

## SFF 2\*10 GEPON 1000BASE-PX20+ ONU Transceiver

HOLS-F342033S-xx

### Product Features

- BiDi SFF Single Mode Transceiver
- SC Receptacle
- 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+

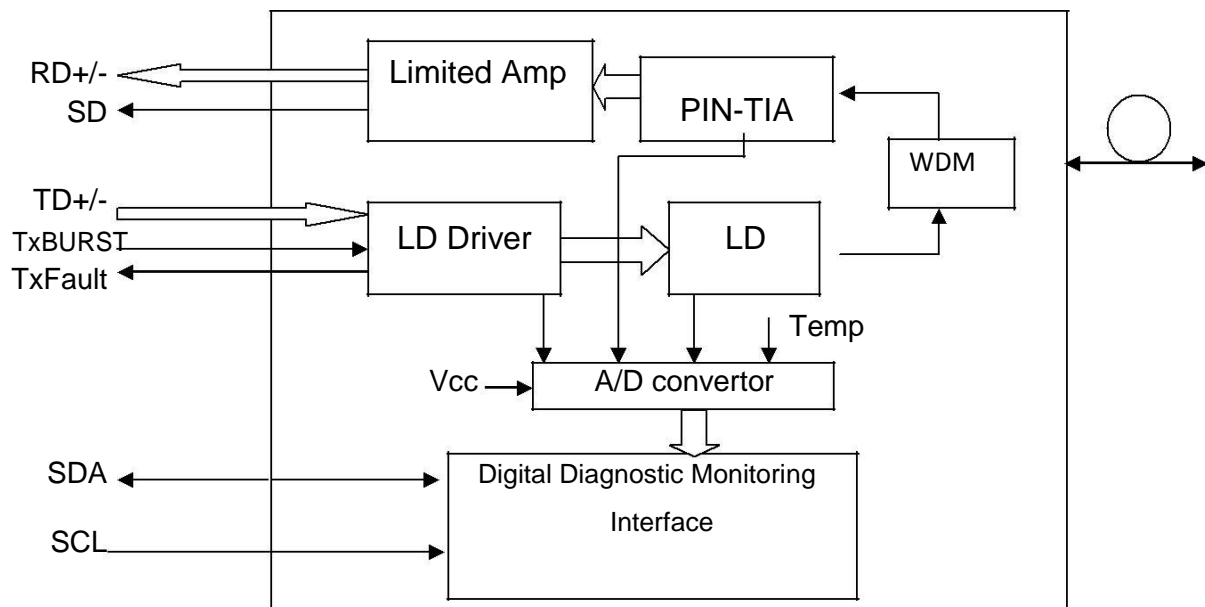


### Product Applications

- GEPON ONU For P2MP Application

### General

The Honlus HOLS- F342033S 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 receptacle 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.

