

Product Specification

1.25Gbps BIDI 20Km SFP Transceiver

SFP-1G-20KM-A SFP-1G-20KM-B

Product Features

- Up to 1.25Gbps data links
- 20Km with 9/125μm SMF
- 1310nm FP /1550nm DFB laser
- Simplex LC Connector
- Hot-pluggable SFP footprint
- Single 3. 3V power supply
- Operating temperature: - 0°C to 70°C
- RoHS
- P/N end by "D" with DDM support

Applications

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

PART NUMBER	WAVE LENGTH TX/RX	DISTANCE	LASER	TEMPERATURE
SFP-1G-20KM-A	Tx1310/Rx15 50nm	20Km	FP+PIN	COM 0~70°C
SFP-1G-20KM-B	Tx1550/Rx13 10nm	20Km	DFB+PIN	COM 0~70°C

1. Product Description

The SFP-1G-20KM-A and SFP-1G-20KM-B 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

This 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. Recommended Operating Conditions

Parameter		Symbol	Min.	Typical	Max.	Unit
SFP-1G-20KM-A	Operating Case Temperature	T _c	0		70	°C
SFP-1G-20KM-B			0		70	
Power Supply Voltage		V _{cc}	3.15	3.3	3.45	V
Power Supply Current		I _{cc}			300	mA
Data Rate				1.25		GBps

4. Optical Characteristics

SFP-1G-20KM-A

Parameter	Symbol	Min.	Typical	Max.	Unit
Transmitter					
Centre Wavelength	λ_c	1270	1310	1370	nm
Spectral Width (RMS)	σ			4	nm
Average Output Power	P _{out}	-9		-3	dBm
Extinction Ratio	EX	9			dB
Optical Rise/Fall Time	tr/tf			2	ns
Receiver					
Centre Wavelength	λ_c	1510	1550	1590	nm
Receiver Sensitivity	P _{IN}			-22	dBm
Receiver Overload	P _{MAX}	1			dBm
LOS De-Assert	LOS _D			-30	dBm
LOS Assert	LOS _A	-35			dBm
LOS Hysteresis		0.5		4.5	dB

SFP-1G-20KM-B

Parameter	Symbol	Min.	Typical	Max.	Unit
Transmitter					

Centre Wavelength	λ_c	1530	1550	1570	nm
Spectral Width (RMS)	σ			4	nm
Average Output Power	P_{out}	-9		-3	dBm
Extinction Ratio	EX	9			dB
Optical Rise/Fall Time	tr/tf			2	ns
Receiver					
Centre Wavelength	λ_c	1270	1310	1350	nm
Receiver Sensitivity	P_{IN}			-22	dBm
Receiver Overload	P_{MAX}	1			dBm
LOS De-Assert	LOS_D			-30	dBm
LOS Assert	LOS_A	-35			dBm
LOS Hysteresis		0.5		4.5	dB

5. Electrical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Unit
Transmitter					
Input Differential Impedance	Z_{in}	90	100	110	Ω
Data Input Swing Differential	V_{in}	500		2400	mV
Tx-Dis Disable	V_d	2.0		V_{cc}	V
Tx-Dis Enable	V_{en}	0		0.8	V
TX-Fault (Fault)		2.0		$V_{cc}+0.3$	V
TX-Fault (Normal)		0		0.8	V
Receiver					
Data Output Swing Differential	V_{out}	370		2000	mV
Rx-Los Fault	V_{lf}	2.0		$V_{cc}+0.3$	V
Rx-Los Normal	V_{ln}	0		$0+0.8$	V

6. Pin Descriptions

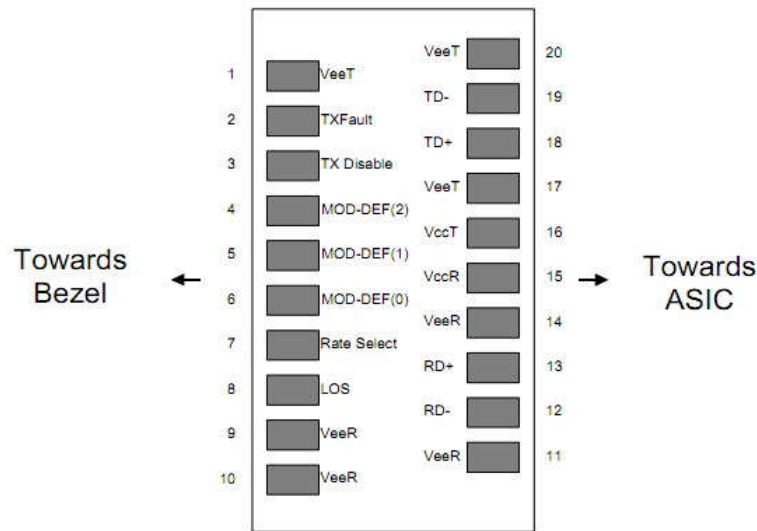


Diagram of Host Board Connector Block Pin Numbers and Names

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:

6.1 Circuit ground is internally isolated from chassis ground.

6.2 Laser output disabled on TDIS >2.0V or open, enabled on TDIS <0.8V.

6.3 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.

