

**Description:** 2.4GHz Ceramic Chip Antenna

**Series:** Ceramic Chip Antenna

**PART NUMBER:** W3008G



**Features:**

- Frequency 2400-2483.5MHz
- Size 3.2 x 1.6 x 1.1mm
- Efficiency >80%
- Gain >1.5dBi
- SMD compatible
- MSL 1

**Applications:**

- 2.4GHz ISM band radios
- Bluetooth, BLE
- WiFi 2.4GHz
- IoT, M2M devices

All dimensions are in mm / inches

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### ELECTRICAL SPECIFICATIONS

Antenna Type	Ceramic Chip
Frequency	2400-2483.5MHz
Nominal Impedance	50 Ω
VSWR	<1.6:1
Radiation Pattern	Omni
Gain	>1.5dBi
Efficiency	>80%
Polarization	Linear
Power Withstanding	2W

### MECHANICAL SPECIFICATIONS

Weight	0.03 g
Overall Length	3.2 [0.126] MM [INCHES]
Over all width	1.6 [0.063] MM [INCHES]
Over all thickness	1.1 [0.043] MM [INCHES]
MSL (Moisture Sensitivity Level)	1

### ENVIRONMENTAL SPECIFICATIONS

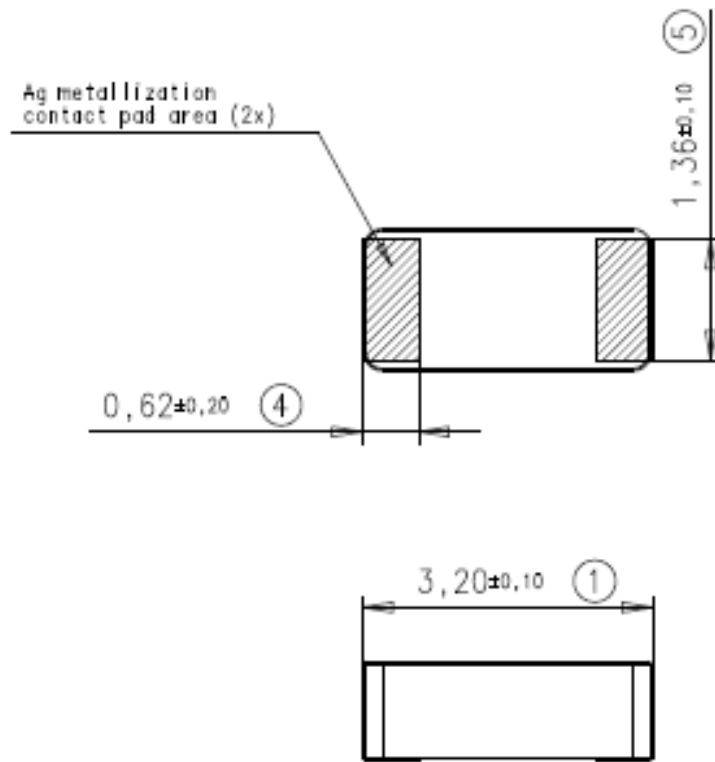
Operating Temperature	-40 / +85 ° C
Storage Temperature	-40 / +85 ° C
RoHS Compliant	Yes

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**MECHANICAL DRAWING**



Antenna features		
No.	Terminal Name	Terminal Dimensions
1	Feed / GND	0.62 x 1.36 mm
2	Feed / GND	0.62 x 1.36 mm

Antenna is symmetrical. Either of terminals 1 or 2 can be Feed / GND

Note: This type of antenna is called loaded PIFA. One pad (on the bottom of the ceramic chip antenna) that feedline and GND are connected is a basic PIFA antenna structure. And, another pad on the other side that only GND is connected is for capacitive loading. Loaded capacitive value is optimized by the gap distance between two pads on the top surface. In PIFA, there is short mechanism usually in proximity to feed. This RF shorting affects impedance and current distribution mechanism of antenna. The actual antenna top face can seem to be mirrored, however it can be used same as the non-mirrored version. Please follow the design recommendation specified in this data sheet for either case.

