SKI-BIDI-20 Series

LC/SC | 1.25 | 20KM

1.25Gbps BIDI Optical Transceiver, 20Km

- SFP package with LC/SC connector ◦
- 1310nm FP Laser and 1550nm PIN photodetector ◦
- 1550nm DFB Laser and 1310nm PIN photodetector ◦
- Up to 20Km transmission on SMF ◦
- +3.3V single power supply ◦
- LVPECL compatible data input/output interface ◦
- Low EMI and excellent ESD protection ◦
- laser safety standard IEC-60825 compliant ◦
- Compatible with RoHS ◦

Application

- Ethernet
- Telecom
- Fiber Channel

Absolute Maximum Ratings

Parameter	Symbol	Minimum	Maximum	Units
Storage Temperature	Tst	-40	+85	°C
Supply Voltage	Vcc	0	+3.6	V
Operating Relative Humidity	RH	5	95	%

Operation Environment

Parameter		Symbol	Min	Typical	Max	Units
Supply Voltage		Vcc	3.15	3.3	3.45	V
Operating Case Temperature	Commercial	Tc	-10		+70	°C
	Industrial		-40		+85	
Power Dissipation					1	W
Data Rate			1.25			Mbps

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Optical Characteristics

(Ambient Operating Temperature 0 C to +70 C, Vcc =3.3 V)

Parameter		Symbol	Min.	Typ.	Max.	Units
Transmitter Section						
Data rate		-	-	1250	-	Mb/s
Center Wavelength	Tx 1310	o	1270	1310	1350	nm
	Tx 1550		1480	1550	1580	
Spectral Width(RMS)			-	-	4	nm
Average Output Power	Tx 1310	Po	-8	-	-3	dBm
	Tx 1550		-8		-3	
Extinction Ratio		Er	10	-	-	dB
Rise/Fall Time(20%~80%)		Tr/Tf			0.26	ns
Total jitter		Tj			0.43	UI
Optical Eye Diagram		IEEE 802.3z and ANSI Fibre Channel Compatible				
Receiver Section						
Center Wavelength	Rx 1550	o	1480	1550	1580	nm
	Rx 1310		1270	1310	1350	
Receiver Sensitivity		Rsen			-24	dBm
Receiver Overload		Ro	-3			dBm
Return Loss			12			dB
LOS Assert		LOSA	-30			dBm
LOS Dessert		LOSD			-27	dBm
LOS Hysteresis			0.5		4	

Electrical Characteristics

(Ambient Operating Temperature 0 C to +70 C, Vcc =3.3 V)

Parameter		Symbol	Min.	Typ.	Max.	unit
Transmitter Section						
Input Differential Impendence		Zin	90	100	110	Ohm
Data Input Swing Differential		Vin	500		2400	mV
TX Disable	Disable		2.0		Vcc	V
	Enable		0		0.8	V
TX Fault	Assert		2.0		Vcc	V
	Deassert		0		0.8	V
Receiver Section						
Output differential impendence		Zout		100		Ohm
Data Input Swing Differential		Vout	370		2000	mV
Rx_LOS	Assert		2.0		Vcc	V
	Deassert		0		0.8	V

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EEPROMINFORMATION (A0)

Addr	Field Size (Bytes)	Name of Field	HEX	Description
0	1	Identifier	03	SFP
1	1	Ext. Identifier	04	MOD4
2	1	Connector	07	SC
3-10	8	Transceiver	00 00 00 02 12 00 0D 01	Transmitter Code
11	1	Encoding	01	8B10B
12	1	BR, nominal	0D	1250M bps
13	1	Reserved	00	
14	1	Length (9um)-km	14/28	20km/40km
15	1	Length (9um)	64	
16	1	Length (50um)	00	
17	1	Length (62.5um)	00	
18	1	Length (copper)	00	
19	1	Reserved	00	
20-35	16	Vendor name	57 49 4E 54 4F 50 20 20 20 20 20 20 20 20 20 20	SUNKIND
36	1	Reserved	00	
37-39	3	Vendor OUI	00 00 00	
40-55	16	Vendor PN	xx xx xx xx xx xx xx xx	ASC II
56-59	4	Vendor rev	31 2E 30 20	V1.0
60-61	2	Wavelength	05 1E/06 0E	1310nm/1550nm
62	1	Reserved	00	
63	1	CC BASE	XX	Check sum of byte 0~62
64-65	2	Options	00 1A	LOS, TX_DISABLE, TX_FAULT
66	1	BR, max	32	50%
67	1	BR, min	32	50%
68-83	16	Vendor SN	00 00 00 00 00 00 00 00	Unspecified
84-91	8	Vendor date code	XX XX XX 20	Year, Month, Day
92-94	3	Reserved	00	
95	1	CC_EXT	XX	Check sum of byte 64~94
96-255	160	Vendor specific		

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Pin Descripyion

Pins	Name	Discription	NOTE
1	VeeT	Transmitter Ground	
2	Tx Fault	Transmitter Fault Indication	1
3	Tx Disable	Transmitter Disable	2
4	MOD DEF2	Module Definition 2	3
5	MOD DEF1	Module Definition 1	3
6	MOD DEF0	Module Definition 0	3
7	Rate Select	Not Connected	
8	LOS	Loss of Signal	4
9	VeeR	Receiver Ground	
10	VeeR	Receiver Ground	
11	VeeR	Receiver Ground	
12	RD-	Inv. Received Data Output	5
13	RD+	IReceived Data Output	5
14	VeeR	Receiver Ground	
15	VccR	Receiver Power	
16	VccT	Transmitter Power	
17	VeeT	Transmitter Ground	
18	TD+	Transmit Data Input	6
19	TD-	Inv. Transmit Data Input	6
20	VeeT	Transmitter Ground	

