Renesas Electronics
Business Policy

Renesas Electronics Corporation
August 2, 2011
Yasushi Akao, President

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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.
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

<table>
<thead>
<tr>
<th>CY2010</th>
<th>1H/CY2011</th>
<th>2H/CY2011</th>
<th>CY2012</th>
</tr>
</thead>
</table>

## Impact of the Earthquake

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

## Reconstruction Measures

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

## Growth and strengthening of core businesses

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

## Measures for mid-term Business Growth

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

*BCP: Business Continuity Plan

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Promoting the 100-Day Project

- Review of business portfolio
- Realization of merger synergies
- Implementation of structural reforms

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Great East Japan Earthquake

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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

![Electric Power Consumption Trends](source: Ministry of Economy, Trade and Industry, etc.)

![Semiconductor Market Forecasts](source: WSTS, Renesas)

Source: Ministry of Economy, Trade and Industry, etc.

Source: WSTS, Renesas
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

<table>
<thead>
<tr>
<th>Smart Society Market</th>
<th>Smart Grid</th>
<th>Smart Home</th>
<th>Smart Car</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><img src="image1" alt="Wind Turbine" /> <img src="image2" alt="Solar Panel" /></td>
<td><img src="image3" alt="House" /> <img src="image4" alt="Electric Car" /></td>
<td><img src="image5" alt="Car" /></td>
</tr>
<tr>
<td>System/Application</td>
<td>• Power generation/storage</td>
<td>• Energy-saving home appliance</td>
<td>• Next-generation automobile (HEV/EV) (Infrastructure for electric charge)</td>
</tr>
<tr>
<td></td>
<td>• Energy management</td>
<td>• Home network</td>
<td>• Transportation system (ITS/ETC)</td>
</tr>
<tr>
<td></td>
<td>• Smart meter</td>
<td>• LED lighting</td>
<td>• Car navigation</td>
</tr>
<tr>
<td></td>
<td>• Wireless/PLC*</td>
<td>• Mobile device</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Healthcare equipment</td>
<td></td>
</tr>
</tbody>
</table>

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

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

#1 World’s #1 Business (Source: Renesas)
Approach to Smart Grid Market

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

Source: iSuppli

Semiconductor Market for Smart Grid Applications

1 million USD

- Smart Grid Server
- Smart Meter
- Power Router

Source: iSuppli
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

![Meter Shipment Volume (WW)](image)

Source: Renesas

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

**Smart Meter**
- Expand lineup of MCU products with built-in Analog ICs

**Communication MCU/SoC**
- Track record in Communication and Security market
- 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.
Solutions for Inverter-Controlled Home Appliances

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

Inverter-controlled home appliances

Low-power inverter MCU
- Low power consumption
- Fine-tuned temperature control
- Low noise

Sinusoidal control
120-degree control

Provide solutions

+ Analog & Power products

IBGT
Photo Coupler
PFC
(Power Factor Correction)
Power MOS

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.

- **Low system cost**
  - Light bulb/Down light, etc
  - Analog LED driver
  - AC power supply (incl. PFC)

- **Communication function/Multi-channels driver**
  - Base light/Ceiling light, etc
  - MCU + LED driver
  - Solar street lighting, etc
  - Analog LED driver
  - DC power supply (excl. PFC)
  - Analog 4ch LED driver
  - Illumination, etc
  - SiP solution
  - MCU + 4ch driver

- **Driver IC**

**Software automatic-generation tool**
- Reduce software development time

**LED lighting reference**
- Evaluation of LED lighting dimmer control
- Evaluation of DALI/DMX512 communication

**DALI**
- Digital Addressable Lighting Interface

**DMX512**
- Common communication standard for stage lighting

- **PFC**: Power Factor Correction
- **DALI**: Digital Addressable Lighting Interface
- **DMX512**: Common communication standard for stage lighting

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 Analog IC : $2.7B US$ (CY2010)

Automotive Power Device: 4.1B 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

