

SUB-GHZ CERAMIC SMD

VEGA

ISM / LoRa SMD Antenna

SZC-C-0M01

FREQUENCY
863 to 928 MHz

PEAK GAIN
1.2 dBi

EFFICIENCY
>65%

SIZE
1.6 × 0.8 × 0.8 mm

ISM

863 to 928 MHz

Covers ISM 868 / 915, LoRa, SigFox, Weightless-P

Key Features

- For ISM / LoRa / SigFox / Weightless-P applications 863 to 928 MHz
- 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
- Ideal for smaller designs
- Suitable for sealing with resin / potting compounds
- Standard optimal clearance or high-density clearance for smaller designs

1 Introduction

A highly compact yet high performance solution for embedded design. Synzen have created the optimal solution for ISM / LoRa / SigFox / Weightless-P applications that simplifies the design in process and allows you to focus on the product development.

This antenna resonates best when placed at the end of the longest PCB edge or in a corner and produces a near omnidirectional pattern.

— Features

- ◆ For ISM / LoRa / SigFox / Weightless-P applications 863 to 928 MHz
- ◆ Highly resistant to detuning
- ◆ Clean resonance with no unwanted out of band response
- ◆ SMD component supplied in tape and reel
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— Applications

- | | |
|-------------------------------------|--------------|
| ◆ Industrial / Scientific / Medical | ◆ Headsets |
| ◆ M2M Industrial | ◆ Healthcare |
| ◆ Smart Meters | ◆ Smart Grid |
| ◆ Access Point | |

2 Mechanical Specifications

Part Number	SZC-C-0M01
Name	VEGA
Dimensions (mm)	1.6 × 0.8 × 0.8
Required Clearance Area (mm)	25.0 × 10.0 optimal / 15.0 × 11.0 high density
Weight	<0.2 g
Antenna Type	Surface Mount Device

3 RF Specifications

Frequency Range (MHz)	Average Efficiency	Peak Gain (dBi)	S11 (max) dB	VSWR (max)	Impedance
863 to 915	>65%	1.2	<-8.5	2.1:1	50 Ω

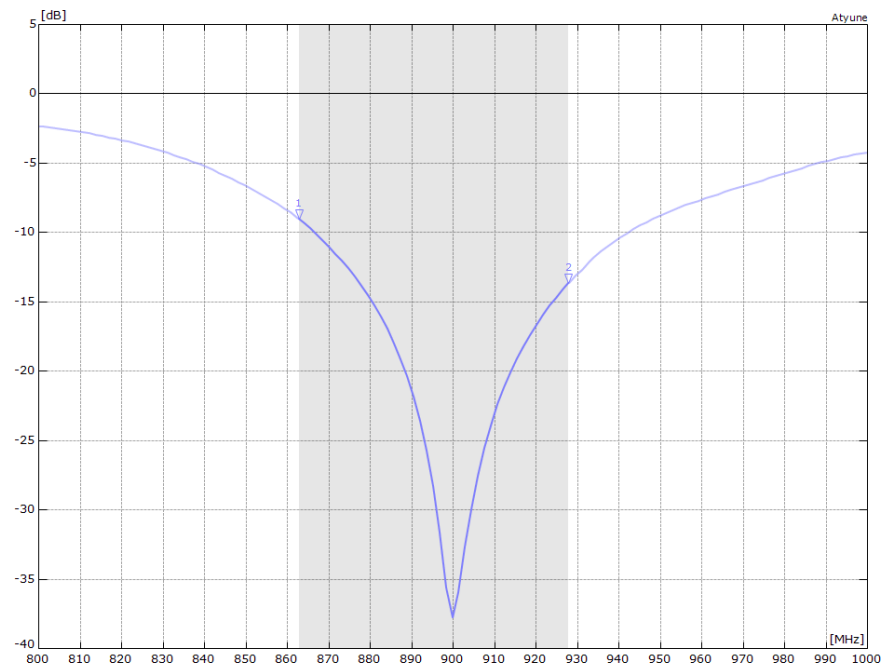
Polarization: Linear. *All performance stated is measured on the SZDV-C-0M01 evaluation kit.

