Pulse
A YAGEO Company

CONSUMER PRODUCTS & FLUIDANT SOLUTIONS

V04

Pulse Wireless Consumer & FluidANT Solutions

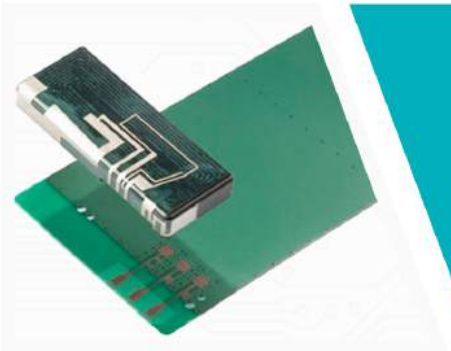
In our carefully developed Pulse solutions we aim to optimize our antenna radiator and the mechanics design. Without limiting the industrial design, we develop it to work for complex multi-radio environments and under all circumstances.

FluidANT is print technology which enables you to produce high performance antennas, sensors and electrical circuits on 3D surfaces using conductive ink. Process suits also to printing dielectric materials and to other applications in which the high speed, excellent accuracy and precise deposition rate are important.

FluidANT consists of the FluidWRITER printer and related CAM design software for the print work programming."in the blue background area.

PULSE ELECTRONICS

A Yageo Company, the worldwide leader in electronic component design and manufacturing.



PRODUCTS

WIRELESS CONSUMER DIVISION

Providing Antenna design and manufacturing solutions for wireless devices.

FLUIDANT SOLUTIONS

Prints conductive ink on full 3D surfaces using modern software controlled digital process.

http://antennas.pulseelectronics.com
http://www.fluidant.com

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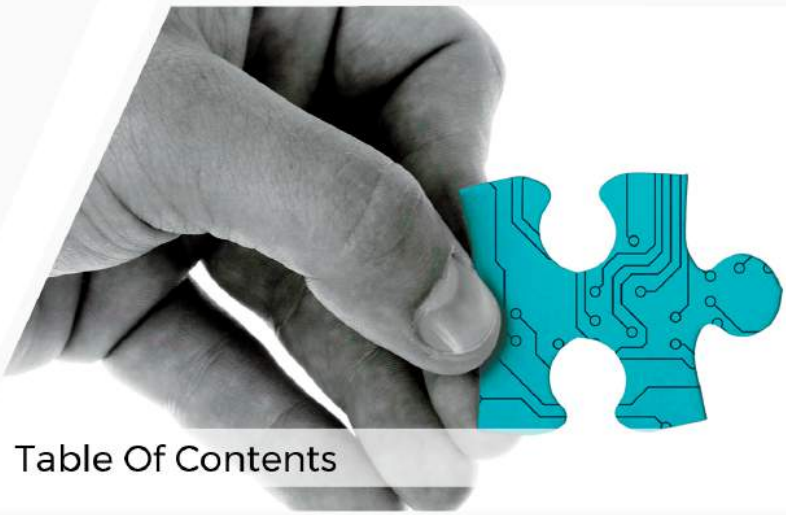

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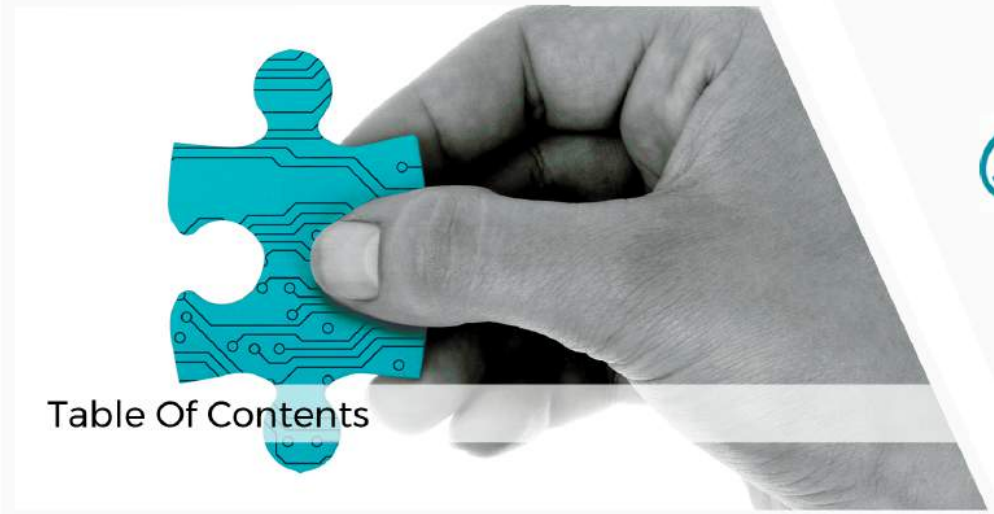

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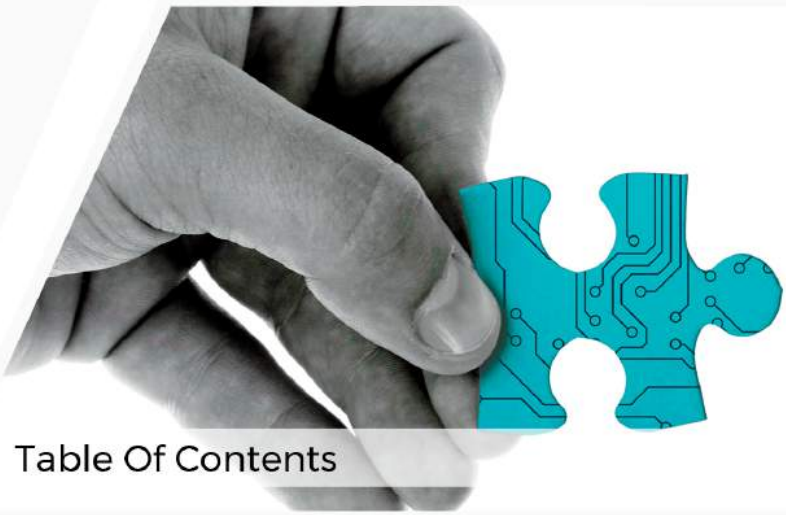

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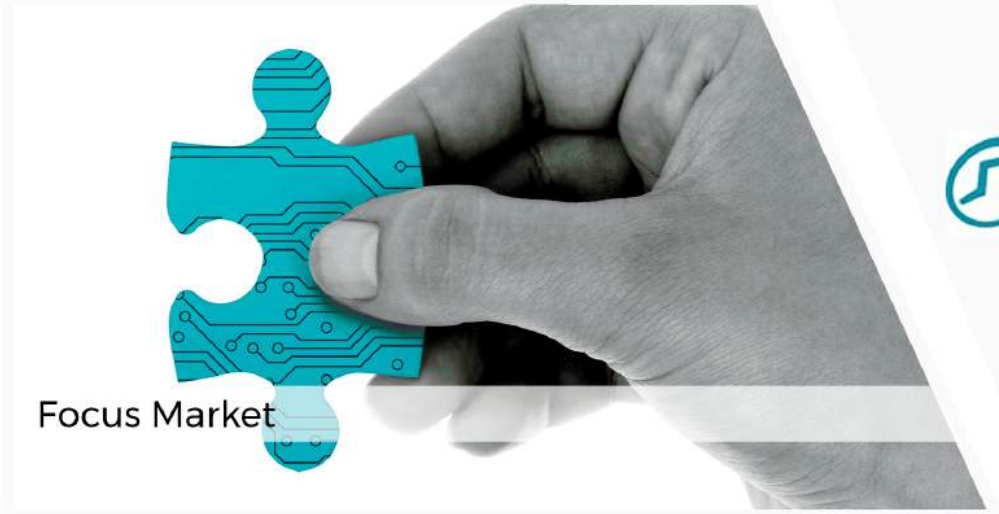

Focus Market

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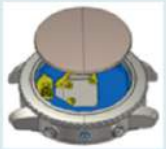
FOCUS
MARKET

Portable

Antenna
- Smartphone
- Laptop
- Tablet
- PNC
- Monitor

Wearable



Antenna
- Smartwatch
- Fit products
- Ear piece
- Medical devices

Smarthome

Antenna
- Smartspeaker
- Smartlighting
- Camera
- Smart controler
- Smart TV

EV

IoT, STB

Antenna
- Automotive EV GPS,NFC, Remote key, FM,LTE
- SETTOPBOX

Connection

Metallic connection
- Trace
- Metal jumper
- EMI protection
- Metal seal
- Conductive glue

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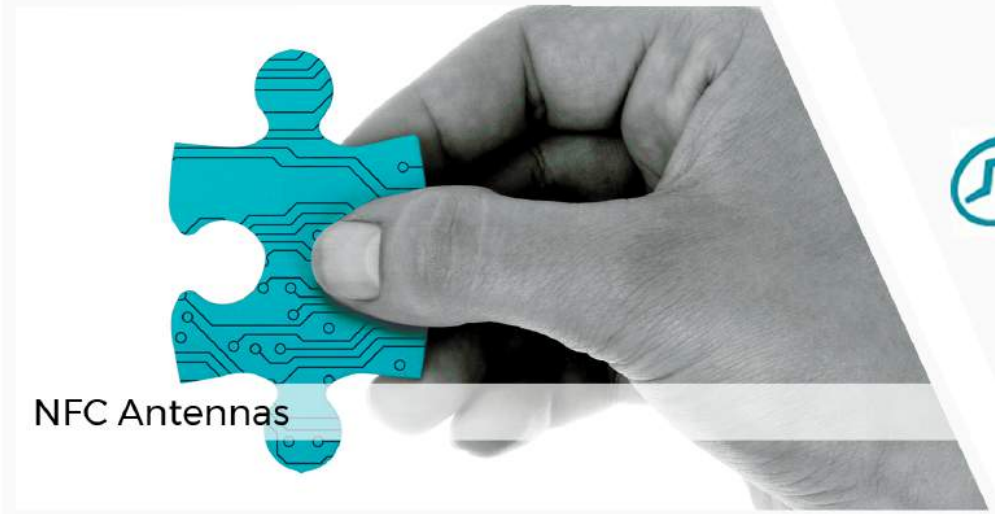
PRODUCTS: SMART ANTENNAS

THE BEST FOR THE BEST

Pulse has often been the first to introduce new technologies and product concepts, which have subsequently earned a dominant position in the highly competitive mobile device antenna market. We are affirming our role as a pioneer in the field by introducing appealing product concepts and manufacturing technologies—which will be applicable to all upcoming mobile device generations.

NEW TECHNOLOGIES AND PRODUCT CONCEPTS

Our research and development activities offer favorable roadmaps in areas such as, e.g. smart antennas, metal cover antenna solutions, future 3D antenna manufacturing technologies, LTE and NFC antennas.



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PRODUCTS:
NFC ANTENNAS

COMPETITIVE OPTIONS

The incomparable NFC Roadmap presents several different product concepts that go beyond the first generation ferrite based solutions. Also, Pulse has carried out intensive material studies in order to find more cost-effective options for future applications.

In order to ensure reliability, Pulse performs the following set of measurements: EMVCo, and a user case test for reader and card modes in every single project. In order to ensure quality, we have invested into our main R&D sites to have the correct measurement tools, and we always verify our products prior to shipping them.

- ✓ FluidANT NFC Ferrite Sheet Antenna (0.12 mm)
- ✓ Ultra-thin NFC Ferrite Sheet Antenna (0.133 mm)
- ✓ Ultra-thin NFC Ferrite Sheet Antenna (0.185 mm)
- ✓ NFC Ferrite Sheet Antenna
- ✓ NFC Cover Integrated Antenna
- ✓ NFC Wire Loop Antenna
- ✓ NFC Stamp Antenna

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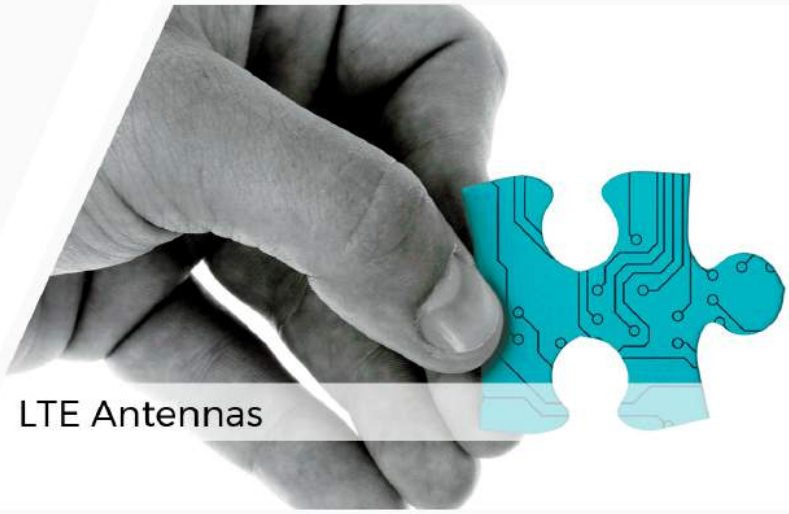
PRODUCTS:
LTE ANTENNAS



LTE Antennas

MAXIMUM DATA RATE

LTE provides the ability to deliver high-data rates to a variety of consumer devices such as smartphones and tablets. LTE also enables the possibility for adopting the new, non-traditional devices, applications and services. In order to achieve this maximum data rate the current LTE standard calls for MIMO antenna technology, or the use of two separate antenna structures for the multiple transmitting and receiving signals.

THE SMALLEST ANTENNA PLATFORM AVAILABLE

Pulse LTE antennas are designed to meet the worlds' future demands for mobile devices, with a truly global roaming that also works seamlessly in the LTE multiple-input, multiple-output (MIMO) networks. All, while providing normal WCDMA, CDMA, and GSM access. The Pulse adjustable single-element antennas only require a single feed to cover multiple operating bands.

Pulse LTE antennas are built on the smallest antenna platforms available. The extremely compact sizes also include the volume for speakers and other accessories within the antenna frame structure in handset applications. When using Pulse LTE solutions, there is a significantly lower correlation between the antennas and any other handset MIMO configurations. In addition, Pulse LTE antennas can be 3D fitted by using LDS manufacturing technology.

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PRODUCTS:
PULSE ANTENNAS MATCH WITH METAL COVERS

PULSE ANTENNAS MATCH WITH METAL COVERS

Metal covers have become increasingly popular in mobile devices. The slimmer devices with larger displays require strength and rigidity. From the environmental, industrial design and expense points of views, metal covers are very attractive. Metal covers also provide the additional benefit of heat dissipation, which is generated by the mobile phone´s PAs / processors.

COMPETETIVE ANTENNA SOLUTIONS

Pulse offers several competitive antenna solutions for metallic mobile device covers:

- ✓ Capacity Fed Antenna match with metallic surfaces.
- ✓ Metal ring antennas match with metal end caps and rings.
- ✓ NIFA/NILA antennas match with metal back covers.
- ✓ Pulse mCEMPA: All-in-one for Full Metal Chassis.

