

6.24 ~ 8.50 GHz UWB - Chip Antenna



ACR0301U

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Check Inventory



3.2 x 1.6 x 1.1 mm
RoHS/RoHS II Compliant
MSL Level = 1

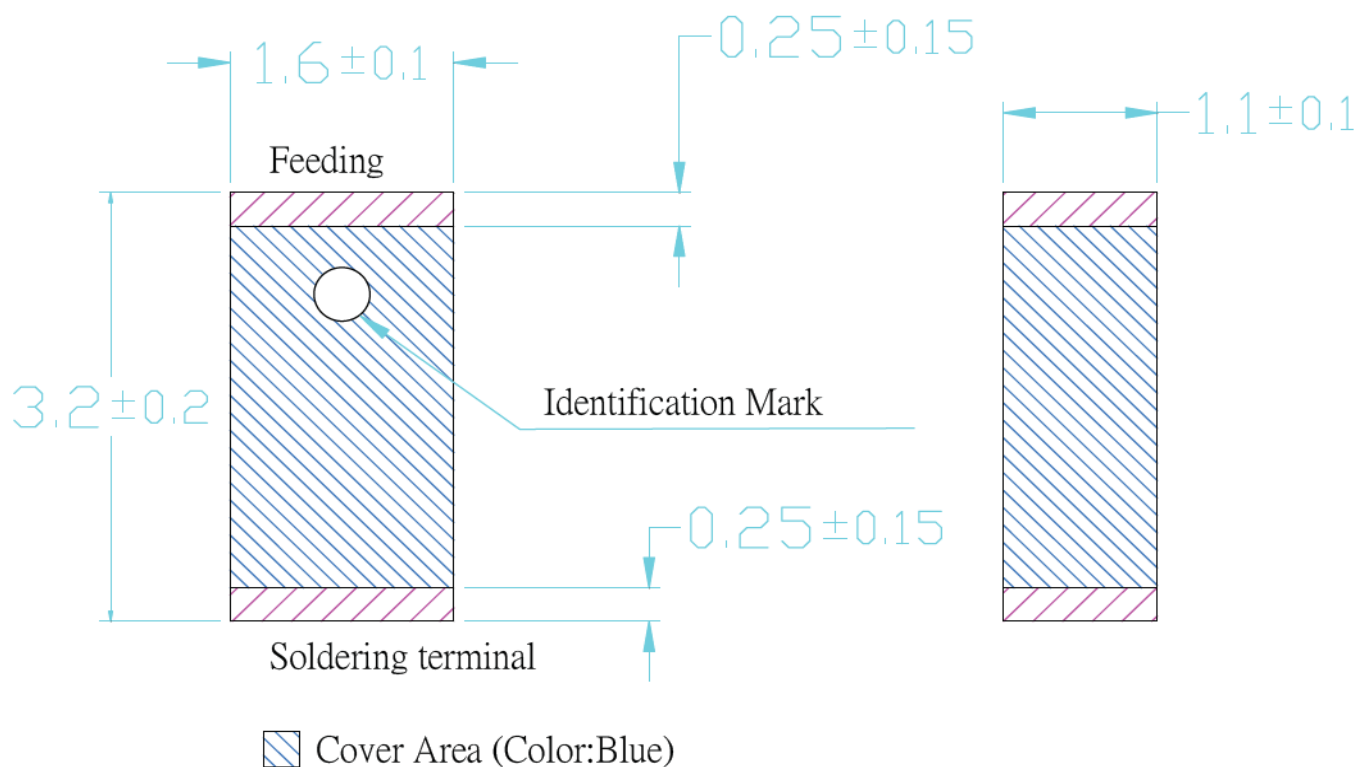
Features

- Compact size
- UWB Bands in 6.24 GHz ~ 8.5 GHz
- Manufactured using LTCC technology
- High Gain of 4.5 dBi
- Omni-directional Pattern
- High Efficiency of 70 ~ 80 %
- Surface mount component

Applications

- UWB Applications
- IoT
- M2M
- Real time tracking
- Location based services
- Personal Area Networks (PAN)
- Short range, high speed data links for Medical and Commercial equipment

Product Dimensions



Unit : mm



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Electrical Specification

Parameter		Specification			Unit
		Min	Typ	Max	
Operating Frequency		6.24		8.5	GHz
Center Frequency			7.37		
VSWR				2.0	
Polarization		Linear			
Peak Gain				4.5	dBi
Efficiency			70 ~ 80		%
Impedance			50		Ω
Azimuthal Beamwidth		Omni-directional			
Input Power	Continuous			3	W
	Up to 5 minutes			5	

Note: All test measurements were conducted with the antenna on a 42.6x22.6 mm Evaluation board. Please note that the performance is dependent on the ground plane dimensions, matching network and application environment.

