



*Franchised Suppliers of the world's
most Innovative Electronic
Products and Solutions*

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PCTEL - Performance Critical Antennas
- RF Telecom Scanner Receivers and Test Software
- IOT WiFi Modules

Adactus - Antennas, Cables & Connectors, SIM Card Holders

Lantronix - GPS/GNSS Receivers

Daico - DC to 18GHz, IF/RF/Microwave, Amplifiers, Control Products, Transmitters & Transceivers.

SEMICONDUCTORS

MegaChips - ASICs & HD PLC

Kinetic Technologies - DisplayPort ICs

Mixed Signal Integration (MSI) - General Purpose Digital Filters, Audio & Video, Communication & Speciality ICs

KDS Daishinku Corp. - Crystal Resonators and Oscillators

About BT2000



Broadband Technology 2000 Ltd (BT2000) is a long established design-led, franchised, electronic component distributor and manufacturer's representative.

We are a technically focused supplier of leading edge, world class solutions used to enhance our customer's product specifications. Established in 1995, BT2000 is a team of experienced electronic component sales, marketing and engineering professionals who are focused on demand creation.

Our unique local knowledge of the diverse market within our UK & Eire territory allows us to manage the introduction of product from the embryonic stage to full production assisting with the approval, test and management control documentation expected from a fully ISO approved company.

Our franchised suppliers are carefully selected to allow a non conflicting synergistic complement to our already impressive portfolio. This, in turn, allows us a close working relationship with both customers and suppliers setting high quality expectations and delivering the best service.

Our high attention to detail mean that we are driven to supply competitively priced solutions to meet the stringent delivery requirements set by the ever demanding market.

Our extensive warehouse facilities, unique shipping knowledge and controls allow us to manage the shipment of a variety of different goods worldwide.

Our winning team look forward to sharing our mutual business opportunities with you to further expand and enhance our businesses.

SENSORS



MEMSIC Semiconductor is a world-leading IC product company, mainly engaged in MEMS sensor R&D, manufacturing and sales, providing "one-stop" sensor solutions of MEMS sensor chip, software algorithm and applications. MEMSIC now realizes large-scale production of world's most exclusive thermal accelerometer, AMR geomagnetic sensor, capacitive accelerometer, and micropower Hall Switch, that are widely applied to different fields such as automobile, industrial, medical, wearable, smart home, and consumer electronics.

Accelerometers



Capacitive Accelerometer



Low Power Consumption



Ultra Small Package Size



Multiple Functions & Algorithm Support



MC3416

- 16-bit high resolution, support I2C communication mode
- Low noise, low offset, low temperature drift
- Package size: LGA-12 2×2×0.95mm



MC3419

MC3479

- 16-bit high resolution, support I2C/SPI communication mode, with FIFO cache
- Low noise, low offset, low temperature drift
- Package size: LGA-12 2×2×0.95mm



MXD6100HG

MXD6101HG

- 16-bit high resolution, support I2C/SPI communication mode, with FIFO cache
- Support single/double tap interrupt, low noise, low offset, low temperature drift
- Package size: LGA-12 2×2×0.95mm



MC3630

MC3632

MC3635

- 14-bit resolution, support I2C/SPI communication mode, with FIFO cache
- Ultra-low power consumption, supports a variety of low-power modes
- Package size: LGA-12 2×2×0.95mm
- MC3635 Package size: LGA-10 1.6×1.6×0.94mm



MC3672

- 14-bit resolution, support I2C/SPI communication mode, with FIFO cache
- Ultra-small size, ultra-low power consumption, support a variety of low power modes
- Package size: CSP-8 1.29×1.08×0.74mm



Hall Switch



Ultra-Low Power



Ultra Small Package Size Multiple Package Types



Ultra-Wide Operation Voltage Range



Accurate Switch Control



MHA100KN

- Omni polar and dual output, ultra-low power consumption, high sensitivity
- Package size: DFN 4 1.0×1.4×0.37mm



MHA150N/S

- Unipolar and single output, ultra-low power consumption, high sensitivity
- Package size: SOT23-3L 2.9×1.6×1.1mm



MHA160N/S

- Unipolar and single output, ultra-low power consumption, high sensitivity
- Package size: SOT23-3L 2.9×1.2×0.55mm



SENSORS



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Magnetometers



AMR 3D Magnetometer



Ultra-Small



Low Noise



High Sensitivity



High Accuracy



History of MEMSIC
Magnetometers



Mobile & Tablets



Automotive
Infotainment



Drone

MMC5633NJL

- Monolithic integrated 3-axis magnetometers
- Advanced AMR technology
- Wafer level package size: $0.8 \times 0.8 \times 0.4\text{mm}$
- MMC5633NJ fully supports I3C interfaces



MMC3630KJ

- Mature process, stable and reliable performance
- Low noise, strong anti-interference ability
- Package size: $1.2 \times 1.2 \times 0.5\text{mm}$



MMC5883MA

MMC5983MA

MMC5893VA

MMC3416xPJ

- Low temperature drift, low noise, low hysteresis, high accuracy
- High reliability, good stability, strong anti-interference ability
- MMC5983MA and MMC5893VA are AEC-Q100 Grade 2 certified
- MMC3416xPJ has ultra-low power consumption, support up to 8 I2C addresses



Thermal Accelerometer



Monolithic
Integration



Extremely
Impact resistant



Ultra-small size



Ultra-low
Temperature drift

MXC4005XC MXC6655XA

- 3-axis monolithic integration, wafer level package, ultra-small size, stable performance, low failure rate
- Used in consumer electronic devices such as mobile phones and tablets
- MXC4005XC Package size: $1.2 \times 1.7 \times 0.95\text{mm}$
- MMC5566XA Package size: $2 \times 2 \times 1\text{mm}$



MXD2020EL MX6235QB

- 2-axis, PWM digital output
- Good consistency of offset and sensitivity, easy for temperature compensations
- MXD2020EL has $\pm 1\text{g}$ range and $0.2\text{mg}/\sqrt{\text{Hz}}$ noise
- MXD6235QB has $\pm 1.5\text{g}$ range and $0.13\text{mg}/\sqrt{\text{Hz}}$ noise
- Used in level gauge, home appliance and other industrial applications
- Package size: $5.5 \times 5.5 \times 2\text{mm}$



MXP7205VW

- 2-axis, the temperature compensations for the offset and sensitivity are done respectively, can be mounted flat or vertically, flexible installation.
- SPI digital output, range $\pm 5\text{g}$, sensitivity 800LSB/g
- AEC-Q100 Grade 2 certified, used in automotive ESC and EPB systems.
- Package size: $5.5 \times 5.5 \times 2.7\text{mm}$



MXR7150VW MXR7999VW

- 2-axis monolithic integration, the temperature compensations for the offset and sensitivity are done respectively, can be mounted flat or vertically, flexible installation
- Analog output, MXR7999VW has $\pm 2\text{g}$ range and 1000mV/g sensitivity
- MXR7150VW has $\pm 13.3\text{g}$ range and 150mV/g sensitivity
- AEC-Q100 Grade 1 certified, widely used in active suspension, ESC and EPB systems
- Package size: $5.5 \times 5.5 \times 2.7\text{mm}$



SENSORS



SENSAGGIO Pressure Sensors

Sensaggio Technologies, based in Rozzano (MI) Italy designs, manufactures and distributes ratiometric, absolute pressure sensors. The pressure sensors, based on piezoresistive technology using ceramic materials are TS, IATF and UL certified. The ratiometric pressure transducer utilizes a Piezoresistive Wheatstone bridge with a chemically etched ceramic diaphragm.

