

DATA SHEET

Thick Film Chip Resistor Network

YCN Series

5.0%, TCR ± 200

SIZE: 158R/158T

RoHs Compliant

THICK FILM CHIP RESISTOR NETWORK

YCN Series

DS-ENG-014

Page: 2 of 13

1. SCOPE

1.1 This specification specifies fixed thick film chip resistor array (convex terminations) for use in electronic equipment. In case there are discrepancies in specifications between this specification and the Customer's specifications, the latter shall precede.

2. PART NUMBERING SYSTEM

Part Numbering is made in accordance with the following system:

YCN	158R	-	XXX	-	J	L
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Type	Size (mm)	Nominal Resistance			Resistance Tolerance	Packaging
Thick Film Chip Resistor Network	158R (0612/1632) 158T (0612/1632)	Resistors	3-Digit	E24 Series 10Ω=100 100Ω=101	J = ± 5%	L = 5,000 pcs Lead Free

3. RATING

3.1 Rated Power

3.1.1 Resistor Rated Power

Product Type	Power Rating @ 70°C	Max Working Voltage	Max Overload Voltage	Jumper Rated Power	Jumper Resistance Value
YCN158R 0612 (1632)	1/16W	25V	50V	1A	50mΩ MAX
YCN158T 0612 (1632)	1/16W	25V	50V	1A	50mΩ MAX

3.2 Power Derating Characteristics

Rated Power shall be the load power corresponding to nominal wattage suitable for continuous use at 70°C ambient temperatures. In case the ambient temperature exceeds 70°C, reduce the load power in accordance with Derating curve in Fig. 1.

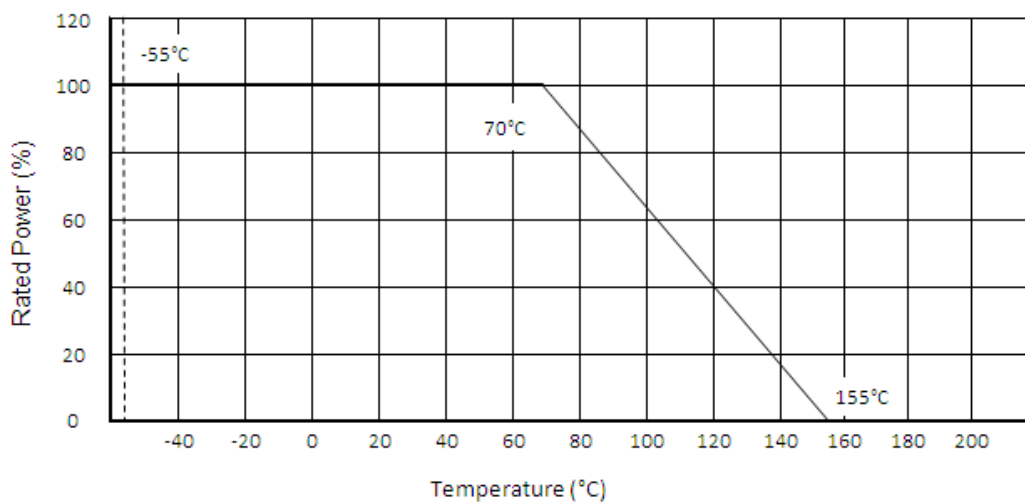


Fig.1 Power Derating Characteristics

3.3 Standard Atmospheric Condition

Unless otherwise specified, the standard range of atmospheric conditions for making measurements and tests is as follows:

Ambient Temperature = + 5°C to +35°C

Relative Humidity = < 85% RH

Air Pressure = 86 kPa to 106kPa

If there may be any doubt about the results, measurement shall be made within the following limits:

Ambient Temperature = $20 \pm 2^\circ\text{C}$

Relative Humidity = 60 to 70% RH

Air Pressure = 86 kPa to 106kPa

3.4 Operating Temperature Range -55°C to +155°C

3.5 Storage Temperature Range -5°C to + 40°C

3.6 Flammability Rating Tested in accordance to UL-94, V-0

3.7 Moisture Sensitivity Level Rating: Level 1

3.8 Product Assurance ASJ resistors shall warranty 24 months from the date of shipment.

3.9 ASJ resistors are RoHS compliance in accordance to RoHS Directive 2011/65/EU.

3.10 Resistance, Resistance Tolerance and Temperature Coefficient of Resistance.

Product Type	Power Rating @ 70°C	T.C.R (ppm/°C) Max	Resistance Range E-12 J(±5%)	Jumper Rated Power	Jumper Resistance Value	Operating Temperature Range
YCN158R 0612 (1632)	1/16W	±200	56Ω to 1MΩ	1A	50mΩ MAX	-55°C to +155°C
YCN158T 0612 (1632)	1/16W		33Ω to 1MΩ	1A	50mΩ MAX	

