2021 KOREA MURATA WEBINAR

LPWA Module

CATM1 기술과 무라타 모듈 소개

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LPWA

Low Power Wide Area

muRata
INNOVATOR IN ELECTRONICS

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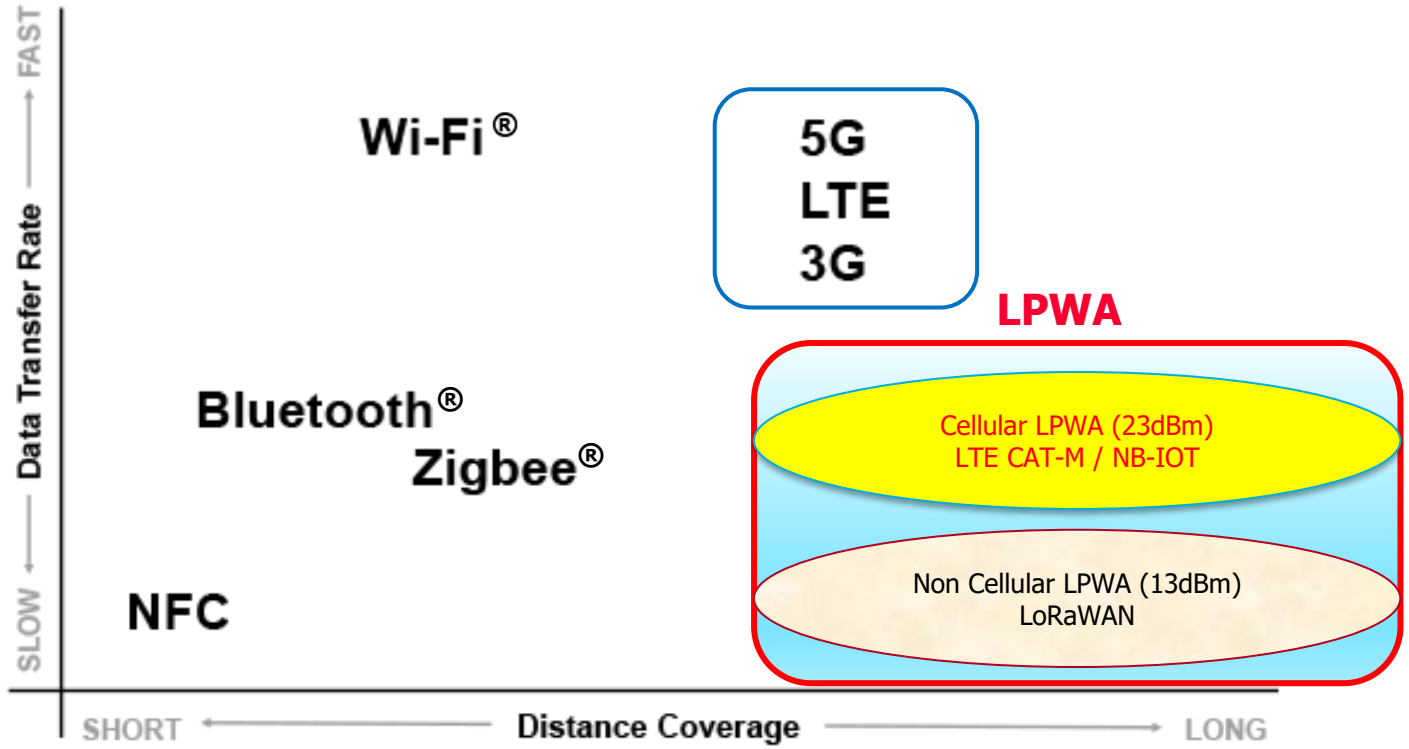
LPWA (Low Power Wide Area) Network Technology



- LPWA is lower power, long range, cost efficient technology
- Cellular LPWA supports higher power (23dBm) and higher data rate than does non-cellular LPWA

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LPWA (Low Power Wide Area) Network Technology

	LoRa	NB-IoT	Cat.M1
Spec	LoRa Aliance LoRaWAN	3GPP Release 13	3GPP Release 13
Frequency	비면허 대역 (~920MHz)	면허 LTE 대역 (~800MHz&1.8GHz)	면허 LTE 대역 (~800MHz&1.8GHz)
Transfer Rate	☆☆☆☆☆ (~5.4Kbps)	☆☆☆☆☆ (DL/UL : ~27/63Kbps)	★★★★★ (DL/UL : 300/375Kbps)
Cost	Low	Low	Low
Power Consumption	Very Low	Low	Low
Mobility	부분지원	부분지원	Full Mobility(Hand over)지원

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Cat.M1 vs LTE

< LTE >

Base Station

High Speed

Voice, Movie

Smart Phone
M2M Device

Large battery

Power supply

< Cat.M1 >

Base Station

Low Speed

Sensor data, Location data

IoT device

Small battery

LTE is for high speed data such as voice or streaming movies
with high speed and low latency, but **higher current consumption**.

