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Welcome to our March edition of Braemac Product News

Atmel's AVR XMEGA Redefines System Performance for 8/16-bit Microcontrollers



Ultra low power 1.6 Volt microcontroller family

San Jose, CA, announced today the AVR® XMEGA™ family, an important addition to their successful AVR microcontrollers. The system performance of AVR XMEGA expands the market reach for 8/16-bit microcontrollers. With second generation of picoPower™ technology, XMEGA is the only family of Flash microcontrollers with true 1.6V operation. The ultra low power consumption is combined with fast 12-bit analog functions, a DMA controller, an innovative Event System and a crypto engine. All features free CPU resources which minimize power consumption and increase system performance.

"With a modern AVR CPU, Atmel is capable to serve both the 8- and 16-bit microcontroller market," said Ingar Fredriksen, Atmel's AVR Product Marketing Director. "Many competitors are forced to offer 32-bit solutions since their old 8- or 16-bit CPU does not meet the customer's requirements. However, they struggle with price, power consumption, ease of use, EMC performance and analog features. AVR XMEGA combines Atmel's picoPower technology with extended task-handling capability and advanced peripherals in a large family of devices."

The XMEGA microcontrollers range from 16 to 384 KB of Flash and 44- to 100-pin packages. They operate from 1.6V to 3.6V and achieve up to 32 MIPS at 32 MHz. The XMEGA devices are general purpose microcontrollers well suited for a variety of applications including audio systems, ZigBee®, power tools, medical, board controllers, networking, metering, optical transceivers, motor control, white goods and any battery powered product.

Ultra Low Power – Atmel's picoPower technology already used in megaAVR® products, is recognized as market leader in low power. With AVR XMEGA, using second generation picoPower, battery life is further increased by additional features like true 1.6V operation and a combined Watchdog Timer- and Brown-Out-Detector current consumption of only 1 uA. True 1.6V operation means all functions including Flash reprogramming, EEPROM write, analog conversions and internal oscillators are operative. In battery powered applications like mobile phones, XMEGA devices can be connected to a 1.8V (+/- 10%) regulated power supply to save cost and increase battery life. AVR XMEGA delivers industry leading power consumption numbers. In Power Down mode with RAM retention, current consumption is 100 nA. A Real-Time Clock function using a 32 kHz crystal oscillator has a power consumption of only 650 nA.



Modern CPU Built for Scalability – The 8/16-bit AVR CPU is designed for high-level languages like C. It has 16- and 32-bit arithmetic support and 16- and 24-bit memory pointers. Single cycle operation and 32 working registers connected to the Arithmetic Logic Unit makes AVR more efficient than other CPUs. Based on the solid AVR CPU platform, Atmel now offers one of the largest families of code compatible devices ranging from 1 KB 8-pin tinyAVR® to 384 KB 100-pin XMEGA. By standardizing on AVR MCUs, customers save investments and shorten time-to-market by reusing development tools, software and hardware design.

Innovative Event System – Like a reflex in the human body, the innovative XMEGA Event System enables inter-peripheral communication without CPU or

DMA usage. This ensures 100% predictable and short response time. Up to 8 simultaneous events or interrupt conditions in the peripherals can automatically start actions in other peripherals. The Event System removes bottlenecks associated with multiple and/or frequently triggering interrupts. There is no software overhead and critical tasks are handled with a guaranteed latency shorter than any interrupt response time.

Leading Analog Performance – The XMEGA Analog-to-Digital Converter has 12-bit resolution and provides up to 2 million samples per second with hardware support for oversampling to increase resolution to 16 bits without extra cost. Programmable gain stage, differential inputs, temperature sensor, and accurate internal voltage references removes external components and saves cost. AVR XMEGA also includes 12-bit Digital-to-Analog Converters and advanced Analog Comparators.

Fast Crypto Engine – XMEGA has a hardware crypto engine that supports Advanced Encryption Standard (AES) and Data Encryption Standard (DES). The crypto engine increases encrypted communication speed from 10 kbps to 2 Mbps compared to software solutions. AVR XMEGA is the only solution for high bandwidth encrypted data communication in long life battery powered applications, like toll road tags, wireless sensor nodes and ZigBee.

Development Tools – AVR XMEGA is supported by the easy-to-use tool chain already existing for AVR devices. The AVR Studio® integrated development environment is available free of charge on Atmel's web site. The STK®600 Starter Kit and JTAGICE mkII on-chip debugger supports every microcontroller in Atmel's AVR and AVR32 UC3 product families.

For further information: [Click Here](#)

Austriamicrosystems' new 16-Channel LED driver for high performance large-size LED displays with outstanding spectrum of 68 billion colors

Continuing austriamicrosystems' innovative edge in LED driver technology, the AS1112 offers 12-bit PWM control and 6-bit dot-correction combined with powerful diagnostic features

Austriamicrosystems, a leading global designer and manufacturer of high performance analog ICs for communications, industrial, medical and automotive applications, today expanded its LED driver portfolio with the AS1112, a full color LED driver ideally suited for full color applications such as LED video displays, LCD TV backlighting, indoor/outdoor full-color LED displays and large-size stadium displays.