4 Environmental

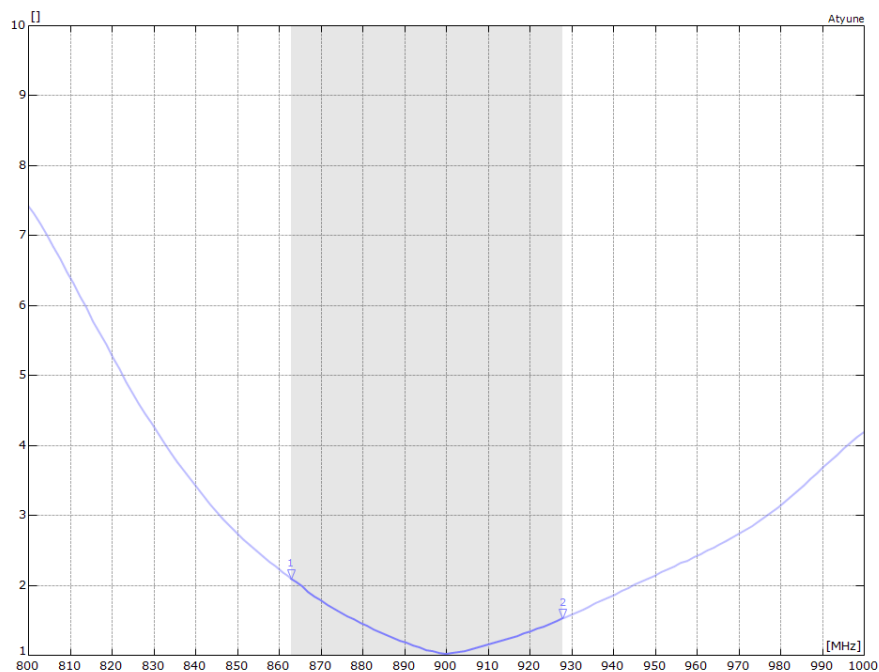
Operational Temperature	-40 to +125°C
Storage Temperature	-10 to +40°C
Relative Humidity	≤75%

