

Information Meeting 2013



<http://www.murata.com/ir/library/index.html>

Murata & Market Environment



Existing Market

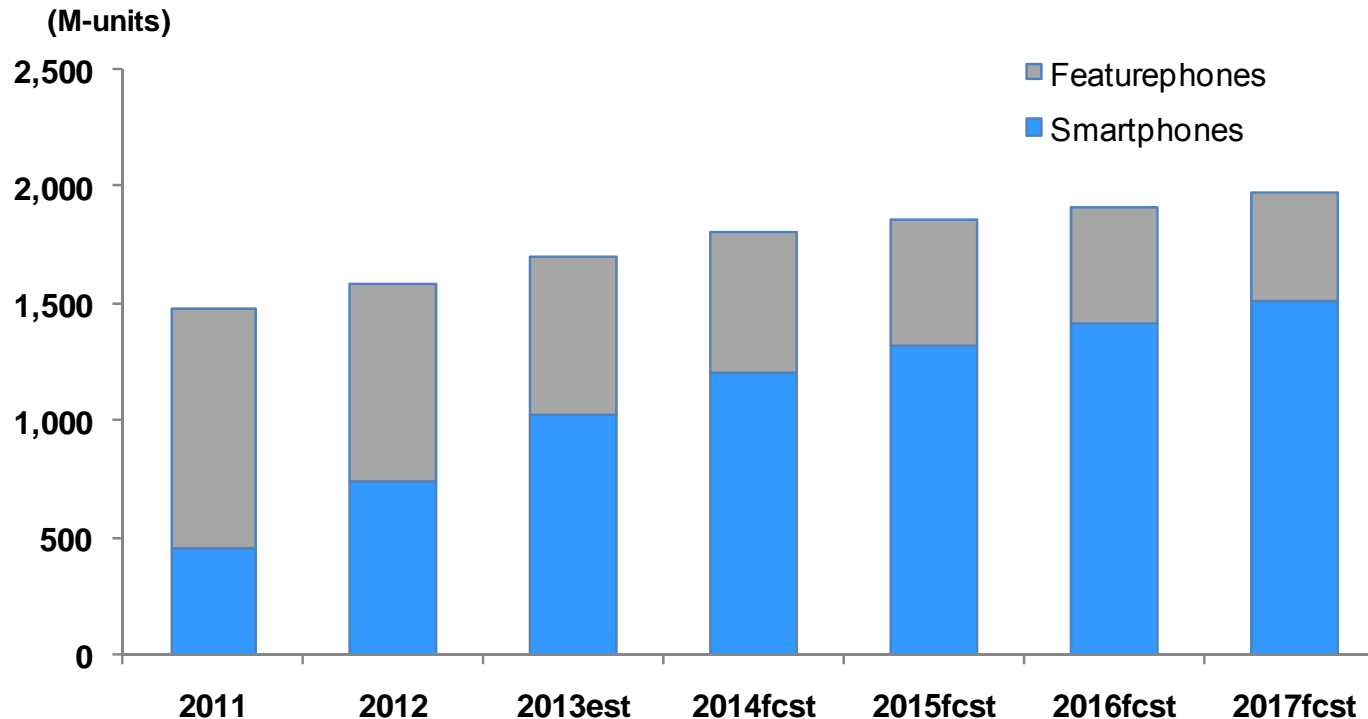
- Progress of the speed-up and smart communication devices.
 - ⇒ Mounting area for electronic components becomes smaller and modules more complex and multifunctional
 - ⇒ Demand for highly-efficient PAs increases to reduce power consumption
- Penetration of smartphones especially in emerging countries.
- Demand for smartphones will increase, replacing the present feature phones.
 - ⇒ Demand for advanced functional electronic components will expand thanks to the increase in the number of components -especially small-sized components-per terminal.

New Market

- Focus on establishing and expanding new business in future growth markets such as automotive, healthcare, environment and energy.
- Create new markets with fusion of thinner and miniaturization technologies and core technologies of sensors and wireless communication.

Growth of the smartphone market

Forecast of the demand for smartphones

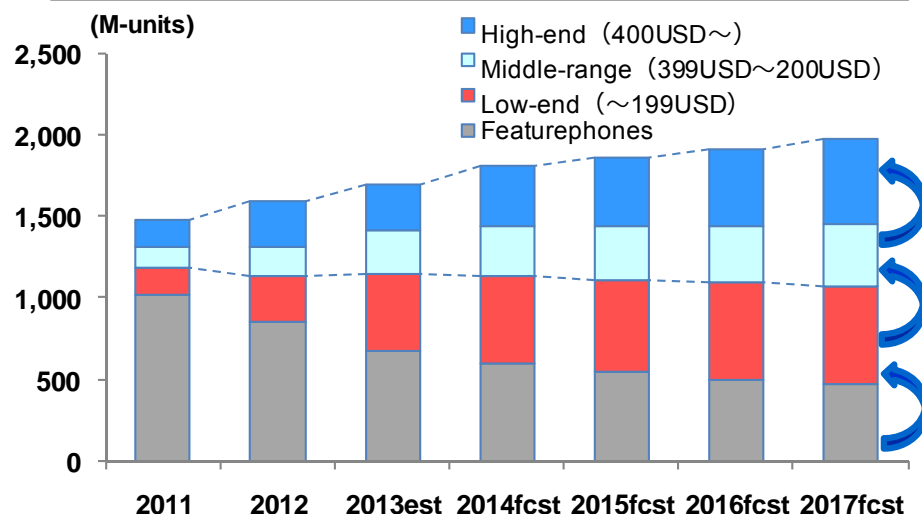


(Source: Fuji Chimera Research Institute, Inc. Future Market Outlook of Next Generation Mobile Phone Terminals and Key Devices 2013)

Smartphones will have the largest share of the mobile phone market in 2013, and occupy $\frac{3}{4}$ of the market in 2017 due to the increasing shipment volume especially in emerging countries.

Upgrade shift of mobile phones

Trend in mobile phone unit sales by price range



(Source: Fuji Chimera Research Institute, Inc. Future Market Outlook of Next Generation Mobile Phone Terminals and Key Devices 2013)

Influence of the upgrading shift

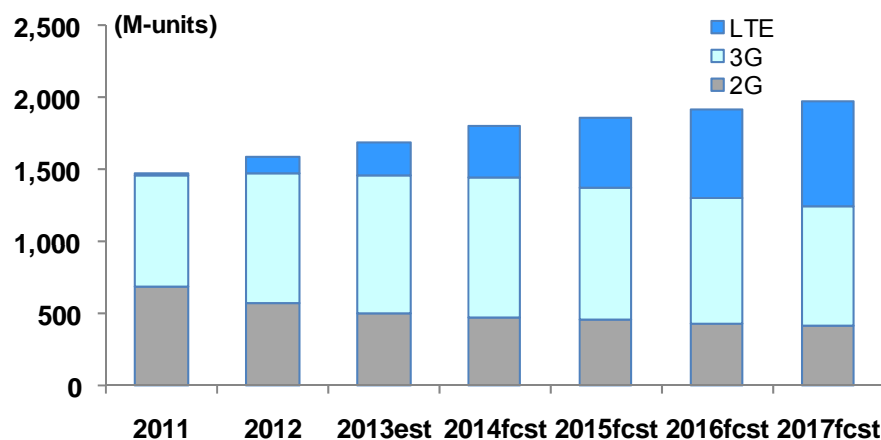
- ✓ Demand for Smartphones will steadily increase due to repurchase demand, although the growth ratio will be getting lower in developed countries.
 - ✓ Smartphones unit sales will increase due to upgrade from feature phones especially in emerging countries.
 - ✓ Upgrading shift from low-end smartphones to middle-end
- ⇒ Demand of electronic components will expand due to increase in devices using compact components.

