

Abstract Submitted  
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**A Robust Modular IGBT Power Supply for Configurable Series/Parallel Operation at High Power and Frequency**<sup>1</sup> TIMOTHY ZIEMBA, K.E. MILLER, J.R. PRAGER, J.G. CARSCADDEN, Eagle Harbor Technologies, Inc — Eagle Harbor Technologies (EHT) is developing a modular, solid-state power supply for pulsed high power ( $> 10$  MW) RF applications supported by a DOE SBIR Phase II. The prototype modules utilize a low-cost IGBT based system that can be assembled in multiple ways for a wide range of applications. Each module is capable of switching 2 kA at 1 kV up to megahertz frequencies with rise times of  $\sim 40$  ns. Experimental testing of the modules demonstrated both parallel (high current) and series (high voltage) configurations. The modules are designed for precise switching control, which reduces jitter ( $< 5$  ns) between modules, enabling robust series operation. Present work is focused on building individual modules with active overvoltage and overcurrent fault detection. Two prototype supplies will be demonstrated: one capable of switching 2 kA at 10 kV and the other capable of switching 20 kA at 1 kV. The prototype costs are estimated to be three times less than older generation IGBT based power supplies for similar high current pulsed applications and twenty times less for the pulsed high voltage and high power tube based RF applications.

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