SOLUTION FOR METAL COVERS

Metal cover solutions typically have some location on the device that is sensitive to the user´s hand. Our antenna solutions for metallic covers are carefully designed to avoid "death grip´ scenarios. Furthermore, the smart antenna technology developed by Pulse can detect these scenarios, and have the antenna adapt to them in order to get the best performance in various user cases.

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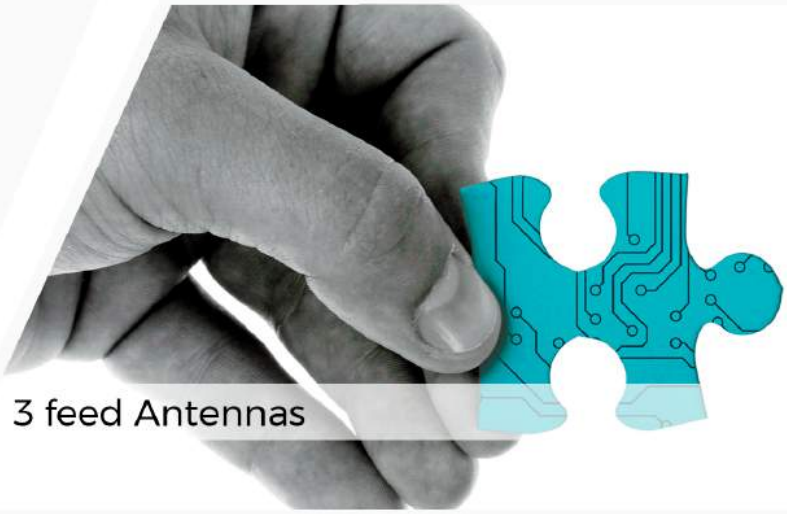
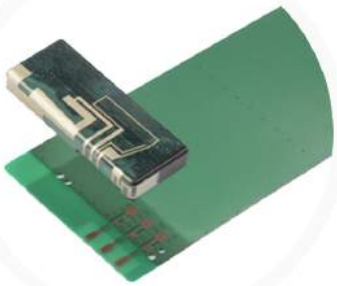
PRODUCTS: 3 FEED ANTENNAS



Pulse 3-feed Antenna

Pulse 3-feed cellular antenna, the passive antenna based on proven technology,

- PWB length 115 and width 50 mm
- Antennasize7x50x13mm3
- Ground clearance 9 mm
- Number of contacts 4 – 3 feeds, 1 GND



Band coverage

- LB (B5,B6,B8,B12,B13,B18,B19,B20): 704-960 MHz
- HB (B2,B3,B4,B9,B10,B22,B35,B36,B37,B39): 1710- 2170 MHz
- B7: 2500-2690 MHz; B38: 2570-2620
- B40: 2300-2400 MHz
- B11: 1427.9-1495.9 MHz

PERFORMANCE VERIFIED

The 3-feed cellular antenna for all NGMN target bands was first introduced by Pulse in the IWPC workshop. The antenna can designed with:

- 3D fitted by using LDS manufacturing technology.
- Speaker integration possible on the frame

Note: China Mobile reports test results in the GTI's (Global TD-LTE Initiative) TD-LTE Industry Briefing, August 2012 | Issue No. 14.

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Pulse mLUX Invisible Antenna

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PRODUCTS:
MLUX
INVISIBLE
ANTENNAS

Industrial design plays a very important role in the global mobile device market. Pulse mLUX Translucent Flex Antenna enables creative industrial design effects for mobile devices. The invisible antenna concept allows light and color to shine through the translucent device cover, offering multiple options for a show-stopping design. When integrated into the display, the antenna makes it possible to use more metal on the back cover of the device.

Let the Light Delight

The mLUX also provides a state-of-the-art RF performance. The antenna can be placed as far from the ground plane as possible, which in return would significantly increase user's performance with their hands. The device thickness can be reduced and the same performance achieved as with the typical flex antenna solutions.

THE ART OF ASSEMBLING

This antenna concept offers numerous integration and assembly possibilities. The antenna can be assembled with the display, the covers, or a separate carrier with an adhesive. Alternatively, it can also be molded between clear and opaque plastics. When the antenna is placed near the display, smaller feeding elements can be used and the total volume needed for the antenna decreased.

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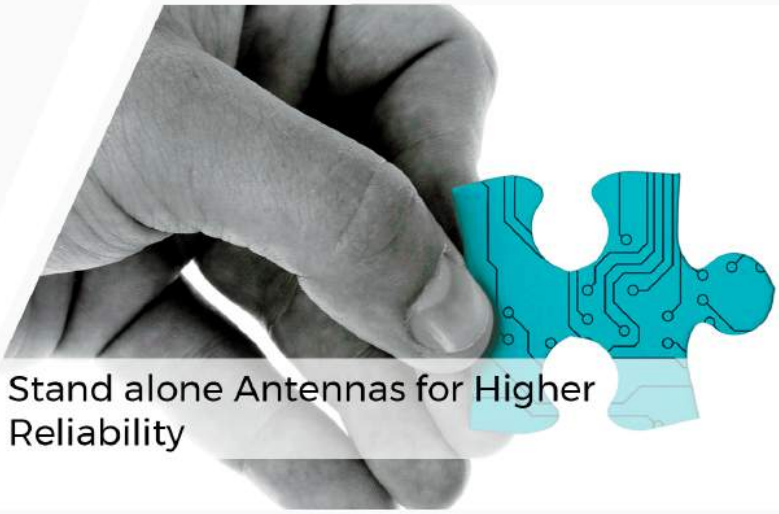
PRODUCTS: STAND ALONE ANTENNAS



Stand alone Antennas for Higher Reliability

Pulse offers a strong base for the volume production of internal multiband antennas, by utilizing its antenna design platforms and production technologies. The antenna platforms are quickly customizable and tailor to the needs of each customer's project; as a result, Pulse's internal multi-band antennas provide a cost-efficient and straightforward solution to a large range of mobile-device projects.

INTERNAL ANTENNAS

Internal antennas have almost entirely replaced the traditional, retractable and stubby antennas. Ever since the first handsets with internal antennas were launched, Pulse has been in the leading position for development. The company has a number of patented solutions for multi-band antennas that are suitable for different form factors.

LEADING MANUFACTURER OF COMPLEX RF COMPONENTS.

Pulse customers consider integrated solutions to be an attractive option due to simplified logistics, possibilities of lowering component counts, and improved reliability, as well as better tolerance in chain management of critical components. These designs could also increase the structural strength of the device which is critical, considering today's ever slim mobile devices with large displays. We can proudly present ourselves as a leading manufacturer of complex RF components. Pulse knows how to rule RF quality in mass production and optimize designs for the lowest total costs. Pulse has a state-of-the-art volume production experience with an optimal set of testing and measurements.

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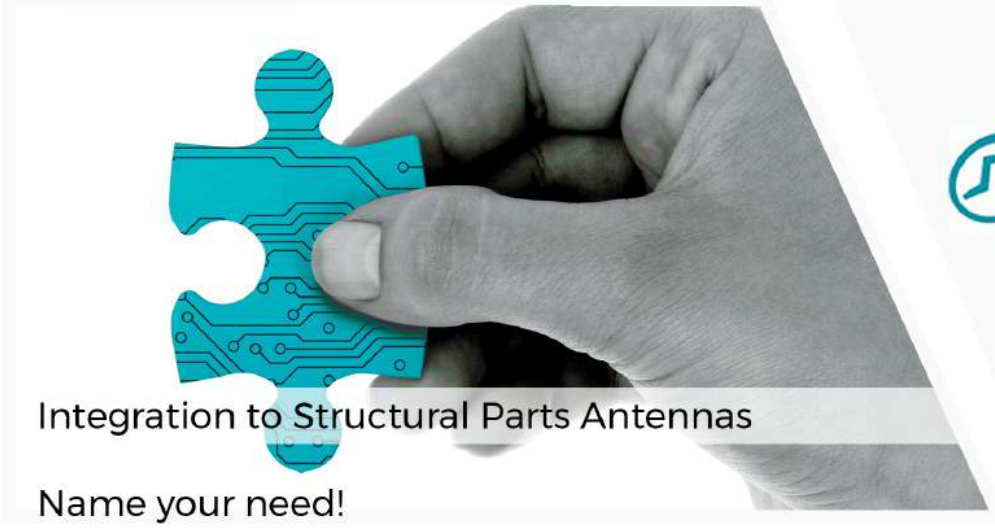

Integration to Structural Parts Antennas

Name your need!

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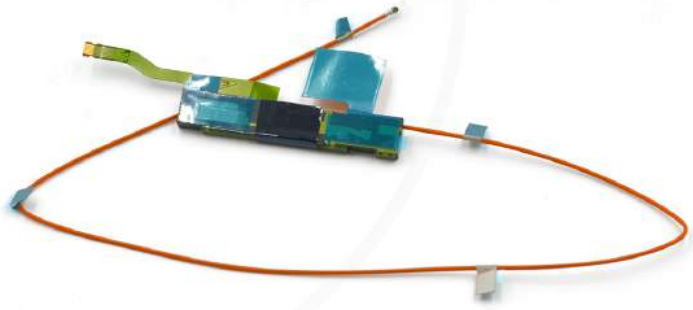
PRODUCTS:
INTERGRATION TO STRCUTURAL ANTENNAS



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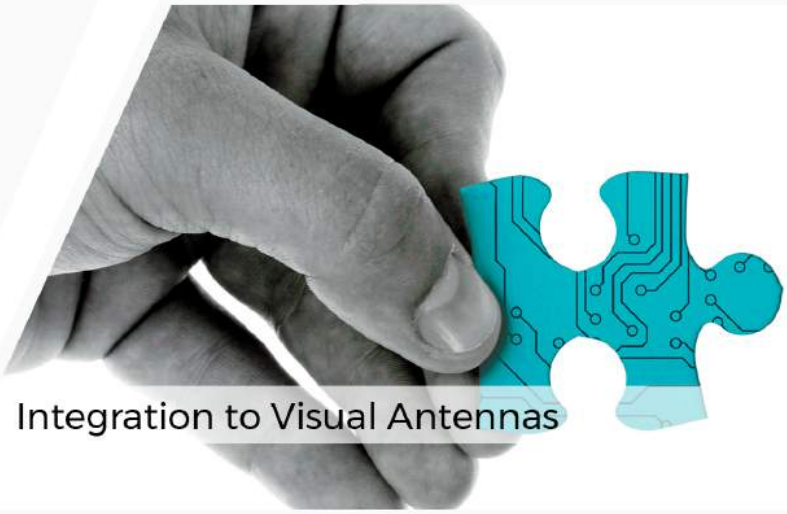
PRODUCTS: INTEGRATION TO VISUAL ANTENNAS



Visual Quality Solutions

Pulse is known as the pioneer in the field of value-added integration. When taking integration beyond the conventional structural mechanics, the next step is to integrate components that are critical for performance into the visual parts of a mobile device. When antennas are integrated into the visual mechanics, even the visual parts of a mobile device begin performing as an antenna.

Visual parts as an antenna

Most commonly, the radiator is placed on the outer cover of a mobile device and painted over to meet a Class 1 / Class A visual requirements.

Competitive alternative

Pulse´s reliable LDS manufacturing process, with protective and cosmetic painting capabilities, is one of the most competitive alternatives for visual designs.

RF QUALITY FOR THE SMALLEST DEVICE VOLUME

Pulse has been placed in an active role in the antenna integration process, and was the first to introduce antenna integration with structural mechanics.

ADDITIONAL INTEGRATION POSSIBILITIES

Integration of antennas into structural mechanics enables us to create the smallest possible mobile device volume component. This allows the possibility of other electrical or electromechanical components such as speakers to be added into a complete structural element.

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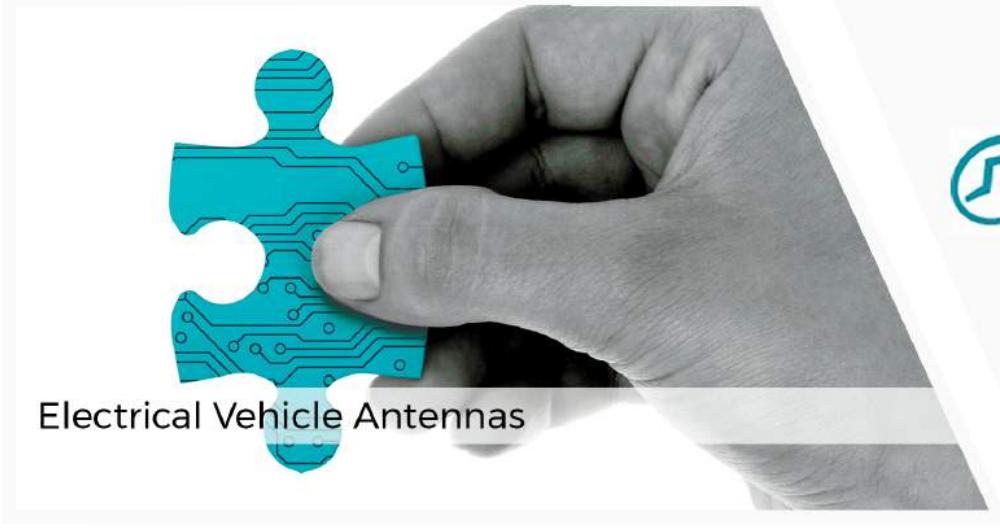

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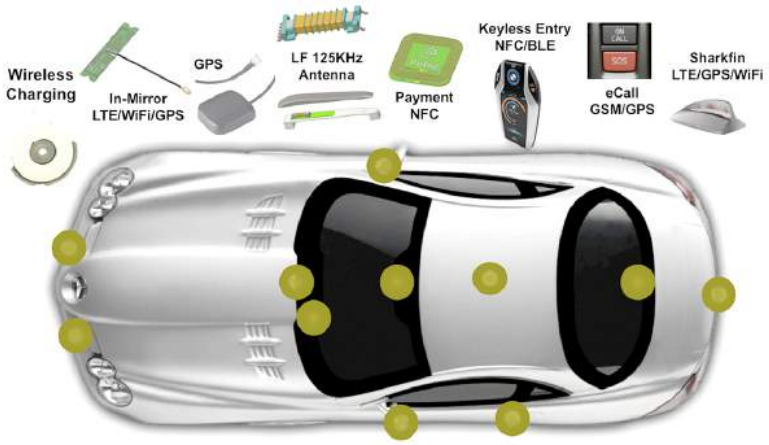
NEW PRODUCTS: ELECTRICAL VEHICLE ANTENNAS



Pulse's new EV Antenna provides superior wireless solutions that are engineered to support today's technology, while adapting to future wireless releases. As the 3G/4G LTE technology continues to innovate and lead the automotive field, carmakers can further integrate additional wireless technologies to their vehicles including Wi-Fi, Bluetooth, Global Navigation Satellite System (GNSS), Wireless Charging, NFC, and Wireless Key Solutions.