- High power
- High-current/High-voltage

Drive inverter
Accessory inverter
Chassis control
Start/Stop electric pump
Lamp control
Body control (Door, mirror)
1. 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

Projected TAM-based W/W semiconductor market growth

- CAGR (10-15) +8%

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

**Rapid expansion of MCU market**

**Increased market share:**
- CY2009: 15%
- CY2010: 22%

**MCU Sales of Chinese Market**

- CY2009: 2044M US$
- CY2010: 3773M US$

**MCU Share of Chinese Market**

- CY2009: 15%
- CY2010: 22%

Source: IHS iSuppli 2011
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
- Energy-saving home appliance
- Automobile (EV/HEV, e-Bike)
- Home environment (Home security, etc)

100 products 600 products 100 products 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

<table>
<thead>
<tr>
<th>Region</th>
<th>MCU</th>
<th>Transistor</th>
<th>Analog IC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Japan</td>
<td>64%</td>
<td>17%</td>
<td>6%</td>
</tr>
<tr>
<td>US</td>
<td>16%</td>
<td>2%</td>
<td>Below 15th</td>
</tr>
<tr>
<td>EMEA</td>
<td>23%</td>
<td>3%</td>
<td>Below 15th</td>
</tr>
<tr>
<td>ASIA</td>
<td>17%</td>
<td>6%</td>
<td>Below 15th</td>
</tr>
<tr>
<td>W/W</td>
<td>29%</td>
<td>8%</td>
<td>2%</td>
</tr>
</tbody>
</table>

Provide the best solutions to overseas customers

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

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 general-purpose/automotive MCUs with 29% market share w/w

![Market Share Graph]

*General-purpose MCU: MCU market for applications excluding automotive
## Strength of the MCU Business

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>High Quality</strong></td>
<td>Target zero-defects</td>
</tr>
<tr>
<td>&lt;Safety improvement&gt;</td>
<td>- Currently boasts 0.4ppm (parts per million)</td>
</tr>
<tr>
<td><strong>Low Power</strong></td>
<td>World-leading low power consumption</td>
</tr>
<tr>
<td>&lt;Support promotion of green products&gt;</td>
<td>- Achieved 55 μA/DMIPS with RL78 MCU</td>
</tr>
<tr>
<td><strong>Integrate Tools</strong></td>
<td>Integrated GUI (Graphical User Interface)</td>
</tr>
<tr>
<td>&lt;Provide best-fit development environment&gt;</td>
<td>supports user operability</td>
</tr>
<tr>
<td></td>
<td>RL78, RX, SH, V850</td>
</tr>
<tr>
<td><strong>Support Structure</strong></td>
<td>Extensive alliance with over 700 partner companies worldwide</td>
</tr>
<tr>
<td>&lt;Offer industry-leading hospitality&gt;</td>
<td>to provide detailed assistance</td>
</tr>
<tr>
<td><strong>Global Network</strong></td>
<td>Local support structure to support customers worldwide</td>
</tr>
</tbody>
</table>
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 (μA/DMIPS)

<table>
<thead>
<tr>
<th>Company A</th>
<th>Company B (RX600)</th>
<th>Company C (RX200)</th>
<th>Company D</th>
<th>Company E (RL78)</th>
</tr>
</thead>
<tbody>
<tr>
<td>32-bit @100 MHz</td>
<td>448</td>
<td>330*</td>
<td>300</td>
<td>367</td>
</tr>
<tr>
<td>32-bit @50 MHz</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16-bit @32 MHz</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Excluding flash memory
# Promotion of Integrated Support Tools

<table>
<thead>
<tr>
<th>Integrated software development tool</th>
<th>Integrated hardware development tool</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>2010</strong></td>
<td><strong>2011</strong></td>
</tr>
<tr>
<td>Integrated Development Environment (IDE)</td>
<td>OCD Emulator E1/E20</td>
</tr>
<tr>
<td>MINICUBE2</td>
<td>Flash programmer PG-FP5</td>
</tr>
<tr>
<td>E8a</td>
<td></td>
</tr>
</tbody>
</table>

