Antenna specification

PN: CA-S01

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

Guangzhou Cambrian electronic Technology Co., LTD

Address: Building 1#, Hongda Business Creative Park, No. 96 Yuanxiang Road, Yunpu Street, Huangpu District, Guangzhou

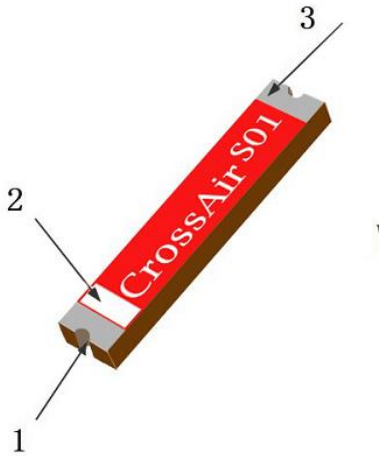
Specialty

1. Size 15.0 X 3.0 X 1.0 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 AnAntenna 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

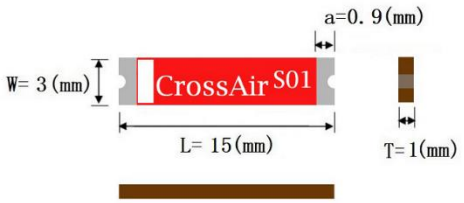


1、Antenna feed end

2、Feed identification mark

3、Antenna welding fixed end

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

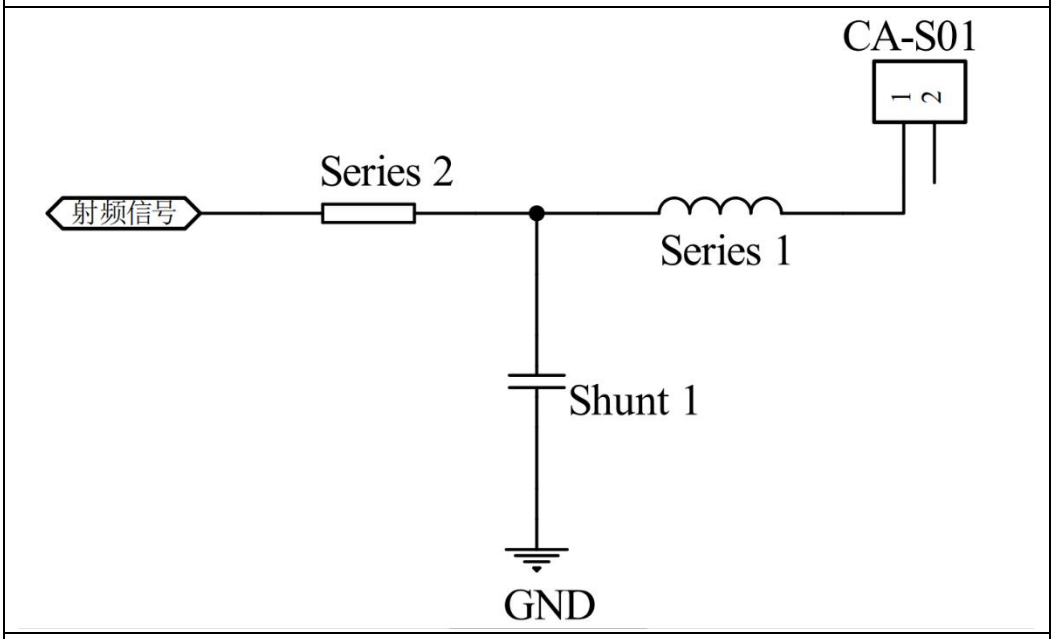
electrical specification

CA-S01	Specification
Working Frequency	420Mhz-440Mhz
Initial frequency band**(GHz)**	433MHz
Band Width	>80MHz
Impedance	50Ω
Gain(dBi)	2.5
VSWR	<2
Operation Temperature	-40℃~+85℃
Power Capacity	4W

