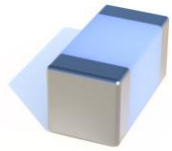
SYNZEN



DATASHEET

SIRIUSa SZC-C-0W02 | Ceramic Chip Antenna | WI-FI/ Bluetooth

Features:

WI-FI : 2400-2500MHz

>4.8dBi Peak Gain, >75% Efficiency

Dimensions: 1.6 x 1.6 x 0.8 mm
Clearance Area: 6.0 x 5.0 mm
RoHs compliant

Contents

Introduction

SIRIUSa ceramic chip antenna, the ultimate solution for WLAN, Bluetooth, and ISM applications. Designed to simplify your design process, SIRIUSa empowers you to focus on product development while delivering exceptional performance.

Engineered to resonate best when placed at the centre of the longest PCB edge, SIRIUSa provides a near-omnidirectional radiation pattern. Its robust design ensures consistent performance, even in challenging environments.

Key Features:

- Optimal for WLAN/Bluetooth/ISM Applications (2400–2500 MHz)
- Highly resistant to detuning for reliable performance.
- Clean resonance with no unwanted out-of-band responses.
- SMD component supplied in tape and reel for streamlined assembly.
- Ultra-small form factor with >70% efficiency for high-performance results.
- Ideal for compact, wearable designs.
- Compatible with resin and potting compounds for robust sealing.

Applications:

- Industrial/Scientific/Medical
- M2M Industrial
- Smart Meters
- Access Points
- Headsets
- Healthcare
- Smart Grid
- ODBII
- Tablets

Choose SIRIUSa for a reliable, efficient, and space-saving antenna solution that meets the demands of modern embedded design.

Mechanical Specifications

Parameter	
Part Number	SZC-C-0W02
Name	SIRIUSa
Dimensions (mm)	1.6 x 1.6 x 0.8
Weight	<0.1g
Antenna Type	Surface Mount Ceramic Chip

Electrical / RF Specifications

Band	Frequency Range (MHz)	Efficiency (%)	Peak Gain (dBi)	VSWR	Impedance
Wi-Fi/BLE	2400-2500	>75	3.0	1.75:1	50 Ω

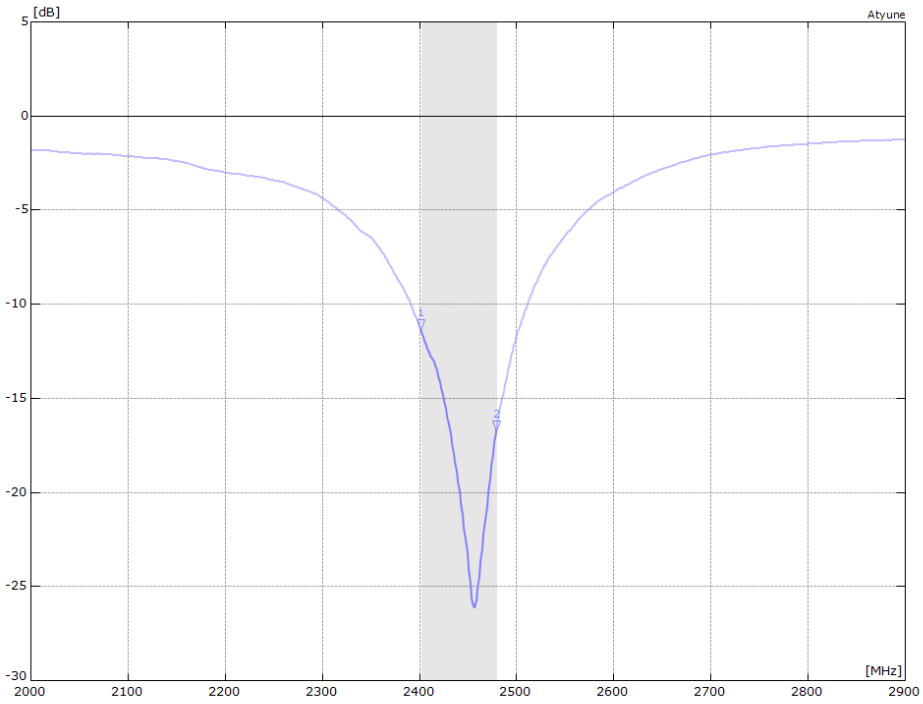
Note: All performance stated is measured of SZDV-C-0W02 evaluation kit

