Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!

Contact us

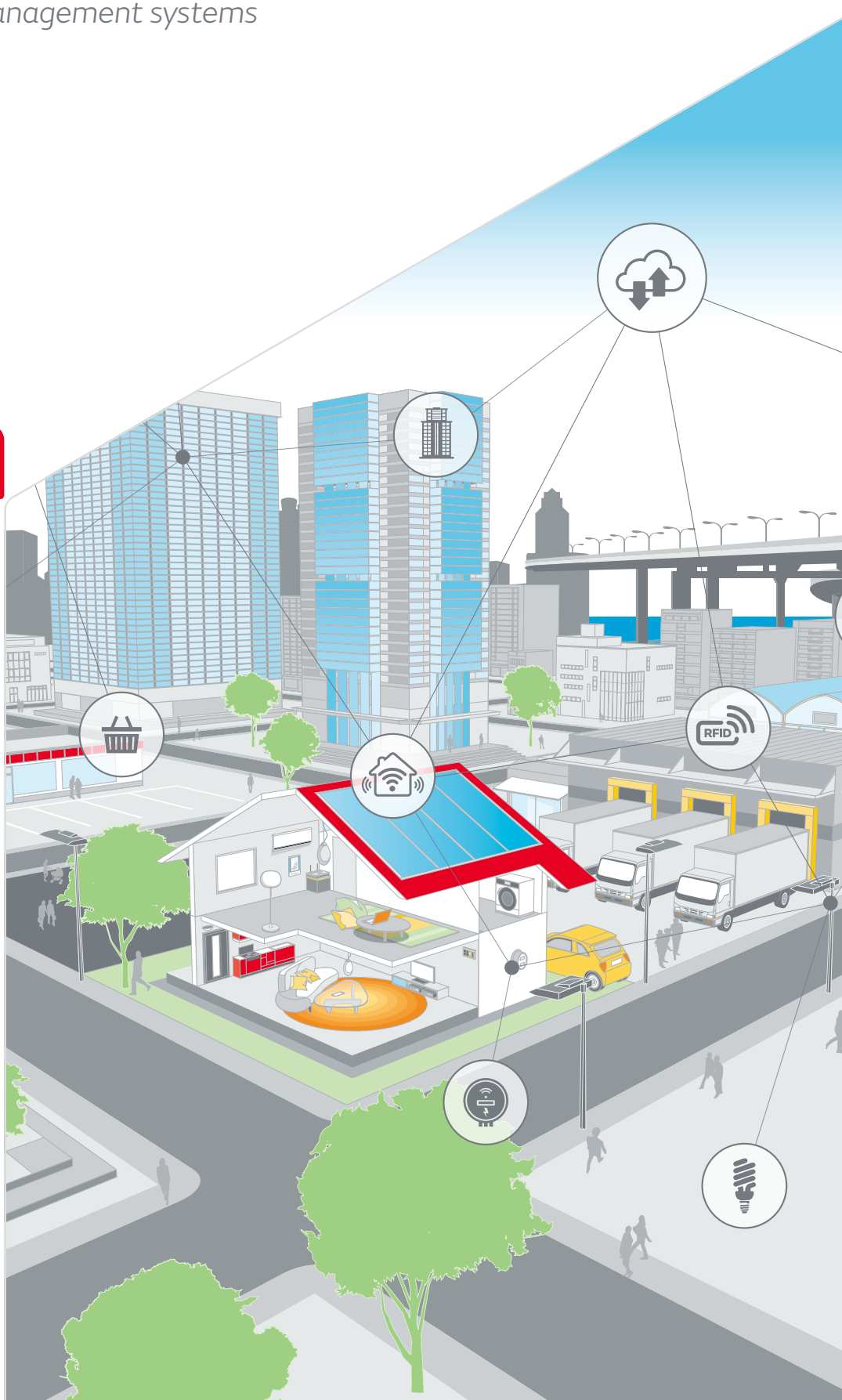
Tel: +86-755-8981 8866 Fax: +86-755-8427 6832
Email & Skype: info@chipsmall.com Web: www.chipsmall.com
Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China

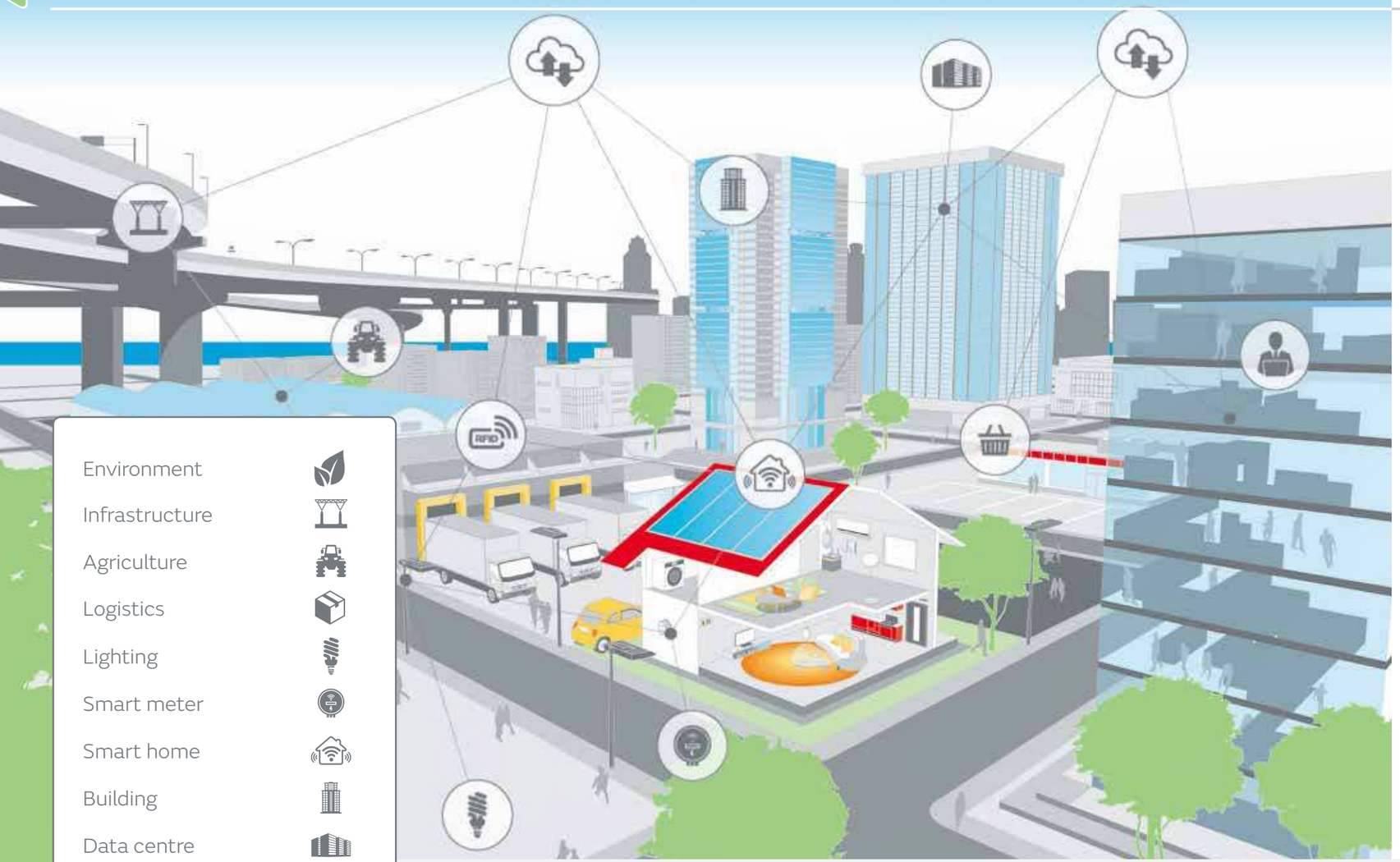
INNOVATOR IN ELECTRONICS

Solutions for sensor networks

Enabling IoT applications

Smart buildings, home, agriculture, logistics & energy management systems

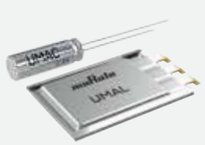




Wireless communications

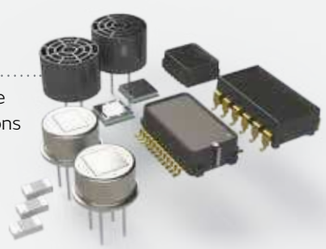
We provides RF components and also modules for wireless communication applications. Our modules are the number one in the mobile phone market and offer an extensive range of products such as WLAN, ZigBee, RFID, and many more.

Energy storage devices



We provide miniature, high-energy storage devices for wireless communication applications, including those using energy harvesting systems.

Sensors

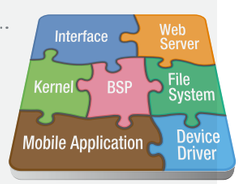


We offer an extensive range of sensors for IoT applications such as;

- PIR sensors
- Shock sensors
- MEMS sensors
- Ultrasonic sensors

Software

We have a wealth of experience in developing software solutions for IoT applications including 3G/Wi-Fi routers for mobile devices. We are also developing device drivers for wireless communication ICs, middleware and peripheral control software.



