GIGA

an Intel company

General Description

The GD90573A evaluation board is designed for evaluation of the performance of the advanced Laser Driver circuit GD16573A, designed for driving telecom lasers with a 25 Ω characteristic load impedance.

The GD90573A evaluation board comprises:

◆ SMA connectors
◆ 50 Ω matching transmission lines for balanced ECL signal inputs
◆ 25 Ω transmission line for output to laser
◆ Regulator for the negative supply voltage VEE, which is operated from a single external negative supply
◆ Potentiometers for all necessary adjustments of the regulation circuits
◆ Regulation circuit for control of the Laser Driver's modulation current.

The GD90573A is a fully tested evaluation board with all necessary components for normal operation.

For normal operation only an external power supply, input data, relevant load (laser unit), and measuring equipment is necessary.

All that is necessary for a full application is to mount a laser unit and apply power. Relevant adjustments can then be undertaken to match the actual laser unit.

Features

● On-board regulation circuits for control of modulation current.

● Test points available for monitoring of:
  – bias
  – bias control voltage
  – mark/space ratio

● On-board foot print for RF-side of butterfly package providing easy connection to laser unit.

● Easy connection of input signals via standard SMA connectors.

● Single negative power supply operation with on board supply voltage regulator for all process and control logic.

● Board dimensions: 96 × 62,5 mm (exclusive connectors)
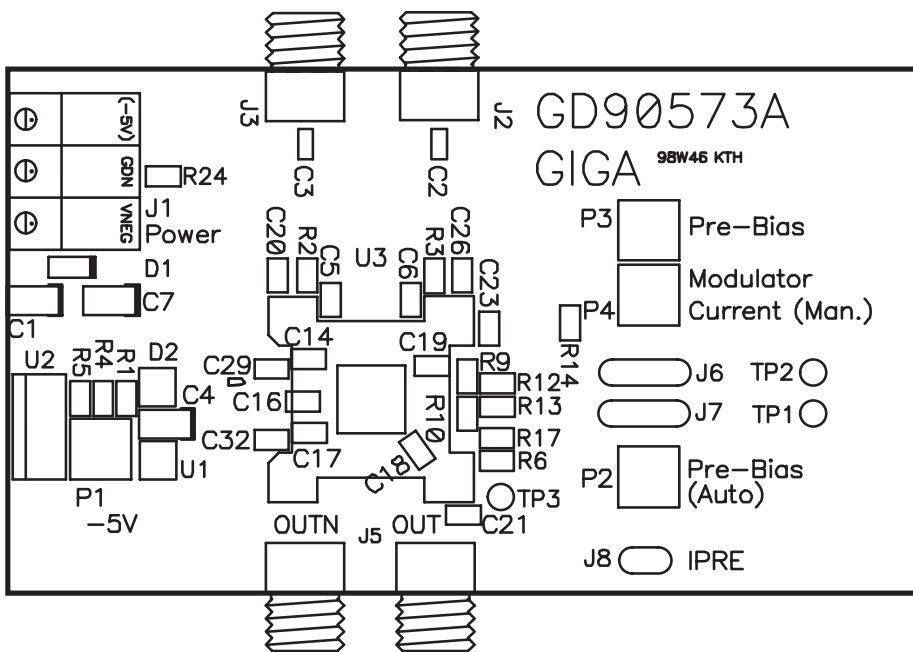
Applications

● Tele Communication:
  – SDH STM-16
  – SONET OC-48

● Data Communication.

● Direct Modulation laser driver.

Functional Details

Power Supply

A single supply voltage of –7.5 V drives the board. Higher supply voltage can be used if a heat sink is mounted on the voltage regulator (U2).

Data Input

The data input to the Laser Driver is differential and AC coupled, with the two inputs found in J2 and J3. Single-ended application can be obtained easily by connecting a 50 Ω terminator to the un-used input connector.

The differential data inputs are terminated internally in the Laser Driver with 50 Ω to DINT/DINTQ.

Data Output

The modulation current from the laser driver (IOUT/IOUTN) is fed to the laser unit via transmission lines to J5 at the board edge. For easy electrical testing of output SMA connectors are mounted on the board when delivered from factory. The footprint of J5 is intended for connection to the RF side of butterfly package. When using the board with a laser unit desolder the SMA connectors in J5.

At delivery the outputs are DC-connected (C2 and C3 are 0 Ω). If AC-coupling is preferred replace these components with SMD capacitors (size 0603) and connect the IOUT/IOUTN pins to VDD via RF- chokes. Refer to Data Sheet for GD16573A for further information.

Regulation Circuit

Modulation Regulation

The GD90573A evaluation board comprises a regulation network for the modulation current.

This regulation circuit comprises a simple external filter and feed-back loop to the laser driver's integrated regulation network.The regulation is included to stabilise the modulation current, independent of load variations in the laser or drift in laser driver.

