



**Compact, low noise, high ripple rejection LDO regulator series delivers enhanced power rail stabilization in space-constrained designs**

**Düsseldorf, Germany, 26<sup>th</sup> November 2020** – Toshiba Electronics Europe GmbH (“Toshiba”) today announced the TCR3RM series of low noise ultra-compact low dropout (LDO) voltage regulators. Constructed in a plastic DFN4C package measuring 1.00 mm x 1.00 mm x 0.38 mm, the TCR3RM series comprises 32 product variants with fixed single output voltages in the range 0.9 VDC to 4.5 VDC.

The regulators are suitable for use in a wide variety of portable and wearable devices, such as sensors, RF devices and IoT applications or any applications where the available board space is at a premium and high-density mounting is required.

The TCR3RM series features a high ripple rejection ratio characteristic of, typically, 100 dB at 1 kHz measured with a 2.8 V output. Unlike other LDO regulators where the ripple rejection ratio usually drops 20 dB every 10-fold increase in frequency, the TCR3RM falls significantly less. The rejection ratio at 1 MHz and a 2.8 V output is 68 dB. Electrical noise is an increasing challenge for many designs, particularly DC/DC converters where higher switching frequencies are used to improve conversion efficiency. The ripple rejection attributes of the TCR3RM series coupled with its low noise credentials, typically 5  $\mu$ Vrms at  $10 \text{ Hz} \leq f \leq 100 \text{ kHz}$ , contribute to a high degree of power supply line stability and voltage accuracy.

With a maximum output current of 300 mA, the TCR3RM series employs a bandgap circuit, a low pass filter, and a low-noise, high speed operational amplifier to provide the regulator with excellent ripple rejection and output noise specifications.

The dropout voltage is typically 130 mV at 2.8 V / 300 mA output. Across the series the input voltage range is from 1.8 V to 5.5 V. The regulator includes overcurrent protection, auto discharge, and thermal shutdown safety features.

Further information about the TCR3RM series is available [here](#).

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**About Toshiba Electronics Europe**

Toshiba Electronics Europe GmbH (TEE) is the European electronic components business of Toshiba Electronic Devices and Storage Corporation (Toshiba). TEE offers European consumers and businesses a wide variety of innovative 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.

TEE has headquarters in Düsseldorf, Germany, with branch offices in France, Italy, Spain, Sweden and the United Kingdom providing marketing, sales and logistics services. The company president is Mr. Tomoaki Kumagai.

For more company information visit TEE's web site at [www.toshiba.semicon-storage.com](http://www.toshiba.semicon-storage.com).

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