050-334

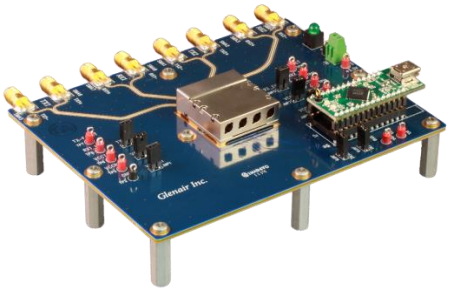
DATA SHEET

GLENAIR PCB MOUNT DUAL TRANSCEIVER EVALUATION BOARD FOR GLENAIR PCB MOUNT DUAL TRANSCEIVERS

REV	DESCRIPTION	DATE	APPROVED
A	Initial Release	03/04/2015	SZ
B	Updated Datasheet format to new format with ECCN. Added option for 62µm MMF cable	07/20/2015	SZ/GC
C	Per DCN 63527; Remove ECCN Information	01/19/2017	RAS/GC
D	Per DCN 72590; Remove Gap Pad P/N reference	09/24/2018	RAS/GC

BF14U2-7033

050-334 DATASHEET
Evaluation Board
For Glenair PCB Mount Dual Transceivers



The 050-334-EVALBOARD can be used to evaluate 050-333 Board Mount Dual Optical Transceiver Operating from 100Mbps to 5Gbps data rate. The transceivers can be used for bidirectional fiber optic link over 4 multimode 50µm/125µm or 62.5µm/125µm type fiber optic cables.

For purposes of this document, 050-333, will henceforth be referred to as Unit under Test (UUT).

The evaluation board is designed as an interface to allow evaluation of the Optical Transmitters and the Optical receivers on the board mount dual transceiver module. Devices are powered through the 3.3V and GND connections.

For each of the transmitters, Fault condition (TXn-Fault) can be monitored via test points and the Transmitter disable (TXn-Disable) can be controlled via Jumpers.

For each of the receivers, loss of signal (LOSn) state can be monitored via test points.

KEY FEATURES/BENEFITS

- Supports large variety of Dual Optical Transmitters/ Receivers suitable for Harsh Environment (Wide temperature ranges and Extremely High Vibration)
  - 0.1 Gbps to 10 Gbps

APPLICATIONS

- As an evaluation tool for Glenair Opto-electronic modules which are suited to Harsh Environment Applications such as: Airborne, Tactical Military, Oil and Gas, Railway and Shipboard
  - Ethernet, Fibre Channel, 1x, 2x, 4x, 8x, SFPDP, Aurora
  - Video (DVI, SMPTE, ARINC818, etc)

How To Order

Product Code

050 - **334** - **MMF** - **EVALBOARD**

050: Evaluation Board for Glenair PCB Mount Dual Transceivers

334

MMF: Fiber Type
MMF – Multi Mode Fiber (50µm/125µm)
MMF62 – Multi Mode Fiber (62µm/125µm)

EVALBOARD

What is included with 050-334:

- The 050-334-**MMF**-EVALBOARD kit includes the following:
  - Evaluation board PCBA 990-05076
  - 050-334 Datasheet
  - 4 fiber optic MMF test jumper cables (1-2m, 50µm/125µm, ARINC 801 connector to LC connector)
  - Gap Pad 0.040" thick, Laird Technologies, Tflex 400 Series Thermal Gap Filler, Laird P/N: A15896-04 or equivalent
  - Gap Pad 0.050" thick, Laird Technologies, Tflex 400 Series Thermal Gap Filler, Laird P/N: A15896-05 or equivalent
  - Insertion/Extraction Tool for #16 Contacts
  - 1 LC to LC adapter

050-334-**MMF**-EVALBOARD	USED TO TEST THE FOLLOWING: 050-333 (Dual Transceiver, 850nm VCSEL MMF, 0.1-5 Gbps)

- The 050-334-**MMF62**-EVALBOARD kit includes the following:
  - Evaluation board PCBA 990-05076
  - 050-334 Datasheet
  - 4 fiber optic MMF test jumper cables (1-2m, 62µm/125µm, ARINC 801 connector to LC connector)
  - Gap Pad 0.040" thick, Laird Technologies, Tflex 400 Series Thermal Gap Filler, Laird P/N: A15896-04 or equivalent
  - Gap Pad 0.050" thick, Laird Technologies, Tflex 400 Series Thermal Gap Filler, Laird P/N: A15896-05 or equivalent
  - Insertion/Extraction Tool for #16 Contacts
  - 1 LC to LC adapter

