Renesas Electronics Announces New USB Power Delivery Controller that Implements USB Power Supply for Notebook PCs

Enables Up to 100W Power Supply over a USB Interface for Industrial, Home Appliance, and OA/ICT Applications

TOKYO, Japan, June 2, 2014— Renesas Electronics Corporation (TSE: 6723), a premier supplier of advanced semiconductor solutions, today announced its new Universal Serial Bus (USB) Power Delivery (PD) controller (part number µPD720250) that is based on the USB PD Specification to deliver up to 100W (5 A at 20 V) power over a USB PD cable. Renesas will exhibit its new USB PD controller at Computex Taipei from June 3 to June 7, 2014 at booth # N0608, 4th floor of the Nangang exhibition hall in Taipei.

By combining the new USB PD controller with an optimal power supply circuit, designers will be able to rapidly implement USB-based solutions that provide higher power to notebook PCs and also can reduce the battery charging time for smartphones and tablets. Furthermore, by standardizing the AC adapters provided with notebook PCs and other equipment, both development costs and design challenges can be reduced.

Smartphones and tablet PCs are demanding increasingly larger power supplies. To address this market need, the USB PD Specification was developed by the USB 3.0 Promoter Group in 2012 to allow equipment with large power requirements, such as notebook PCs, to be powered over a USB connection. In the USB PD Specification, the connected equipment can mutually negotiate power supply capacities and requirements and then, after safety has been verified, the USB circuits can control the power supply up to 100 W; up from the previous 7.5 W level. The newer 100W power supply adequately supports high-power consumption equipment and significantly reduces battery charging times.

Furthermore, the earlier USB power supply was limited to unidirectional supply from host/hub equipment to peripheral equipment; in the USB PD Specification, the power supply is bidirectional and power can be sent in either direction. This is expected to allow the creation of new applications. For example, at the same time as video is being output on a large-size monitor over a USB connection from a notebook PC, the USB PD Specification will allow the large-size monitor, which is powered from the AC power mains, to supply power to the notebook PC, which is being operated on battery power.
Key features of the new USB PD controller:

(1) Based on the USB PD Specification
The µPD720250 USB PD controller is based on the USB PD Specification and in addition to supporting both the power supply and the power receiving sides of a USB connection, can flexibly support either role depending on the actual conditions of operation.

(2) Provision of optimal solutions for all types of system
The µPD720250 device is capable of control over an SMBus (Note 1) and can be easily incorporated into tablets and notebook PCs. It also provides flexible support for external ROM firmware and can thus implement optimal systems for both the power supply and power receiving sides. Furthermore, Renesas plans to provide powerful support for system development by offering solution kits that include both boards and software for all types of system.

(3) Low-power consumption to support Energy Star (Note 2) and the EuP Directive (Note 3)
The µPD720250 device takes advantage of Renesas' low-power technologies for reductions of both standby and operating power consumption and is appropriate for the Energy Star and the EuP Directive.

(4) Built-in regulator and compact package
The µPD720250 device includes an integrated 1.0 V regulator and can operate from a single 3.3 V power supply. It is provided in a compact package and enables lower costs and miniaturization in system construction.

Refer to the separate sheet for the specifications for the new µPD720250 PD controller.

(Note 1) SMBus:
A serial interface specification for connecting the various components within a personal computer and transmitting the information necessary for power supply management.

(Note 2) Energy Star:
An environmental labeling system for energy-saving electrical equipment products promoted by the United States and operated in Japan, Australia, Canada, the EU, and other countries
and areas.

(Note 3) EuP Directive:
A European Union environment system that aims at evaluating the environmental burden over the whole product life cycle and reducing that burden.

Leadership in USB

As a member of the USB Implementers Forum (USB-IF) since 1996, Renesas (formerly NEC Electronics) has played a leading role both in defining USB standards and developing USB technology. In April 2000, the company (then NEC Electronics) launched the world's first USB 2.0-compliant host controller chip (uPD720100), the world's first USB 2.0-compliant hub controller chip (uPD720110) and an extensive lineup of other USB devices. Renesas has earned a reputation for delivering dedicated customer service and high quality. In May 2009, Renesas (then NEC Electronics) introduced the industry's first USB 3.0 xHCI host controller (uPD720200) and earned the first “Certified SuperSpeed USB (USB 3.0)” certification from the USB-IF. With the robust and compliant design of uPD720200, Renesas contributed to the USB-IF certification tests, providing the organization with a host controller product as the platform for other USB 3.0 peripheral devices to perform interoperability testing.

Availability

Samples of Renesas Electronics’ µPD720250 will be available in July 2014.
(Availability is subject to change without notice.)

About Renesas Electronics Corporation

Renesas Electronics Corporation (TSE: 6723), the world's number one supplier of microcontrollers, is a premier supplier of advanced semiconductor solutions including microcontrollers, SoC solutions and a broad range of analog and power devices. Business operations began as Renesas Electronics in April 2010 through the integration of NEC Electronics Corporation (TSE:6723) and Renesas Technology Corp., with operations spanning research, development, design and manufacturing for a wide range of applications. Headquartered in Japan, Renesas Electronics has subsidiaries in 20 countries worldwide. More information can be found at www.renesas.com.

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Media Contacts:

Japan
Kyoko Okamoto
Renesas Electronics Corporation
+ 81-3-6756-5555
kyoko.okamoto.sx@renesas.com
Separate Sheet

Product Specifications of the USB PD Controller, the uPD720250

- Based on the Universal Serial Bus Power Delivery Specification released by the USB 3.0 Promoter Group
  - Supports cable detection sequence to distinguish maximum current capability of the cable
  - Supports Dual Role operation and Role Swap protocol
  - Supports dead battery operation

- Supports Energy Star and EuP specifications for low-power PC peripheral systems

- System clock: 25 MHz crystal or oscillator

- Package: 32-pin QFN (5mm x 5mm, 0.5mm pitch) (contemplating of 48-pin QFN, 28-pin SOP)

- Single 3.3 V power supply

- Supports SMBus slave interface

- Supports I²C master interface

- Supports external SPI ROM

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(Remarks) The Energy Star service mark signifies compliance with standards set by the U.S. government. Other names of products or services mentioned in this press release are trademarks or registered trademarks of their respective owners.