

DESCRIPTIONS

The exciting **920D07E15XX5013** is one of the world's high-performance 2.4GHz small chip antennas. It is for all 2.4GHz applications, including Bluetooth, IEEE802.11b/g, home RF, ZigBee and other popular and emerging standards. This chip antenna comprises a radiating structure of multiple meandered conducting strips, which are developed on a tiny piece of Printed Circuit Board (PCB) and packed with a Liquid Crystal Polymer (LCP) dielectric composite material to achieve size, performance characteristics and cost effectiveness superior to other designs. The incredibly compact surface mountable package measures a merely 5.2mm (L) × 2.0mm (W) × 1.5mm (H) in dimensions and is fully compatible with handmade and reflow attachment processes. The antenna's favorable electrical specifications, stability and cost-effectiveness make it the logical choice for a wide variety of applications in the 2.4GHz ISM band.

FEATURES

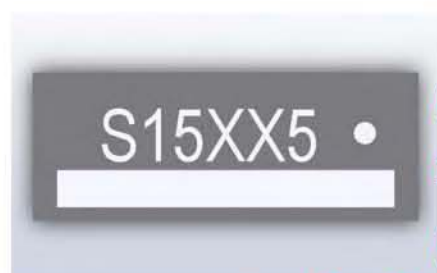
- Low Profile, Ultra-Thin, Light Weight (0.05g)
- Miniaturized Size (**5.2×2.0×1.5 mm³**)
- Omni-Directional Antenna Patterns
- Low Loss (**Average Gain = 0 dBi**)
- 50Ω Characteristic Impedance
- Impedance-Matching Free
- Wide Bandwidth
- Favorable Linear Polarization
- Fully Manual and Surface Mount Compatible
- Incredibly Compact SMD Package
- Highly Stable with Variations in Temperature and Humidity
- LCP Insert Molding Technology
- Cost-Effective

APPLICATIONS

- Bluetooth
- IEEE802.11b/g
- Wireless PCMCIA Cards
- Telemetry
- Data Collection
- Industrial Process Monitoring
- Compact Wireless Products
- External Antenna Elimination
- ZigBee

SPECIFICATIONS

- **920D07E15XX5013**



KEY FEATURES:

- Low Profile, Ultra-Thin, Light Weight (0.05g)
- Miniaturized Size (5.2×2.0×1.5mm³)
- Impedance-Matching Free
- SMD Type
- Cost-Effective

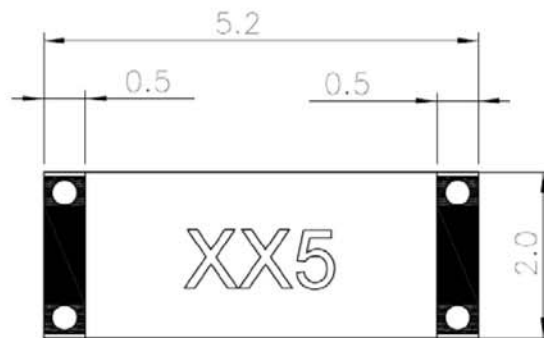
MAIN APPLICATIONS:

- Wireless communications in 2.4GHz ISM Band

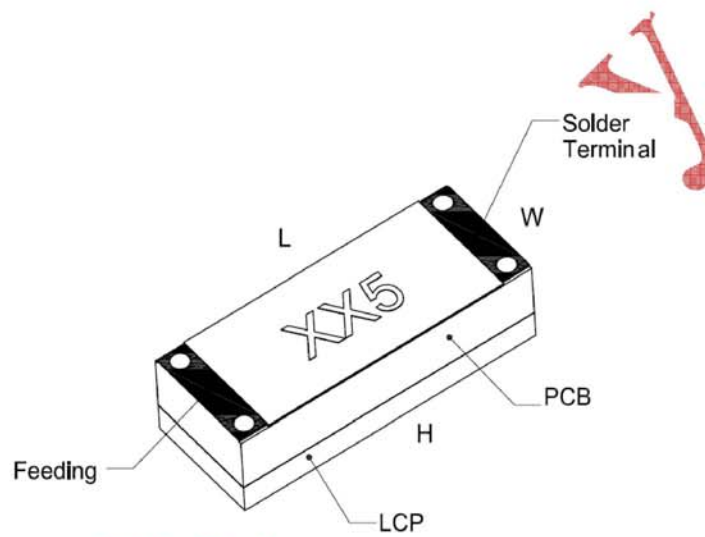
	Single-Band Planar Chip Antenna
Dimension (mm ³)	5.2×2.0×1.5
Central Frequency (GHz)	2.45
Bandwidth (MHz)	>100
Gain (dBi) (Typical)	2
VSWR	2.0 (max.)
Return Loss (dB)	-10 (max.)
Polarization	Linear
Pattern	Omni-Directional
Impedance (Ω)	50
Operating Temperature (°C)	-25 ~ +85
Construction	LCP Insert Molding

CHARACTERISTICS

Pad Layout (unit: mm)

