Ultra-Wide Band SMD Antenna SZP-C-0U01

UWB Channels 1,2,3,4,5,6,7: **3.2GHz – 4.8GHz; 5.9GHz – 7.0GHz**

Description

A high-performance solution for embedded design. For UWB applications including ranging, sensors, and position tracking. Simple design-in with high performance, while keeping costs low with this ultra-small form factor.

- For UWB Applications
- Highly resistant to de-tuning
- SMD component supplied in Tape and reel
- High performance
- Ideal for tags or smaller devices
- Channels 1 to 7
- 10 x 9.0 x 1.7 (mm) smaller than other OTS antennas

Applications

Asset Tracking	M2M Industrial	Location
Wearable devices	Smart home	Precision Survey
Sensor tags	Automotive Sensors	Medical

Patent pending design

General Specifications

Mechanical Specifications

Part Number	SZP-C-0U01
Name	RIGEL
Dimensions	10.0 x 9.0 x 1.7 (mm)
Weight	<1.0g
Antenna Type	Surface Mount Device

RF Specifications

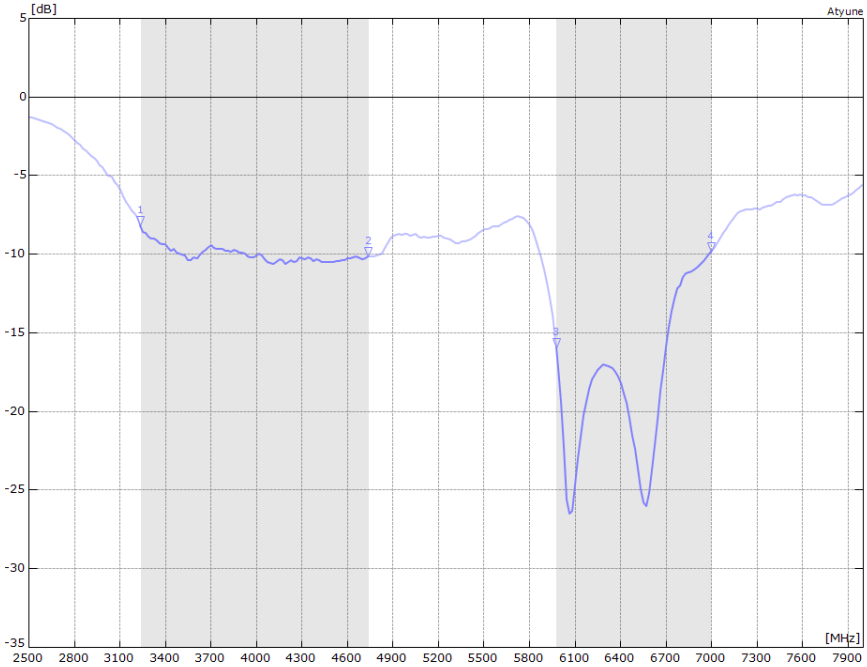
Frequency Range	3200 - 4800MHz	5900 – 7000MHz
Average Efficiency (Linear)	>80%	>70%
Peak Gain	3.60dBi	1.5dBi
S11 (max)	<-8.0dB	<-10.0dB
VSWR (max)	2.30:1	2.00:1
Impedance	50 Ω	
Polarization	Linear	

Environmental Specifications

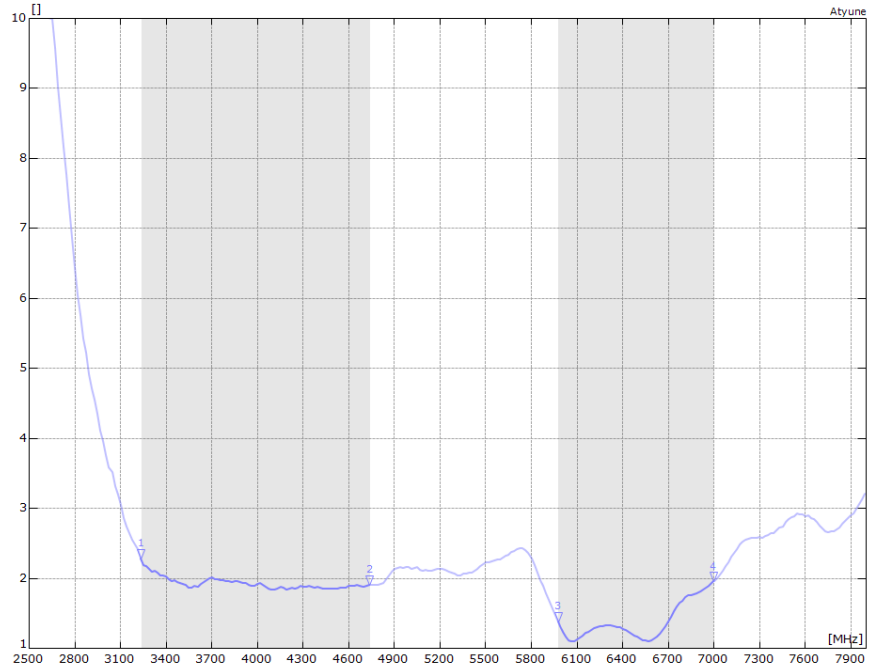
Operational Temperature	-40 to +125 (°C)
Storage Temperature	-10 to +40 (°C)
Relative Humidity	≤75%