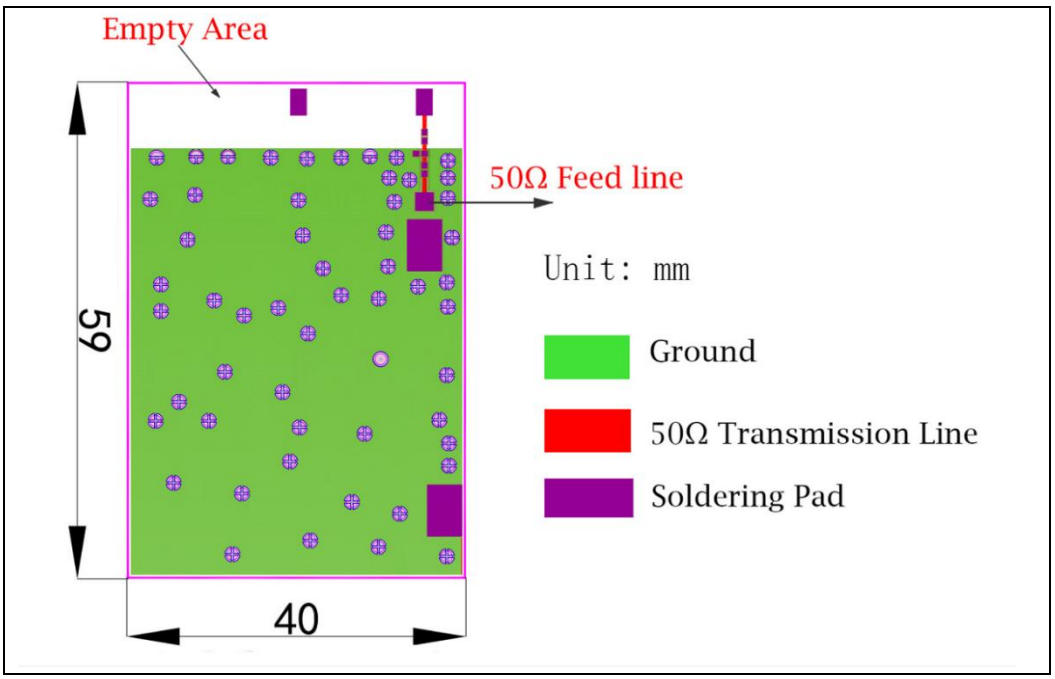
The antenna operating frequency needs to be realized through impedance matching device debugging