PERFORMANCE: resistant to extreme temperatures, excellent hysteresis, high accuracy, fast response time and excellent surge resistance

COMPATIBILITY: Suitable for HVAC-R refrigerant gases, also for new gas HFO 1234ze, R1234yf, R407c, and related oil.

RESISTANCE: suitable for critical applications, with aggressive fluids

COMPLIANCE: compliant with RoHS and Reach regulation — UL and TS certified

RANGE: 0-700 (psi) 0 -46 (bar)

OUTPUT: 0 to 5V, 4 to 20mA

TYPE: absolute

MEDIA: air, gases, liquids

APPLICATIONS:

- HVAC-T (transportation: bus, truck, ships, trains...)
- Oil system pressure
- Fuel system pressure
- HVAC after market
- AD blue
- HVAC-R (industrial automation)
- Process monitoring
- Automation process control
- Data instrumentation
- HVAC-R portable monitoring system

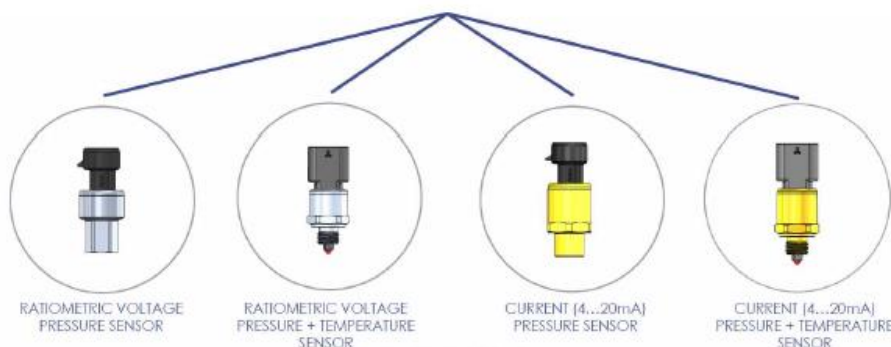
AREAS: Automotive, Industrial, Medical, Consumer, Aviation/Defense



SENSORS



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GENERAL FEATURES

Pressure ranges	0 to 5.2 bar (abs), through 1 to 46 bar (abs) (other pressure range and transfer function available on request)
Over pressure	25 to 91 bar (abs) typical
Burst pressure	Brass, min 110 bar (abs)
Pressure connection	7/16" 20UNF (other connections available on request)
Pressure connection material	Brass (other materials available on request) AL SS
Tightening torque	Brass, 12 to 16 Nm
Electrical connection	Packard connector (other connections available on request)
Electrical connection material	PBT GF30

ELECTRICAL FEATURES

Power supply (Vdd)	5Vdc \pm 10% (Protected against polarity inversion and short circuit)
Supply current (Idd)	< 10 mA @ 5,5Vdc (8,5 mA typical)
Output voltage (Vout)	10% Vdd to 90% Vdd typical
Output current (Iout)	5mA typical
Output load	20 K Ω min. (Pull-up or Pull-down)
Insulation resistance	1 G Ω @ 50Vdc
Output response time	10 ms typical
Power supply overvoltage	18Vdc
Reverse voltage	-14Vdc

PERFORMANCE FEATURES

Operating temperature	-40°C to 135°C
Storage temperature	-40°C to 150°C
Accuracy	\pm 1,2% F.S. (linearity, hysteresis, repeatability and calibration) Static error band @ 25°C, 5.0Vdc
Temperature error	\pm 0,013% F.S./°C
Cycle life	10 millions F.S. cycles
IP code	IP67 (with connector female IP67 plugged)
Fluids compatibility	HVAC refrigerants, new HFO 1234ze refrigerant and associated oils (other fluids compatibilities available on request) most gases and liquids
Vacuum pressure (referred to refrigerant circuit)	0 bar (abs)
Drop (any axis)	1,5m
Vibration: IEC 60068-2-64:2008	12g (rms)
Shock: IEC 60068-2-27:2008	50g, 6ms
Weight	30 grams typical


POWER



VinaTech, based in Korea, is a fast growing manufacturer of Electric Double Layer Capacitor (EDLC) and Hybrid Capacitor (P-EDLC) HY-CAP brand of Super Capacitors. The HY-CAP series offers high capacitance ranges from 0.5 Farad to 500 Farad with a capability of upto 6000 Farad from Single cells to modules. Applications include Wireless Communications, IoT , Security, Medical , Regenerative technology and Hydrogen Fuel Cells.

EDLC Product Range

EDLC [Electric Double Layer Capacitor]



FEATURES

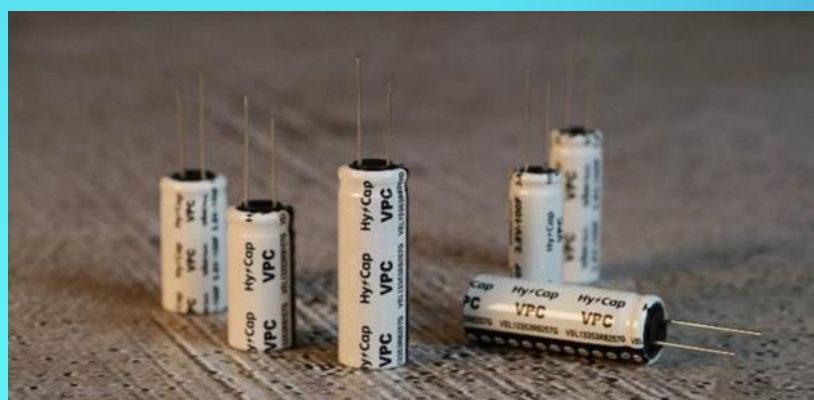
- Rated 2.5V, 2.7V, 3.0V
- Higher Power Density (low ESR)
- Over 500,000 cycle life
- Short-term Peak Power assist applications
- Operating temperature range
 - Rated 2.5V : -25°C ~ 70°C
 - Rated 2.7V, 3.0V : -40°C ~ 65°C

The Hy-Cap NEO WEC series Anti Wetting solution EDLC Supercaps has been developed by VINATech's development team to combat the extreme conditions experienced by customers in all sectors when the final user deploys in areas of high temperature and high humidity.

VPC Lithium Ion Super Capacitor

Hy-Cap VPC(Vina Pulse Capacitor) single cell products are rated at 3.8v and suitable for applications requiring higher voltage and high energy density than standard EDLCs.

VINATech, developed the VPC Lithium Hybrid EDLC Capacitor to meet growing demands for environmentally friendly and cost effective solutions for long term back up and pulse management for IoT and AMR applications.



