



Toshiba Expands 32-bit Microcontroller Product Line-up

Introducing the TXZ+™ microcontroller family

Düsseldorf, Germany, 16th March 2020 – Toshiba Electronics Europe GmbH has announced major strategic expansions to its already extensive line-up of microcontrollers. The TXZ+™ family is a new range of 32-bit microcontrollers based on Arm® Cortex® processor cores.

The family is split into two device classes with the first, the TXZxA+ advanced class microcontrollers, fabricated in a 40 nm CMOS process technology. These features either an Arm Cortex-M3 or a Cortex-M4 with FPU processor core. The second is the TXZxE+ entry class using a 130nm CMOS process and utilizing an Arm Cortex-M0, Cortex-M3, or Cortex-M4 processor core.

With the introduction of the new TXZ+ family, Toshiba focuses its microcontroller strategy on industry-standard Arm Cortex processor cores that are highly energy efficient and suitable for real time control applications. Enriched by Toshiba's original and highly functional IP blocks, the devices are suitable for a variety of target applications such as home appliances, industrial and motor control applications as well as communication and data processing.

The TXZxA+ advanced class is Toshiba's 3rd generation of Arm Cortex core-based microcontrollers. The devices will provide enhanced performance with operating frequencies

of up to 200 MHz (254 DMIPS) while dissipating approximately 30% lower dynamic power compared to the existing 65nm devices^[1]. Toshiba will provide a line-up of microcontrollers that are functionally aligned pin-compatible to the existing 65nm TXZ devices enabling customers to seamlessly migrate to the new microcontroller family. Features will include a built-in high-precision oscillator and pre-drivers. A single-supply regulator that operates without the need for external capacitors to save on bill of material cost and board size is also integrated. TXZxA+ is a scalable platform with modular IP using a common register map that simplifies software design and re-use. A wide package line-up with intra-family footprint compatibility facilitates easier PCB design. Initial engineering samples are scheduled for Q3/2020 while customer samples and mass production are scheduled for Q2/2021.

The TXZxE+ entry class includes microcontrollers with essential functionality to serve basic control applications. They will be manufactured by Japan Semiconductor Corporation (JSC), a 100% subsidiary of TDSC, on JSC's own 130nm CMOS process technology. Using its own fabrication facilities gives Toshiba full control for all aspects of the supply chain, from development of process technology to device development, design and manufacturing. Customers will benefit from short production times, high reliability and longevity of supply. These are also Toshiba's first microcontrollers featuring a SONOS (silicon-oxide-nitride-oxide-silicon) memory^[2], a new technology for non-volatile memory providing superior data retention and write endurance compared to conventional flash memory technology. Initial engineering samples are scheduled for Q2/2020 while customer samples and mass production are scheduled for Q4/2020.

Toshiba's new TXZ+ microcontroller family will meet the increasing demand for energy saving by not only reducing its own power dissipation, but also by providing smarter control of attached sensors and actuators leading to significantly reduced system power consumption. Their improved performance and extended operating temperature range of up to +125°C will also make them suitable for a wide variety of applications, including use in harsh industrial environments.

[1] The advanced class reduces power to 68µA/MHz from 100µA/MHz of Toshiba's current product, TMPM4G9F15FG. As of March 2020, Toshiba survey.

[2] Toshiba has cooperated with Floadia Corporation in development of SONOS memory. Toshiba microcontrollers utilize "G1," Floadia's SONOS memory IP.

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[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. The company's broad portfolio encompasses integrated wireless ICs, power semiconductors, microcontrollers, optical semiconductors, ASSPs and discrete devices ranging from diodes to logic ICs.

TEE has headquarters in Düsseldorf, Germany, with branch offices in France, Italy, Spain, Sweden and the United Kingdom providing design, manufacturing, marketing and sales. Company president is Mr. Tomoaki Kumagai.

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