GNSS SMD Antenna SZP-C-0G02

GNSS: GPS, GLONASS, GALILEO, Beidou: **1.559 – 1.610 GHz**

Description

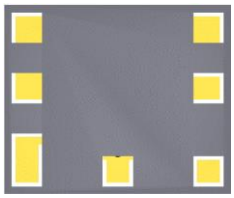
A highly compact yet high-performance solution for embedded design. Synzen have created the optimal solution for GNSS applications that simplify the design in process and allows you to focus on the product.

This antenna resonates best paced at the center of the longest PCB edge and produces a near omni directional pattern unlike patch antennas meaning the device orientation is less critical.

- For GNSS Applications 1559 to 1610MHz
- Highly Resistant to detuning
- Clean resonance with no unwanted out of band response.
- SMD component supplied in Tape and reel
- High performance comparable to large ceramic patch type
- Ideal for wearable or smaller designs.
- Simple design in with no additional clearance needed
- Suitable for sealing with resin/potting compounds

Applications

Asset Tracking	M2M Industrial	Tablets
Wearable devices	Headsets	Healthcare
Drones	Telematics	OBD-II



Patent pending design

General Specifications

Mechanical Specifications

Part Number	SZP-C-0G02
Name	LODESTAR
Dimensions	6.0 x 5.0 x 0.9 (mm)
Required Clearance area	6 x 5 (mm)
Weight	<0.2g
Antenna Type	Surface Mount Device

RF Specifications

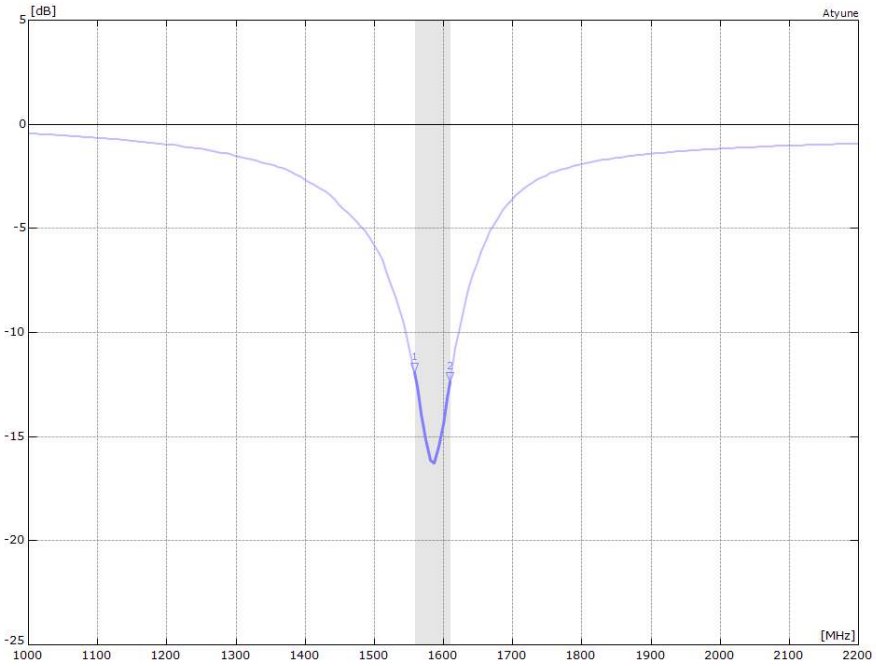
Frequency Range	1559 – 1610MHz
Average Efficiency (Linear)	>60%
Average Efficiency (RHCP)	>30%
Peak Gain	0.5dBi
S11 (max)	<-11.8dB
VSWR (max)	1.70:1
Impedance	50 Ω
Polarization	Linear