Features of VPC

- Low Self Discharge
- Wide Operating Temperature Range
- High Operating Voltage
- High Capacitance

Part Number	Rated Voltage (V)	Capacitance (F)	ESR(mΩ)	Max. Discharge Current (A)		Size (mm) D x L
			AC(1kHz)	Continuous	Pulse(1s)	
VEL 3R8 107 G	3.8	100	90	0.5	2.0	10 x 30
VEL 3R8 157 G	3.8	150	50	1.0	4.0	12.5 x 25
VEL 3R8 257 G	3.8	250	40	2.0	5.0	12.5 x 35

POWER



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Hy Cap/ Module Snap-In Standard (16V)

VEM16R0606QG

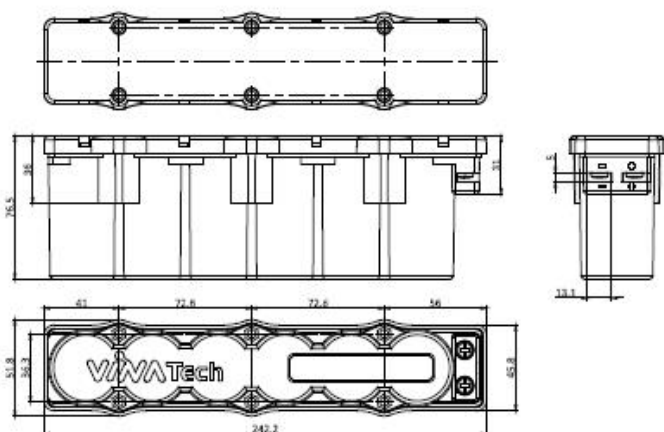
FEATURES

- Ultra-low internal resistance
- High power and reliable performance
- Over 500,000 duty cycles
- Compact & fully enclosed splash proof design

TYPICAL APPLICATIONS

- Automotive
- Consumer electronics
- Renewable energy system
- Short term UPS & Telecommunications
- Wind turbine pitch control

DRAWING



SPECIFICATION

ELECTRICAL	VEM16R0606QG
Rated Capacitance	60 F
Maximum ESR _{oc} , initial	22 mΩ
Rated Voltage	16 V
Maximum Peak Current(1 second)	200 A
Maximum Continuous Current	20A
Leakage Current, maximum	22 mA
TEMPERATURE	
Operating Temperature	-40°C ~ 65°C
Storage Temperature	-40°C ~ 70°C
CELL VOLTAGE MANAGEMENT	
Cell Voltage Management	ACTIVE / PASSIVE
PHYSICAL	
Mass, typical	0.67 kg
Power Terminals	M5 Thread
Environmental Protection	IP54
POWER & ENERGY	
Usable Specific Power	2,400 W/kg
Specific Energy, E _{max}	3.33 Wh/kg
Stored Energy	2.13 Wh
LIFE	
High Temperature (1500 hours)	Capacitance: -20% of initial value, ESR: Within 2 times of initial value
Room Temperature (25°C)	Capacitance: -20% of initial value, ESR: Within 2 times of initial value
Cycle Life	500,000 cycles

POWER



Hy-Cap VET Supercapacitor

VINATech Hy-cap NEO Supercapacitors eliminate effects of Extreme environments

VET Supercapacitors are now available and they are optimized for wider temperature environments.

VINATech is the leading supercapacitor manufacturer in the Smart Meter and IoT application markets, offering the best supercapacitor for a variety of functions and conditions.

- Temperature range -40~85°C, Humidity 85% RH (2.7V)
- - Low ESR
- - 500,000 Cycle life



Part Number	Rated	Capacitance (F)	ESR (mΩ)		Max.	Leakage	Size (mm)
	Voltage				Current	Current	
	(V)		AC(1kHz)	DC	(A)	(mA, 72hr)	D x L
VET2R7335QG	2.7	3.3	140	210	2.5	0.01	08 x 20
VET2R7505QG	2.7	5	90	135	4	0.015	10x20
VET2R7106QG	2.7	10	50	75	7.5	0.03	10 x 30
VET2R7156QG	2.7	15	40	60	10.5	0.04	13 x 25
VET2R7156QD	2.7	15	40	60	10.5	0.04	10 x 40

POWER



Hy-Cap modules



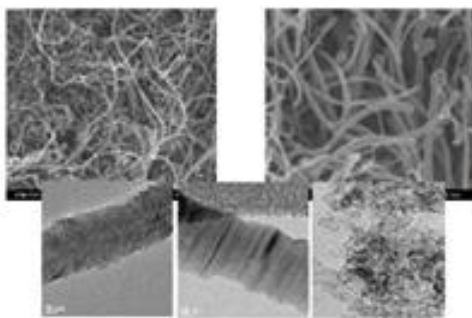
Hy-Cap customized module comes in a structure optimized to the customer's specifications and application areas. Items subject to optimization include capacitance, voltage, current, size, enclosure protection level, terminal type and balancing circuit.

Hy-Cap 2 Series module, a serial combination of 2 single cells, comes in a sleeve type where the outer surface is encased with sleeves. They are divided into rated Voltages of 6.0V, 5.4V which are ideal for smart meters or black box products for cars and many other applications.

Fuel Cell

Vinatech lead the world in production of catalyst support, catalyst for fuel cell and MEA. VINATech developed the original technology involving CNF (Carbon Nano Fiber) through independent research projects, in 2002. Subsequent development includes different carbon solutions including activating carbons, controlling the shape, composite and metal impregnated activation.

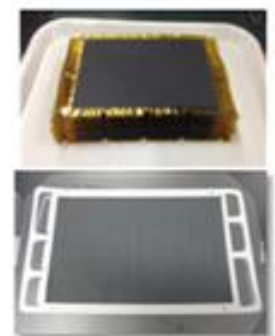
The application range of VINATech's carbon solutions includes CNF, catalyst support for fuel cells, MEA (Membrane Electrode Assembly), and electrode and filter materials.



Catalyst support



Catalysts



MEA

WIRELESS & M2M

PCTEL Inc.



PCTEL, based in Chicago, manufacture High Performance Antennas for GPS, Tetra, Public Safety, Defence, Military, SATCOM, Industrial Wireless, Broadband Wireless and SCADA solutions. Brands include MAXRAD, BLUEWAVE, WI-SYS & SPARCO WIRELESS. Covering 27MHz to 6GHz Frequency Range. 5 year Warranty.

Product Range

GNSS (Galileo, GLONASS, Beidou), GPS, Embedded & Iridium Antennas and Timing Reference Antennas



Mobile (VHF, UHF, Multiband MIMO, WiFi, LTE, No Ground versions, Covert, Mag Mounts) Antennas



