

# APPROVAL SHEET

**CrossAir™ SMD antenna series  
RoHS Compliance**

**PN: CA-S01**

**NB-IOT B5 B8 /Lora/ Sub-1g/ UHF band  
antenna**

## CA-S01 Approval sheet

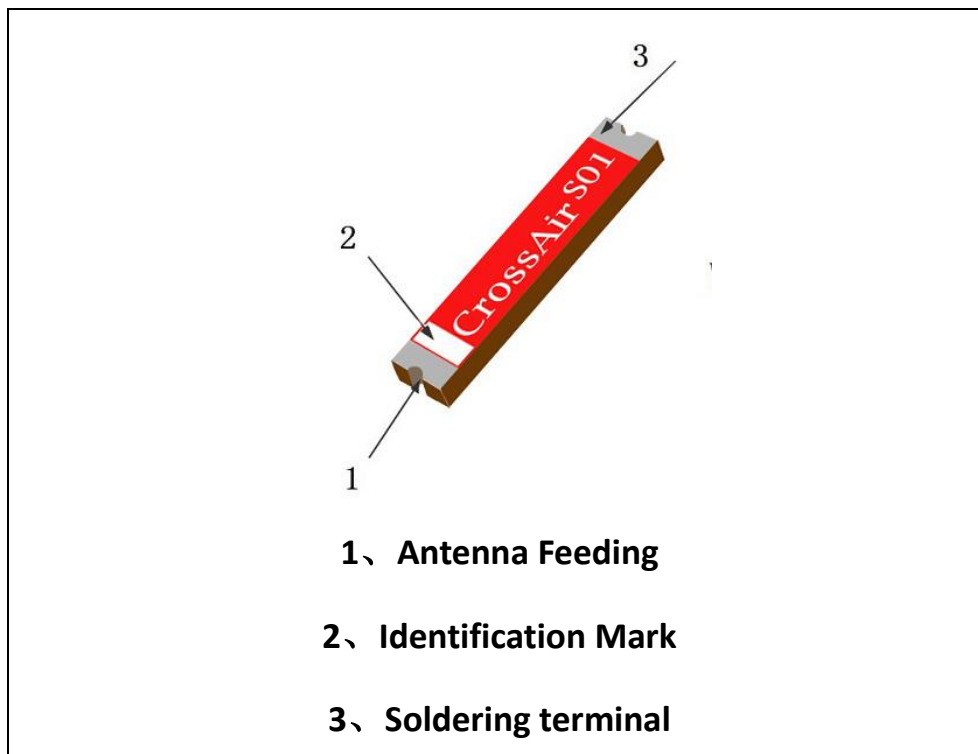
### FEATURES

1. Surface Mounted Devices with a small dimension of 15.0 X 3.0 X 1.0 mm<sup>3</sup> meet miniaturization trend.
2. Low power loss and high antenna efficiency.
3. High stability in Temperature and Humidity Change.

