

**PRODUCT SPECIFICATION 1.25GBPS
BIDI LC 10KM SFP TRANSCEIVER**
SFPGEBD131510D-L
SFPGEBD131510D-LI

Product Features

- Up to 1.25Gbps data links
- 10Km with 9/125µm SMF *1
- 1310nm FP /1550nm PIN laser *1
- Simplex LC Connector
- Hot-pluggable SFP footprint
- Single 3.3V power supply
- Operating temperature: Refer to *1
- RoHS



Applications

√ 1.25Gbps 1000Base-LX

*1

PART NUMBER	WAVE LENGTH TX/RX	DISTANCE	LASER	TEMPERATURE
SFPGEBD131510D-L	1310/1550nm	10Km	FP/PIN	COM 0~70°C
SFPGEBD131510D-LI	1310/1550nm	10Km	FP/PIN	IND -40~85°C

1. Product Description

The SFPGEBD131510D-L/I series SFPs are small form factor pluggable (SFP) transceivers compatible with multi-sourcing agreement (MSA). It is suitable for single-mode fiber (SMF) communications in 1.25Gbps Ethernet and 1G/2G Fiber Channel.

2. Regulatory Compliance

It transceivers are Class 1 Laser Products comply with FDA regulations. Meet Class 1 eye safety requirements of EN 60825 and the electrical safety requirements of EN 60950.

3. Absolute Maximum Ratings

Parameter		Symbol	Min.	Max.	Unit
Supply Voltage		VCC	-0.5	3.6	V
Storage Temperature		TS	-40	85	°C
SFPGEBD1 31510D-L	Operating Case Temperature	TC	0	70	°C
SFPGEBD1 31510D-LI	Operating Case Temperature	TC	-40	85	°C

4. Recommended Operating Conditions

Parameter		Symbol	Min.	Typical	Max.	Unit
SFPGEBD131510D-L	Operating Case Temperature	TC	0		70	°C
SFPGEBD131510D-LI	Operating Case Temperature	TC	-40		85	°C
Power Supply Voltage		VCC	3.15	3.3	3.45	V
Power Supply Current		ICC			300	mA
Data Rate				1.25		GBps
Max Link Length on 9/125µm SMF		Lmax		10		km

5. Optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Unit
Transmitter					
Centre Wavelength	λ_c	1300	1310	1320	nm
Spectral Width (RMS)	σ			4	nm
Average Output Power	Pout	-9		-3	dBm
Extinction Ratio	ER	9			dB
Optical Rise/Fall Time	tr/tf			2	ns
Receiver					
Centre Wavelength	λ_c	1540	1550	1560	nm
Receiver Sensitivity	PIN			-23	dBm
Receiver Overload	PMAX	1			dBm
LOS De-Assert	LOSD			-30	dBm
LOS Assert	LOSA	-35			dBm
LOS Hysteresis		0.5		4.5	dB

6. Electrical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Unit
Transmitter					
Input Differential Impedance	Zin	90	100	110	Ω
Data Input Swing Differential	Vin	500		2400	mV
Tx-Dis Disable	Vd	2.0		Vcc	V
Tx-Dis Enable	Ven	0		0.8	V

TX-Fault (Fault)		2.0		Vcc+0.3	V
TX-Fault (Normal)		0		0.8	V
Receiver					
Data Output Swing Differential	Vout	370		2000	mV
Rx-Los Fault	Vlf	2.0		Vcc+0.3	V
Rx-Los Normal	Vln	0		0+0.8	V

7. Pin Descriptions

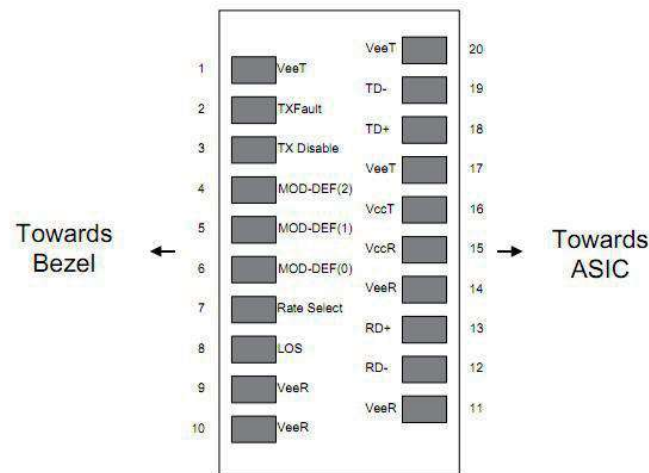


Diagram of Host Board Connector Block Pin Numbers and Names

Pin	Symbol	Description	Ref.
1	VEET	Transmitter Ground (Common with Receiver Ground)	6.1
2	TFAULT	Transmitter Fault. Not supported.	
3	TDIS	Transmitter Disable. Laser output disabled on high or open.	6.2
4	MOD_DEF(2)	Module Definition 2. Data line for Serial ID.	6.3
5	MOD_DEF(1)	Module Definition 1. Clock line for Serial ID.	6.3
6	MOD_DEF(0)	Module Definition 0. Grounded within the module.	6.3
7	Rate Select	No connection required	
8	LOS	Loss of Signal indication. Logic 0 indicates normal operation.	6.4
9	VEER	Receiver Ground(Common with Transmitter Ground)	6.1
10	VEER	Receiver Ground(Common with Transmitter Ground)	6.1
11	VEER	Receiver Ground(Common with Transmitter Ground)	6.1
12	RD-	Receiver Inverted DATA out. AC Coupled.	

13	RD+	Receiver Non-inverted DATA out. AC Coupled.	
14	VEER	Receiver Ground(Common with Transmitter Ground)	6.1
15	VCCR	Receiver Power Supply	
16	VCCT	Transmitter Power Supply	
17	VEET	Transmitter Ground(Common with Receiver Ground)	6.1
18	TD+	Transmitter Non-Inverted DATA in.AC Coupled.	
19	TD-	Transmitter Inverted DATA in.AC Coupled.	
20	VEET	Transmitter Ground(Common with Receiver Ground)	6.1

Notes:

- 1.Circuit ground is internally isolated from chassis ground.
- 2.Laser output disabled on TDIS >2.0V or open, enabled on TDIS <0.8V.
- 3.Should be pulled up with 4.7k - 10kohms on host board to a voltage between 2.0V and 3.6V. MOD_DEF(0) pulls line low to indicate module is plugged in.
- 4.LOS is open collector output.
Should be pulled up with 4.7k -10kohms on host board to a voltage between 2.0V and 3.6V.
Logic 0 indicates normal operation; logic 1 indicates loss of signal.

8. EEPROM & DDM THRESHOLD

8.1 EEPROM

2 wire address 1010000X (A0hex)

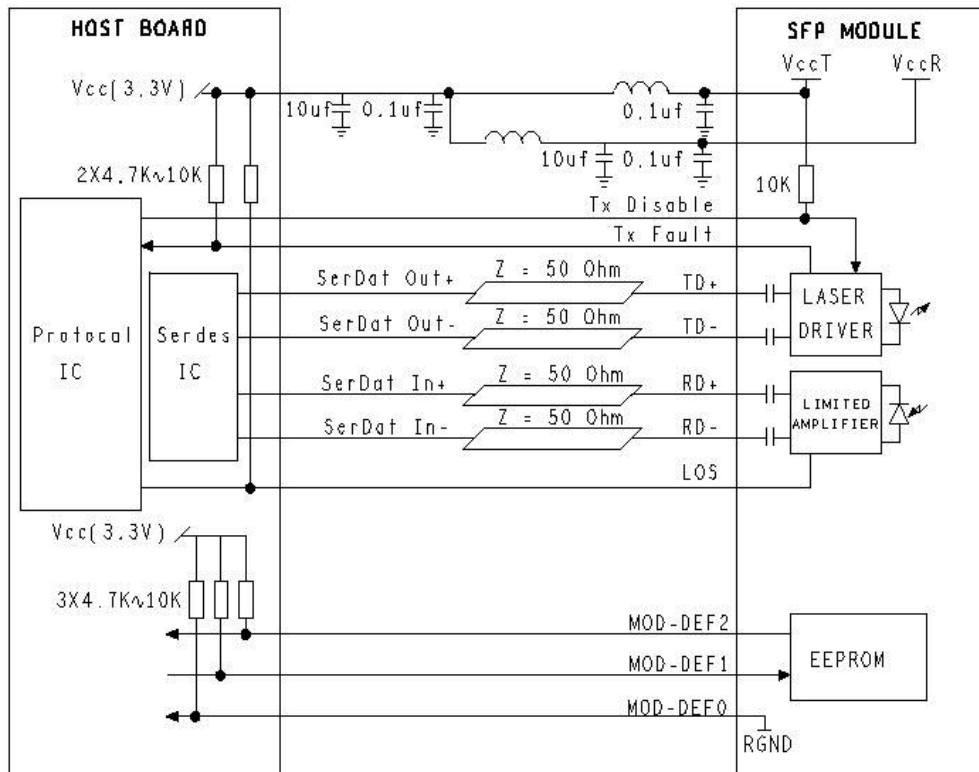
0~95
Serial ID Defined by SFP MSA (96 bytes)
96~127
Vendor Speific (32 bytes)
128~255
Reserved (128 bytes)