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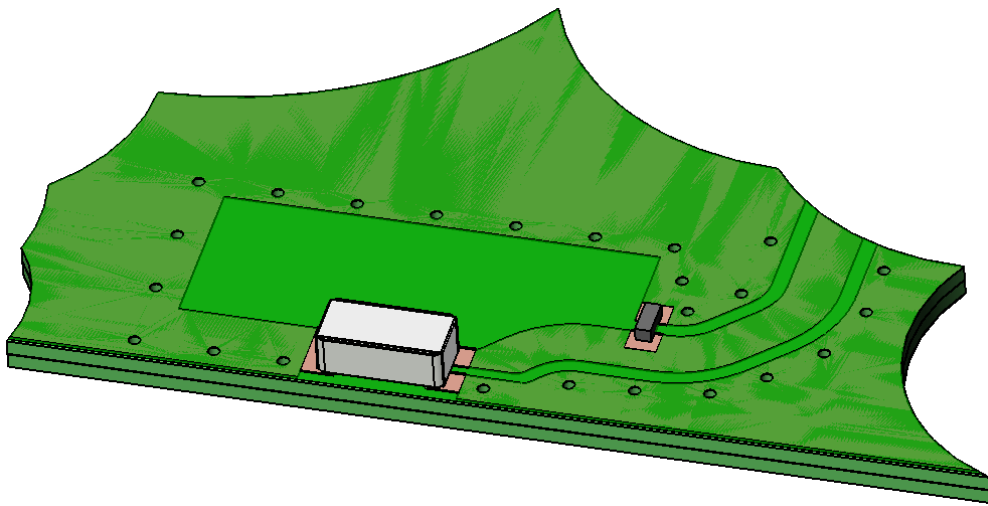
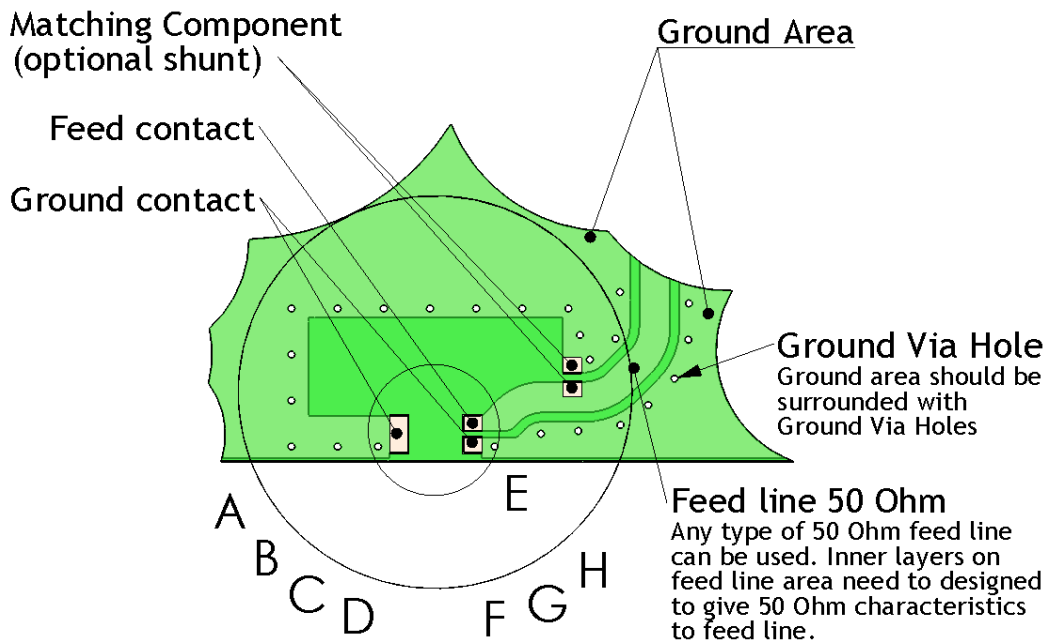
**Series: Ceramic Chip Antenna**

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**OTHER SPECIFICATIONS**

**PWB Layout**

Typical performance (test board size 80x37 mm, PWB ground clearance area 11.00 x 6.25 mm) Antenna placed 80mm edge center position.



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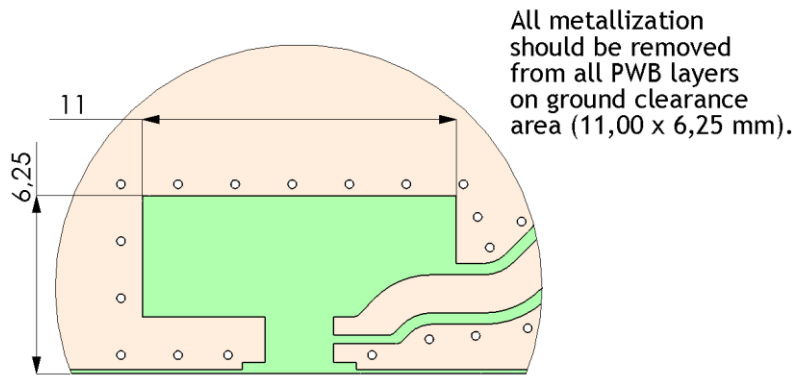
**Series: Ceramic Chip Antenna**

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**OTHER SPECIFICATIONS**

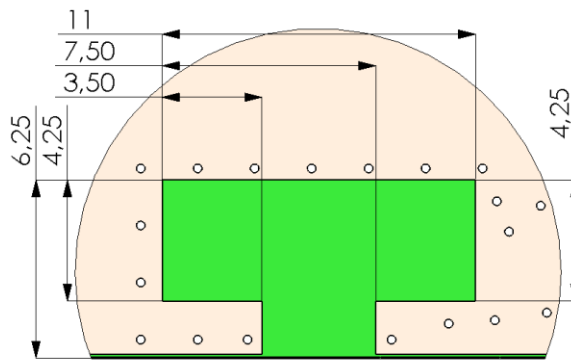
Ground cleared under antenna, clearance area 11.00 x 6.25 mm

