东莞市爱玲电子科技有限公司
Dongguan A-Lin Electronic&Technology Limited

FIBER OPTIC DATA LINK

DATA SHEET

MODEL NO : DLR2170

DATE : 2021-03-30

VERSION : A.0

DEVICE NO. : AX-FS-RD-064

CUSTOMER	DESIGNER	CHECKER	APPROVER

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Features

- High PD sensitivity for red light
- High speed up to 25 Mbps
- Low power consumption and current dissipation
- +3~+5V power source

Descriptions

The light receiving unit is a standard-package product with connector and opto-electric component packaged with PD and I/V amplifier IC. The function of unit changes the light signal into electric signal.

The unit is operated at +3~+5V and the input signal is TTL compatible. The DLR2170 has a maximum operating speed of 25 Mbps.

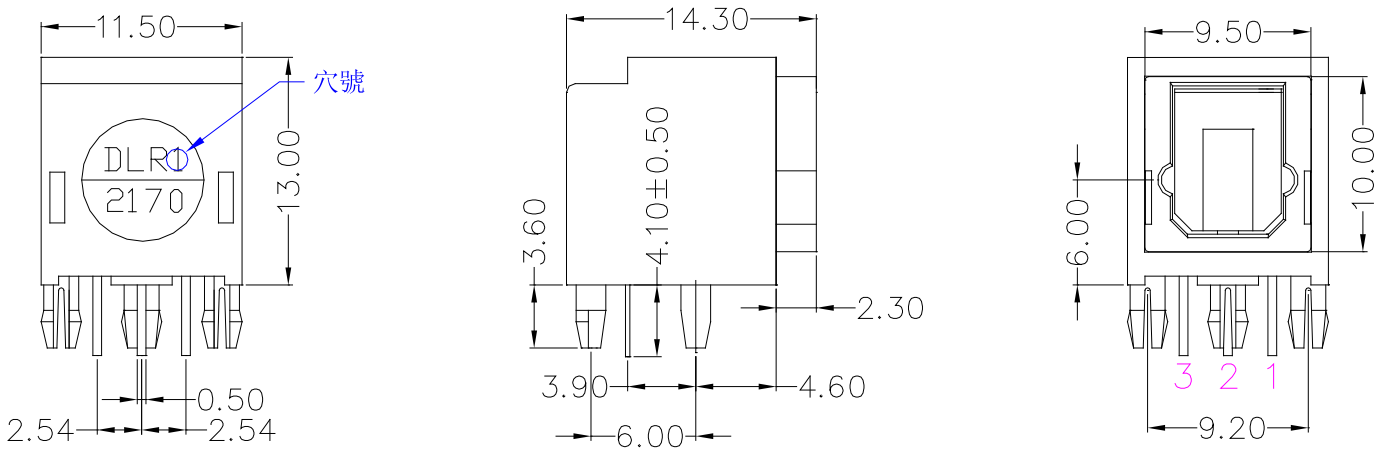
Applications

- Amplifier
- Audio equipment
- Digital optical data link
- Sound Card

Device Selection Guide

Chip		Operating Voltage (Vcc)	Dissipation Current(mA)	Fiber Coupling Light Output (dBm)		
IC Material	PD λ p(nm)		Typ.	Min.	Typ.	Max.
Si	660	+3~+5V	2.5	-24	-	-14.5

Package Dimensions



Notes: 1.All dimensions are in millimeters.
2.General Tolerance:±0.2mm

Pin Function

1. Vout 2.GND 3.Vcc

Shutter Colour Notes:

1.DLR2170-B : Black
2. DLR2170-G : Gray
3. DLR2170-P : Pink

Absolute Maximum Ratings(Ta = 25℃)

Parameter	Symbol	Rating	Unit
Supply Voltage	Vcc	0~5.5	V
Storage Temperature	Tstg	-30 to 80	℃
Operating Temperature	Topr	-20 to 70	℃
Soldering Temperature	Tsol	260*	℃