050-334-**MMF62**-EVALBOARD	USED TO TEST THE FOLLOWING: 050-333 (Dual Transceiver, 850nm VCSEL MMF, 0.1-5 Gbps)

NOTE: In order to simplify attachment of the fiber cable assemblies to the module, please insert ARINC 801 connectors of the fiber cable assemblies into the 050-333 module before installing the module on the evaluation board. Also prior to removal of the fibers from the 050-333 module please remove the module from the evaluation board.

Opto-Electronic Devices and additional Test cables sold separately: Many options can be supported.

- Glenair PCB Mount devices Selection Guide
  - http://www.glenair.com/opto_electronic/b.htm

- Fiber Optic Test cables as required:
  - MMF & SMF test cables can be configured to support all Glenair Opto-electronic components
  - FA03216: http://www.glenair.com/opto_electronic/pdf/b/fa03216.pdf

Evaluation board I/O descriptions and Jumper settings

General Description

SMA1 – Pulse pattern generator negative polarity transmitter2 data input
SMA2 – Pulse pattern generator positive polarity transmitter2 data input
SMA3 – Positive polarity receiver2 data output to Error Detector
SMA4 – Negative polarity receiver2 data output to Error Detector or Digital Communication Analyzer
SMA5 – Pulse pattern generator negative polarity transmitter1 data input
SMA6 – Pulse pattern generator positive polarity transmitter1 data input
SMA7 – Positive polarity receiver1 data output to Error Detector
SMA8 – Negative polarity receiver1 data output to Error Detector or Digital Communication Analyzer

JMP1 – Install jumper to power up receiver1 circuit
JMP2 – Install jumper to power up transmitter1 circuit
JMP4 – Install jumper to enable the transmitter1. Remove jumper to disable the transmitter1
JMP6 – Install jumper to power up receiver2 circuit
JMP7 – Install jumper to power up transmitter2 circuit
JMP5 – Install jumper to enable the transmitter2. Remove jumper to disable the transmitter2

TP1- Voltage input, connect to positive output of 3.3V power supply
TP3- Ground input, connect to negative output of 3.3v power supply
TP2- Additional Ground connection
TP4- Additional Ground connection
TP5 – Voltage output to monitor RX1 power supply voltage
TP6 – Voltage output to monitor TX1 power supply voltage
TP13 – Voltage output to monitor RX2 power supply voltage
TP14 – Voltage output to monitor TX2 power supply voltage
TP7 – Voltage output to indicate TX1 Fault State (3.3V indicates a TX1 Fault Condition)
TP8 – Voltage output to indicate RX1 LOS State (3.3V indicates receiver1 Loss of Signal)
TP11 – Voltage output to indicate TX2 Fault State (3.3V indicates a TX2 Fault Condition)
TP12 – Voltage output to indicate RX2 LOS State (3.3V indicates receiver2 Loss of Signal)

TP9- SCL, Serial Clock for Serial I2C communication
TP10 – SDA, Serial Data for Serial I2C communication
TB1- Power Connector, Alternative 3.3V and Ground input connections from power supply
Power LED – Indicator for 3.3V supply voltage

