SINCE 1981

BRIGHT LED ELECTRONICS CORP.

PHOTO LINK TRANSMITTER SPECIFICATION

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REVISION: 1.0

●DEVICE NUMBER：BFTX-1001/HP

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●DEVICE NUMBER: BFTX-1001/HP

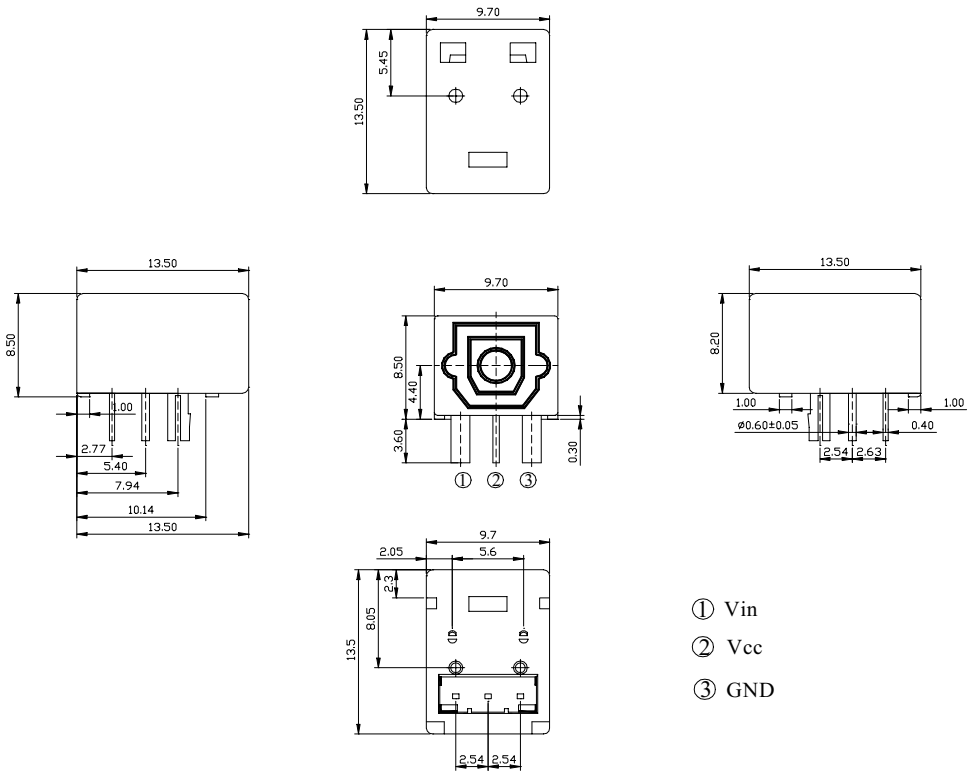
●Features:

1. Conform to EIAJ Standard CP-1201 (For Digital Audio Interface including Fiber Optic inter-connections).
2. TTL interface.
3. LED is driven by differential circuit.
4. +5V single power supply.
5. High speed signal transmission (12.5M NRZ signal).
6. ESD tolerance IC>8KV.
7. Housing heat deflection temperature 290℃(@1.8MPa/ISO75).
8. Compatible Toshiba Toslink mini-package type.

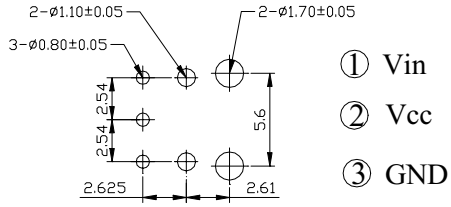
●Applications:

1. Digtital audio equipment:PC sound cards, Notebook and Portable devices.
2. Navigation system.

●Outline Dimensions



●Recommended drilling as viewed from the soldering face



NOTES: Tolerance is ±0.3 mm unless otherwise noted.