In Building Antennas

VenU® Ceiling Mount Antennas

Wall Mount Antennas



Infrastructure Yagi, Omnidirectional, MIMO, Flat Panel Antennas



WIRELESS & M2M



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Freq Range (MHz)		Antenna Type	Antenna Series
From	To		
27	132	Whip - Quarter Wave	MLB
108	512	Spring Whip	ASP
118	2500	Whip - Chrome Nut	PCTCN
118	3800	Spring Whip - Molded Base Antennas	BMAX
132	512	Whip - Spring	MWB
136	960	Wide Spectrum Multi-Band VHF, TETRA/UHF	PCTWSLMR
136	174	Whip	MWV
136	174	Log Periodic Array	LPA
138	470	Whip - Mosaic® high performance collinear	ASP
144	174	Whip - VHF Base Loaded Chrome Coil	MHB
148	960	Low-Profile Whipless	ASP
150	512	Whip	AP
150	970	Aluminum Yagi	MYA
158	223	Low Profile Wideband Rail	PCT-RSA
380	2500	Max-Matics™ Coach™ Multi-Band TETRA, LTE Cellular, Wi-Fi	GPSHP-UWB
380	657	Whip - Wideband – No Tune	MWU
380	6000	Low Profile	MLPV
403	470	Bluewave Yagi	BMVD
406	960	Black Optimized Welded Yagi (No Tune)	BMOY
430	2700	Heavy Duty Flexible	PCTP
430	3800	Heavy Duty Omnidirectional	BOA
450	470	Whip - Base Loaded Field Tunable 3dB Gain	MUF
450	940	Whip - Base Loaded Chrome Coil	MUF
600	5925	Coach™ II GNSS L1 L2 L5 Multi-Band , Dual-Port 4G LTE and 802.11ac	GL125-DLTEMIMO
600	5900	Ultra-Wideband High Performance	PCTUWB
617	5900	Coach™ II Dual Carrier GNSS Multi-Band , 5G & 4G LTE with 802.11ax	GLXX1AX
617	5950	Trooper™ Multi-Band LTE MIMO & 802.11ac	TRP-20INT
617	5950	Trooper™ 5G & 4G Dual LTE, WiFi	PCTHPDLTE
617	5950	Trooper™ II Slender Dual Carrier GNSS Multi-Band Antenna	GL9X1AX
698	5900	Coach™ Multi-Band LTE MIMO & 802.11ac	GLHPDLTE
698	5900	Trooper™ Multi-Band LTE and Wi-Fi Antenna with HR GPS/GLONASS	GLLEWIFI
698	2700	Portable OmniDirectional	MPAMB
746	928	Fiberglass OmniDirectional	MFB
806	2600	Medallion™ GPS Multiband platform	PCTMDL
824	2485	Multiband Omnidirectional - Cellular & WiFi	PCTMBPTSM
863	5925	Omnidirectional	MHO
902	928	Integrated Connector	MN915
1150	1615	Multi-GNSS L1/L2/L5	GNSS-L125
1390	5900	Dual Polarised Directional Panel	FP
1554	1615	GNSS Timing Reference - GPS L1, GALILEO E1, GLONASS L1 & BEIDOU B1	GNSS1-xxx-xxx
1561	1608	GNSS, Embedded, Flat, Dome Head & PUK	81xxD
1565	1608	Trooper™ Low-Profile Multi-Band LTE MIMO & 802.11ac	GLHPDLTEMIMO
1565.42	1585.42	GPS Timing Reference - Quadrifilar Helix	GPS-xxx-xxx
1565.42	1585.42	Airborne	12700
1575.42	1602	GLONASS L1 Active, High Performance Magnetic Mount	GPS-LB12GL
1575.42	2400	GPS, Embedded, Flat, Dome Head & PUK	39xxD
1575.42	1176.45	WAAS	2225NW
1800	5900	Dual Polarised Directional Panel	FP
2300	5900	Coach™ Multi-Band MIMO	PCTHPMIMO
2400	5920	Low Profile Access Point	PCTMI2458
2400	5900	Omnidirectional - Ground Plane Independent	BMH
2400	5925	Dual Band Panel	MSP
3300	4200	Ultra-Flat Ceiling Mount CBRS	PCTHP
4900	5900	Bi-Directional Train Top	PCT-RSABD

Latest PCTEL Antennas



PCTEL, Inc., based in Chicago, delivers Performance Critical Telecom antenna solutions that support evolving wireless standards for cellular, private, and broadband including SCADA for oil, gas and utilities, fleet management, Industrial operations, Health care, Small cell and Network timing deployment, Defense, Public safety, Education, and Broadband access. The PCTEL High Performance Antennas cover a frequency range of 27MHz to 6GHz and offer a warranty of up to five years.

GNSMB-COV



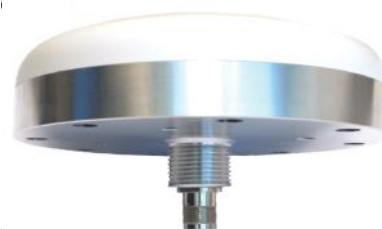
The GNSMB-COV multi-band antenna provides optimal MIMO 4G LTE and single port 802.11ac Wi-Fi coverage in a covert, low-profile housing. The antenna also incorporates PCTEL's unique high rejection GNSS technology for global guidance and support of carrier voice and data networks. Designed for heavy construction, this antenna will withstand the most rugged applications with a sub 1-inch height profile and conduit for ease in installation.

Important Features:

- No tune, multi-band coverage: dual 4G LTE, Wi-Fi and GPS L1/Galileo E1/ GLONASS L1/Beidou B1 frequencies
- Sub 1-inch height without magnet mount adapter
- IP67 highly ruggedized design provides maximum protection against water or dust ingress under severe environmental conditions
- Proprietary filtering design allows wideband coverage while achieving superior out-of-band rejection for all GNSS frequencies
- Braided conduit for ease in installation

GPS-L125-GL12

The GPS-L125-GL12 is a multi-GNSS high performance antenna designed to meet stringent AAR environmental standards. The antenna features a multi-stacked patch design covering global GNSS frequencies, a high gain, multi-stage LNA and advanced filtering to combat the effects of adjacent band interference. The antenna has a hermetic seal, is IP67 and has a CorrSolve gasket included.



Important Features:

- Advanced Out-of-Band Filtering
- High Gain (35dB typ.)
- CorrSolve gasket included
- Great Multipath Mitigation
- IP67 ingress protection

Applications:

- PTC Rolling Stock Tracking
- Military Vehicle Tracking & Asset Tracking
- Precision Agriculture
- Differential Correction



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GEO-GNSS-AC-S1



PCTEL's GEO-GNSS-AC-S1 is a robust, active, high performance antenna covering both GPS L1 and GLONASS L1 frequency bands. PCTEL's proprietary filtering design allows wideband coverage while achieving superior out-of-band rejection. This antenna is ideal for performance in critical asset tracking and network timing synchronization applications.

Important Features:

- GPS L1 & GLONASS L1 Frequencies
- Custom-Tuned Micro Helix Element
- High Rejection Filtering
- 26.5 dB Gain
- IP67* Ingress Protection

Applications

- Defense
- Radio Communications
- Handheld Devices
- Body Worn Asset Tracking
- Public Safety Emergency Responders
- Industrial Network Synchronization

GL9X1AX-SF, GL7X1AX-SF, GL4X4-SF-PLK Series

The Coach™ II Dual Carrier GNSS Multi-Band Antenna, 5G & 4G LTE with 802.11ax supports the high speed requirements of complex RF communication systems used for Intelligent Transportation Systems (ITS), and IIoT applications. These antennas feature four 5G elements compatible with the world's leading multi-carrier cellular routers that support 600 MHz to 3800 MHz frequencies. The platform also incorporates 802.11ax Wi-Fi MIMO connectivity, with four dual band 2.4/5 GHz Wi-Fi elements supporting DSRC 5.99 GHz applications. In addition, PCTEL's proprietary high-rejection multi-GNSS technology is included for high precision tracking and asset management.

Features



Metal 1-inch stud mount with slotted jam nut provides single cable exit for easier installation and/or antenna replacement

IP67 compliant design provides maximum protection against water or dust ingress under severe environmental conditions (when installed on sealed surface)

Proprietary high rejection filtering allows wide-band coverage while achieving superior out-of-band rejection for all GNSS frequencies

Meets AAR certification requirements for rail applications



Scanner Product Range

PCTEL scanning receivers and test software provide real-world data for wireless network design, planning, deployment, optimization and interference hunting. They efficiently verify in-building public safety network coverage.

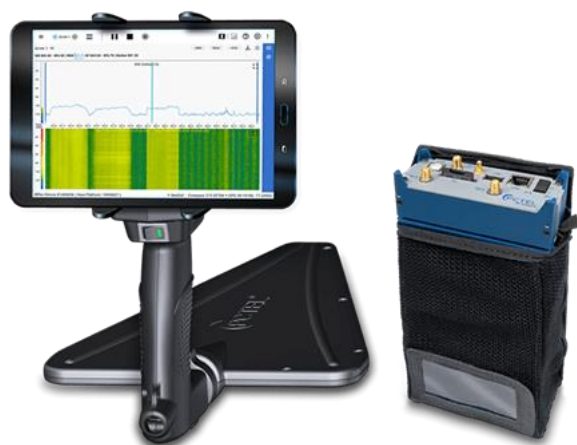
Interference, caused by everything from fluorescent lights to garage door openers to unlicensed radios, can reduce data rates and Quality of Service on 4G LTE networks. With many potential sources of interference on newly available and re-farmed spectrum, 5G networks could be impacted as well.