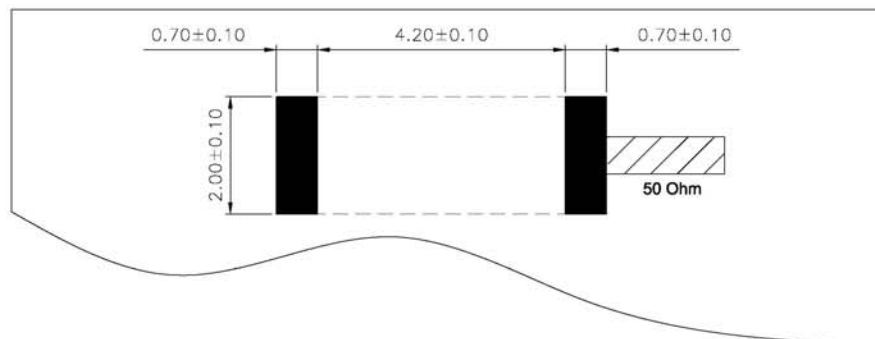


Construction



Antenna size: 5.2mm (L) × 2.0mm (W) × 1.5mm (H)

Land Pattern (unit: mm)



For best results, the chip antenna 920D07E15XX5013 should be mounted on one corner of 0.8mm thick FR4 PCB with $5.2 \times 9.0 \text{mm}^2$ empty area and 50Ω microstrip-line input.

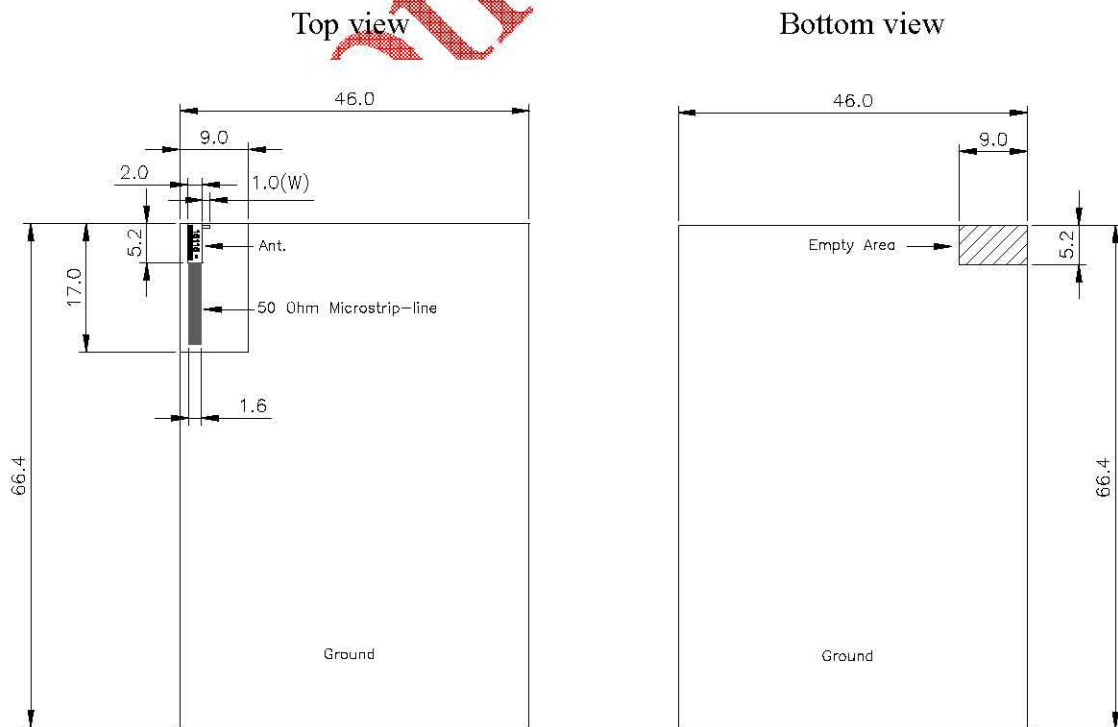
For another condition, the chip antenna 920D07E15XX5013 also could be mounted on one corner of 0.8 mm thick FR4 PCB with $5.2 \times 5 \text{mm}^2$ empty area and 50Ω microstrip-line input but it must be utilized series winding 1pF capacitor as matching circuit component in order to improve the return loss of chip antenna at 2.45 GHz central frequency. Consequently, we can use the method of Pi circuit to tune central frequency of chip antenna. As regard, it can achieve excellent performance and desire different customer demands.

Summary :

We can utilize different circuit length to tune the return loss of chip antenna for diverse product requirements. It was indicated that the central frequency shifted to high frequency with decrease in line length (see symbol "(W)" in land pattern). Such a results, when the length decreases 1 mm, the central frequency shifts about 100 MHz besides the bandwidth also still achieves previous purpose.

About above the results are mentioned as shown belows :

Condition (1) :

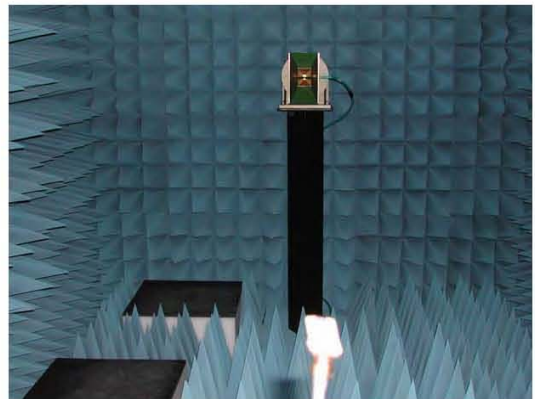
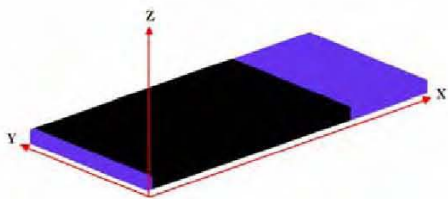
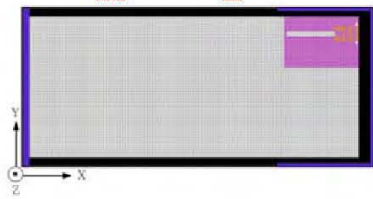