RF Characteristics

S11 Parameter



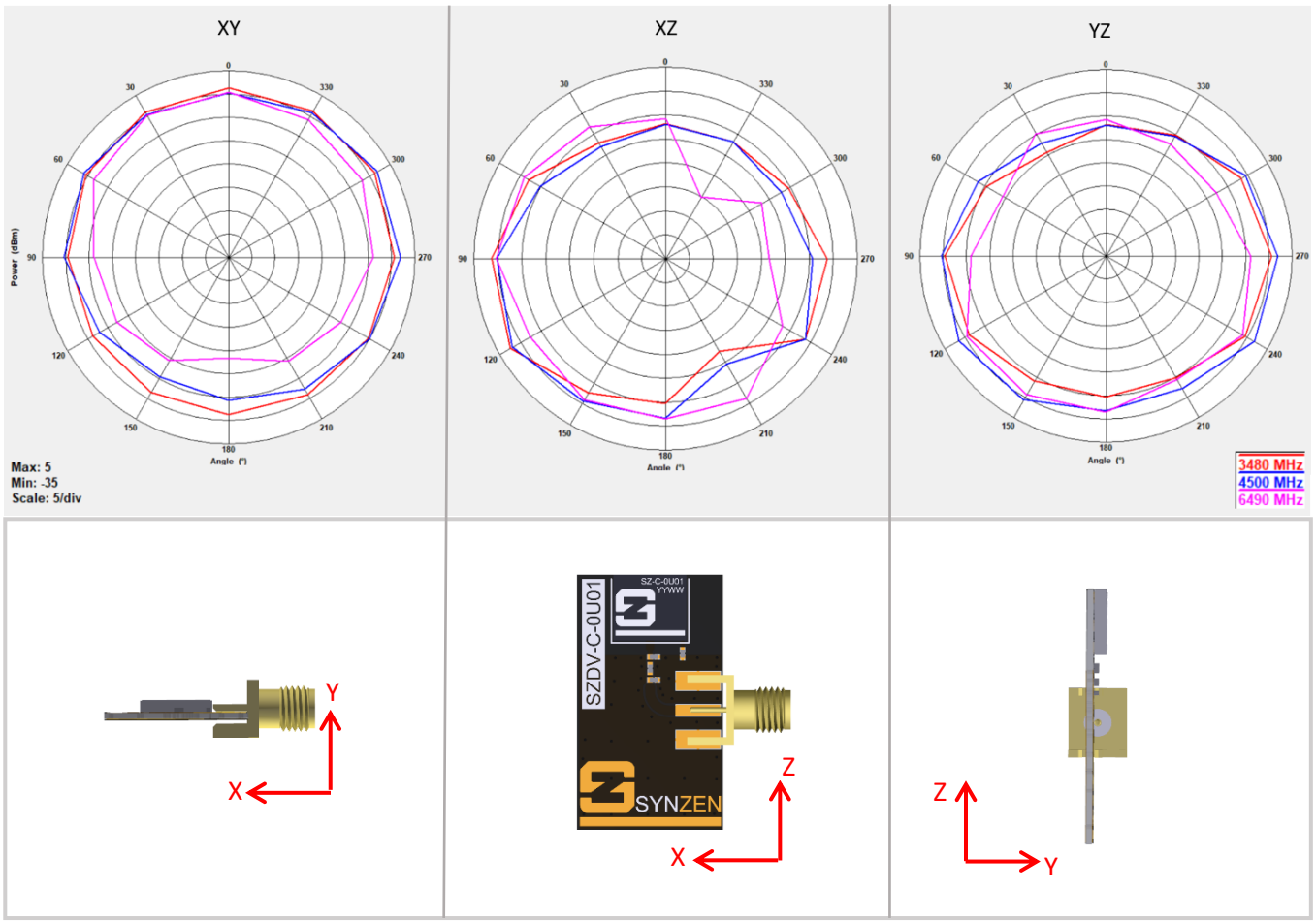
VSWR



Radiated Performance

2D Polar Plot

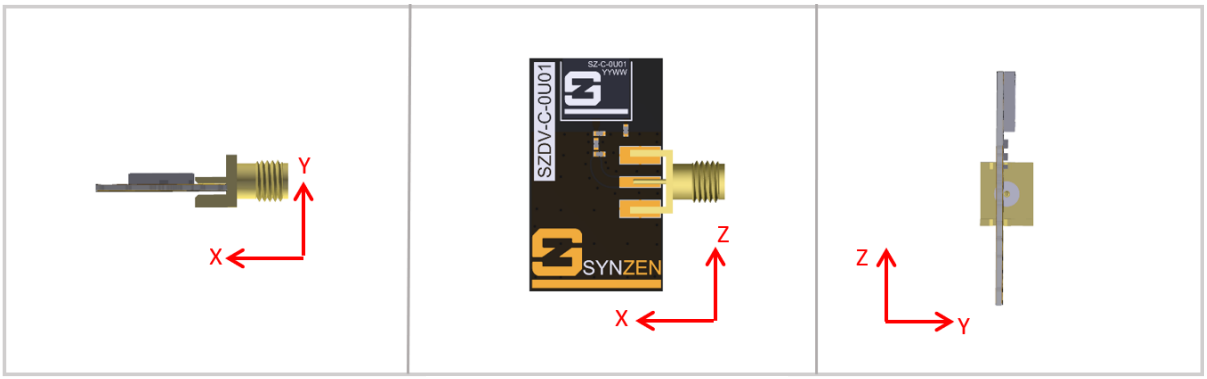
The data shown was measured on Synzen DVK (SZDV-C-0U01)

