WiFi 6E Chip Antenna

ACR1004A

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10.0 x 4.0 x 1.5 mm
RoHS/RoHS II Compliant
MSL Level = N/A

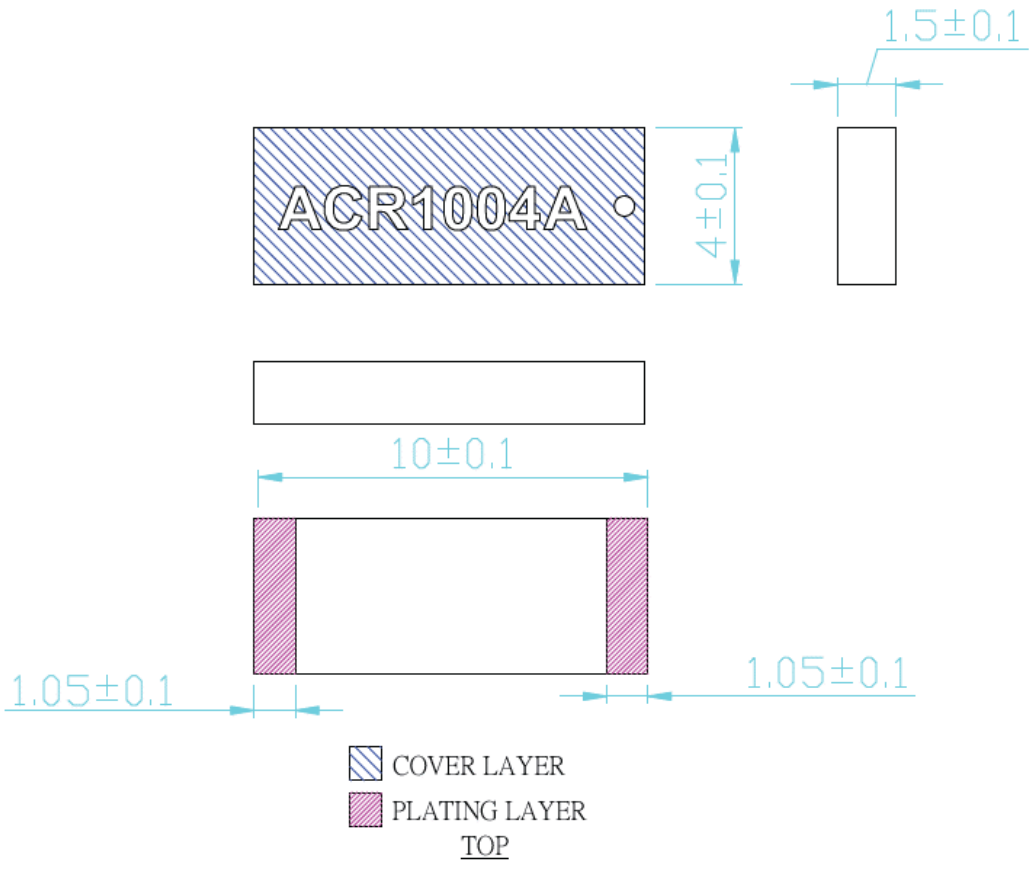
Features

- Compact
- Low Profile
- LTCC Chip Antenna
- High Peak Gain of 4 dBi
- Optimal Efficiency
- SMD Component

Applications

- IoT
- M2M
- Medical devices
- Smart Wearables
- Consumer Electronics
- VR/AR solutions
- Home / Building Automation

Product Dimensions



Unit : mm

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Electrical Specification

Parameter	Specification			Unit
	Min	Typ	Max	
Operating Frequency	2400		2500	MHz
	5150		7125	
Peak Gain			4.02	dBi
Average Gain			-2.71	dBi
Efficiency	53		79	%
Impedance	50			Ω
Polarization	Linear			

Note : The chip antenna performance is evaluated as per the evaluation board dimension of 100 x 50 mm. Frequency detuning may occur based on the application materials and environment which can be compensated using a suitable matching circuit.

Mechanical Specification

Parameter	Specification
Antenna Dimension	10.0 x 4.0 x 1.5 mm
Evaluation Board Dimension	100.0 x 50.0 x 0.8 mm
Mounting Type	Surface Mount

Environmental Specification

Parameter	Specification
Operating Temperature	-30ºC to +85ºC
Storage Temperature	-40ºC to +85ºC
RoHS	Compliant
Termination	Ag
Pb-Free	Yes
Relative Humidity	0-95 %

