

Eco-Products Initiative

Contents/Editorial Policies/
How to Use/Editorial Policies

Top Message

Renesas Electronics Group
Environmental Measures

Eco-Management Initiative

Eco-Factories Initiative

Eco-Products Initiative

Eco-Communication Initiative

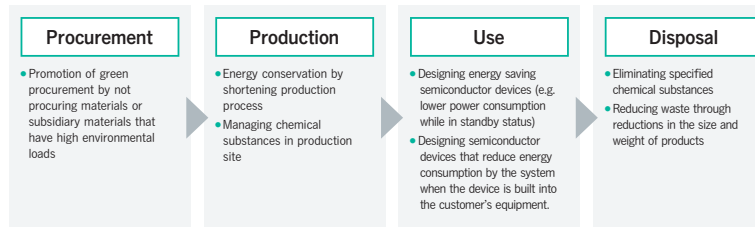
Third-party opinions

Eco-Products Initiative

Customers' environmental requirements for our semiconductor products are growing stricter every year. The Renesas Electronics Group is proceeding with its Eco-Products Initiative to meet these requirements. To turn a product into an eco-product, it is important to build in a variety of innovations at the development and design stages to reduce environmental loads at all life cycle stages, including procurement, production, usage and disposal.

Our eco-products are made possible through product environmental assessments, which are comprehensive evaluations of the product environmental loads reduction measures. Product environmental assessments are divided into two stages: At the time of development and prior to mass production.

Eco-Products Initiative at Each Stage

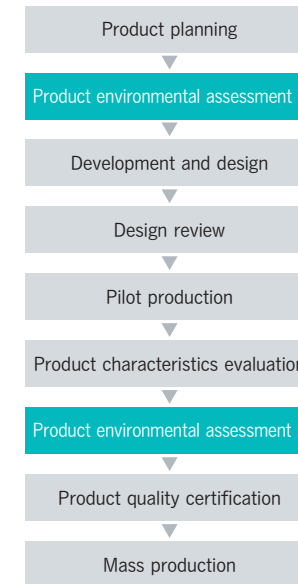


Creation of Eco-Friendly Products

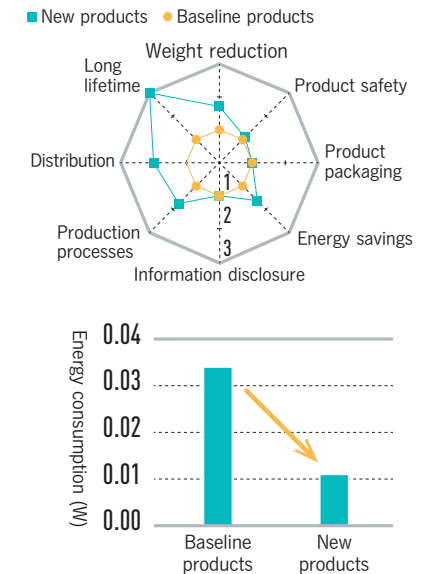
As a way to create eco-friendly products, we include a product environmental assessment, a way of evaluating how much a project mitigates environmental loads, into our development and design flow. The evaluation compares new products against old ones in eight categories, including volume reduction, product safety, and energy savings. The process yields quantifiable results that can be visualized, for example with charts. This helps improve the performance of our semiconductor product itself, and when used in our customers' products, helps make them smaller and more energy-efficient. This ultimately decreases the environmental loads of the customers who use those products.

Information about eco-friendly products (Eco-Products Initiative)
<https://www.renesas.com/en-hq/about/company/csr/ecoproduct.html>

Flowchart of Development and Design of General Semiconductor Device



Product Environmental Assessment Results Chart and Energy Consumption Comparison



Renesas Green Device

The Renesas Green Device is internally certified as a product with an assessed environmental performance above the set criterion level. Products with higher environmental performance are selected and certified as Renesas Super Green Devices. The Renesas Green Devices and Renesas Super Green Devices selected from hundreds of newly developed products every year are registered in our database. Some of these products are presented on our website with an environmental performance index.



