EPON OLT PX20+ 收发器

产品介绍

The EPON OLT Transceiver module is designed for Gigabit Ethernet Passive Optical Network（EPON） 20km transmission. The module incorporates 1490nm continuous-mode transmitter and 1310nm burst-mode receiver.

发射器部分使用高效 1490nm DFB 激光器，发生故障时符合 class-1 眼安全标准。激光驱动器包括 APC 功能和温度补偿功能，在温度范围和寿命周期内可保持发射光功率和消光比稳定。

The receiver section uses an integrated APD and BM-preamplifier mounted together. The burst-mode receiver is resetless and wide dynamic range over 20dB can be obtained under whole operating conditions. The module has the function that indicates receiver burst-power-detect signal (active LOW).

接收机拥有突发光功率监控功能，在系统触发信号的作用下，能将任何上行的 ONU 突发光信号转换为数字信号。当检测到触发信号的上升沿时，DDM 处理器开始对突发光信号进行转换，转换借宿后，数字结果可通过 DDM 界面得到。触发信号宽度必须大于突发光信号的保持时间。

An integrated WDM coupler can distinguish 1310nm input light from 1490nm output light.

The metallic package guarantees excellent EMI and EMC characteristics.

Features特征

- 集成单纤双向光组件
- 1310nm 突发模式 APD/TIA 接收机和 1490nm 连续模式 DFB 激光发射器 (with WDM)
- SFP 金属封装
- 0 to 70°C 工作环境温度
- 单 SC 可插拔光接口
- 热插拔
- +3.3V 单电源供电
- 低功耗
- 自复位突发模式接收机
- 超过 20dB 的大动态范围
- 建立时间小于 400ns
- LVPECL 电平交流耦合输入接口
- LVPECL 电平直流耦合输出接口
- LVTTL 电平发射激光器关断
- LVTTL 接收机突发接收光功率显示
- Class 1 激光眼安全标准

- 极好的 EMI and EMC 特性
- ESD 防护功能

应用

Optical transceiver for 20km Gigabit Ethernet Passive Optical Networks (EPON) OLT side

标准

- IEEE802.3ah 1000BASE-PX20-D

Specifications

参数	符号	单位	最小值	典型值	最大值
工作电压	V_{cc}	V	3.135	3.3	3.465
工作温度范围	T_{op}	℃	0	–	70
工作信号速率		Gbps	–	1.25±100ppm	–

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Part No	Specification									Application Code
	Package	Data Rate	Laser	Optical Power	Detector	Data Rate	Sensitivity	Temp	Standrad	
RTXM168-415	SFP	1.25Gb/s	1490nm DFB	2 ~ 7dBm	APD	1.25Gb/s	<-30dBm	0~70°C	GEPON OLT 20km	20km

Ports Definition

Parameter	Symbol	Unit	Min	Typ	Max	Test condition
Electrical Characteristics						
Operating Voltage	V_{op}	V	3.135	3.3	3.465	
Supply Current	I_{cc}	mA	–	–	450	
LVPECL Single Ended Data Input Swing		mV	300	–	1600	Note7
LVPECL Differential Data Output Swing		mV		1500		Note10
Differential Data input impedance		Ω	–	100	–	Note7
Input Signal Level(LVTTL H)		V	2.0	–	Vcc	
Input Signal Level(LVTTL L)		V	0	–	0.8	
Output Signal Level(LVTTL H)		V	2.4	–	Vcc	
Output Signal Level(LVTTL L)		V	0	–	0.4	
Optical transmiter Characteristics						
Data Rate		Mbps	–	1250	–	
Center Wavelength Range	λ_c	nm	1480	1490	1500	DFB-LD
Spectral Width(@-20dB)	Δλ	nm	–	–	1	
Side Mode Suppression Ratio	SMSR	dB	30	–	–	
Launch Optical Power	P_o	dBm	+2	–	+7	Note1
Off level light		dBm	–	–	-39	Note2
Extinction Ratio	EX	dB	9.0	–	–	Note3
Total Jitter	J_{total}	UI	–	–	0.44	
Rise/Fall time(20～80%)	Tr/Tf	ps	–	–	350	Note4
Optical Return Loss Tolerance		dB	–	–	15	
Maximum reflectance		dB	–	–	-12	λ=1.49μm
Eye Diagram	Compliant with IEEE Std 802.3ah					Note3 Note5

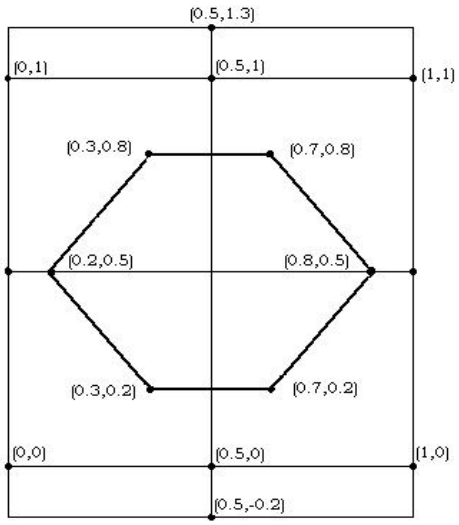
Note1:Coupled into 9/125 SMF

Note2:Measured without data input

Note3:Measured with PRBS 2^7-1 test pattern @1.25Gbps

Note4:Measured with the Bessel-Thompson filter ON

Note5:Mask of diagram



Mask of diagram

Optical receive Characteristics							
Data Rate			Mbps	–	1250	–	
Receiver Sensitivity		S	dBm	–	–	-30	Note6
Overload Input Optical Power		P_{in}	dBm	-6	–	–	Note6
Center Wavelength Range		λ_c	nm	1260	1310	1360	
Reciever Settling Time		$T_{settling}$	ns	–	–	400	Note8
Reciever Dynamic range			dB	20	–	–	Note9
Receiver reflectance			dB	–	–	-12	λ=1.31μm
BPD(LVTTL)	Optical Assert		dBm	-45	–	–	Note11
	Optical Deassert			–	–	-31	
BPD Hysteresis			dB	0.5	–	6	Note11
Measurement Accuracy of received burst optical power, range from -10dBm to -30dBm			dB	-3		+3	Test temperature is from 0 to 70℃
Measurement Accuracy of received burst optical power, range from -10dBm to -30dBm			dB	-2		+2	Test temperature is 25℃
Burst optical power conversion settling time		BOPCS Time	ns	496	512	528	Figure 1
Burst optical power conversion holding time		Holding Time	ns	584	600	616	Figure 1
Burst optical power conversion time			us			500	result can be read out since trigger is High
Burst optical power conversion interval time			ms	1.0			means 1000 conversions/s max.

Note6:Measured with PRBS 2^7-1 test pattern @1.25Gbps with Tx on,ER=10dB,BER<=10E-12.

Note7:AC coupled internal(see the recommended circuit below).

Note8:Define $T_{settling}$ as the time from the Tx_BEN assertion,minus the Ton time,to the time the electrical signal the Reciever output reaches within 15% of its steady state conditions.It is shown in the Figure 1.

Note9:See Figure 2.

Note10:LVPECL output, DC coupled internal（see the recommended circuit on page 14).

Note11:Burst optical Power received Detect.