Cat.M1 is for low speed data transfer such as from sensors or location data.
Features **lower current consumption** by **eDRX & PSM**.

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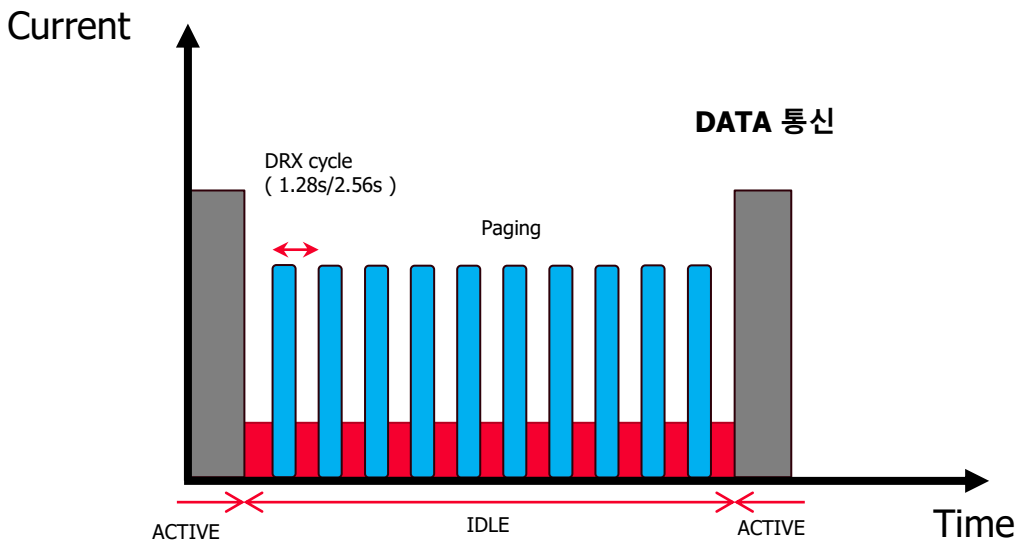
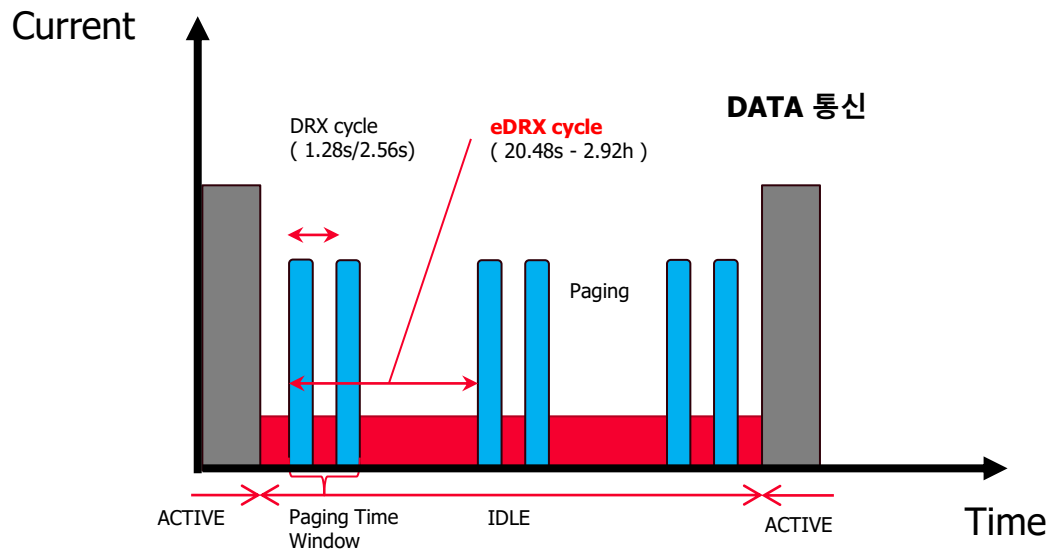
eDRX and PSM

eDRX | 단말 **Sleep(IDLE)** 상태에서 **Wake Up(Paging)** 주기를 늘려,
단말 소비전력 최소화



LTE : DRX
(Discontinuous Reception)



