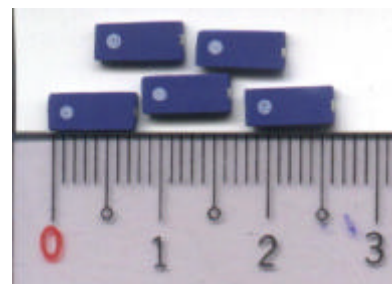


**MULTILAYER CERAMIC ANTENNA (TYPE 230)  
FOR BLUETOOTH & WLAN IEEE 802.11b (2.45G Hz ISM Band)  
(Long Shape)**

**QUICK REFERENCE DATA**

Dimension	7.8* 3.6 * 0.9 mm
Central Frequency*	2.37 GHz
Bandwidth	>100 MHz
Gain	2.5dBi max
VSWR	2.0 max
Polarization	Linear
Azimuth	Omni-directional
Impedance	50Ω
Operating Temperature	-55~125 °C
Termination	Ni/Sn (Environmentally-Friendly Leadless)
Resistance to soldering heat	260°C, 10 sec.
Maximum Power	1W



\* Based on customer PCB



*Special Environmental Concerns- Green Products Design: The foil making process is using environmentally-friendly aqueous solvent technology. Termination is lead free (Pb free) and packing materials can be re-cycled*

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				<b>AN2300000708031K</b>	
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**APPLICATION**

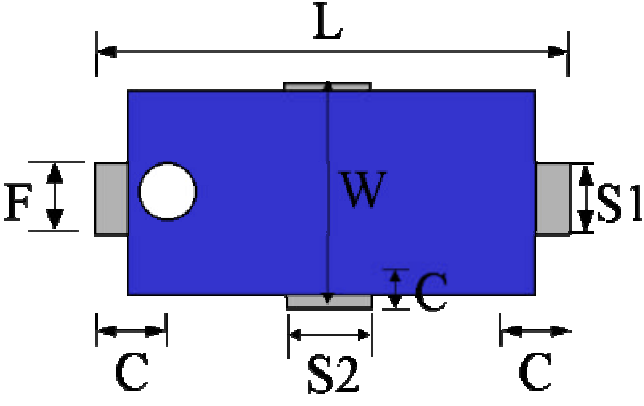


**DIMENSIONAL DATA**

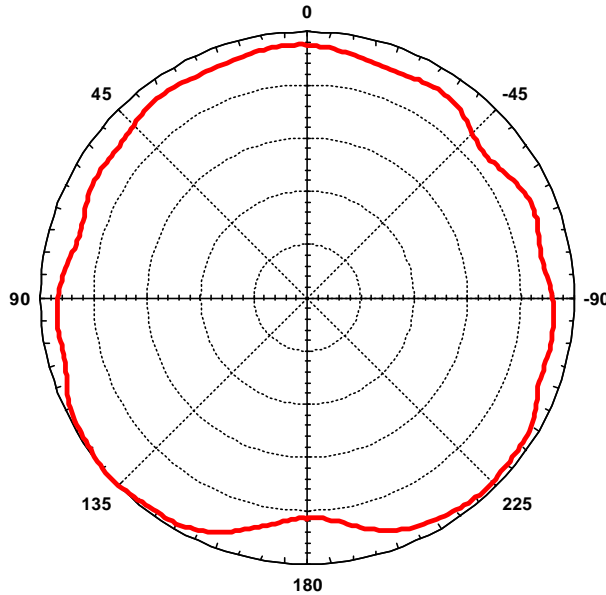
Figure	Dimension	Port
	<p>L : 7.8 +/-0.25 mm</p> <p>W: 3.6 +/- 0.2 mm</p> <p>T: 0.9 +/- 0.2 mm</p> <p>F: 1.25 +/- 0.25 mm</p> <p>C: 0.4 +/-0.2 mm</p> <p>S1: 1.25 +/- 0.25 mm</p> <p>S2: 1.40 +/- 0.25 mm</p>	<p>-</p> <p>-</p> <p>-</p> <p>Feed Termination</p> <p>-</p> <p>NC Solder Termination Only</p> <p>Optional NC Solder Termination Only</p>

