

EPON

EEP3411-3SCDP2

SFF EPON 1000BASE-PX20+ ONU Transceiver

- 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+



Applications

- GEPON ONU For P2MP Application

Description

The 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 for optical interface.

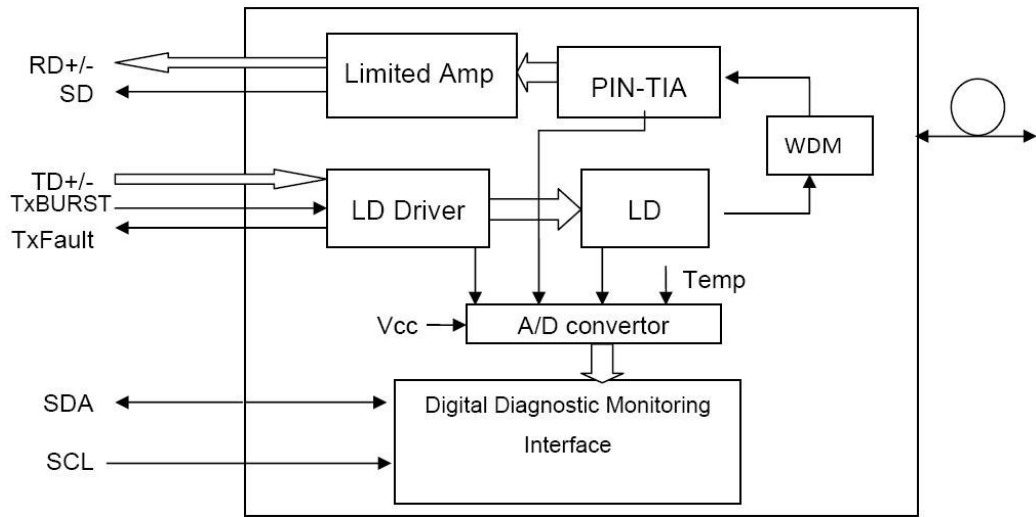


Fig 1 Transceiver Block Diagram

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.