Environmental Specifications

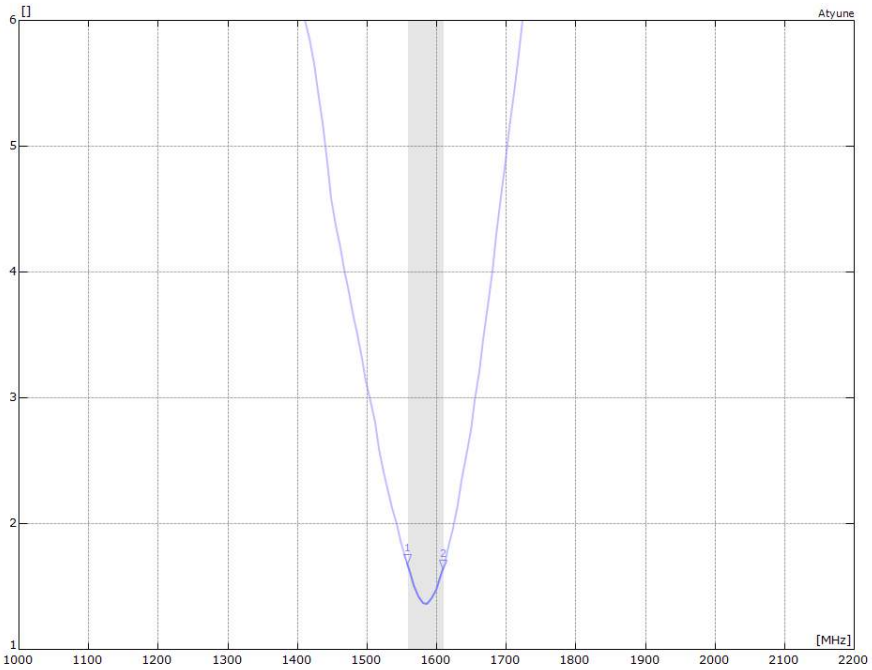
Operational Temperature	-40 to +125 (°C)
Storage Temperature	-10 to +40 (°C)
Relative Humidity	≤75%