Mechanical Specification

Parameter	Specification
Antenna Dimension	3.2 x 1.6 x 1.1 mm
Antenna Ground Clearance Area	8 x 7.8 mm
Evaluation board Dimension	42.6 x 22.6 x 0.8 mm
Manufacturing Technology	Multilayer LTCC Chip
Mounting Type	Surface Mount

Environmental Specification

Parameter	Specification
Operating Temperature	-40°C to +85°C
Storage Temperature	+5°C to +40°C
Relative Humidity	30 ~ 70 %
Pb-free	Yes



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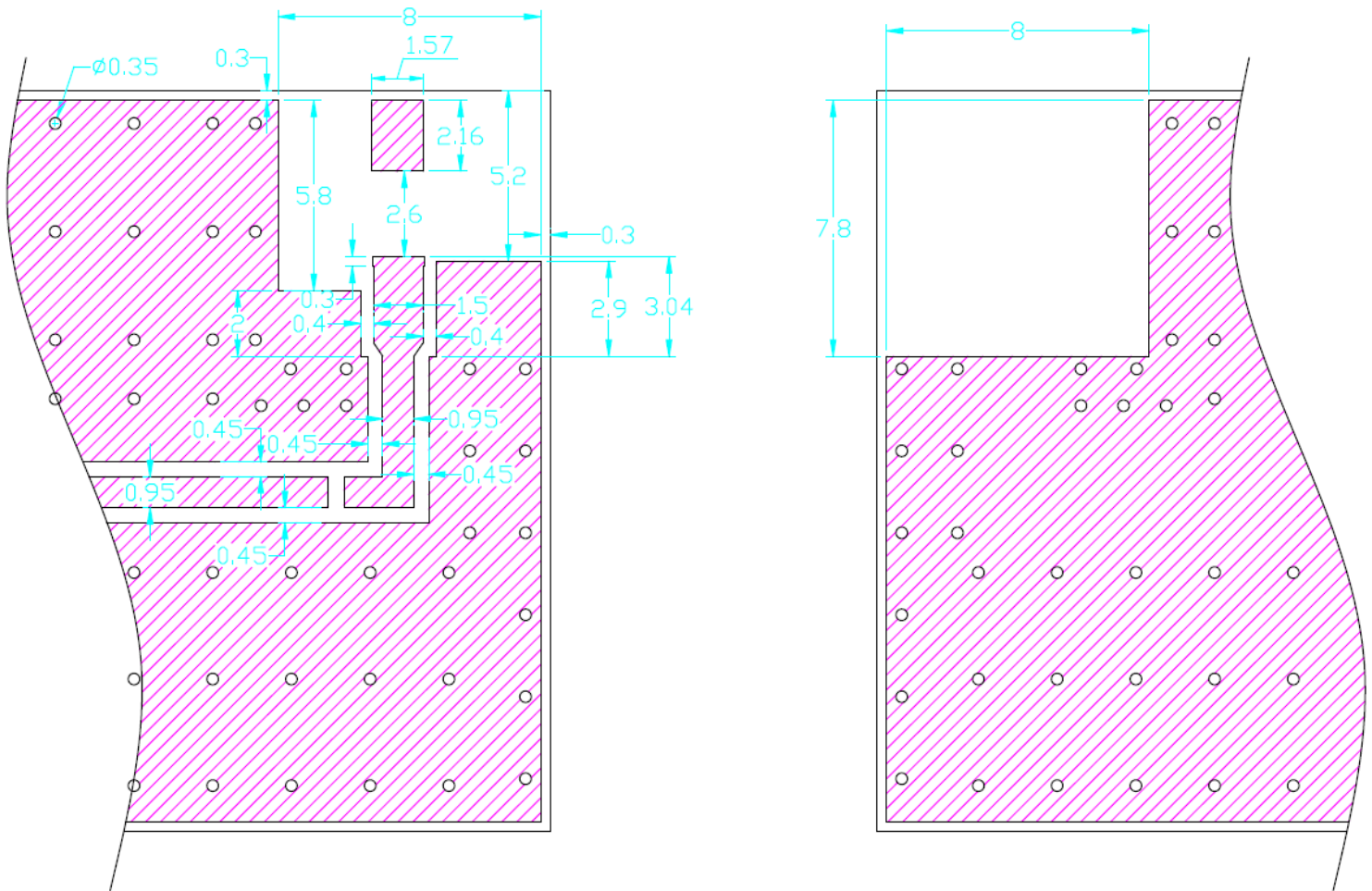


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Recommended Layout Dimensions