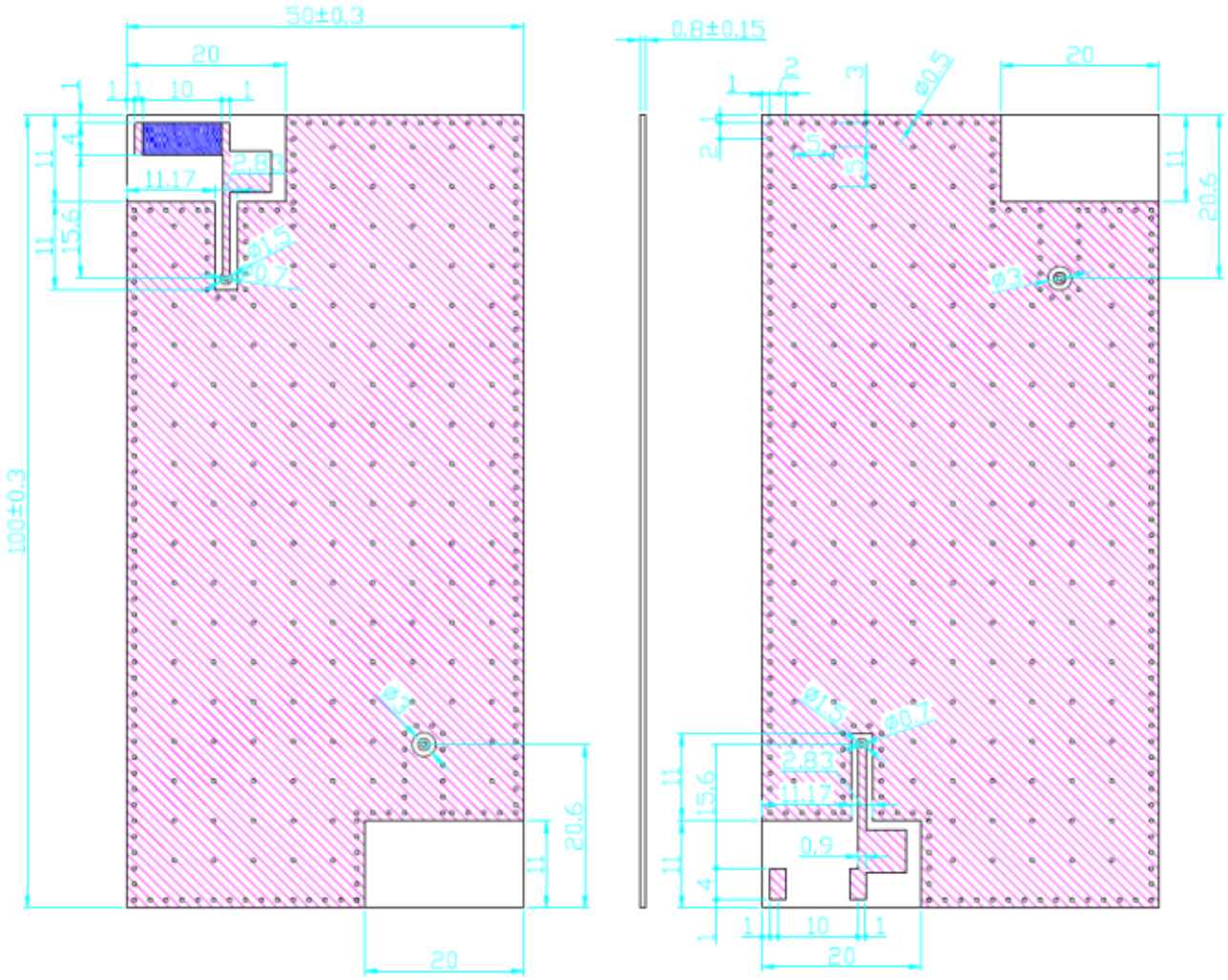
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Evaluation Board Dimensions



Unit: mm

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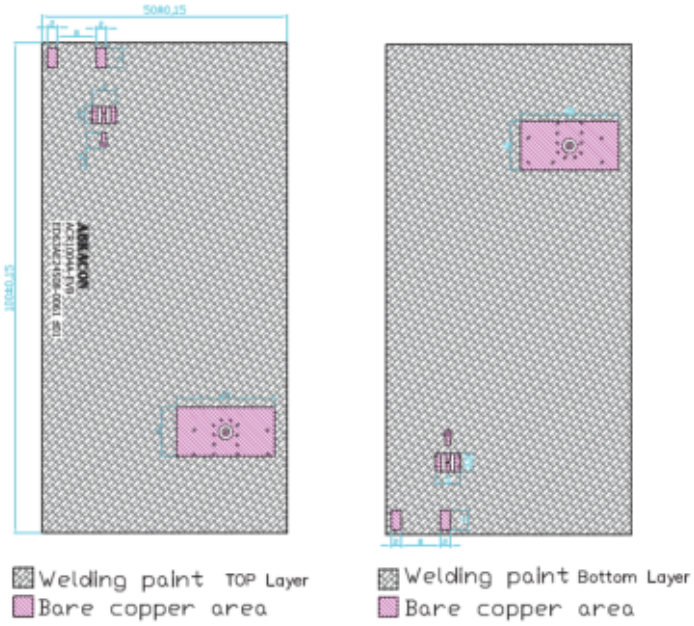
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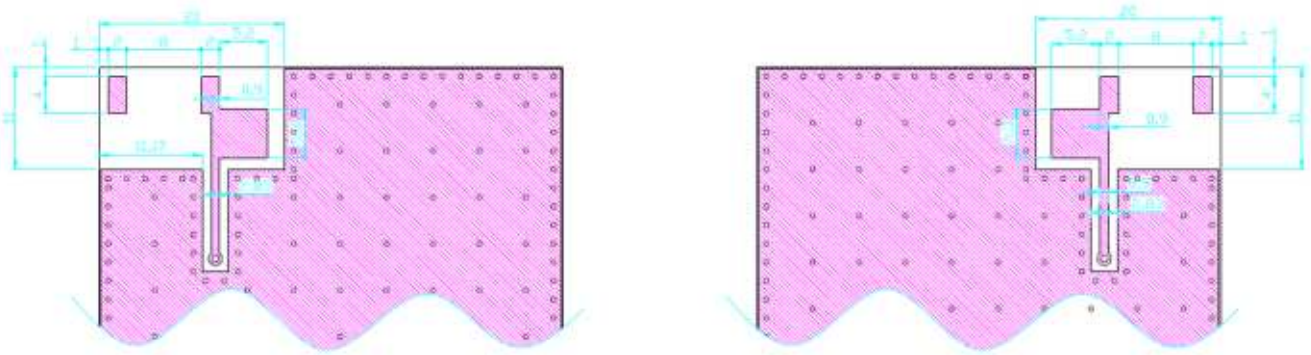
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Evaluation Board Marking



