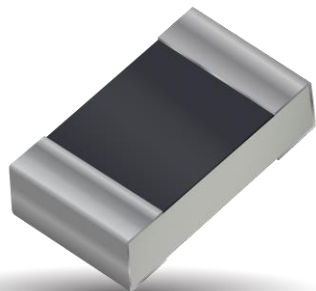


Part No. A1001312

Automotive Wi-Fi / BT / Zigbee or UWB Ceramic Antenna

2.4 GHz or 6.0 – 8.5 GHz

Supports: Wi-Fi applications, Bluetooth, Zigbee, WLAN, UWB



*UWB layout offered in Appendix 1

Layouts:

- 1001312-01: Single Band 2.4 GHz
- 1001312-04: UWB 6.0 - 8.5 GHz (Appendix 1)

KEY BENEFITS

Stay-in-Tune

IMD antenna technology provides superior RF field containment, resulting in less interaction with surrounding components.

Quicker Time-to-Market

By optimizing antenna size, performance and emissions, customer and regulatory specifications are more easily met.

Environmental Compliance

Products are the latest RoHS version compliant.

APPLICATIONS

- Embedded design
- Handheld
- Smart Grid
- OBD-II
- UWB
- Automotive
- Telematics
- Tracking
- M2M, Industrial devices

KYOCERA AVX A-Series automotive antennas deliver on the key needs of device designers for higher functionality.

KYOCERA AVX has completed rigorous testing to qualify the A-series antennas for automotive applications. Although the AEC-Q200 standard does not include antenna products, all testing has been done following applicable AEC-Q200 requirements and procedures as closely as possible. Customers must provide additional quality requirements, if any, to drive additional compliance testing.

Electrical Specifications

Typical performance on 55 x 25 mm PCB

Frequency	2400 – 2485 MHz	6.0 – 8.5 GHz
Peak Gain	1.88 dBi	Refer to Appendix 1
Average Efficiency	62%	
VSWR Match	1.8:1 max	
Feed Point Impedance	50 ohms unbalanced	
Polarization	Linear	
Power Handling	0.5 Watt CW	

Mechanical Specifications & Ordering Part Number

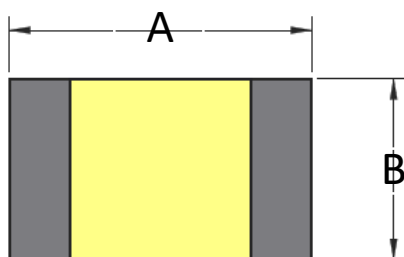
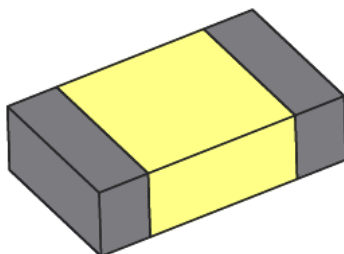
Ordering Part Number	A1001312
Size (mm)	2.00 x 1.20 x 0.55
Mounting	Surface mounted to the PCB
Weight (grams)	0.003
Packaging	Tape & Reel A1001312 – 5,000 pieces per reel
Demo Board	1001312-01 (2400 – 2485 MHz) 1001312-04 (UWB 6.0 – 8.5GHz)
Temperature Range	-50/+125 °C
Temperature Cycle	IEC 60068-2-14:2009
Temperature Exposure	Mil-STD-202 Mantennaod 108
High Temperature & High Humidity	MIL-STD-202
Mechanical Shock	IEC 60068-2-6:2007
Vibration	IEC 60068-2-27:2008
IMDS and PPAP available	
Additional Resources	Download DXF, Gerber and 3D FIT Files

2.4 GHz Automotive KYOCERA AVX Embedded Ceramic Antenna Specifications
 KYOCERA AVX produces a wide variety of standard and custom antennas to meet user needs

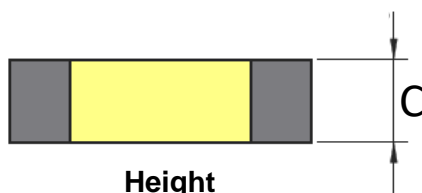
Antenna Dimensions

Typical antenna dimensions (mm)