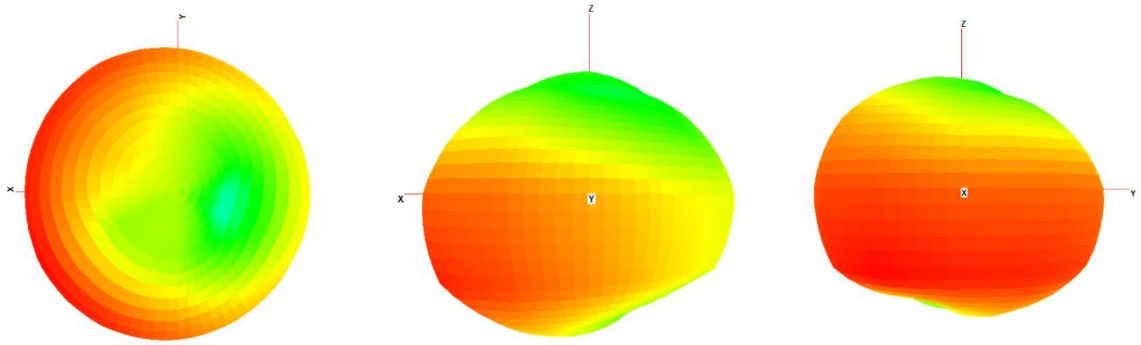


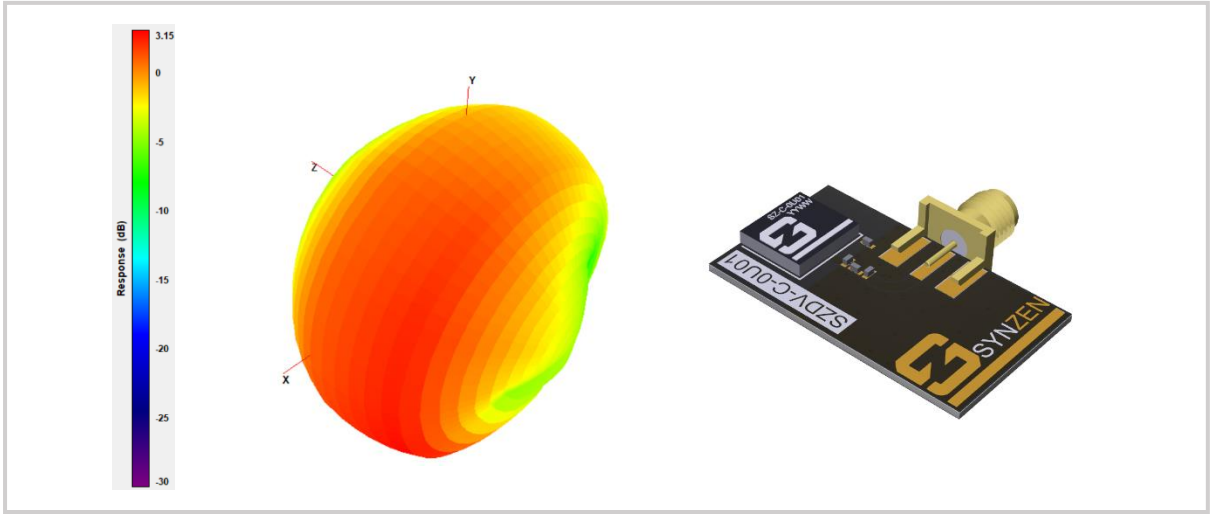
Radiated Performance

3D Radiation Pattern at 3500MHz

The data shown was measured on Synzen DVK (SZDV-C-0U01).