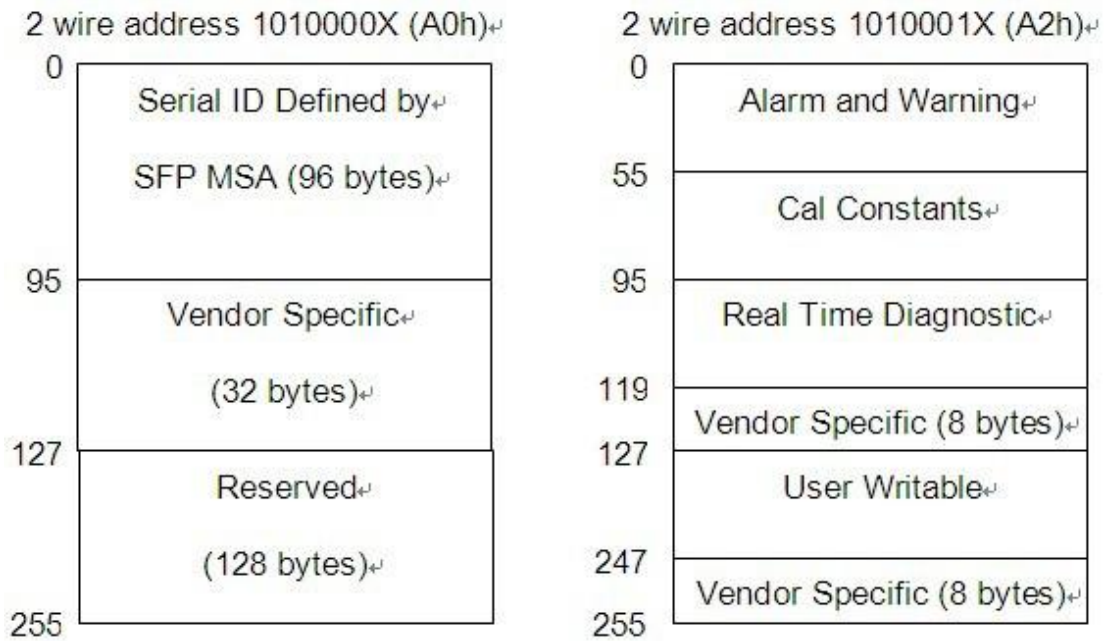


Fig 2 EEPROM Information

Performance Specifications

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

Recommended Operating Conditions						
Parameter	Symbol	Min.	Typi cal	Max.	Unit	Note
Power Supply Voltage	Vcc	3.135	3.3	3.465	V	-
Operating Case Temperature	Tc	0	-	70	°C	
		-40	-	85		
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		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		-	-	3.0		
	1317nm		-	-	2.53		
	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	-	
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	-	
Optical Isolation from the external source	ISO1	38	-	-	dB	$\lambda=1550\text{nm}$	
	ISO2	35	-	-	dB	$\lambda=1650\text{nm}$	

Note: Minimum Sensitivity and saturation levels for a 2⁷-1 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	01	01	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	5A 4B 54 45 4C 20 20 20 20 20 20 20 20 20 20 20	90 75 84 69 76 32 32 32 32 32 32 32 32 32 32 32	(ASCII)
36	1	Reserved	00	0	-
37-39	3	Vendor OUI	00 00 00	0 0 0	-
40-55	16	Vendor PN	5A 50 34 33 34 32 30 33 33 2D 48 xx 53 xx 20 20 20	90 80 52 51 52 50 48 51 51 45 72 xx 83 xx 32 32 32	(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)	C Temp (°C)	I Temp (°C)	Voltage (V)	Bias (mA)	TX Power (dBm)	RX Power (dBm)
High Alarm	100	100	3.6	90	4	-3
Low Alarm	-10	-40	3	0	0	-27
High Warning	95	95	3.5	70	3	-4
Low Warning	0	-30	3.1	0	1	-26

Digital Diagnostic Monitor Accuracy

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

PIN Diagram

PIN	FUNCTION	PIN	FUNCTION
1	NC	11	VCCT
2	NC	12	VEER
3	NC	13	Tx_Burst
4	NC	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(OPT)

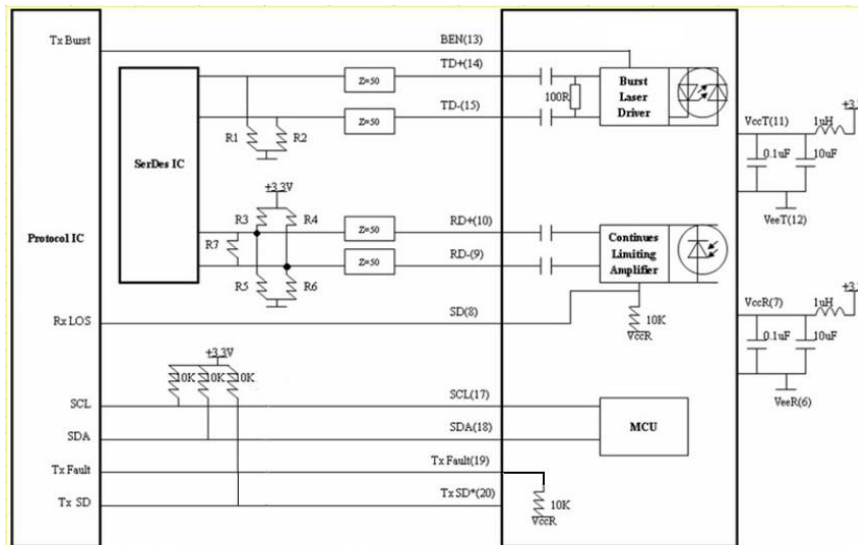


TOP VIEW

PIN Description

Pin No.	Name	Description
1	NC	
2	NC	
3	NC	
4	NC	
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 '1' or Logic '0' Tx on pleaser refer to order information
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 .Optional

Recommended Circuit



Note:

1. If you use the no Tx_SD function, please don't connect PIN 20 in your circuit.

2. Tx: AC coupled internally.

R1=R2=150Ω.