3.11 Rated Voltage

The rated voltage is calculated from the rated power and nominal resistance by the following formula:

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

Where E : Rated Voltage (V)
P : Rated Power (W)
R : Nominal Resistance (Ω)

In case the value calculated by the formula exceeds the maximum working voltage given in Section 3.1.2, the maximum working voltage in Section 3.1.2 shall be regarded as the rated voltage.

3.12 Document review period: every 3 months

4. MARKING ON PRODUCT

The nominal resistance shall be marked on the surface of each resistor.

Part Number	Color	Marking on Product
YCN158R	White	E-24 Series: 3 digits First two digits for significant figure and 3 rd digit for number of zeros.
YCN158T	White	

4.1 Numeric Numbering

4.1.1 5% Tolerance: *Three Numerals Marking*

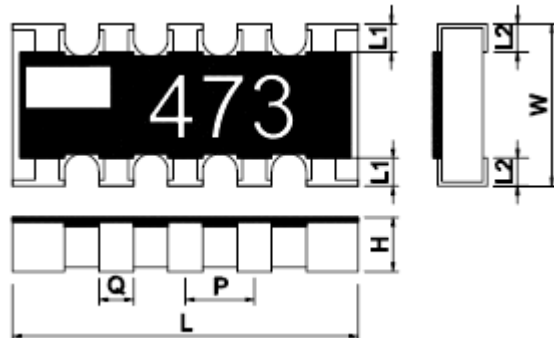
First 2 digits are significant figures, third digit is number of zeros. Letter R is decimal point.

Example

Nominal Resistance	Marking	Remarks
1 Ω	1R0	$1 \times 10^0 = 1$
10 Ω	100	$10 \times 10^0 = 10$
100 Ω	101	$10 \times 10^1 = 100$
4.7K Ω	472	$47 \times 10^2 = 4700$
47K Ω	473	$47 \times 10^3 = 47000$
470K Ω	474	$47 \times 10^4 = 470000$
4.7M Ω	475	$47 \times 10^5 = 4700000$

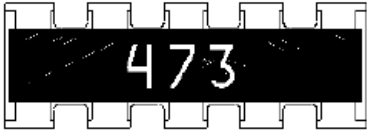
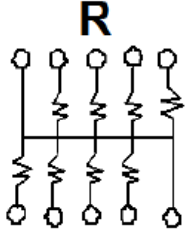

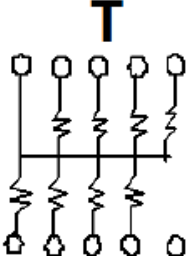
5. DIMENSIONS

5.1 Dimensions



Type	Dimensions						
	Inches (Millimeters)						
	L	W	H	L ₁	L ₂	P	Q
YCN158R 0612(1632)	0.126±0.008 (3.20±0.20)	0.063±0.006 (1.60±0.15)	0.022 ± 0.004 (0.55 ± 0.10)	0.012±0.006 (0.30±0.15)	0.012±0.006 (0.30±0.15)	0.025±0.004 (0.64±0.10)	0.013±0.004 (0.32±0.10)
YCN158T 0612 (1632)							

5.2 Circuit

Type	Circuit	
YCN158R		
YCN158T		

6. ELECTRICAL CHARACTERISTICS AND TEST CONDITIONS

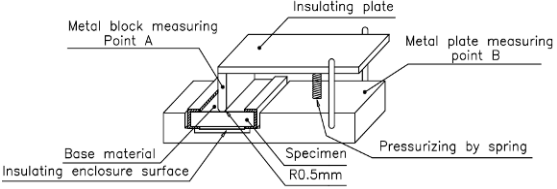
CHARACTERISTICS		RESISTANCE SPECIFICATION	TESTING CONDITIONS
		Resistance	
1	Temperature Coefficient of Resistance	Refer Clause 3.10	<p>JIS C 5202 5.2</p> $TCR(ppm/^{\circ}C) = \frac{(R2-R1)}{R1} \times 10^6$ <p>R1: Resistance at room temperature R2: Resistance at -55°C or +125°C T1: Room temperature T2: Temperature -55°C or +125°C</p>
2	Short Time Overload	±(2.0%+0.10Ω)	<p>JIS-C5201-1 4.13</p> <p>Applied 2.5 times rated voltage for 5 seconds and release the lead for about 30 minutes, then measure its resistance variance rate. (Rated voltage refer to clause 3.8 - Resistance, Resistance Tolerance and Temperature Coefficient of Resistance)</p>
		No evidence of mechanical damage	
3	Dielectric Withstand Voltage	No short or burned on the appearance.	<p>JIS C 5201-1 4.7</p> <p>Put the resistor in the fixture, add 300 VAC in +, - terminal for 60 sec.</p>