Environmental

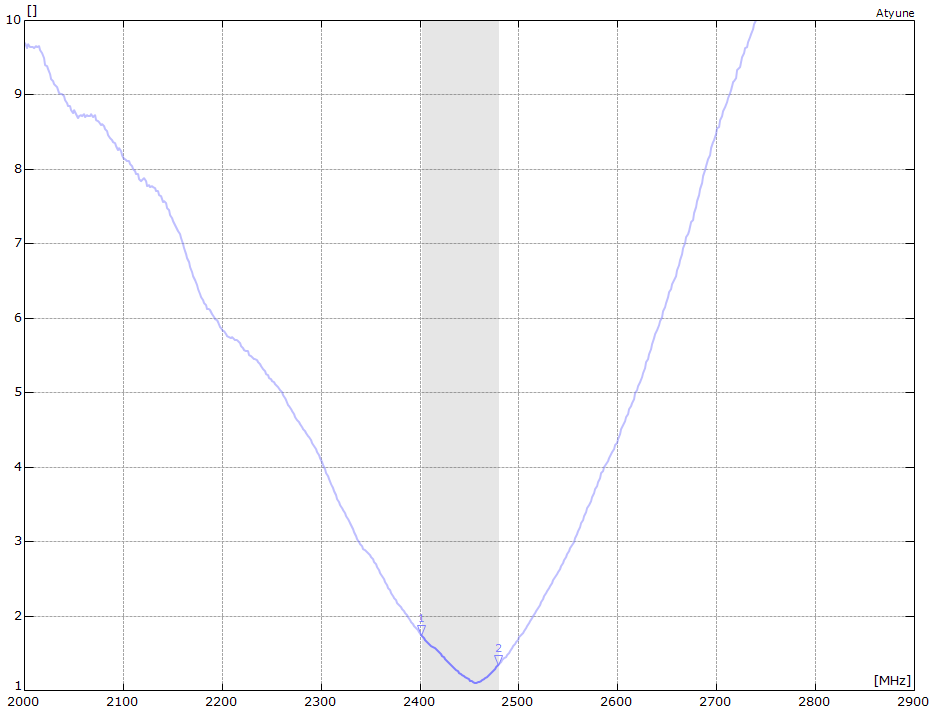
Parameter	
Operational Temperature	-40 to +125
Storage Temperature	-10 to +40
Relative Humidity (Storage)	65±20% RH
Moisture Sensitivity	1
RoHs and REACH compliant	Yes

