

Antenna specification

PN: CA-S01

NB-IOT B5 B8 /Lora/ Sub-1g/ UHF Antenna

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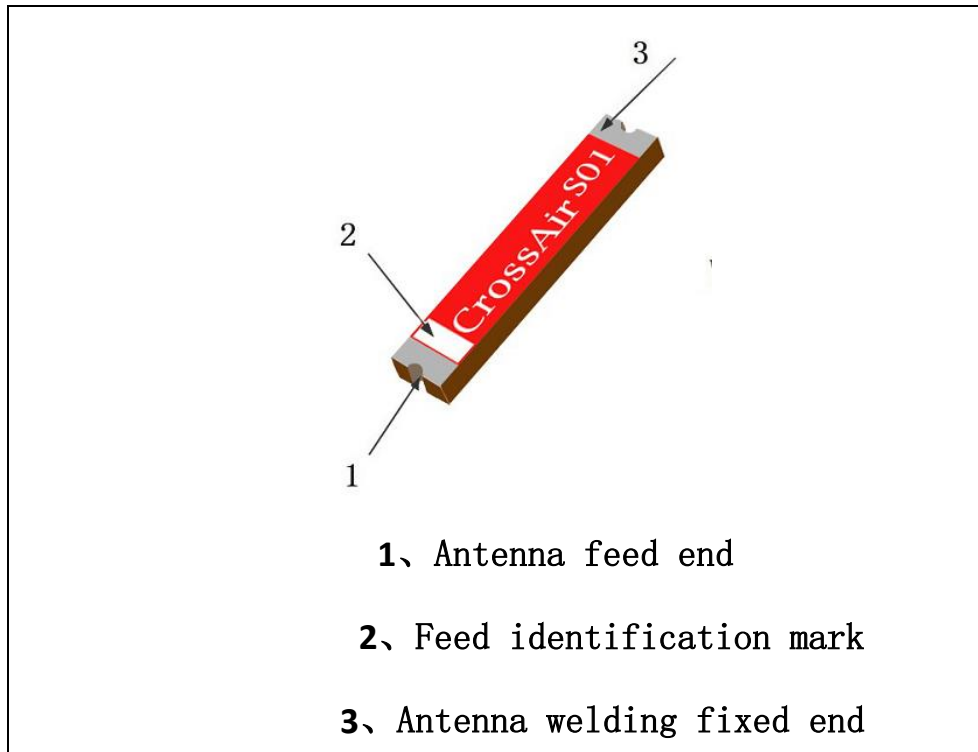
Specialty

1. Si e $15.0 \times 3.0 \times 1.0 \text{ mm}^3$ 。
2. Low energy loss, high antenna efficiency.
3. High stability in the case of temperature and humidity changes.

Apply

1. NB-IoT B5 B8 Antenna applications in frequency bands
2. Lora 915M 868M 490M 433MHz Antenna applications in frequency bands。
3. Sub-1g 915M 868M 490M 433MHz Antenna applications in frequency bands
4. UHF band (400M-800Mhz) Antenna applications in frequency bands