5 RF Characteristics

S11 Parameter



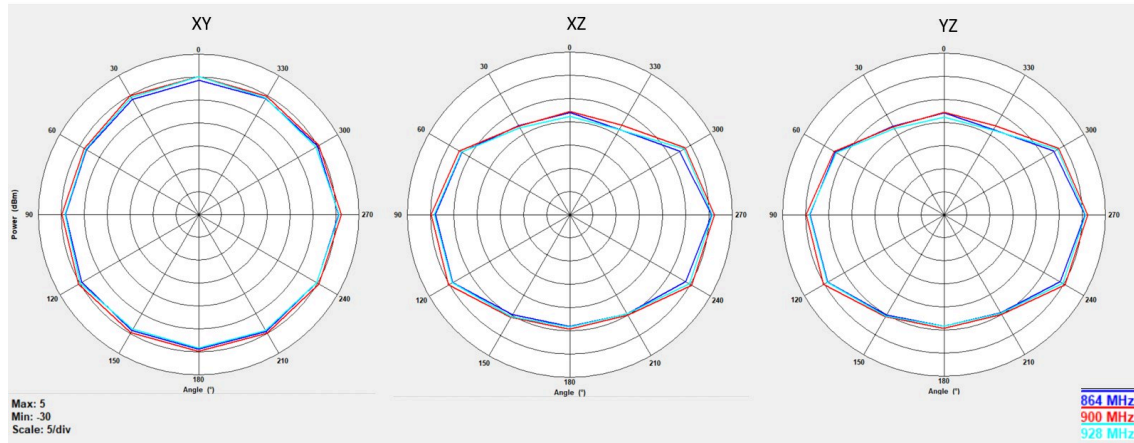
VSWR



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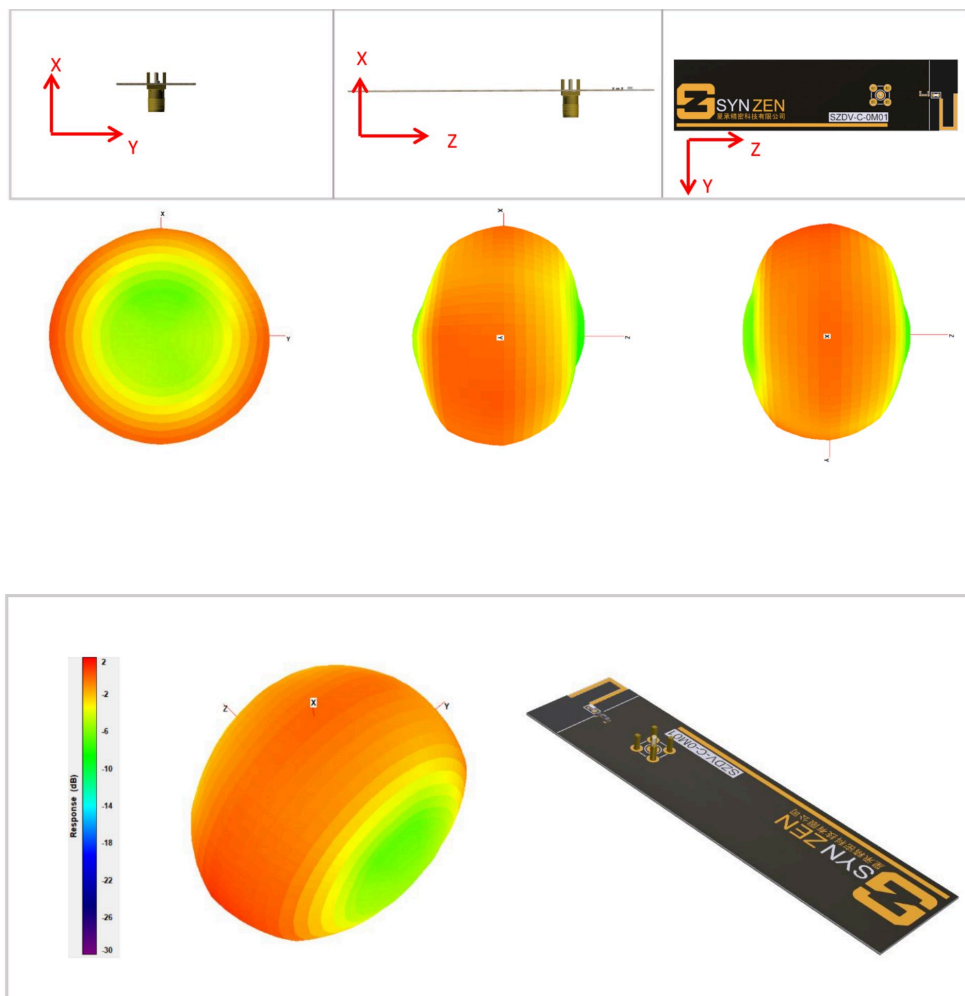
2D Polar Plot

MEASURED ON SYNZEN DVK (SZDV-C-0M01)

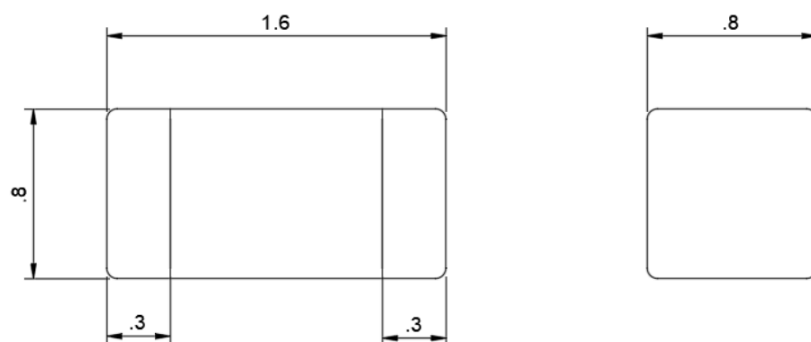


7 3D Radiation Pattern at 868 MHz

MEASURED ON SYNZEN DVK (SZDV-C-0M01), FREQUENCY POINT 868 MHz



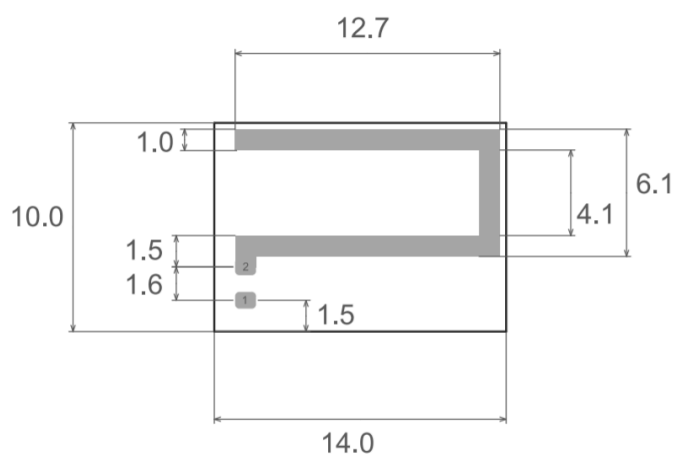
8 Antenna Mechanical Drawing



All dimensions in mm

9 Required Host PCB Footprint

The host PCB requires the footprint shown below. PCB library files and DXF are available from our website www.synzen.com.tw/products. The required clearance for the host PCB is 14 × 10 mm on all layers.



