

25G SFP28 Active Electrical Loopback Module P/N: GSS-MPO250-LP

Features

- ✓ Hot-pluggable SFP28 form factor
- ✓ Single-channel electrical loopback module
- ✓ Supports 25Gbps data rate
- ✓ Supports 10G by CDR bypass
- ✓ Low power consumption < 1W
- ✓ RoHS compliant (lead-free)
- ✓ Case temperature range of 0°C to 70°C
- ✓ Single 3.3V power supply
- ✓ SFP28 MSA compliant



Applications

- ✓ 10G/25G Ethernet

Description

GIGALIGHT's GSS-MPO250-LP SFP28 active electrical loopback is used for testing 25G SFP28 transceiver ports in board level test. By substituting for a full-featured SFP28 transceiver, the electrical loopback provides a cost-effective low loss method for SFP28 port testing.

The GSS-MPO250-LP is packaged in a standard MSA housing compatible with all SFP28 ports. Transmit data from the host is electrically routed (internal to the loopback module) to the receive data outputs and back to the host. Since the loopback module does not contain laser diodes, photodiodes, laser driver or transimpedance amplifier chips, etc., it provides an economical way to exercise SFP28 ports during R&D validation, production testing and field testing.

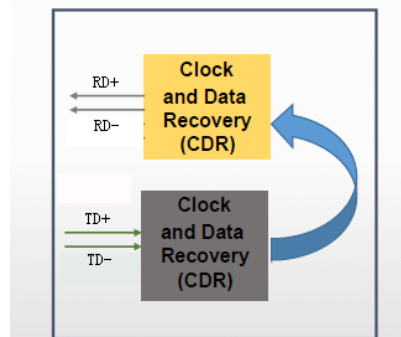


Figure 1. Module Block Diagram

Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Unit
Supply Voltage	V_{cc}	-0.3	3.6	V
Input Voltage	V_{in}	-0.3	$V_{cc}+0.3$	V
Storage Temperature	T_s	-40	85	°C
Case Operating Temperature	T_c	0	70	°C
Humidity (non-condensing)	Rh	5	95	%

Recommended Operating Conditions

Parameter	Symbol	Min	Typical	Max	Unit
Supply Voltage	V_{cc}	3.13	3.3	3.47	V
Operating Case Temperature	T_c	0		70	°C
Data Rate Per Lane	fd		25.78125		Gb/s
Humidity	Rh	5		85	%
Power Dissipation	P_m			1	W

Electrical Specifications

Parameter	Symbol	Min	Typical	Max	Unit
Differential Input Impedance	Z_{in}	90	100	110	ohm
Differential Output Impedance	Z_{out}	90	100	110	ohm
Differential Input Voltage Amplitude	ΔV_{in}	300		900	mVpp
Differential Output Voltage Amplitude	ΔV_{out}	300		800	mVpp
Bit Error Rate	BER			E-12	
Input Logic Level High	V_{IH}	2.0		V_{cc}	V
Input Logic Level Low	V_{IL}	0		0.8	V
Output Logic Level High	V_{OH}	$V_{cc}-0.5$		V_{cc}	V
Output Logic Level Low	V_{OL}	0		0.4	V

