

SMD Antenna Datasheet

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CrossAir™ SMD Antenna Aeries

PN:CA-C03

2.4 GHz ISM Frequency band antenna

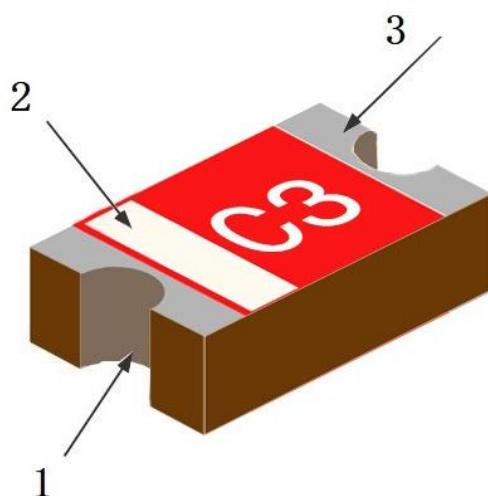
Features

1. Small size SMD patch antenna with size only 5.5 X 2.0 X 1.0 mm³.
2. Low energy loss, high antenna efficiency.
3. It has high stability in the case of temperature and humidity changes.

Application

1. Application of 2.4GHz ISM band antenna
2. Bluetooth, ZigBee, wireless applications, smart home applications, etc.
3. WIFI (only 2.4G)