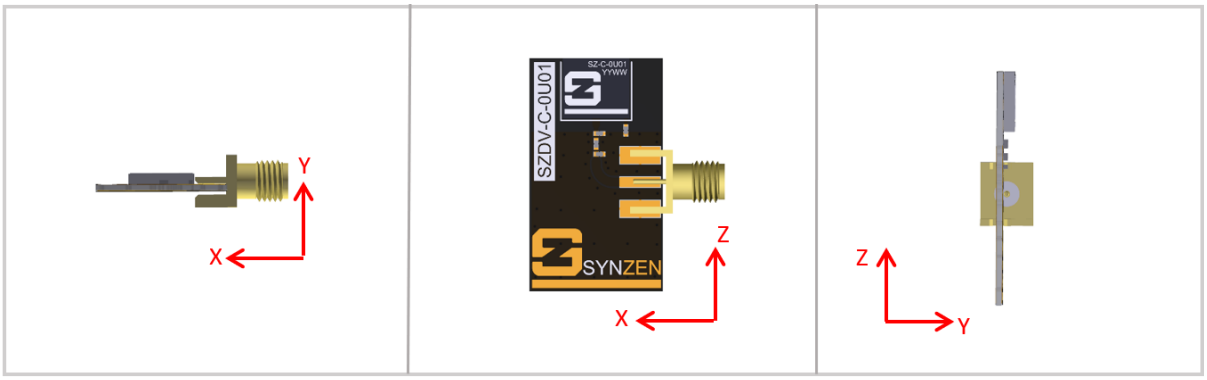


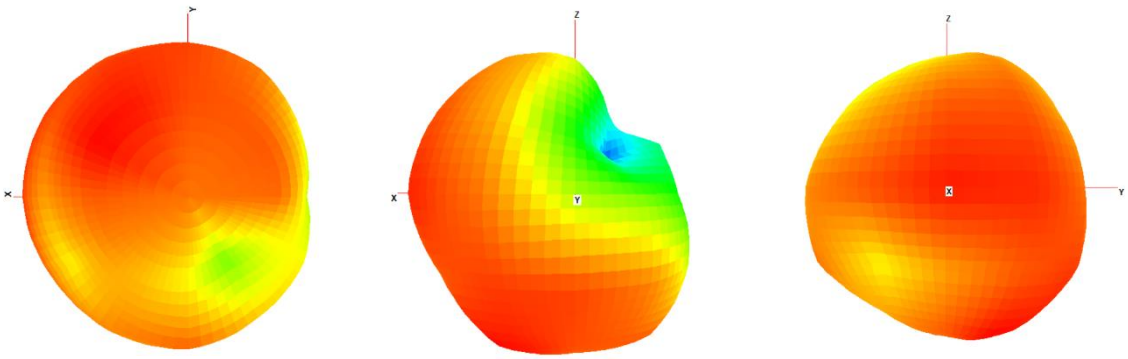


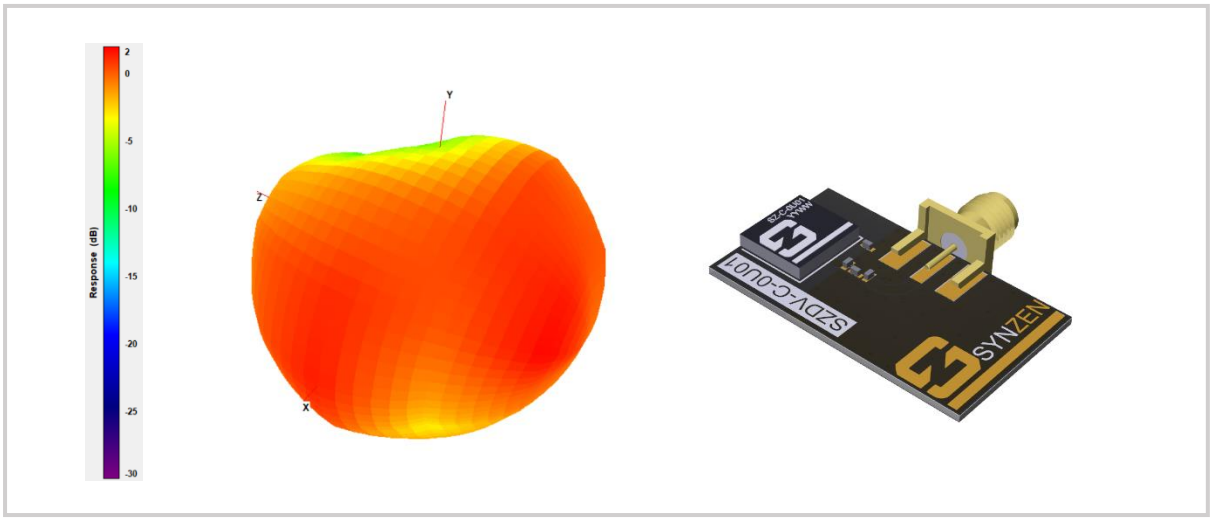
Radiated Performance

3D Radiation Pattern at 6400MHz

The data shown was measured on Synzen DVK (SZDV-C-0U01).

