

Cliff Electronic Components Ltd.  
76 Holmethorpe Avenue, Holmethorpe Industrial Estate,  
Redhill, Surrey, RH1 2PF, England, UK  
Tel: 01737-771375 Fax: 01737-766012 Website: www.cliffuk.co.uk

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# FIBER OPTIC DATA LINK

## DATA SHEET

MODEL NO. : FCR6842031R

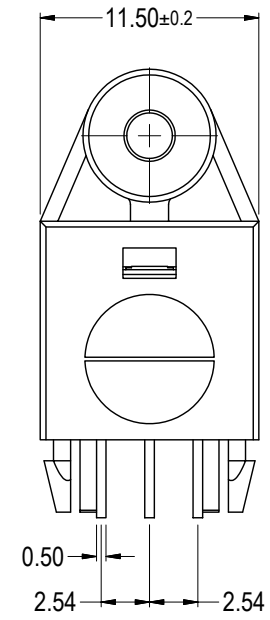
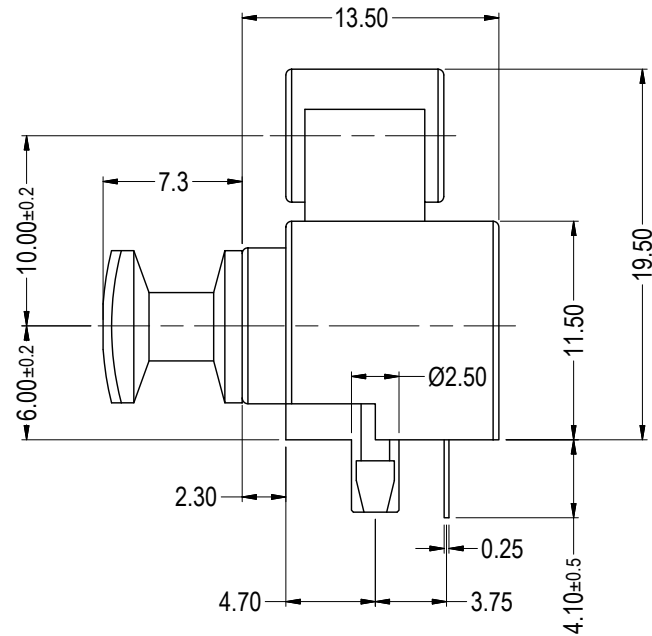
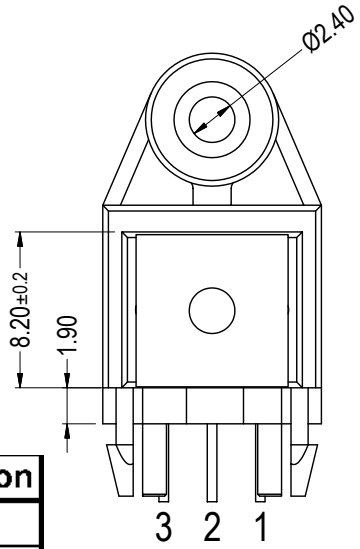
DATE : 09-05-2017 :

VERSION : 1.0

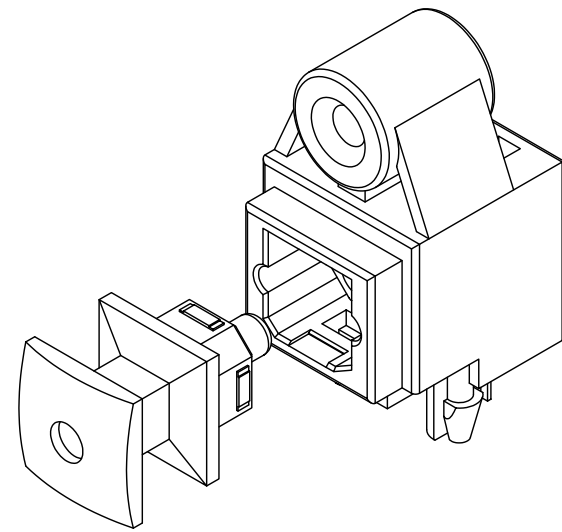
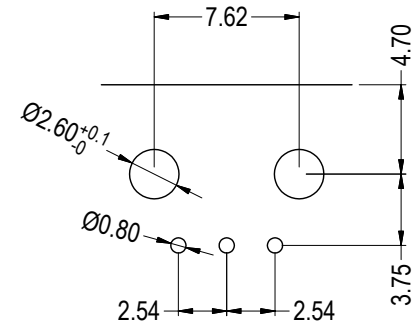
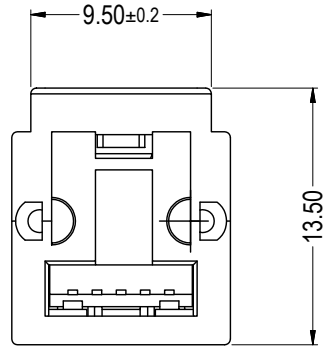
DEVICE : ORJ -1 Optical Receiver

