

# Renesas Electronics Business Policy

Renesas Electronics Corporation

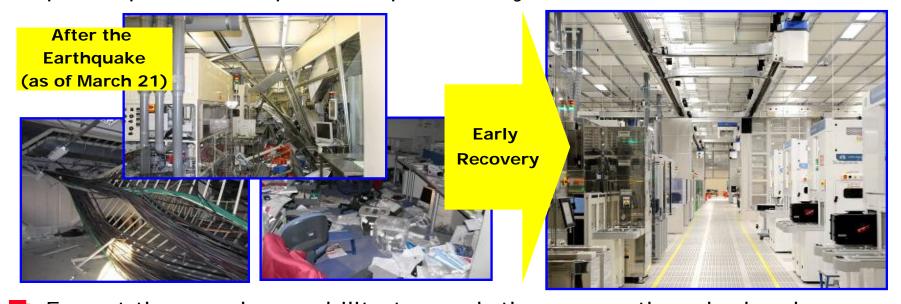
August 2, 2011

Yasushi Akao, President

# Introduction -Recovery and Reconstruction Following the Great East Japan Earthquake-

# Recovery from the Earthquake- Completion of Naka Factory Restoration

Great support from outside and inside the Renesas Group helped to speed up the resumption of operation by three months



Expect the supply capability to reach the pre-earthquake level by the end of September (%) 100 Alternate production Outside foundries 80 Other Renesas factories 60 As of June 10 40 Naka factory 20 Jun Jul Oct Aug Sep Pre-earthquake

# Impact of the Earthquake and Efforts toward Recovery, and Measures for Mid-Term Growth

- Carried out recovery from earthquake with utmost effort
- -Grateful for all of the help from everyone involved Accelerate transformation of business portfolio following the earthquake
- CY2010 1H/CY2011 2H/CY2011 CY2012

Promoting the 100-Day Project

Earthquake

Review of business portfolio

Realization of merger synergies

**Implementation** of structural reforms

#### Impact of the Earthquake

- ✓ Temporary shutdown at some of Renesas factories
- ✓ Decrease in semiconductor demand

Great East Restoration cost Japan

#### Reconstruction Measures

- √Short-tem measures for production retrieval and expense suppression
- -Early restoration
- -Alternate production
- -Suppression of capital investment and R&D expense

Measures for midterm Business Growth

- Accelerate withdrawal from non-core businesses
- Enhance BCP\*

Growth and strengthening <a></a> of core businesses

#### Market Change

- ✓ Energy issue
- ✓ Expansion of market segments to grow both in emerging/developed countries

\*BCP: Business Continuity Plan

### **Executive Summary**

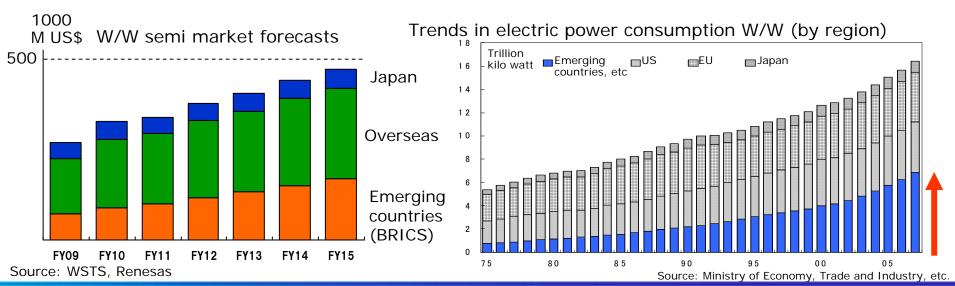
- 1. Business Focus of Renesas Group
- 2. Strengthen Core Business Focus Market
- 3. Business Continuity Plan (BCP)

4. Summary of Business Policy

1. Strengthen Core Business - Focus Market (1) Keywords to Market Development

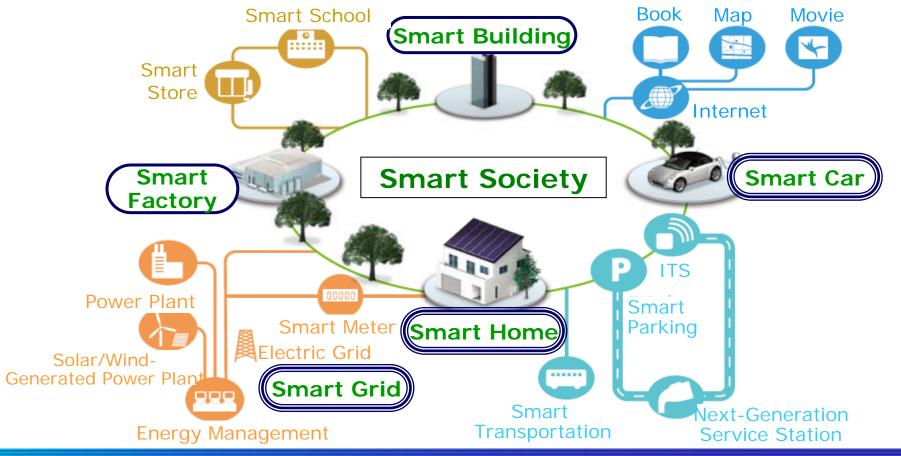
# Key Words: "Overseas Market", "Emerging Countries" and "Smart Society"

- Capture overseas market with high growth potential
  - √Rapid economic development in emerging countries
  - ✓Increasing range of functions in electric equipment and automobiles and growing demand for reasonably priced products
- Increase in electric power consumption accelerates the movement toward "Smart Society", enabling efficient use of energy resources
- "Smart Society" is expected to expand both in developed countries and "Emerging Countries" and "Smart Society" and expect to lead the semiconductor market as a driving force



## Toward "Smart Society" through Coexistence with the Global Environment

With the energy condition and zero-based infrastructure in addition to environmental conservation and convenience, smart society will develop both in emerging/developed countries => Expansion of market segments to grow both in emerging/developed countries



1. Strengthen Core Business - Focus Market (2) Market of "Smart Society"

#### Renesas' World-Leading Products for Smart Society

Further enhance lineups of one-kit solution with power and analog devices evolving around the strong MCUs

Smart Society Market	Smart Grid	Smart Home	Smart Car
System/ Application	<ul><li>Power generation/ storage</li><li>Energy management</li><li>Smart meter</li><li>Wireless/PLC*</li></ul>	<ul> <li>Energy-saving home appliance</li> <li>Home network</li> <li>LED lighting</li> <li>Mobile device</li> <li>Healthcare equipment</li> </ul>	<ul> <li>Next-generation automobile (HEV/EV) (Infrastructure for electric charge)</li> <li>Transportation system (ITS/ETC)</li> <li>Car navigation</li> </ul>

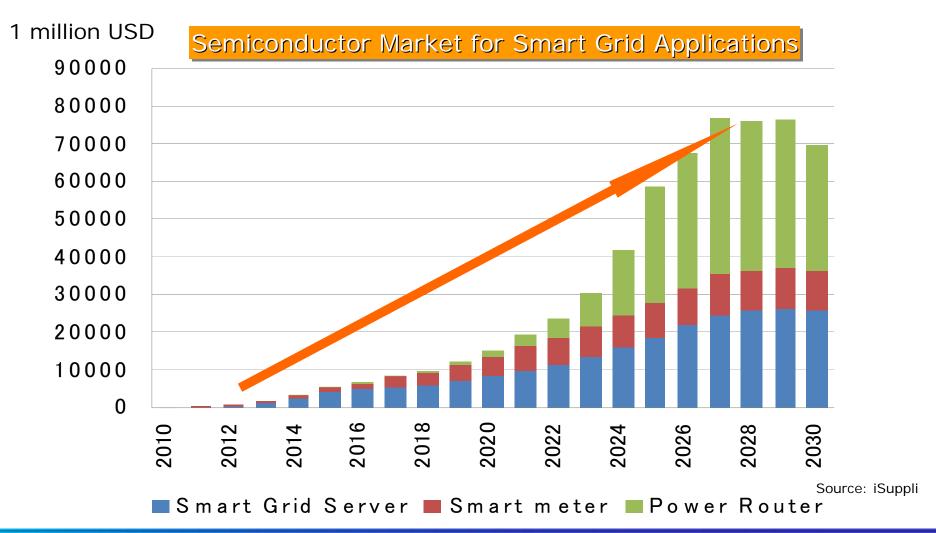


#1 World's #1 Business (Source: Renesas)

	#1MCU for meter	#1Low-power MCU	#1Automotive MCU
Renesas	-IGBT	#1MCU for inverter motor	#1MCU for EV/HEV motor
	-PFC (Power factor	#1Low-voltage MOSFET	-IGBT
	correction IC)	-IGBT	#1SoC for car
Products	ASIC for industry	-LED driver	infotainment system
	application	-ASIC for industry	-LTE modem
		application	#1ASIC for industry application