Part Number	A	B	C
A1001312	2.0 ± 0.3	1.2 ± 0.3	0.55 ± 0.2



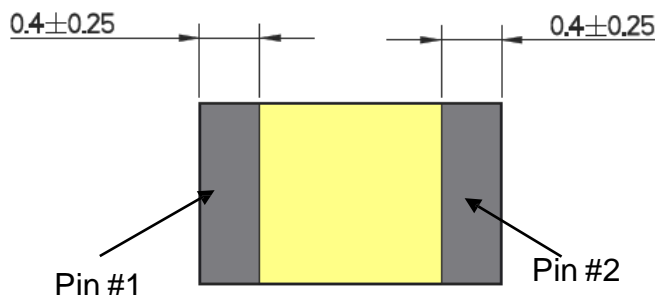
Top View



Height

Pin	Description
1	Feed
2	Ground

*Pin #1 and Pin #2 are interchangeable.



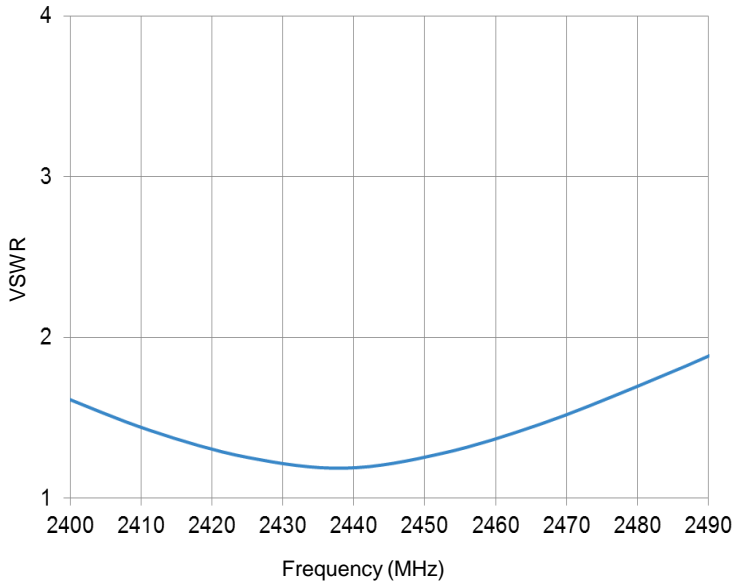
Bottom View

2.4 GHz Automotive KYOCERA AVX Embedded Ceramic Antenna Specifications
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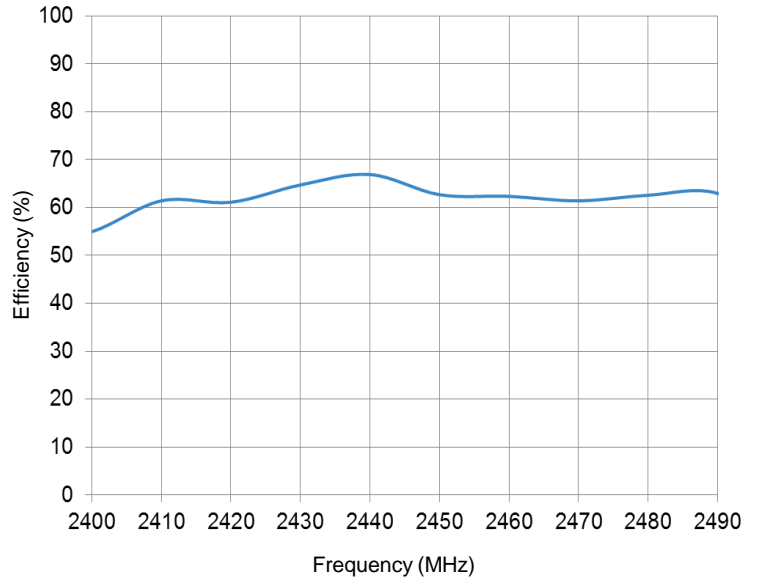
VSWR and Efficiency Plots

