



AANI-PP-0123

Request Samples



Check Inventory



25.0 x 25.0 x 4.0 mm

RoHS Compliant

MSL Level = N/A

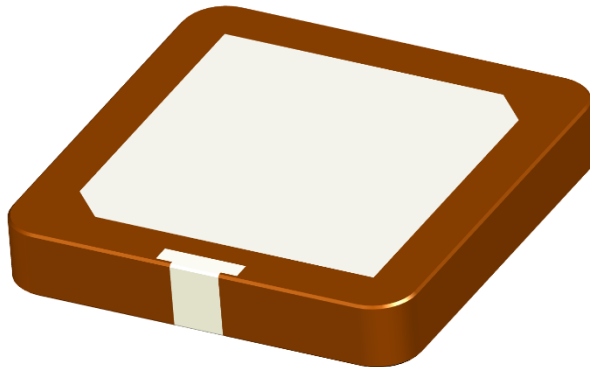
Features

- GPS/GLONASS/Galileo SMD Patch Antenna
- Size: 25.0 x 25.0 x 4.0 mm
- Peak Gain: 4.8 dBic
- Antenna Efficiency: 83%
- RHCP Polarization
- Surface Mounting
- Light Weight: 10 g

Applications

- IoT / M2M
- Unmanned Aerial Vehicle (UAV)
- Fleet Management and Asset Tracking
- Transportation
- Precision Agriculture
- Geolocation and Tracking

Product Image



GPS/GLONASS/Galileo SMD Patch Antenna



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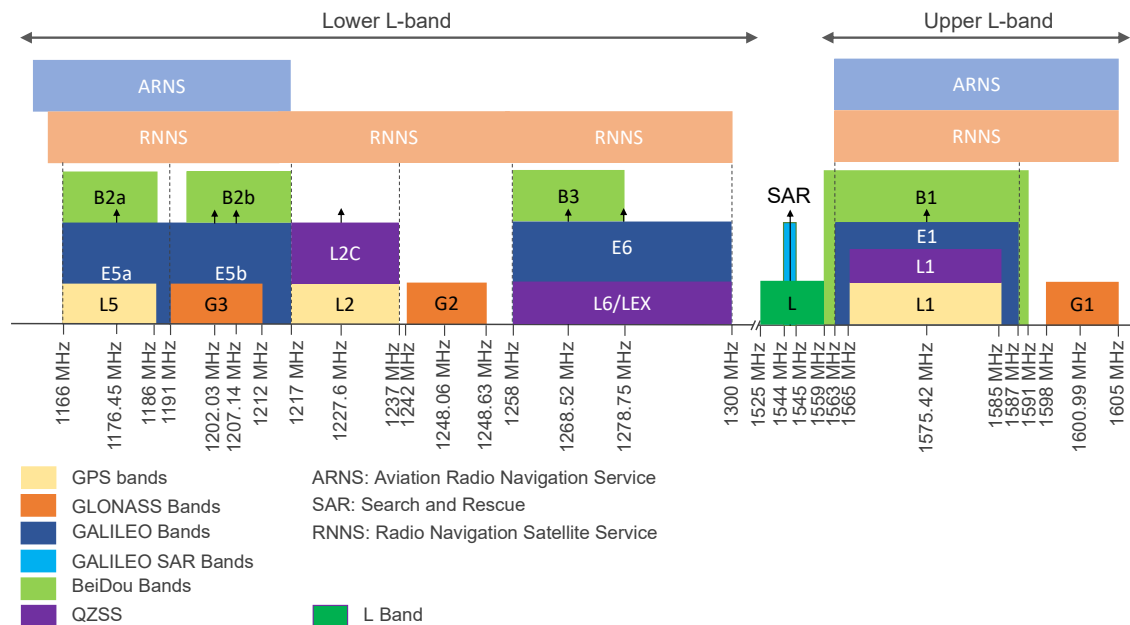
25.0 x 25.0 x 4.0 mm

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MSL Level = N/A

GNSS Frequency Bands Covered

GPS	L1 1575.42MHz	L2 1227.6MHz	L5 1176.45MHz	
	■	□	□	
GLONASS	G1 1598.06-1609.31MHz	G2 1242.93-1251.68MHz	G3 1202.025MHz	
	■	□	□	
Galileo	E1 1575.42MHz	E5a 1176.45MHz	E5b 1201.5MHz	E6 1278.75MHz
	■	□	□	□
BeiDou	B1 1561MHz	B2 1207.14MHz	B3 1268.52MHz	
	□	□	□	
QZSS	L1 1575.42MHz	L2 1227.6MHz	L5 1176.45MHz	L6 1278.75MHz
	■	□	□	□
IRNSS/NAVIC			L5 1176.45MHz	
			□	
SBAS	L1/E1/B1 1575.42MHz		L5/B2a/E5a 1176.45MHz	
	■		□	



Frequency allocation: GNSS systems, upper L bands and lower L bands



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Electrical Specification

Parameters	Typ.		Units	Note
Antenna				
Frequency	1575.42 (L1/E1)	1602 (G1)	MHz	
VSWR	< 2.0		-	
Peak Gain	4.8	4.3	dBic	
Maximum Efficiency	83	83	%	
Average Efficiency	77	78	%	
Polarization	RHCP		-	(Right Hand Circular Polarization)
Nominal Impedance	50		Ω	

Note: All measurements were performed using the evaluation board in a free-space environment. Actual performance may vary depending on factors such as the ground plane, specific application, and surrounding environment.

