WTG02TB1(C1) (C2)

GPON OLT SFP Transceiver Class B+/ C+/ C++



1. Product Overview

The WTG02TB1(C1) (C2) transceiver with supports data rate of typical 2.488 Gbps for GPON OLT application up to 20km transmission distance, it's designed meeting with ITU-T

G.984.2 Class B+/ C+/ C++ specifications. SC receptacle 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

Features

- SC BIDI SFP Single Mode Transceiver
- 1490nm Continuous Mode 2.488 Gbps DFB Transmitter
- 1310nm Burst Mode 1.244 Gbps APD-TIA Receiver
- Single +3.3 Power Supply, Hot-pluggable
- LVTTL receiver Fast Burst Packet Detect indication
- Burst mode received signal strength indication (RSSI) function
- Complies with Telcordia (Bellcore) GR-468-CORE
- Class I laser safety standard IEC-60825 compliant
- Compliant with SFP MSA and SFF-8472
- Complies with ITU-T G.984.2 Class B+/ C+/ C++

Applications

- GPON OLT For P2MP Application

2. Ordering Information

Part No.	Product Specification	Product Specification	Product Specification	Product Specification	Product Specification
	Package	Data-Rate	Temperature	Optical Power	Application
WTG02TB1	SFP, SC/UPC	2.488Gb/s/ 1.244Gb/s	0°C ~70°C	3.5 dBm typical	GPON OLT， Class B+
WTG02TC1	SFP, SC/UPC	2.488Gb/s/ 1.244Gb/s	0°C ~70°C	5 dBm typical	GPON OLT， Class C+
WTG02TC2	SFP, SC/UPC	2.488Gb/s/ 1.244Gb/s	0°C ~70°C	7 dBm typical	GPON OLT， Class C++

3. Ordering Information

4. Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Units	Notes
Storage Temperature	Tst	-40	+85	°C	
Operating Case Temperature	Tc	0	70	°C	
Input Voltage	-	GND	Vcc	V	
Power Supply Voltage	Vcc-Vee	-0.5	+3.6	V	

5. Recommended Operating Conditions

Parameter	Symbol	Min	Typical	Max	Units	Notes
Power Supply Voltage	Vcc	3.135	3.3	3.465	V	
Operating Case Temperature	Tc	0	-	70	°C	
Data Rate	TX	-	2.488	-	Gbps	
	RX	-	1.244			
Total Supply Current	-	-	-	400	mA	
Damage Threshold For Receiver	-	-	-	4	dBm	

6. Recommended Operating Conditions

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	℃	±3	Recommended operating conditions	External/Internal

7. Optical Parameters

Transmitter	Transmitter	Transmitter	Transmitter	Transmitter	Transmitter	Transmitter
Parameter	Symbol	Min.	Typ.	Max.	Unit	Note

Transmitter	Transmitter	Transmitter	Transmitter	Transmitter	Transmitter	Transmitter
Optical Central Wavelength		1480	1490	1500	nm	-
Spectral Width (-20dB)		-	-	1	nm	-
Side Mode Suppression Ratio	SMSR	30	-	-	dB	-
Average Optical Output Power	Po	+2	+3.5	+5.5	dBm	WTG02TB1
Average Optical Output Power	Po	+3.5	+5	+7	dBm	WTG02TC1
Average Optical Output Power	Po	+5	+7	+10	dBm	WTG02TC2
Extinction Ratio	Er	8.2	-	-	dB	-
Rise/Fall Time	Tr/Tf	-	-	150	ps	-
Transmitter Total Jitter	Jp-p	-	-	0.1	UI	
Transmitter Reflectance	RFL	-	-	-12	dB	
Average Lauched Power of Off Transmitter	Poff	-	-	-39	dBm	-
Differential Input Voltage	VIN-DIF	300	-	1600	mV	-
Tx Disable Input Voltage-Low	VIL	0	-	0.8	V	-
Tx Disable Input Voltage-High	VIH	2.0	-	Vcc	V	-
Output Eye	Compliant with ITU-T G.984.2	Compliant with ITU-T G.984.2	Compliant with ITU-T G.984.2	Compliant with ITU-T G.984.2	Compliant with ITU-T G.984.2	Compliant with ITU-T G.984.2
Receiver	Receiver	Receiver	Receiver	Receiver	Receiver	Receiver
Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Operate Wavelength	-	1260	1310	1360	nm	-
Sensitivity	Pr	-	-	-28	dBm	WTG02TB1
Sensitivity	Pr	-	-	-30	dBm	WTG02TC1/WTG02TC2
Saturation	Ps	-8	-	-	dBm	WTG02TB1
Saturation	Ps	-10	-	-	dBm	WTG02TC1/WTG02TC2
LOS assert Level	-	-45	-	-	dBm	-
LOS De-Assert Level	-	-	-	-30	dBm	-
LOS Hysteresis	-	0.5	-	5	dB	-
Receiver Optical Reflectance	-	-	-	-12	dB	-
Data Output Low	Vol	-2	-	-1.58	V	-
Data Output High	Voh	-1.1	-	-0.74	V	-
LOSOutput Voltage-Low	VSD-L	0	-	0.8	V	-
LOS Output Voltage-High	VSD-H	2.0	-	Vcc	V	