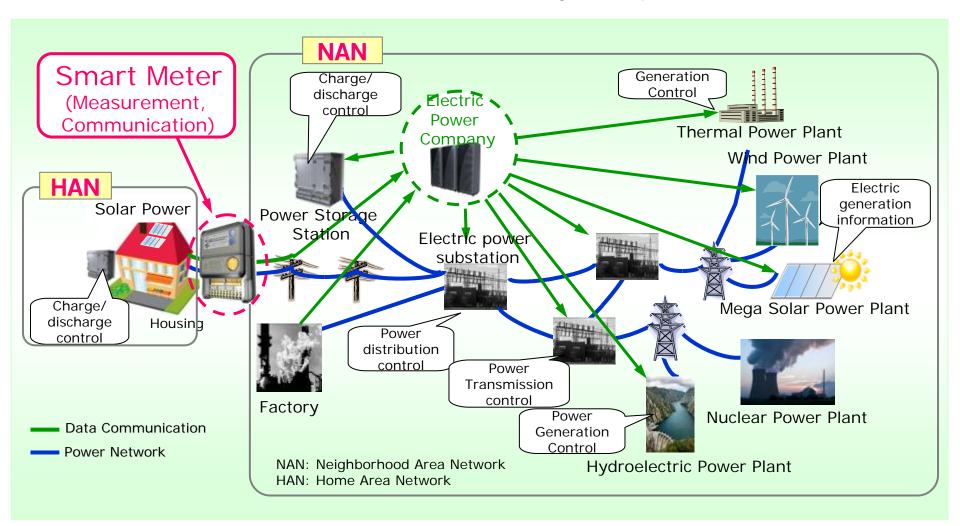
#### **Approach to Smart Grid Market**

Semiconductor market for Smart Grid applications as the new promising market to grow drastically



# **Approach to Smart Grid Market**

Provide solution for Smart Meter, a key component for Smart Grid



#### **Smart Meter Solution**

- Aggressive approach to Smart Meter market, that has high market growth rate and requires multiple MCUs
- Strengthen solutions for meter/communication unit based on proven track record as the top supplier of MCUs for meter



Source: Renesas

#### Measurement MCU

30 years track record
in meter market
World's top supplier
W/W share 30%
Overwhelm competitors by
low-power & high reliability

Expand lineup of MCU products
with built-in Analog ICs

#### **Smart Meter**



# Communication MCU/SoC

<u>Track record in Communication and</u> <u>Security market</u>

No.1 in Japanese market for communication gateway/router MCUs (achieved product differentiation through

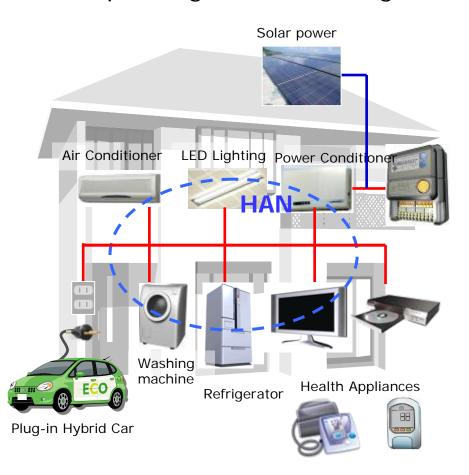
high-definition communication)

High security technology for IC cards (achieved product differentiation through charging, secure communication"

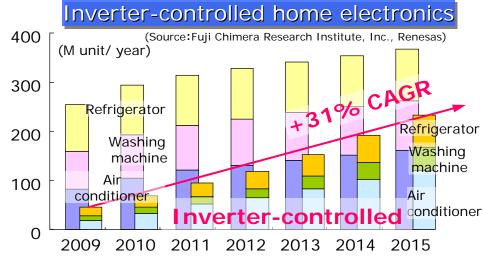
Expand lineup of communication MCU/SoC products with built-in AFE (analog front-end) devices

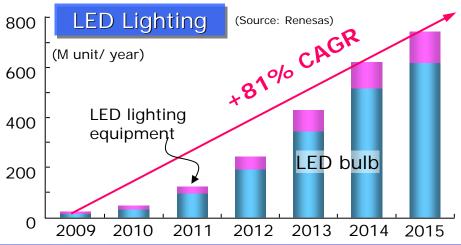
# **Approach to Smart Home Market**

Aggressive promotion of MCU and Analog & Power products to the inverter-controlled home electronics and LED lighting markets globally expanding with increasing awareness on energy conservation



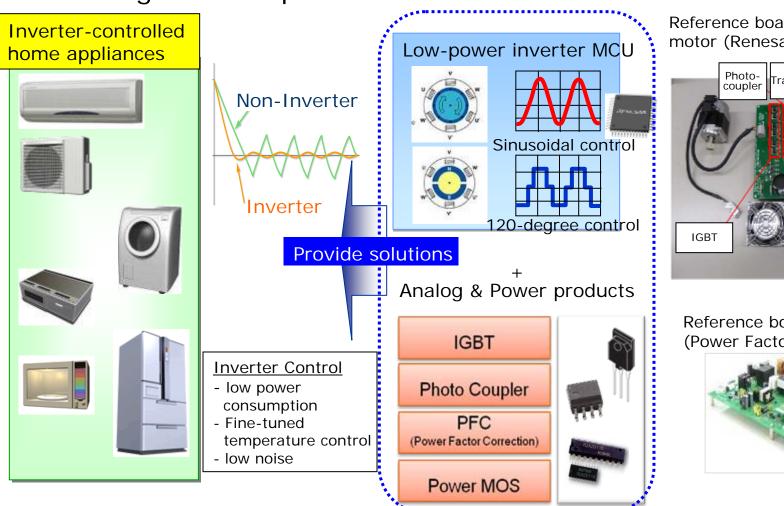
HAN: Home Area Network



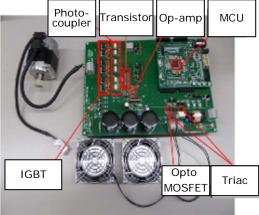


# Solutions for Inverter-Controlled Home Appliances

Provide inverter-control MCU (40% W/W share) together with Analog & Power products as one kit-solution



Reference board for inverter motor (Renesas MCU + A&P)

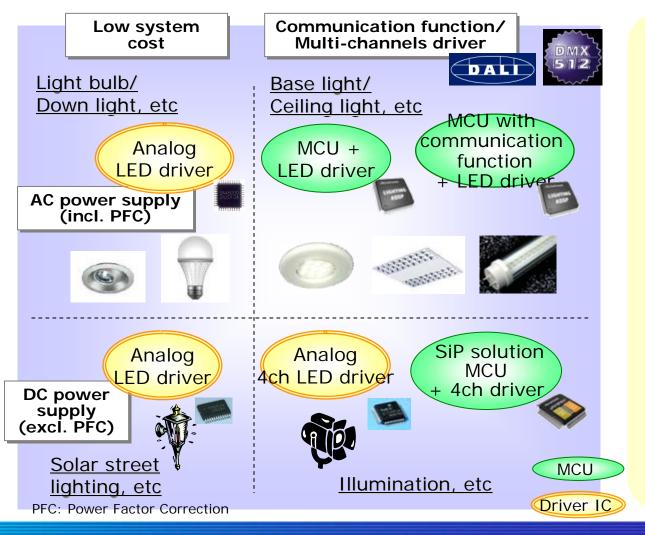


Reference board for PFC (Power Factor Correction)



## **LED Lighting Solution**

Provide full lineups of MCU solutions with analog drivers for various LED lightings together with enhanced development environment

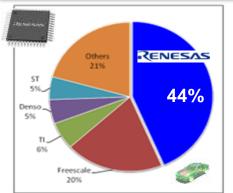


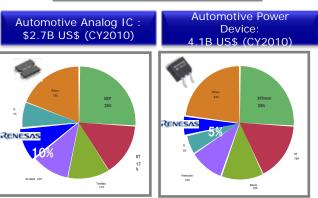


# **Approach to Smart Car Market**

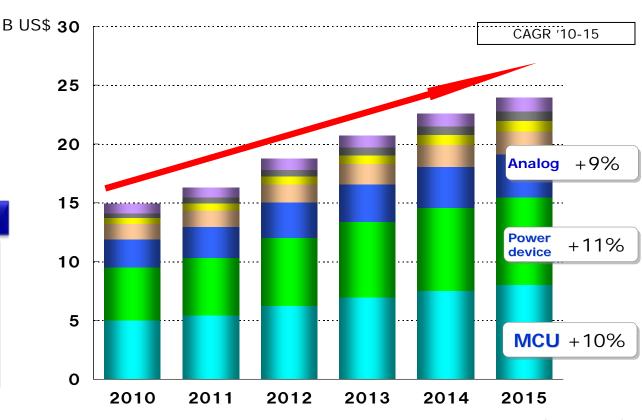
Automotive semiconductor market is expected to increase steadily driven by growth in emerging countries and rise in HEV/EV ratio