The modulation current is monitored across R6 by the op-amp in U4:A. The feedback regulation signal is low pass filtered and routed out to jumper J7 . The signal can be connected to the modulation current regulation input (J6) via a jumper wire as shown in Figure 1.
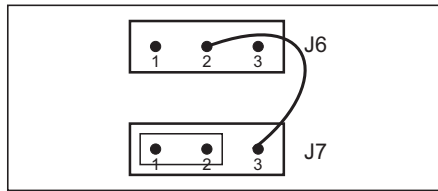

Figure 1. *Jumper wire for automatic regulation*

Alternatively, the regulation of the modulation current can be disabled and a potentiometer P4 connected for simple, manual setting of the modulation current. This is done by connecting the jumper wire as shown in Figure 2.
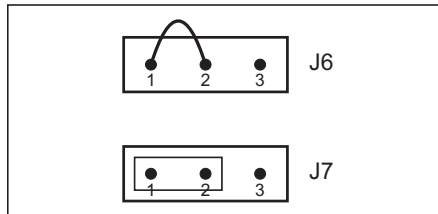

Figure 2. *Jumper wire for manual regulation*

External circuits for regulation of pre-bias and modulation current can be connected via the center pins of jumper J7 and J6, respectively.
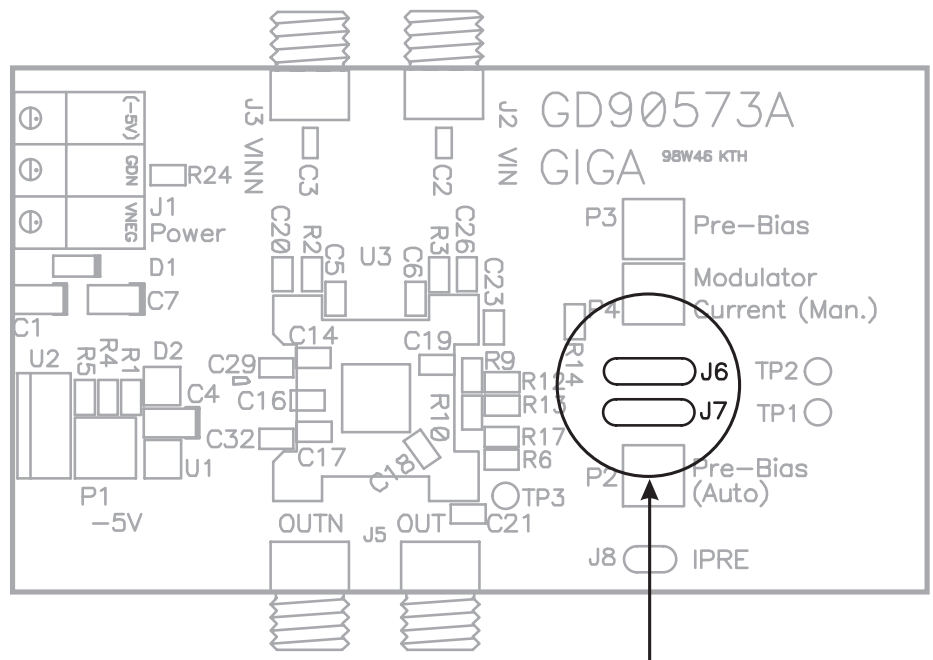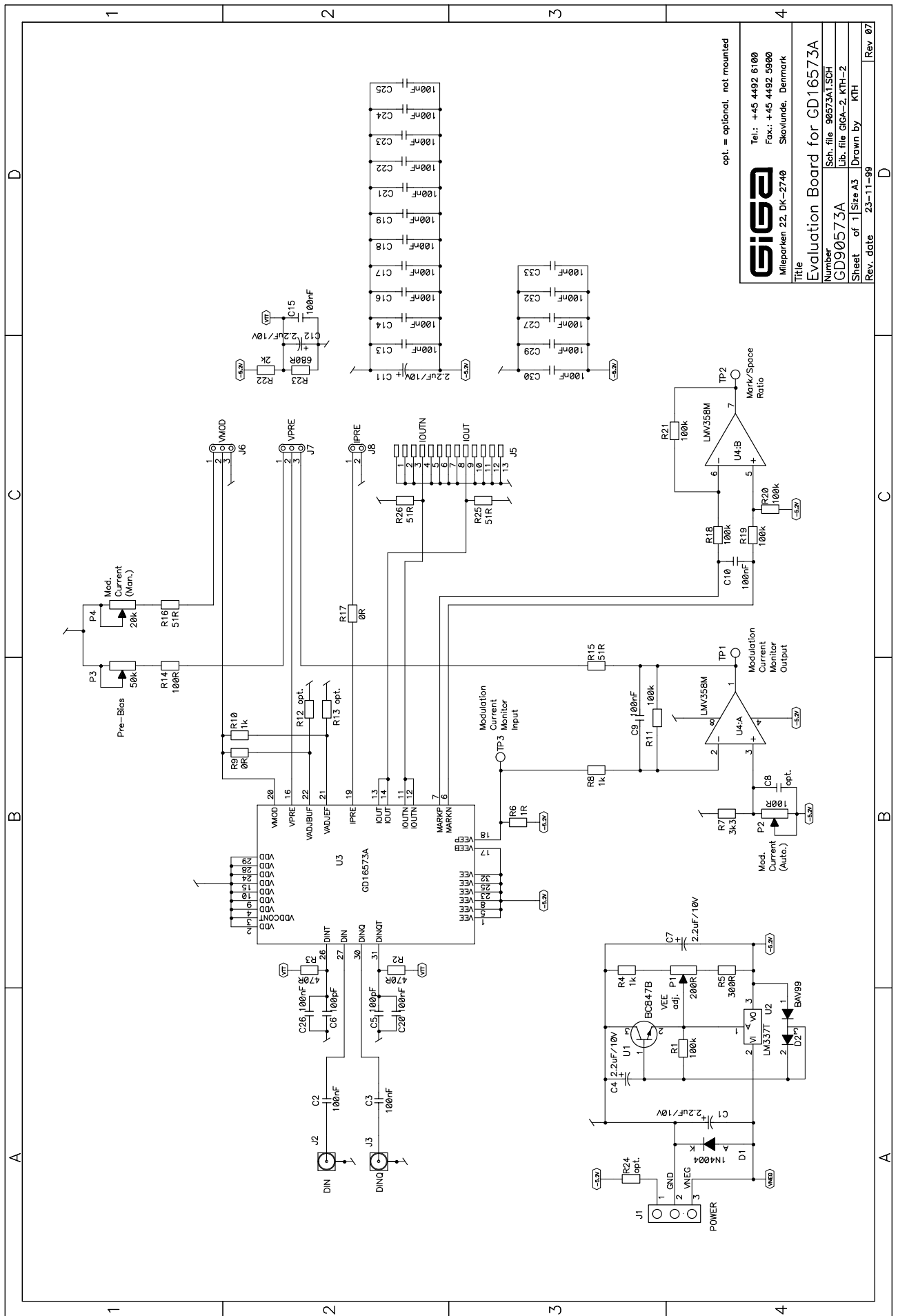