The AS1112 full color LED driver offers an integrated PWM of 12-bit with impressive 4,096 grayscale steps per color, reaching up to 68 billion colors with RGB. Additionally, the integrated 6-bit dot-correction allows adjusting the output current in 64 steps compensating for LED luminous mismatch. With an excellent accuracy of $\pm 4.5\%$ between channels and ICs plus the dot-correction the AS1112 dramatically improves the picture quality of LED displays since variations of intensity between LEDs and LED modules completely disappear. The AS1112 also offers outstanding line regulation of 2.5% and load regulation of 0.5%.

"Huge volumes of LEDs are required for high quality LED displays such as big stadium displays, commercially used

error detection is a very important factor in order to optimize maintenance cost and to guarantee high picture quality," said Walter Moshhammer, Director Marketing Standard Linear at austriamicrosystems. "austriamicrosystems' AS1112 full color LED driver is designed for video displays with fast video action, such as in stadium and sporting event applications, as it provides a very fast refresh rate capability at 30MHz data transfer rate with no delay. Furthermore, AS1112 can be used in LCD TV backlighting where a dynamic dot-correction scheme is required to generate "tunable" white light."

The AS1112 features sixteen regulated current ports which provide constant currents for driving LEDs within a wide range of forward voltages. The AS1112's output ports are guaranteed to endure a maximum voltage of 15V allowing multiple LEDs to be combined in series to a single pixel to increase brightness. Currents can be adjusted from 0 to 80mA via an external resistor which provides utmost flexibility in controlling LED brightness.

Another highlight of the AS1112 is the built-in LED error detection. Easy and intuitive to use, the AS1112 can detect any open- or short-circuit as well as any over-temperature occurrence. Two temperature thresholds allow detailed thermal surveillance of the system. For immediate detection of errors a global error pin is available. Furthermore, a detailed error report can be read out with the exact position of the broken LED. The AS1112 uses the serial data input/output lines for the detailed error information readback so that no additional PCB tracks are needed for LED error diagnostics.

The fast 30MHz serial interface of the AS1112 ensures high refresh rates even for huge LED display modules. The AS1112 offers very low power consumption, additionally, a power-down function allows reducing the supply current to 40nA in standby mode. With an operating temperature range from -40 to +85°C, the AS1112 is ideal for industrial as well as outdoor applications. The IC is available in the small size, thermally efficient 32-pin TQFN (5x5mm) package, easily handling high output power and allowing a very small pitch between LED pixels.

For more information: [Click Here](#)

Austriamicrosystems unveils dual 8-bit digital potentiometer with high performance EEPROM and industry-leading data retention and write cycles



AS1507 offers excellent DC performance plus unrivalled 150 year data retention and 10 million write cycles with unique Hi-EPR EEPROM

austriamicrosystems (SWX:AMS), a leading global designer and manufacturer of high performance analog ICs for communications, industrial, medical and automotive applications, today expanded its digital potentiometer portfolio with the AS1507, the successor of the AS1506, a 256- tap SPI-interfaced non-volatile dual digital potentiometer available with 10, 50 and 100k Ohms resistance.

The AS1507 is ideal for the usage in low power environments, using a maximum of 500nA during standby and exceptional low 200µA (max) during operation including the CMOS write current. Operating from a single supply from 2.7 to 5.5V, the AS1507 offers an end-to-end resistance temperature coefficient of 90ppm/°C. The AS1507 delivers an excellent integral nonlinearity (INL) of ±0.5LSB (max) as well as outstanding differential nonlinearity (DNL) of ±0.5LSB (max). A mute input signal allows a wiper reset to zero for both potentiometer registers.

"The AS1507 offers several advantages over analog potentiometers and competitive digital potentiometers," said Walter Moshhammer, marketing director Standard Linear at austriamicrosystems. "Besides the obvious advantages of being vibration and shock resistant, with better resolution, small form factor and increased overall performance, the AS1507 offers an exceptionally reliable EEPROM which is able to save the stored information for decades, even in the harshest environments, and endures millions of ."

The AS1507 digital potentiometer stores the wiper information in the integrated Hi-EPR (High Endurance, Performance & Retention) EEPROM with world beating numbers of write cycles and data retention time. austriamicrosystems Hi-EPR EEPROM allows 10 million write cycles at 25°C and an unheard of 1 million write cycles at 85°C which is 50 times more



EEPROM information 15 times longer than standard high grade EEPROM. A ready signal indicates the end of a writing operation.

For further information: [Click Here](#)

Micrel Rolls Out World's First Programmable Receiver With "Jam Avoidance"

MICRF218 RF Solution Escapes From Jamming Source, Goes To Alternate Frequency

Micrel Inc., an industry leader in analog, high bandwidth and Ethernet IC solutions, today announced that it is launching the world's first programmable receiver featuring jam avoidance. The MICRF218, which is part of Micrel's QwikRadio® family, is targeted at garage door openers and tire pressure monitoring systems. It is the world's first integrated ASK/OOK receiver with selectable IF bandwidth for 300 to 450 MHz operation.