LPWA : eDRX
(extended Discontinuous Reception)

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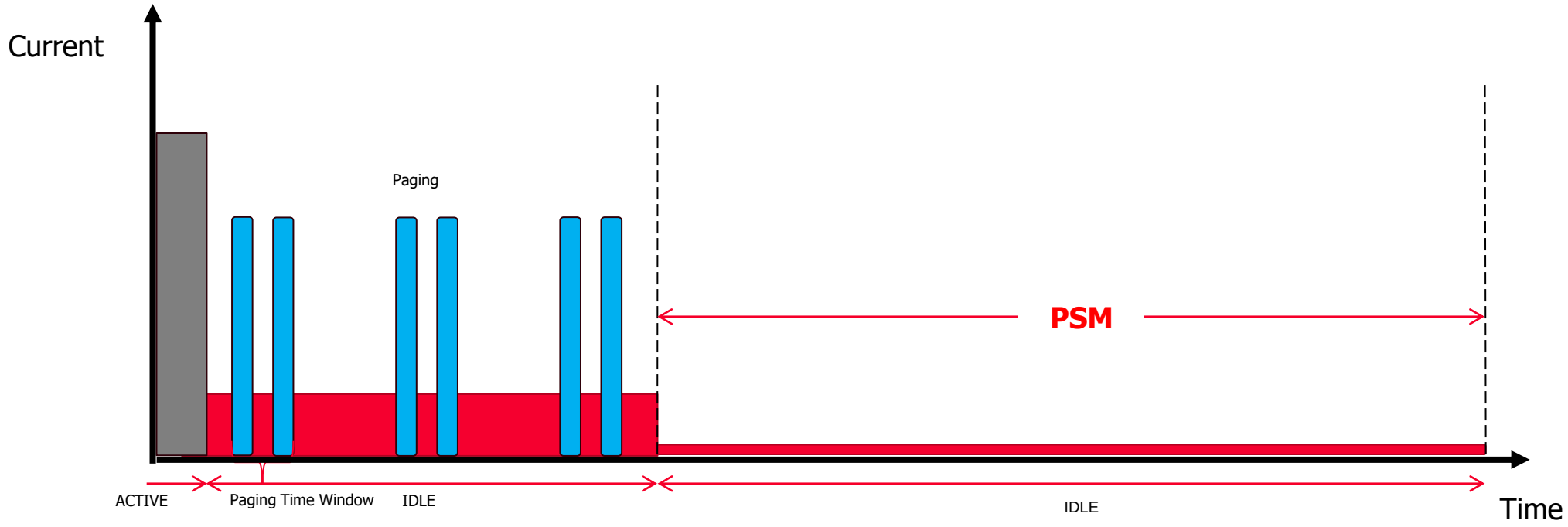
eDRX and PSM

PSM | 설정된 **PSM Timer**동안 **Paging**동작도 **Skip**함으로써 단말 소비전력 최소화
(다음 **Wake up**까지 단말은 **Deep Sleep**상태로 통신 단절)