Typical Performance on 55 x 25 mm PCB

VSWR

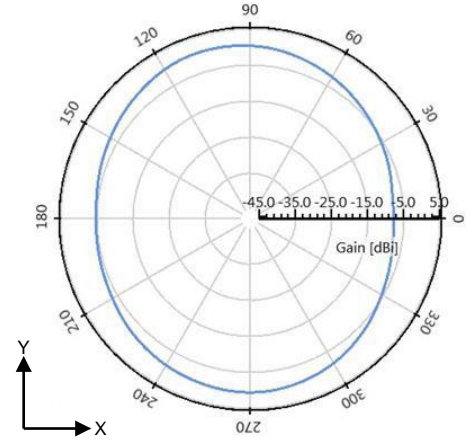
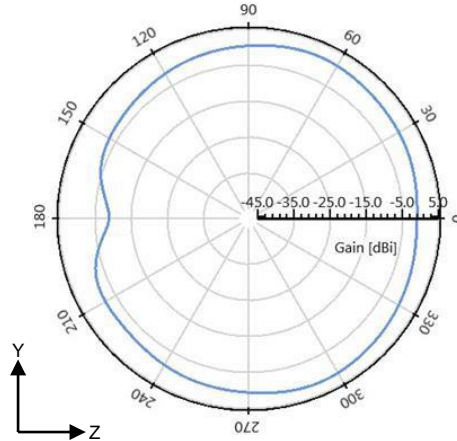
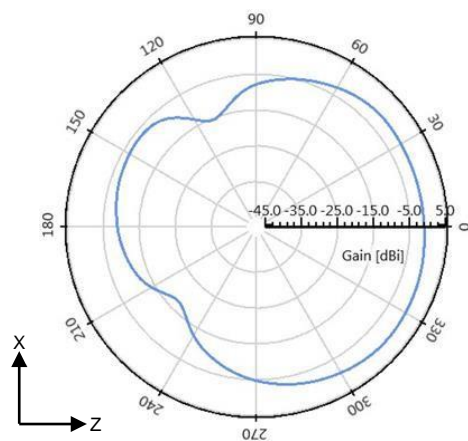


Efficiency



Antenna Radiation Patterns

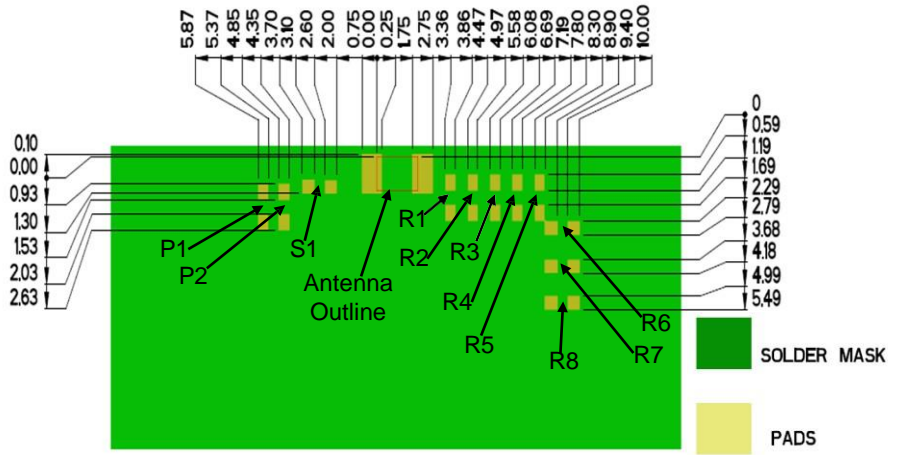
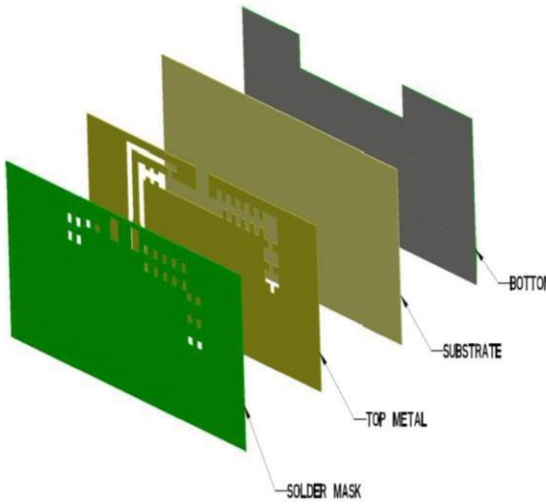
Typical performance on 55 x 25 mm PCB
 Measured @ 2440 MHz



2.4 GHz Automotive KYOCERA AVX Embedded Ceramic Antenna Specifications
 KYOCERA AVX produces a wide variety of standard and custom antennas to meet user needs

Antenna Layout (1001312-01)

Typical layout dimensions (mm)



