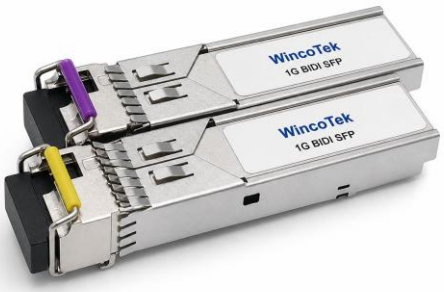
WT-OC24-120A

1.25Gbps SFP Bi-Directional Transceiver, 120km Reach / TX1490nm / 1550nm

Part Number WT-OC24-120A



1. Product Overview

The BIDI SFP transceivers are high performance, cost effective modules supporting dual data-rate of 1.25Gbps/1.0625Gbps and 120km transmission distance with SMF.

The transceiver consists of three sections: a DFB laser transmitter, a APD photodiode integrated with a trans-impedance preamplifier (TIA) and MCU control unit. All modules satisfy class I laser safety requirements.

The transceivers are compatible with SFP Multi-Source Agreement (MSA) and SFF-8472. For further information, please refer to SFP MSA.

TD+/- TxFault <— TxDis

LOS RD+/-

Features

- Dual data-rate of 1.25Gbps/1.063Gbps operation
- 1490nm DFB laser and APD photodetector for 120km transmission
- Compliant with SFP MSA and SFF-8472 with simplex LC receptacle
- Digital Diagnostic Monitoring:
- Internal Calibration or External Calibration
- Compatible with RoHS
- +3.3V single power supply
- Operating case temperature:
- Standard : 0 to +70°C

Applications

- Gigabit Ethernet
- Fiber Channel
- Switch to Switch interface
- Switched backplane application
- Router/Server interface
- Other optical transmission systems

2. Ordering Information

Part Number	Product Description
WT-OC24-120A	1490nm, 1.25Gbps, LC, 120km, 0°C~+70°C, With Digital Diagnostic Monitoring

3. Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Unit
Supply Voltage	Vcc	-0.5	4.5	V
Storage Temperature	Ts	-40	+85	°C
Operating Humidity	-	5	85	%

4. Recommended Operating Conditions

Parameter	Parameter	Parameter	Symbol	Min	Typical	Max	Unit
Operating Case Temperature	Operating Case Temperature	Standard	Tc	0		+70	°C
Power Supply Voltage	Power Supply Voltage	Power Supply Voltage	Vcc	3.13	3.3	3.47	V
Power Supply Current	Power Supply Current	Power Supply Current	Icc			300	mA
Data Rate	Gigabit Ethernet	Gigabit Ethernet			1.25		Gbps
Data Rate	Fiber Channel	Fiber Channel			1.063		Gbps

5. Recommended Operating Conditions

Optical and Electrical Characteristics WT-BD120-1415D: (DFB and APD, 120km Reach) Table 3 - Optical and Electrical Characteristics	Optical and Electrical Characteristics WT-BD120-1415D: (DFB and APD, 120km Reach) Table 3 - Optical and Electrical Characteristics	Optical and Electrical Characteristics WT-BD120-1415D: (DFB and APD, 120km Reach) Table 3 - Optical and Electrical Characteristics	Optical and Electrical Characteristics WT-BD120-1415D: (DFB and APD, 120km Reach) Table 3 - Optical and Electrical Characteristics	Optical and Electrical Characteristics WT-BD120-1415D: (DFB and APD, 120km Reach) Table 3 - Optical and Electrical Characteristics	Optical and Electrical Characteristics WT-BD120-1415D: (DFB and APD, 120km Reach) Table 3 - Optical and Electrical Characteristics	Optical and Electrical Characteristics WT-BD120-1415D: (DFB and APD, 120km Reach) Table 3 - Optical and Electrical Characteristics	Optical and Electrical Characteristics WT-BD120-1415D: (DFB and APD, 120km Reach) Table 3 - Optical and Electrical Characteristics	Optical and Electrical Characteristics WT-BD120-1415D: (DFB and APD, 120km Reach) Table 3 - Optical and Electrical Characteristics
Parameter	Parameter	Symbol	Symbol	Min	Typical	Max	Unit	Notes
Transmitter	Transmitter	Transmitter	Transmitter	Transmitter	Transmitter	Transmitter	Transmitter	Transmitter
Centre Wavelength	Centre Wavelength	Centre Wavelength	λc	1470	1490	1510	nm	
Spectral Width (-20dB)	Spectral Width (-20dB)	Spectral Width (-20dB)	Δλ			1	nm	
Side Mode Suppression Ratio	Side Mode Suppression Ratio	Side Mode Suppression Ratio	SMSR	30			dB	
Average Output Power	Average Output Power	Average Output Power	Pout	0		+5	dBm	1
Extinction Ratio	Extinction Ratio	Extinction Ratio	ER	9			dB	
Optical Rise/Fall Time (20%~80%)	Optical Rise/Fall Time (20%~80%)	Optical Rise/Fall Time (20%~80%)	tr/tf			0.26	ns	
Data Input Swing Differential	Data Input Swing Differential	Data Input Swing Differential	VIN	400		1800	mV	2
Input Differential Impedance	Input Differential Impedance	Input Differential Impedance	ZIN	90	100	110	Ω	
TX Disable	Disable	Disable		2.0		Vcc	V	
TX Disable	Enable	Enable		0		0.8	V	
TX Fault	Fault	Fault		2.0		Vcc	V	
TX Fault	Normal	Normal		0		0.8	V	
Receiver	Receiver	Receiver	Receiver	Receiver	Receiver	Receiver	Receiver	Receiver
Centre Wavelength	Centre Wavelength	Centre Wavelength	λc	1530		1570	nm	
Receiver Sensitivity	Receiver Sensitivity	Receiver Sensitivity				-30	dBm	3