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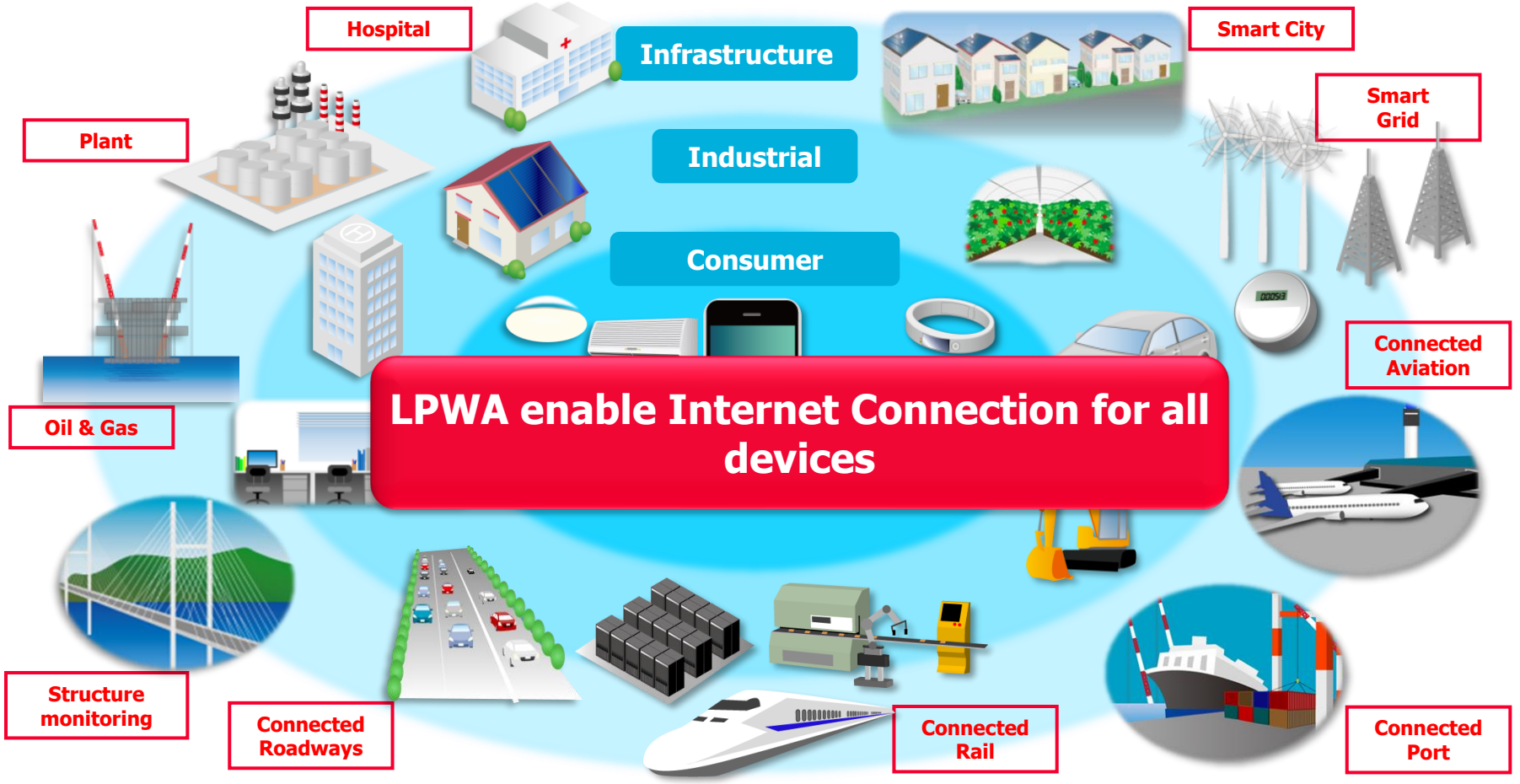
The Connected World



All the things will be digitalized and be connected to the Internet.
Move to "Connected World"

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Murata
LPWA Module

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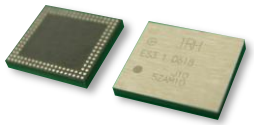
Murata Connectivity Products

Mobile Market

Smartphone/Tablet /Wearable etc.

Unique Smallest Package
High Performance RF



Wi-Fi® Module
Wi-Fi® 6E
UWB

mm Wave Module
-5G (for smartphone/BTS)
-WiGig (for smartphone/Backhaul/VR)

Automotive Market

Automotive Quality
IATF16949
Software / Certification

Bluetooth®/Wi-Fi®/UWB
Module & Software

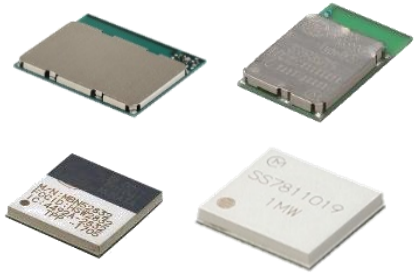
V2X-11p, C-V2X, GNSS
Software, Onboard Security