THICK FILM CHIP RESISTOR NETWORK

YCN Series

DS-ENG-014

Page: 7 of 13

4	Insulation Resistance	$\geq 10^9 \Omega$	<p>JIS C 5201-1 4.6 Put the resistor in the fixture, add 100 VDC in +, - terminal for 60 sec then measured the insulation resistance between electrodes and insulating enclosure or between electrodes and base material.</p> 
5	Intermittent Overload	$\pm(5.0\% + 0.10\Omega)$	<p>JIS C 5201-1 4.13 Put the tested resistor in chamber under temperature $25 \pm 2^\circ\text{C}$ and load 2.5 times rated DC voltage for 1 sec on, 25 sec off, $10\,000^{+400}_{-0}$ test cycles, then it be left at no-load for 1 hour, then measure its resistance variance rate.</p>
6	Resistance to Solvent	$(0.5\%+0.05\Omega)$	<p>JIS C 5201-1 4.29 The tested resistor be immersed into isorophyl alcohol of $20\sim 25^\circ\text{C}$ for 5 minutes, then the resistor is left in the room for 48 hr, then measure its resistance variance rate.</p>
		No evidence of mechanical damage, no overcoating and Sn layer by leaching.	
7	Resistance to Soldering Heat	$\pm (1.0\%+0.05\Omega)$	<p>JIS C 5201-1 4.18 • Test method 1 (Reflow test): The tested resistor should be subject in the following procedure, and after finish each step, it should be left for a duration of 2 hours or longer at a temperature of 30°C or lower and a humidity of 70% RH or lower.</p>
		No evidence of electrode damage. No side conductive peel off	
8	Solderability	Test item 1: Solder coverage over 95%	<p>JIS C 5201-1 4.17 Preconditioning: Put the tested resistor in the apparatus of PCT, at a temperature of 105°C, humidity of 100% RH, and pressure of $1.22 \times 10^5 \text{ Pa}$ for a duration of 4 hours. Then after left the tested resistor in room temperature for 2 hours or more. Test method: • Test item 1 (solder pot test): The resistor be immersed into solder pot in temperature $235 \pm 5^\circ\text{C}$ for 2 sec, then the resistor is left as placed under microscope to observed its solder area.</p>



Product Specification

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THICK FILM CHIP RESISTOR NETWORK

YCN Series

DS-ENG-014

Page: 8 of 13

9	Resistance to Dry Heat	$\pm(2.0\% + 0.10\Omega)$	<p>JIS C 5201-1 4.25 Put the tested resistors in chamber under temperature 155 ± 5 °C for 96 ± 4 hours. Then leaving in room temperature for 60 minutes, and measure its resistance variance rate.</p>								
		No evidence of mechanical damage.									
10	Thermal Shock	$\pm(1.0\% + 0.05\Omega)$	<p>MIL-STD 202 Method 107 Put the tested resistor in the thermal shock chamber under the temperature cycle which shown in the following table shall be repeated 300 times consecutively. Then leaving the tested resistor in the room temperature for 1 hour, and measure its resistance variance rate.</p> <table border="1" data-bbox="858 651 1433 775"> <thead> <tr> <th colspan="2">Testing condition</th> </tr> </thead> <tbody> <tr> <td>Lowest temperature</td> <td>-55 ± 5 °C</td> </tr> <tr> <td>Highest temperature</td> <td>125 ± 5 °C</td> </tr> <tr> <td>Temperature-retaining time</td> <td>15 minutes each</td> </tr> </tbody> </table>	Testing condition		Lowest temperature	-55 ± 5 °C	Highest temperature	125 ± 5 °C	Temperature-retaining time	15 minutes each
		Testing condition									
Lowest temperature	-55 ± 5 °C										
Highest temperature	125 ± 5 °C										
Temperature-retaining time	15 minutes each										
		No evidence of mechanical damage.									
11	Loading Life in Moisture	$\pm(2.0\% + 0.10\Omega)$	<p>JIS C 5201-1 4.24 Put the tested resistor in chamber under temperature 40 ± 2 °C, relative humidity 90~95% and load the rated voltage for 90 minutes on, 30 minutes off, total 1000 hours. Then leaving the tested resistor in room temperature for 60 minutes, and measure its resistance variance rate.</p>								
		No evidence of mechanical damage.									
12	Load Life	$\pm(3.0\% + 0.10\Omega)$	<p>JIS C 5201-1 4.25 Put the tested resistor in chamber under temperature 70 ± 2 °C and load the rated voltage for 90 minutes on, 30 minutes off, total 1000 hours. Then leaving the tested resistor in room temperature for 60 minutes, and measure its resistance variance rate.</p>								
		No evidence of mechanical damage, no short or burned on the appearance.									
13	Low Temperature Operation	$\pm(1.0\% + 0.05\Omega)$	<p>MIL-R-55342D 4.7.4 Put the tested resistor in the chamber at room temperature 25°C. Decreasing the temperature to -55°C and keep the temperature at -55°C for 1 hour. Then load the rated voltage for 45 minutes on, and 15 minute off. Then leaving the tested resistor in room temperature for 8 ± 1 hour, and measure its resistance variance rate.</p>								
		No evidence of mechanical damage.									