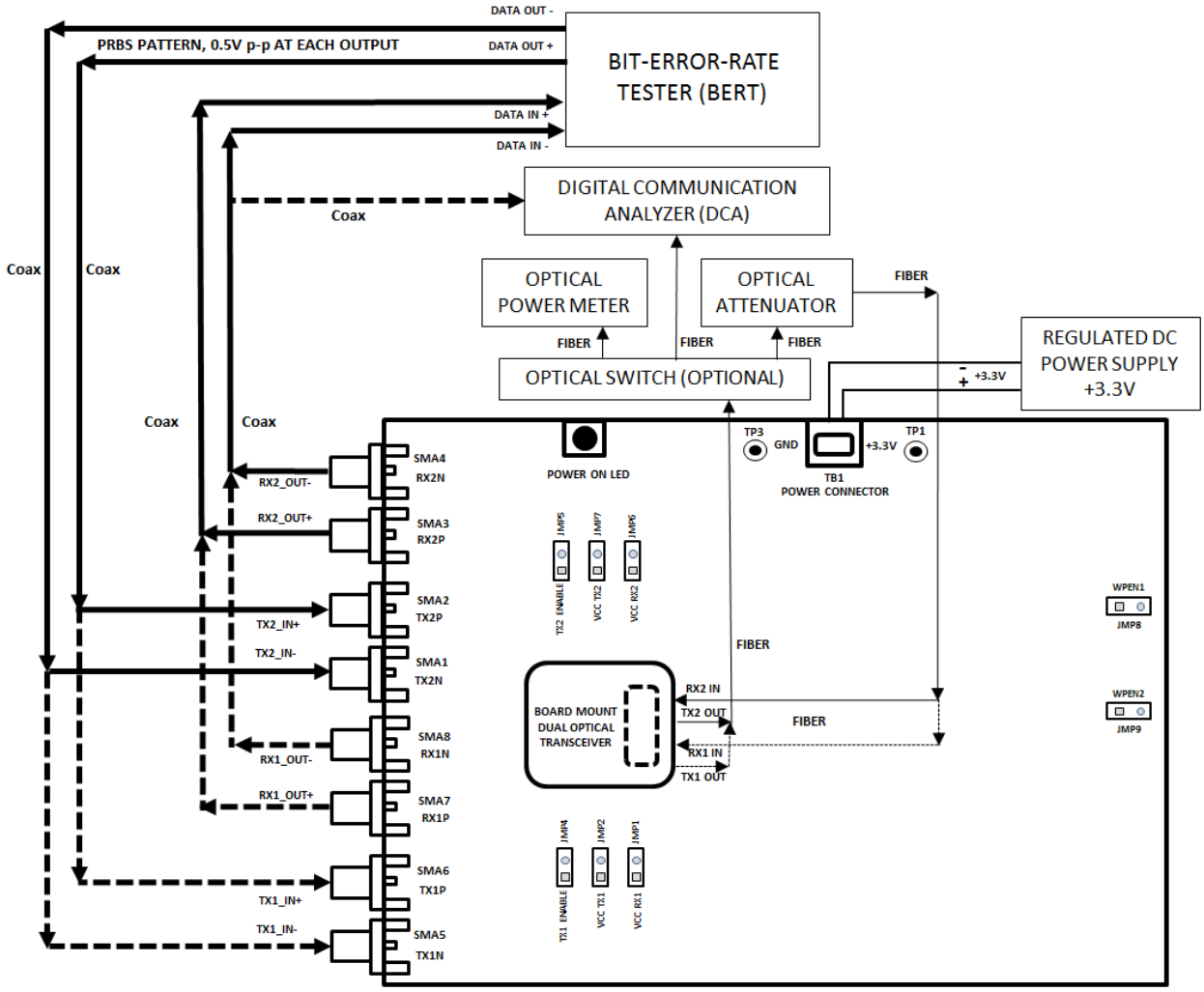
Transmitter Testing

Transmitter sections of 050-333 Board Mount Dual Optical Transceivers are electrical to optical digital signal converter accepting data transmitted at 100Mb/s to 5Gb/s and at the wavelength of 850nm. Typical measured parameters such as Average Optical Output Power, Extinction Ratio, and Eye Mask can be measured.

Receiver Testing

Receiver sections of 050-333 Board Mount Dual Optical Transceivers are optical to electrical digital signal converter accepting data transmitted at 100Mb/s to 5Gb/s and at the wavelength of 850 nm. Typical measured parameters such as Receiver Optical Sensitivity, Loss of Signal Detect Assert and De-assert levels can be measured.

Test Set Block Diagram for Dual Transceiver Testing



Typical Application

In a typical link test setup, connect the RF cables with SMA connections first from the Bit-Error-Rate Tester's pulse pattern generator (PPG) data outputs to the test board and from the test board to the Bit-Error-Rate Tester's error detector (ED) data inputs. Then connect the optical fiber from the 050-333 Board Mount Dual Optical Transceiver's first transmitter to the optical attenuator if only the link to be verified. (Special fibers are provided to connect to UUT transmitters and receivers that will terminate with the standard LC type connector.) If the optical eye or optical power is to be monitor simultaneously then an optical splitter will be needed, a 50/50 ratio is recommended. An optical switch can be used, but it's understood that if the transmitter is being monitored or tested the link is broken. After the optical switch or splitter connect in the fiber spool with the appropriate fiber type and the matching distance. After the fiber spool, connect to the UUT Receiver. Power all equipment except the DC power supply, which should be powered last. Set the correct data rate on the PPG. Enable the optical switch and the optical attenuator. Then power the DC power supply. The Green LED on the board will light when power is applied. Synchronize the PPG and ED. Depending upon the attenuation set errors may be present. The attenuation can be further adjusted to find the 1E-12 BER power level.