Automotive MCU : 5.1B US\$ (CY2010)





Automotive Semiconductor Market Demand Trend

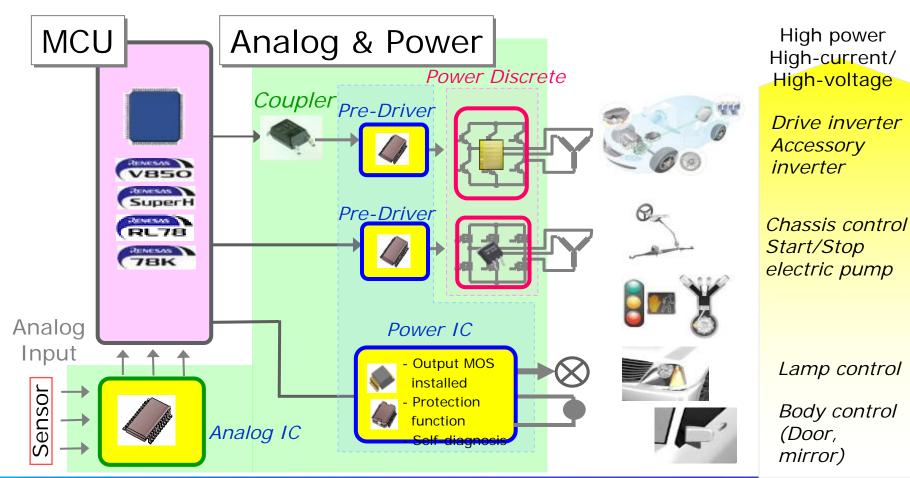


Source: Renesas, Gartner & Strategy Analytics (April 2011)



#### **Smart Car Solution**

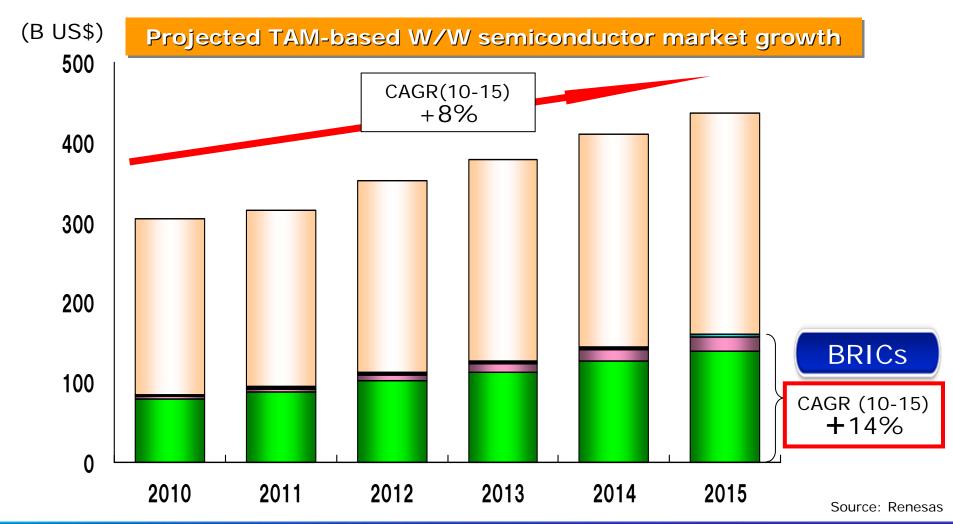
- Expanded lineup of A&P products for automobiles, Provide as a kit-solution with MCU
  - ➤ Reduce development time by offering a sample software
  - ➤ Provide timely support for customers' evaluation by offering a demonstration board



Strengthen Core Business -Focus Market
 (3)Global/Emerging Market

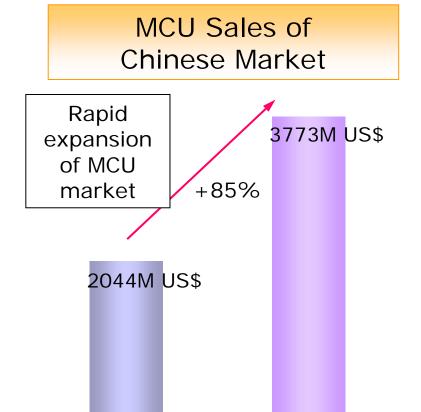
# **Approach to Emerging Markets**

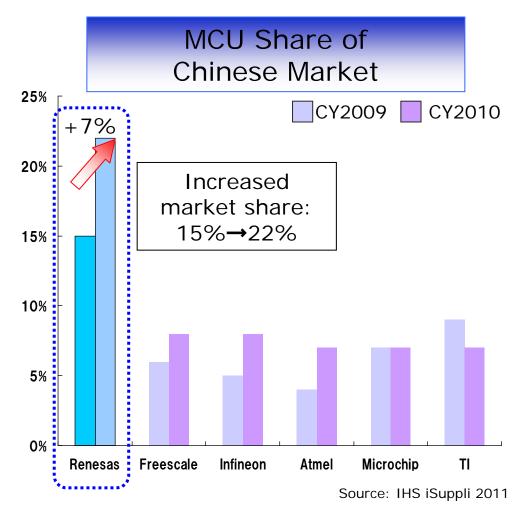
Future semiconductor market growth will be led by China and other emerging countries



# **Approach to Emerging Markets**

Amidst a rapid expansion of MCU market in China, Renesas attained the position as the market leader leaving competitors far behind





CY2010

CY2009

# **Approach to Emerging Country Markets**

Built a comprehensive structure facilitating local development based on local needs with the market-leading, rich lineup of elemental technologies and products that correspond with expanding areas



Plan to launch products that address local needs (1st product available now)

Social infrastructure



100 products

Energy-saving home appliance



600 products

Automobile (EV/HEV, e-Bike)



100 products

Home environment (Home security, etc)



200 products

# **Approach to Emerging Country Markets**

Efforts to grow sales in the next promising Indian and Brazilian market that have a huge potential for growth with enhanced local-based support

#### **Chinese Market**



Oct. 2010

- -Started operation of "MCU China Business Unit"
- -Raised CY10 MCU market share to 22% from 15% in China
- <Semiconductor TAM: 78,950M US\$(FY10)>

#### Indian Market

Jan. 2011

- -Opened a local branch of Renesas Electronics Singapore in Bangalore to enhance sales and support for the market with huge growth potential
- <Semiconductor TAM: 3,600M US\$(FY10)>
- <CAGR(10-15): +38%>

#### **Brazilian Market**

- -Contracted with a local distributor to promote sales
- -Started to study to open Renesas branch office
- <Semiconductor TAM: 1,600M US\$(FY10)>
- <CAGR(10-15): +15%>

Source: Renesas

# Approach to Overseas Market

Provide the best solutions combining MCUs and A&P products tailored to overseas market demands

Competitive A&P products in Japan

Provide the best solutions to overseas customers

Tran-Analog **MCU** sistor IC 64% 17% 6% Japan 1st 2nd 4th 16% 2% Below US 15th 15th 2nd 23% 3% Below: **EMEA** 15th 1st 11th 17% 6% Below ASIA 15th 5th 1st 29% 8% 2% W/W 1st 4th 14th

Launched Marketing Unit (Apr. 2011)

- →Unified marketing functions of MCU and A&P
- ➤ Consolidation of eco-system for A&P sales (Complete by the end of Aug. 2011)
- Consolidate enough sales infrastructure to the same level of MCU
- Consolidation of sales tools combining MCUs and A&P products
- Application catalogs and demo boards are available
- Study to provide incentive for selling kit solutions

Big potential for sales growth

- ✓ Lack of infrastructure to promote sales of A&P
- ✓Insufficient sales tools for system configuration
- √ Emphasis on MCU promotion and sales by distributors

Power	Transistor	DAC	
Managemen	MEMS	AMP	
LED Dr.	MCU	ASSP	
Sensor	IVICU	ASSP	
Buffer	Timing	l∕F	
Digital IC	Memory	pt couple	r