RF Characteristics

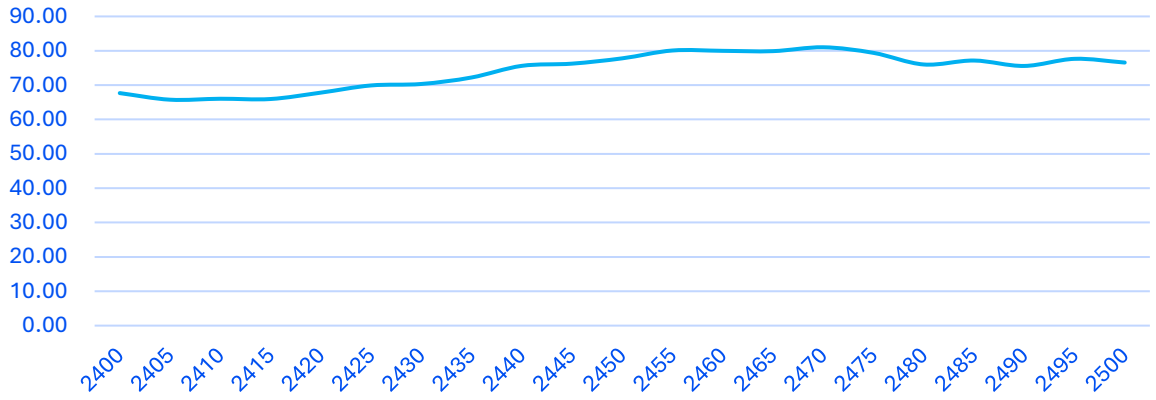
Return loss



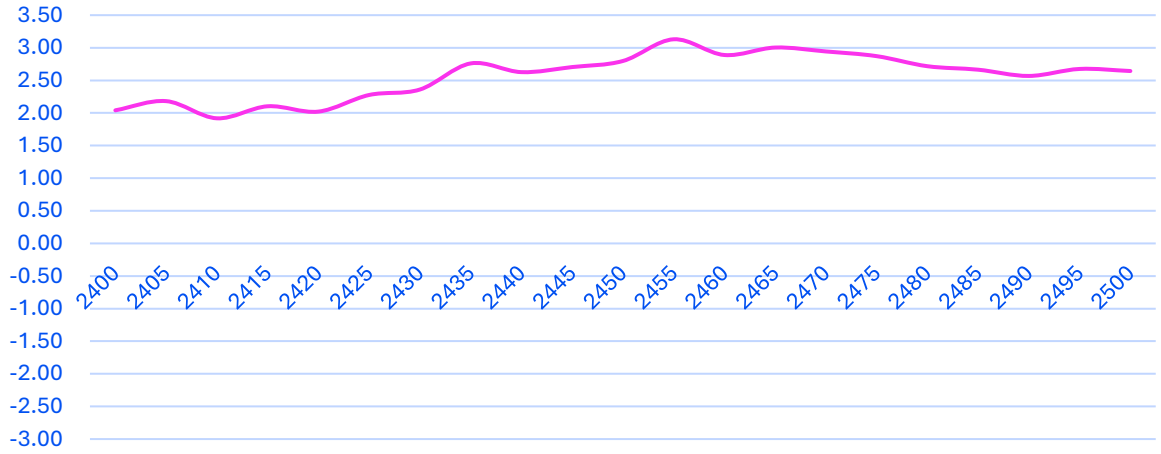
VSWR



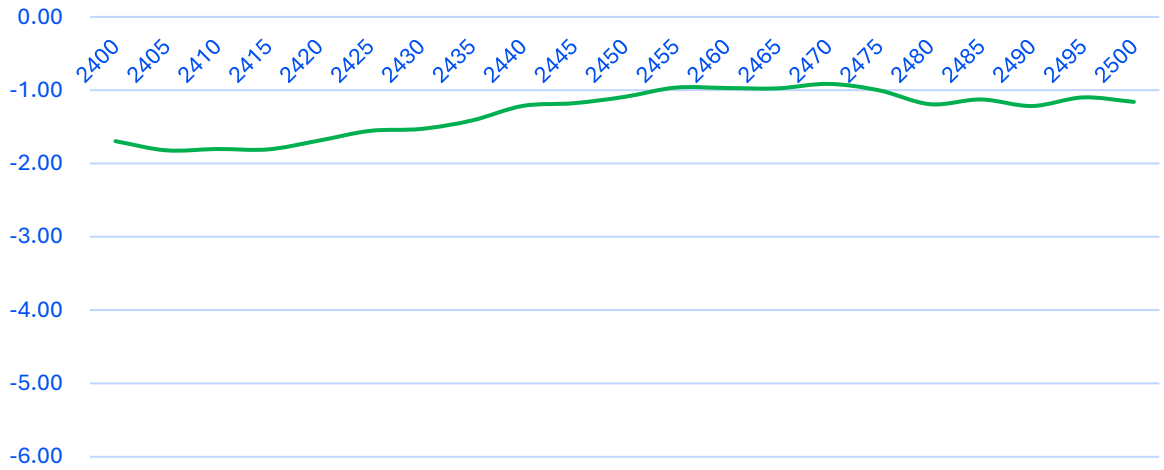
Efficiency



Peak Gain

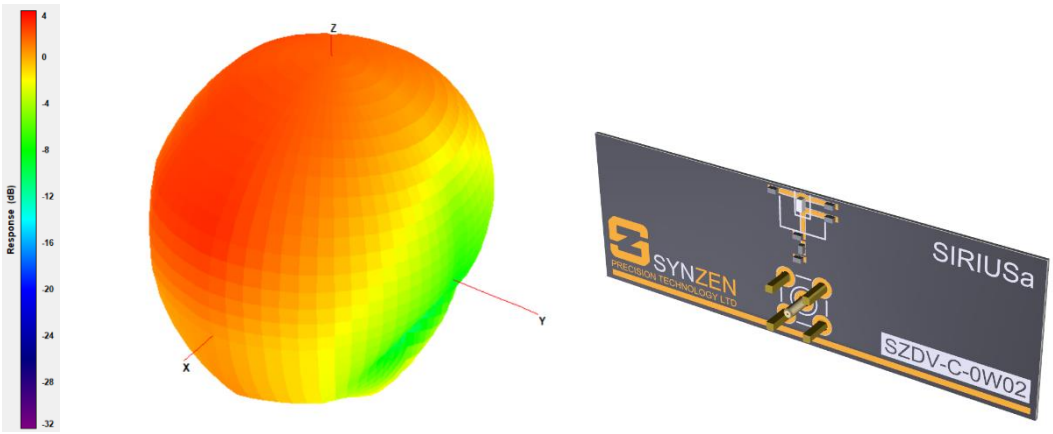


Average Gain

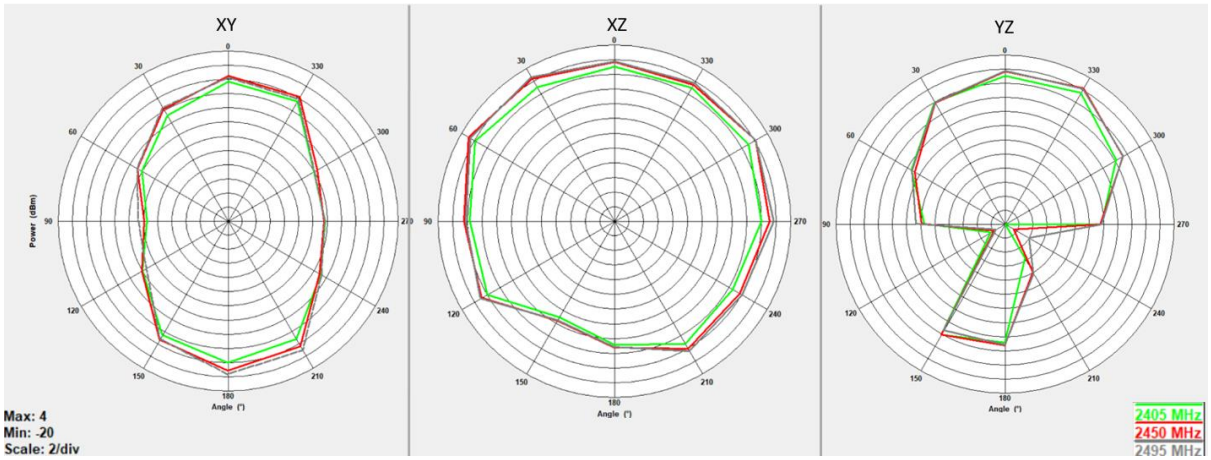