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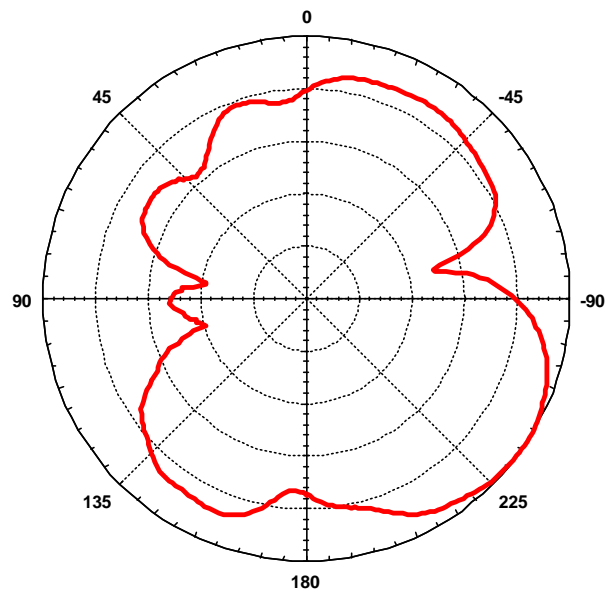
## SOLDER LAND PATTERN

Figure	Dimensions	Remark															
	<table border="1"> <tr> <td>L</td> <td><math>9 \pm 0.10</math> mm</td> </tr> <tr> <td>W</td> <td><math>4.4 \pm 0.20</math> mm</td> </tr> <tr> <td>F</td> <td><math>1.40 \pm 0.25</math> mm</td> </tr> <tr> <td>C</td> <td><math>0.80 \pm 0.20</math> mm</td> </tr> <tr> <td>S1</td> <td><math>1.40 \pm 0.25</math> mm</td> </tr> <tr> <td>S2</td> <td><math>1.60 \pm 0.25</math> mm</td> </tr> </table>	L	$9 \pm 0.10$ mm	W	$4.4 \pm 0.20$ mm	F	$1.40 \pm 0.25$ mm	C	$0.80 \pm 0.20$ mm	S1	$1.40 \pm 0.25$ mm	S2	$1.60 \pm 0.25$ mm	<table border="1"> <tr> <td>Feed Pad</td> </tr> <tr> <td>NC Mount Pad Only</td> </tr> <tr> <td>Optional NC Mount Pad Only</td> </tr> </table>	Feed Pad	NC Mount Pad Only	Optional NC Mount Pad Only
L	$9 \pm 0.10$ mm																
W	$4.4 \pm 0.20$ mm																
F	$1.40 \pm 0.25$ mm																
C	$0.80 \pm 0.20$ mm																
S1	$1.40 \pm 0.25$ mm																
S2	$1.60 \pm 0.25$ mm																
Feed Pad																	
NC Mount Pad Only																	
Optional NC Mount Pad Only																	