Mechanical Specification

Parameter	Specification
Antenna Dimension	25.0 x 25.0 x 4.0 mm
Evaluation Board Dimension	70 x 70 mm
Mounting Type	Surface Mount
Mounting Location	PCB Center Mounting
Material(s)	Ceramic
Weight	10 g

Environmental Specification

Parameter	Specification
Operating Temperature	-40°C to +85°C
Storage Temperature	-40°C to +85°C
RoHS Compliance	Yes

GPS/GLONASS/Galileo SMD Patch Antenna



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MSL Level = N/A

Ordering Information

Part Number	Description
AANI-PP-0123	GPS/GLONASS/Galileo SMD Patch Antenna on Cut Tape
AANI-PP-0123-T	GPS/GLONASS/Galileo SMD Patch Antenna on Tape & Reel
AANI-PP-0123-EVB	GPS/GLONASS/Galileo SMD Patch Antenna EVB



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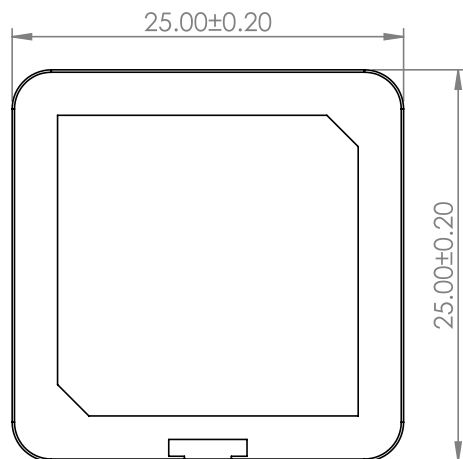


25.0 x 25.0 x 4.0 mm

RoHS Compliant

MSL Level = N/A

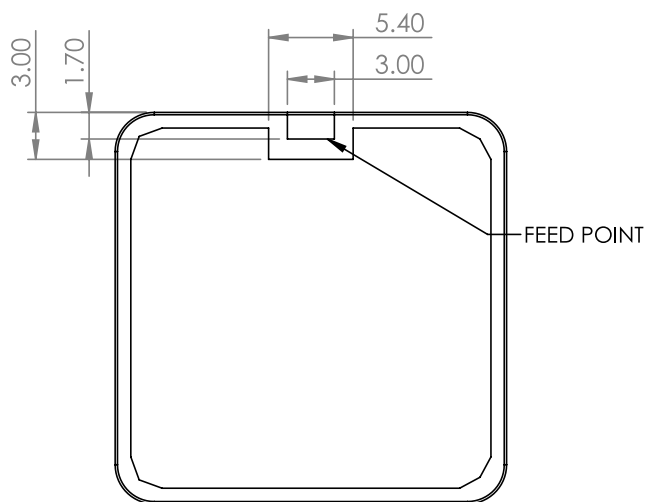
Product Dimensions



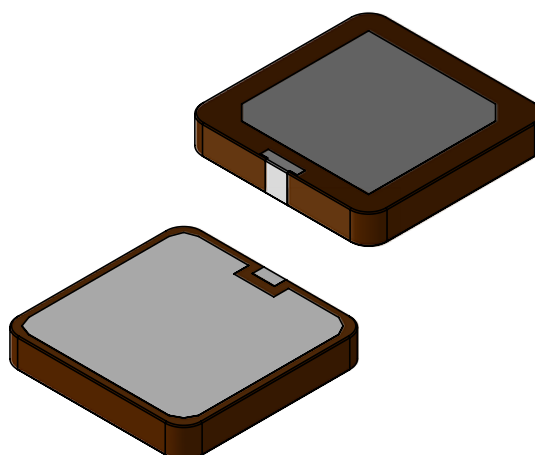
TOP VIEW



FRONT VIEW



BOTTOM VIEW



Unit: mm



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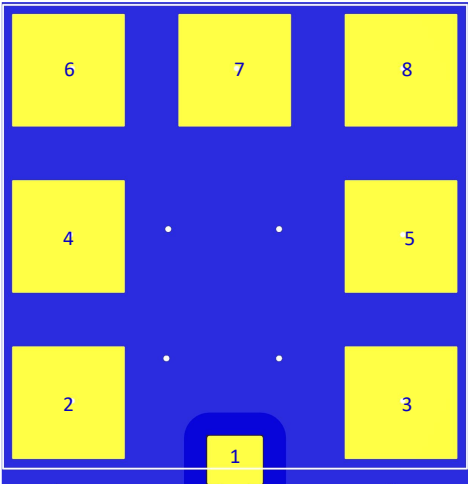
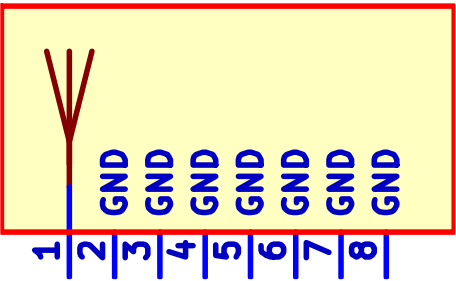
Check Inventory