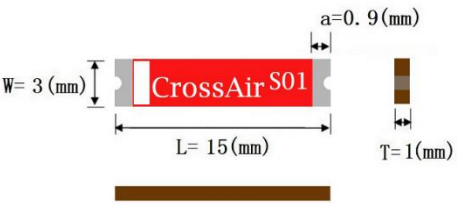
### APPLICATIONS

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

### CONSTRUCTION



### DIMENSIONS

Figure	Symbol	Dimension(mm)
	L	15.0±0.2
	w	3.0±0.1
	T	1.0±0.05
	a	0.9±0.1

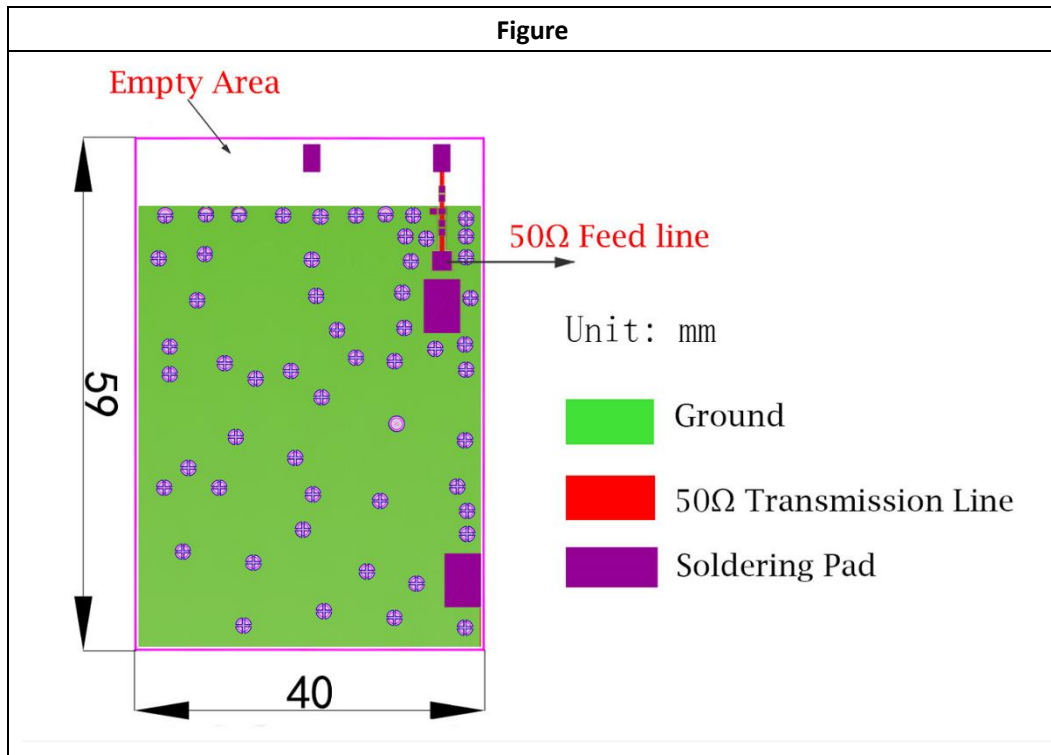
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### ELECTRICAL CHARACTERISTICS

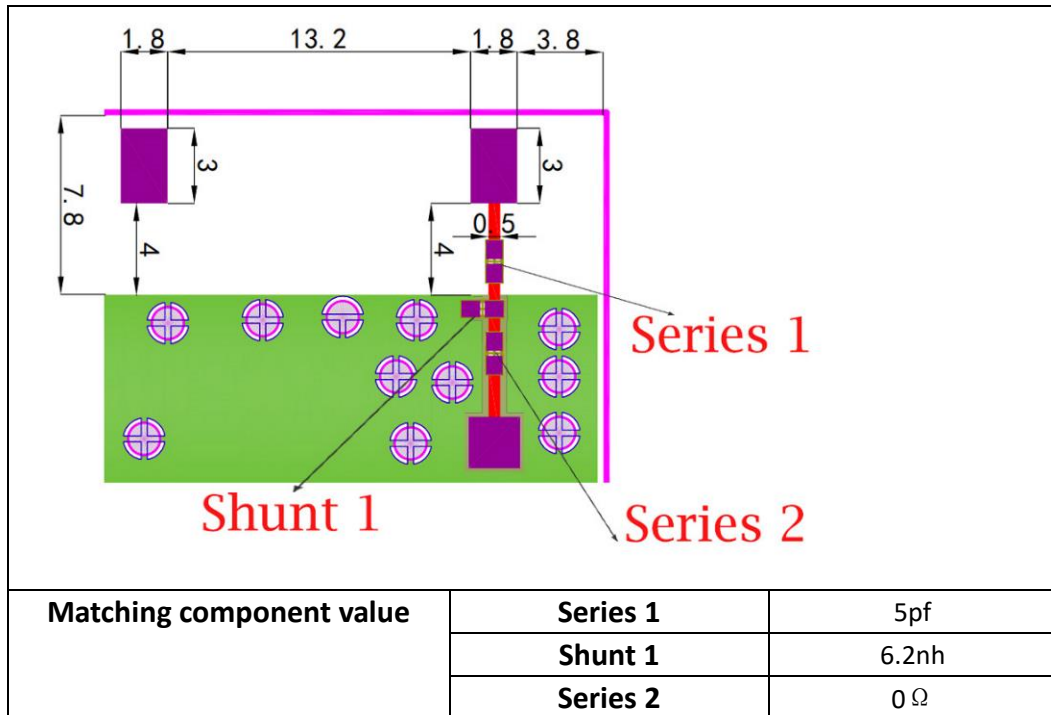
CA-S01	Specification
Working Frequency Range	400Mhz-960Mhz
Fc(GHz)	950MHz
Band Width	>80MHz
Impedance	50 $\Omega$
Gain(dBi)	2.2
VSWR	<2
Operation Temperature	-40°C~+85°C
Power Capacity	4W