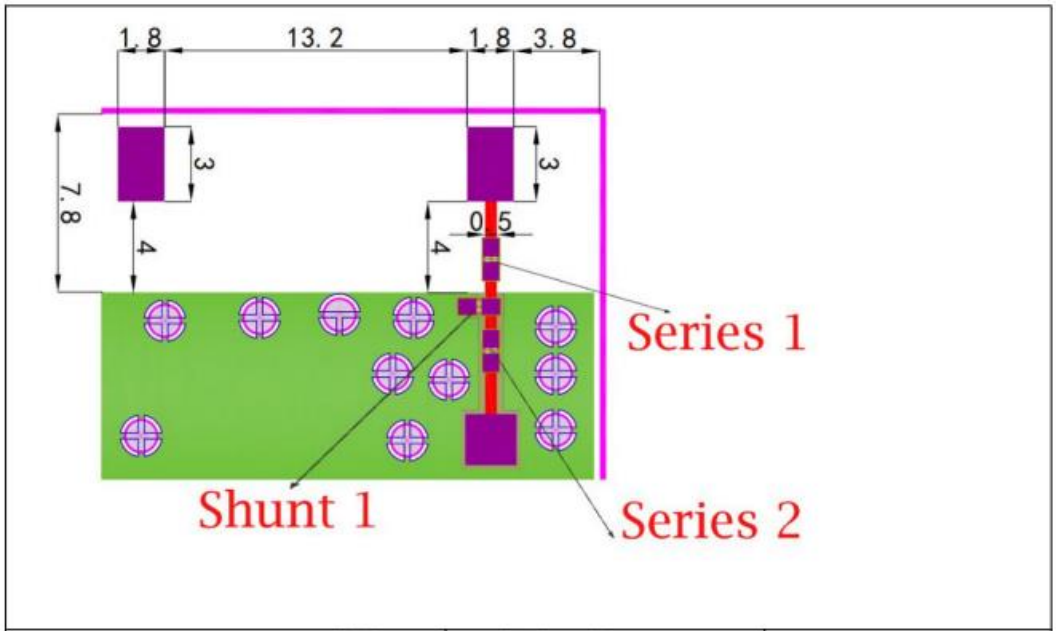
Antenna pad and wiring design

PCB SCH



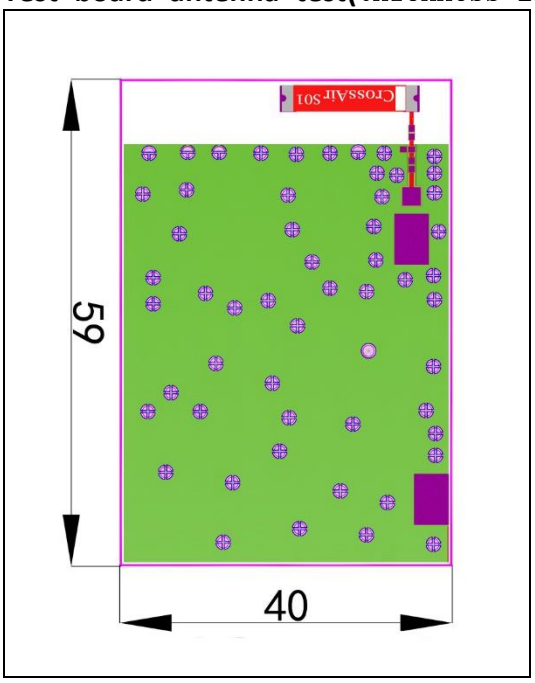
PCB Design dimension drawing



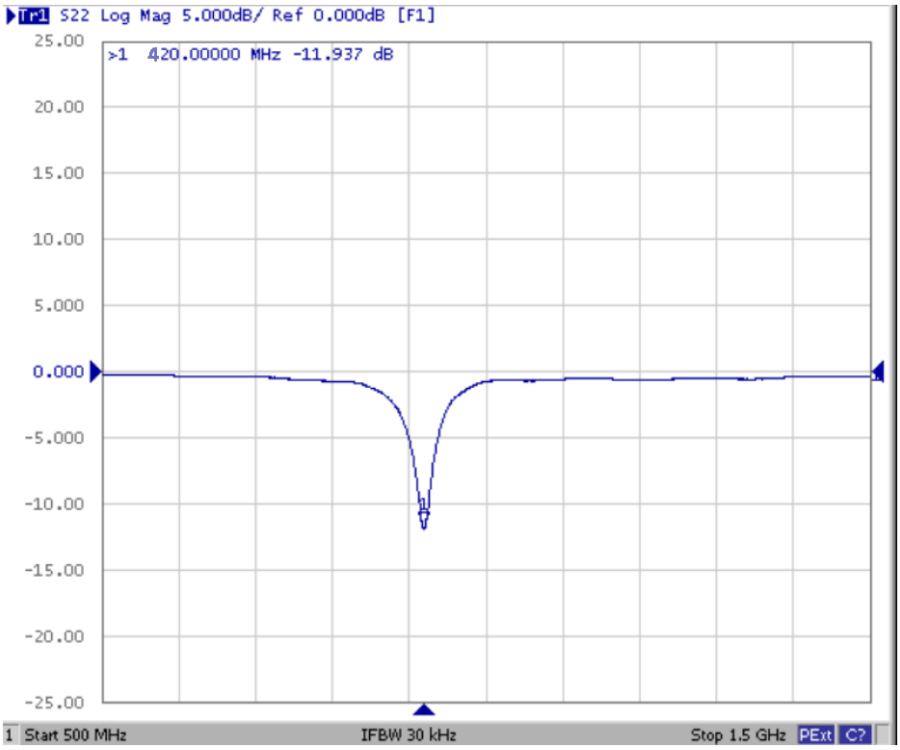


915MHz/B8 Matched device value	cascade **Series 1**	5pf
	Parallel **Shunt 1**	6.2nh
	cascade **Series 2**	0Ω
868MHz/B5 Matched device value	cascade **Series 1**	4.7nh
	Parallel **Shunt 1**	6.2nh
	cascade **Series 2**	0Ω
433Mhz Matched device value	cascade **Series 1**	100nh
	Parallel **Shunt 1**	NC
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