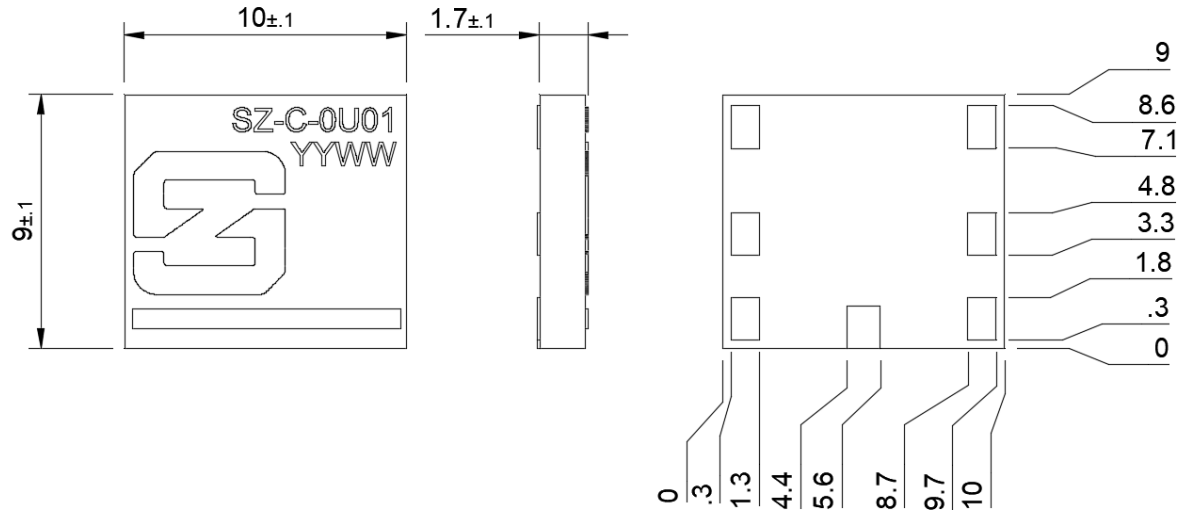






Mechanical

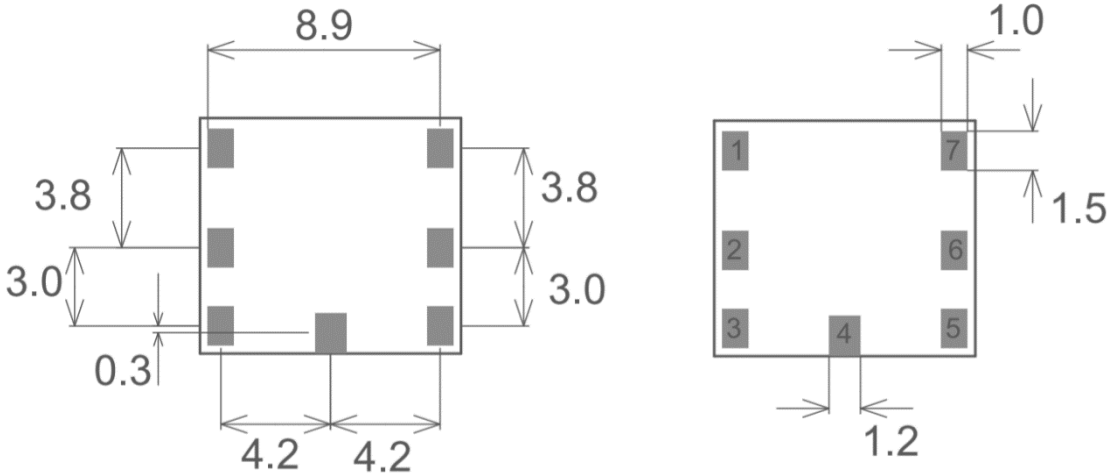
Antenna Mechanical Drawing



All dimensions in mm

Required Host PCB Footprint

The host PCB requires the footprint shown below. PCB library files and DXF is available from our website www.synzen.com.tw/products.



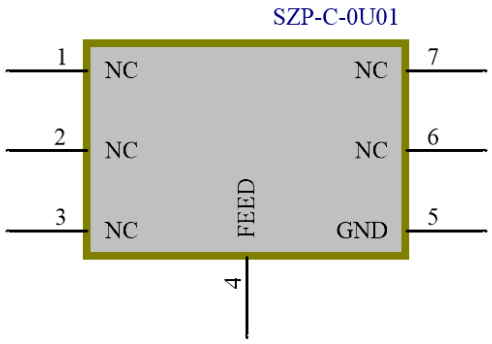
Pins 1,2,3,5,6,7 = 1.0 x 1.5 (mm)
Pin 4 = 1.2 x 1.5 (mm)

All dimensions in mm

Antenna Pinout

SZP-C-0U01 Schematic Symbol

The schematic symbol for the antenna is shown below with a description of each pin.

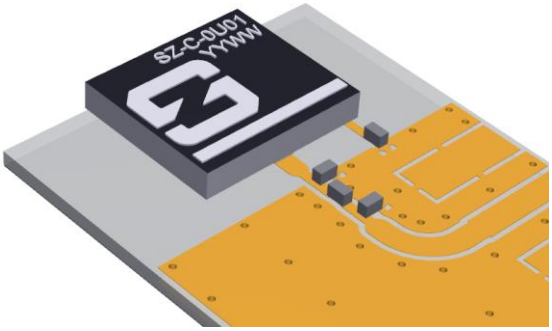


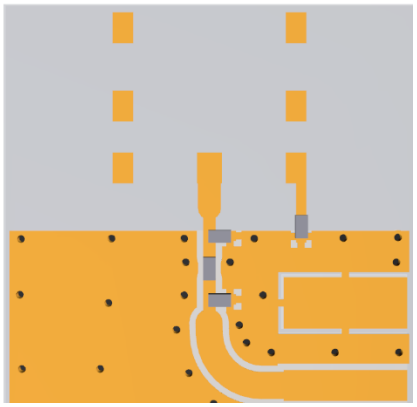
Pin	Description
1,2,3,6,7	Not used, leave unconnected
4	Feed to Matching network
5	Ground

