

**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 : FCR6842032R

DATE : 24-05-2021

VERSION : 1.1

DEVICE NO. : ORJ3 (OPTICAL RECEIVER JACK)

CUSTOMER	DESIGNER	CHECKER	APPROVER

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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

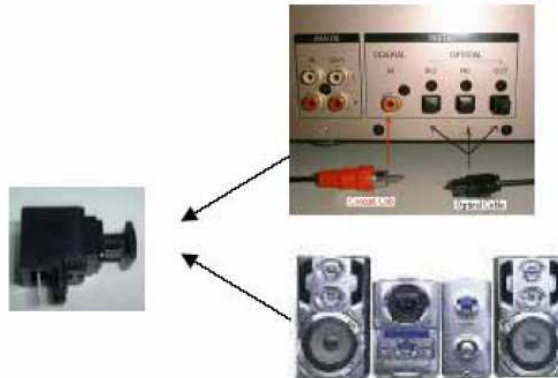
## Descriptions

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. FCR6842032R 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	650	2.7~5.5	6.5	-24	-	-14.5

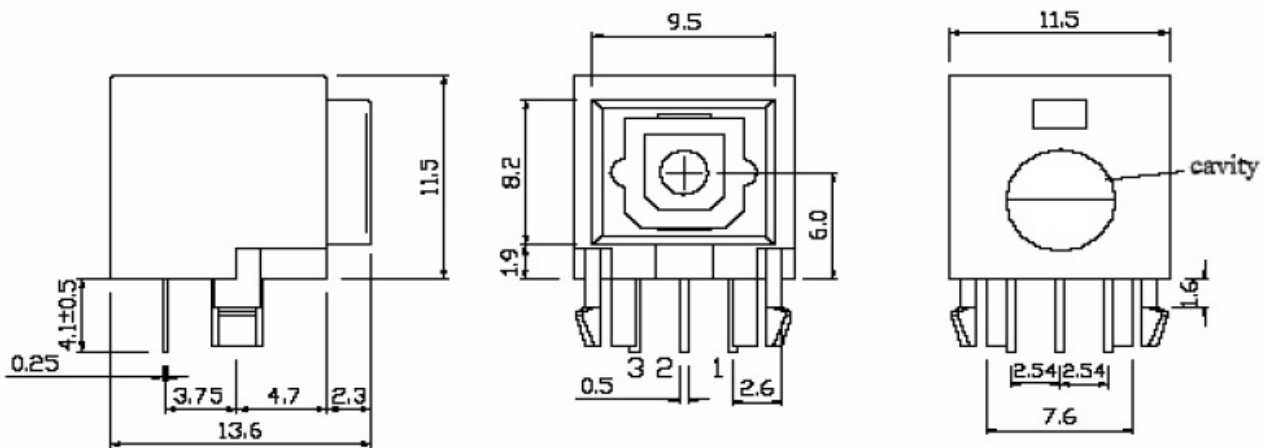
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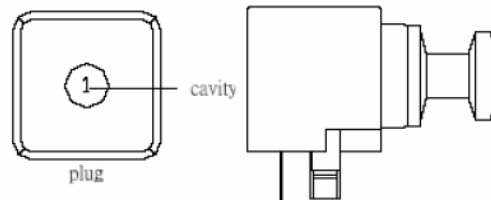
## Package Dimensions



- Notes:** 1. All dimensions are in millimeters.  
2. General Tolerance:  $\pm 0.2$  mm

## Pin Function

1. Vout
2. GND
3. Vcc



## 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  $\leq 5$  s / 2 times.

\*Don't touch flux soldering and white Gas

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### Electro-Optical Characteristics

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Operating Voltage	V <sub>cc</sub>	-	2.7	-	5.5	V
Peak Detective Wavelength	$\lambda_p$	-	-	650	-	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	P <sub>i</sub>	*1	-24	-	-14.5	dBm
Dissipation Current	I <sub>cc</sub>	*2	-	6	10	mA
High Level Output Voltage	V <sub>OH</sub>		2.4	-	-	v
Low Level Output Voltage	V <sub>OL</sub>		-	-	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

