Power MOSFETs feature industry-leading low loss

Renesas Electronics Corporation announced the availability of eight new low-loss P- and N-channel power metal-oxide-semiconductor field-effect-transistor (MOSFET) products optimized for use in portable electronics including smartphones and tablets. Featuring industry-leading low loss (low on-resistance), the new devices include the 20 V (VDSS) µPA2600 and the 30 V µPA2601, equipped in ultracompact 2 mm × 2 mm packages to deliver increased power efficiency and miniaturization within smaller mobile device form factors.

With the increasing popularity of high-functionality smartphones and user expectations for seamless experiences with these devices, demand is increasing for smaller, thinner form factor devices with lower power consumption that enable longer battery lifebetween charges. To meet these demands, designers are turning to power MOSFETs that feature lower on-resistance for use in charge/discharge control, RF power amplifier on/off control, and overcurrent cutoff switches, while supportinglarge currents.

The new µPA2600 and µPA2601 MOSFETs achieve these demands for further miniaturization and industry-leading low on-resistance in portable devices while reducing mounting areas in a wide variety of applications, including load switches (which turn power applied to ICs on or off) and charge/discharge control in portable devices and on/off control and overcurrent cutoff switches in RF power amplifiers (amplifiers for high-frequency signals).

A variety of device types, with differing voltages and polarities, such as power MOSFETs, are required to match the specifications of power supplies used in portable devices, including smartphones. In response to these evolving needs, Renesas has been working to reduce on-resistance and create even smaller packages, and provides an extensive lineup of these products.

Key features of the new P- and N-channel power MOSFETs:

(1) Industry-leading low on-resistance (N-channel, µPA2600 and µPA2601)

The µPA2600 and µPA2601 MOSFETs are equipped in 2 mm × 2 mm ultra compact package and achieves an on-resistance of 9.3 mΩ (typical value at VGSS=4.5 V) for the 20 V (VDSS) µPA2600 device and 10.5 mΩ (typical value at VGSS=10 V) for the 30 V µPA2601 device, enabling power savings in end-use products.

(2) Compact package for reduced mounting areas

Renesas achieved the use of 2 mm × 2 mm ultra compact packages by placing large-area high-performance chips in miniature packages and using an exposed heat sinkminiature package, thus efficiently dissipating the package heat to the mounting board. The µPA2600 and similar products can reduce the mounting area

by approximately 30 percent compared to existing 3 mm × 2 mm packages, and the µPA2672 and similar products can reduce the mounting area by approximately 40 percent compared to existing 3 mm × 3 mm packages. This can reduce the size and weight of end-use products.

(3) Extensive device lineup

Comprising eight devices, the new P- and N-channel power MOSFETs are concentrated in the 12- to 30 V range common in portable devices: 4 P-channel products including the µPA2630, 3 n-channel products including the µPA2600, and the µPA2690, which holds both an N-channel and a P-channel device in a single package. Thus, this lineup can support a variety of applications, including charge/discharge control, RF power amplifier on/off control, and overcurrent cutoff switches.

The new power MOSFET products are environmentally-friendly, conforming to the RoHS directive (Note 1) and are halogen-free.

Equipment functionality is increasing dramatically in the portable electronics area, and as form factors for devices like smartphones continue to move to thinner profiles, the mounting space available for components is becoming increasingly limited. To respond to these needs for increasing miniaturization and higher performance, Renesas will continue to develop products that maintain earlier product performance levels with even smaller mounting area requirements, while expanding its lineup to contribute to further miniaturization and higher performance in portable devices.

(Note 1) European RoHS directive: Directive 2002/95/EC of the European Parliament and of the Council of 27 January 2003 on the restriction of the use of certain hazardous substances in electrical and electronic equipment.

Pricing and Availability

Samples of Renesas Electronics' new µPA2600 and µPA2601 power MOSFETs will be available in April 2012, priced at US$0.4 per unit. Mass production is scheduled to begin in May 2012 and is expected to reach a combined volume of 3,000,000 units per month for all eight products by 1H of FY2013. (Pricing and availability are subject to change without notice.)

More information can be found at www.renesas.com [1]

Source URL (retrieved on *08/28/2014 - 11:10am*):
http://www.ecnmag.com/products/2012/04/power-mosfets-feature-industry-leading-low-loss

Links:
[1] http://www.renesas.com