Layout Dimensions



Unit: mm

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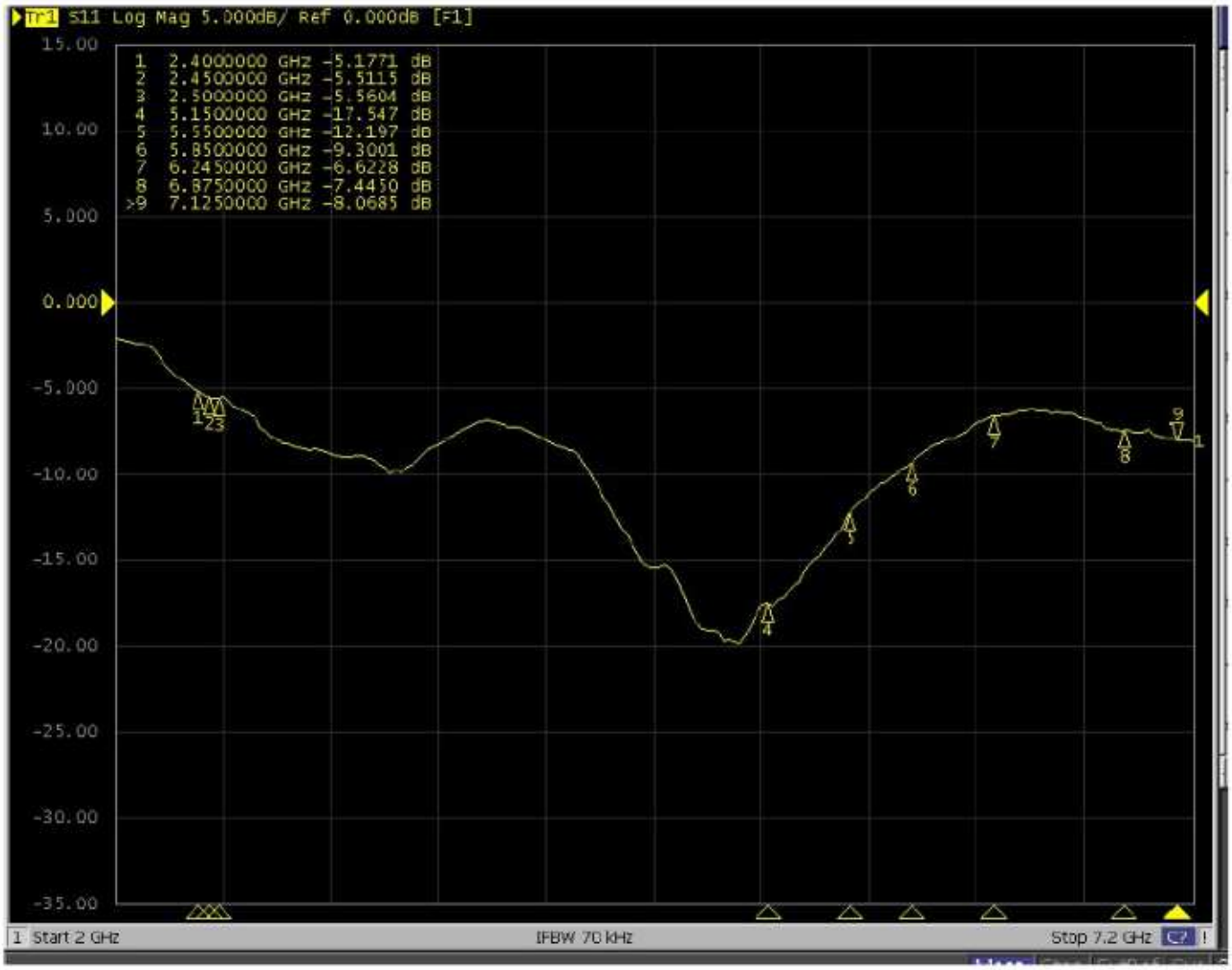
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Reflection Characteristics – Return Loss



