



GNSS Ceramic SMD Antenna

SZC-C-1G18

GNSS: 1.559 – 1.609 GHz

Description

A high-performance solution for embedded design. Synzen have created SIRIUSb, the optimal solution for GNSS 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.

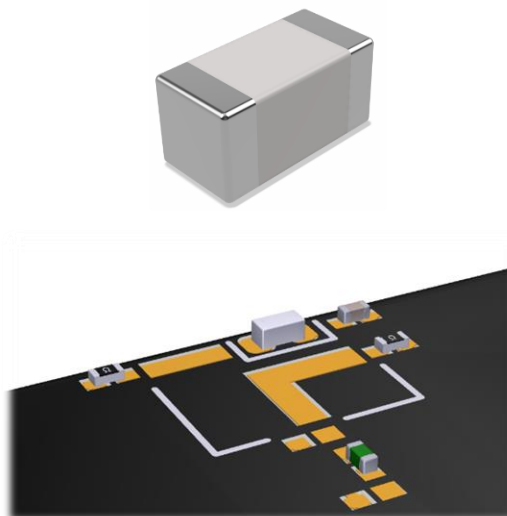
- For GNSS Applications 1559 - 1609MHz
- Highly Resistant to detuning
- Clean resonance with no unwanted out of band response.
- SMD component supplied in Tape and reel
- High performance yet ultra-small form factor >75% efficiency
- Ideal for smaller wearable designs.
- Suitable for sealing with resin / potting compounds

Applications

Wearables
Asset Trackers
Smart Grid

Telematics
Headsets
ODB-II

Smart Meters
Healthcare
Tablets





General Specifications

Mechanical Specifications

Part Number	SZC-C-1G18
Name	SIRIUSb
Dimensions	1.6 x 0.8 x 0.8 (mm)
Required Clearance area	7.0 x 6.0 (mm)
Weight	<0.1g
Antenna Type	Surface Mount Device

RF Specifications*

Frequency Range	1559 – 1609MHz
Average Efficiency (Linear)	>75%
Peak Gain	3.1dBi
S11 (max)	<-12.5dB
VSWR (max)	1.70:1
Impedance	50 Ω
Polarization	Linear

