

ROYALOHM

C O N F I D E N T I A L D O C U M E N T

SPECIFICATION FOR APPROVAL

TRELIK

Description: Thick Film Chip Resistor Array (Terminal Lead Free)

Royalohm Part no.:

10P8WHJxxxxT5E (RMC 1/32W (10P8) +/- 5% 10Ω - 1MΩ)

Approved by

Parts corresponding to RoHS Compliant: 2005-Apr.-1

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Approved	Checked	Prepared
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Issued Date: 2013/09/04

Customer: TRELIIK

Part No.: 10P8WHJxxxxT5E

1. Scope:

This specification for approval relates to Thick Film Chip Resistor Array (Terminal Lead Free) manufactured by ROYALOHM 's specifications.

2. Type designation:

The type designation shall be in the following form:

	Type	Power Rating	Resistance tolerance	Nominal Resistance
<u>Ex.</u>	RMC 10P8	1/32 W	J	25 Ω

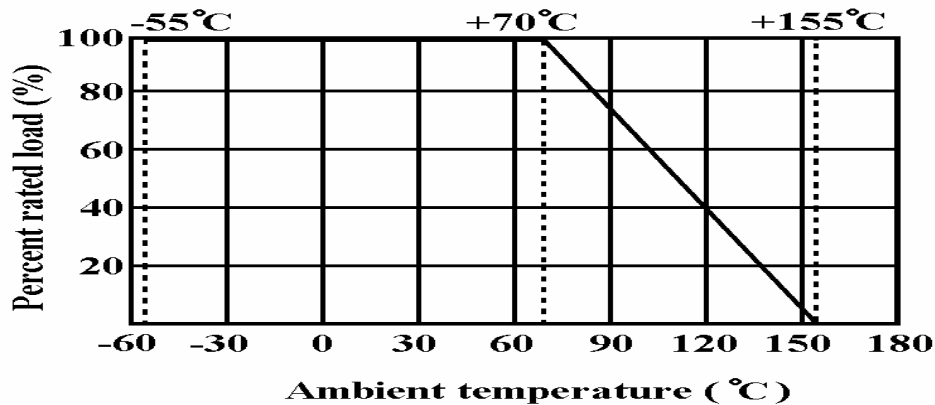
3. Ratings:

Type	RMC 10P8 (10Pin8R)
Power Rating	0.0312 W
Max. Working Voltage	25 V
Max. Overload Voltage	50 V
Temperature Range	-55°C ~ +155°C
Ambient Temperature	70 °C

3.1 Power rating:

Resistors shall have a power rating based on continuous load operation at an ambient temperature of 70 °C . For temperature in excess of 70 °C , The load shall be derate as shown in figure 1.