Laser Safety

Transmitters are Class 1 devices in accordance with FDA/CDRH Eye Safety requirements.

In spite of the class 1 rating, it is strongly recommend taking precautions to avoid exposures to the unprotected eye. Before powering the transmitter, connect the TX-DISABLE pin to 3.3V and ensure there is no exposure risk before setting the TX-DISABLE pin to ground or removing any connection. It is also recommend that fiber jumper be connected prior to turning on the laser.

Fiber Handling

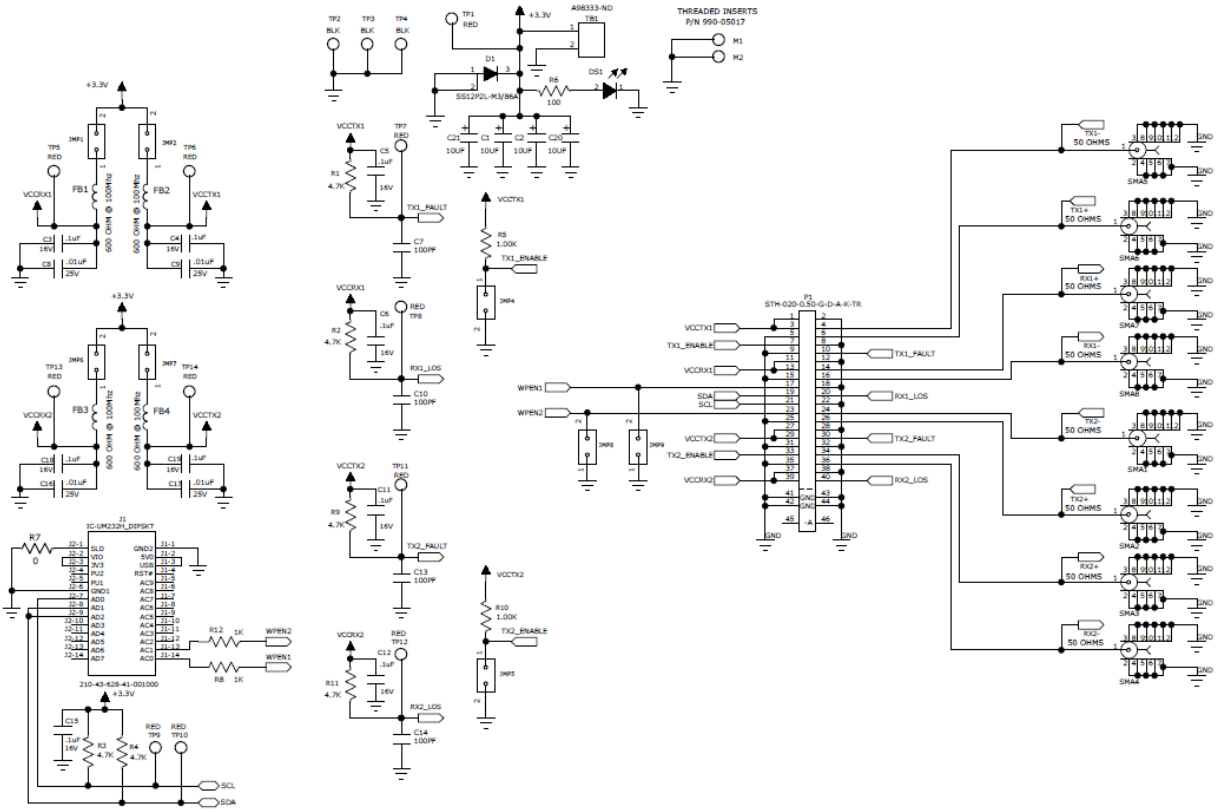
Fiber optic cables require special handling.

Avoid bending the fiber with small radiuses exceeding manufacturer's minimum bend radius specification. Use dust caps when the fiber connector is not mated. Clean and inspect fiber connector ends with appropriate cleaning and inspection tools to insure proper operation.

