

DSRC Mini SMD Antenna

Part No. GA523408DL01

Product Specification



Dimension: 5.2mmx3.4mmx0.8mm

➤ Applications

- Smart Phones
- Tablets
- Laptops
- Wireless dongles
- Wireless modules
- Sensors
- Automotive

➤ Features

- Designed for 5.855GHz – 5.925GHz applications
- High efficiency
- Linear Polarization
- Omni- Directional (*PCB dimension dependent*)
- Minimum PCB clearance
- Flexible placement on PCB edge
- SMD mounting
- Low Profile, miniature and light weight
- Tape and reel packaging
- RoHS Compliance

➤ Customer Services (Optional)

- EM Antenna Simulation for optimum placement of antenna on PCB.
- Lump Elements Matching for optimum antenna performance.
- Anechoic Chamber Measurement for antenna performance validation.

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➤ Specification

ELECTRICAL	
Frequency	5.855 ~ 5.925 GHz
S11	<-10 dB
VSWR	<2:1
Peak Gain	0.4dBi
Polarization	Linear
Impedance	50 Ohms
Efficiency	60%
Radiation Pattern	Omni
MECHANICAL	
Dimension	5.2mm x 3.4mm x 0.8 mm
Weight	~0.04g
ENVIROMENTAL	
Temperature Range	-25°C to +80°C
Humidity	65°C 95% RH

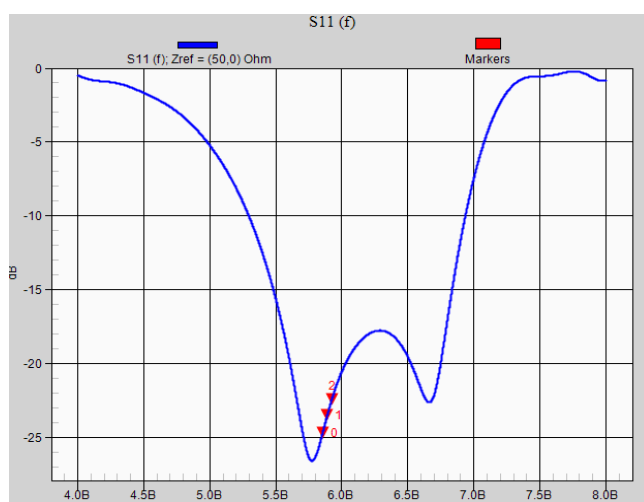
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➤ Antenna Performance with Reference Board

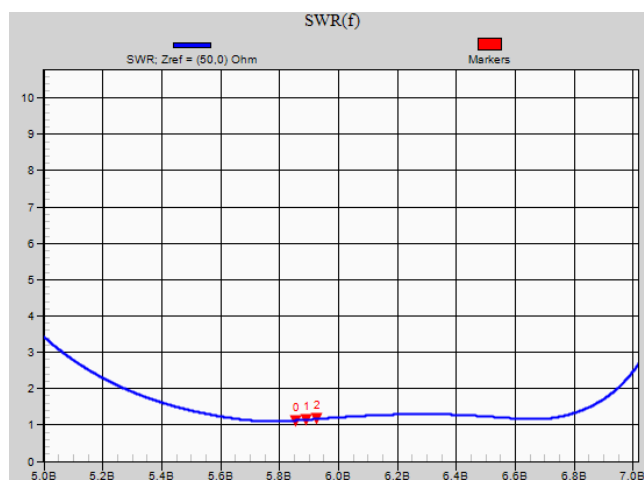
	Performance	Conditions
Peak Gain	0.4dBi	All results measured from frequency range 5.855GHz to 5.925 GHz on reference board,
Average 3D Gain	-2dBi	
*Average Efficiency	60%	
S11	< -10dB	
VSWR	< 2:1	*antenna efficiency without loss of transmission line