## Typical Radiation Pattern Polar Plot



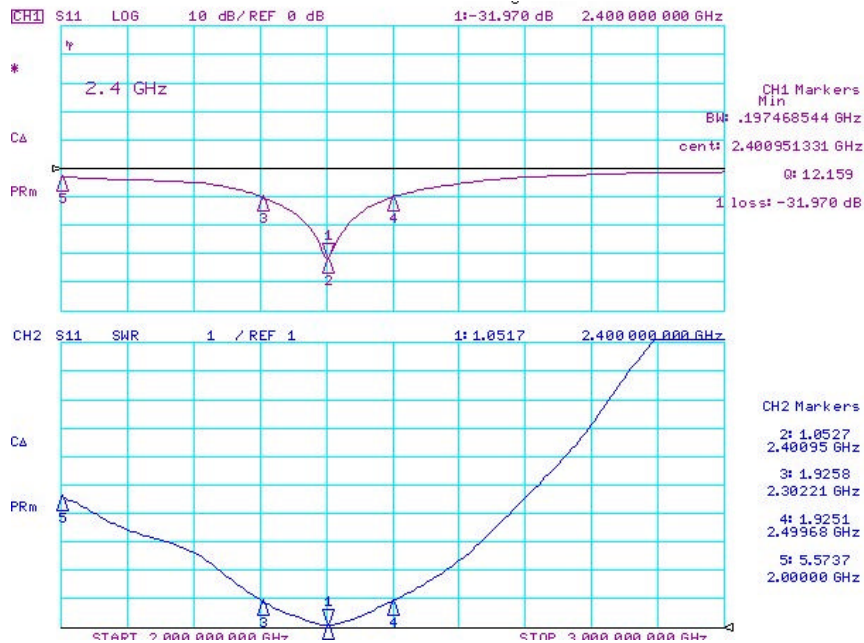
**H-Plane**



**E-Plane**

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## Typical Return Loss and SWR



## RELIABILITY DATA (Reference to IEC Specification)

IEC 384-10/CECC 32 100 CLAUSE	IEC 60068-2 TEST METHOD	TEST	PROCEDURE	REQUIREMENTS
4.4		Mounting	The antenna can be mounted on printed-circuit boards or ceramic substrates by applying wave soldering, reflow soldering (including vapour phase soldering) or conductive adhesive	No visible damage
4.5		Visual inspection and dimension check	Any applicable method using $\times 10$ magnification	In accordance with specification (chip off 4mm)
4.6.1		Antenna	Central Frequency 2.37GHz at 20 °C	Per customer request board

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IEC 384-10/ CECC 32 100 CLAUSE	IEC 60068-2 TEST METHOD	TEST	PROCEDURE	REQUIREMENTS
4.8		Adhesion	A force of 3 N applied for 10 s to the line joining the terminations and in a plane parallel to the substrate	No visible damage
4.9		Bond strength of plating on end face	Mounted in accordance with CECC 32 100, paragraph 4.4	No visible damage
			Conditions: bending 0.5 mm at a rate of 1mm/s, radius jig. 340 mm, 2mm warp on FR4 board of 90 mm length	No visible damage
4.10	20(Tb)	Resistance to soldering heat	260 ± 5 °C for 10 ± 0.5 s in a static solder bath	The terminations shall be well tinned after recovery and Central Freq. Change ± 6%
		Resistance to leaching	260 ± 5 °C for 30 ± 1 s in a static solder bath	Using visual enlargement of × 10, dissolution of the termination shall not exceed 10%
4.11	20(Ta)	Solderability	Zero hour test, and test after storage (20 to 24 months) in original atmosphere; un-mounted chips completely immersed for 2 ± 0.5 s in 235 ± 5°C.	The termination must be well tinned, at least 75% is well tinned at termination

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<b>IEC 384-10/ CECC 32 100 CLAUSE</b>	<b>IEC 60068-2 TEST METHOD</b>	<b>TEST</b>	<b>PROCEDURE</b>	<b>REQUIREMENTS</b>
4.12	4(Na)	Rapid change of temperature	-55 °C (30 minutes) to +125 °C (30 minutes); 100 cycles	No visible damage Central Freq. Change ± 6%
4.14	3(Ca)	Damp heat	500 ± 12 hours at 60 °C; 90 to 95 % RH	No visible damage 2 hours recovery Central Freq. Change ± 6%
4.15		Endurance	500 ± 12 hours at 125 °C;	No visible damage 2 hours recovery Central Freq. Change ± 6%

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**ORDERING INFORMATION: Method I- by 12NC Ordering Code**

The antennas may be ordered by using the 12 NC ordering code. These code numbers can be determined by the following rules:

4311 1 15 00 230  
 F C M S T A

F. Family Code

43 = Antenna

C. Packing Type Code

11 = 180 mm/ 7" blister (1000pcs)

M. Materials Code

1 = High Frequency Material

S. Size Code

15 = 7.8 \* 3.6 \* 0.9 mm

T. Tolerance

00 = larger than 100 M Hz Band Width

A. Working Frequency (three types of antenna are available)

230 = 2.3 GHz ~2.40GHz

Type 230

**Example: 12NC 4311 115 00230**  
 Product description: Antenna (43) by 180 mm blister (11) of High Frequency Material (1), Size 7.8\*3.6\*0.9 mm (1);  
 Tolerance (00) of 100 MHz (VSWR<2)  
 Working Frequency (230) = 2.30~2.40G Hz

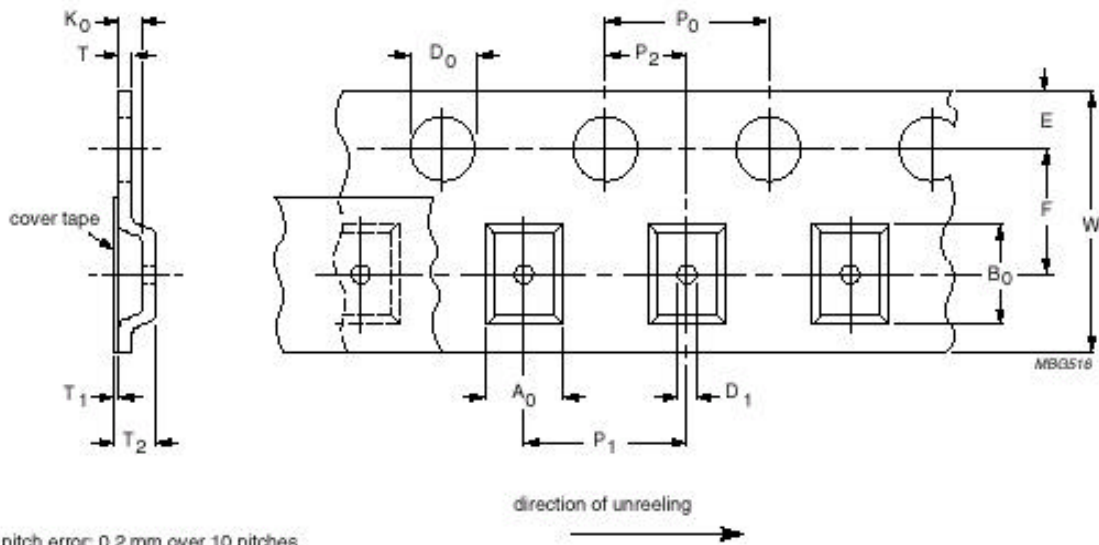
**ORDERING INFORMATION: Method II- by Clear Text Code**

The antennas may be ordered by using the 16-digit clear text ordering code. These code numbers can be determined by the following rules:

AN2300000708031K (Clear Text Code Example)						
AN	2300	00	07	0803	1	K
Product	Central Freq.	Bandwidth	Material	Size	Quantities	Packing
AN= Antenna	2300= 2.30~2.40GHz	00= >100MHz	07=K7	0803=7.8*3.6 * 0.9 mm	1 = 1K	K=7" plastic

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## Taping Blister Tape



Cumulative pitch error: 0.2 mm over 10 pitches.

Cumulative tolerance over 10 holes:  $\pm 0.2$  mm.

$K_0$ : chosen so that the orientation of the component cannot change.