RF Characteristics

S11 Parameter



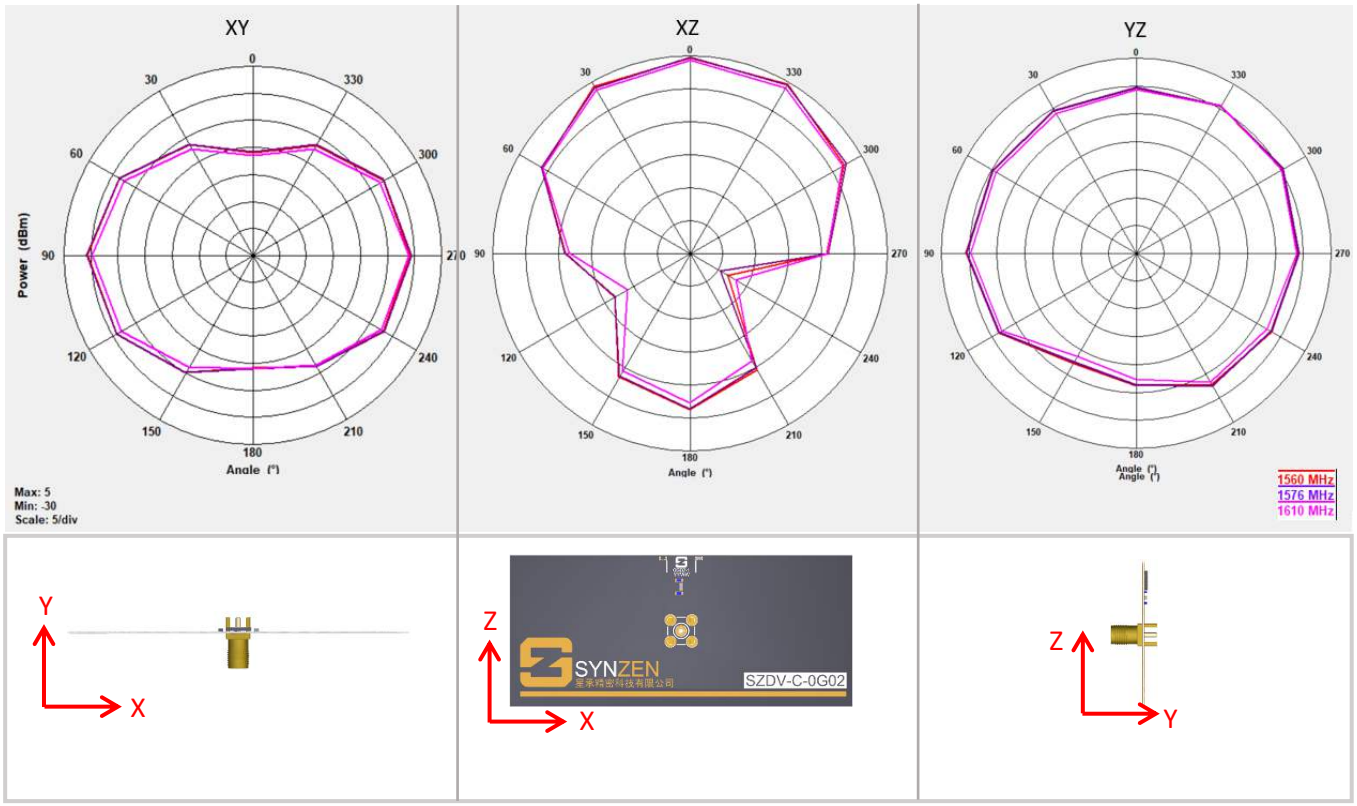
VSWR



Radiated Performance

2D Polar Plot

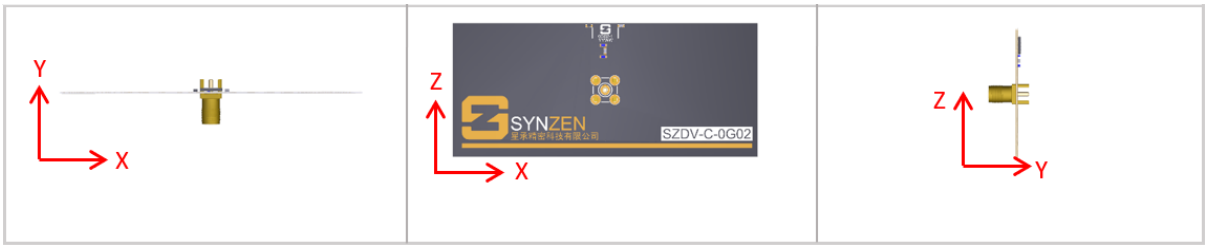
The data shown was measured on Synzen DVK (SZDV-C-0G02)