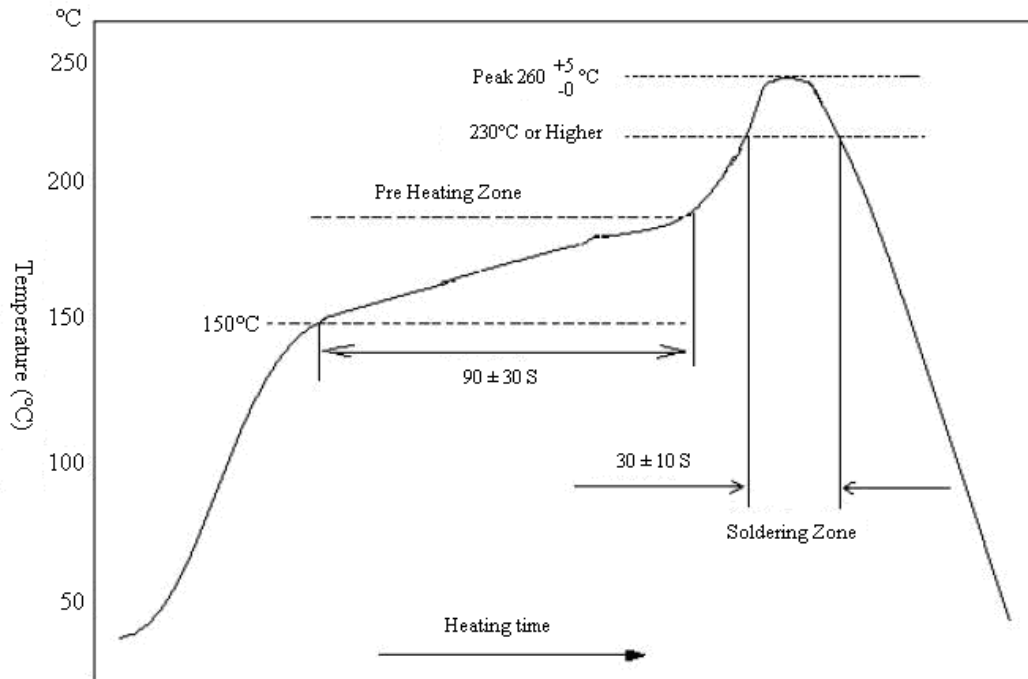


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6.1 Soldering Profile

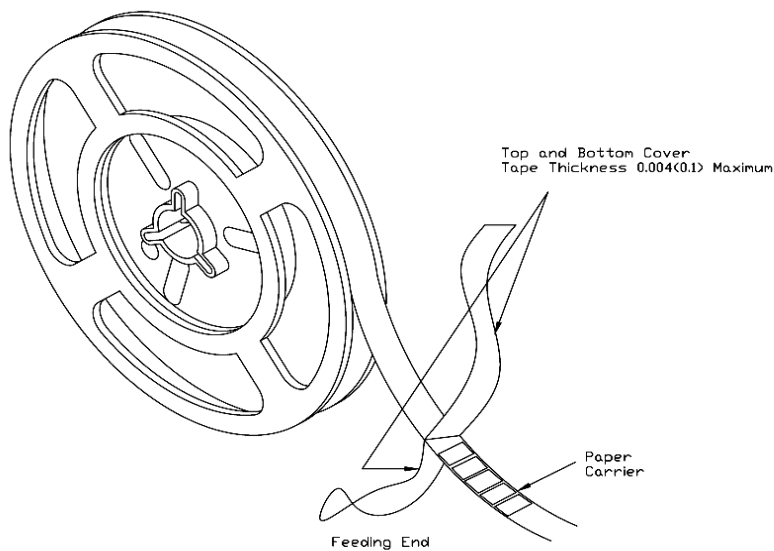
6.1.1 IR Reflow



7. TAPING

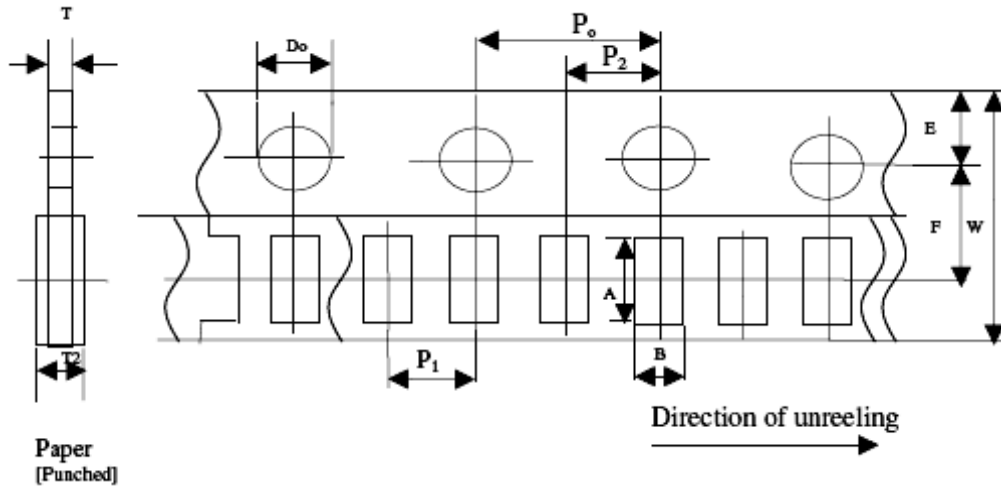
7.1 Structure of Taping

Paper Carrier



7.2 Dimension

7.5.1 Dimension of Punched Paper Tape Carrier System

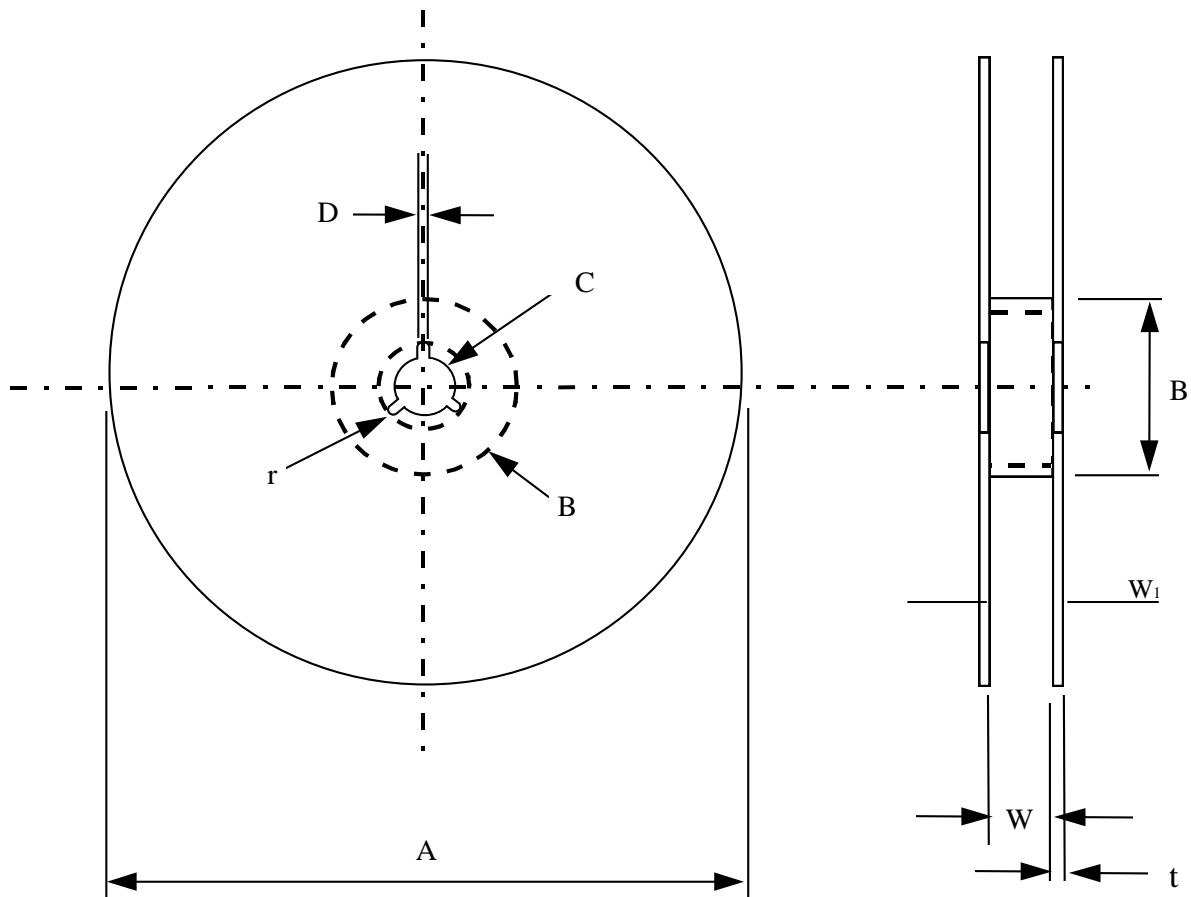


Remark : Pitch tolerance over any 10 pitches of P₀ is ± 0.2 mm

Inches (Millimeters)						
Dimensions	A	B	W	E	F	P ₁