**Ground clearance area (11,00 x 6,25 mm)**



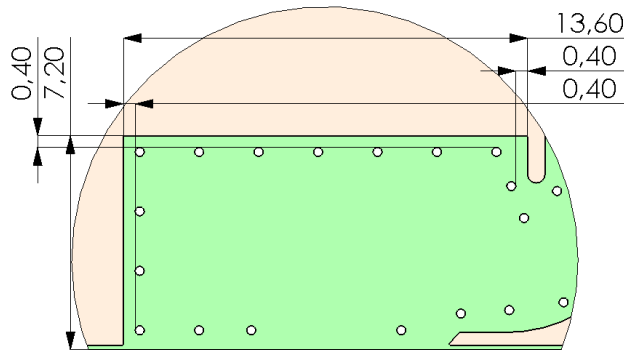
DETAIL A

**Opening in bottom/inner ground layers**



DETAIL B

**Opening in other layers (no ground/ RF)**



DETAIL C

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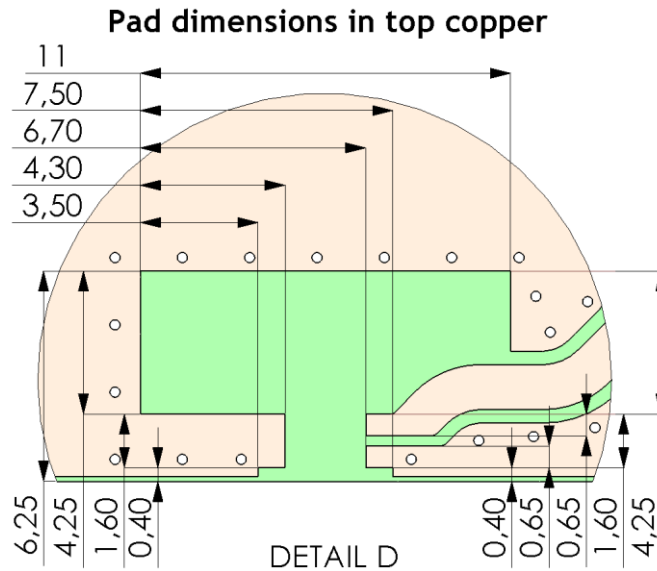
**Description:** 2.4GHz Ceramic Chip Antenna

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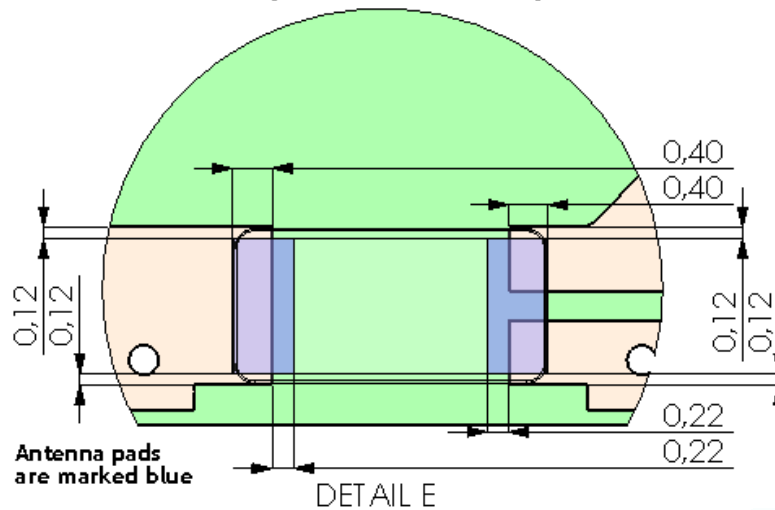
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**OTHER SPECIFICATIONS**

PWB pad dimensions and antenna position



**Antenna position on PWB layout**



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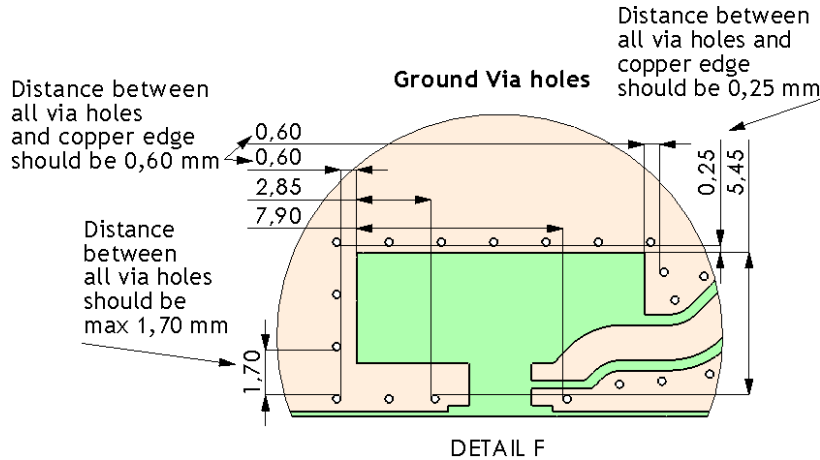
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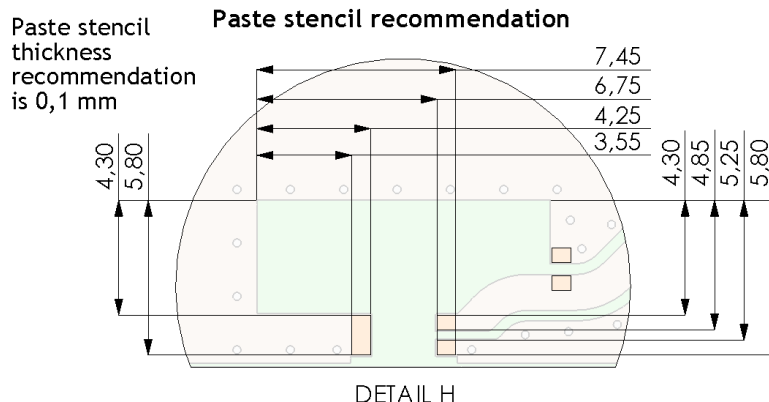
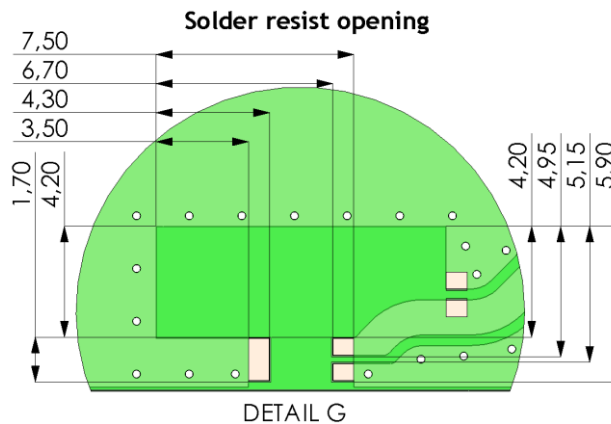
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**OTHER SPECIFICATIONS**