- Additional VIAS : Diam. 0.2mm to be placed around antenna, (no vias on transmission lines).
- Via holes must be covered by solder mask

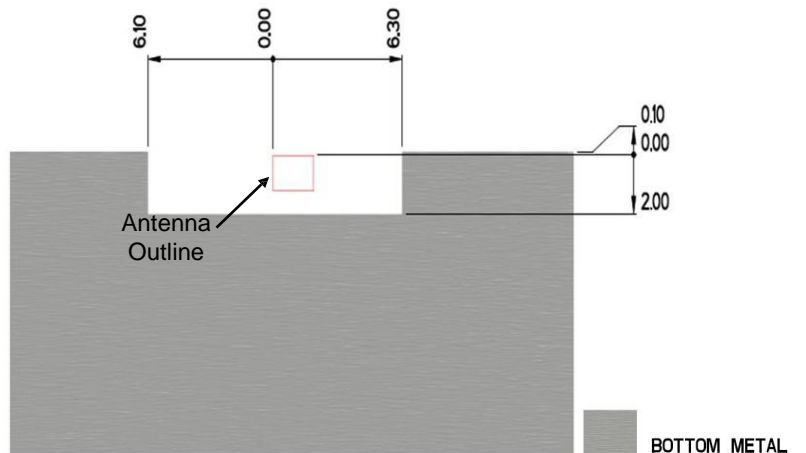
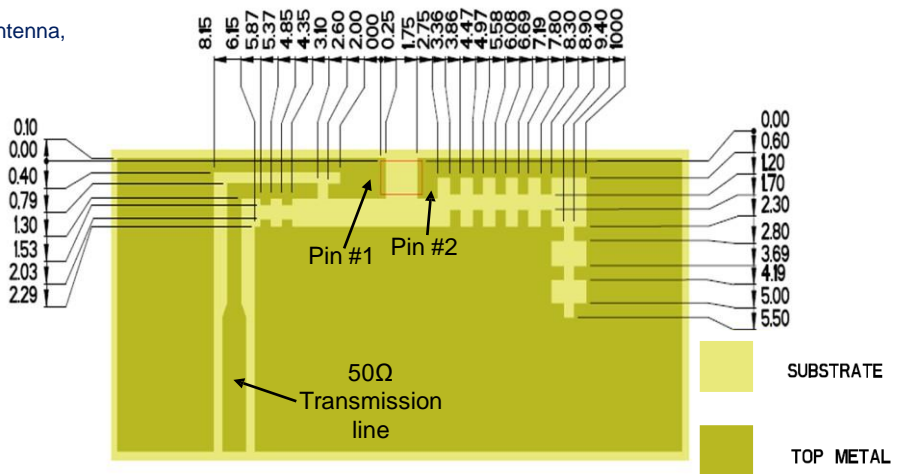
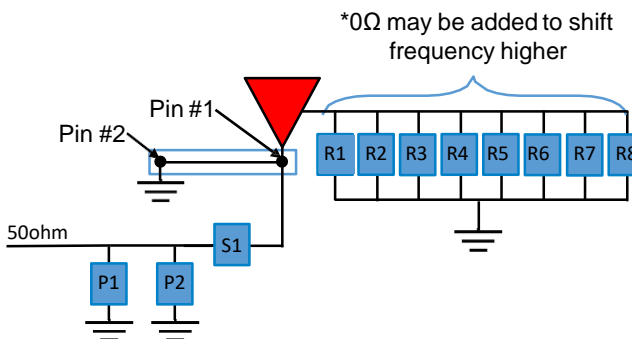
Pin Descriptions

Pin#	Description
1	Feed
2	Ground

Matching Pi Network (Demo Board)

Component	Value	Tolerance
P1	4.7nH	±0.1nH
P2	DNI	N/A
S1	0Ω	N/A
R1	0Ω	N/A
R2 – R8	DNI	N/A

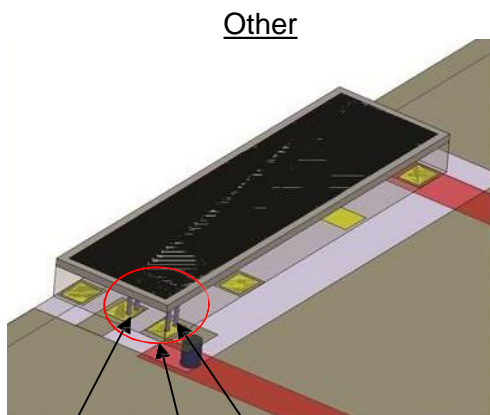
*Actual matching values depend on customer design