Unit : mm



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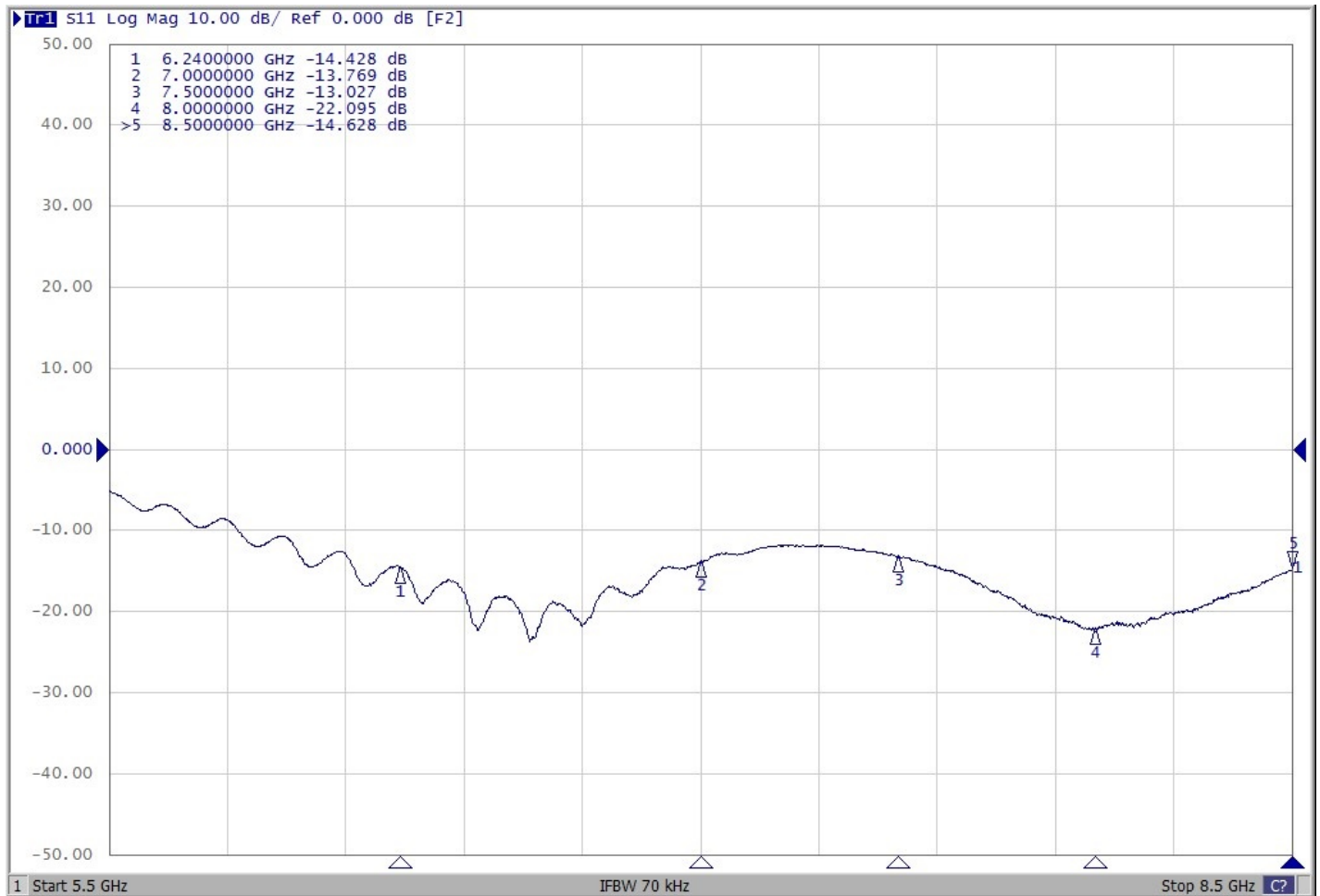


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Reflection Characteristics - Return Loss



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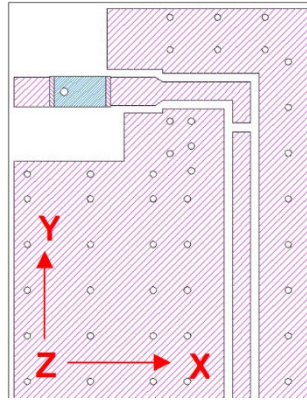


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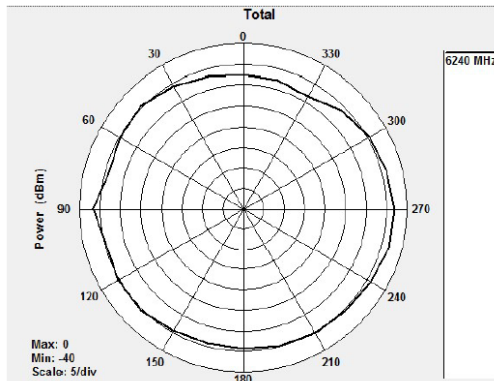