Typical Ground via hole placement in PWB layout



Solder resist opening and paste stencil recommendations



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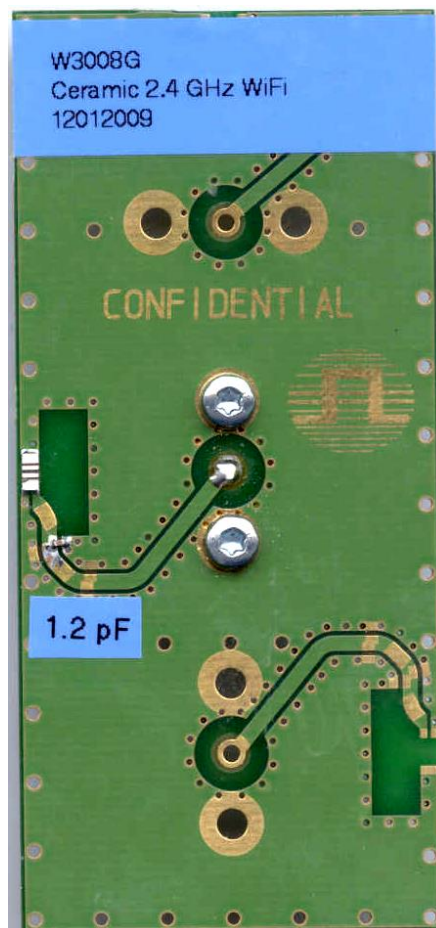
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### TEST SETUP

All RF parameters measured on 37x80mm evaluation board.  
Antenna placement on side center position of PCB long edge.  
Shunt 1.2pF capacitor for matching.





