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		DATE	2016-5-20
PART NAME	FIBER OPTIC TRANSMITTER	Rev	A-0
PART No.	YL-T015C	DOC No.	

1. Application

This specification applies to the outlines of the fiber-optic transmitter unit for digital audio interface

- DVD players
- CD players
- Digital TV
- Set top box
- PC-sound card

2. Descriptions

- The opto-electrical component is assembled with a 640nm AlGaInP LED and a driver IC. It Transforms the electrical signal to optical signal and be transmitted by 1mm diameter plastic optical fiber.
- The component is operated at +3 ~ +5V and has good performance at low dissipation current, steady light output and efficient light coupling.

3. Features

- High speed signal transmission (100Mbps NRZ Signal)
- Wide supply voltage: +2.7V to +5.5V
- Low power consumption for extended battery life
- TTL interface compatible
- Product remain the RoHS compliant version



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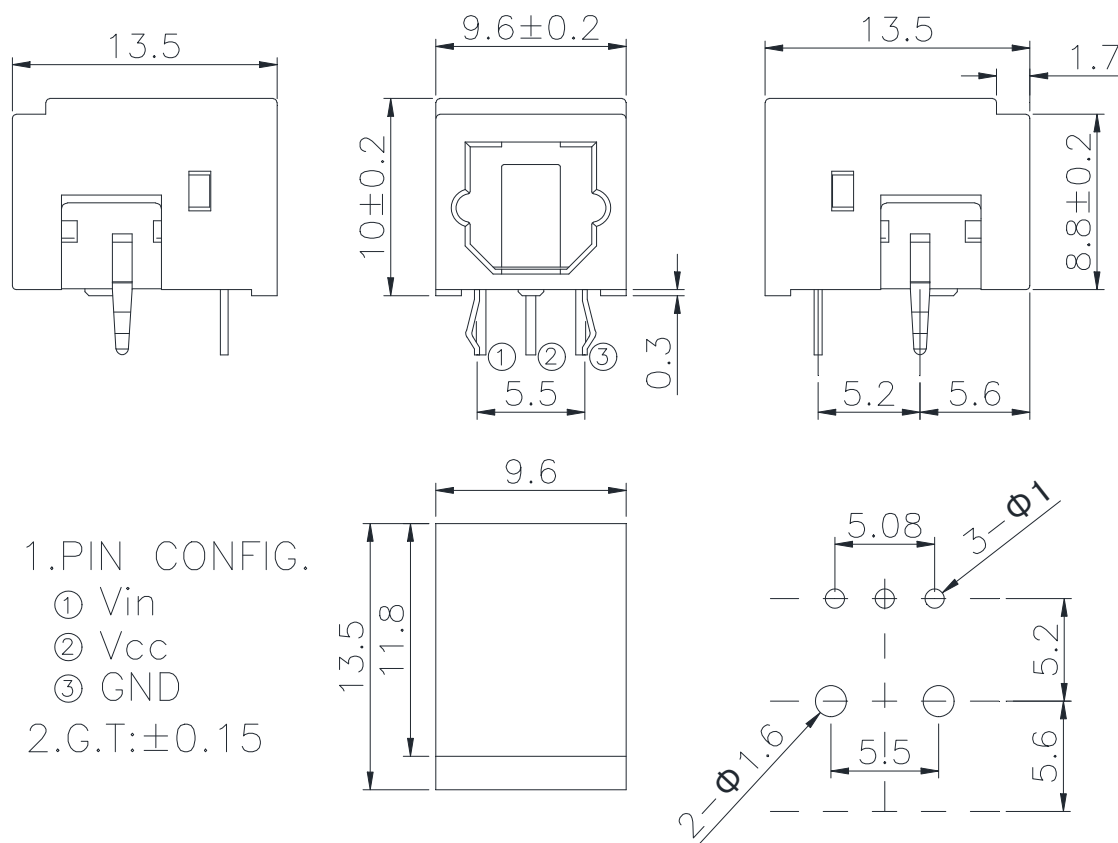
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4. Appearance & Dimensions

1) Package Dimension (Unit: mm)



2) Material List

Symbol	Description	Material
a	Drive IC	Silicone
	LED	AlGaInP
	Silver Paste	Ag Epoxy + Lead Frame
	Gold Wire	Au
	C.M.C	Non-fireproof epoxy resin
b	Lead Frame	Cu Alloy (Ag Plating Thickness: 2um)