construction



Size

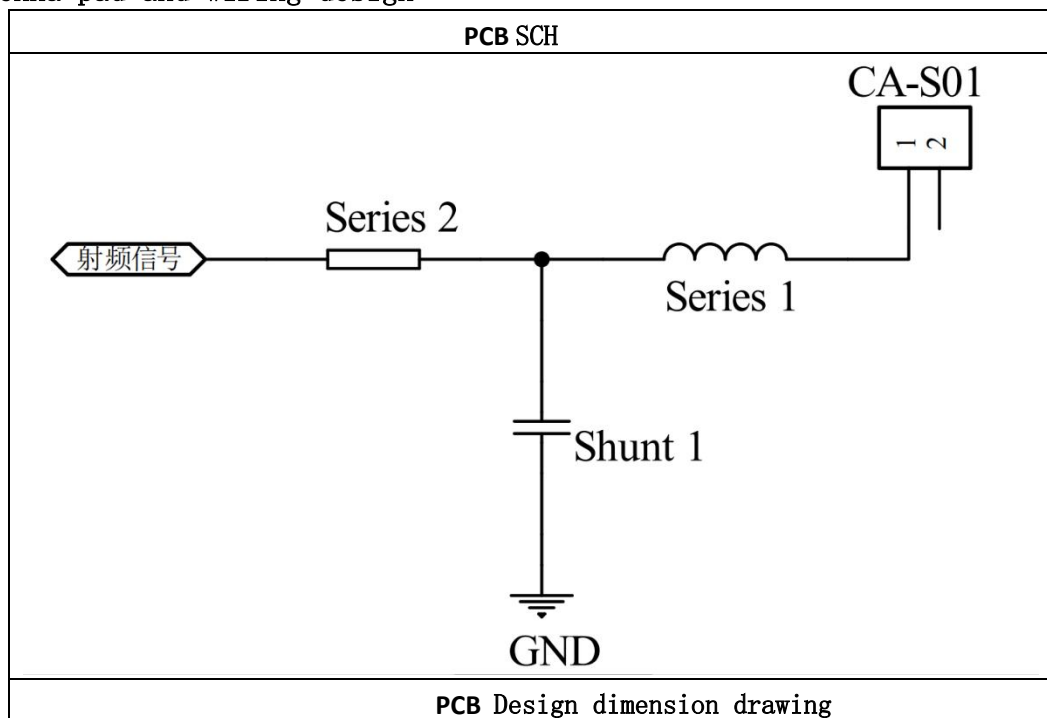
three views	symbol	size(mm)
	L	15.0 ± 0.2
	w	3.0 ± 0.1
	T	1.0 ± 0.05
