

GPON OLT Class B+ 收发器



产品介绍

GPON OLT 收发器设计用于千兆无源光网络。模块包括 1490nm DFB 连续模式发射器和 1310nm 突发模式 APD 接收机。

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。

接收机部分将 APD 探测器和突发模式前置放大器集成在一起。为了能提供快速建立时间，且能忍受长 CID，接收机需要 MAC 提供复位信号。接收机有快速 SD 功能，当复位信号到达时，SD 信号能快速拉低，并能抑制包间噪声。

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。

内置的 WDM 耦合器能够使 1310nm 的光输入的同时也可以使 1490nm 的光输出。

金属机身保证了极佳的 EMI 和 EMC 性能。

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
- 快速建立时间，长 CID 耐受
- 包间隔抑制功能
- 突发光功率检测
- LVPECL 电平数据输入输出接口
- LVTTTL 电平接收机复位控制
- LVTTTL 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

■ RoHs 符合

应用

Optical transceiver for Gigabit-capable Passive Optical Networks (GPON) Class B+ OLT side

标准

- ITU-T G.984.2 Class B+
- Small Form-factor Pluggable (SFP) Transceiver MultiSource Agreement July 5, 2000

特性

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(发射端)		Mbps	—	2488.32	—
工作信号速率(接收端)		Mbps	—	1244.16	—

订购信息

Part No	Specification									Application Code
	Package	TX DataRate	Laser	Optical Power	Detector	RX DataRate	Sensitivity	Temp	Standrad	
RTXM167-522	SFP	2.488Gb/s	1490nm DFB	1.5~5dBm	APD	1.244Gb/s	<-28dBm	0~70℃	GPON OLT Class B+	CLASS B+

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 differential Data Input Swing		mV	200	—	1600	Note1
LVPECL differential Data Output Swing		mV	400	-	1600	Note10
Differential Data input impedance		Ω	—	100	—	Note1
Input Signal Level(LVTTL H)		V	2.0	—	V _{cc}	
Input Signal Level(LVTTL L)		V	0	—	0.8	
Output Signal Level(LVTTL H)		V	2.4	—	V _{cc}	
Output Signal Level(LVTTL L)		V	0	—	0.4	
Optical Transmitter Characteristics						
Data Rate		Mbps	—	2488.32	—	
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(EOL)	PEOL	dBm	+1.5	—	+5	Note2
Off level light		dBm		—	-39	Note3
Extinction Ratio	EX	dB	8.2	—	—	Note4
Total Jitter	J _{total}	UI	—	—	0.2	
Rise/Fall time(20~80%)	Tr/Tf	Ps	—	—	250	Note5
Optical Return Loss Tolerance		dB	—	—	15	
Maximum reflectance		dB	—	—	-12	λ=1.49μm
Eye Diagram	Compliant with ITU-T G.984.2					Note4 Note6

Note1:AC coupled internal(see the recommended circuit below).

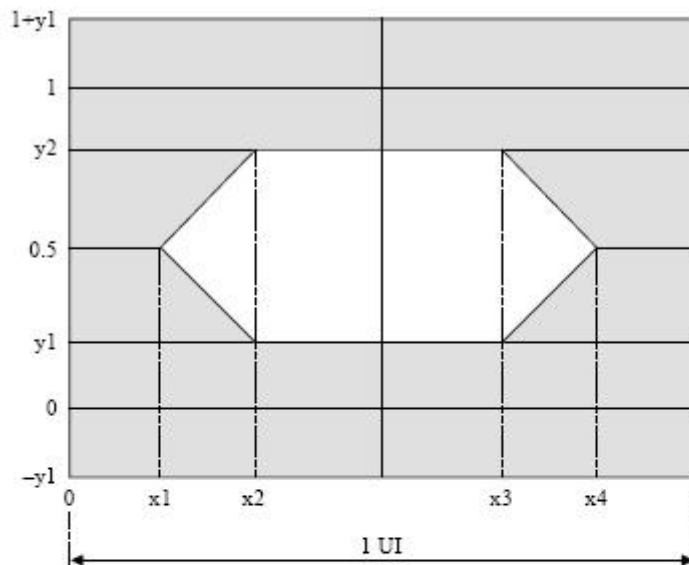
Note2:Coupled into 9/125 SMF

Note3:Measured without data input

Note4:Measured with PRBS 2²³-1 test pattern @2.488Gbps

Note5:Measured with the Bessel-Thompson filter OFF

Note6:Mask of diagram as below,



	1244.16 Mbit/s	2488.32 Mbit/s
x1/x4	0.28/0.72	---
x2/x3	0.40/0.60	---
x3 - x2	---	0.2
y1/y2	0.20/0.80	0.25/0.75

Optical Receiver Characteristics						
Data Rate		Mbps	—	1244.16	—	
Receiver Sensitivity(EOL)	SEOL	dBm	—	—	-28	Note7
Overload Input Optical Power	P _{in}	dBm	-8	—	—	Note7
Center Wavelength Range	λ _c	nm	1260	1310	1360	
Receiver Settling Time	T _{settling}	ns	—	—	35	Note8 Figure1
Reset to Data Time	T _{rd}	ns	15	—	—	Note9 Figure1
Reset Pulse Width	T _{reset}	bit	—	16	—	Figure1
Guard Time	T _{guard}	bit	32	—	—	Note11 Figure1
Receiver reflectance		dB	—	—	-20	λ=1.31μm
Signal Detect (LVTTTL)	Optical Deassert	dBm	-45	—	—	
	Optical Assert		—	—	-32	
Signal Detect Hysteresis		dB	0.5	—	6	
Measurement Accuracy of received burst optical power, range from -8dBm to -28dBm		dB	-3		+3	Note12
Burst optical power conversion settling time	BOPCS Time	ns	25			Figure 2

Burst optical power conversion holding time	Holding Time	ns	350			Figure 2
Burst optical power conversion time		us			500	result can be read out since rising edge of the trigger pulse

Note7: Measured with PRBS 2²³-1 test pattern @1.244Gbps with Tx on, ER=10dB, BER≤10E-10.

Note8: Time from the arrival of data to the output data settling to within 15% of final amplitude and duty-cycle. It is shown in the Figure 1.

Note9: Time from a falling edge on reset signal input to the start of preamble at the data input of the receiver.

Note10: DC coupled internal. Need LVPECL terminal on the hostboard.

Note11: Time from end of previous data burst to beginning of next data burst.

Note12: Measured with PRBS23 Burst data pattern @1.244Gbps.