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Adjustable, High Voltage Pulse Generator with Isolated Output for Plasma Processing[1] TIMOTHY ZIEMBA, KENNETH E. MILLER, JAMES PRAGER, ILIA SLOBODOV, Eagle Harbor Technologies, Inc. — Eagle Harbor Technologies (EHT), Inc. has developed a high voltage pulse generator with isolated output for etch, sputtering, and ion implantation applications within the materials science and semiconductor processing communities. The output parameters are independently user adjustable: output voltage (0 – 2.5 kV), pulse repetition frequency (0 – 100 kHz), and duty cycle (0 – 100%). The pulser can drive loads down to 200 Ω. Higher voltage pulsers have also been tested. The isolated output allows the pulse generator to be connected to loads that need to be biased. These pulser generators take advantage modern silicon carbide (SiC) MOSFETs. These new solid-state switches decrease the switching and conduction losses while allowing for higher switching frequency capabilities. This pulse generator has applications for RF plasma heating; inductive and arc plasma sources; magnetron driving; and generation of arbitrary pulses at high voltage, high current, and high pulse repetition frequency.

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