



Datasheet

No.

DS10-B001

Initial Date

2010-07-29

OB

OB2S321

Written Team

R&D Dept.

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### I Preview


PN	OB2S321
Description	SFP transceiver, 1.25G SM 1310nm 20KM LC 0~70°C +3.3V

### II Contents

1. Features
2. Applications
3. Absolute maximum Ratings
4. Operating Environment
5. Electrical and Optical Characteristics
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9. Serial ID Memory Contents
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### III Revision History

No.	Date	Items	Change Recording	Ver.	Rev.	Customer
1	2010-07-29	All	Initial registration	000	000	Standard
2	2017-02-04	All	Update the PN	001	001	Standard
3						
4						
5						
6						

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## 1. Features

- ◆ Compliant with Specifications for IEEE802.3Z
- ◆ Multi-Source Package with Duplex LC Connector
- ◆ Up to 1.25Gb/s Data Links
- ◆ Single Mode 1310nm FP-LD
- ◆ Single +3.3V Power Supply
- ◆ Hot-Pluggable
- ◆ Compliant with Bellcore TA-NWT-000983
- ◆ Eye Safety Designed to Meet Laser Class1, Compliant with IEC60825-1
- ◆ RoHS Compliant Products

## 2. Applications

- ◆ Gigabit Ethernet
- ◆ Fiber Channel
- ◆ Other Optical Links

## 3. Absolute Maximum Ratings: (TC=25°C)

Parameter	Symbol	Remarks	Min.	Max.	Unit
Storage Temperature	T <sub>ST</sub>	-	-40	+85	°C
Operating Temperature	T <sub>P</sub>	-	0	+70	°C
Input Voltage	T <sub>CC</sub>	-	0	+5	V


## 4. Operating Environment:

Parameter	Symbol	Remarks	Min.	Typical	Max.	Unit
Supply Voltage	V <sub>CC</sub>	-	+3.0	+3.3	+3.6	V
Operating Temperature	T <sub>OP</sub>	-	0	-	+70	°C

## 5. Electrical and Optical Characteristics(Condition: Ta=TOP)

Parameter	Symbol	Min.	Typical	Max.	Unit
Transmitter Differential Input Volt	+/-TX_DAT	200		2400	mV p-p
Supply Current	I <sub>CC</sub>		130	180	mA
Tx_Disable Input Voltage – Low	V <sub>L</sub>	0		0.8	V
Tx_Disable Input Voltage – High	V <sub>H</sub>	2.0		V <sub>CC</sub>	V
Tx_Fault Output Voltage – Low	V <sub>OL</sub>	0		0.8	V
Tx_Fault Output Voltage – High	V <sub>OH</sub>	2.0		V <sub>CC</sub>	V
Receiver Differential Output Volt	+/-RX_DAT	600		1400	mV p-p
Rx_LOS Output Voltage- Low	V <sub>OL</sub>	0		0.8	V
Rx_LOS Output Voltage- High	V <sub>OH</sub>	2.0		V <sub>CC</sub>	V

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### Transmitter Section

Parameter	Symbol	Min.	Typical	Max.	Unit
Data Rate	B	-	1250	-	Mb/s
Centre Wavelength	$\lambda_c$	1296	1310	1330	nm
Output Spectral Width	$\Delta\lambda$	-	-	4	nm
Average Output Power	$P_o$	-9	-	-3	dBm
Extinction Ratio	EXT	9	-	-	dB
Data Input Voltage-High	$V_{IHS}$	$V_{cc}-1.16$	-	$V_{cc}-0.89$	V
Data Input Voltage-Low	$V_{ILS}$	$V_{cc}-1.82$	-	$V_{cc}-1.48$	V
Supply Current	$I_{cc}$	-	90	150	mA
Output Optical Eye	Compliant with IEEE802.3Z				


### Receiver Section:

Parameter	Symbol	Min.	Typical	Max.	Unit
Receive Sensitivity	$P_{min}$	-	-	-22	dBm
Maximum Input Power	$P_{MAX}$	-3	-	-	dBm
Signal Detect Threshold-De-Assert	$S_D$	-	-	-23	dBm
Signal Detect Threshold-Assert	$S_A$	-33	-	-	dBm
Hysteresis	-	-	2.0	-	dBm
Output High Voltage	$V_{OH}$	$V_{cc}-1.03$	-	$V_{cc}-0.89$	V
Output Low Voltage	$V_{OL}$	$V_{cc}-1.82$	-	$V_{cc}-1.63$	V
Operating Wavelength	$\lambda_c$	1100	-	1600	nm
Supply Current	$I_{cc}$	-	80	110	mA

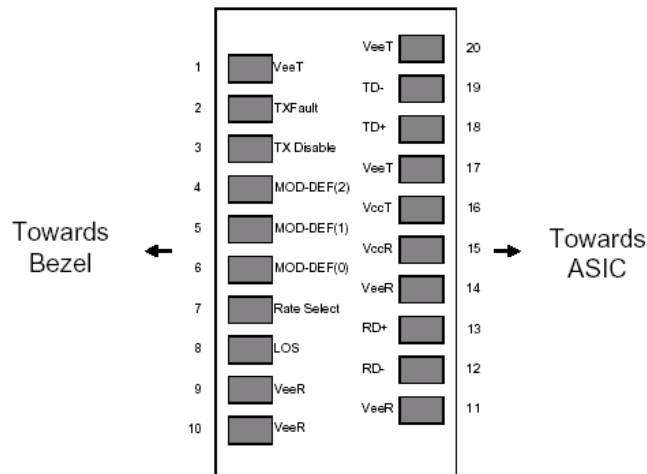
### 6. Timing Characteristics:

Parameter	Symbol	Min.	Typical	Max.	Unit
TX_DISABLE Assert Time	$t_{off}$		3	10	usec
TX_DISABLE Negate Time	$t_{on}$		0.5	1	msec
Time to initialize include reset of TX_FAULT	$t_{int}$		30	300	msec
TX_FAULT from fault to assertion	$t_{fault}$		20	100	usec
TX_DISBEL time to start reset	$t_{reset}$	10			usec
Receiver Loss of Signal Assert Time (off to On)	$T_{A,RX\_LOS}$			100	usec
Receiver Loss of Signal Assert Time (on to off)	$T_{d,RX\_LOS}$			100	usec

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## 7. Pin Assignment



Pin out of Connector Block on Host Board


### Pin Description

Pin	Symbol	Name/Description	Ref
1	$V_{EET}$	Transmitter Ground(Common with Receiver Ground)	1
2	$T_{FAULT}$	Transmitter Fault.Low normal operation,High Fault indication	
3	$T_{DIS}$	Transmitter Disable.Laser output disabled on high or open	2
4	MOD_DEF(2)	Module Definition 2.Data line for Serial ID	3
5	MOD_DEF(1)	Module Definition 1.Clock line for Serial ID	3
6	MOD_DEF(0)	Module Definition 0.Grounded within the module	3
7	Rate Select	No connection required	
8	LOS	Loss of Signal indication.Logic 0 indicates normal operation.	4
9	$V_{EER}$	Receiver Ground(Common with Transmitter Ground)	1
10	$V_{EER}$	Receiver Ground(Common with Transmitter Ground)	1
11	$V_{EER}$	Receiver Ground(Common with Transmitter Ground)	1
12	RD-	Receiver Inverted DATA out.AC Coupled	
13	RD+	Receiver Non-inverted DATA out.AC Coupled	
14	$V_{EER}$	Receiver Ground(Common with Transmitter Ground)	1
15	$V_{CCR}$	Receiver Power Supply	
16	$V_{CCT}$	Transmitter Power Supply	
17	$V_{EET}$	Transmitter Ground(Common with Receiver Ground)	1
18	TD+	Transmitter Non-inverted DATA in.AC Coupled	
19	TD-	Transmitter Inverted DATA in.AC Coupled	
20	$V_{EET}$	Transmitter Ground(Common with Receiver Ground)	1

### Notes:

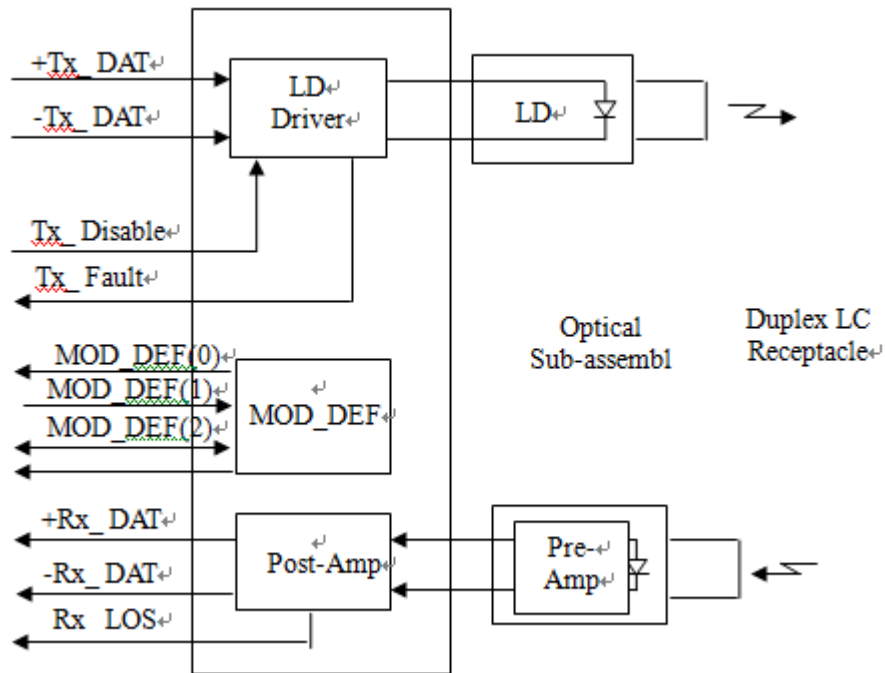
1. Circuit ground is internally isolated from chassis ground.

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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. Block Diagram of Transceiver



### 9. Serial ID Memory Contents

Data Address	Length (Byte)	Name of Length	Description and Contents
Base ID Fields			
0	1	Identifier	Type of Serial transceiver (03h=SFP)
1	1	Reserved	Extended identifier of type serial transceiver (04h)
2	1	Connector	Code of optical connector type (07=LC)
3-10	8	Transceiver	Gigabit Ethernet 1000Base-SX & Fiber Channel
11	1	Encoding	NRZ (03h)
12	1	BR,Nominal	Nominal baud rate, unit of 100Mbps
13-14	2	Reserved	(0000h)
15	1	Length(9um)	Link length supported for 9/125um fiber, units of 100m
16	1	Length(50um)	Link length supported for 50/125um fiber, units of 10m

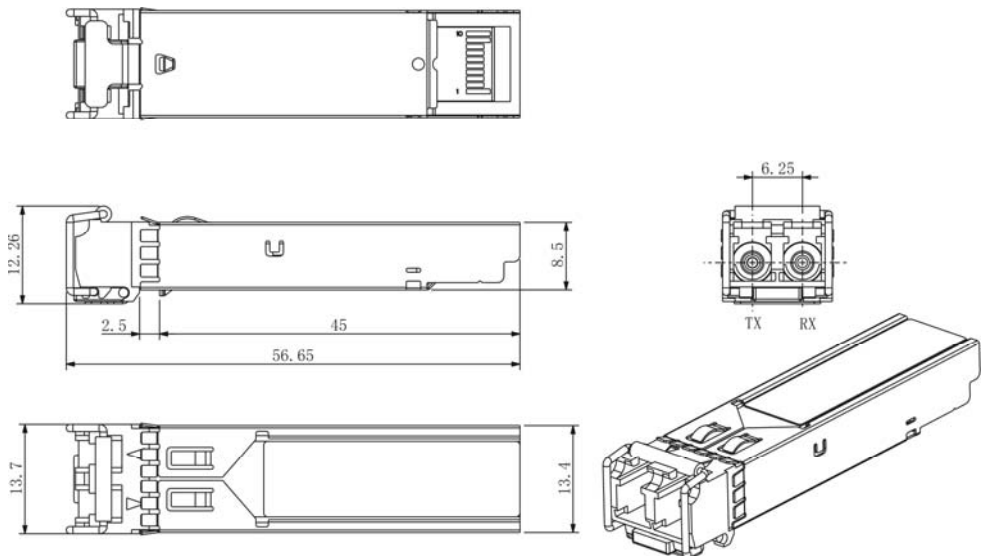
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17	1	Length(62.5um)	Link length supported for 62.5/125um fiber, units of 10m
18	1	Length(Copper)	Link length supported for copper, units of meters
19	1	Reserved	
20-35	16	Vendor Name	SFP vendor name: OCRE
36	1	Reserved	
37-39	3	Vendor OUI	SFP transceiver vendor OUI ID
40-55	16	Vendor PN	Part Number: "OB2S321" (ASCII)
56-59	4	Vendor rev	Revision level for part number
60-61	2	Wavelength	Laser wavelength
62	1	Reserved	
63	1	CCID	Least significant byte of sum of data in address 0-62
<b>Extended ID Fields</b>			
64-65	2	Option	Indicates which optical SFP signals are implemented (001Ah = LOS, TX_FAULT, TX_DISABLE all supported)
66	1	BR, max	Upper bit rate margin, units of %
67	1	BR, min	Lower bit rate margin, units of %
68-83	16	Vendor SN	Serial number (ASCII)
84-91	8	Date code	OCRE's Manufacturing date code
92-94	3	Reserved	
95	1	CCEX	Check code for the extended ID Fields (addresses 64 to 94)
<b>Vendor Specific ID Fields</b>			
96-127	32	Readable	OCRE specific date, read only

## 10. Mechanical

Dimensions(Unit:mm)



## 11. Recommended Circuit

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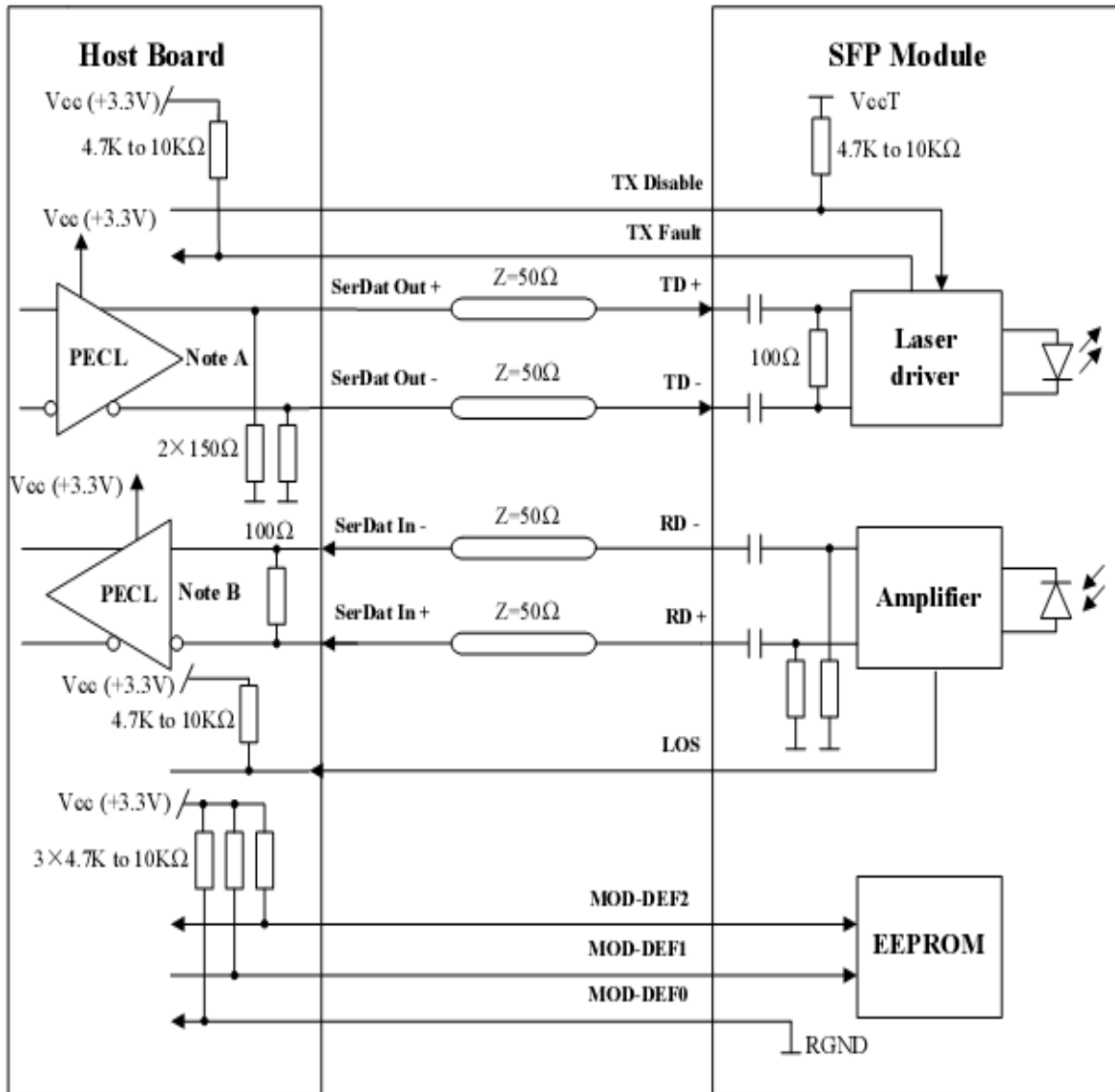
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Note A: Circuit assumes open emitter output

Note B: Circuit assumes high impedance internal bias @Vcc-1.3V

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## 12. Model Ordering Information

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OB2S321	SFP transceiver, 1.25G SM 1310nm 20KM LC 0~70°C +3.3V
OB2S341	SFP transceiver, 1.25G SM 1310nm 20KM LC DDMI 0~70°C +3.3V
OB2S322	SFP transceiver, 1.25G SM 1310nm 20KM LC -40~85°C +3.3V
OB2S342	SFP transceiver, 1.25G SM 1310nm 20KM LC DDMI -40~85°C +3.3V
OB2S323	SFP transceiver, 1.25G SM 1310nm 20KM LC -20~70°C +3.3V
OB2S343	SFP transceiver, 1.25G SM 1310nm 20KM LC DDMI -20~70°C +3.3V

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