*All performance stated is measured of SZDV-C-1G18 evaluation kit

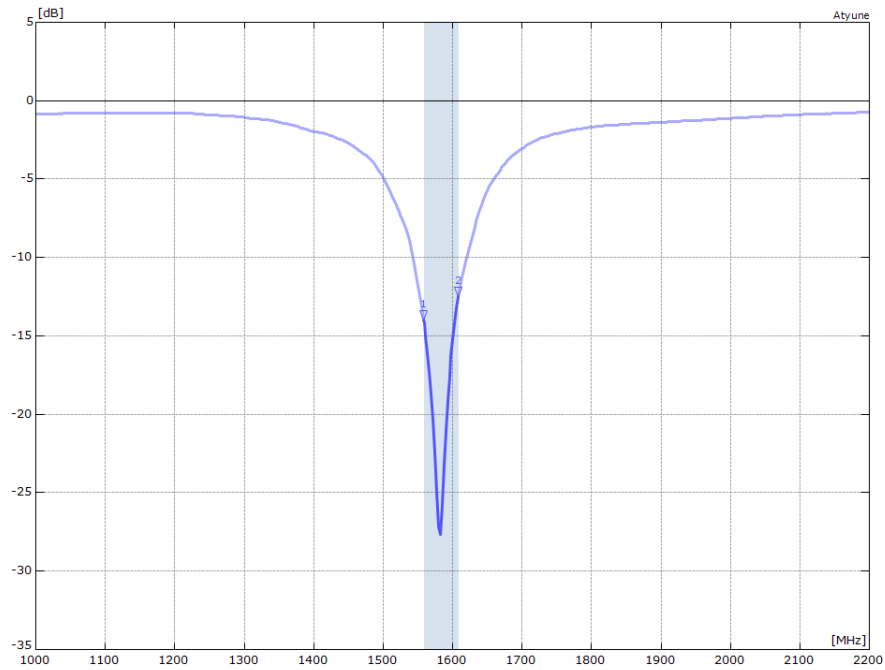
Environmental Specifications

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

