

EGP3412-3SCD2B2

SFF 2*10 Bi-Directional GPON ONU Transceiver

Product Features

- BiDi SFF Single Mode Transceiver
- SC/PC or SC/APC pigtail is optional
- Comply with ITU-T G.984.5 Class B+
- Compliant with SFF MSA-2000 And SFF-8472 V10.3
- Single +3.3 Power Supply
- LVPECL Differential Data Inputs And CML Data Outputs
- LVTTTL Signal Detection Output And LVTTTL Burst Control
- Complies with Telecordia (Bellcore) GR-468-CORE
- 1310 nm Burst Mode Transmitter and 1490 nm Continuous Mode Receiver
- 1.244 Gbps DFB Laser Diode, 2.488 Gbps APD-TIA Receiver
- Maximal reach 20km

Product Applications

- GPON ONU For P2MP Application

General

The transceiver with SFF 2*10 package supports typically Tx 1.244Gbps and Rx 2.488Gbps Asymmetric Data Rate for GPON ONU application up to 20km transmission distance, it's designed meeting with ITU-T G.984.5 Class B+. SC/PC pigtail or SC/APC is for optical interface.

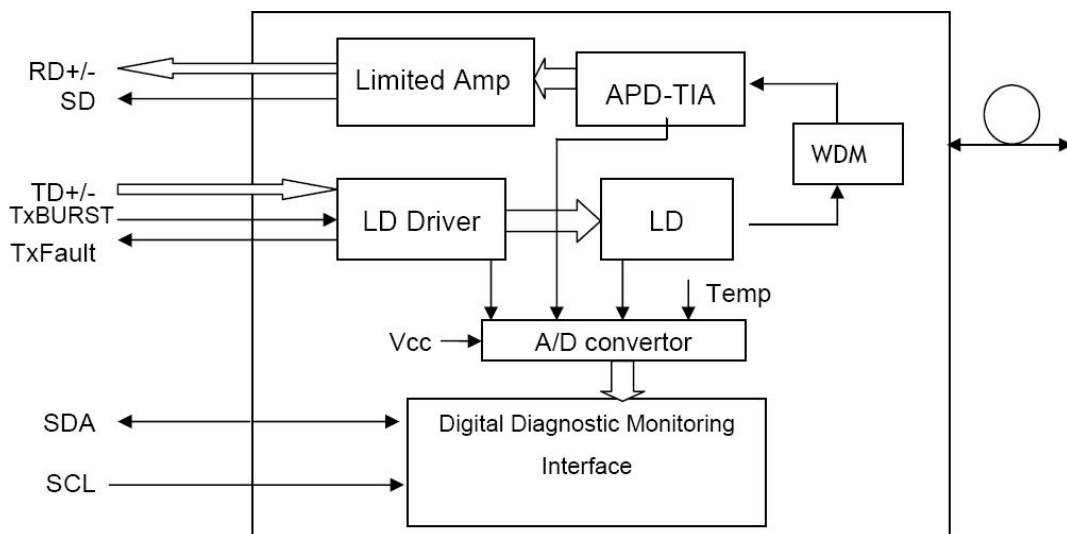


Fig 1 Transceiver Block Diagram

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.

