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**Monitoring of linear transformer driver switches through photodetection** ANDREW BALOGH, DYSON KENNEDY, University of Rochester, PABLO RODRIGUEZ, Hartnell College, MATT EVANS, JAMES YOUNG, PIERRE-ALEXANDRE GOURDAIN, University of Rochester — To achieve a high peak current by producing the best overlap of currents, LTD switches must fire simultaneously. The nanosecond time scale on which an LTD operates can make it difficult to diagnose misfiring switches. Development of a circuit that generates a programmable signal delay from each switch allowed for diagnostic capabilities. In each switch, a fiber optic cable transmitted light from the switch firing and relayed it to a photodetector in the circuit. The input pulses from the switches were separated in time with programmed delay width, which were then combined into a single signal that was measured by an oscilloscope. Comparing the Boolean output signal to the initial firing signal time and expected delay detected pre-firing or misfiring from individual switches. The high-speed nature and signal recombination made this circuit an accurate way to compare the firing of switches that number in hundreds with a single measurable output. We present our circuit board and experimental results.

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