Structure



1. Antenna feed end

2. Power supply identification mark

3. Antenna welding fixed end

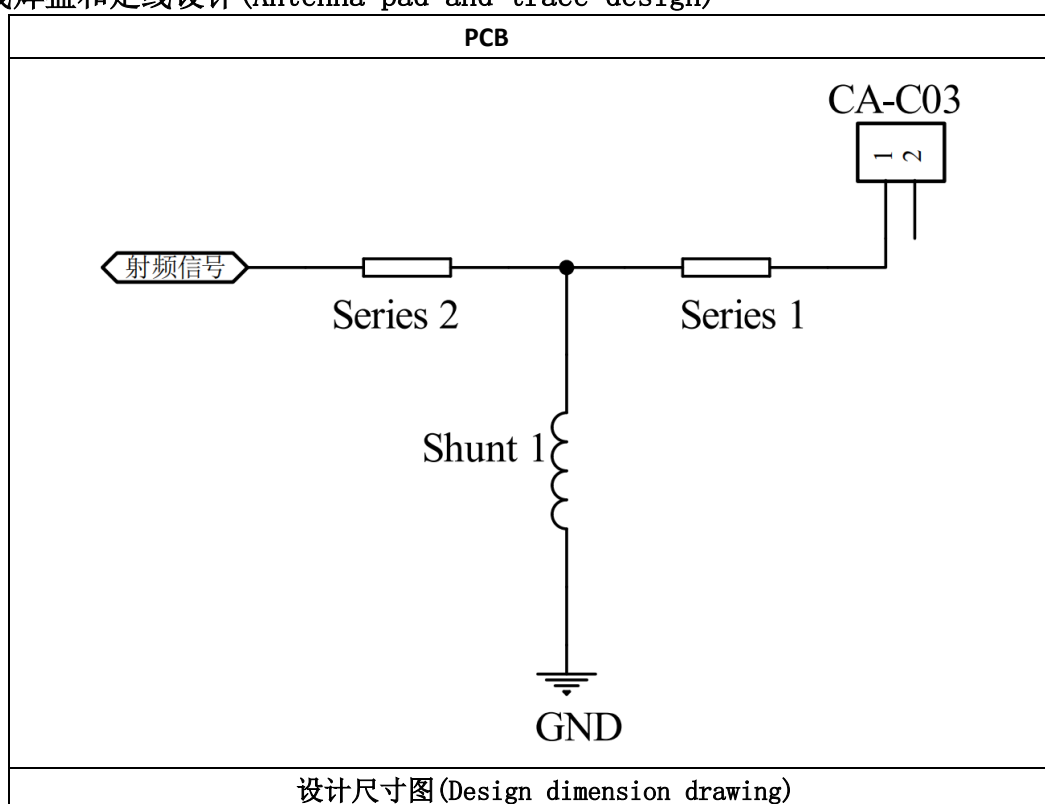
Size