	a	0.9 ± 0.1

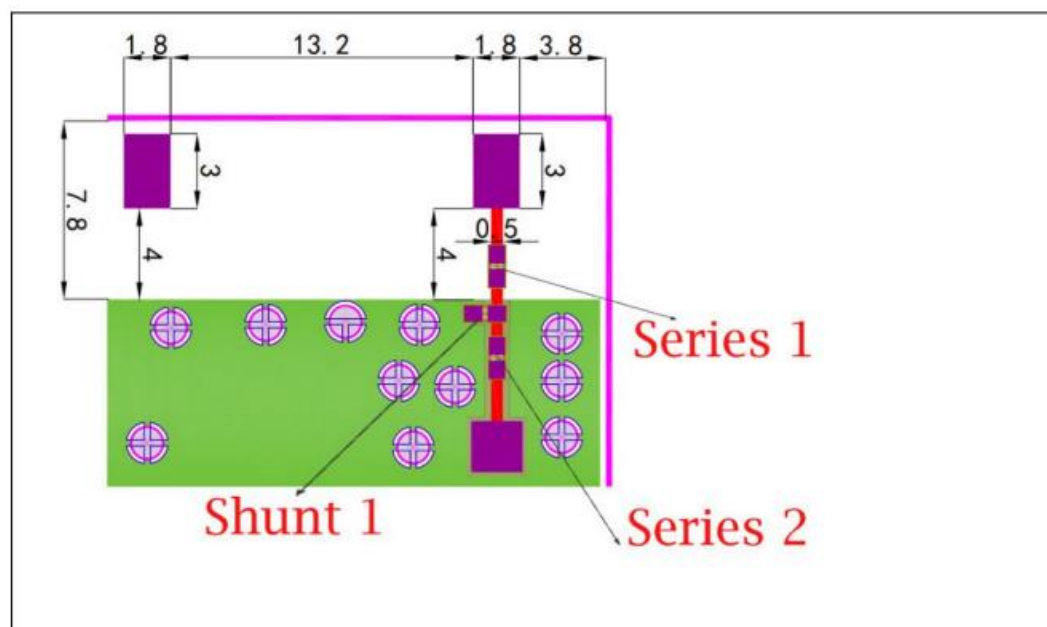
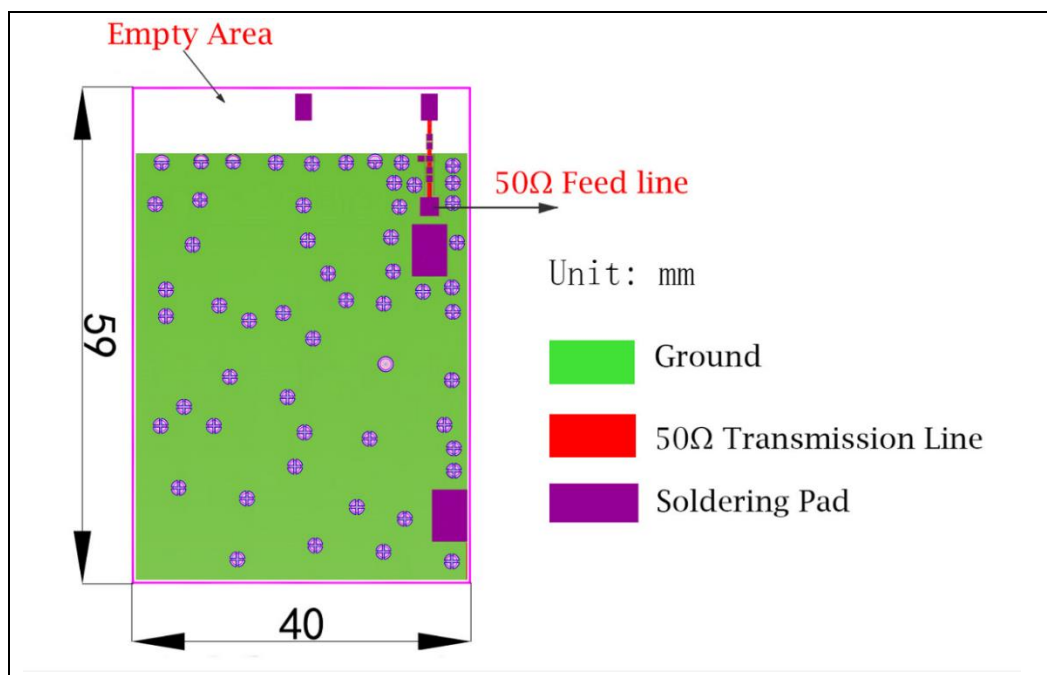
electrical specification