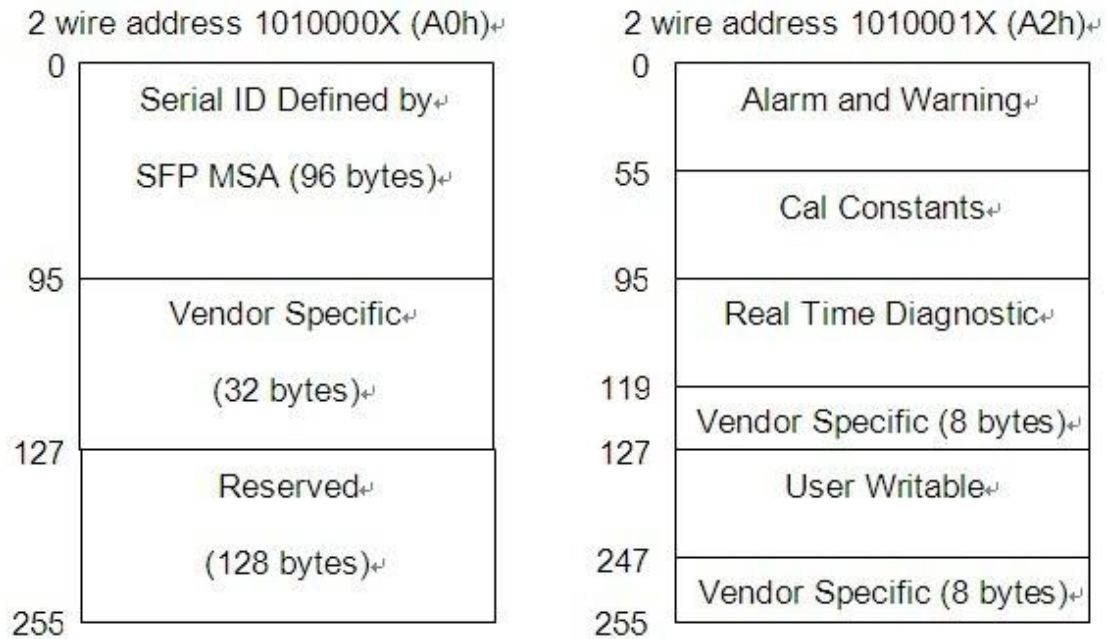


Fig 2 EEPROM Information

Performance Specifications

Absolute Maximum Ratings					
Parameter	Symbol	Min.	Max.	Unit	Note
Storage Temperature	Tst	-40	+85	°C	
Operating Case Temperature	Tc	0	70	°C	
		-40	+85		
Input Voltage	-	GND	Vcc	V	
Power Supply Voltage	Vcc-Vee	-0.5	+3.6	V	
Damage Threshold For Receiver	-	-	4	dBm	
Soldering Temperature / Time	-	-	260/10	°C/S	



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	
		-40	-	85		
Total Supply Current	-	-	-	350	mA	-

Optical Specification							
Transmitter							
Parameter	Symbol	Min.	Typ.	Max.	Unit	Note	
Data Rate	DR	-	1.244	-	Gbps	-	
Optical Central Wavelength	λ	1260	1310	1360	nm		
Spectral Width (-20dB)	$\Delta\lambda$	-	-	1	nm		
Side Mode Suppression Ratio	SMSR	30	-	-	dB		
Average Optical Output Power	Po	0.5	-	5	dBm		
Extinction Ratio	Er	10	-	-	dB	-	
Transmitter Reflectance	-	-	-	-12	dB		
Tx Burst ON Time	Ton	-	-	12.8	ns	-	
Tx Burst OFF Time	Toff	-	-	12.8	ns	-	
Rise/Fall Time	Tr/Tf	-	-	250	ps	-	
Average Launched Power of Off Transmitter	Poff	-	-	-45	dBm	-	
Output Eye	Compliant with ITU-T G.984.5						
Receiver							
Parameter	Symbol	Min.	Typ.	Max.	Unit	Note	
Data Rate	DR	-	2.488	-	Gbps	-	
Operate Wavelength	-	1480	-	1500	nm	-	
Sensitivity	Pr	-	-	-28	dBm	1	
Saturation	Ps	-8	-	-	dBm	1	
SD De-assert Level	-	-45	-	-	dBm	-	
SD Assert Level	-	-	-	-28	dBm	-	
SD Hysteresis	-	0.5	-	6	dB	-	
Receiver Reflectane	-	-	-	-12	dB	-	
RSSI Range	-	-28	-	-8	dBm		
RSSI Accuracy	-	-3	-	+3	dB		

Note:

1. Minimum Sensitivity and saturation levels for a 2³ -1 PRBS. BER≤10⁻¹⁰, 2.488Gpbs, ER=9dB



Electrical Specification						
Transmitter						
Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Differential Input Voltage	V _{IN-DIF}	200	-	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}	400	-	1000	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 00 00 00 00 00	00 00 00 00 00 00 00 00	Not defined
11	1	Encoding	03	3	NRZ
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	90 80 52 51 52	
			30 33 34 2D 4B xx xx xx 20 20	50 48 51 52 45 75 xx xx xx 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	5	-8
Low Alarm	-10	-40	3	0	0.5	-28
High Warning	95	95	3.5	70	4	-9
Low Warning	0	-30	3.1	0	1	-27