3.2 x 1.6 x 1.1 mm
RoHS/RoHS II Compliant
MSL Level = 1

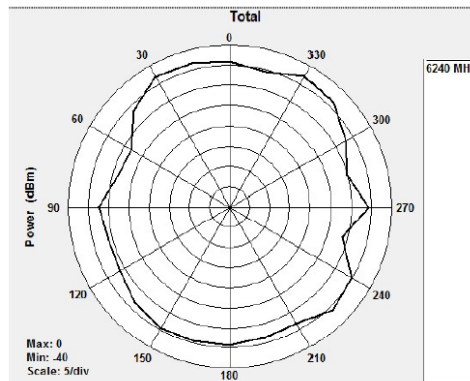
Radiation Characteristics – 2D Pattern



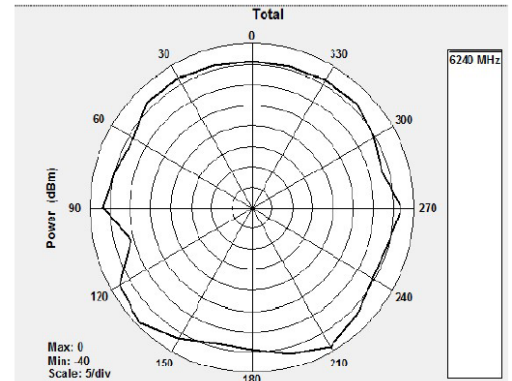
6240 MHz



XY-Plane

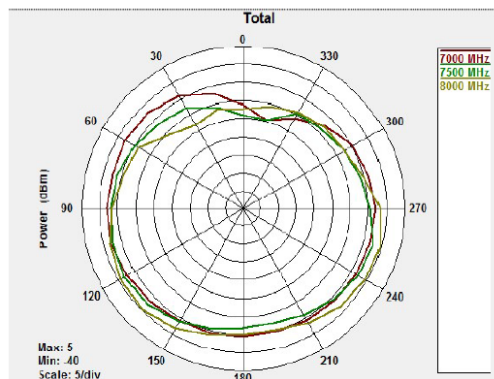


XZ-Plane

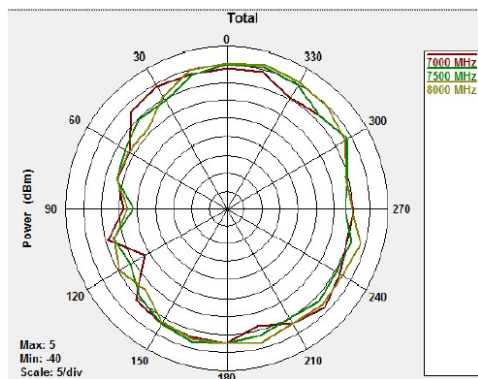


YZ-Plane

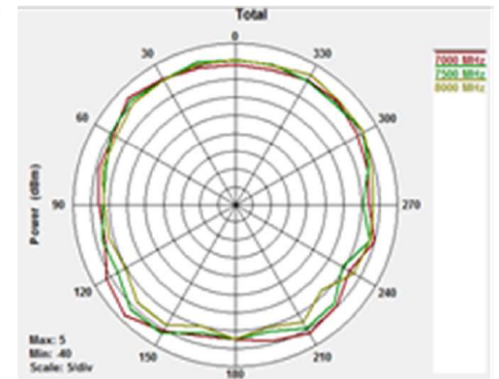
7000/7500/8000 MHz



XY-Plane



XZ-Plane



YZ-Plane



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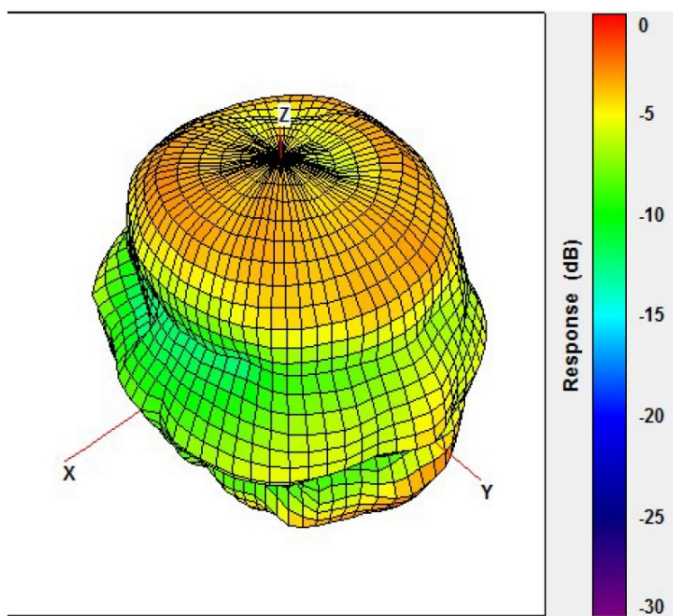