CA-S01	Specification
Working Frequency	420Mhz-440Mhz
Initial frequency band(GHz)	433MHz
Band Width	>80MHz
Impedance	50 Ω
Gain(dBi)	2.5
VSWR	<2
Operation Temperature	-40℃~+85℃
Antenna Type	Internal Antenna

The antenna operating frequency needs to be realized through impedance matching device debugging

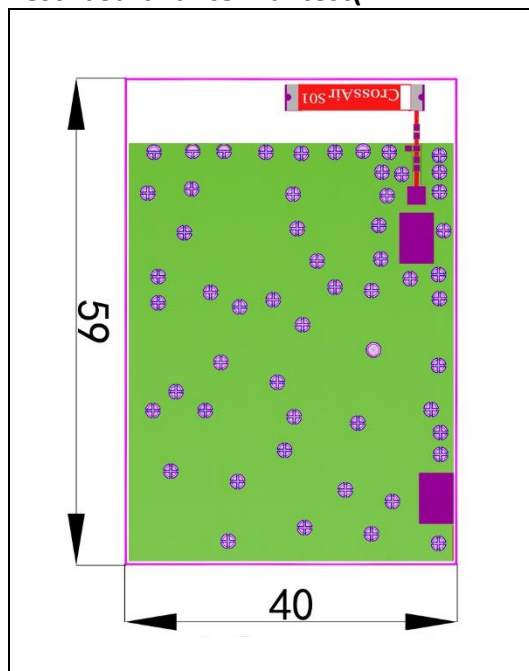
Antenna pad and wiring design



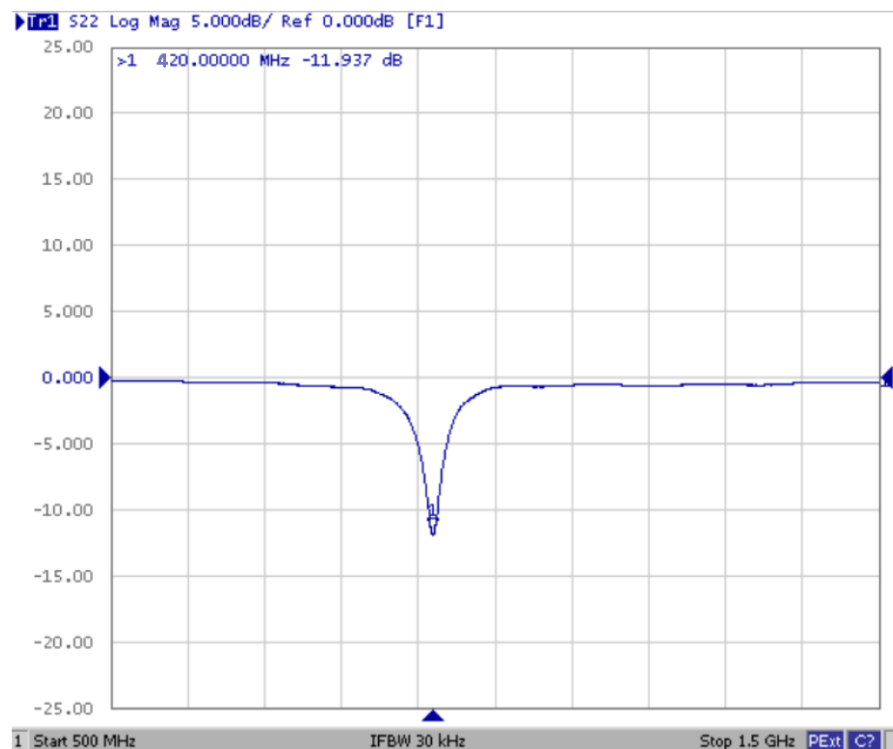