25.0 x 25.0 x 4.0 mm
RoHS Compliant
MSL Level = N/A

Schematic and Symbol Definition

AANI-PP-0123
Antenna



Pin	Description
1	RF Feed
2 ~ 8	Ground





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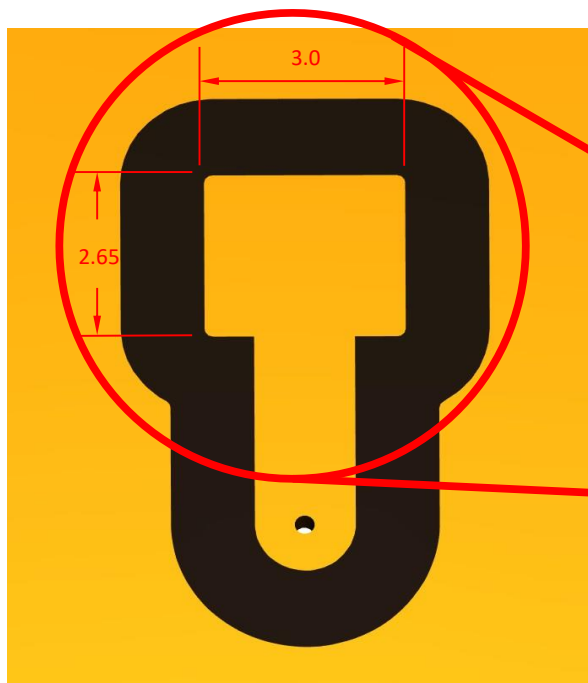


25.0 x 25.0 x 4.0 mm

RoHS Compliant

MSL Level = N/A

PCB Land Pattern



Unit: mm

GPS/GLONASS/Galileo SMD Patch Antenna



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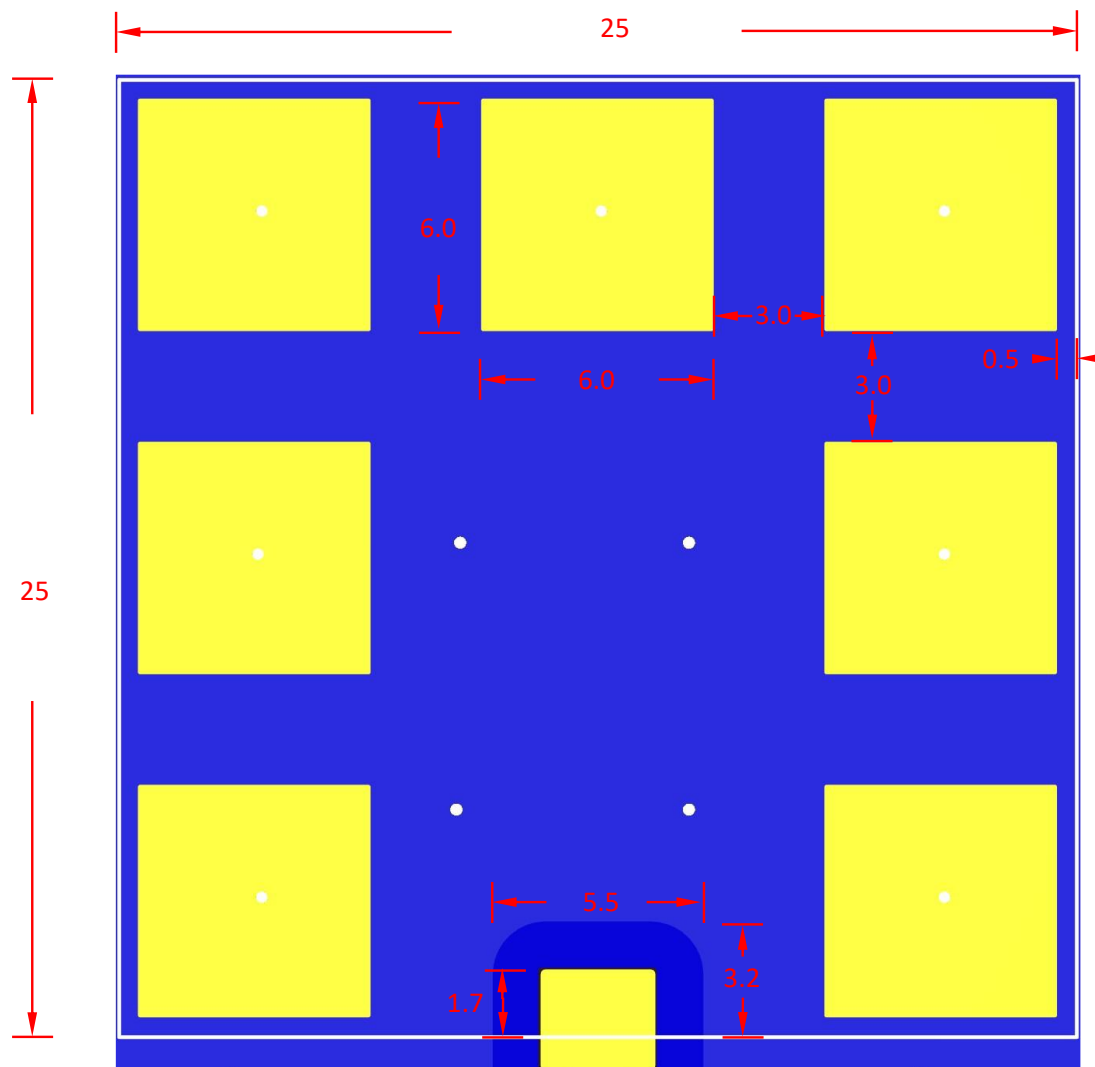


