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Paper Describes High Efficiency Linear Regulators With Buck And Boost Capability

[Polaris Semiconductor](#) has collaborated with Texas Instruments and the Ohio State University on the development of a white paper on Polaris' unique, voltage regulator technology. Using a proprietary optocoupler in combination with high-performance LDOs, Polaris is developing linear regulators that achieve high efficiency and which can perform both buck and boost operations. These devices are also rad hard. The paper is titled, "Breaking the Rules of Linear Regulators: High Efficiency Buck and Boost Conversion Without Switching" and is available now on the Polaris website.

According to Matthew Lumb, founder of Polaris, this paper goes into much greater technical depth about the technology than what is published on Polaris' website. Lumb adds, "Our latest chips are the very low noise devices featured on page 9, which are promising for very noise sensitive RF circuits."

A copy of the white paper is available [here](#) or see the Polaris Semiconductor white papers [page](#). For further background on this technology, see "[Power Highlights From CMSE 2023: A New Twist On Voltage Regulator ICs And Radiation Effects In GaN Devices](#)," which reported on the paper that Matthew Lumb presented on this technology two years ago at the CMSE conference.



Figure. Polaris Semiconductor's technology retains the low-noise, simplicity and low component count advantages of a linear regulator, but can achieve much higher efficiency and boost capability. The technology is also rad hard. Its patented device architecture comprises a conventional, Si-based LDO, co-packaged with Polaris Semiconductor's unique, high-performance, GaAs-based photovoltaic-output optocouplers in a multichip module. The recently published white paper describes this technology in depth.