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●Absolute Maximum Ratings (Ta=25℃)

Parameter	Symbol	Rating	Unit
Power Dissipation	Pd	100	mw
Supply voltage	Vcc	-0.5 to + 7	V
Input voltage	Vin	-0.5 to Vcc + 0.5	
Operating temperature	Topr	-20 to + 70	℃
Storage temperature	Tstg	-30 to + 80	
Soldering temperature	Tsol	260 For 5sec	

●Electro-Optical Characteristics (Ta=25℃)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Peak wavelength	λp		---	660	---	nm
Operating supply voltage	Vcc		4.75	5.0	5.25	V
Data rate	T	NRZ code	---	---	12.0	Mbps
Transmission Distance	D	Using All Plastic Fiber (970/1000μm) and TORX179	0.2	---	5	m
Optical power output	Pc	Refer to Fig. 1	-21	-17	-15	dBm
Dissipation current	Icc	Refer to Fig. 2	---	8	13	mA
High level input voltage	V_{iH}	Refer to Fig. 2	1.5	---	Vcc	V
Low level input voltage	V_{iL}	Refer to Fig. 2	0	---	0.8	
Low→High delay time	t_{PLH}	Refer to Fig. 3	---	---	180	ns
High→Low delay time	t_{PHL}	Refer to Fig. 3	---	---	180	
Pulse width distortion	△tw	Refer to Fig. 3	-25	---	+25	
Jitter	△tjr	Refer to Fig. 3	---	4	25	

●Mechanical Characteristics (Ta=25℃)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Insertion Force		＊1	---	---	40	N
Withdrawal Force		＊1	6	---	40	
Torque for Self-Tap		Using self-tapping screw (M3 x 8)	60	---	100	N-cm

＊1： Using standard optical fiber cable (970/1000 μm)

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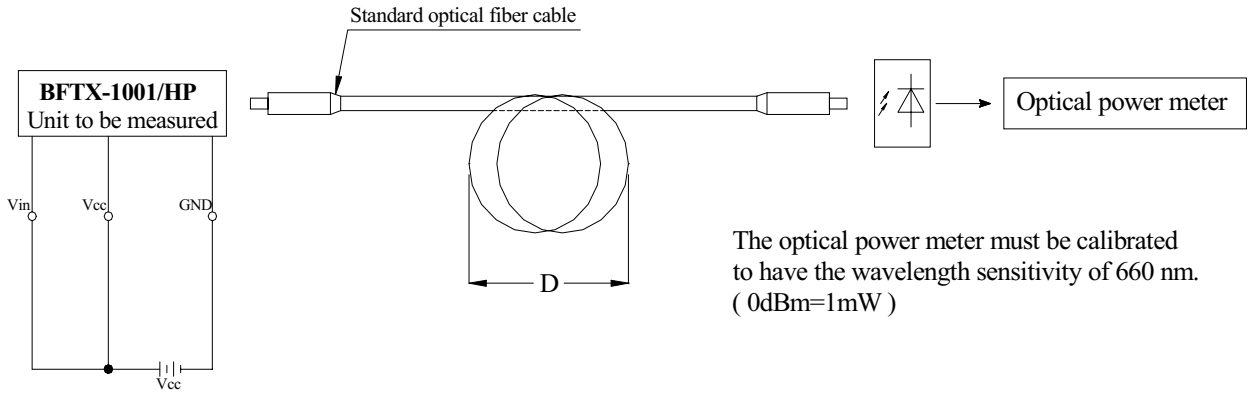
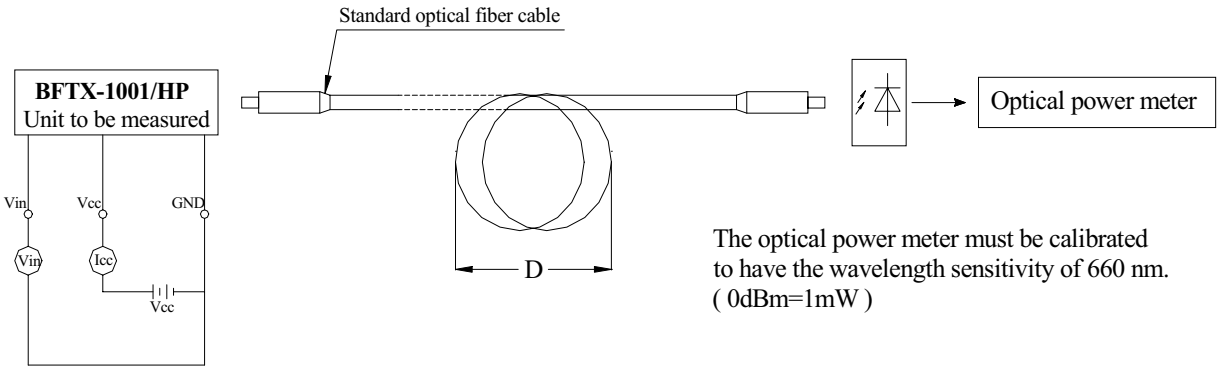
●Fig.1 Measuring Method of Optical Output Coupling with Fiber.