Pin Definitions

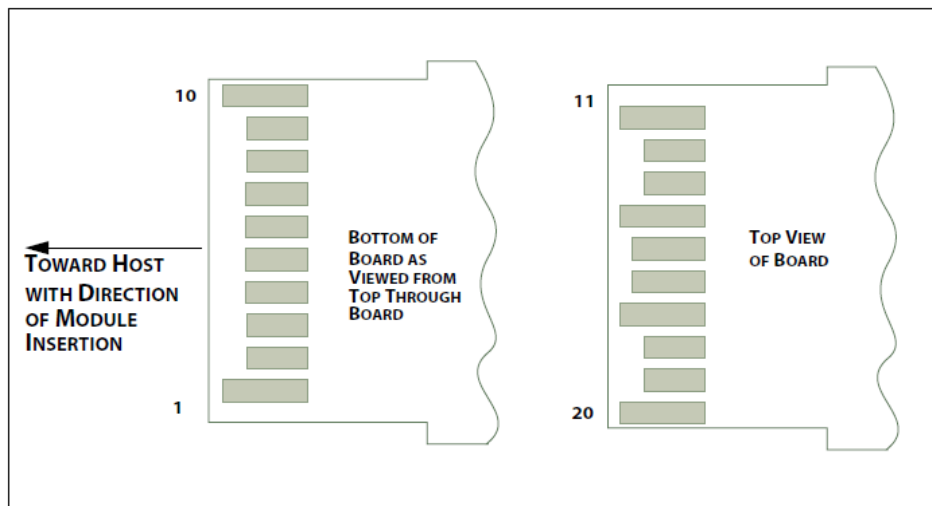
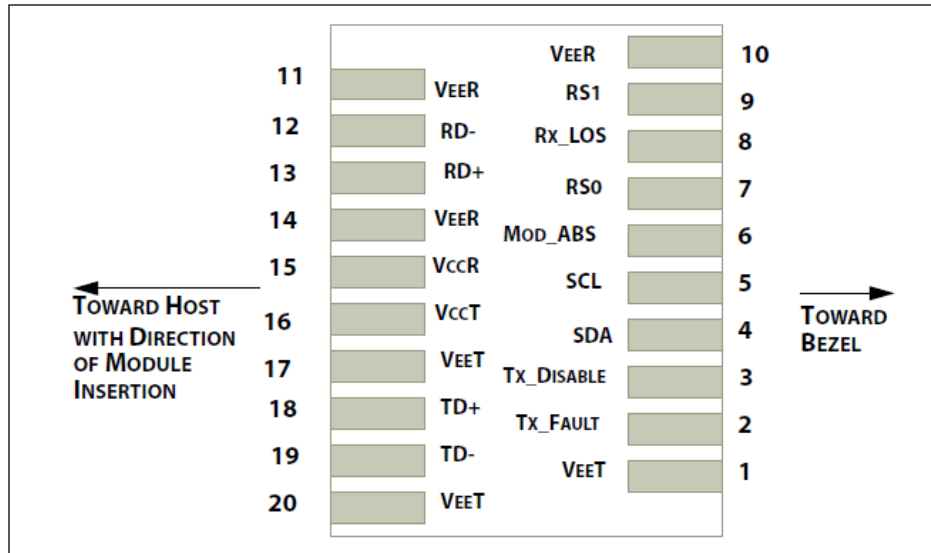


Figure 2. Electrical Pin-out Details

Pin Descriptions

PIN	Logic	Symbol	Name / Description	Note
1		VeeT	Module Transmitter Ground	1
2	LVTTL-O	TX_Fault	Module Transmitter Fault	2
3	LVTTL-I	TX_Dis	Transmitter Disable; Turns off transmitter laser output	
4	LVTTL-I/O	SDA	2-Wire Serial Interface Data Line	2
5	LVTTL-I	SCL	2-Wire Serial Interface Clock	2
6		MOD_ABS	Module Definition, Grounded in the module	
7	LVTTL-I	RS0	Receiver Rate Select	
8	LVTTL-O	RX_LOS	Receiver Loss of Signal Indication Active LOW	
9	LVTTL-I	RS1	Transmitter Rate Select (not used)	
10		VeeR	Module Receiver Ground	1
11		VeeR	Module Receiver Ground	1
12	CML-O	RD-	Receiver Inverted Data Output	
13	CML-O	RD+	Receiver Data Output	
14		VeeR	Module Receiver Ground	1
15		VccR	Module Receiver 3.3 V Supply	
16		VccT	Module Receiver 3.3 V Supply	
17		VeeT	Module Transmitter Ground	1
18	CML-I	TD+	Transmitter Non-Inverted Data Input	
19	CML-I	TD-	Transmitter Inverted Data Input	
20		VeeT	Module Transmitter Ground	1

Notes:

1. Module ground pins GND are isolated from the module case.
2. Shall be pulled up with 4.7K-10Kohms to a voltage between 3.15V and 3.45V on the host board.