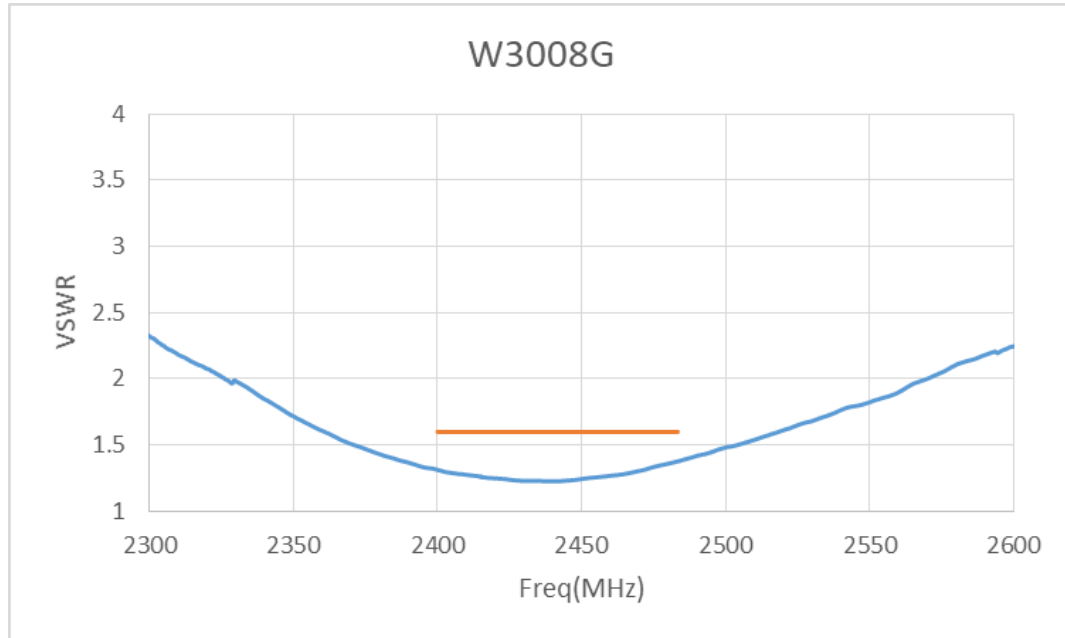
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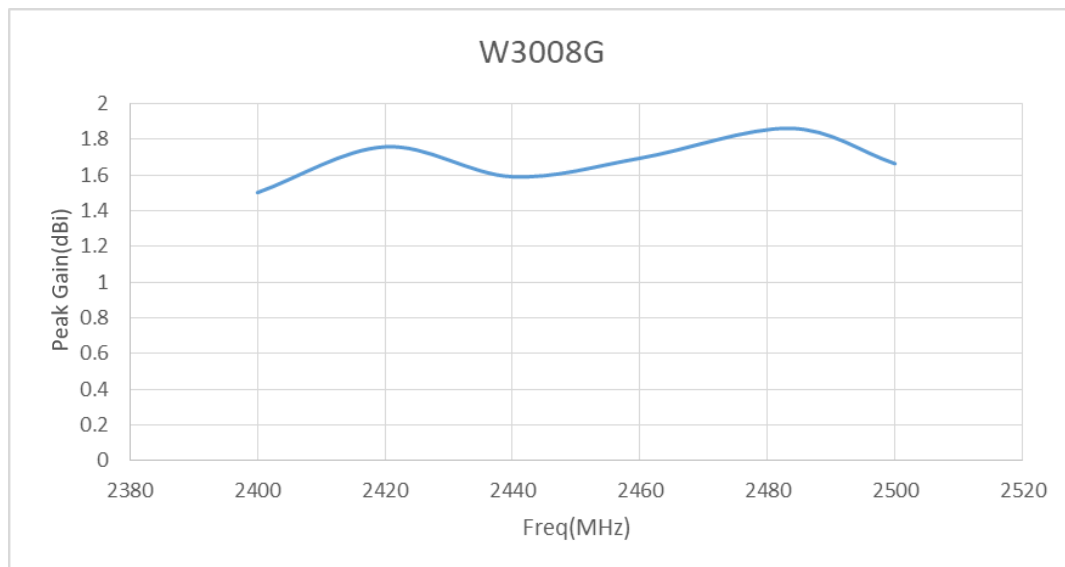
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**CHARTS**

**VSWR**



**Peak Gain**



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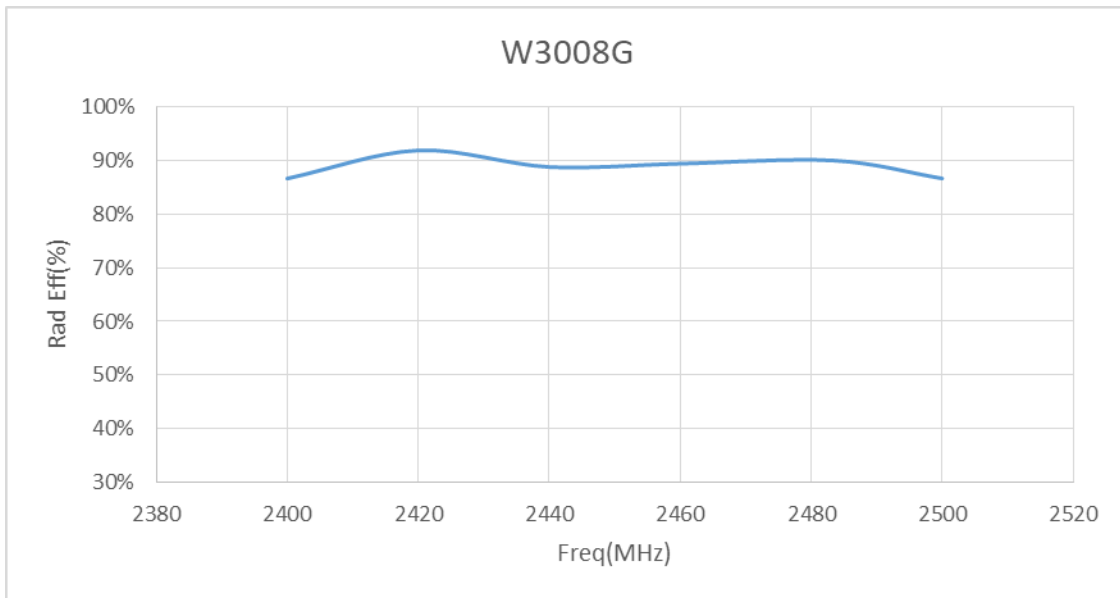
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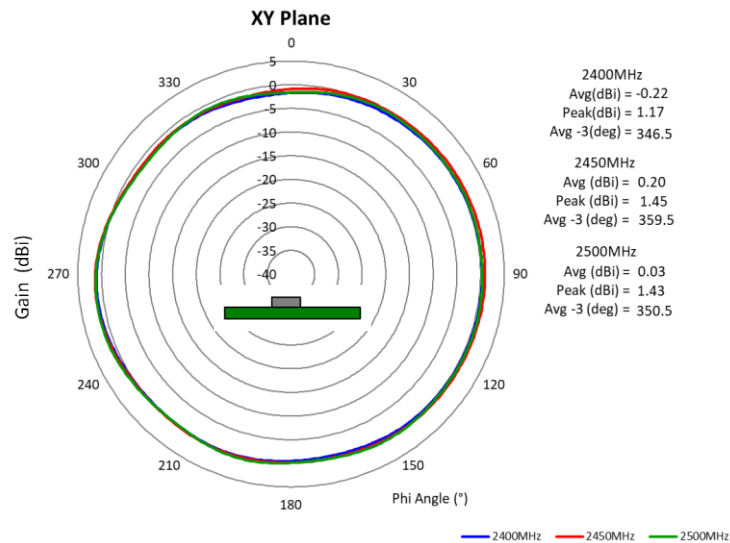
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**CHARTS**