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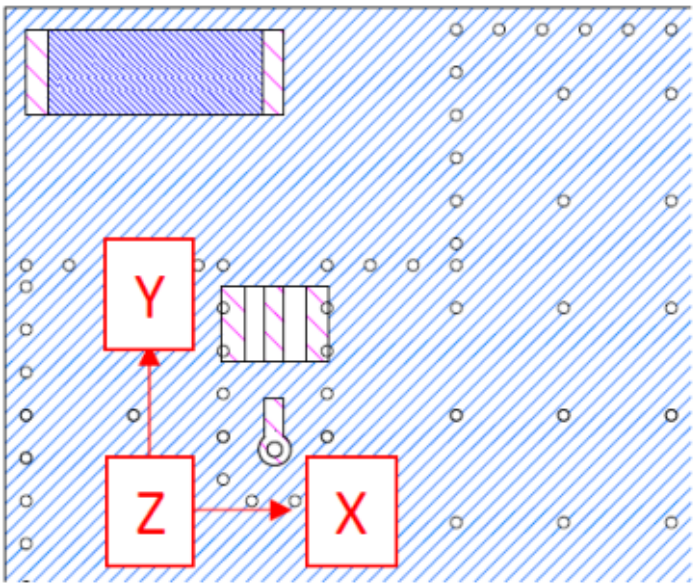
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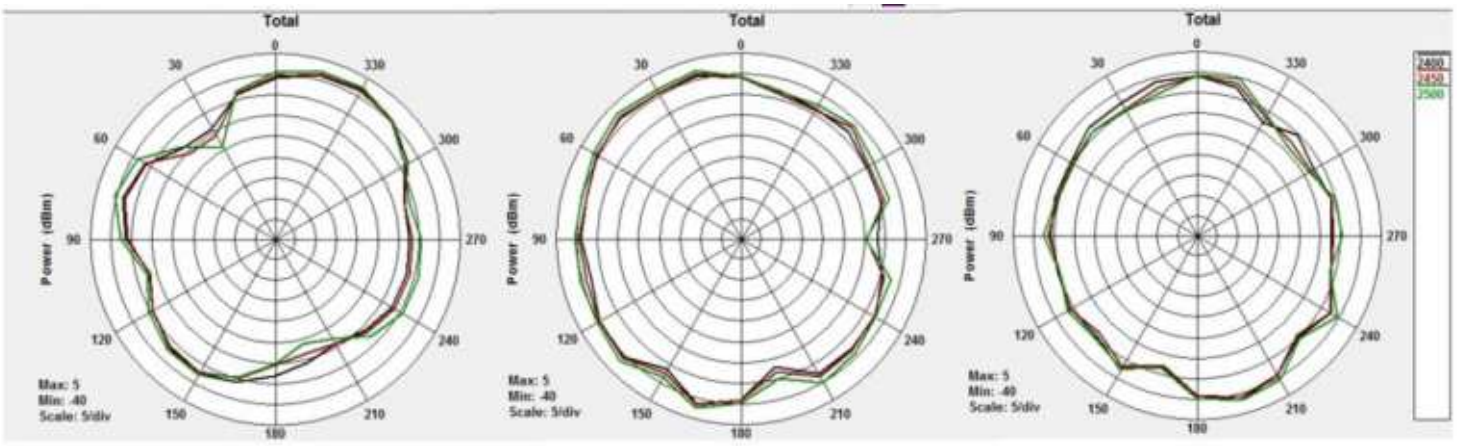
10.0 x 4.0 x 1.5 mm
RoHS/RoHS II Compliant
MSL Level = N/A

Radiation Characteristics



2D Pattern

2450MHz



XY-Plane XZ-Plane YZ-Plane

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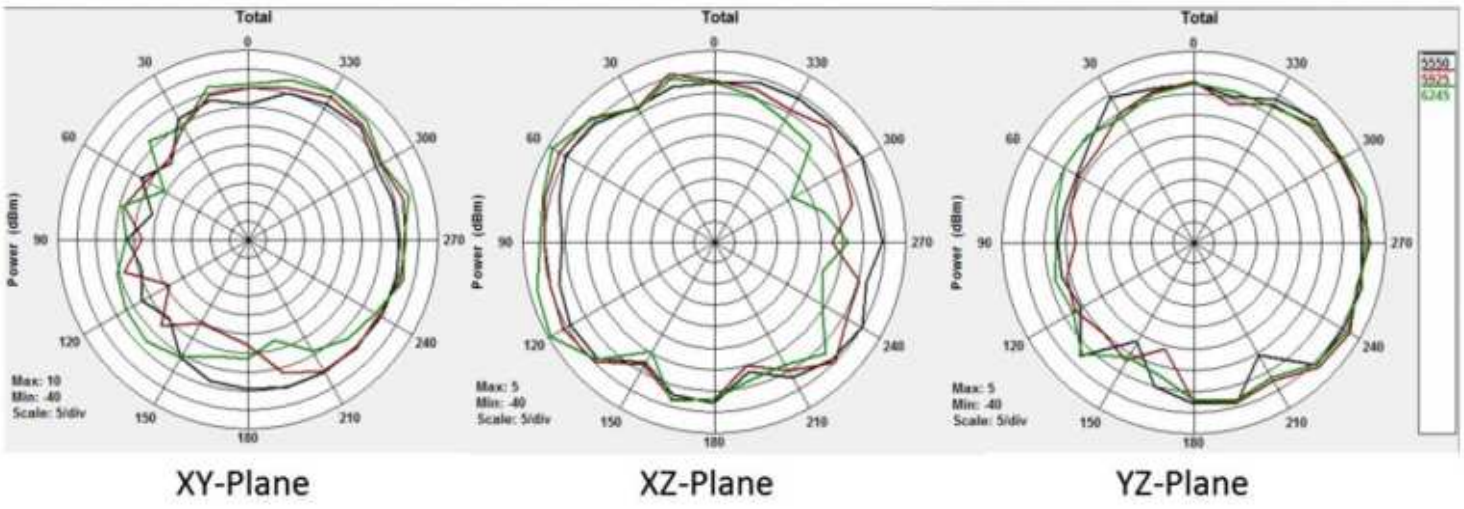
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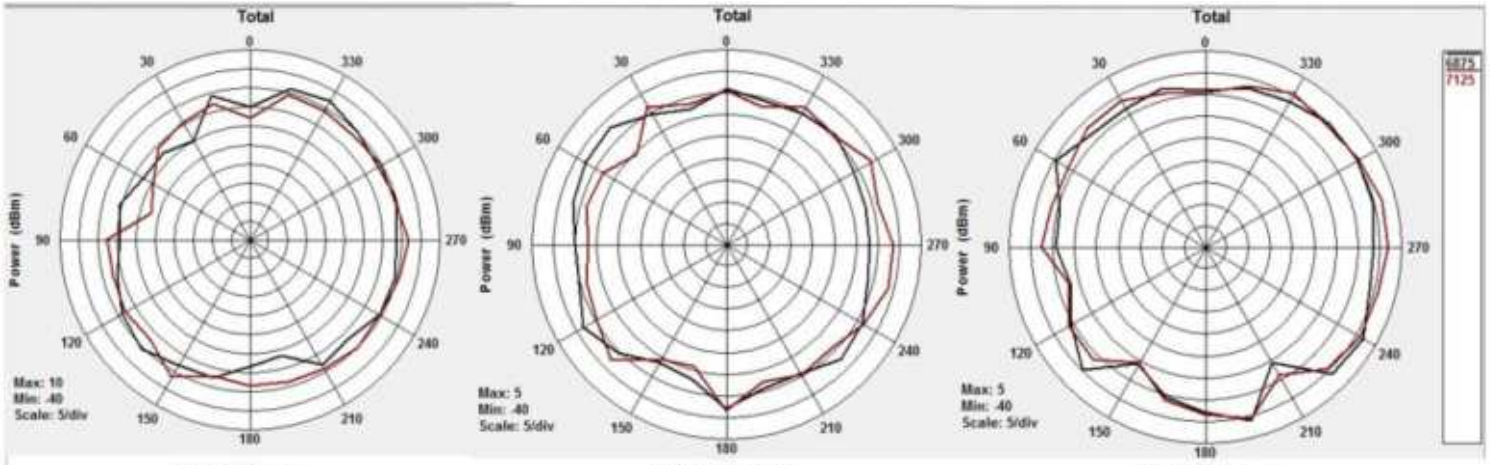
10.0 x 4.0 x 1.5 mm
RoHS/RoHS II Compliant
MSL Level = N/A