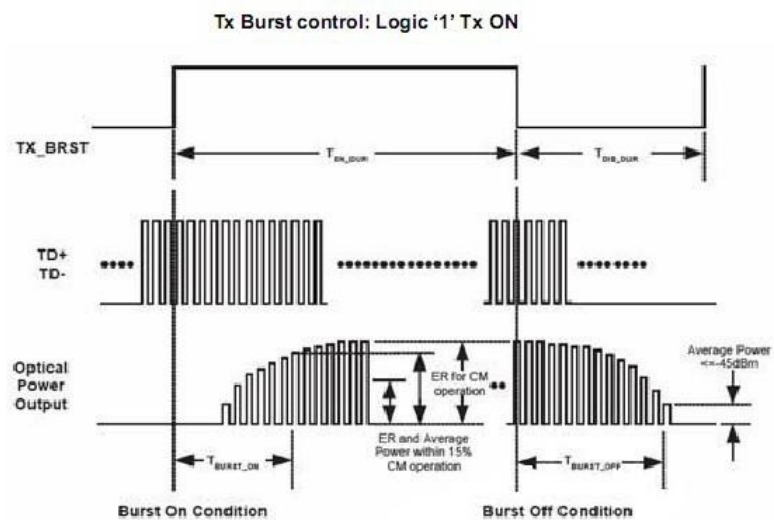
Rx: AC coupled internally.

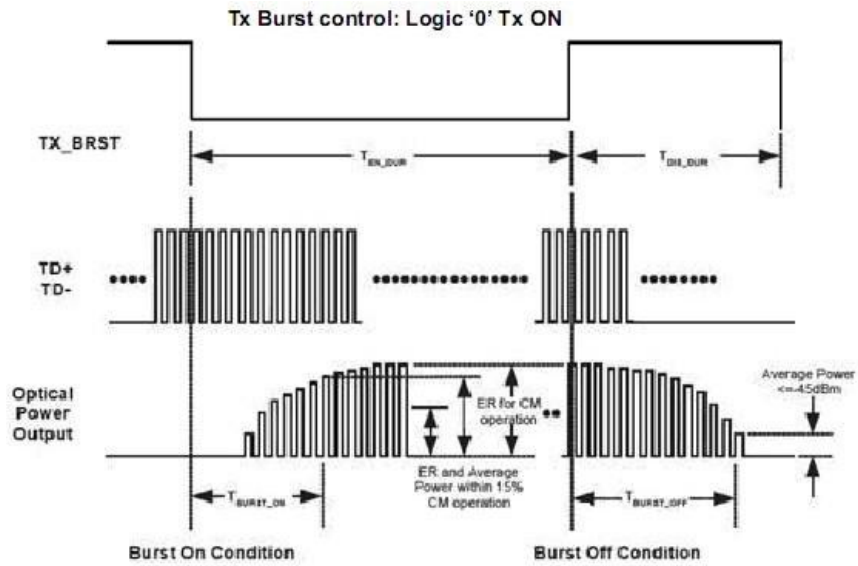
Input stage in SerDes IC with internal bias to Vcc-1.3V