LTE module

IOT Market

Antenna Embedded Module
Software Embedded Module
Regulatory Certified Module

Connectivity Software Expert
Cloud - Mobile application
New Software



Bluetooth® Low Energy Wi-Fi® UWB
802.15.4 ISM communications

LPWA Module

Asset Tracking

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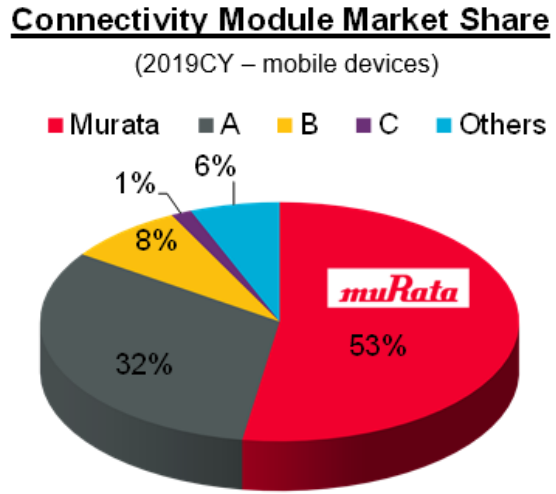
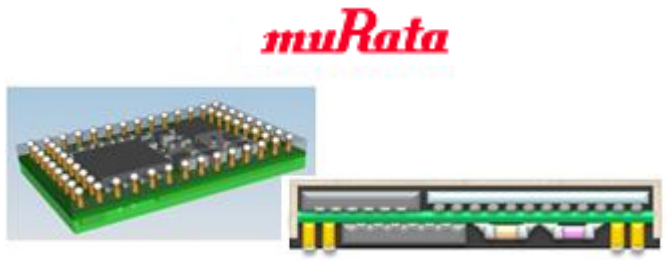
Values of Murata Module

- Top market share in Bluetooth®, Wi-Fi® module market;
  More than 50% market share
- Excellent partnerships with global market leaders
- High quality design with our own components
- Small size, high quality, regulatory certified, ready-to-market product with stable supply
- Hardware and RF design support capabilities





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Murata LPWA Modules

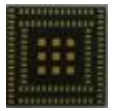
Cat-M1/NB-IoT module

Type 1SC

Part Number: LBAD0XX1SC

Altair ALT1250

11.4x11.1mm



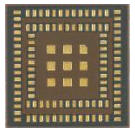
Cat-M1/NB-IoT module

Type 1WG

Part Number: LBAD0XX1WG

Altair ALT1250

12.2x12.0mm



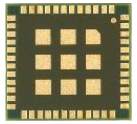
LoRa module

Type ABZ

Part Number: CMWX1ZZABZ

Semtech SX1276 + STMicro STM32L0

12.5x11.6mm



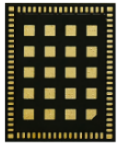
NB-IoT module

Type 1YS

Part Number: LBAD0YW1YS

Mediatek MT2625

13.2x10.6mm



- 50% smaller size than the market standard (18x16mm -> 11.4x11.1mm)
- Low power, high quality, strong support

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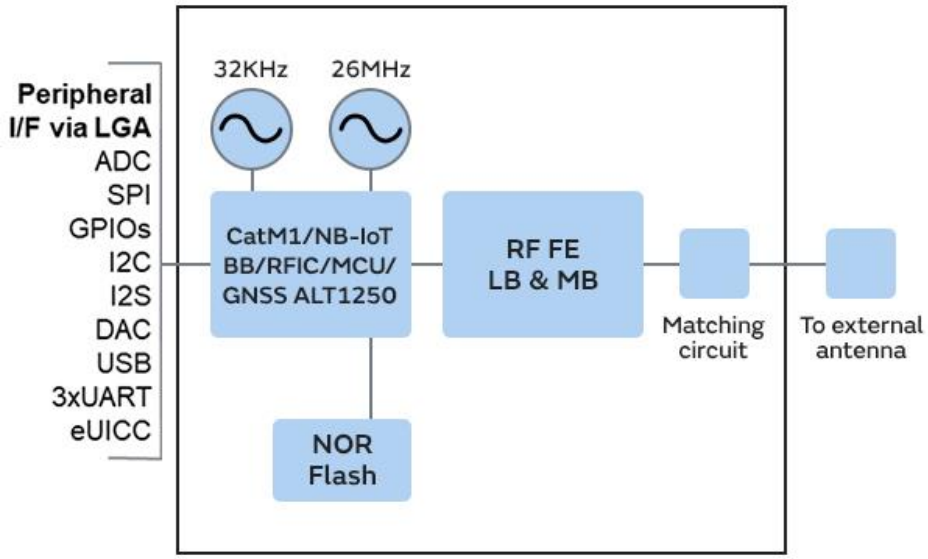
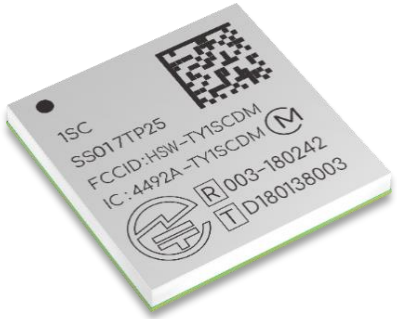
Murata Cat.M1 Module 소개