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5. Electro-Optical Characteristics

1) Absolute Maximum Rating (Ta = 25°C)

Parameter	Symbol	Ratings	Unit
Supply Voltage	Vcc	+2.4 to +5.5	V
DC Input Voltage	Vin	-0.5 to Vcc+0.5	V
Storage Temperature	Tstg	-40 to +85	°C
Operating Temperature	Topr	-20 to +70	°C
Soldering Temperature (※1)	Tsol	260	°C
Human Body Model ESD	HBM	8000	V
Machine Model ESD	MM	400	V

(※1) Soldering time: 10sec or less

2) Recommended Operating Conditions

Parameter	Symbol	Condition	Min	Typ.	Max	Unit
Power Supply Voltage	Vcc	-	2.7	-	5.25	V

3) Electro-Optical Characteristics (Ta=25°C, Vcc=5.0V, 25Mbps)

Parameter	Symbol	Condition	Min	Typ.	Max	Unit
Peak Emission Wavelength	λ_p		620	640	660	nm
Data Rate	FD	NRZ Signal	0.1		100	Mbps
Fiber Coupling Output Power	Pf	Ref. to Fig.1	-21	-	-15	dBm
Dissipation Current	Icc	Ref. to Fig.2	1.0	-	5.5	mA
High Level Output Voltage	V _{IH}		2.0	-	-	V
Low Level Output Voltage	V _{IL}		-	-	0.8	V
Rise Time	Tr	Ref. to Fig.3	-	12	20	ns
Fall Time	Tf	Ref. to Fig.3	-	12	20	ns
Low to High Delay Time	tpLH	Ref. to Fig.3	-	-	100	ns
High to Low Delay Time	tpHL	Ref. to Fig.3	-	-	100	ns
Pulse Width Distortion	Δtw	Ref. to Fig.3	-15	-	+15	ns
Jitter	Δtj	Ref. to Fig.4	-	2	15	ns

Measure with a standard optical fiber, peak value.

*Circuit Layout Notice:

When power is off, it must be cut off together in Vin and Vcc pin.

If it only has Vcc power-off, LED will sure to be no output power.

Vcc	Vin	LED Condition
2.7~5.5	High	ON
2.7~5.5	Low	OFF
2.7~5.5	Floatin	OFF
Floatin	High	OFF
Floatin	Low	OFF



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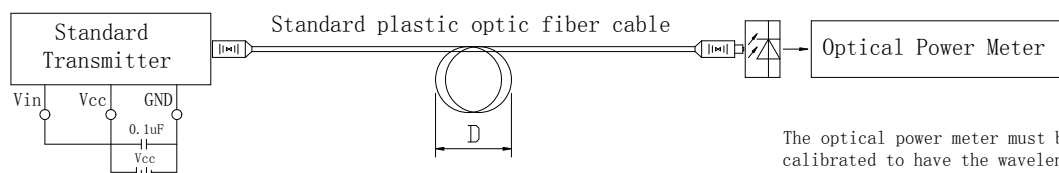
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4) Measurement Conditions

Fig.1 Measuring Method of Optical output coupling with Fiber

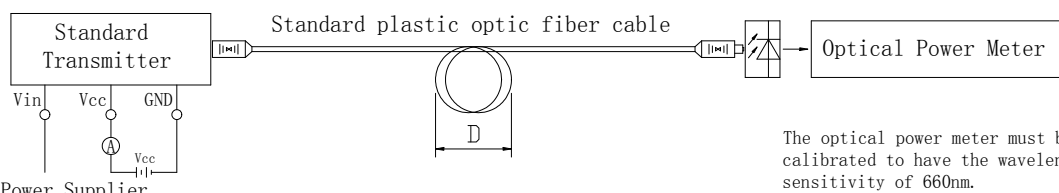


The optical power meter must be calibrated to have the wavelength sensitivity of 660nm.

Conditions:

1. $V_{cc}=5.0V \pm 0.05V$ (DC)
2. If bundle up the standard fiber cable, make it into a loop with the diameter (D) of 10cm or more.