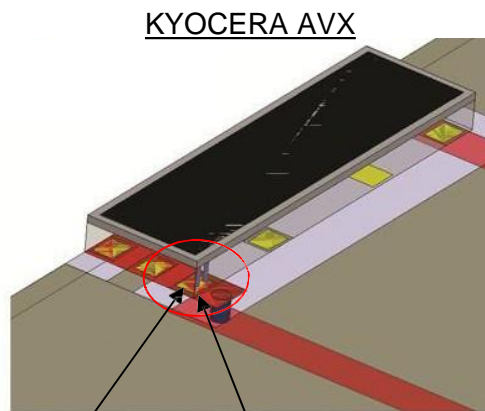
2.4 GHz Automotive KYOCERA AVX Embedded Ceramic Antenna Specifications
 KYOCERA AVX produces a wide variety of standard and custom antennas to meet user needs

Antenna Layout Tips (General reference)

Important layout guidelines for correct operation of KYOCERA AVX Ceramic Antennas. Please read guidelines below before laying out the antenna in a device. Figure 1 shows the typical antenna layout. Figure 2 shows KYOCERA AVX antenna layout.



Other
 Shorting pin Feed pin
 Antenna tuning loop:
 Figure 1
 Typical antenna layout



KYOCERA AVX
 Shorting pin and feed pin are shared in KYOCERA AVX ceramic antennas

Figure 2
 KYOCERA AVX antenna layout

(required)

- The antenna tuning loop is formed by the PCB layout.
- The feed pin and shorting pin are combined because it requires very close proximity to achieve more band- width.

2.4 GHz Automotive KYOCERA AVX Embedded Ceramic Antenna Specifications
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Antenna Demo Board

Typical layout dimensions (mm)

Part Number	A	B	C
1001312-01	55.0	25.0	26.0



Appendix 1 Automotive UWB KYOCERA AVX Embedded Ceramic Antenna Specifications
 KYOCERA AVX produces a wide variety of standard and custom antennas to meet user needs.

Appendix 1

Appendix 1 gives instructions on how to achieve UWB performances through layout and impedance matching network.
(6.0 – 8.5 GHz)

Frequency (GHz)	6.0 – 8.5
Peak Gain	4.8 dBi
Average Efficiency	84%
VSWR Match	2.0:1 max
Feed Point Impedance	50 ohms unbalanced
Polarization	Linear
Power Handling	2 Watt CW

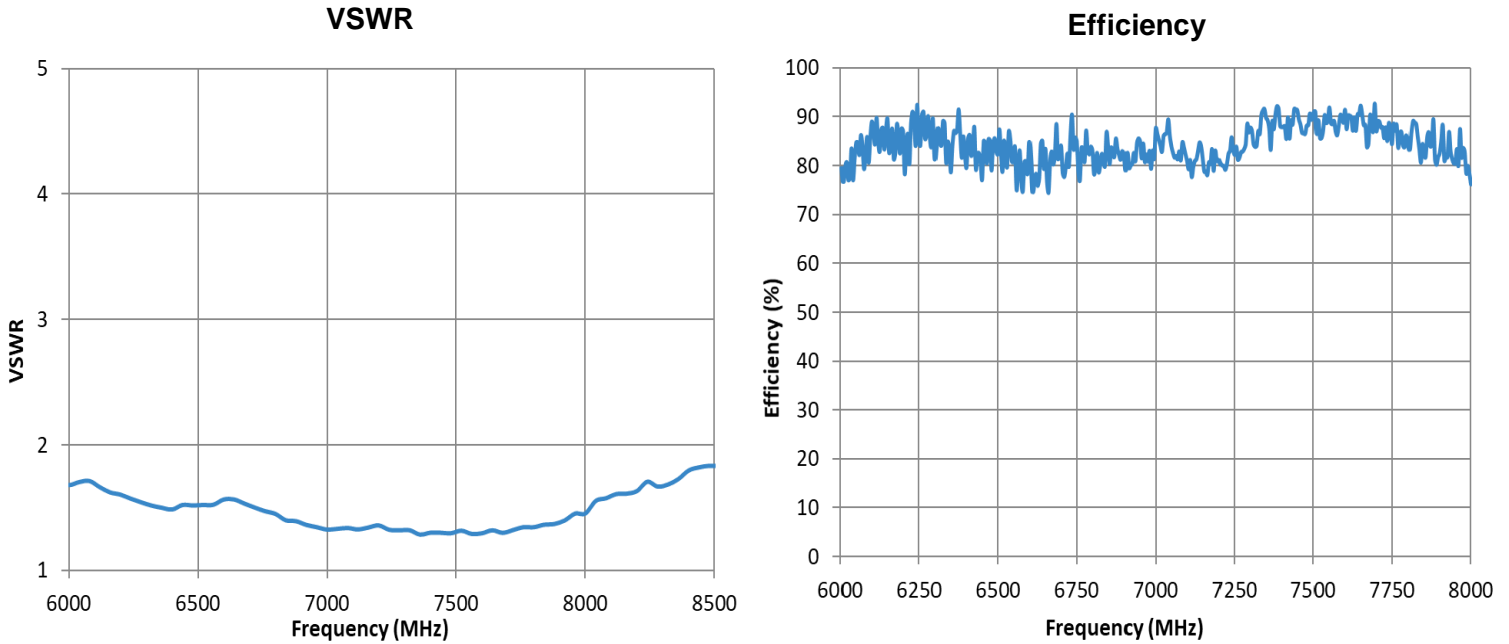
*Data shown above has Appendix 1 matching applied on 26.0 x 25.0 mm PCB,
 Using UWB 1001312-04 layout