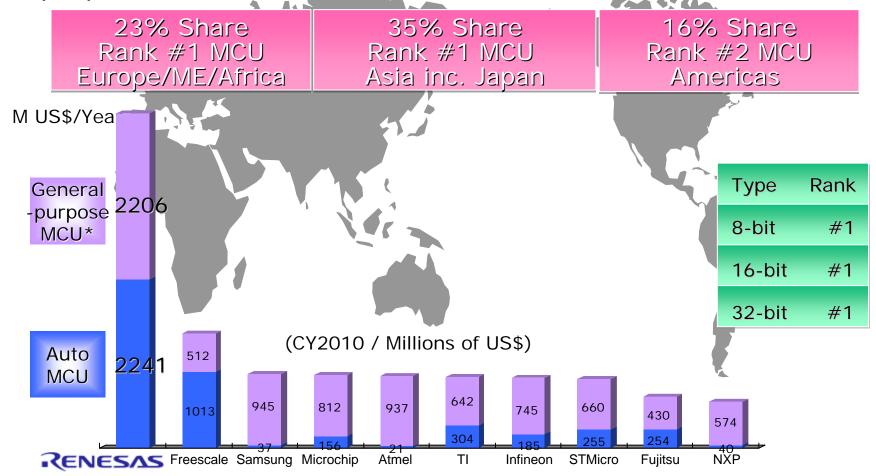
Source: Renesas, Gartner, Analog (General-purpose linear IC)

2. Business Policy by Business Segment

# 2. Business Policy by Business Segment (1) MCU Business

# World-Leading Renesas MCU

■ Firmly maintained top positions both in generalpurpose/automotive MCUs with 29% market share w/w



\*General-purpose MCU: MCU market for applications excluding automotive Source: Gartner, "Market Share: Semiconductor Applications, Worldwide, 2010," 30 March 2011, "Market Share Semiconductor Devices Worldwide 2010" 30 March 2011, Chart created by Renesas Technology based on Gartner data. Renesas Technology's MCU revenues in the 1st quarter (Jan. - Mar.) of 2010 has been combined in Renesas Electronics' MCU revenues in 2010.



### **Strength of the MCU Business**

High Quality

<Safety improvement>

Target zero-defects

-Currently boasts 0.4ppm (parts per million)

**Low Power** 

<Support promotion of green products>

World-leading low power consumption

-Achieved 55  $\mu$  A/DMIPS with RL78 MCU

Integrate Tools

<Provide best-fit development environment>

Integrated GUI (Graphical User Interface)

supports user operability

RL78, RX, SH, V850

Support Structure

<Offer industry-leading hospitality>

Extensive alliance with over 700

partner companies worldwide

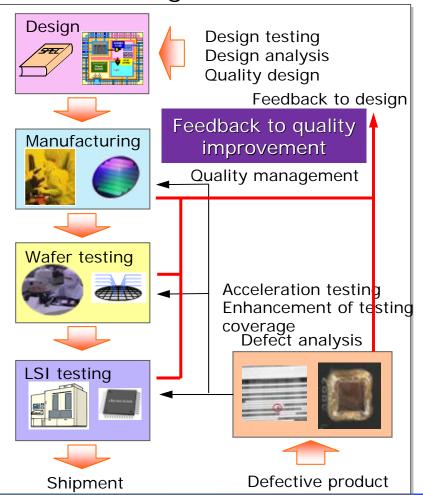
to provide detailed assistance

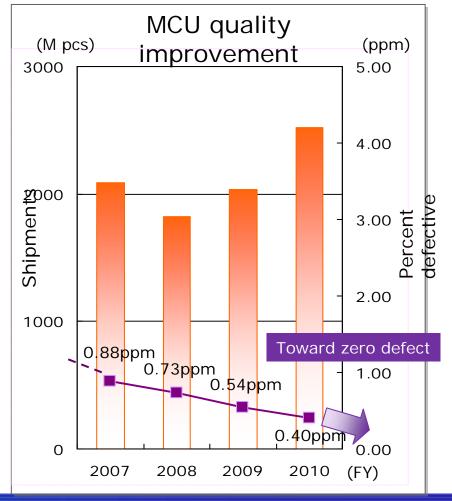
Global Network

Local support structure to support customers worldwide

### **Exceptional High Quality**

Utilizing the strength as an IDM, realized percent defective of 0.4ppm through cross-sectional zero-defect activities from design to manufacturing





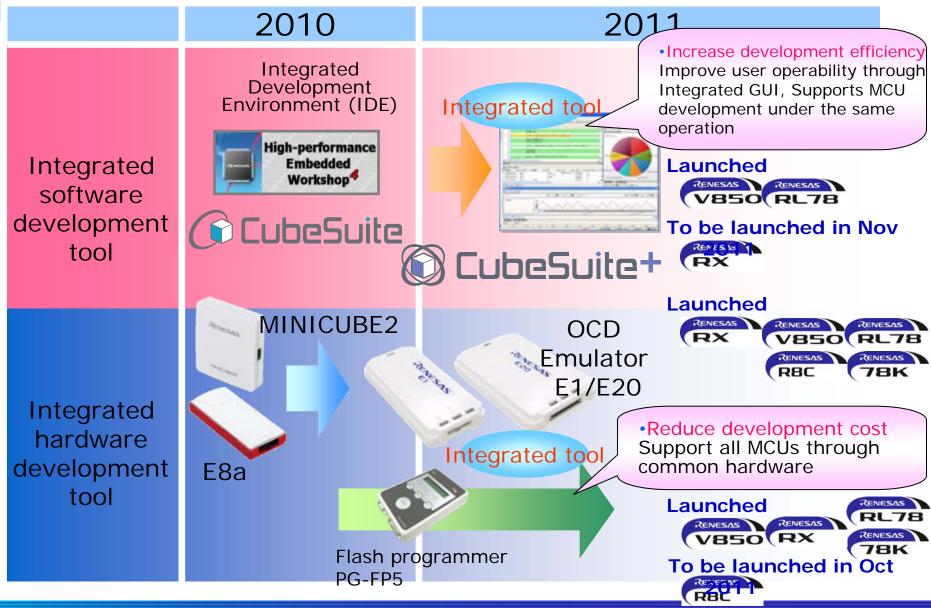
#### **Out-and-Out Efforts toward Low Power**

Realize unparalleled low power consumption through optimization of CPU core and processes

Power consumption/performance comparison (uA/DMIPS)



#### **Promotion of Integrated Support Tools**



#### **Support Structure**

- Provide fine-tuned support as a semiconductor company in cooperation with partner companies
- Extensive alliance with over 700 partner companies worldwide

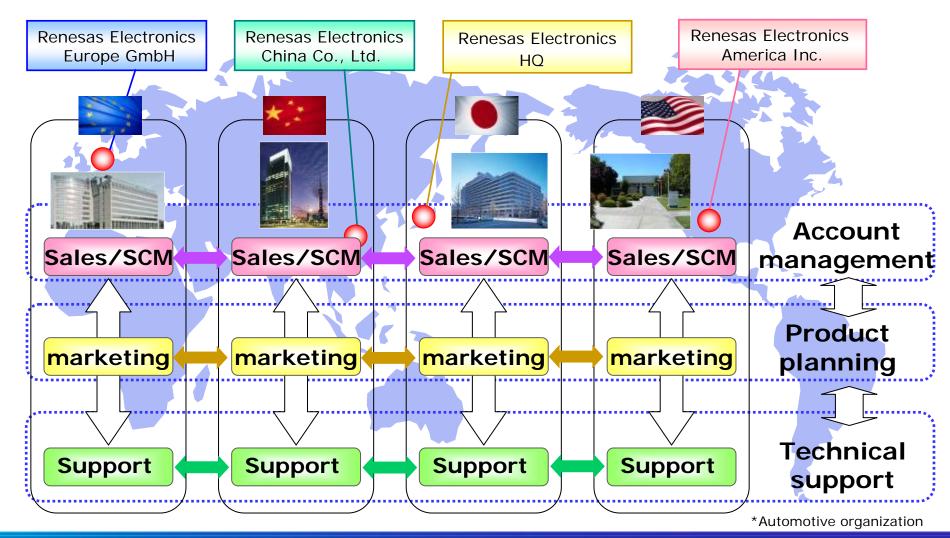


Provides customers with wide range of solutions including products and services from numbers of partners that provide services or products that support Renesas products and customers



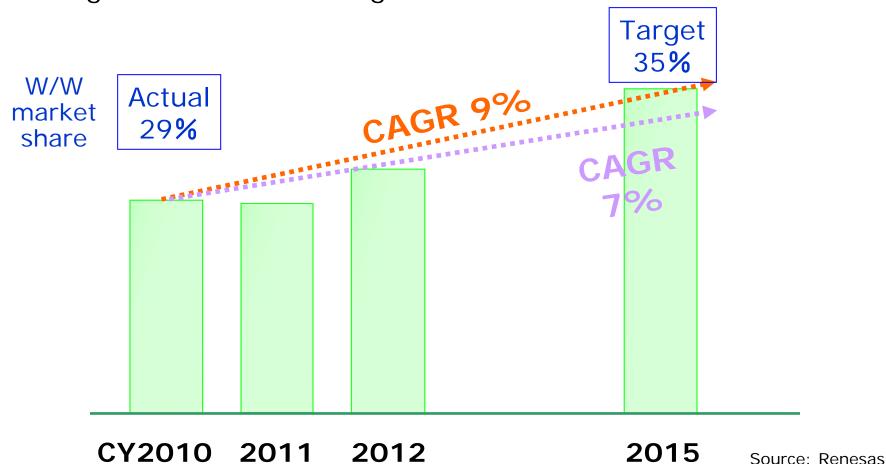
#### **Global Network**

Construct a network on a global basis for sales, marketing, technology development