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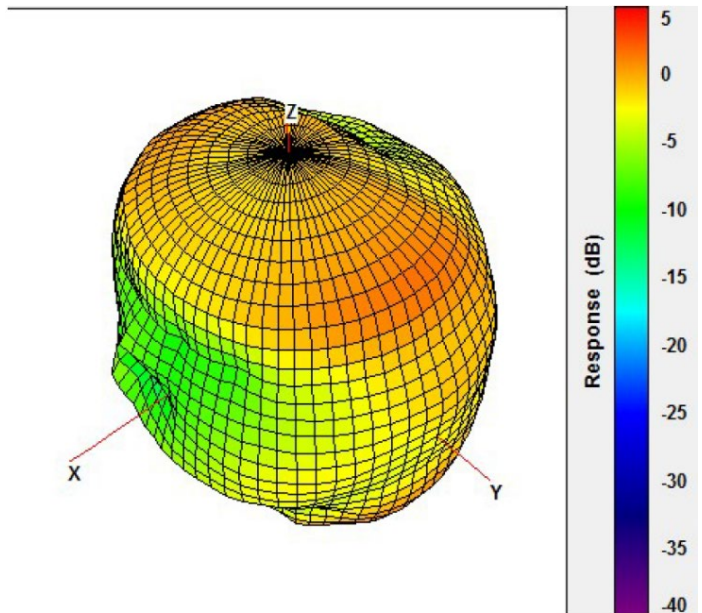