CUSTOMER	DESIGNER	CHECKER	APPROVER

ISS.	AMEND	DATE
1	ISSUED	08/05/17



Pin	Function
1	Vout
2	GND
3	Vcc



DESCRIPTION	MATERIAL	UL
BODY	BLACK PBT	UL94 V-0 E323954
REAR BODY	BLACK PBT	UL94 V-0 E323954
COVER	BLACK PBT	UL94 V-0 E323954
IC	BRIGHT TIN PLATE	n/a

All materials used are environment-friendly, non-toxic and are fully compliant with RoHS and REACH directives

RoHS COMPLIANT	
TOLERANCE	
NO DEC. PLACE ±	
1 DEC. PLACE ±	
2 DEC. PLACE ±	
HOLE Ø ±	
ANGLES ±	
UNLESS OTHERWISE STATED	
DO NOT SCALE	

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DIMENSIONS IN MILLIMETERS UNLESS OTHERWISE STATED. WORK TO DIMENSIONS. REMOVE ALL BURRS. IF IN DOUBT ASK.

3rd ANGLE PROJECTION:

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MATERIAL: SEE TABLE  
 FINISH: SEE TABLE  
 DRAWN: T.J.O. APPROVED: D.P.J.

TITLE: OPTICAL JACK RECEIVER ORJ-1  
 DRWG. No. **FCR6842031R** FORM: A4DRWGH

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## Features

- High PD sensitivity for red light
- High speed up to 16 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. FCR6842031R has a maximum operating speed of 16 Mbps.

## Applications

- Audio equipment
- Digital optical data link
- MD
- Sound card



## Device Selection Guide

Chip		Operating Voltage (Vcc)	Dissipation Current(mA)	Fiber Coupling Light Output (dBm)		
IC Material	LED $\lambda$ p(nm)			Min.	Typ.	Max.
Si	700	2.7~5.5	Typ. 6.5	-24	-	-14.5

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

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

\* Soldering time ≤ 5s / 2times.

\*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	$\lambda_p$	-	-	700	-	nm
Transfer Speed		NRZ signal	0.1	-	16	Mbps
Receiving Distance		Using APF	0.2	-	20	m
Pulse Width Distortion	$\Delta tw$	16Mbps NRZ Signal	-20	-	20	ns
Input Light power	Pi	*1	-24	-	-14.5	dBm
Dissipation Current	Icc	*2	-	6	10	mA
High Level Output Voltage	VOH		2.4	-	-	v
Low Level Output Voltage	VoL		-	-	0.4	v
Rise Time	t <sub>r</sub>	*3	-	-	25	ns
Fall Time	t <sub>f</sub>	*3	-	-	25	ns
Low → High propagation delay time	t <sub>PLH</sub>	*3	-	-	100	ns
High → Low propagation delay time	t <sub>PHL</sub>	*3	-	-	100	ns
Jitter time	$\Delta t_j$	*3	-	1.5	15	ns

FCR6842031R light receiving unit satisfies EIAJ CP-1201 digital audio interface standard.