5550MHz



XY-Plane XZ-Plane YZ-Plane

6875MHz



XY-Plane XZ-Plane YZ-Plane

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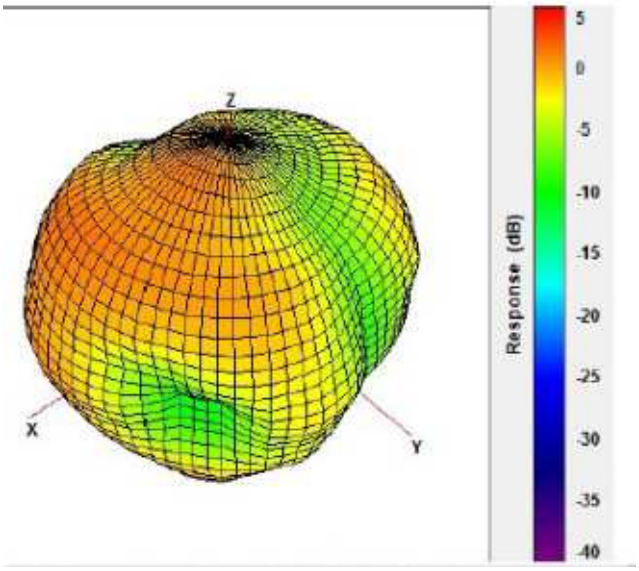
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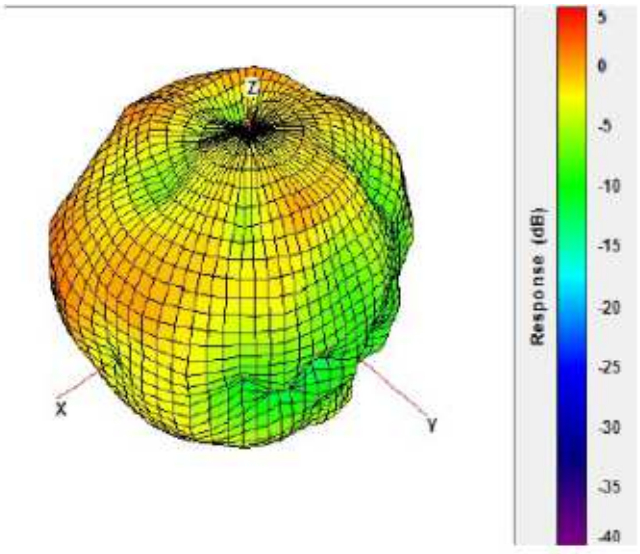
10.0 x 4.0 x 1.5 mm
RoHS/RoHS II Compliant
MSL Level = N/A

3D pattern

2400 MHz



5550 MHz



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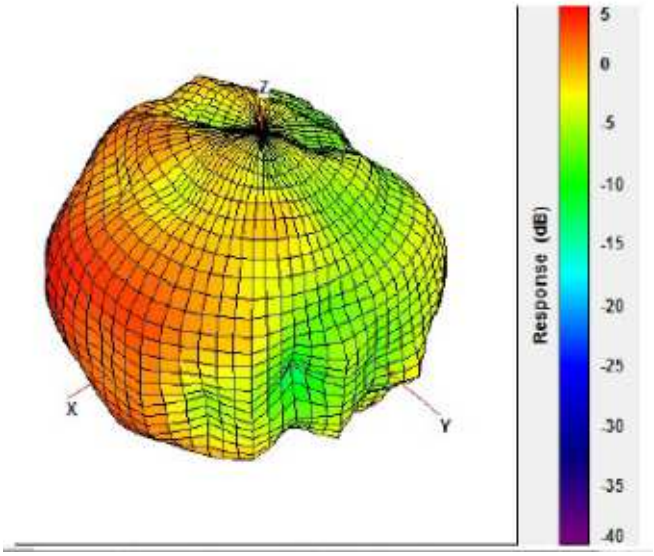
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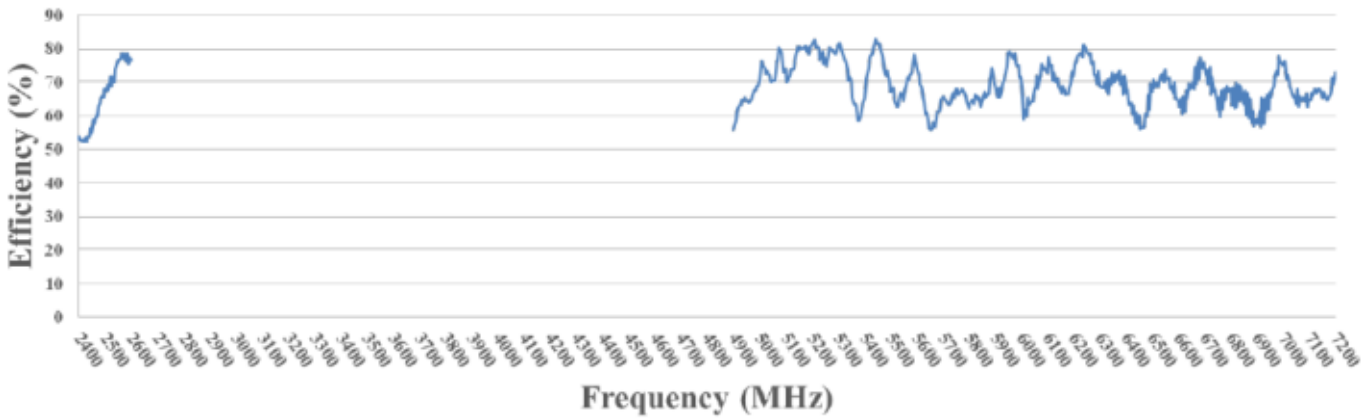
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10.0 x 4.0 x 1.5 mm
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6875 MHz