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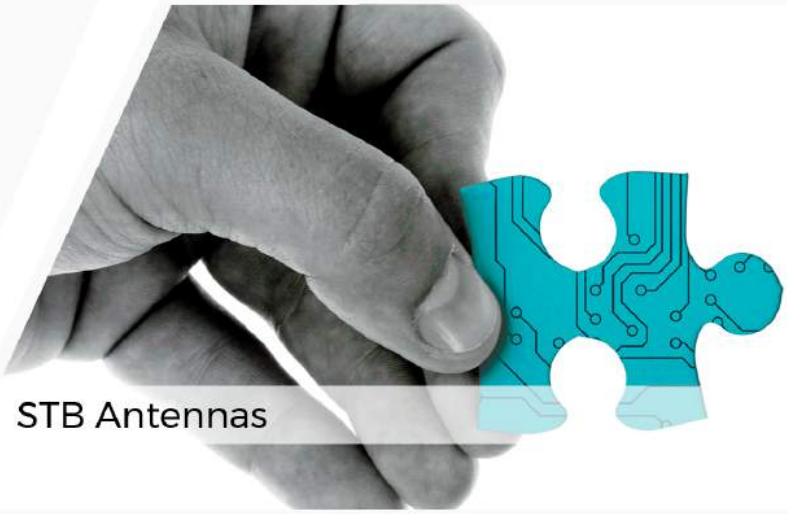
NEW PRODUCTS: STB ANTENNAS



ThroughAnt – MIMO Wi-Fi Antenna technology:

The number of devices with wireless connectivity continues to increase tremendously, but at the same time the demand for higher speed rates require innovative antenna solutions.

Pulse's new ThroughAnt Antenna solution uses an advanced isolation technique for Wi-Fi MIMO applications, 802.11n/ac/ax, giving superior throughput performance. The ThroughAnt Antenna is perfectly suited for the following: Set Top Box, AP, Router, Wi-Fi Mesh, tablet, laptop or any device with Wi-Fi MIMO functionality.

The concept can be customized and applied to any form factor.

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NEW PRODUCTS: WIRELESS POWER COILS & SYSTEM

WM5V(5W) & SWA1400(15W)
QI TRANSMITTER
For Mobile devices Charger Applications

Features:

- ✓ Wireless power electronics transmitter for mobile phone consumer electronics.
- ✓ Plug-and-play electronics module designed for fast end-product design and implementation.
- ✓ Trusted and cost-effective design.
- ✓ Compatible for charging with all industry leading mobile phones.

Specifications:

- 5V Input – wire pigtail
- Qi Compliant Electronics
- 5W Charging System
- Metal bracket (1) and screw holes (4) for connection to housing assemblies

Additional Options:

- LED indicator assemblies
- I/O Connector Assemblies
- 10W and 15W Transmitter Options

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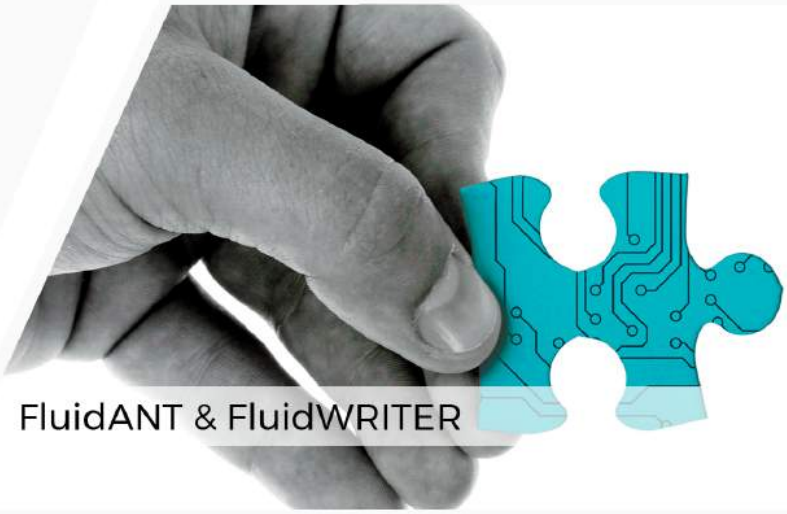
FLUIDANT & FLUIDWRITER



FluidANT

Print Directly on 3D Surfaces

- Use normal plastic with good mechanical properties and wide color range or even as transparent
- Exploit new product design and structure options
- Benefit from low cost micron particle silver ink
- Print prototypes quickly in your own R&D
- Produce in-house with simple logistics

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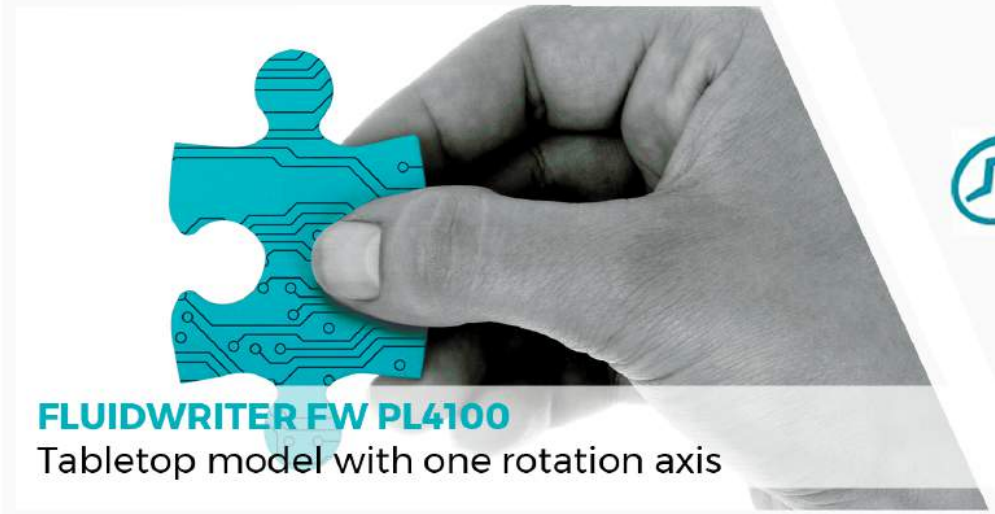
www.fluidant.com

FluidANT is trademark registered in the US Patent and Trademark Office.



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FLUIDANT &
FLUIDWRITER

FLUIDWRITER FW PL4100

Tabletop model with one rotation axis

Designed to provide an affordable entry option for printing and the development of printed products. It has the same capability to print on 3D surfaces as in production model, except with limited max printing speed and only one rotation axis for fixtures that hold the parts to be printed on.

- **Print work area:**
  - 300 x 140 x 140 mm (one rotation axis)
  - 500 x 350 x 190 mm (open table)
- Max printing speed 50 mm/s
- Printer weight 200 kg

SURFCAM WITH FLUIDANT CUSTOMIZATION

FluidWRITER IV print work is designed with the well-known SurfCAM 2015 and equipped with FluidANT user interface customization to serve print work designing purpose. Design tool utilizes easy to use FluidWRITER IV post-processor for toolpath data generation.

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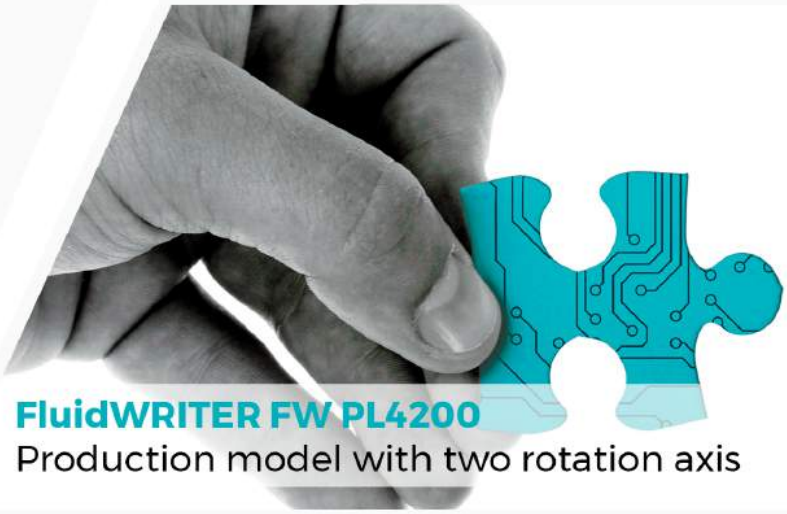
FLUIDANT & FLUIDWRITER



FluidWRITER FW PL4200

Production model with two rotation axis

Designed for high speed and high precision production operations, with the capability to print on 3D surfaces. Printhead is on a linear XYZ motion system and the printhead is real time synchronized to actual motion, which makes the system capable to have very precise dosing during high speeds. The printed line width and thickness remain stable in all situations. Its' unique digital 3D offset setting together with the advanced control SW enables for accurate printing on rotary three-dimensional surfaces.

3D capability
One part fixing enables access to four sides of cube with fixed tool orientation.

Two rotation axis for fixture that hold the parts to be printed on.

- ✓ **Print work area:**
  - 300 x 160 x 160 mm (two rotation axis)
  - 650 x 480 x 350 mm (open table)
- ✓ Max printing speed 200 mm/s
- ✓ Printer weight 1250 kg
- ✓ Print orientation freedom: 4D

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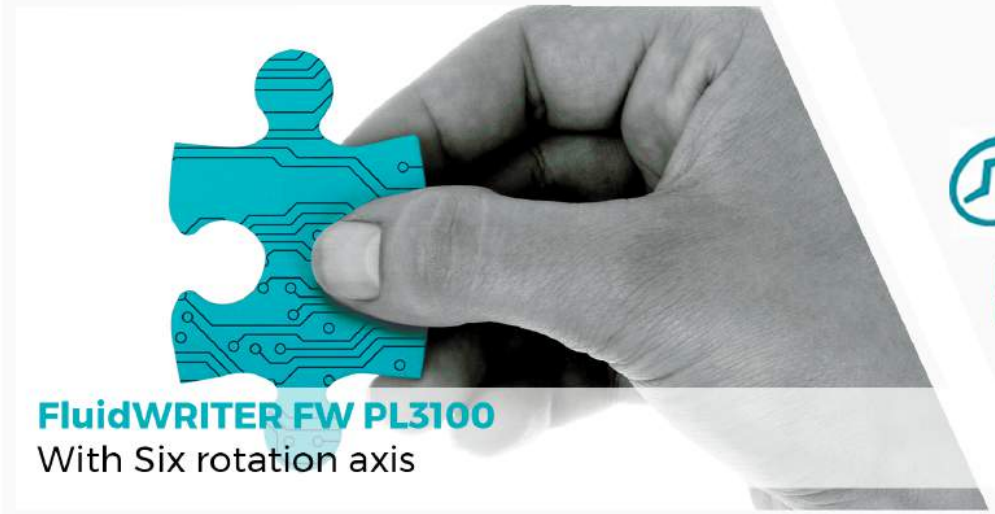

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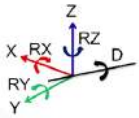
FluidANT &
FluidWRITER

FluidWRITER FW PL3100
With Six rotation axis

Designed for both prototyping and production use with ultimate 3D capability. Printhead is on six axis industrial robot and two rotation axis with fixtures for parts to be printed on.

3D capability
One part fixing enables access to five sides of cube with desired tool orientation.

- Print work area 260 x 150 x 150 mm
- Max printing speed 100 mm/s
- Printer weight 830 kg
- Print orientation freedom: 7D



FluidPATH

FluidWRITER III print work is designed using a tailor-made FluidPATH CAM design software, which includes specifically developed advanced tools for pattern and circuit print programming, real printer environment based integrated simulation, and built-in file transfer management.

Pulse Finland is a subsidiary of Pulse Electronics. SurfCAM is a registered trademark of Surfware Inc.

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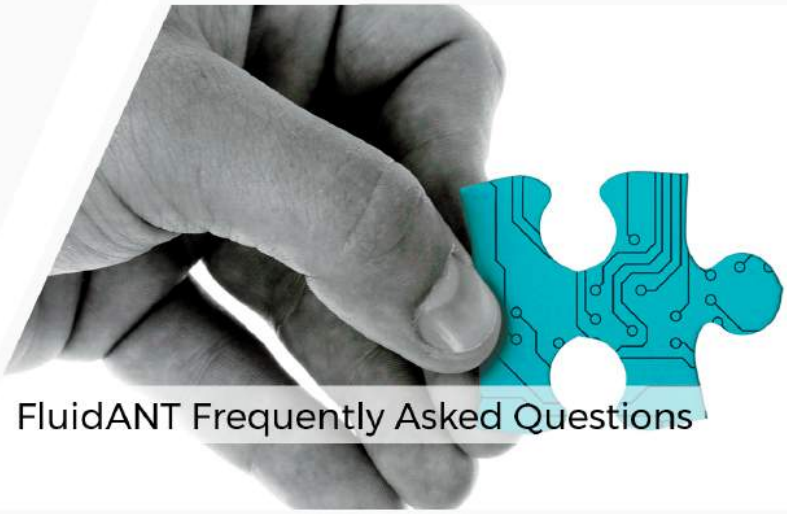
FluidANT FREQUENTLY ASKED QUESTIONS



WHAT IS FluidANT?

FluidANT is print technology that enables you to produce high performance antennas, sensors and electrical circuits on 3D surfaces using conductive ink. This process allows printing of dielectric materials as well as other applications that require high speed, excellent accuracy and precise deposition rate which are all important.

FluidANT consists of the FluidWRITER printer and related CAM design software for the print work programming.

WHAT ARE THE BIGGEST BENEFITS OF FluidANT?

With FluidANT you can print on 3D parts made from commonly available materials with good mechanical properties and a wide choice of colors. The print system enables significant reduction in prototyping and versioning time, as well as opens new design and integration options. Printing is located next to the device assembly line, which omits the long process chain and complex logistics.

HOW DOES FluidANT COMPARE TO OTHER PRINTING TECHNOLOGIES?

Other existing printing techniques, like screen and pad printing, are either limited to 2D applications or use, like inkjet or aerosol jet, high cost nanoparticle inks.

Unlike in traditional dispensing systems, in FluidWRITER printers the printhead operation is synchronized in real time to actual motion which makes it capable to very precise dosing in high speeds. Printed line width and thickness remain stable in all situations. Unique digital 3D offset setting together with advanced control SW enables accurate printing on rotary three dimensional surface.

WHAT SUBSTRATES CAN BE USED?

FluidANT can be applied on normal resins with good mechanical properties and a wide choice of colors, resins do not need any additional additives. The most common types are polycarbonate grades; the Polyamide grades are used with care on molding parameters. There is also a wide range of other resins that can be used.