- **Launched**
  - CubeSuite
  - CubeSuite+
  - V850 RL78
  - RX
  - R8C
  - 78K

- **To be launched in Nov**
  - V850 RX

- **Launched**
  - OCD Emulator E1/E20

- **To be launched in Oct**
  - PG-FP5

**Promotions**

- Increase development efficiency
- Improve development cost
  - Reduce development cost
  - Support all MCUs through common hardware
  - Support all MCUs through common hardware
  - Improve user operability through Integrated GUI
  - Supports MCU development under the same operation
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

Renesas Electronics Europe GmbH

Renesas Electronics China Co., Ltd.

Renesas Electronics HQ

Renesas Electronics America Inc.

Sales/SCM → marketing → Support

Sales/SCM → marketing → Support

Sales/SCM → marketing → Support

Sales/SCM → marketing → Support

Account management

Product planning

Technical support

*Automotive organization
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.

<table>
<thead>
<tr>
<th>Year</th>
<th>Actual W/W Market Share</th>
<th>CAGR 9%</th>
<th>Target 35%</th>
</tr>
</thead>
<tbody>
<tr>
<td>CY2010</td>
<td>29%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2011</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2012</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2015</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Renesas
2. Business Policy by Business Segment (2) 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% (5th) (Note: including IGBT module)

Analog IC
- Analog ASIC/ASSP for automobile
- Market share: 3.9% (5th)

Source: Renesas, iSuppli (CY10)
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)

Total power device will grow by 7% annually driven by high-voltage power device such as IGBT

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

<table>
<thead>
<tr>
<th></th>
<th>CAGR (10-14)</th>
<th>CY10 Market ranking (Share)</th>
<th>Application</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low-voltage</td>
<td>+7%</td>
<td>1st* (15%)</td>
<td>Automotive device, PC/server, rechargeable battery</td>
</tr>
<tr>
<td>Power MOSFET</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High-voltage</td>
<td>+9%</td>
<td>6th* (7%)</td>
<td>Power supply module</td>
</tr>
<tr>
<td>Power MOSFET</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IGBT (excl. module)</td>
<td>+11%</td>
<td>4th* (9%)</td>
<td>White goods, Digital AV device, Strobe</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Triac/Thyristor</td>
<td>+5%</td>
<td>3rd* (14%)</td>
<td>White goods, Power supply module</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>5</td>
<td>10</td>
<td>15</td>
<td></td>
</tr>
</tbody>
</table>

7%/year

Source: WSTS

*Source: Marketing Eye

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

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

**MOSFET for battery**
- Established excellent record with world’s smallest chip

**MOSFET for mobile phone**
- Electrode
- 1.65×1.65mm
- Mounted on the board

**SVR solution for power supply of PC and server**
- Energy-saving, space-saving and easy evaluation
- High-performance one-chip controller with built-in MCU
- Highly-efficient power device Dr.MOS

**Power device for automobile**
- Automotive MOSFET
- Address wide range of needs from compact package to large-current bare die
- 75A 6×5mm
- 180A
- 180A～ bare die
- IPD (Intelligent Power Device)
  - Switching device with integrated protection function

**Easy evaluation**
- SVR: Scalable Voltage Regulator

**svr: Scalable Voltage Regulator**
- Mounted on the board

**Highly-efficient power device**
- Dr.MOS
- (6x6mm)
- Optimized power control

**High-performance one-chip controller**
- with built-in MCU

**Easy evaluation**
- Mount on the board

**Control IC**
- Output MOS FET

**Switching device with integrated protection function**
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

<table>
<thead>
<tr>
<th>High-voltage MOSFET (Over 200V)</th>
<th>IGBT (Excluding module)</th>
<th>FRD Diode</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deep trench (50 micron)</td>
<td>Thin wafer (70 micron@8-inch)</td>
<td>FRD: First Recovery Diode</td>
</tr>
</tbody>
</table>

