New Low Voltage Trench MOSFETs Improve Power Circuit Efficiency and Battery-Life

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Further expanding its portfolio of industry-leading Trench technology devices, ON Semiconductor today introduced eight new N-channel and P-channel, low voltage Trench MOSFETs. These devices reduce resistance between drain and source (RDS(on)) to improve overall power circuit efficiency by 30 percent in portable products when compared to similarly packaged competitive solutions.

The new devices are small signal, 20 volt (V) MOSFETs specifically designed for use in -430 milliamp (mA) to -950 mA applications such as power load switches, power supply converter circuits and the battery management of cell phones, digital cameras, PDAs, pagers, media players and portable GPS systems. Utilizing ON Semiconductor's Trench technology, these new low voltage MOSFETS boost channel length and equivalent channel density. This enables greater current conduction which delivers 60 percent lower RDS(on) than comparably packaged MOSFETs offered today.

Comparison of RDS(on) Ranges
- ON Semiconductor Trench MOSFETs: 150 – 900 mOhms
- Competitive MOSFET Devices: 850 mOhms to 1600 mOhms

Available in three tiny (1.6 mm x 1.6 mm) low profile (0.6 mm to 1.0 mm) packages, these Trench MOSFETs conserve valuable board space. Because MOSFETs are inherently susceptible to electrostatic discharge (ESD) damage - and the smaller the package the higher the risk of ESD damage – ON Semiconductor has integrated zener diodes into the gates

of their Trench MOSFET to provide superior ESD protection. Overall, these packaging, performance and integration improvements work to further simplify overall board design and free-up additional board space.

“ON Semiconductor Trench technology realizes the highest channel density in the industry and delivers the best-in-class on-resistance (Rds(on)) performance for a given package footprint,” said David Garafano, ON Semiconductor general manager of Power FET Products. “By combining this Trench technology and the company’s ultra-small packaging technology, ON Semiconductor has developed a series of low voltage MOSFETs that deliver superior RDS(on), reduce power loss and improve current conduction. As such, these devices improve overall power circuit efficiency by up to 30 percent and greatly assist our customers in improving battery efficiency in their portable products.”

The Devices

- NTA4151PT1, NTE4151PT1, NTZS3151PT1, and NTZD3152PT1 are P-Channel MOSFETs for high-side load switching of up to 850 milliamps (mA). Both single and dual modes are offered.
- NTA4153NT1, NTE4153NT1 and NTZD3154NT1: These are N-Channel MOSFETs for low side load switches up to 915 mA. Both single and dual modes are offered.
- NTZD3155CT1: This is a complementary N-Channel and P-Channel combination for integrated load switching or low current dc-to-dc conversion