Recommended Interface Circuit

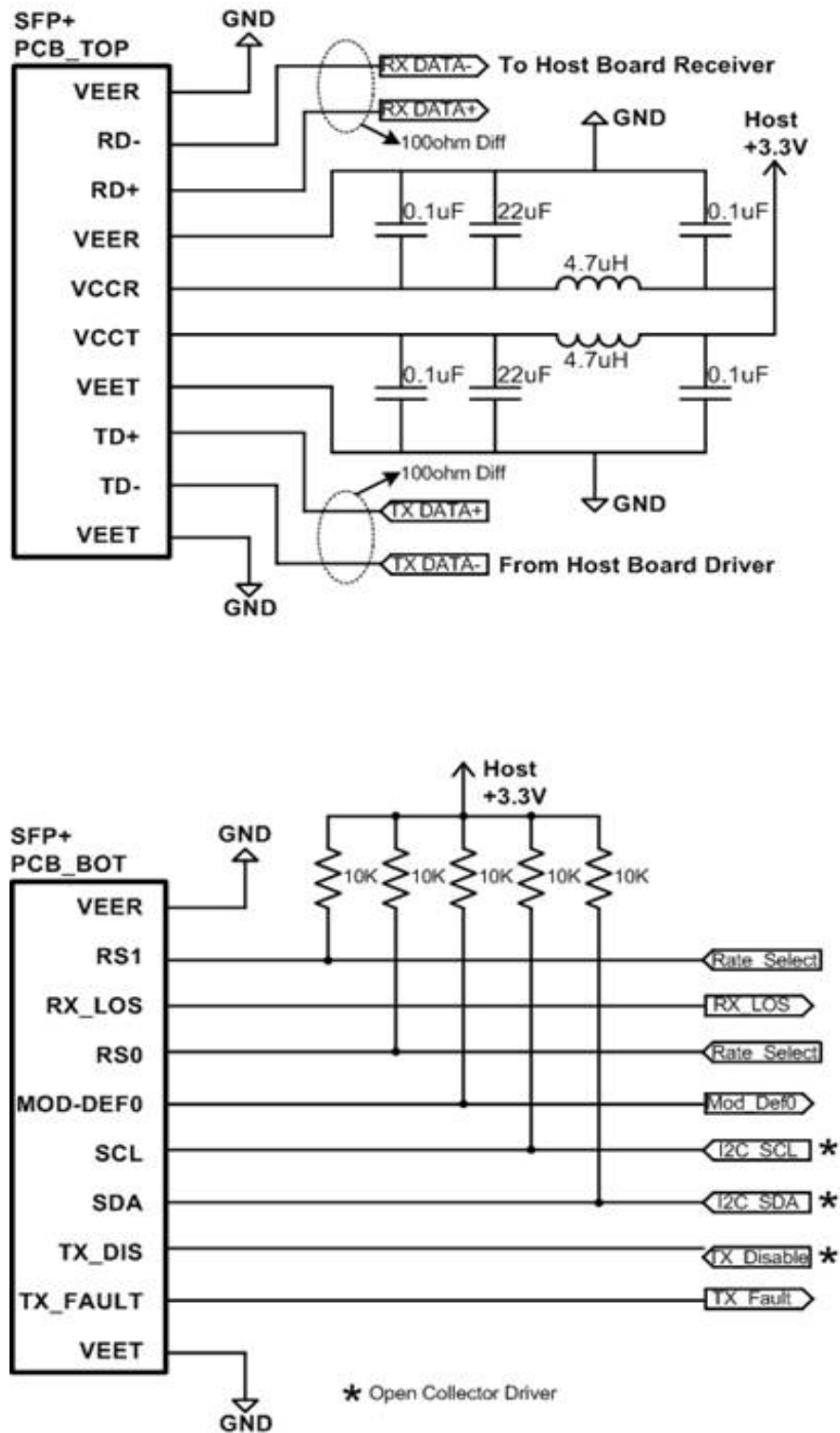