8.2 DDM THRESHOLD

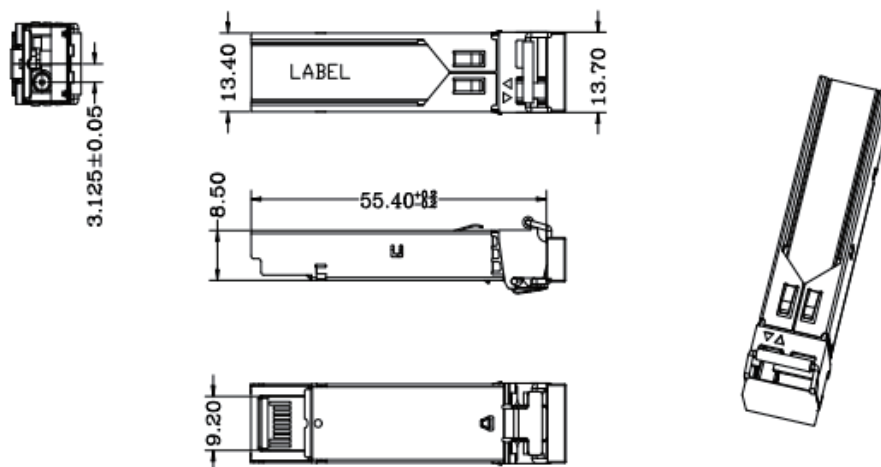
SFPGEBD131510D-L/I

		Low Alarm	Low Warn	High Warn	High Alarm
Temp	SFPGEBD131510D-LI	-45℃	-40℃	85℃	90℃
Temp	SFPGEBD131510D-L	-5℃	0℃	70℃	75℃
Voltage		3V	3.1V	3.6V	3.7V
Tx Bias	SFPGEBD131510D-L	3mA	4mA	70mA	75mA
Tx Bias	SFPGEBD131510D-LI	3mA	4mA	125mA	130mA
Tx Power		-13.5dBm	-9.5dBm	-1dBm	1dBm
Rx Power		-23dBm	-19dBm	-3dBm	1dBm

9. Recommend Circuit



10. Mechanical Specifications



Units in mm
Tolerance without indication is ±0.1mm

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BIDI LC 10KM SFP TRANSCEIVER**
SFPGEBD131510D-L
SFPGEBD131510D-LI

Ordering Information

Part No.	Data Rate	DDM	TX/RX	Fiber Type	Dist.	Temp.	Optical Interface
SFPGEBD131510D-L	1.25Gbps	yes	1310nm/ 1550nm	SMF	10km	0~70℃	BiDi LC
SFPGEBD131510 D-LI	1.25Gbps	yes	1310nm/ 1550nm	SMF	10km	-40~85 ℃	BiDi LC

VERSION UPDATE:

VERSION NO.	DATE	UPDATED INFORMATION
V20161010	20161010	1. EEPROM& DDM Threshold updated 2. "LABEL" added 3. Ordering information updated 4. Product picture updated
V20170815	20170815	1. More items added into list

NOTICE:

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BIDI LC 10KM SFP TRANSCEIVER**
SFPGEBD151310D-L
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- Up to 1.25Gbps data links
- 10Km with 9/125µm SMF *1
- 1550nm DFB /1310nm PIN laser *1
- Simplex LC Connector
- Hot-pluggable SFP footprint
- Single 3.3V power supply
- Operating temperature: Refer to *1
- RoHS



Applications

√ 1.25Gbps 1000Base-LX

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PART NUMBER	WAVE LENGTH TX/RX	DISTANCE	LASER	TEMPERATURE
SFPGEBD151310D-L	1550/1310nm	10Km	DFB/PIN	COM 0~70°C
SFPGEBD151310D-LI	1550/1310nm	10Km	DFB/PIN	IND -40~85°C

1. Product Description

The SFPGEBD151310D-L/I series SFPs are small form factor pluggable (SFP) transceivers compatible with multi-sourcing agreement (MSA). It is suitable for single-mode fiber (SMF) communications in 1.25Gbps Ethernet and 1G/2G Fiber Channel.

2. Regulatory Compliance

It transceivers are Class 1 Laser Products comply with FDA regulations. Meet Class 1 eye safety requirements of EN 60825 and the electrical safety requirements of EN 60950.

3. Absolute Maximum Ratings

Parameter		Symbol	Min.	Max.	Unit
Supply Voltage		VCC	-0.5	3.6	V
Storage Temperature		TS	-40	85	°C
SFPGEBD151310D-L	Operating Case Temperature	TC	0	70	°C
SFPGEBD151310D-LI	Operating Case Temperature	TC	-40	85	°C

4. Recommended Operating Conditions

**PRODUCT SPECIFICATION 1.25GBPS
BIDI LC 10KM SFP TRANSCEIVER**
SFPGEBD151310D-L
SFPGEBD151310D-LI

Parameter		Symbol	Min.	Typical	Max.	Unit
SFPGEBD151310D-L	Operating Case Temperature	TC	0		70	°C
SFPGEBD151310D-LI	Operating Case Temperature	TC	-40		85	°C
Power Supply Voltage		VCC	3.15	3.3	3.45	V
Power Supply Current		ICC			300	mA
Data Rate				1.25		GBps
Max Link Length on 9/125µm SMF		Lmax		10		km

5. Optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Unit
Transmitter					
Centre Wavelength	λ_c	1540	1550	1560	nm
Spectral Width (-20dB)	σ			1	nm
Average Output Power	Pout	-9		-3	dBm
Extinction Ratio	ER	9			dB
Optical Rise/Fall Time	tr/tf			2	ns
Receiver					
Centre Wavelength	λ_c	1300	1310	1320	nm
Receiver Sensitivity	PIN			-23	dBm
Receiver Overload	PMAX	1			dBm
LOS De-Assert	LOSD			-30	dBm
LOS Assert	LOSA	-35			dBm
LOS Hysteresis		0.5		4.5	dB

6. Electrical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Unit
Transmitter					
Input Differential Impedance	Zin	90	100	110	Ω
Data Input Swing Differential	Vin	500		2400	mV
Tx-Dis Disable	Vd	2.0		Vcc	V
Tx-Dis Enable	Ven	0		0.8	V
TX-Fault (Fault)		2.0		Vcc+0.3	V
TX-Fault (Normal)		0		0.8	V

Receiver					
Data Output Swing Differential	Vout	370		2000	mV
Rx-Los Fault	Vlf	2.0		Vcc+0.3	V
Rx-Los Normal	Vln	0		0+0.8	V

7. Pin Descriptions

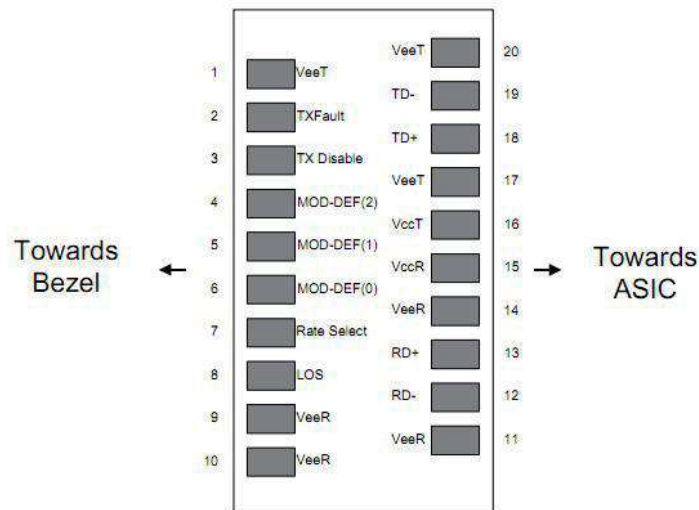


Diagram of Host Board Connector Block Pin Numbers and Names

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12	RD-	Receiver Inverted DATA out.AC Coupled.	
13	RD+	Receiver Non-inverted DATA out.AC Coupled.	