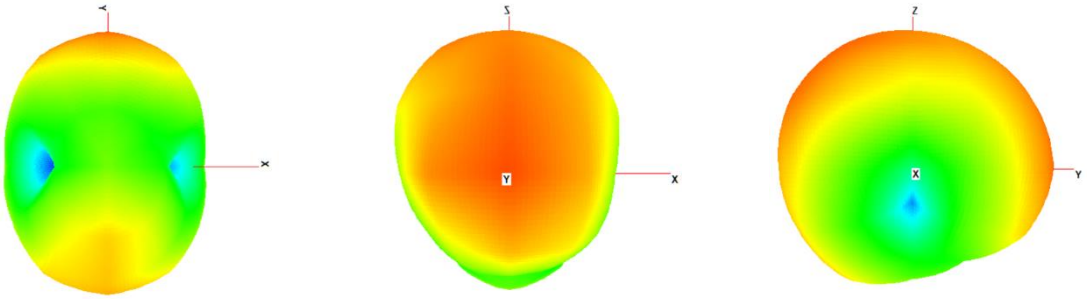


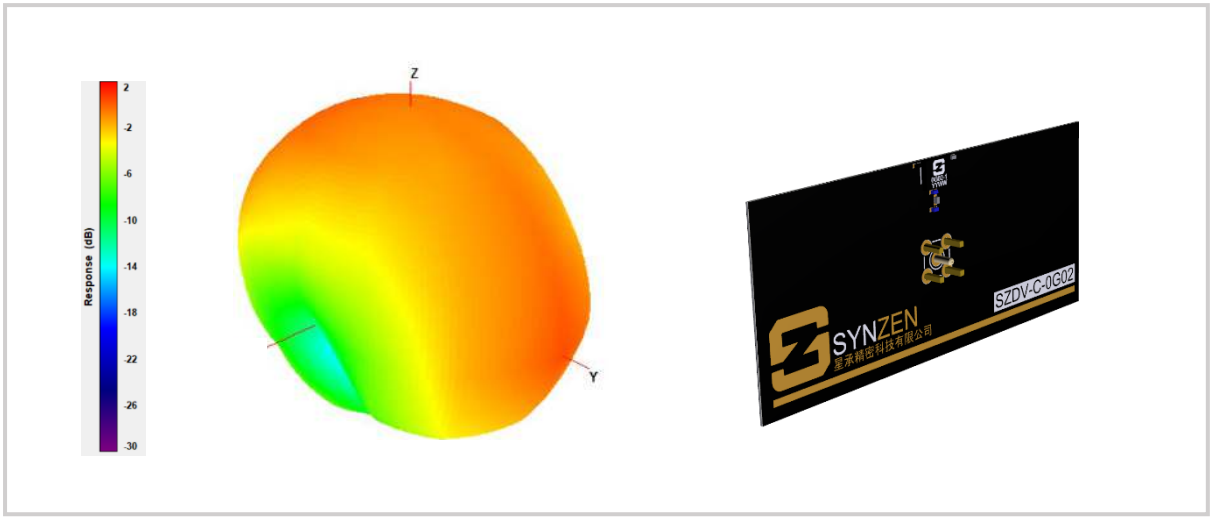
Radiated Performance

3D Radiation Pattern

The data shown was measured on Synzen DVK (SZDV-C-0G02). The frequency point shown here is 1575.42MHz.

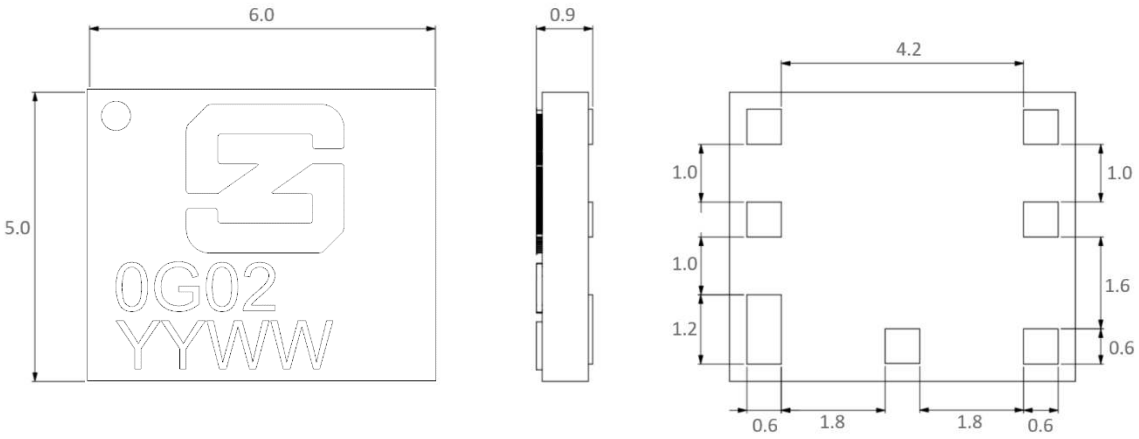






Mechanical

Antenna Mechanical Drawing



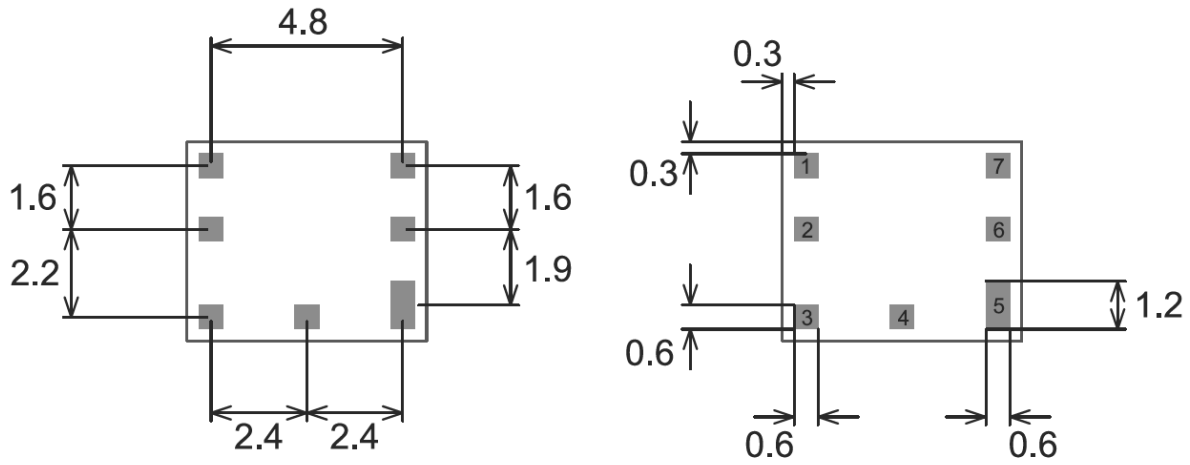
L	W	H
6.0 ±0.1	5.0 ± 0.1	0.9 ± 0.1

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.