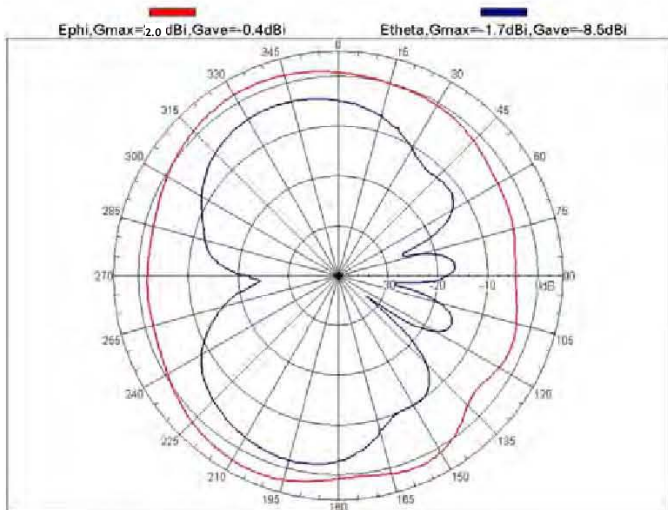
Return Loss and Bandwidth

▶ 511 Log Mag 10.00dB/ Ref 0.000dB [F1]

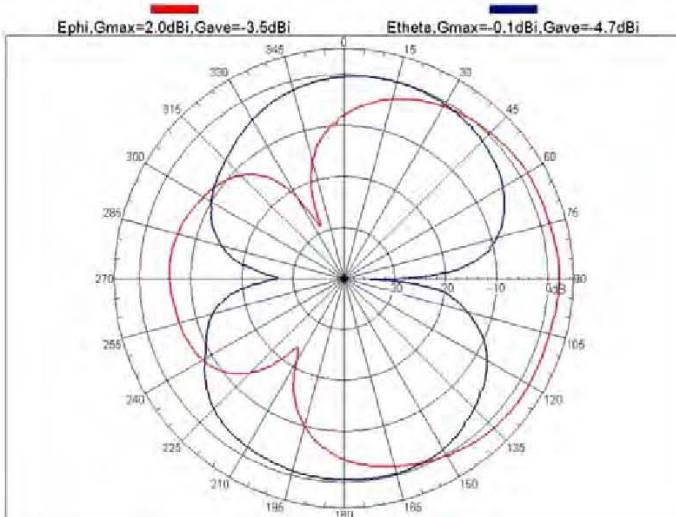


Radiation Pattern (unit dBi)

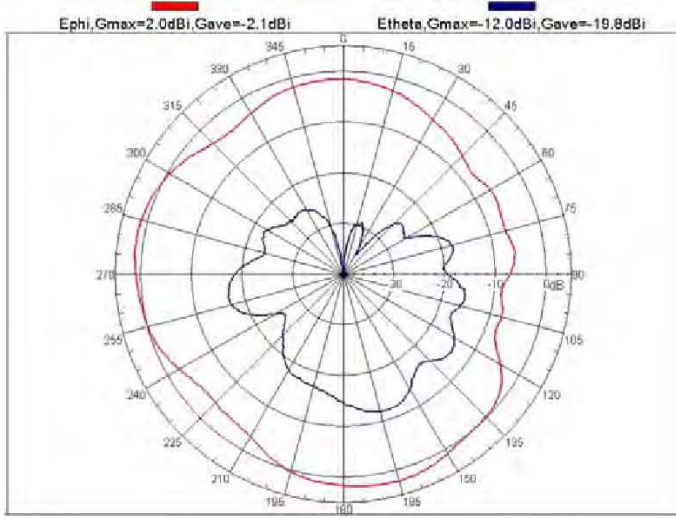
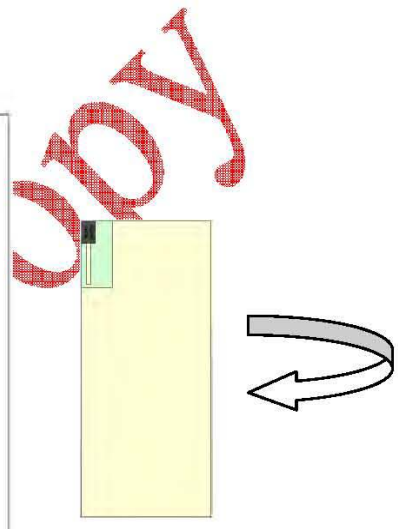