14	VEER	Receiver Ground(Common with Transmitter Ground)	6.1
15	VCCR	Receiver Power Supply	
16	VCCT	Transmitter Power Supply	
17	VEET	Transmitter Ground(Common with Receiver Ground)	6.1
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19	TD-	Transmitter Inverted DATA in.AC Coupled.	
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Notes:

- 1.Circuit ground is internally isolated from chassis ground.
- 2.Laser output disabled on TDIS >2.0V or open, enabled on TDIS <0.8V.
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MOD_DEF(0) pulls line low to indicate module is plugged in.
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Should be pulled up with 4.7k -10kohms on host board to a voltage between 2.0V and 3.6V.
Logic 0 indicates normal operation; logic 1 indicates loss of signal.

8. EEPROM & DDM THRESHOLD

8.1 EEPROM

2 wire address 1010000X (A0hex)

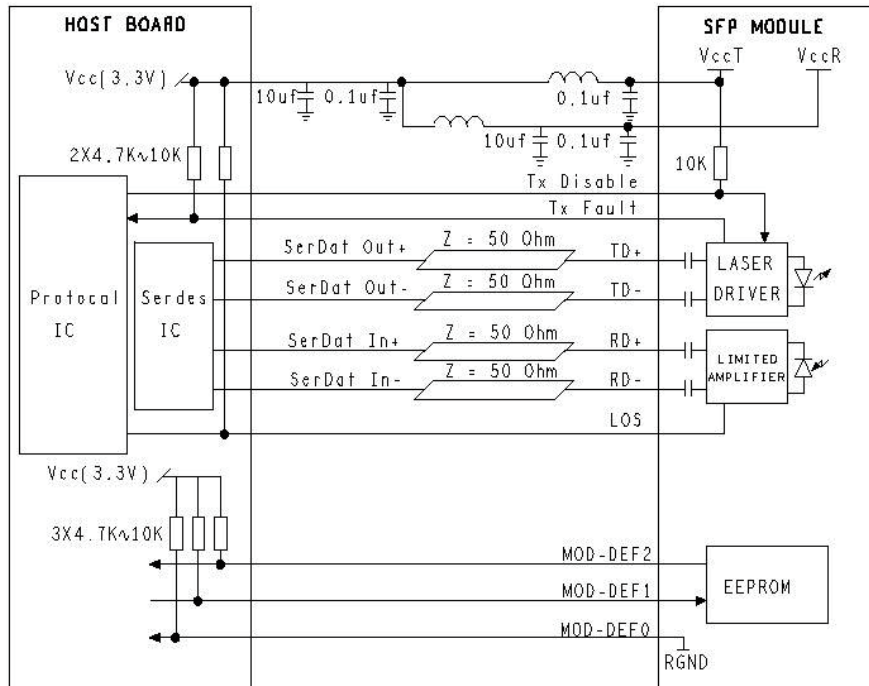
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Serial ID Defined by SFP MSA (96 bytes)
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Vendor Speific (32 bytes)
128~255
Reserved (128 bytes)

8.2 DDM THRESHOLD

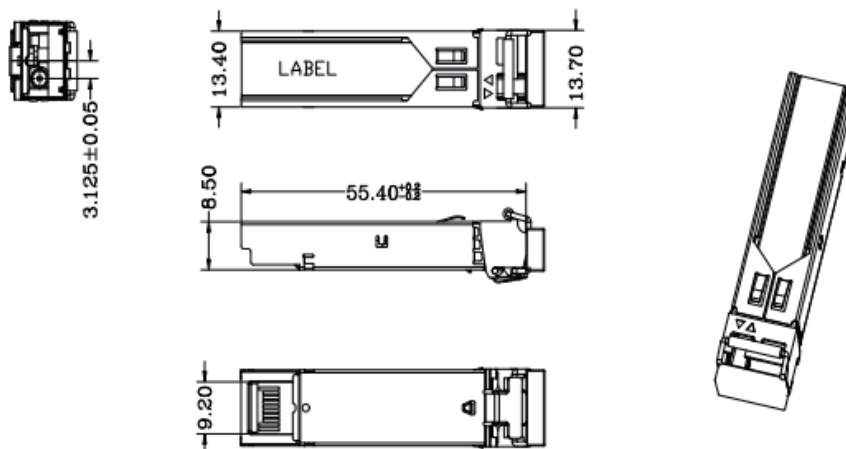
OPTSFPGEBD151310D-L/I

		Low Alarm	Low Warn	High Warn	High Alarm
Temp	SFPGEBD151310D-LI	-45℃	-40℃	85℃	90℃
Temp	SFPGEBD151310D-L	-5℃	0℃	70℃	75℃
Voltage		3V	3.1V	3.6V	3.7V
Tx Bias	SFPGEBD151310D-L	3mA	4mA	70mA	75mA
Tx Bias	SFPGEBD151310D-LI	3mA	4mA	125mA	130mA
Tx Power		-13.5dBm	-9.5dBm	-1dBm	1dBm
Rx Power		-23dBm	-19dBm	-3dBm	1dBm

9. Recommend Circuit



10. Mechanical Specifications



Units in mm
Tolerance without indication is ±0.1mm

Ordering Information

**PRODUCT SPECIFICATION 1.25GBPS
BIDI LC 10KM SFP TRANSCEIVER**
SFPGEBD151310D-L
SFPGEBD151310D-LI

Part No.	Data Rate	DDM	TX/RX	Fiber Type	Dist.	Temp.	Optical Interface
SFPGEBD151310D-L	1.25Gbps	yes	1550nm/ 1310nm	SMF	10km	0~70℃	BiDi LC
SFPGEBD151310D-LI	1.25Gbps	yes	1550nm/ 1310nm	SMF	10km	-40~85℃	BiDi LC

VERSION UPDATE:

VERSION NO.	DATE	UPDATED INFORMATION
V20161010	20161010	1. EEPROM& DDM Threshold updated 2. "LABEL" added 3. Ordering information updated 4. Product picture updated
V20170815	20170815	1. More items added into list

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Product Features

- Up to 1.25Gbps data links
- 20Km with 9/125µm SMF *1
- 1310nm FP /1550nm PIN laser *1
- Simplex LC Connector
- Hot-pluggable SFP footprint
- Single 3.3V power supply
- Operating temperature: Refer to *1
- RoHS



Applications

√ 1.25Gbps 1000Base-LX

*1

PART NUMBER	WAVE LENGTH TX/RX	DISTANCE	LASER	TEMPERATURE
OPTSFPGEBD131520D-L	1310/1550nm	20Km	FP/PIN	COM 0~70°C
OPTSFPGEBD131520D-LI	1310/1550nm	20Km	FP/PIN	IND -40~85°C

1. Product Description

The OPTSFPGEBD131520D-L/I series SFPs are small form factor pluggable (SFP) transceivers with multi-sourcing agreement (MSA). It is suitable for single-mode fiber (SMF) communications in 1.25Gbps Ethernet and 1G/2G Fiber Channel.

2. Regulatory Compliance

OPT transceivers are Class 1 Laser Products comply with FDA regulations. Meet Class 1 eye safety requirements of EN 60825 and the electrical safety requirements of EN 60950.