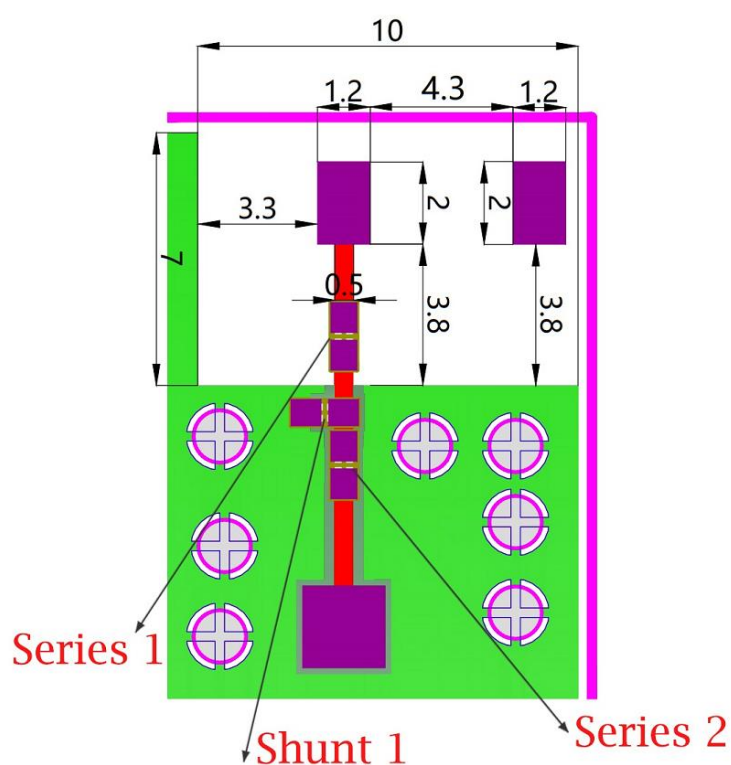
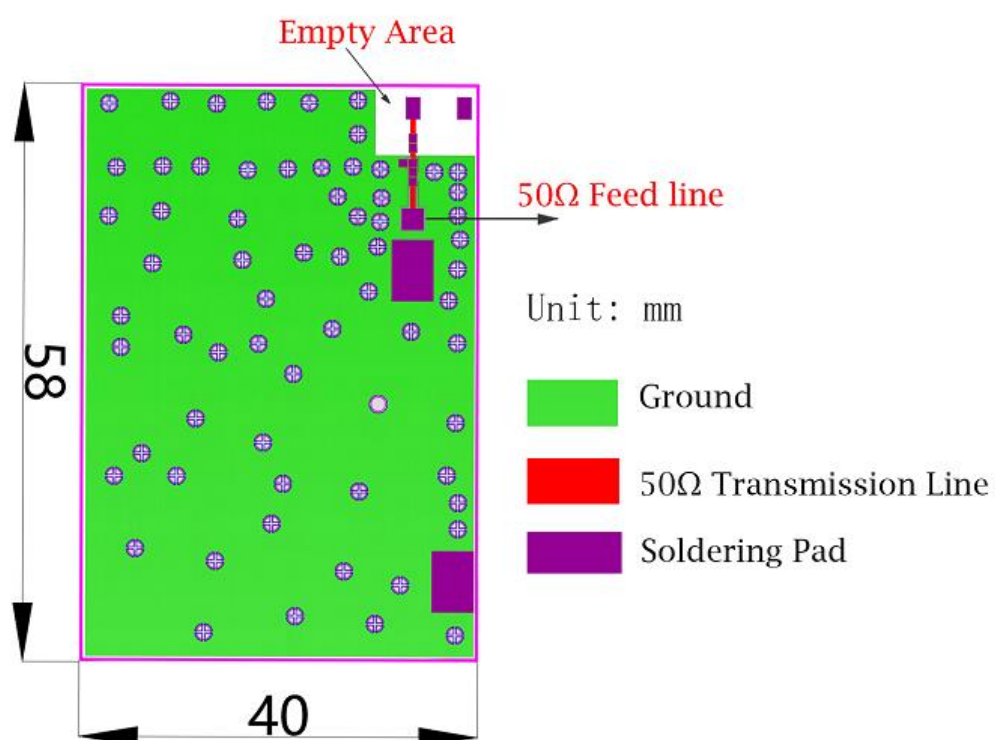
Three views	Symbol	Size(mm)
	L	5.5 ± 0.2
	w	2.0 ± 0.1
	T	1.0 ± 0.1
	a	0.5 ± 0.1