915MHz/B8 Matched device value	cascade Series 1	5pf
	Parallel Shunt 1	6.2nh
	cascade Series 2	0 Ω
868MHz/B5 Matched device value	cascade Series 1	4.7nh
	Parallel Shunt 1	6.2nh
	cascade Series 2	0 Ω
433Mhz Matched device value	cascade Series 1	100nh
	Parallel Shunt 1	NC
	cascade Series 2	0 Ω
490Mhz Matched device value	cascade Series 1	82nh
	Parallel Shunt 1	NC
	cascade Series 2	0 Ω

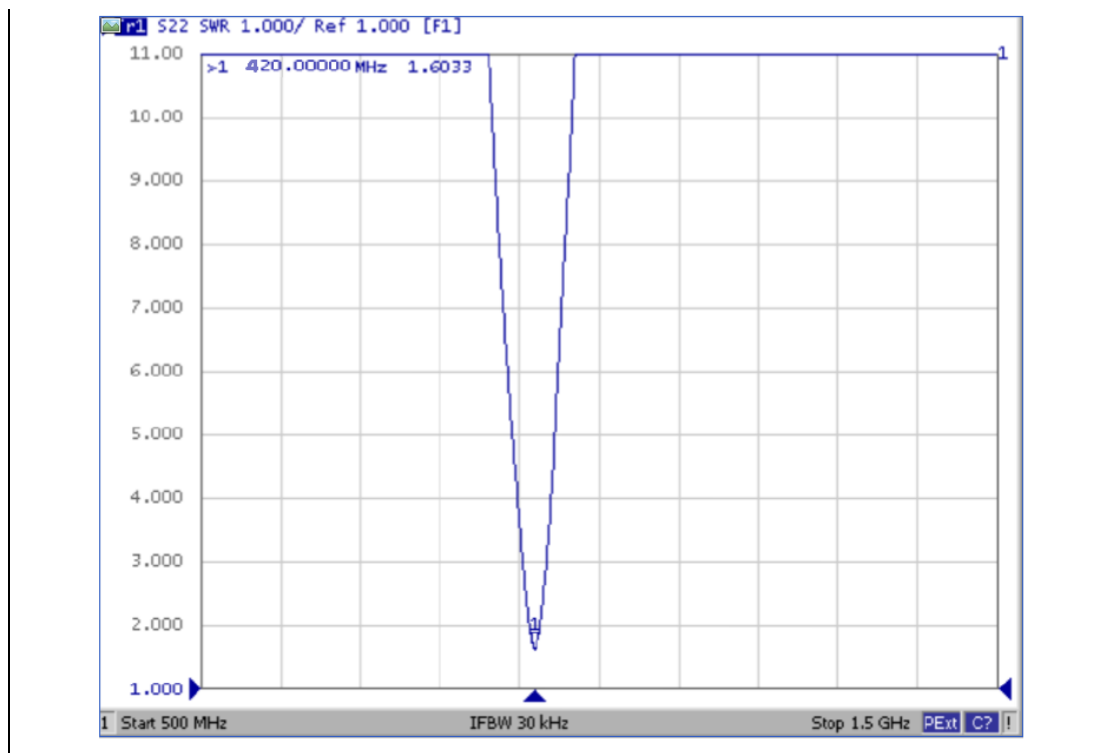
Test board antenna test(thickness 1.0mm)