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)



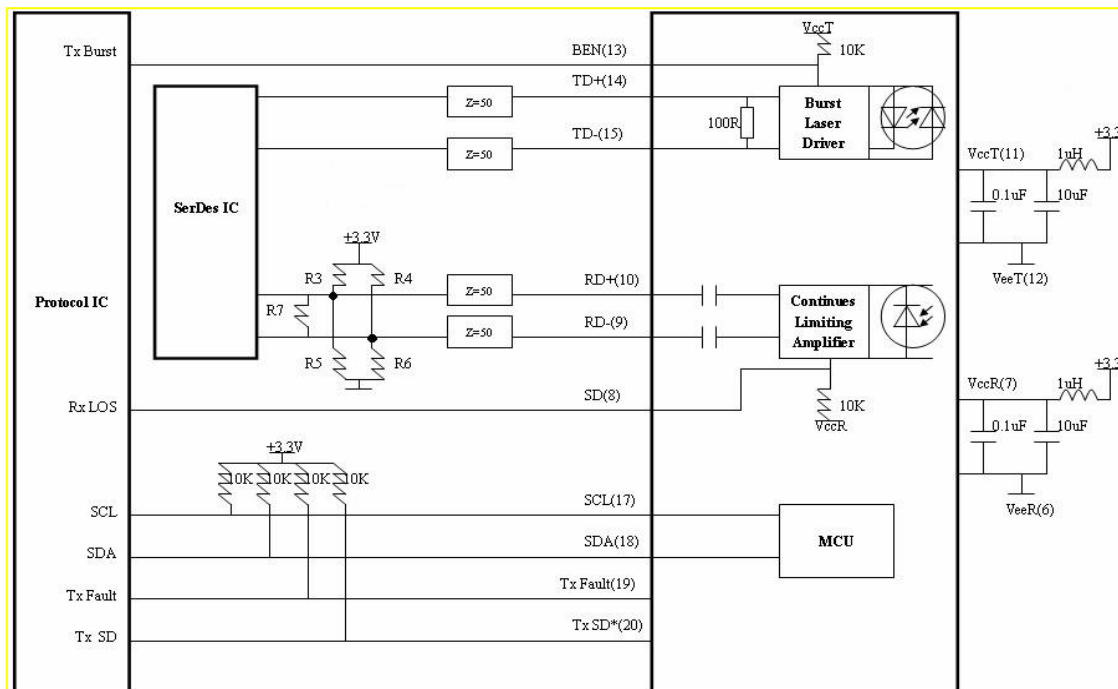
TOP VIEW



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:

Tx: DC coupled internally.

Rx: AC coupled internally.