A smart & connected society with Murata's wireless sensor network

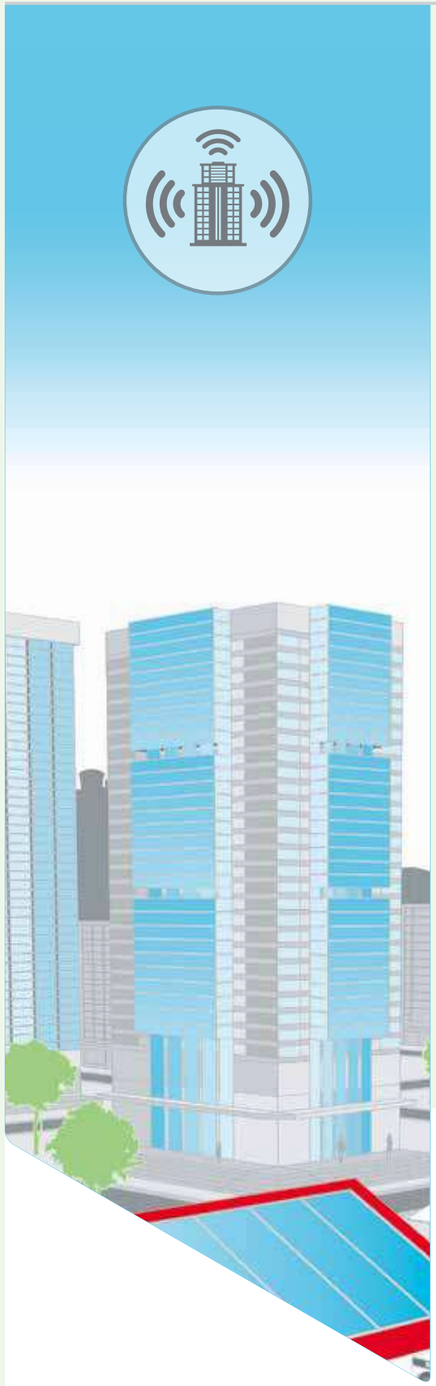
Connected technology is changing the way we live. Whether at home or at work Murata innovation is contributing to a smarter, productive and more efficient way of life.

Smart homes and buildings rely on energy management systems (EMS) to perform detailed control of lighting and air conditioning. This is achieved whilst monitoring power consumption and environmental conditions - such as temperature, humidity and light levels - using sensors located throughout your home.

The sensor network system for smart homes enables easy EMS construction.

Additionally, this network can be used to achieve automated control without compromising the comfort in our daily life. In a similar way, its expected to expands usage in smart agriculture for efficient and automated cultivation.

Sensor technology, wireless communication technology, and software. Murata has been ready to provide all the technology that essential to realize the smart life utilizing a wireless sensor network.



BEM, lighting, air conditioning, security, construction monitoring
Smart building control

Smart building control

- BEM (building energy management)
- Lighting
- Air conditioning
- Security
- Construction monitoring

PG 8 Pyroelectric infrared sensor
PG 9 Piezoelectric shock sensor
PG 10 AMR Magnetic sensor
PG 12-13 High Accuracy **MEMS Sensor**
PG 14-15 Small Energy Device **UMA Series**
PG 20-21 W-LAN/ Bluetooth Smart module
PG 23 Power supply for LED lighting

HEMs, smart appliance, lighting, security

Smart home control

Smart Home Control

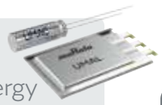
- HEMS (home Energy management systems)
- Smart appliances
- Lighting
- Security

PG 8 — Pyroelectric infrared sensor

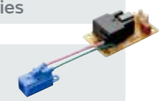
PG 9 — Piezoelectric shock sensor

PG 10 — AMR Magnetic sensor

PG 11 — Ultrasonic sensor



PG 14-15 — Small Energy Device **UMA Series**



PG 16-17 — Ionissimo® MHM Series Ionizer/Ozonizer

PG 20-21 — W-LAN/ Bluetooth Smart module

PG 23 — Power supply for LED lighting

Pyroelectric infrared sensor

New extra high sensitivity, lead-type pyroelectric infrared sensor

Our newly developed developed low-cost, high-sensitivity, high-RFI (Radio Frequency Immunity) and high-WLI (White Light Immunity) characteristic lead-type infrared sensor.
The IRA-S series has an improved RFI characteristic for the security market to fulfill EN regulation in detector level, such as peripheral circuitry. Its high sensitivity and high reliability makes a great contribution to ergonomics and energy conservation for a wide range of appliances.

Features

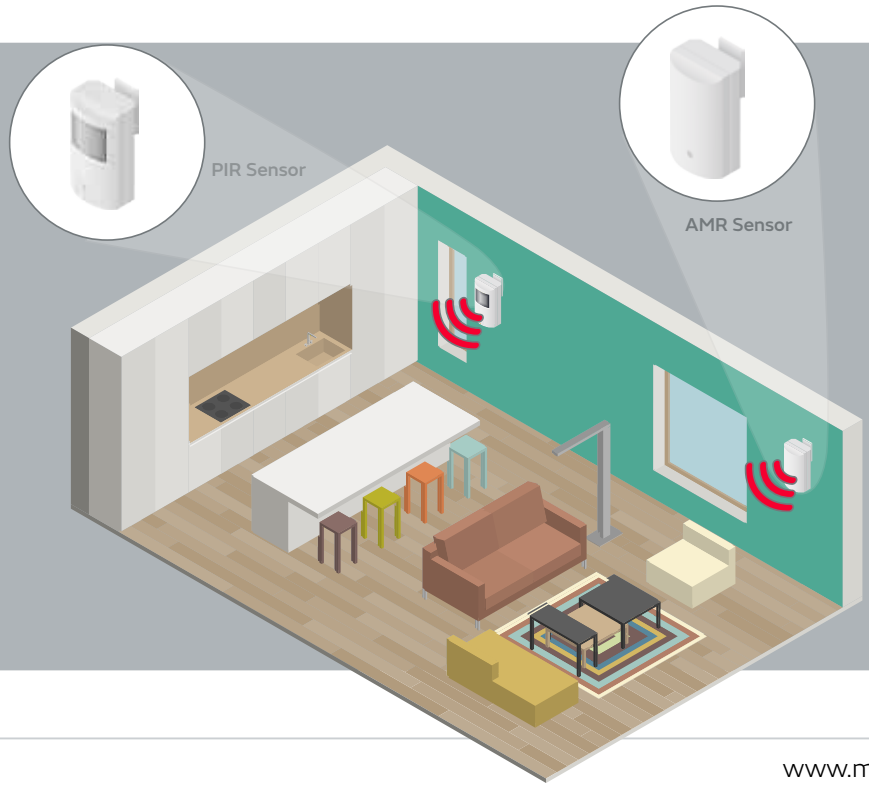
- **Good RFI (Radio Frequency Immunity)**
- **Good WLI (White Light Immunity)**
- **Easy human movement detection**
- **Wide detection area using lens**

Applications

- **Security systems**

Type	Part number	Sensitivity (500K, 1Hz, mVpp)	Dimensions (mm)	Benefits
Dual	**IRA-S210ST01**	4.6	ø9.2x4.7	New and cost effective model High RFI (Radio Frequency Immunity) For security, automatic ECO switch for display and other appliance
Serial quad	**IRA-S410ST01**	7.0		

Security system applications



Piezoelectric shock sensor

Touch sensor that detects vibration

Our shock sensor is produced on the basis of piezoelectric principles and can detect the mechanical shock resulting from tapping, as well as direction. It is capable of exporting data through an electric signal. We currently offer three types of direction- sensing devices, that are capable of delivering excellent performance, including operation and control of household appliances.

Applications

- **Vibration detection**

0 Degree type

Part Number	Dimensions (mm)	Charge sensitivity (pC/G)	Capacitance (pF)	Resonance frequency(kHz)	Benefits
PKGS-00LDP1-R	6.4x2.8x1.20	0.840±15%	770±30%	20	Most sensitive of its type
PKGS-00GXP1-R	3.8x2.0x1.05	0.350±15%	390±30%	31	Smallest of its type

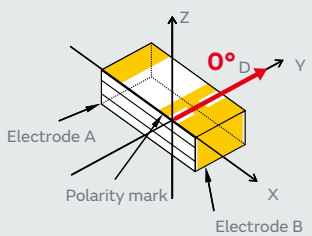
25 Degree type

Part Number	Dimensions (mm)	Charge sensitivity (pC/G)	Capacitance (pF)	Resonance frequency(kHz)	Benefits
PKGS-25NBP1-R	3.8x2.0x1.05	0.168±15%	520±30%	44	Most popular so far
PKGS-25SXAP1-R	3.2x2.0x1.05	0.350±15%	740±30%	27	Smallest of its type
PKGS-25WXP1-R	2.8x2.0x1.05	0.168±15%	550±30%	44	New smallest of its type

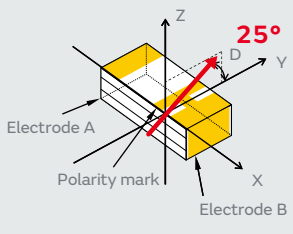
90 Degree type

Part Number	Dimensions (mm)	Charge sensitivity (pC/G)	Capacitance (pF)	Resonance frequency(kHz)
PKGS-90LDP1-R	6.4x2.8x2.10	0.840±15%	770±30%	20

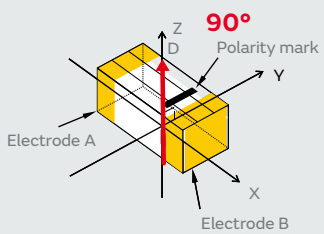
0 Degree type



25 Degree type



90 Degree type



AMR magnetic sensor

Broad product portfolio, design flexibility, narrower sensitivity range and higher reliability

MRUS74S
1.5 mm x 1.8mm

The AMR series comprises sensors that include an IC to detect changes in the magnetic resistance of a magneto resistive element that is effected by an external magnetic field. This is achieved from a ferromagnetic NiFe alloy thin film that is deposited over the IC circuit. We can offer more than 30 part types that support a broad range of applications backed by our experienced design consulting service.