Appendix 1 Automotive UWB KYOCERA AVX Embedded Ceramic Antenna Specifications
 KYOCERA AVX produces a wide variety of standard and custom antennas to meet user needs.

VSWR and Efficiency Plots

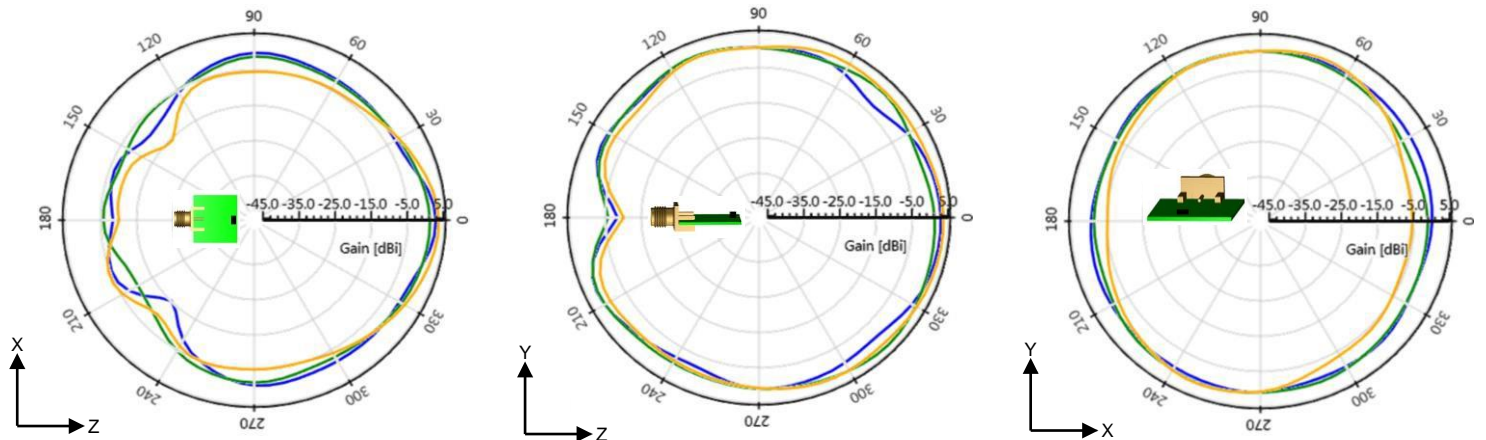
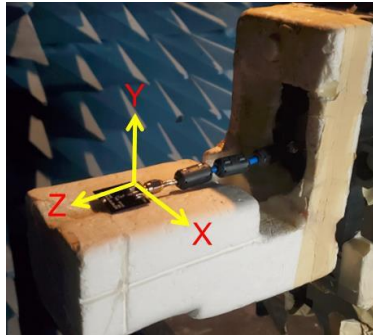
Typical Performance on 26.0 x 25.0 mm PCB