The working frequency need be adjusted to working band with matching circuit.

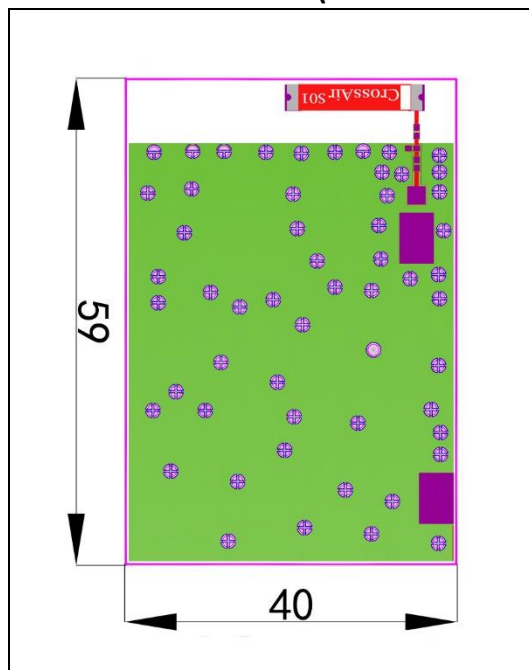
### SOLDER LAND PATTERN DESIGN



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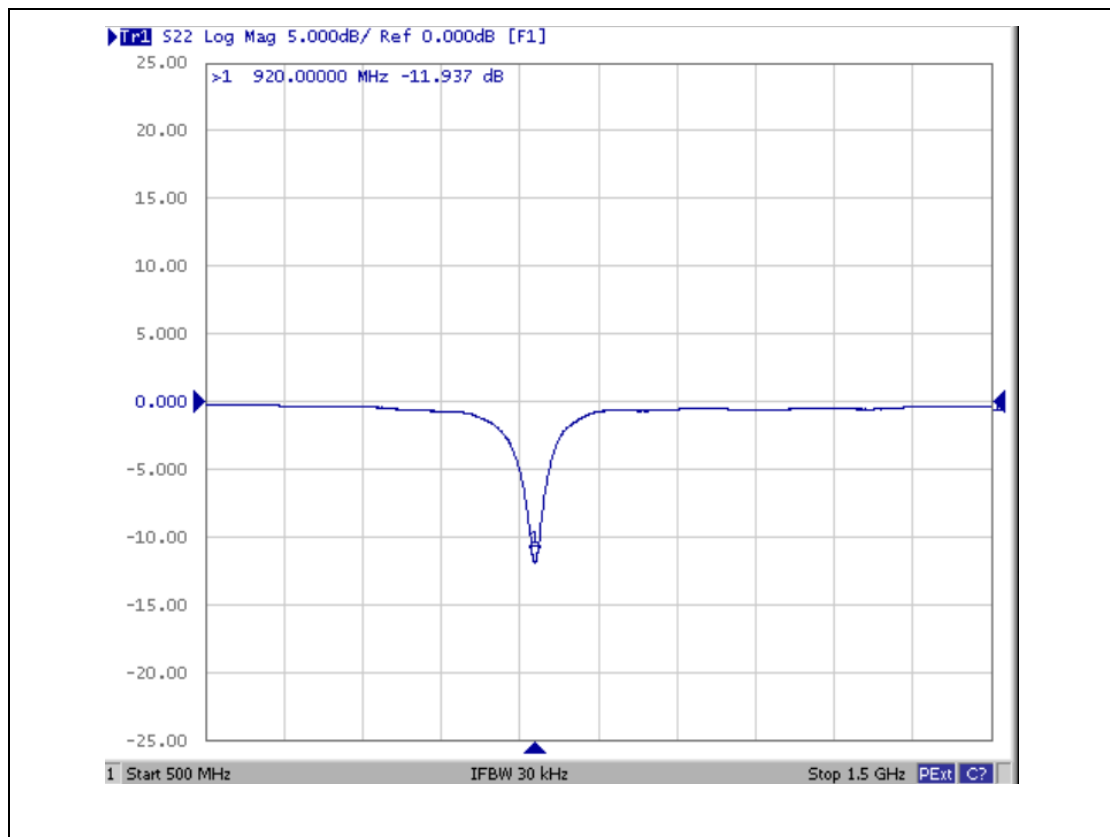