The required clearance for the host PCB is 6 x 5 (mm) on all layers.



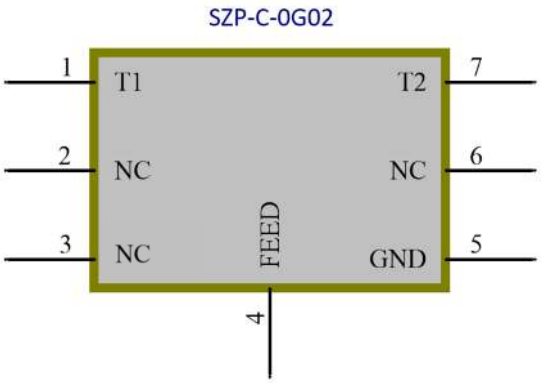
Pins 1,2,3,4,6,7 = 0.6 x 0.6 (mm)
Pin 5 = 1.2 x 0.6 (mm)

All dimensions in mm

Antenna Pinout

SZP-C-0G02 Schematic Symbol

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

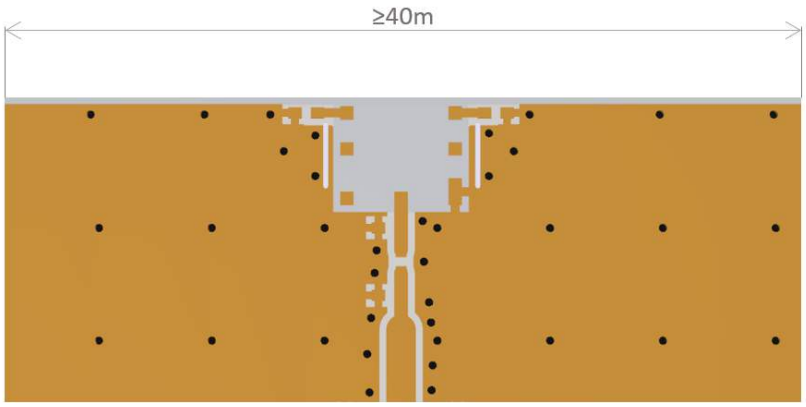


Pin	Description
1,7	Tuning Pins
2,3,6	Not used, leave unconnected
4	Feed to Matching network
5	Ground

PCB Layout Requirements

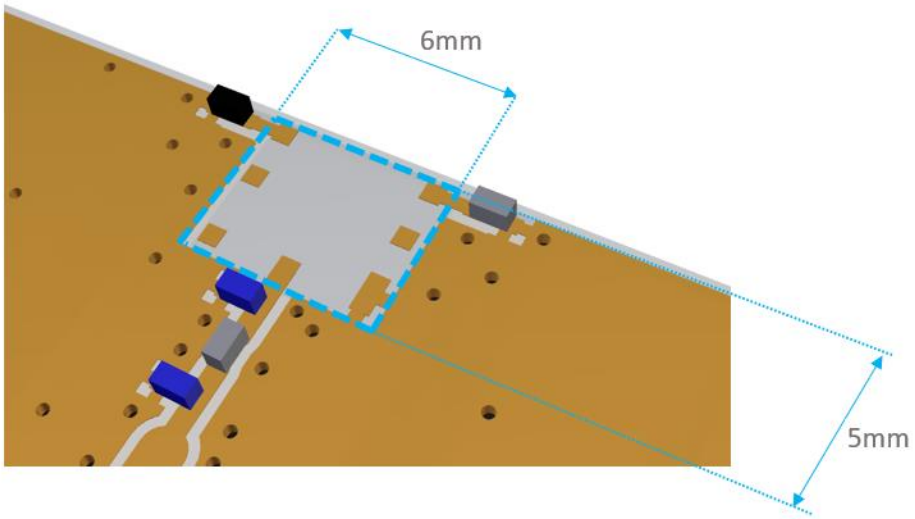
Placement

The antenna is designed to function placed at the centre of the longest PCB edge equidistant from either side as shown here. Where possible the top and bottom side of the PCB should be flooded with GND, this optimizes the antenna performance but also assists in preventing noise that GNSS systems are sensitive to.



