

SFF 2*10 EPON 1000BASE-PX20+ ONU Transceiver

HOLS-F342033A-xx

Product Features

- BiDi SFF Single Mode Transceiver
- SC/APC Pigtail
- Compliant with SFF MSA-2000 And SFF-8472 V10.3
- Single +3.3 Power Supply
- LVPECL Differential Inputs and Outputs And LVTTTL Signal Detection Output
- Complies with Telcordia (Bellcore) GR-468-CORE
- 1310 nm Burst Mode Transmitter and 1490 nm Continuous Mode Receiver
- Typical data rate 1.25 Gbps
- Maximal reach 20km
- Comply with 1000Base-PX20+



Product Applications

- GEPON ONU For P2MP Application

General

The Honlus HOLS- F342033A transceiver with SFF 2*10 package supports data rate of typical 1.25 Gbps for GEPON ONU application up to 20km transmission distance, it's designed meeting with 802.3 ah and China Telecom 1000BASE-PX20+ specifications. SC pigtail is for optical interface.

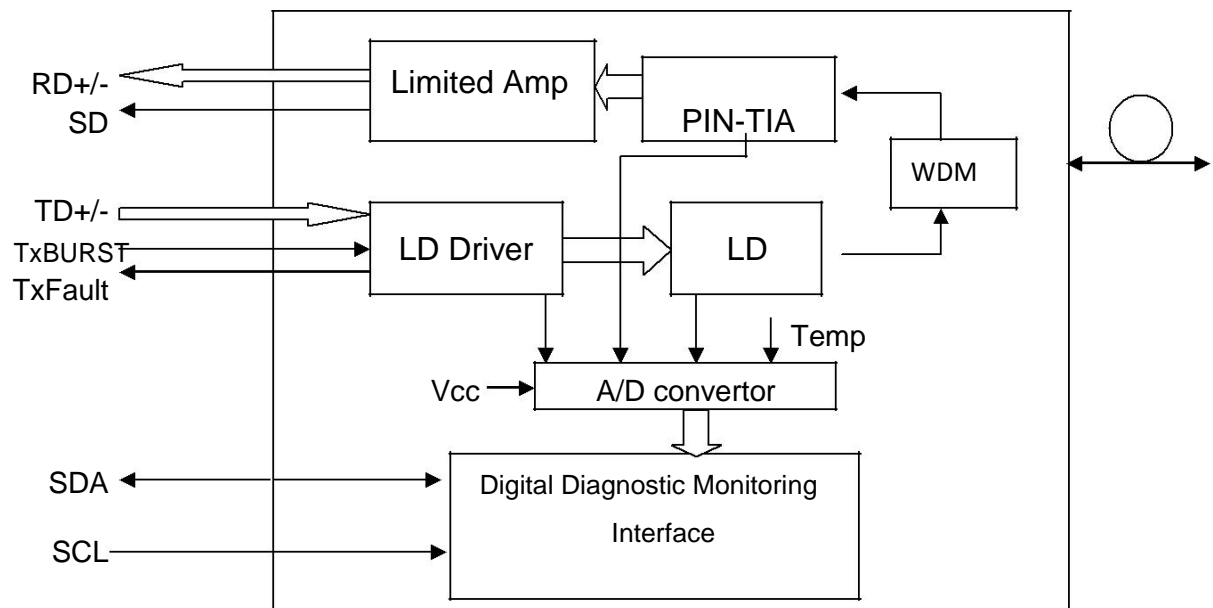


Fig 1 Transceiver Block Diagram

The module provides digital diagnostic information of its operating conditions and status, including transmitting power, laser bias, receiver input optical power, module temperature, and supply voltage. Calibration and alarm/warning threshold data are written and stored in internal memory (EEPROM). The memory map is compatible with SFF-8472, as shown in Fig. 2. The diagnostic data are raw A/D values and must be converted to real world units using calibration constants stored in EEPROM locations 56 – 95 in A2h.