Notes: (1) Vcc=5.0V (State of operating)
(2) To bundle up the standard fiber optic cable, make it into a loop with the diameter D=10cm or more.

●Fig.2 Measuring Method of Input Voltage and Supply Current.



Input conditions and judgment method Supply Current.

Conditions	Judgment method
Vin=2.1V or more	-21 dBm≦Pc≦-15 dBm, Icc=13mA or less
Vin=0.8 V or less	Pc≦-36 dBm, Icc=13mA or less

Notes: Vcc=5.0V (State of operating).

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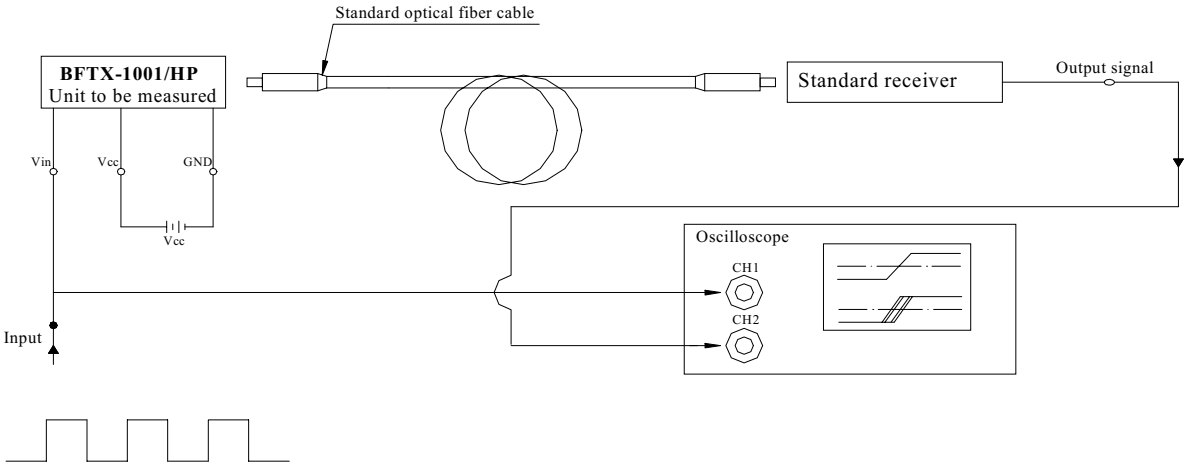
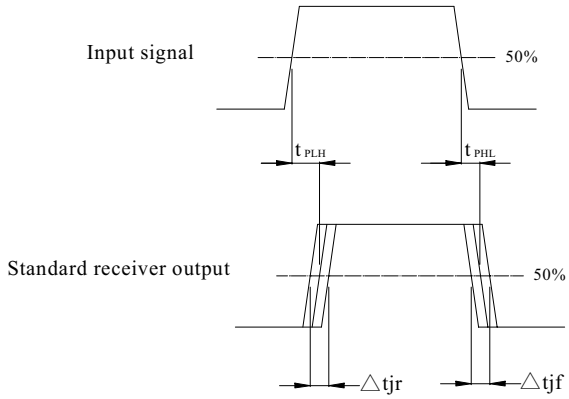
●Fig.3 Measuring Method of Pulse Response and Jitter.



12Mbps NRZ code, duty 50%



Test item

Test item	Symbol	Test item
Low→High pulse delay time	t_{PLH}	Refer to the above prescriptions.
High→Low pulse delay time	t_{PHL}	Refer to the above prescriptions.
Pulse width distortion	△tw	$△tw=t_{PHL}-t_{PLH.}$
Low→High Jitter	△tjr	Set the trigger on the rise of input signal to measure the jitter of the rise of output.
High→Low Jitter	△tjf	Set the trigger on the fall of input signal to measure the jitter of the fall of output.

Notes: (1) The waveform write time shall be 4 seconds. But do not allow the waveform to be distorted by increasing the brightness too much.
(2) Vcc=5.0V (State of operating)
(3) To probe for the oscilloscope must be more than 1MΩ and less than 10pF.