Efficiency



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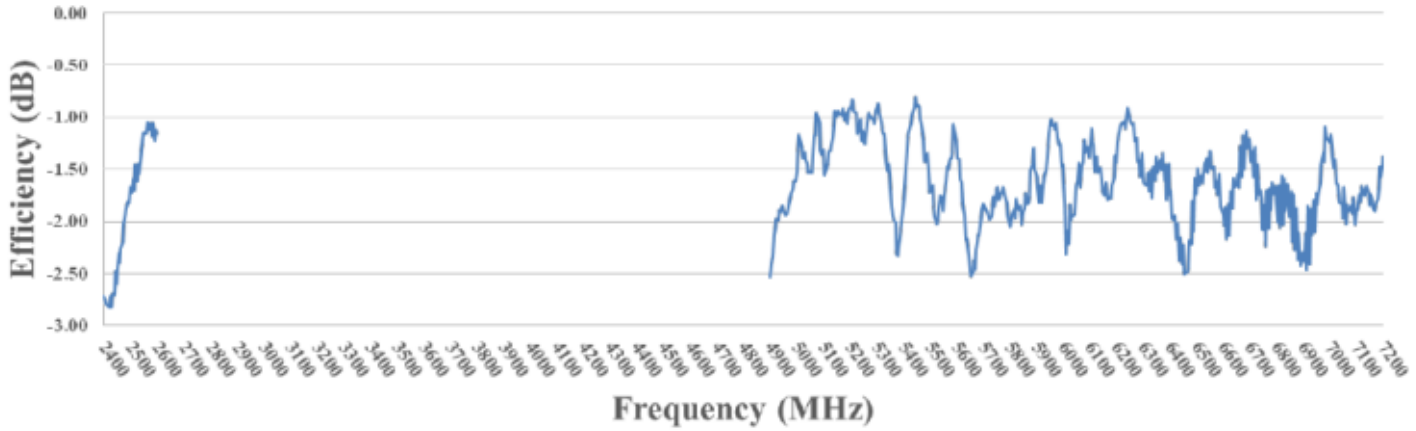
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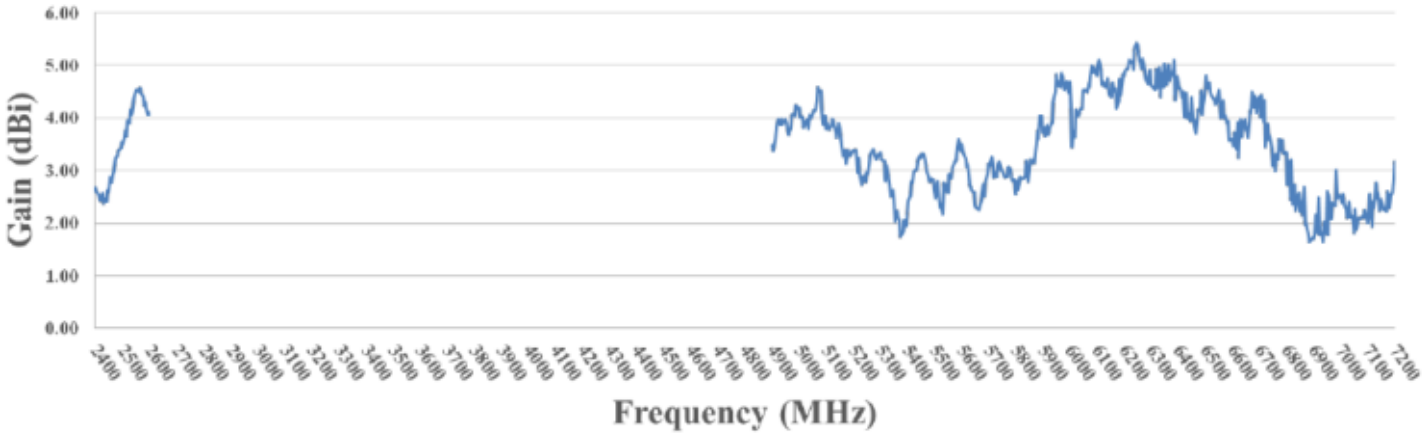
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Average Gain



