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Alpha and Omega Semiconductor Introduces Industry's Lowest Quiescent Power Multiphase Vcore Solution for Computing Systems

Paired with a 4+2+1 Intel IMVP Digital Multiphase Controller and AOS Power Stage for Intel Meteor Lake/Arrow Lake notebook platforms provides a complete Vcore power management system solution

SUNNYVALE, Calif., May 29, 2024 – Alpha and Omega Semiconductor Limited (AOS) (Nasdaq: AOSL a designer, developer, and global supplier of a broad range of discrete power devices, wide band gap power devices, power management ICs, and modules, today announced the release of the AOZ71137QI, a 3 rail, 7-phase controller engineered as a multiphase core voltage (Vcore) power management system solution. Delivering the industry's lowest quiescent power in a multiphase controller, the AOZ71137 is designed to meet Intel IMVP 8, 9, 9.1, and 9.2 specifications. When paired with AOS' benchmark DrMOS and Smart Power Stage (SPS), this combination of devices provides a complete power delivery solution for Intel Meteor Lake and Arrow Lake notebook platforms.

The AOZ71137 digital controller provides three output rails in flexible 4/3/2/1, 2/1, and 1-phase configurations for IA, GT, and SA rails. It is designed with AOS' Advanced Transient Modulator (A^2TM), an advanced variable frequency hysteretic peak current mode control with a proprietary phase current sensing scheme. With the control provided by the A2TM feature, designers are able to implement fast transient response and optimal current balance for both transient and DC load. These benefits also help enhance design flexibility and tunability for engineers, helping them minimize external component counts that reduce BOM costs while streamlining design efforts.

This new AOS Vcore solution offers low quiescent power in all power states to maximize battery life. Its SMBus interface also eases customer or application-specific tuning or configuration, allowing settings to be programmed into the parts register, thereby eliminating the need for manual solder re-work during the development phase. Programmability can be done by an AOS GUI or customized EC into the controller's built-in RAM. The controller also provides MTP to store register settings once the configuration is finalized.

In addition, the AOZ71137 provides complete protection and warning features, including UVP, OVP, OCP, and OTP. Fault protection behavior can also be easily programmed through SMBus AOS' Vcore solution offers real-time telemetry information via its SMBus for VIN, VOUT, temperature, output currents, power states, and PSYS / VSYS / IAUX pins reporting through the SMBus.

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Pairing with AOS' full portfolio of DrMOS and Smart Power Stage (SPS), designers can access cost-effective and high-performance core power solutions for today's demanding computing systems that require advanced features and capabilities for AI-related applications. For these designs, AOS offers its DrMOS in a small QFN5x5 packages that include the AOZ5516/AOZ5517 for gaming and the AOZ5508/AOZ5507 in the QFN3.5x4.5 package for mobile computing. These DrMOS devices allow designers to meet complete Vcore power requirements with best-in-class robustness along with 30V breakdown voltage and UIS testing. In addition, the AOZ71137QI can pair with SPS, such as the AOZ52183QI, AOZ52173QI, and AOZ52153, available in compact QFN4x5 form factors. These devices deliver accurate IMON reporting and ultra-low quiescent current by enabling Sleep Mode that satisfy advanced design requirements.

"The biggest challenge for multiphase Vcore in mobile applications is lowering quiescent power while still providing fast and reliable performance. The AOZ71137 checks all the boxes. It offers a novel control scheme to meet stringent power delivery, minimizes the need for external components with programmable tuning and configuration, and, above all, features the industry's lowest quiescent power paired with the AOS Smart Power Stage. These capabilities set our Vcore solution worlds apart from what is currently available in the industry. Laptops designed using the AOZ71137 can extend battery life workload run times from 30 minutes to 1 hour longer compared to competing solutions," said Starry Tsai, Senior Director of Product Marketing for Power IC Product Line at AOS.

Technical Highlights

- AOS Advanced Transient Modulator (A^2TM) control scheme: Variable frequency hysteretic peak current mode control ensures fast transient response and Dynamic phase current balance
- Three output rails up to 4 + 2 +1 phases
- SVID Interface to CPU compliant with IMVP8, 9, and 9.1/9.2 specifications, support Fast V-Mode to protect CPU
- Low quiescent current: 3.7 mA at PS0 for 2 + 1 +1 configuration
- Autonomous Phase Management, including Phase shedding and auto DCM to optimize power loss
- FCCM/FCCM2 pins to lower power loss in power-saving mode for notebook applications
- Supports multi-sourced industry-standard DrMOS and SPS power stages
- User-friendly GUI for compensation and configurations with minimal external RC components
- EC programmability for configurations with Built-in MTP and RAM with more than 10x configuration changes
- Acoustic Noise Suppression QFN 6x6-52L package

Pricing and Availability

The AOZ71137QI is immediately available in production quantities with a lead time of 12-16 weeks. The unit price for AOZ71137QI starts at $2.4 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 discrete power devices, wide band gap power devices, power management ICs and modules, including a wide portfolio of Power MOSFET, SiC, IGBT, IPM, TVS, HV Gate Drivers, 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' 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 that are 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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