

SMD Antenna Specifications

CrossAir™ SMD Antenna
RoHS compliant

PN: CA-C03

2.4 GHz ISM Band Antenna

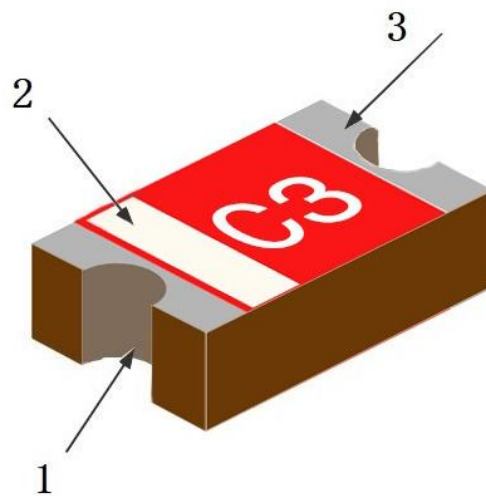
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Features

1. Small size SMD patch antenna with size only 5.5 X 2.0 X 1.0 mm.
2. Low energy loss, high antenna efficiency.
3. High stability under temperature and humidity changes.



Structure



1. Antenna feeder

2. Feeder identification mark 3.

Antenna welding fixed end

Size

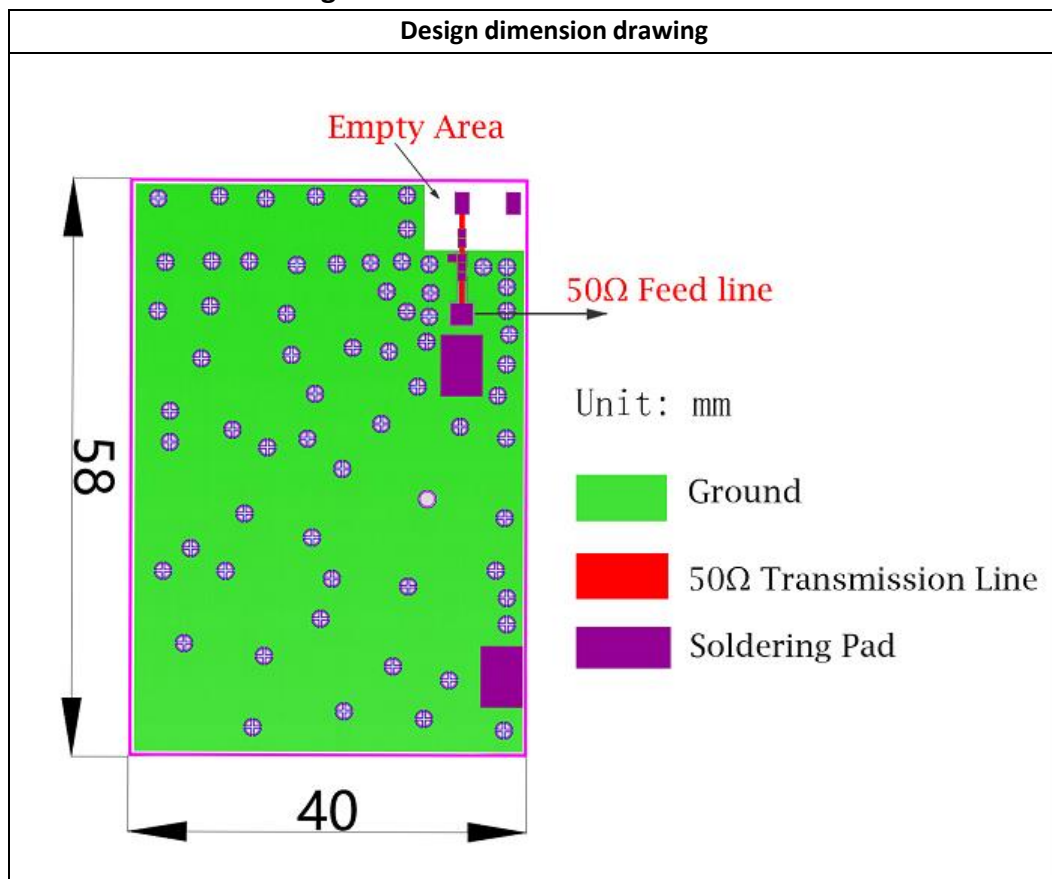
Three View	symbol	Size(mm)
The diagram shows three views of the antenna: a top view, a side view, and a front view. The top view shows a red rectangle with a white 'C3' marking and a yellow strip on the left. Dimensions are labeled: 'a=0.5 (mm)' for the width of the yellow strip, 'W=2.0 (mm)' for the width of the red patch, 'L=5.5 (mm)' for the length of the red patch, and 'T=1.0 (mm)' for the thickness of the substrate. The side view shows the brown substrate. The front view shows the brown substrate. a=0.5 (mm) W=2.0 (mm) L=5.5 (mm) T=1.0 (mm)	L	5.5 ± 0.1
	w	2.0 ± 0.1
	T	1.0 ± 0.1
	a	0.5 ± 0.1