Peak Gain



Frequency (MHz)	2400	2450	2500	5150	5550	5925	6425	6875	7125
Efficiency (%)	53.55	54.98	67.95	79.58	64.54	68.34	60.61	64.98	67.59
Average Gain (dB)	-2.71	-2.60	-1.68	-0.99	-1.90	-1.65	-2.17	-1.87	-1.70
Peak Gain (dBi)	2.66	2.59	3.54	3.78	2.57	3.74	4.02	2.00	2.29

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Reliability Test Report

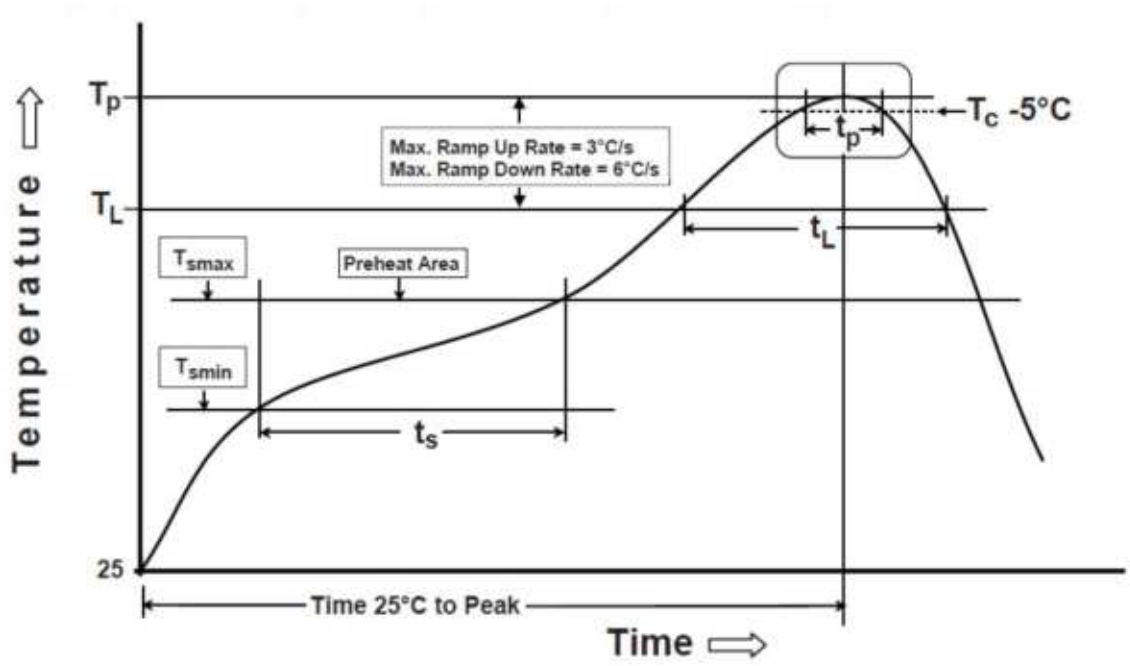
Test Item	Test Condition / Method	Specification
Humidity Test	The device is subjected to +85ºC and 90%~95% for 96h~98h, then dry out at normal temperature	After the test, examine its appearance and functions
High Temperature Exposure	Device is subjected to 85ºC temperature for 16h, and measured after 24h leaving in 25ºC±5ºC and less than 65% relative humidity.	After the test, examine its appearance and functions
Low Temperature	Device is subjected to -40ºC temperature for 16h, and measured after 24h leaving in 25ºC±5ºC and less than 65% relative humidity.	After the test, examine its appearance and functions
Sinusoidal Vibration Test	Frequency：5Hz~200Hz~5Hz Total amplitude：2.0 mm Test times：4hrs (Two hrs each in X and Y directions) and 4hrs in Z direction.	After the test, examine its appearance and functions
Vibration test in Packaged condition	Frequency：15Hz~60Hz~15Hz Total amplitude：2.0 mm Test times：6hrs (Two hrs each in X,Y and Z direction.)	After the test, examine its appearance and functions
Solder Ability	Soaked in solder bath at 270ºC±5ºC for 10s±0.5s and then left for 1hr or more at 25±5ºC	After the test, examine its appearance and functions
Adhesion test	Device is subjected to be soldered on test PCB. Then apply 5N of force for 10s±1s in the direction parallel to the substrate	After the test, examine its appearance and functions
Free fall test in packaged condition	Drop the object, to a concrete surface from the height of 90 cm on one corner, 3 edges and six faces once each i.e 10 times in total	After the test, examine its appearance and functions

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Recommended Soldering Profile



Phase	Profile features	Pb-Free Assembly (SnAgCu)
Preheat	-Temperature Min(Tsmin) -Temperature Max(Tsmax) -Time(ts) form (Tsmin to Tsmax)	150℃ 200℃ 60-120 seconds
Ramp-up	Avg. Ramp-up Rate (Tsmax to TP)	3℃/second(max)
Reflow	-Temperature(TL) -Total Time above TL (t L)	217℃ 30-100 seconds
Peak	-Temperature(TP) -Time(tp)	260℃ 20-30 second
Ramp-down	Rate	6℃ / second max.
Time from 25℃ to Peak Temperature		8 minutes max.
Composition of solder paste		96.5Sn/3Ag/0.5Cu
Solder Paste Model		SHENMAO PF606-P26