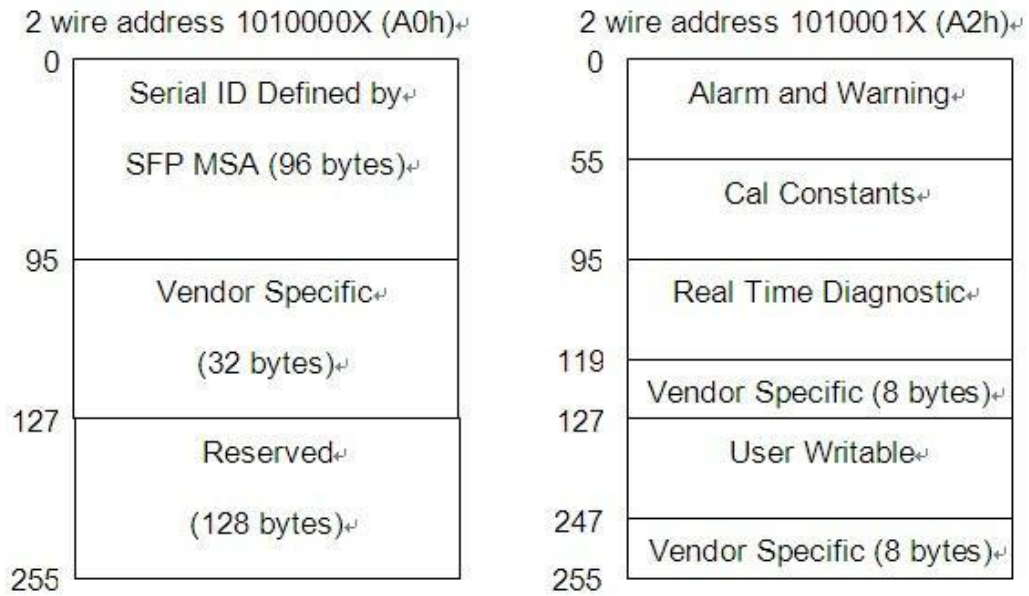


Fig 2 EEPROM Information

Performance Specifications

Absolute Maximum Ratings					
Parameter	Symbol	Min.	Max.	Unit	Note
Storage Temperature	Tst	-40	+85	°C	
Operating Case Temperature	Tc	0	70	°C	-
Input Voltage	-	GND	Vcc	V	
Power Supply Voltage	Vcc-Vee	-0.5	+3.6	V	

Recommended Operating Conditions						
Parameter	Symbol	Min.	Typical	Max.	Unit	Note
Power Supply Voltage	Vcc	3.135	3.3	3.465	V	-
Operating Case Temperature	Tc	0	-	70	°C	-

Data Rate	DR	-	1.25	-	Gbps	-	
Total Supply Current	-	-	200	300	mA	-	
Damage Threshold For Receiver	-	-	-	4	dBm	-	
Optical Specification							
Transmitter							
Parameter		Symbol	Min.	Typ.	Max.	Unit	Note
Central Wavelength		λ	1260	1310	1360	nm	
Spectral Width (RMS)	1260nm	$\Delta\lambda$	-	-	0.72	nm	
	1270nm		-	-	0.86		
	1280nm		-	-	1.07		
	1290nm		-	-	1.4		
	1300nm		-	-	2.0		
	1304nm		-	-	2.5		
	1305nm		-	-	2.55		
	1308nm 1317nm		-	-	3.0		
	1320nm		-	-	2.53		
	1321nm		-	-	2.41		
	1330nm		-	-	1.71		
	1340nm		-	-	1.29		
	1350nm		-	-	1.05		
1360nm	-	-	0.88				
Average Optical Output Power		Po	0	-	4	dBm	
Extinction Ratio		Er	9	-	-	dB	-
Tx Burst ON Time		Ton	-	-	50	ns	-
Tx Burst OFF Time		Toff	-	-	50	ns	-
Power on first burst		-			900	ns	
Rise/Fall Time		Tr/Tf	-	-	260	ps	-
Transmitter Total Jitter		Jp-p	-	-	280	ps	
Average Launched Power of Off Transmitter		Poff	-	-	-45	dBm	-
Output Eye	Compliant with IEEE 802.3ah-2004						
Receiver							
Parameter		Symbol	Min.	Typ.	Max.	Unit	Note
Operate Wavelength		-	1480	-	1500	nm	-
Sensitivity		Pr	-	-	-27	dBm	1
Saturation		Ps	-3	-	-	dBm	1