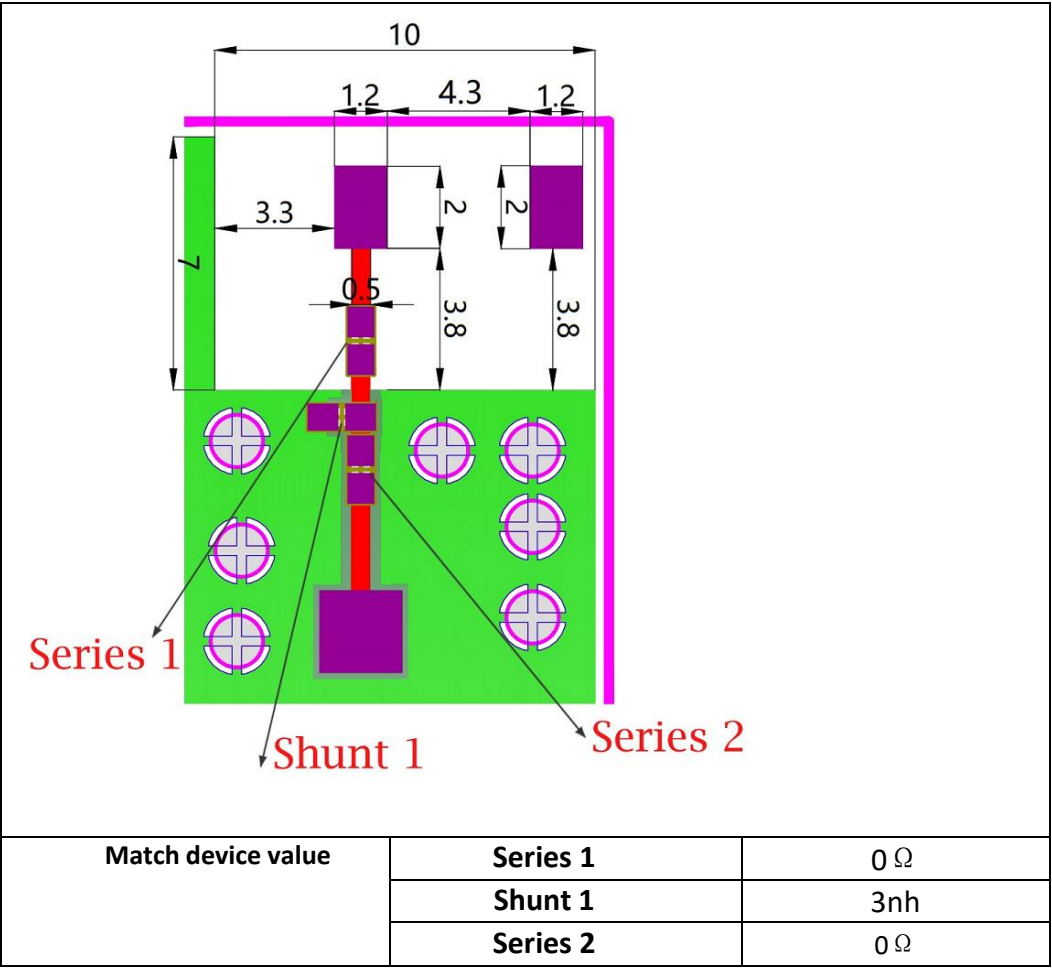
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Electrical Characteristics