"The MICRF218 is unique for its ability to "escape" from a jamming source and migrate to an alternate frequency," stated John Lee, director of mixed-signal and RF products, Micrel. "This is a crucial feature due to recent homeland security measures deploying a new mobile radio system. This new radio system presents the possibility of jamming at the 390 MHz frequency, a frequency also commonly used by garage door remote controls. The MICRF218 receiver system can avoid jamming by switching to a quieter frequency."

The MICRF218 can accommodate two reference crystals with the use of an external switch. It features a fully integrated IF section with built-in image rejection. The IF section has dual IF bandwidths that are externally selectable. In addition, a wide IF bandwidth can be chosen for backward compatibility with older transmitters that are LC-based. Wide IF bandwidth allows the receiver to capture a signal that slightly deviates from the intended communication frequency, or one can select a narrow IF bandwidth that operates with a crystal-based transmitter to improve selectivity to increase communication distance. There is no sacrifice of performance with either option.

For further information: [Click Here](#)

Proposed ENERGY STAR EPS Specification Version 2.0

Proposed ENERGY STAR EPS Specification Version 2.0

ENERGY STAR has recently issued a proposal for a version 2.0 specification for external power supplies (EPS). The proposed effective date is July 1, 2008.

The test methodology is unchanged, and compliance is voluntary.

Notable changes of the proposed specification include:

- Increased active mode energy efficiency minimum requirements
- Reduced no-load power max limits
- Power factor correction requirement will be added for power supplies with a nameplate power output ≥ 75 watts
- No-load requirements for AC-DC and AC-AC will be separated

The following tables show active mode energy efficiency and no-load power consumption specifications in the proposal.

Active Mode Efficiency (AC-AC and AC-DC)

Nameplate Output Power (Pno)	Minimum Average Efficiency in Active Mode (expressed as a decimal)
0 to ≤ 1 watt	$\geq 0.44 * Pno + 0.145$
> 1 watt to ≤ 36 watts	$\geq [0.08 * \ln (Pno)] + 0.585$
> 36 watts	≥ 0.870

No-load Energy Consumption

Nameplate Output Power (Pno)	Maximum Power for No-load		
	AC-AC	AC-DC	
0 to < 50 watts	≤ 0.5 watts	≤ 0.3 watts	
≥ 50 to ≤ 250 watts	≤ 0.5 watts	≤ 0.5 watts	

Conforming Design Ideas from Power Integrations

Document	Device Used	Power Output (W)	Efficiency (4 Points Average) *	CEC 2008 †	ENERGY STAR 2.0 ‡
DI-85	LNK564PN	2	64.8%	56.2%	64.0%
DI-113	TNY274PN	5	71.5%	59.9%	71.4%
DI-115	TNY376PN	7.5 / 13 Pk	77.7%	68.1%	74.6%
DI-132	LNK564DN	1.75	64.0%	55.0%	63.0%
DI-143	TOP258MN	20 / 80 Pk	85%	77%	82%
DI-144	TOP258PN	50 / 70 Pk	89.9%	84%	87%

The following table shows Power Integrations Design Ideas that meet the proposed spec.

* The actual measurement of the average efficiency of the design idea the 4 test points of load: 25%, 50%, 75% and 100%, as called for by ENERGY STAR specs.

For further information: [Click Here](#)

Hitachi power semiconductors



Hitachi power semiconductors (<http://www.pi.hitachi.co.jp/pse>) is focused on heavy current, high power parts.

They have a range of product available today:

Rectifier Diodes - 100V to 800V

Fast Recovery Diodes - 100V to 12kV

Avalanche Diodes - 50V to 1kV

Zener Diodes - 6V to 33V (1W or 2.5W)

Surge Suppressor Diodes - 10V to 51V (600 to 3000W Prms)

Hi-power IGBT module - 1.7kV to 6.5kV (up to 3,600 Amps)

Brushless DC motor driver (VSP, single analogue input) - 250V or 500V, up to 2A peak per channel

Brushless DC motor driver (6 logic inputs) - 250V or 500V, up to 3A peak per channel

EL display driver - 60 outputs (programmable shift direction),

output terminal voltage up to 260V and up to 0.8A sink/source

High voltage analog switch - 8-bit shift register, integrated switch (20-ohm, 220V)

For further information: [Click Here](#)



About Braemac

Braemac is Australia's largest electronic component distributor with offices throughout Australia, New Zealand, USA, Singapore, Hong Kong and the UK. Our product offer includes some of the world's most prestigious suppliers including Atmel, Altera, Hitachi (Renesas), STMicroelectronics, Cirrus Logic, Marvell and Wavecom which allows our customers to choose from a wide selection of quality, well recognised components. Visit Braemac Website

Contact Us

For further information, product data sheets and pricing, please contact your local Braemac sales representative. or email info@braemac.com.au

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