Fig.2 Measuring method of dissipation current / input voltage

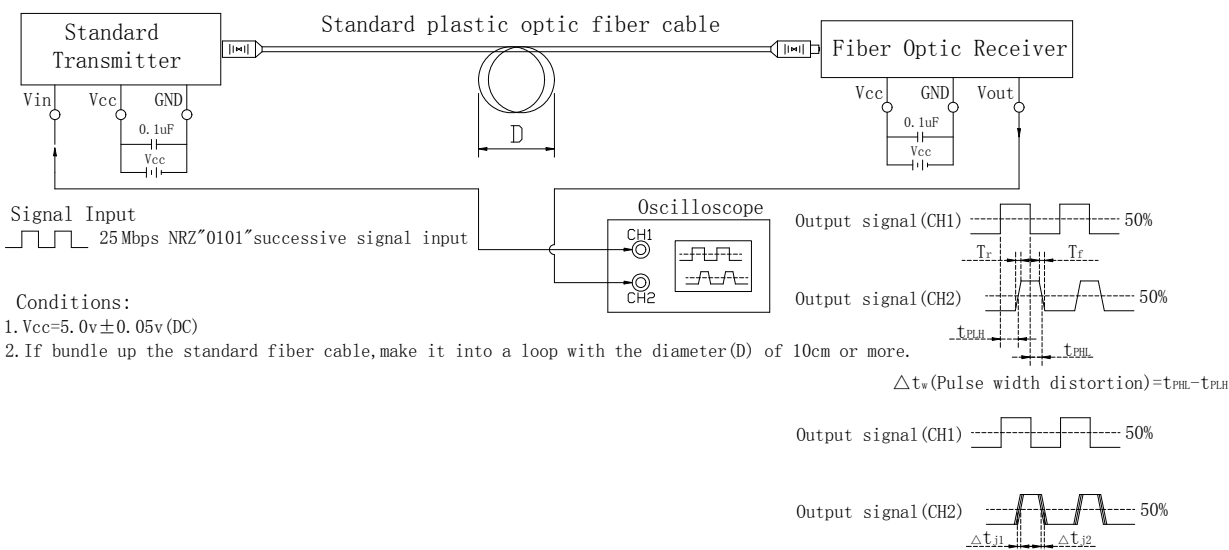


The optical power meter must be calibrated to have the wavelength sensitivity of 660nm.

Conditions:

1. $V_{cc}=5.0V \pm 0.05V$ (DC)
2. (A) Current meter
3. V_{in} : to power supplier (or signal Generator) (DC: 0-5V).

Fig.3 Measuring Method of Pulse Response



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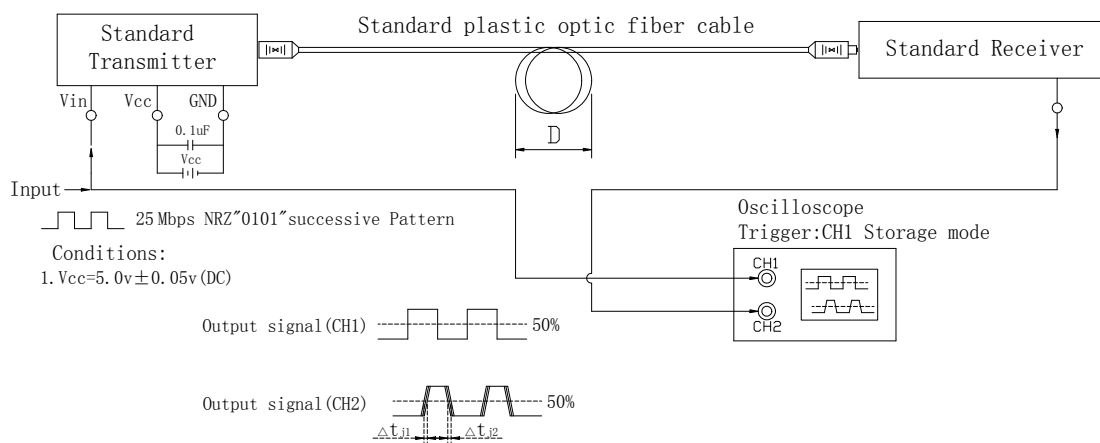
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Fig.4 Measuring method of Dissipation Current / Input Voltage



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6. Reliability Test Item and Standard.

- 1) All output products shall satisfy below Reliability test items.
- 2) Related sampling quantity and acceptance/failure judgment standard accordance with MIL standard MIL-STD-883 is as listed below.