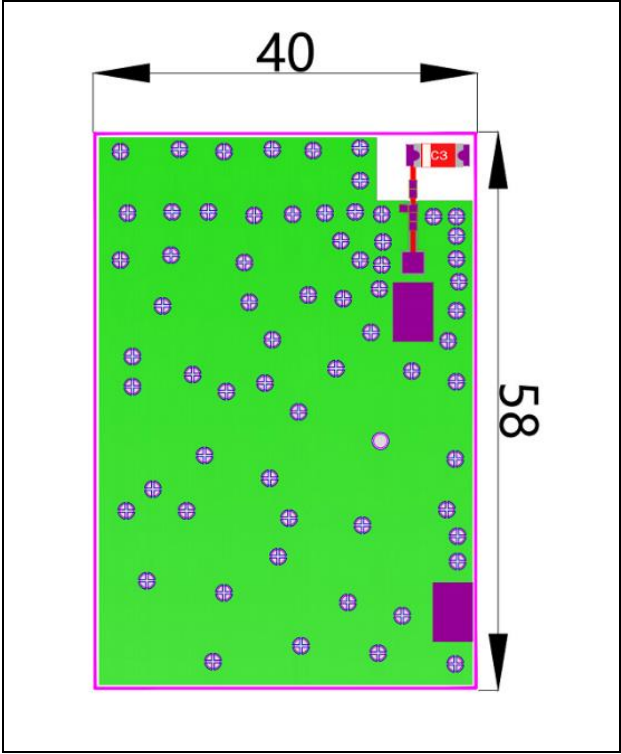
CA-C03	Specification
Working Frequency	$2450 \pm 50\text{MHz}$
Initial frequency band(GHz)	2.7GHz
Band Width	>100MHz
Impedance	$50\ \Omega$
Gain(dBi)	4.3 (peak)
VSWR	<2
Operation Temperature	$-40^{\circ}\text{C} \sim +95^{\circ}\text{C}$
Power Capacity	3W

Antenna Pad and Trace Design



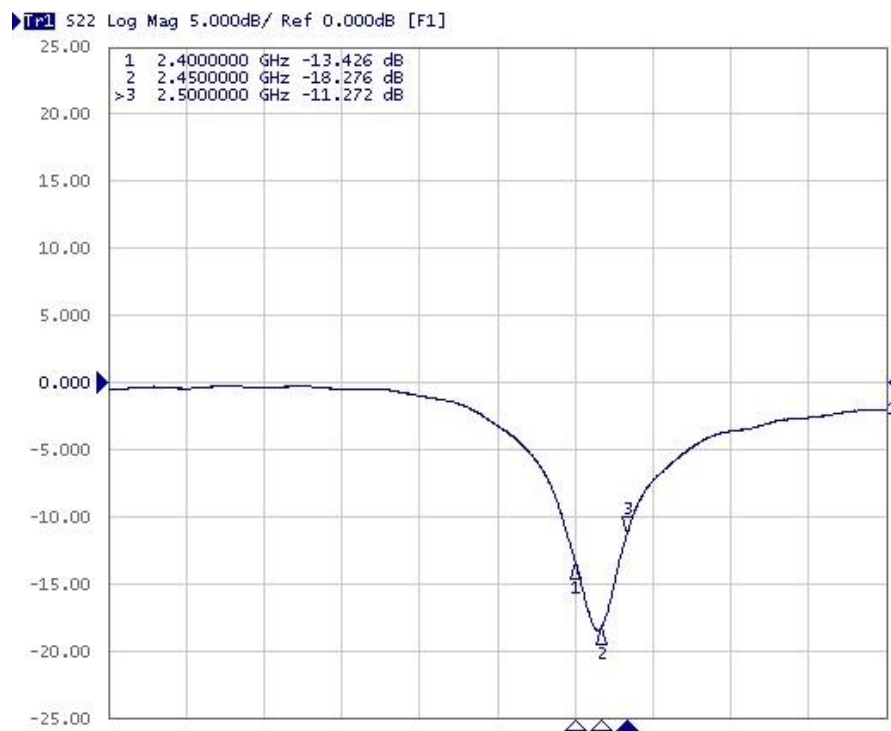


Antenna test on test board (board thickness 1.0mm)