	2G Feature Phone	Low-end Smartphone	Middle-range Smartphone	High-end Smartphone
MLCC	100 to 200	200 to 400	300 to 500	400 to 800
(Ultra-Compact MLCC)	—	100 to 200	200 to 400	300 to 600
SAW Device	2 to 3	4 to 6	6 to 8	15 to 20
Module	—	△	○	◎

(Based on our estimate)

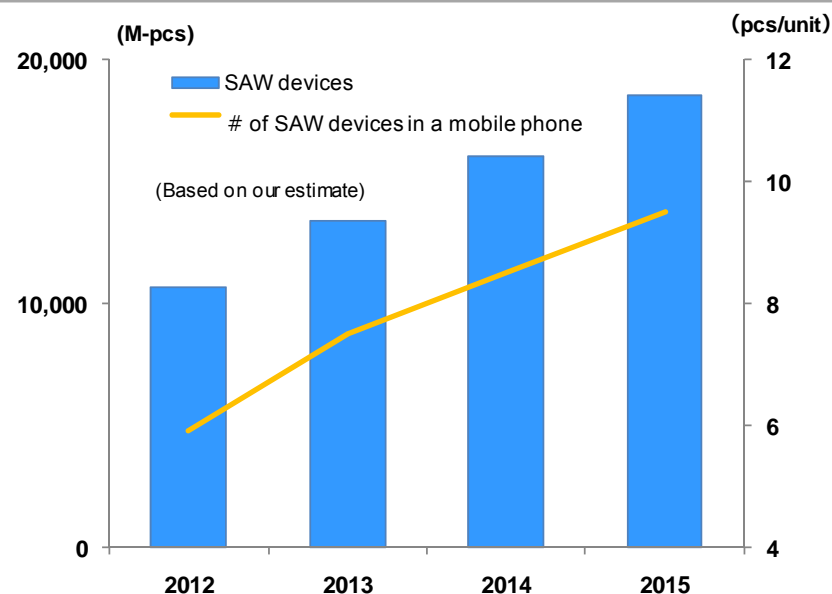
Increase of LTE devices corresponding to high-speed communication

Trend in mobile by communication system

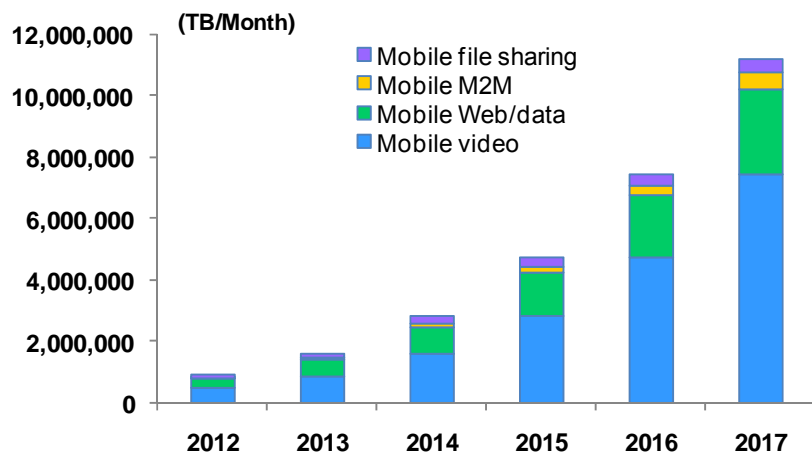


(Source: Fuji Chimera Research Institute, Inc. Future Market Outlook of Next Generation Mobile Phone Terminals and Key Devices 2013)

Demand for SAW devices



Trend in data traffic by application

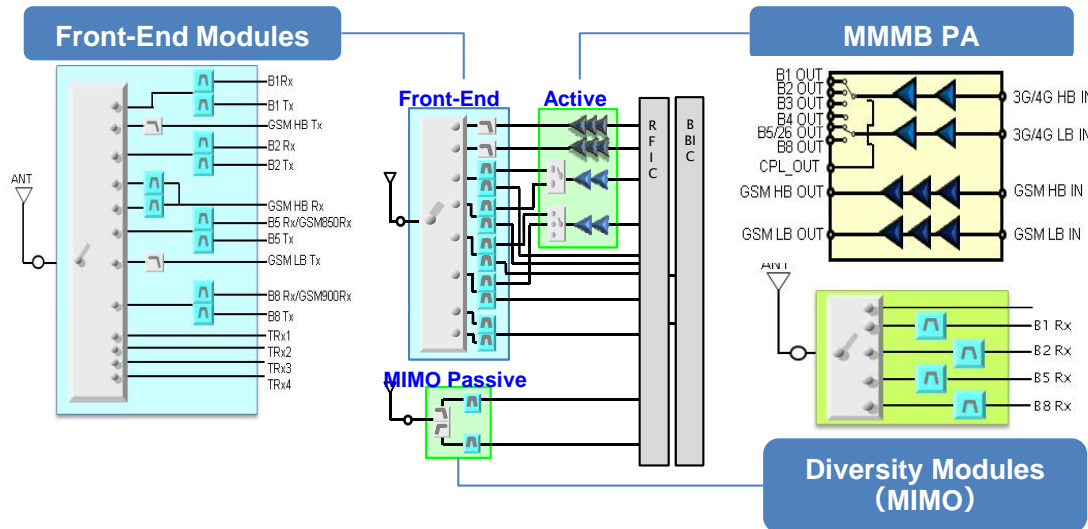


(Source: Cisco VNI Mobile 2013)

Increase in sophisticated devices enabling high-speed communication

- ✓ The global mobile data traffic will increase over ten times between year 2012 and 2017.
- ✓ Demand for LTE devices enabling faster download of large amount of data will increase.

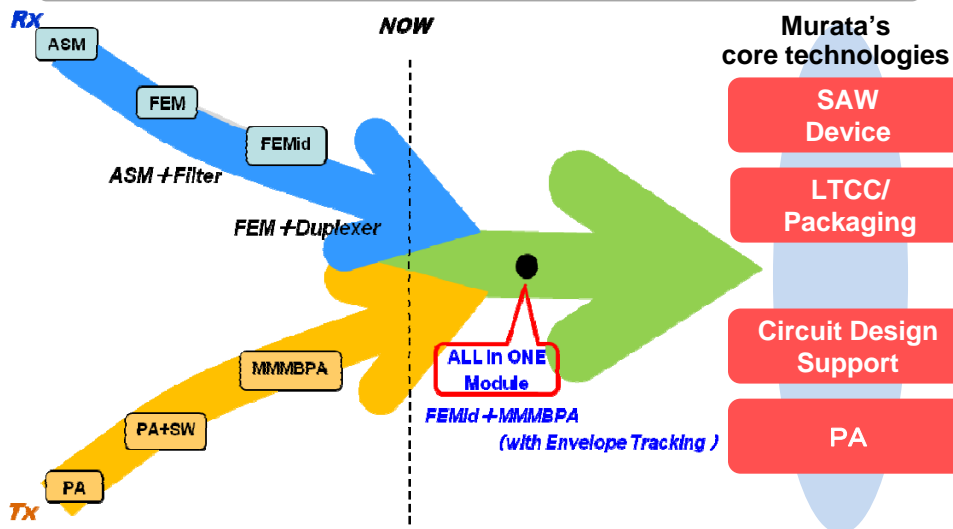
Advanced module technologies enabling high-speed communication



Technology terminology explanation

- * **Envelope Tracking**
Technologies for minimizing power consumption by controlling electric voltage sensitively corresponding to transmission wave.
- * **MIMB PA (Multi Mode Multi Band Power Amplifier)**
PA which is accessible to multi-transmission system (mode) and band frequency differently depending on countries and area.
- * **MIMO (Multi Input Multi Output)**
Technologies which realize high-speed, high-quality and enhance reliability by wireless communication using multi-antenna for simultaneous data sent/receive.

