



Preliminary Specification
of
Bi-directional Transceiver Devices
(for 1.49 μ m 622Mbps/1.3 μ m 155.52Mbps
transmission applications)
SXT4412-S(1.49 μ m(T)/1.3 μ m(R))



1. General

SXT4412-S is a bi-directional transceiver device suitable for 622Mbps transmit and 155.52Mbps receive simplex fiber optic bi-directional transmission applications.

A laser diode and a monitoring photodiode as transmitter components and a detector PIN-PD and a DC-coupled pre-Amplifier as receiver components are mounted into a package integrated with a single mode fiber pigtail.

2. Package dimension and pin assignment

(See attached appendix.)

3. Absolute maximum ratings

Parameter	Symbol	Ratings	Unit
Storage temperature	Tstg	-40~+85	°C
Operating case temperature	Top	-20~+85	°C
Forward current (LD)	IfL	150	mA
Reverse voltage (LD)	VrL	2	V
Reverse voltage (monitoring PD)	VrMP	15	V
Reverse current (monitoring PD)	IrMP	2	mA
Supply voltage (IC)	Vdd	4.3	V
Reverse voltage (detector PD)	VrDP	28	V
Reverse current (detector PD)	IrDP	4	mA
Soldering temperature (<10s)	Stemp	260	°C

4. Electrical and optical characteristics

4-1. Transmitter (Pf=+3dBm, Tc=+25°C, unless otherwise noted.)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Threshold current	I _{th}	CW	—	8	15	mA
		CW, Tc=-20~+85°C	—	—	50	
Operating output power	Pf	CW, Tc=-20~+85°C, I _f =110mA	3	—	—	dBm
Slope efficiency	Se	CW, Average(I _{th} to I _{th} +20mA), Tc=-20~+85°C	0.025	—	0.3	mW/mA
Modulation current	I _{MOD}	CW, Tc=-20~+85°C (*1)	10	—	60	mA
Operating voltage	V _f	CW, Tc=-20~+85°C	—	—	1.8	V
Rise time	t _r	CW, Tc=-20~+85°C (*2)	—	—	0.5	ns
Fall time	t _f	CW, Tc=-20~+85°C (*2)	—	—	0.5	ns
Central wavelength	λ _c	CW, Tc=-20~+85°C	1480	—	1500	nm
Side-mode suppression ratio	SSR	CW, Tc=-20~+85°C	30	—	—	dB
Spectral width	Δλ	CW, Tc=-20~+85°C (-20dB)	—	—	1	nm
Tracking error	ΔPf	I _m hold(@Pf=3dBm(25°C)) CW, Tc=-20~+85°C	-1.5	—	1.5	dB
Monitor current	I _m	CW, Tc=-20~+85°C	0.1	—	1	mA
Monitor dark current	I _d	V _r =5V, Tc=-20~+85°C	—	—	500	nA
Monitor PD capacitance	C _{PD}	1MHz, V _r =5V, Tc=-20~+85°C	—	—	15	pF

Note:*1.Modulation current is total current(110mA max) minus threshold current..

Note:*2.Measured with a min Extinction ratio of 10:1, 10% to 90%.

4-2. Receiver (Tc=+25°C, Vcc=3.3 V, unless otherwise noted.)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Receiver wavelength	λ _c	—	1260	1310	1360	nm
Sensitivity	S _{min}	λ=1310nm,155.52Mb/s ER=10:1, BER=10 ⁻¹⁰ (*3), Burst mode	—	-32	—	dBm
		λ=1310nm,155.52Mb/s ER=10:1, BER=10 ⁻¹⁰ (*3), Continuous mode	—	-35	-33	dBm
TIA Responsivity	—	CW (Differential)	13	—	—	V/mW
Bandwidth	—	3dB	117	—	—	MHz
Overload	—	Optical input	-8	—	—	dBm
Optical crosstalk	X _{opt}	λ=1480~1560nm (*4)	—	—	-47	dB
Optical return loss	ORL	λ=1480~1500nm	20	—	—	dB
		λ=1260~1360nm	20	—	—	dB
Output Voltage	—	Differential	—	—	1	V _{pp}
Output Resistance	—	Single ended	—	37	—	Ohm
Power Supply (Vcc)	V _{cc}	PIN-TIA	3.135	3.3	3.465	V
Power Supply (Icc)	I _{cc}	PIN-TIA No Loads	—	15	25	mA

Note:*3.Measured with the standard equipment of SEI.

