



Datasheet

### Part No: PCS.62.A

Description

Low Profile Wideband SMD Antenna 617-6000MHz 38mm x 10mm x 3mm

### Features:

Low Profile Wideband SMD Antenna Covering 617-6000MHz High efficiency across all bands Dims: 38mm x 10mm x 3mm RoHS & Reach Compliant



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## Introduction

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The Taoglas PCS.62.A is a revolutionary cellular, low profile, small footprint, patent pending, SMD mount PCB ultra wide-band antenna. The PCS.62.A has been designed to cover global cellular bands across the 600MHz to 6000MHz spectrum in a very small footprint of just 38 x 10mm. The low-profile height of just 3mm makes it ideal for installations where space is at a premium.

Typical applications include

- Smart Metering
- Smart City Infrastructure
- Automotive Systems
- Wearable and Medical Devices
- Surveillance Systems

The unique design uses printed circuit board material and innovative design techniques to deliver high efficiency at all bands when mounted to the device PCB. The PCS.62.A is suitable for lower cost cellular applications, especially IoT projects requiring wide bandwidth and comes supplied on tape and reel to allow it to be mounted via 'pick & place' onto the PCB.

If tuning is required, it can also be tuned specifically depending on device environment. Contact your local Taoglas customer support team for advice on integrating the PCS.62.A into your device.

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# Specification

LTE Electrical								
Band	Frequency (MHz)	Efficiency (%)	Average Gain (dB)	Peak Gain (dBi)	Impedance	Polarization	Radiation Pattern	Max. input power
5GNR/4G Band71	617-698	31.6	-5.01	-1.14				
<b>4G/3G</b> Band 12,13,14,17,28	698-894	66.7	-1.76	2.56				
<b>GSM, UMTS, LTE</b> Band 5,8	880-960	60.1	-2.21	2.78				
LTE, 5G NR (L-band) Band 32,42, 43	1427-1661	29.9	-5.24	2.30				
5GNR/4G Band 2,4,10,25,66	1695-2200	60.0	-2.22	4.44	50.0	Linger	Omni	1014/
LTE, 5G NR Band 40	2300-2400	58.4	-2.33	3.83	50 12	Linear	directional	1000
LTE, 5G NR Band 7,38,41	2484-2690	47.4	-3.24	4.42				
<b>5G NR</b> Band 77,78	3300-4200	61.0	-2.15	7.47				
5G NR Band 79	4400-5000	58.4	-2.34	6.63				
Wi-Fi (5 GHz band) Band 46,96	5150-5925	53.7	-2.70	5.63				

Mechanical		
Dimensions	38 x 10 x 3mm	
Weight	2.5g	
Material	FR4	
Termination	Solder Pad	

Environmental		
Operation Temperature	-40 - +85°C	
Storage Temperature	-40 - +85°C	
Moisture Sensitivity Level	3	
Relative Humidity	Non-condensing 65°C 95% RH	



5G/4G Bands			
Band Number	5GNR / FR1 / LTE / LT	+ / TD-SCDMA / NTN	
	Uplink	Downlink	Covered
B1	1920 to 1980	2110 to 2170	1
B2	1850 to 1910	1930 to 1990	4
B3	1710 to 1785	1805 to 1880	4
B4	1710 to 1755	2110 to 2155	*
B5	824 to 849	869 to 894	*
B7	2500 to 2570	2620 to 2690	•
Dõ RO*	1749 9 to 1784 9	925 to 960	4
B5 B11	1/43.5 to 1/84.5	1475 9 to 1495 9	1
B12	699 to 716	729 to 746	4
B13	777 to 787	746 to 756	1
B14	788 to 798	758 to 768	1
B17	704 to 716	734 to 746	1
B18	815 to 830	860 to 875	✓
B19	830 to 845	875 to 890	1
B20	832 to 862	791 to 821	4
B21	1447.9 to 1462.9	1495.9 to 1510.9	4
B22*	3410 to 3490	3510 to 3590	4
B23 / n23	2000 to 2020	2180 to 2200	4
B24 / n255	1626.5 to 1660.5	1525 to 1559	*
B25	1850 to 1915	1930 to 1995	*
B20	814 t0 849	859 t0 894	*
B27	702 to 748	758 to 802	4
829	703 t0 748	738 10 803	4
B20	2305 to 2315	2350 to 2360	1
B31	452.5 to 457.5	462.5 to 467.5	×
B32	1452 to	o 1496	1
B34	2010 to	o 2025	1
B35	1850 to	o 1910	✓
B36	1930 te	o 1990	1
B37	1910 te	o 1930	1
B38	2570 to	o 2620	4
B39	1880 to	o 1920	4
B40	2300 to	- 2600	*
B41 B42	2496 to	2690	4
843	3400 ti 3600 ti	n 3800	4
845	1447 tr	n 1467	1
B46	5150 to	n 5925	1
B47	5855 to	o 5925	1
B48	3550 to	o 3700	1
B49	3550 to	o 3700	1
B50	1432 to	o 1517	1
B51	1427 to	o 1432	1
B52	3300 to	o 3400	1
B53	2483.5	to 2495	4
B65	1920 to 2010	2110 to 2200	*
Bob	1710 to 1780	2110 to 2200	4
D00 R60	098 10 728	753 10 783	
B70	1695 to 1710	1995 to 2020	1
871	663 to 698	617 to 652	1
B72	451 to 456	461 to 466	*
B73	450 to 455	460 to 465	*
B74	1427 to 1470	1475 to 1518	✓
B75	1432 to	o 1517	✓
B76	1427 to	o 1432	✓
B77	3300 te	o 4200	1
B78	3300 to	o 3800	1
B79	4400 to	o 5000	1
B85	698 to 716	728 to 746	✓
B8/	410 to 415	420 to 425	* •
588	412 to 417	422 t0 427 2170 to 2200	* -
11200	1300 (0 2010	2170 (0 2200	•