SD De-assert Level	-	-44	-	-	dBm	-
SD Assert Level	-	-	-	-27	dBm	-
SD Hysteresis	-	0.5	-	5	dB	-
Optical Reflectance	-	-	-	-12	dB	-

Note:

1. Minimum Sensitivity and saturation levels for a 2^7-1 PRBS. BER $\leq 10^{-12}$, 1.25Gpbs, ER=9dB

Electrical Specification						
Transmitter						
Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Differential Input Voltage	V _{IN-DIF}	300	-	1600	mV	-
Tx Burst Input Voltage-Low	V _{IL}	0	-	0.8	V	-
Tx Burst Input Voltage-High	V _{IH}	2.0	-	V _{cc}	V	-
Receiver						
Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Data Output Voltage Differential	V _{OUT-DIF}	300	-	1600	V	-
Signal Detect Output Voltage-Low	V _{SD-L}	0	-	0.8	V	-
Signal Detect Output Voltage-High	V _{SD-H}	2.0	-	V _{cc}	V	-

EEPROM Information

EEPROM Serial ID Memory Contents (A0h)

Addr. (decimal)	Field Size (Bytes)	Name of Field	Content (Hex)	Content (Decimal)	Description
0	1	Identifier	02	2	SFF
1	1	Ext. Identifier	04	4	MOD4
2	1	Connector	0B	11	Optical Pigtail
3-10	8	Transceiver	00 00 00 80 00 00 00 00	00 00 00 80 00 00 00 00	Transmitter Code
11	1	Encoding	01	1	8B10B
12	1	BR, nominal	0C	12	1.25Gbps
13	1	Reserved	00	0	-
14	1	Length (9um)-km	14	20	20km
15	1	Length (9um)	C8	200	20km
16	1	Length (50um)	00	0	-
17	1	Length (62.5um)	00	0	-

18	1	Length (copper)	00	0	-
19	1	Reserved	00	0	-
20-35	16	Vendor name			'Honlus' (ASCII)
36	1	Reserved	00	0	-
37-39	3	Vendor OUI	00 00 00	0 0 0	-
40-55	16	Vendor PN			'HOLS-F342033A' (ASCII)
56-59	4	Vendor rev	30 30 30 20	48 48 48 32	"000" (ASCII)
60-61	2	Wavelength	05 1E	05 30	1310
62	1	Reserved	00	0	-
63	1	CC BASE	-	-	Check sum of bytes 0 - 62
64	1	Reserved	00	0	
65	1	Options	1A	26	
66	1	BR, max	00	0	-
67	1	BR, min	00	0	-
68-83	16	Vendor SN	-	-	ASCII
84-91	8	Vendor date	-	-	Year (2 bytes), Month (2 bytes), Day (2 bytes)
92	1	DDM Type	58/68	88/104	External/Internal Calibrated
93	1	Enhanced Option	B0	176	LOS, TX_FAULT and Alarm/warning flags implemented
94	1	SFF-8472 Compliance	03	3	SFF-8472 Rev 10.3
95	1	CC EXT	-	-	Check sum of bytes 64 - 94
96-255	160	Vendor spec			

Alarm and Warning Thresholds (Serial ID A2H)

Parameter(Unit)	Temp (°C)	Voltage (V)	Bias (mA)	TX Power (dBm)	RX Power (dBm)
High Alarm	100	3.6	90	4	-3
Low Alarm	-10	3	0	0	-27
High Warning	95	3.5	70	3	-4
Low Warning	0	3.1	0	1	-26