25.0 x 25.0 x 4.0 mm

RoHS Compliant

MSL Level = N/A

Top Solder Mask & Copper Keep-Out



Unit: mm



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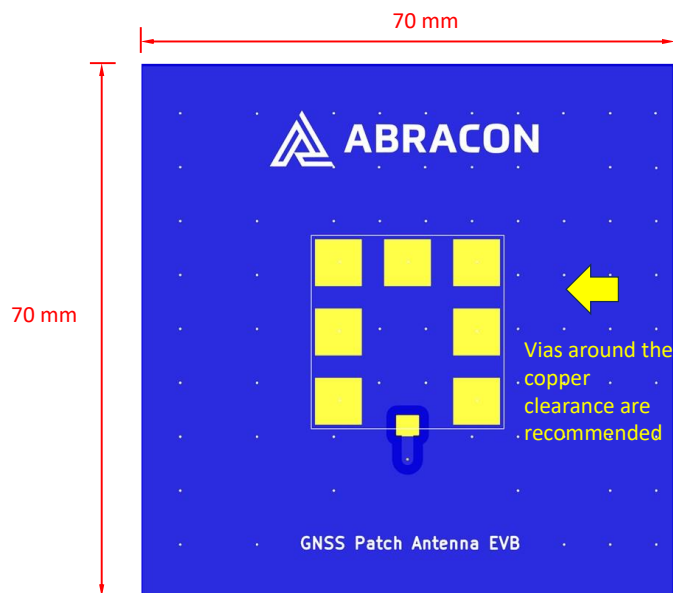


Check Inventory

**25.0 x 25.0 x 4.0 mm****RoHS Compliant****MSL Level = N/A**

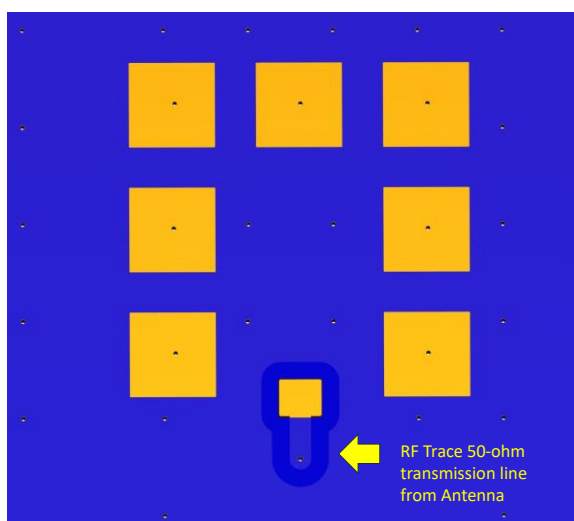
Integration Guide

The following is an example on how to integrate the AANI-PP-0123 antenna into a design. The AANI-PP-0123 has one pin which is used for RF Feed.



Top view of PCB

Unit: mm



The AANI-PP-0123 should be placed in the center of the PCB to take advantage of the ground plane. The RF traces must maintain a 50 Ohm transmission line. Ground vias should be placed around the copper clearance area.



AANI-PP-0123

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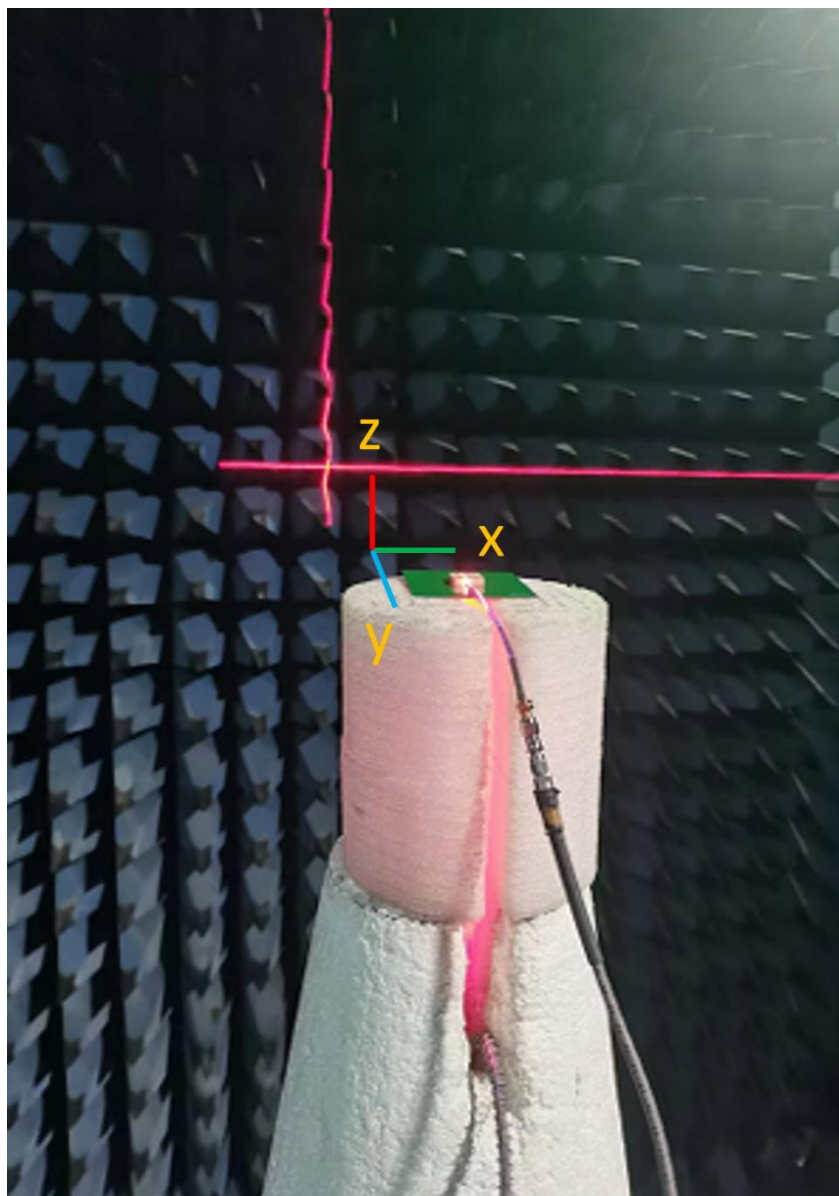