● Return Loss with Reference Board



marker	x	f(x)
0	5.855e+009	-24.6539
1	5.89e+009	-23.4593
2	5.925e+009	-22.3657

● VSWR with Reference Board

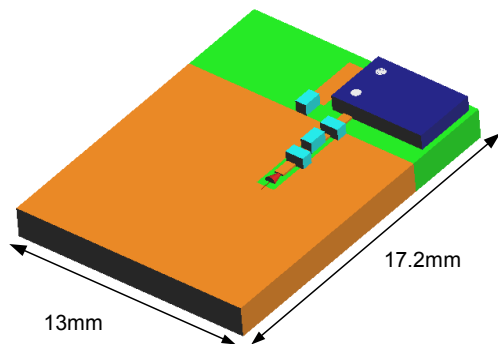


marker	x	f(x)
0	5.855e+009	1.12431
1	5.89e+009	1.14396
2	5.925e+009	1.16487

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● Performance with reference board



RADIATION PATTERN

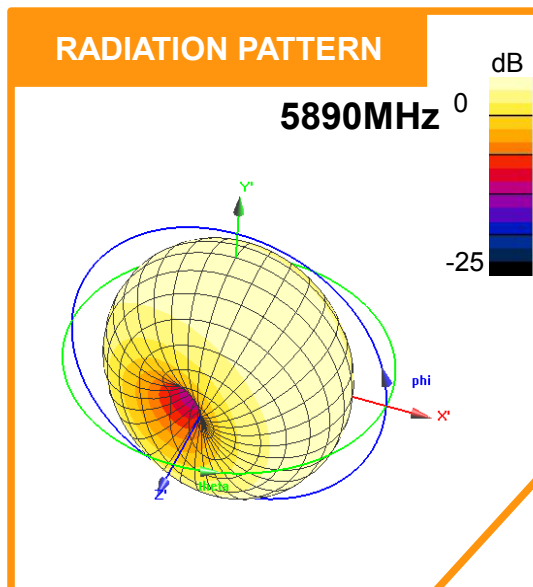
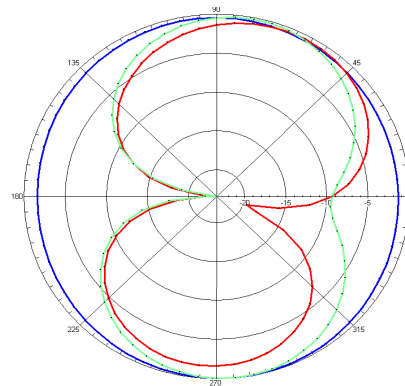


Figure 1, Antenna on reference board

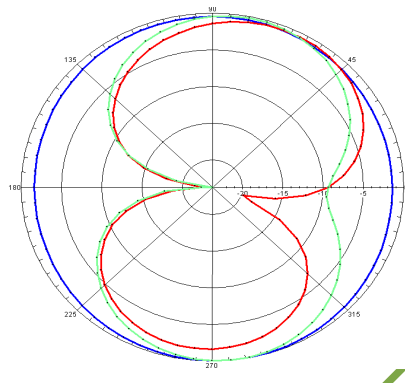
Antenna Placement: Top

2D PLOT

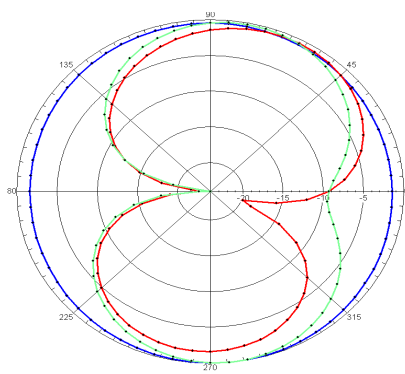
5855MHz



5890MHz



5925MHz



Gain(X'Y' Plane)

Gain(X'Z' Plane)

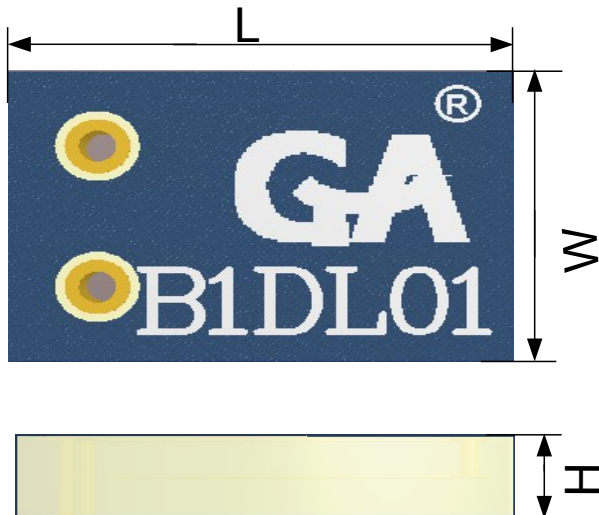
Gain(Y'Z' Plane)