## Antenna on Test Board (Thickness 1.0mm)

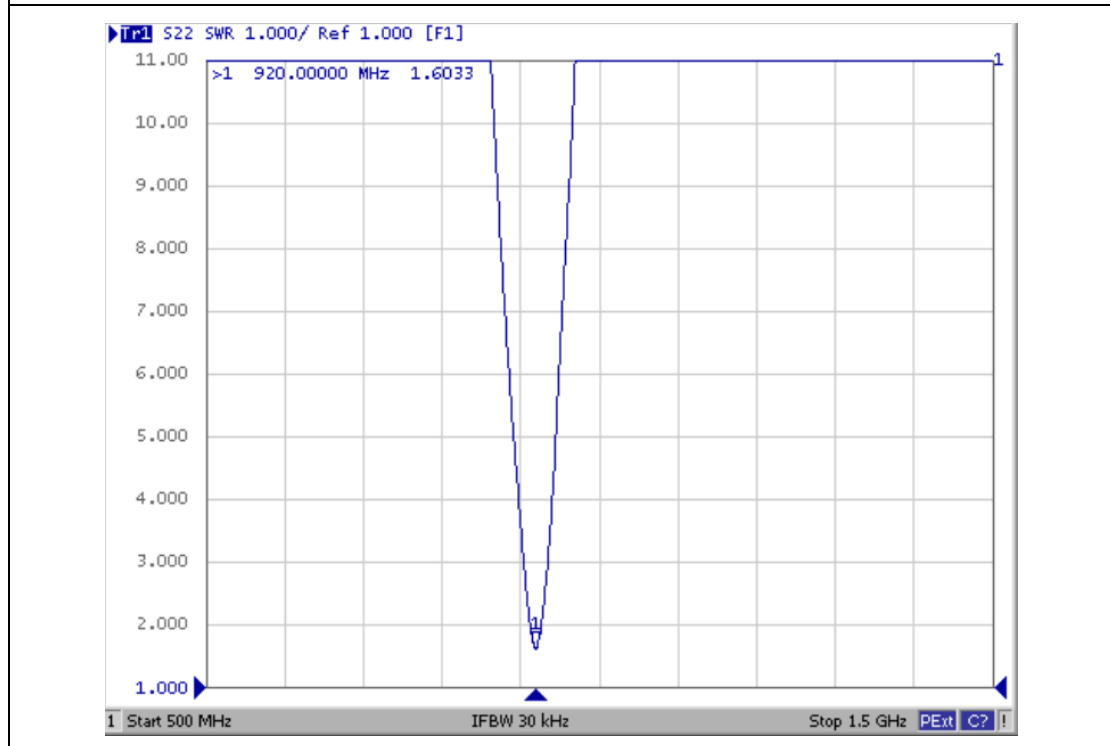


Antenna S11 on Test Board

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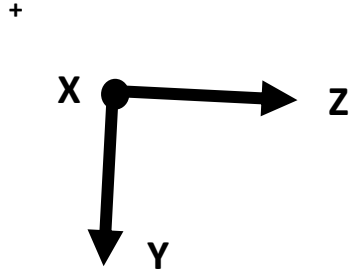
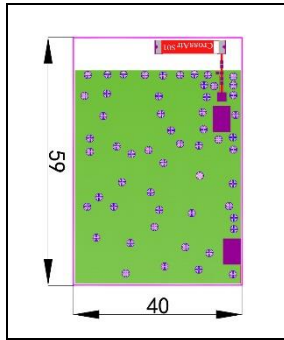
Antenna VSWR on Test Board