25.0 x 25.0 x 4.0 mm

RoHS Compliant

MSL Level = N/A

Measurement Setup





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Request Samples



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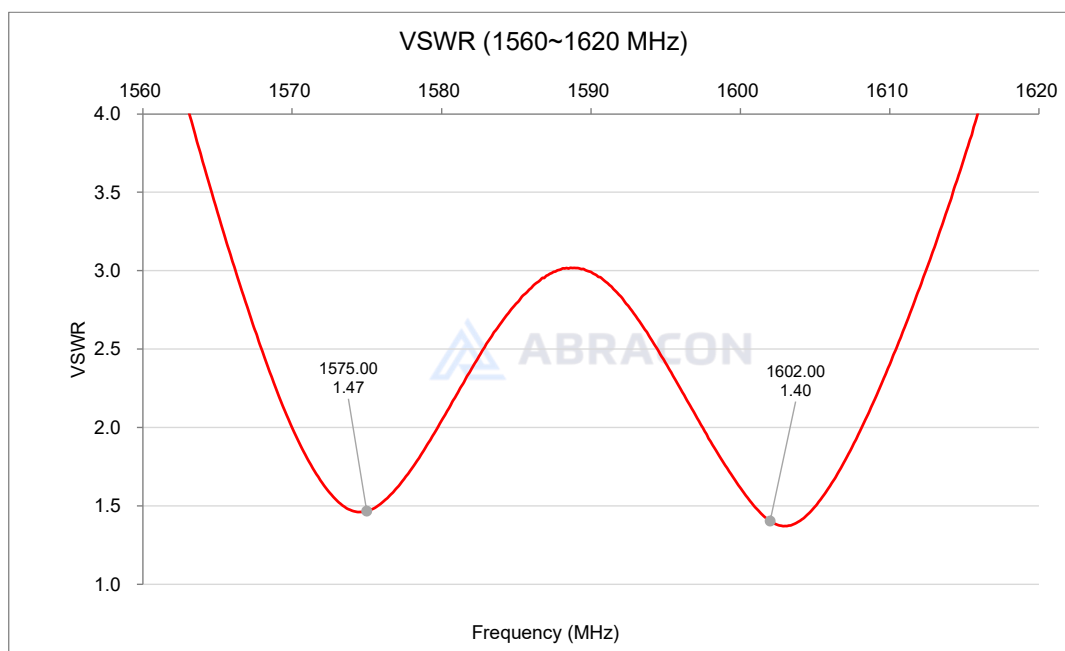
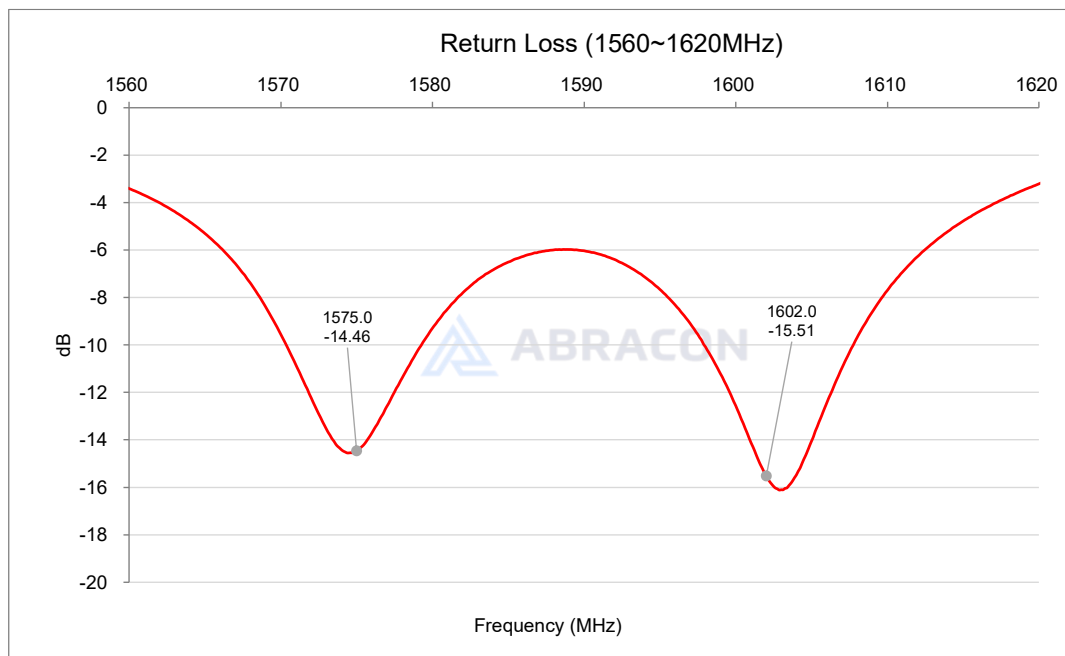