电气特性(Electrical characteristics)

CA-C03	Specification
工作频率范围 Working Frequency	2450±50MHz
带宽 Band Width	>100MHz
阻抗 Impedance	50 Ω
增益 Gain(dBi)	4.3 (peak)
驻波比 VSWR	<2
工作温度 Operation Temperature	-40℃~+95℃
可承受功率 Power Capacity	3W

天线焊盘和走线设计(Antenna pad and trace design)

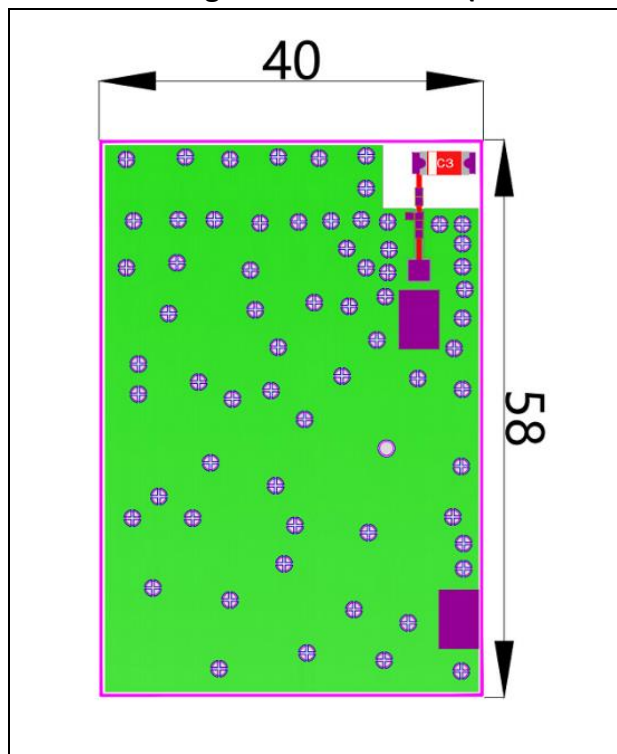




Matching device value