Front-end integration road map

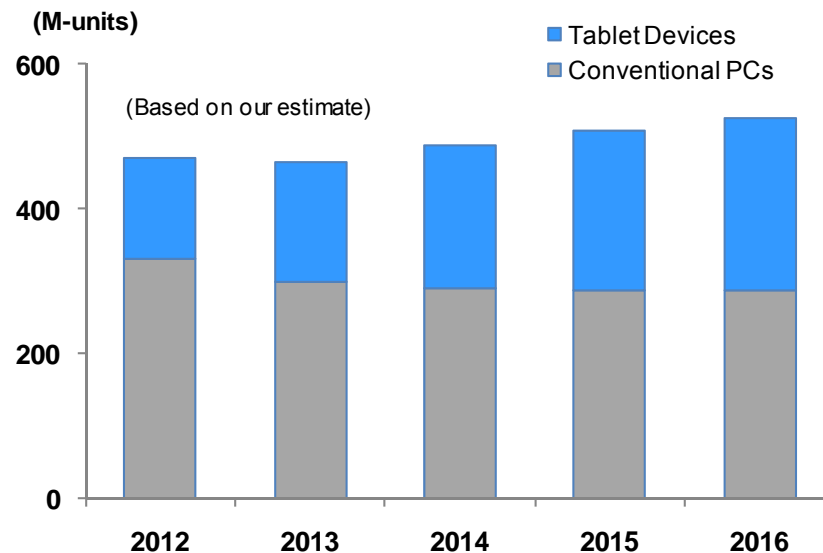


Trend toward More Compact & Higher-Density Module

- ✓ RF circuits will become more complex in smartphones corresponding to LTE.
- ✓ Limited space for components in order to pack a larger battery in a thin/compact device.
- ✓ Difficulty level of designing, terms and cost for development will increase.
⇒ Growing trend toward more compact and higher density components and modules.
- ✳ We have a wide range of key RF components, enabling us to provide our customers with various solutions.
- ✳ We have next-generations high-speed communication technologies such as MIMB PA* corresponding to Envelop Tracking* and passive devices for MIMO*.

Growth of tablet devices

Forecast of tablet devices demand



Growth of tablet devices

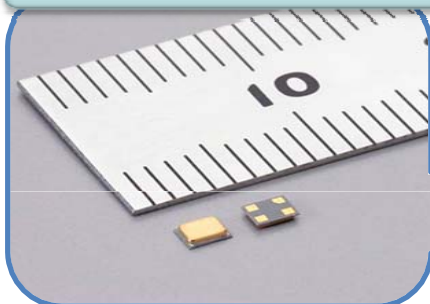
- ✓ Tablet devices are expected to penetrate and expand in the corporate computer market.
- ✓ Tablet devices require more RF components than conventional PCs because of internet connection .

	Notebook PC	Tablet Device
MLCC	600 to 800	600 to 800
(Ultra-Compact MLCC)	100	300 to 500
SAW Device	—	10 to 20
Module	—	△

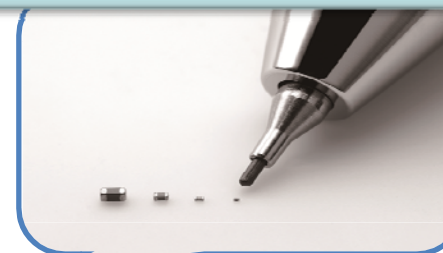
(Based on our estimate)

Our technologies enabling “wearable devices”

Small Package Crystal Unit for
Mobile Phones / Tablets



World smallest 0201series
(MLCC, Chip Inductor, Chip Ferrite Beads)



The World's Smallest and the Lowest Power
Bluetooth® SMART Module



Keys to realize “wearable”

- ✓ Demand for more compact, light weight and low power electronic components will increase.
- ⇒ As industry leader, we participate in the customers' development phases in order to get early information from equipment manufacturers.

Expansion into New Applications

AUTOMOTIVE

- **Safety & Accident Prevention**
Sensor technology and Communication technology supporting driving, turning and stopping.
- **Infotainment**
Communication modules to connect car and information equipment to increase comfort and safety thanks to new services (e.g. traffic jam).
- **Electrification**
Progress of electrification of cars increases the use of ECUs which increases demand for highly reliable electronic components.

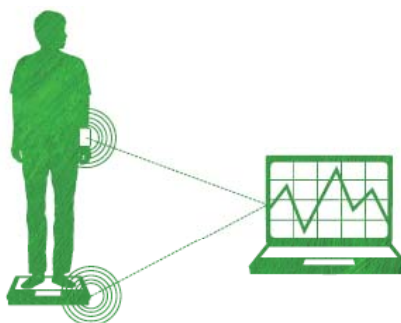


HEALTHCARE & MEDICAL

- **Solutions for Medical and Healthcare Applications**

Low energy communication modules to connect healthcare devices and PCs / smart phones to support sports activities.

Sensor technology supporting digitalization and portability of medical applications.



ENERGY & ENVIRONMENT

- **Home / Building Energy Management Systems (HEMS/BEMS)**

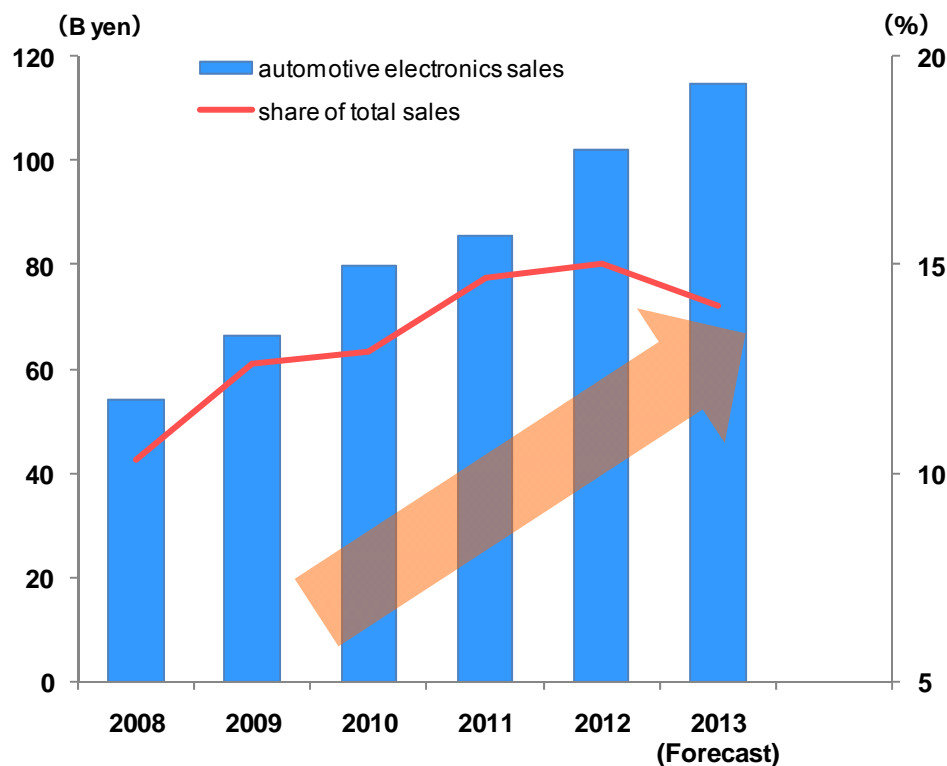
Wireless communication modules for air and lightning control systems, combined with sensor technology to save energy.