The 5G NR (New Radio) testing is available on both HBflex and IBflex scanning receivers.

PCTEL has a world respected RF engineering expertise providing the test tools, antennas, and embedded systems that efficiently manage interference. They offer PIM (Passive Inter-modulation) antennas and network equipment; MIMO antennas with strong port-to-port isolation; and Wi-Fi and GPS/GNSS antennas with advanced filtering technology to protect from nearby or co-located LTE transmitters.

The SeeWave® interference locating system utilises the SeeGull® *flex* scanning receivers to make hunting for external interference faster, easier, and more cost effective. These *flex* scanning receivers and SeeHawk® Touch software also provide crucial data used to minimize interference in all phases of heterogeneous network deployment.

The portable unit is an Ergonomic and lightweight design for one hand operation. It offers an Easy-to-hold grip with trigger for recording interfering signal location. The unit includes a digital compass and pre-amplifier for accurate direction finding. The software supplies simplified open street based mapping and triangulation functionality.



PCTEL
Gflex™
Compact Scanner
for Multi-Operator
2G-5G Testing



New Gflex™ Scanner

10 MHz-8 GHz, 24-48
GHz Freq Range
Measures 120 x 5G
channels
simultaneously.

NEW! TX2440 MMWAVE TRANSMITTER

5G CW testing
in 24-40 GHz
band range



PCTEL

WIRELESS & M2M



PCTEL Scanner Product Overview

Scanning Receivers:

IBflex®, HBflex®, MXflex™ or Gflex™ scanner
Simultaneous testing on multiple
technologies and bands Analysis.



SeeWave Handheld Host Platform

contains a digital compass, pre-amplifier,
bearings trigger, and tablet mount.



Walk test kit to carry
scanner and hot swap
battery system.



Tablet for touchscreen
optimized software.



Antenna choices of a 690 MHz to 6 GHz Log Periodic,
440 MHz to 480 MHz Yagi antenna, or COTS Yagi antenna.

Adactus



ADACTUS, Sweden is an established designer of RF products for the Industrial wireless market. They developed their business in the early days with Antennas for data logging and have now expanded in to Satellite antenna and RF Cables.

Well known for their excellent quality, Adactus products are supplied with a guarantee. Their portfolio includes a wide range of Internal and external ISM Band products to support their established GSM/GPRS/3G & 4G portfolio.
ISM(Zigbee, Bluetooth, WiFi(2.4, 4.9-5.8GHz), TETRA + License Freebands)

ISM Band, 2G,3G,4G & GPS/Glonass Antenna's



Patch



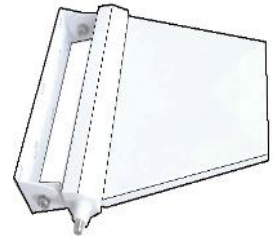
Pigtail



Stubbie



Puck



YAGI

**2G + 3G (SMS,
PENTA Band) 4G/**



6 Band
LTE Blade



Stubbie



Stickable LTE

**GPRS,
LTE**



Outdoor



Puck

GNSS + Iridium (Hi Gains, Combination, Marine)



Puck



Waterproof



Pole Mount



MIMO



3G/GPS

Also Available

SIM Card Holders



Range of RF Cables

New Releases



ADA-9XYZ Screw Mount Combination Antenna

- GNSS/ LTE/ 5G NR WiFi Combination Antenna
- Versatile Combination with up to 3 Cables
- GPS/GLONASS/Beidou/Galileo/QZSS Supporting
- LTE/ 5G NRMIMO or Dual Band WiFi MIMO + Full GNSS
- IP67 Rated Waterproof and ESD Protection
- Machine to Machine Communication & IOT
- Vehicle Tracking & Telematics

ADA-0068-5G LTE/5G Dipole Antenna

- LTE/5G Dipole Antenna
- 2,0-5,0 dBi Gain
- Multi-band
- Adhesive tape mount
- Omni-radiant



ADA-0030 LTE/5G Antenna



- Supports 5G, 4G, 3G & 2G applications
- Permanent mounting and detachable design
- Flexibility to different cable options
- Low profile structure design
- IPX7 fully waterproof
- Detachable type with N Female connector is available
- Data communication & Wireless monitoring

ADA-125H High-Accuracy GNSS Active Antenna

- Supports GPS, GLONASS, BeiDou, Galileo and QZSS systems
- Substantial and environmental-resistance structure
- Proprietary antenna design provides the flexibility to reach a range of operational goals
- IP67 grade waterproof and ESD Protection
- Multi-Constellation and Signal-Frequency for faster initialization



Lantronix



Lantronix, USA recently acquired Maestro Wireless. This addition of Maestro's product portfolio and industry-leading cellular connectivity technology is the perfect complement to the Lantronix portfolio of IoT solutions .

GPS/GNSS Receivers

A portfolio to address a wide area of location applications. These range from traditional telematics solutions to latest highly integrated consumer devices, all of them having their special requirements toward a GPS module. Based on SiRFstarIV and also SiRFstarV chip sets, the GNSS and GPS receiver solutions address different specific needs and combine high performance, low power consumption, and simplified integration effort.

A5100-A – SiRFStar V



Concurrent GPS/GLONASS GNSS solutions - BeiDou / Galileo ready.
Lowest tracking power consumption.
Ideal for battery powered applications.
Pin compatible with key A2200-A.
Simple integration for fast time to market.

A5135-H – SiRFStar V

Concurrent GPS/GLONASS GNSS solutions - BeiDou / Galileo ready.
Lowest tracking power consumption.
Ideal for battery powered applications.
Pin compatible with key A2135-H / A2235-H.
Simple integration for fast time to market.
Integrated Antenna.



A2200-A– SiRFStar IV

This small form-factor module fully addresses the demand for low-est power consumption with, amongst other features, SiRFaware technology. The removal of jammers does not only facilitate designs of new products, but guarantees operation even in hostile environments.



A2235-H– SiRFStar IV

Stack-up Antenna SiRFstarIV Integrated Solution.

The A2235-H is Maestro's next generation of active GPS module, integrating a cost effective GPS receiver with an on-board patch antenna judiciously assembled above the components for an optimally small 17.8 x 16.5 mm footprint.



Daico Industries Inc.



DAICO Industries, Carston, USA offers both standard and full custom, leading edge IF / RF / Microwave Solutions, from basic Control Products to Multi-Function Assemblies through to rack-based Transmitters; with a focus on applications for Defense, Aerospace, and other High-Reliability customers.

