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Alpha and Omega Semiconductor Unveils World's Lowest Quiescent Power Notebook Multiphase VR Controller

4+2 Intel IMVP 9.1/9.2 Hybrid Digital Multiphase Controller for Intel Alder Lake and Raptor Lake Notebook Platforms

SUNNYVALE, Calif., March 16, 2022 – Alpha and Omega Semiconductor Limited (AOS) (Nasdaq: AOSL), a designer, developer, and global supplier of a broad range of power semiconductors, power ICs, and digital power products, today announced the release of the AOZ71026QI, a 2 rail, 6 phase controller for notebook Vcore power delivery. The new device features the world's lowest quiescent power for a multiphase controller designed to meet Intel IMVP 8, 9, 9.1, and 9.2 specifications. Combined with AOS's benchmark DrMOS power stages, the AOZ71026 provides a complete power solution for Intel Alder Lake and Raptor Lake Notebook platforms.

AOS's Hybrid Digital approach enables the best of both worlds: the flexibility/tunability of a digital solution and the low quiescent power of an analog solution. This unique approach enables low quiescent power consumption in all power states as defined by the Intel IMVP 9.1 platform specification to maximize battery life. At the same time, customer or application-specific tuning or configuration settings can be programmed into the parts register settings via a SMBus digital interface. This minimizes system components and eliminates manual solder re-work during the development phase. Programmability can be done either by AOS GUI or customized ECS into the controller's built-in RAM. The controller also provides MTP to store register settings once the configuration is finalized.

The AOZ71026 provides two output rails in flexible 4/3/2/1 and 2/1 phase configurations. An SVID interface supports three separate SVID domains: Up to 4 phases for the core voltage domain (IA) and 2 phases for the graphics voltage domain (GT), as well as the PSYS domain's reporting functions. The new device offers a novel AOS Advanced Transient Modulation (A^2TM). It combines an advanced variable frequency hysteretic peak current mode control with a proprietary phase current sensing scheme for fast transient response and optimal current balance for both transient and DC loads. The control loop enhances light-load efficiency by seamlessly entering DCM mode of operation.

The AOZ71026QI provides complete protection and warning functions, including UVP, OVP, OCP, and OTP. Fault protection behavior can be easily programmed through SMBus. AOZ71026QI also offers real-time telemetry information via SMBus for VIN, VOUT, temperature, output currents, power states, as well as PSYS / VSYS / IAUX pins reporting via SMBus.

"The biggest challenge for multiphase VR controllers for core power in mobile applications is how to lower quiescent power while still providing fast and reliable performance. The AOZ71026 checks all the boxes, offering a novel control scheme to meet stringent power delivery requirements minimum external components thanks to registering programmable tuning and configuration, and the industry's lowest quiescent power. This low quiescent power sets its world apart from what is available in the industry. Laptops designed using the AOZ71026 will offer from 30 minutes to 1 hour longer run times in battery life workloads compared to competing solutions," said Lu Jian (LJ), Client Computing Solution Senior Marketing Director at AOS.

Technical Highlights

- Dual output rails up to 4 + 2 phases
- Digital & analog hybrid controller with SMBus programmability and industry lowest power consumption
- SVID Interface to CPU compliant with IMVP8, 9, and 9.1 /9.2 specifications
    - Support Fast V-Mode (FVM) to protect CPU
- Low quiescent current: 3.42 mA at PS0 for 3 + 2 configuration ADL-P 28W SKU
- FCCM/FCCM2 pins to lower power loss in power saving mode for notebook applications
- Supports multi-sourced industry-standard DrMOS or driver + MOSFET power stages
- User-friendly GUI for compensation and configurations with minimal external RC components
- ECS programmability for configurations with Built-in MTP and RAM
- AOS Advanced Transient Modulator (A^2TM) control scheme: Variable frequency hysteretic peak current mode control ensures fast transient response and Dynamic phase current balance
- Acoustic Noise Suppression QFN 6x6-48L Package

Pricing and Availability

The AOZ71026QI is immediately available in production quantities with a lead-time of 12-16 weeks. The unit price for AOZ71026QI starts at $1.95 in 1,000-piece quantities.

About AOS

Alpha and Omega Semiconductor Limited, or AOS, is a designer, developer, and global supplier of a broad range of power semiconductors, including a wide portfolio of Power MOSFET, IGBT, IPM, TVS, HVIC, SiC/GaN, Power IC, and Digital Power products. AOS has developed extensive intellectual property and technical knowledge that encompasses the latest advancements in the power semiconductor industry, which enables us to introduce innovative products to address the increasingly complex power requirements of advanced electronics. AOS differentiates itself by integrating its Discrete and IC semiconductor process technology, product design, and advanced packaging know-how to develop high-performance power management solutions. AOS's portfolio of products targets high-volume applications, including portable computers, flat-panel TVs, LED lighting, smartphones, battery packs, consumer and industrial motor controls, automotive electronics, and power supplies for TVs, computers, servers, and telecommunications equipment. For more information, please visit www.aosmd.com.

Forward-Looking Statements

This press release contains forward-looking statements based on current expectations, estimates, forecasts, and projections of future performance based on management's judgment, beliefs, current trends, and anticipated product performance. These forward-looking statements include, without limitation, references to the efficiency and capability of new products and the potential to expand into new markets. Forward-looking statements involve risks and uncertainties that may cause actual results to differ materially from those contained in the forward-looking statements. These factors include but are not limited to the actual product performance in volume production, the quality and reliability of the product, our ability to achieve design wins, the general business and economic conditions, the state of the semiconductor industry, and other risks as described in the Company's annual report and other filings with the U.S. Securities and Exchange Commission. Although the Company believes that the expectations reflected in the forward-looking statements are reasonable, it cannot guarantee future results, level of activity, performance, or achievements. You should not place undue reliance on these forward-looking statements. All information provided in this press release is as of today's date unless otherwise stated, and AOS undertakes no duty to update such information, except as required under applicable law.

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