Open-close detection

Part number	Sensitivity (m T)	Dimensions (mm)	Features	Applications
MRMS20 series	0.5 to 2.5	2.9x2.8x1.1	Std. performance, compact package	Std. open-close, position detection Low-speed rotation detection
MRMS50 series		1.45x1.45x0.55	Std. performance, ultra compact package	

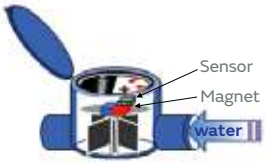
Flow metering by rotation detection

Part number	Sensitivity (m T)	Dimensions (mm)	Features	Applications
MRSS29D	0.8 to 2.5	2.9x2.8x1.1	High voltage operation (3.5 to 30V) High speed detection High temp. operation (to 100°C) Built-in voltage regulator	Flow metering for industrial equipments
MRUS74S	1.0 to 2.5 (Hon)	1.5x1.8x0.8	Low voltage low power operation Very low current consumption Built-in temp. compensation circuit	Flow metering for battery powered equipments ▪ Gas meter ▪ Water meter ▪ Flow meter
MRUS74X	1.0<		2-axis (XY plane) magnetic field sensing Low voltage low power operation Very low current consumption Built-in temp. compensation circuit	

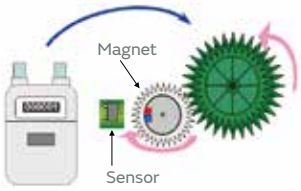
Cylinder control by position detection

Part number	Sensitivity (m T)	Dimensions (mm)	Features	Applications
MRMS541D	1.0 to 2.5	1.45x1.45x0.55	High accuracy, high-speed type (Typ. 2kHz) Built-in temp. compensation circuit Ultra compact flat lead package	Position, proximity detection High-speed rotation detection for industrial equipments
MRUS73C	Out1 [L->H] 2.8 max. Out1 [H->L] 1.4 min. Out2 [L->H] 3.0 max. Out1 [H->L] 1.6 min.	1.5x1.8x0.8	2-output type High accuracy, high-speed detection Built-in temp. compensation circuit Low voltage low power operation	

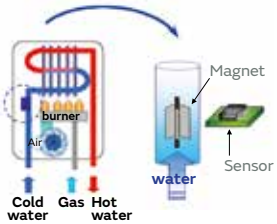
Water meter



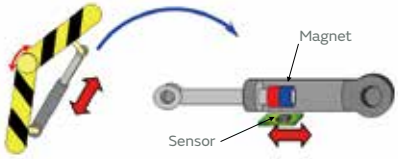
Gas meter



Water boiler



Cylinder control



Ultrasonic sensor

Low-cost solution for distance detection

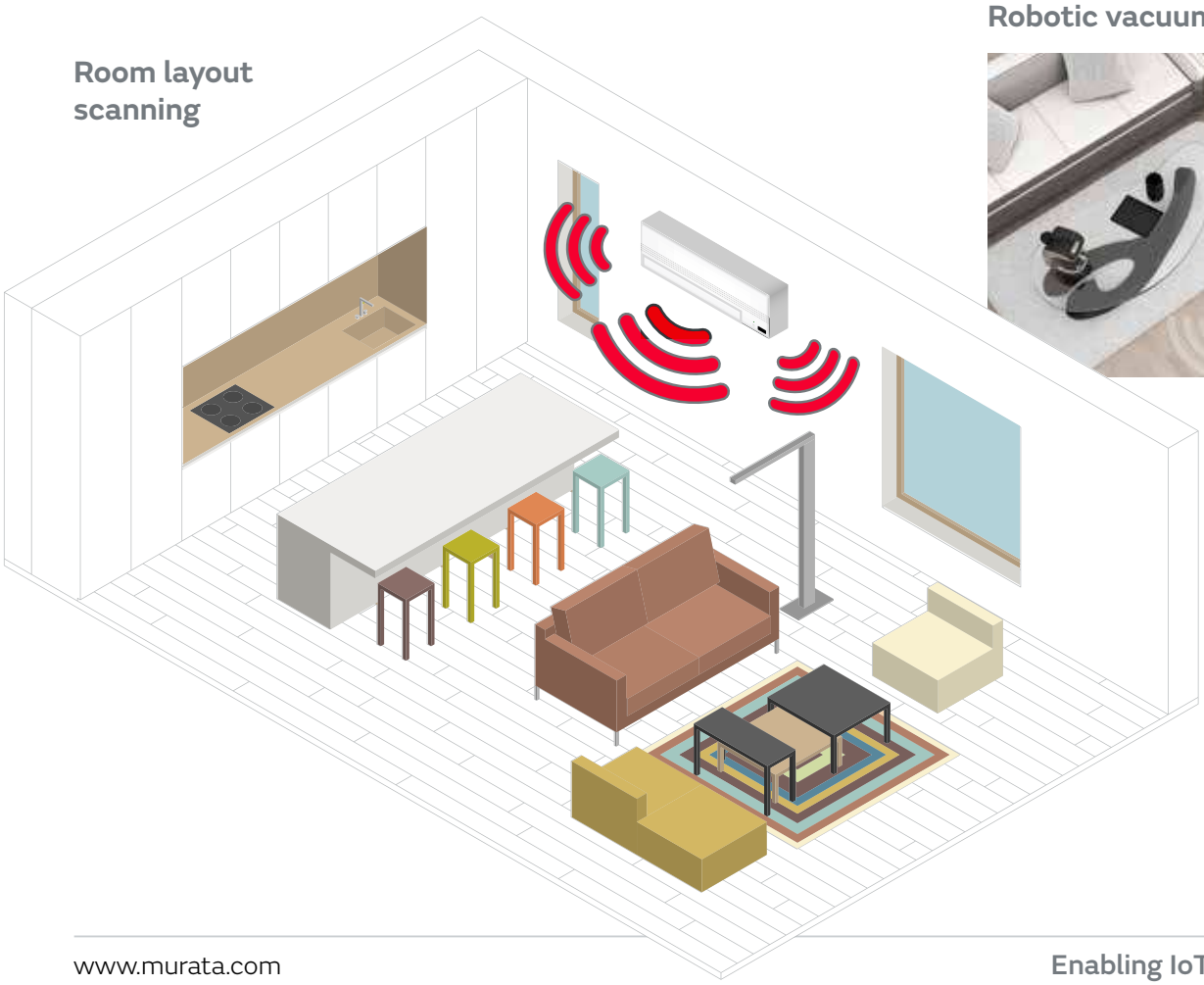
Small and lightweight, mainly used for short-distance range detection and home security.

Applications

- For robotic (consumer use)
- Room layout scanning

Type	Using method	Part number	Driving frequency (kHz)	Diameter (mm)	Capacitance (pF)	Directivity (degree, typ.)	Sound pressure level	Sensitivity	Max. Input Voltage
Open type	Transmitter	**MA40S4S**	40	9.9±0.3	2550±20%	80	120dB typ. (0db=0.02mPa)	—	20Vp-p Continuous signal
	Receiver	**MA40S4S**		9.9±0.3	2550±20%		—	-63dB typ. (0db=10V/Pa)	—
SMD type	—	**MA40H1S-R**		5.2x5.2x 1.15±0.1	4500±20%		95dB min. (0dB=20uPa)	-65dB min. (0dB=1V/Pa)	7.2V p-p (at 40kHz, Square Wave)

Room layout scanning



Robotic vacuum cleaner

High accuracy MEMS sensor

3D MEMS technology enables higher performance at lower prices.

Gyroscope components and combined sensors (including gyroscope and accelerometer) are based on our proven 3D MEMS technology and highly integrated electronics.

Industrial gyroscopes offer a performance level that has typically been available only for expensive module products. Sensing elements and the measuring circuitry are assembled into a pre-molded plastic dual-in-line (DIL) package, protected with silicon gel and covered with a stainless steel lid. All products are RoHS compatible and suitable for lead-free reflow soldering.

Features

- **Robust MEMS technology**
- **Field proven reliability & high performance in demanding applications**
- **Good offset stability over temperature and time**
- **High accuracy in demanding applications**
  eg, high temperature variation, high vibration environment, etc.)
- **Excellent mechanical shock endurance**
- **Can withstand high impact/dropping**

For construction monitoring
(Distortion, abnormal vibration, etc.)

