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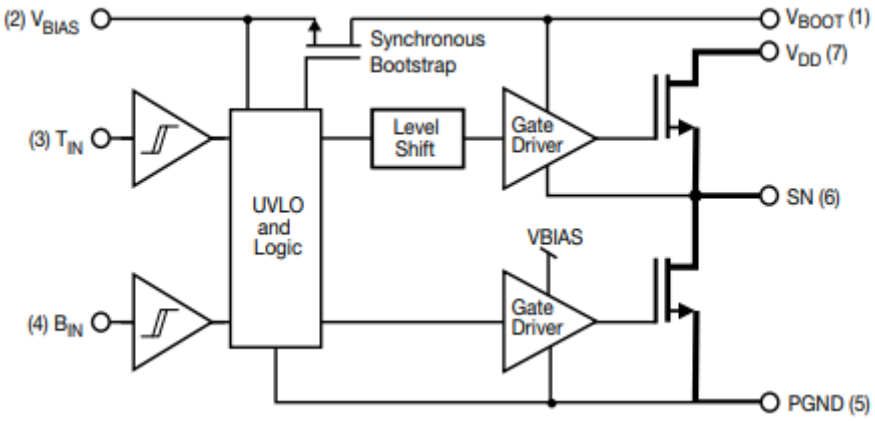
GaN Power Stage IC Is Rad Hard

EPC Space's EPC7011L7SH is a 50-V, 6-A rad-hard GaN power stage IC designed for space applications. Described by the company as the world's first rad-hard GaN power stage IC, the EPC7011L7SH is a single-chip driver plus eGaN FET half-bridge in a compact aluminum nitride ceramic surface-mount package (see the figure).

Integration is implemented using EPC's proprietary GaN IC technology. Input logic interface, level shifting, bootstrap charging and gate drive buffer circuits along with eGaN output FETs configured as a half-bridge are integrated within a monolithic chip with high-speed switching capability of 2+ MHz. The IC features a TID rating of 1000 kRad and a SEE immunity for LET of 84 MeV/mg/cm^2 with V_{DD} up to 100% of rated voltage.

The EPC7011L7SH is part of a family of space-level rad-hard ICs that EPC and EPC Space will be launching starting this year. According to the company, rad-hard ICs are the next significant stage in the evolution of rad-hard GaN power conversion, from integrating discrete devices to more complex solutions that offer in-circuit performance beyond the capabilities of silicon solutions and enhance the ease of design for power systems engineers.

Applications for this device include single- and multi-phase motor drivers for reaction wheel assemblies (RWAs), robotic actuators, and point-of-load converters. For more information see the EPC7011L7SH page or contact your local EPC Space representative.



(a)

(b)

Figure. The 50-Vdc, 6-A EPC7011L7SH is being introduced as the "world's first rad-hard GaN power stage IC". Input logic interface, level shifting, bootstrap charging and gate-drive buffer circuits along with 14-mΩ eGaN output FETs configured as a half-bridge (a) are integrated within a monolithic chip in a custom 7-pin aluminum-nitride SMT ceramic package (b).