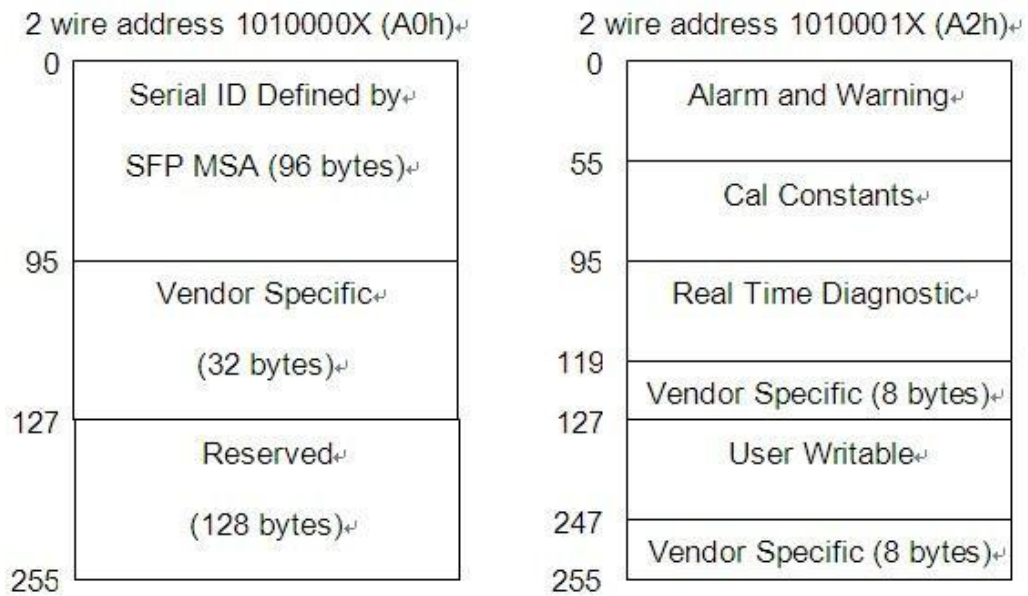


Fig 2 EEPROM Information

## 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
Optical Central Wavelength		$\lambda$	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						
<b>Transmitter</b>						
Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Differential Input Voltage	V <sub>IN-DIF</sub>	300	-	1600	mV	-
Tx Burst Input Voltage-Low	V <sub>IL</sub>	0	-	0.8	V	-
Tx Burst Input Voltage-High	V <sub>IH</sub>	2.0	-	V <sub>cc</sub>	V	-
<b>Receiver</b>						
Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Data Output Voltage Differential	V <sub>OUT-DIF</sub>	300	-	1600	V	-
Signal Detect Output Voltage-Low	V <sub>SD-L</sub>	0	-	0.8	V	-
Signal Detect Output Voltage-High	V <sub>SD-H</sub>	2.0	-	V <sub>cc</sub>	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	01	01	Optical Receptacle
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	-
40-5	16	Vendor PN			'HOLS-F342033S- xx' (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	R <sub>x</sub> _DATA-	19	TX_FAULT
10	R <sub>x</sub> _DATA+	20	TX_SD



