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Media Contact: Mina Galvan
Tel: 408.789.3233
Email: mina.galvan@aosmd.com

Alpha and Omega Semiconductor Announces Type-C Power Delivery Input Protection Switch with True Reverse Blocking

Smart protection switch provides industry-leading performance, up to 28V over-voltage protection for Type-C PD port applications

SUNNYVALE, Calif., July 19, 2018, Alpha and Omega Semiconductor Limited (AOS) (Nasdaq: AOSL), a designer, developer and global supplier of a broad range of power semiconductors and power ICs, announced today a new Type-C Power Delivery compliant input protection switch with up to 28V over-voltage protection. The AOZ1376 is a smart protection switch with reverse current blocking capability intended for applications where internal circuitry requires protection from exposure to high voltages. This new device offers low $R_{DS(ON)}$ (20mohm) in a thermally enhanced 3x3mm DFN package, made possible by AOS' advanced co-packaging technology, combining a high performance IC with protection features and our latest high SOA MOSFET. The AOZ1376 provides an ideal solution for the latest notebooks, ultra books, dongles, and docking stations, with Thunderbolt/USB Type-C PD ports.

Typically, USB Type-C sinking applications are protected from a reverse current using a circuit that uses two discrete back to back MOSFETs along with resistors and capacitors to provide basic soft start functionality; however programmability and protection features are lacking in this implementation. The AOZ1376 overcomes these disadvantages, saving both component count and PCB footprint while offering a robust protection feature set to increase the reliability of end products using Type-C power delivery.

"The thinner profile, higher power and greater flexibility offered by USB Type-C and USB PD 3.0 standards have prompted many computer manufacturers to drop the barrel jack in favor of USB Type-C ports for charging their notebook and ultra book offerings; and for the best user experience many of these devices allow the laptop to charge from any of the USB Type-C ports. This makes reverse voltage protection imperative for these devices," said Mehdy Khotan, Power IC Marketing Director at AOS. "AOZ1376 is used in the Type-C charging path of such devices. It not only protects the laptop and its battery from over voltage and over current, but it also prevents an unintended reverse current and over voltage on the opposite port, protecting the laptop's peripheral devices."

Technical Highlights

The AOZ1376 operates from 3.4V to 22V on VIN. Both VIN and VOUT are rated at 28V Absolute Maximum. The back-to-back switch configuration blocks any current flow between VIN and VOUT pins when the device is disabled or when the device is enabled, but VOUT is greater than VIN. The AOZ1376 offers programmable soft start and comprehensive protection against short-circuit, thermal overload, reverse voltage and over voltage. The over-voltage protection threshold is selectable by an external resistor. The internal soft-start circuitry controls the inrush current due to highly capacitive loads, and the slew rate can be adjusted using an external capacitor. The device also features robust ESD of +/-8kV on V_{IN} and V_{OUT} pins and +/-4kV on all other pins.

Pricing and Availability

The AOZ1376 is immediately available in production quantities with a lead-time of 12 weeks. The unit price of 1,000 pieces is $2.25.

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, 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, smart phones, battery packs, consumer and industrial motor controls 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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