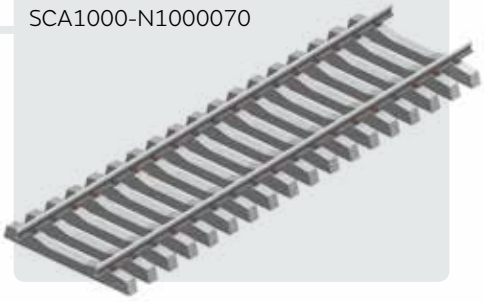
Inclinometers

Recommended product	Product description	Accuracy	Features
SCA100T	Analog output 2 axis inclinometer	Accuracy ± 0.5 degree over operating temperature	Good performance in vibrating environment High offset accuracy over temperature and time High mechanical shock endurance Competitive price
SCA103T	Analog output 1 axis inclinometer	Accuracy ± 0.1 degree over operating temperature	
SCA61T		Accuracy ± 0.5 degree over operating temperature	

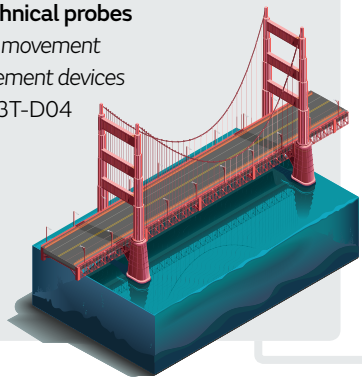
Applications

Structural health monitoring

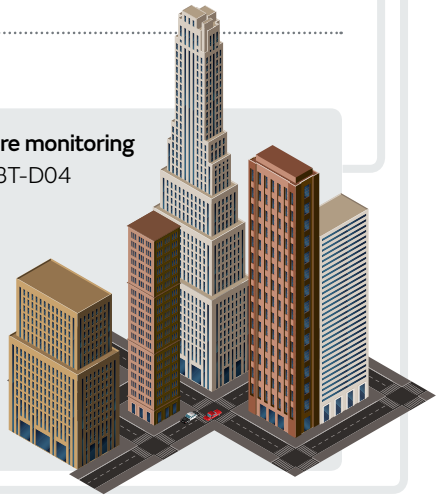
Railway track monitoring
SCA103T-D04,
SCA1000-N1000070



Geotechnical probes
Ground movement measurement devices
SCA103T-D04



Structure monitoring
SCA103T-D04



Inclinometers

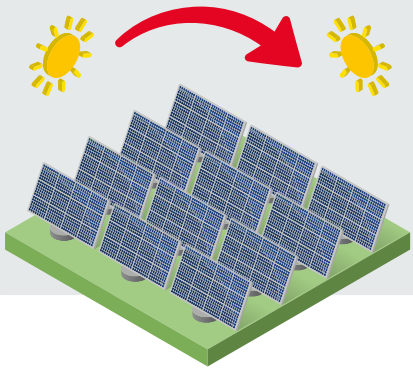
Recommended product	Product description	Accuracy	Features
SCA100T	Analog output 2 axis inclinometer	Accuracy ± 0.5 degree over operating temperature	High offset accuracy over temperature and time Competitive price

Applications

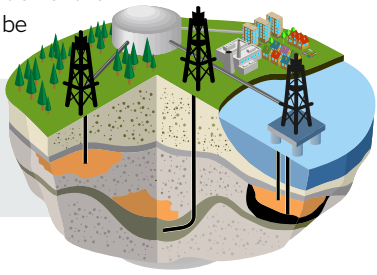
Levelling

- **Solar tracker systems**
  SCA100T
- **Wheel alignment service stations**
  SCA103T, SCA100T
- **Platform and boom lift leveling**
  Digital levels and scales
  SCA103T, SCA100T, SCA61T

Solar tracker systems
SCA100T



Relative position information of the arm tip is very important for excavators. Based on the gradient information from one axis detected by inclinometers, the relative position of the bucket can be calculated.



Accelerometers & gyros

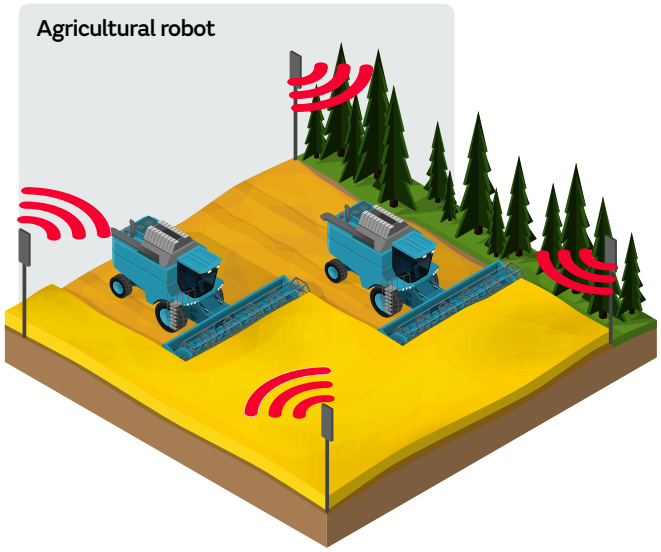
Recommended product	Product description	Benefits	Features
SCA3100	Digital SPI 3 axis accelerometer for inclinometer	Reliability References	Good performance in vibration environment High offset accuracy over temperature and time High mechanical shock endurance Competitive price
SCC2000	Digital SPI 1 axis gyro & 3 axis accelerometer (X or Z axis)	Combined sensor Reduced PCB size	

Applications

Moving Machines

- **Precision agriculture products help to minimize farming costs and maximize yields.**
- **Precision agriculture**
  SCC2000 Series, SCA3100
- **Construction machines (excavators, wheel loaders, bull-dozers...)**
  SCC2000 Series, SCA3100
- **Material handling equipment**
  SCC2000 Series, SCA3100

Agricultural robot

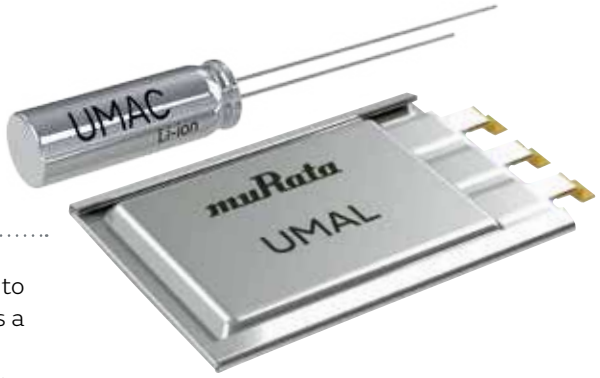


Murata benefits & advantages:

- **Gyroscope performance:**
  Bias stability,
  Low noise,
  Accuracy
- **Accelerometer performance:**
  Offset stability over temperature

Small energy device

UMA Series



The small energy device UMA series has a high energy storage capacity, low ESR, fast charging and discharging and the ability to withstand load fluctuations. It may be used as a secondary battery in the same way as a capacitor.

This energy device achieves better charge/discharge characteristics and has an extended service life superior to conventional batteries. Well suited as a power supply for sensor nodes for wireless sensor networks using energy harvesting, this device maintains flat voltage characteristics while accommodating a wide range of load characteristics.

Features

- **Long cycle life (maintenance free)**
  Even after 5000 Charge-discharge cycles (depth of discharge: 50%), the capacity degradation is very small. 5000 cycles is about 13 years when charging-discharging UMA series once a day.
- **Low loss (low leakage current)**
  UMA series devices, having excellent charge (capacity) retention rates, can be charged even with a small current of 5μA. They can keep charged energy for a long time because of their low leakage current.
- **High rate charge-discharge**
  Max. charge/discharge rate (current): 10 C (UMAC: 30mA, UMAL: 240mA)
- **Quick start-up time**
  UMA series can be charged to nominal voltage quickly after the start of charging (harvesting). It contributes to shrink charging time or eliminate the use of a primary battery for pre-charging.

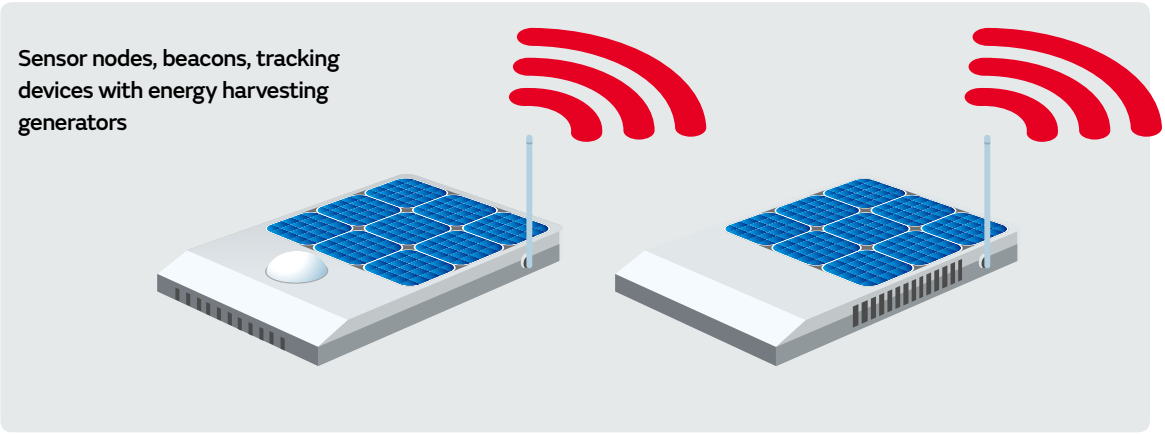
Applications

- **Sensor nodes, beacons, tracking devices with energy harvesting generators**
  - SHM,
  - Smart home, Smart building,
  - Smart agriculture,
  - iBeacon,
  - Asset tracking, inventory tracking, Baggage tracking,
  - Animal/pet tracking,
  - Children/elderly tracking,
  - Patient monitor,
  - RFID tags for farm animals,