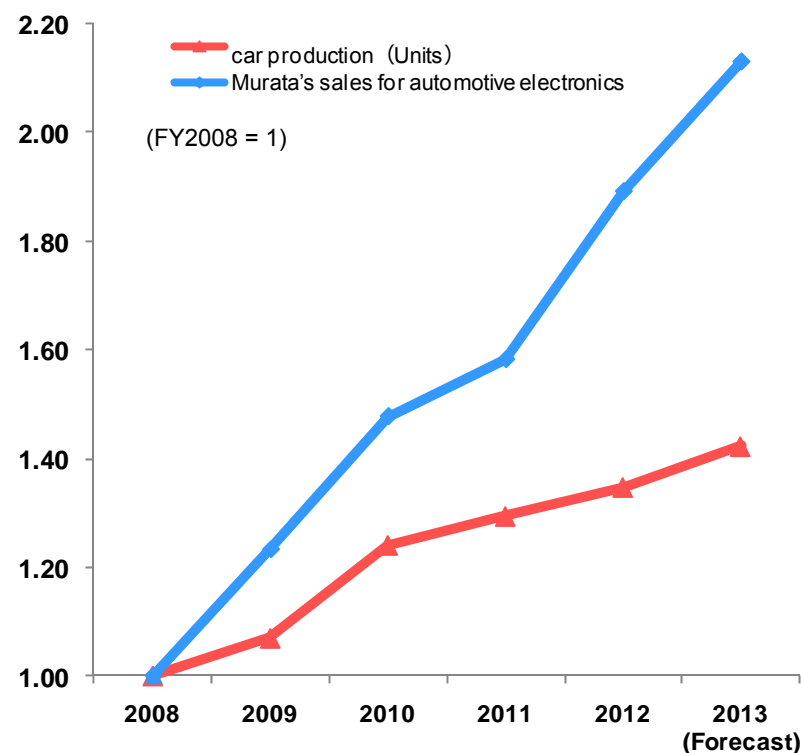
Trend in Automotive markets



Trend in Murata's automotive electronics sales



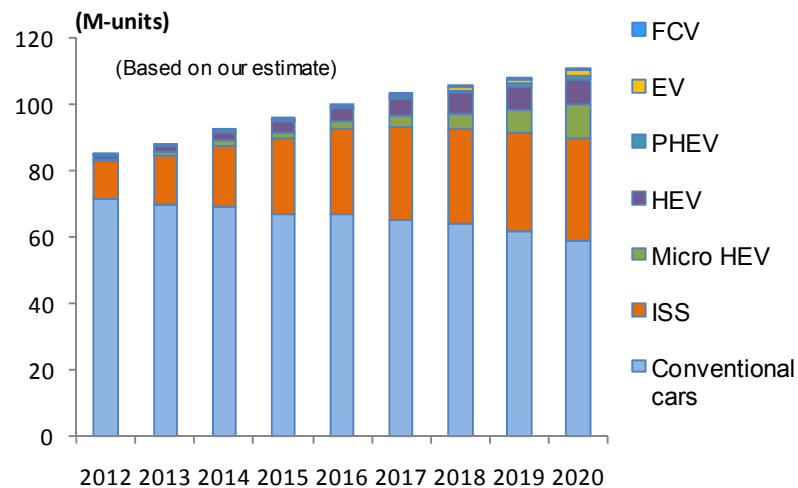
The pace of expansion car production/ Murata's sales for automotive electronics



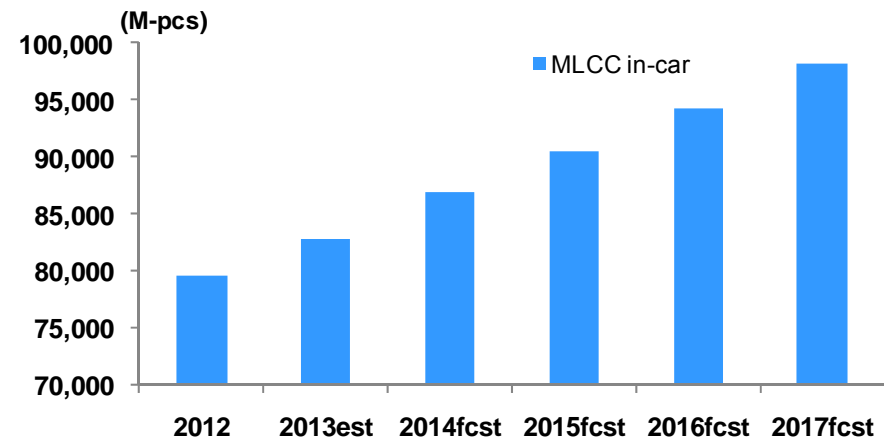
Murata's sales for automotive electronics are growing double digit or more every year accounting for 15% within the entire sales in 2012 from 10% in 2008.

Support for “automotive evolution”

Trend in automotive sales



Demand for MLCC in-car



(Source: Fuji Chimera Research Institute, Inc. Reality and Future Prospect In Vehicle ECU Related Market 2013)

Technology trend in MLCC in-car

High temperature certification

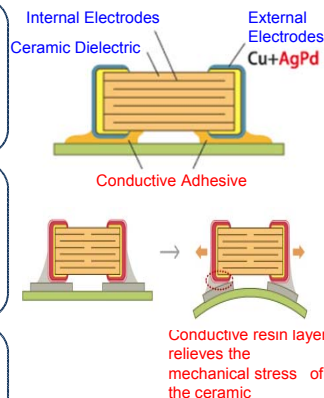
- Correspond circuit operation in high temperature (over 150 °C) such as engine room

Failsafe

- Capacitor using resin for external electrode which has fail safe function to prevent short-circuit defect by stress-strain

Compact Hi-Capacity

- Range of compact and hi-capacity products with higher reliability for ECU applications



Expanding the demand for MLCC in-car

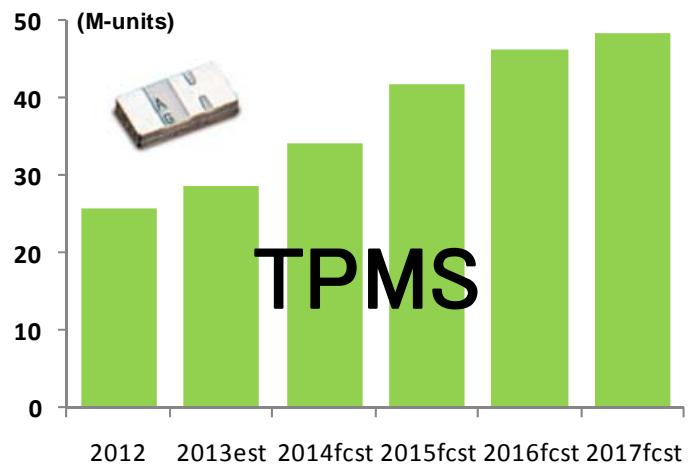
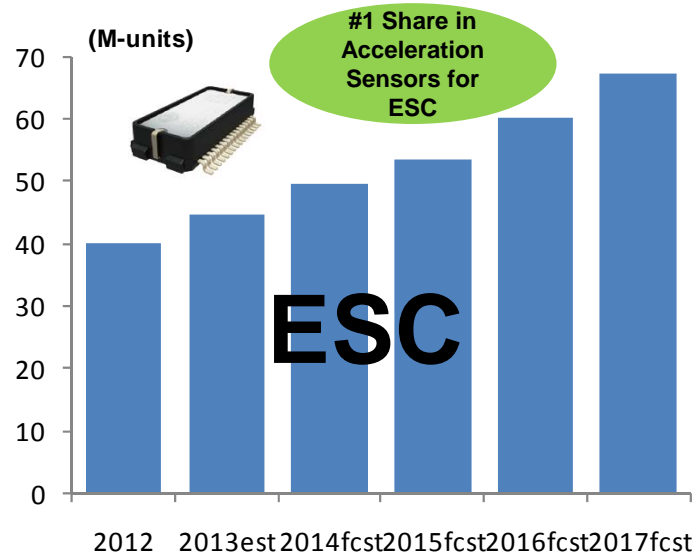
✓ The amount of electronic components per car increases principally due to increase in the number of ECUs thanks to penetration of HEV, PHEV and EV, and to advanced electrification for automotive such as Idling Stop System.

✓ The number of MLCC per car is about 1,000 to 3,000pcs.

⇒ A wide variety of MLCCs used in cars corresponding to high temperature certification, compact/hi-capacity and preventing stress-strain.

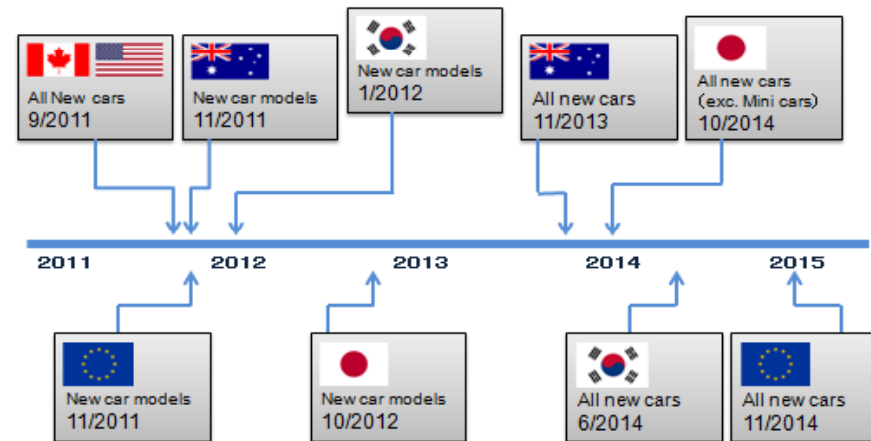
Safety: Improving car safety

Demand for Vehicles Equipped with Safety Features



(Source: Fuji Chimera Research Institute, Inc. Reality and Future Prospect In Vehicle ECU Related Market 2013)

Legislation Schedule of ESC (Electronic Stability Control)