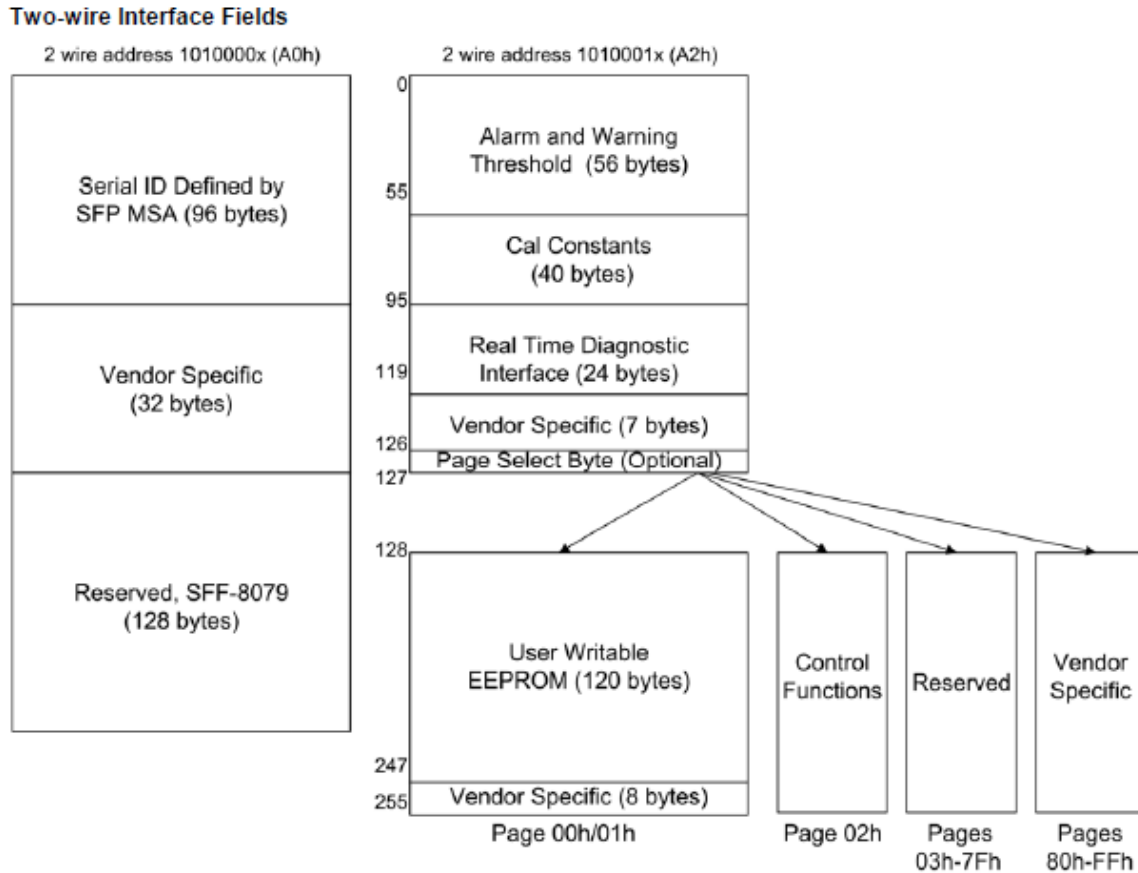