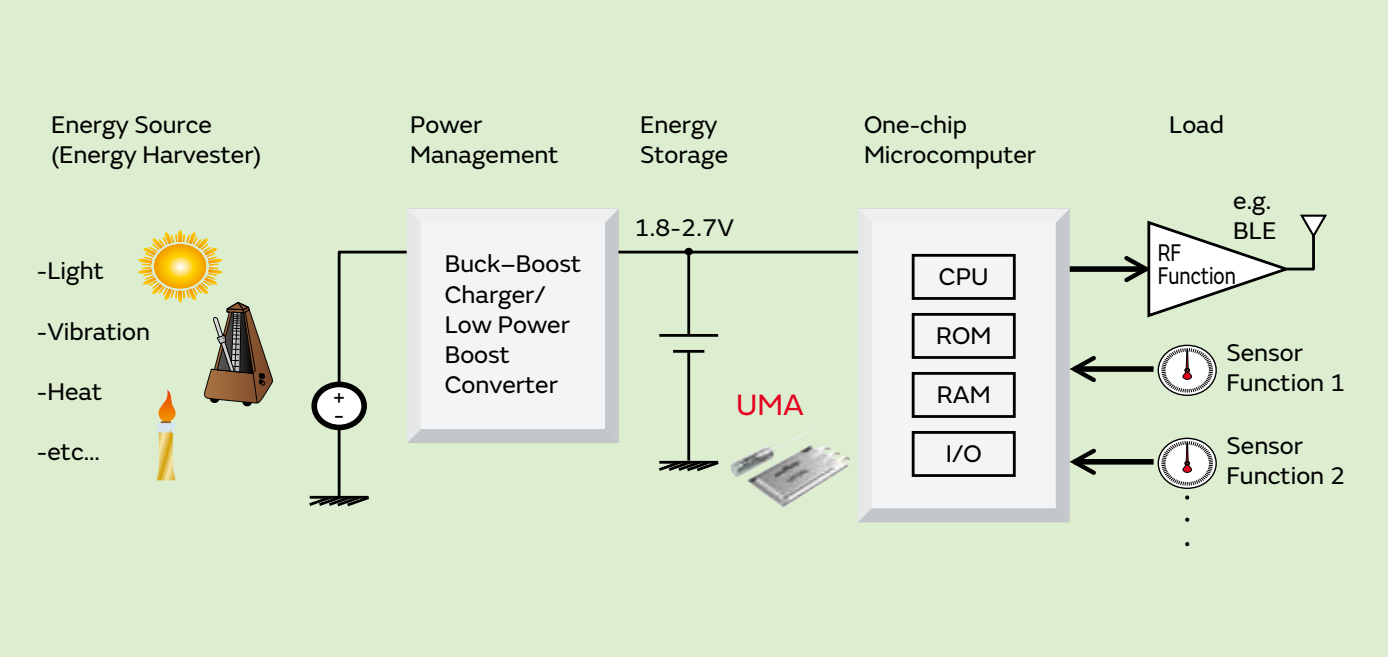
Comparison table of storage devices for energy harvesting system*

	Supercapacitor	UMA	Conventional LIB
Maintenance free (long cycle life)	Good	**Good**	Poor
Low loss (Low leakage current)	Poor	**Good**	Good
Directly drives the load (High rate discharge)	Good	**Good**	Poor
Quick start-up time (Charge characteristic)	Poor	**Good**	Poor

Comparison of same size devices



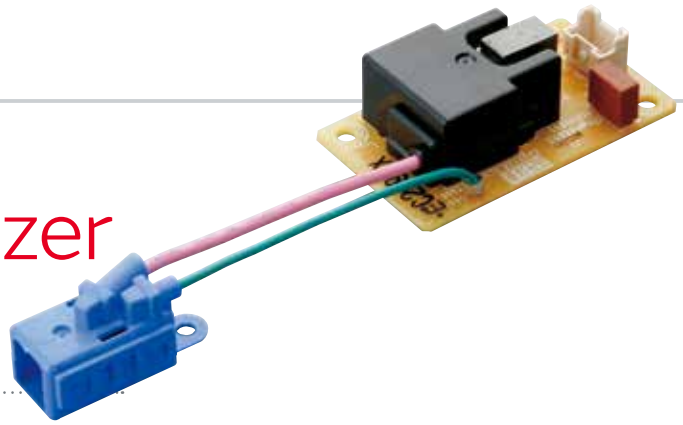
Block diagram



Specifications

Type	Product description	Nominal capacity	Max. discharge current	ESR	Nominal voltage	Charge voltage	Cut-off voltage	Operating temperature range	Size (typ.)
UMAC (Cylinder type)	**UMAC040130A003TA01**	3mAh	30mA (10 C)	800mΩ	2.3V	2.7V	1.8V	-20 to 70°C	ø4x12mm (w/o terminals)
UMAL (Laminate type)	**UMAL361421B024TA01**	24mAh	240mA (10 C)	100mΩ	2.3V	2.7V	1.8V	-20 to 70°C	21x14x3.6mm

Small, low-voltage ionizer



Ionissimo® MHM series

Today, the emphasis on health improvement and disease prevention is higher than ever, and there is a growing interest in ways of eliminating odor, germs and mold in the home and office.

Additionally, equipment production sites are becoming ever denser and more crowded, and there is a growing need for static elimination in order to prevent defects caused by static electricity. To respond to these needs, we have stepped up our development, production and sales of ion generating elements and small modules integrated with these elements.

Features

- **High ion output**
  Optimization of module structure has made high ion output possible.
- **Low driving voltage** 4.3kV (Typical)
- **Small size**
  Our original structural design and circuit design technologies have enabled us to develop a small-sized product.
- **Customizable**
  Adjustable ozone output enables customization for specific applications.
- **In addition to home electronics, this product may be used for a variety of other needs, including;**
  - Automotive,
  - Production line,
  - Home care and nursing,
  - Interior/pet-related needs.

Applications

Air purifier

Air conditioner

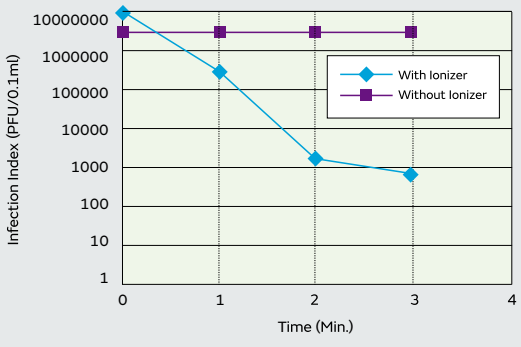
Vacuum cleaner

Inclinometers

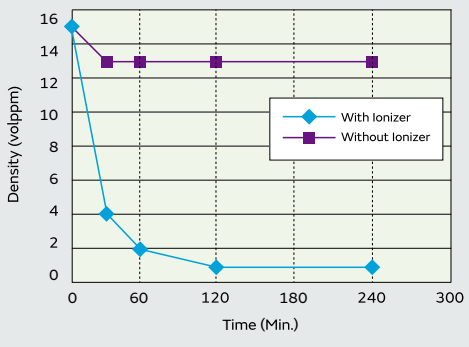
Part number	Ion type	Amount of Ozone generation*	Functions
MHM305	Negative	0.1mg/H	skin moisturizing, static electricity removal
MHM306	Negative	1.0mg/H	Air purification, skin moisturizing, deodorizing elimination of bacteria/odor/mold
MHM400	Positive	0.1mg/H	Static electricity removal

*Typical value under the condition 20°C/50%RH

Sterilizing influenza virus (HK A H 3 N2)

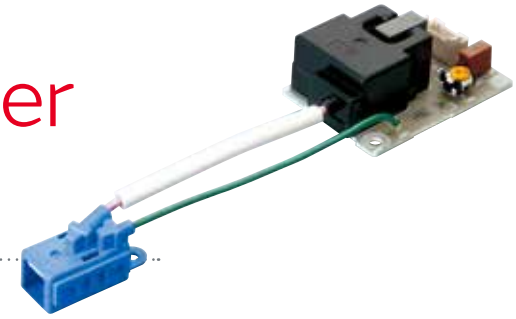


Deodorizing test for formaldehyde



Small, low voltage ozonizer

Ionissimo® MHM Series



What is an Ozonizer?

Surface discharge is made by AC high voltage applied between the top and bottom of the dielectric substrate. The discharge makes Ozone from Oxygen molecules around the electrode. $O_2+O=O_3$ The Ozonizer module will ozonize Oxygen molecules efficiently utilizing the above principle.

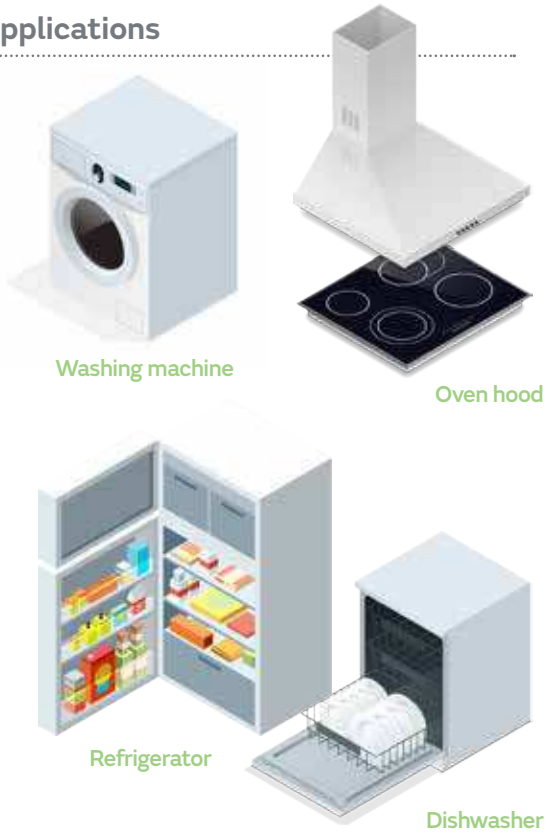
Features

- **Our unique design is capable of creating large amounts of Ozone with high efficiency.**
- **Ozone density will be duty cycled controlled.**
- **Intermittent operation can save power consumption of the ozonizer module.**
- **The Ozonizer module can have a longer life than the needle type.**