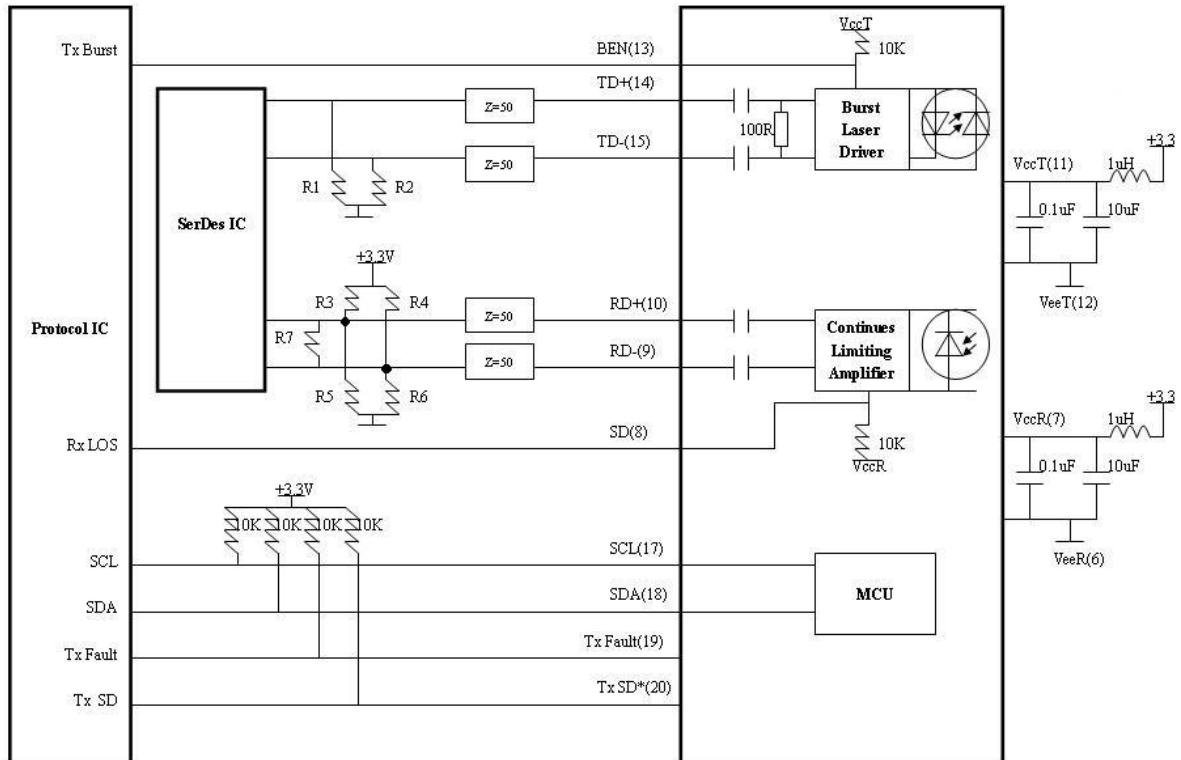
TOP VIEW

## 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**



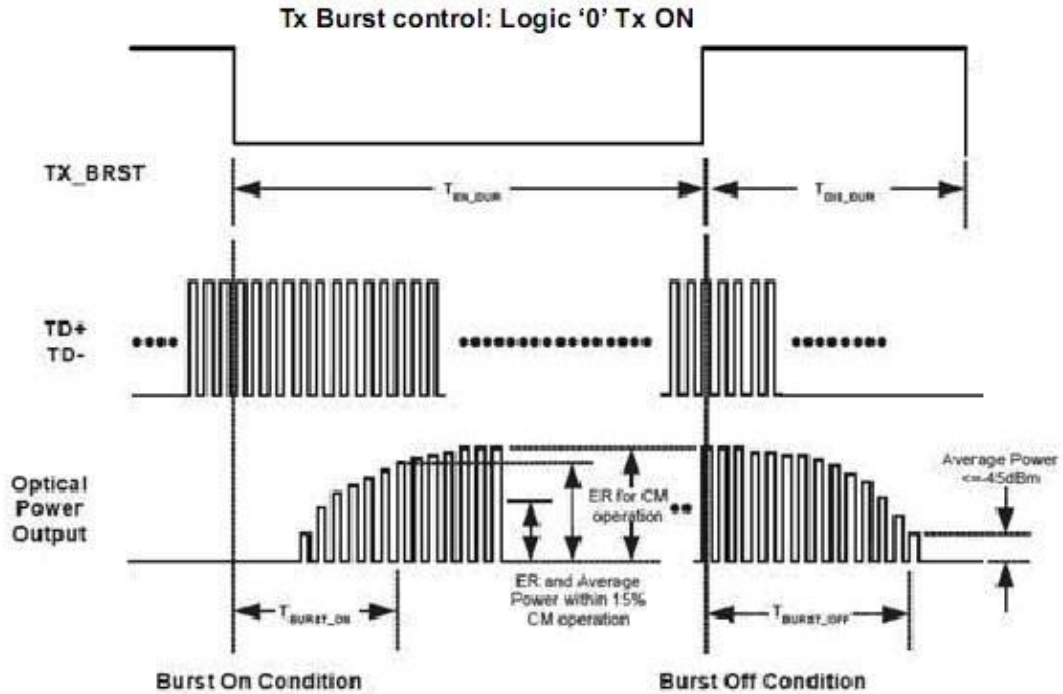
Input stage in SerDes IC with internal bias to Vcc-1.3V

R3=R4=R5=R6=N.C, R7=100Ω

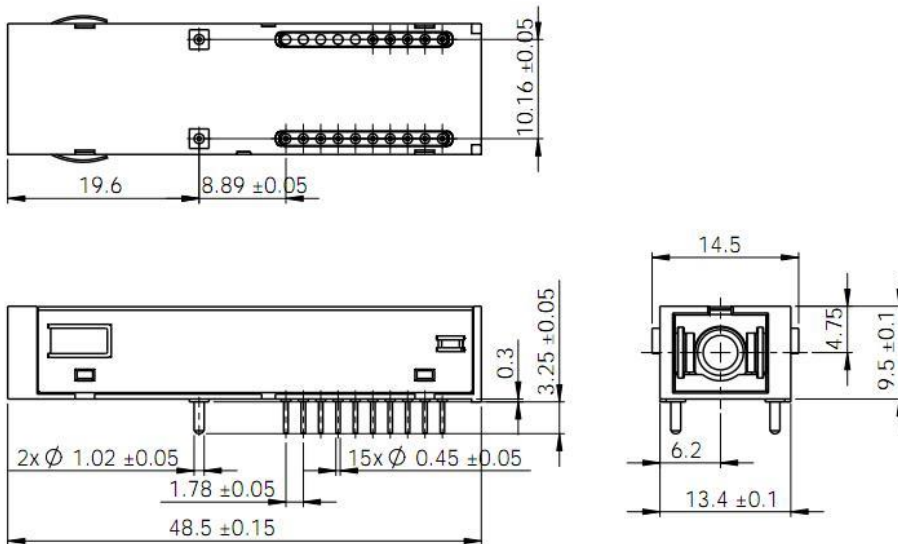
Input stage in SerDes IC without internal bias to Vcc-1.3V

R3=R4=82Ω,R5=R6=130Ω,R7=N.C

**Burst Mode Sequence Definition**



**Package Diagram**



**SC Receptacle**

Unit: mm

## Order Information

Part Number	Product Description
HOLS-F342033S-CL	2X10 SFF, Tx1310nm, Rx1490nm,1.25Gbps/1.25Gbps, 20km, 0°C ~ +70°C, SC/PC Receptacle, Tx enable at low voltage;
HOLS-F342033S-IL	2X10 SFF, Tx1310nm, Rx1490nm,1.25Gbps/1.25Gbps, 20km, -40 °C ~+85 °C, SC/PC Receptacle, Tx enable at low voltage;
HOLS-F342033S-CH	2X10 SFF, Tx1310nm, Rx1490nm,1.25Gbps/1.25Gbps, 20km, 0°C ~ +70°C, SC/PC Receptacle, Tx enable at high voltage;
HOLS-F342033S-IH	2X10 SFF, Tx1310nm, Rx1490nm,1.25Gbps/1.25Gbps, 20km, -40 °C ~+85 °C, SC/PC Receptacle, Tx enable at high voltage;

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