No.	Test Items	Test Condition	Test Hour/Cycle	Sample Size	Fail(c)/ Sample(n)
1	High Temp. Storage (※2)	Ta= +85°C	500hours	22	C=0 / n=22
2	Low Temp. Storage (※2)	Ta= -30°C	500hours	22	C=0 / n=22
3	Temperature Cycle (※2)(※3)	Ta= -30°C to +85°C, cycle time: 30min	20cycle	22	C=0 / n=22
4	DC Operation Life Test	Ta= +60°C, Vcc=+5.0V	500hours	11	C=0 / n=11
5	Salt Spray (※2)	5%Nacl, Ta=35°C,80%RH	8hours	11	C=0 / n=11
6	Soldering Heat (※4)	Ta= 260±5°C	5sec./2times	11	C=0 / n=11
7	Solder ability	Ta= 260±5°C	5sec.	11	C=0 / n=11

※1. Supply voltage of load test is 5.0V.

※2. Electro-optical characteristics shall be satisfied after leaving 2 hours in the normal condition.

※3. Temperature cycle test shall repeat above condition 20 times under no load.

※4. For 5sec (after mounting on PCB with thickness of 1.6mm)

※Remark:

1. Icc (mA): Dissipation Current Attenuate Difference < ±20%

2. Pf (Fiber Coupling Output Power): Brightness Attenuate Difference < ±20%



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7. Outgoing Inspection

- 1) Inspection lot
Inspection shall be carried out per each delivery lot.
- 2) Inspection method
A single sampling plan, normal inspection level II based on ISO2859 shall be adopted.

Parameter		Inspection Item	AQL(%)
Major Defect	1	Satisfies electro-optical characteristics in parameter	0.4
	2	It should have no disconnection of lead terminal It should have no dust and solder that would hinder PCB insertion	
	3	Free from foreign on the connector coupling portion that would hinder plug insertion	
Minor defect	1	Deformation of case and lead terminal	1.5
	2	Stamp should be indicated at fixed position	

8. Soldering Condition

- 1) The distance between holes should be the same as that of between terminal leads of the component to avoid any stress during the soldering process. This may lead to the open circuit. Also, lead forming should be done before soldering process not to apply any stress to the inside of the epoxy resin.
- 2) Not to apply any stress to the component during the soldering process.
- 3) Recommended soldering condition.

Item	Condition
Pre-heating & Solder Bath	- Pre-heating : Less than 90°C - Solder Bath : 260°C - Soldering Area : 3mm away from the bottom the epoxy resin - Dipping time : Less than 5seconds. Less than twice.
Soldering – Iron	- Temperature : Less than 350°C, within 3 seconds.

※ Note

- Not to apply high temperature exceeding the maximum storage temperature to the epoxy resin.
- Not to apply any force to the epoxy resin at high temperature.

- 4) Washing Some chemicals may damage the epoxy resin. Ethyl-alcohol is recommended under the following condition.

Chemical washing	- Temperature : Less than 45°C - Wash time : Less than 3 minutes
Ultrasound washing	- Power : Less than 15W - Wash time : Less than 3 minutes



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9. Notice

- 1) The circuit application examples in this publication are provided to explain representative applications of YL devices and are not intended to guarantee any circuit design or license any intellectual property rights. YL takes no responsibility for any problems related to any intellectual property right of a third party resulting from the use of YL's device.
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- 3) Observe the following points when using any devices in this publication. YL takes no responsibility for damage caused by improper use of the devices which does not meet the condition and absolute maximum ratings to be used specified in the relevant specification sheet nor meet the following conditions.
 - a) The devices in this publication are designed for use in general electronic equipment designs such as :
 - Personal computers
 - Office automation equipment [terminal]
 - Telecommunication equipment
 - Test and measurement equipment
 - Industrial control
 - Audio visual equipment
 - Consumer electronics
 - b) Measures such as fail-safe function and redundant design should be taken to ensure reliability and safety when YL devices are used for or inconnection with equipment that requires higher reliability such as :
 - Transportation control and safety equipment (aircraft, trains, automobiles, etc.)
 - Traffic signals
 - Gas leakage sensor breakers
 - Alarm equipment
 - Various safety devices, etc.