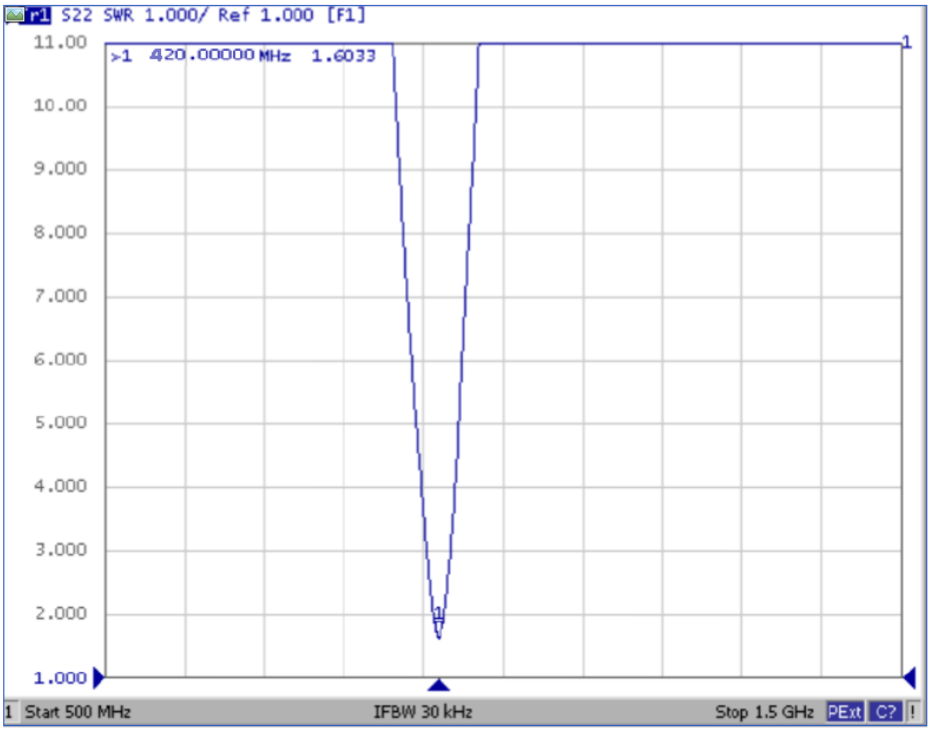
Test board antenna test(thickness **1.0mm)**