RF Radiation Patterns

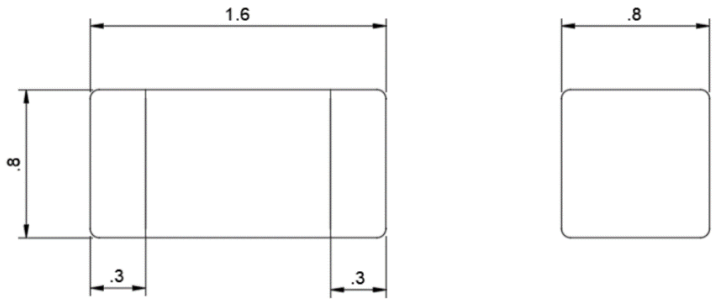
RF Radiation Patterns at 2450MHz



XY	XZ	YZ



Mechanical Drawing



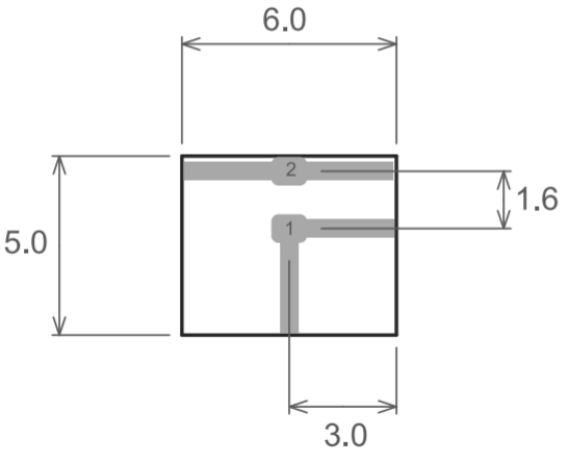
All dimensions in mm

L	W	T
1.6 ±0.15	0.8 ±0.15	0.8 ±0.15

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.