**Radiation Efficiency**



**Radiation pattern X-Y plane**



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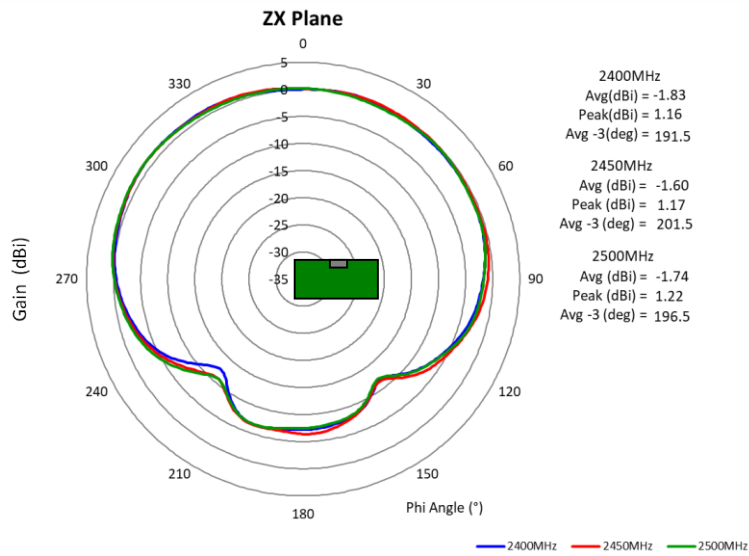
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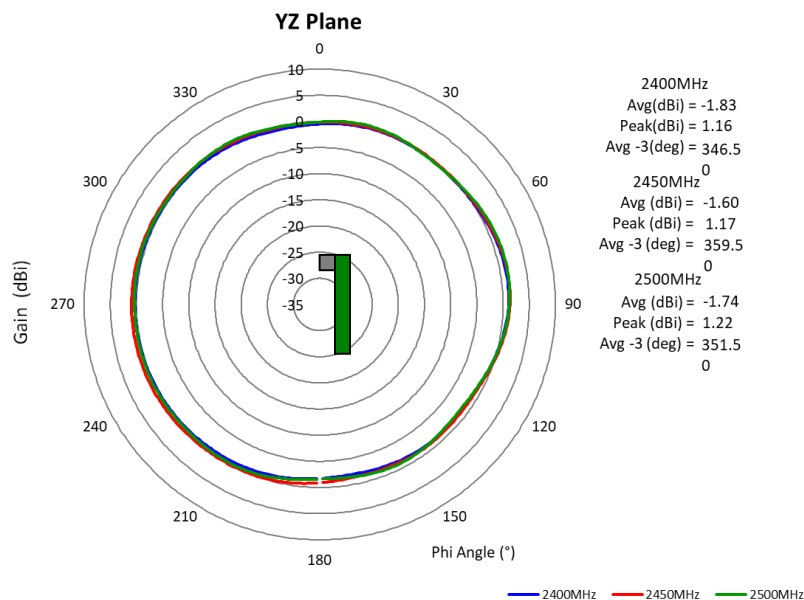
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**CHARTS**

**Radiation pattern Z-X plane**



**Radiation pattern Y-Z plane**



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**Recommendation for reflow soldering process**

Printing stencil thickness 0,15 - 0,25 mm is recommended for the solder paste. The maximum soldering temperature should not exceed 260°C. The temperature profile recommendations for reflow soldering process is presented in the Figures 1 and 2. The reflow profile

presented in figure 1 describes minimum reflow temperatures. The reflow profile presented in figure 2 describes maximum reflow temperatures. located at the center of the coverage area.

	Method of heat transfer	Controlled hot air convection
1	Average temperature gradient in preheating	2.5 °C/s
2	Soak time	2-3 minutes
3	Max temperature gradient in reflow	3 °C/s
4	Time above 217 °C	Max 30 sec
5	Peak temperature in reflow	230 °C for 10 seconds
6	Temperature gradient in cooling	Max -5 °C/s