Eco-Products Initiative

Contents/Editorial Policies/
How to Use/Editorial Policies

Top Message

Renesas Electronics Group
Environmental Measures

Eco-Management Initiative


Eco-Factories Initiative

Eco-Products Initiative

Eco-Communication Initiative

Third-party opinions

Introducing Renesas Super Green Devices for the public

 Environment-friendly products (Eco-products activity)
<https://www.renesas.com/en-hq/about/company/csr/ecoproduct.html>

Product name	Type	Application	Environmental performance	Feature
RJH65T14DPQ	IGBT + Fast recovery diode	High power control such as IH	★★★★	Realizing miniaturization by packaging both IGBT and fast recovery diode in one body
RJE0620JPD	High performance power MOSFET (Thermal FET)	Power switching	★★★★★	Realizing both high performance and miniaturization with built-in overheat cutoff circuit
R5FIIAG series	General purpose low-end MCU	Bluetooth Low Energy	★★★★	Reduced power consumption for input/output in half, and enabling downsizing of board by eliminating external parts
NP30N04QUK	Power MOSFET for low-middle power	Switching Car mounted ECU control	★★★★	Mounting Dual chip and miniaturizing system configuration 50% in size
R7S721000VLFP	Display control (Camera, Network, Voice) MCU	Display control	★★★★★	Eliminating DRAM on peripheral components Enabling miniaturization of module board size Enlarging internal memory size
RAJ240500A20DNP	Charge and discharge control, Current monitoring function mounted MCU	Monitoring and controlling Lithium ion secondary battery	★★★★	Optimizing battery efficiency by integrating all necessary features in one package, realizing miniaturization for a lightweight device
RBA80N04AHWAUH01	Power MOSFET for low-middle power	Switching Car mounted ECU control	★★★★★	Improved function with built-in temperature sensing diode Reducing power consumption by 20% by low ON resistance
R8A77920DA01BG	Onboard camera image recognition and processing SoC	For image processing (image input, and distortion recognition and correction)	★★★★★	Expansion of the functions, such as an increase of inputs, downsizing, and reduction of a power consumption by 30% or more
R7F701383EAFP	RH850 onboard RISC MCU	For safety of a chassis and automatic operation control	★★★★★	Upgrading of the existing functions such as the advanced safety and security functions and various interfaces
R7F7015874AFP-C	RH850 onboard 32-bit MCU	For automobile electronic parts	★★★★★	Smaller unit with the same performance, reduction of a power consumption by 48% or more

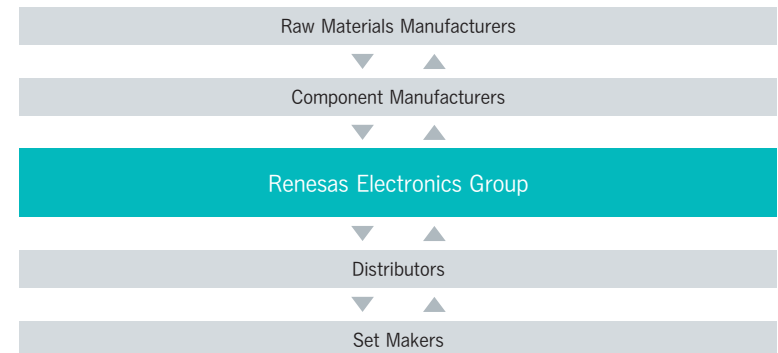
Environmental performance (indicator) ★~★★★★:Renesas Green Device
★★★★~★★★★★:Renesas Super Green Device



Product Environmental Quality

To customers, we provide information on substances contained in our products and analysis data on the substances prohibited by the Restriction of Hazardous Substances (RoHS)*¹ at the request of customers to ensure that our products can be used safely. Moreover, we offer opportunities to check our chemical substances control system and actual environmental protection activities. We think that chemical substances used in all processes from selection of materials at development and design phases to pollution prevention in the manufacturing processes must be controlled by the whole supply chain. To suppliers, we ask them to submit a certificate and analysis data to ensure that the prohibited substances are not used. Additionally, we perform supplier audits to check their control systems. To distributors and special agents, we request them to control chemical substances contained in packaging materials.