speciality

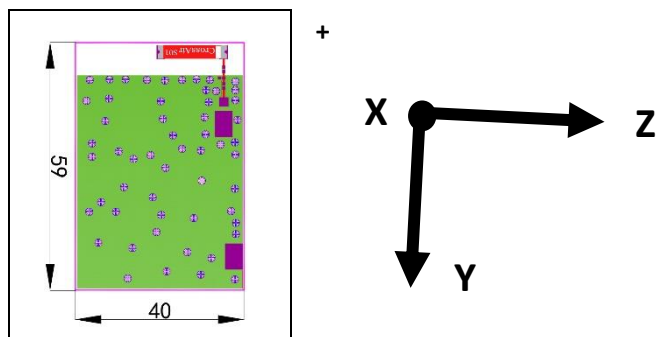


VSWR speciality

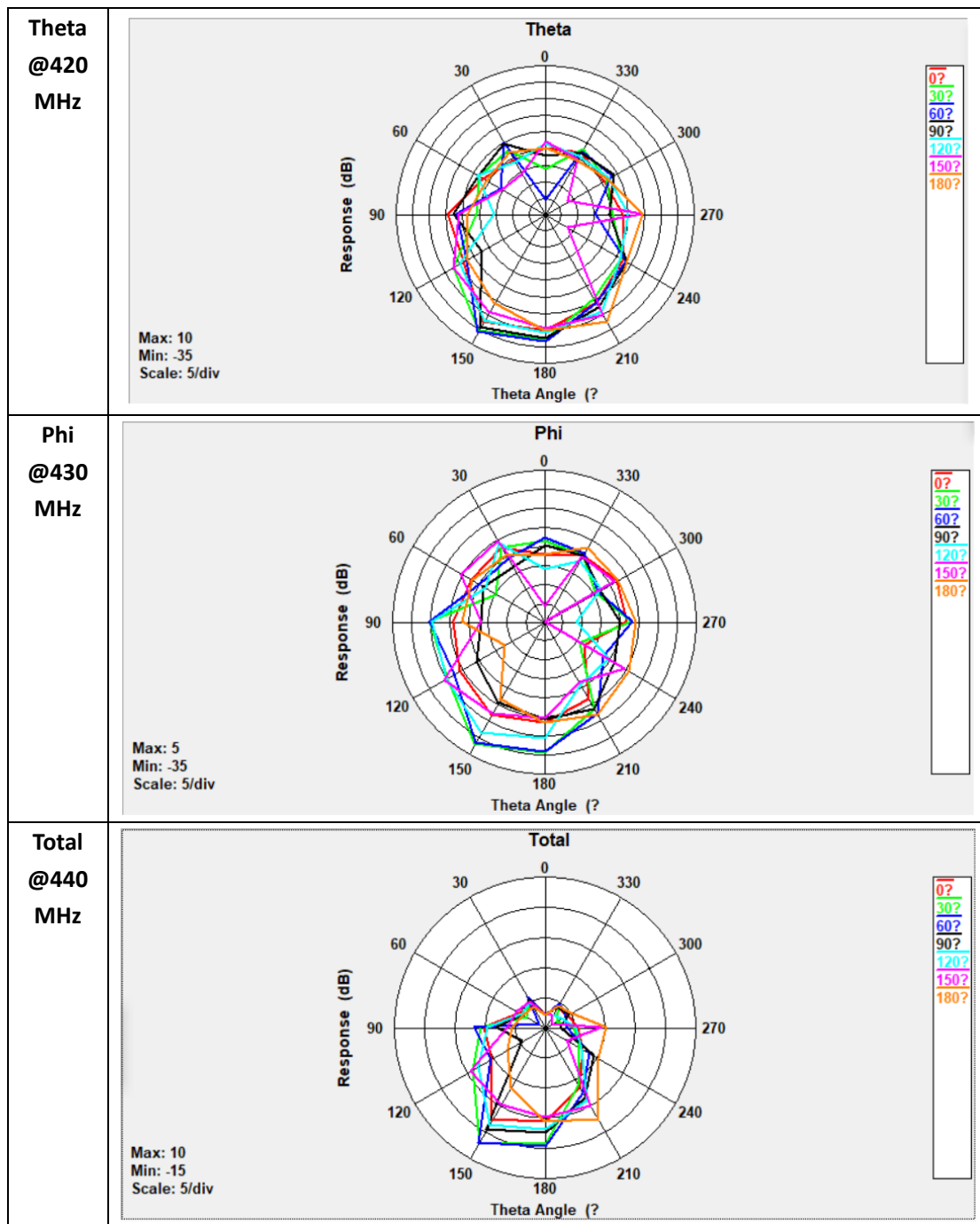


Efficiency and radiation maps

The efficiency, radiation pattern, gain and other properties are designed based on the test board. The specification and characteristic test data of the CA-S01 antenna are obtained based on the test PCB board size and the test direction shown in the figure below. The following data was obtained in ETS 3D microwave darkroom testing.

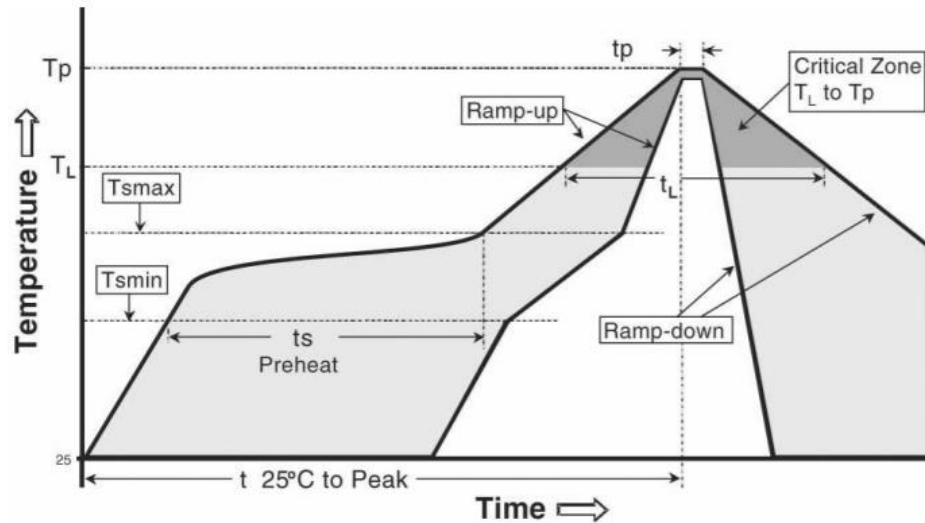


Gain and efficiency	Band 433MHz
Peak Gain	2.5dBi
Average Gain across the band	1.6dBi
Gain Range across the band	0.2dBi~2.2dBi
Peak Efficiency	39.5%
Average Efficiency across the band	28.7%
Efficiency Range across the band	12.3%~39.5%