ESD precaution

Fiber optic transceivers are sensitive to electro static discharge. Open the ESD protection packaging only in ESD protected environment. Use appropriate ESD protection when handling the transceiver.

Package and Schematic Design



Operation

This evaluation board can be used in one of three test configurations. The options are transmitter only, receiver only, and both transmitter and receiver either in a single link or two separate links.

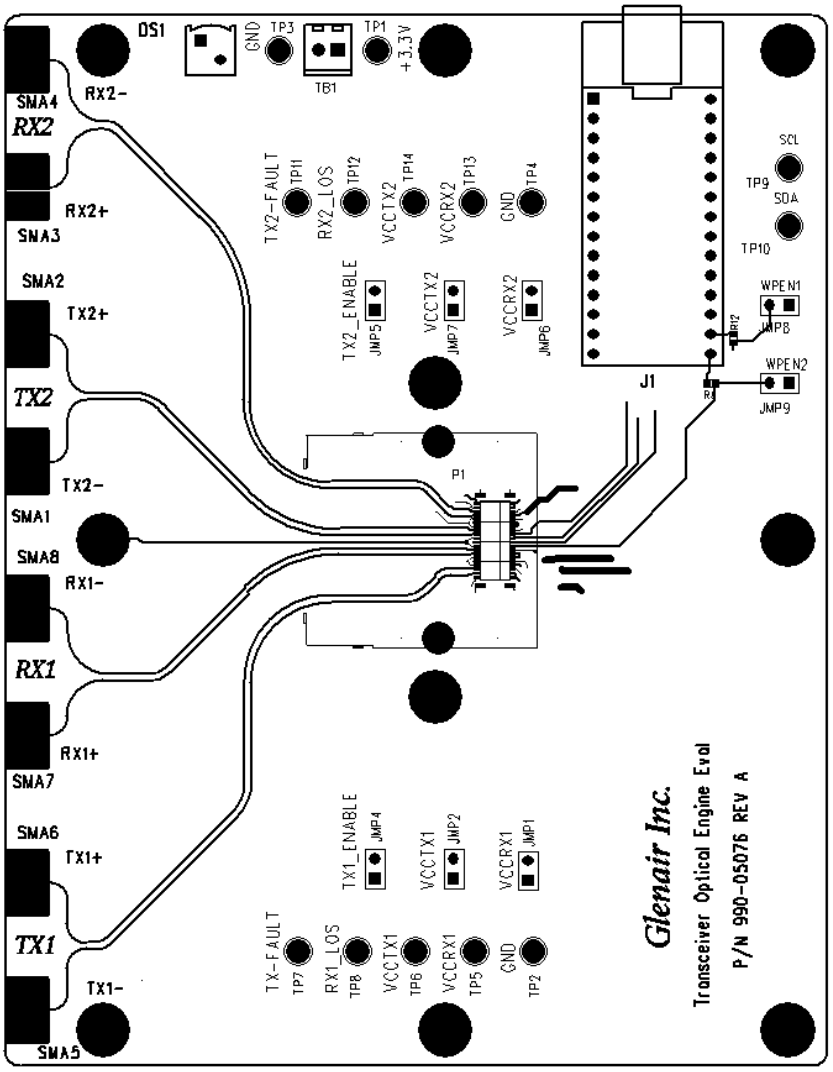
To test the transmitter the following equipment is required:

- DC power source capable of supplying 3.3V and at least 400mA
- Pulse pattern generator (PPG) capable of providing data rates up to 5Gb/s
- An optical power meter capable of measure 850nm, if optical power is to be measured
- A digital communications analyzer, if the eye diagram is to be examined.
- A voltmeter to monitor the TX FAULT outputs

To test the receiver the following equipment will be needed:

- DC power supplying 3.3V and at least 400mA
- An optical source transmitting a digital signal at a 5Gb/s at 850nm
- A bit error rate tester that is synchronized with the optical source
- An optical attenuator if receiver sensitivity is to be measured
- A voltmeter to monitor the LOS output

PCB Layout Top



Thermal Management

Dual Board Mount Transceiver 050-333 maximum operating case temperature is rated at 85C. In order to achieve best performance it is recommended to use thermal pads between the UUT and the 050-338 evaluation board. Thermal pads are provided with the evaluation boards.

The following drawing shows recommended thermal pad dimensions, locations, and part numbers.