



Toshiba launches tiny common-drain N-channel MOSFET

New device features very low on-resistance making it suitable for quick charging applications

Düsseldorf, Germany, 18 July 2023 – Toshiba Electronics Europe GmbH (“Toshiba”) launched a 12V common-drain N-channel MOSFET with a current rating of 20A, for use in battery protection circuits in lithium-ion (Li-ion) battery packs, such as those commonly used for smartphones, tablets, power banks, compact digital cameras, digital SLR cameras and other similar applications.

Li-ion battery pack safety is enhanced by highly robust protection circuits that reduce heat generation while charging and discharging. In order to meet the required charging performance, these circuits must have low power consumption. Given the compact nature of these solutions, suitable MOSFETs must be small and thin while delivering low levels of on-resistance.

The new 20A SSM14N956L is rated for a 12V source-to-source voltage (V_{SSS}) and uses Toshiba’s micro-process, in common with the already released 13.5A SSM10N954L. This ensures excellent low on-resistance ($R_{SS(ON)}$) characteristics, as low as 1m Ω , which limits conduction losses. Additionally, the process delivers low gate-source leakage current (I_{GSS}) of $\pm 1\mu A$ (max.), allowing for low standby power consumption. Together, these attributes allow for extended battery operation between charges.

In order to fit in the constrained spaces available in these applications, the new SSM14N956L is designed as a chip-scale package, known as TCSPED-302701. The dimensions are just 2.74mm x 3.0mm with a typical height of just 0.085mm.

Shipments of the new device start today and Toshiba will continue to develop MOSFET products for protection circuits in devices powered by lithium-ion battery packs.

More information about SSM14N956L can be found on the Toshiba website:

<https://toshiba.semicon-storage.com/eu/semiconductor/product/mosfets/detail.SSM14N956L.html>

###

About Toshiba Electronics Europe

[Toshiba Electronics Europe GmbH](#) (TEE) offers European consumers and businesses a wide variety of hard disk drive (HDD) products plus semiconductor solutions for automotive, industrial, IoT, motion control, telecoms, networking, consumer and white goods applications. Next to HDDs, the company's broad portfolio encompasses power semiconductors and other discrete devices ranging from diodes to logic ICs, optical semiconductors as well as microcontrollers and application specific standard products (ASSPs) amongst others.

In addition, TEE also offers Toshiba's SCiB™ battery cells and modules with lithium titanium oxide (LTO) for heavy-duty applications and Silicon Nitride (SiN) ceramic substrates used in power semiconductor modules, inverters and converters for their heat dissipation characteristics and strength.

TEE has its headquarters in Düsseldorf, Germany, with branch offices in France, Italy, Spain, Sweden and the United Kingdom providing marketing, sales and logistics services.

Visit Toshiba's websites at www.toshiba.semicon-storage.com, www.scib.jp/en and www.toshiba-tmat.co.jp/en/ for further company and product information.

Contact details for publication:

Toshiba Electronics Europe GmbH, Hansaallee 181, D-40549 Düsseldorf, Germany

Tel: +49 (0) 211 5296 0

Web: www.toshiba.semicon-storage.com/eu/company/news.html

Contact details for editorial enquiries:

Michelle Shrimpton, Toshiba Electronics Europe GmbH

Tel: +44 (0)7464 493526

E-mail: MShrimpton@teu.toshiba.de

Issued by:

Birgit Schöniger, Publitek

Tel: +49 (0) 4181 968098-13

Web: www.publitek.com

E-mail: birgit.schoeniger@publitek.com

July 2023

Ref. 7469(A1)E