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Toshiba Electronics to Showcase Solutions for Rapid Development of Industrial and Home Appliance Embedded Designs

Hardware and software includes latest Starter Kit for high-connectivity ARM micro and software tools that speed motor control applications

Düsseldorf, Germany, January 12th, 2012 – Visitors to the [Toshiba Electronics Europe](#) booth at this year's Embedded World Exhibition and Conference will have the opportunity to see the latest hardware and software development tools for speeding the design, prototyping and testing of embedded systems for industrial, home appliance and retail applications.

Among the technologies to be unveiled at the event will be the BMSKTOPASM369 – a new Starter Kit for the first family of ARM-Cortex™ microcontrollers to combine Ethernet, CAN and USB Host and Device connectivity in a single IC. Software tools that speed and optimise embedded designs for motor control applications will also be announced and supported by live demonstrations.

Toshiba's BMSKTOPASM369 Starter Kit is a highly integrated evaluation board that combines a Toshiba TMPM369Fxxx microcontroller with a comprehensive set of connectivity options and peripherals. The board features an integrated power supply and offers rapid 'out-of-box' prototyping and testing for applications ranging from industrial control systems and barcode readers to motion control, home appliances and solar inverters. Using the board in conjunction with software from Toshiba's partners, developers can quickly and

easily develop fully functioning prototypes - including embedded systems that integrate a web server on the microcontroller.

Interfaces provided by the BMSKTOPASM369 hardware comprise 10/100 Ethernet; USB (host and device) and USB (UART); CAN; microSD; and a dedicated motor control interface that supports direct connection to a motor power board. A light sensor, eight indication LEDs and a joystick interface are also provided, while a 'J-Link' JTAG interface supports connection of hardware probes for debugging and trace functionality. Toshiba partners can provide a comprehensive range of free and low-cost development tools and embedded software – such as Atollic's TrueSTUDIO IDE and Segger's RTOS, web server software and TCP/IP and HTTP stacks - to support application development.

Based around a 32-bit ARM Cortex-M3 core running at 80MHz - and with up to 512Kbyte of Flash memory and up to 128Kbyte of RAM - the four microcontrollers in the TMPM369Fxxx series integrate single-channel CAN2.0B, a full-speed USB Host controller, a full-speed USB device controller and a 10/100BASE single-channel Ethernet MAC. Two independent analogue-to-digital converters (ADCs) with conversion times of 1µs – or 0.5 µs in interleaved mode - meet the requirements of barcode readers and other applications requiring ultra-fast conversion. In addition, each of the devices features a special Multi-Purpose Timer (MPT). This MPT combines three-phase PWM control with an ADC trigger making the new devices ideal for motor control applications.

All of the microcontrollers feature two 10-bit digital-to-analogue converter (DAC) channels and a 2-channel encoder signal input for motor control. Also on-board are a Real Time Clock and an Oscillation Frequency Detector (OFD). The latter provides hardware monitoring of the CPU clock in accordance with the IEC60730 (Class B) safety standard for home appliances. Power on Reset (PoR) functionality as well as an internal Oscillator is provided as standard.

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About Toshiba

Toshiba Electronics Europe (TEE) is the European electronic components business of Toshiba Corporation, which is ranked among the world's largest semiconductor vendors. TEE offers one of the industry's broadest IC and discrete product lines including high-end memory, microcontrollers, ASICs, ASSPs and display products for automotive, multimedia, industrial, telecoms and networking applications. The company also has a wide range of power semiconductor solutions. TEE was formed in 1973 in Neuss, Germany, providing design, manufacturing, marketing and sales and now has headquarters in Düsseldorf, Germany, with subsidiaries in France, Italy, Spain, Sweden and the United Kingdom. TEE employs approximately 300 people in Europe. Company president is Mr. Takashi Nagasawa.

Toshiba Corporation is a world leader and innovator in pioneering high technology, a diversified manufacturer and marketer of advanced electronic and electrical products spanning digital consumer products; electronic devices and components; power systems, including nuclear energy; industrial and social infrastructure systems; and home appliances. Founded in 1875, Toshiba today operates a global network of more than 490 companies, with 203,000 employees worldwide and annual sales surpassing US\$77 billion.

For more information visit Toshiba Electronics Europe's web site at www.toshiba-components.com

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