mm)

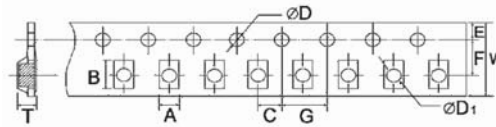


Type	A	B	C $\pm 0.05$	$\begin{matrix} +0.1 \\ \Phi D \\ -0 \end{matrix}$	E $\pm 0.1$	F $\pm 0.05$	G $\pm 0.1$	W $\pm 0.2$	T
01005	0.24 $\pm$ 0.05	0.45 $\pm$ 0.05	2.00	1.50	1.75	3.50	4.00	8.00	0.40 $\pm$ 0.1
0201	0.40 $\pm$ 0.05	0.70 $\pm$ 0.05	2.00	1.50	1.75	3.50	4.00	8.00	0.42 $\pm$ 0.1
0402	0.65 $\pm$ 0.10	1.20 $\pm$ 0.10	2.00	1.50	1.75	3.50	4.00	8.00	0.42 $\pm$ 0.05



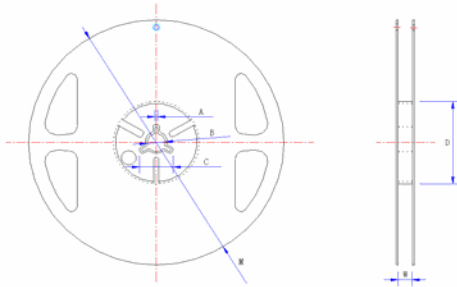
Type	A $\pm 0.2$	B $\pm 0.2$	C $\pm 0.05$	$\begin{matrix} +0.1 \\ \Phi D \\ -0 \end{matrix}$	E $\pm 0.1$	F $\pm 0.05$	G $\pm 0.1$	W $\pm 0.2$	T $\pm 0.1$
0603	1.10	1.90	2.00	1.50	1.75	3.50	4.00	8.00	0.67
0805	1.65	2.40	2.00	1.50	1.75	3.50	4.00	8.00	0.81
1206	2.00	3.60	2.00	1.50	1.75	3.50	4.00	8.00	0.81
1210	2.80	3.50	2.00	1.50	1.75	3.50	4.00	8.00	0.75

## 12.2 Dimension of Embossed Taping



Type	A ±0.2	B ±0.2	C ±0.05	+ 0.1 φD - 0	+0.25 φD1 -0	E ±0.1	F ±0.05	G ±0.1	W ±0.2	T ±0.1
2010	2.90	5.60	2.00	1.50	1.50	1.75	5.50	4.00	12.00	1.00
1812	3.50	4.80	2.00	1.50	1.50	1.75	5.50	4.00	12.00	1.00
2512	3.50	6.70	2.00	1.50	1.50	1.75	5.50	4.00	12.00	1.00

## 12.3 Dimension of Reel : (Unit: mm)



Type	Taping	Qty/Reel	A ±0.5	B ±0.5	C ±0.5	D ±1	M ±2	W ±1
01005	Paper	20,000pcs	2.0	13.0	21.0	60.0	178.0	10.0
0201	Paper	15,000pcs	2.0	13.0	21.0	60.0	178.0	10.0
0402	Paper	10,000pcs	2.0	13.0	21.0	60.0	178.0	10.0
0603	Paper	5,000pcs	2.0	13.0	21.0	60.0	178.0	10.0
0805	Paper	5,000pcs	2.0	13.0	21.0	60.0	178.0	10.0
1206	Paper	5,000pcs	2.0	13.0	21.0	60.0	178.0	10.0
1210	Paper	5,000pcs	2.0	13.0	21.0	60.0	178.0	10.0
2010	Embossed	4,000pcs	2.0	13.0	21.0	60.0	178.0	13.8
1812	Embossed	4,000pcs	2.0	13.0	21.0	60.0	178.0	13.8
2512	Embossed	4,000pcs	2.0	13.0	21.0	60.0	178.0	13.8

## 13. Note

- 13.1. UNI-ROYAL recommend the storage condition temperature: 15 ~35 , humidity :25%~75%.  
 (Put condition for individual product).Even under UNI-ROYAL recommended storage condition, solderability of products over 1 year old.  
 (Put condition for each product) may be degraded.
- 13.2. Store / transport cartons in the correct direction, which is indicated on a carton as a symbol.  
 Otherwise bent leads may occur due to excessive stress applied when dropping of a carton.
- 13.3. Product performance and soldered connections may deteriorate if the products are stored in the following places:
- Storage in high Electrostatic.
  - Storage in direct sunshine 、rain and snow or condensation.
  - Where the products are exposed to sea winds or corrosive gases, including Cl<sub>2</sub>, H<sub>2</sub>S<sub>3</sub> NH<sub>3</sub>, SO<sub>2</sub>, NO<sub>2</sub>.
- 13.4. The products are used in circuit board thickness greater than 1.6mm. If customers use less than the thickness of the circuit board that you should confirm with the company, in order to recommend a more suitable product.

## 14. Record

Version	Description of amendment	Page	Date	Amended by	Checked by
1	First issue of this specification	1~7	Mar.20, 2018	Chen Haiyan	Chen Nana
2	Modify 0201 packing quantity	7	May.24, 2018	Chen Haiyan	Chen Nana

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