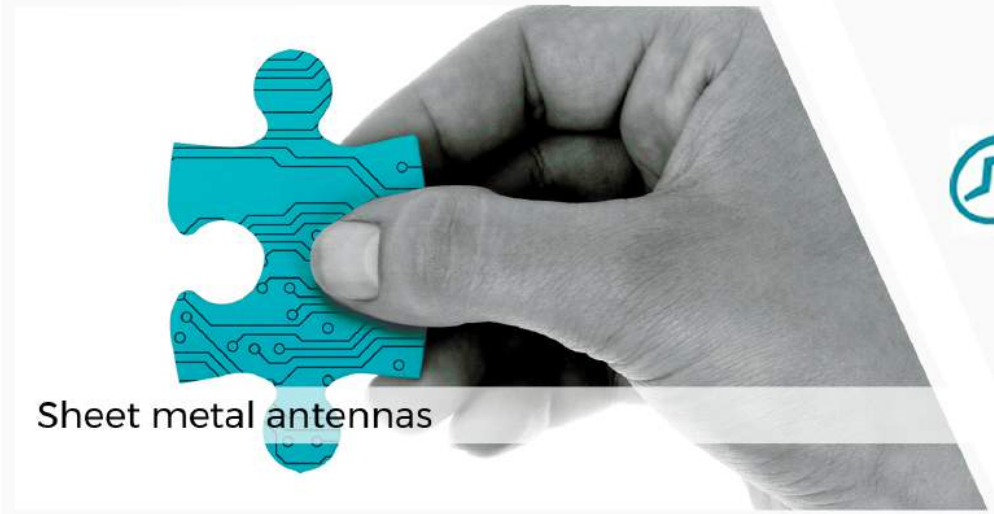
WHAT TYPE OF INKS CAN BE USED?

In creating antenna patterns and conductive traces, the FluidANT printer uses high viscosity micron particle silver inks. The benefit of a micron particle ink includes low cost and good conductivity. It is always recommended to verify in advance the compatibility of an ink and substance e.g. good adhesion.

WHAT INK DRYING TEMPERATURES ARE USED?

Higher ink drying temperature produces better conductivity, therefore the drying is typically set as high as possible for the used resin material. Typical drying temperature for polycarbonate is about 100C. Maximum drying temperature for polymer based inks is typically around 200C and minimum drying temperature around 70C. Lower conductivity due to low temperature drying can typically be compensated to some extend by longer drying time.

fluidant@pulseelectronics.com



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STANDARD PRODUCTS OFFERING

SHEET METAL ANTENNAS

			Peak Gain(dBi)		RF Performance Efficiency(%)		
Type	Pulse Part number	Frequency range(MHz)	Peak	Band edges	Peak	Band edges	Antenna DIM. (W×L×H,mm)
Sheet Metal	SZ0401C	2400	0.8		43		30×15×9

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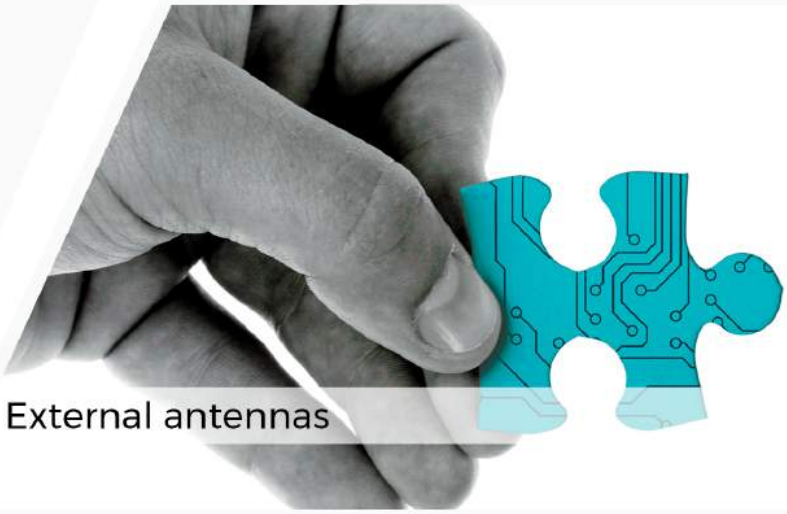
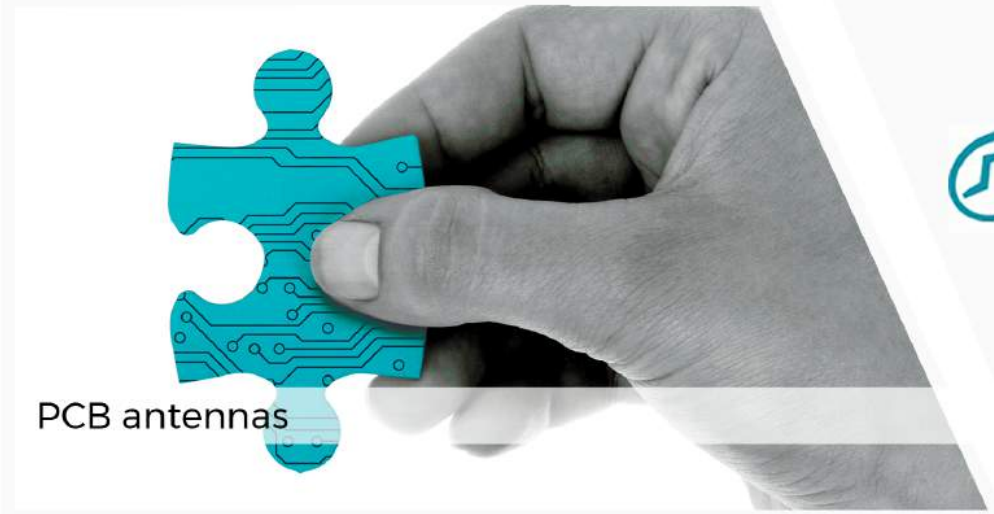
STANDARD PRODUCTS OFFERING



EXTERNAL ANTENNAS

			Peak Gain(dBi)				Evaluation
Type	Pulse Part number	Frequency range(MHz)	RL Min.(dB)	Peak	Antenna DIM.(W×L×H,mm)	GC-area (L×CW,mm)	Board Size(L×CW,mm)
Stick	CW1010	2400		2	82.7×ø10		
Stick	CW1030	2400		2	82.7×ø10		
Stick	CW3510	470	-3	-9	45×6.6×7	7	100×45
Stick	CW3510	750	-3	-6	45×6.6×7	7	100×45
Stick	CW3520	470/750		-4.5/-3.5	50.5×10.5×3.0		100×45
Stick	SWM178Z	2400/2483.5	-2	2	53.7x10.5		
Stick	SWM176Z	433	-2	2	53.7x10.5		
Stick	SWM1762	824-894 /1710-2170	-2.5	2	91.3x9.2		
Stick	SWM1772	7824/894/ 1710-2170	-2.5	2	53.7x10.5		100×45

Type	Pulse Part number	Frequency range(MHz)	VSWR 2.4GHZ	VSWR 6GHZ	IMPEDANCE	Insertion loss 2.4GHZ	Insertion loss 6GHZ	SMA	Ipex	Coaxial Cable
SMA to Ipex cable	CW9009	0-6GHZ	<1.2	<1.4	50	<1.0	<2.0	Female		1.13



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PCB ANTENNAS

				Peak Gain(dBi)	RF Performance Efficiency(%)				Evaluation
Type	Pulse Part number	Frequency range(MHz)	RL Min.(dB)	Peak	Peak	Band edges	Antenna DIM. (W×L×H,mm)	GC-area (L×CW,mm)	Board Size (L×CW,mm)
PCB	CW3513	2400	-10	2	72	69	16×70×0.9		
PCB	CW3513	5000	-10	2	65	50	16×70×0.9		
PCB	CW3544	1710-1880	-4.6		45	74	7.65×26×3	21×33.5	110×50
PCB	CW3544	1850-1990	-16.3		73	74	7.65×26×3	21×33.5	110×50
PCB	CW3544	1920-2170	-12.3		67	68	7.65×26×3	21×33.5	110×50
PCB	CW3544	824-960	-4.1		46	65	7.65×26×3	21×33.5	110×50

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Electronics
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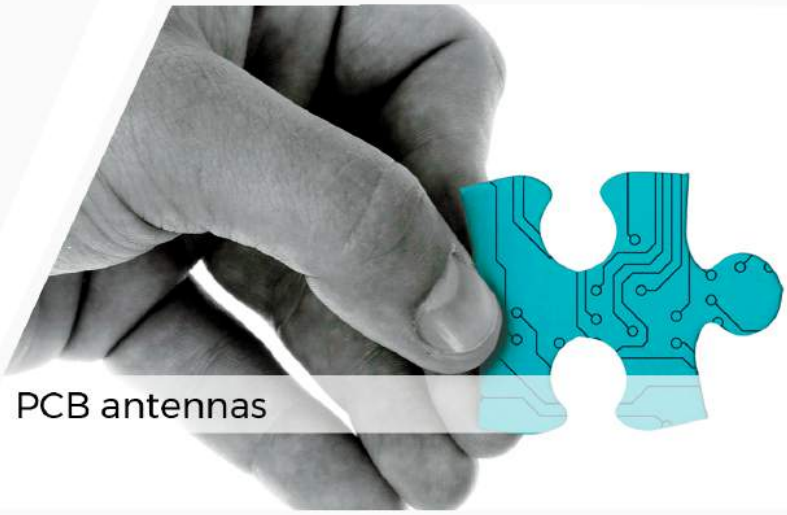
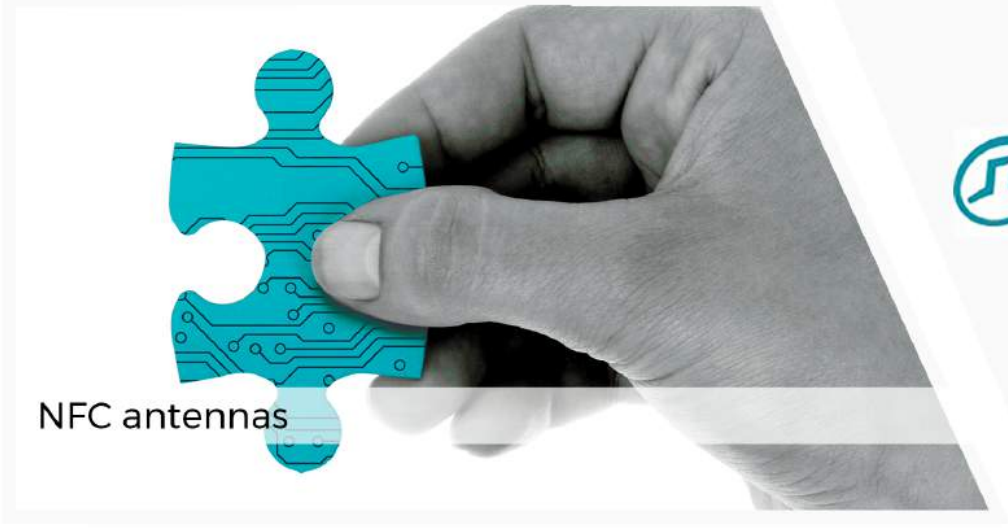


				Peak Gain(dBi)	RF Performance Efficiency(%)				Evaluation
Type	Pulse Part number	Frequency range(MHz)	RL Min.(dB)	Peak	Peak	Band edges	Antenna DIM. (W×L×H,mm)	GC-area (L×CW,mm	Board Size (L×CW,mm)
PCB	CW3544A	1710-1880	-4.6	-1.3			7.65×26×3		110×50
PCB	CW3544A	1850-1990	-16.3	-1.3			7.65×26×3		110×50
PCB	CW3544A	1920-2170	-12.3	-1.66			7.65×26×3		110×50
PCB	CW3544A	824-960	-4.1	-1.9			7.65×26×3		110×50
PCB	CW3544B	1710-1880	-5.7	-1.1			7.65×26×3		110×50
PCB	CW3544B	1850-1990	-18.5	-1.1			7.65×26×3		110×50
PCB	CW3544B	1920-2170	-13	-1.5			7.65×26×3		110×50
PCB	CW3544B	824-960	-6.5	-1.5			7.65×26×3		110×50
PCB	CW3796	1427.9-1660.5	6	2	55		7×40×3		
PCB	CW3796	1695-2200	6	5.5	75		7×40×3		
PCB	CW3796	2300-2700	6	5	70		7×40×3		
PCB	CW3796	698-960	6	1.5	65		7×40×3		



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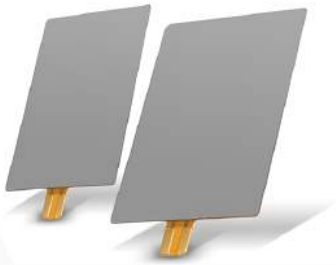
NFC ANTENNAS



Type	Pulse Part number	Frequency range(MHz)	Antenna DIM.(W×L×H,mm)
NFC	CW3550	13.56	50×30×1
NFC	CW3550	13.56	50×30×0.15
NFC	CW3580	13.56	35×50×0.133
NFC	CW7001	13.56	25×25×0.12
NFC	CW7013	13.56	25×30
NFC	CW7013	13.56	25×30
NFC	SW0154F	13.56	24×35×0.3

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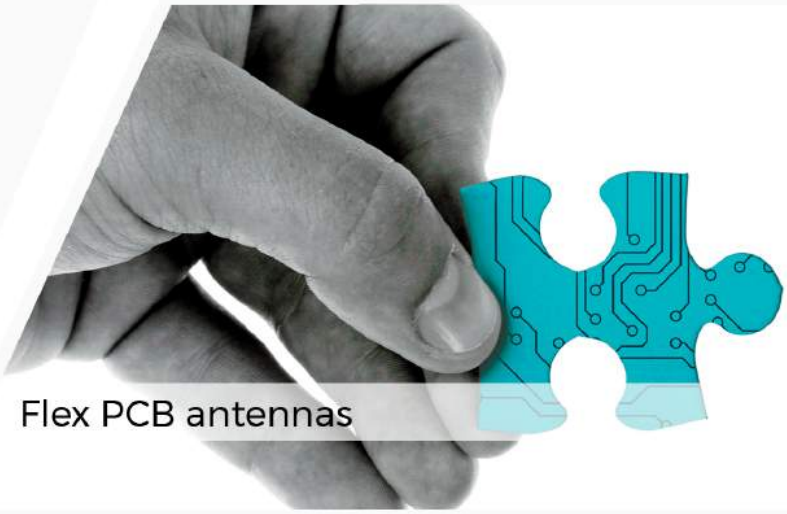
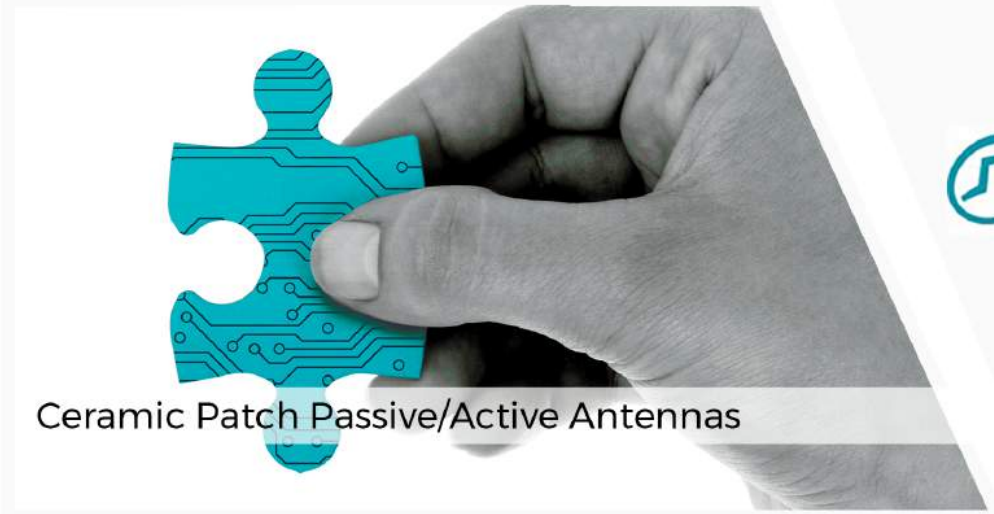