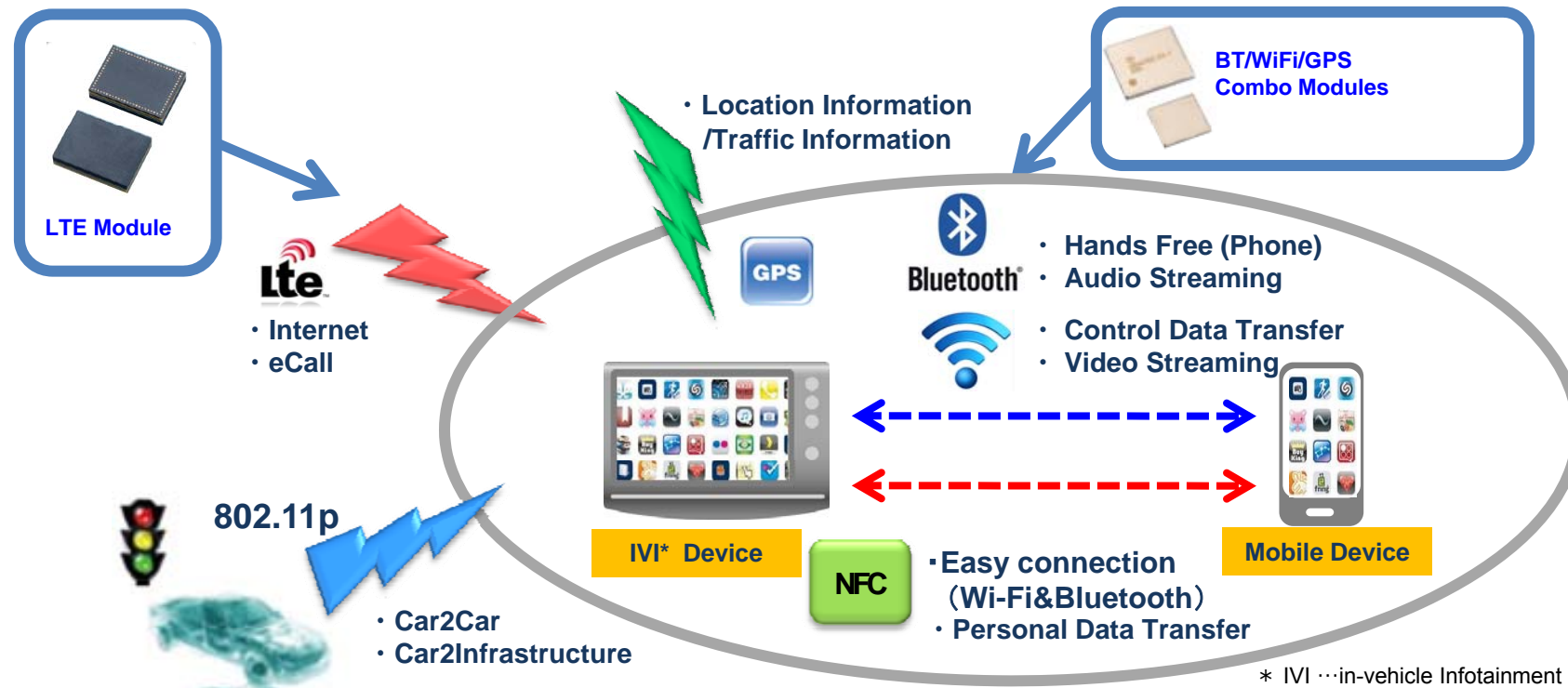


Legislation for Safety Features Using Sensing Technologies

- Legislation for mandatory use of ESCs is being implemented to prevent sideslip and rollover of vehicles.
 - Applications using sensor technology to support driving such as ABS*, TPMS* and PAS* will increase more and more in the future.
- ⇒ Strengthen competitiveness in sensor market by technologies of shock sensors and ultrasonic sensors and MEMS technologies (thanks to the acquisition of VTI Technologies in 2012).

- * ESC = Electronic Stability Control
- PAS = Parking Assistance System
- ABS = Anti-lock Braking System
- TPMS = Tire Pressure Monitoring System
- MEMS = Micro Electro Mechanical System

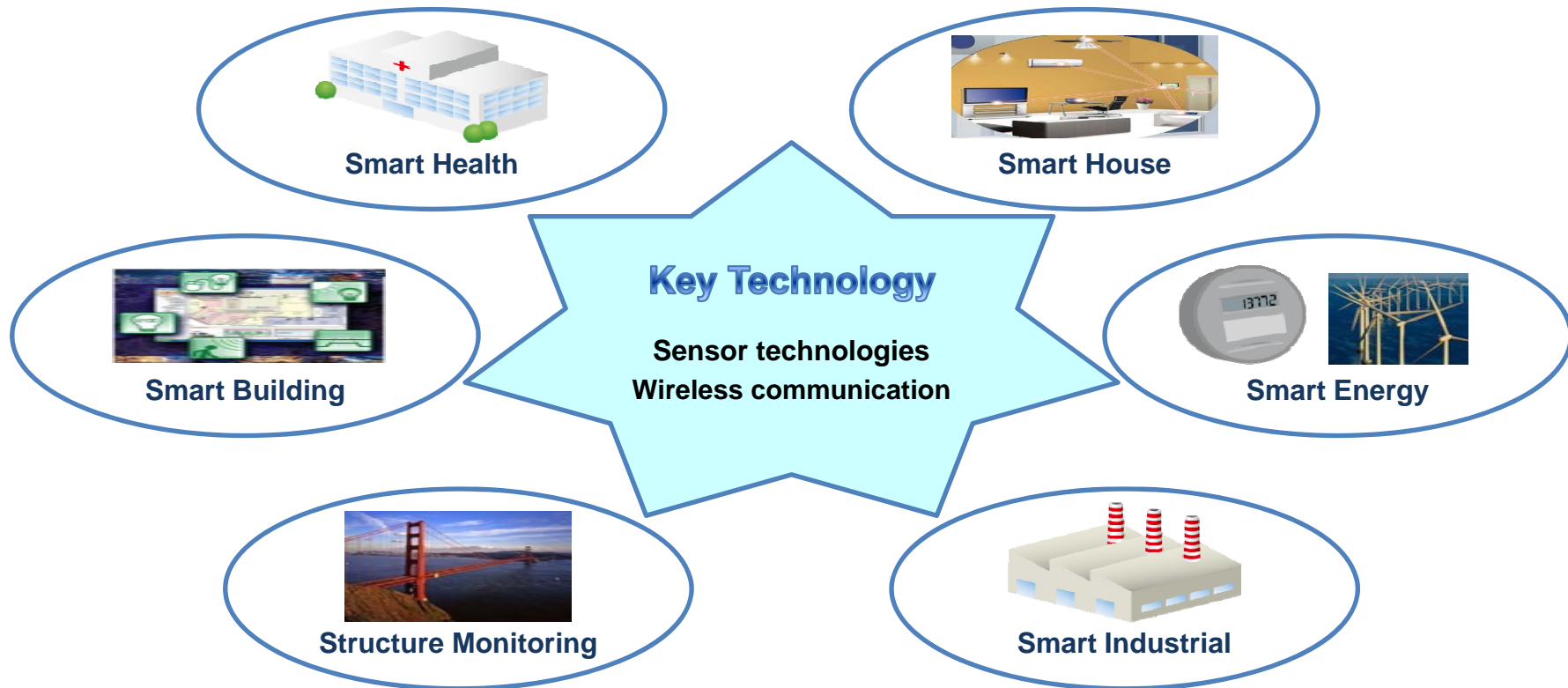
Infotainment: Networks inside and outside of vehicles



High Potential for Automotive Wireless Communications

- ✓ Infotainment in vehicles accelerated by the use of wireless communication functions.
- ✓ Automotive wireless communications will prevail in response to the legislations for the eCall (automated emergency calls from cars in case of serious road accidents) and stolen vehicle tracking systems using GPS.
- ⇒ We will capture growing demand for the automotive wireless communication market with wireless communication technologies, software technologies and consistent support incl. authentication services we have fostered in the consumer electronic market.