25.0 x 25.0 x 4.0 mm

RoHS Compliant

MSL Level = N/A

Reflection Characteristics – Return Loss & VSWR



**AANI-PP-0123**

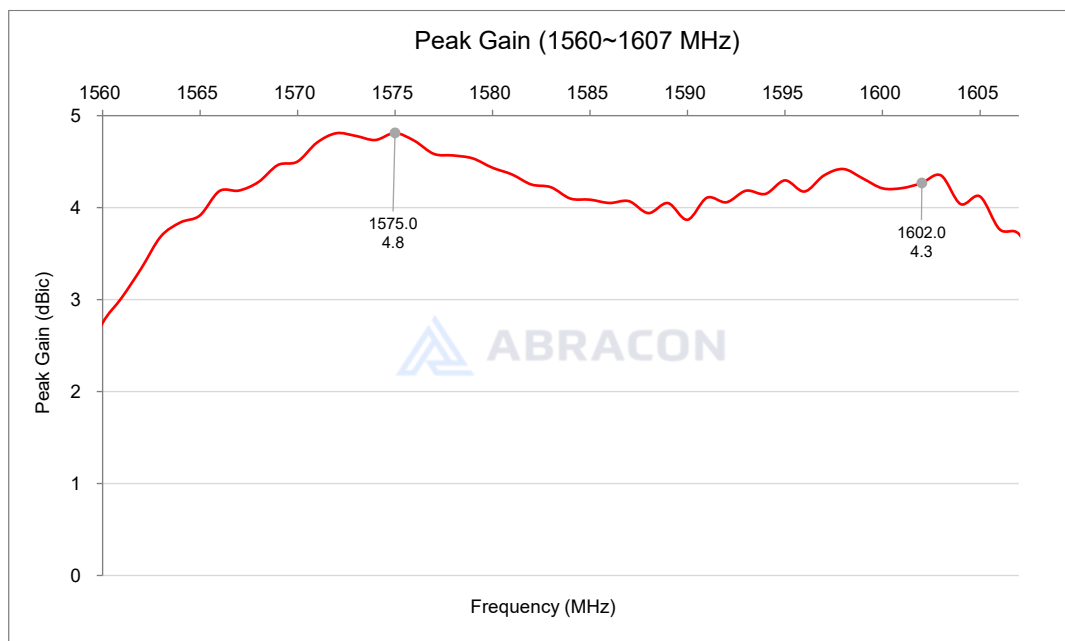
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**25.0 x 25.0 x 4.0 mm****RoHS Compliant****MSL Level = N/A**

Radiation Characteristics – Peak Gain





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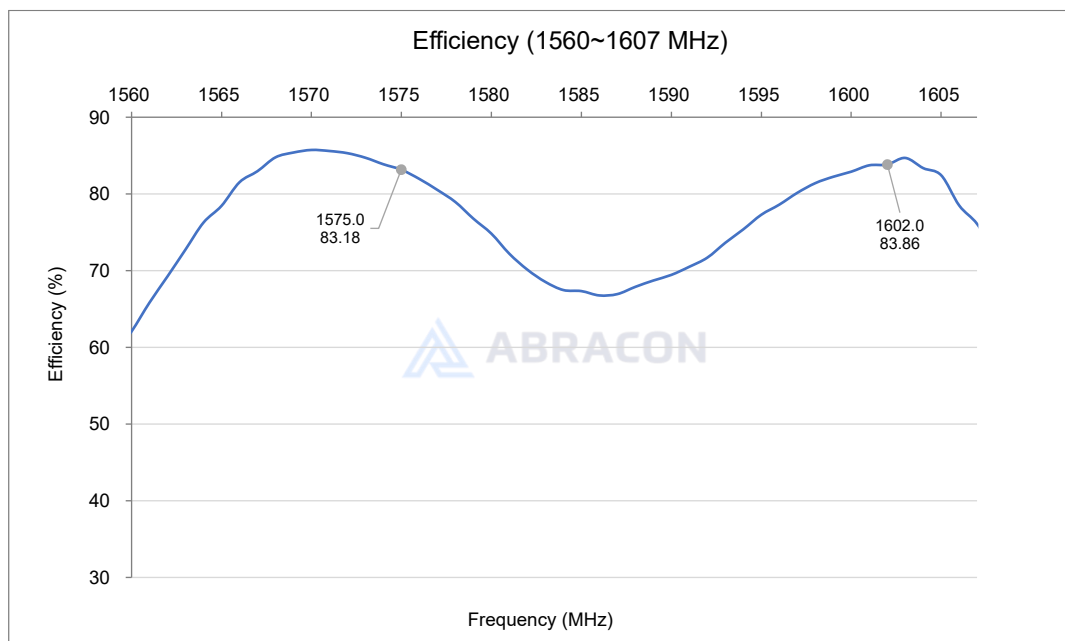


25.0 x 25.0 x 4.0 mm

RoHS Compliant

MSL Level = N/A

Radiation Characteristics – Total Efficiency (%)





