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Ideal Power Releases White Paper Exploring the Benefits of New B-TRAN Technology

Ideal Power Granted Five Patents by the U.S. Patent Office for B-TRAN Semiconductor Power Switch and Methods of Operation

AUSTIN, TX -- (Marketwired) -- 08/17/15 -- Ideal Power Inc. (NASDAQ: IPWR), a developer of advanced power conversion technologies, released a white paper describing a new power semiconductor switch called the Bi-directional Bipolar Junction TRANSistor (B-TRAN) and its method of operation as well as the implications of the B-TRAN as a replacement for conventional power switches. The technical whitepaper describing the device structure and operation of the B-TRAN is available at [B-TRAN White Paper](#).

Ideal Power was granted five U.S. patents, patent numbers 9,029,909; 9,035,350; 9,054,707; 9,054,706 and 9,059,710, for the B-TRAN device and its methods of operation. Additional U.S. and international patents are pending. The B-TRAN device has a simple, 3 layer, 4 terminal, vertically symmetric double sided structure which presents unique opportunities for high current density operation at high efficiency. B-TRANs have potential uses in a wide range of power conversion and control applications, including very low loss AC power control and in power converters from Ideal Power and other power converter OEMs. Based on a recent study by Yole Development, power semiconductor switches are a \$10 billion per year addressable market currently served by conventional devices such as Insulated Gate Bipolar Transistors (IGBTs).

"Given the performance predictions for this new power switch topology, the B-TRAN may be the most significant new type of power semiconductor since the introduction of the IGBT," says Dr. Richard Blanchard, a B-TRAN co-inventor and holder of over 200 patents primarily related to power semiconductors including the widely used trench MOSFET.

"These B-TRAN patents, along with other pending Ideal Power patents covering methods of double sided power switch manufacturing and operation, extend our intellectual property portfolio into power semiconductors, which we believe could significantly improve power conversion efficiency in a wide range of applications including AC power control, Ideal Power's Power Packet Switching Architecture (PPSA) topology, conventional power converters and non-conventional power converters," stated Bill Alexander, Chief Technology Officer, founder of Ideal Power and a B-TRAN co-inventor. "High efficiency power converters deliver more power for the customer resulting in potentially lower cost, more reliable and smaller products. Ideal Power's current products using standard IGBTs already deliver some

of the highest efficiencies for energy storage applications and the Company believes that future Ideal Power products using B-TRANs could have full power conversion efficiencies equal to or exceeding 99 percent, as compared with conventional power conversion systems with typical full power efficiencies of less than 95 percent. Third party simulations show that, when applied to AC power control, the B-TRAN is predicted to operate with less than 20% of the conduction losses of conventional solid state AC power control devices while providing valuable fault control capabilities such as current limiting and fast turn-off during fault conditions, which are lacking in such conventional devices. The B-TRAN could also potentially replace electro-mechanical contactors in many applications where fault limiting and explosion-proof operation is required."

The development of the B-TRAN has been supported by a U.S. Department of Energy Advanced Research Projects Agency - Energy (ARPA-E) award to create new bi-directional IGBT (BD-IGBT) power switches. Unlike conventional uni-directional power switches, bi-directional switches conduct current and block voltage in both directions. As part of this advanced research, the Company patented the B-TRAN, which combines the bi-directional functionality of the BD-IGBT with exceptionally low losses. Both the BD-IGBT and the B-TRAN have been extensively studied in detailed, physics-based simulations, and the semiconductor processes to build prototype devices are in development. These simulations show a 0.2 V drop on a 1200 V B-TRAN at high current density and gain greater than 10, as compared to a typical IGBT with series diode voltage drop of 4.5 V, for a factor of 22 reduction in conduction losses in IGBT AC switch applications. B-TRAN switching losses are predicted by these simulations to be significantly lower than IGBTs.

About Ideal Power Inc.

Ideal Power Inc. (NASDAQ: IPWR) has developed a novel, patented power conversion technology called Power Packet Switching Architecture™ (PPSA). PPSA improves the size, cost, efficiency, flexibility and reliability of electronic power converters. PPSA can scale across several large and growing markets, including solar photovoltaic generation, electrified vehicle charging, and commercial grid storage. Ideal Power also has a capital-efficient business model that can enable it to address these markets simultaneously. Ideal Power has won multiple grants for its PPSA technology, including a \$2.5 million grant from the Department of Energy's Advanced Research Projects Agency - Energy (ARPA-E) program, and market-leading customers are incorporating PPSA as a key component of their systems. For more information, visit www.IdealPower.com.

Safe Harbor Statement

All statements in this release that are not based on historical fact are "forward looking statements" within the meaning of the Private Securities Litigation Reform Act of 1995 and the provisions of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended. These statements include our statements concerning the potential applications for B-TRANs, potential power conversion efficiency improvements relative to conventional power conversion systems and AC power control devices, and the potential for B-TRAN to replace electro-mechanical contactors in certain applications. While management has based any forward looking statements included in this release on its current expectations, the information on which such expectations were based may change. These forward looking statements rely on a number of assumptions concerning future events and are subject to a number of risks, uncertainties and other factors, many of which are outside of our control that could cause actual results to materially

differ from such statements. Such risks, uncertainties, and other factors include, but are not limited to, the risk that ongoing development and commercialization of the B-TRAN technology will not proceed as we anticipate and that the performance of B-TRAN technology in commercial applications will not achieve the improvements we currently expect based on simulation results. Due to the many technical, competitive and market factors that impact successful commercialization of developed technology, there can be no assurance that products incorporating B-TRAN technology will achieve commercial acceptance in the potential markets described in this press release. These statements are also subject to the risks of whether the patents for our technology provide adequate protection and whether we can be successful in maintaining, enforcing and defending our patents, whether demand for our products, which we believe are disruptive, will develop and whether we can compete successfully with other manufacturers and suppliers of energy conversion products, both now and in the future, as new products are developed and marketed. Furthermore, we operate in a highly competitive and rapidly changing environment where new and unanticipated risks may arise. Accordingly, investors should not place any reliance on forward-looking statements as a prediction of actual results. We disclaim any intention to, and undertake no obligation to, update or revise forward-looking statements.

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