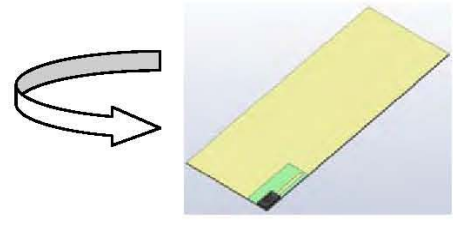
Phi=0° (X-Z plane) for 2.45 GHz



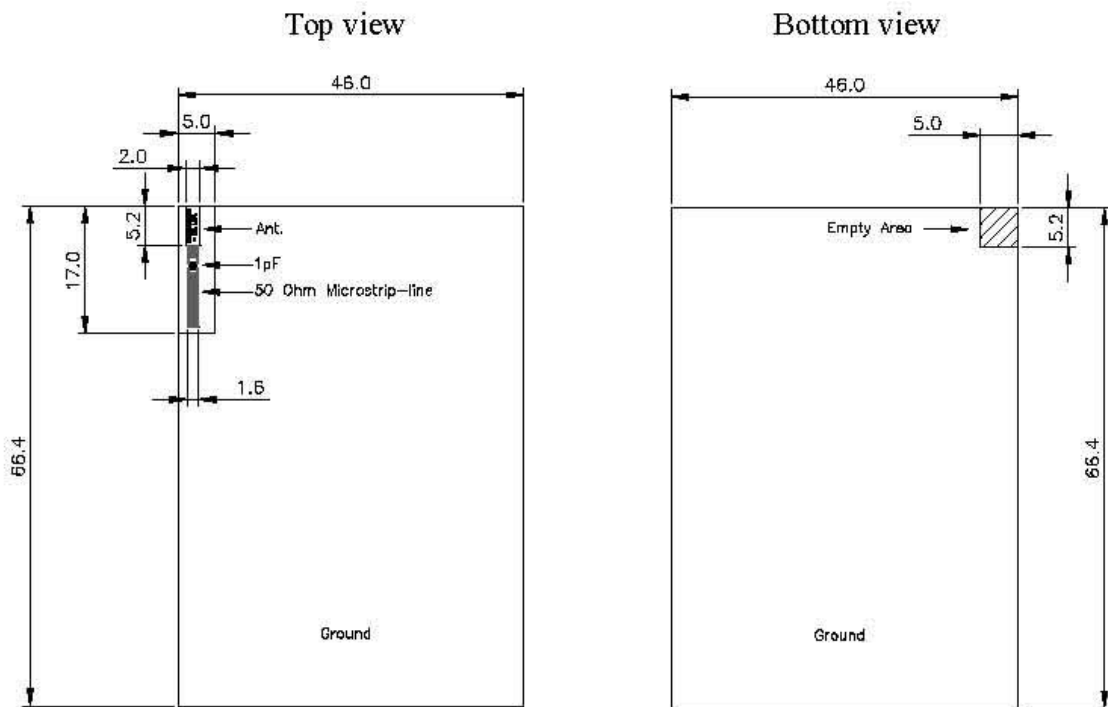
Phi=90° (Y-Z plane) for 2.45 GHz



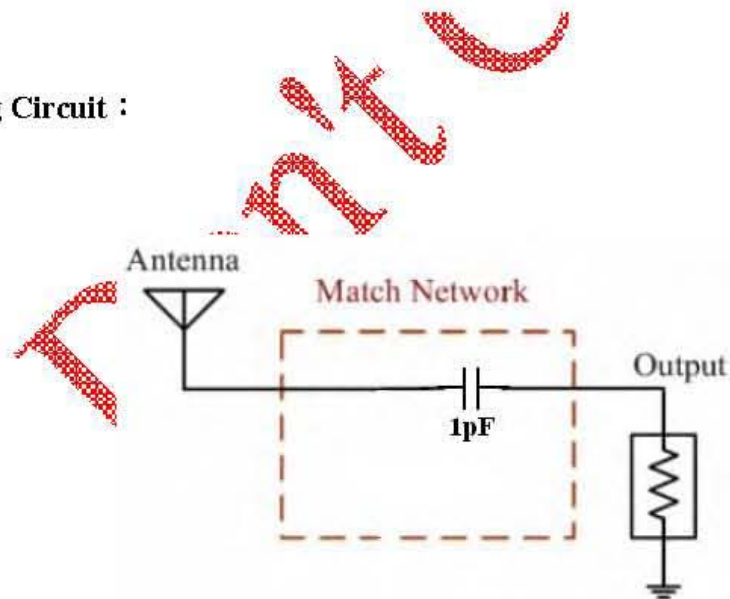
Theta=90° (X-Y plane) for 2.45 GHz



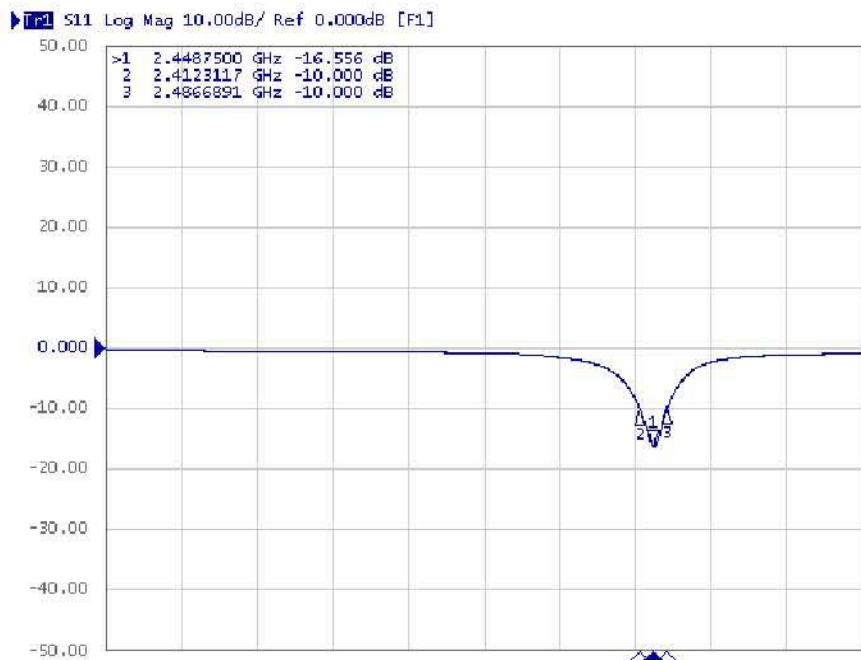
Condition (2) :