8. Optical Parameters

Addr. (decimal)	Field Size (Bytes)	Field Size (Bytes)	Name of Field	Name of Field	Content (Hex)	Content (Hex)	Content (Decimal)	Content (Decimal)	Description	Description
0	1	1	Identifier	Identifier	03	03	3	3	SFP	SFP
1	1	1	Ext. Identifier	Ext. Identifier	04	04	4	4	MOD4	MOD4
2	1	1	Connector	Connector	01	01	1	1	SC	SC
3-10	8	8	Transceiver	Transceiver	00 00 00 80 00 00 00 00	00 00 00 80 00 00 00 00	00 00 00 128 00 00 00 00	00 00 00 128 00 00 00 00		
11	1	1	Encoding	Encoding	03	03	3	3	NRZ	NRZ
12	1	1	BR, nominal	BR, nominal	19	19	25	25	2.488Gbps	2.488Gbps
13	1	1	Reserved	Reserved	00	00	0	0	-	-
14	1	1	Length (9um)-km	Length (9um)-km	14	14	20	20	20/km	20/km
15	1	1	Length (9um)	Length (9um)	C8	C8	200	200	20km	20km
16	1	1	Length (50um)	Length (50um)	00	00	0	0	-	-
17	1	1	Length (62.5um)	Length (62.5um)	00	00	0	0	-	-
18	1	1	Length (copper)	Length (copper)	00	00	0	0	-	-
19	1	1	Reserved	Reserved	00	00	0	0	-	-
20-35	16	16	Vendor name	Vendor name	57 69 6E 63 6F 54 65 6B 20 20 20 20 20 20 20 20	57 69 6E 63 6F 54 65 6B 20 20 20 20 20 20 20 20	87 105 110 99 111 84 101 107 32 32 32 32 32 32 32 32	87 105 110 99 111 84 101 107 32 32 32 32 32 32 32 32	'WincoTek' (ASCII)	'WincoTek' (ASCII)
36	1	1	Reserved	Reserved	00	00	0	0	-	-
37-39	3	3	Vendor OUI	Vendor OUI	00 00 00	00 00 00	0 0 0	0 0 0	-	-
40-55	16	16	Vendor PN	Vendor PN	57 54 47 30 32 54 42 31 20 20 20 20 20 20 20 20	57 54 47 30 32 54 42 31 20 20 20 20 20 20 20 20	87 84 71 48 50 84 66 49 32 32 32 32 32 32 32 32	87 84 71 48 50 84 66 49 32 32 32 32 32 32 32 32	WTG02TB1 (ASCII); 16-byte PN varies with ordered WT grade	WTG02TB1 (ASCII); 16-byte PN varies with ordered WT grade
56-59	4	4	Vendor rev	Vendor rev	30 30 30 20	30 30 30 20	48 48 48 32	48 48 48 32	“000” (ASCII)	“000” (ASCII)
60-61	60-61	2	2	Wavelength	Wavelength	05 D2	05 D2	05 210	05 210	1490
62	62	1	1	Reserved	Reserved	00	00	0	0	-
63	63	1	1	CC BASE	CC BASE	-	-	-	-	Check sum of bytes 0 - 62

9. Optical Parameters

64	1	Reserved	00	0	
65	1	Options	1C	28	
66	1	BR, max	00	0	-
67	1	BR, min	00	0	-
68-83	16	Vendor SN	-	-	ASCII