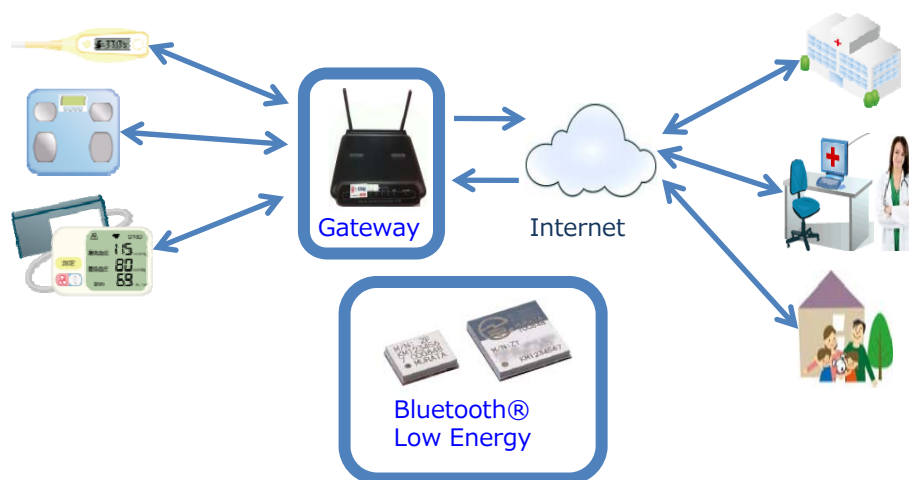
Support “Smart Society” by sensors and wireless communication



Wireless Sensor Networks will support Internet of Things :IoT.

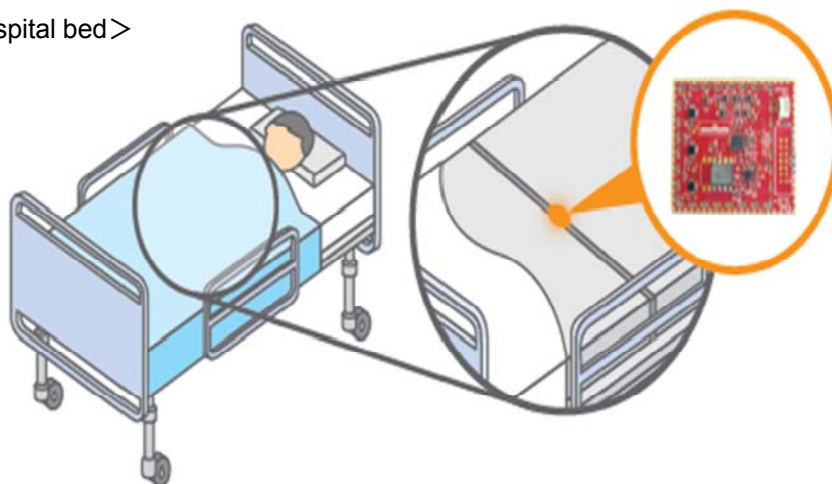
- ✓ Various markets and area connect by development of cloud /internet. Subsequently, things and things, things and human, human and human, everything will connect all over the world.
- ✓ Create new market needs to control information which is collected and compiled by combining sensor technologies with wireless technologies, .
⇒ Murata's core technologies (sensor and wireless) can be applied to wireless sensor network.

Healthcare: Sensor network solution

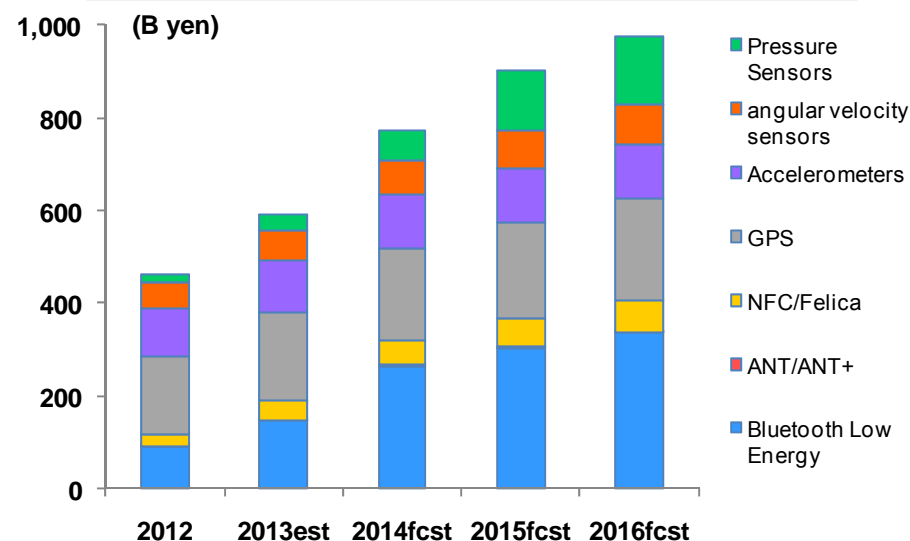


MEMS Based BCM Opens New Possibilities in Patient Monitoring and Elderly Care

<hospital bed>



Demand for electronic components for "Personal Healthcare"



(Source: Fuji Chimera Research Institute, Inc. Future Prospect of Digital Health Solution Market 2013)

Realize (or Enable) "Personal Healthcare"

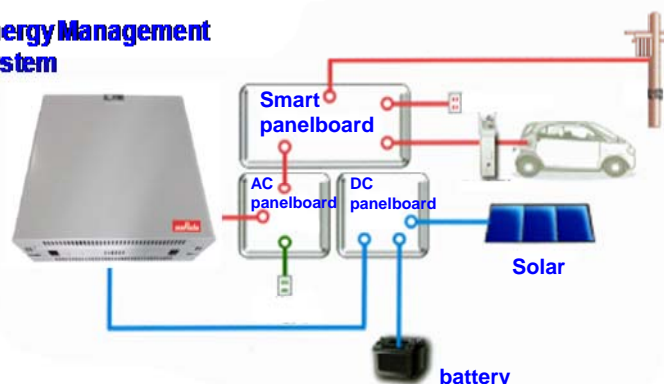
- ✓ Contribute to the advancement of "personal healthcare" with sensor and communication technologies enabling smaller, lighter and low-power devices.
- ✓ Increased health-consciousness of people and use of IT in medical equipment is expected to enhance the growth of the market.

Energy: Approach for Smart Grids

Yokohama Smart Community Smart Cells



Energy Management System

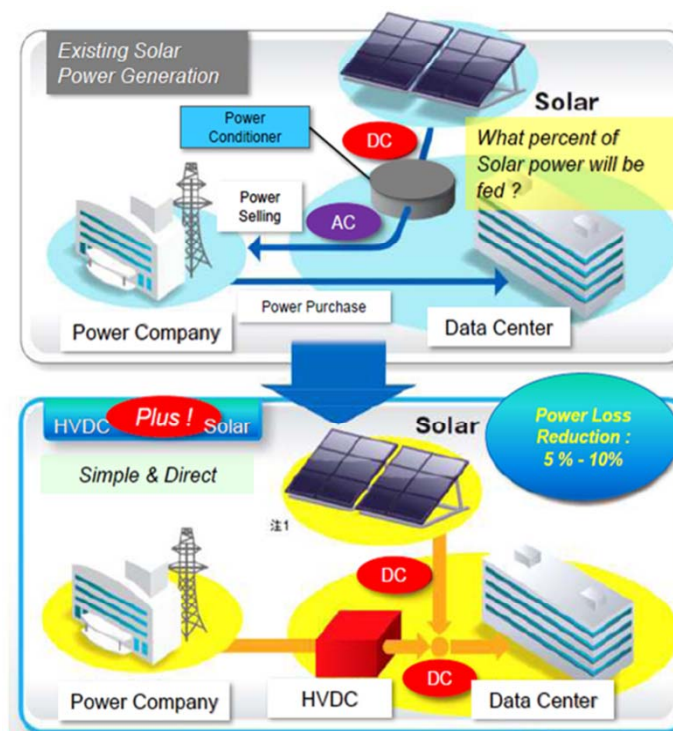


Participate in Consortium

- ✓ Participate in "Smart House" experiment
- ✓ Energy management system controlling several electric powers such as solar batteries, rechargeable batteries and grid power.