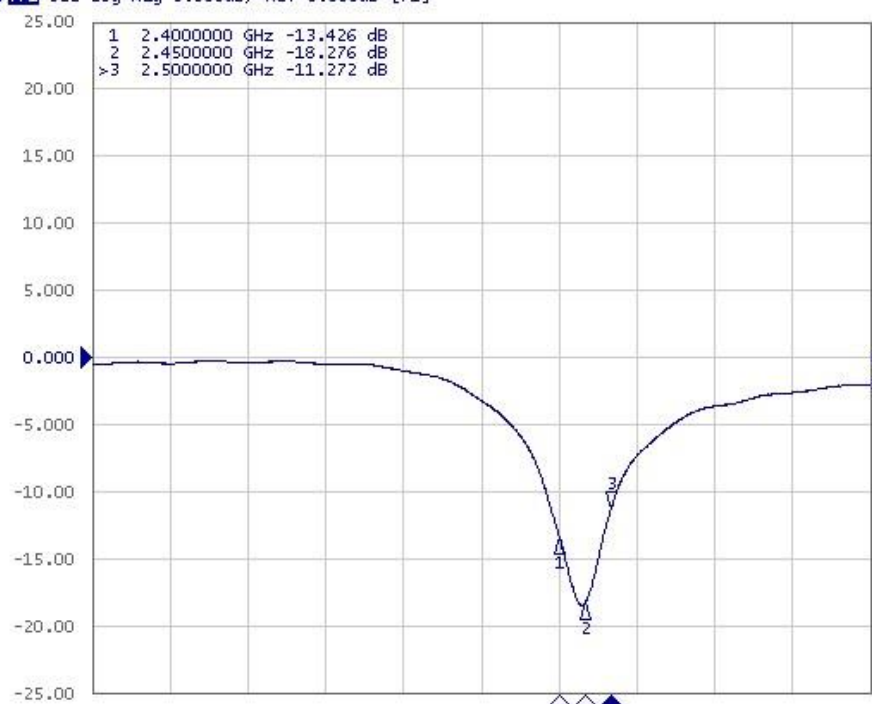
Series device **Series 1**Resistance $0\ \Omega$ Parallel device **Shunt 1**Frequency inductor 3nh Series device **Series 2**Resistance $0\ \Omega$

Antenna testing on the test board (board thickness 1.0mm)

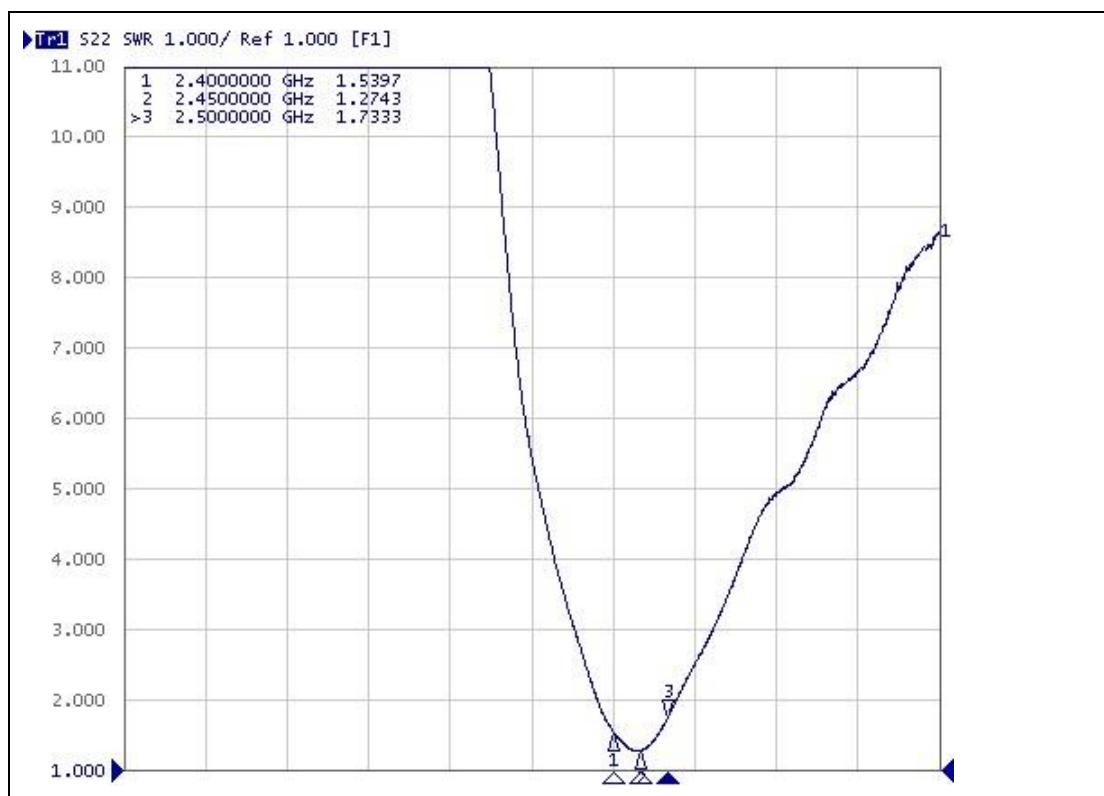


Antenna S11 Characteristics

▶ Tr1 S22 Log Mag 5.000dB/ Ref 0.000dB [F1]