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MSL Level = 1

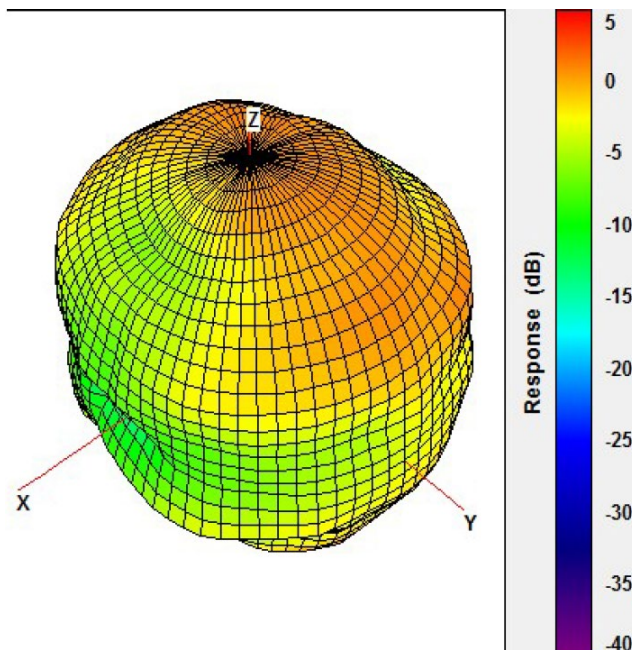
Radiation Characteristics – 3D Pattern



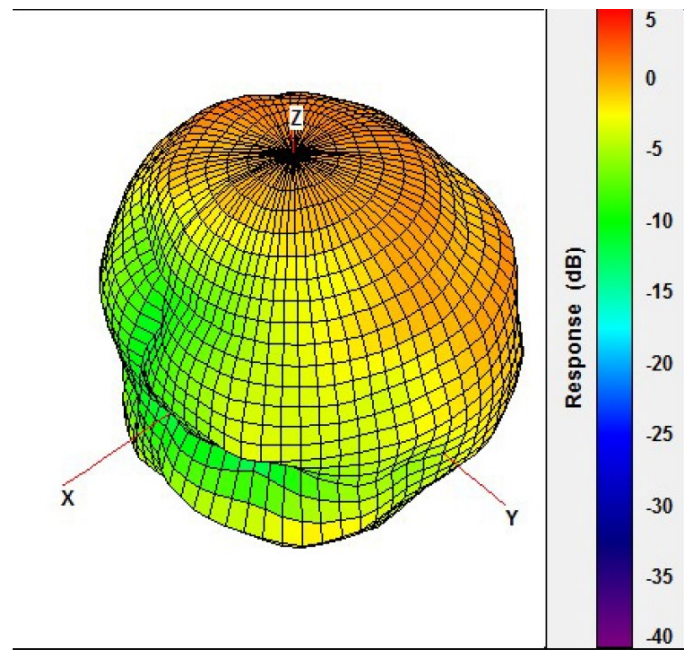
6240 MHz



7000 MHz



7500 MHz



8000 MHz



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Reliability Test

Items	Test Method	Standard
Resistance to soldering heat JIS C 0050-5.4	<ol style="list-style-type: none"> 1. Preheating temperature: 120 ~ 150 °C 2. Duration: 1 min 3. Solder Temperature: 270 ± 5 °C 4. Immersion Time: 10 ± 1 s 5. Solder: Sn3Ag0.5Cu for lead free 6. Measurement to be made after keeping at room temperature for 24 ± 2 hrs 	<ol style="list-style-type: none"> 1. Specimens shall be free of any traffic discontinuities during the test. (No mechanical damage) 2. The appearance of the product, and electrical properties to meet the requirements under operational temperature range within -40 ~ +85 °C 3. Loss of metallization on the edges of each electrode shall not exceed 25%
Solderability JIS C 0050-4.6 JESD22-B102D	<ol style="list-style-type: none"> 1. Solder bath temperature : 235 +/- 5 C 2. Immersion time : 2 ± 0.5 sec 3. Solder : Sn3Ag0.5Cu for lead-free 	At least 95% of a surface of each terminal electrode must be covered by fresh solder.
Adhesive Strength of Termination JIS C 0051- 7.4.3	<ol style="list-style-type: none"> 1. Pressurizing force : 5N (LGA terminal series) ; 5N(≤0603) ; 10N(>0603) 2. Test time : 10±1 s 	No remarkable damage or removal of the termination.
Vibration JIS C 0040	<ol style="list-style-type: none"> 1. Vibration Frequency: 10~50~10 Hz (1min) 2. Amplitude:1.5 mm 3. Sweep Direction: 6 Hrs = X(2H), Y(2H), Z(2H) 4. Examine the appearance and functions after the test. 	<ol style="list-style-type: none"> 1. Specimens shall be free of any traffic discontinuities during the test. (No mechanical damage) 2. The appearance of the product, and electrical properties to meet the requirements under operational temperature range within -40 ~ +85 °C
Drop Test JIS C 0044	<ol style="list-style-type: none"> 1. Drop the object onto a concrete surface or steel surface from a height of 75 cm. 2. Number of Times : 6 surfaces for each unit – 2 times each side. 3. Examine the appearance and functions after the test. 	
Bending test JIS C 0051- 7.4.1	<ol style="list-style-type: none"> 1. The middle part of substrate shall be pressurized by means of the pressurizing rod at a rate of about 1 mm/s per second until the deflection becomes 1mm/s and then pressure shall be maintained for 5±1 sec. 2. Measurement to be made after keeping at room temperature for 24±2 hours 	



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Temperature cycle JIS C 0025	<ol style="list-style-type: none"> 1. 30±3 minutes at -40°C±3°C 2. 10~15 minutes at room temperature 3. 30±3 minutes at +85°C±3°C 4. 10~15 minutes at room temperature 5. Number of cycles: 100 continuous cycles 6. Measurement to be made after keeping at room temperature for 24±2 hrs 	<ol style="list-style-type: none"> 1. Specimens shall be free of any traffic discontinuities during the test. (No mechanical damage) 2. The appearance of the product, and electrical properties to meet the requirements under operational temperature range within -40 ~ +85 °C
High Temperature JIS C 0021	<ol style="list-style-type: none"> 1. Temperature: 85°C±2°C 2. Time: 1000+24/-0 H 3. Examine the appearance and functions after taken out at room temperature for 24±2H. 	
Low Temperature JIS C 0020	<ol style="list-style-type: none"> 1. Temperature: -40°C±2°C 2. Time: 1000+24/-0 H 3. Examine the appearance and functions after taken out at room temperature for 24±2H. 	
Humidity (Steady conditions) JIS C 0022	<ol style="list-style-type: none"> 1. Temperature range: 40°C±2°C 2. Humidity Range: 90%~95% R.H. 3. Cycle times: 1000+24/-0 H 4. Examine the appearance and functions after taken out at room temperature for 24H±2H. 500 hrs measuring the first data then 1000 hrs data. 	