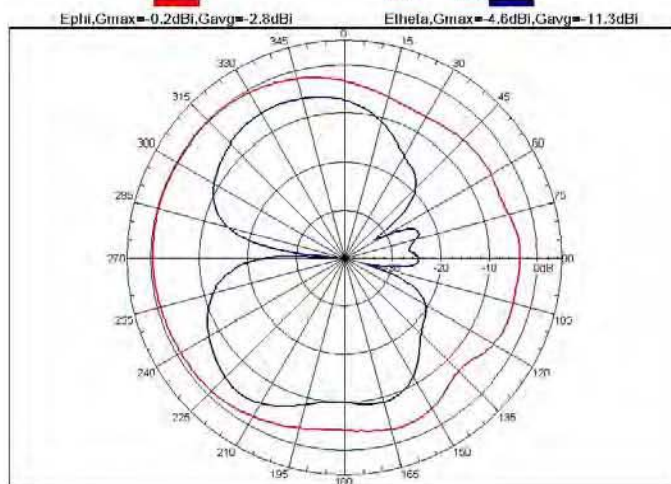
Matching Circuit :



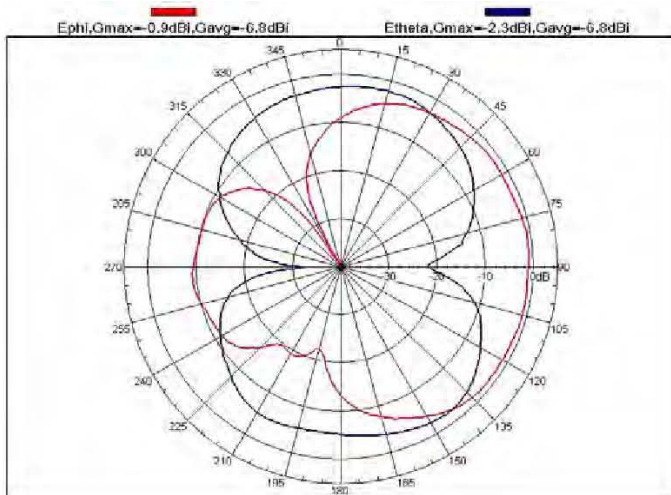
Return loss and Bandwidth



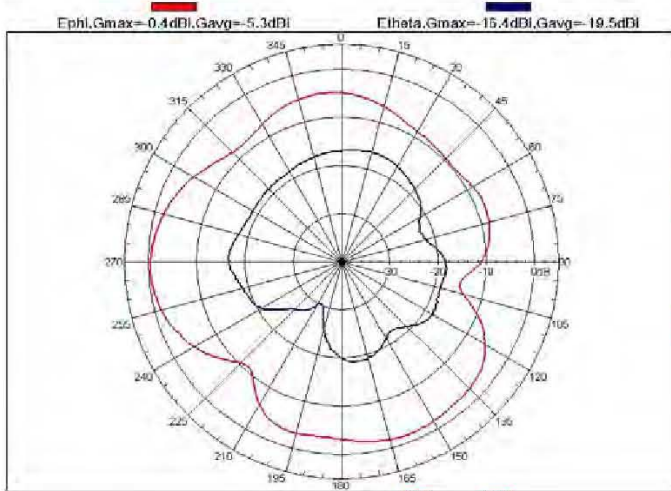
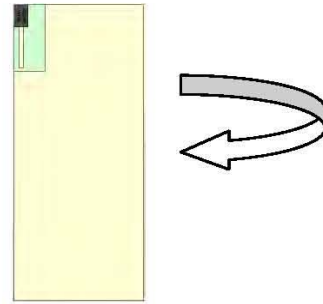
Radiation Pattern (unit : dBi)



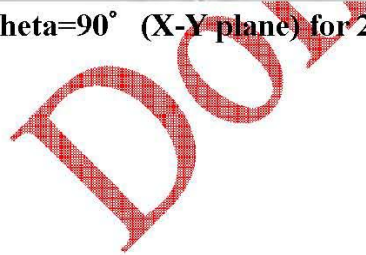
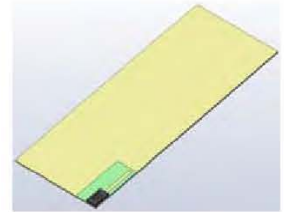
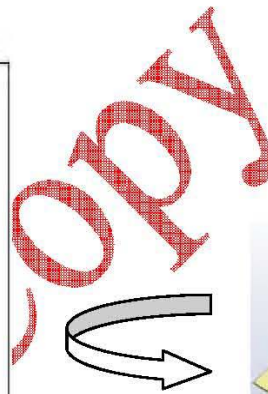
Phi=0° (X-Z plane) for 2.45 GHz



