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Sub-gigahertz beam switching of vertical-cavity surface-emitting laser with transverse coupled cavity

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Abstract

We report a high-speed electrical beam switching of vertical cavity surface emitting laser with a transverse coupled cavity. A high speed (sub-gigahertz) and large deflection angle (>30 degrees) beam switching is demonstrated by employing the transverse mode switching. The angular switching speed of 900 MHz is achieved with narrow beam divergence of below 4 degrees and extinction ratio of 8 dB. We also measured the near-and far-field patterns to clarify the origin of the beam switching. We present a simple one-dimensional Bragg reflector waveguide model, which well predicts the beam switching characteristic. (C) 2015 AIP Publishing LLC.

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