FCR6842032R 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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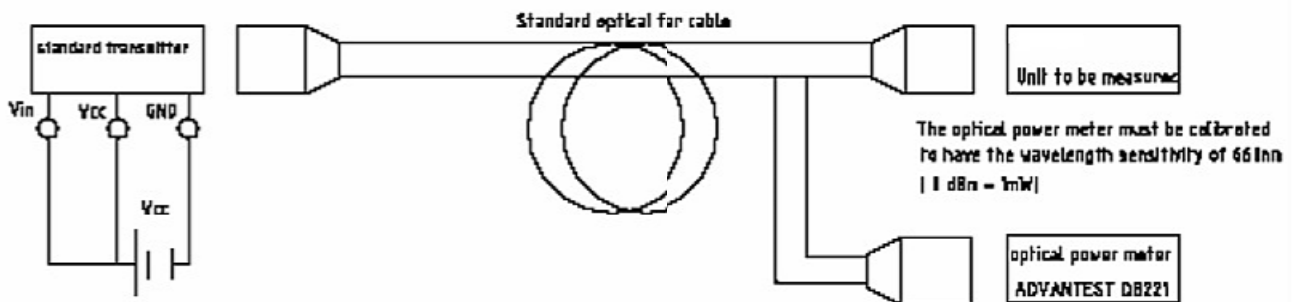
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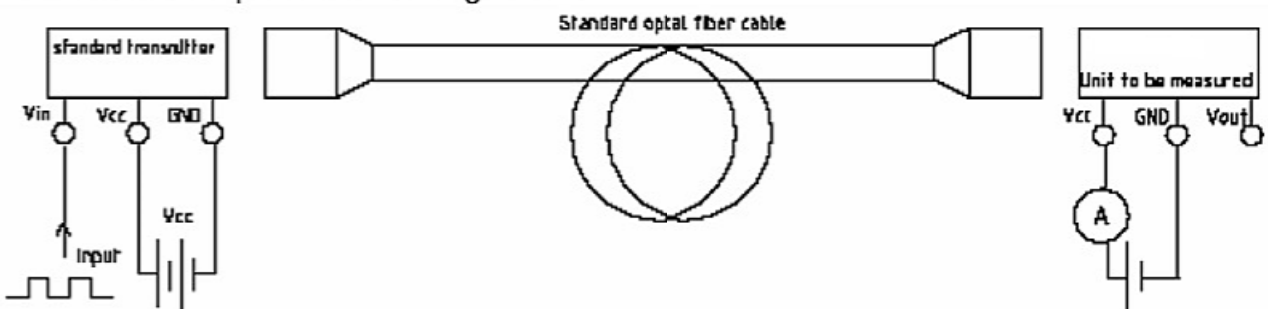
Tf (fall time): TIME DIFFERENCE < 20%

## Measuring Method

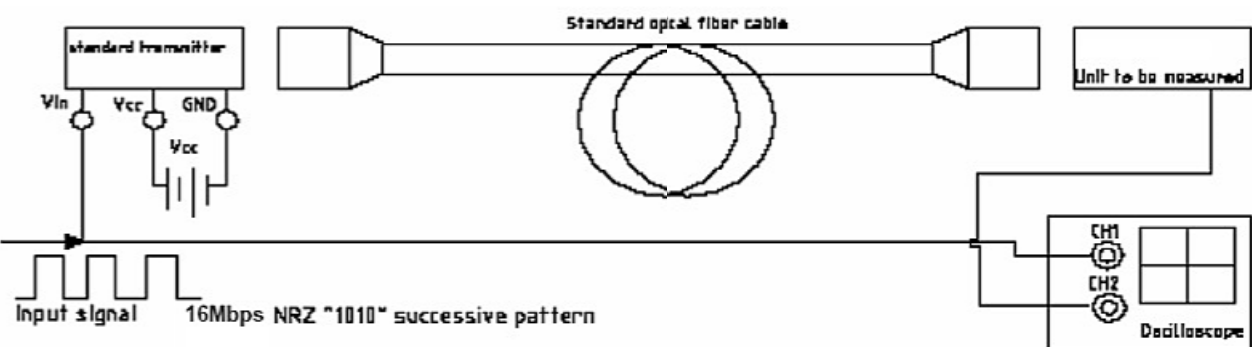
\*1 Maximum receiver input optical power/Minimum receiver input optical power