Products

Control Products



Amplifiers



Transmitters &



Multifunction Assemblies



Build-to-Print /
Design Optimization Services



SEMICONDUCTORS

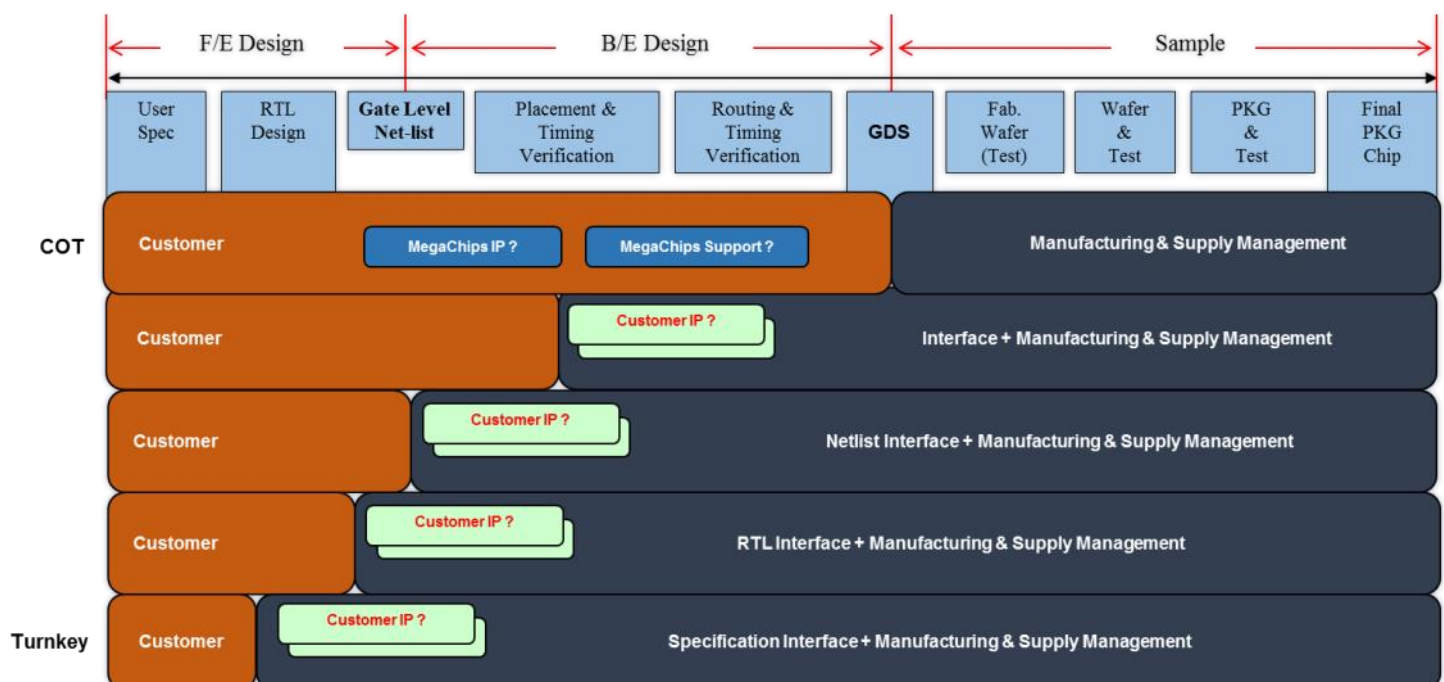
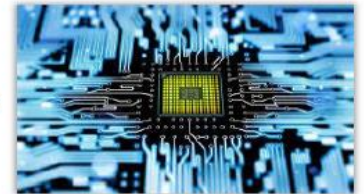
MegaChips Technology America Corporation

MegaChips

MegaChips Corporation was established in 1990 as the first innovative fabless LSI company in Japan dedicated to ASICs and SOCs with integrating LSIs and systems/applications knowledge. Its focus is on the development of cutting-edge SOCs incorporating original algorithms and architecture in the areas of imaging, audio, and tele-communications.

ASICs

- Built on a solid 26 year experience in product development, manufacturing, and quality assurance.

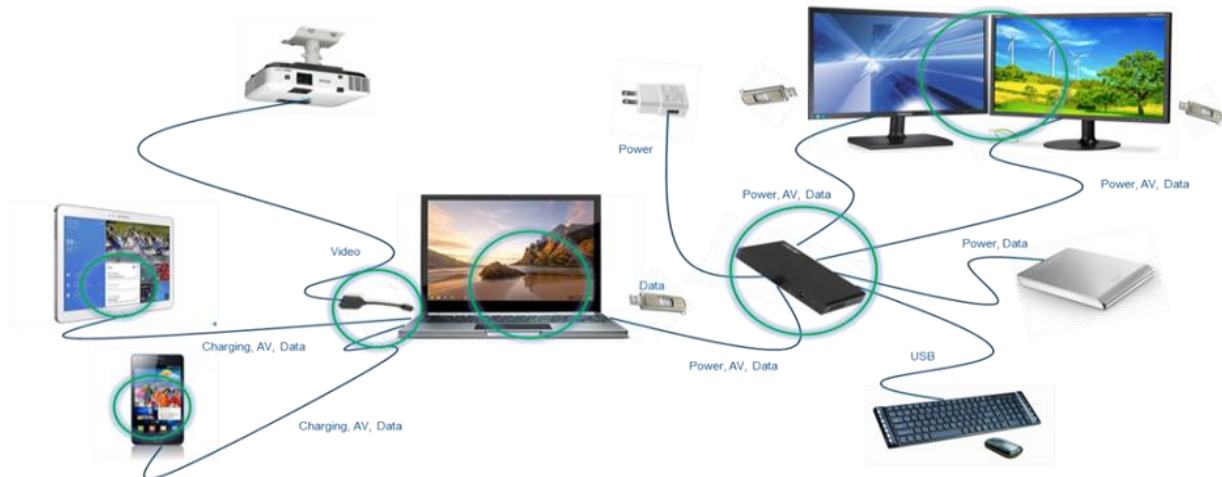


Kinetic Technologies Inc



Kinetic Technologies, USA designs, develops and markets proprietary high-performance analogue and mixed-signal semiconductors.

DisplayPort ICs



Part Number	Feature Differentiation	Application	Package
DP SST Converters			
STDP4020	DP/eDP to QLVDS/TTL	Digital TV, LCD Monitor, Mobile Display, Projector etc.	164LFBGA 12 x 12 mm
STDP4010	DP/eDP to DLVDS/TTL	Digital TV, LCD Monitor, Mobile Display, Projector etc.	164LFBGA 12 x 12 mm
STDP4028	QLVDS/TTL to DP/eDP	Digital TV, Docking Station, STB, Game Console etc.	164LFBGA 12 x 12 mm
STDP3100	10-bit Video DAC (DP to VGA)	Notebook, Desktop PC, Dongle, Desktop PC Motherboard etc.	64LQFP 10 x 10 mm
STDP3150	10-bit Video DAC (DP to VGA)	Notebook, Desktop PC, Dongle, Desktop PC Motherboard etc.	64QFN 6 x 6 mm
STDP3160	8-bit Video DAC (DP to VGA)	Notebook, Desktop PC, Dongle, Desktop PC Motherboard etc.	81BGA 8 x 8 mm
STDP2600	HDMI-DP++	Audio-video accessory (dongle), Docking Station etc.	81BGA 8 x 8 mm
STDP2650	DP1.2 to HDMI1.4	TV, Projector, Audio-video accessory (dongle), Desktop PC, Notebook, Tablet etc.	81BGA 8 x 8 mm
STDP2690	DP1.2 to DP++	Audio-video accessory (dongle), Desktop PC, Notebook, Docking Station, Thunderbolt Source, Peripheral device etc.	81BGA 8 x 8 mm
MCDP2800/2850	DP1.2 to HDMI2.0	Desktop PC, Notebook, Tablet motherboard, DP/USB Type-C Docking Station, Dongle etc.	64LFBGA 7 x 7 mm
MyDP Converters			
STDP2500	MyDP to DP	Audio-video accessory (dongle), Smartphone, Tablet etc.	81BGA 5 x 5 mm
STDP2550	MyDP to HDMI	Audio-video accessory (dongle), Smartphone, Tablet, TV front-end etc.	81BGA 5 x 5 mm
STDP2530	HDMI to MyDP	Smartphone, Tablet, Camera, Portable media device etc.	81BGA 5 x 5 mm
DP MST Hub			
STDP4320	Splitter	Audio-video router, docking station, hub, 4K2K TV, Daisy chain monitor, digital signage etc.	172LFBGA 12 x 12 mm
STDP4328	Concentrator	Audio-video router, docking station, 4K2K camera/recorder etc.	172LFBGA 12 x 12 mm

SEMICONDUCTORS

Mixed Signal Integration



Incorporated in 1997, Mixed Signal Integration, USA specializes in analogue and mixed-signal integrated circuits.