Clearance

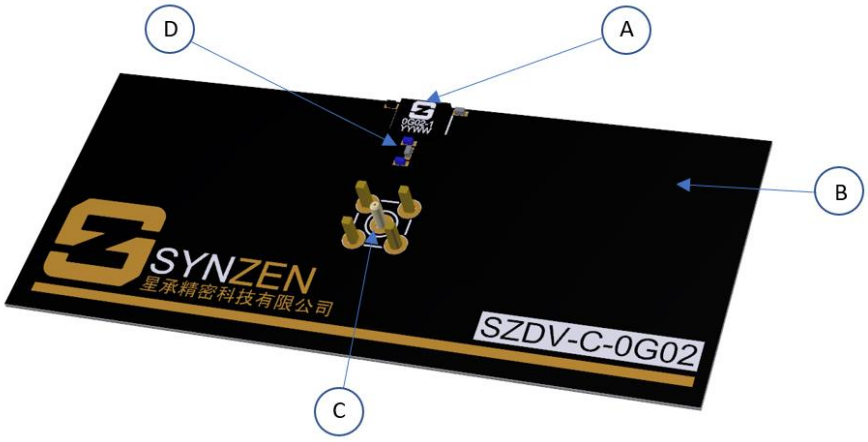
A clearance is required through all PCB layers for the precise area shown. Also, any components such as battery or display must also avoid this area. The rest of the area under the antenna should be filled GND.



Development Kit

SZDV-C-0G02 Development Kit

The SZDV-C-0G02 development kit is a PCBA with the GNSS antenna (SZP-C-0G02) fitted and optimised with a matching network. Connection to the antenna is made using the fitted female SMA connector.