Flex PCB antennas

FLEX PCB ANTENNAS

			Peak Gain(dBi)		RF Performance Efficiency(%)		
Type	Pulse Part number	Frequency range(MHz)	Peak	Band edges	Peak	Band edges	Antenna DIM.(W×L×H,mm)
FPC	CW3315B0100	2400-2500	2.5		70		6×45
FPC	CW3315B0100	4900-5900	5		70		6×45
FPC	SH0319D	2400/5000	4.7/4.6		63/46		10×25×1.08
FPC	TWA0831	2400	?		?		?
FPC	SH0319E	2400-2500					38×15×1.08
FPC	SH0319E	5150-5850					38×15×1.08
FPC	SW0159W	1500	3.4		67		70×15×1
FPC	SW0159W	2400	3.4		58		70×15×1
FPC	SW0159W	5000	3.9		43		70×15×1
FPC	SW0159W	900	1.3		60		70×15×1
FPC	SW0159W	1800	1.9		60		70×15×1
FPC	SZ0595D	2400-2500 5150-5850	2.5 3		45 50		60x15x1.08
FPC	SZ06776W	2400-2500 5150-5850					34.5x8.8x1.6



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Ceramic Patch Passive/Active Antennas

CERAMIC PATCH ANTENNAS

Passive	Pulse Part number	Frequency range(MHz)	RL Min.(dB)	Peak	Peak	Antenna DIM. (W×L×H,mm)	GC-area (L×W,mm)	Board Size(L×W,mm)
Ceramic Patch	CW3216	1575		-2	60	13×13×5		50X 50
Ceramic Patch	CW3216	1575		-2	60	13×13		50X 50
Ceramic Patch	CW3223	1575	-32	4.6	62	25×24×4		

Active GPS	with Ipex MHF connector, 1.13 55mm RF cable			Gain(dBi)		RF Performance				
	Pulse Part number	Frequency range(MHz)	RL Min.(dB)	Zenith	Zenith edges	Output VSWR	Current	Antenna DIM. (W×L×H,mm)	Operation Voltage	Polarization
Ceramic Patch	SWR0032	1575-1615	-10	2.4	2	2.5 max	DC=9.0+-3mA	25×25×8.25	DC=3.0+-0.6V	RHCP
Ceramic Patch	SWR0042	1575-1615	-10	2.4	2	2.5 max	DC=9.0+-3mA	13.4×13.4×2.6	DC=3.0+-0.6V	RHCP
Ceramic Patch	SWM1660	1575-1602 698-960 1710-2690	-10	2	2	<2	Consumpition <15mA	84.6X14.5X3M	DC: 2.2-5V	RHCP
Ceramic Patch	SWM1672	1575		2		<1.5	consumpition <5mA	15X15X4	DC:2-3.6V	RHCP
Ceramic Patch	SWM172Z	1561-1575.42		5		<1.5	Consumpition <15mA	36X36X6.9	DC:2.2-5V	RHCP

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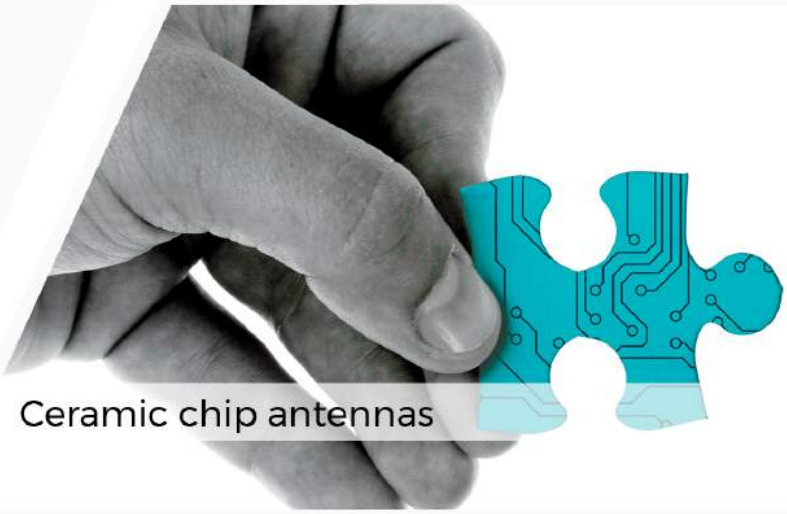
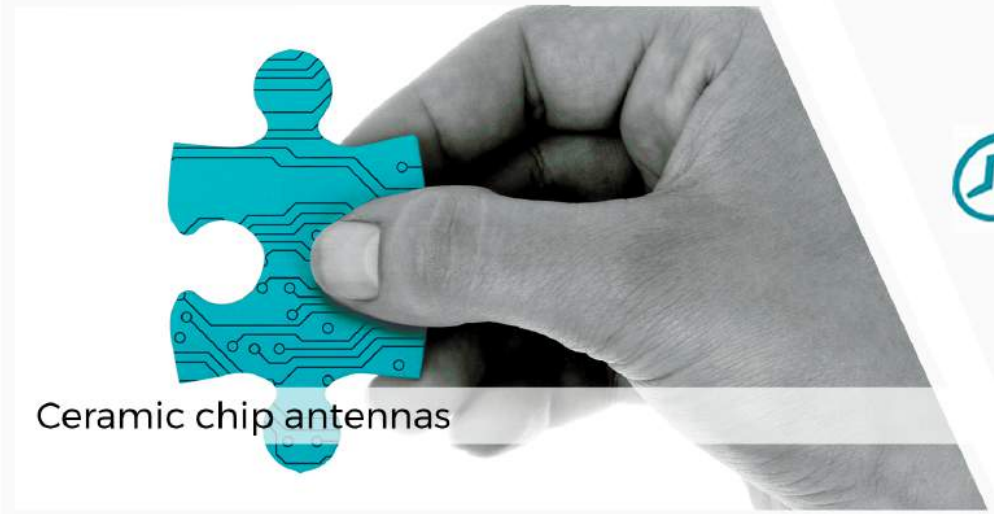


CERAMIC CHIP ANTENNAS

				Peak Gain(dBi)		RF Performance Efficiency(%)				Evaluation
Type	Pulse Part number	Frequency range(MHz)	RL Min. (dB)	Peak	Band edges	Peak	Band edges	Antenna DIM. (W×L×H,mm)	GC-area (L×CW,mm)	Board Size (L×CW,mm)
Ceramic Chip	CW3000	2400-2483.5	-18	2.5	2.1	65	55	7×1.6×1.6	11×6	11×40
Ceramic Chip	CW3000	2400-2483.5	-12	2.2	1.5	52	46			20×30
Ceramic Chip	CW3000	2400	-12	-3.5	-3.9	50	45	7×1.6×1.6	11×6	40×11
Ceramic Chip	CW3000	868	-18	-4.1	-3.7	50	45	7×1.6×1.6	11×6	40×11
Ceramic Chip	CW3000	1575	-10	-6.5	-7	70	65	7×1.6×1.6	11×6	20×40
Ceramic Chip	CW3001	2400-2483.5	-6	1.5	0.5	75	60	10×3.2×4	10.8×6.25	80×37
Ceramic Chip	CW3001	2400	-6	1.5	0.5	75	60	10×3.2×4	10.80×6.25	37×80



Ceramic chip antennas

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				Peak Gain(dBi)		RF Performance Efficiency(%)				Evaluation
Type	Pulse Part number	Frequency range(MHz)	RL Min. (dB)	Peak	Band edges	Peak	Band edges	Antenna DIM. (W×L×H,mm)	GC-area (L×CW,mm)	Board Size (L×CW,mm)
Ceramic Chip	CW3005	2400-2830	-4	1	0	55	40	7×3×3		70×37
Ceramic Chip	CW3006	2400-2483.5	-8	3.2	2.7	70	65	10×3.2×1.5	11.6×6	80×37
Ceramic Chip	CW3006	5150-5850	-10	4.2	3	80	70	10×3.2×1.5	11.6×6	80×37
Ceramic Chip	CW3006	2400-2483.5	-8	3.2	2.7	70	65	10×3.2×1.5	11.6×6.25	80×37
Ceramic Chip	CW3006	5150-5850	-10	4.2	3	80	70	10×3.2×1.5	11.6×6.25	80×37
Ceramic Chip	CW3006	2400	-8	3.2	2.7	70	65	10.0×3.2 ×.5	11.6×6.0	80×37
Ceramic Chip	CW3006	5000	-10	4.2	3.0	80	70	10.0×3.2×1.5	11.6×6.0	80×37
Ceramic Chip	CW3008	2400-2483.5	-8	1.7	0.7	70	55	3.2×1.6×1.1	4.25×4	80×37
Ceramic Chip	CW3008	2400-2483.5	-11	2.2	1.9	75	70	3.2×1.6×1.1	6.25×4	80×37
Ceramic Chip	CW3008	2400-2483.5	-8	1.7	0.7	70	55	3.2×1.6×1.1	4×4.25	80×37
Ceramic Chip	CW3008	2400-2483.5	-4	3	1	60	40	3.2×1.6×1.1	4×4.25	80×37
Ceramic Chip	CW3008	2400-2483.5	-7	2.5	1.5	70	55	3.2×1.6×1.1	4×4.25	80×37

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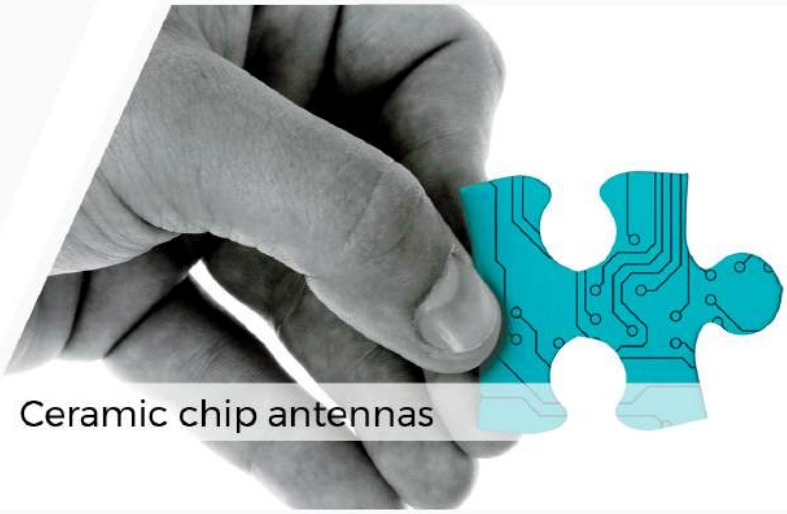
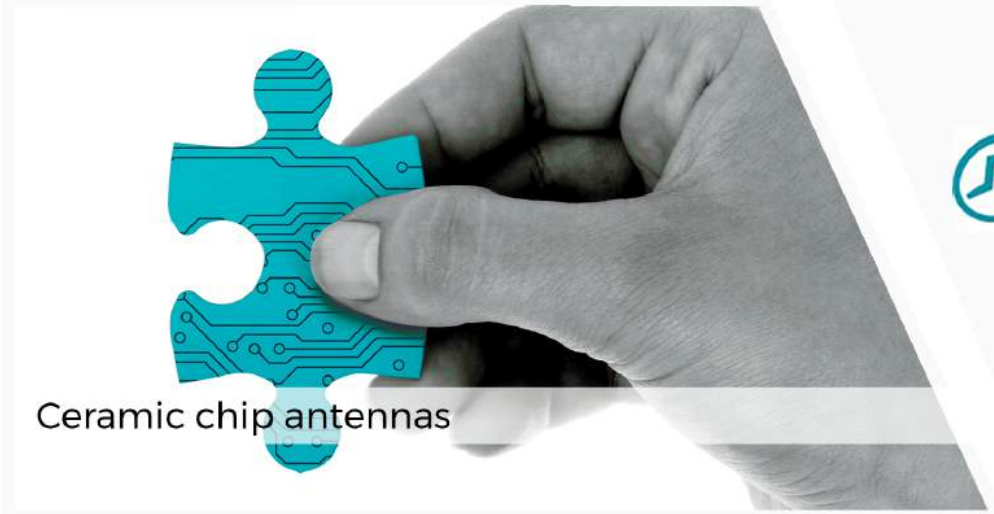


Ceramic chip antennas

				Peak Gain(dBi)		RF Performance Efficiency(%)				Evaluation
Type	Pulse Part number	Frequency range(MHz)	RL Min. (dB)	Peak	Band edges	Peak	Band edges	Antenna DIM. (W×L×H,mm)	GC-area (L×CW,mm)	Board Size (L×CW,mm)
Ceramic Chip	CW3008	2400-2483.5	-8	1.7	0.7	70	55	3.2×1.6×1.1	4×4.25	80×37
Ceramic Chip	CW3008	2400-2483.5	-11	2.2	1.9	75	70	3.2×1.6×1.1	4×6.25	80×37
Ceramic Chip	CW3008	2400	-8	1.7	0.7	70	55	3.2×1.6×1.1	4.00×4.25	80 x 37
Ceramic Chip	CW3008C	2400-2483.5	-11	2.5	2	75	70		4×6.25	80×37
Ceramic Chip	CW3008C	2400-2483.5	-5	3.3	2.5	70	50		4×6.25	80×37
Ceramic Chip	CW3008C	2400	-11	2.2	1.9	75	70	3.2×1.6× 1.1	4.00×6.25	80×37
Ceramic Chip	CW3008E	2400-2483.5	-13	3	2.7	85	83	3.2×1.6×1.1	11×6.25	75×43
Ceramic Chip	CW3008G	2400-2483.5	-15	3.8	3.5	90	85	3.2×1.6×1.1	11×6.25	80×37
Ceramic Chip	CW3009	1575	-10	0.7	0.3	80	75	10×3.2×4	10.80×6.25	80×37
Ceramic Chip	CW3010	1575.42 +/-10	-18	2.8	2.3	75	70	10×3.2×2	10.6×6.25	80×37
Ceramic Chip	CW3010	1575.42+/-10	-18	2.8	2.3	75	70	10×3.2×2	10.8×6.25	80×37
Ceramic Chip	CW3010	1575	-18	-0.2	-0.7	75	70	10×3.2×2	10.80×6.25	80×37