Phi=90° (Y-Z plane) for 2.45 GHz

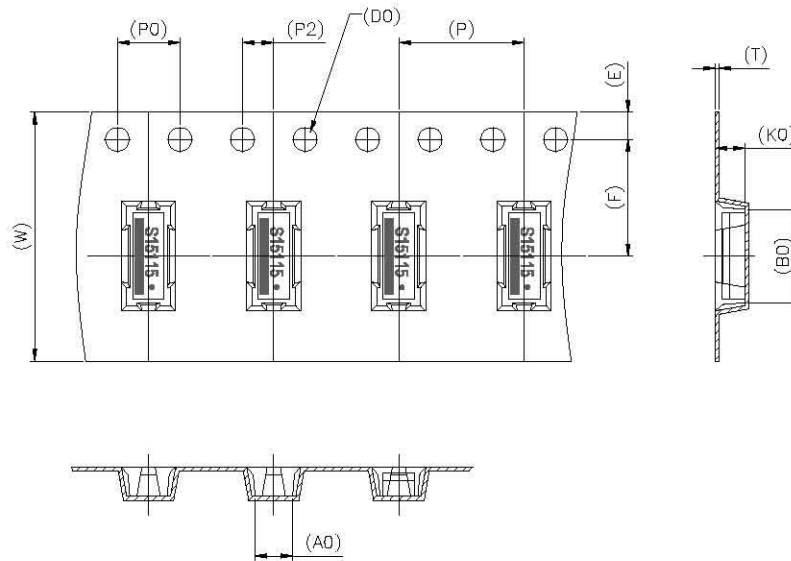


Theta=90° (X-Y plane) for 2.45 GHz



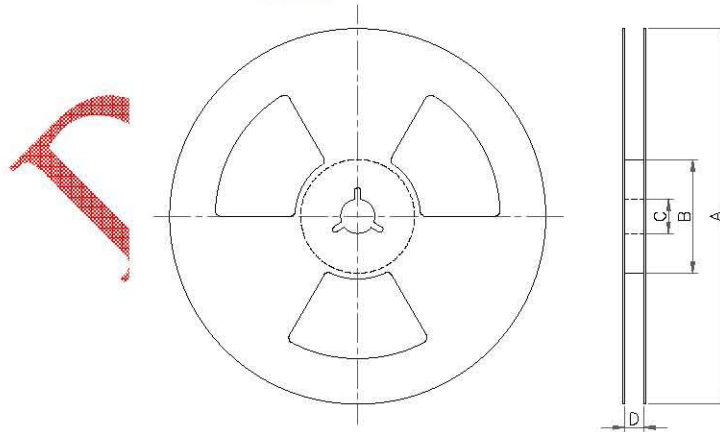
PACKING

Plastic Tape Specification (unit: mm)



Index	W	E	F	T	P	K0
Dimension(mm)	16.00 ± 0.30	1.75 ± 0.10	7.50 ± 0.10	0.25 ± 0.05	8.00 ± 0.10	1.90 ± 0.10
Index	P0	P2	D0	A0	B0	
Dimension(mm)	4.00 ± 0.10	2.00 ± 0.10	∅1.50	2.40 ± 0.10	6.00 ± 0.10	

REEL DIMENSIONS (unit: mm)