Antenna Radiation Patterns

Typical performance on 26.0 x 25.0 mm PCB
 Measured @ 6500, 7000, 8000 MHz

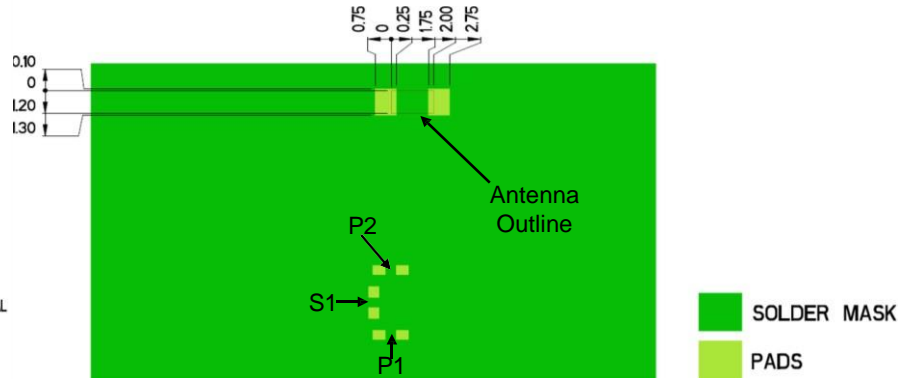
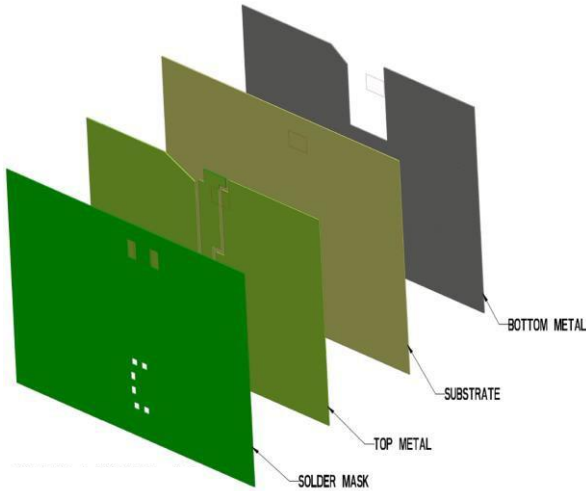
- 6500 MHz
- 7000 MHz
- 8000 MHz



Appendix 1 Automotive UWB KYOCERA AVX Embedded Ceramic Antenna Specifications
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Antenna Layout (1001312-04)

Typical layout dimensions (mm)



- Additional VIAS : Diam. 0.2mm to be placed around antenna, (no vias on transmission lines).
- Via holes must be covered by solder mask

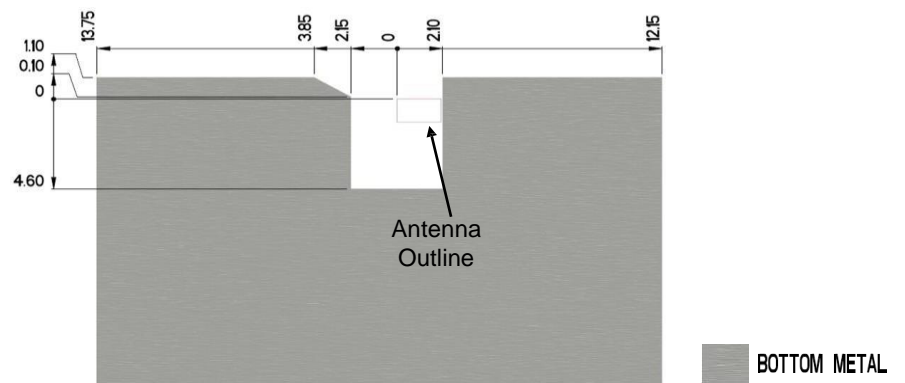
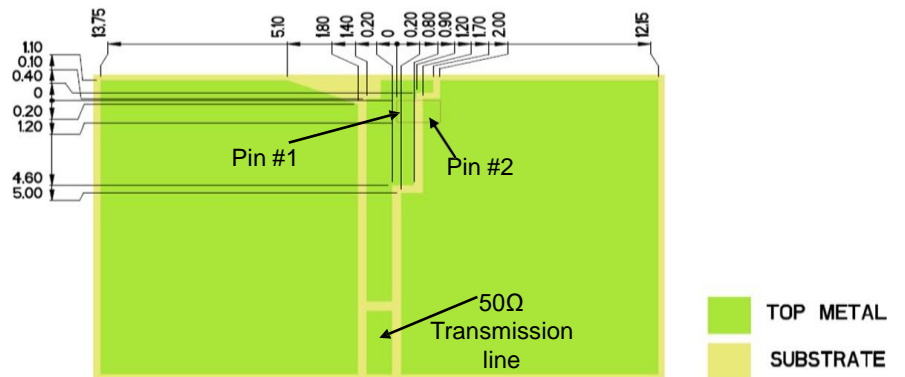
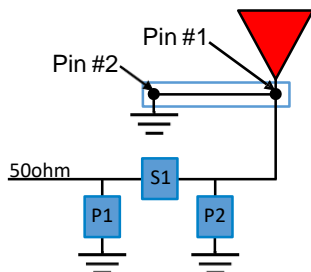
Pin Descriptions