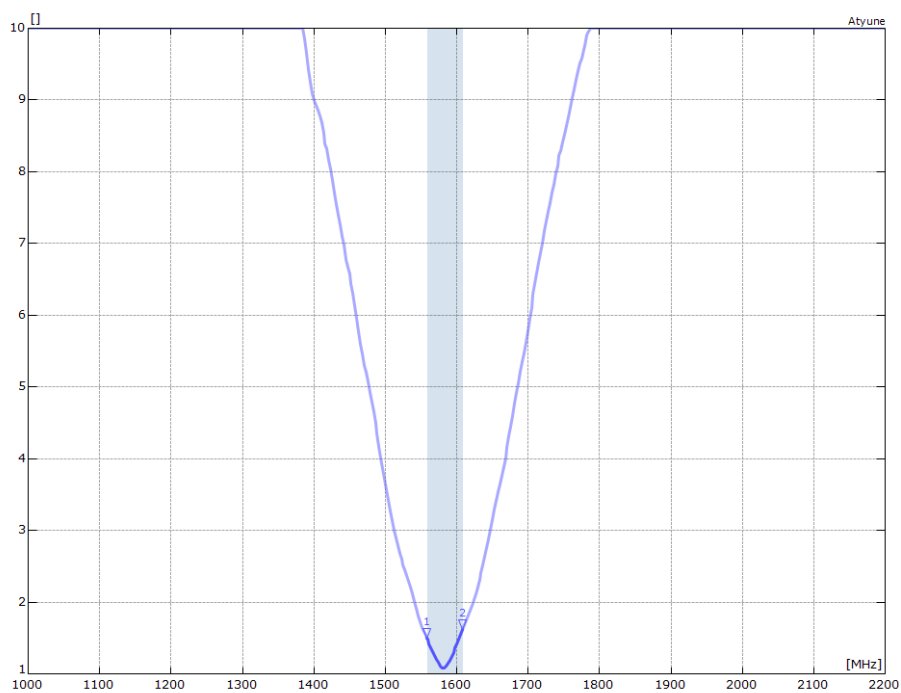


RF Characteristics

S11 Parameter



VSWR

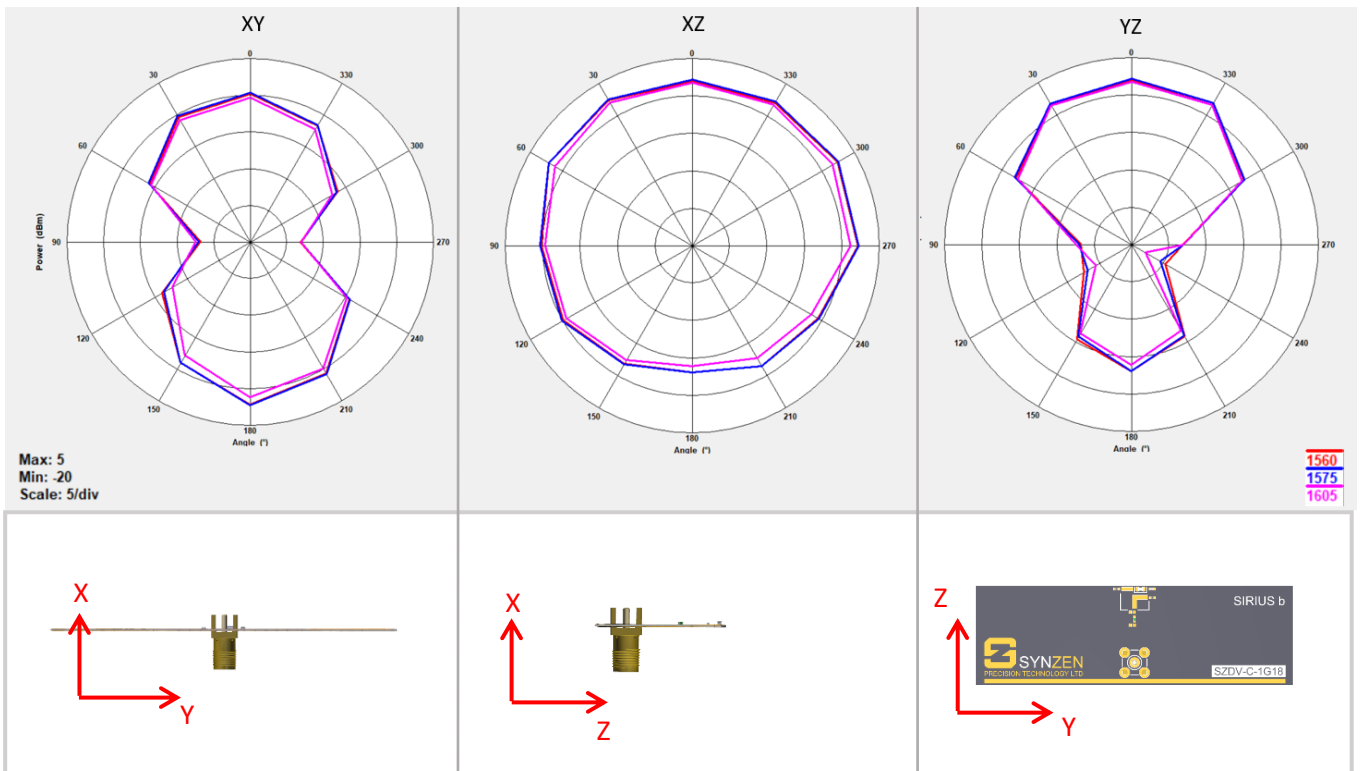




Radiated Performance

2D Polar Plot

The data shown was measured on Synzen EVK (SZDV-C-1G18)