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➤ Antenna Dimension

● Overview



L	W	H
5.2	3.4	0.8

Unit : mm
Tolerance: +/- 0.2mm

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➤ Reference Board

The recommended placement of the antenna is on the edge of the PCB board. Minimum ground clearance of $K = 1\text{mm}$ as shown in the following figures are recommended to achieve optimum antenna performance.

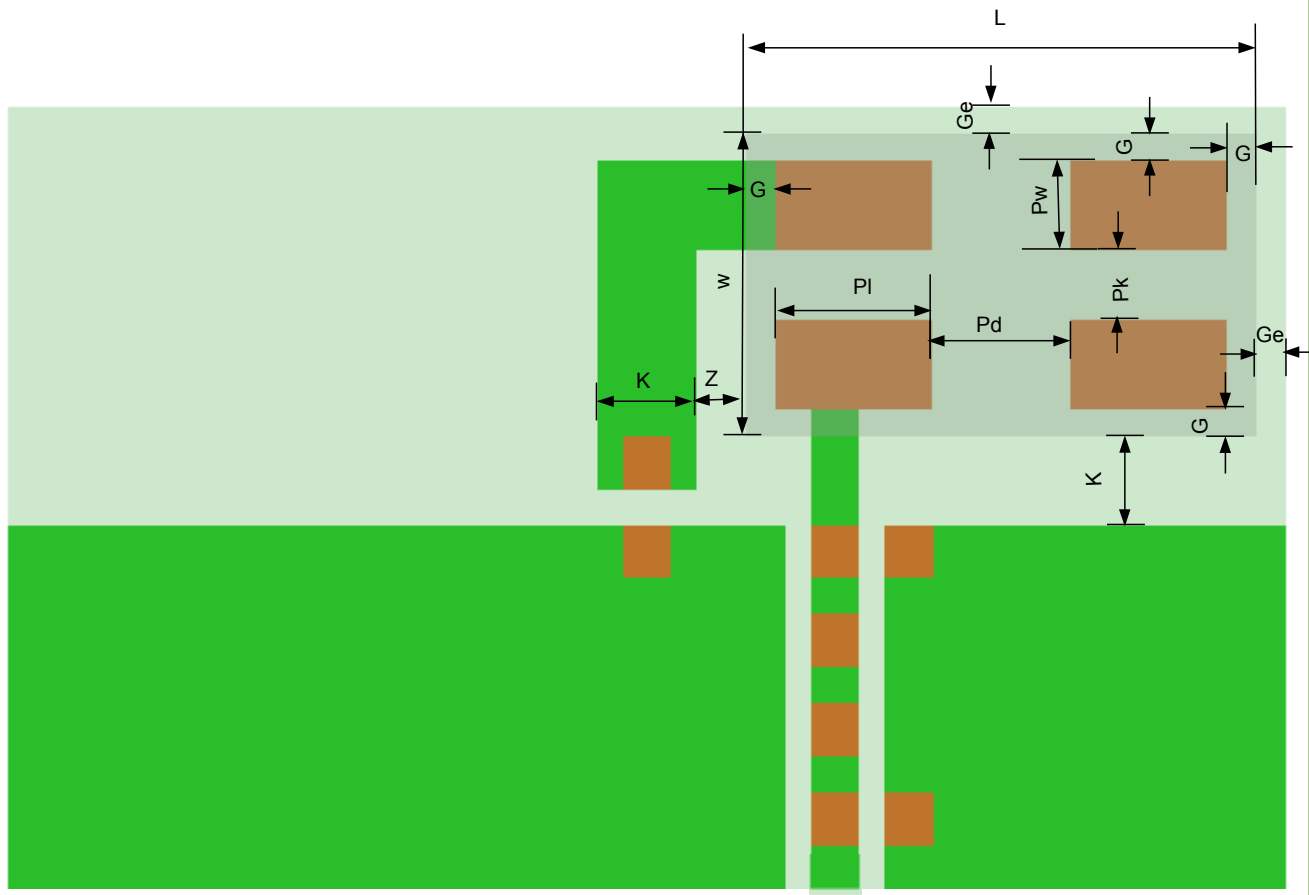
The reference boards are designed for evaluation purposes of the antenna which include a SMA female connector.



