



Toshiba releases new LDO for ultra-miniature applications

IoT and wearable designs will benefit from small size and reduced power consumption

Düsseldorf, Germany, 30th May 2024 – Toshiba Electronics Europe GmbH (“Toshiba”) has just announced the release of a new series of low-dropout (LDO) voltage regulators in their ultra-miniature DFN4D package type.

Specifically aimed at miniature applications powered by small-scale batteries, the new family of devices significantly reduces power consumption, thereby elongating the usable lifetime. With demand for battery powered IoT equipment/modules, communications modules, wearable devices, and other miniature equipment increasing, the new LDO regulators will help designers meet the ever-increasing expectations of engineers.

The new TCR3LM series offers a comprehensive line-up of over thirty devices spanning the voltage range 0.8V DC to 5.0V DC with an input voltage (V_{IN}) in the range 1.4V DC to 5.5V DC. Each device is capable of delivering up to 300mA of output current (I_{OUT}).

The new TCR3LM offers enhanced drop-out performance with a typical dropout voltage (V_{DO}) of just 137mV. As the output voltage can be achieved with a lower input voltage, battery drain is reduced.

Additionally, the load transient response has been improved, enhancing the output stability when the load fluctuates. Toshiba has achieved a typical transient response of -70mV / +35mV at 2.8V-output, $I_{OUT} = 1\text{mA} - 100\text{mA}$, while also managing to reduce the quiescent current ($I_{B(ON)}$) to a typical value of just 1.2µA.

The ultra-compact solution is housed in a DFN4D package measuring just 1.0mm × 1.0mm × 0.37mm. Furthermore, as small ceramic capacitors can be used on the input and output, the overall solution size is further reduced.

Despite its small size, these feature rich LDO regulators offer overcurrent and over temperature protection as well as an auto discharge function.

The new TCR3LM series is now in mass production.

Find out more about TCR3LM LDO series on Toshiba's website:

<https://toshiba.semicon-storage.com/eu/semiconductor/product/power-management-ics/low-dropout-regulators-ldo-regulators/detail.TCR3LM08A.html>

<https://toshiba.semicon-storage.com/eu/semiconductor/product/power-management-ics/low-dropout-regulators-ldo-regulators/detail.TCR3LM18A.html>

<https://toshiba.semicon-storage.com/eu/semiconductor/product/power-management-ics/low-dropout-regulators-ldo-regulators/detail.TCR3LM33A.html>

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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.

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