64	1	Reserved	00	0	
84-91	8	Vendor date	-	-	Year (2 bytes), Month (2 bytes), Day (2 bytes)
92	1	DDM Type	60	96	Internal Calibrated
93	1	Enhanced Option	80	128	LOS, TX_FAULT and Alarm/warning flags implemented
94	1	SFF-8472 Compliance	02	2	SFF-8472 Rev 10.3
95	1	CC EXT	-	-	Check sum of bytes 64 - 94
96-255	160	Vendor spec			

10. Optical Parameters

Parameter (Unit)	C Temp (℃)	Voltage (V)	Bias (mA)	TX Power (dBm)	TX Power (dBm)	TX Power (dBm)	RX Power (dBm)	RX Power (dBm)	RX Power (dBm)
High Alarm	100	3.6	80	+6	+7	+8	-8	-10	-10
Low Alarm	-10	3	1	+2	+3.5	+5	-28	-30	-30
High Warning	95	3.5	70	+5.5	+6	+7.8	-9	-11	-11
Low Warning	0	3.1	2	+2.5	+4	+5.5	-27	-29	-29

11. Pin Descriptions

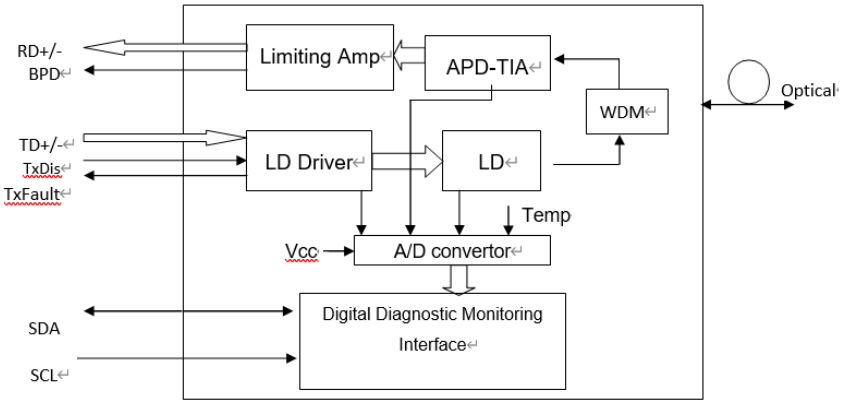
Pin No.	Name	Function	Plug Seq.	Notes
1	VeeT	Transmitter Ground	1	
2	Tx Fault	Transmitter Fault Indication	3	Note 1
3	Tx Disable	Transmitter Disable	3	Note 2
4	MOD-DEF2	Module Definition 2	3	Note 3
5	MOD-DEF1	Module Definition 1	3	Note 3
6	MOD-DEF0	Module Definition 0	3	Note 3
7	Reset	Reset signal input	3	
8	BPD	Burst Power Detect (active HIGH)	3	Note 4
9	RSSI-Trigger	Receiver Signal Strength Indication	1	
10	VeeR	Receiver Ground	1	Note 5
11	VeeR	Receiver Ground	1	Note 5
12	RD-	Inv. Receiver Data Out	3	Note 6
13	RD+	Receiver Data Out	3	Note 6
14	VeeR	Receiver Ground	1	Note 5
15	VccR	Receiver Power Supply	2	Note 7, 3.3V 5%
16	VccT	Transmitter Power Supply	2	Note 7, 3.3V 5%
17	VeeT	Transmitter Ground	1	Note 5
18	TD+	Transmitter Data In	3	Note 8

Pin No.	Name	Function	Plug Seq.	Notes
19	TD-	Inv.Transmitter Data In	3	Note 8
20	VeeT	Transmitter Ground	1	Note 5