PCB Layout Requirements

Placement

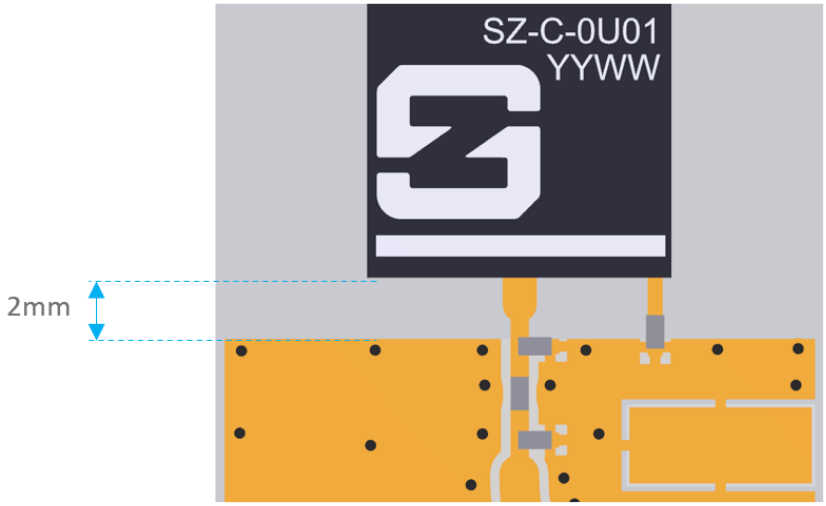
The antenna is designed to function placed at the centre of the shortest PCB edge equidistant from either side as shown here.





Clearance

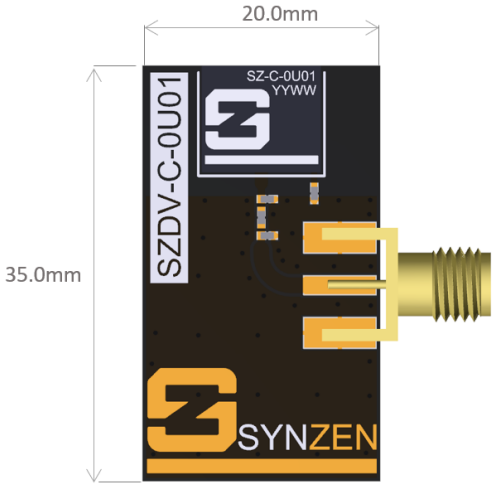
A clearance is required through all PCB layers. Also, any components such as battery or display must also avoid this area. 2mm distance must be maintained from the antenna to the GND plane.

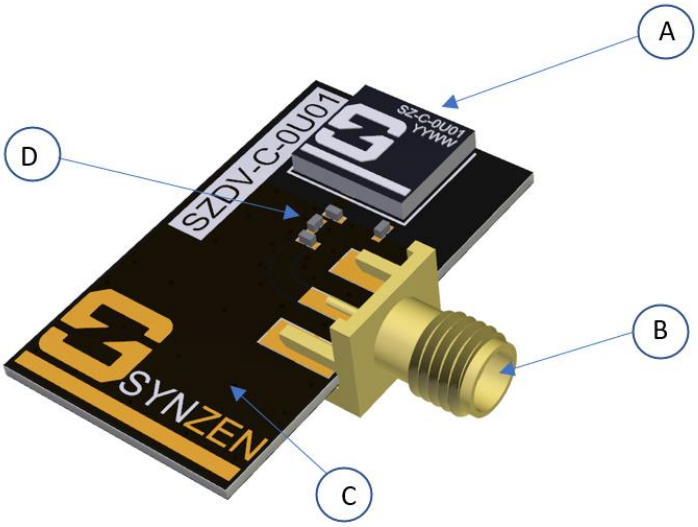


Development Kit

SZDV-C-0U01 Development Kit

The SZDV-C-0U01 development kit is a PCBA with the UWB antenna (SZP-C-0U01) fitted and optimised with a matching network. Connection to the antenna is made using the fitted female SMA connector.