speciality

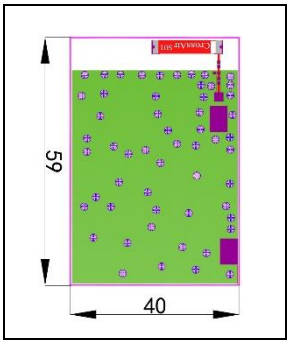


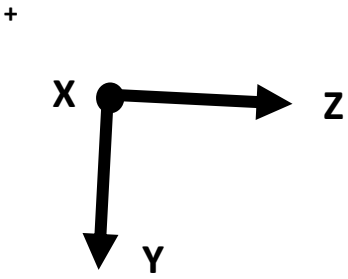
VSWR speciality



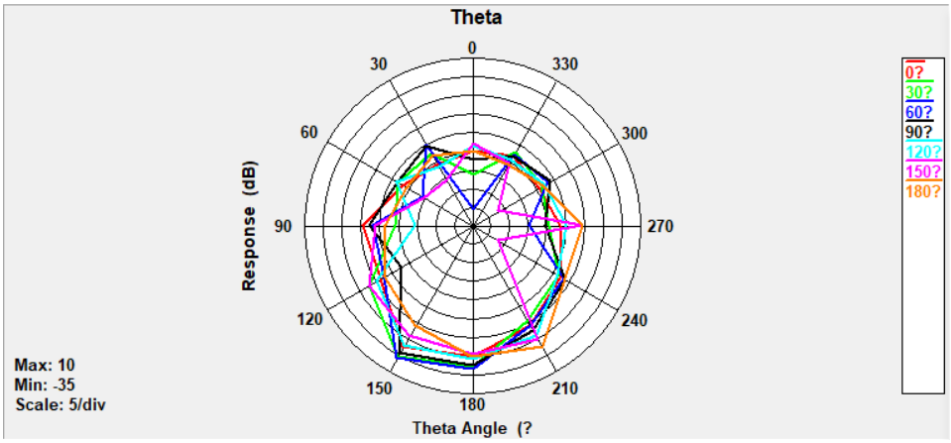
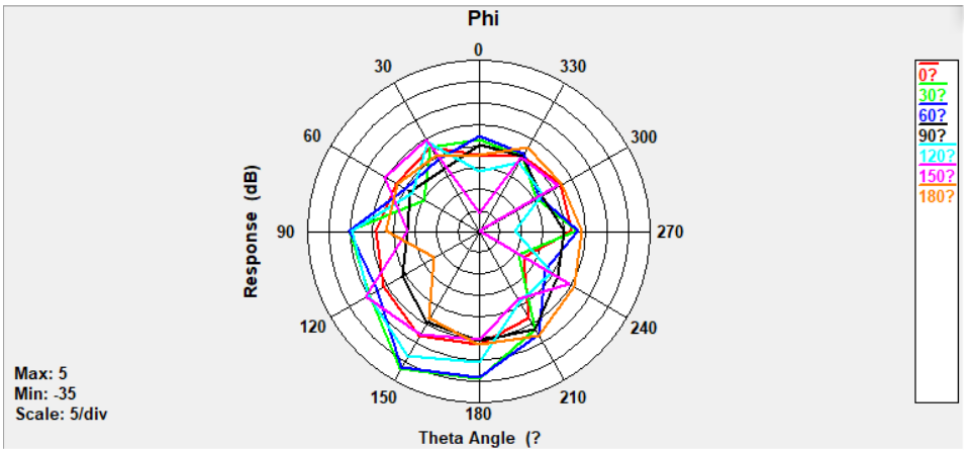
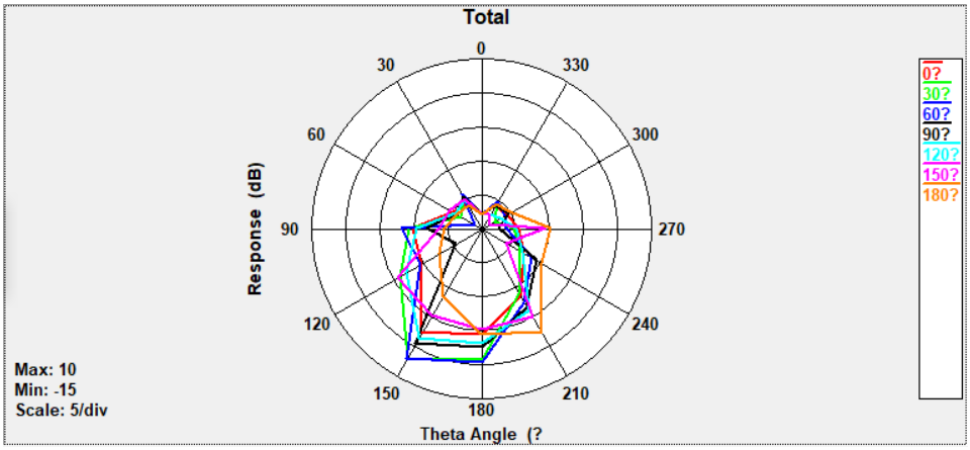
Efficiency and radiation maps

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.



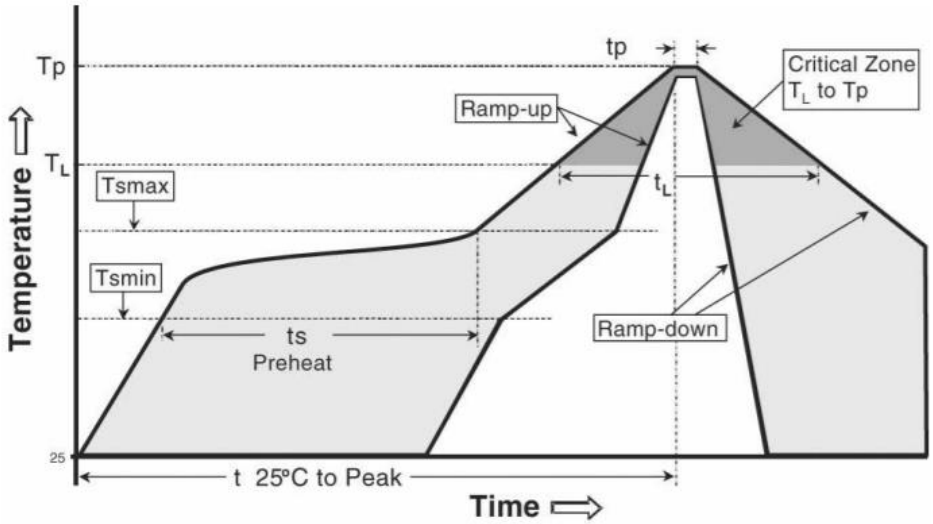


Gain and efficiency	Band **433MHz**
Peak Gain	**2.5dBi**
Average Gain across the band	**1.6dBi**
Gain Range across the band	**0.2dBi~2.5dBi**
Peak Efficiency	**39.5%**
Average Efficiency across the band	**28.7%**
Efficiency Range across the band	**12.3%~39.5%**