R3=R4=R5=R6=N.C, R7=100Ω

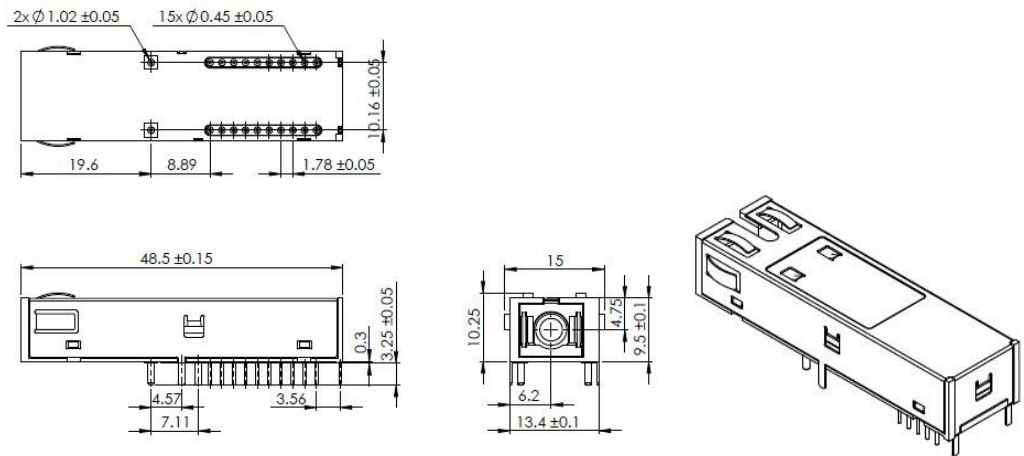
Input stage in SerDes IC without internal bias to Vcc-1.3V R3=R4=82Ω,R5=R6=130Ω,R7=N.C

Burst Mode Sequence Definition





Package Diagram



Unit: mm

Compatibility Test

In order to ensure the product compatibility, our products will be tested on the switch before shipment. Our modules can be compatible with many mainstream brand switches, such as Cisco, Juniper, Extreme, Brocade, IBM, H3C, HP, Huawei, D-Link, Mikrotik, ZTE, TP-Link...

Our test equipment: VOLKTEK MEN-4110, HP 2530-8G, CRS226-24G-25+RM, Catalyst 2960G Series, Catalyst 3850 XS 10G SFP+, Catalyst 3750-E Series, HUAWEI S5700Series, H3C S3100V2 Series, Juniper-EX4200, etc.



Cisco Catalyst 3850



HUAWEI S5700



H3C S3100V2



HP J9264AR



Juniper EX 4200



Alcatel 6850E-U24X



Mikrotik CR5226-24G-25+RM



Cisco Catalyst 2960G



Volktek MEN-4110

Product Production Process

Quality Assurance

Continuous introduction of new equipment, produced by strict standards, strict quality inspection, to guarantee the high quality standard of each product.



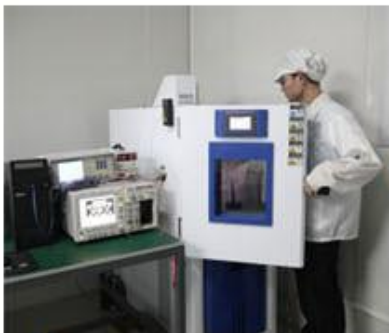
**Standardized
Production Line**



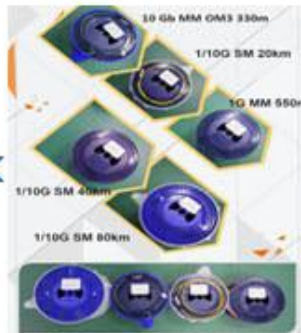
**Professional
Welding**



Assembling



Aging Testing



Distance Testing



Cleaning end face



Product Initial Test



Switch Testing



Product Final Test

Packaging

ETU-Link provides two kinds of packaging, 10pcs/Tray and individual package.



Company: ETU-Link Technology Co., LTD

Address: 4th Floor, C Building, JinBoLong Industrial Park, QingQuan Road, LongHua District, Shenzhen city, GuangDong

Tel: +86-755 2328 4603

Addresses and phone number also have been listed at www.etulinktechnology.com.

Please e-mail us at sales@etulinktechnology.com or call us for assistance.