# Target to Grow with Higher Rate than the Market

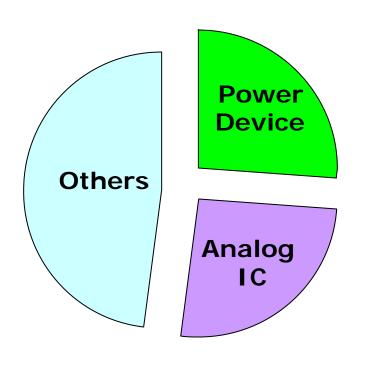
Realize further growth in the global market, emerging countries and "Smart Society" by utilizing Renesas' overwhelming strength on MCU. Aim to expand market share at a growth rate exceeding that of MCU market



# Business Policy by Business Segment Analog & Power Business

#### Overview of Analog & Power Business

Low-loss power device, and highly-integrated analog ICs realize energy-efficient and compact system



#### **Power Device**

- Power devices such as MOSFET and IGBT
- Market share: 7.4% (5<sup>th</sup>) (Note: including IGBT module)

#### **Analog IC**

- Analog ASIC/ASSP for automobile
- •Market share: 3.9% (5<sup>th</sup>)

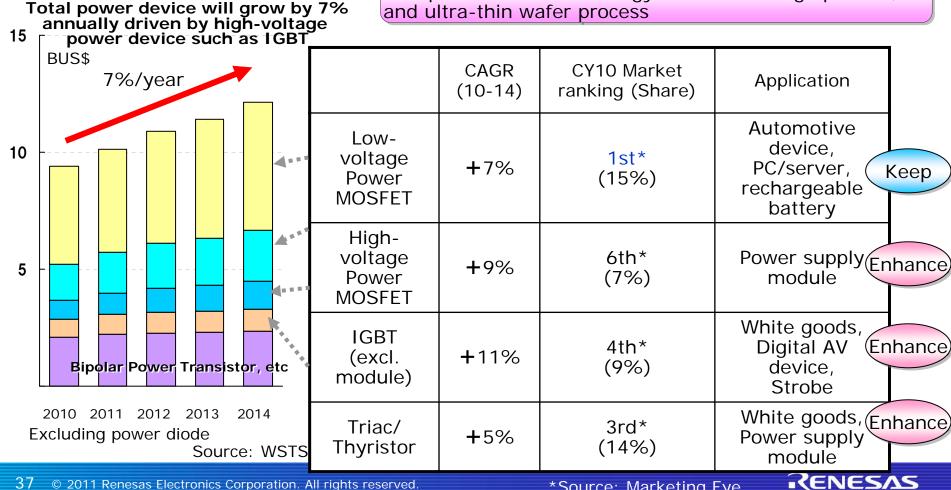
Source: Renesas, iSuppli (CY10)

Power device (Low voltage/high voltage power MOSFET, IGBT, Triac/SCR, IPD) Analog IC (Analog ASIC/ASSP, General-purpose linear IC, High-frequency IC) Others (Diode, Photocoupler, General-purpose SRAM, EEPROM, LCD driver, etc.)

#### Renesas' Power Device

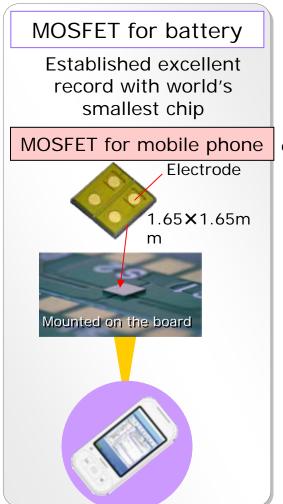
Extensive product lineups ranging from low-voltage to high-voltage (up to 2,000V) contribute to offering wide range of highly-efficient systems

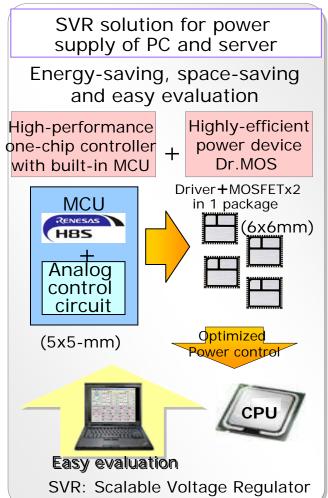
Demand forecast of power device (excl. module) Adding to world's No.1 low-voltage power MOSFET, Renesas will enhance the high-voltage MOSFET and IGBT lineups with such technology as trench filling epitaxial, and ultra-thin wafer process

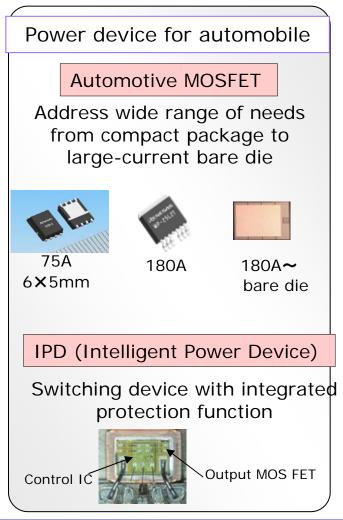


### Renesas' Low-Voltage Power Device Technology

Low on-resistance, fast switching speed and space-saving packaging to attain high efficiency and more compact systems







# Renesas' Power Device Technology Realizes High-efficiency Inverter

Trench-filling epitaxial technology, ultra-thin wafer process technology and space-saving packaging yield more compact systems with high efficiency

High-voltage MOSFET (Over 200V)

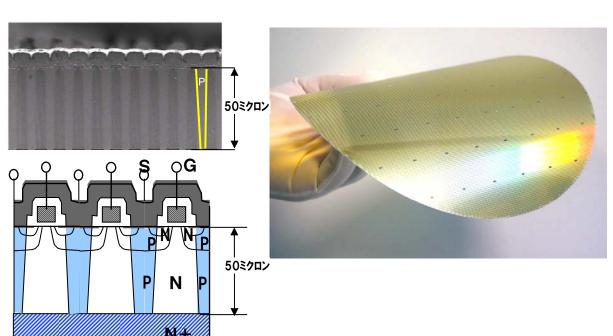
Deep trench (50 micron)

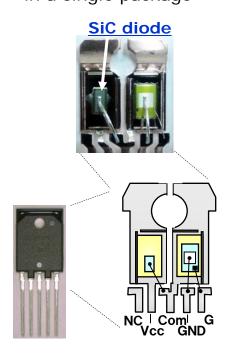
IGBT (Excluding module)

Thin wafer (70 micron@8-inch)

FRD Diode FRD: First Recovery Diode

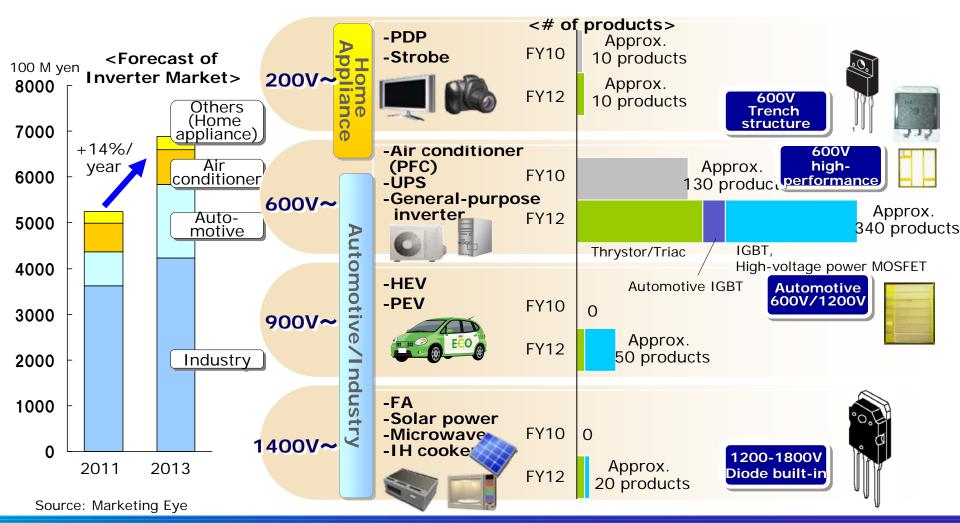
Integrates the newly-adopted SiC and compound IGBT in a single package