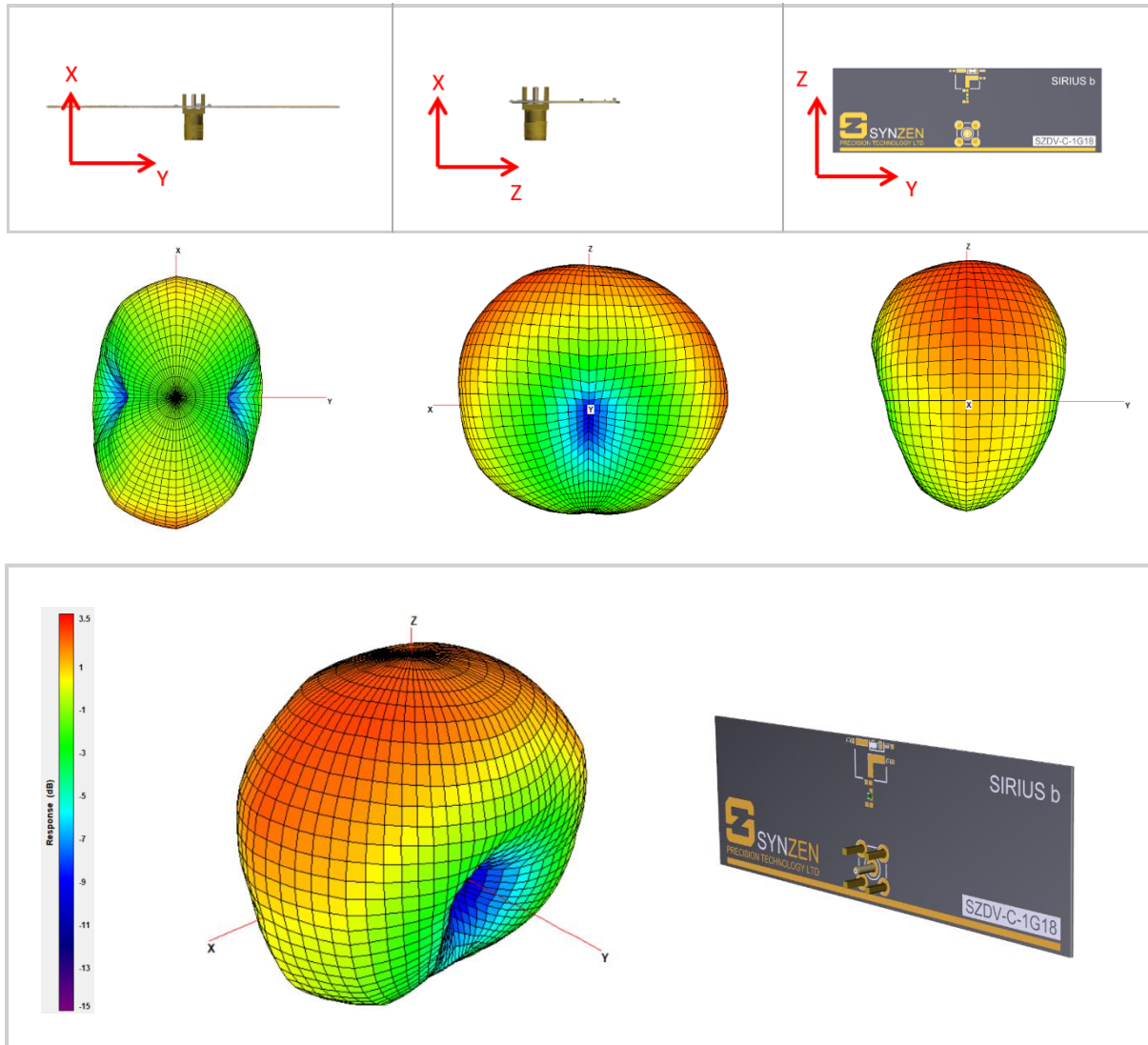




Radiated Performance

3D Radiation Pattern

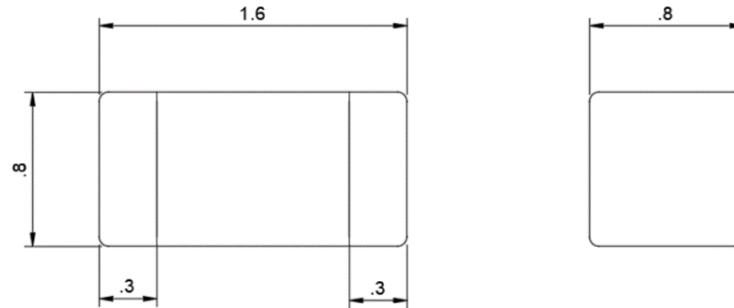
The data shown was measured on Synzen DVK (SZDV-C-1G18). The frequency point shown here is 1575MHz.





Mechanical

Antenna Mechanical Drawing

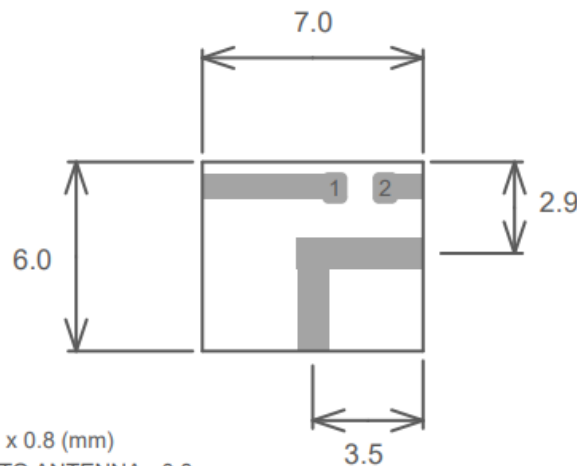


All dimensions in mm

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 7.0 x 6.0 (mm) on all layers.