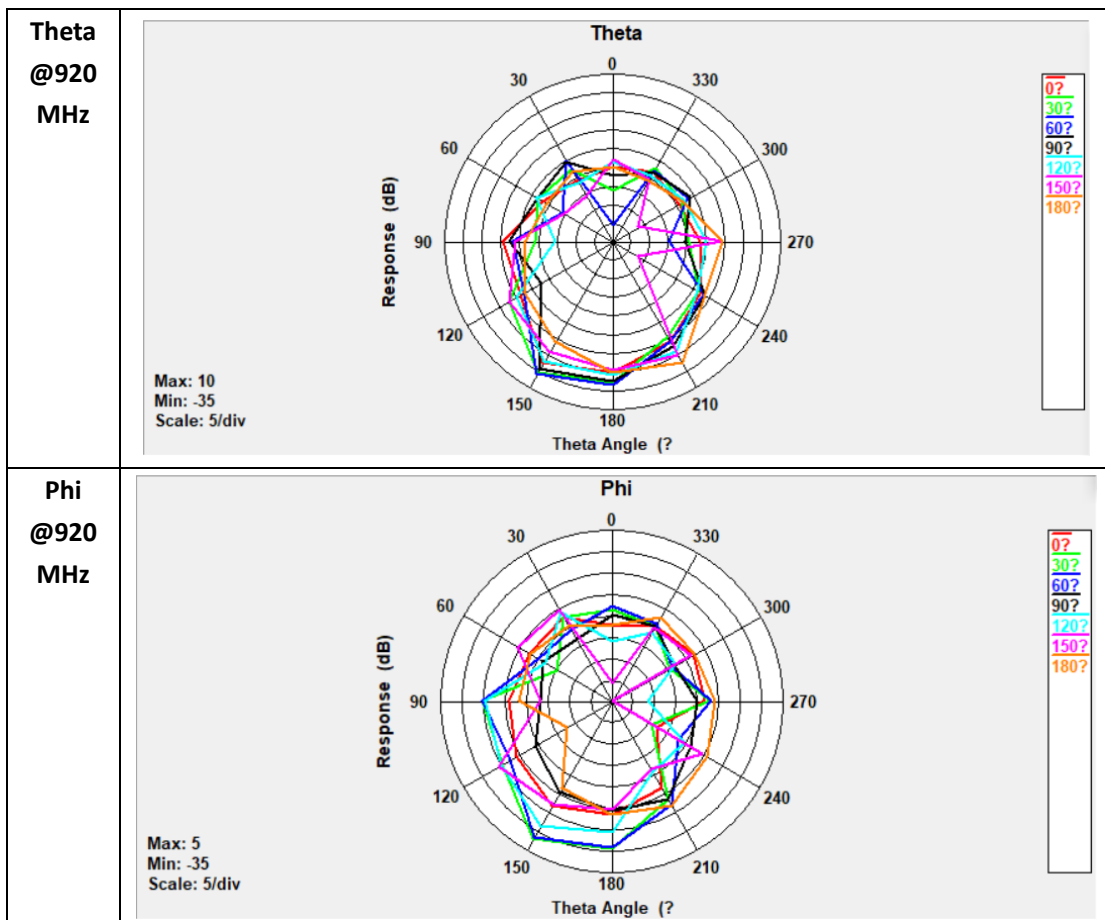
### Efficiency and RADIATION PATTERN

Efficiency, Radiation Pattern and Gain were dependent on measurement board design. The specification of CA-S01 antenna was measured based on the PCB size and installation position as shown in the below figure test board. The test results were tested in ETS 3D Chamber.