Efforts in the Data Center DC Power Supply

DC-DC Power Supply for HVDC



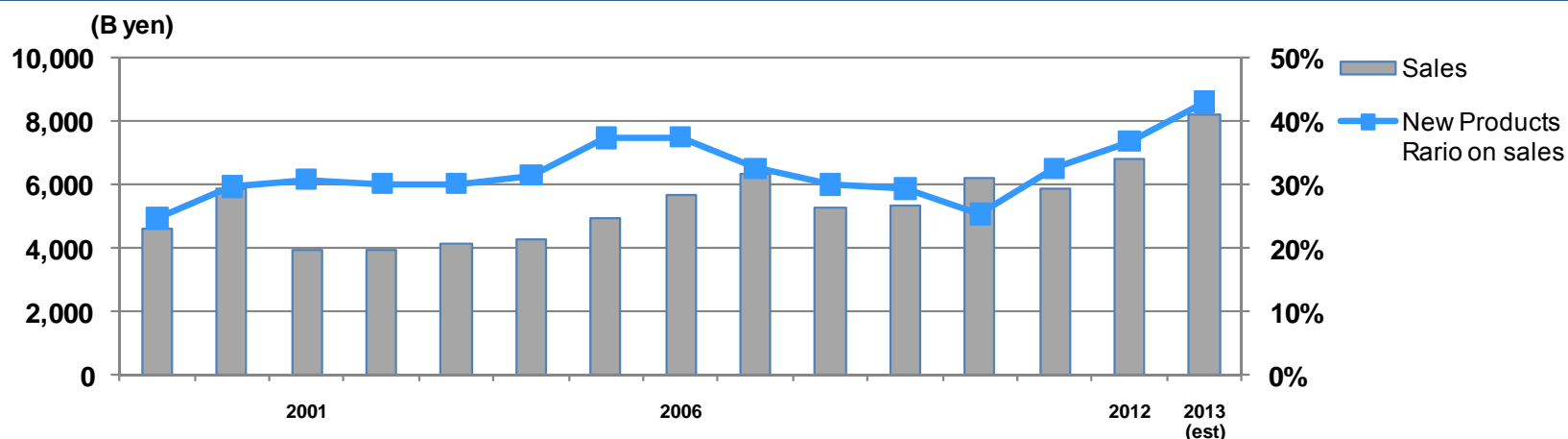
Energy Saving by High Efficiency HVDC DC-DC Converter

- ✓ Supply DC12V from high-voltage (300-400V) against equipment in data center such as servers directly.
- ✓ Increase efficiency to take in sub-energy such as solar power thanks to reduced loss occurred in power supply.

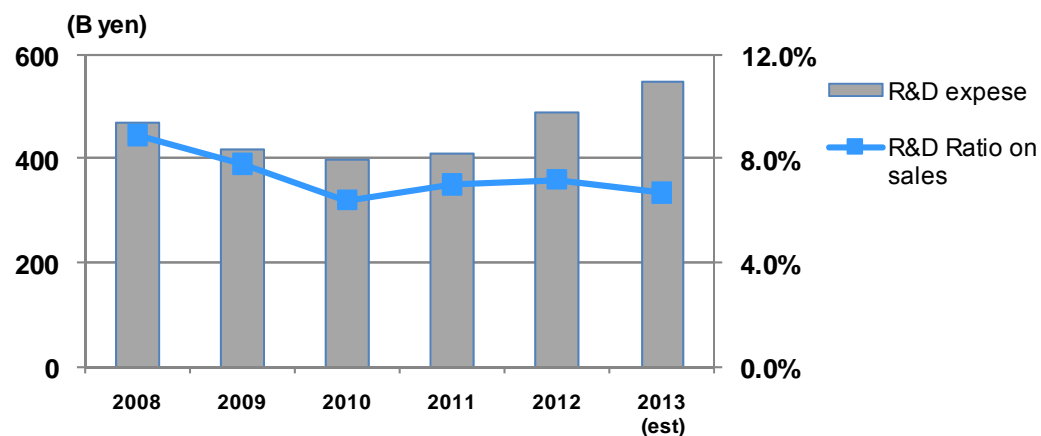
Net Sales and New Products Ratio on sales/ R&D expense and R&D ratio on sales



Net Sales and New Products Ratio on sales



R&D expense and R&D Ratio on sales



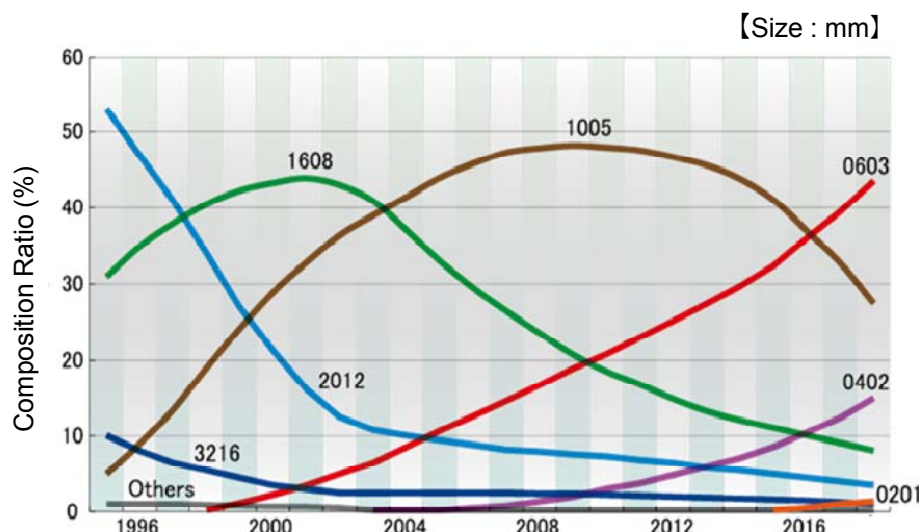
Fiscal year 2012
 • R&D expense
 48,766 million yen
 • R&D Ratio on sales 7.2%

Fiscal year 2013 (Forecast)
 • R&D expense
 55,000 million yen
 • R&D Ratio on sales 6.7%

“Technology Breakthrough” as Top Runner in MLCCs

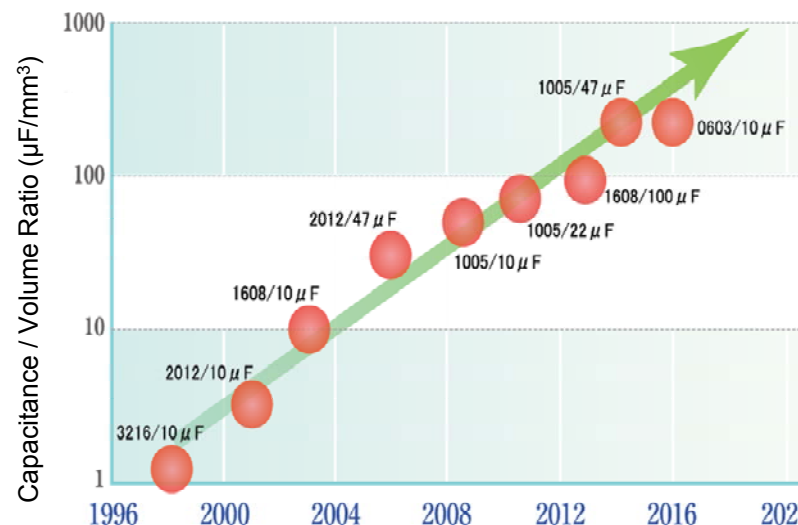


MLCC Size Trend



- ✓ Ultra-compact MLCC market (in which Murata has large share) will expand. 0603 size will be used as mainstream from 2016.
- ✓ The usage of 0402 (0.4 × 0.2mm) size will expand.
- ✓ We will start to supply samples of the world's smallest 0201 size (0.25 × 0.125mm) from the end of 2013.

Trend toward Compact & High-Capacitance MLCCs



- ✓ MLCC's density of electrostatic capacity increases year by year.
- ✓ Trend of MLCC's miniaturization and hi-capacitance will continue.
- ✓ Increase added value by shifting high-technology product in product mix.

We are pursuing trend toward ultra-compact and high-capacitance MLCCs as the top runner of the market, and continue to lead the electronics industry.