PADS 1, 2 = 1.0 x 0.8 (mm)
TRACE WIDTH TO ANTENNA= 0.8mm
TRACE WIDTH FEED= 1.0mm

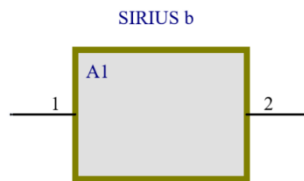
ALL DIMENSIONS IN MM



Antenna Pinout

SZC-C-1G18 Schematic Symbol

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

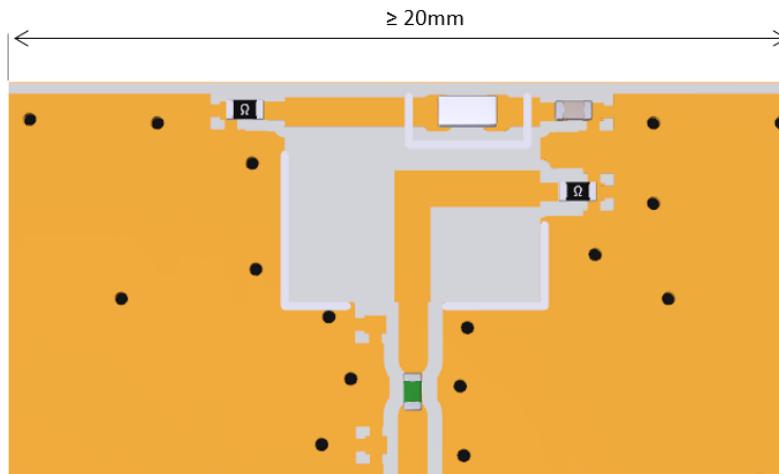


Pin	Description
1	Not orientation sensitive
2	Not orientation sensitive

PCB Layout Requirements

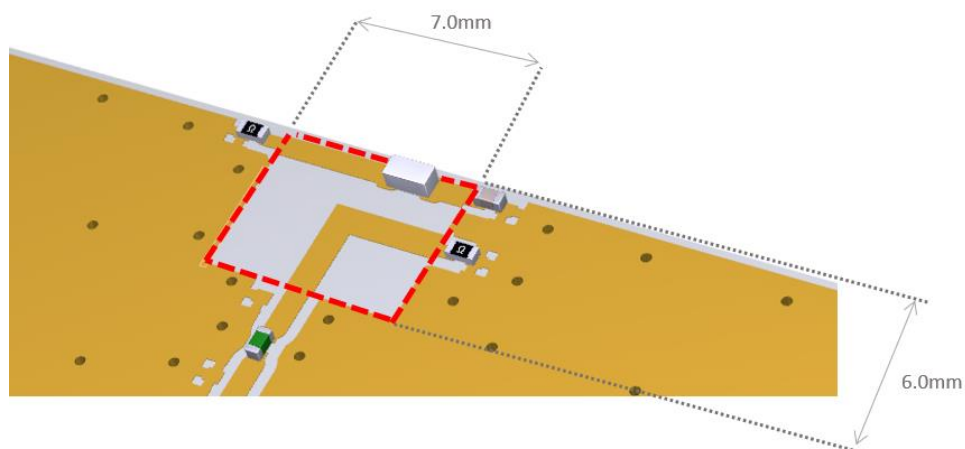
Placement

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.