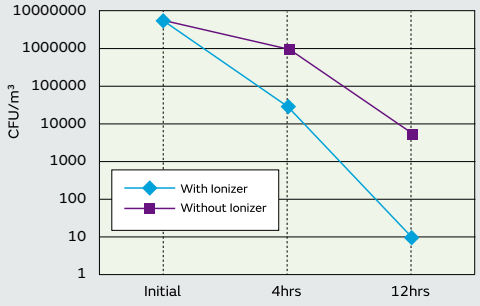
Part number	Ion type	Amount of Ozone generation*	Functions
MHM500	Negative Positive	2.5mg/H	Air purification, deodorizing elimination of bacteria/ odor/mold

*Typical value under the condition 20°C/50%RH

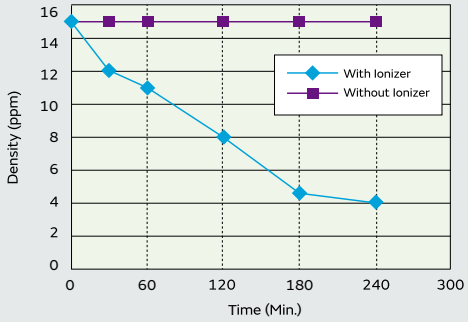
Applications



Sterilizing test data in refrigerator colon bacillus



Deodorizing test for hydrogen sulfide (H2S)

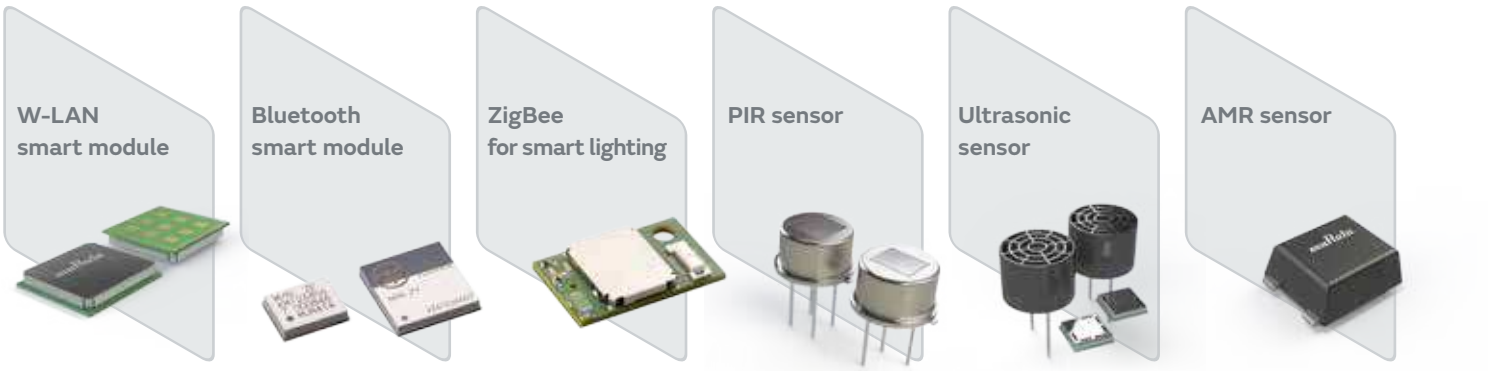


Why choose Murata?

Establish a competitive edge in the wireless network market.

Our technologies provide various cutting-edge product lineups and our many achievements establish competitive advantages in the wireless network market

Product lineup



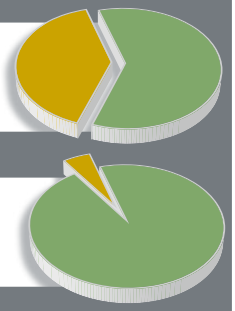
Achievement for wireless and sensor

Product shipments *(2003 - 2012)*

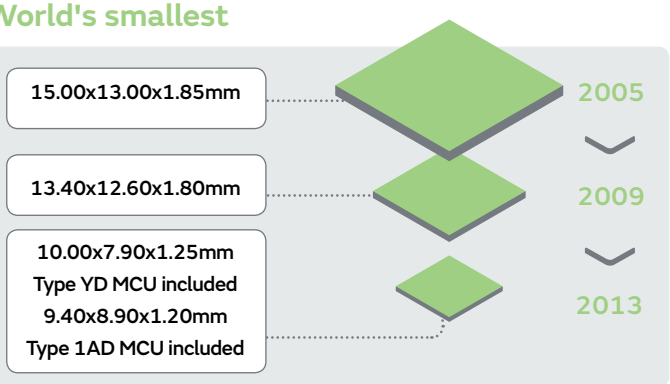
Connectivity modules	10.9bn 〉
Sensors	10.6bn 〉

Market share

Connectivity modules	60%
Shock sensors	95%



World's smallest



High quality / easy to integrate

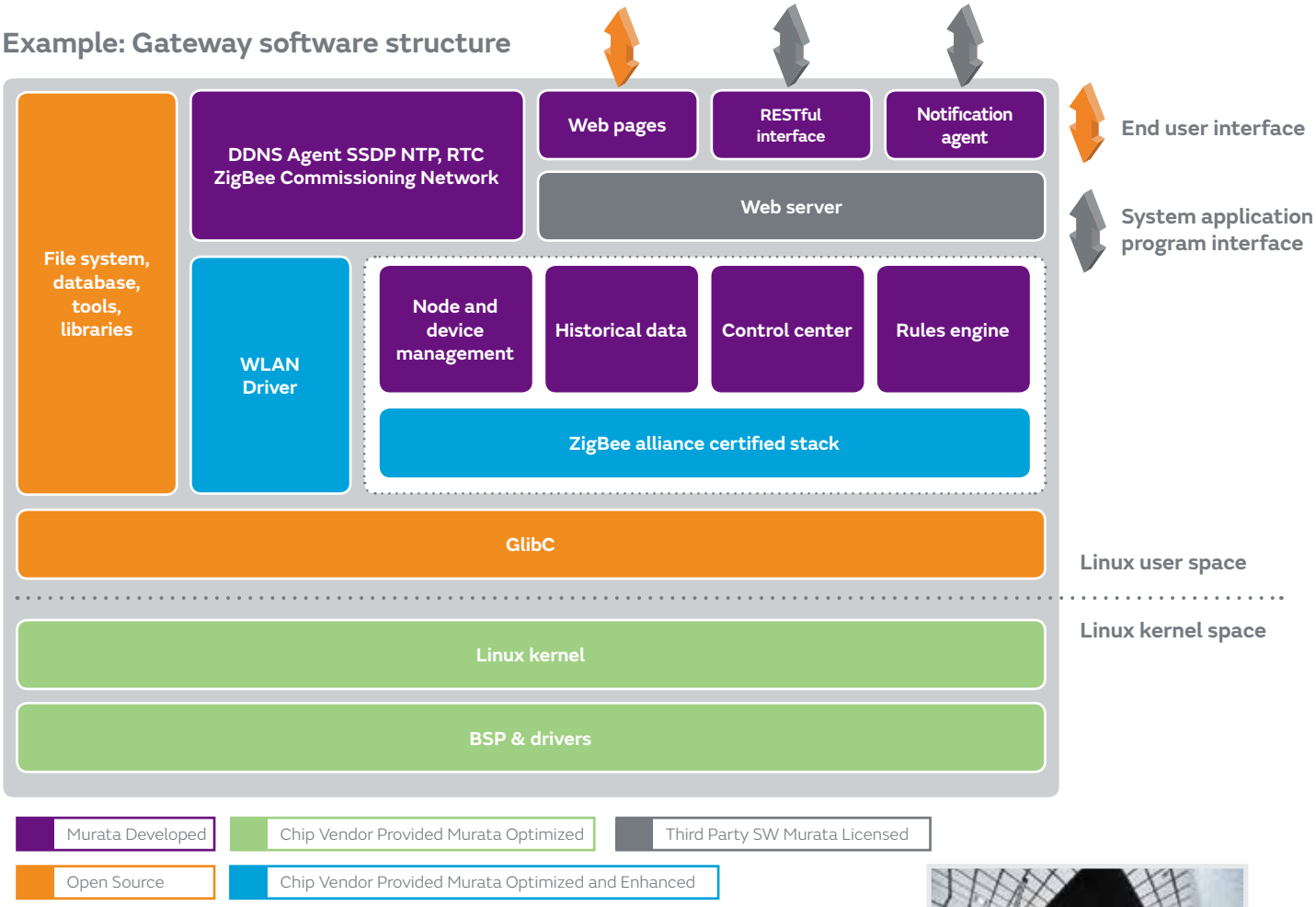
- Accurately evaluated according to each required regulation
- Easy to integrate with your existing system with simple structure hardware and software

Customizable software solutions

Software customized for secure control and conversion of data is required to suit various customers' needs in development of wireless communication equipment.

We provide a high quality software package that matches various capabilities in a small footprint, promising a reduced load on your development resources.

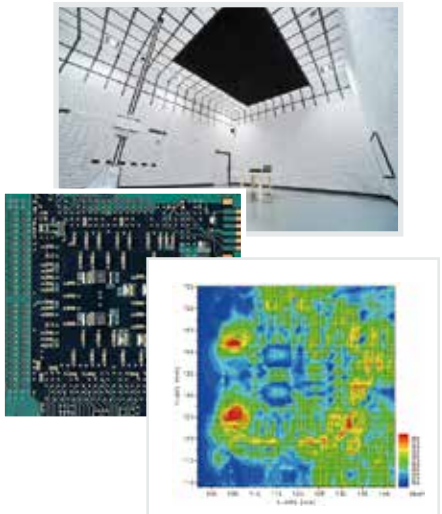
Example: Gateway software structure



EMC support with EMC lab

Because almost all devices related to the "internet of things" market have a communication function, it is necessary to comply with the technical standards stipulated by law in various countries such as CCC and CE and part of that standard includes EMC issues.