Pin#	Description
1	Feed
2	Ground

Matching Pi Network (Demo Board)

Component	Value	Tolerance
P1	DNI	N/A
S1	0Ω	N/A
P2	DNI	N/A

*Actual matching values depend on customer design

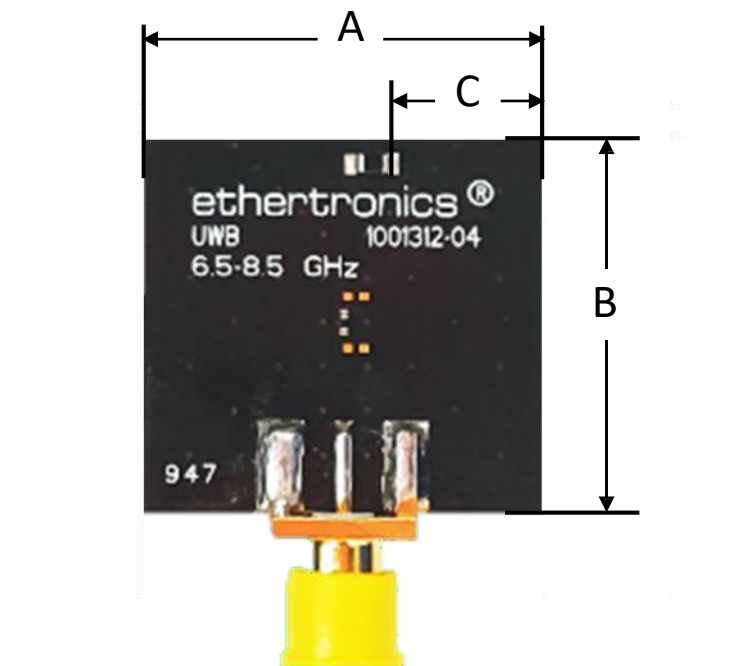


Appendix 1 Automotive UWB KYOCERA AVX Embedded Ceramic Antenna Specifications
 KYOCERA AVX produces a wide variety of standard and custom antennas to meet user needs.

Antenna Demo Board

Typical layout dimensions (mm)

Part Number	A	B	C
1001312-04	26.0 ± 0.25	25.0 ± 0.25	10.15



2.4 GHz Automotive KYOCERA AVX Embedded Ceramic Antenna Specifications
KYOCERA AVX produces a wide variety of standard and custom antennas to meet user needs

Additional Resources – A1001312 Automatic UWB Ceramic Antenna

3D Fit File:

https://www.kyocera-avx.com/download/antennas/ME-FIT/1001312_ME_fit.zip

DXF File:

https://www.kyocera-avx.com/download/antennas/3D-DXF/1001312-01_3D-DXF.zip

Gerber File:

https://www.kyocera-avx.com/download/antennas/GERBER/1001312-01_GERBERS.zip

Additional Resources – A1001312 Automatic Wi-Fi / Bluetooth / Zigbee Antenna

3D FIT File:

https://www.kyocera-avx.com/download/antennas/ME-FIT/1001312_ME_fit.zip

DXF File:

https://www.kyocera-avx.com/download/antennas/3D-DXF/1001312-01_3D-DXF.zip

Gerber File:

https://www.kyocera-avx.com/download/antennas/GERBER/1001312-01_GERBERS.zip