APPLICATION NOTE 2934

MAX3701: Interfacing the MAX3701 to a Blue/Violet Laser Diode [Application Brief]

Dec 18, 2003

Abstract: This Application Brief is an outline of the detailed information that can be found in the complete version of HFDN (High Frequency Design Note) 028.0. HFDN-028.0 explains in detail how optical measurements were performed, and provides guidelines for interfacing the MAX3701 blue laser driver with the blue/violet laser.

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 ≤1ns 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 Time**
- Optical rise and fall times limitations
- Analysis and performance relationships

**Related Parts**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
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<tbody>
<tr>
<td>MAX3701</td>
<td>2x Blue Laser Driver with Sample and Hold</td>
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