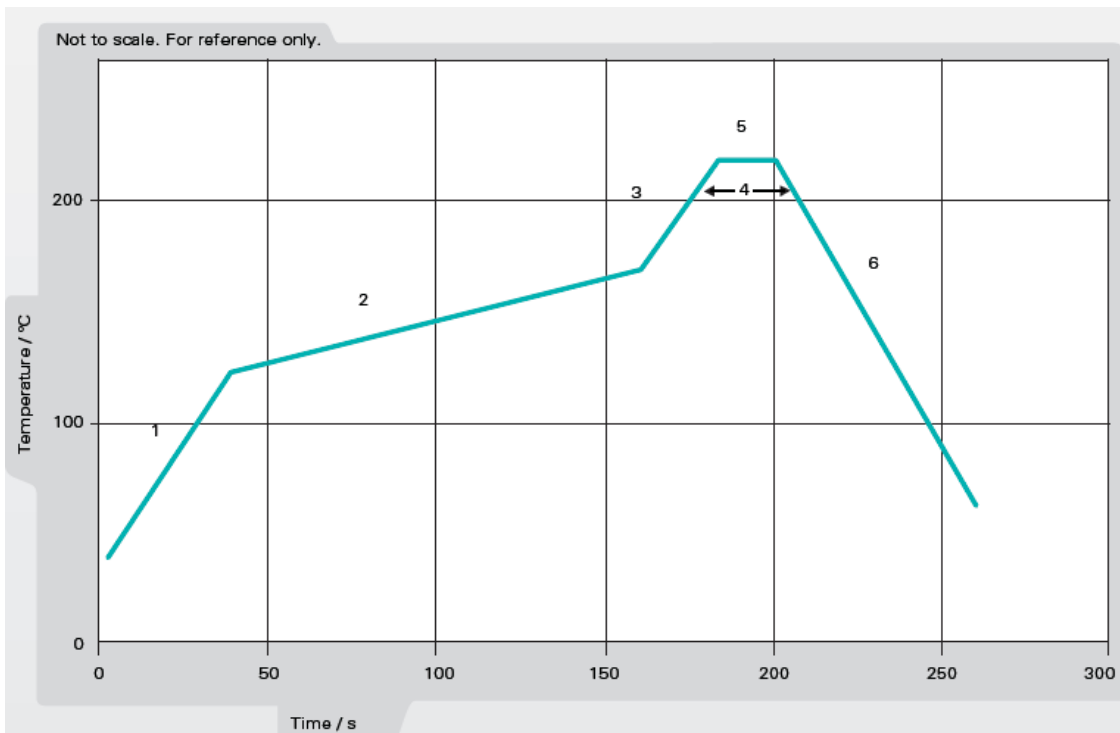


Figure 1. Minimum temperature profile recommendation for reflow soldering process

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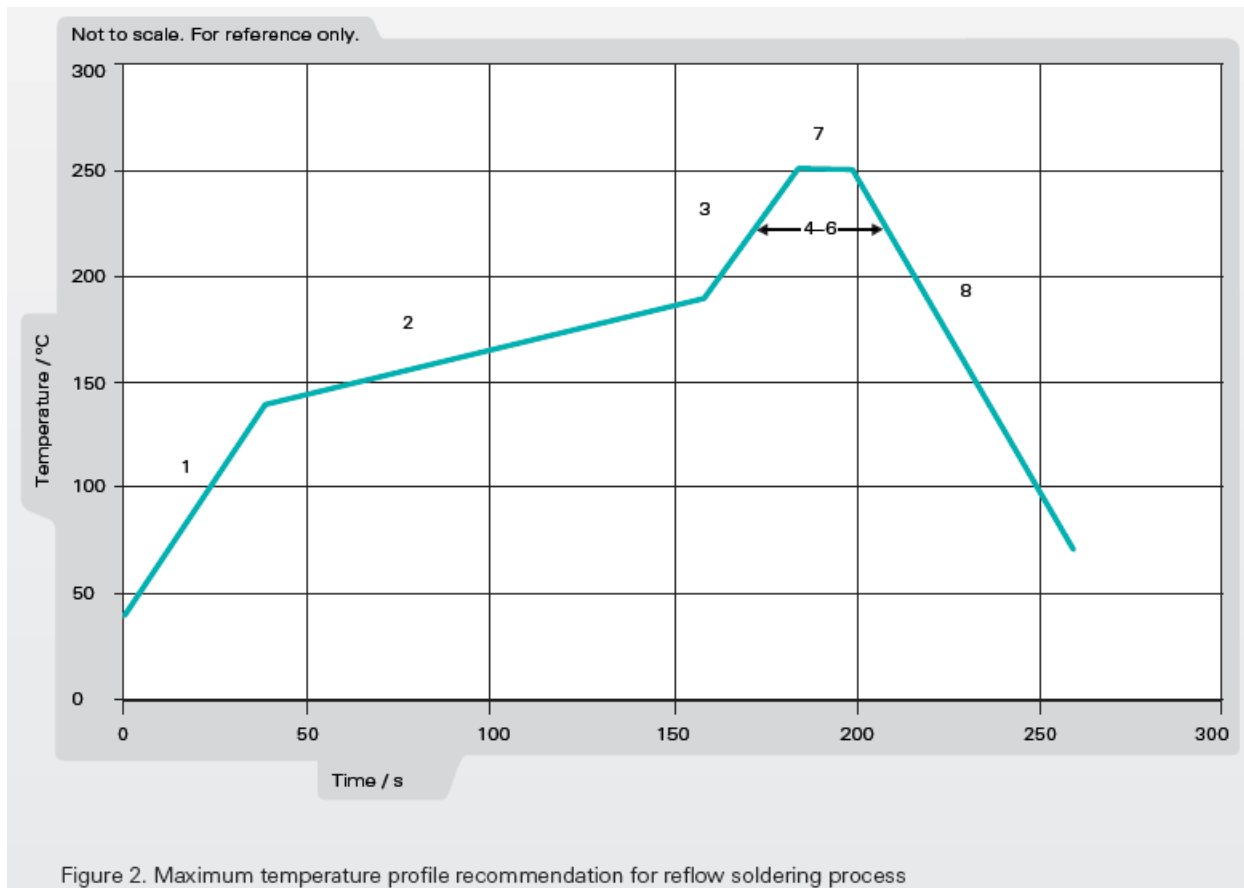
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**Recommendation for reflow soldering process**