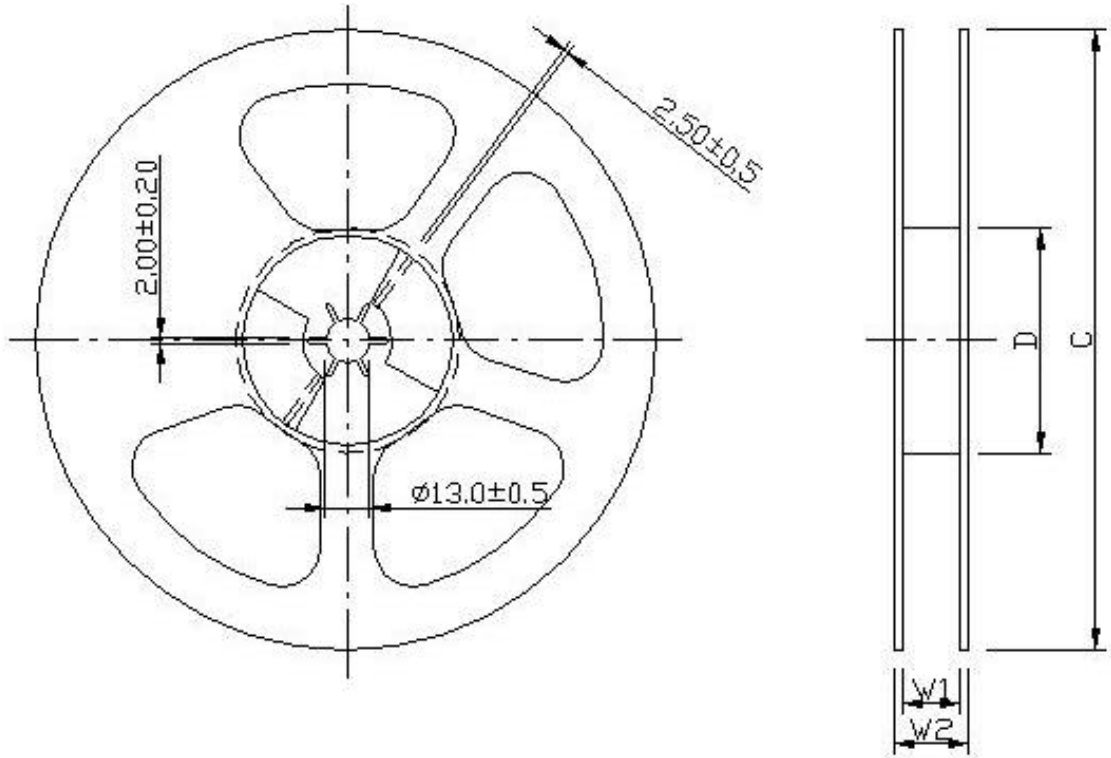
### DIMENSION:

Serial no	Checking note	Index	Spec(mm)
1	Sprocket hole	Do	1.55 $\pm$ 0.10
2	Pocket hole	D1	1.50 $\pm$ 0.10
3	Distance sprocket hole/sprocket hole	Po	4.0 $\pm$ 0.10
4	Distance pocket/pocket	P1	8.0 $\pm$ 0.10
5	Distance sprocket hole/pocket	P2	2.0 $\pm$ 0.10
6	Tape width	W	16.0 $\pm$ 0.30
7	Distance sprocket hole/outside	E	1.75 $\pm$ 0.10
8	Distance sprocket hole/pocket	F	7.50 $\pm$ 0.10
9	Pocket length	Ao	3.86 $\pm$ 0.10
10	Pocket length	Bo	8.15 $\pm$ 0.10
11	Pocket depth	Ko	1.20 $\pm$ 0.10
12	Thickness of tape	T	0.25 $\pm$ 0.10
13	10x sprocket hole pitch	10Po	40.0 $\pm$ 0.20

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**7”(180mm) Reel Specifications**



Product size code	Units per Reel	Tape Width (mm)	C (mm)	D (mm)	W <sub>1</sub> (mm)	W <sub>2</sub> (mm)
Antenna	1000	16	180.0±1.0	62±0.5	16.0 <sup>+1</sup> <sub>-0</sub>	20.5±0.2

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