

New power management IC from ams helps reduce thermal stress on processors in phones and tablets

Innovative ams architecture enables board designers to locate the new AS3721 PMIC and the applications processor - both intense hotspots - far away from each other

Unterpremstaetten, Austria (28 May, 2013) - ams AG (SIX: AMS), a leading provider of high performance analog ICs and sensors, today introduced the AS3721, a power management IC (PMIC) with an innovative remote-feedback circuit that helps reduce the thermal stress of applications processors in smartphones and tablets.

When paired with new AS3729 point-of-load regulators from ams, the highly-integrated AS3721 provides a complete power management system that offers a fast response to load transients for reliable processor performance, high efficiency, and flexible board layout.

The AS3721 and AS3729 are optimized for use with Tegra applications processors from Nvidia.

The AS3721 PMIC enables a compact remote feedback path from the processor to the IC's integrated DC-DC controllers. Thanks to a patent-pending design innovation by ams, the feedback interface to the AS3721 only requires two wires (one control signal, one temperature signal) instead of the four or five wires typically required by other PMICs.

With fewer traces connecting the PMIC to the point-of-load power stages, the two devices can be placed far apart in the board layouts of space-constrained devices such as smartphones, tablets and notebooks. This dramatically reduces the size and intensity of the hotspot around the processor compared to conventional power architectures in which the processor and PMIC, both handling high currents simultaneously, must be located side-by-side.

The feedback loop carried over the AS3721's two-wire interface also operates extremely fast, maintaining the processor it supports within its safe operating voltage even when supplying extremely fast-changing loads. Using an output capacitor of just 40 μ F and at an output voltage of 1.0V, the system's voltage drop during a step up from 0.5A to 5A in burst mode is just 32mV (typical).

The AS3729 5A point-of-load power stages complement the AS3721 PMIC. The AS3729 contains NMOS and PMOS FETs for each of two phases, which can be controlled separately and can handle an output current of 2.5A. The PMIC can combine up to four devices in an eight-phase configuration that supplies a 20A maximum output. By choosing single- or multi-phase configurations, device manufacturers can optimize their design either for cost and board footprint (using fewer, larger inductors) or for low



profile (using more, smaller inductors).

The AS3721 PMIC features four DC-DC step-down regulators supplying 4A, 2A and 1.5A; three DC-DC step-down controllers rated for 5A, 10A and 20A; 12 digital LDOs; a real-time clock; a supervisor circuit; GPIOs; a general-purpose ADC; and a one-time programmable boot sequence. The device's 8mm x 8mm BGA package has a pitch of just 0.5mm.

The AS3729 power stage is in a chip-scale package measuring just 1.6mm x 1.6mm and with a 0.4mm pitch.

'ams has a track record of developing solutions to the toughest power and analog problems, and this power design for Nvidia is another outstanding example. Our patent-pending feedback interface technique provides for a huge improvement in the board layout of smartphones and tablets, and will allow device manufacturers to dramatically reduce the thermal stress on the processor and associated components,' Kambiz Dawoodi, vice-president and general manager of the power and wireless business unit at ams, said.

Price & Availability

The AS3721 PMIC and AS3729 power stage are available for sampling now. The AS3721 is priced at \$2.65 for 1,000 pieces. The AS3729 is priced at \$0.40 for 1,000 pieces.

Technical Support

For further information on the AS3721 and AS3729 or to request samples, please visit www.ams.com/Power-Management/AS3721 and www.ams.com/Power-Management/AS3729.



Press Release
ams power solution eases thermal stress
on applications processors

About ams

ams develops and manufactures high performance analog semiconductors that solve its customers' most challenging problems with innovative solutions. ams' products are aimed at applications which require extreme precision, accuracy, dynamic range, sensitivity, and ultra-low power consumption. ams' product range includes sensors, sensor interfaces, power management ICs and wireless ICs for customers in the consumer, industrial, medical, mobile communications and automotive markets.

With headquarters in Austria, ams employs over 1,300 people globally and serves more than 7,800 customers worldwide. ams is the new name of austriamicrosystems, following the 2011 acquisition of optical sensor company TAOS Inc. ams is listed on the SIX Swiss stock exchange (ticker symbol: AMS). More information about ams can be found at www.ams.com.

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