YCN158R 0612 (1632)	0.138 ± 0.004 (3.5 ± 0.1)	0.079 ± 0.004 (2.0 ± 0.1)	0.315 ± 0.008 (8.0 ± 0.2)	0.069 ± 0.004 (1.75 ± 0.1)	0.138 ± 0.002 (3.5 ± 0.05)	0.157 ± 0.002 (4.0 ± 0.05)
YCN158T 0612 (1632)						

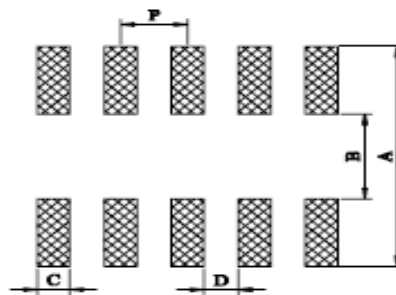
Inches (Millimeters)					
Dimensions	P ₂	P ₀	D ₀	T ₂	T
YCN158R 0612 (1632)	0.079 ± 0.002 (2.0 ± 0.05)	0.157 ± 0.004 (4.0 ± 0.1)	0.059 ^{+0.004} ₋₀ (1.5 ^{+0.10} ₀)	0.033 ^{+0.004} ₋₀ (0.85 ^{+0.10} ₀)	-
YCN158T 0612 (1632)					

7.7.4 Reel Dimensions



Model	A	B	C	D	W	W ₁	t	r
7"Reel (5K) (except 0402 10K)	$\phi 178 \pm 2.0$	$\phi 80 \text{min}$	13 ± 0.2	$\phi 2.0 \pm 0.5$	11 ± 0.1	14.4 max	1.0 ± 0.1	1.0
7"Reel (4K)	$\phi 178 \pm 2.0$	$\phi 60 \text{min}$	13 ± 0.2	$\phi 2.0 \pm 0.5$	13 ± 1.0	14.4 max	1.2 ± 0.1	1.0
10"Reel (10K)	$\phi 254 \pm 2.0$	$\phi 60 \text{min}$	13 ± 0.2	$\phi 2.0 \pm 0.5$	11 ± 1.0	14.4 max	1.5 ± 0.1	1.0
13"Reel (20K, 50K)	$\phi 330 \pm 2.0$	$\phi 60 \text{min}$	13 ± 0.2	$\phi 2.0 \pm 0.5$	11 ± 1.0	14.4 max	2.1 ± 0.1	-

8. SURFACE MOUNT LAND PATTERNS



Product (Type)	Land Dimensions - Inches (mm)			
	A	B	P	Q1
YCN158R	0.80±0.10	2.60±0.20	0.64±0.05	0.35±0.05
YCN158T				

9. REVISION HISTORY

REVISION	DATE	CHANGE NOTIFICATION	DESCRIPTION
Version. 1	February 13,2015		Initial Release