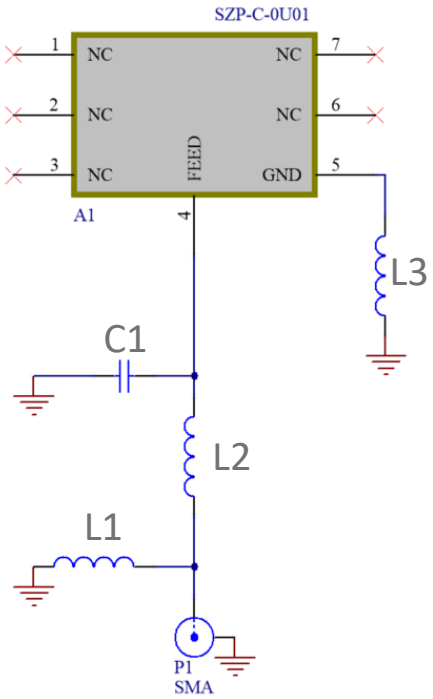


A	SZP-C-0U01-1 (Antenna)
B	SMA Connector
C	Host PCB
D	Matching Circuit

Development Kit Schematic

Development Kit Matching Circuit

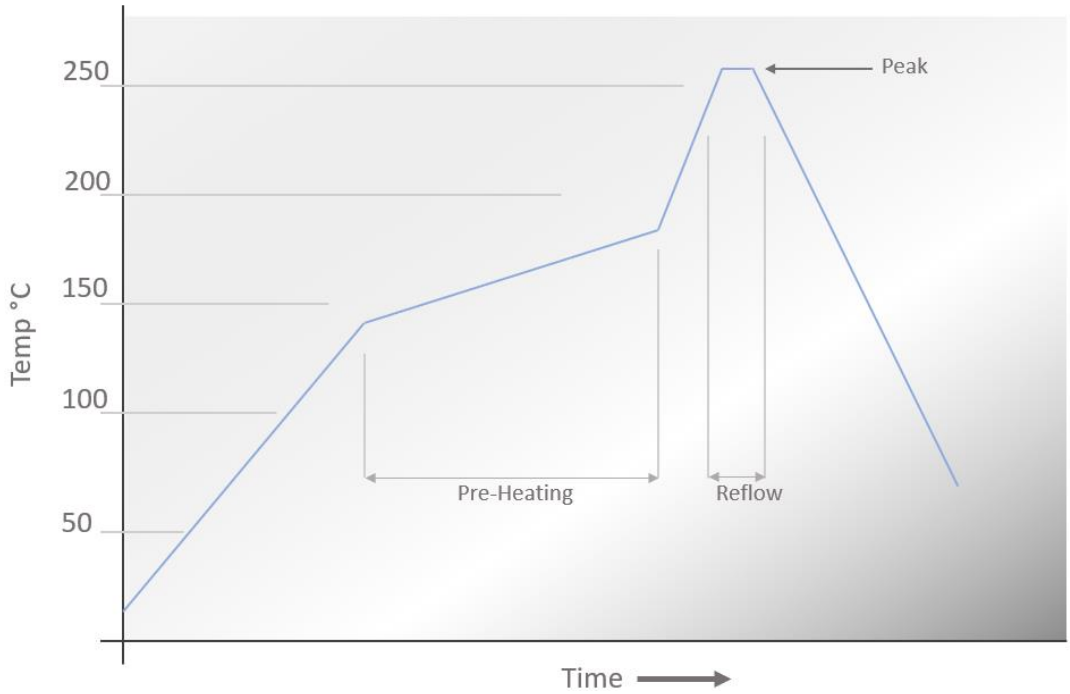
The circuit of the DEV kit along with the BOM is shown below. The matching network topology should be used on the device host PCB although the matching values will be dependent on the host PCB and device environment. Synzen provide a matching service to optimise your device to ensure the best performance, please contact sales@synzen.com.tw for more information.



Designator	Component Type	Value	Size	Manufacturing Part No.
A1	Antenna	RIGEL	-	SZP-C-0U01
L1	Inductor	47nH	0402	LQG15HN47NH02D
L2	Inductor	1.0nH	0402	LQG15HS1N0S02D
C1	Capacitor	Not Fitted	0402	Do Not Place
L3	Inductor	1.5nH	0402	LQG15HS1N5S02D
J1	SMA Connector	-	-	ACE solution A3SAFTST135

Soldering

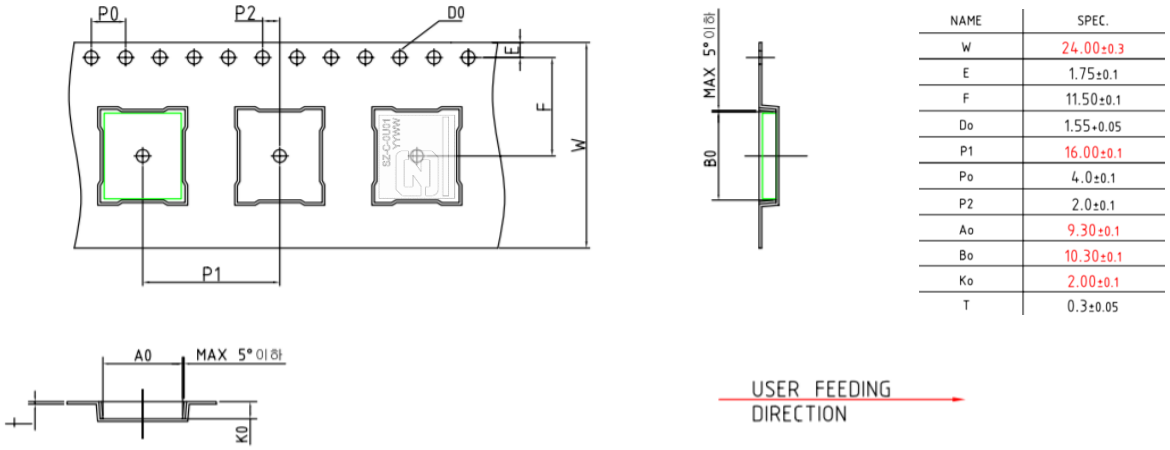
Reflow Profile



Pre-Heating	130 - 180°C	50 to 190 seconds
Reflow	>220 °C	50 to 160 seconds
Peak Temperature	260 °C	15 to 45 seconds