Ceramic chip antennas

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				Peak Gain(dBi)		RF Performance Efficiency(%)				Evaluation
Type	Pulse Part number	Frequency range(MHz)	RL Min. (dB)	Peak	Band edges	Peak	Band edges	Antenna DIM. (W×L×H,mm)	GC-area (L×CW,mm)	Board Size (L×CW,mm)
Ceramic Chip	CW3011	1575	-12	3.4	3.0	85	80	3.2×1.6×1.1	4.00×4.25	80×37
Ceramic Chip	CW3011A	1575	-16	3.7	3.4	85	85	3.2×1.6×1.1	4.00×6.25	80×37
Ceramic Chip	CW3012	900	-6	2	0.5	70	50	10×3.2×4	10.80×8.25	100×37
Ceramic Chip	CW3013	868	-10	1.4	1.4	65	65	10×3.2×4	10.80×8.25	100×37
Ceramic Chip	CW3014	880-960	-7	-0.5	-1	45	40	10×3.2×1.5	40×16	96×40
Ceramic Chip	CW3016	844-904	-15	-2.2	-4.2	24	17	10×3.2×4	11.5×7	25×25
Ceramic Chip	CW3017	2320-2345	-10	2.7	2.5	75	70	3.2×1.6×1.1	4×4.25	80×37
Ceramic Chip	CW3017	2300	-12	2.7	2.4	80	75	3.2×1.6×1.1	4.00×4.25	80×37
Ceramic Chip	CW3018	2605-2655	-10	3	2.5	85	80	3.2×1.6×1.1	4×4.25	80×35
Ceramic Chip	CW3018	2600	-10	3	2.5	85	80	3.2×1.6×1.1	4.0×4.25	80×35
Ceramic Chip	CW3020	2500-2690	-5.5	2.8	1	80	60	3.2×1.6×1.1	4×6.25	80×35
Ceramic Chip	CW3020	2500-2690	-5.5	2.9	1.5	89	72	3.2×1.6×1.1	4×6.25	80×37

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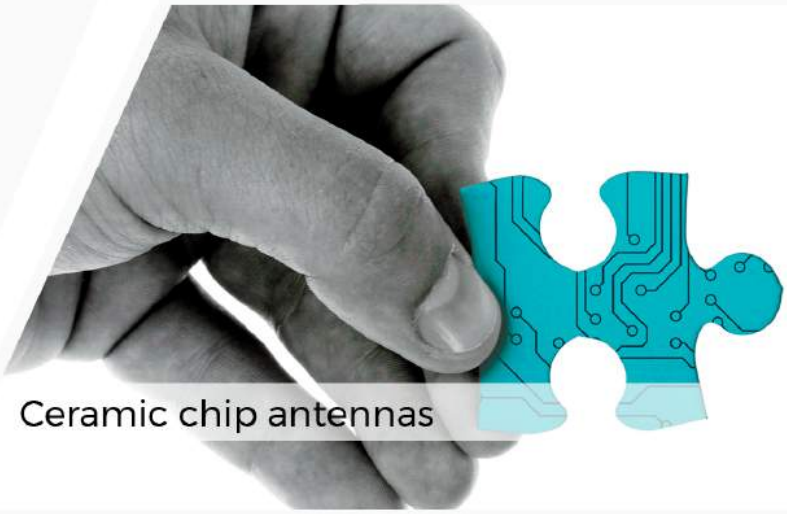
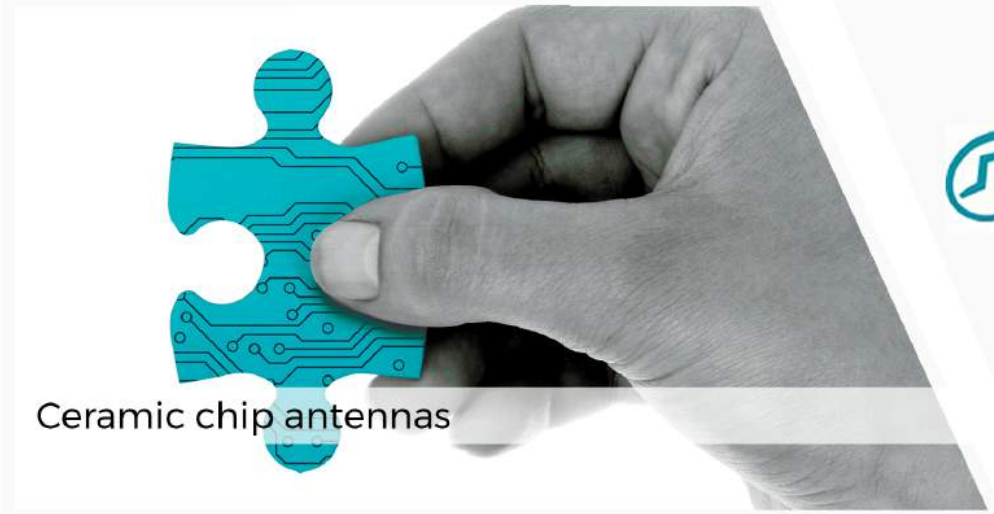


Ceramic chip antennas

				Peak Gain(dBi)		RF Performance Efficiency(%)				Evaluation
Type	Pulse Part number	Frequency range(MHz)	RL Min. (dB)	Peak	Band edges	Peak	Band edges	Antenna DIM. (W×L×H,mm)	GC-area (L×CW,mm)	Board Size (L×CW,mm)
Ceramic Chip	CW3020	2600	-5.5	2.8	1	80	60	3.2×1.6×1.1	4.0×6.25	80×35
Ceramic Chip	CW3021	3200-3600	-7.5	3	1.6	85	70	3.2×1.6×1.1	4×6.25	80×37
Ceramic Chip	CW3022	1880-1930	-12	2.5	2	80	70	10×3.2×2	10.6×7.25	80×37
Ceramic Chip	CW3022	1880 - 1930	-12	2	2.5	80	70	10×3.2×2	10.80×6.25	80×37
Ceramic Chip	CW3024	716-722	-8	2	1.5	75	70	10×3.2×4	10.6×10.25	100×37
Ceramic Chip	CW3024	716-722	-8	2	1.5	75	70	10×3.2×4	10.60×10.25	100×37
Ceramic Chip	CW3028	1805-1880	-9	2.5	2	80	70	10×3.2×2	10.6×6.25	80×37
Ceramic Chip	CW3028	1800	-9	2.5	2	80	70	10×3.2×2	10.60 x	80×37
Ceramic Chip	CW3029	1930-1990	-10	2	1.3	80	70	10×3.2×2	6.25	80×37
Ceramic Chip	CW3029	1900	-10	2	1.3	80	70	10×3.2×2	10.6×6.25	80×37
Ceramic Chip	CW3030	2110-2170	-10	2	1.5	80	70	10×3.2×2	10.60 x	80×37
Ceramic Chip	CW3030	2100	-10	2	1.5	80	70	10×3.2×2	6.25	80×37



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Ceramic chip antennas

				Peak Gain(dBi)		RF Performance Efficiency(%)				Evaluation
Type	Pulse Part number	Frequency range(MHz)	RL Min. (dB)	Peak	Band edges	Peak	Band edges	Antenna DIM. (W×L×H,mm)	GC-area (L×CW,mm)	Board Size (L×CW,mm)
Ceramic Chip	CW3031	869-894	-5.5	2.3	0.2	75	45	10×3.2×4	10.6×8.25	100×37
Ceramic Chip	CW3031	850	-5.5	2.3	0.2	75	45	10×3.2×4	10.60×8.25	100×37
Ceramic Chip	CW3032	925-960	-5	2	0	65	45	10×3.2×4	10.6×8.25	100×37
Ceramic Chip	CW3032	900	-5	2	0	65	45	10×3.2×4	10.60×8.25	100×37
Ceramic Chip	CW3033	869-894	-4	1.5	-1	70	40	10×3.2×4	10.6×8.25	100×37
Ceramic Chip	CW3033	1930-1990	-10	2	1.5	75	65	10×3.2×2	10.6×6.25	100×37
Ceramic Chip	CW3037	2110-2170	-6	1.5	0.5	75	60	3.2×1.6×1.1	4×4.25	80×37
Ceramic Chip	CW3037	2110-2170	-10	2	1.4	80	75		4×6.25	
Ceramic Chip	CW3038	1930-1990	-6	1.8	0.5	70	50	3.2×1.6×1.1	4×4.25	80×37
Ceramic Chip	CW3038	1930-1990	-9	2	1.5	80	70		4×6.25	
Ceramic Chip	CW3039	2110-2170	-10	2.5	1.8	80	75	7×1.6×1.6	7.8×5.25	80×37
Ceramic Chip	CW3039	2100	-10	2.5	1.8	80	75	7.0×1.6×1.6	7.80×5.25	80×37

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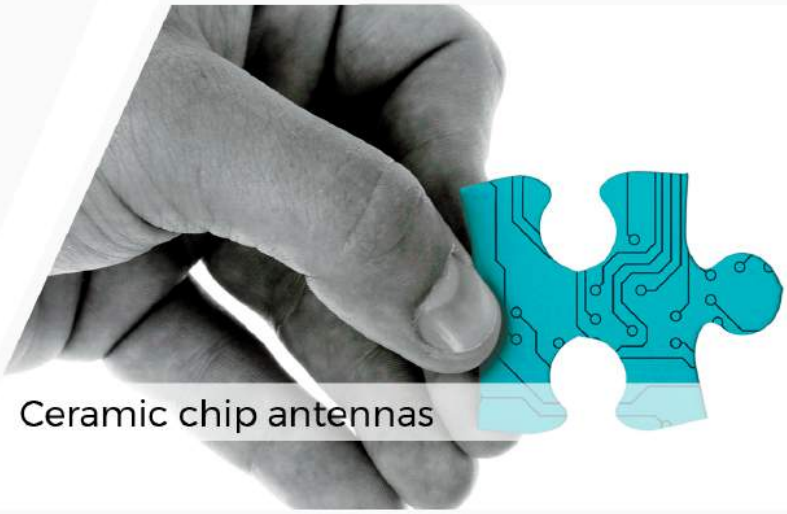
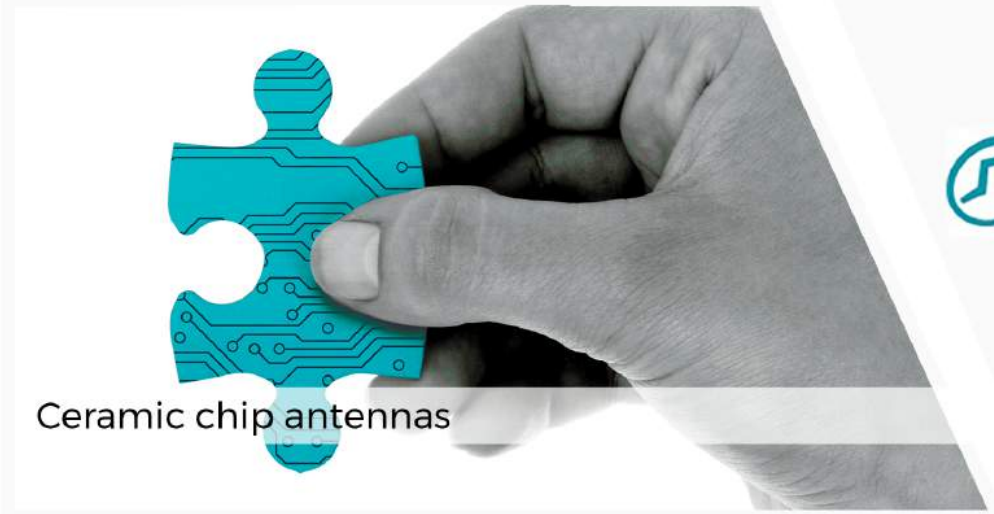


Ceramic chip antennas

				Peak Gain(dBi)		RF Performance Efficiency(%)				Evaluation
Type	Pulse Part number	Frequency range(MHz)	RL Min. (dB)	Peak	Band edges	Peak	Band edges	Antenna DIM. (W×L×H,mm)	GC-area (L×CW,mm)	Board Size (L×CW,mm)
Ceramic Chip	CW3040	1920-2170	-10	2.3	1.5	80	70	10×3.2×2	10.60×8.25	80×37
Ceramic Chip	CW3043	1575.42	-15	0.35		43		3.2×1.6×1.1	17×20	37×20
Ceramic Chip	CW3043	2400-2483.5	-12	4		70		3.2×1.6×1.1	17×20	37×20
Ceramic Chip	CW3043	1575	-15	0.35		43		3.2×1.6×1.1	17×20	37×20
Ceramic Chip	CW3043	2400	-12	4		70		3.2×1.6×1.1	17×20	37×20
Ceramic Chip	CW3044	869-894				19		3×12×4		
Ceramic Chip	CW3044	1930-1990			3.0	47		3×12×4		
Ceramic Chip	CW3044	2110-2170			3.4	38		3×12×4		
Ceramic Chip	CW3047A	850			0.5	50		12×3×3	12.80×6.25	40×100
Ceramic Chip	CW3047A	1900			1.4	70		12×3×3	12.80×6.25	40×100
Ceramic Chip	CW3056	1575.42+/-10	-20		-1	75	65	10×3.2×1.5	10.8×6.25	100×40
Ceramic Chip	CW3056	2400-2480	-10		-4.2	80	70	10×3.2×1.5	10.8×4.25	100×40



Ceramic chip antennas

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				Peak Gain(dBi)		RF Performance Efficiency(%)				Evaluation
Type	Pulse Part number	Frequency range(MHz)	RL Min. (dB)	Peak	Band edges	Peak	Band edges	Antenna DIM. (W×L×H,mm)	GC-area (L×CW,mm)	Board Size (L×CW,mm)
Ceramic Chip	CW3056	1575+/-10	-20			75	65	10×3.2×1.5	10.80×6.25	100×40
Ceramic Chip	CW3056	2400 - 2480	-10			80	70	10×3.2×1.5	10.80×6.25	100×40
Ceramic Chip	CW3059	1575.42+/-10	-8.7			46	30	12×3×4	12×6.4	96×45
Ceramic Chip	CW3059	2400-2480	-5.5			28	15	12×3×4	12×6.4	96×45
Ceramic Chip	CW3062A-G	1575	-10	2.5	5			7×1.6×1.6	7.80 mm×5.25	80×37
Ceramic Chip	CW3063	1575.42+/-10	-23			46	25	10×3.2×4	10.8×6.25	96×45
Ceramic Chip	CW3063	2400-2480	-7			42	20	10×3.2×4	10.8×6.25	96×45
Ceramic Chip	CW3063	1575	-22			67		10×3.2×4	10.80×6.50	96×45
Ceramic Chip	CW3063	2400	-7			86		10×3.2×4	10.80×6.50	96×45
Ceramic Chip	CW3064A	1575.42				67		10×3.2×1.5	10.8×6.4	96×45
Ceramic Chip	CW3064A	2400-2483.5				86	60	4×6.25	80×37	96×45
Ceramic Chip	CW3064A	1575				67		10×3.2×1.5	10.8×6.4	96×45