* Soldering time ≤ 5s / 2 times. *Don't touch flux soldering and white Gas

Electro-Optical Characteristics

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Operating Voltage	Vcc	-	2.7	-	5.5	V
Peak Detective Wavelength	λp	-	-	650	-	nm
Transfer Speed		NRZ signal	0.1	-	25	Mbps
Receiving Distance		Using APF	0.2	-	20	m
Pulse Width Distortion	Δtw	25Mbps NRZ Signal	-11	-	11	ns
Input Light power	Pi	*1	-24	-	-14.5	dBm
Dissipation Current	Icc	*2	-	2.5	10	mA
High Level Output Voltage	V_{OH}		2.4	-	-	v
Low Level Output Voltage	V_{OL}		-	-	0.4	v
Rise Time	t_r	*3	-	-	25	ns
Fall Time	t_f	*3	-	-	25	ns
Low→ High propagation delay time	t_{PLH}	*3	-	-	100	ns
High→ Low propagation delay time	t_{PHL}	*3	-	-	100	ns
Jitter time	Δtj	*3	-	1.5	10	ns

*Light Input after APF should satisfy Pi range.

The DLR2170 light receiving unit satisfies EIAJ CP-1201 digital audio interface standard.

Reliability Test Items

No.	Item	Test Condition	Test Hour/Cycle	Samples	Number (n) Failure (c)
1	Soldering Heat	260℃±5℃	5 sec./2times	22	n=22, c=0
2	High temp. & Hum. storage	Ta=40℃, 90%RH	500	22	n=22, c=0
3	High temp. storage	Ta=80℃	500	22	n=22, c=0
4	Low Temp. storage	Ta=-30℃	500	22	n=22, c=0
5	Temp. cycling	-30℃ ~ 80℃ (30min) (5min) (30min)	20	22	n=22, c=0
6	High Temp. Operation life	Ta=60℃, Vcc=5V ON	500	22	n=22, c=0
7	Repeated operation	500 times	Coupling force < 2 kg 0.4kg<Detaching force <2kg	22	n=22, c=0
8	Terminal Strength(tension)	Weight: 500 g 30 sec./each terminal		22	n=22, c=0
9	Terminal Strength(bending)	Weight: 500 g 2 times/each terminal		22	n=22, c=0
10	Mechanical Shock	Acceleration: 1000m/s2 Pulse width: 6 ms 3 times/ X,Y,Z direction		22	n=22, c=0
11	Vibration	Frequency range: 10~55 Hz /sweep 1 min Overallamplitude:1.5 mm 2H./X,Y,Z direction		22	n=22, c=0

Icc (dissipation current): CURRENT ATTENUATE DIFFERENCE < 20%

T_{PLH} (propagation L→H delay time): DELAY TIME DIFFERENCE < 20%

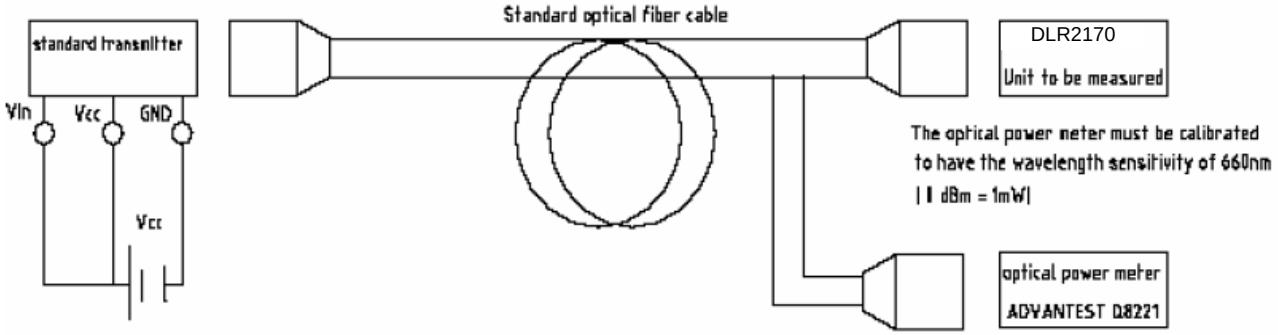
T_{PHL} (propagation H→L delay time): DELAY TIME DIFFERENCE < 20%