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

SiC diode
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

**<Forecast of Inverter Market>**

<table>
<thead>
<tr>
<th>Voltage Level</th>
<th>Home Appliance</th>
<th>Automotive / Industry</th>
<th>Automotive</th>
<th>Others (Home appliance)</th>
</tr>
</thead>
<tbody>
<tr>
<td>200V~</td>
<td>-PDP - Strobe</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>600V~</td>
<td>-Air conditioner (PFC) - UPS - General-purpose inverter</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>900V~</td>
<td>-HEV - PEV</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1400V~</td>
<td>-FA - Solar power - Microwave - IH cooker</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**<# of products>**

<table>
<thead>
<tr>
<th>Fiscal Year</th>
<th>Home Appliance</th>
<th>Automotive / Industry</th>
<th>Automotive</th>
<th>Others (Home appliance)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY10</td>
<td>10 products</td>
<td>130 products</td>
<td>340 products</td>
<td></td>
</tr>
<tr>
<td>FY12</td>
<td>10 products</td>
<td>20 products</td>
<td>50 products</td>
<td></td>
</tr>
</tbody>
</table>

Source: Marketing Eye

- Approx. 10 products
- Approx. 130 products
- Approx. 340 products
- Approx. 20 products

**Products Overview**

- 600V/1200V Automotive IGBT
- Automotive 600V/1200V
- Diode built-in 1200-1800V
- High-voltage power MOSFET
- IGBT, Thrystor/Triac
- Trench structure

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Renesas Analog ASIC/ASSP Products

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

- 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 5th 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

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

***PFC: Power Factor Correction

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

Automotive analog system technology

- Power steering
  - Motor drive control
  - Speed/location control

- Automotive LAN transceiver
  - Various protocol handling
  - High-speed communication

- Air bag
  - Ignition control
  - Separate power supply
  - Satellite sensor

- HEV/EV battery management
  - Inverter
  - Efficiency improved
  - Battery monitoring

- Body control
  - Sensor I/F
  - Power supply control

- Powertrain
  - Solenoid control
  - High-speed communication

Accumulated IP library

Analog ASSP

“Contribute to low-power, down-sized, safety design of automotive system”

- System Battery
- Lighting
- Communication transceiver
- Air bag

ASSP solution case for products supporting air bag

Integrated ASSP

- Squib Driver
- Battery
- Satellite
- Fail Safe

Extended ASSP

- Squib Driver
- Battery

Analog ASIC

- Power Steering
- Body control
- Power train
- HEV/EV

No.1 Automotive MCU
Provide Battery Management Solutions for Cloud Terminals

Battery monitor/control

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 (ΔΣ ADC)
- Precision battery failure prediction algorithm

Wireless charging system

Provide solution combining MCU and analog IC

Technology for wireless power supply system
- High-efficiency/low-noise power supply technology
- RF technology
- Protocol control/authentication/safety control

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

**Power Device**

<table>
<thead>
<tr>
<th>Rank</th>
<th>CY2010</th>
<th>CY2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st</td>
<td>11%</td>
<td>Over 10%</td>
</tr>
<tr>
<td>2nd</td>
<td>9.2%</td>
<td></td>
</tr>
<tr>
<td>3rd</td>
<td>8.4%</td>
<td></td>
</tr>
<tr>
<td>4th</td>
<td>7.9%</td>
<td></td>
</tr>
<tr>
<td>5th</td>
<td>Renesas 7.4%</td>
<td></td>
</tr>
</tbody>
</table>

**Analog IC**

<table>
<thead>
<tr>
<th>Rank</th>
<th>CY2010</th>
<th>CY2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st</td>
<td>11%</td>
<td>Over 5%</td>
</tr>
<tr>
<td>2nd</td>
<td>9.0%</td>
<td></td>
</tr>
<tr>
<td>3rd</td>
<td>6.7%</td>
<td></td>
</tr>
<tr>
<td>4th</td>
<td>6.6%</td>
<td></td>
</tr>
<tr>
<td>5th</td>
<td>Renesas 3.9%</td>
<td></td>
</tr>
</tbody>
</table>