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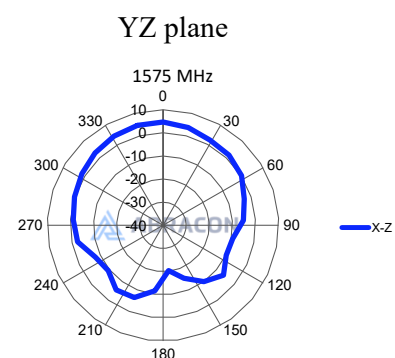
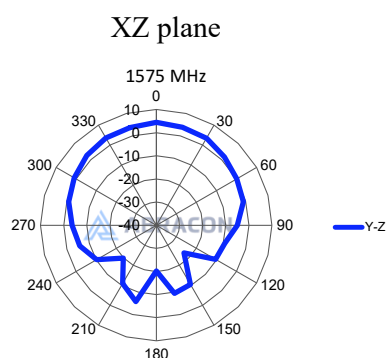
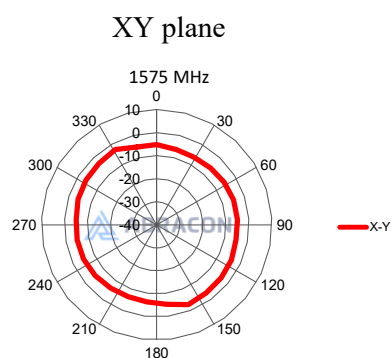
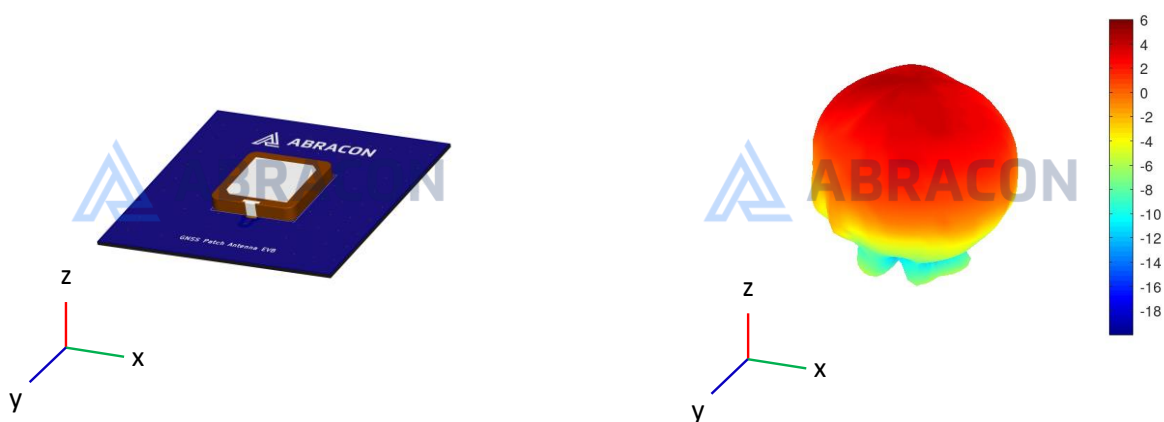
25.0 x 25.0 x 4.0 mm

RoHS Compliant

MSL Level = N/A

Radiation Characteristics – 3D & 2D Pattern

1575MHz



GPS/GLONASS/Galileo SMD Patch Antenna



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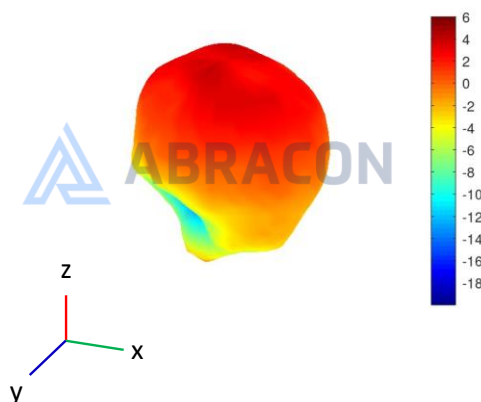
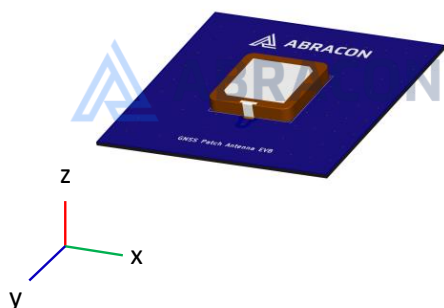


25.0 x 25.0 x 4.0 mm

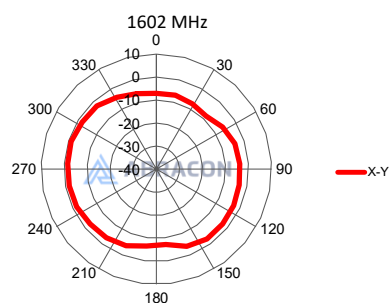
RoHS Compliant

MSL Level = N/A

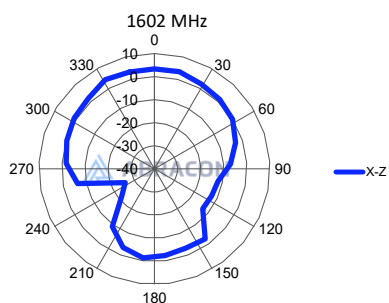
1602MHz



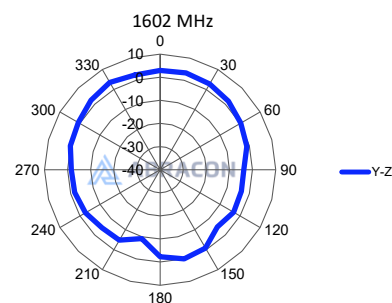
XY plane



XZ plane



YZ plane



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Reflow Profile [JEDEC J-STD-020]

Solder Paste: Ag/Sn/Cu:96.5/3.0/0.5

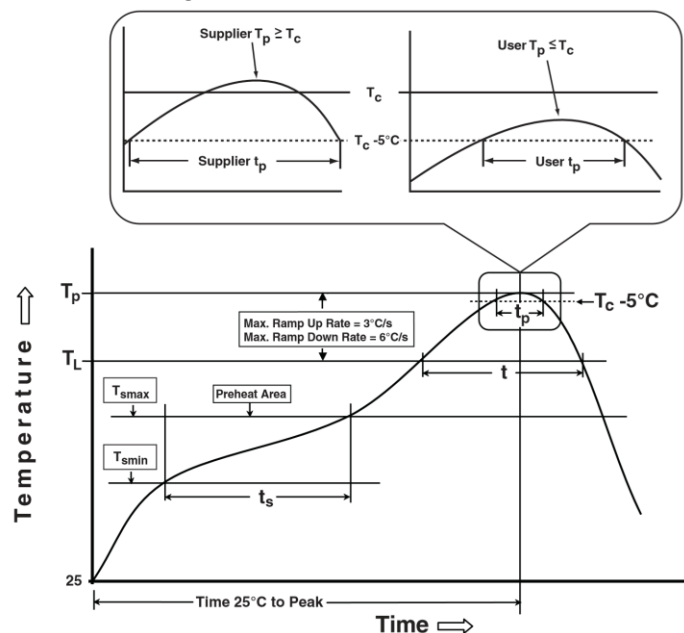


Table 1

SnPb Eutectic Process
Classification Temperatures (T_c)