All dimensions in mm

Pins 1, 2 = 1.0 × 0.8 mm

Trace = 1.0 mm width

10 SZP-C-0M01 Schematic Symbol

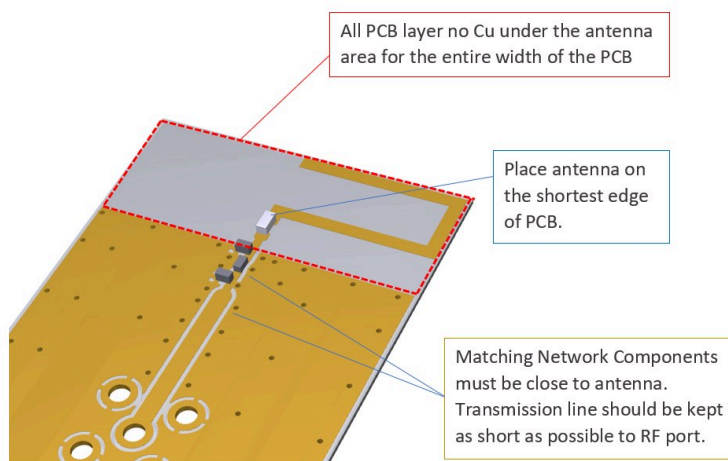
The schematic symbol for the antenna is shown below with a description of each pin.



Pin	Description
1	Feed
2	To precalculated trace option

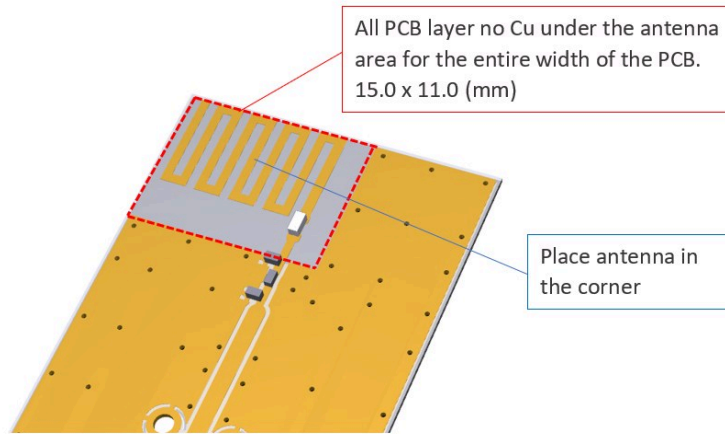
11 Placement and Clearance

The antenna is designed to function placed at the end 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.



12 High Density Footprint Option

A corner placement is possible on designs that cannot accommodate the standard footprint and clearance. This space saving option is available upon request from Synzen at www.synzen.com.tw/products.



Footprint: SZC-HDC-0M01

13 SZDV-C-0M01 Development Kit

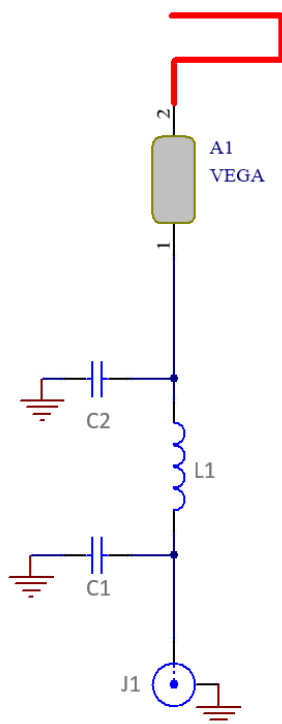
The SZDV-C-0M01 development kit is a PCBA with the antenna (SZC-C-0M01) fitted and optimized with a matching network. Connection to the antenna is made using the fitted female SMA connector.



