

GPON OLT (Class B+) Optical Transceiver SFP Module

TS-GP2512-OLT-B+



TS-GP2512-OLT-B+

Features

- ✧ Integrated Single fiber bi-directional optical subassembly
- ✧ 1310nm Burst-mode APD/TIA receiver and 1490nm Continuous DFB laser Transmitter (with WDM)
- ✧ SFP metallic package
- ✧ -40 to 85 °C operating ambient temperature
- ✧ Single SC receptacle optical interface compliant
- ✧ Hot-pluggable
- ✧ +3.3V single power supply
- ✧ Low power consumption
- ✧ Fast settling time with immunity to long streams of CID
- ✧ Guard time squelched function
- ✧ Digitalized burst mode optical power monitoring
- ✧ LVPECL compatible data input and output interface
- ✧ LVTTTL receiver reset control
- ✧ LVTTTL receiver burst-power-detect indication
- ✧ Class 1 Laser eye safety standard
- ✧ Excellent EMI and EMC characteristics
- ✧ ESD protection function
- ✧ RoHs compliant

Applications

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

Standard

ITU-T G.984.2 Class B+

Small Form-factor Pluggable (SFP) Transceiver MultiSource Agreement July 5, 2000

Description

The GPON OLT Transceiver is designed for Gigabit-capable Passive Optical Network (GPON) transmission. The module incorporates 1490nm DFB continuous-mode transmitter and 1310nm burst-mode APD receiver.

The transmitter section uses a high efficiency 1490nm DFB laser and an integrated laser driver which is designed to be class-1 eye safety under any single fault. The laser driver includes APC and temperature compensation functions, which are used for keeping the launch optical power and extinction ratio constant

over temperature and aging.

The receiver section uses an integrated APD detector and burst mode preamplifier mounted together. To provide fast settling time with immunity to long streams of Consecutive Identical Digits(CID), the receiver requires a reset signal provided by the media access controller(MAC). The receiver has fast SD function, the rising time is about 5ns, when reset signal arrived, the SD signal will be turned to low, and the noise in the guard time will be squelched.

The receiver includes digitalized burst mode optical power monitoring function, which converses any of a received ONU optical power directly in digital, with a Trigger input from system. When rising edge of Trigger detected, the DDM processor starts a burst optical power conversion, the digital result is available via DDM interface after Burst Optical Power Conversion Time. Trigger pulse width should be more than Burst Optical Power Conversion Holding Time.

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

The metallic package guarantees excellent EMI and EMC characteristics, which totally comply with international relevant standards.

Absolute Maximum Ratings

Parameter	Symbol	Unit	Min	Max
Operating Temperature Range	T _c	°C	-40	85
Storage Temperature Range	T _s	°C	-40	85
Relative Humidity	RH	%	5	95
Power Supply Voltage	V _{cc}	V	0	4.6
Pin Input Voltage		V	GND	V _{cc}
Receiver Damage Threshold		dBm	+5	-

Recommended operating conditions

Parameter	Symbol	Unit	Min	Typ	Max
Operating Voltage	V _{cc}	V	3.135	3.3	3.465
Operating Temperature Range	T _{op}	°C	-40	-	85
Operating Data Rate(TX side)		Mbps	-	2488.32	-
Operating Data Rate(RX side)		Mbps	-	1244.16	-

Specifications(-40 °C<T_{op}<85°C and 3.135V<V_{cc}<3.465V)

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	200	-	400	
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
Signal Level(LVTTL H)		V	2.4	-	V _{cc}	
Signal Level(LVTTL L)		V	0	-	0.8	
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(BOL)	PBOL	dBm	+2.5	-	+5	Note2
Launch Optical Power(EOL)	PEOL	dBm	+1.5	-	+5	
Off level light		dBm		-	-39	Note3
Extinction Ratio	EX	dB	9.0	-	-	Note4
Total Jitter	J _{total}	UI	-	-	0.1	
Rise/Fall time(20 ~ 80%)	T _r /T _f	Ps	-	-	250	Note5
RIN ₁₅ OMA		dB /Hz	-	-	-115	
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,