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## Reliability Test Items

No.	Item	Test Condition	Test Hour/Cycle	Samples	Number (n) Failure (c)
1	Soldering Heat	260°C±5°C	5 sec./2times	22	n=22, c=0
2	High temp. & Hum. storage	Ta=40°C, 90%RH	500	22	n=22, c=0
3	High temp. storage	Ta=80°C	500	22	n=22, c=0
4	Low Temp. storage	Ta=-30°C	500	22	n=22, c=0
5	Temp. cycling	-30°C ~ 80°C (30min) (5min) (30min)	20	22	n=22, c=0
6	High Temp. Operation life	Ta=60°C, 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/s <sup>2</sup> 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

I<sub>cc</sub> (dissipation current): CURRENT ATTENUATE DIFFERENCE < 20%

T<sub>PLH</sub> (propagation L→ H delay time): DELAY TIME DIFFERENCE < 20%

T<sub>PHL</sub> (propagation H→ L delay time): DELAY TIME DIFFERENCE < 20%

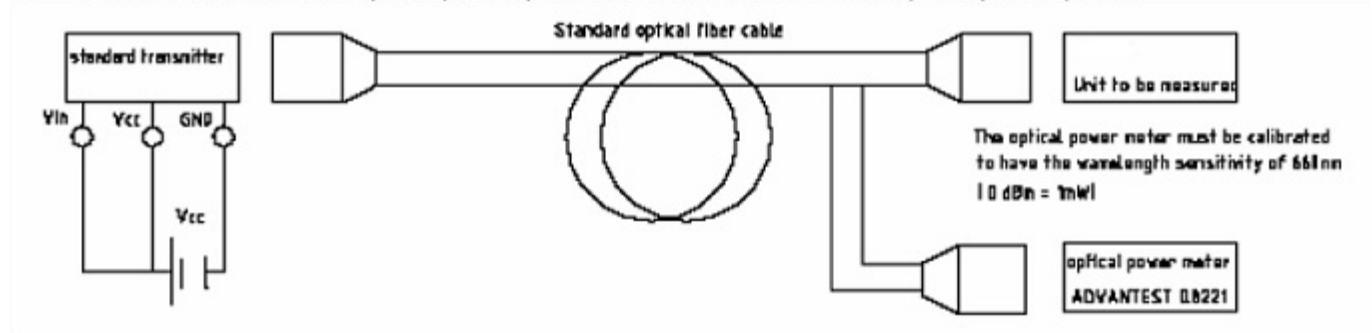
T<sub>r</sub> (rise time): TIME DIFFERENCE < 20%

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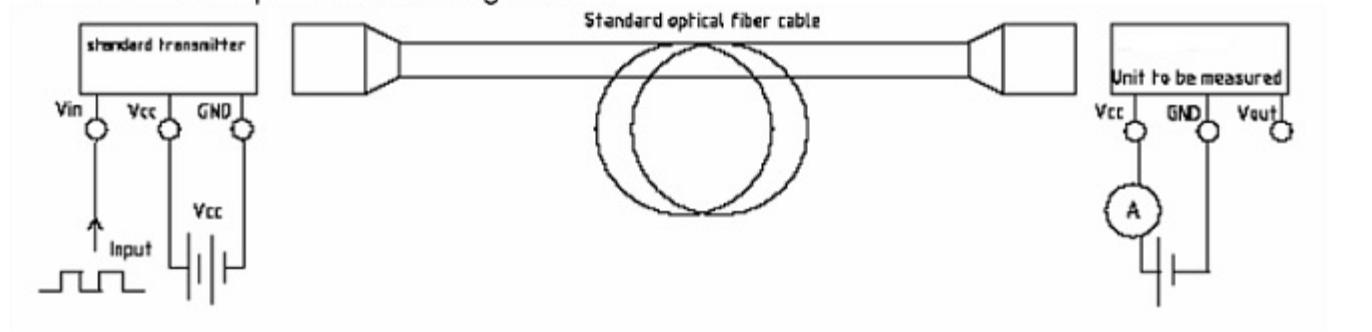
Tf (fall time): TIME DIFFERENCE < 20%