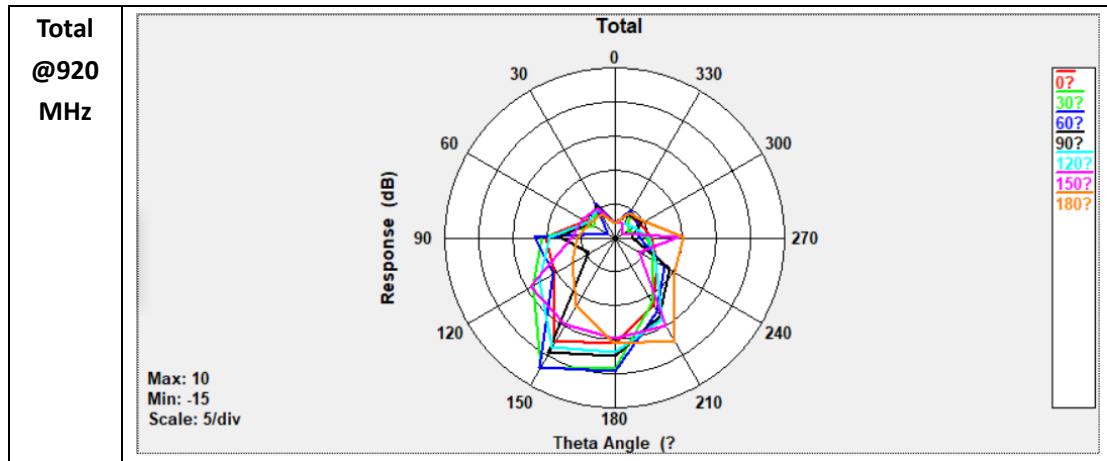
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Gain and Efficiency	840M-960MHz
Peak Gain	2.2dBi
Average Gain across the band	2dBi
Gain Range across the band	1.6dBi~2.2dBi
Peak Efficiency	39.5%
Average Efficiency across the band	28.7%
Efficiency Range across the band	12.3%~39.5%

