

Renesas Technology Releases Car Audio Power Supply IC with Industry's Lowest Loss

— Enabling car audios to be made smaller through approximately 70% less power supply loss (compared with previous Renesas products) and lower heat generation —

Tokyo, November 16, 2005 — Renesas Technology Corp. today announced the R2S25404SP car audio power supply IC, which meets the increased current requirements of functions such as DVD playback. This IC enables eliminate the need for a bulky heat sink.*¹ through generating low heat. Mass production will begin in Japan in February 2006.

The R2S25404SP offers the following main features.

(1) Industry's Lowest Loss and Reduced Heat Generation

The R2S25404SP achieves the industry's lowest level of loss (3 watts) for a car audio power supply IC. Power supply loss is approximately 70% less than that of previous Renesas products, and the IC device also generates substantially less heat. Since a large heat sink is not required, components incorporating the R2S25404SP can be made more compact.

(2) Low Standby Current

The new power supply IC satisfies reduced standby current*² requirements. The standby current is supplied even when the vehicle is parked. The rated standby current of the R2S25404SP (50 μ A (typ.)) is the lowest available in the industry.

< Product Background >

Recently car audio systems are adding ever more sophisticated capabilities. In addition to CD, radio, and cassette functions, newer systems add the ability to play MP3 music files and DVDs, for example. The larger volume of data to be processed brings with it an increase in the power supply requirements. At the same time, the voltage ratings of the newer LSI devices used in car audio systems have dropped to the 5 V, 3.3 V, 2.5 V, or 1.8 V class from the 9 V, 8 V, or 5 V class of older LSI chips. This means that power supplies for today's car audio systems must combine low-voltage operation with high-current capabilities.

Conventional linear regulators had high loss levels, and they generated large amounts of heat when operating at high current levels. This required the use of large, bulky heat sinks, and made it difficult to design compact car audio system components. Renesas Technology currently mass produces multi-channel linear regulators such as the HA13164AH for car audio applications. The new R2S25404SP is a power supply IC incorporating highly efficient switching regulators designed to meet industry needs for reduced heat generation.

< Product Details >

The R2S25404SP employs the high-voltage 50 V SOI*³ process and is the industry's first car audio power supply IC to incorporate switching regulators. This enables it to achieve a power supply loss level of 3 watts or less, the lowest currently available.

In addition, the R2S25404SP employs a special circuit to block unnecessary current during standby operation, allowing it to realize a rated standby current (50 μ A (typ.)) that is the lowest available in the industry.

Additional features of the R2S25404SP are as follows.

1) High-Level Functionality

The R2S25404SP has the following functions for detecting power supply malfunctions and reporting them to the microcomputer.

Independent total output control, self-diagnostic malfunction detection (open, shorted, temperature rise, external synchronization clock error, input voltage error), etc.

These functions are implemented using SPI (Serial Peripheral Interface) to reduce the number of pins required.

2) Flexible Output Voltage

Unlike earlier car audio power supply ICs, which had fixed output voltages due to pin count restrictions, the output voltages of the R2S25404SP are adjustable. Voltages of 3.3 V and 5.0 V are supported as the output to the microcomputer, and the SPI interface voltage can also be set independently.

Instead of the vertical package used for previous car audio power supply IC products, the R2S25404SP uses a surface mount power package 36-pin HSOP.

In future, Renesas Technology will continue to develop new power supply IC products for car navigation systems providing further performance enhancements (large-current capabilities).

<Notes>

- Notes: 1. Heat sink: A panel made of metal (such as aluminum) for dispersing heat generated by the component.
2. Standby current: The microcomputer chip of a car audio system requires a minute current supply even when the vehicle's ignition is turned off in order to maintain functions such as the clock. The power supply IC also operates while the ignition is turned off, supplying this current to the microcomputer and monitoring the voltage level. The current consumed at such times is called the standby current (or dark current) and ideally should be very low in level.
3. SOI (silicon-on-insulator): This term refers to semiconductor devices employing single-crystal silicon formed on top of the insulator membrane as a substrate and to the associated semiconductor fabrication technology. Transistors are then formed on top of the single-crystal silicon (SOI layer).

* Product names, company names, or brands mentioned are the property of their respective owners.

< Typical Applications >

- Automotive: Car audio systems, etc.

< Prices in Japan > *For Reference

Product Name	Sample Price [Tax Included] (Yen)
R2S25404SP	600

< Specifications >

Item	R2S25404SP Specification
Process	0.35 μ m SOI, 50 V breakdown voltage
Operating power supply voltage	18 V (max.)
Internal power supply count	6 channels (of which 2 are used by switching regulator)
Package	36-pin HSOP

Information contained in this news release is current as of the date of the press announcement, but may be subject to change without prior notice.

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