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# 3. Mechanical Drawing









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## Antenna Integration Guide

The following is an example on how to integrate the PCS.62.A into a design. This antenna has 3 pins, where one pin is used for the RF Feed. Taoglas recommends using a minimum of 133 x 38mm ground plane (PCB) to ensure optimal performance.



Top view of PCB.

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## 4.1 Schematic Symbol and Pin Definitions



Above is a 3D model of the PCS.62.A on a PCB.

The circuit symbol for the PCS.62.A is shown below. The antenna has 3 pins as indicated below.

Pin	Description
1	RF Feed
2, 3	Mechanical, No Connection



Above is a schematic symbol of PCS.62.A and a table of the pin definitions.

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## 4.2 Schematic Layout

Matching components with the PCS.62.A are required for the antenna to have optimal performance in the spaces specified in the schematic below. Additional matching components may be necessary for your device, Taoglas recommends incorporating extra component footprints, forming a "Pi" network, for the PCS.62.A.



Designator	Туре	Value	Manufacturer	Manufacturer Part Number
C1	Capacitor	3.6pF	Murata	GRM1555C1H3R6CA01D
C2	Capacitor	Not Fitted	-	-
L1	Inductor	10nH	TDK	MHQ1005P10NJT000

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## 4.3 Antenna Footprint



Pin	Description
1	RF Feed
2, 3	Mechanical, No Connection

SPE-25-8-085-A

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## 4.6 Copper Clearance

The footprint and clearance on the PCB must comply with the antenna's specification. The PCB layout shown in the diagrams below demonstrates the PCS.62.A clearance area. The copper keep out area applies to all layers that are below the PCS.62.A.

There should be a copper clearance area between the PCB edge and the ground plane of 11.7mm. The ground plane should be 4.6mm from the mechanical pads. The PCB Edge Clearance should be 0.2mm.





### 4.7 Antenna Integration

The PCS.62.A should be placed in the centre, as close to the edge on the long side of the PCB as possible, to take advantage of the ground plane. The RF trace must maintain a 50 Ohm transmission line. A "Pi" Matching Network is recommended for the RF transmission line, the values and components for the matching circuit will depend on the tuning needed. Ground vias should be placed around the transmission line and the copper clearance area.



PCS.62.A antenna mounted on a PCB reference board, showing transmission lines and integration notes.



## 4.8 Final Integration

The top side image shown below highlights the antenna transmission line. Taoglas recommends using a minimum of 133x38mm ground plane (PCB) to ensure optimal performance.



Top Side (PCS.62.A placement on 133x38mm PCB reference design)



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The PCS.62.A can be assembled by following the recommended soldering temperatures are as follows:



Smaller components are typically mounted on the first pass, however, we do advise mounting the PCS.62.A when placing larger components on the board during subsequent reflows.

Note: Soldering flux classified ROLO under IPC J-STD-004 is recommended.







1000pcs PCS.62.A per reel (1) Humidity indicator card (2) 3g Desiccant



1000pcs PCS.62.A per Vacuum bag MSL Label Caution label



1000pcs PCS.62.A per box Dimensions 335x335x85mm Weight: 2.5Kg





3000 pcs PCS.62.A per carton Carton dimensions: 370x370x300mm Weight: 8Kg

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Chamber Test Set-up

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## Application Note

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This application note shows how changing the ground plane length effects the antenna performance.







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Changelog for the datasheet				
SPE-25-8-085 – PCS.62.A				
Revision: A (Origina	Revision: A (Original First Release)			
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Author:	Gary West			

#### **Previous Revisions**





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