



WLAN SMD Ceramic Antenna

SZC-C-0W02

WLAN/Bluetooth/ISM: 2.40 – 2.50 GHz

Description

A high-performance solution for embedded design. Synzen have created SIRIUSa, the optimal solution for WLAN/Bluetooth/ISM applications that simplify the design in process and allows you to focus on the product development.

This antenna resonates best when placed at the centre of the longest PCB edge and produces a near omni directional pattern.

- For WLAN/Bluetooth/ISM Applications 2400 - 2500MHz
- Highly Resistant to detuning
- Clean resonance with no unwanted out of band response.
- SMD component supplied in Tape and reel
- High performance yet ultra-small form factor >70% efficiency
- Ideal for smaller wearable designs.
- Suitable for sealing with resin / potting compounds

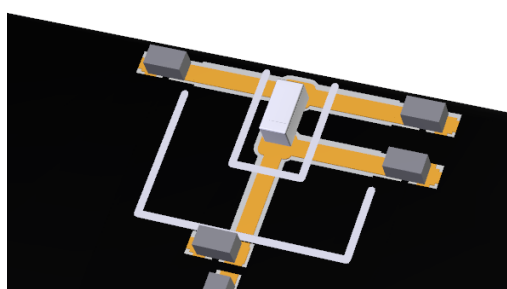


Applications

Industrial/Scientific/Medical
Access Point
Smart Grid

M2M Industrial
Headsets
OBDII

Smart Meters
Healthcare
Tablets





General Specifications

Mechanical Specifications

| | |
|-------------------------|----------------------|
| Part Number | SZC-C-0W02 |
| Name | SIRIUSa |
| Dimensions | 1.6 x 0.8 x 0.8 (mm) |
| Required Clearance area | 6.0 x 5.0 (mm) |
| Weight | <0.1g |
| Antenna Type | Surface Mount Device |

RF Specifications*

| | |
|-----------------------------|----------------|
| Frequency Range | 2400 – 2500MHz |
| Average Efficiency (Linear) | >75% |
| Peak Gain | 3.0dBi |
| S11 (max) | <-11.0dB |
| VSWR (max) | 1.75:1 |
| Impedance | 50 Ω |
| Polarization | Linear |

*All performance stated is measured of SZDV-C-0W02 evaluation kit

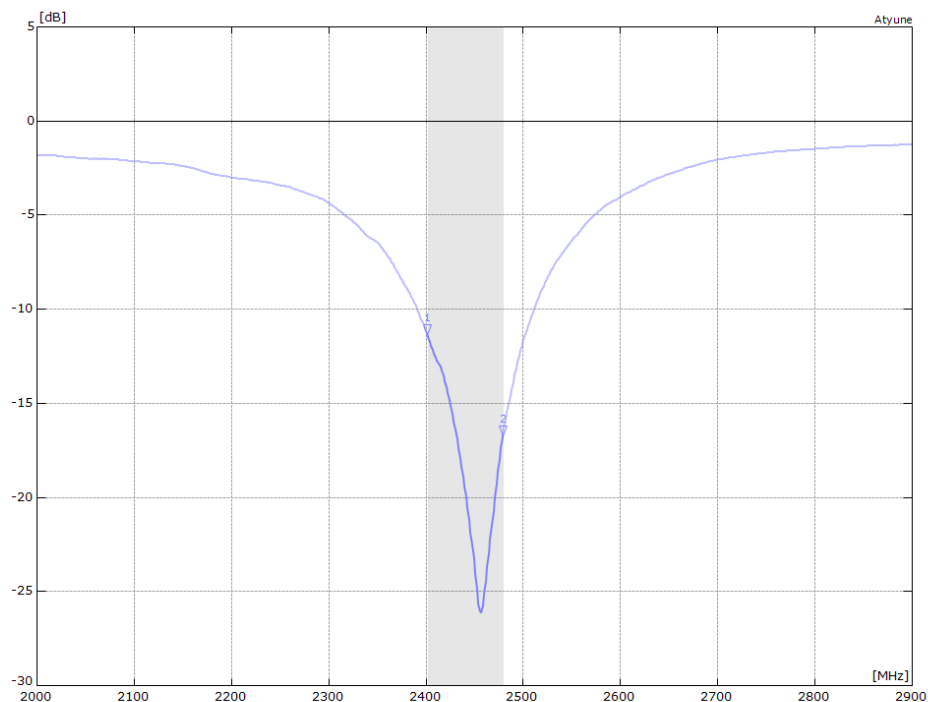
Environmental Specifications

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

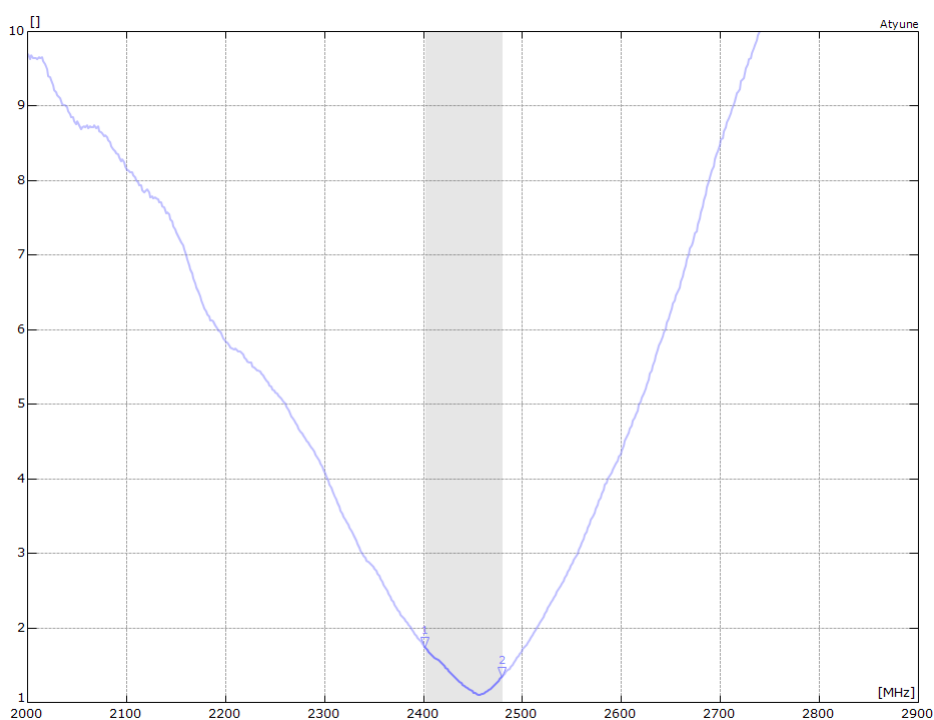


RF Characteristics

S11 Parameter



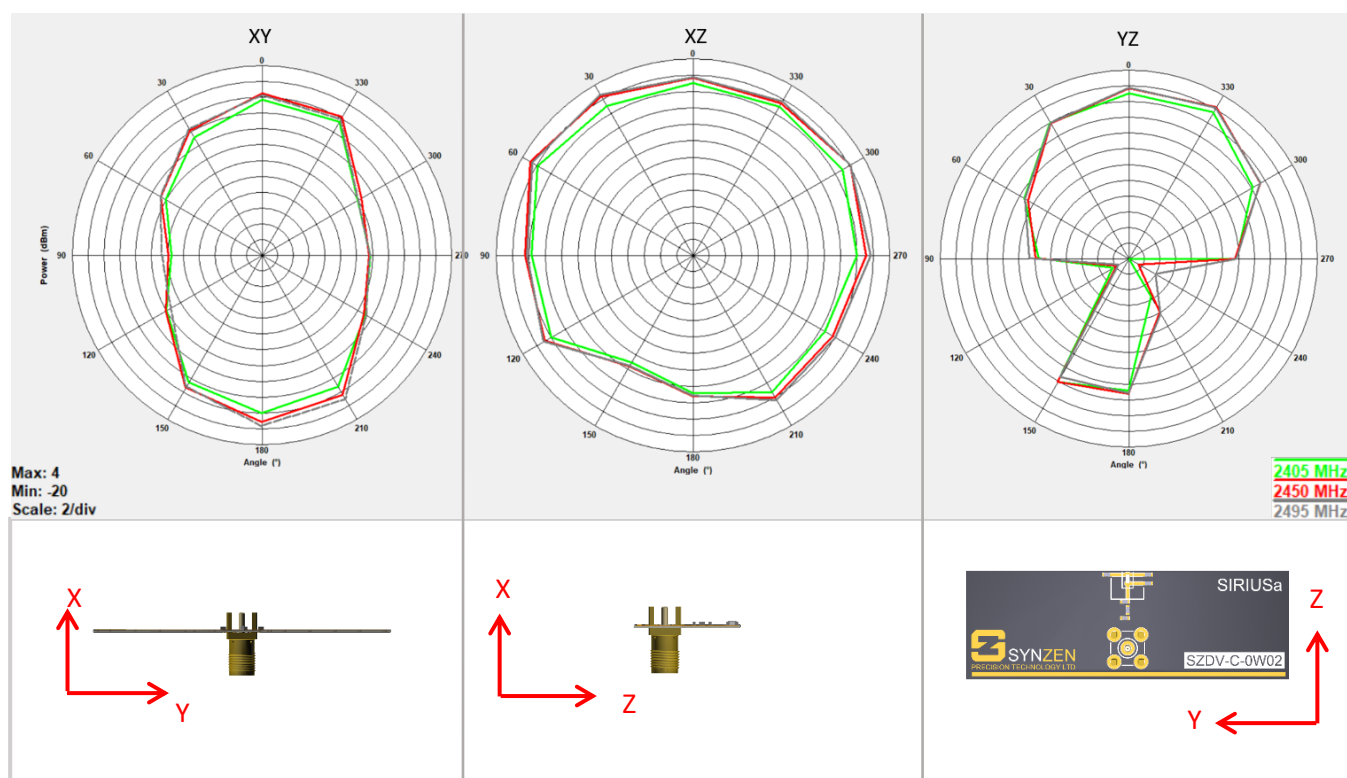
VSWR



Radiated Performance

2D Polar Plot

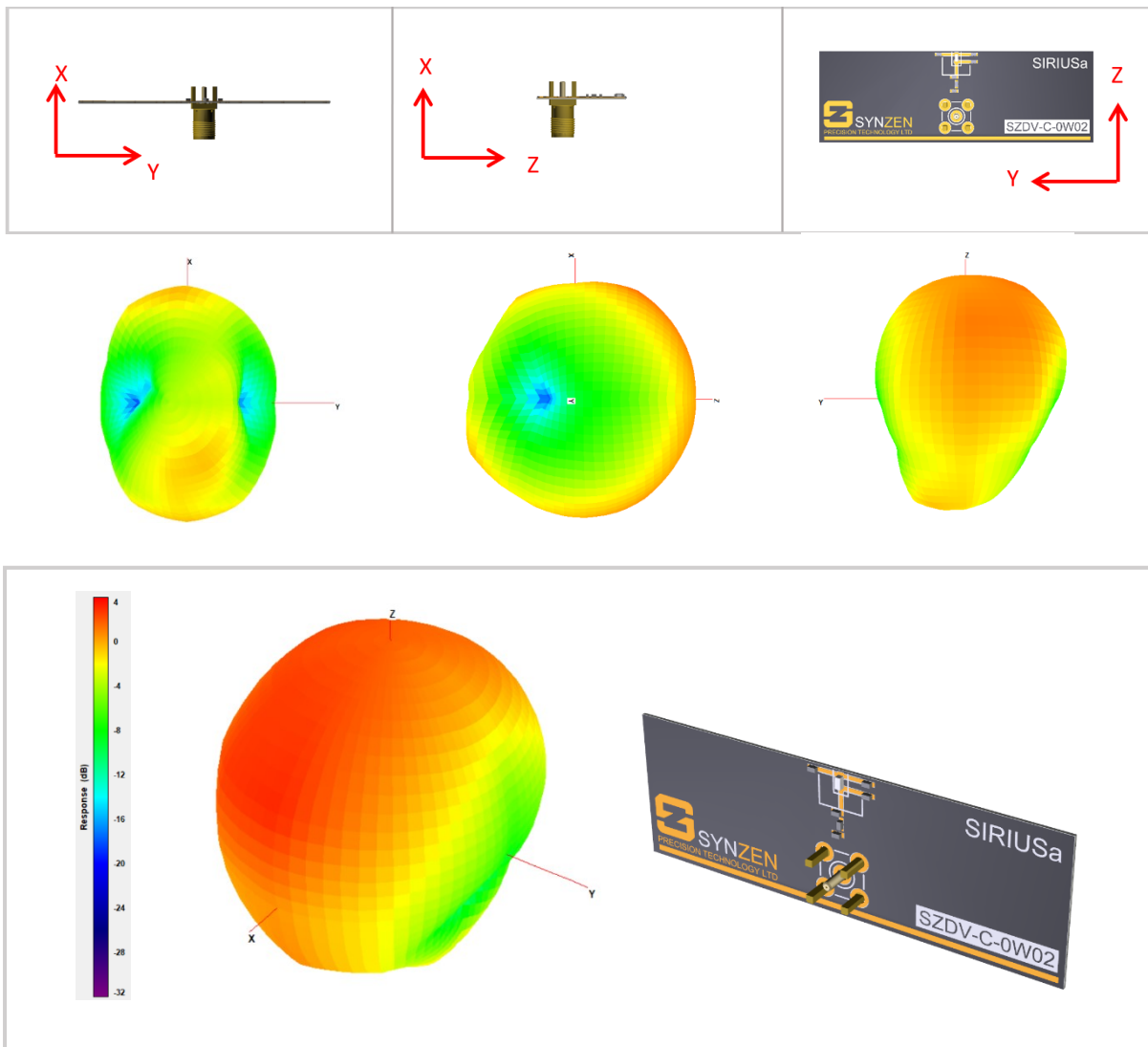
The data shown was measured on Synzen DVK (SZDV-C-0W02)



Radiated Performance

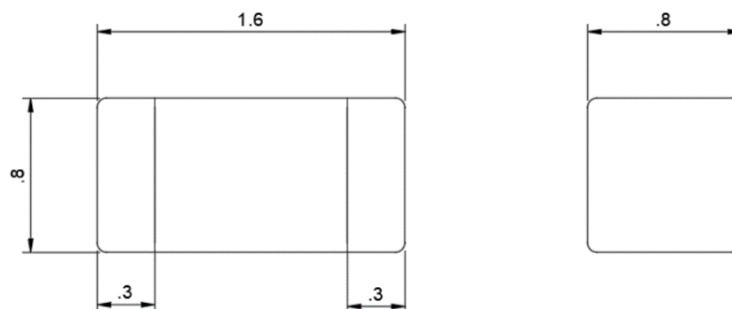
3D Radiation Pattern

The data shown was measured on Synzen DVK (SZDV-C-0W02). The frequency point shown here is 2450MHz.



Mechanical

Antenna Mechanical Drawing

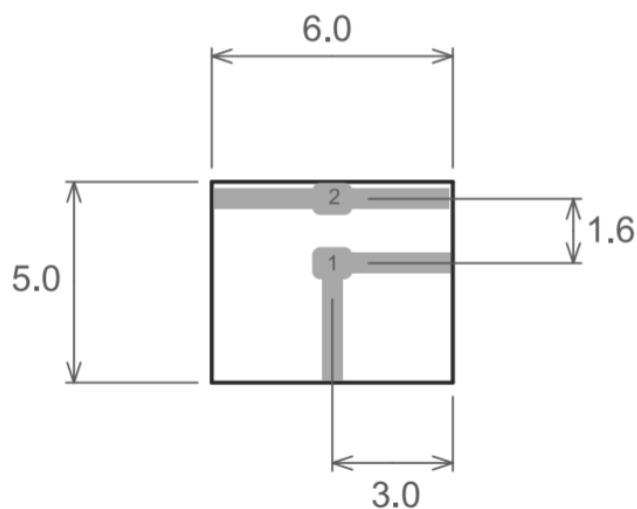


All dimensions in mm

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.

The required clearance for the host PCB is 6.0 x 5.0 (mm) on all layers.



Pins 1,2 = 1.0 x 0.8 (mm)

Trace = 0.5mm width

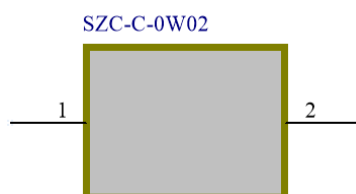
All dimensions in mm



Antenna Pinout

SZC-C-0W02 Schematic Symbol

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

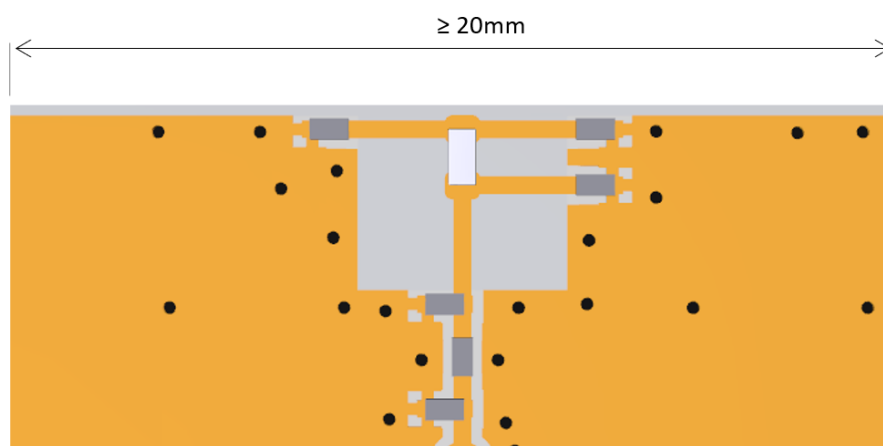


| Pin | Description |
|-----|---------------------------|
| 1 | Not orientation sensitive |
| 2 | Not orientation sensitive |

PCB Layout Requirements

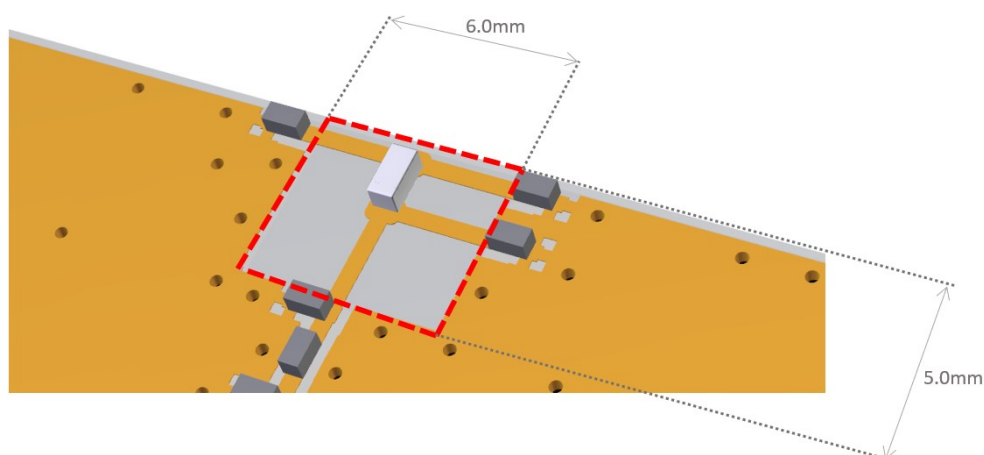
Placement

The antenna is designed to function placed at the centre of the longest PCB edge. Where possible the top and bottom layers of the PCB should be flooded with GND, this optimizes the antenna performance.



Clearance

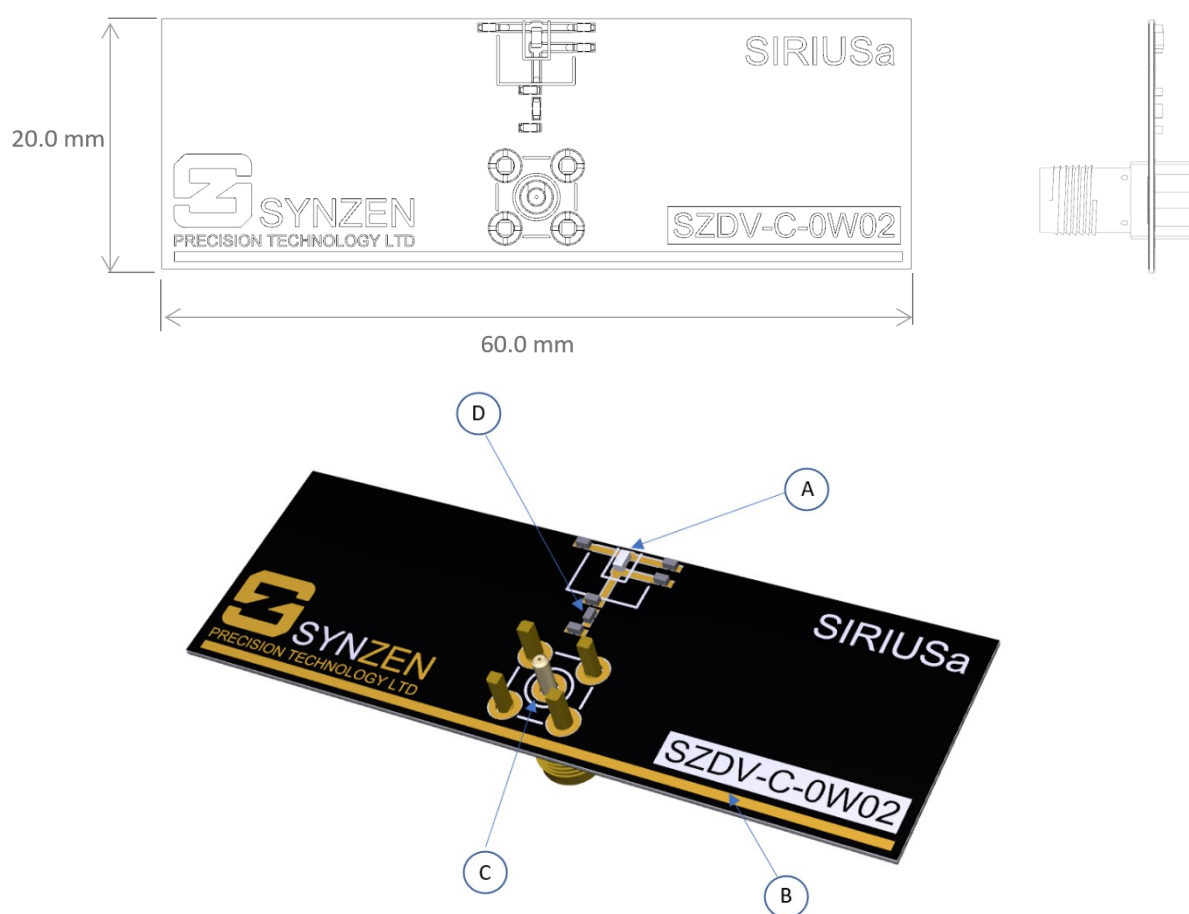
A clearance is required through all PCB layers for the precise area shown. Also, any components such as battery or display must also avoid this area. The rest of the area under the antenna should be filled GND.