Required Clearance

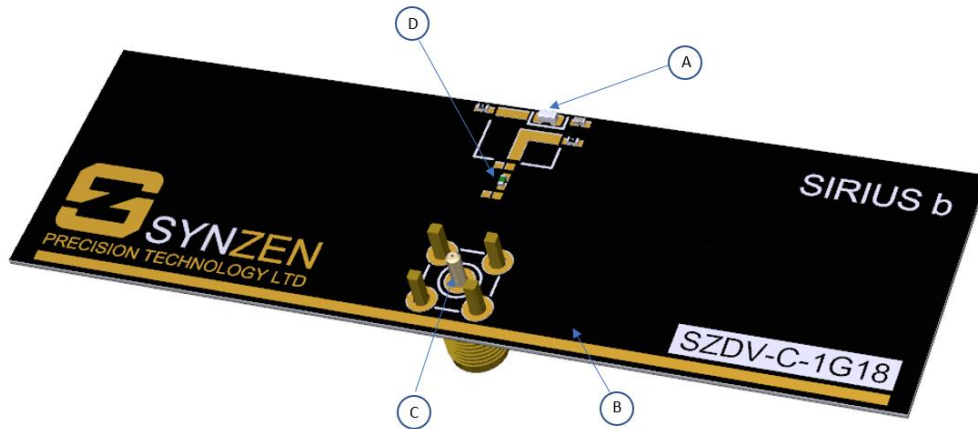
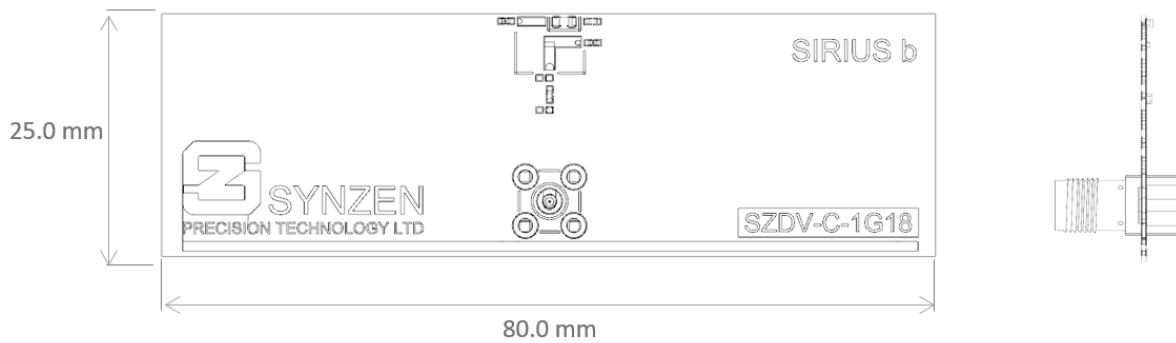
A clearance is required through all PCB layers for the precise area shown. Also, any components such as battery or display must also avoid this area. The rest of the area under the antenna should be filled GND.



Evaluation Kit

SZDV-C-1G18 Evaluation Kit

The SZDV-C-1G18 evaluation kit is a PCBA with the antenna (SZC-C-1G18) fitted and optimised with a matching network. Connection to the antenna is made using the fitted female SMA connector.

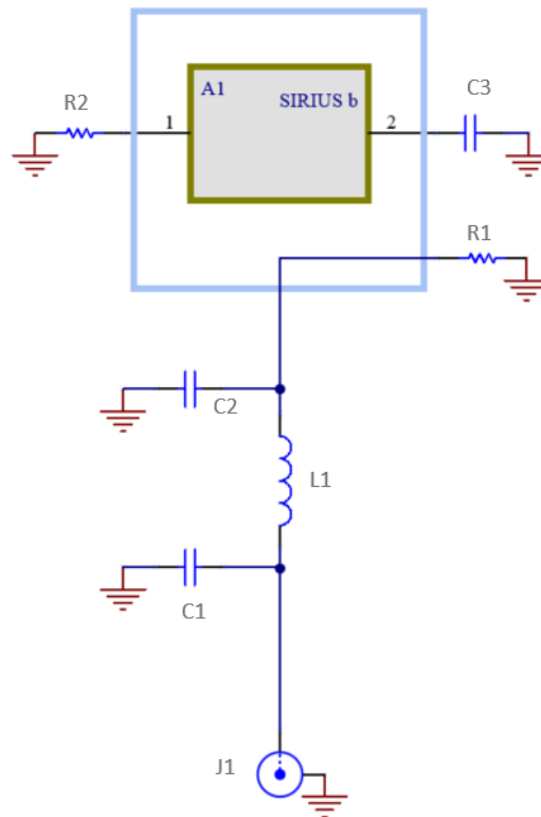


A	SZC-C-1G18 (Antenna)
B	Host PCB
C	SMA Connector
D	Matching Circuit

Evaluation Kit Schematic

Evaluation Kit Matching Circuit

The circuit of the EVK 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.