Source: Renesas, iSuppli (CY10)
2. Business Policy by Business Segment
(3) SoC Business
SoC Business Domain and Policy

Core devices for cloud-computing infrastructure

- High-speed/Large capacity data transferring
- Appeal high reliability and error correction technology

Highly-reliable, real-time Ethernet communication

Communication Via power line

Encryption

Cloud infrastructure

Terminal (Client)

Industrial devices for cloud-computing

- Real-time Ethernet
- PLC
- USB3.0, etc.

Provide silicon solutions that boast competitive interconnect technology with cloud-computing systems

Multimedia cloud terminal

- High-speed wireless communication
- Cryptographic communication

Strengthen interconnect technology with cloud-computing systems and provide system solutions

Industrial/FA equipment

Office equipment

Smart grid/Energy (Smart meter)

USB3.0 (High-speed data communication)

STB

Car information system

Mobile phone/device

Set-top box

Mobile phone/device
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 high-performance, 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.

Traffic forecast of Internet video

- Video contents incl. clips made by internet users
- Non-commercial videos incl. live TV and background videos
- Pay-per-view services incl. Internet TV and PVR

Source: Cisco (Cisco Visual Networking Index: Forecast and Methodology, 2010-2015)
Renesas Mobile Business Strategy – Necessary Conditions to Win in the Market

Application technologies
No.1 track record in Japan

OS Technologies
Support Android 2.3

Modem technologies
World’s smallest LTE chip

Reference design
- Application processer
- RF IC
- Modem baseband

LTE data card
Android smartphone

Customers W/W

Application technologies

OS Technologies

Modem technologies

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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 broad partnership

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

**BCP Concept**

**Before the quake**
- **Stable Supply**
  - Stock management considering risks
- **Stable Production**
  - Study alternate production and improve resistance against quakes

**Add enhancing measures**

**After the quake**
- **Stable Supply**
  - Strengthen risk communication
  - Visualize risks at each stage and share daily countermeasures with customers
- **Stable Production**
  - Reinforce alternate production
  - Accelerate “Multi-fab” strategy
  - Improve resistance against quakes and accelerate restoration

Resume product supply ➔ Resume product supply

Reduce TAT

Propose various countermeasures

Customers

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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 production tools
  - Test production
    - Prepare reticules

- 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 0.15μm) 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

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

*Foundry: GLOBALFOUNDRIES, TSMC, Telefunken Semiconductors (Roseville factory)
## Approach to “Multi-Fab” for A&P Products

<table>
<thead>
<tr>
<th>Process-node</th>
<th>Process technology</th>
<th>Current fab/line</th>
<th>Alternate fab/line</th>
<th>Time frame</th>
</tr>
</thead>
<tbody>
<tr>
<td>10μm</td>
<td>TRIAC</td>
<td>Takasaki/150mm</td>
<td>Foundry</td>
<td>FY12</td>
</tr>
<tr>
<td>0.5μm</td>
<td>BCD</td>
<td>Kochi/150mm</td>
<td>Saijo/200mm</td>
<td>2H/FY12</td>
</tr>
<tr>
<td>0.35μm</td>
<td>Automotive IGBT</td>
<td>Kofu/200mm</td>
<td>Shiga/200mm</td>
<td>FY12</td>
</tr>
<tr>
<td></td>
<td>Automotive Analog</td>
<td>Naka/200mm</td>
<td>Takasaki/150mm</td>
<td>Mass production now</td>
</tr>
<tr>
<td>0.18~0.2μm</td>
<td>APEX</td>
<td>Kofu/200mm</td>
<td>Foundry</td>
<td>FY12</td>
</tr>
<tr>
<td>0.15μm</td>
<td>BEAM2</td>
<td>Kofu/200mm</td>
<td>Shiga/200mm</td>
<td>2H/FY11</td>
</tr>
<tr>
<td></td>
<td>BCD</td>
<td>Saijo/200mm</td>
<td>Foundry</td>
<td>TBD</td>
</tr>
<tr>
<td>0.13μm</td>
<td>C130L</td>
<td>Powerchip</td>
<td>Naka/300mm</td>
<td>Mass production now</td>
</tr>
<tr>
<td>90nm</td>
<td>90nmHV</td>
<td>Powerchip</td>
<td>TSMC</td>
<td>1H/FY12</td>
</tr>
</tbody>
</table>
## Approach to Stable Supply