	Method of heat transfer	Controlled hot air convection
1	Average temperature gradient in preheating	2.5 °C/s
2	Soak time	2-3 minutes
3	Max temperature gradient in reflow	3 °C/s
4	Time above 217 °C	Max 60 sec
5	Time above 230 °C	Max 50 sec
6	Time above 250 °C	Max 10 sec
7	Peak temperature in reflow	260 °C for 5 seconds
8	Temperature gradient in cooling	Max -5 °C/s



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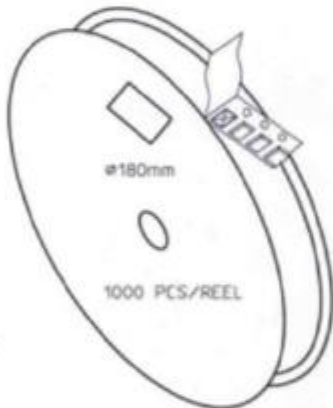
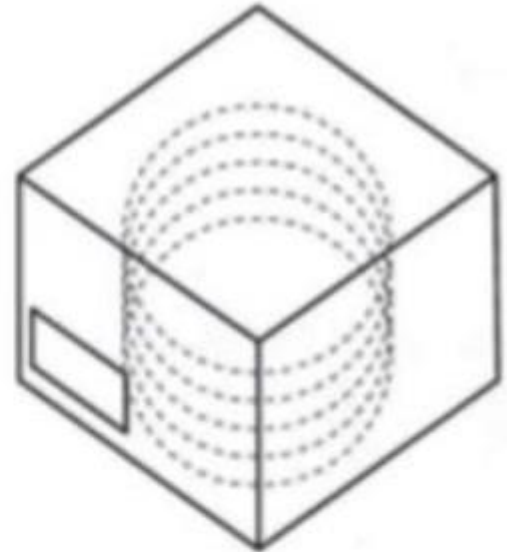
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**PACKAGING-1**

- 3000pcs antennas per 7" reel
- 5pcs 7" reel per inner package box
- 2pcs inner box per out box
- Total 30000pcs antenna per out box
- Out box size: 390mmx215mmx165mm



<b>NOT MOISTURE SENSITIVE</b>	<b>LEVEL</b> <b>1</b>
<p>These Devices do not require special storage conditions provided:</p> <ol style="list-style-type: none"> <li>1. They are maintained at conditions equal to or less than 30°C and 85% RH.</li> <li>2. They are solder reflowed at a peak body temperature which does not exceed 260°C.</li> </ol> <p>Note: Level 1 and body temperature defined by IPC/JEDEC J-STD-020</p>	

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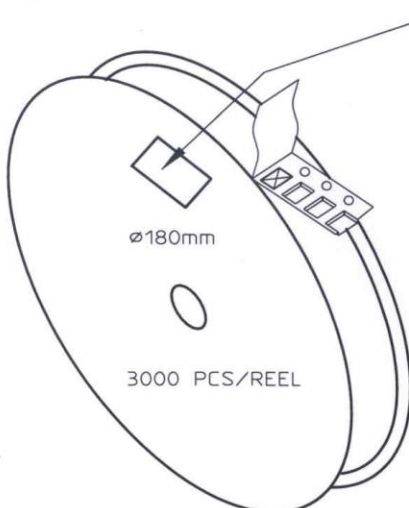
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**PACKAGING-2**

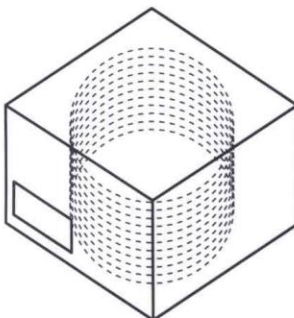


REEL LABEL INFORMATION:  
 - TRACEABILITY  
 - QUANTITY  
 - PRODUCT CODE


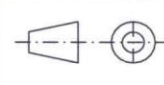
CARRIER TAPE H85-00125  
 width=8,00 depth=1,22  
 COVER TAPE H85-00126  
 width=5,60

LENGTH OF TAPE:  
 - Leader section: min 350 mm before component section  
 - Trailer section: min 40 mm after component section.

Empty part cavities at leader and trailer section of the tape must be sealed with top cover tape.



BOX H85-00128 (182x182x132)	1 pcs
- LABEL	1 pcs/BOX
REEL H85-00127 (D180, W12)	10 pcs
- REEL LABEL	1 pcs/REEL

MATERIAL				
HANDLINGS				
		RATIO	DRWN 090507 PeHa H	
			DGNER	G
			CHKD	F
			APPRD	E
PRODUCT H90-OY805		APPRD BY	D	
DENOMINATION PACKING FORM			C	
			B	
			A	
		VERSION	MOD/DATE/NAME	

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