Item	Description
A	SZC-C-0M01-1 (Antenna)
B	Host PCB
C	SMA Connector
D	Matching Circuit

14 Development Kit Matching Circuit

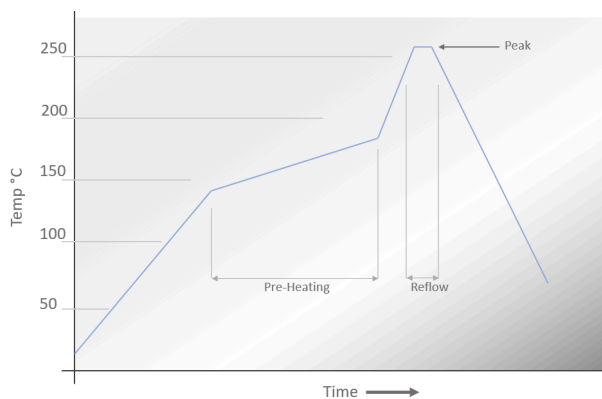
The circuit of the development kit along with the BOM is shown below. The matching network topology should be used on the device host PCB, although the matching values will be dependent on the host PCB and device environment. Synzen provide a matching service to optimize your device to ensure the best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



Designator	Component Type	Value	Size	Manufacturing Part No.
A1	Antenna	VEGA		SZC-C-0M01
C1	Capacitor	Not Fitted	0402	Do Not Place
C2	Capacitor	1.5 pF	0402	GCM1555C1H1R5JA16D
L1	Inductor	1.5 nH	0402	LQG15HS1N5S02D
J1	SMA Connector			ACE solution A3SAFTST135

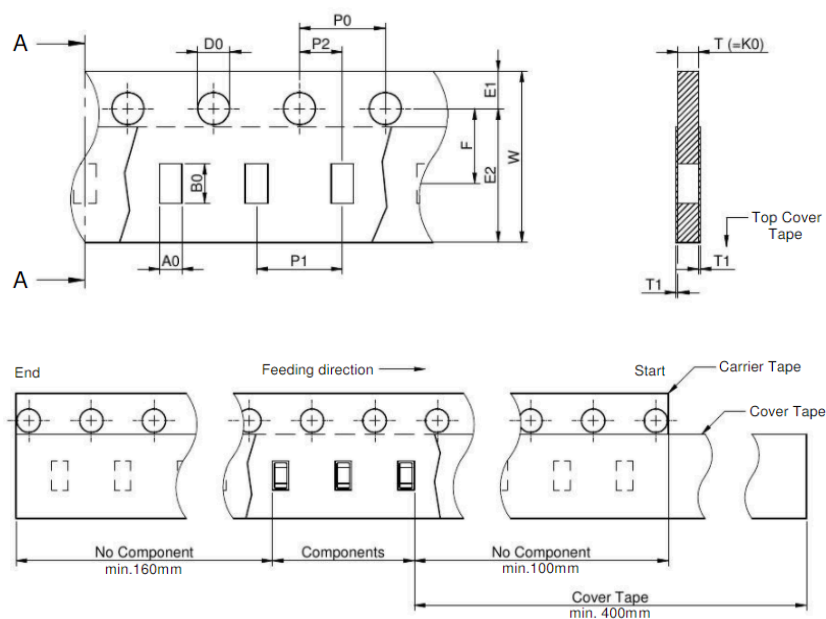
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Reflow Profile



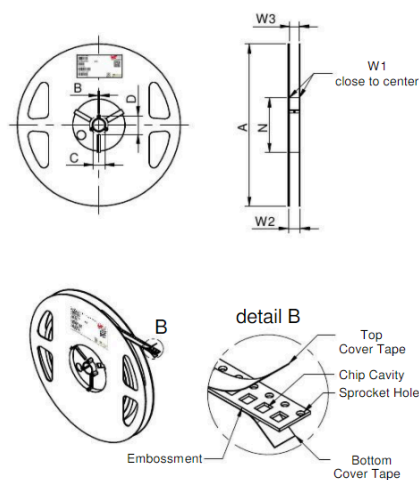
Stage	Temperature	Time
Pre-Heating	130 to 180°C	50 to 190 seconds
Reflow	>220°C	50 to 160 seconds
Peak Temperature	260°C	15 to 45 seconds

16 Tape



Dimension	Size 0402 (mm)	Tolerance
A0	0.62	typ.
B0	1.15	typ.
W	8.00	+0.3 / -0.1
T	0.60	typ.
T1	0.10	max.
P0	4.00	±0.1
P1	2.00	
P2	2.00	+0.05
D0	1.50	+0.1 / -0.0
E1	1.75	±0.1
E2	6.25	min.
F	3.50	±0.05
Tape type	Polystyrene (type 1a)	
Packaging unit	10000 pcs	

17 Reel



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

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Compliance

ROHS

Compliant

Conforms to EU RoHS Directive 2011/65/EU as amended by Delegated Directive (EU) 2015/863.

REACH

Compliant

Conforms to EU REACH Regulation (EC) No 1907/2006.

CERTIFICATE

On request

A certificate of conformance is available upon request from sales@synzen.com.tw.

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