Receiver Overload	Receiver Overload	Receiver Overload		-9			dBm	3
LOS De-Assert	LOS De-Assert	LOS De-Assert	LOSD			-31	dBm	
LOS Assert	LOS Assert	LOS Assert	LOSA	-37			dBm	
LOS Hysteresis	LOS Hysteresis	LOS Hysteresis		1		4	dB	
Data Output Swing Differential	Data Output Swing Differential	Data Output Swing Differential	Vout	400		1800	mV	4
LOS	LOS	LOS	High	2.0		Vcc	V	
LOS	LOS	LOS	Low			0.8	V	

6. Electrical Characteristics

Parameter	Symbol	Min	Typical	Max	Unit
Tx Disable Negate Time	t on			1	ms
Tx Disable Assert Time	t_off			10	µs
Time To Initialize, including Reset of Tx Fault	t_init			300	ms
Tx Fault Assert Time	t_fault			100	µs
Tx Disable To Reset	t reset	10			µs
LOS Assert Time	t_loss_on			100	µs
LOS De-assert Time	t_loss_off			100	µs
Serial ID Clock Rate	f_serial_clock			400	KHz
MOD_DEF (0:2)-High	VH	2		Vcc	V
MOD_DEF (0:2)-Low	VL			0.8	V

7. Digital Diagnostics

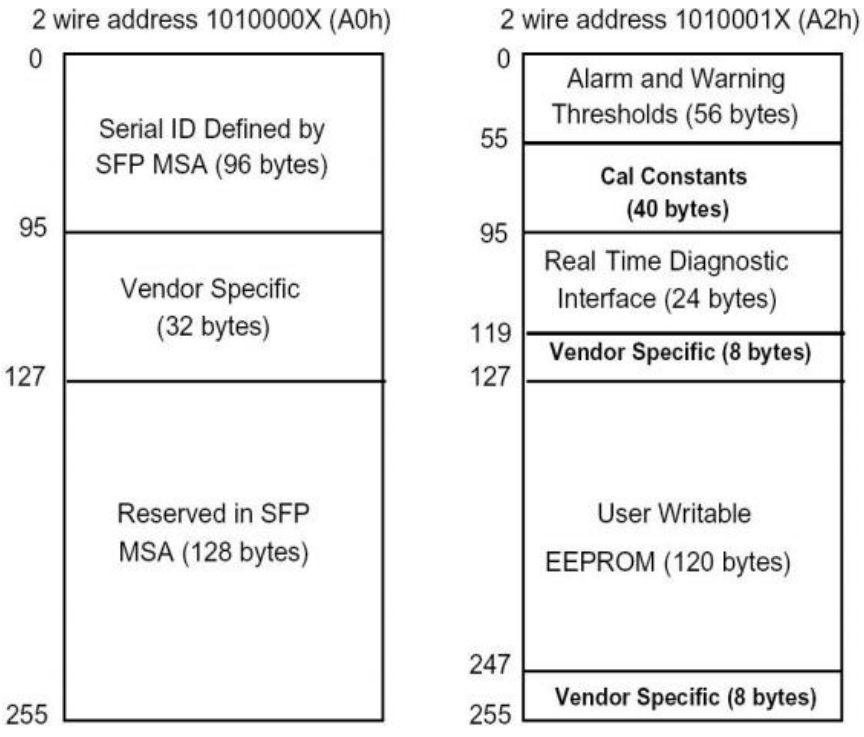
Parameter	Range	Unit	Accuracy	Calibration
Temperature	0 to +70	°C	±3°C	Internal / External
Voltage	3.0 to 3.6	V	±3%	Internal / External
Bias Current	0 to 100	mA	±10%	Internal / External
TX Power	0 to +5	dBm	±3dB	Internal / External
RX Power	-30 to -9	dBm	±3dB	Internal / External