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● Layout with feeding



L	W	K	G	Pl	Pw	Pd	Pk	Ge	Z
5.2	3.4	1	0.3	1.6	1	1.4	0.8	0.3	0.5

Unit : mm
Tolerance: +/- 0.1mm

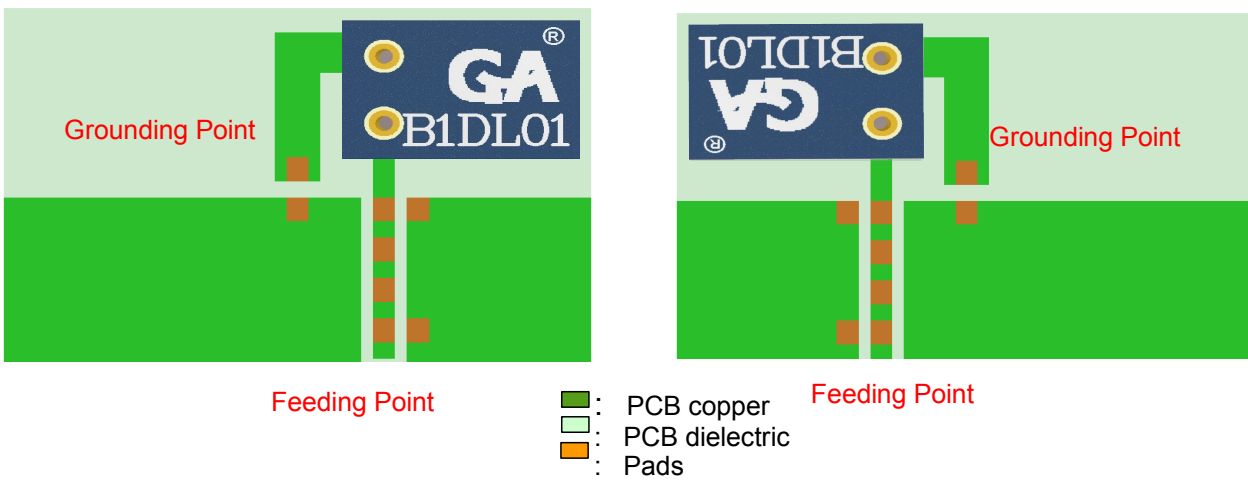
■ : PCB copper
■ : PCB dielectric
■ : Pads

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● Antenna Orientation Flexibility

Antenna can be implemented on the PCB either right side feeding or left side feeding by rotating it 180 degrees. Please implement the antenna placement and orientation as below drawings.



● Soldering and SMT Re-flow

The re-flow profile should consider the following conditions:

- The maximum re-flow temperature should not exceed 240 °C
- The maximum temperature of 255 °C for less than 20 seconds is allowed during lead free soldering.

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➤ Antenna Implementation Guidelines

● Transmission Line

- a) Design the transmission line with characteristic impedance of 50 Ohm to feed the antenna.
- b) Minimize the length of transmission line to reduce insertion loss.

● Lump Elements Matching Circuit

Placement of antenna, PCB dimension and components within the vicinity of antenna will affect the antenna performance. Therefore, at least four lump elements matching circuit **MUST** be reserved, three at feeding point and one at grounding point, for antenna optimization purpose during PCB layout process.

Green Antenna provides optional matching and anechoic chamber measurement services on request. Please contact ga@green-antenna.com for further information.