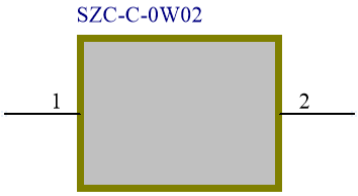
The required clearance for the host PCB is 6.0 x 5.0 (mm) on all layers.



Pins 1,2 = 1.0 x 0.8 (mm)

Trace = 0.5mm width

Schematic Symbol

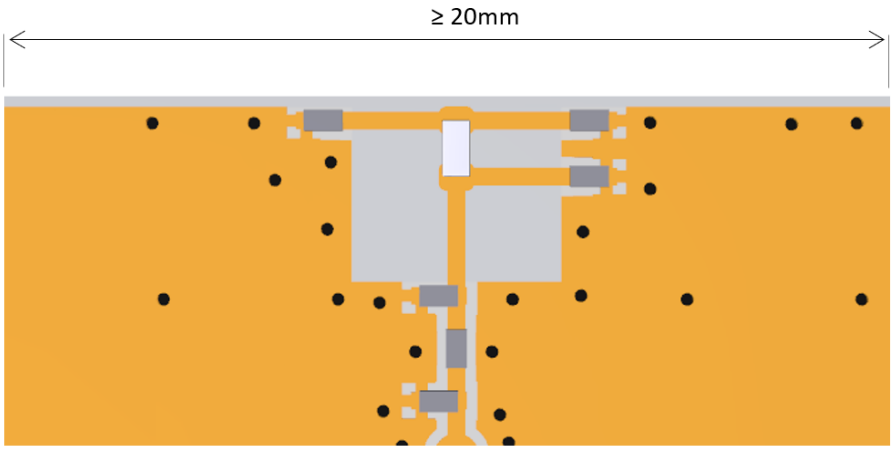


Pin	Description
1	Not orientation sensitive
2	Not orientation sensitive

PCB Layout Guide

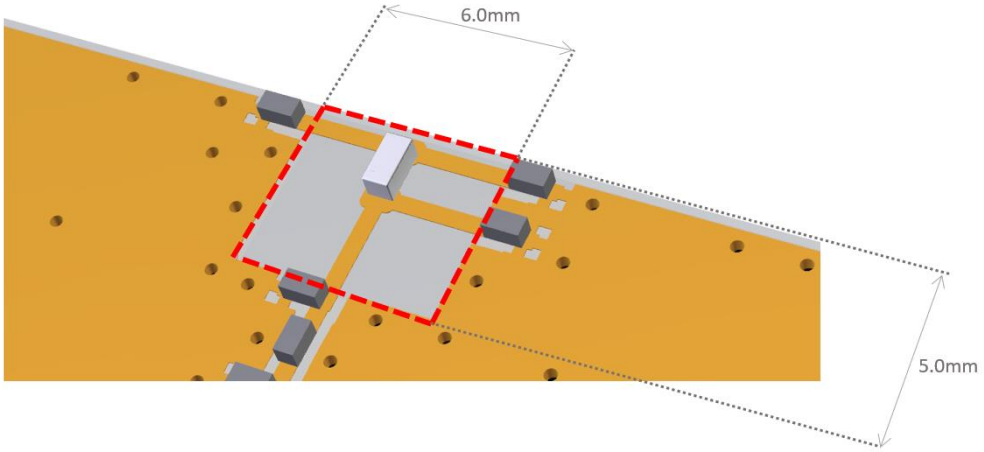
Placement

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.