Figure 3. *Location of jumpers J6 and J7*

Title
Evaluation Board for GD16573A

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Number GD90573A
Sch. file 90573A1.SCH
Lib. file GIGA-2_KTH-2
Drawn by KTH
Rev 07
Sheet of 1 | Size A3
Rev. date 23-11-99
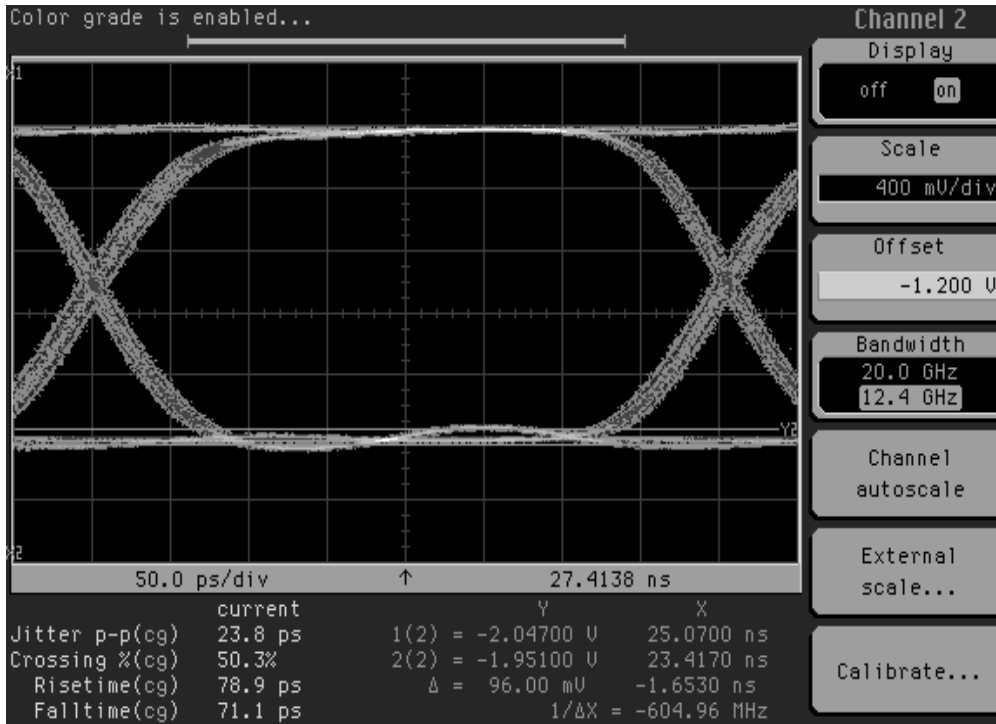
opt. = optional, not mounted

Test Results

Figure 4. *A sample test result of the optical output at 2.5 Gbit/s measured with a PRBS data sequence*

References

Please see the GD16573A data sheet for detailed information about the Laser Driver.

Ordering Information

To order, please specify as shown below.

Product Name:	Intel Order Number:	Description:
GD90573A	**GD90573A** MM#: 836275	The evaluation kit comprises: Evaluation board in antistatic bag GD16573A device mounted on the board How to get started GD16573A Data sheet GD90573A Data sheet (this document)

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