Notes:

1. TX Fault is an open collector output, which should be pulled up with a 4.7k~10kΩ resistor on the host board to a voltage between 2.0V and Vcc+0.3V. Logic 0 indicates normal operation; logic 1 indicates a laser fault of some kind. In the low state, the output will be pulled to less than 0.8V.
2. TX Disable is an input that is used to shut down the transmitter optical output. It is pulled up within the module with a 4.7k~10kΩ resistor. Its states are: Low (0~0.8V): Transmitter on
   (>0.8V, <2.0V): Undefined
   High (2.0~3.3V): Transmitter Disabled
   Open: Transmitter Disabled
3. MOD-DEF 0,1,2 are the module definition pins. They should be pulled up with a 4.7k~10kΩ resistor on
   the host board. The pull-up voltage shall be VccT or VccR.
   MOD-DEF 0 is grounded by the module to indicate that the module is present
   MOD-DEF 1 is the clock line of two wire serial interface for serial ID MOD-DEF 2 is the data line of two wire serial interface for serial ID
4. LOS is an open collector output, which should be pulled up with a 4.7k~10kΩ resistor on the host board to a voltage between 2.0V and Vcc+0.3V. Logic 0 indicates normal operation; logic 1 indicates loss of signal. In the low state, the output will be pulled to less than 0.8V.
5. These are the differential receiver output. They are internally AC-coupled 100Ω differential lines which should be terminated with 100Ω (differential) at the user SERDES.
6. These are the differential transmitter inputs. They are AC-coupled, differential lines with 100Ω differential termination inside the module.

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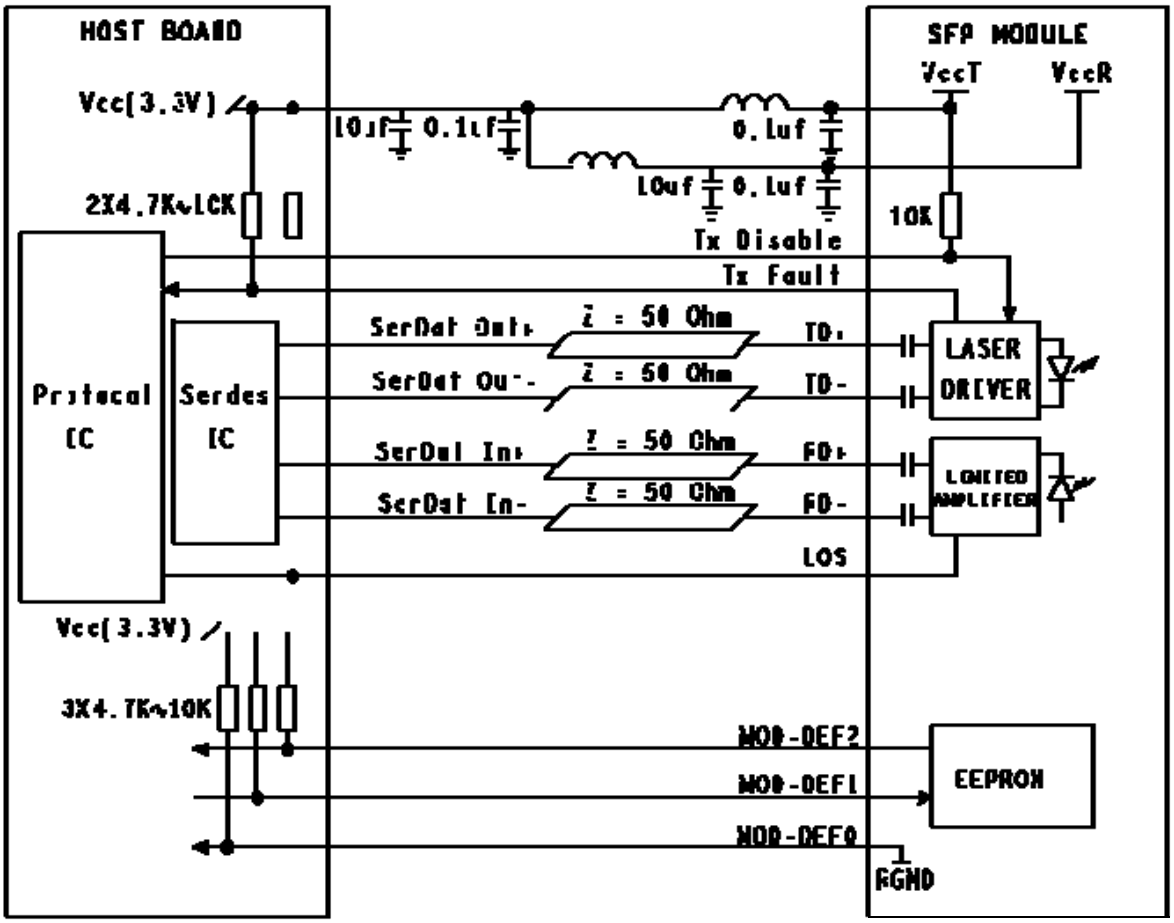
Recommended Application Circuit



Outline drawing(mm)