

## Photolink- Fiber Optic Receiver PLR135/T7



### Features

- High PD sensitivity optimized for red light
- Data : NRZ signal
- Low power consumption for extended battery life
- Built-in threshold control for improved noise Margin
- The product itself will remain within RoHS compliant version.
- Receiver sensitivity: up to  $-27\text{dBm}$  (Min. for 16Mbps)
- The product itself will remain within RoHS compliant version.
- Compliance with EU REACH
- Compliance Halogen Free(Br<900ppm,Cl<900ppm,Br+Cl<1500ppm)

### Description

The optical receiver is packaged with custom optic data link interface, integrated on a proprietary CMOS PDIC process.

The unit functions by converting optical signals into electric ones.

The unit is operated at 2.4 ~ 5.5 V and the signal output interface is TTL compatible with high performance at low power consumption.

### Applications

- Digital Optical Data-Link
- Dolby AC-3 Digital Audio Interface

### Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Rating	Unit
Supply Voltage	Vcc	-0.5 ~ +5.5	V
Output Voltage	Vout	Vcc +0.3	V
Storage Temperature	Tstg	-40 to 85	°C
Operating Temperature	Topr	-20 to 70	°C
Soldering Temperature	Tsol	260*	°C
Human Body Model ESD	HBM	2000	V
Machine Model ESD	MM	100	V

**Notes:** Soldering time  $\leq$  10 seconds.

### Recommended Operating Conditions

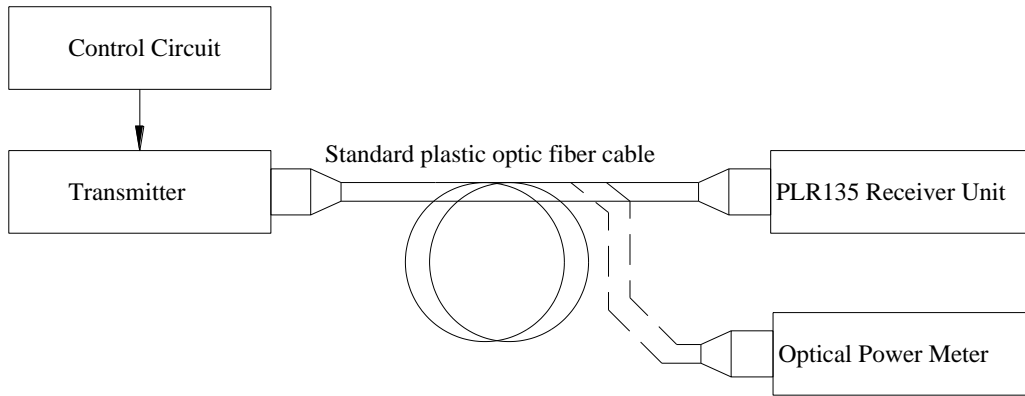
Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Supply Voltage	Vcc	-	2.4	3.0	5.50	V