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10. Packing Specifications

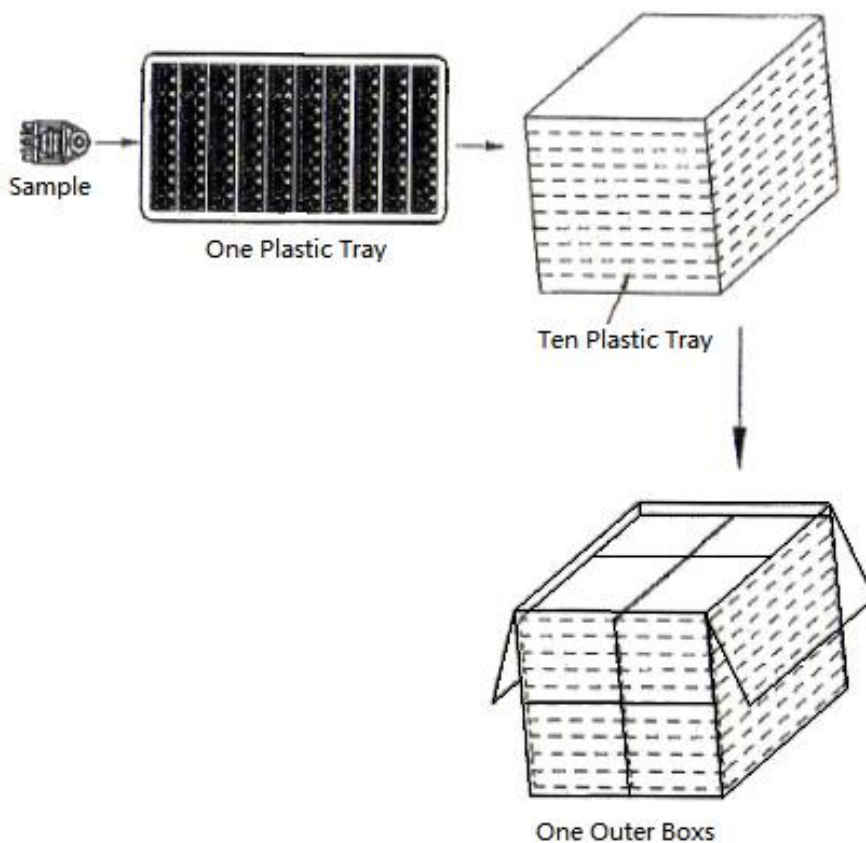
1) Label Specification

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 PO: _____
 MODEL: YL-_____
 QTY: _____ PCS
 DATE: _____



Label Dimensions (Unit: mm)

Label Type	L	W	Remark
Label #1	80	60	

2) Box Packing Method



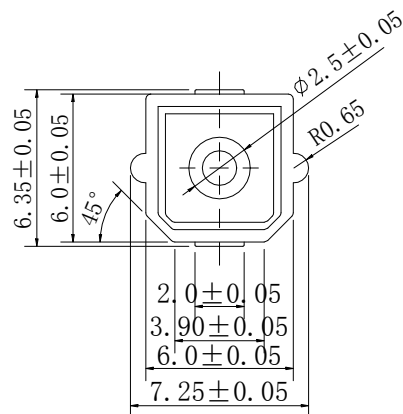
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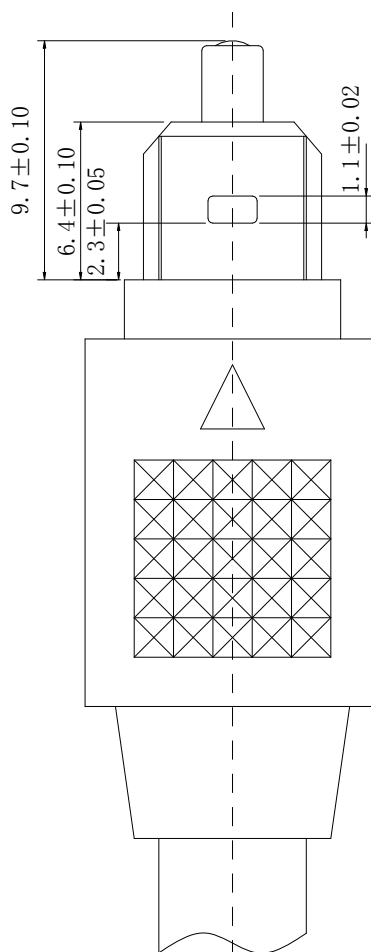
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11. Suggest using optical fiber line plug



Note: to not affect the use of optical fiber terminal Life, the fiber plug in the optical fiber terminal Must be inserted into the socket with the terminal When in, pull out flat out



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