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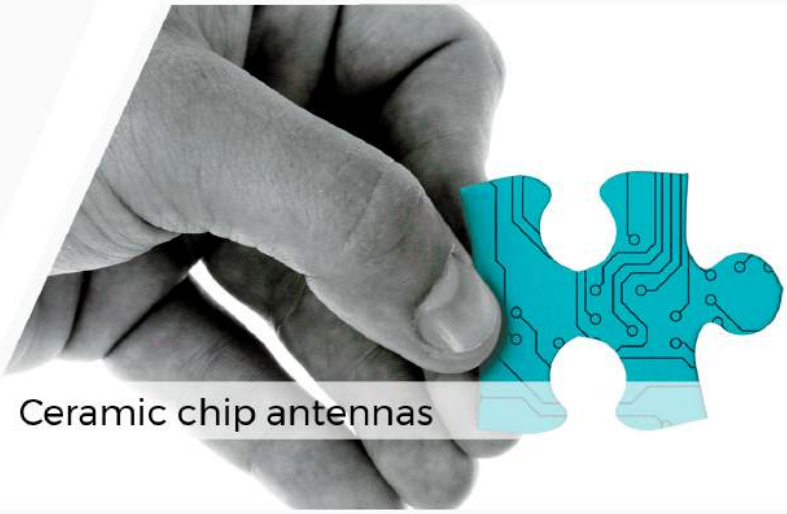
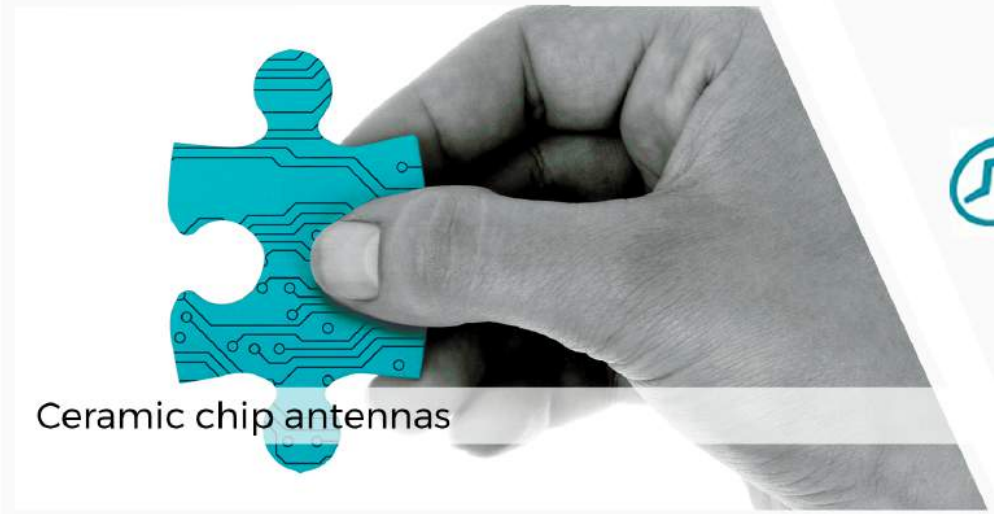


Ceramic chip antennas

				Peak Gain(dBi)		RF Performance Efficiency(%)				Evaluation
Type	Pulse Part number	Frequency range(MHz)	RL Min. (dB)	Peak	Band edges	Peak	Band edges	Antenna DIM. (W×L×H,mm)	GC-area (L×CW,mm)	Board Size (L×CW,mm)
Ceramic Chip	CW3064A	2400				86		10×3.2×1.5	10.8×6.4	96×45
Ceramic Chip	CW3065	1575.42+/-10	-10			45	35	10×3.2×4	10.8×4.25	100×40
Ceramic Chip	CW3065	2400-2480	-10			70	45	10×3.2×4	10.8×4.25	100×40
Ceramic Chip	CW3070	900	-5.1	1.2	-0.4	65	47	10×3.2×2	40×10	95×40
Ceramic Chip	CW3070	1800	-5.8	2.5	1.5	60	50	10×3.2×2	40×10	95×40
Ceramic Chip	CW3073	824-894		1.7	-0.2	68	45	10×3.2×4	40×10	105×40
Ceramic Chip	CW3073	1710-1880		2.9	3.2	68	68	10×3.2×4	40×10	105×40
Ceramic Chip	CW3073	1850-1990		3.2	3	68	68	10×3.2×4	40×10	105×40
Ceramic Chip	CW3073	1920-2170		3.2	1.8	71	57	10×3.2×4	40×10	105×40
Ceramic Chip	CW3076	746-756	-8	1.5	1	80	70	10×3.2×1.5	16×6.25	250×150
Ceramic Chip	CW3078	5000	-6	4.3	3.7	80	55	3.2×1.6×1.1	11.15×6.40	80×37
Ceramic Chip	CW3078	2400	-10	1.7	1.0	65	55	3.2×1.6×1.1	11.15×6.40	80×37



Ceramic chip antennas

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				Peak Gain(dBi)		RF Performance Efficiency(%)				Evaluation
Type	Pulse Part number	Frequency range(MHz)	RL Min. (dB)	Peak	Band edges	Peak	Band edges	Antenna DIM. (W×L×H,mm)	GC-area (L×CW,mm)	Board Size (L×CW,mm)
Ceramic Chip	CW3095	1575		1.5		60		10×3.2×1.5		
Ceramic Chip	CW3095	2400		2		80		10×3.2×1.5		
Ceramic Chip	CW3095	5000		2.5		50		10×3.2×1.5		
Ceramic Chip	CW3079	?		1.5		60		10×3.2×1.5		
Ceramic Chip	CW3079	2400		2		80		10×3.2×1.5		
Ceramic Chip	CW3079	5000		2.5		50		10×3.2×1.5		
Ceramic Chip	CW3568B0120	2400-2500	-6	4		70		8×35×7.5		
Ceramic Chip	CW3568B0120	4900-5900	-10	4.5		70		8×35×7.5		
Ceramic Chip	SZ0318C	5150-5850	-15	3.5	2.5	70	65	3.2×1.6×1.1	4.25×5.25	80×37
Ceramic Chip	SW0156B	2400-2483.5		1.72		72		1.2x2.0x0.55		110x55

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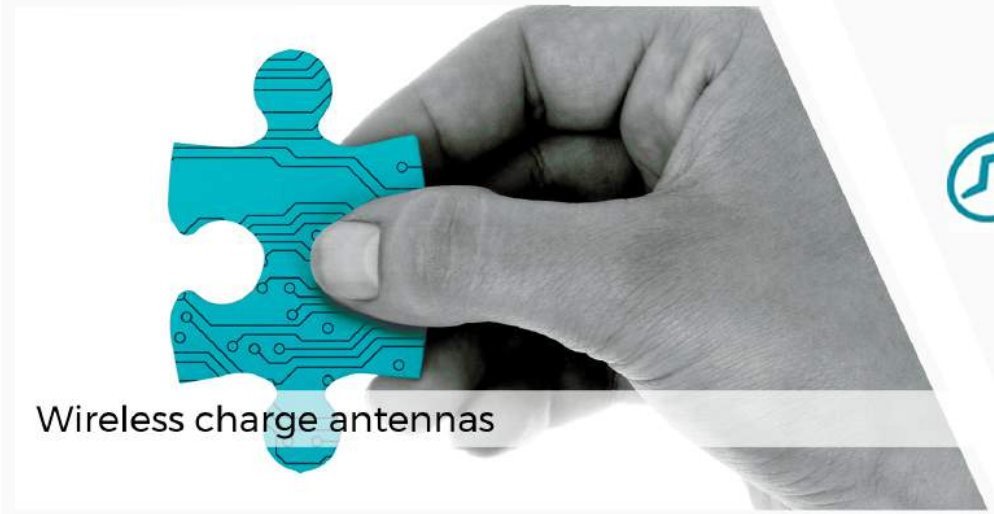
STANDARD PRODUCTS OFFERING

HELICAL ANTENNAS

				Peak Gain(dBi)		RF Performance Efficiency(%)				Evaluation
Type	Pulse Part number	Frequency range(MHz)	RL Min.(dB)	Peak	Band edges	Peak	Band edges	Antenna DIM. (W×L×H,mm))	GC-area (L×CW,mm)	Board Size (L×CW,mm)
Helical	CW3108	2400-2483.5	-8	1.5		50		5×2.5×5.5	7.5×5.5	100×40
Helical	CW3108	2400	-8	1.5		50		5.0×2.5×5.5	7.5×5.5	100×40
Helical	CW3110	1575.42 +/-10	-9	1.3	1.2	47	45	5×2.5×5.5	7.5×5.5	100×40
Helical	CW3110	1575	-16	1.3	0.7	47	43	5.0×2.5×5.5	7.50×5.50	80×37
Helical	CW3112	902-928	-10	0.9	-0.3	67	50	2.5×8×8	6×11	100×40
Helical	CW3112A	900	-10	0.9	-0.3	67	50	2.5×8×8	6.00×11.00	100×40
Helical	CW3113	902-928	-10	0.8	-0.3	66	51	12.4×8×2.5	8×40	100×40
Helical	CW3113	900	-10	0.8	-0.3	66	51	12.4×8×2.5	8.00×40.00	100×40
Helical	CW3117	850	-9	0	-1.3	55	40	12.4×8×2.5	8.00×40.00	100×40
Helical	CW3118A	850	-9	0	-1.4	52	38	2.5×8×8	8.00×40.00	100×40
Helical	CW3127	433-435	-15	-2.9				35.35×ø7	8.5×40	100×40
Helical	CW3127	433	-15	-2.9				35.35×ø 7	8.50×40.00	100×40



Wireless charge antennas

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WIRELESS CHARGE ANTENNAS

Type	Pulse Part number	Voltage(V)	Rated current(mA)	Inductance(uH)	Size(mm)
Wireless charge	WMRT149A-1	5	1000~2000	6.9±10%	φ49
Wireless charge	SWM1390/MP-A9	1-25V	2A	9.8/10.2±10%	101.8X57.3X4.7
Wireless charge	WMRR124F-0	5	100~250	11.5±10%	20×11
Wireless charge	WMRR124F-1	5	100~300	11.2±10%	φ24
Wireless charge	WMRR132F-0	5	100~400	11.5±10%	φ32
Wireless charge	WMRR126F-0	5	50~200	11.5±10%	26×19
Wireless charge	WMRR124F-2	5	50~240	11.5±10%	24×14
Wireless charge	WMRT399A-0/MP-A6	12 & 5	1000~2000	12.2±10% &	99×57
Wireless charge	WMRR147F-0	5	800~1000	10.6±10%	47×32
Wireless charge	WMRR138F-0	5	500~900	12.5±10%	32×38
Wireless charge	WMRR147F-1	5	800~1000	12.5±10%	50×50
Wireless charge	WMRR142F-0	5	600Max	13.5±5%	42×42
Wireless charge	WMRT130F-0	5	1000Max	12.5±10%	φ30
Wireless charge	SWM1410/MP-A13	1-25V	2A	611.5/11.5±10%	92.9X58.1X4

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No.	PN	Description	(L*W*H) mm	Working High(mm)	Material	Plating	Picture	Package
1	SW0165N	TX0131-002 H=2.7	5.0*1.1*3.5	2.7	CU alloy T0.1mm	8u" Min GOLD PLATING ON CONTACT AREA,3u" Min GOLD PLATING ON SOLDER AREA,50u" MIN NICKEL PLATING OVER ALL;		Tape and Reel
2	SW0166N	TX13003-001 H=0.5	2.8*1.55*1.1	0.5	C17200 T=0.08	8u" Min GOLD PLATING ON CONTACT AREA,3u" Min GOLD PLATING ON SOLDER AREA,50u" MIN NICKEL PLATING OVER ALL;		Tape and Reel
3	SW0167N	TX13011-001 H=1.6	3.35*1.5*1.9	1.6	SUS304-H T=0.08	3u"MIN GOLD PLATING ON CONTACT AREA,GOLD FLASH PLATING ON SOLDER AREA,50u" MIN NICKEL PLATING OVER ALL;		Tape and Reel
4	SW0174N	TX15039-001 H=0.4	2.5*1.0*0.8	0.4	SUS304-H T=0.05mm	3u"MIN GOLD PLATING ON CONTACT AREA,GOLD FLASH PLATING ON SOLDER AREA,50u" MIN NICKEL PLATING OVER ALL;		Tape and Reel

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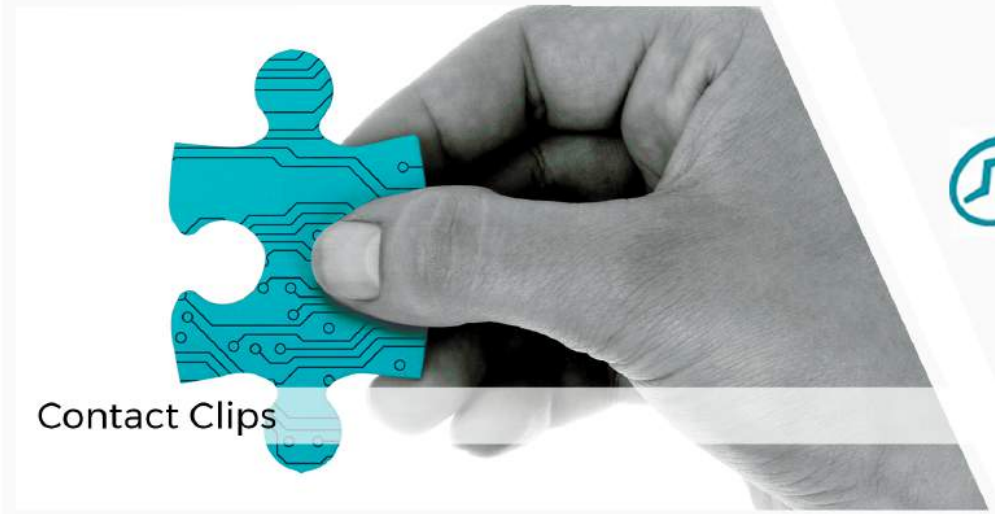

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No.	PN	Description	(L*W*H) mm	Working High(mm)	Material	Plating	Picture	Package
5	SW0180N	TX80101-001 H=1.0	3.55*1.5*1.4	1	SUS304-H T0.1mm	3u"MIN GOLD PLATING ON CONTACT AREA,GOLD FLASH PLATING ON SOLDER AREA,50u" MIN NICKEL PLATING OVER ALL;		Tape and Reel
6	SW0181N	TX80102-001 H=1.5	3.55*1.5*1.9	1.5	C17200 T0.1mm	8u" Min GOLD PLATING ON CONTACT AREA,3u" Min GOLD PLATING ON SOLDER AREA,50u" MIN NICKEL PLATING OVER ALL;		Tape and Reel
7	SW0182N	TX80103-001 H=2.5	3.55*1.5*3	2.5	Ycut-FX-EH T0.1mm	10u" Min GOLD PLATING ON CONTACT AREA,3u" Min GOLD PLATING ON SOLDER AREA,50u" MIN NICKEL PLATING OVER ALL;		Tape and Reel
8	SW0183N	TX80104-001 H-2.0	3.55*1.5*2.5	2	SUS304-H T0.1mm	3u"MIN GOLD PLATING ON CONTACT AREA,GOLD FLASH PLATING ON SOLDER AREA,50u" MIN NICKEL PLATING OVER ALL;		Tape and Reel