### Electro-Optical Characteristics (Ta=25°C, Vcc=3V, CL= 5pf)

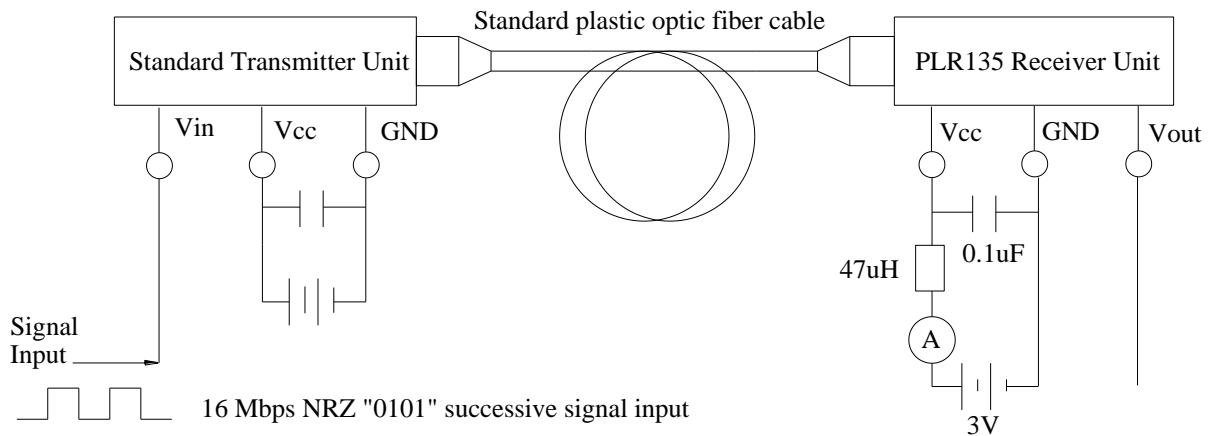
Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Peak sensitivity wavelength	$\lambda_p$	-	-	650	-	nm
Transmission Distance	d	*1	0.2	--	5	m
Maximum receiver power	Pc,max	Refer to Fig.1	-	-	-14	dBm
Minimum receiver power	Pc,min	Refer to Fig.1	-27	-	-	dBm
Dissipation current	Icc	Refer to Fig.2	-	4	12	mA
High level output voltage	VOH	Refer to Fig.3	2.1	2.5	-	V
Low level output voltage	VOL	Refer to Fig.3	-	0.2	0.4	V
Rise time	tr	Refer to Fig.3	-	10	20	ns
Fall time	tf	Refer to Fig.3	-	10	20	ns
Propagation delay Low to High	tPLH	Refer to Fig.3	-	-	120	ns
Propagation delay High to Low	tPHL	Refer to Fig.3	-	-	120	ns
Pulse Width Distortion	$\Delta tw$	Refer to Fig.3	-25	-	+25	ns
Jitter	$\Delta tj$	Refer to Fig.3, Pc=-14dBm	-	1	15	ns
		Refer to Fig.3, Pc=-27dBm	-	5	20	ns
Transfer rate	T	NRZ signal	0.1	-	16	Mb/s

## Measuring Method

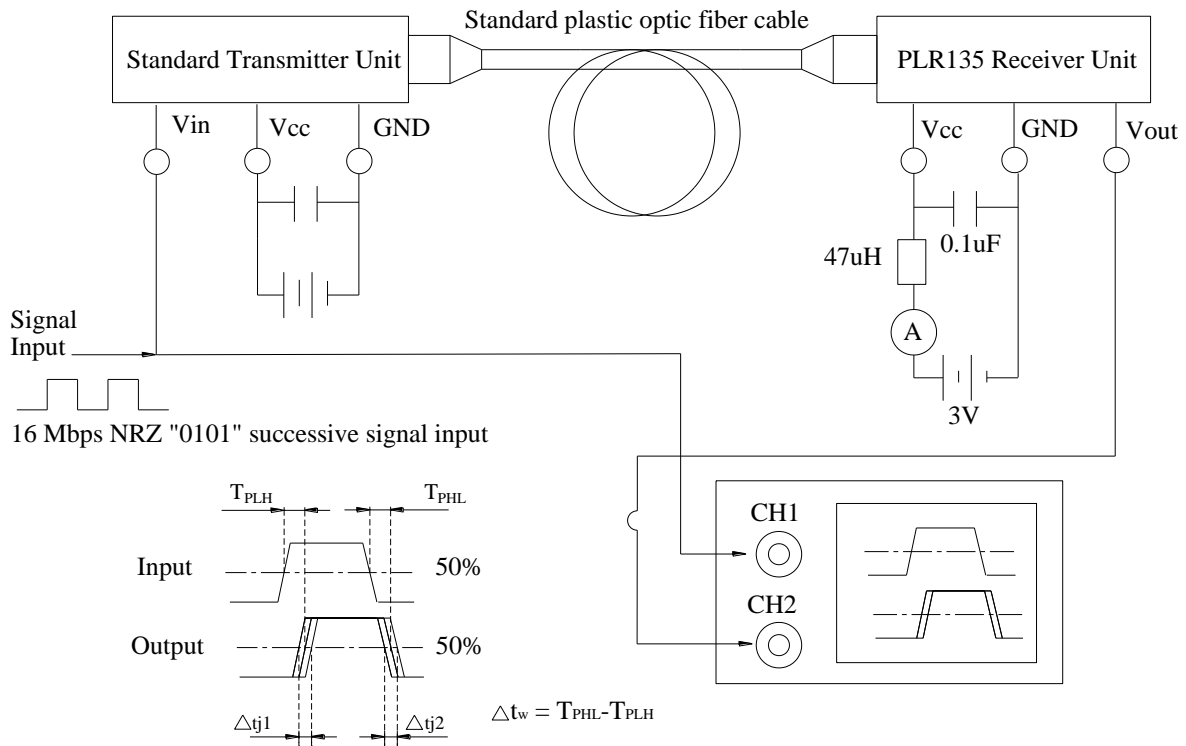
\*Fig.1 Measuring Method of Maximum and Minimum Input Power that Receiver Unit Need