Part Number	
Part Number	LBAD0XX1SC
Product Type	Module
Type Mounting	LGA
Type Package	Resin Mold
Chipset	
RF IC	Altair ALT1250
Features	
Connectivity	LTE Cat.M1 / NB-IoT
Support bands	Low: B5/B8/B12/B13/B14 (Cat M1 only) /B17/B18/B19/B20/B26/B28 Mid: B1/B2/B3/B4/B25
Power class	Cat.M1/NB: 23/20dBm
Supply Voltage	2.2~4.35V
Host Interface	UART (AT command via UART)
Dimensions L x W x H (mm)	11.1 x 11.4 x 1.5mm(Max)
Operating Temp. (°C)	-40~85°C
Certification	
Regulatory	FCC/IC/RED/TELEC/KC/NCC GCF/PTCRB

Block Diagram





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Murata LPWA module Applications

- Meter
  Ele/Gas/Water
- Location Tracking
- Remote Controlling
- Smart Lock
- Sensor Device

Value Propositions:

Smart Meter (Electricity, Gas, Water); Air Control; Lighting Control; Sensor Devices (Gas, Water, Temp, Road condition); Location Tracking; Remote Control Device; Home Appliance; Smart lock, etc.

More than 800 opportunities worldwide (Japan, America, Europe, Korea, ASEAN, Oceania, etc.)

*Above pictures are not related with any actual project

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More information about Murata LPWA Module

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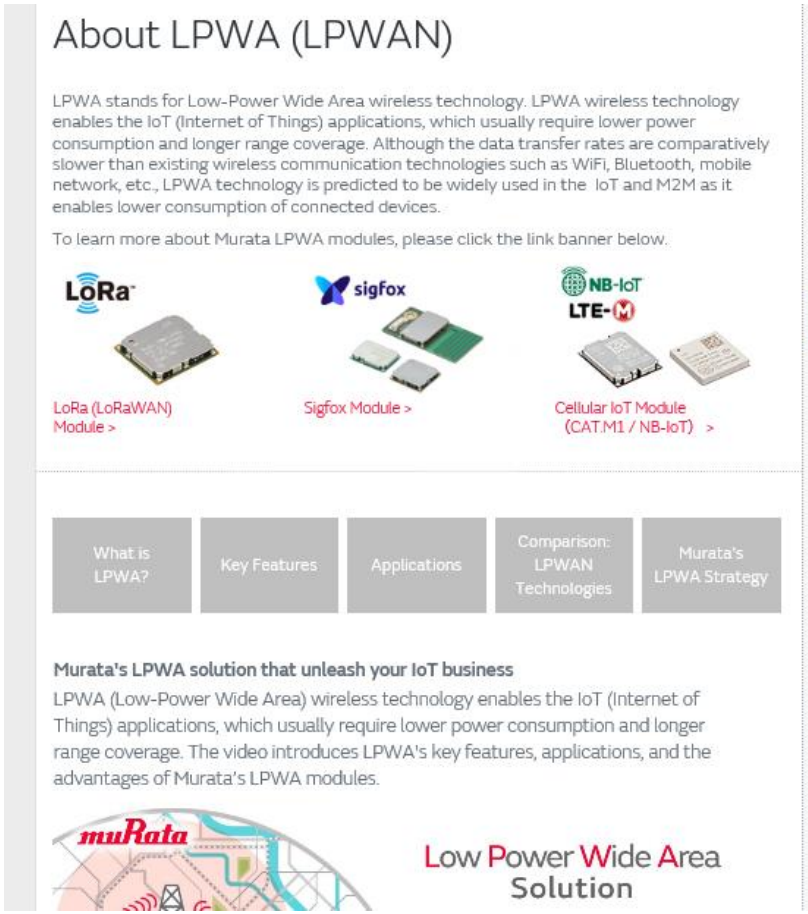
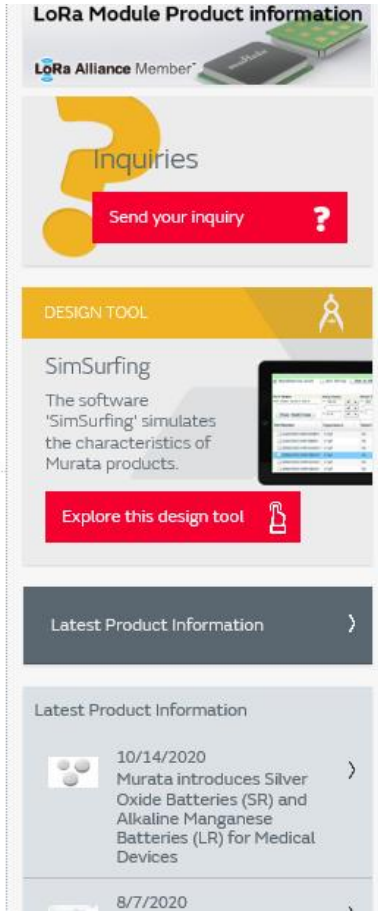
Murata LPWA Web Site