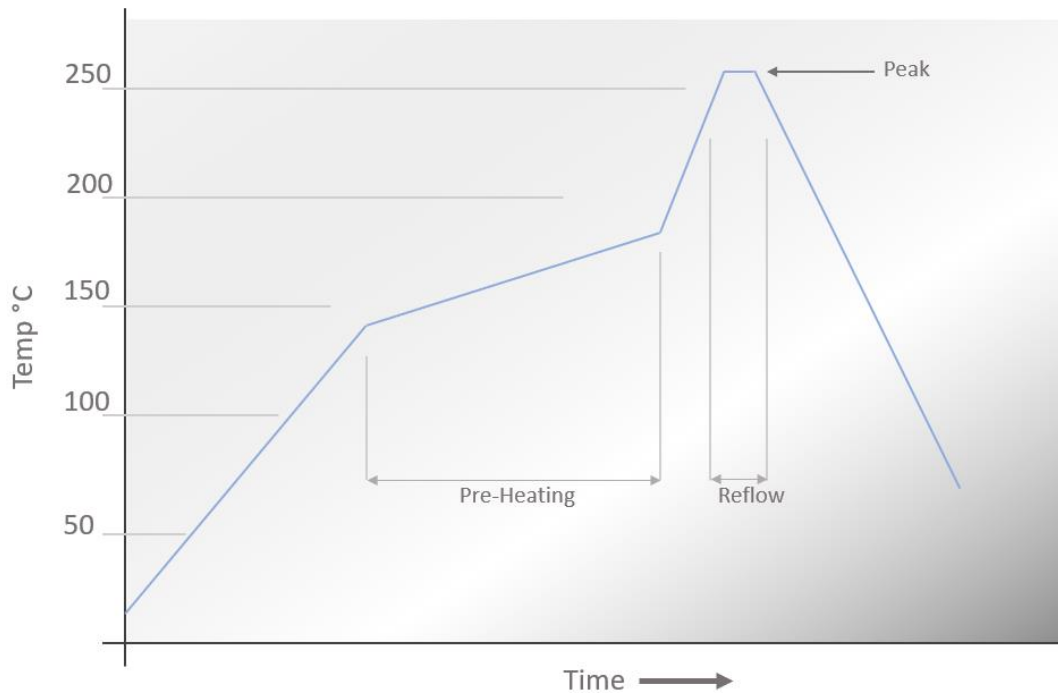


Designator	Component Type	Value	Size	Manufacturing Part No.
A1	Antenna	SIRIUSb	-	SZC-C-1G18
R1, R2	Resistor	0R	0402	Nonspecific part
L1	Inductor	2.0nH	0402	LQG15HS2N0S02D
C1, C2	NA	DNP	0402	Not Fitted
C3	Capacitor	4.3pF	0402	GJM1555C1H4R3CB01D
J1	SMA Connector	-	-	ACE solution A3SAFTST135