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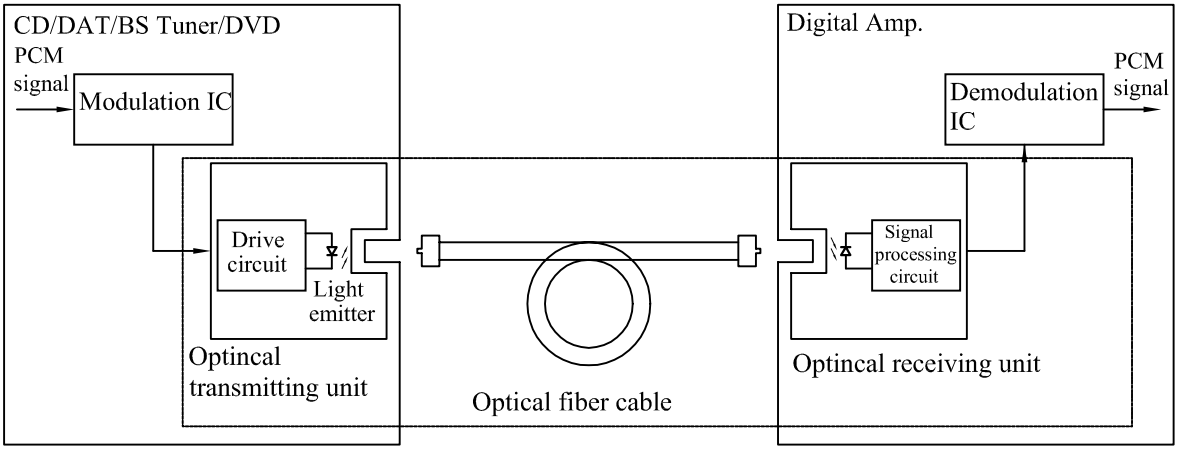
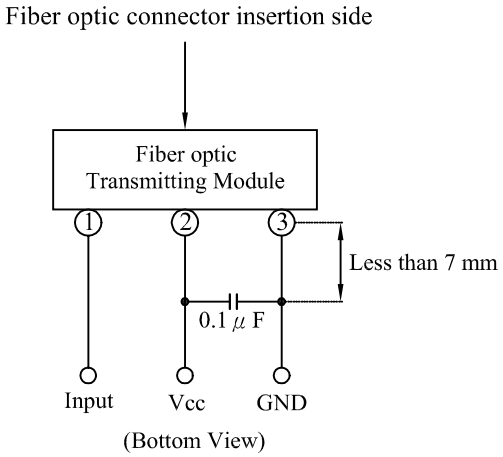
●System Configuration Example:



●Application Circuit:



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RELIABILITY TEST

Classification	Test Item	Reference Standard	Test Conditions	Result
Endurance Test	Operation Life	MIL-STD-750:1026 MIL-STD-883:1005 JIS C 7021 :B-1	Connect with a power Vcc,Vin=5V Ta=Under room temperature Test time=1,000hrs	0/20
	High Temperature High Humidity Storage	MIL-STD-202:103B JIS C 7021 :B-11	Ta=85℃±5℃ RH=90%-95% Test time=240hrs	0/20
	High Temperature Storage	MIL-STD-883:1008 JIS C 7021 :B-10	High Ta=105℃±5℃ Test time=1,000hrs	0/20
	Low Temperature Storage	JIS-C-7021 :B-12	Low Ta=-55℃±5℃ Test time=1,000hrs	0/20
Environmental Test	Temperature Cycling	MIL-STD-202:107D MIL-STD-750:1051 MIL-STD-883:1010 JIS C 7021 :A-4	-55℃ ~25℃ ~105℃ ~25℃ 30min 5min 30min 5min Test Time=10cycle	0/20
	Thermal Shock	MIL-STD-202:107D MIL-STD-750:1051 MIL-STD-883:1011	-55℃±5℃ ~105℃±5℃ 10min 10min Test Time=10cycle	0/20
	Solder Resistance	MIL-STD-202:201A MIL-STD-750:2031 JIS C 7021 :A-1	T.sol=260±5℃ Dwell Time=5±1sec.	0/20
	Solder ability	MIL-STD-202:208D MIL-STD-750:2026 MIL-STD-883:2003 JIS C 7021 :A-2	T.sol=230±5℃ Dwell Time=5±1sec.	0/20
	Lead Bending Stress	MIL-STD-750:2036 JIS C 7021 :A-11	0°~90°~0°bend , 3 cycles Weight 250g	0/20

JUDGMENT CRITERIA OF FAILURE FOR THE RELIABILITY

Parameter	Symbol	Measuring conditions	Judgement criteria for failure
Optical power output	Pc	Vcc,Vin=5V	-21dBm~-15dBm
Dissipation current	Icc	Vcc,Vin=5V	Over Ux2

Note: 1.U means the upper limit of specified characteristics. S means initial value.