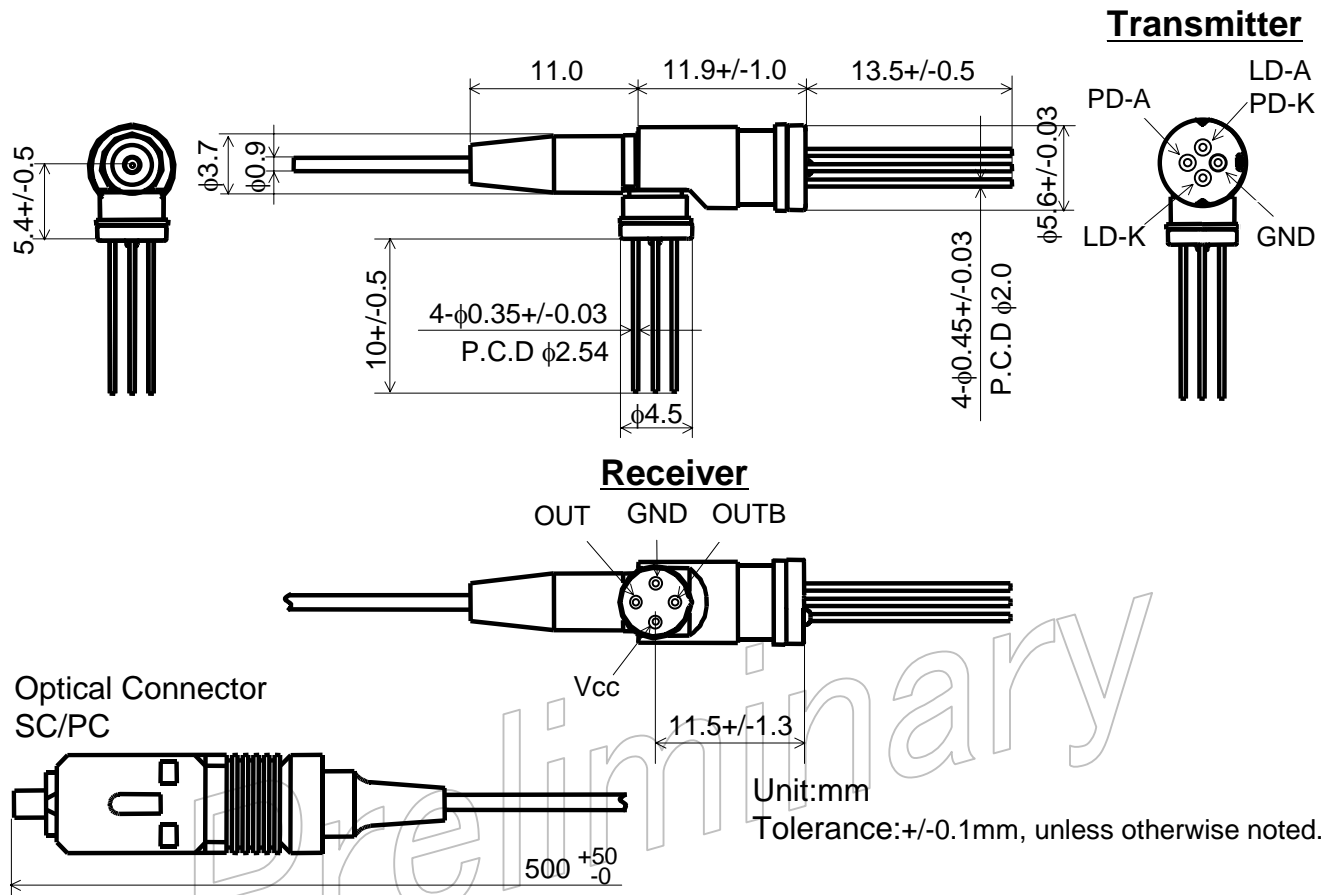
Note:*4.X_{opt}=10xlog{(I_{Xopt}/R)/Pf}. I_{Xopt} is photocurrent at Pf=3dBm.

5. Precaution

- (1) Radiation emitted by laser devices can be dangerous to the eyes. Avoid eye or skin exposure to direct or scattered radiation.
- (2) The modules should be handled in the same manner as ordinary semiconductor devices to prevent the electro-static damages. For safe keeping and carrying, the modules should be packaged with ESD proof material. To assemble the modules on PCB, the workbench, the soldering iron and the human body should be grounded.
- (3) The stress to the fiber pigtail may cause the damage on the performance. The fiber pigtail may snap off by dropping the module.
- (4) Please pay special attention to the atmosphere condition because the dew on the module may cause some electrical damages.
- (5) Under such a strong vibration environment as in automobile, the performance and reliability are not guaranteed.

Preliminary

Outline Drawings



Revision Record

Document No.	Date of issue	Description	Incorporated by	Checked by	Approved by
HUW0324202-01A	Feb.10,2004	Preliminary issue.	M. Furumai	Y. Yamasaki	M. Yoshimura
HUW0324202-01B	May.17,2004	Changed symbol of power supply from Vdd to Vcc. Corrected receiver pin symbol from Mon. to NC.	M. Furumai	T. Kounosu	M. Yoshimura
HUW0324202-01C	June28,2004	Changed pin assignment.	M. Furumai	Y. Yamasaki	M. Yoshimura

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