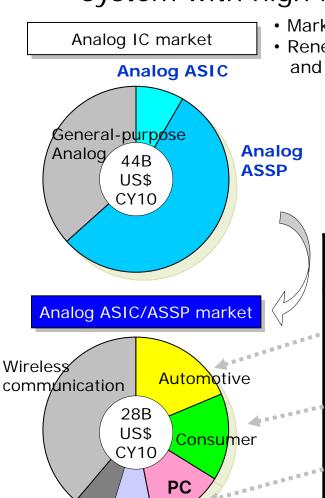
# **Enhance Product Lineups of High-voltage Power Devices**

- Inverters as the key driving force for growing power devices
- Enhance product lineup covering up to 1,800V centering around power devices for inverter control



#### Renesas Analog ASIC/ASSP Products

Optimally-designed by system needs, realizing a compact system with high functionality



PC

Industria

- Market of analog ASIC/ASSP accounts for 60% of the whole analog market
- · Renesas has a proven record centering around automotive, consumer and PC areas with approx. 4% market share and is ranked in the 5<sup>th</sup> place
  - Business expansion through automotive analog ASSP as well as automotive ASIC
  - Providing battery-control solution of MCU together with analog ASSP for cloud-computing terminals, such as smartphones and tablet PC, etc

	CAGR (10-15)	CY10 Market ranking (Share)	Major product
Automotive	+9%	5th* (9%)	Body control, Engine control Communication interface
Consumer	+3%	3rd** (8%)	DSC lens control LED driver, Keep PFC***
PC	+3%	4th** (6%)	Motor driver, Keep Battery control

\*\*\*PFC: Power Factor Correction

Source: \* Strategy Analytics, \*\* iSuppli, Renesas

Wired

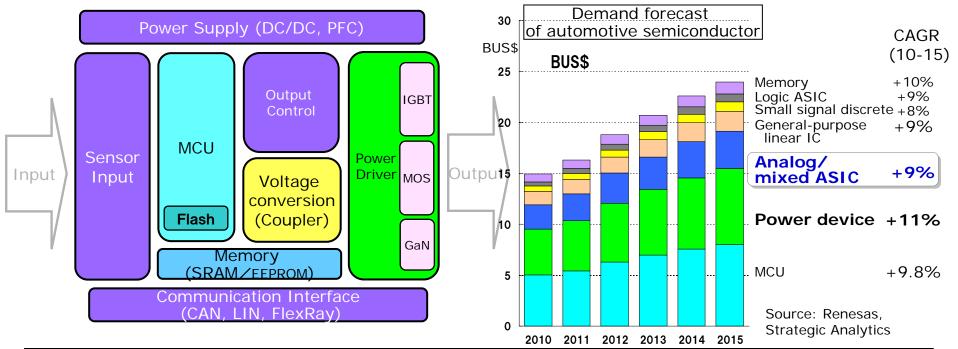
communication

Renesas, i Suppli

Source:

#### **Automotive Analog ASIC/ASSP**

- Automotive systems require sensor inputs, and mechanical control, and thereby makes analog IC a key component
- Needs for uniting peripherals with analog IC as a core to realize compact and highly-integrated system



As the world's leader of automotive semiconductor, Renesas has established a significant presence in all three areas, including MCU, analog IC and power devices.

Market share Automotive Semiconductor #1\* Automotive MCU #1\*

Automotive
Analog IC
#5\*

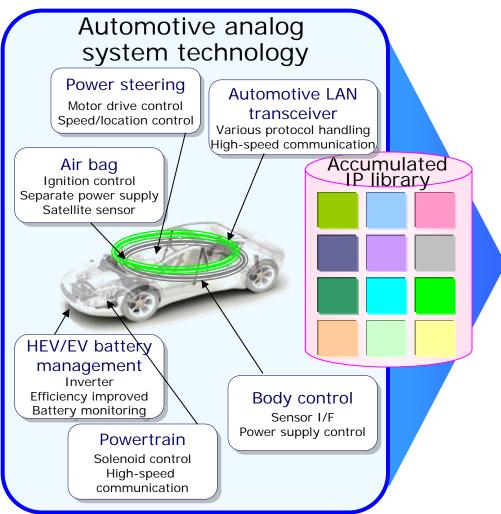
Automotive
Power MOSFET
#1\*\*

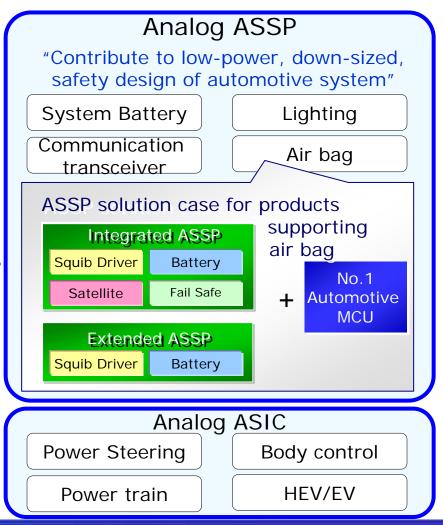
\*Source: Strategy Analytics (CY2010),
\*\*Source: Marketing Eye (CY2009)



## Automotive Analog IC: Expand to ASSP in Addition to ASIC

Adding ASSP business based upon the rich experience of automotive analog system technology of ASIC





Provide Battery Management Solutions for Cloud Terminals

Battery monitor/control

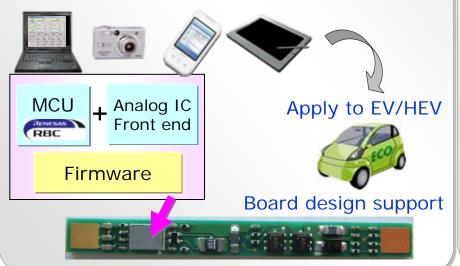
Forecast for Market scale in 2015: Approx. 38BUS\$

Wireless charging system

With total technology of MCU+Analog IC (+firmware), apply knowhow of laptop PC to smart phone and tablet PC and provide best solutions for high performance battery control

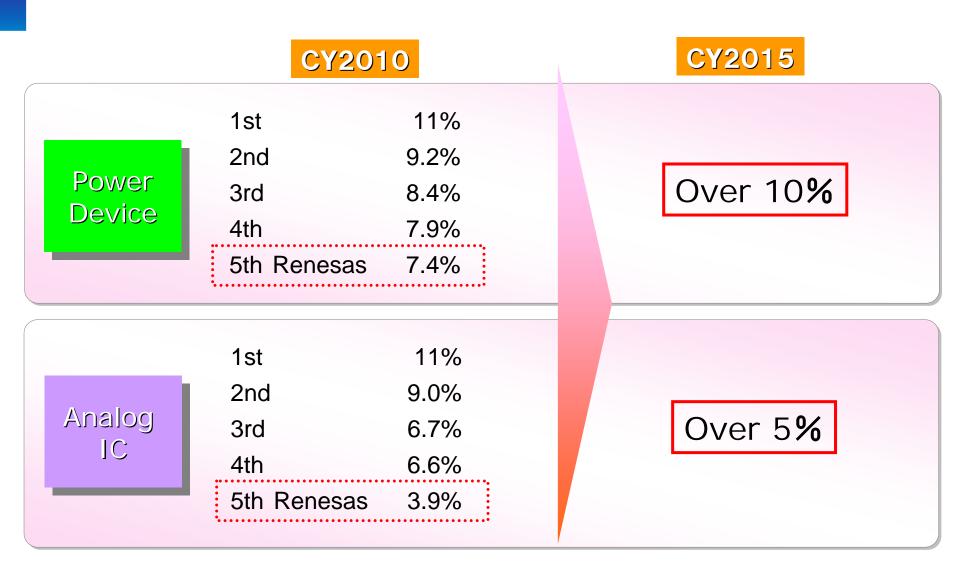
Long-lived battery technology

- Precision analog circuit technology
   (∠ΣADC)
- Precision battery failure prediction algorism





