

response time, and high contrast ratio. It can diffract $>32\%$ light to ± 2 nd orders with a diffraction angle of 12.1° . Meanwhile, it is able to achieve a rise and decay time of 0.21ms and 2.95ms, respectively. Even when the phase grating operates at -40°C , it still exhibits a reasonably fast decay time of 40.4ms. A simulation model is developed to explain the experimental results and good agreement is obtained between the model and experiment. Moreover, a blazed phase grating is proposed to achieve tunable beam steering between 0th, 1st and 2nd orders.

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