8. Pin Descriptions

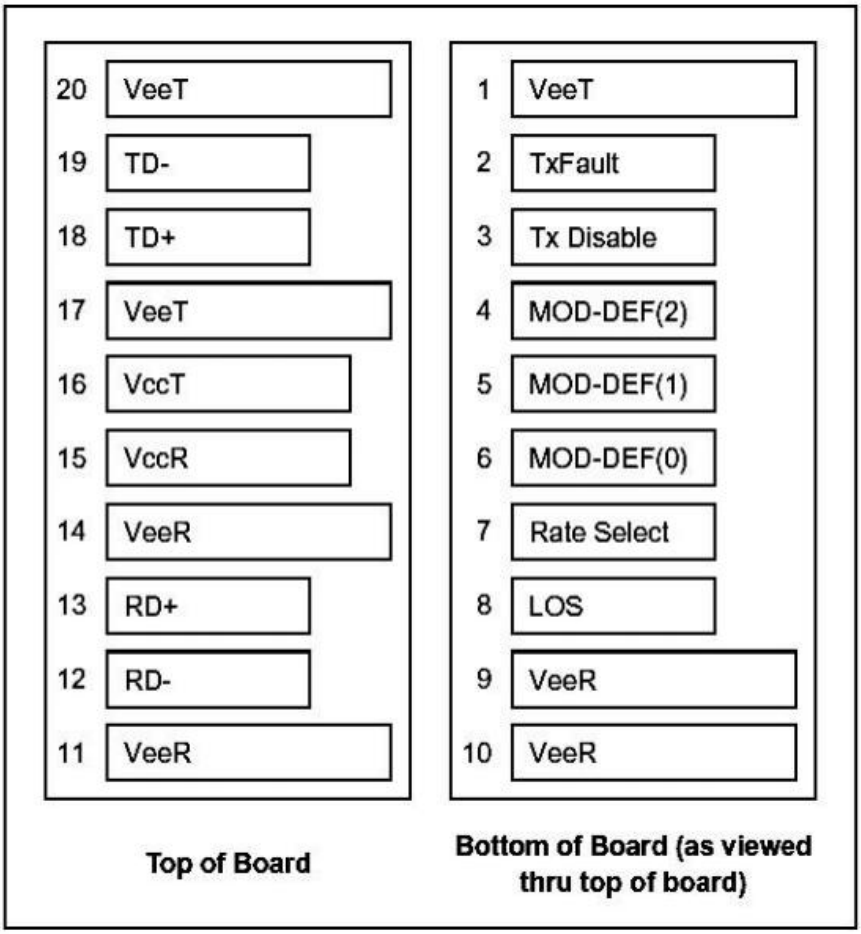
Pin	Signal Name	Description	Plug Seq.	Notes
1	VEET	Transmitter Ground	1	