Digital Diagnostic Monitor Accuracy

Room Temperature

Parameter	Unit	Accuracy	Range	Calibration
Tx Optical Power	dB	±2	Po: -Pomin~Pomax dBm, Recommended operation conditions	External/Internal
Rx Optical Power	dB	±2	Pi: Ps~Pr dBm, Recommended operation conditions	External/Internal
Bias Current	%	±10	Id: 1-100mA, Recommended operating conditions	External/Internal
Power Supply Voltage	%	±3	Recommended operating conditions	External/Internal
Internal Temperature	°C	±3	Recommended operating conditions	External/Internal

High(70°C) and Low(0°C)Temperature

Parameter	Unit	Accuracy	Range	Calibration
Tx Optical Power	dB	±3	Po: -Pomin~Pomax dBm, Recommended operation conditions	External/Internal
Rx Optical Power	dB	±3	Pi: Ps~Pr dBm, Recommended operation conditions	External/Internal
Bias Current	%	±10	Id: 1-100mA, Recommended operating conditions	External/Internal

Power Supply Voltage	%	±3	Recommended operating conditions	External/Internal
Internal Temperature	°C	±3	Recommended operating conditions	External/Internal

Note: Digital Diagnostic Monitor temperature is case temperature, Transmitter in Continuous work status, transceiver's temperature is stable.

PIN Diagram

PIN	FUNCTION	PIN	FUNCTION
1	NC	11	VCCT
2	NC	12	VEET
3	NC	13	TX BURST
4	VEER	14	TX_DATA+
5	NC	15	TX_DATA-
6	VEER	16	VEET
7	VCCR	17	SCL
8	SD	18	SDA
9	Rx_DATA-	19	TX FAULT
10	Rx_DATA+	20	TX SD