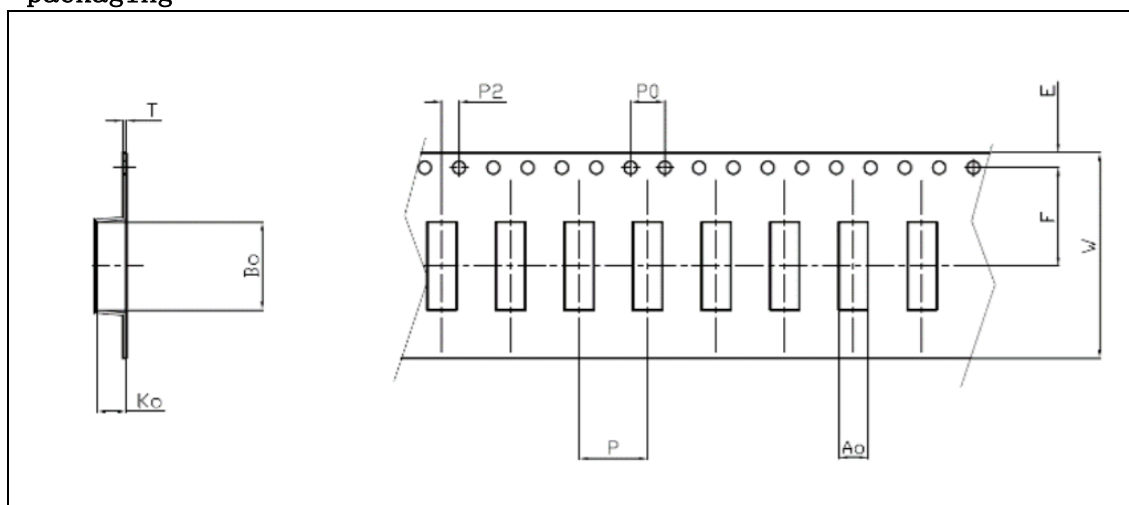
Solder Temperature

Typical welding specifications for reliable and non-destructive welding are shown below:



Phase	Profile features	Pb-Free assembly (SnAgCu)
RAMP-UP	Avg. Ramp-up Rate (T _{smax} to T _p)	3 °C / second (max.)
PREHEAT	- Temperature Min (T_{smin}) - Temperature Max (T_{smax}) - Time (t_{smin} to t_{smax})	150 °C 200 °C 60-180 seconds
REFLOW	- Temperature (T_L) - Total Time above T_L (t_L)	217 °C 60-150 seconds
PEAK	- Temperature (T_p) - Time (t_p)	260 °C 20-40 seconds
RAMP-DOWN	Rate	6 °C/second max
Time from 25 °C to Peak Temperature		8 minutes max

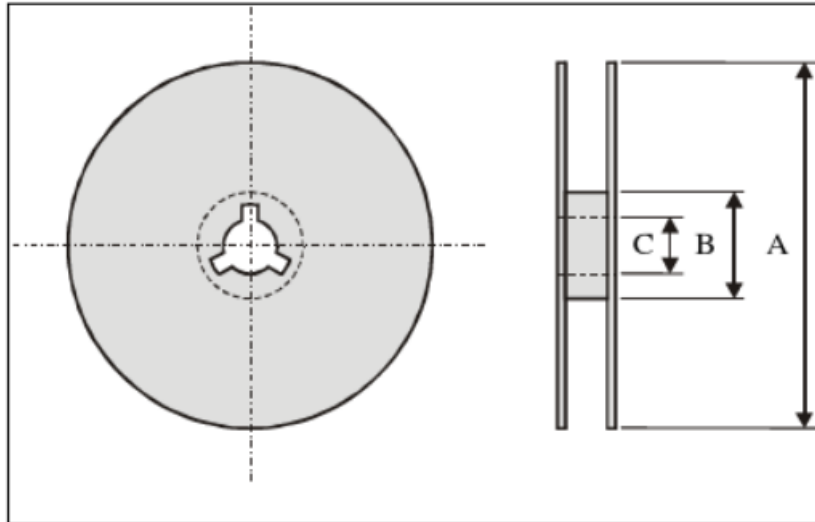
packaging



Plastic carrier tape specifications (Unit:mm)

Index	Ao	Bo	Ko	T	W
Dimension (mm)	3.3 ± 0.1	15.5 ± 0.1	1.3 ± 0.1	0.3 ± 0.05	24.0 ± 0.3
Index	E	F	P	P0	P2
Dimension (mm)	1.75 ± 0.1	11.0 ± 0.1	8.0 ± 0.1	4.0 ± 0.1	2.0 ± 0.1

Reel size



Index	A	B	C
Dimension(mm)	330	100	13.5

Standard quantity: 2000 PCS/ disk

Storage Environment

The following conditions should be met when the product is stored:

temperature : $-10^{\circ}\text{C}\sim+40^{\circ}\text{C}$

humidity : 30% – 70% relative humidity

Do not place the product in contact with corrosive gases, such as sulfur. Chlorine gas or acid may lead to oxidation of product electrodes resulting in poor weldability.

The product should be placed in the toolbox and protected from moisture and dust.

Products should be stored in the warehouse and away from heat, vibration and direct sunlight.

Products should be stored in closed conditions.