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No.	PN	Description	(L*W*H) mm	Working High(mm)	Material	Plating	Picture	Package
9	SW0184N	TX80106-001 H=0.9	2.8*1.54*1.1	0.9	SUS304-H T0.1mm	3u"MIN GOLD PLATING ON CONTACT AREA,GOLD FLASH PLATING ON SOLDER AREA,50u" MIN NICKEL PLATING OVER ALL;		Tape and Reel
10	SW0173N	TX15005-001 H=1.7	3.4*1.2*2.1	1.7	C17460-H T0.1mm	10u" Min GOLD PLATING ON CONTACT AREA,3u" Min GOLD PLATING ON SOLDER AREA,50u" MIN NICKEL PLATING OVER ALL;		Tape and Reel
11	SW0172N	TX15004-001 H=1.3	3.4*1.1*1.8	1.3	C17460-H T0.1mm	10u" Min GOLD PLATING ON CONTACT AREA,3u" Min GOLD PLATING ON SOLDER AREA,50u" MIN NICKEL PLATING OVER ALL;		Tape and Reel
12	SW0178N	TX16056-001 H=1.1	3.4*1.1*1.8	1.1	YCUT-FX-EH	10u" Min GOLD PLATING ON CONTACT AREA,3u" Min GOLD PLATING ON SOLDER AREA,50u" MIN NICKEL PLATING OVER ALL;		Tape and Reel

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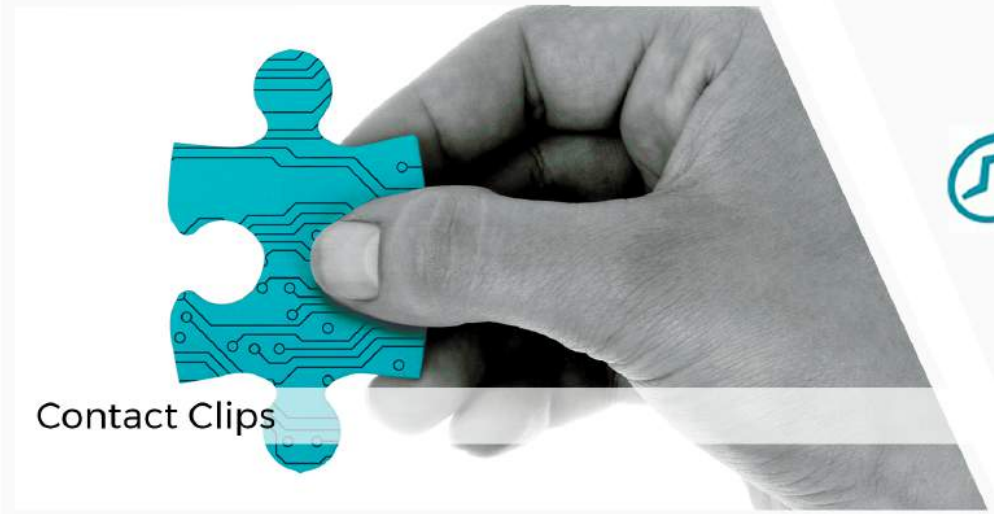

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No.	PN	Description	(L*W*H) mm	Working High(mm)	Material	Plating	Picture	Package
13	SW0177N	TX16014-001 H=0.65	2.8*1.0*1.1	0.65	C5210-EH	10u" Min GOLD PLATING ON CONTACT AREA,3u" Min GOLD PLATING ON SOLDER AREA,50u" MIN NICKEL PLATING OVER ALL;		Tape and Reel
14	SW0176N	TX16013-001 H=1.3	3.42*0.9*1.8	1.3	C5210-EH	10u" Min GOLD PLATING ON CONTACT AREA,3u" Min GOLD PLATING ON SOLDER AREA,50u" MIN NICKEL PLATING OVER ALL;		Tape and Reel
15	SW0175N	TX16006-001 H=0.7	3.2*1.0*1.35	0.7	TICU T0.08mm	10u" Min GOLD PLATING ON CONTACT AREA,3u" Min GOLD PLATING ON SOLDER AREA,50u" MIN NICKEL PLATING OVER ALL;		Tape and Reel
16	SW0171N	TX14030-001 H=3.2	4.9*2*4.2	3.2	C5210-1/2H	8u" Min GOLD PLATING ON CONTACT AREA,3u" Min GOLD PLATING ON SOLDER AREA,50u" MIN NICKEL PLATING OVER ALL;		Tape and Reel

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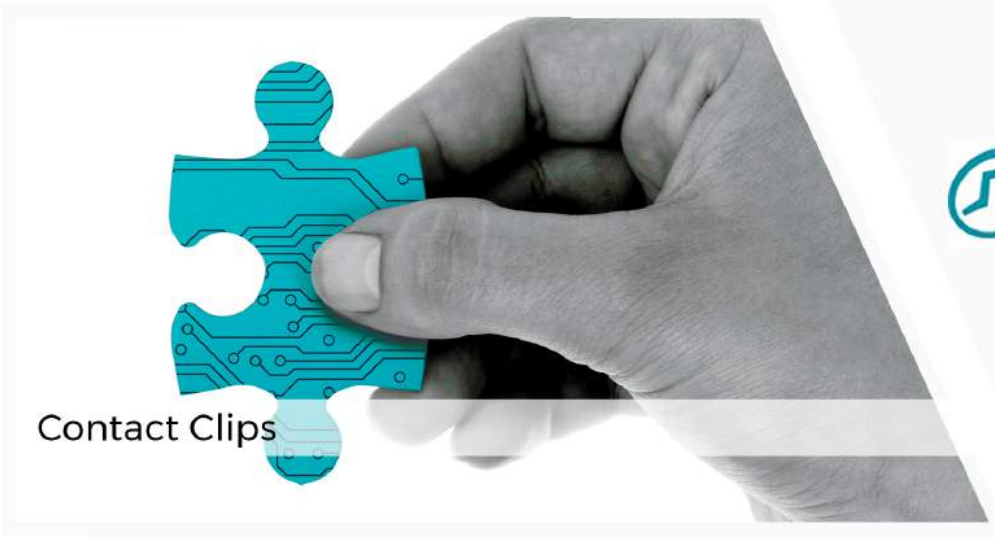
No.	PN	Description	(L*W*H) mm	Working High(mm)	Material	Plating	Picture	Package
17	SW0170N	TX14026-001 H=0.25	3.66*1.5*0.7	0.25	SUS304-H T0.08mm	3u"MIN GOLD PLATING ON CONTACT AREA,GOLD FLASH PLATING ON SOLDER AREA,50u" MIN NICKEL PLATING OVER ALL;		Tape and Reel
18	SW0168N	TX14001-001 H=0.86	3.33*1.5*1.36	0.86	Stainless Steel	3u"MIN GOLD PLATING ON CONTACT AREA,GOLD FLASH PLATING ON SOLDER AREA,50u" MIN NICKEL PLATING OVER ALL;		Tape and Reel
19	SW0185N	TX80117-001 H=3.0	3.5*1.50*3.5	3	C17200 T0.1mm	8u" Min GOLD PLATING ON CONTACT AREA,3u" Min GOLD PLATING ON SOLDER AREA,50u" MIN NICKEL PLATING OVER ALL;		Tape and Reel
20	SW0186N	TX80118-001 H=1.5	3.4*0.90*1.8	1.5	SUS304-H T0.1mm	3u"MIN GOLD PLATING ON CONTACT AREA,GOLD FLASH PLATING ON SOLDER AREA,50u" MIN NICKEL PLATING OVER ALL;		Tape and Reel



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No.	PN	Description	(L*W*H) mm	Working High(mm)	Material	Plating	Picture	Package
21	SW0187N	TX80120-001 H=1.0	3.2*1.0*1.4	1	C17200 T=0.1mm	8u" Min GOLD PLATING ON CONTACT AREA,3u" Min GOLD PLATING ON SOLDER AREA,50u" MIN NICKEL PLATING OVER ALL;		Tape and Reel
22	SW0188N	TX80121-001 H=0.75	3.26*1.0*1.24	0.75	SUS304-H T0.1mm	3u" Min GOLD PLATING ON CONTACT AREA, GOLD FLASH PLATING ON SOLDER AREA,50u" MIN NICKEL PLATING OVER ALL;		Tape and Reel
23	SW0189N	TX80201-001 H=1.2	2.95*1.5*1.6	1.2	SUS304-H T0.1mm	3u"MIN GOLD PLATING ON CONTACT AREA,GOLD FLASH PLATING ON SOLDER AREA,50u" MIN NICKEL PLATING OVER ALL;		Tape and Reel
24	SW0169N	TX14025-001 H=2.3	4.38*1.9*3	2.3	Cu alloy T0.15mm	3u"MIN GOLD PLATING ON CONTACT AREA,GOLD FLASH PLATING ON SOLDER AREA,50u" MIN NICKEL PLATING OVER ALL;		Tape and Reel

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No.	PN	Description	(L*W*H) mm	Working High(mm)	Material	Plating	Picture	Package
25	J37-08851	NADE 1A Chip H=1.9	2.3*3.25*2.41	1.9	SUS301-3/4H T=0.15mm	0.1um MIN GOLD PLATING ON CONTACT AREA,GOLD FLASH PLATING ON SOLDER AREA,1-3um NICKEL PLATING OVER ALL;		Bulk
26	J91-12571	chip PSU A H=1.9	3.73*1.5*2.6	1.9	stainless steel T=0.12mm	0.1um MIN GOLD PLATING ON CONTACT AREA,GOLD FLASH PLATING ON SOLDER AREA,1-3um NICKEL PLATING OVER ALL;		Tape and Reel
27	CW9908	H91-00285 H=1.0	3.41*1.5*1.45	1	stainless steel T=0.12mm	0.1um MIN GOLD PLATING ON CONTACT AREA,GOLD FLASH PLATING ON SOLDER AREA,1-3um NICKEL PLATING OVER ALL;		Tape and Reel
28	CW9909	H91-00286 H=2.0	3.41*1.5*2.44	2	stainless steel T=0.12mm	0.1um MIN GOLD PLATING ON CONTACT AREA,GOLD FLASH PLATING ON SOLDER AREA,1-3um NICKEL PLATING OVER ALL;		Tape and Reel
29	CW9914	H91-00293 H=1.9	3.73*1.5*2.60	1.9	SUS301-CSP-H T=0.12mm	0.4um MIN GOLD PLATING ON CONTACT AREA,GOLD FLASH PLATING ON SOLDER AREA,1-3um NICKEL PLATING OVER ALL;		Tape and Reel

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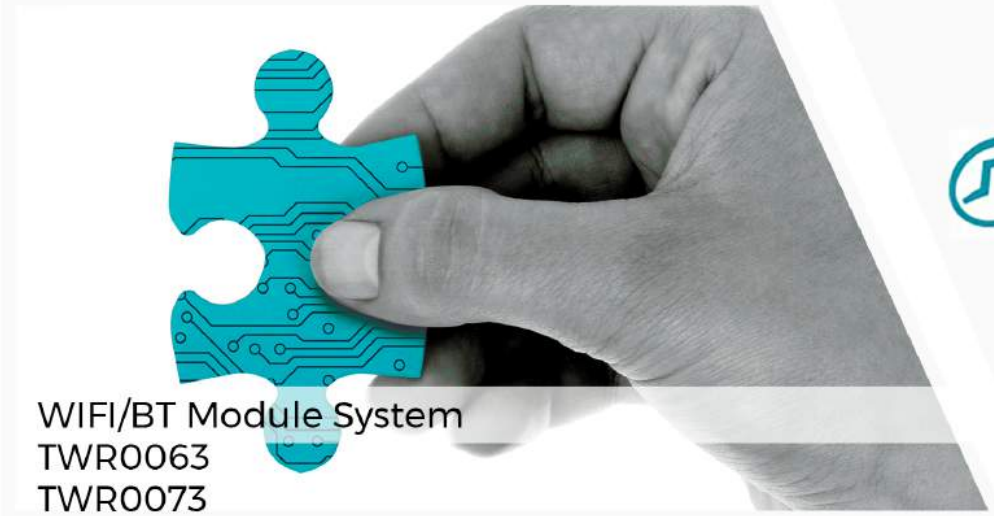

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NEW PRODUCTS: WIFI/BT MODULE SYSTEM

WIFI/BT Module System

TWR0063
TWR0073
TWR0083
TWR00153

QUSB 802.11 B/G/N, WIFI MODULE, UW2011
For Mobile Device Applications

Features:

- ✓ TWR0063 is 802.11 b/g/n 2.4G with USB2.0 interface module.
- ✓ It operated in ISM frequency band with low power consumption and it use highly integrated SOC chip MT7601UN with 150Mbps PHY 2.4G delivers superior WiFi output up to 16dBm.
- ✓ TWR0063 provide high performance design for wireless connection with popular USB interface.
- ✓ It is good choose for high throughput networking and multimedia application. In addition, it also support security encryption through WPA, WPA2 ..and so on.

Applications:

- Desk-Top/Mini PC/Note-Book.
- Set-top box/Media player IP-Cam
- Portable smart device
- Tablet Blue-ray Disk

Specifications:

- IEE 802.11 b/g/n mode with support of 150Mbps PHY rate 2. IEEE 802.11 b/g/n client
- 802.11e QoS support of WFA WMM, WMM PS 802.11 d/h/k compliant
- 1/2/3/4-wire PTA Wi-Fi / Bluetooth coexistence support
- Supports 802.11w protected managed frame
- Security : WFA WPA/WPA2 personal, WPS2.0, WAPI Supports Wi-Fi Direct
- USB 2.0/1.1 interface
  Antenna: Option for IPEX-I & Ceramic Chip Antenna
- Support Windows XP/Vista/7/8, Linux 2.6.x and MAC OS
  USB 2.0/1.1
  2.0-pitch 4 pin header (option)

Pulse
A YAGEO Company

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70th ANNIVERSARY

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CONSUMER PRODUCTS & FLUIDANT SOLUTIONS

PULSE ELECTRONICS

Pulse Electronics is a worldwide leader in electronic component design and manufacturing.

QUALITY & LOCATION

RELATIONSHIPS AND SUPPORT

INDUSTRY EXPERTISE

ABOUT US

Pulse Electronics is a Yageo Company, the worldwide leader in electronic component design and manufacturing. With an extensive line of state-of-the-art catalog products as well as custom capabilities, Pulse is a global supplier of electronic components to OEMs, contract manufacturers and CEMs. Pulse's engineering design centers and manufacturing facilities (in North America, Europe and Asia) supply products to a broad international customer base.

WHY CHOOSE US

- Our goal is to be the preferred technology partner for copper connectivity interface solutions to leading suppliers of communication network equipment & devices.
- By manufacturing & supplying many of the world's best connectors and passive components, our focus always remains on ensuring that CEMs, OEMs and PHY companies can rely on our quality, design and production volume capabilities.

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Consumer Division & FluidANT Division
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