### **Target Market Share**

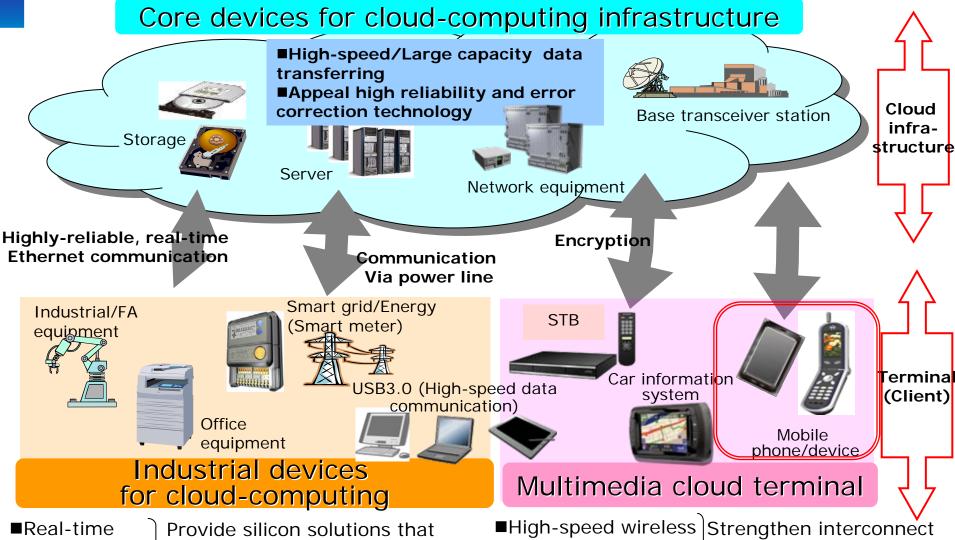


Source: Renesas, iSuppli (CY10)



## 2. Business Policy by Business Segment (3) SoC Business

## SoC Business Domain and Policy



Ethernet

**■**PLC

■USB3.0, etc. >

boast competitive interconnect technology with cloud-computing systems

communication

■Cryptographic communication

technology with cloudcomputing systems and provide system solutions

# Provide SoCs for Core Equipment of Cloud Infrastructure and Industrial Equipment

- Steadily expand business by providing silicon solutions for core equipments of cloud infrastructure and for industrial equipments
- Streamline consumer products of short lifecycle





Address the needs for highperformance, highly-reliable and differentiated products for infrastructure and industrial equipment

Fine-tuned WW network of sales and design

Design platform for custom LSI

Rich IP lineup for industrial and communication

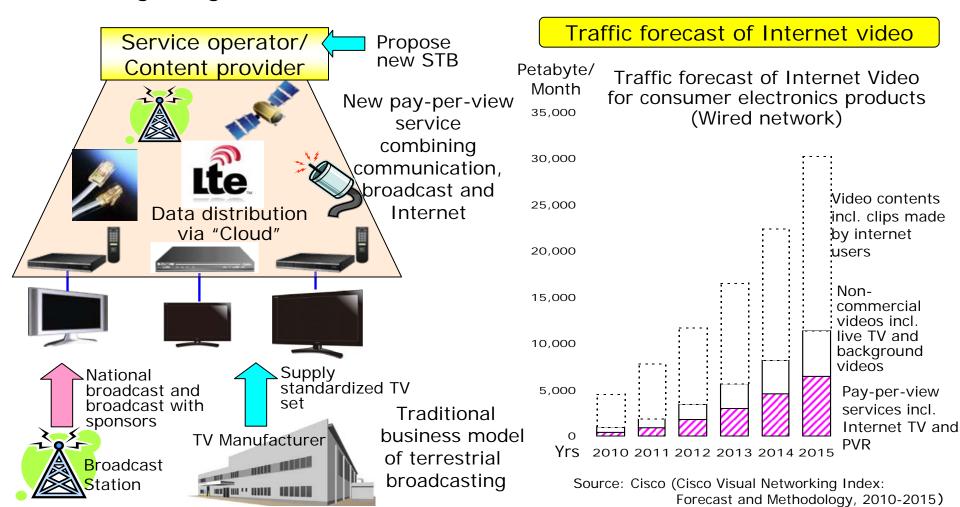
Low power technology (Green Technology)

High quality and reliability

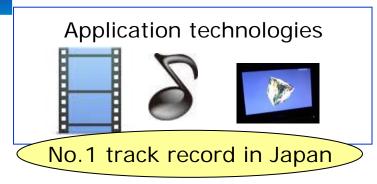
Long-term stable production

#### Focus on STB in the Era of Cloud Computing

Propose and expand new STB for pay-per-view TV service with rich cryptographic technology for/via service operator and provider integrating communication, broadcasts and internet

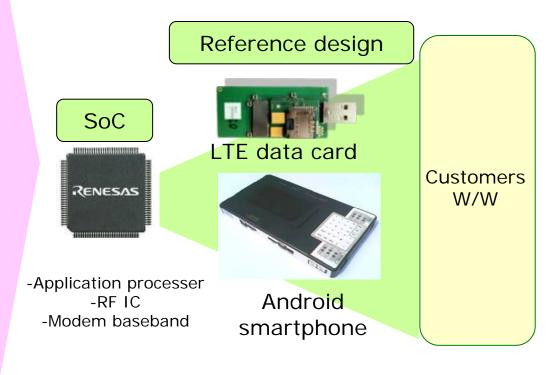


# Renesas Mobile Business Strategy — Necessary Conditions to Win in the Market







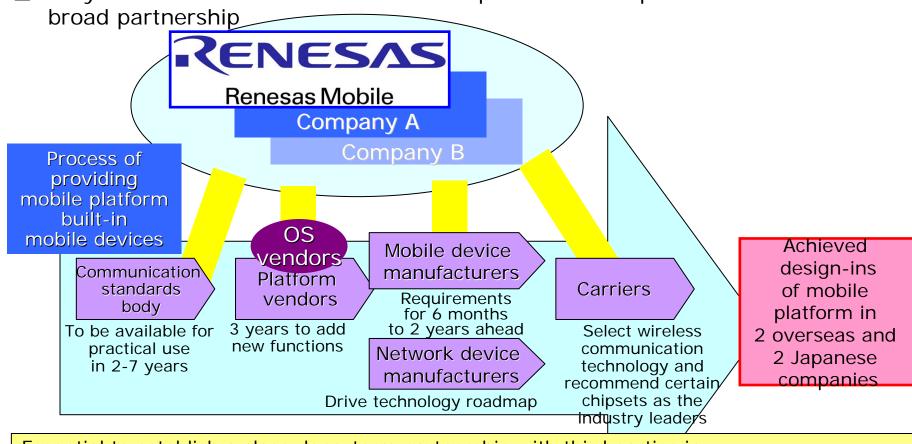


## **Business Strategy of Renesas Mobile**

#### Sufficient Condition to Win

Long-term partnership with third-party companies is essential to provide mobile platform

Only Renesas Mobile and other few companies have experience of

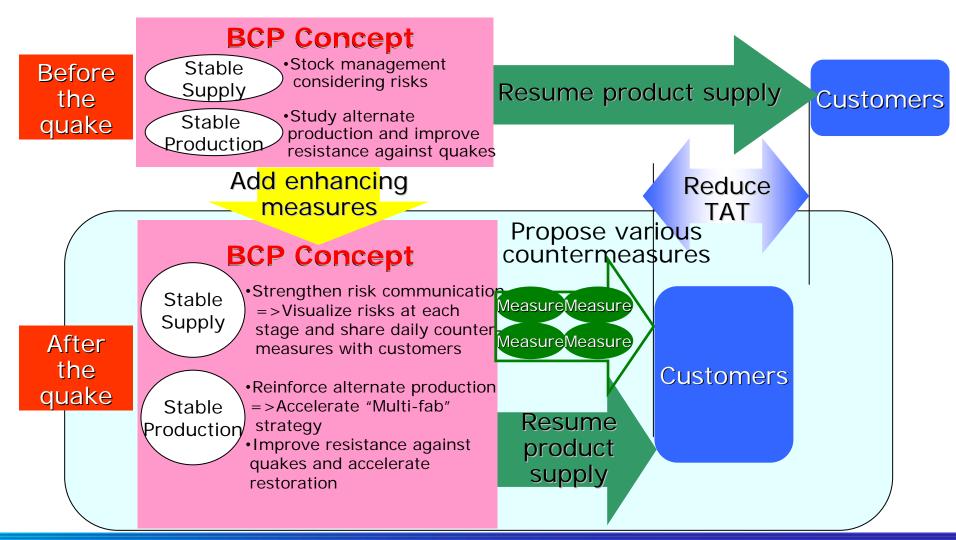


Essential to establish a close, long-term partnership with third parties in order to incorporate advanced technology into mobile platform and to get that mobile platform adopted to network and mobile devices

3. Business Continuity Plan (BCP)

#### Renesas' New BCP

Aim to improve strength for business continuity to prioritize keeping stable product supply to customers



### Approach to Reduce Damages to Minimum Level

- Build robust factories by enhancing earthquake resistance and countermeasures for quick recovery
  - ■Enhance earthquake safety
- Resistant to intensity 6 lower → Strengthen to 6 upper

(same level as the Great East Japan Earthquake)

- ➤ Target to resume production within one month for front-end lines and within 0.5 month for back-end lines
- Countermeasures for quick recovery
- Clarify the points which took time to restore due to great damages

Restore utilities, buildings
and clean rooms

•Repair ducts
•Repair pumps

•Restore equipment

•Repair equipment

•Prepare reticules

•Prepare production tools

Improve mainly the points above which we learned from the earthquake to resume production earlier