Figure 1

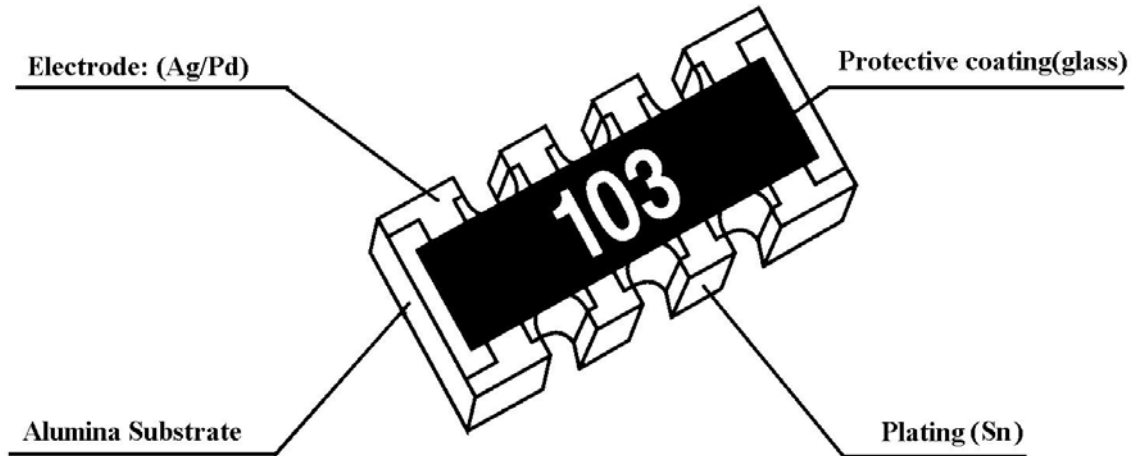


3.2 Nominal Resistance

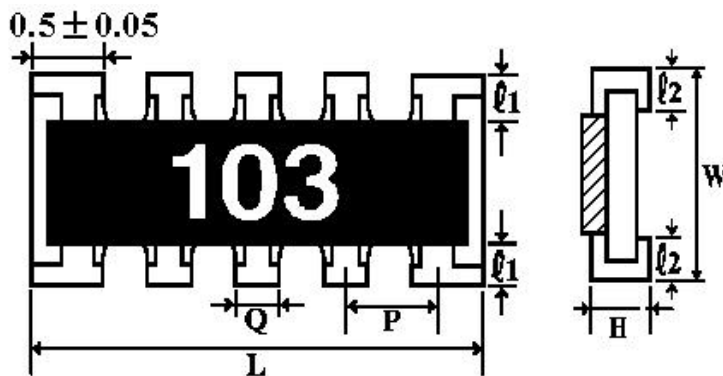
Effective figures of nominal resistance shall be in accordance with E-24 for 2 % and 5 %.

Thick Film Chip Resistor Array (Terminal Lead Free)

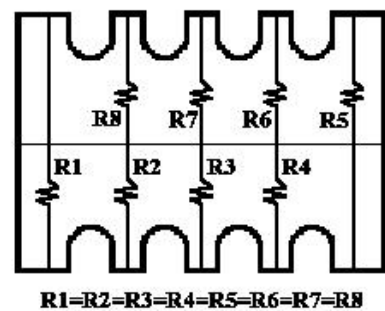
4. Construction :



5. Power rating and dimensions



Equivalent Circuit Diagram:



Dimension :

Type	Dimension (mm)						
	L ± 0.20	W ± 0.15	H ± 0.10	l1 ± 0.15	l2 ± 0.15	P ± 0.05	Q ± 0.05
RMC 10P8 (10Pin8R)	3.20	1.60	0.55	0.40	0.30	0.64	0.35

Power Rating :

Type	Power Rating at 70 °C	Tolerance %	Resistance Range	Standard Resistance values
RMC 10P8 (10Pin8R)	0.0312W	± 5	10Ω--1MΩ	E-24

Thick Film Chip Resistor Array (Terminal Lead Free)

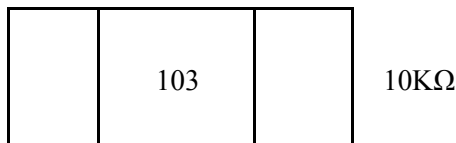
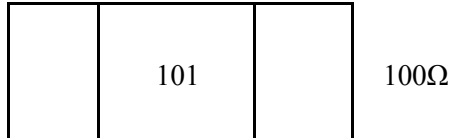
6. Marking :

6.1 Resistors

A. Marking for E-24 series in 10P8 size : 3 Digits

*The first 2 digits are significant figures of resistance and the 3rd digit denoted number of zeros.

Ex.




6.2 Labels

Label shall be marked with the following item :

- A. Nominal Resistance
- B. Resistance Tolerance
- C. Power Rating
- D. Size
- E. Quantity
- F. Lot Number

Ex.

ROYALOHM			
CHIP RESISTOR			
RESISTANCE:	25 Ω	± 5 %	
WATTAGE:	1/32W	SIZE:	Size: 10P8
QUANTITY:	5,000	PCS	Pb-Free
PART NO.:			
P.O.NO.:			
LOT NO. :	60500C	10P8WHJ0250T5E	
			