Theta @420 MHz	
Phi @430 MHz	
Total @440 MHz	

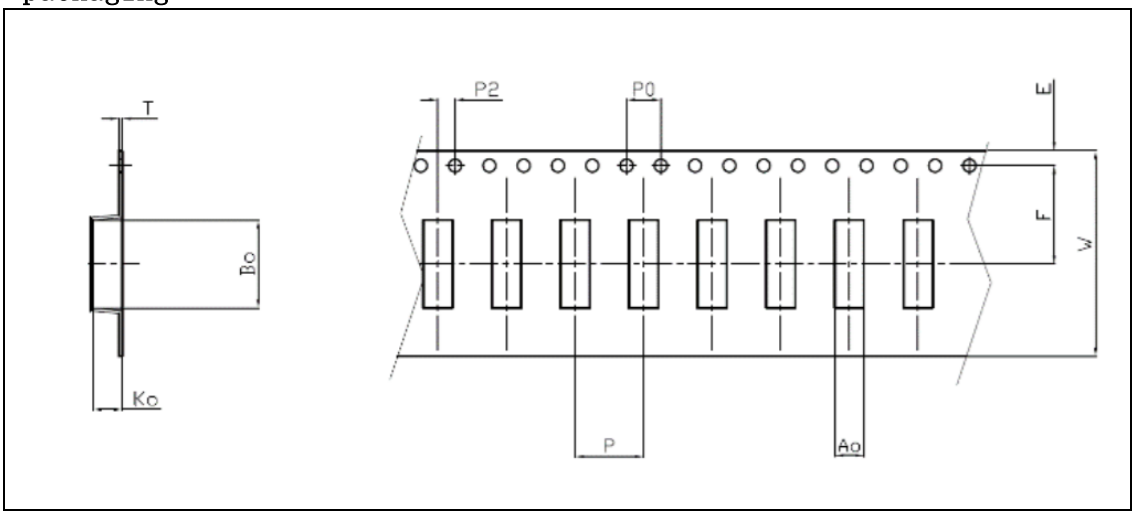
Solder Temperature

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 (Tsmax to Tp)	3 °C / second (max.)
PREHEAT	- Temperature Min (Tsmin) - Temperature Max (Tsmax) - Time (tsmin to tsmax)	150 °C 200 °C 60-180 seconds
REFLOW	- Temperature (TL) - Total Time above TL (tL)	217 °C 60-150 seconds
PEAK	- Temperature (Tp) - Time (tp)	260 °C 20-40 seconds
RAMP-DOWN	Rate	6 °C/second max
Time from 25 °C to Peak Temperature		8 minutes max

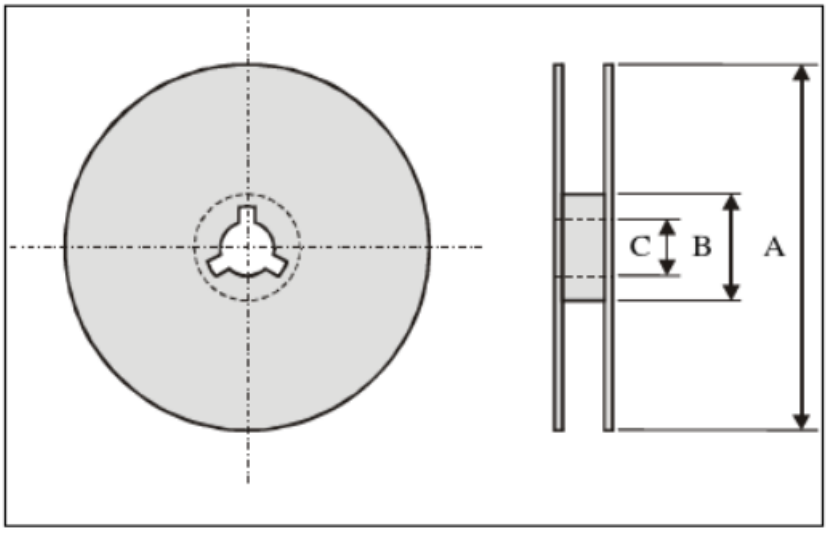
packaging



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℃~+40℃

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.