Abstracts

High Power Light Activated Semiconductor Switches with Sub-Nanosecond Rise Times

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This paper presents a summary of results from experiments with large GaAs, InP, and silicon photoconductive semiconductor switches (PCSS). Linear and high gain (lock-on) switching modes will be described. We have used individual PCSS to switch voltages as high as 120 kV and currents as high as 4.2 kA and have produced rise times as fast as 200 ps in the linear mode and 600 ps in the initiation of lock-on. The high gain switching mode is important to applications which must be compact or operate at high repetition rates. The highest power which we have switched to date with a pulsed semiconductor laser diode array (100 W) is 40 MW. The potential development of these switches for future applications will also be discussed.

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