Thick Film Chip Resistor Arrays (Terminal Lead Free)																	
7. Performance specification :																	
Characteristics	Limits	Test Methods (JIS C 5201-1)															
Temperature coefficient	$\pm 200 \text{ PPM}/^\circ\text{C}$	5.2 Natural resistance change per temp. degree centigrade. $\frac{R_2 - R_1}{R_1(t_2 - t_1)} \times 10^6 \quad (\text{PPM}/^\circ\text{C})$ R1: Resistance value at room temperature (t1) R2: Resistance value at room temp. plus 100 °C (t2)															
Short time overload	Resistance change rate is $\pm (2.0\% + 0.1 \Omega)$ Max.	5.5 Permanent resistance change after the application of a potential of 2.5 times RCWV for 5 seconds															
Insulation resistance	1,000 M Ω or more	5.6 Apply 500V DC between protective coating and termination for 1 min, then measure															
Dielectric withstanding voltage	No evidence of flashover mechanical damage, arcing or insulation break down	5.7 Apply 500V AC between protective coating and termination for 1 minute															
Terminal bending	$\pm (1.0\% + 0.05 \Omega)$ Max.	6.1.4 Twist of Test Board : Y/X = 5/90 mm for 10 seconds															
Temperature cycling	$\pm (1.0\% + 0.05 \Omega)$ Max.	7.4 Resistance change after continuous 5 cycles for duty cycle specified below :															
		<table border="1"> <thead> <tr> <th>Step</th> <th>Temperature</th> <th>Time</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>-55°C \pm 3°C</td> <td>30 mins</td> </tr> <tr> <td>2</td> <td>Room temp.</td> <td>10~15 mins</td> </tr> <tr> <td>3</td> <td>+155°C \pm 2°C</td> <td>30 mins</td> </tr> <tr> <td>4</td> <td>Room temp.</td> <td>10~15 mins</td> </tr> </tbody> </table>	Step	Temperature	Time	1	-55°C \pm 3°C	30 mins	2	Room temp.	10~15 mins	3	+155°C \pm 2°C	30 mins	4	Room temp.	10~15 mins
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		2	Room temp.	10~15 mins													
3	+155°C \pm 2°C	30 mins															
4	Room temp.	10~15 mins															
Load life in humidity	Resistance change rate is $\pm (3.0\% + 0.1 \Omega)$ 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°C \pm 2°C and 90 to 95 % relative humidity															
Load Life	Resistance change rate is $\pm (3.0\% + 0.1 \Omega)$ Max.	7.10 Permanent resistance change after 1,000 hours operating at RCWV, with duty cycle of (1.5 hours"on", 0.5 hour"off") at 70 °C \pm 2°C ambient															

Thick Film Chip Resistor Arrays (Terminal Lead Free)

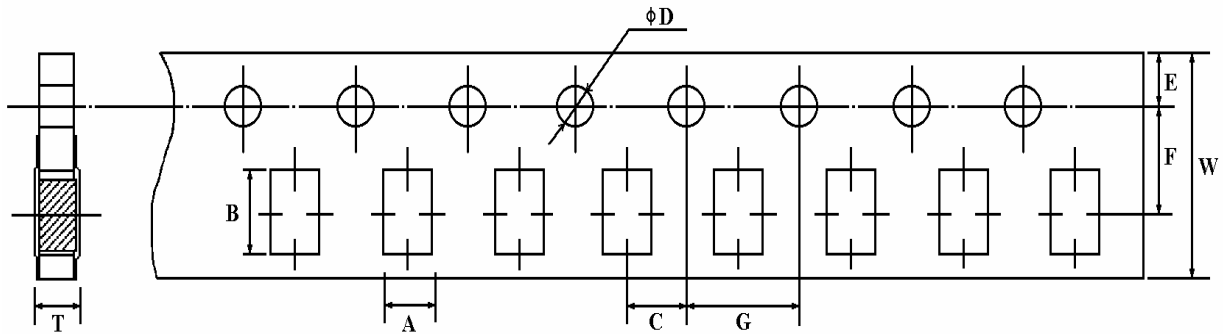
7. Performance specification :

Characteristics	Limits	Test Methods (JIS C 5201-1)
Soldering Heat	Electrical characteristics shall be satisfied. Without distinct deformation in appearance.	<u>Solder bath method</u> Pre-heat : 100 to 105 °C, 30 ± 5 sec. Temperature : 265 ± 3°C, 5 +1/-0 sec. <u>Reflow soldering method</u> Peak : 250 +5/-0°C 230°C or higher 30 ± 10Sec. <u>Soldering iron method</u> Bit temperature : 350 ± 10°C Application time of soldering iron : 3 +1/-0sec.
Solderability	95 % coverage Min.	6.5 Test temperature of solder : 245 ± 3°C Dipping them solder : 2~3 seconds