We have our own EMC lab stocked with state-of-the-art equipment. Our highly skilled engineers are working to develop unique products with less noise and also to support our customers in reducing noise in their own products.



W-LAN smart module

As a market leader in W-LAN modules for embedded systems, providing high-quality and high-performance modules for high volume production all year round. Wireless modules are easy to assemble, thus significantly reducing customer's design time. Meanwhile, a variety of low-power products for sensor networks are also provided.

Type 1HD

Features

- **Highly integrated**
- **FCC/IC/CE/TELEC compliant**
- **Stand-alone complete W-LAN 11b/g/n module**
  - CPU, W-LAN function and stack (TCP/IP, Supplicant) are embedded.
- **Serial interface**
  - Easy to control with simple command

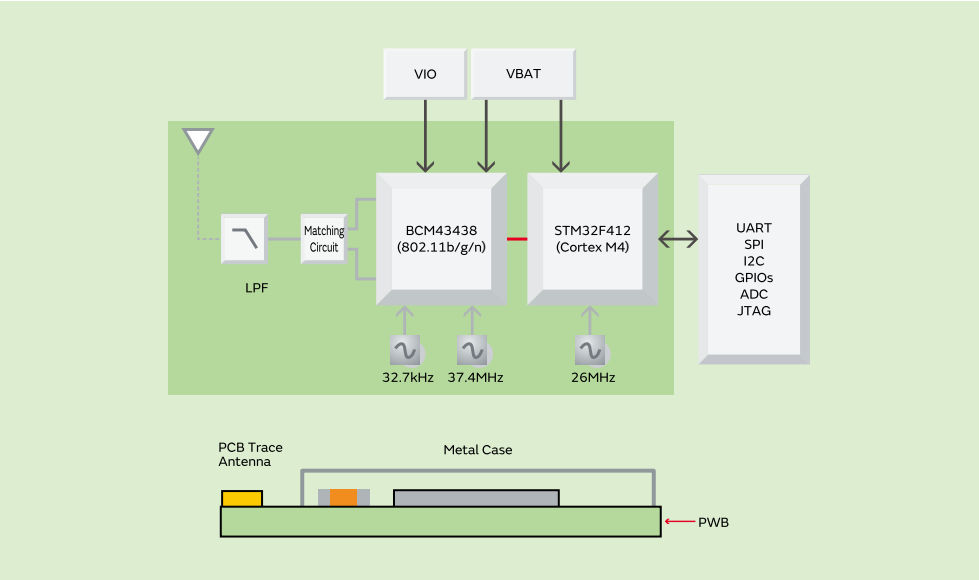
Applications

- **Home and building automation**
  - Lighting control
  - HVAC (Heating, Ventilation, Air-conditioning)
- **EMS (Energy management system)**
- **Simple sensor network**
- **Home security**
- **Healthcare/fitness**

Product Specifications

- **WLAN chipset**
  - Broadcom BCM43438, 802.11b/g/n
- **MCU chipset: STM32F412**
  - ARM Cortex-M4 processor
  - ROM: 1MB, RAM: 256kB
- **Size: 21.0x17.5x2.3 (max.) (mm)**
- **Metal can shield FCC/CA/CE/TELEC certified**
- **Software**
  - Web server
  - WiFi STA and So AP modes
  - Network stack
- **WEP, WPA-PSK, WPA2-PSK**
- **Diverse peripheral interfaces:**
  - UART/SPI/I2C/GPIOs/JTAG

Block diagram



Bluetooth Smart Module

Bluetooth low energy (BLE) is an ultra-low power communication technology that enables months to years of operation with a button battery. Widespread adoption is expected in various fields such as health management, fitness and home networks.
In addition, BLE has also been adopted as a communication method by the Continuar Health Alliance, a non-profit organization of leading healthcare and technology industry companies.

Type ZY

Features

- **All protocol stacks required for Bluetooth low-energy communication are built in, including various healthcare profiles. The module can also be easily controlled from the 8-bit or 16-bit CPUs o en used in embedded devices.**
- **Simple commands can be transmitted to the module via a UART interface, enabling easy communication with smartphones and other devices that support Bluetooth SMART Ready.**
- **The module has already acquired various certifications (Radio Act and Bluetooth Qualification), helping to greatly reduce customers' development costs.**

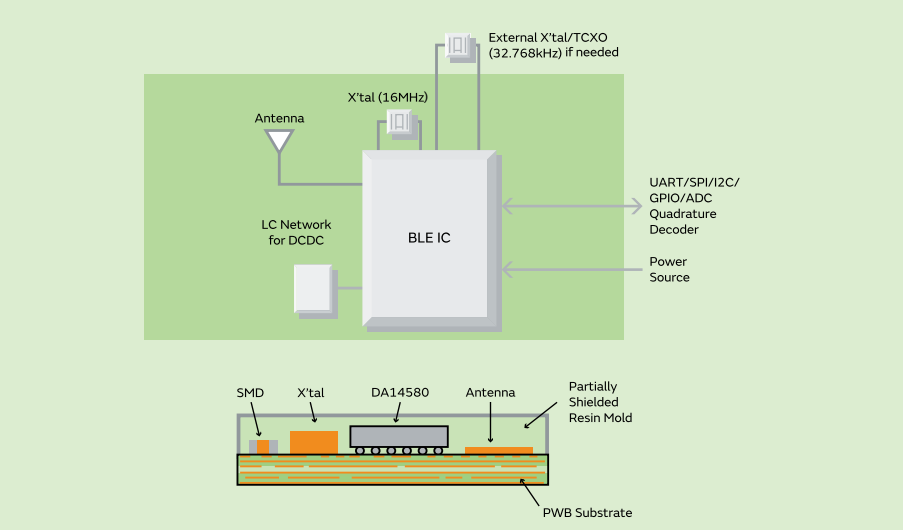
Product Specifications

- **Chipset:** Dialog DA14580
- **Size:** 7.4x7.0x1.0 (max.) (mm)
- **Output Power:** -1dBm typ.
- **Interface:** UART/SPI/I2C/GPIO/ADC/Quadrature Decoder
- **Operating Voltage:** 2.35 to 3.3
- **Operating Temperature:** -40 to +85 deg.C
- **Protocol Stack:** BB, LL, L2CAP, GAP, SMP, ATT, GATT, Sample Profile
- **Embedded X'tal, DC/DC Conv., Antenna**
- **FCC/IC/CE/TELEC compliant**
- **Bluetooth SIG Qualification**

Applications

- **Healthcare products**
  - Pedometer, weight scale, blood pressure monitor, thermometer
- **Remote control**
- **Medical products**

Block diagram



Smart LED lighting control system

Control center / main system

UART

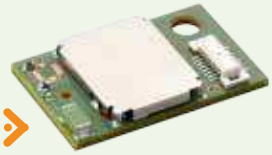
ZigBee*

ZigBee*

Gateway

We can control all the lighting through Gateway.

ZigBee*



Dimming and On-Off control becomes more efficient with our LED power supplies which also support digital interface for wireless control.

Individually control task lighting and ambient lighting wirelessly.

ZigBee*

AMR Sensor Node
Type-AAM
Function: Open/Close detection
Power supply: Coin cell

ZigBee*

Wi-Fi

Tablet PC, Smart Phone

PIR Sensor Node
Type-AAP
Function: Motor detection
Power supply: Lithiun battery

* ZigBee 3.0 Profile Compliant

63%
Power consumption reduced

Power consumption can be reduced by 63% by simply using this lighting system. We are currently using it ourselves in our Murata Tokyo office.

Switching power supply for LED lighting

(LED Ballast) series

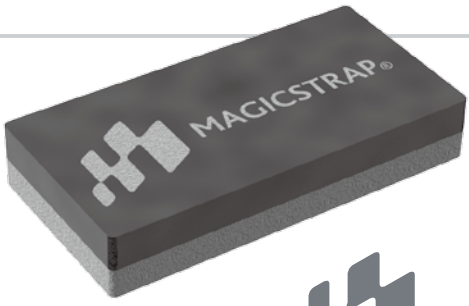
Wireless dimming and switching on and o of LED lighting devices requires the power supply circuit driving the LED devices to coordinate with the wireless circuit. Murata has developed a power supply module that can be directly coupled with the wireless transmission module to help develop seamless lighting systems.