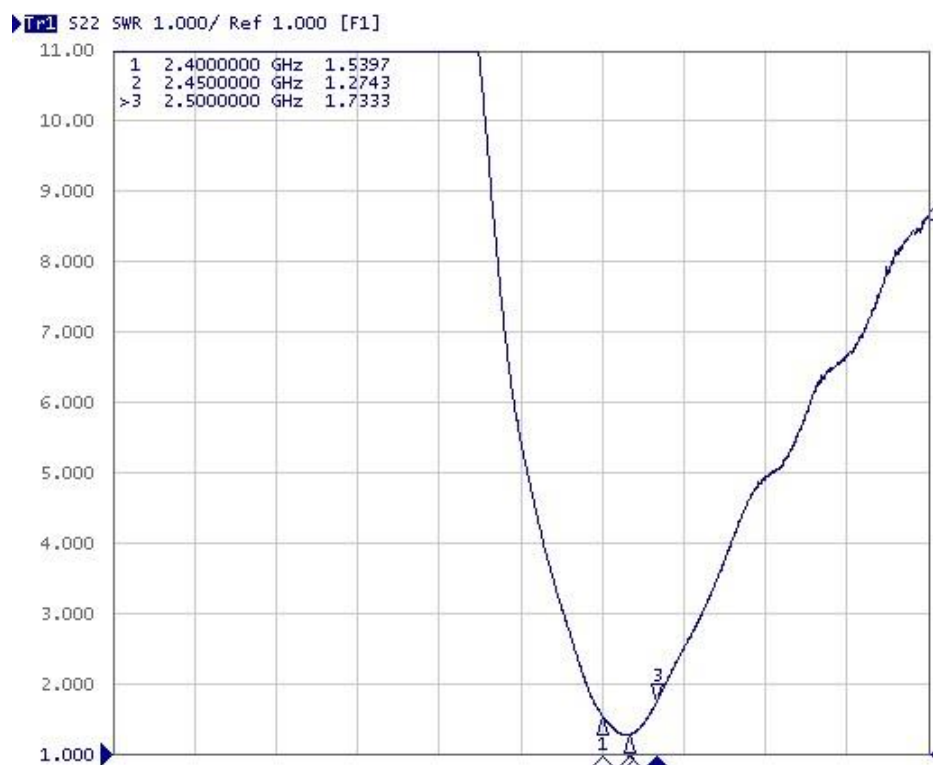


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Antenna S11 Characteristics

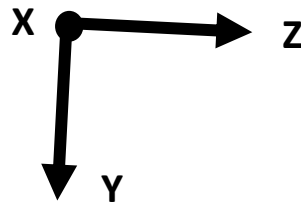
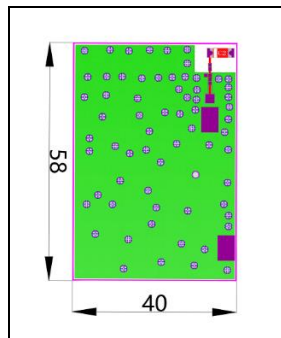


