

INTERFACING THE MAX3701 TO A BLUE/VIOLET LASER DIODE

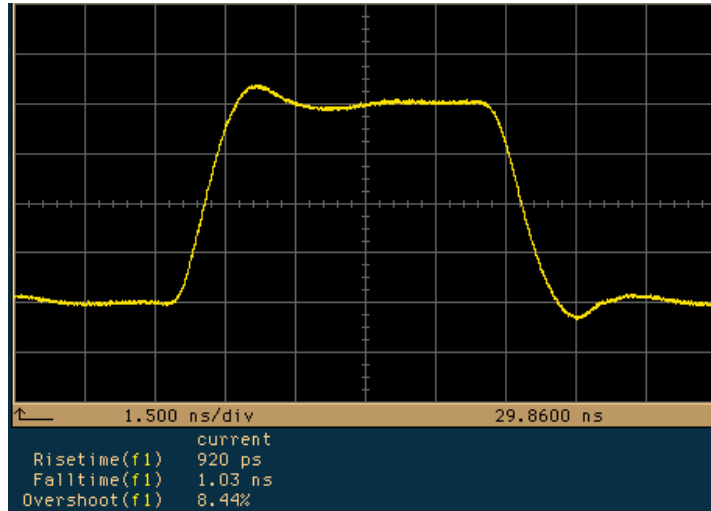


Figure 1. Optical output of a blue/violet laser driven by the MAX3701.

BACKGROUND AND PURPOSE

Optical measurements of the MAX3701 driving a blue/violet laser diode were performed prior to the release of the MAX3701 in October of 2003. These measurements verified that the MAX3701 is capable of driving the blue/violet laser with rise/fall times of ≤ 1 ns and overshoot $< 9\%$ as shown in Figure 1.

This Application Brief is an outline of the detailed information that can be found in the complete version of HFDN (High Frequency Design Note) 28.0. HFDN-28.0 explains in detail how optical measurements were performed, and provides guidelines for interfacing the MAX3701 with the blue/violet laser.

The complete version of HFDN-28.0 can be obtained

by request from the following link: [MAX3701 datasheet](#).

Topics include:

OPTICAL EVALUATION PRINTED CIRCUIT BOARD

- Materials and layout of the MAX3701 optical evaluation board
- Schematic diagram of the laser interface
- Connections and geometry of transmission lines

OPTICAL TEST EQUIPMENT

- Optical test equipment setup
- Mounting information, including thermal heat sink
- Fiber optic patch cable alignment
- Optical-to-electrical converter
- Oscilloscope-recorded waveforms of blue/violet laser driver optical output

PERFORMANCE OPTIMIZATION

- Parasitic elements
- Reducing overshoot and ringing on rising and falling edges
- Minimizing inductance

DECREASING THE RISE/FALL TIMES

- Optical rise and fall times limitations
- Analysis and performance relationships