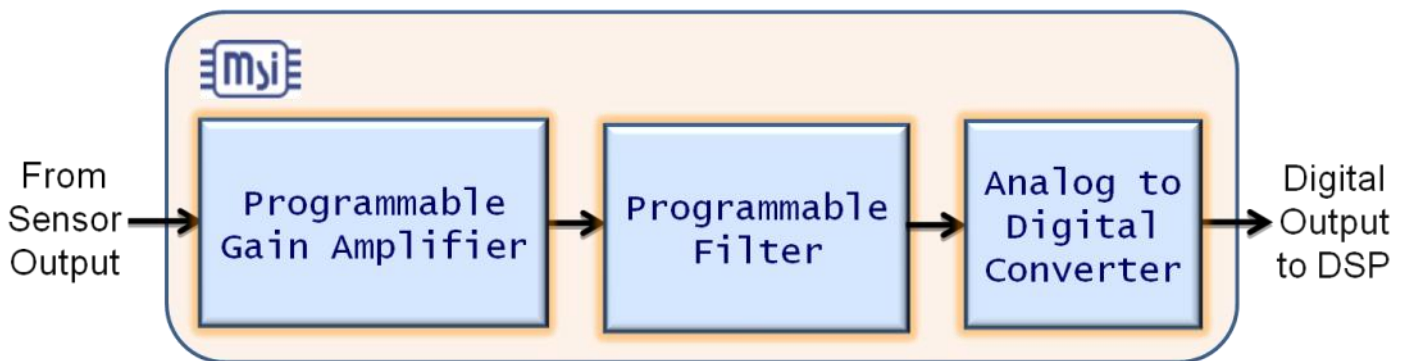
MSI offers both standard products and custom ASICs in CMOS technologies. Consumer audio and video, wireless personal communications, automatic test equipment and medical are some of the markets where MSI enjoys excellent customer relationships.

A corporate commitment to continued research and development has allowed MSI to innovate in the areas of low noise, low distortion audio; high frequency filtering and low voltage operation. These breakthroughs are featured in the company's standard products and are available for implementation into custom designs. MSI is particularly strong in integrated circuit filter design, both switched capacitor and integrated RC active filters. MSI works in conjunction with select wafer foundries and assembly vendors to offer its customers a broad choice of processes and packages.

The Standard IC Product Range

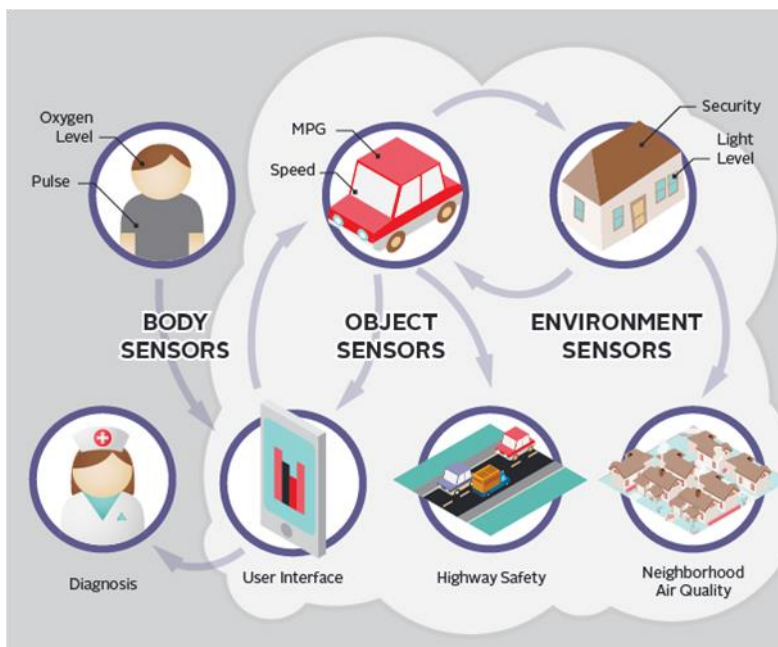
IC Part Number	Description	Application
MSFIPS	FIPS-140 Level 4+ Security Supervisor - 4 physical tamper switch inputs, temperature sensor	POS, Storage security, Cryptography
MSLSA	Low Power Spectrum Analyzer - 2mA @ 5V, 1/6th octave-wide 6 band - can be cascaded	Vibration, Audio, Ultrasonic Analysis
MSSCSA	Single Chip Spectrum Analyzer - 6mA @ 5V, 1/6th octave-wide 6 band - can be cascaded	Vibration, Audio, Ultrasonic Analysis
MSTHDA	Total Harmonic Distortion Analyzer - 1/6th octave-wide, five 6 pole BP filters	RFID Readers, ultrasonic analysis
MSCBT	Communications Baseband Transceiver - 50 x CTCSS Squelch tones filtered, BW 3kHz	LMR, FRS, GMRS, LPRS, Intercom
MSCPSI	Controller Programmable Sensor Interface - CMOS Hybrid processing sensor or MEMs	MEMS, Accelerometer, Pressure
MSSPSI	Smart Programmable Sensor Interface - offset adjust, low power and temperature sensor	MEMS, Accelerometer, Pressure
MSRFIF	RF Interface Front End (RFID) - 50Hz to 7MHz - Powered by RF energy from the reader	Access Cards/ Inventory control
MSVL14	14 MHz Video Lowpass Filter - 4th-order video LP Butterworth response filter	Video filter, Radar
MSLOSC	15 Hz to 64 kHz All Silicon Sine Source - low distortion (0.1%), sine wave (0dB to -63dB)	Test Equipment
MSLFS	Selectable Low Voltage Lowpass/Bandpass Filter - six filter types in one package, variable gain	Spectrum Analyser, Telecom/ Datacom
MSEPAF	Electrically Programmable Active Filter - 500kHz to 18 MHz with one external component	Instrumentation filtering
MSHN1-6	Selectable Highpass/Notch Filter - 6 filter types in one package, adjustable gain	Tracking filters, Datacom/telecom
MS2LFS	Dual Selectable Low Voltage Lowpass/Bandpass Filter - 6 filter types in one package	Spectrum Analyser, Telecom/ Datacom
MSRAAF	Resistor Programmable Active Audio Filter - LP, BP, HP, allpass or notch filter - up to 20kHz	Spectrum Analyser, Telecom/ Datacom
MSNBLP	Switched Capacitor Butterworth Lowpass Filter - Max corner frequency of 20 kHz	Two way radio, Datacom/ Telecom
MSCAHF	Selectable High Frequency Active LP/BP Filter - 4 pole RC active filter, center freq of 1MHz to 5MHz	Two way radio, HDTV, Cellular Phone
MSGEQ5A	Five Band Graphic Equalizer Display Filter - 100Hz, 330 Hz, 1kHz, 3.3kHz and 10kHz	Spectrum Analyser, Audio Stereos
MSGEQ7	Seven Band Graphic Equalizer Display Filter - 63Hz, 160Hz, 400Hz, 1kHz, 2.5kHz, 6.25kHz & 16kHz	Spectrum Analyser, Audio Stereos
MSDET	Tone Detector - Center Freq of 1Hz to 100kHz, 2mW @ 2.7V	Satellite radio, Caller ID, FSK demod
MSHFS1-6	Selectable High Frequency LP/BP Filter - six filter types in one package, adjustable gain	Tracking filters, Datacom/telecom
MSFS1-6	Selectable Lowpass/Bandpass Filter - six filter types in one package, adjustable gain	Tracking filters, Datacom/telecom
MSU1F1-4, MSU2F1	Resistor Programmable Universal Active Filter - LP, HP, Elliptic, allpass or notch filter using ext resistors	Instrumentation filtering
MSU1HF1-4, MSU2HF1	High Frequency Resistor Programmable Universal Active Filter - Switched Capacitor Technology	Instrumentation filtering
MSELP	Switched Capacitor Elliptic Lowpass Filter - Max corner Freq is 20kHz	Two way Radio, Telecoms/ Datacoms
MSLE/B/C5L/M	Switched Capacitor General Purpose Lowpass Filter - Elliptic, Butterworth or Chabyshev	MEMS, Accelerometer, Pressure