Pin	Signal Name	Description	Plug Seq.	Notes
2	TX FAULT	Transmitter Fault Indication	3	Note 1
3	TX DISABLE	Transmitter Disable	3	Note 2
4	MOD_DEF(2)	SDA Serial Data Signal	3	Note 3
5	MOD_DEF(1)	SCL Serial Clock Signal	3	Note 3
6	MOD_DEF(0)	TTL Low	3	Note 3
7	Rate Select	Not Connected	3	
8	LOS	Loss of Signal	3	Note 4
9	VEER	Receiver ground	1	
10	VEER	Receiver ground	1	
11	VEER	Receiver ground	1	
12	RD-	Inv. Received Data Out	3	Note 5
13	RD+	Received Data Out	3	Note 5
14	VEER	Receiver ground	1	
15	VCCR	Receiver Power Supply	2	
16	VCCT	Transmitter Power Supply	2	
17	VEET	Transmitter Ground	1	
18	TD+	Transmit Data In	3	Note 6
19	TD-	Inv. Transmit Data In	3	Note 6
20	VEET	Transmitter Ground	1	

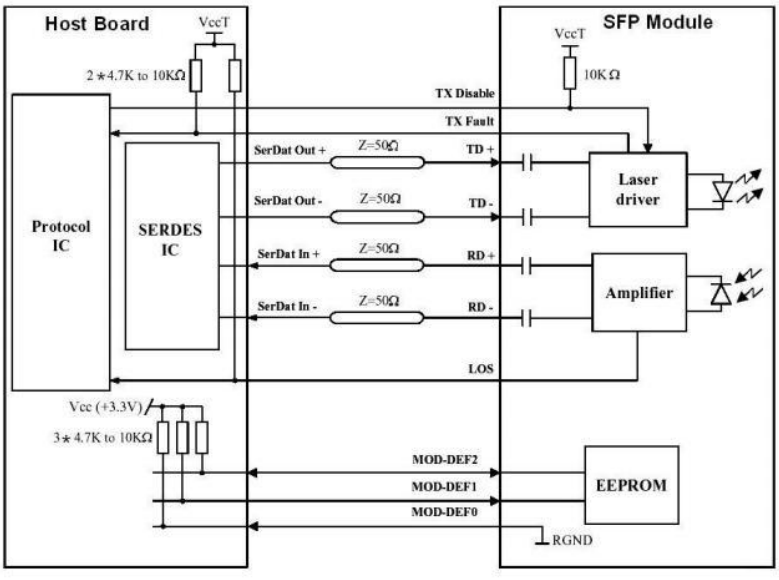
9. Digital Diagnostics Memory Map



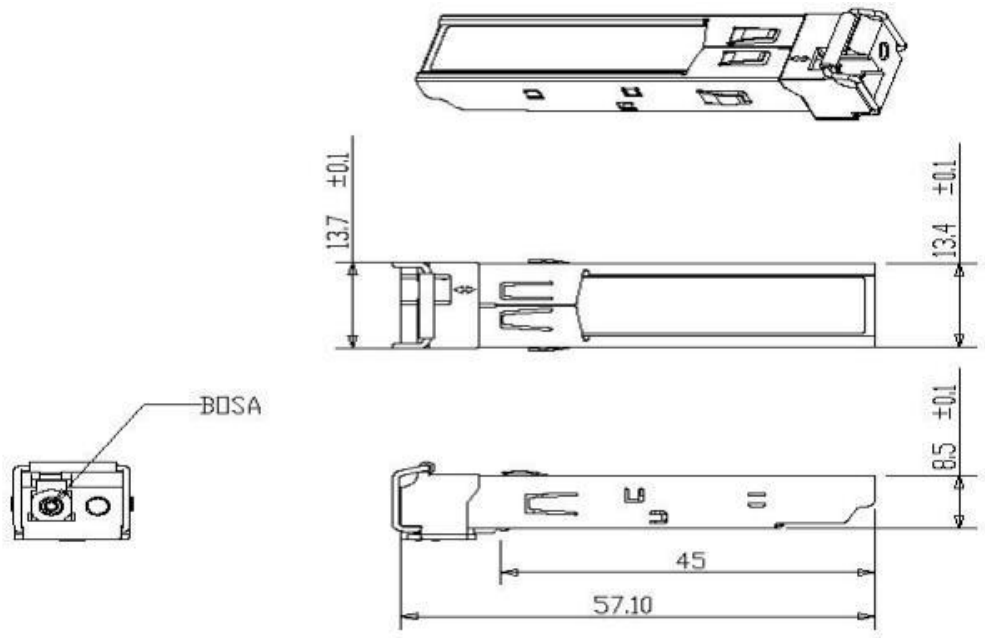
10. Pin Assignment



11. Electrical Interface



12. Mechanical Specifications



13. Revision History

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