\*Fig.2 Measuring Method of Dissipation Current



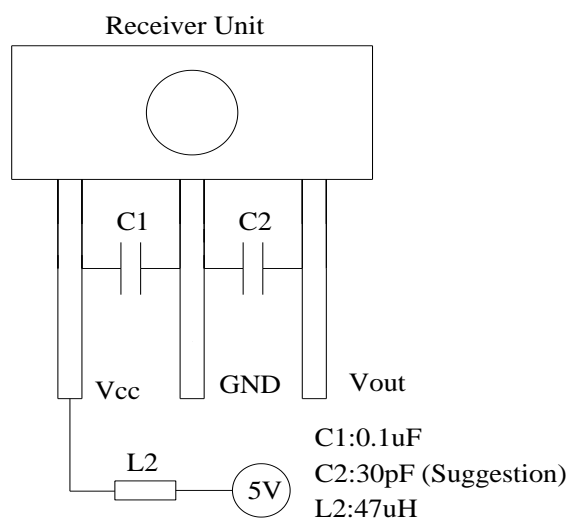
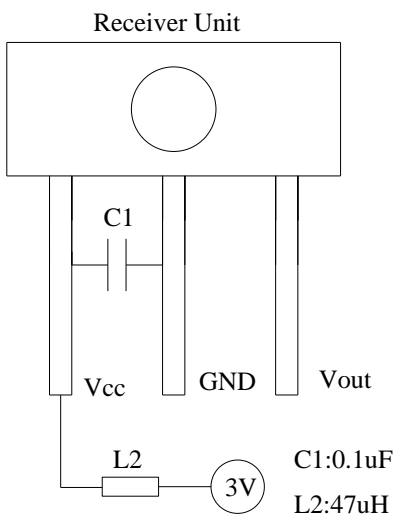
\*Fig.3 Measuring Method of Output Voltage, Pulse and Jitter



### Application Circuit

(1) General application circuit for Vcc=3V

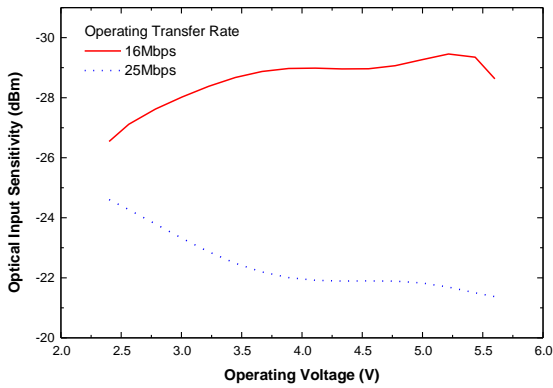
(2) General application circuit for Vcc=5V



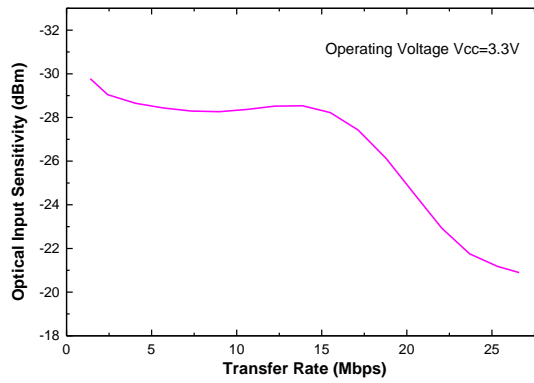
Note: For having good coupling, the C1,C2 capacitor must be placed within 7mm