6.4 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)

EEPROM Serial ID Memory Contents

Add.	Size (Bytes)	Name of Field	Hex	Description
BASE ID FIELDS				
0	1	Identifier	03	SFP
1	1	Ext. Identifier	04	SFP function is defined by serial ID only
2	1	Connector	07	LC
3-10	8	Transceiver	00 10 02 00 00 00 00 00	Transmitter Code
11	1	Encoding	01	GE
12	1	BR, Nominal	0D	1300M bps
13	1	Reserved	00	
14	1	Length (9um) km	14	20Km
15	1	Length (9um) km	C8	



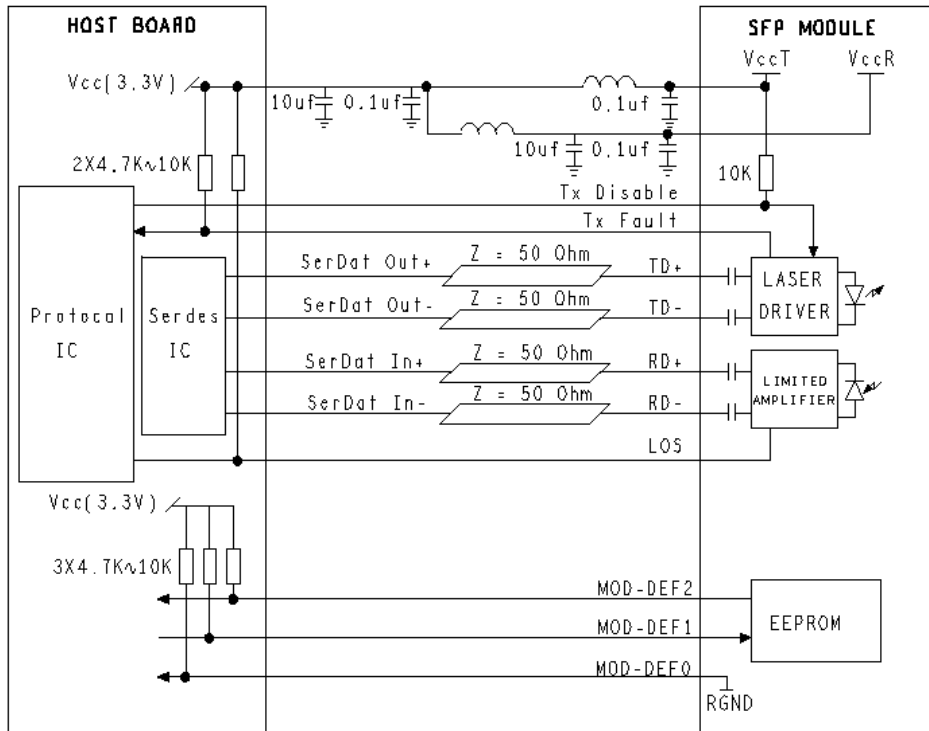
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16	1	OM2 Length (50um) m	00	
17	1	OM1 Length (62.5um) m	00	
18	1	Length (Copper)	00	
19	1	OM3 Length (50um) m	00	
20-35	16	Vendor Name	48 41 4E 44 41 52 20 20 20 20 20 20 20 20 20 20	HANDAR * OEM available
36	1	Reserved	00	
37-39	3	Vendor OUI	00 00 00	* OEM available
40-55	16	Vendor PN	xx xx xx xx xx xx xx xx xx xx xx xx xx xx xx xx	* OEM available
56-59	4	Vendor Rev	30 31 20 20	01
60-61	2	Wavelength	05 IE/ 06 0E/05 D2	1310nm/ 1550nm/1490nm
62	1	Reserved	00	
63	1	CC_BASE	xx	Check Code for Base ID Field
EXTENDED ID FIELDS				
64-65	2	Options	00 1A	Loss/ TX_Fault/ TX_Disable
66	1	BR, Max	00	
67	1	BR, Min	00	
68-83	16	Vendor SN	43 4C xx xx xx xx xx xx xx xx xx 20 20 20 20 20	SN of Transceiver (ASCII). Exp. "XXXXXXXXXX"
84-91	8	Date Code	xx xx xx xx xx xx 20 20	YY/MM/DD Exp. 160727
92	1	Diagnostic Monitoring	6B	
93	1	Enhanced Options	90	
94	1	SFF_8472 Compliance	01	
95	1	CC_EXT	checksum	Checksum for Extended ID
VENDOR SPECIFIC ID FIELDS				
96-127	32	Vendor Specific	20 20 20.....	Depends on Customer Info
128-255	128	Reserved	FF FF FF.....	Depends on Customer Info

8.1 DDM THRESHOLD

/D	Low Alarm	Low Warn	High Warn	High Alarm
Temp	-10°C	-5°C	75°C	80°C
Voltage	2.97V	3.13V	3.47V	3.63V
Tx Bias	5mA	10mA	60mA	65mA
Tx Power	-11dBm	-10dBm	-2dBm	-1dBm
Rx Power	-28.86dBm	-26.99dBm	-3dBm	-2dBm

9. Recommend Circuit



10. Mechanical Specifications