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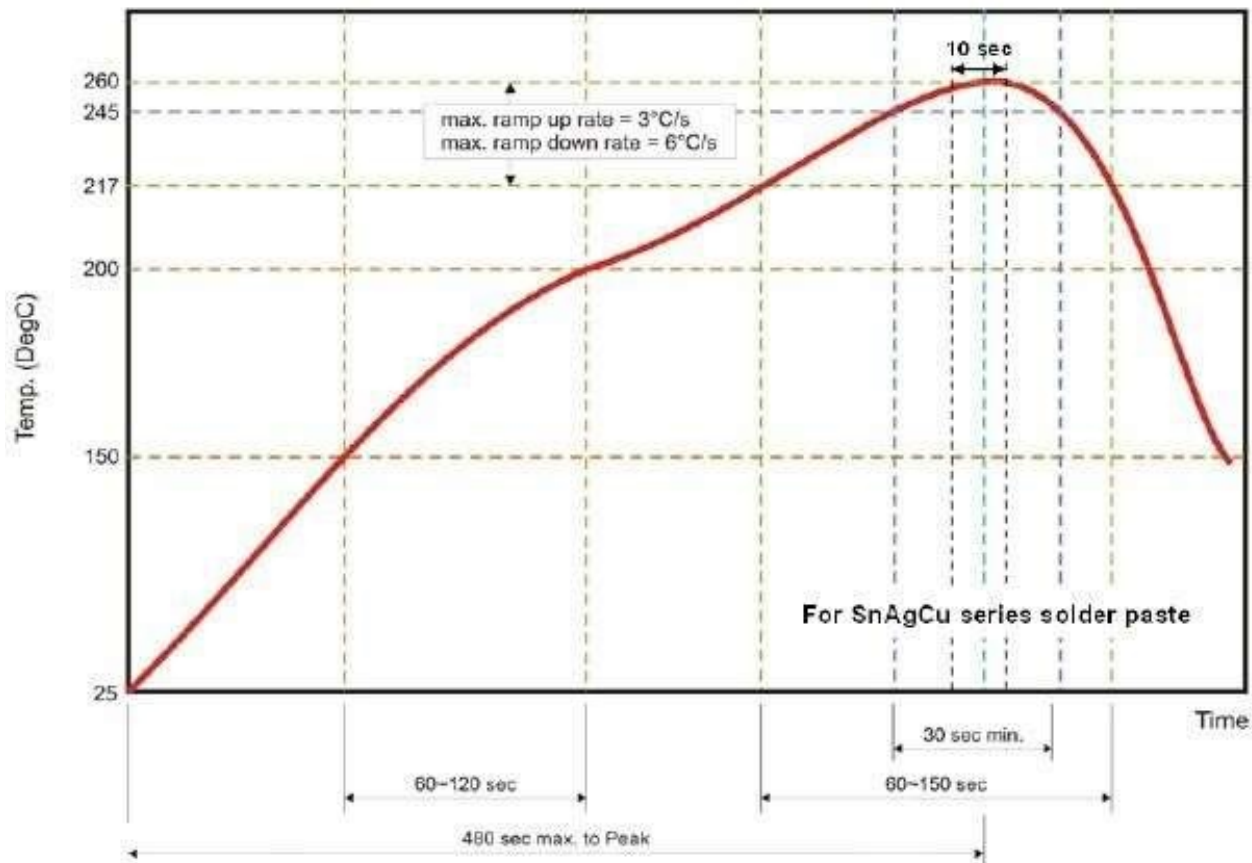
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Infrared Soldering Profile

A typical example of soldering processes that provides reliable joints without any damage is given below. This product can sustain a reflow process three times, and at temperatures below 260 °C.



Caution

- Do not place the product in a corrosive or corrosive gas environment as it may cause oxidation of the metal electrode, resulting in poor solderability.
- Products should be stored on the palette for the prevention of the influence from external factors including humidity, dust.
- Products should be stored in an environment without being exposed to but not limited to heat shock, vibration, direct sunlight.
- Products should be stored in an airtight packaged condition.