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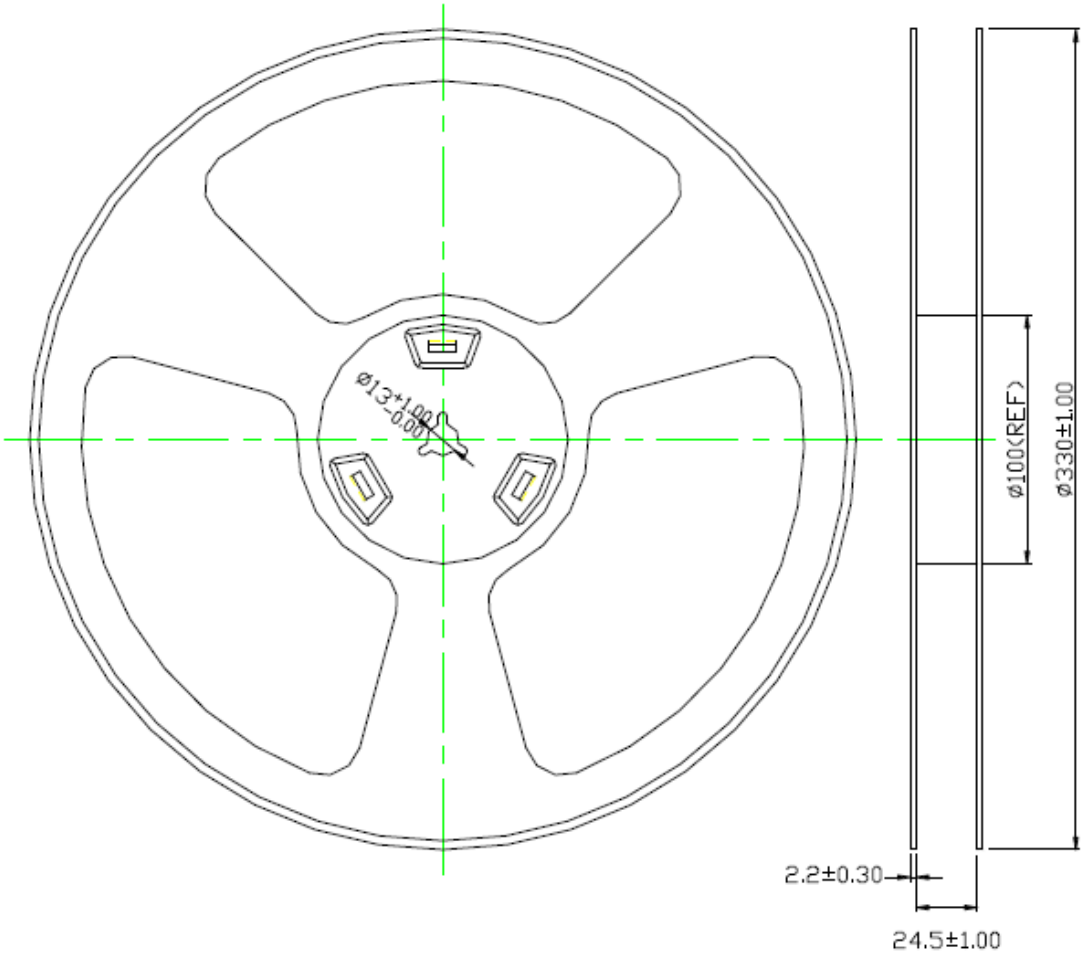
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Packaging

Packaging Type : Tape & Reel
Number of Pieces per Reel : 2000

Reel Specifications



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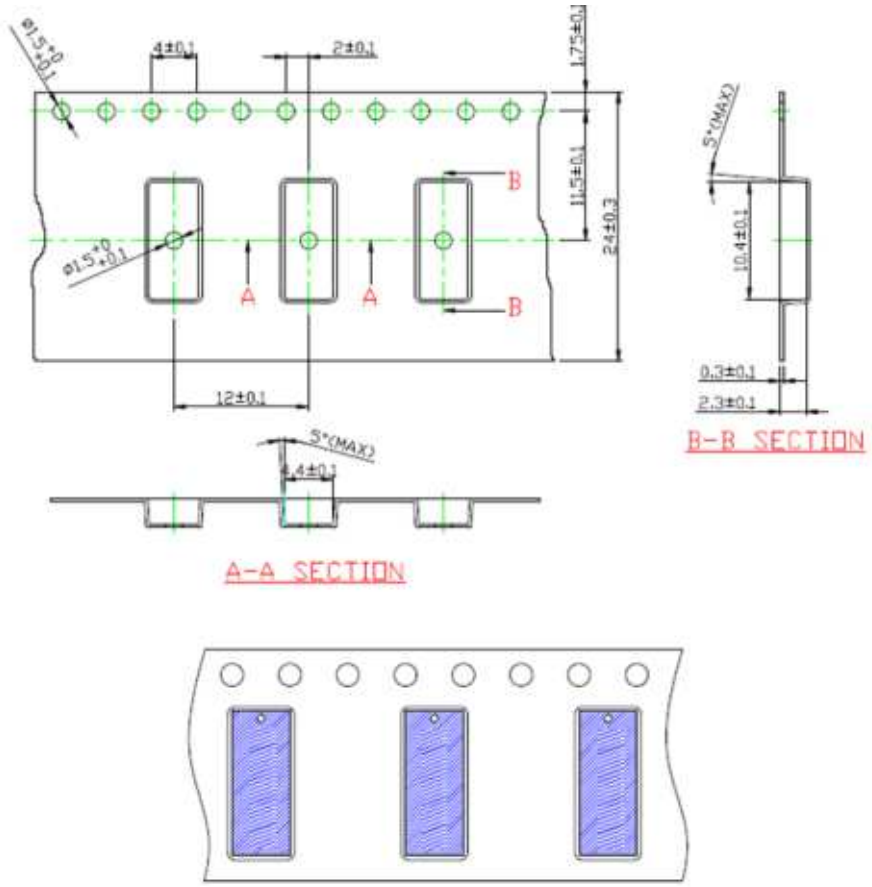
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Tape Specifications



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