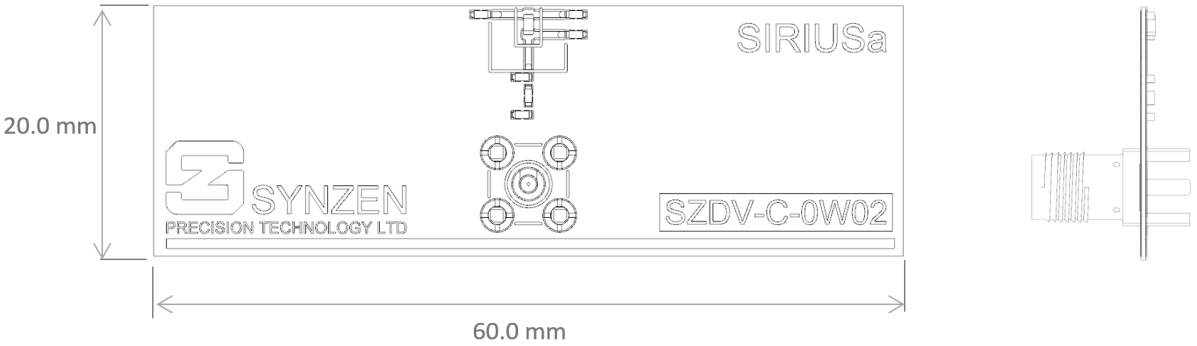
Clearance

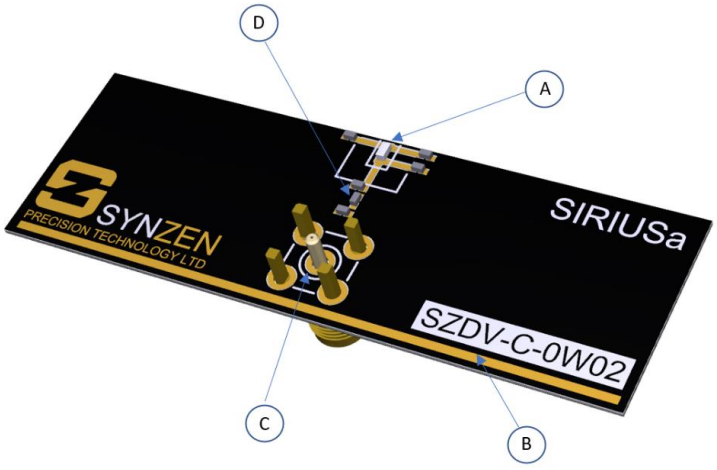
A clearance is required through all PCB layers for the precise area shown. Also, any components such as battery or display must also avoid this area. The rest of the area under the antenna should be filled GND.



Evaluation 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.