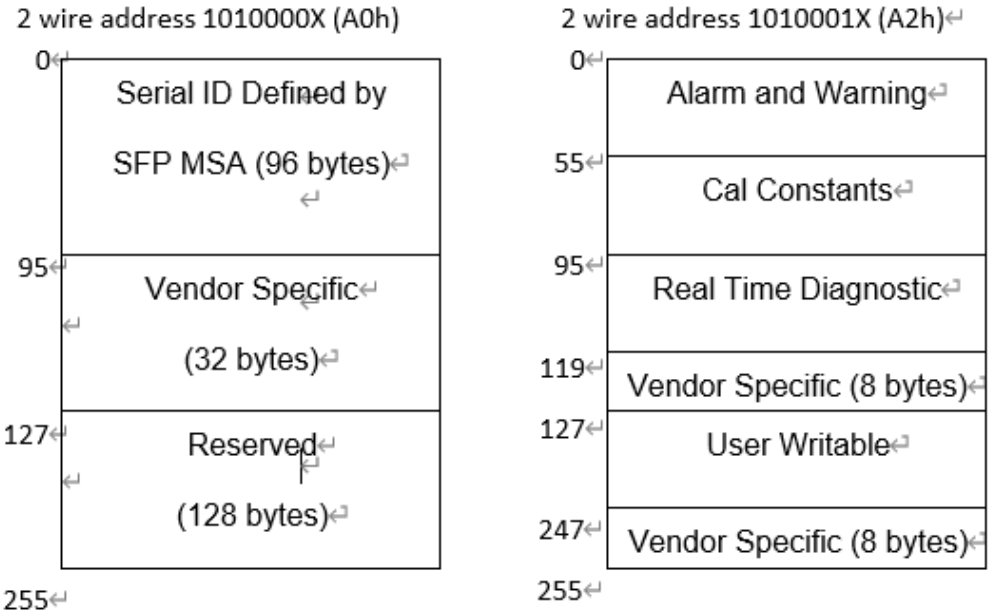
12. Additional Specifications

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS
Packet Length	-	600	-	-	ns
Trigger delay	BOPCS	100	-	-	ns
RSSI Trigger and Sample Time	Holding Time	400	-	-	ns
Internal delay	Conversion time	500	-	-	us

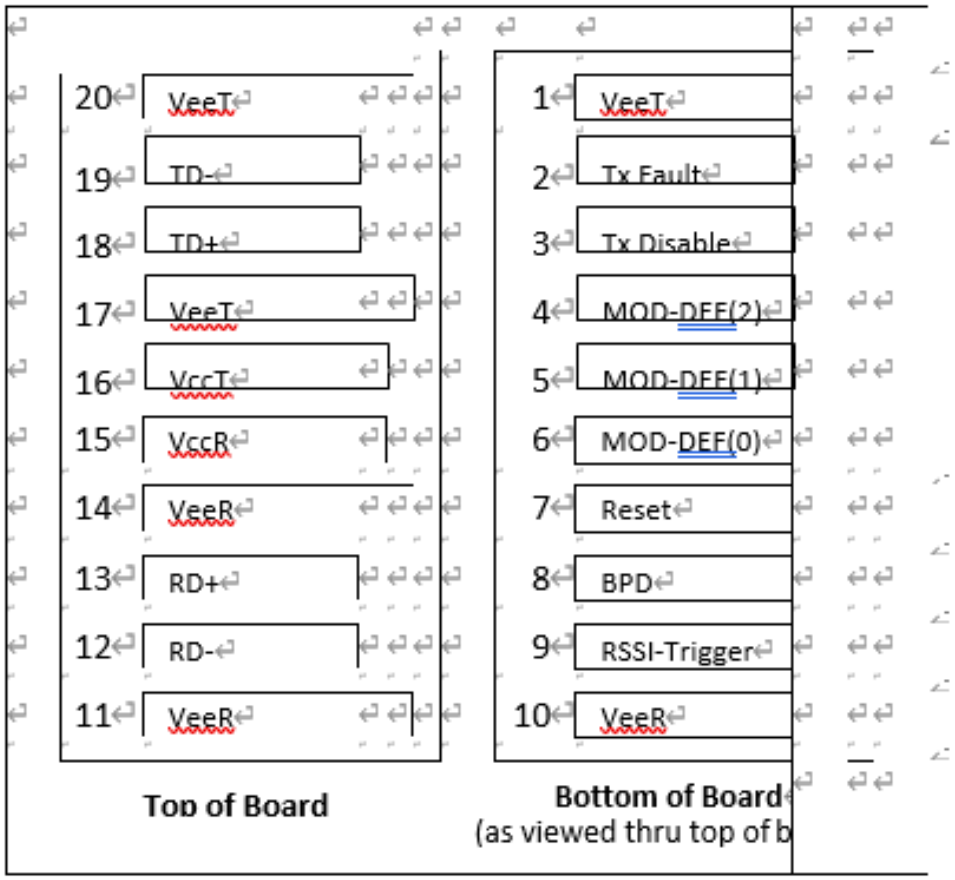
13. Functional Block Diagram



14. Digital Diagnostics Memory Map



15. Pin Assignment



16. Revision History

Version	Date	Description	Prepared by
V6	2025	Unified WincoTek datasheet format	WincoTek
V6.1	2026-10-23	Engineering and format review	WincoTek