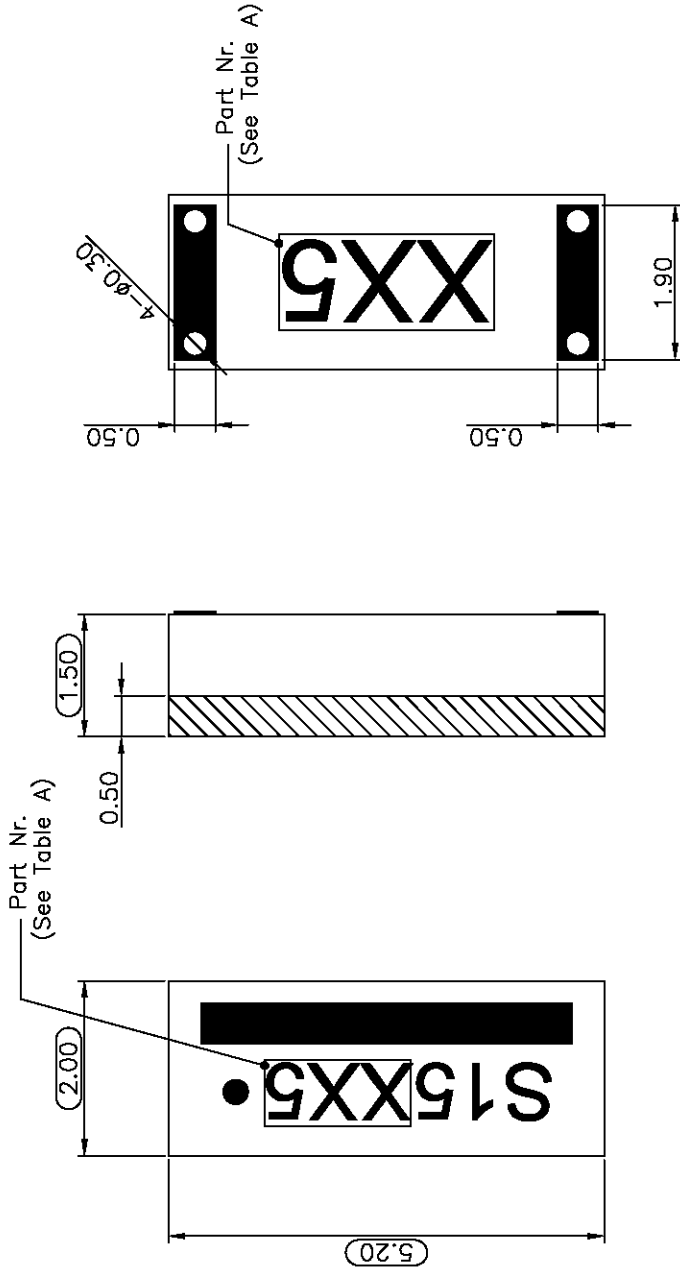


Index	A	B	C	D
Dimension(mm)	∅330	∅100	∅13.5	17.0 ± 0.5

Taping Quantity: MOQ = 2K pieces per 13" reel.

(See Table A)

Part Nr.	Central Frequency Code
XX5	XX5=015,115,215,225,235

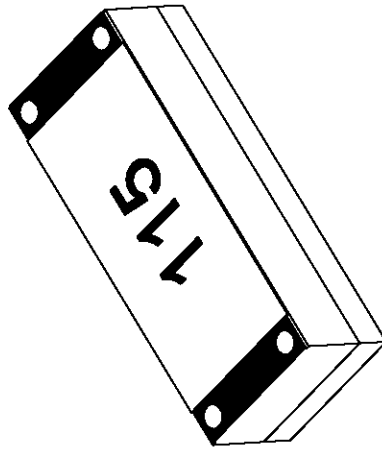


SPECIFICATION

MATERIAL
 Insulator: Thermal Plastic UL94V-0
 Base: FR4
ELECTRICAL
 Central Frequency(GHz): 2.45GHz
 Bandwidth(MHz): >100
 Typical Peak Gain(dBi): 2
 VSWR: 2 max
 Polarizaion: Linear
 Azimuth Beamwidth: Omni-Directional
 Impedance(Ω): 50 Ω
 Operating temperature: -25°C TO +85°C
PART NO.

920 D07 X 15 X 5 0 1 3
 1 2 3 4 5 6 7 8 9 10

- 1.SERIES NO.
920=Chip Antenna
- 2.TYPE:
D07=2X5.2mm
- 3.ENVIRONMENT PROTECTION MATERIAL:
J=SONY SS-00259(Reserved)
E=RoHS
- 4.THICKNESS:
15=1.5mm
- 5.FREQUENCY
0=<2.4GHZ
1=2.4GHZ
2=>2.4GHZ
- 6.ANTENNA TYPE
1=TYPE 1
2=TYPE 2
3=TYPE 3
- 7.MOLDING THICKNESS
5=0.5mm
- 8.FILL IT WITH "0"
- 9.MATERIAL
1=LCP+Logo White
3=Black



UNLESS OTHERWISE SPECIFIED TOLERANCE
 ANG. ±5
 0. ±0.5
 .90 ±0.3
 .90 ±0.2

SCALE: AS SHOWN	UNIT: M/M
DRAWN APRIL	08/14/06
CHECKED	/ /
APPROVED	/ /
DATE	08/11/06
SIZE	A4
REV.	A



CHANT SINCERE CO., LTD
 TEL:886-02-86471251 FAX:886-02-86472962

DRAWN NAME:
920D07 CHIP ANTENNA

PRODUCT NO. 920D07X15XX5013
 FILE NAME: 920D07J15XX5013

REV. A ECN-0608088(Anderson)

DESCRIPTION

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SPC. NO.:	SPECIFICATION	FILE: 920D07-SPEC
SERIES NO.: 920D07		REVISION: Ax1
DATE: 05/27/08		PAGE: 1/3

SCOPE

The exciting 920D07E15XX5013 is one of the world's high-performance 2.4GHz small chip antennas. It is for all 2.4GHz applications, including Bluetooth, IEEE802.11b/g, home RF, ZigBee and other popular and emerging standards.

This chip antenna comprises a radiating structure of multiple meandered conducting strips, which are developed on a tiny piece of Printed Circuit Board (PCB) and packed with a Liquid Crystal Polymer (LCP) dielectric composite material to achieve size, performance characteristics and cost effectiveness superior to other designs.