3. Absolute Maximum Ratings

Parameter		Symbol	Min.	Max.	Unit
Supply Voltage		VCC	-0.5	3.6	V
Storage Temperature		TS	-40	85	°C
OPTSFPGEBD131520D-L	Operating Case Temperature	TC	0	70	°C
OPTSFPGEBD131520D-LI	Operating Case Temperature	TC	-40	85	°C

4. Recommended Operating Conditions

Parameter		Symbol	Min.	Typical	Max.	Unit
OPTSFPGEBD131520D-L	Operating Case Temperature	TC	0		70	°C
OPTSFPGEBD131520D-LI	Operating Case Temperature	TC	-40		85	°C
Power Supply Voltage		VCC	3.15	3.3	3.45	V
Power Supply Current		ICC			300	mA
Data Rate				1.25		GBps
Max Link Length on 9/125µm SMF		Lmax		20		km

5. Optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Unit
Transmitter					
Centre Wavelength	λ_c	1300	1310	1320	nm
Spectral Width (RMS)	σ			4	nm
Average Output Power	Pout	-9		-3	dBm
Extinction Ratio	ER	9			dB
Optical Rise/Fall Time	tr/ta			2	ns
Receiver					
Centre Wavelength	λ_c	1540	1550	1560	nm
Receiver Sensitivity	PIN			-23	dBm
Receiver Overload	PMAX	1			dBm
LOS De-Assert	LOSD			-30	dBm
LOS Assert	LOSA	-35			dBm
LOS Hysteresis		0.5		4.5	dB

6. Electrical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Unit
Transmitter					
Input Differential Impedance	Zin	90	100	110	Ω
Data Input Swing Differential	Vin	500		2400	mV
Tx-Dis Disable	Vd	2.0		Vcc	V
Tx-Dis Enable	Ven	0		0.8	V

TX-Fault (Fault)		2.0		Vcc+0.3	V
TX-Fault (Normal)		0		0.8	V
Receiver					
Data Output Swing Differential	Vout	370		2000	mV
Rx-Los Fault	Vlf	2.0		Vcc+0.3	V
Rx-Los Normal	Vln	0		0+0.8	V

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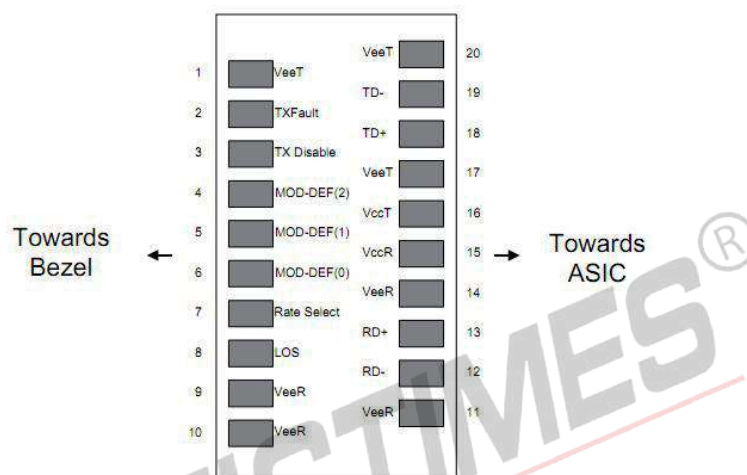


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8.1 EEPROM

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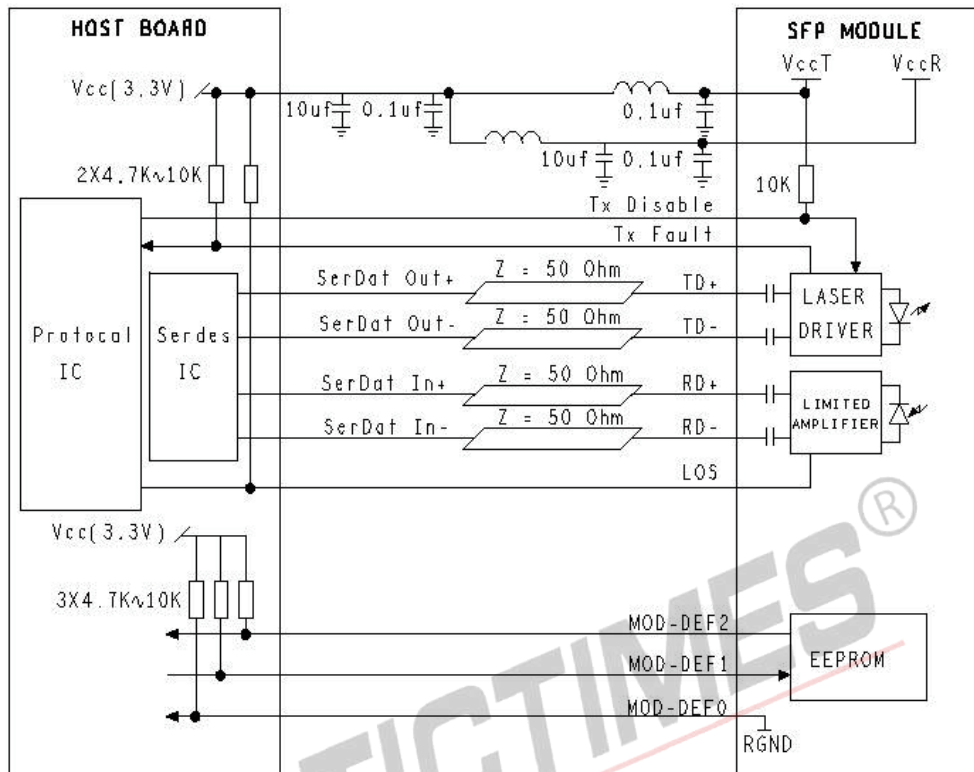
0~95
Serial ID Defined by SFP MSA (96 bytes)
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Vendor Speific (32 bytes)
128~255
Reserved (128 bytes)

8.2 DDM THRESHOLD

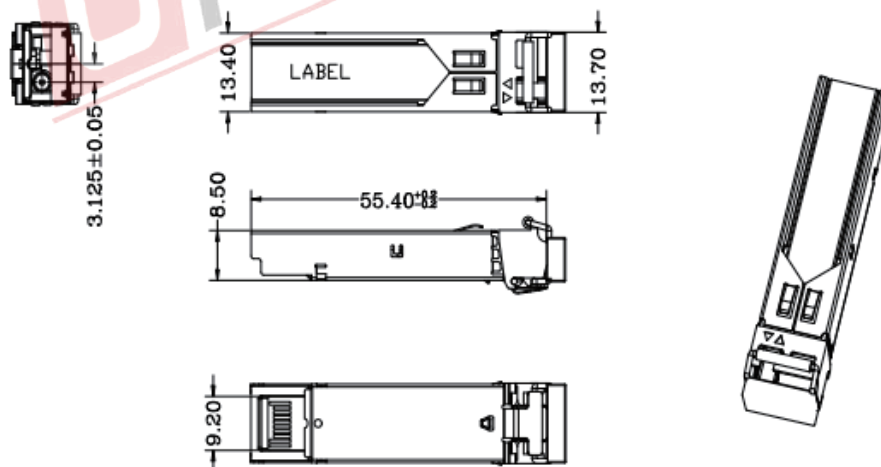
OPTSFPGEBD131520D-LI

		Low Alarm	Low Warn	High Warn	High Alarm
Temp	OPTSFPGEBD131520D-LI	-45℃	-40℃	85℃	90℃
Temp	OPTSFPGEBD131520D-L	-5℃	0℃	70℃	75℃
Voltage		3V	3.1V	3.6V	3.7V
Tx Bias	OPTSFPGEBD131520D-L	3mA	4mA	70mA	75mA
Tx Bias	OPTSFPGEBD131520D-LI	3mA	4mA	125mA	130mA
Tx Power		-13.5dBm	-9.5dBm	-1dBm	1dBm
Rx Power		-23dBm	-19dBm	-3dBm	1dBm

9. Recommend Circuit



10. Mechanical Specifications



Units in mm
Tolerance without indication is ±0.1mm

Ordering Information

Part No.	Data Rate	DDM	TX/RX	Fiber Type	Dist.	Temp.	Optical Interface
OPTSFPGEBD131520D-L	1.25Gbps	yes	1310nm/ 1550nm	SMF	20km	0~70℃	BiDi LC
OPTSFPGEBD131520 D-LI	1.25Gbps	yes	1310nm/ 1550nm	SMF	20km	-40~85 ℃	BiDi LC

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- 1550nm DFB /1310nm PIN laser *1
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- Operating temperature: Refer to *1
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Applications

√ 1.25Gbps 1000Base-LX

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PART NUMBER	WAVE LENGTH TX/RX	DISTANCE	LASER	TEMPERATURE
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OPTSFPGEBD151320D-LI	1550/1310nm	20Km	DFB/PIN	IND -40~85°C

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Parameter		Symbol	Min.	Max.	Unit
Supply Voltage		VCC	-0.5	3.6	V
Storage Temperature		TS	-40	85	°C
OPTSFPGEBD151320D-L	Operating Case Temperature	TC	0	70	°C
OPTSFPGEBD151320D-LI	Operating Case Temperature	TC	-40	85	°C