MSI Sensor Interface Solutions



Typical signal conditioning IC Block Diagram

Typical Applications



- Low voltage operation
- Ultra low power and low noise
- Small package size

Custom ASICs

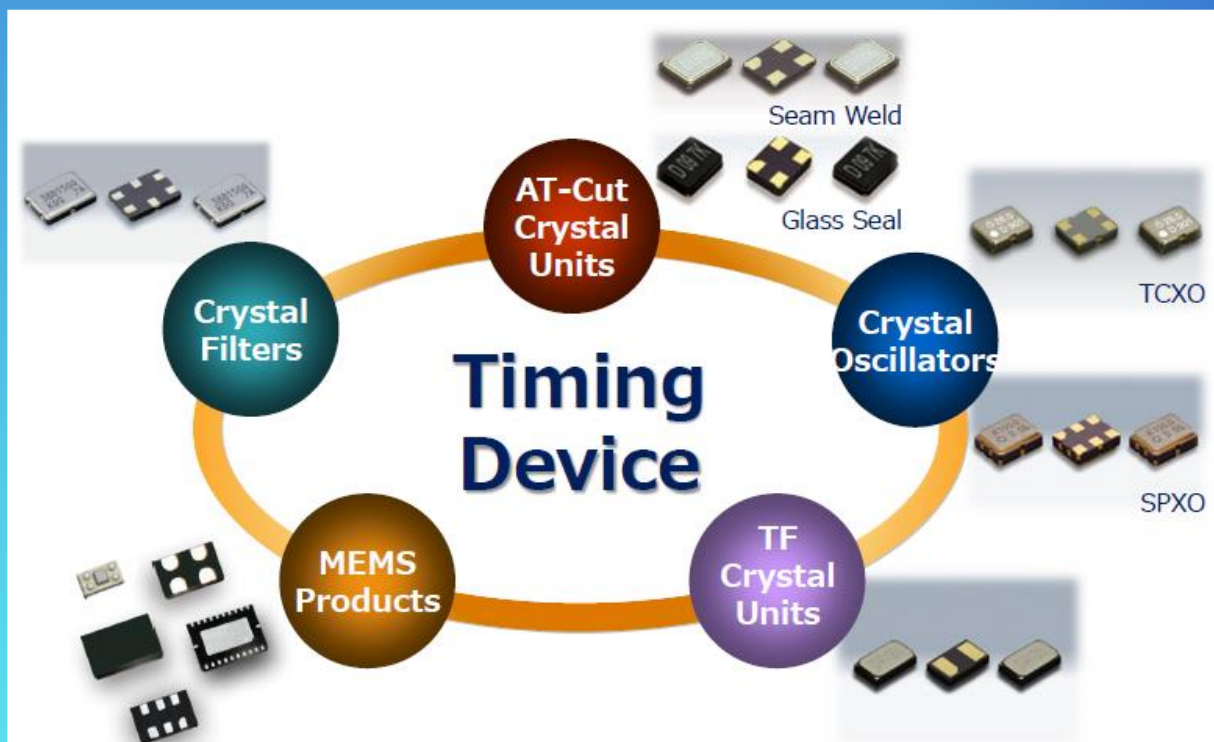
Mixed Signal Integration provides a turn-key ASIC solution. In addition to design and development of the ASIC, MSI manufactures the production volume parts for its customers. This includes foundry, packaging and testing of the ASICs prior to shipment.

SEMICONDUCTORS

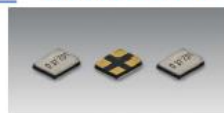
KDS Daishinku Corporation



Daishinku Corporation (KDS), based in Japan, specialises in high quality miniature crystal oscillators and resonators. They have gained a global reputation for undisputed technology and quality control in the field of crystal oscillators and resonators due to innovative processes from growing synthetic quartz crystal to manufacturing the finished product.



Small Module DSX1210A



- Ultra small, thin Height
- 1210 size
- Low Height 0.35mm Max.

Wearable Healthcare



Si-MEM Oscillator MO Series



- Ultra Small size MEMS Oscillators
- 1508 size CSP/ 2012 QFN
- µPower kHz/ MHz MEMS Oscillators

HiFi Audio



DSO211AH



- Low Phase Noise SPXO
- Improve Sound Quality
- 2016 size

Network Equipment



DSO323SK/ SJ/ SD



- Small Differential Oscillator
- Fundamental up to 212.5MHz
- LV-PECL, LVDS, HCSL
- 3225size

SEMICONDUCTORS

KDS Daishinku Corporation



Timekeeping DSK324SR

- High Stability RTC Module
- Low Current Consumption
- I²C BUS Interface (400kHz)
- 3225 size

Metering Unit DST1610A

- 32.768kHz crystal unit
- 1610 size

Wireless Data Transfer DSB535SG

- Ultra High Stability TCXO
- Stratum 3 Server
- 5032 size

PLC, Driver, HMI DSX321G

- 3225 size
- Glass seal Xtal
- 7.9~64MHz
- MP since 2002

DSO221SHF

- 2520 size
- 1.5~80MHz
- 100ppm/+125degC
- 1.8/2.5/2.8/3.3/3.3/5V

LoRa/Sigfox/Zigbee DSX211SH

- 2016 size
- Metal Lid Xtal
- 24~50MHz
- Low EMI

DSB211SDN

- 2016 size
- TCXO
- 12.288~52MHz
- 0.5ppm/+85degC

Ethernet DSO211SX

- 2016 size
- 20~125MHz
- 50ppm/+125degC
- Low Phase Noise

DSO323SK/SJ

- 3225 size
- Differential Output
- LV-PECL, LVDS
- 13.5~212.5MHz

3G/4G DSR1612ATH

- XTAL with built in Temp. Sensor
- 1612 size

PM DST1610A

- Ultra small, thin 32.768kHz
- 1610 size
- 0.45mm Max. Height

GPS/GNSS DSB1612SDN

- High Stability TCXO
- Low Phase Noise
- 1612 Size

Wi-Fi/BT/NFC DSX1612S

- XTAL Unit
- 1612 size

ECU DSX320GE DSX210GE

- Heat cycling 3000 cycles durable
- Low frequency 8MHz available (DSX320GE) 16MHz available (DSX210GE)
- AEC-Q200

RKE/TPMS DSX221SH

- High shock durability
- AEC-Q200

ITS DSB211SDN DSK321STD

- TCXO
- 2016 size
- AEC-Q100
- 32.768kHz TCXO
- ±13Sec/ Month
- AEC-Q100



If you have any questions, or require additional information, please contact a member of the Sales Team

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