Document name	File type
Simple Datasheet	PDF
Product Brief	PDF
Quick Start Guide	PDF
EVK User Manual	PDF

Download

Please visit Murata LPWA Web Site

You can find lots of LPWA related information in addition to Murata LPWA module information.

https://www.murata.com/en-global/products/connectivitymodule/lpwa

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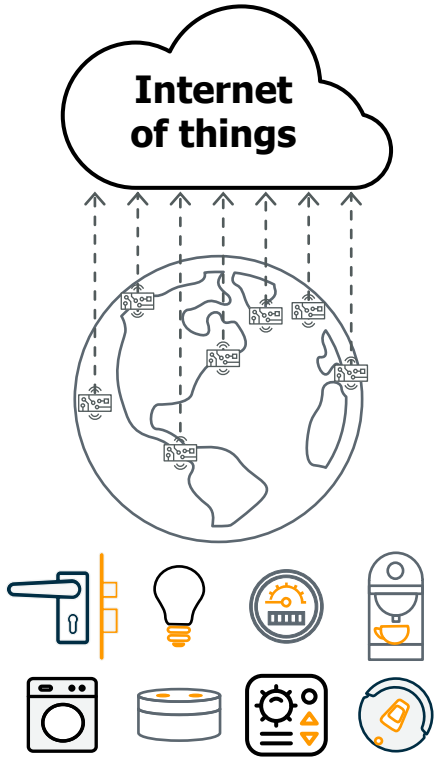
Murata and AWS Value Proposition

Leverage respective companies unique strength to ease and speed up your journey to connect IoT Devices to the cloud

- Module Maker Excellence
- Large and Diversified connectivity module portfolio
- Multi MCU &connectivity radio semiconductor partners
- Large customer base coverage across different application segments

- Cloud Platform Excellence
- Unique set of powerful cloud services
- Dedicated IoT Core Platform (scalability, security, analytics and device management services,..)
- Large customer base coverage across different application segments



Easy connection to AWS using Murata "cloud-ready" modules

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muRata INNOVATOR IN ELECTRONICS & LPWA

- LPWA technology will be one of the pillars of connectivity technology in IoT.
  All the "Things" will become connected to the Internet.
- LPWA devices are starting to be released to the market gradually.
- Small Size and Performance are the key for IoT devices.
  In addition, low cost is necessary for its rapid expansion.
  LPWA will enable this to occur.
- Murata provides total solutions such as Sensor, Battery, Connectivity System in addition to the connectivity module by working with partners for contributing to the spread of LPWA technology.

Name of standard and product name are registered trademark or trademark of their respective corporations or companies.
Bluetooth is a registered trademark or trademark of Bluetooth SIG, Inc. in United States and other countries.
Wi-Fi is a registered trademark or trademark of Wi-Fi Alliance in United States and other countries.

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INNOVATOR IN ELECTRONICS

Thank you

감사합니다.