New Products

NFC* communication compact antenna

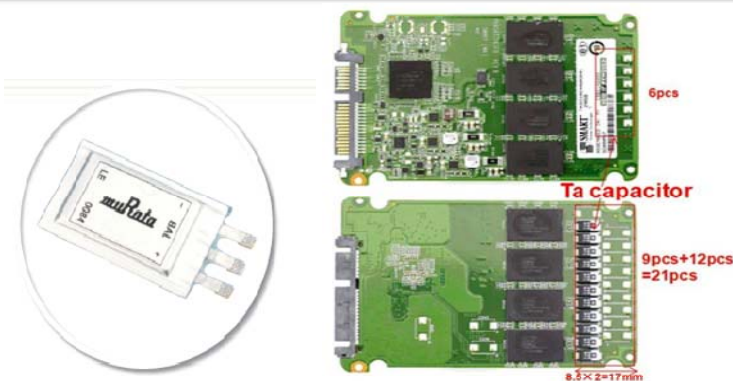


- ✓ Antennas for NFC communication even if put inside of metal frame
- ✓ Ultra-compact devices best suited for on-board mobile equipment
- ✓ Support NFC communication to every mobile equipment.



* NFC (Near Field Communication)
One of the wireless international standard for data communication point blank such as ten and a few centimeters.

High Power Densified Milli Farad Capacitor



High Power Densified
Milli Farad Capacitor

Solid State Drive (SSD)

Hundredfold
energy density
comparing to
tantalum capacitor

- ✓ Provides high power density and can input and output huge energy effectively even if compact.
- ✓ Realize ESR (Equivalent Series Resistance) and high-capacitance.
- ✓ Best suited application of moment stop back-up for SSD.

Capturing Demand in Emerging Countries

Increase in Production Ratio outside Japan

- ✓ Constructed factory in Philippines Oct. 2012 and started manufacturing MLCC in 2013.
- ✓ Continuing to shift production to China (Wuxi, Shenzhen), Thailand and Malaysia.
- ✓ Increase in production ratio outside Japan (FY2010: 15% ⇒ FY2013 (est.): 27%)

Expansion of Sales Facilities in Emerging Countries

- ✓ Established sales companies in India and Vietnam.
- ✓ Established sales facilities in inland China (Chengdu, Wuhan, Chongqing, Xian)
- ✓ Focusing on exploiting demand in emerging countries.

**Seizing growing demand in emerging countries
where upper/middle-class population is exploding.**

Amplification of Design Supports

- ✓ Established a shielded room in Beijing, Shenzhen, Taipei, to promote EMC solutions in Greater China.
- ✓ Reinforcing support systems in addition to the Murata EMC Support Center in Shanghai.



EMC Support Center in Shanghai

Recent M&A and Alliances



- Acquisition of C&D Technologies Power Electronics Division (now Murata Power Solutions)
- **Power Supplies**



- Acquire 100% ownership of Tokyo Denpa Co., Ltd.

• **Crystal Devices**



- Tender offer for the majority of shares of Toko Inc.

• **Coils** (ongoing)

2007

2012

2013



- Acquisition of VTI Technologies (now Murata Electronics Oy)
- **MEMS Sensors**



- Acquisition of Renesas **High Power Amplifier** Business



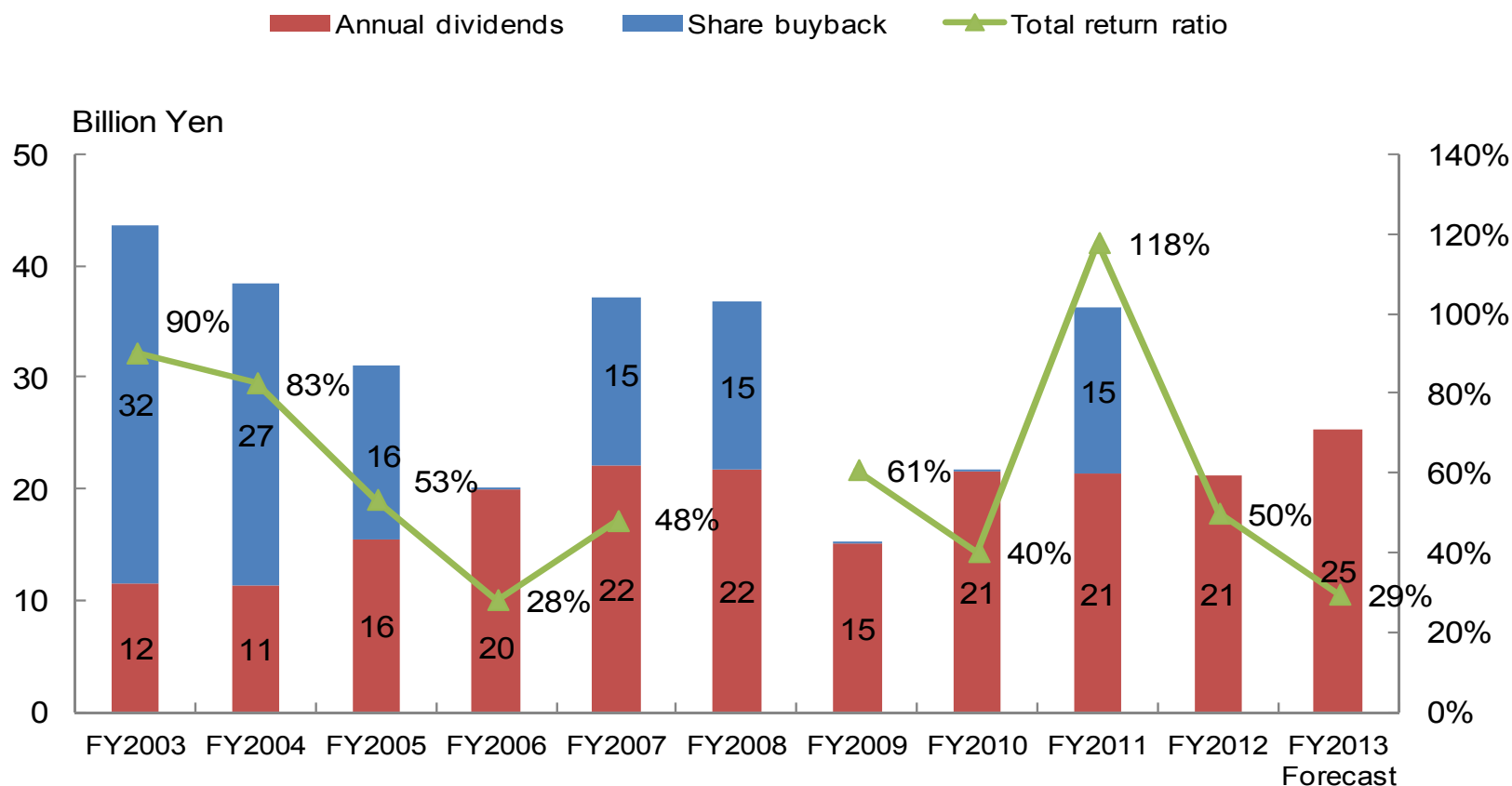
- Acquisition of RF Monolithics
- **Wireless Connectivity Solutions**



- Capital & Business Alliance with Ubiquitous Corporation
- **Software**

Proceed M&A for capturing new technologies and new market demand for Murata step by step.

Return to Shareholders



Our basic policy of profit distribution to shareholders is to prioritize the sharing of gains through payment of dividends, and to steadily raise them by increasing profit per share.

This report contains forward-looking statements concerning Murata Manufacturing Co., Ltd. and its group companies' projections, plans, policies, strategies, schedules, and decisions. These forward-looking statements are not historical facts; rather, they represent the assumptions of the Murata Group (the "Group") based on information currently available and certain assumptions we deem as reasonable. Actual results may differ materially from expectations due to various risks and uncertainties. Readers are therefore requested not to rely on these forward-looking statements as the sole basis for evaluating the Group. The Company has no obligation to revise any of the forward-looking statements as a result of new information, future events or otherwise.

Risks and uncertainties that may affect actual results include, but are not limited to, the following: (1) economic conditions of the Company's business environment, and trends, supply-demand balance, and price fluctuations in the markets for electronic devices and components; (2) price fluctuations and insufficient supply of raw materials; (3) exchange rate fluctuations; (4) the Group's ability to provide a stable supply of new products that are compatible with the rapid technical innovation of the electronic components market and to continue to design and develop products and services that satisfy customers; (5) changes in the market value of the Group's financial assets; (6) drastic legal, political, and social changes in the Group's business environment; and (7) other uncertainties and contingencies.

The Company undertakes no obligation to publicly update any forward-looking statements included in this report.