Product Chemical Content Control throughout the Supply Chain



Provision of the information on substances contained in our products and the analysis data on the substances prohibited by the RoHS

*¹ **RoHS Directive**:EU directive on the Restriction of the use of certain Hazardous Substances in electrical and electronic equipment. Limits content of lead, mercury, cadmium, hexavalent chromium and brominated flame retardants (PBB, PBDE).

Eco-Products Initiative

Contents/Editorial Policies/
How to Use/Editorial Policies

Top Message

Renesas Electronics Group
Environmental Measures

Eco-Management Initiative

Eco-Factories Initiative

Eco-Products Initiative

Eco-Communication Initiative

Third-party opinions

Promoting Green Procurement

Renesas Electronics is promoting green procurement. Specifically, the Company prioritizes the procurement of ecofriendly products free of hazardous substances from suppliers who are proactively promoting environmental protection. These guidelines are disclosed to all suppliers and the Company conducts periodic investigations on the environmental measures implemented by suppliers. In addition, the Company advances its procurement initiatives with the understanding and cooperation of our suppliers in relation to testing of purchased items for hazardous substances, compliance with the European Union's RoHS directive and other laws and regulations.



About Green Procurement

<https://www.renesas.com/en-hq/about/company/csr/green.html>

Compliance with Environmental Laws and Regulations

Embedded in a wide range of finished products, Renesas Electronics' semiconductors are being used worldwide. In order to ensure compliance with environmental laws and regulations related to its products Renesas Electronics is working to obtain information regarding such laws and regulations in major countries immediately after its publication.

Major Environmental Laws Overseas and Our Response

The RoHS Directive and the ELV Directive*¹ of the European Union have defined threshold values for chemical substances contained in certain products. In response to these and similar directives, Renesas Electronics makes sure that it receives product analysis data from suppliers of semiconductor device components as well as reports certifying that their products are free of banned substances. In addition, we conduct voluntary analysis of these components to confirm that sub-threshold values are observed.

*¹ **ELV Directive**: EU directive on End-of-Life Vehicles. Limits content of lead, mercury, cadmium and hexavalent chromium.



European RoHS initiatives

<https://www.renesas.com/en-eu/support/products-common/lead/rohs.html>



Initiatives in China

China's Administrative Measures for Restrictions on the Use of Hazardous Substances in Electrical and Electronic Products, also known as Amendment China RoHS, requires an indication of the hazardous substance used and the product Environment Friendly Use Period (EFUP) for end products that contain specified toxic and hazardous substances. Semiconductor products are not electrical and electronic end products, so information related to each chemical substance contained in products and product Environment Friendly Use Period (EFUP) values is provided through sales companies and authorized dealers without directly marking the products.



Information about China RoHS

<https://www.renesas.com/en-eu/support/products-common/lead/rohs.html#chinarohs>

Initiatives in Europe

Renesas Electronics is not required to register its semiconductor devices under the EU's REACH Regulation*², since they are articles (finished products) that do not intentionally emit chemical substances. However, we obtain the products containment information related to substances of very high concern (SVHCs*³) from the supply chain and provide it to customers.

The Group will continue to closely monitor movements of environmental laws and regulations overseas and implement appropriate measures.

*² **REACH Regulation**: Regulation on Registration, Evaluation, Authorization and Restriction of Chemicals. Requires registration and evaluation to produce or import chemical substances in the EU, requires authorization for substances of very high concern, and sets limits (including bans) on high-risk substances.

*³ **SVHC**: Substances of Very High Concern (because they harm or may harm health and safety.)