



Technical Specification
of
Bi-directional Transceiver Devices
(for 1.3 μ m (T)/1.55 μ m(R) transmission applications)
SXT4790-Q



1. General

SXT4790-Q is bi-directional transceiver device suitable for simplex fiber optic bi-directional transmission applications.

A laser diode and a monitoring photodiode as transmitter components and a detector photodiode as a receiver component are mounted into a package integrated with a simplex optical ferrule.

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	-40~+85	°C
Fiber output power	Pmax	4	mW
Forward current (LD)	IfL	120	mA
Reverse voltage (LD)	VrL	2	V
Reverse voltage (monitoring PD)	VrMP	10	V
Reverse current (monitoring PD)	IrMP	2	mA
Forward current (detector PD)	IfDP	3	mA
Reverse voltage (detector PD)	VrDP	27	V
Reverse current (detector PD)	IrDP	4	mA
Optical input	Pin	4	mW
Soldering temperature (<10s)	Stemp	260	°C

4. Electrical and optical characteristics

4-1 . Transmitter (Pf=+2dBm, Tc=+25°C, unless otherwise noted.)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Threshold current	Ith	CW	—	4	15	mA
		CW, Tc=-40~+85°C	—	—	45	
Operating output power	Pf	CW, If=Ith+20mA	0	2	4	dBm
		CW, If=Ith+20mA, Tc=-40~+85°C	-3	—	6	
Operating voltage	Vf	CW, Tc=-40~+85°C	—	—	1.8	V
Slope efficiency	Se	CW, Average(Ith to Iop@+2dBm)	0.05	—	0.3	mW/mA
Central wavelength	λ_c	CW	1270	1300	1340	nm
		CW, Tc=-40~+85°C	1260	—	1360	
Spectral width	$\Delta\lambda$	CW, Tc=-40~+85°C (RMS)	—	1.5	6	nm
Tracking error	ΔPf	I _m hold(@Pf=2dBm(25°C)) CW, Tc=-40~+85°C	-1.5	—	1.5	dB
Monitor current	I _m	CW, VrP=5V, Tc=-40~+85°C	80	—	1600	μA
Monitor dark current	I _{dmp}	VrP=5V	—	1	10	nA
Monitor capacitance	C _{mp}	VrP=5V, f=1MHz	—	—	10	pF

4-2 . Receiver (Vpd=12V, Tc=+25°C, unless otherwise noted.)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Input wavelength	λ_{pd}		1550	—	1560	nm
Responsivity	R		0.80	—	—	W/A
Capacitance	C _{pd}		—	0.8	—	pF
Optical return loss	ORL	$\lambda=1550\text{nm}$	40	—	—	dB
Polarization dependent loss	PDL		—	—	0.5	dB
Dark current	I _d	Vpd=15V	—	—	5	nA
Optical crosstalk	Xtalk	1260-1360nm	47	—	—	dB
Second order inter-modulation distortion	IMD2	$\lambda=1550\text{nm}$, (*1), Tc=-40~+85°C, Vpd=15V	—	—	-70	dBc
Third order inter-modulation distortion	IMD3	$\lambda=1550\text{nm}$, (*1) , Tc=-40~+85°C, Vpd=15V	—	—	-80	dBc

Note: *1. Two tone two laser test (f1=373.25MHz, f2=451.25MHz), OMI=40%, 0.5mW per laser,

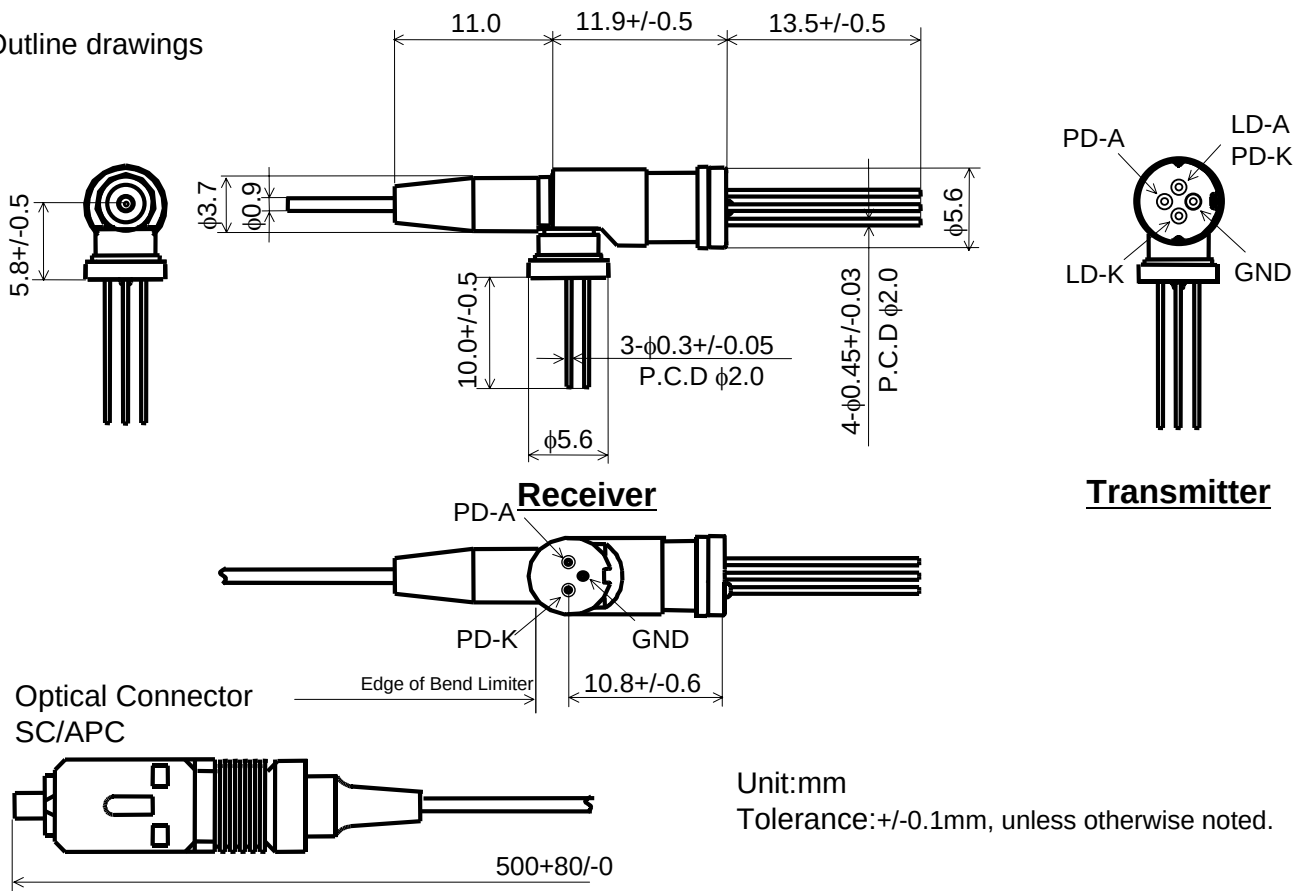
Load impedance for PIN diode=230Ω (insert 180Ω in front of 50Ω-transmission line)

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.

6. Drawing

Outline drawings



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