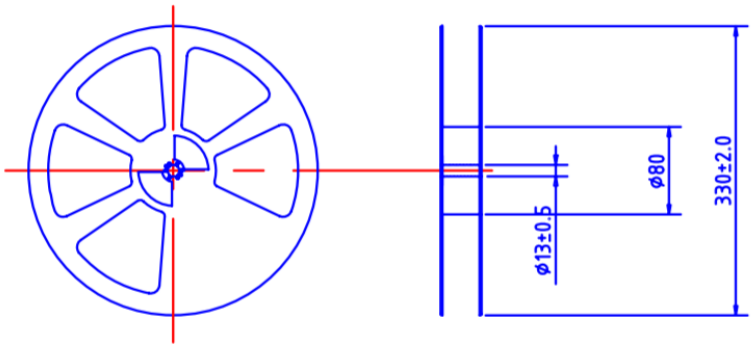
Packaging

Tape and Reel



NAME	SPEC.
W	24.00±0.3
E	1.75±0.1
F	11.50±0.1
Do	1.55+0.05
P1	16.00±0.1
Po	4.0±0.1
P2	2.0±0.1
Ao	9.30±0.1
Bo	10.30±0.1
Ko	2.00±0.1
T	0.3±0.05

1. 10 sprocket hole pitch cumulative tolerance ±0.2
2. Camber not to exceed 1mm in 100mm.
3. Ao and Bo measured on a plane 0.1mm above the bottom of the pocket
4. Ko measured from a plane on the inside bottom of the pocket to the top surface of the carrier.



ANTI-STATIC

REEL DIMENSION	Type	Color	Size	Hub
	PS	Black	ø330	ø80

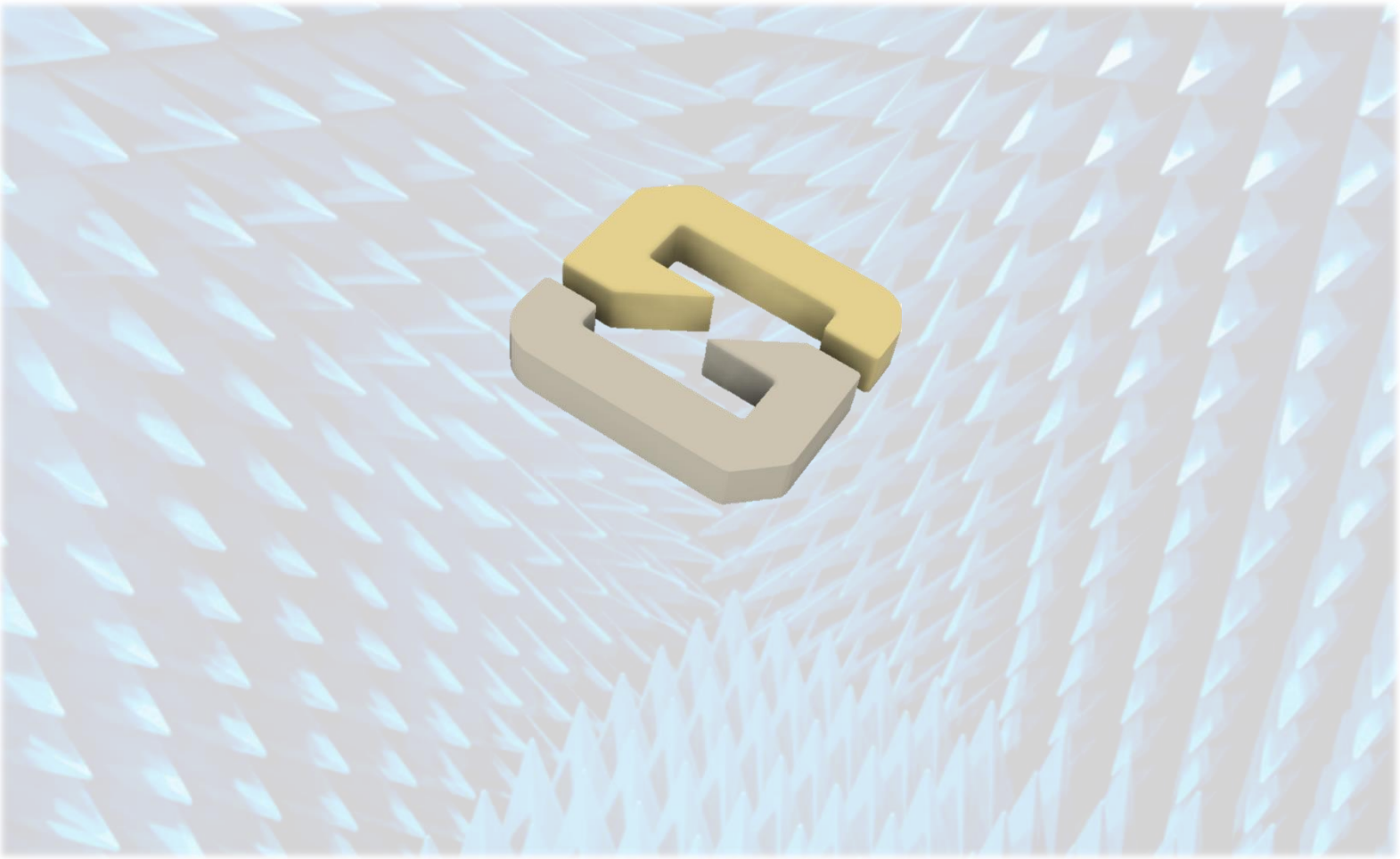
Environmental

Material Regulation

The antenna has been tested to conform to RoHS requirements. A certificate of conformance is available upon request.

This product is Halogen free.

Synzen Precision Technology Ltd



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