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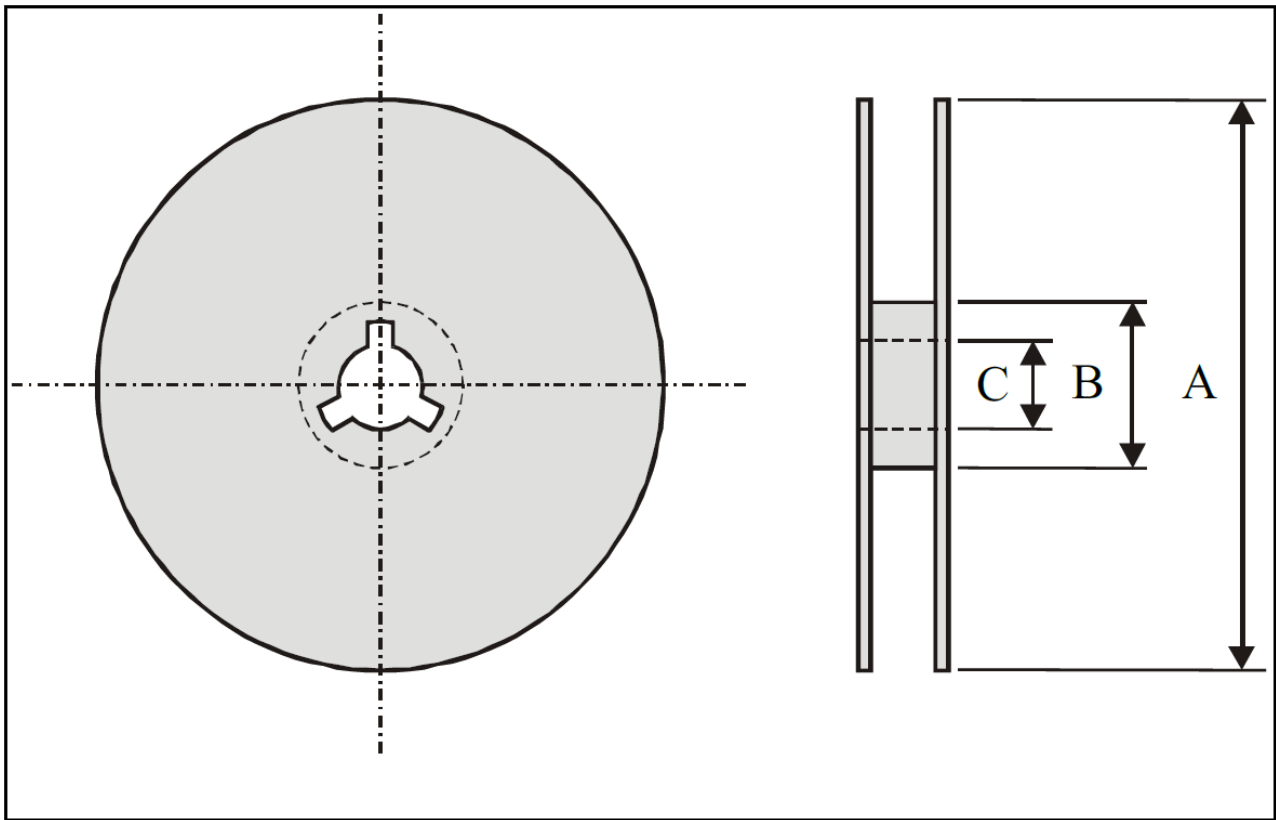


3.2 x 1.6 x 1.1 mm
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Packaging

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

Reel Specifications



Dimension	Specification (mm)
A	D178
B	D60
C	D13.5

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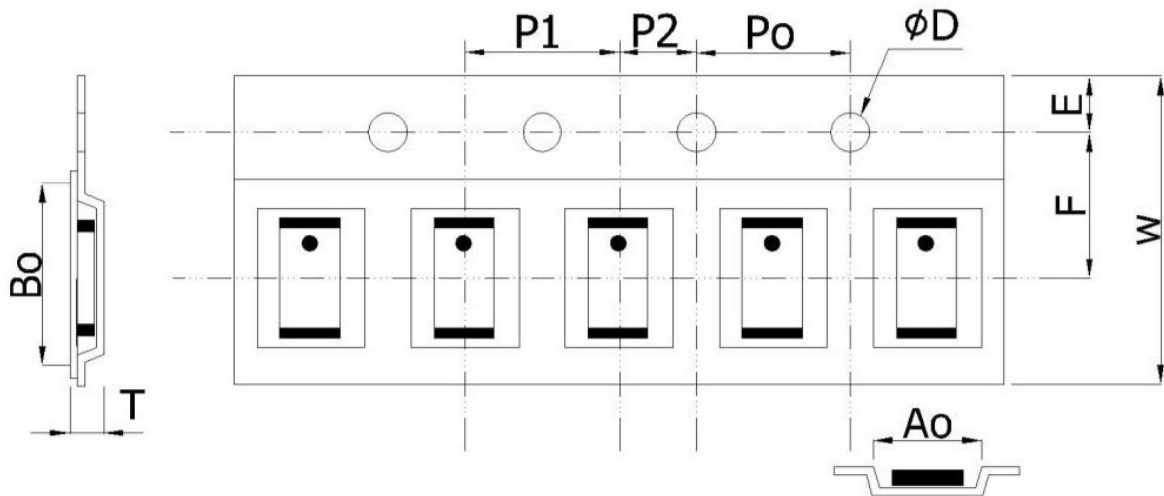
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Packaging

Reel Tape Specifications



Dimension	Specification (mm)
Ao	1.81 ± 0.10
Bo	3.42 ± 0.10
φD	1.55 ± 0.05
T	1.26 ± 0.10
W	8.20 +0.10/-0.30
E	1.75 ± 0.10
F	3.50 ± 0.05
Po	4.00 ± 0.10
P1	4.00 ± 0.10
P2	2.00 ± 0.10

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