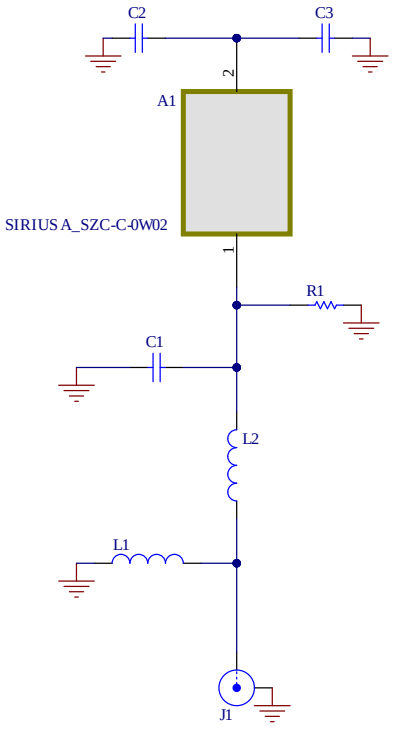




A	SZC-C-0W02 (Antenna)
B	Host PCB
C	SMA Connector
D	Matching Circuit

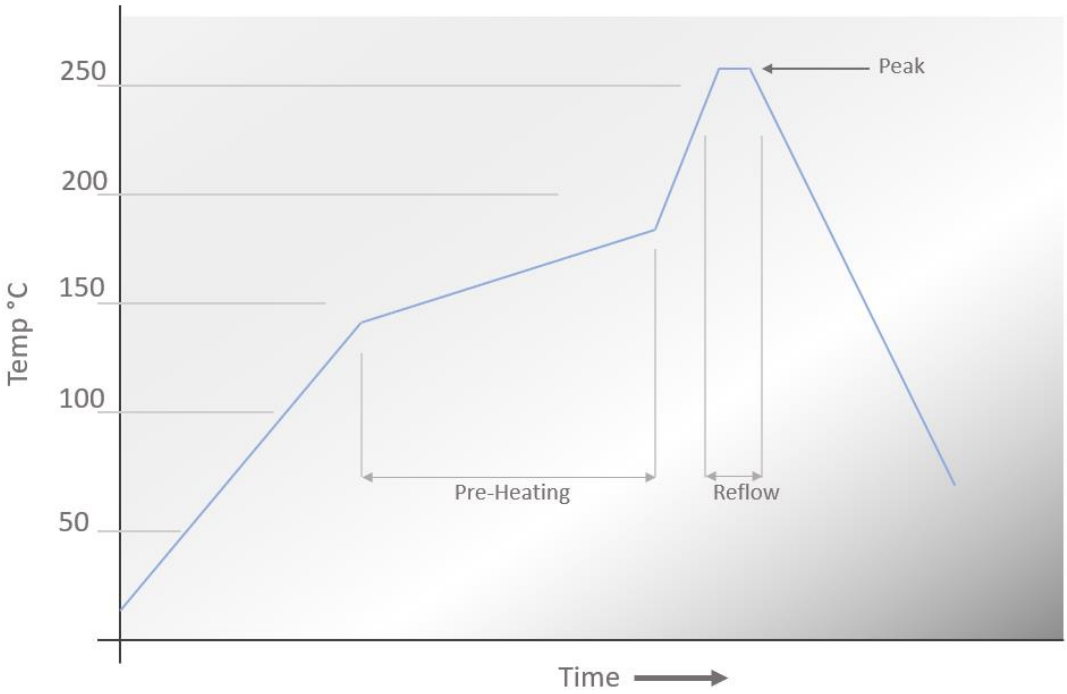
Evaluation Kit Matching Circuit

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
R1	Resistor	0R	0402	Nonspecific part
C3	Capacitor	0.5pF	0402	GJM1555C1HR50BB01D
L2	Inductor	1.2nH	0402	LQG15HS1N2B02D
C2	Capacitor	1.0pF	0402	GCM1555C1H1R0CA16J
L1	Inductor	Not Fitted	0402	Do Not Place
C1	Capacitor	0.3pF	0402	GJM1555C1HR30BB01D
J1	SMA Connector	-	-	ACE solution A3SAFTST135

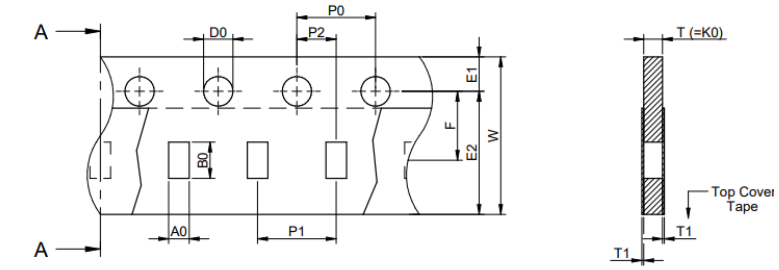
Soldering Profile

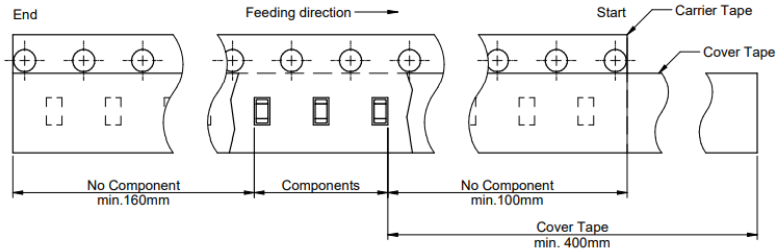


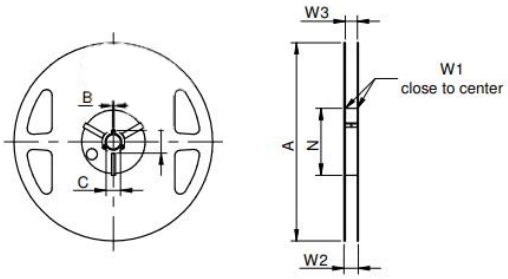
Pre-Heating	130 - 180°C	50 to 190 seconds
Reflow	>220 °C	50 to 160 seconds
Peak Temperature	260 °C	15 to 45 seconds

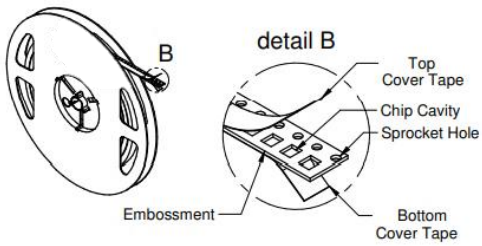
Packaging

		A0	B0	W	T	T1	P0	P1	P2	D0	E1	E2	F	Tape Type 1a	VPE / packaging unit
tolerance	Tolerances	typ.	typ.	+0,3/ -0,1	typ.	max.	±0,1		+0,05	+0,1 / -0,0	±0,1	min.	±0,05		pcs.
size	0603	1.05	1.85	8.00	0.95	0.10	4.00	4.00	2.00	1.50	1.75	6.25	3.50	Paper	4000









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

Material Regulation

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