Development Kit

SZDV-C-0W02 Development Kit

The SZDV-C-0W02 development kit is a PCBA with the antenna (SZC-C-0W02) fitted and optimised with a matching network. Connection to the antenna is made using the fitted female SMA connector.

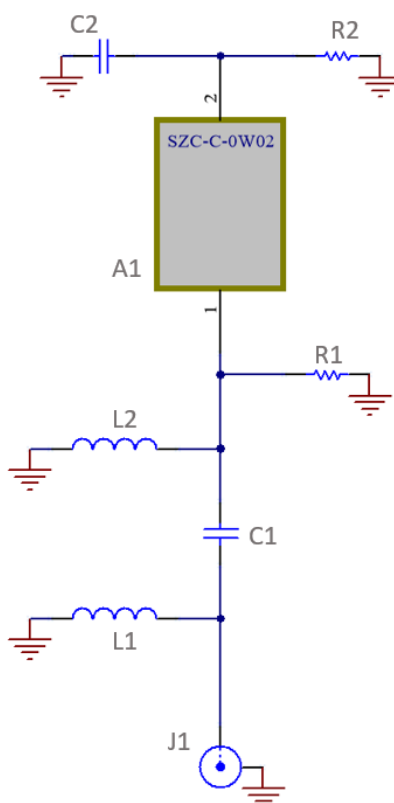


| | |
|---|----------------------|
| A | SZC-C-0W02 (Antenna) |
| B | Host PCB |
| C | SMA Connector |
| D | Matching Circuit |

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.

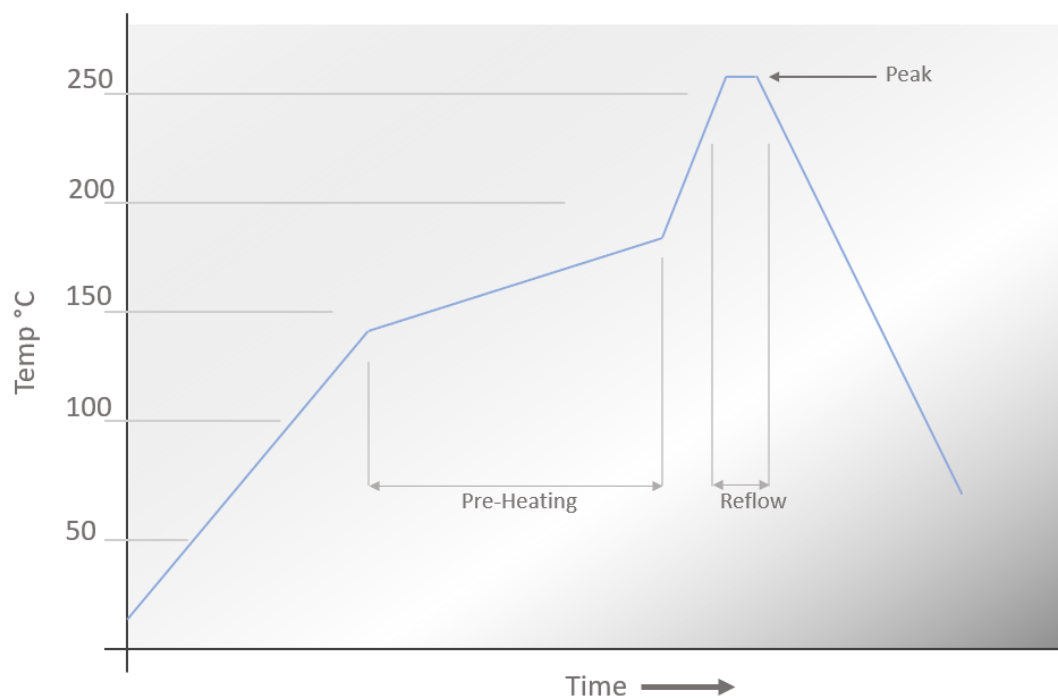


| Designator | Component Type | Value | Size | Manufacturing Part No. |
|------------|----------------|------------|------|--------------------------|
| A1 | Antenna | SIRIUSa | - | SZC-C-0W02 |
| C1, R1, R2 | Resistor | 0R | 0402 | Nonspecific part |
| C2 | Capacitor | 1.0pF | 0402 | GCM1555C1H1R0CA16J |
| L1, L2 | Inductor | Not Fitted | 0402 | Do Not Place |
| J1 | SMA Connector | - | - | ACE solution A3SAFTST135 |