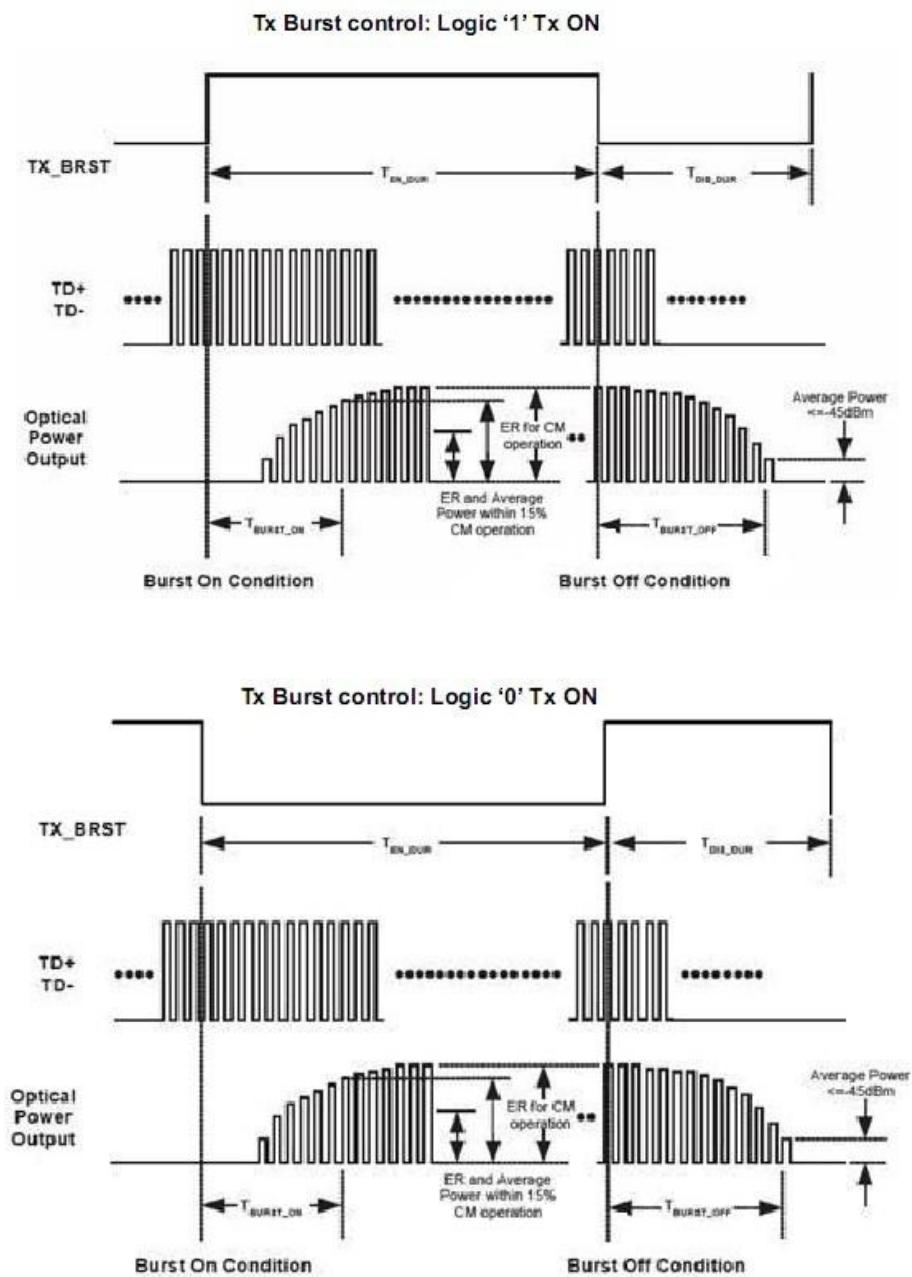
Input stage in SerDes IC with internal bias to Vcc-1.3V

R3=R4=R5=R6=N.C, R7=100Ω

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

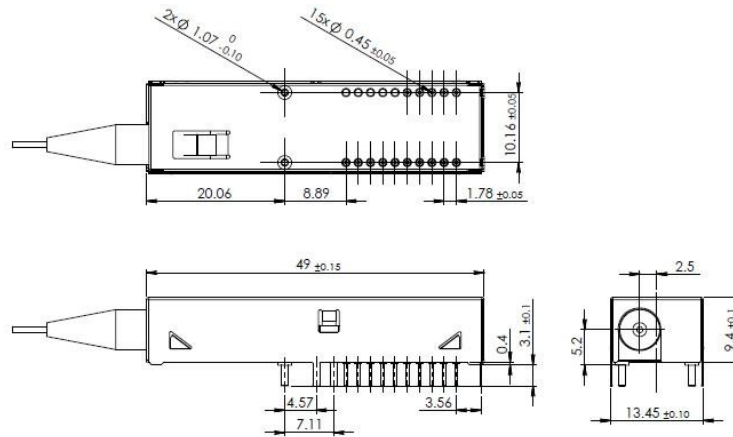
R3=R4=82Ω,R5=R6=130Ω,R7=N.C

Burst Mode Sequence Definition





Package Diagram



SC/PC or SC/APC Pigtail

Unit: mm

Order Information

Z	P	4	3	4	2	0	3	4	-	K	x	x	x
	PON	SFF 2*10	Tx1310nm	Rx1490nm	20km	1.25Gbps	2.5Gbps	-	G984.5		C 0~70℃ I -40~85℃	P Pigtail with SC/PC A Pigtail with SC/APC	H High Open&No Tx_SD L Low Open&No Tx_SD T High Open&with Tx_SD Y Low Open&with Tx_SD

For more information:

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