4. Recommended Operating Conditions

Parameter		Symbol	Min.	Typical	Max.	Unit
OPTSFPGEBD151320D-L	Operating Case Temperature	TC	0		70	°C
OPTSFPGEBD151320D-LI	Operating Case Temperature	TC	-40		85	°C
Power Supply Voltage		VCC	3.15	3.3	3.45	V
Power Supply Current		ICC			300	mA
Data Rate				1.25		GBps
Max Link Length on 9/125µm SMF		Lmax		20		km

5. Optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Unit
Transmitter					
Centre Wavelength	λ_c	1540	1550	1560	nm
Spectral Width (-20dB)	σ			1	nm
Average Output Power	Pout	-9		-3	dBm
Extinction Ratio	ER	9			dB
Optical Rise/Fall Time	tr/ta			2	ns
Receiver					
Centre Wavelength	λ_c	1300	1310	1320	nm
Receiver Sensitivity	PIN			-23	dBm
Receiver Overload	PMAX	1			dBm
LOS De-Assert	LOSD			-30	dBm
LOS Assert	LOSA	-35			dBm
LOS Hysteresis		0.5		4.5	dB

6. Electrical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Unit
Transmitter					
Input Differential Impedance	Zin	90	100	110	Ω
Data Input Swing Differential	Vin	500		2400	mV
Tx-Dis Disable	Vd	2.0		Vcc	V
Tx-Dis Enable	Ven	0		0.8	V
TX-Fault (Fault)		2.0		Vcc+0.3	V
TX-Fault (Normal)		0		0.8	V

Receiver					
Data Output Swing Differential	Vout	370		2000	mV
Rx-Los Fault	Vlf	2.0		Vcc+0.3	V
Rx-Los Normal	Vln	0		0+0.8	V

7. Pin Descriptions

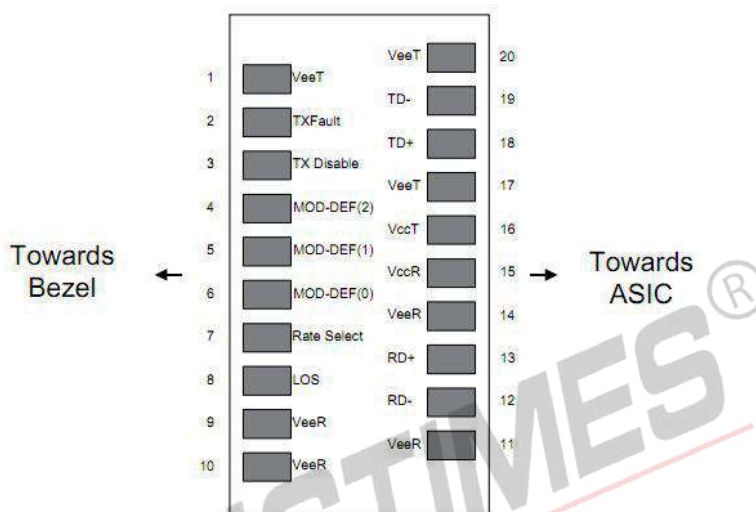


Diagram of Host Board Connector Block Pin Numbers and Names

Pin	Symbol	Description	Ref.
1	VEET	Transmitter Ground(Common with Receiver Ground)	6.1
2	TFAULT	Transmitter Fault. Not supported.	
3	TDIS	Transmitter Disable. Laser output disabled on high or open.	6.2
4	MOD_DEF(2)	Module Definition 2. Data line for Serial ID.	6.3
5	MOD_DEF(1)	Module Definition 1. Clock line for Serial ID.	6.3
6	MOD_DEF(0)	Module Definition 0. Grounded within the module.	6.3
7	Rate Select	No connection required	
8	LOS	Loss of Signal indication. Logic 0 indicates normal operation.	6.4
9	VEER	Receiver Ground(Common with Transmitter Ground)	6.1
10	VEER	Receiver Ground(Common with Transmitter Ground)	6.1
11	VEER	Receiver Ground(Common with Transmitter Ground)	6.1
12	RD-	Receiver Inverted DATA out.AC Coupled.	
13	RD+	Receiver Non-inverted DATA out.AC Coupled.	

14	VEER	Receiver Ground(Common with Transmitter Ground)	6.1
15	VCCR	Receiver Power Supply	
16	VCCT	Transmitter Power Supply	
17	VEET	Transmitter Ground(Common with Receiver Ground)	6.1
18	TD+	Transmitter Non-Inverted DATA in.AC Coupled.	
19	TD-	Transmitter Inverted DATA in.AC Coupled.	
20	VEET	Transmitter Ground(Common with Receiver Ground)	6.1

Notes:

- 1.Circuit ground is internally isolated from chassis ground.
- 2.Laser output disabled on TDIS >2.0V or open, enabled on TDIS <0.8V.
- 3.Should be pulled up with 4.7k - 10kohms on host board to a voltage between 2.0V and 3.6V.
MOD_DEF(0) pulls line low to indicate module is plugged in.
- 4.LOS is open collector output.
Should be pulled up with 4.7k -10kohms on host board to a voltage between 2.0V and 3.6V.
Logic 0 indicates normal operation; logic 1 indicates loss of signal.

8. EEPROM & DDM THRESHOLD

8.1 EEPROM

2 wire address 1010000X (A0hex)

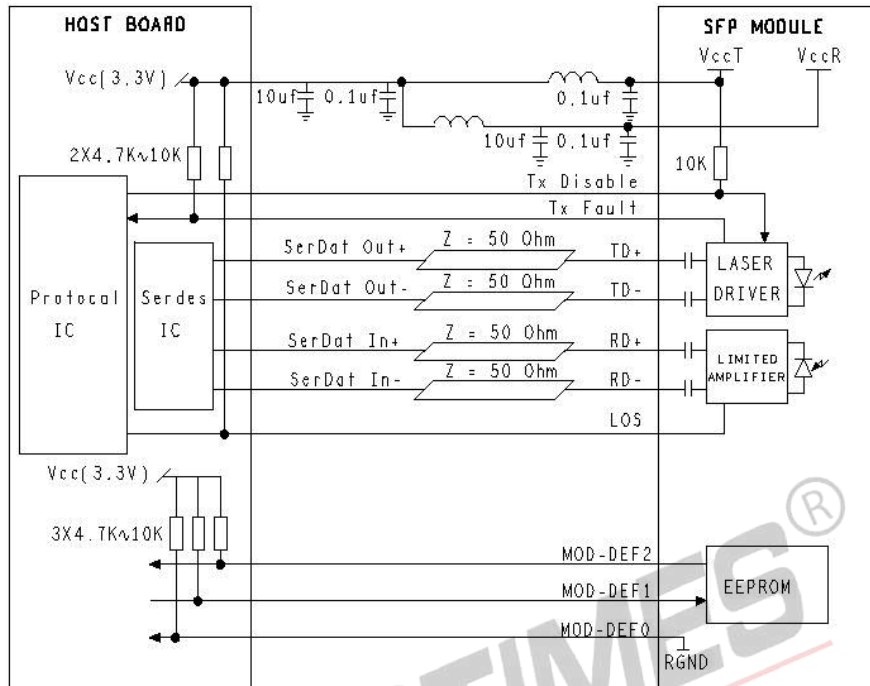
0~95
Serial ID Defined by SFP MSA (96 bytes)
96~127
Vendor Specific (32 bytes)
128~255
Reserved (128 bytes)

8.2 DDM THRESHOLD

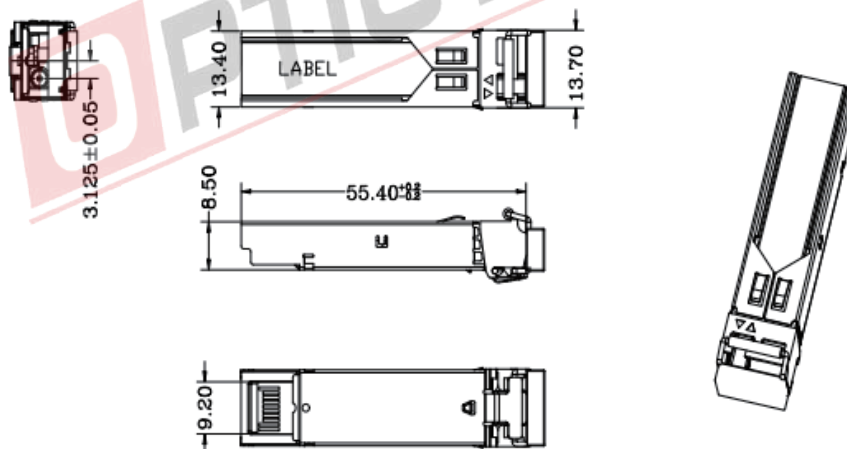
OPTSFPGEBD151320D-L/I

		Low Alarm	Low Warn	High Warn	High Alarm
Temp	OPTSFPGEBD151320D-LI	-45℃	-40℃	85℃	90℃
Temp	OPTSFPGEBD151320D-L	-5℃	0℃	70℃	75℃
Voltage		3V	3.1V	3.6V	3.7V
Tx Bias	OPTSFPGEBD151320D-L	3mA	4mA	70mA	75mA
Tx Bias	OPTSFPGEBD151320D-LI	3mA	4mA	125mA	130mA
Tx Power		-13.5dBm	-9.5dBm	-1dBm	1dBm
Rx Power		-23dBm	-19dBm	-3dBm	1dBm

9. Recommend Circuit



10. Mechanical Specifications



Units in mm
Tolerance without indication is ±0.1mm

Ordering Information

OPTICTIMES S.A.C

E-mail: casildo@optictimes.com

Add: AV. GUARDIA CIVIL NRO. 1321 INT. 1803 URB. VILLA VICTORIA (EDIFICIO CONEXION

Tel: +51 932 411 092

<https://optictimesperu.com/>

Part No.	Data Rate	DDM	TX/RX	Fiber Type	Dist.	Temp.	Optical Interface
OPTSFPGEBD151320D-L	1.25Gbps	yes	1550nm/ 1310nm	SMF	20km	0~70℃	BiDi LC
OPTSFPGEBD151320D-LI	1.25Gbps	yes	1550nm/ 1310nm	SMF	20km	-40~85℃	BiDi LC

VERSION UPDATE:

VERSION NO.	DATE	UPDATED INFORMATION
V20161010	20161010	1. EEPROM& DDM Threshold updated 2. "LABEL" added 3. Ordering information updated 4. Product picture updated
V20170815	20170815	1. More items added into list

NOTICE:

OPT reserves the right to make changes to this product in this specification without notice, in order to improve product performance.

Product Features

- Up to 1.25Gbps data links
- 40Km with 9/125μm SMF *1
- 1310nm /1550nm FP laser *1
- Simplex LC Connector
- Hot-pluggable SFP footprint
- Single 3.3V power supply
- Operating temperature: Refer to *1
- RoHS



Applications

- √ 1.25Gbps 1000Base-LX
- √ 1G/2G Fiber Channel *1

PART NUMBER	TX/RX	DISTANCE	LASER	TEMPERATURE
OPTSFPGEBD131540D-L	1310/1550nm	40Km	FP/PIN	COM 0~70°C
OPTSFPGEBD131540D-LI	1310/1550nm	40Km	FP/PIN	IND -40~85°C

1. Product Description

The OPTSFPGEBD131540D-L/LI series SFPs are small form factor pluggable (SFP) transceivers compatible with multi-sourcing agreement (MSA). It is suitable for single-mode fiber (SMF) communications in 1.25Gbps Ethernet and 1G/2G Fiber Channel.

2. Regulatory Compliance

OPT transceivers are Class 1 Laser Products comply with FDA regulations. Meet Class 1 eye safety requirements of EN 60825 and the electrical safety requirements of EN 60950.

3. Absolute Maximum Ratings

Parameter		Symbol	Min.	Max.	Unit
Supply Voltage		VCC	-0.5	3.6	V
Storage Temperature		TS	-40	85	°C
OPTSFPGEBD131540D-L	Operating Case Temperature	TC	0	70	°C
OPTSFPGEBD131540D-LI	Operating Case Temperature	TC	-40	85	°C

4. Recommended Operating Conditions

Parameter		Symbol	Min.	Typical	Max.	Unit
OPTSFPGEBD131540D-L	Operating Case	TC	0		70	°C

OPTSFPGEBD1 31540D-LI	Temperature	TC	-40		85	°C
Power Supply Voltage		VCC	3.15	3.3	3.45	V
Power Supply Current		ICC			300	mA
Data Rate				1.25		GBps
Max Link Length on 9/125µm SMF		Lmax			40	km

5. Optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Unit
Transmitter					
Centre Wavelength	λ_c	1300	1310	1320	nm
Spectral Width (RMS)	σ			4	nm
Average Output Power	Pout	-5		0	dBm
Extinction Ratio	ER	9			dB
Optical Rise/Fall Time	tr/ta			2	ns
Receiver					
Centre Wavelength	λ_c	1540	1550	1560	nm
Receiver Sensitivity	PIN			-19	dBm
Receiver Overload	PMAX	1			dBm
LOS De-Assert	LOSD			-30	dBm
LOS Assert	LOSA	-35			dBm
LOS Hysteresis		0.5		4.5	dB

6. Electrical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Unit
Transmitter					
Input Differential Impedance	Zin	90	100	110	Ω
Data Input Swing Differential	Vin	500		2400	mV
Tx-Dis Disable	Vd	2.0		Vcc	V
Tx-Dis Enable	Ven	0		0.8	V
TX-Fault (Fault)		2.0		Vcc+0.3	V
TX-Fault (Normal)		0		0.8	V
Receiver					
Data Output Swing Differential	Vout	370		2000	mV
Rx-Los Fault	Vlf	2.0		Vcc+0.3	V
Rx-Los Normal	Vln	0		0+0.8	V

7. Pin Descriptions

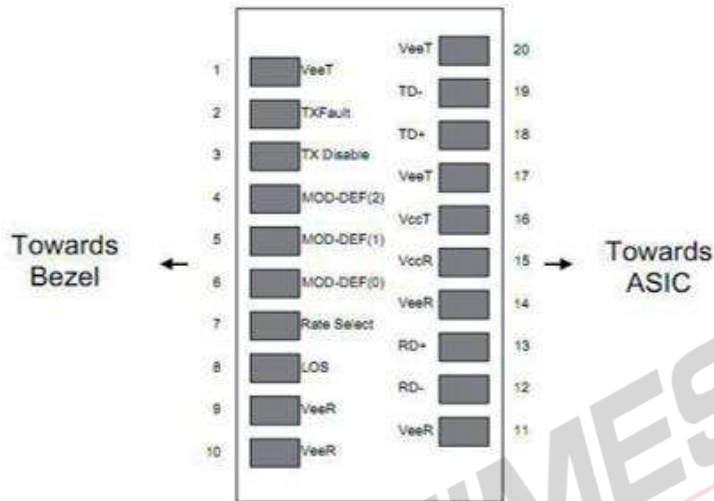


Diagram of Host Board Connector Block Pin Numbers and Names

Pin	Symbol	Description	Ref.
1	VEET	Transmitter Ground(Common with Receiver Ground)	6.1
2	TFAULT	Transmitter Fault. Not supported.	
3	TDIS	Transmitter Disable. Laser output disabled on high or open.	6.2
4	MOD_DEF(2)	Module Definition 2. Data line for Serial ID.	6.3
5	MOD_DEF(1)	Module Definition 1. Clock line for Serial ID.	6.3
6	MOD_DEF(0)	Module Definition 0. Grounded within the module.	6.3
7	Rate Select	No connection required	
8	LOS	Loss of Signal indication.Logic 0 indicates normal operation.	6.4
9	VEER	Receiver Ground(Common with Transmitter Ground)	6.1
10	VEER	Receiver Ground(Common with Transmitter Ground)	6.1
11	VEER	Receiver Ground(Common with Transmitter Ground)	6.1
12	RD-	Receiver Inverted DATA out.AC Coupled.	
13	RD+	Receiver Non-inverted DATA out.AC Coupled.	
14	VEER	Receiver Ground(Common with Transmitter Ground)	6.1
15	VCCR	Receiver Power Supply	
16	VCCT	Transmitter Power Supply	
17	VEET	Transmitter Ground(Common with Receiver Ground)	6.1
18	TD+	Transmitter Non-Inverted DATA in.AC Coupled.	
19	TD-	Transmitter Inverted DATA in.AC Coupled.	
20	VEET	Transmitter Ground(Common with Receiver Ground)	6.1

Notes:

1. Circuit ground is internally isolated from chassis ground.
2. Laser output disabled on TDIS >2.0V or open, enabled on TDIS <0.8V.
3. Should be pulled up with 4.7k - 10kohms on host board to a voltage between 2.0V and 3.6V.
MOD_DEF(0) pulls line low to indicate module is plugged in.
4. LOS is open collector output. Should be pulled up with 4.7k -10kohms on host board to a voltage between 2.0V and 3.6V. Logic 0 indicates normal operation; logic 1 indicates loss of signal.

8. EEPROM & DDM THRESHOLD

8.1 EEPROM

2 wire address 1010000X (A0hex)

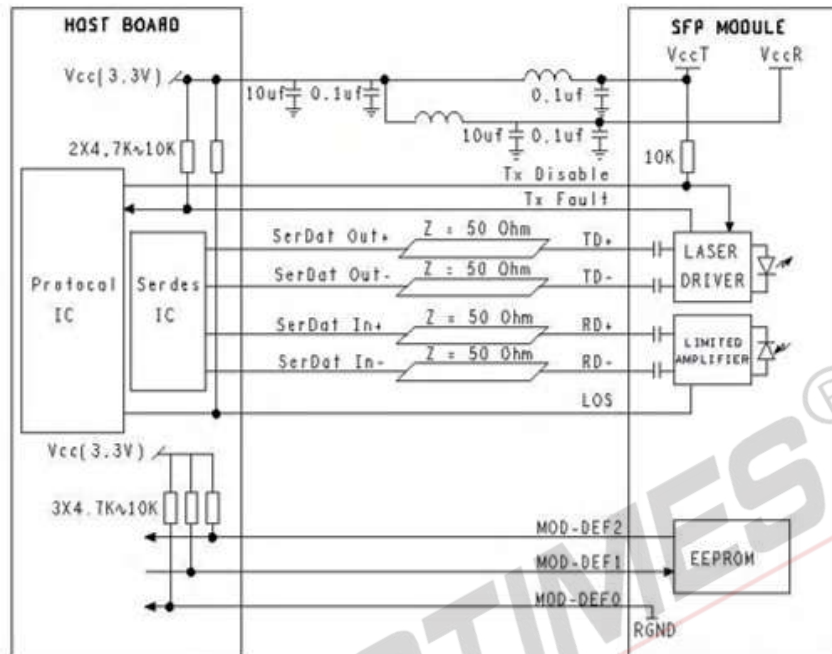
0~95
Serial ID Defined by SFP MSA (96 bytes)
96~127
Vendor Specific (32 bytes)
128~255
Reserved (128 bytes)

8.2 DDM THRESHOLD

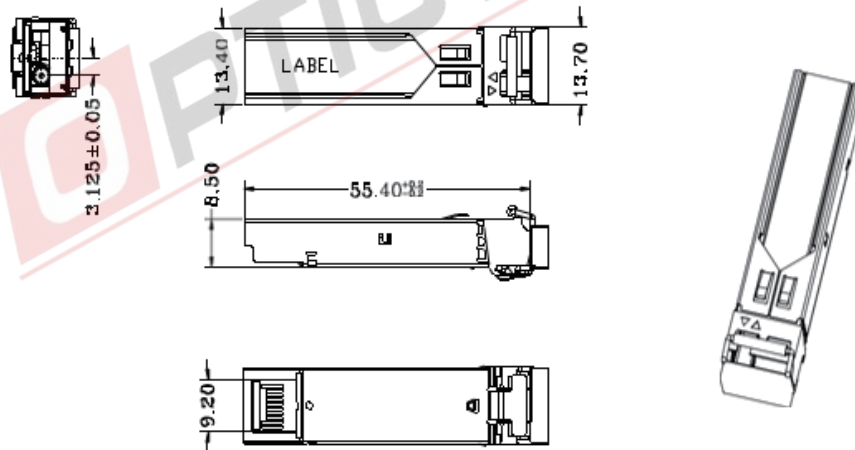
OPTSFPGEBD131540D-LI

		Low Alarm	Low Warn	High Warn	High Alarm
Temp	OPTSFPGEBD131540D-LI	-45°C	-40°C	85°C	90°C
Temp	OPTSFPGEBD131540D-L	-10°C	-5°C	85°C	90°C
Voltage		3V	3.1V	3.5V	3.6V
Tx Bias OPTSFPGEBD131540D-L		3mA	4mA	70mA	75mA
Tx Bias OPTSFPGEBD131540D-LI		5mA	4mA	120mA	130mA
Tx Power		-8dBm	-7dBm	1dBm	2dBm
Rx Power		-23dBm	-22dBm	1dBm	2dBm

9. Recommend Circuit



10. Mechanical Specifications



Units in mm
Tolerance without indication is $\pm 0.1\text{mm}$

Ordering Information

Part No.	Data Rate	DDM	Wave	Fiber Type	Dist.	Temp.	Optical Interface
OPTSFPGEBD131540D-L	1.25Gbps	yes	1310nm / 1550nm	SMF	40km	0~70°C	BiDi LC
OPTSFPGEBD131540D-LI	1.25Gbps	yes	1310nm / 1550nm	SMF	40km	-40~85 °C	BiDi LC

			1550nm				
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VERSION UPDATE:

VERSION NO.	DATE	UPDATED INFORMATION
V20161010	20161010	1. EEPROM& DDM Threshold updated 2. "LABEL" added 3. Ordering information updated 4. Product picture updated
V20170815	20170815	1. More items added into list

NOTICE:

OPT reserves the right to make changes to this product in this specification without notice, in order to improve product performance.

Product Features

- Up to 1.25Gbps data links
- 40Km with 9/125µm SMF *1
- 1550nm /1310nm DFB laser *1
- Simplex LC Connector
- Hot-pluggable SFP footprint
- Single 3.3V power supply
- Operating temperature: Refer to *1
- RoHS



Applications

- √ 1.25Gbps 1000Base-EX
- √ 1G/2G Fiber Channel *1

PART NUMBER	TX/RX	DISTANCE	LASER	TEMPERATURE
OPTSFPGEBD151340D-L	1550/1310nm	40Km	DFB/PIN	COM 0~70°C
OPTSFPGEBD151340D-LI	1550/1310nm	40Km	DFB/PIN	IND -40~85°C

1. Product Description

The OPTSFPGEBD151340D-L series SFPs are small form factor pluggable (SFP) transceivers compatible with multi-sourcing agreement (MSA). It is suitable for single-mode fiber (SMF) communications in 1.25Gbps Ethernet and 1G/2G Fiber Channel.

2. Regulatory Compliance

OPT transceivers are Class 1 Laser Products comply with FDA regulations. Meet Class 1 eye safety requirements of EN 60825 and the electrical safety requirements of EN 60950.

3. Absolute Maximum Ratings

Parameter		Symbol	Min.	Max.	Unit
Supply Voltage		VCC	-0.5	3.6	V
Storage Temperature		TS	-40	85	°C
OPTSFPGEBD151340D-L	Operating Case Temperature	TC	0	70	°C
OPTSFPGEBD151340D-LI	Operating Case Temperature	TC	-40	85	°C

4. Recommended Operating Conditions

Parameter		Symbol	Min.	Typical	Max.	Unit
OPTSFPGEBD151340D-L	Operating Case Temperature	TC	0		70	°C
OPTSFPGEBD151340D-LI		TC	-40		85	°C
Power Supply Voltage		VCC	3.15	3.3	3.45	V

Power Supply Current	ICC			300	mA
Data Rate			1.25		GBps
Max Link Length on 9/125µm SMF	Lmax			40	km

5. Optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Unit
Transmitter					
Centre Wavelength	λ_c	1540	1550	1560	nm
Spectral Width (-20dB)	σ			1	nm
Average Output Power	Pout	-5		0	dBm
Extinction Ratio	ER	9			dB
Optical Rise/Fall Time	tr/tf			2	ns
Receiver					
Centre Wavelength	λ_c	1300	1310	1320	nm
Receiver Sensitivity	PIN			-19	dBm
Receiver Overload	PMAX	1			dBm
LOS De-Assert	LOSD			-30	dBm
LOS Assert	LOSA	-35			dBm
LOS Hysteresis		0.5		4.5	dB

6. Electrical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Unit
Transmitter					
Input Differential Impedance	Zin	90	100	110	Ω
Data Input Swing Differential	Vin	500		2400	mV
Tx-Dis Disable	Vd	2.0		Vcc	V
Tx-Dis Enable	Ven	0		0.8	V
TX-Fault (Fault)		2.0		Vcc+0.3	V
TX-Fault (Normal)		0		0.8	V
Receiver					
Data Output Swing Differential	Vout	370		2000	mV
Rx-Los Fault	Vlf	2.0		Vcc+0.3	V
Rx-Los Normal	Vln	0		0+0.8	V

7. Pin Descriptions

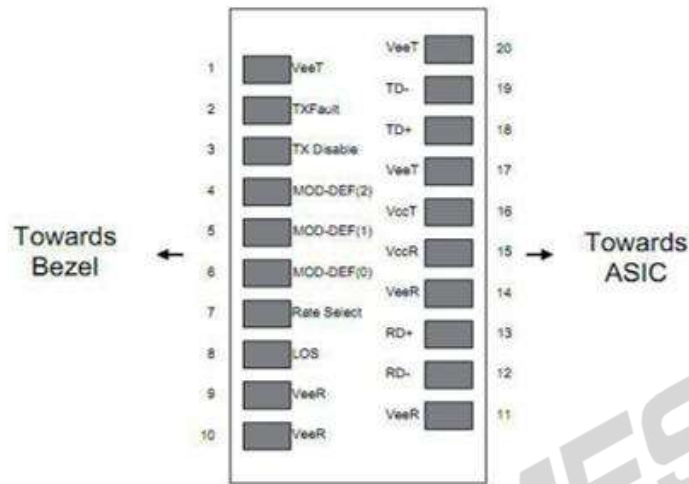


Diagram of Host Board Connector Block Pin Numbers and Names

Pin	Symbol	Description	Ref.
1	VEET	Transmitter Ground(Common with Receiver Ground)	6.1
2	TFault	Transmitter Fault. Not supported.	
3	TDIS	Transmitter Disable. Laser output disabled on high or open.	6.2
4	MOD_DEF(2)	Module Definition 2. Data line for Serial ID.	6.3
5	MOD_DEF(1)	Module Definition 1. Clock line for Serial ID.	6.3
6	MOD_DEF(0)	Module Definition 0. Grounded within the module.	6.3
7	Rate Select	No connection required	
8	LOS	Loss of Signal indication.Logic 0 indicates normal operation.	6.4
9	VEER	Receiver Ground(Common with Transmitter Ground)	6.1
10	VEER	Receiver Ground(Common with Transmitter Ground)	6.1
11	VEER	Receiver Ground(Common with Transmitter Ground)	6.1
12	RD-	Receiver Inverted DATA out.AC Coupled.	
13	RD+	Receiver Non-inverted DATA out.AC Coupled.	
14	VEER	Receiver Ground(Common with Transmitter Ground)	6.1
15	VCCR	Receiver Power Supply	
16	VCCT	Transmitter Power Supply	
17	VEET	Transmitter Ground(Common with Receiver Ground)	6.1
18	TD+	Transmitter Non-Inverted DATA in.AC Coupled.	
19	TD-	Transmitter Inverted DATA in.AC Coupled.	
20	VEET	Transmitter Ground(Common with Receiver Ground)	6.1

Notes:

- 1.Circuit ground is internally isolated from chassis ground.
 - 2.Laser output disabled on TDIS >2.0V or open, enabled on TDIS <0.8V.
 - 3.Should be pulled up with 4.7k - 10kohms on host board to a voltage between 2.0V and 3.6V.
- MOD_DEF(0) pulls line low to indicate module is plugged in.
- 4.LOS is open collector output.Should be pulled up with 4.7k -10kohms on host board to a voltage between 2.0V and 3.6V. Logic 0 indicates normal operation; logic 1 indicates loss of signal.

8.EEPROM & DDM THRESHOLD

8.1 EEPROM

2 wire address 1010000X (A0hex)

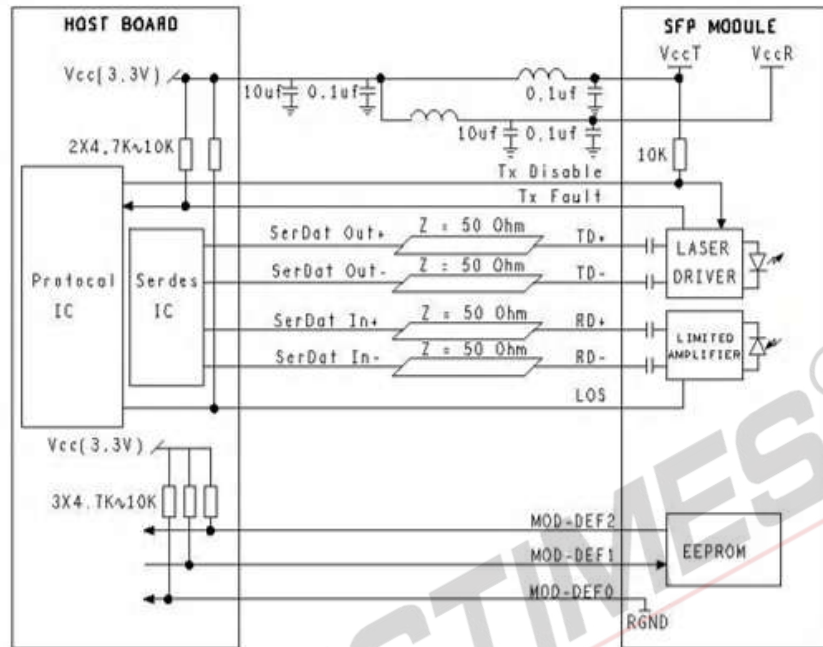
0~95
Serial ID Defined by SFP MSA (96 bytes)
96~127
Vendor Speific (32 bytes)
128~255
Reserved (128 bytes)

8.2 DDM THRESHOLD

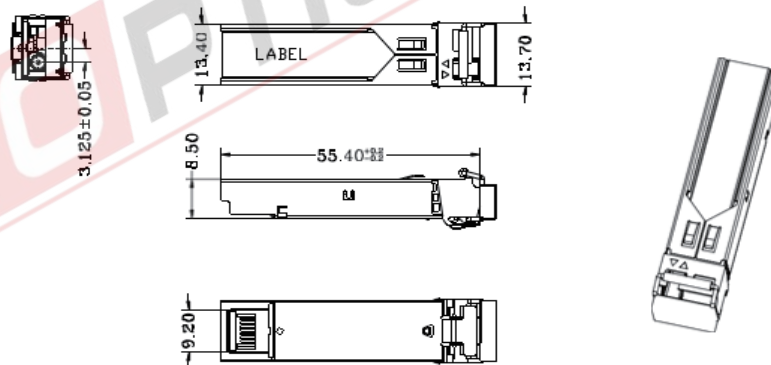
OPTSFPGEBD151340D-L/I

		Low Alarm	Low Warn	High Warn	High Alarm
Temp	OPTSFPGEBD151340D-LI	-45°C	-40°C	85°C	90°C
Temp	OPTSFPGEBD151340D-L	-10°C	-5°C	85°C	90°C
Voltage		3V	3.1V	3.5V	3.6V
Tx Bias OPTSFPGEBD151340D-L		3mA	4mA	70mA	75mA
Tx Bias OPTSFPGEBD151340D-LI		5mA	4mA	120mA	130mA
Tx Power		-8dBm	-7dBm	1dBm	2dBm
Rx Power		-23dBm	-22dBm	1dBm	2dBm

9. Recommend Circuit



10. Mechanical Specifications



Units in mm
Tolerance without indication is $\pm 0.1\text{mm}$

Ordering Information

Part No.	Data Rate	DDM	TX/RX	Fiber Type	Dist.	Temp.	Optical Interface
OPTSFPGEBD151340D-L	1.25Gbps	yes	1550nm / 1310nm	SMF	40km	0~70°C	BiDi LC
OPTSFPGEBD151340D-LI	1.25Gbps	yes	1550nm / 1310nm	SMF	40km	-40~85°C	BiDi LC

VERSION UPDATE:

VERSION NO.	DATE	UPDATED INFORMATION
V20161010	20161010	1. EEPROM& DDM Threshold updated 2. "LABEL" added 3. Ordering information updated 4. Product picture updated
V20170815	20170815	1. More items added into list

NOTICE:

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