

# Power Integrations Announces Immediate Availability of Qspeed™ Family of Advanced Diodes

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Qspeed diodes combine high efficiency and low EMI; ideal for PFC and high-frequency, high-voltage rectifier applications

SAN JOSE, Calif.--(BUSINESS WIRE)-- Power Integrations (Nasdaq:**POWI**), the leader in high-voltage integrated circuits for energy-efficient power conversion, today announced the immediate availability of the **Qspeed** family of advanced diodes. **Qspeed** diodes use a unique silicon-based process to combine an extremely low reverse recovery charge (QRR) with a very soft recovery waveform. Together, these features help designers optimize the efficiency and EMI performance of their power conversion circuits. **Qspeed** diodes are ideal for continuous conduction mode (CCM) boost power factor correction (PFC) circuits, and as output diodes for hard-switching applications. In PFC circuits, **Qspeed** diodes can provide an overall switching performance that is comparable to silicon-carbide (SiC) diodes at much lower cost.

When a silicon PN diode is reverse biased and turns off, the current rapidly falls to zero and then briefly flows backwards through the diode as the PN junction switches from conduction to blocking mode of operation. The product of time and negative current (i.e., the area under a plot of instantaneous current vs. time during commutation) is defined as reverse recovery charge, or QRR. The QRR flows to ground through other devices in the system and the energy is wasted as heat, reducing efficiency and possibly raising the temperature of costly associated components, such as MOSFETs. **Qspeed** diodes have the lowest QRR of any low-cost, silicon-based diode. They supplant ultrafast silicon diodes in PFC and rectifier applications targeting increased efficiency or temperature reduction, and they replace silicon-carbide diodes in applications with aggressive cost goals.

The reverse recovery waveform of a diode generates electrical noise (EMI) which must be filtered to low levels to prevent conduction to the AC mains, the power supply load, or radiation to nearby systems. **Qspeed** diodes have

excellent softness — essentially a sinusoidal recovery waveform, which contains no high-frequency harmonics thus reducing conducted and radiated EMI emissions. This reduces the size, cost, weight, and complexity of a power supply's EMI filter hardware, and reduces the prototyping and development cost associated with EMI suppression.

**Qspeed** diodes deliver industry-leading performance without the cost of exotic materials, enabling high-efficiency and low-cost designs. **Qspeed** 600 V diodes are available in three families. The X Series is optimized for cost-effective high efficiency at switching frequencies below 80 kHz, and the Q and H Series are designed for use above 80 kHz. The Q Series has the highest softness, giving the best EMI performance. The H Series has the lowest forward drop (VF) and QRR, providing the highest efficiency. In addition to the 600 V products, **Qspeed** 300 V diodes provide best-in-class switching for output rectification and audio applications.

Comments Stuart Hodge, product marketing manager at Power Integrations: "In addition to power factor correction circuits, **Qspeed** diodes are also well suited for use as output diodes — replacing Schottky diodes — particularly in high-current, high-voltage power supplies such as telecom and audio. In these applications, **Qspeed** diodes deliver a dramatic reduction in peak inverse voltage and the soft recovery often allows designers to completely remove snubber circuits, lowering design cost and complexity while increasing efficiency."

Power Integrations acquired Qspeed Semiconductor in December 2010. All members of the **Qspeed** families of advanced diodes are now available from Power Integrations priced starting at \$0.43 each for 1,000-piece quantities (LXA03T600; 3 A, 600 V). Full technical details, including an introductory video, datasheets, and application notes, are available now on the Power Integrations website at [www.powerint.com/qspeed](http://www.powerint.com/qspeed). An advanced diode selector tool that allows designers to easily choose the right diode for their specific application is also featured on the website.

## About Power Integrations

Power Integrations is the leading supplier of high-voltage analog integrated circuits used in energy-efficient power conversion. The company's innovative technology enables compact, energy-efficient power supplies in a wide range of electronic products, in AC-DC, DC-DC, and LED lighting applications. Since its introduction in 1998, Power Integrations' EcoSmart™ energy-efficiency technology has saved an estimated \$4.6 billion of standby energy waste and prevented millions of tons of CO2 emissions. The company's **Green Room** web site provides a wealth of information about "energy vampires" and the issue of standby energy waste, along with a comprehensive guide to energy-efficiency standards around the world. Reflecting the environmental benefits of EcoSmart technology, Power Integrations is included in clean-technology stock indices sponsored by the **Cleantech Group** (Amex: CTIUS) and **Clean Edge** (Nasdaq: CELS). For more information, please visit [www.powerint.com](http://www.powerint.com).

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