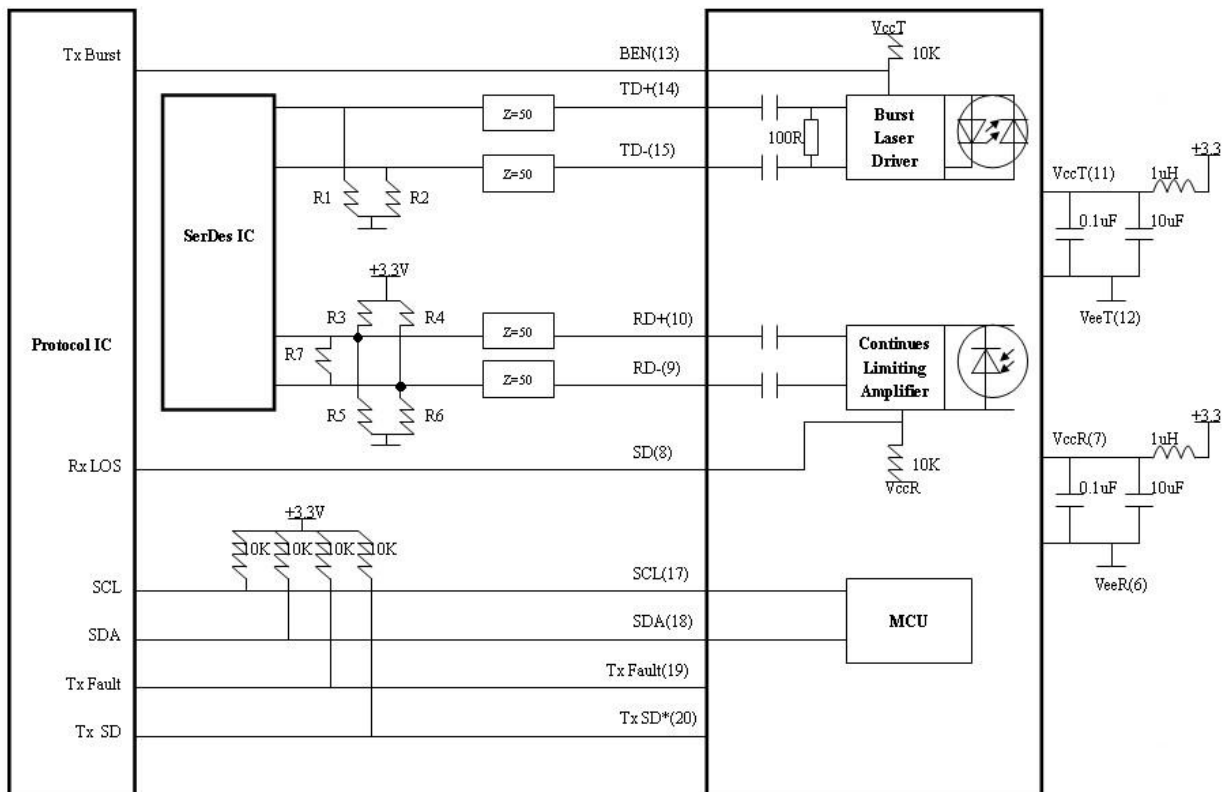
TOP VIEW

PIN Description

Pin No.	Name	Description
1	NC	
2	NC	
3	NC	
4	VEER	Receiver Ground
5	NC	

6	VEER	Receiver Ground
7	VCCR	Receiver Power Supply
8	SD	Signal Detect Output. H--Normal Operation; L--Los Of Signal
9	Rx_DATA-	Receiver Data Output Negative
10	Rx_DATA+	Receiver Data Output Positive
11	VCCT	Transmitter Power Supply
12	VEET	Transmitter Ground
13	TX_BURST	Transmitter Burst Mode Control. Burst Logic '0' Tx on
14	TX_DATA+	Transmitter Data Input Positive
15	TX_DATA-	Transmitter Data Input Negative
16	VEET	Transmitter Ground
17	SCL	I2C Serial Clock
18	SDA	I2C Serial Data
19	TX FAULT	Transmitter Fault
20	Tx SD	Tx Transmitter State Indication, assert When Tx ON .

Recommended Circuit



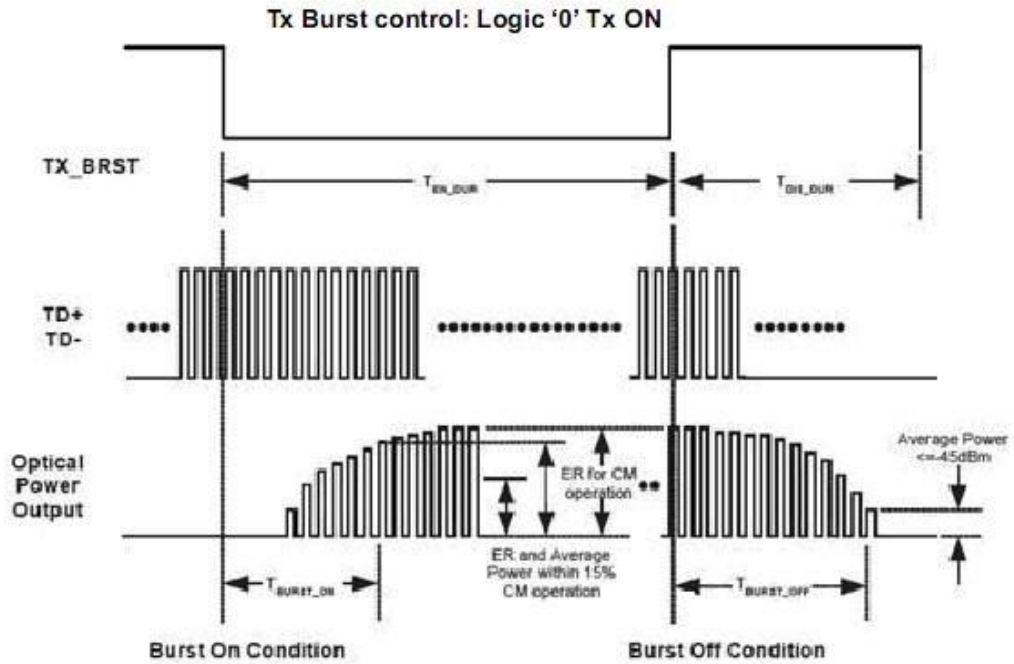
Input stage in SerDes IC with internal bias to Vcc-1.3V