> More robust and easier-to-recover Manufacturing facilities

## Accelerate the "Fab Network" as Part of Stronger BCP

"Fab network", which has been promoted through the 100-Day project, is the most effective countermeasures against earthquake

Full-effort to accelerate establishment of "fab network" to ensure further reliability to customers

#### Customers requests

- Multi-fab (more than two factories available for mass-production)
- •Continue to offer high quality through alternate production (multi-fab production)

#### Renesas countermeasures

- Accelerate establishment of fab network, including multi-fab, which has been planned and promoted since the 100-Day project
  - •For core MCU business aims to establish a structure which enables production of more than 90% of Renesas' MCU products (below 0.15 µm) to be done at alternate manufacturing sites upon customers' approval (achieved for 80% of MCU products at present)
- Establish a system which enables multi-fab more smoothly by streamlining production process of system analog and others

### Example of "Multi-Fab" Approach for MCU **Products**

Process node	Process technology	Current fab/line	Alternate fab/line	Time frame
0.15 <b>µ</b> m	RC01F	Naka/200mm	Naka/300mm, Foundry	Mass production now
	RC01S	Saijo/200mm	Naka/300mm	Mass production now
	MF2	Kawashiri/200mm	Foundry, (Shiga)	Mass production now, (FY12)
	MF3	Kawajiri/200mm	Shiga, Foundry	FY13
90nm -	RC03F	Naka/300mm	Yamagata, Foundry	FY12
	UX6LF	Yamagata/300mm	Naka/300mm	FY13
65nm	RC04LP	Naka/300mm	Foundry	1H/FY11
40nm	RV40F	Naka/300mm	Yamagata, Foundry	FY13

<sup>\*</sup>Foundry: GLOBALFOUNDRIES, TSMC, Telefunken Semiconductors (Roseville factory)

## Approach to "Multi-Fab" for A&P Products

Process- node	Process technology	Current fab/line	Alternate fab/line	Time frame
10 <b>µ</b> m	TRIAC	Takasaki/150mm	Foundry	FY12
0.5 <b>µ</b> m	BCD	Kochi/150mm	Saijo/200mm	2H/FY12
0.35 <b>µ</b> m	Automotive IGBT	Kofu/200mm	Shiga/200mm	FY12
	Automotive Analog	Naka/200mm	Takasaki/150mm	Mass production now
0.18 <b>~</b> 0.2 <b>µ</b> m	APEX	Kofu/200mm	Foundry	FY12
0.15 <b>µ</b> m	BEAM2	Kofu/200mm	Shiga/200mm	2H/FY11
	BCD	Saijo/200mm	Foundry	TBD
0.13 <b>µ</b> m	C130L	Powerchip	Naka/300mm	Mass production now
90nm	90nmHV	Powerchip	TSMC	1H/FY12

### Approach to Stable Supply

Promote visualization of risks and provide tailored various options to customers

Material Manufacturing Sales/Logistics (Customers) Procurement SCM before the earthquake Promote multi-suppliers in ◆Carry work-in-progress in stock as ordinary level ◆Carry finished products in stock as ordinary level buying materials Carry materials in stock as ordinary level Enhance SCM after the earthquake Risk management of finished ◆Extend coverage of multi-I◆Risk management of product stock suppliers (including 2<sup>nd</sup>-tier work-in-progress suppliers) -Disclose stock status to customers -Control of storage area at normal times ◆Risk management of -Control stockpile -Disclose alternate production considering risks information to customers material stock (Cooperation with sales force) (Premise 3-month restoration period of a Share risk stock information with devastated supplier for a certain material)

Secure raw materials by visualization of risks and risk management of material štock

Secure product supply by risk management of work-in-progress stock customers

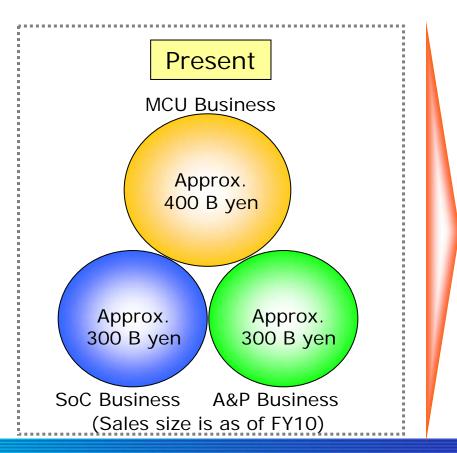
Risk management of finished product stock in close communication with customers

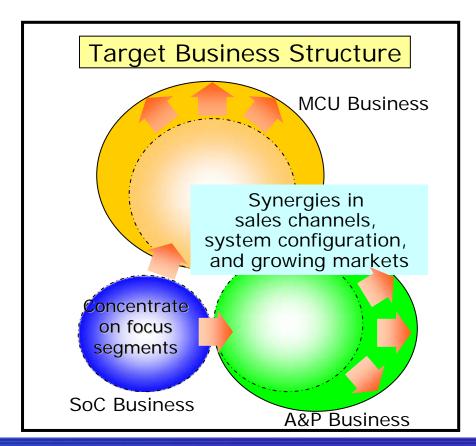
Secure not to stop customers' production lines

## 4. Summary of Business Policy

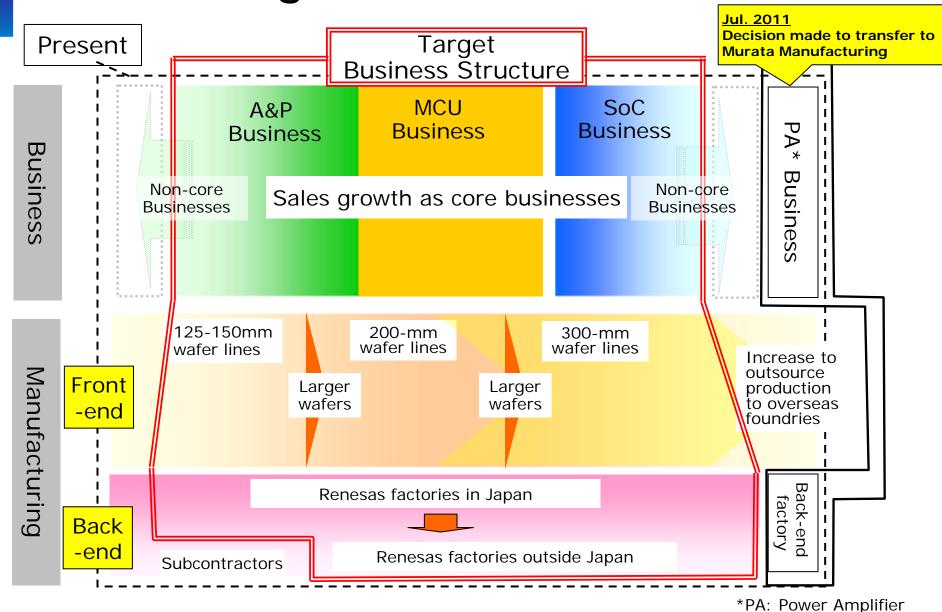
### **Target Business Structure**

- Accelerate focusing on MCU and A&P businesses
- ✓ Continue to expand Renesas' world No.1 MCU business for smart society and emerging countries.
- ✓ Further expand MCU and A&P businesses with synergy among MCU, Analog IC and power device as the main pillar for achieving profits
- ✓ Drastically sort out core competence in the SoC business and focus on markets related to society- and industrial-infrastructure and cloud computing





### Path to Target Business Structure



## **Target Management Index**

FY2011 Mid-term target Ratio to Sales Operating Over 10% -3% **Profit Ratio** >Transformation of business structure -Strengthen core Gross businesses Approx. 40% 32% -Accelerate withdrawal **Profit Ratio** from non-core businesses -Manufacturing Approx. 16% 20% R&D Ratio realignment >FY2012 Full-year -Achieve operating profit Approx. 14% 15% SG&A Ratio -Achieve net profit

#### (FOREWARD-LOOKING STATEMENTS)

The statements in this presentation with respect to the plans, strategies and forecasts of Renesas Electronics and its consolidated subsidiaries (collectively "we") are forward-looking statements involving risks and uncertainties. We caution you in advance that actual results could differ materially from such forward-looking statements due to several factors. The important factors that could cause actual results to differ materially from such statements include, but are not limited to: general economic conditions in our markets, which are primarily Japan, North America, Asia and Europe; demand for, and competitive pricing pressure on, our products and services in the marketplace; our ability to continue to win acceptance of its products and services in these highly competitive markets; and movements in currency exchange rates, particularly the rate between the yen and the U.S. dollar. Among other factors, a worsening of the world economy; a worsening of financial conditions in the world markets, and a deterioration in the domestic and overseas stock markets, would cause actual results to differ from the projected results forecast.