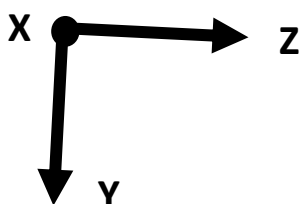
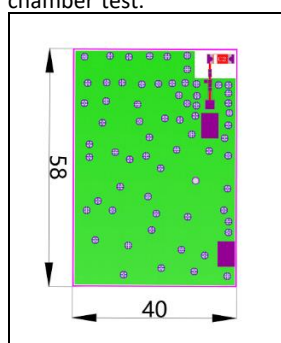


VSWR

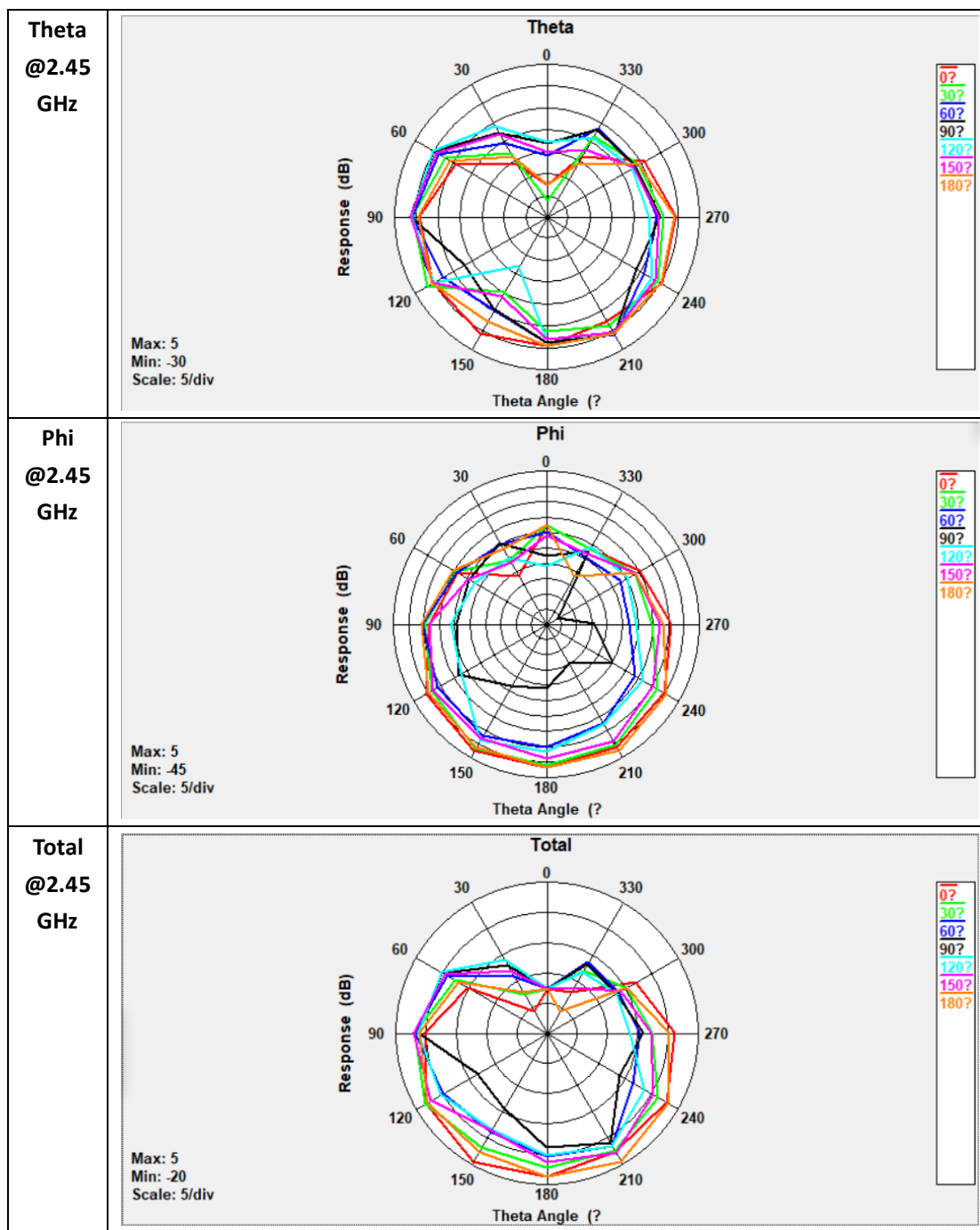


Efficiency and radiation diagram

The performance of efficiency, radiation pattern, gain, etc. is based on the design of the test board. The specifications and test data of the CA-C03 antenna are based on the size of the test PCB board and the test direction shown in the figure below. The following data was completed in the ETS 3D microwave anechoic chamber test.

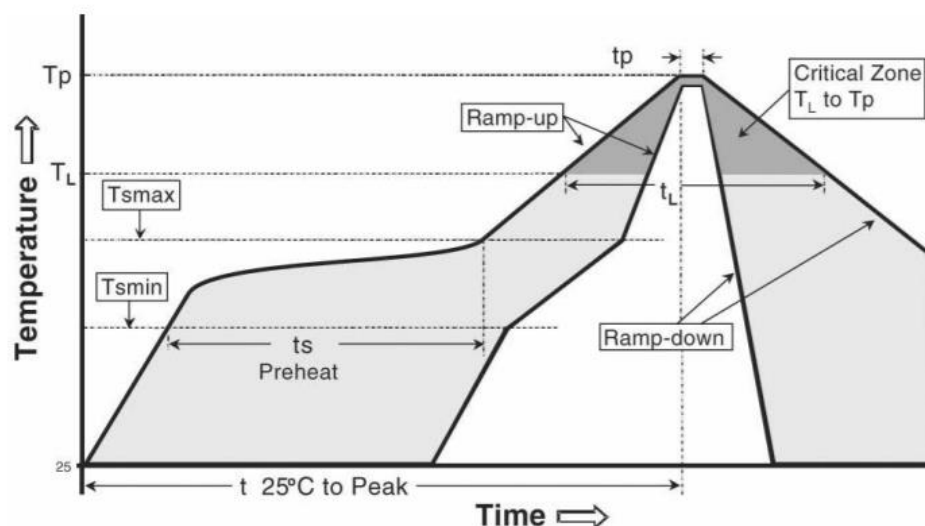


增益和效率 (Gain and efficiency)	Bandwidth 2.4G-2.5GHz
峰值增益 Peak Gain	4.3dBi
带内平均增益 Average Gain across the band	4.1dBi
带内增益范围 Gain Range across the band	3.9dBi~4.3dBi
峰值效率 Peak Efficiency	81.7%
带内平均效率 Average Efficiency across the band	80.2%
带内效率范围 Efficiency Range across the band	78.6%~81.7%