## Measuring Method

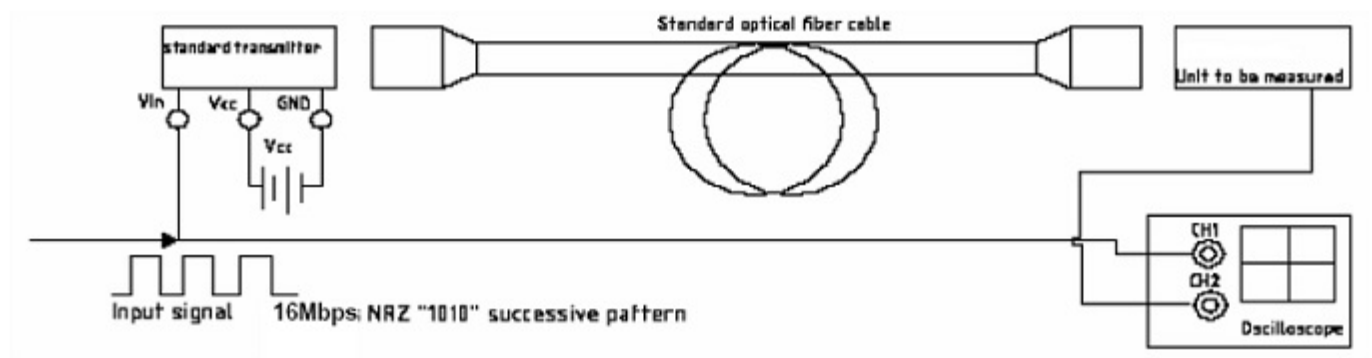
- \*1 Maximum receiver input optical power/Minimum receiver input optical power



- \*2 Current dissipation measuring method



- \*3 Pulse response and jitter measuring method



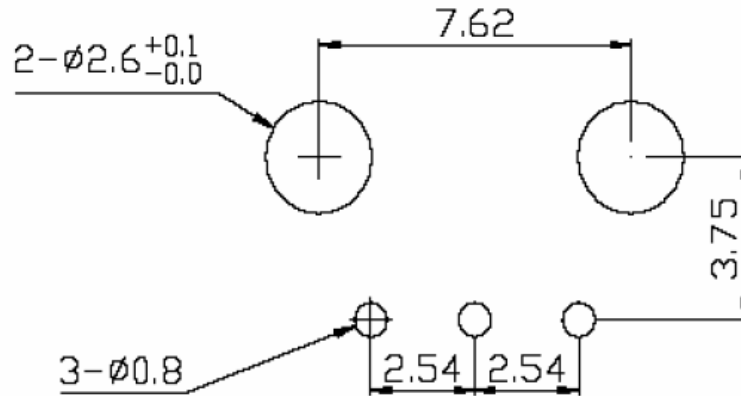
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## PCB Layout For Electrical Circuit

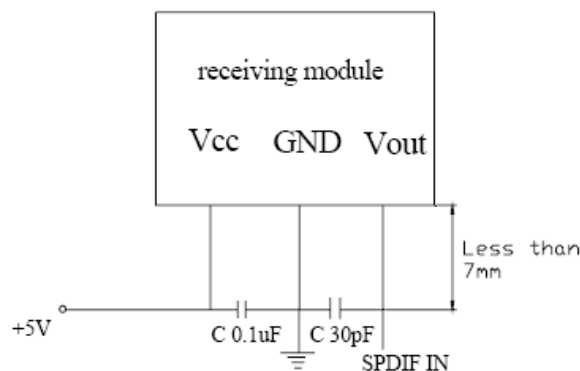


### Notes:

1. Unit: mm
2. Unspecified tolerance:  $\pm 0.3$ mm
3. Substrate Thickness: 1.6mm

### Precautions for Using Method

1. Connect a by-pass capacitor (0.1uF) close to FC R6842031R within 7mm 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.



### Pin Function

1. Vout
2. GND
3. Vcc



## QMFZ2.E323954 Plastics - Component

For enhanced search functionality, please visit UL's [iQ™ Family of Databases](#).

Click on a product designation for complete information.

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### Plastics - Component

[See General Information for Plastics - Component](#)

#### DONG GUAN NUO BAO XIN PLASTIC CO LTD

E323954

GUANZHOU INDUSTRY ZONE

WANG NIU DUN TOWN

DONGGUAN, GUANGDONG 523215 CHINA

									H	D	
		Min.		H	H	R T I			V	4	C
		Thk	Flame	W	A	Elec	Mech		T	9	T
Material Dsg	Color	mm	Class	I	I		Imp	Str	R	5	I
<b>Polybutylene Terephthalate (PBT), glass reinforced, furnished as pellets.</b>											
<b>301-G25</b>	NC, BK	3.0	V-0	-	-	75	75	75	-	-	-

Marking: Company name and material designation on container, wrapper or finished part.

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