Soldering

Reflow Profile



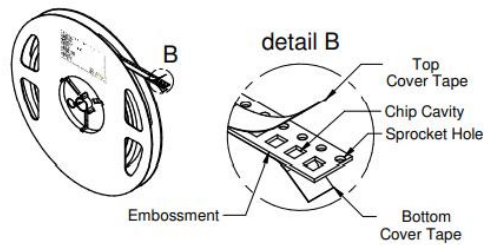
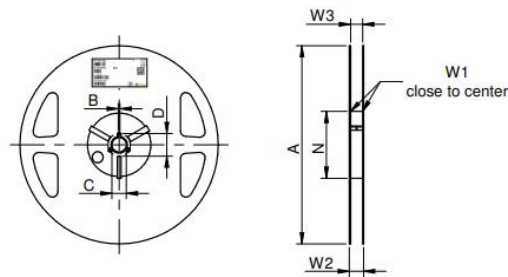
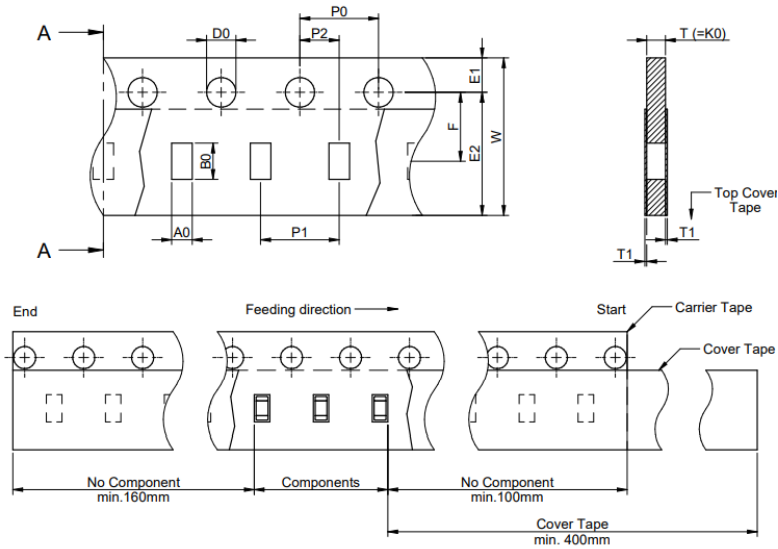
Pre-Heating	130 - 180°C	50 to 190 seconds
Reflow	>220 °C	50 to 160 seconds
Peak Temperature	260 °C	15 to 45 seconds



Packaging

Tape and Reel

tolerance	Tolerances	A0	B0	W	T	T1	P0	P1	P2	D0	E1	E2	F	Tape Type 1a	VPE / packaging unit
size	0603	1.05	1.85	+0.3/ -0.1	typ. max.	±0.1	4.00	4.00	2.00	+0.05	+0.1 / -0.0	±0.1 min.	±0.05	Paper	4000



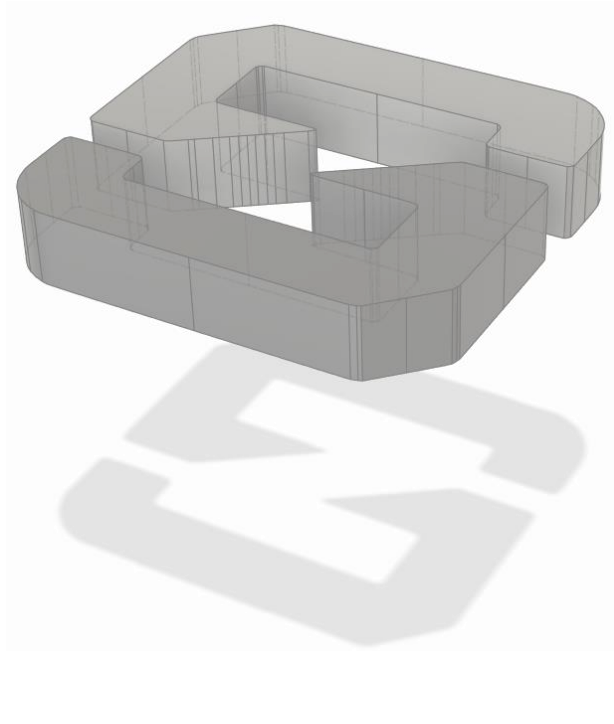
A (mm)	B (mm)	C (mm)	D (mm)	N (mm)	W1 (mm)	W2 (mm)	W3 (mm)	W3 (mm)	Material
± 2.0	min.	min.	min.	min.	+1.5	max.	min.	max.	Polystyrene/ Polyurethane
178	1.5	12.8	20.2	50	8.4	14.4	7.9	10.9	



Environmental

Material Regulation

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



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