### Typical Electro-Optical Characteristics Curves

\*Fig.4 Power supply voltage vs. Minimum receiver power

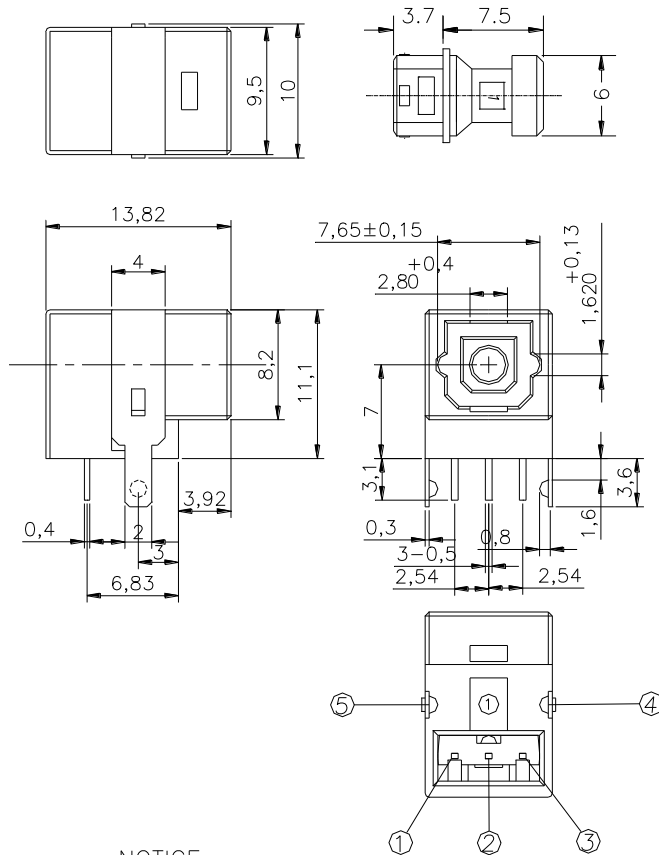


\*Fig.5 Transfer rate vs. Minimum receiver power



**Note:** Before using the PLR135 device, please confirm the minimum sensitivity at different operating voltage and transmission rate.

**Package Dimension**



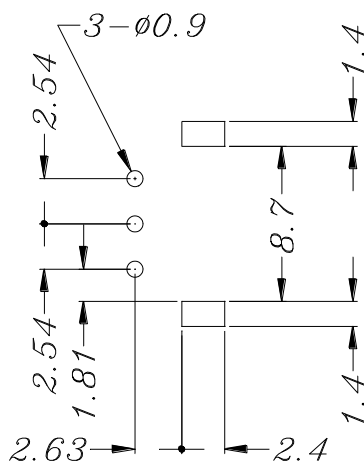
**Pin Function:**

- 1.Vcc
- 2.GND
- 3.Vout
- 4.NC (No Connect)
- 5.NC (No Connect)

NOTICE:  
 1.All dimensions are in mm.  
 2.Unspecified tolerance is  $\pm 0.30$ mm.

**Notes:** 1. All dimensions are in millimeters.  
 2. General Tolerance  $\pm 0.3$ mm

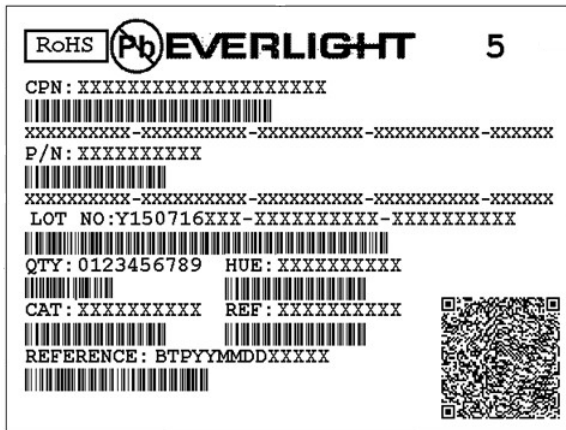
**PCB Layout for Electrical Circuit**



**Notice:**

- 1. Unit:mm
- 2. PCB tolerance:1.6mm

## Label Explanation



- CPN: Customer's Product Number
- P/N: Product Number
- QTY: Packing Quantity
- CAT: Luminous Intensity Rank
- HUE: Dom. Wavelength Rank
- REF: Forward Voltage Rank
- LOT No: Lot Number
- X: Month
- Reference: Identify Label Number

## Packing Quantity Specification

1. 60 pcs/tube
2. 36 tubes/box
3. 4 boxes/carton

## Notes

1. Above specification may be changed without notice. EVERLIGHT will reserve authority on material change for above specification.
2. When using this product, please observe the absolute maximum ratings and the instructions for using outlined in these specification sheets. EVERLIGHT assumes no responsibility for any damage resulting from use of the product which does not comply with the absolute maximum ratings and the instructions included in these specification sheets.
3. These specification sheets include materials protected under copyright of EVERLIGHT corporation. Please don't reproduce or cause anyone to reproduce them without EVERLIGHT's consent.