Package Thickness	Volume mm ³ <350	Volume mm ³ ≥ 350
<2.5mm	235°C	220°C
≥ 2.5mm	220°C	220°C

Table 2

Pb-Free Process
Classification Temperatures (T_c)

Package Thickness	Volume mm ³ <350	Volume mm ³ 350-2000	Volume mm ³ >2000
<1.6mm	260°C	260°C	260°C
1.6mm - 2.5mm	260°C	250°C	245°C
>2.5mm	240°C	240°C	240°C

Profile Feature	Sn-Pb Eutectic Assembly	Pb-Free Assembly
Preheat / soak		
Temperature minimum (T_{smin})	100°C	130°C
Temperature maximum (T_{smax})	150°C	150°C
Time (T_{smin} to T_{smax}) (t_s)	60 – 120 sec.	40 – 120 sec.
Average ramp-up rate (T_{smax} to T_p)	3°C/sec. max	3°C/sec. max
Liquidous temperature (T_L)	183°C	200°C
Time at Liquidous (T_L)	60 – 150 sec.	15 – 30 sec.
Peak package body temperature (T_p)*	See Table 1	See Table 2
Time (T_p)** within 5°C of the specified classification temperature (T_c)	20 sec.	5-10 sec.
Ramp-down rate (T_p to T_{smax})	6°C/sec. max	6°C/sec. max
Time 25°C to peak temperature	6 min. max	8 min. max
Reflow cycles	2 max	2 max

*Tolerance for peak profile temperature (T_p) is defined as a supplier minimum and a user maximum.**Tolerance for time at peak profile temperature (t_p) is defined as a supplier minimum and a user maximum.

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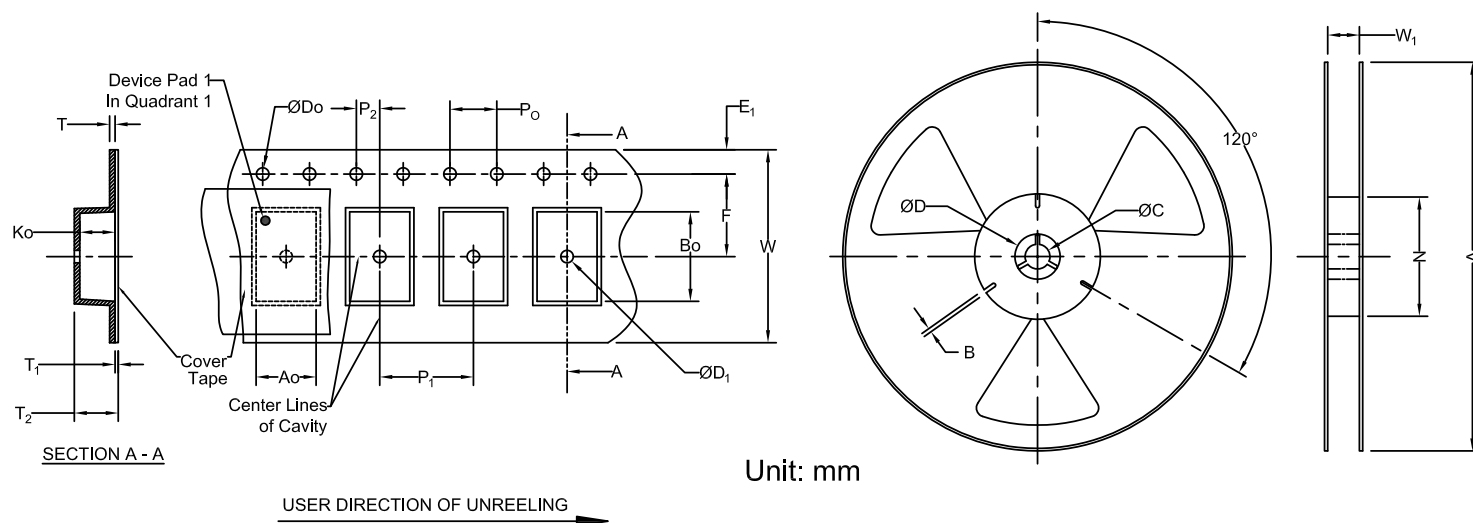
**25.0 x 25.0 x 4.0 mm****RoHS Compliant****MSL Level = N/A****Packaging**

250 pcs per reel

1 reel per inner box

750 pcs (3 inner box) per package

Dimension of the inner box: 360 x 345 x 250 mm

Tape & Reel Dimension:**Carrier Tape Specifications (mm)**

Do	D ₁	E ₁	P ₀	P ₂	T	F	P ₁	W	A ₀	B ₀	K ₀	Reel Qty
1.50 ± 0.1	2.00 ± 0.1	1.85 ± 0.1	4.0 ± 0.1	2.0 ± 0.15	0.4 ± 0.05	20.2 ± 0.1	32.0 ± 0.1	44.0 ± 0.3	26.2 ± 0.2	25.5 ± 0.2	4.5 ± 0.2	250

Reel Specifications (mm)

A	W ₁	N	C	D
330 ± 2	24.4	100	13	21

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