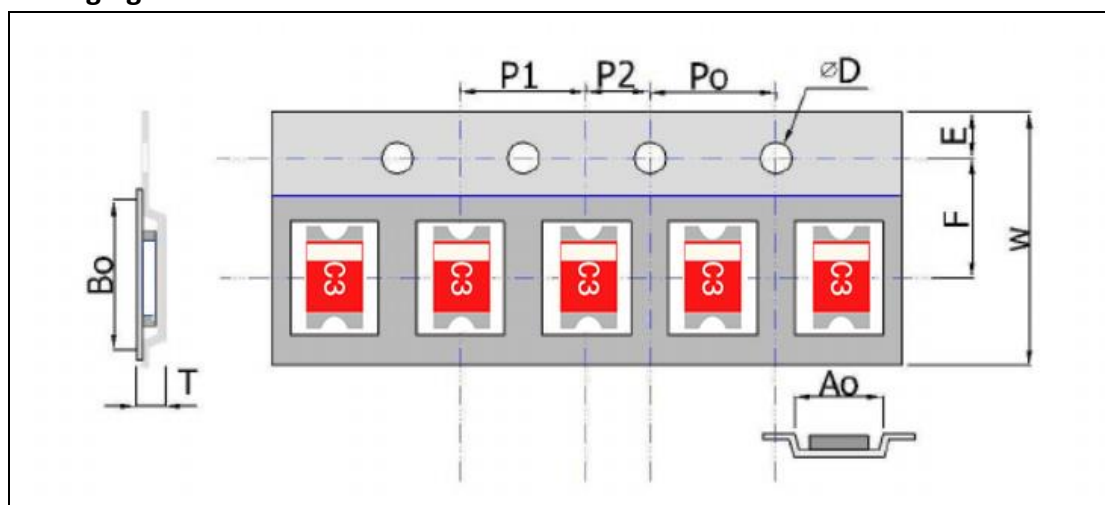
Welding conditions

The typical welding specification that is reliable and non-destructive is shown in the figure below:



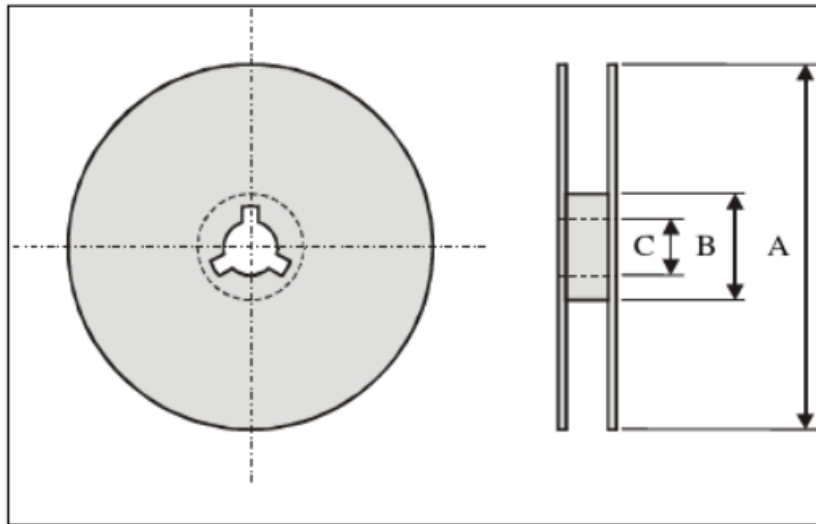
Phase	Profile features	Pb-Free assembly (SnAgCu)
RAMP-UP	Avg. Ramp-up Rate (T_{smax} to T_p)	3 °C / second (max.)
PREHEAT	- Temperature Min (T_{smin}) - Temperature Max (T_{smax}) - Time (t_{smin} to t_{smax})	150 °C 200 °C 60-180 seconds
REFLOW	- Temperature (T_L) - Total Time above T_L (t_L)	217 °C 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 specifications (mm)

Index	Ao	Bo	ΦD	T	W
Dimension (mm)	3.0 ± 0.1	6.0 ± 0.1	1.55 ± 0.05	1.6 ± 0.1	16 ± 0.2
Index	E	F	Po	P1	P2
Dimension (mm)	1.75 ± 0.1	7.0 ± 0.1	4.0 ± 0.1	4.0 ± 0.1	2.0 ± 0.1

Roller size

Index	A	B	C
Dimension(mm)	330	100	13.5