## DISCLAIMER

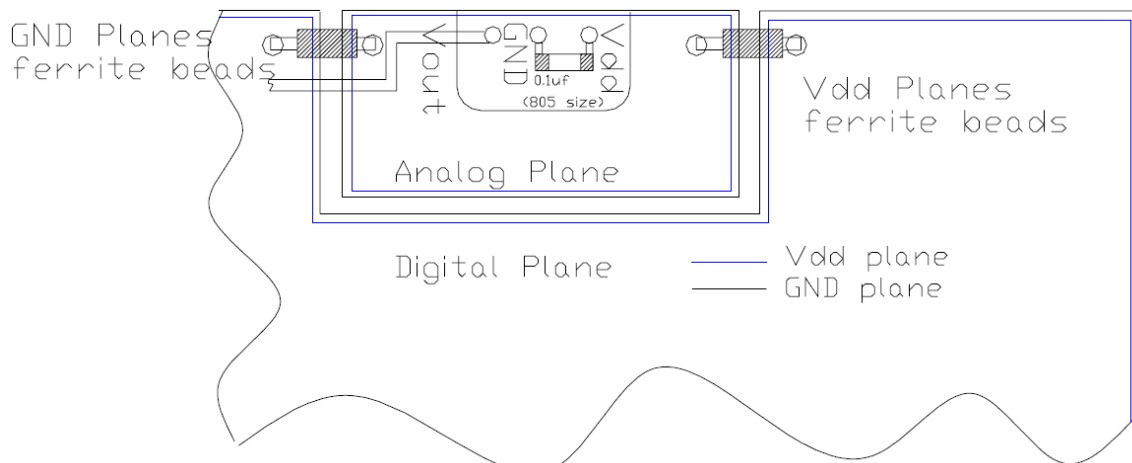
4. Above specification may be changed without notice. EVERLIGHT will reserve authority on material change for above specification and reserve the right(s) on the adjustment of product material mix for the specification.
5. The product meets EVERLIGHT published specification for a period of twelve (12) months from date of shipment.
6. The graphs shown in this datasheet are representing typical data only and do not show guaranteed values.
7. When using this product, please observe the absolute maximum ratings and the instructions for using outlined in these specification sheets. EVERLIGHT assumes no responsibility for any damage resulting from the use of the product which does not comply with the absolute maximum ratings and the instructions included in these specification sheets.
8. These specification sheets include materials protected under copyright of EVERLIGHT. Reproduction in any form is prohibited without obtaining EVERLIGHT's prior consent.
9. This product is not intended to be used for military, aircraft, automotive, medical, life sustaining or life saving applications or any other application which can result in human injury or death. Please contact authorized Everlight sales agent for special application request.
10. Statements regarding the suitability of products for certain types of applications are based on Everlight's knowledge of typical requirements that are often placed on Everlight products in generic applications. Such statements are not binding statements about the suitability of products for a particular application. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Parameters provided in datasheets and/or specifications may vary in different applications and performance may vary over time. All operating parameters, including typical parameters, must be validated for each customer application by the customer's technical experts. Product specifications do not expand or otherwise modify Everlight's terms and conditions of purchase, including but not limited to the warranty expressed therein



Application Notes: PLR135 Series PCB layout for motherboard integration

To achieve better jitter and low input optical power performances, several PCB layout guidelines must be followed. These guidelines ensure the most reliable PLR135 POF performance for the motherboard integration. Failed to implement these PCB guidelines may affect the PLR135 jitter and low input power performances.

- Careful decoupling of the power supplies is very important. Place a 0.1uf surface mount (size 805 or smaller) capacitor as close as (less than 2cm) to the POF Vdd and Gnd leads. The 0.1uf act as a low impedance path to ground for any stray high frequency transient noises.
- To reduce the digital noises form the digital IC on the motherboard, the planar capacitance formed by an isolated Vcc and Gnd planes is critical. The POF device must be mounted directly on these two planes to reduce the lead parasitic inductance.
- The isolated Vdd and Gnd planes must be connected to the main Vcc and Gnd (digital) planes at a single point using ferrite beads. The beads are used to block the high frequency noises from the digital planes while still allowing the DC connections between the planes

**EVERLIGHT ELECTRONICS CO., LTD.**

Office: No 6-8, Zhonghua Rd., Shulin Dist.,  
New Taipei City 23860, Taiwan, R.O.C

Tel: 886-2-2685-6688

Fax: 886-2-2685-6897

<http://www.everlight.com>