Figure 3. Host Board Power Supply Filtering

Memory Organization

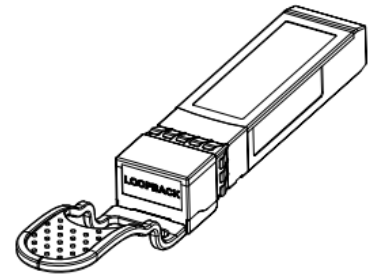
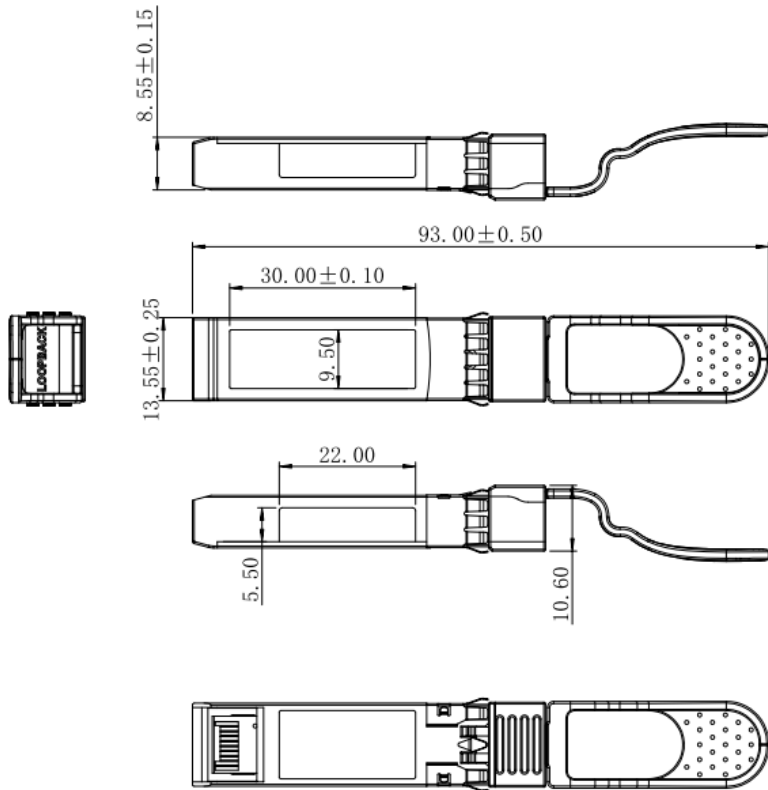
The transceivers provide serial ID memory contents and diagnostic information about the present operating conditions by the 2-wire serial interface (SCL, SDA). The memory map specific data field defines as following.



TWO-WIRE INTERFACE FIELDS

Figure4. Memory Map

Mechanical Dimensions



. Unit:mm
. Unless Otherwise Specified, Tolerance ± 0.1 mm

Figure 5. Mechanical Specifications

Regulatory Compliance

GIGALIGHTGSS-MPO250-LPSFP28loopback are certified per the following standards:

Feature	Standard
Electrical Safety	EN 62368-1: 2014 IEC 62368-1:2014 UL 62368-1:2014
Environmental protection	Directive 2011/65/EU with amendment (EU) 2015/863
CE EMC	EN55032: 2015 EN55035: 2017 EN61000-3-2:2014 EN61000-3-3:2013
FCC	FCC Part 15, Subpart B ANSI C63.4-2014

References

1. SFP28 MSA

⚠ CAUTION:

Use of controls or adjustment or performance of procedures other than those specified herein may result in hazardous radiation exposure.

Ordering Information

Part Number	Product Description
GSS-MPO250-LP	25G SFP28 Active Electrical Loopback

Important Notice

Performance figures, data and any illustrative material provided in this data sheet are typical and must be specifically confirmed in writing by GIGALIGHT before they become applicable to any particular order or contract. In accordance with the GIGALIGHT policy of continuous improvement specifications may change without notice.

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E-mail: sales@GIGALIGHT.com

Official Site: www.GIGALIGHT.com

Revision History

Revision	Date	Description
V0	Oct-8-2022	Advance Release.