Antenna VSWR Characteristics

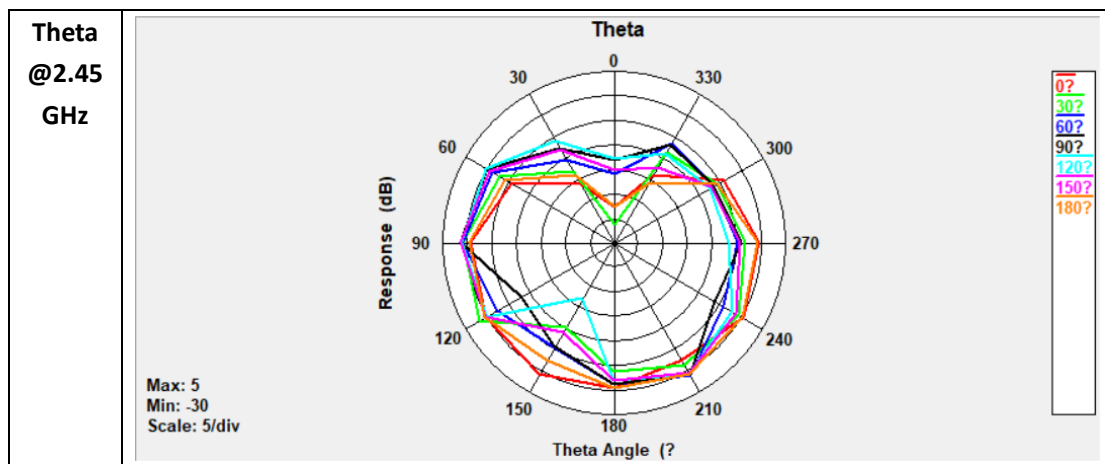


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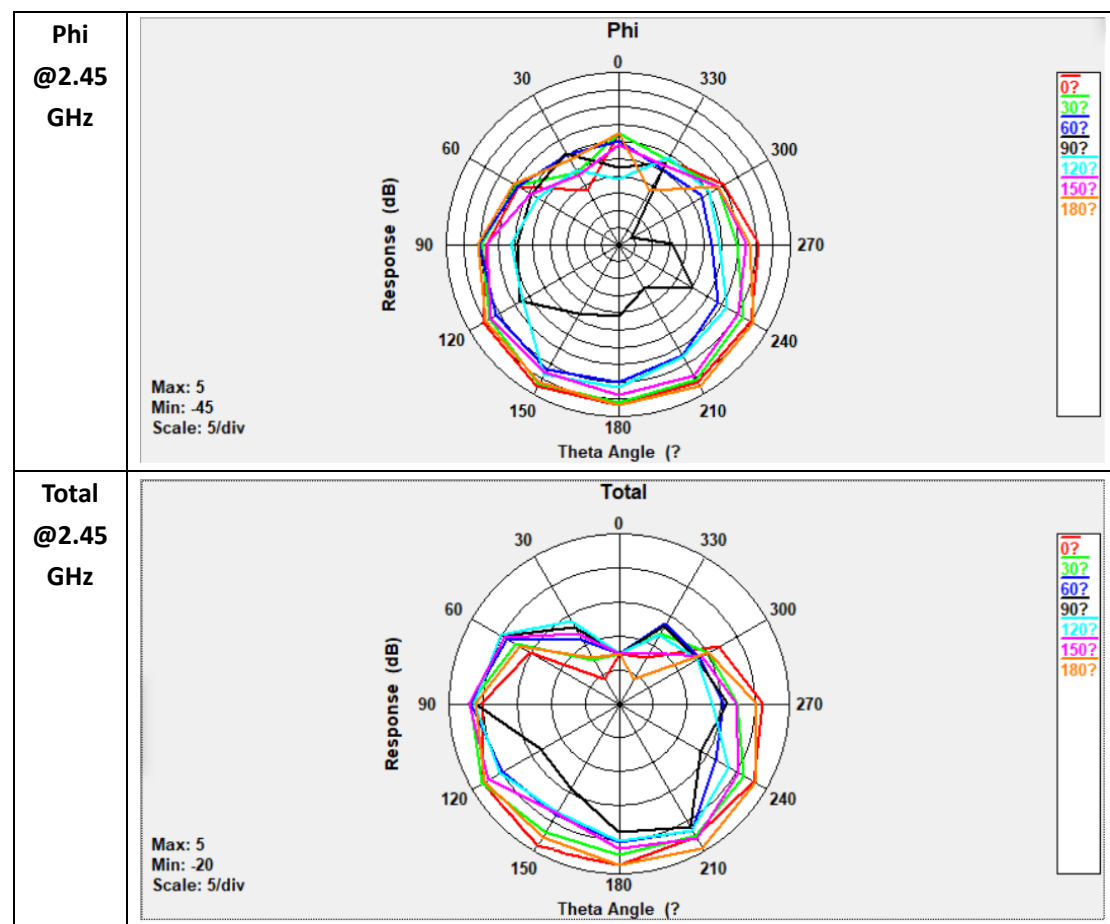
Efficiency and Radiation Patterns



Gain and across	Bandwidth 2.4G-2.5GHz
Peak Gain	4.3dBi
Average Gain across the band	4.1dBi
Gain Range across the band	3.9dBi~4.3dBi
Peak Efficiency	81.7%
Average Efficiency across the band	80.2%
Efficiency Range across the band	78.6%~81.7%