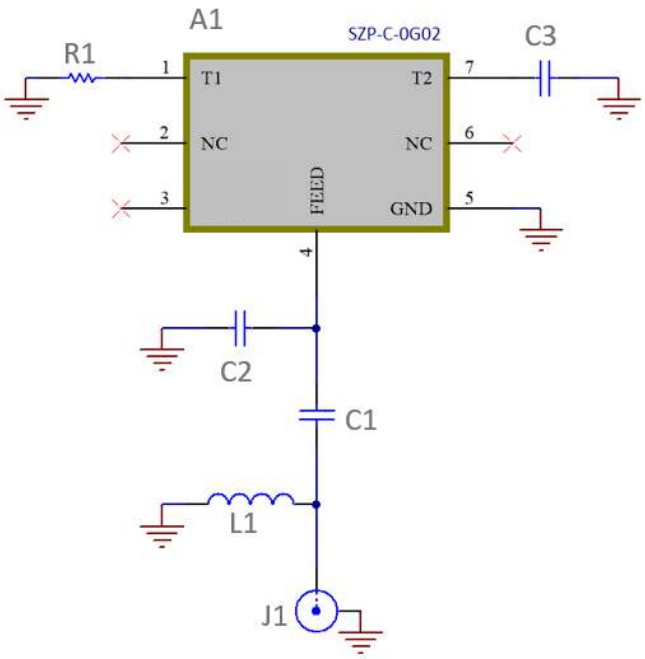


A	SZP-C-0G02 (Antenna)
B	Host PCB
C	SMA Connector
D	Matching Circuit

Development Kit Schematic

Development Kit Matching Circuit

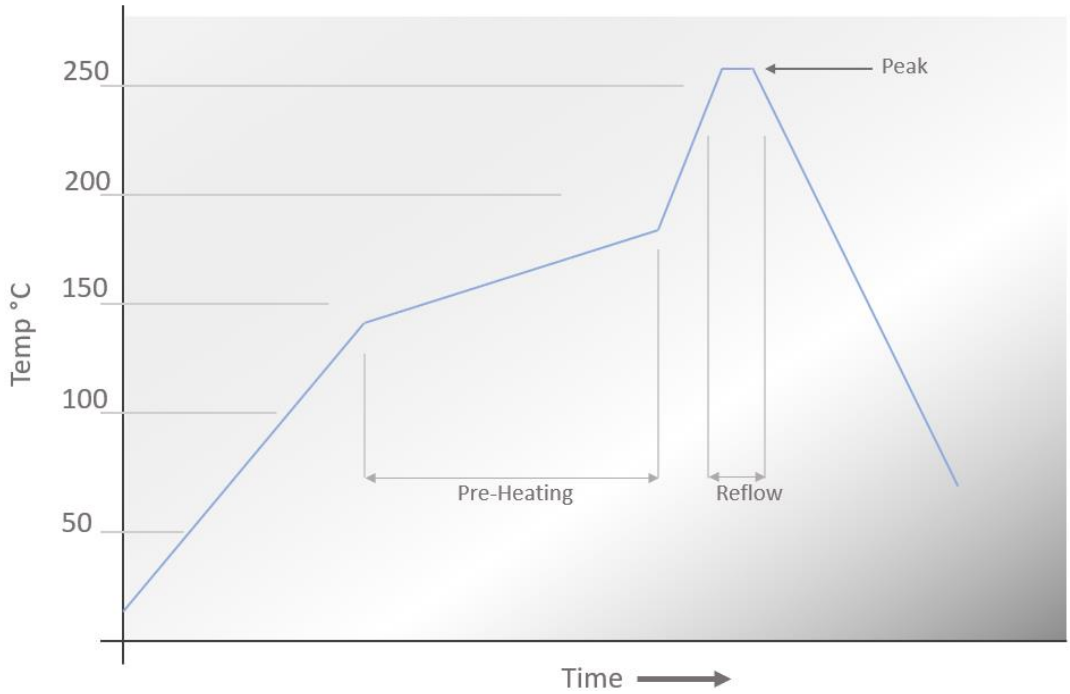
The circuit of the DEV kit along with the BOM is shown below. The matching network topology should be used on the device host PCB although the matching values will be dependent on the host PCB and device environment. Synzen provide a matching service to optimise your device to ensure the best performance,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



Designator	Component Type	Value	Size	Manufacturing Part No.
A1	Antenna	LODESTAR	-	SZP-C-0G02
C1	Capacitor	8.2pF	0402	GRM0335C1H8R2DA01D
C2	Capacitor	1.0pF	0402	GRM0335C1H1R0CA01D
L1	Inductor	Not Fitted	0402	Do Not Place
R1	Resistor	0R	0402	Non-specific part
C3	Capacitor	15pF	0402	GRM0335C1H150JA01D
J1	SMA Connector	-	-	ACE solution A3SAFTST135

Soldering

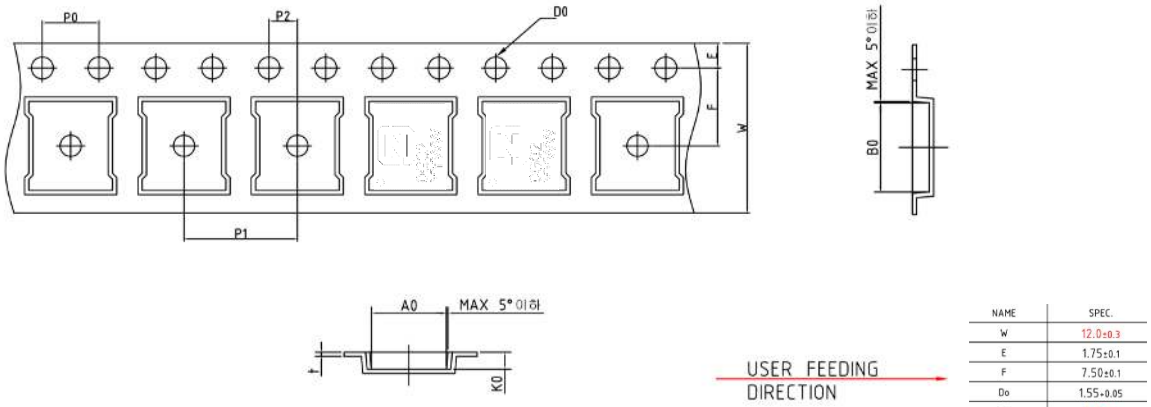
Reflow Profile



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

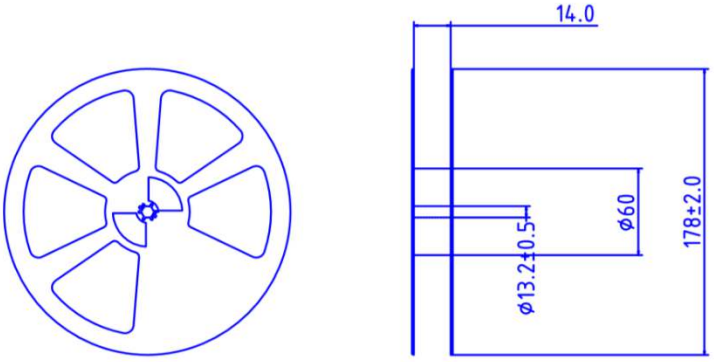
Packaging

Tape and Reel



NAME	SPEC.
W	12.0±0.3
E	1.75±0.1
F	7.50±0.1
Do	1.55+0.05
P1	8.0±0.1
Po	4.0±0.1
P2	2.0±0.1
Ao	5.30±0.15
Bo	6.30±0.15
Ko	1.20±0.15
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	White	ø178	ø60