Thick Film Chip Resistor Arrays (Terminal Lead Free)

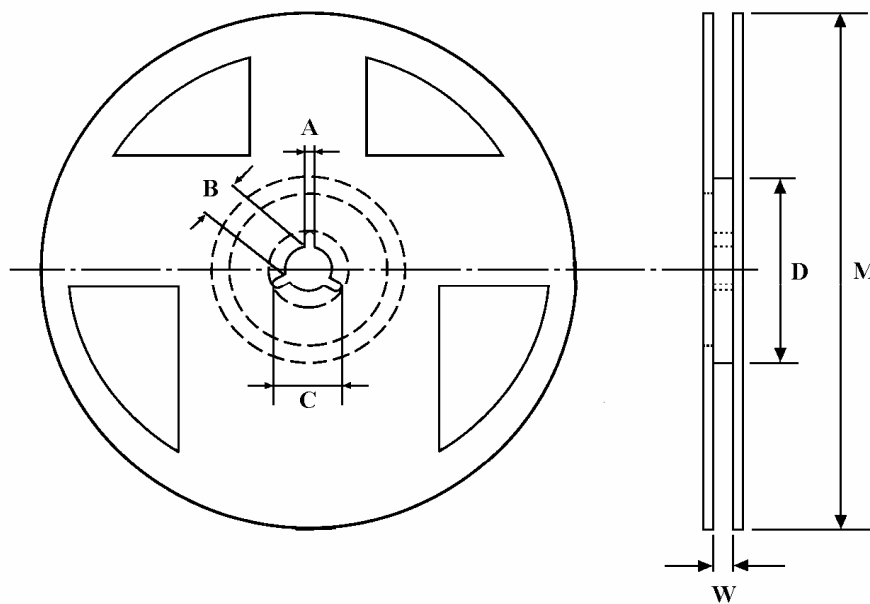
8. Packing specification :

* Taping Dimension (mm)



Type	A ± 0.2	B ± 0.2	C ± 0.05	$\phi D \begin{matrix} +0.1 \\ -0 \end{matrix}$	E ± 0.1	F ± 0.05	G ± 0.1	W ± 0.2	T ± 0.1
10P8	2.0	3.6	2.0	1.5	1.75	3.5	4.0	8.0	0.85

* Reel Dimension (mm)



Type	Quantity Per Reel	A ± 0.5	B ± 0.5	C ± 0.5	D ± 1	M ± 2	W ± 1
10P8	5,000 pcs. / Reel	2	13	21	60	178	10

Remark : ϕM 10,000pcs. / Reel = 255 ± 2mm
 20,000pcs. / Reel = 330 ± 2mm

Part Number System

Explanation of Part Number System (Thick Film Chip Resistor Array (Terminal Lead Free))

1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	0	P	8	W	H	J	0	2	5	0	T	5	E

Product Type:
Fill-in these 4 digits with the Chip resistor types as follows:
2D02
4D02
4D03
16P8
10P8

Wattage:
Fill-in these 2 digits with the codes as follows:
Normal size:
WG = 1/16W
Special:
WH = 1/32W

Tolerance:
F ~ ± 1%
G ~ ± 2%
J ~ ± 5%

Resistance Value:
1. E-24 series: the 1st digit is "0", the 2nd & 3rd digits are for the significant figures of the resistance and the 4th indicate the number of zeros following;
2. E-96 series: the 1st to 3rd digits are for the significant figures of the resistance and the 4th digit indicate the number of zeros following.
"J"~ 0.1, "K"~0.01, "L"~0.001
Ex: 2Ω26 ~226K, 226Ω ~2260

Packing Quantity:
1 = 1,000pcs
2 = 2,000pcs
3 = 3,000pcs
4 = 4,000pcs
5 = 5,000pcs
A = 500pcs
B = 2,500pcs
C = 10,000pcs
D = 20,000pcs
G = 25,000pcs
H = 50,000pcs

Packing Type:
T = T/R Packing
B = Bulk in Poly-bag
C = Bulk in cassette

Special Feature:
0 = NIL
E = Lead Free

Sample : RMC 1/32W (10P8) +/- 5% 25Ω T/R--5000 → 10P8WHJ0250T5E