MATERIAL / FINISHS (材質&表面處理)

天線晶片 ANTENNA PCB	Material (材質)	ISOLA FR-4 94V-0
塑膠絕緣體 INSULATOR	Material (材質)	LCP 30%G.F

SPECIFICATION (規格說明)

頻率 Frequency (MHz)	2450
頻寬 Bandwidth (MHz)	>100
增益 Gain (dBi) (Typical)	2
回饋損失 Return Loss (dB)	- 10
駐波比 VSWR	2 (Max)
偏振 Polarization	Linear
場型 Pattern	Omni-Directional
特性阻抗 Impedance (Ω)	50
結構 Construction	LCP Insert Molding
操作溫度 Operation temperature	-25°C~ +85°C

REMARKS:

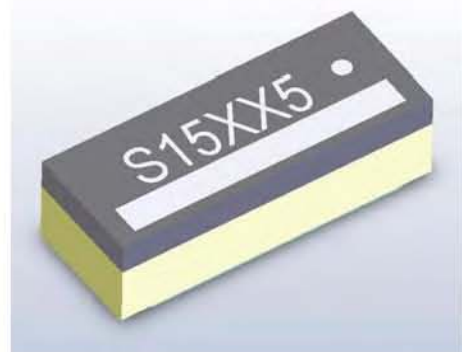
920D07E15XX5013

KEY FEATURES:

- Low Profile, Ultra-Thin, Light Weight (0.05g)
- Miniaturized Size (2.0×5.2×1.5mm³)
- Impedance-Matching Free
- Cost-Effective

MAIN APPLICATIONS:

- Bluetooth
- IEEE802.11b/g
- Wireless PCMCIA Cards



			APPROVED	CHECKED	DRAWN
Ax1		05/27/08	Edward	Anderson	April
A	ECN-0608088(Anderson)	08/11/06			
REV.	DESCRIPTION	DATE			



SPC. NO.:
SERIES NO.: 920D07
DATE: 05/27/08

SPECIFICATION

FILE: 920D07-SPEC
REVISION: Ax1
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ELECTRICAL / MECHANICAL PERFORMANCE

Test item	Test condition / Test method	Specification
Solderability	Solder temp. : $235 \pm 5^{\circ}\text{C}$ Immersion time: 2 ± 1 sec	95% min. coverage of all metallized area. Pin holes or voids < 5% of the total coated area.
Insulation Resistance	250V VDC For 1 Minute	Greater than 10 M Ω initially.
Contact Resistance	20mV VDC 100mA	500 m Ω Max.
Dielectric Strength	250V VAC RMS For 1 Minute	No dielectric breakdown or flashover.

ENVIRONMENTAL CHARACTERISTICS

Test item	Test condition / Test method	Specification
Reflow Test	Temp. : 260°C Test Time : 12sec / 3 cycles Total heat time : 6minutes	No soldering problem shall occur.
Humidity	Humidity: 95% R.H. Temp. : $-25 \sim +85^{\circ}\text{C}$ Time : 24 hours.	No mechanical damage. Samples shall satisfy electrical specification after test.
Thermal Shock	1. 30 ± 3 minutes at $-25^{\circ}\text{C} \pm 3^{\circ}\text{C}$, 2. 10~15 minutes at room temperature, 3. 30 ± 3 minutes at $+85^{\circ}\text{C} \pm 3^{\circ}\text{C}$, 4. 10~15 minutes at room temperature, Total 10 continuous cycles	No mechanical damage. Samples shall satisfy electrical specification after test.

STORAGE CONDITION

- (1) Products should be used in 6 months from the day of Coxoc outgoing inspection, which can be confirmed.
- (2) Storage environment condition :
Products should be storage in the warehouse on the following conditions.
 - Temperature : -10 to $+40^{\circ}\text{C}$
 - Humidity : 30 to 70% relative humidity
 - 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.

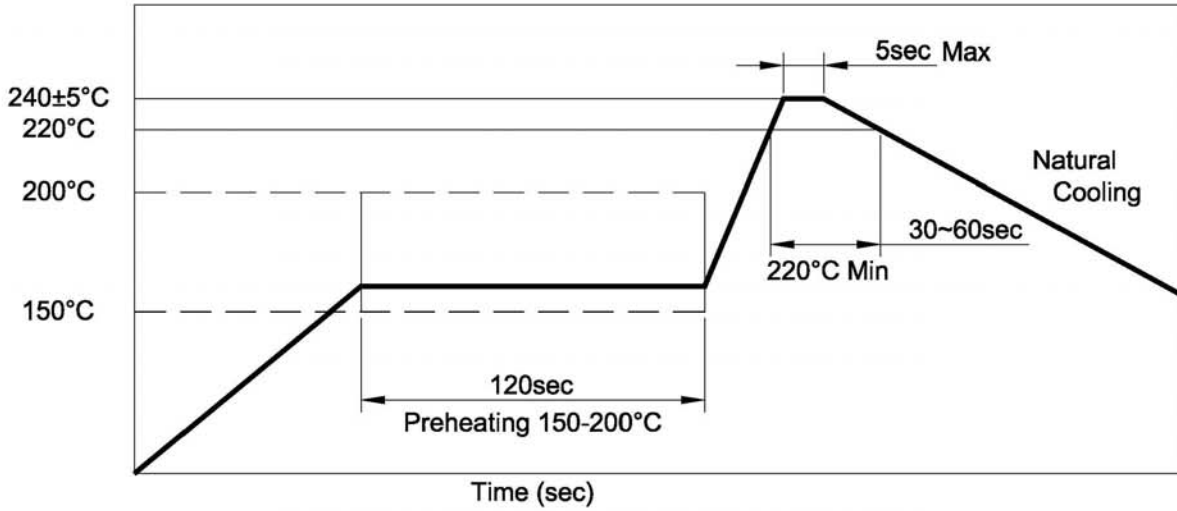
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DATE: 05/27/08

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REVISION: Ax1
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RECOMMENDED SOLDERING CONDITIONS

Reflow Soldering



Iron Soldering

Perform Soldering at 350°C within 5 seconds.