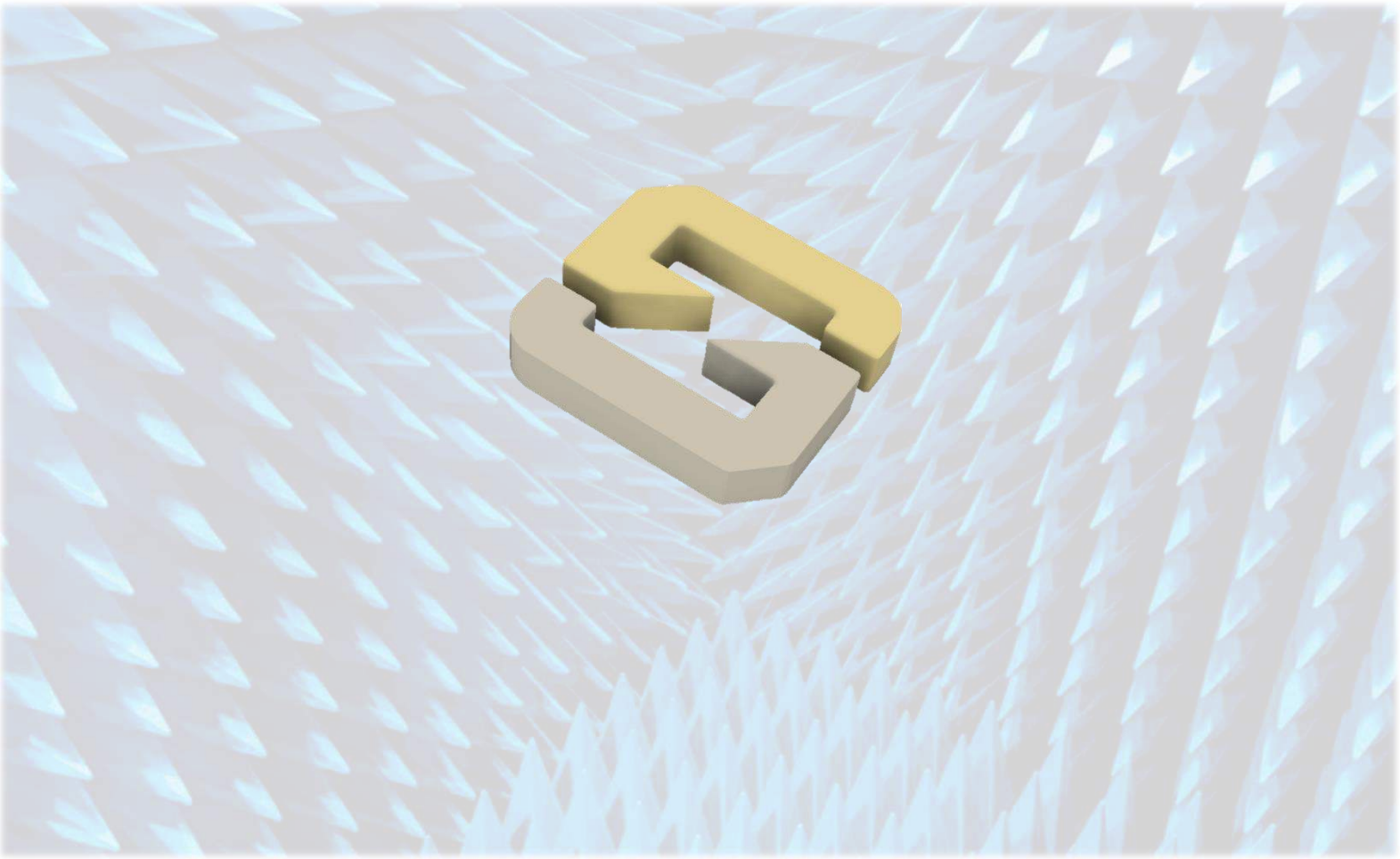
Environmental

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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