Features

- **Constant current LED drive**
- **Wide range AC input (100 to 242V)**
- **Varied ballast line-up**
- **Primary-Secondary isolation structure**
- **Meets safety standard PSE & EN61347**
- **PWM, DALI dimming interface (MPA1948 Series)**
- **Highly compatible with human/ temperature/illuminance/ etc. sensing with UART/ ZigBee interface point (MPA1948 Series)**

Model	MPA1948A	MPA1960A	MPA1967A	MPA1968A
Features	Intelligent power supply suitable for ambient lighting system			
Operating temp. range	-10 to 50°C			
Storage temp. range	-20 to 55°C			
Rated input voltage	AC100/242V			
Rated input voltage range	AC90 to 267V			
Input frequency	50/60Hz			
Number of output channels	1			
Output voltage range	30 - 50V		10 - 25V	30 - 50V
Output current[1]	700mA	1,400mA	1,050mA	
Output power	up to 35W	up to 70W	up to 25W	up to 50W
Output current ripple	20% of maximum output current or less			
Control interface (dimming range)	PWM (5 to 100%), DALI (1 to 100%), UART (1 to 100%)			
Lifetime	50,000 hr or more	40,000 hr or more	50,000 hr or more	
Efficiency	83.8% typ.	86.2% typ.	82.0% typ.	86.1% typ.
Harmonic current	JIS C 61000-3-2 class C, EN 61000-3-2 class C			
EMI	VCCI, CISPR15, CISPR22 class B			
Safety standard[2]	PSE, EN61347			
Dimensions	224x70x35mm	234x85x35mm	224x70x35mm	234x85x35mm

RFID technology



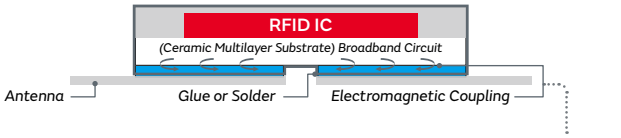
Our unique multi-layered circuit RF technology enabled "one of the world smallest RFID tag". MAGICSTRAP® has a robust package with built-in IC compliant with industry standards.

MAGICSTRAP®

Features

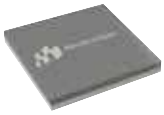
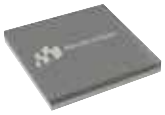
- Small size
- Includes RF function into LTCC
- Both HF and UHF band

Construction diagram



LTCC Include RF function

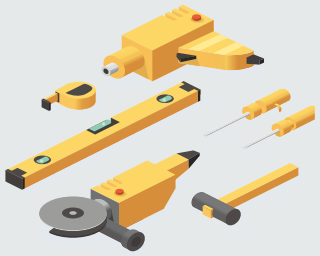
MAGICSTRAP® for item level tagging

	LXMS21NCNH-147	LXMS33HCNG-134	LXMS33HCNK-171
Appearance			
Standard	ISO/IEC 18000-6 Type C,EPC/g C1G2	ISO15693	ISO14443 Type A NFC forum Type 2
Frequency band	UHF	HF	HF (13.56MHz)
Size	2.0 x 1.2mm	3.2x3.2mm	3.2x3.2mm
Thickness	0.6mm max.	0.7mm max.	0.75mm max.
Read range	10mm max.	50mm max.	15mm
IC	NXP G2iM	NXP SLIX	NXP NTAG210

Contents subject to change without notice

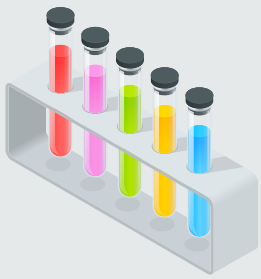
Applications

Tool management



Anti-counterfeit / Authentication

Auto counting

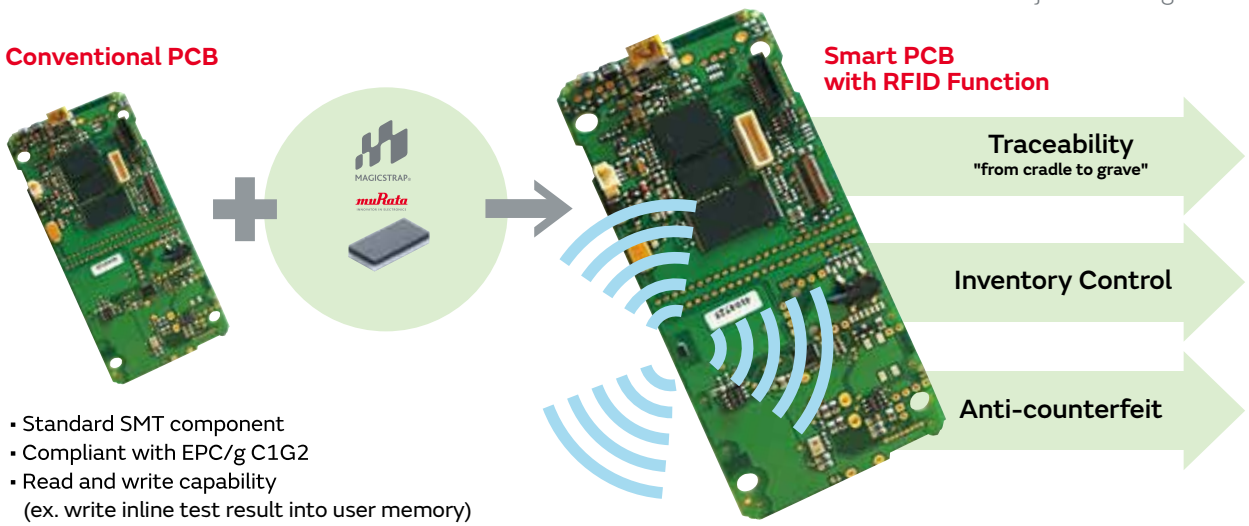


Verification

MAGICSTRAP® for life-cycle management

	LXMS21ACMF-183	LXMS21ACNP-184
Appearance		
Standard	EPC global Gen2 ISO/IEC18000-63	
Frequency band	UHF	
Size	2.0x1.2mm	
Thickness	0.5mm	
Read range	9m max. with external antenna	7m max. with external antenna
IC	impinj monza®	INXP UCODE 7xm

Contents subject to change without notice



- Standard SMT component
- Compliant with EPC/g C1G2
- Read and write capability
  (ex. write inline test result into user memory)

Contents subject to change without notice.

Wireless services

Our Wireless Services capabilities include module design, low power and battery operated sensor nodes, gateways/border routers, so ware development for both embedded and application so ware, and more. We go beyond thinking about just the modules, to identify the optimal approach and platform for the complete end-to-end solution.

Wireless services

Wireless and IoT systems, software, sub-assemblies, and turnkey products

- Device Comm/Wi-Fi, BLE, FHSS, 802.15.4, USB
- Network synchronization, routing, and control
- Topology/point-to-multipoint, mesh
- Native and web application
- Test framework dev and automation
- Secure and encrypted wireless network access

- Interface with application SW
- BSP and device driver dev
- RTOS (Linux, Android, Windows)
- Wired and wireless comms
- Signal processing and algorithms
- Most IC microprocessor (MCU) suppliers

- Electrical design/senors, RF, MCU, battery
- Platform and board bring up
- Integration, simulation, and verification
- Board layout and schematics
- Sensors/signal conditioning
- Carrier board and module design

- Conceptual design
- CAD
- Regulatory compliance (CE, UL, FCC, IC, ETSI)
- Integrated antenna design and characterization
- Enclosure and cable design validation (CAE, IP)
- Environmental & reliability test and certification

- Logging and reporting
- Test automation, verification, and validation
- Device connectivity (HTTP, Modbus TCP, SNMP, MQTT, etc.)
- User interface design and development
- Standalone and web services for cloud integration
- System design for platforms (AWS IoT, ThingWorx, M2X)

Capacitors

The most comprehensive product lineup in the industry, providing ideal solutions, responding to all possible requirements.

Using our unique material technology, we offer a variety of capacitors covering a wide range of voltages. Murata also offers technical support that includes design kits and a comprehensive set of software tools to simulate virtually any circuit condition, satisfying the demands of numerous applications.

Capacitor page
http://www.murata.com/products/capacitor

Noise suppression products/ EMI suppression filters

Broad lineup of noise suppression products and EMI suppression filters

Using our ceramic processing technology and unique material, we offer a variety of Noise Suppression products and EMI Suppression Filters.

EMI Filters page
http://www.murata.com/products/emc

Inductors (coils)

Broad lineup of chip inductors and power inductors

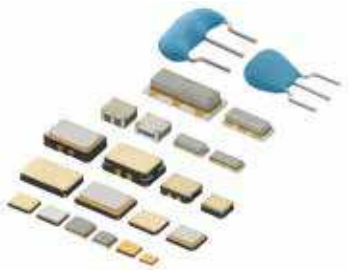
Our chip inductors are optimally designed, making full use of multiple construction techniques, such as the multilayer construction technique, film construction technique, and the wire wound construction technique according to the application, and realized small size and high-performance inductors. We offer an extensive lineup of inductors for power supplies to high frequency.

Inductor page
http://www.murata.com/products/inductor

Timing devices

A stable timing source for microprocessors in various electronic devices

Our ceramic processing technology and unique piezoelectric material has led to the development of a range of small and thin ceramic timing devices that offer high oscillation frequency and remarkable oscillation tolerance.



Timing device page
http://www.murata.com/products/timingdevice

Design support tool "SimSurfing"

This is the latest tool to get the electrical characteristics for Capacitors, Inductors, and EMI Suppression Filters, and to simulate Thermistors' behavior!

Usage example of "Monolithic Ceramic Capacitors"

Characteristics viewer
You can easily search and download the following data for Monolithic Ceramic Capacitors, Polymer Capacitors, EMI Suppression Filters (Three-terminal Capacitors, Ferrite Beads) and Power/RF Inductors.

Components performance simulator
You can search by the simulation on simple circuits for Thermistors.

Selection tool
You can select Medium voltage Capacitors and Power Inductors according to conditions of use.
**Medium voltage: Rated Voltage 250V and over*

Search tool
You can search the Murata timing device (CERALOCK® and crystal units) that is most suitable for your IC and access information about the recommended circuit constant setting.

If you register as 'myMurata' user (https://my.murata.com/en/web/mymurata/), You can use Enhanced SimSurfing.

1 Select the products
(1) By performance/type
(2) By part number

2 Show graph
Click each button on each tab of [Basic], [S-parameter] and [Detailed].

3 Data download
- Click each purple button in this area
- Click "CSV output" button.