2.Measurment shall be taken between 2 hours and after the test pieces have been returned to normal ambient conditions after completion of each test.

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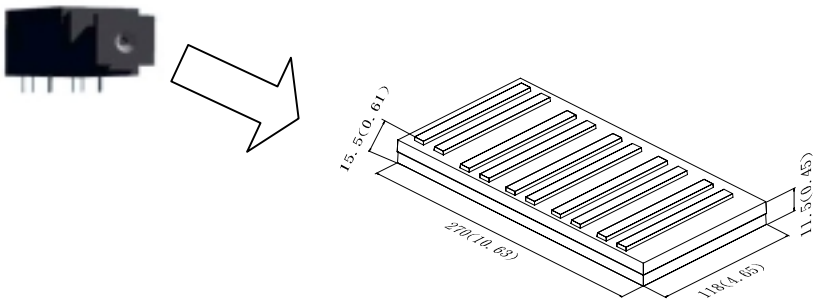
PACKAGING DIMMENSIONS

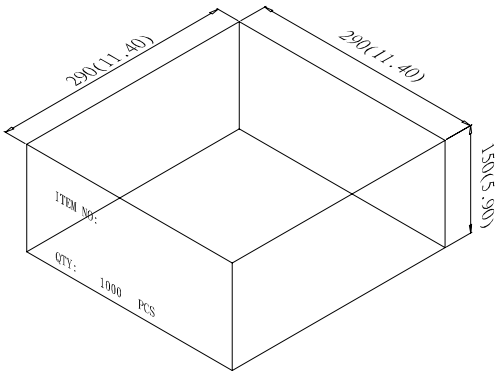
●DEVICE NUMBER: BFTX-1001/HP

●Package Method:(unit:mm)



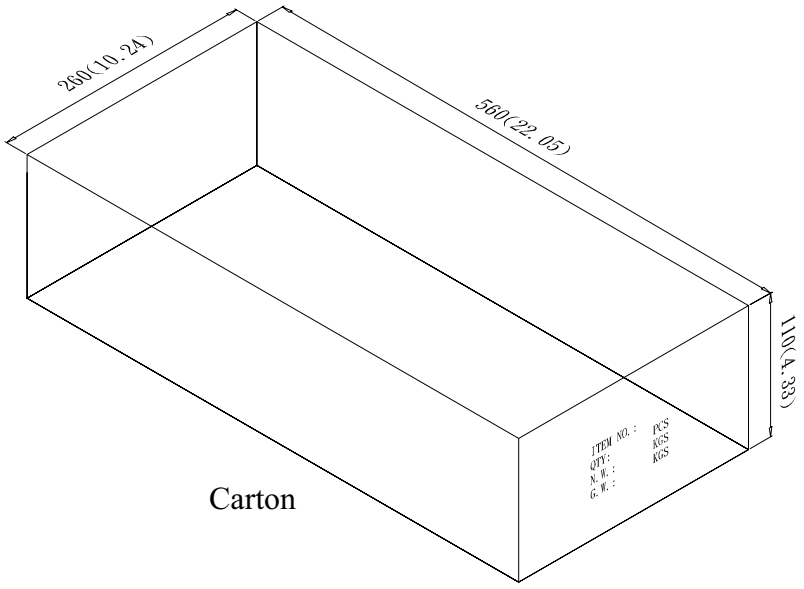
Tray

100 Pcs / Tray



Inner box

10 Tray / Inner box



Carton

2 Inner box / Carton

NOTES : Tray : Tolerance is ± 5 mm unless otherwise noted.

Inner box : Tolerance is ± 10 mm unless otherwise noted.

Carton : Tolerance is ± 10 mm unless otherwise noted.