Tr (rise time): TIME DIFFERENCE < 20%

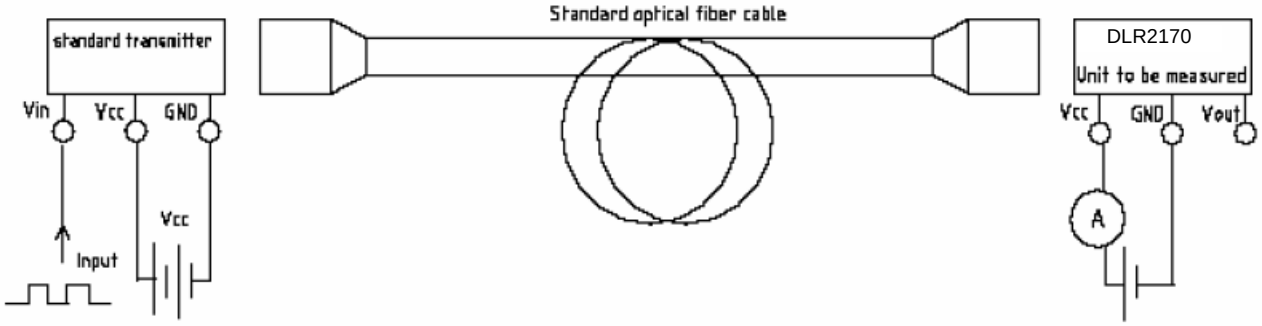
Tf (fall time): TIME DIFFERENCE < 20%

Measuring Method

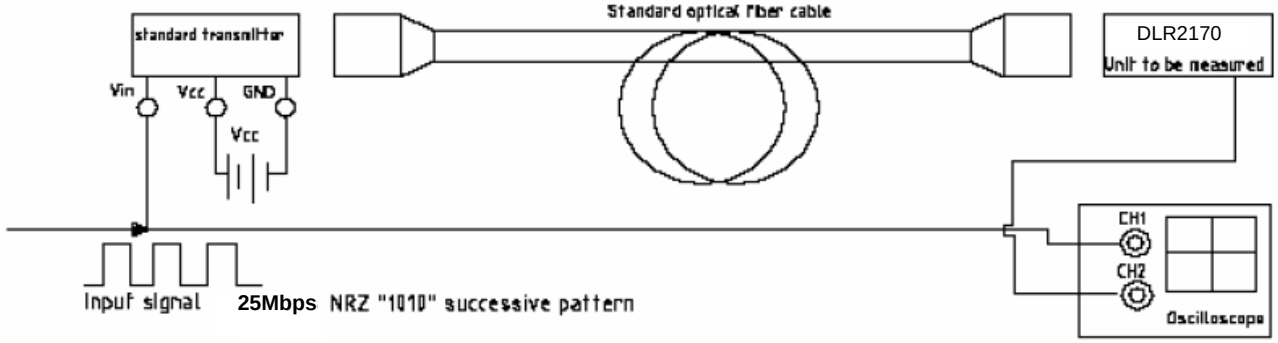
*1 Maximum receiver input optical power/Minimum receiver input optical power



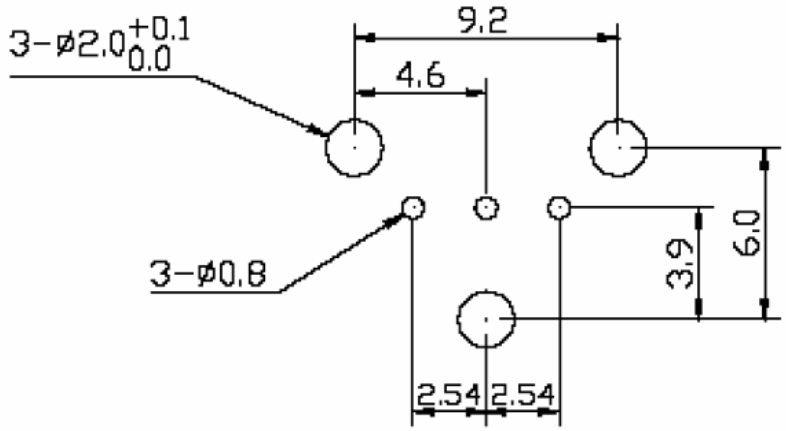
*2 Current dissipation measuring method



*3 Pulse response and jitter measuring method



PCB Layout For Electrical Circuit

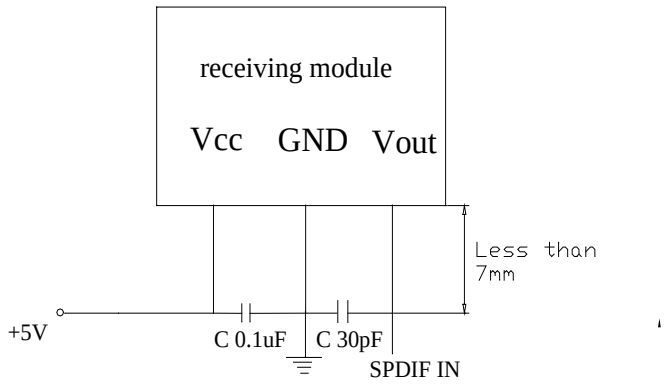


Notes:

1. Unit: mm
2. Unspecified tolerance: ±0.3mm
3. Substrate Thickness:1.6mm

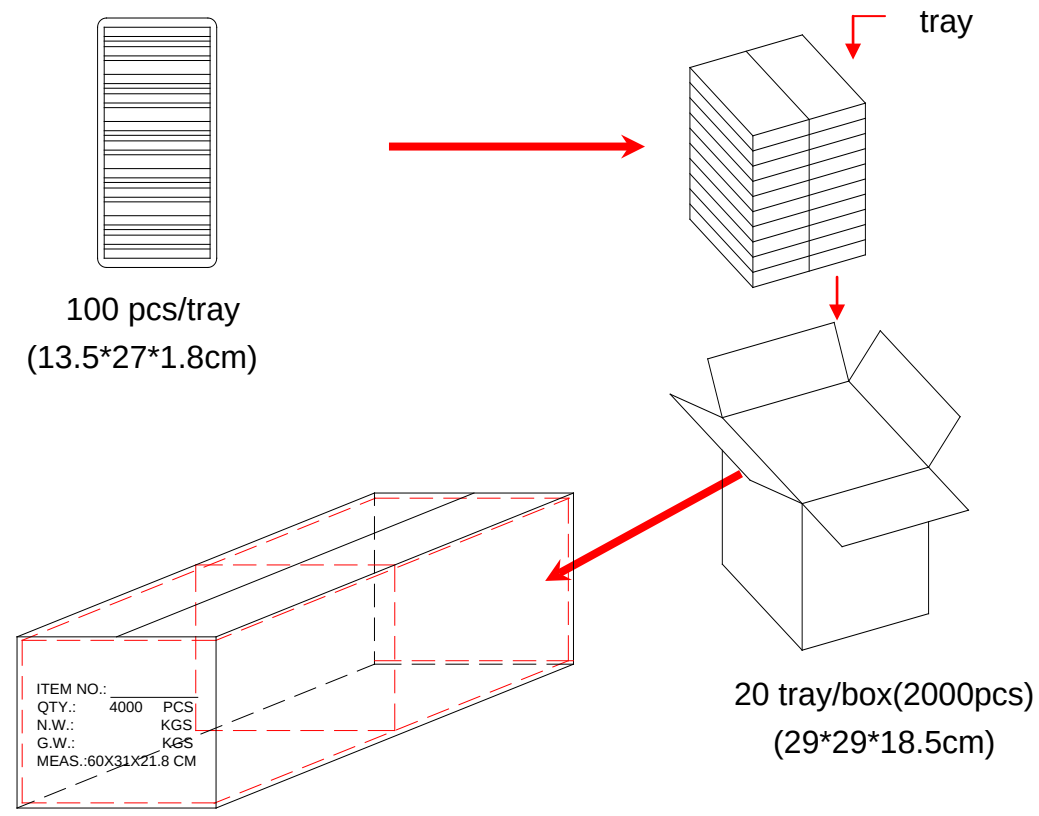
Precautions for Using Method

1.Connect a by-pass capacitor (0.1uF) close to the DLR2170 within 7 mm of the unit lead frame.
2.Connect a by-pass capacitor(30pF) between GND and Vout avoid loading effect.
3. Take proper electrostatic-discharge (ESD) precautions while handling these devices. These devices are sensitive to ESD.



Package

Item	Quantity	Total	Size（long*width*high）
Tray	1	100 pcs	13.5*27*1.8cm
Inner box	20 tray/box	2000 pcs	29*29*18.5 cm
Outer box	2 inner box/outer box	4000 pcs	60*31*21.8 cm



REV	DESCRIPTION	RELEASE DATE