R3=R4=R5=R6=N.C, R7=100Ω

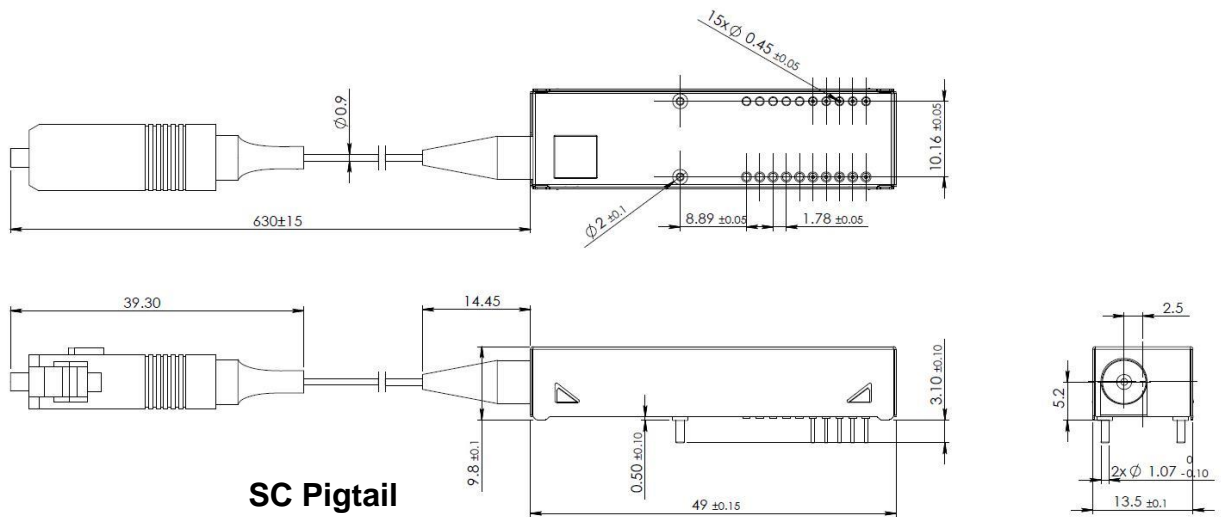
Input stage in SerDes IC without internal bias to Vcc-1.3V

R3=R4=82Ω,R5=R6=130Ω,R7=N.C

Burst Mode Sequence Definition



Package Diagram



SC Pigtail

Unit: mm

Order Information

Part Number	Product Description
HOLS-F342033A-CL	2X10 SFF, Tx1310nm, Rx1490nm,1.25Gbps/1.25Gbps, 20km, 0°C ~ +70°C, SC/APC pigtail. Tx enable at low voltage;
HOLS-F342033A-IL	2X10 SFF, Tx1310nm, Rx1490nm,1.25Gbps/1.25Gbps, 20km, -40 °C ~+85 °C, SC/APC Pigtail. Tx enable at low voltage;
HOLS-F342033A-CH	2X10 SFF, Tx1310nm, Rx1490nm,1.25Gbps/1.25Gbps, 20km, 0°C ~ +70°C, SC/APC pigtail. Tx enable at high voltage;
HOLS-F342033A-IH	2X10 SFF, Tx1310nm, Rx1490nm,1.25Gbps/1.25Gbps, 20km, -40 °C ~+85 °C, SC/APC Pigtail. Tx enable at high voltage;

When the ambient is reaching 85C max as declared, the internal case is hot surface please don't touch.