Soldering

Reflow Profile

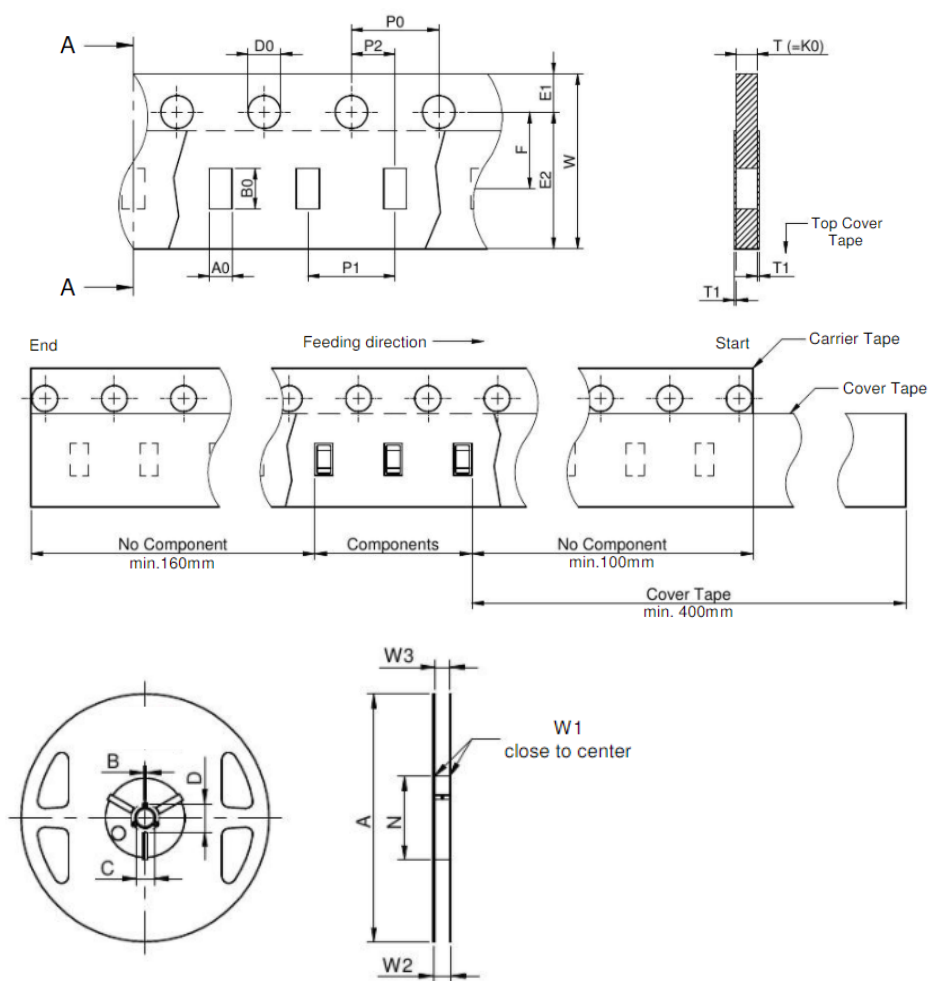


| | | |
|-------------------------|-------------|-------------------|
| Pre-Heating | 130 - 180°C | 50 to 190 seconds |
| Reflow | >220 °C | 50 to 160 seconds |
| Peak Temperature | 260 °C | 15 to 45 seconds |