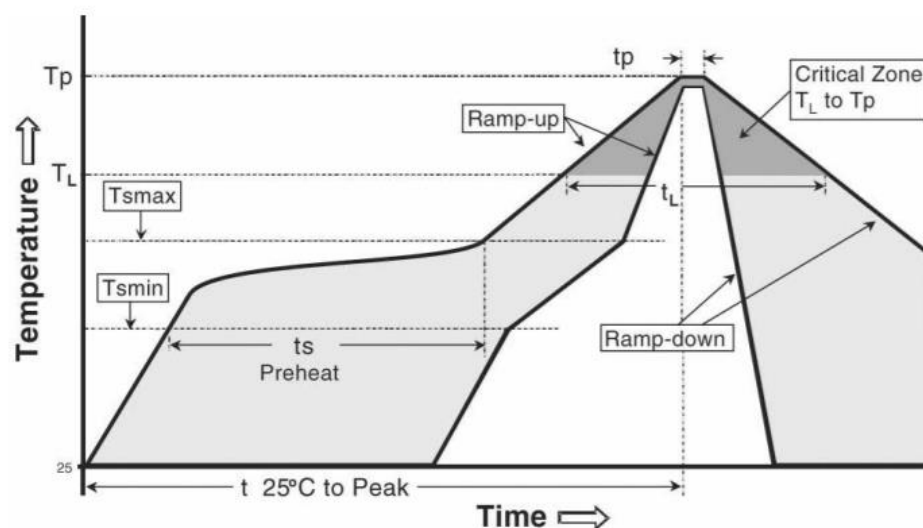


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Welding conditions

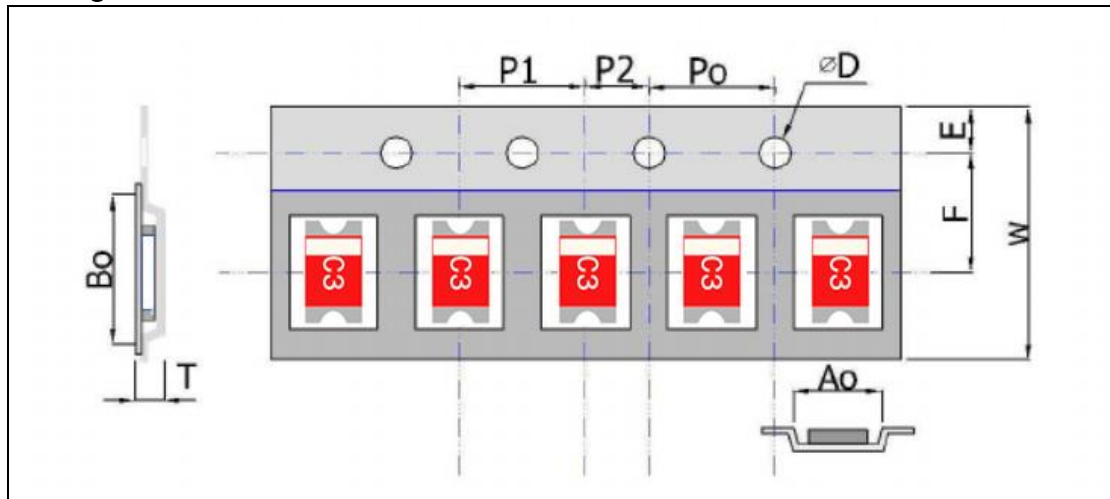
As shown below:



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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

Package

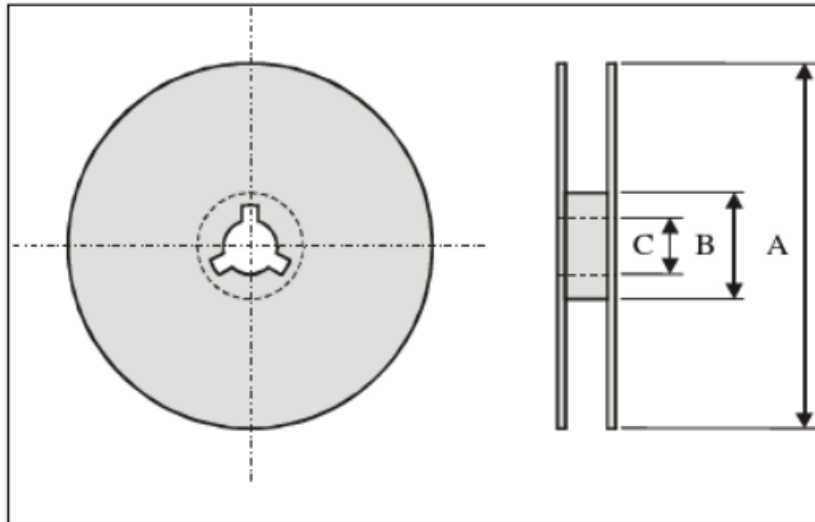


Plastic carrier tape specifications

Index	Ao	Bo	ΦD	T	W
Dimension (mm)	3.0 ± 0.1	6.0 ± 0.1	1.55 ± 0.05	1.2 ± 0.1	11.8 ± 0.1
Index	E	F	Po	P1	P2
Dimension (mm)	1.75 ± 0.1	4.6 ± 0.1	4.0 ± 0.1	4.0 ± 0.1	2.0 ± 0.1

Reel size

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Index	A	B	C
Dimension(mm)	178	60	13.5

Storage Environment

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

Temperature : -10°C~+40°C

Humidity : 30% to 70% relative humidity

The location where the product is placed should not be exposed to corrosive gases such as sulfur.

The product should be placed in a tool box and protected from moisture and dust.

Products should be stored in warehouses away from heat, vibration, and direct sunlight. Product should be stored under airtight conditions.