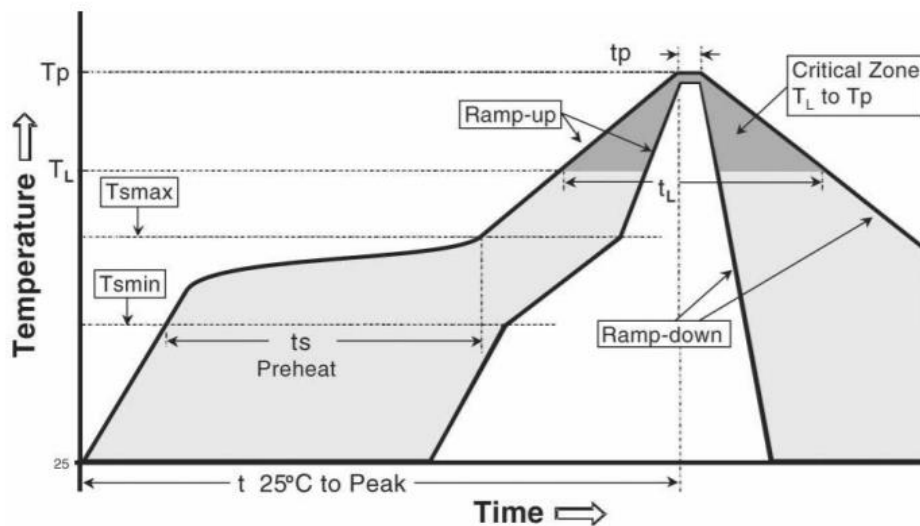


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## SOLDERING CONDITION

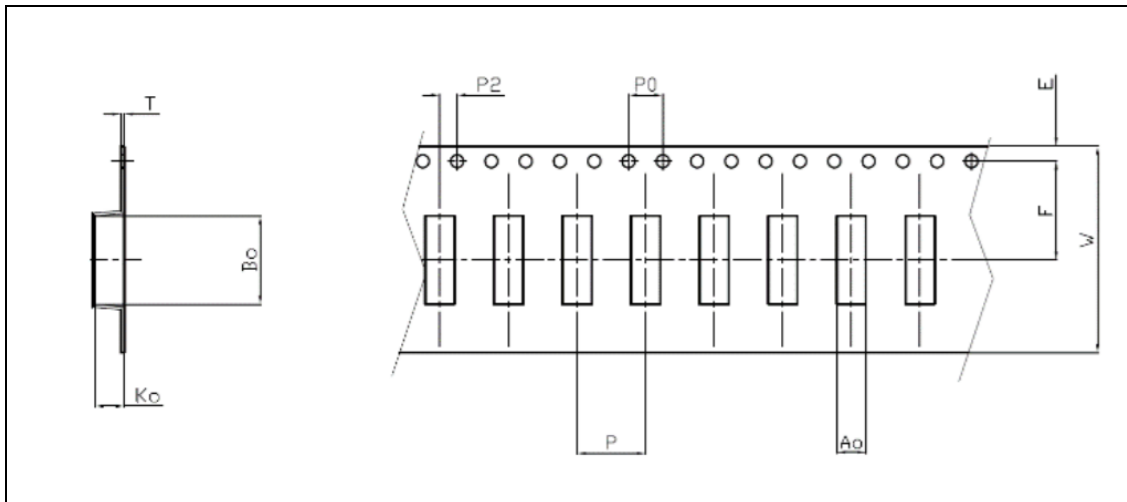
Typical examples of soldering processes that provide reliable joints without any damage is as follows:



Phase	Profile features	Pb-Free assembly (SnAgCu)
RAMP-UP	Avg. Ramp-up Rate (Tsmax to Tp)	3 °C / second (max.)
PREHEAT	- Temperature Min (Tsmmin) - Temperature Max (Tsmmax) - 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
<b>Time from 25 °C to Peak Temperature</b>		8 minutes max

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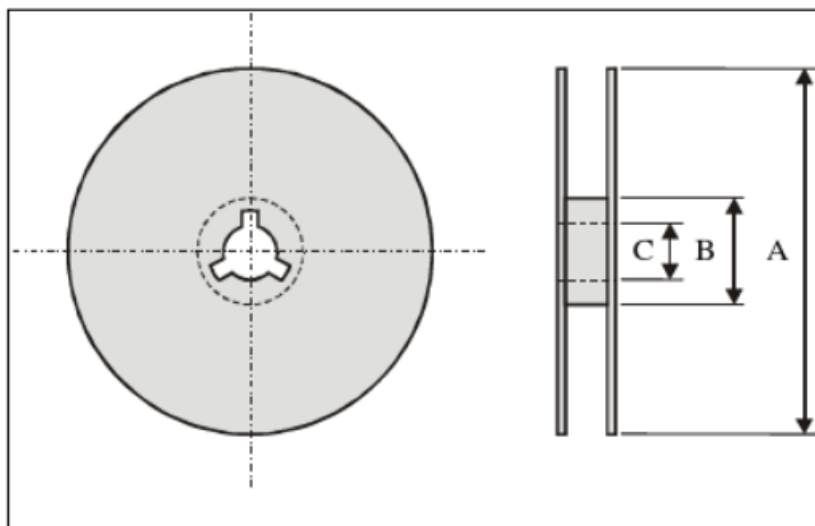
## PACKAGING



### Plastic Tape specification (unit:mm)

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

### Reel dimensions



Index	A	B	C
Dimension(mm)	<b>330</b>	<b>100</b>	<b>13.5</b>

Typing Quantity: 2000 pieces per reel.

### CAUTION OF HANDLING

#### Storage environment condition

Products should be storage in the warehouse on the following conditions:



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Temperature : -10°C~+40°C

Humidity : 30% to 70% relative humidity

Don't keep products in corrosive gases such as sulfur. Chlorine gas or acid or it may cause oxidization of electrode, resulting in poor solderability.

Products should be storage on the palette for the prevention of the influence from humidity, dust and so on.

Products should be storage in the warehouse without heat shock, vibration, direct sunlight and so on.

Products should be storage under the airtight packaged condition.