● Antenna PCB Placement

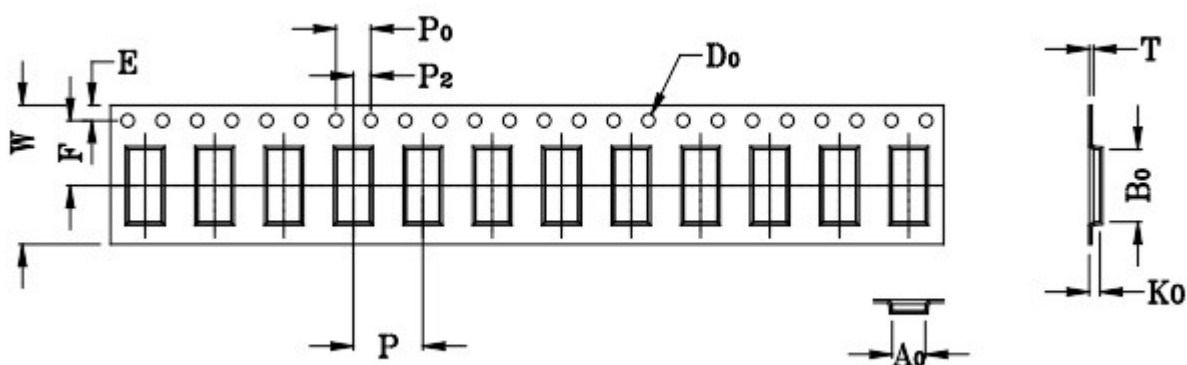
To achieve optimum antenna performance, the antenna is recommended to be placed on the edge of PCB.

Green Antenna provides optional EM simulation service to locate the optimum placement of antenna on customer device or bare PCB board. Please contact ga@green-antenna.com for further information.

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➤ Tape Characteristics



W	A0	B0	K0	P	F	E	D0	P0
X	X	X	X	X	X	X	X	X

Unit : mm

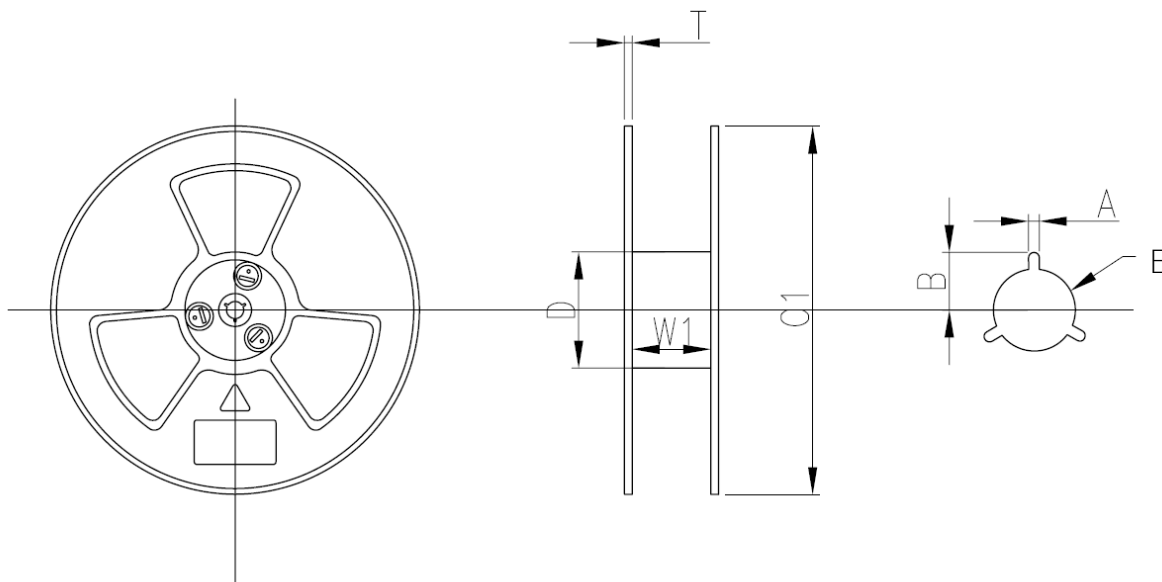
P2	T
X	X

Quantity	6000 pcs/reel
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➤ Reel Dimensions



W1	D	T	C1	A	B	E
X	X	X	X	X	X	X

Unit : mm

➤ Reel Label



Design & Solution Green Antenna Pte Ltd

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Website: www.green-antenna.com

Description: DSRC Mini

Part Number: GA523408DL01

Qty: 6000 pcs

Date Code:

Manufacturers code number: