



Datasheet

No.

DS10-B003

Initial Date

2010-07-29

OB

OB2S521

Written Team

R&D Dept.

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I Preview


PN	OB2S521
Description	SFP transceiver, 1.25G SM 1550nm 80KM LC 0~70°C +3.3V

II Contents

1. Features
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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 +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 _{ST}	-	-40	+85	°C
Operating Temperature	T _P	X=1	0	+70	°C
		X=2	-40	+85	°C
Input Voltage	T _{CC}	-	0	+5	V


4. Operating Environment

Parameter	Symbol	Remarks	Min.	Typical	Max.	Unit
Supply Voltage	V _{CC}	-	+3.0	+3.3	+3.6	V
Operating Temperature	T _{OP}	X=1	0	-	+70	°C
		X=2	-40	-	+85	°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 _{CC}		130	180	mA
Tx_Disable Input Voltage – Low	V _L	0		0.8	V
Tx_Disable Input Voltage – High	V _H	2.0		V _{CC}	V
Tx_Fault Output Voltage – Low	V _{OL}	0		0.8	V
Tx_Fault Output Voltage – High	V _{OH}	2.0		V _{CC}	V
Receiver Differential Output Volt	+/-RX_DAT	600		1400	mV p-p
Rx_LOS Output Voltage- Low	V _{OL}	0		0.8	V

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Rx_LOS Output Voltage- High	V_{OH}	2.0		V_{CC}	V
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Transmitter

Parameter	Symbol	Min.	Typical	Max.	Unit
Data Rate	B	-	1250	-	Mb/s
Output Center Wavelength	λ_C	1480	1550	1580	nm
Output Spectral Width	$\Delta\lambda$ (-20dB)	-	-	1	nm
Average Output Power	P_o	-2	-	+3	dBm
Extinction Ratio	E.R.	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	130	mA
Output Optical Eye	Compliant with IEEE802.3Z				

Receiver


Parameter	Symbol	Min.	Typical	Max.	Unit
Receive Sensitivity	P_{min}	-	-	-30	dBm
Maximum Input Power	P_{MAX}	-3	0	-	dBm
Signal Detect Threshold-De-Assert	S_D	-	-	-33	dBm
Signal Detect Threshold-Assert	S_A	-43	-	-	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	λ_C	1100	-	1600	nm
Supply Current	I_{CC}	-	80	110	mA

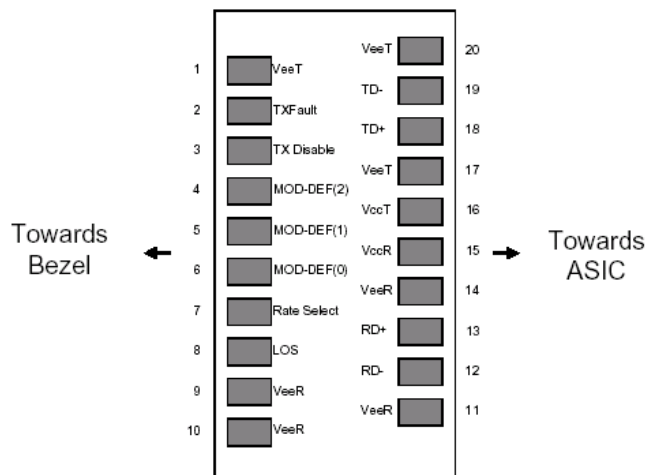
6. Timing Characteristics

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

7. Pin Assignment

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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 moudle	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.
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.

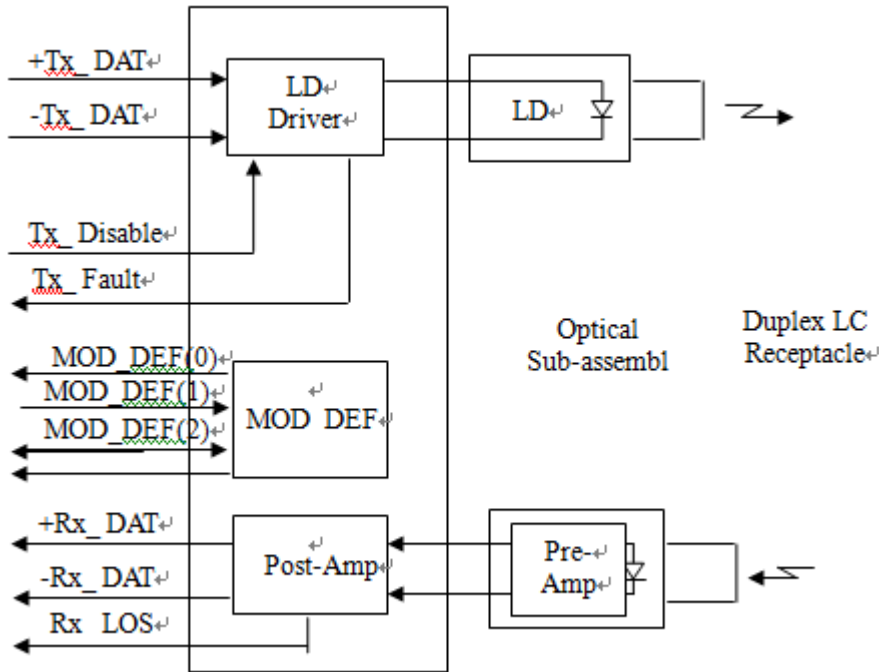
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MOD_DEF(0) pulls line low to indicate module is plugged in.

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:

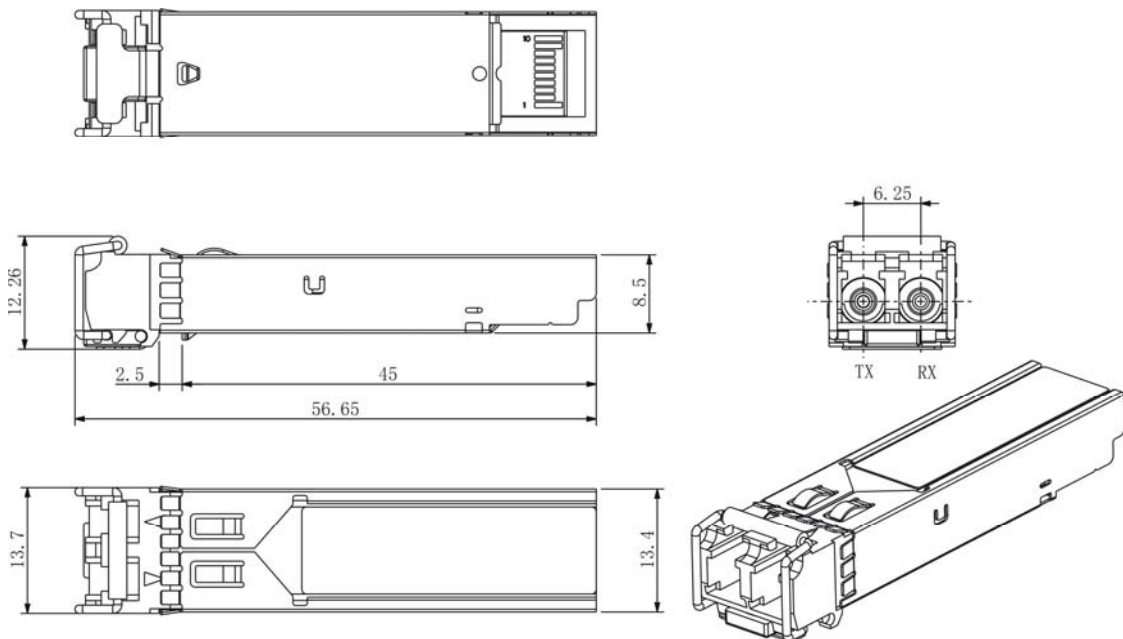
Data Address	Length (Byte)	Name of Length	Description and Contents
Base ID Fields			
0	1	Identifier	Type of Serial transceiver (03h=SFP)
1	1	Reserved	Extended identifier of type serial transceiver (04h)
2	1	Connector	Code of optical connector type (07=LC)
3-10	8	Transceiver	Gigabit Ethernet 1000Base-SX & 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
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	

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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: "OB2S521" (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
Extended ID Fields			
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)
Vendor Specific ID Fields			
96-127	32	Readable	OCRE specific date, read only

10. Mechanical Dimensions(Unit:mm)



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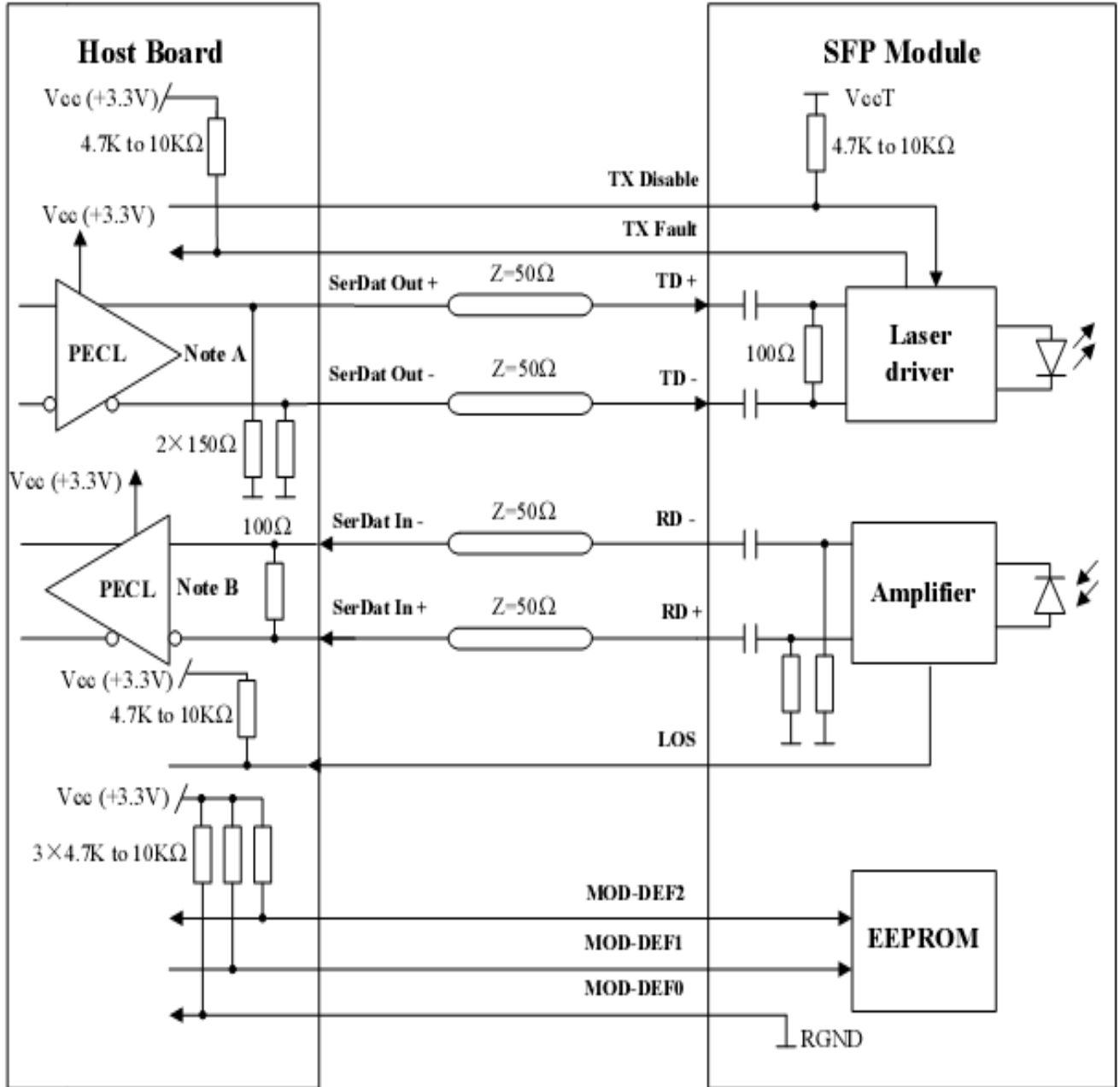
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11. Recommended Circuit



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

PN	Description
OB2S521	SFP transceiver, 1.25G SM 1550nm 80KM LC 0~70°C +3.3V
OB2S541	SFP transceiver, 1.25G SM 1550nm 80KM LC DDMI 0~70°C +3.3V
OB2S522	SFP transceiver, 1.25G SM 1550nm 80KM LC -40~85°C +3.3V
OB2S542	SFP transceiver, 1.25G SM 1550nm 80KM LC DDMI -40~85°C +3.3V
OB2S523	SFP transceiver, 1.25G SM 1550nm 80KM LC -20~70°C +3.3V
OB2S543	SFP transceiver, 1.25G SM 1550nm 80KM LC DDMI -20~70°C +3.3V

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