Packaging

Tape and Reel

| | A0 | B0 | W | T | T1 | P0 | P1 | P2 | D0 | E1 | E2 | F | Tape Type 1a | VPE / packaging unit | |
|-----------|------|------|------------|------|------|------|------|-------|-------------|------|------|-------|--------------|----------------------|-------|
| tolerance | typ. | typ. | +0.3/ -0.1 | typ. | max. | ±0.1 | | +0.05 | +0.1 / -0.0 | ±0.1 | min. | ±0.05 | | pcs. | |
| size | 0402 | 0.62 | 1.15 | 8.00 | 0.60 | 0.10 | 4.00 | 2.00 | 2.00 | 1.50 | 1.75 | 6.25 | 3.50 | Polystyrene | 10000 |



| A (mm) | B (mm) | C (mm) | D (mm) | N (mm) | W1 (mm) | W2 (mm) | W3 (mm) | W3 (mm) | Material |
|--------|--------|--------|--------|--------|---------|---------|---------|---------|---------------------------|
| ± 2.0 | min. | min. | min. | min. | +1.5 | max. | min. | max. | |
| 178 | 1.5 | 12.8 | 20.2 | 50 | 8.4 | 14.4 | 7.9 | 10.9 | Polystyrene/ Polyurethane |



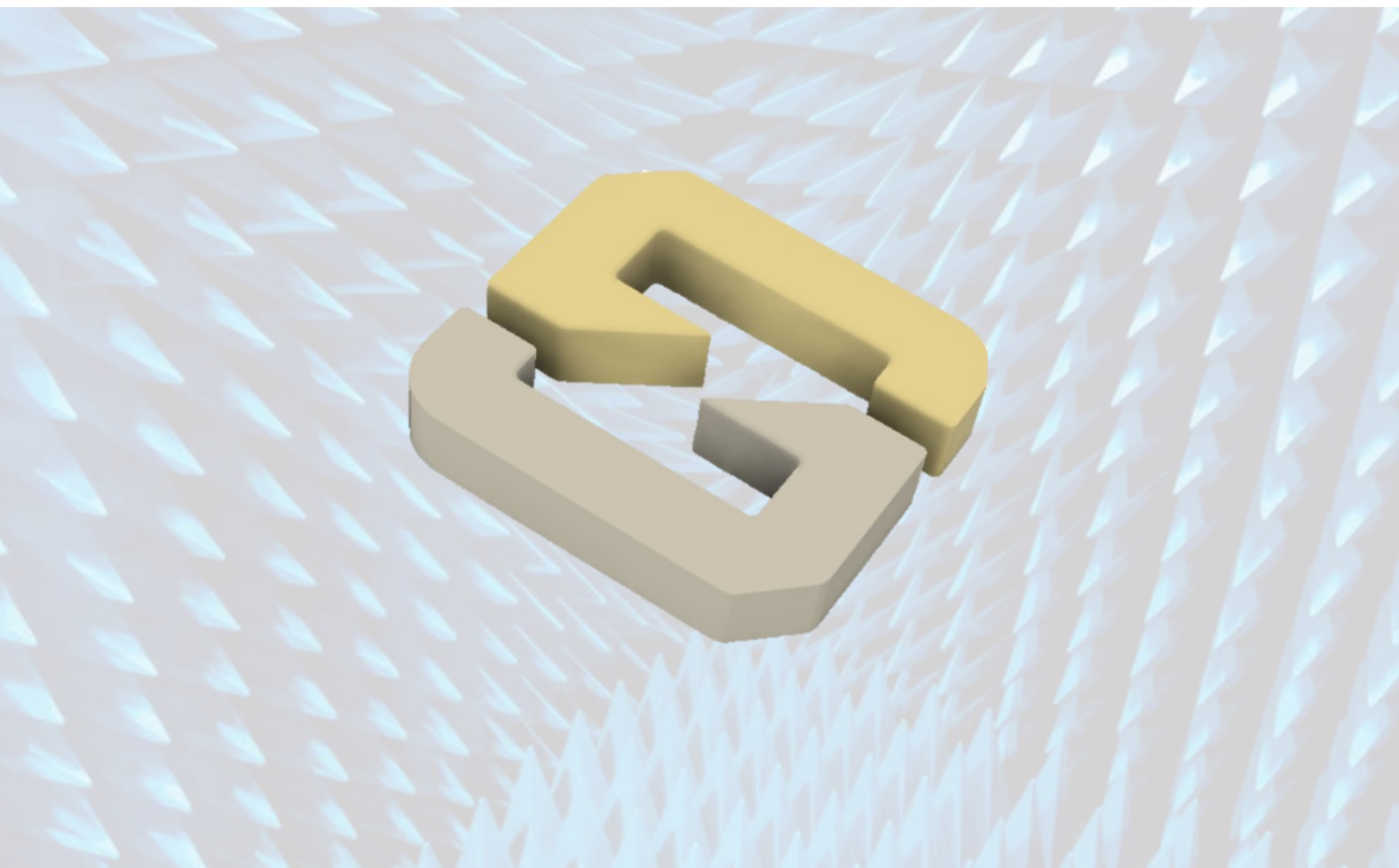
Environmental

Material Regulation

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



Synzen Precision Technology Ltd



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