- Promote visualization of risks and provide tailored various options to customers

### SCM before the earthquake

<table>
<thead>
<tr>
<th>Material Procurement</th>
<th>Manufacturing</th>
<th>Sales/Logistics</th>
<th>Customers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Promote multi-suppliers in buying materials</td>
<td>Carry work-in-progress in stock as ordinary level</td>
<td>Carry finished products in stock as ordinary level</td>
<td></td>
</tr>
</tbody>
</table>

### Enhance SCM after the earthquake

<table>
<thead>
<tr>
<th>Material Procurement</th>
<th>Manufacturing</th>
<th>Sales/Logistics</th>
<th>Customers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extend coverage of multi-suppliers (including 2nd-tier suppliers)</td>
<td>Risk management of work-in-progress</td>
<td>Risk management of finished product stock</td>
<td></td>
</tr>
<tr>
<td>Risk management of material stock (Premise 3-month restoration period of a devastated supplier for a certain material)</td>
<td>Control of storage area</td>
<td>Disclose stock status to customers at normal times</td>
<td></td>
</tr>
<tr>
<td>Secure raw materials by visualization of risks and risk management of material stock</td>
<td>Control stockpile considering risks (Cooperation with sales force)</td>
<td>Disclose alternate production information to customers</td>
<td></td>
</tr>
<tr>
<td>Secure product supply by risk management of work-in-progress stock</td>
<td>Secure not to stop customers’ production lines</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Risk management of finished product stock</td>
<td>Risk management of finished product stock in close communication with customers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Share risk stock information with customers</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
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

Present

MCU Business
Approx. 400 B yen

SoC Business
Approx. 300 B yen

A&P Business
Approx. 300 B yen

Target Business Structure

MCU Business

Synergies in sales channels, system configuration, and growing markets

Concentrate on focus segments

SoC Business

A&P Business
Path to Target Business Structure

**Present**

- A&P Business
- MCU Business
- SoC Business

**Target Business Structure**

- Non-core Businesses: Sales growth as core businesses
- Larger wafers: 125-150mm wafer lines, 200-mm wafer lines, 300-mm wafer lines
- Outsource production to overseas foundries
- Subcontractors

**Renesas factories in Japan**

**Renesas factories outside Japan**

**Jul. 2011**
Decision made to transfer to Murata Manufacturing

**Non-core Businesses**

**Back-end**

**Front-end**

**Renesas factories**

*PA: Power Amplifier*
# Target Management Index

<table>
<thead>
<tr>
<th>Ratio to Sales</th>
<th>FY2011</th>
<th>Mid-term target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Profit Ratio</td>
<td>-3%</td>
<td>Over 10%</td>
</tr>
<tr>
<td>Gross Profit Ratio</td>
<td>32%</td>
<td>Approx. 40%</td>
</tr>
<tr>
<td>R&amp;D Ratio</td>
<td>20%</td>
<td>Approx. 16%</td>
</tr>
<tr>
<td>SG&amp;A Ratio</td>
<td>15%</td>
<td>Approx. 14%</td>
</tr>
</tbody>
</table>

- **Transformation of business structure**
  - Strengthen core businesses
  - Accelerate withdrawal from non-core businesses
  - Manufacturing realignment

- **FY2012 Full-year**
  - Achieve operating profit
  - 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.