\*2 Current dissipation measuring method



\*3 Pulse response and jitter measuring method



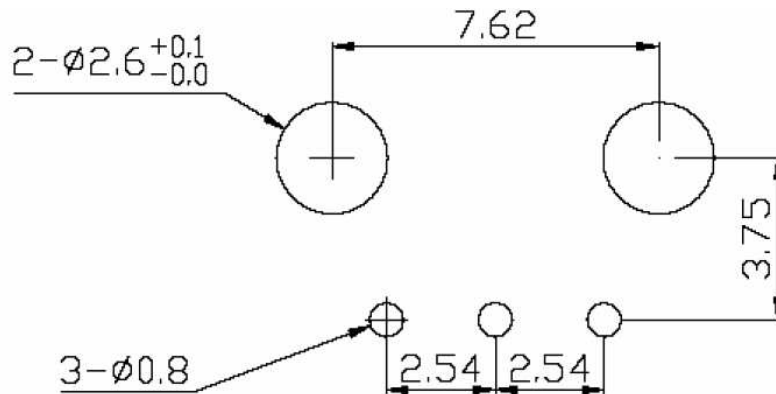
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## PCB Layout For Electrical Circuit

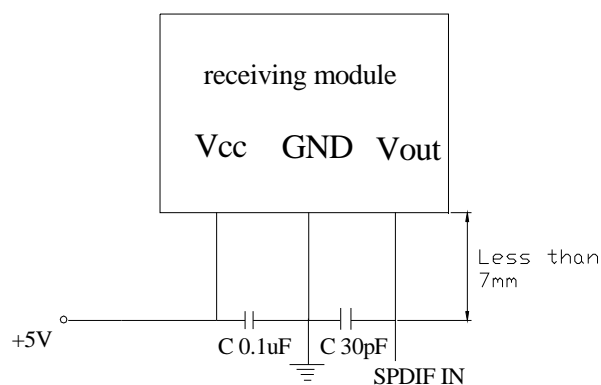


### Notes:

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

### Precautions for Using Method

1. Connect a by-pass capacitor (0.1  $\mu\text{F}$ ) close to FCR6842032R 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.



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The information presented on the UL Prospector datasheet was acquired by UL Prospector from the producer of the material. UL Prospector makes substantial efforts to assure the accuracy of this data. However, UL Prospector assumes no responsibility for the data values and strongly encourages that upon final material selection, data points are validated with the material supplier.

Component - Plastics

E107536

Guide Information

**SHINKONG SYNTHETIC FIBERS CORP**

223 YEN PING RD SEC 3, PIN CHENG TAOYUAN HSIEN 324 TW

**E202G30**

Polybutylene Terephthalate (PBT), glass reinforced, furnished as pellets

<u>Color</u>	<u>Min. Thk</u> (mm)	<u>Flame</u> <u>Class</u>	<u>HWI</u>	<u>HAI</u>	<u>RTI</u> <u>Elec</u>	<u>RTI</u> <u>Imp</u>	<u>RTI</u> <u>Str</u>
BK	0.38	V-0	-	-	75	75	75
ALL	0.75	V-0	3	0	130	110	120
	1.5	V-0, 5VB	2	0	130	110	120
BK	1.5	V-0, 5VA	2	0	130	110	120
ALL	3.0	V-0, 5VA	2	0	130	120	130

Comparative Tracking Index (CTI): 2

Dielectric Strength (kV/mm): 33

High-Voltage Arc Tracking Rate (HVTR): 4

Dimensional Stability (%): -

Inclined Plane Tracking (IPT) kV: -

Volume Resistivity (10<sup>X</sup> ohm-cm): 16Surface Resistivity (10<sup>X</sup> ohms/square): -

High Volt, Low Current Arc Resis (D495): 6

ANSI/UL 94 small-scale test data does not pertain to building materials, furnishings and related contents. ANSI/UL 94 small-scale test data is intended solely for determining the flammability of plastic materials used in the components and parts of end-product devices and appliances, where the acceptability of the combination is determined by UL.

Report Date: 2000-06-24

Last Revised: 2012-11-07

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**IEC and ISO Test Methods**

Test Name	Test Method	Units	Thk (mm)	Value
Flammability	IEC 60695-11-10, IEC 60695-11-20	Class (color)	0.38	V-0 (BK)
			0.75	V-0 (ALL)
			1.5	V-0, 5VB (ALL)
			1.5	V-0, 5VA (BK)
			3.0	V-0, 5VA (ALL)
Glow-Wire Flammability (GWFI)	IEC 60695-2-12	°C	-	-
Glow-Wire Ignition (GWIT)	IEC 60695-2-13	°C	-	-
IEC Comparative Tracking Index	IEC 60112	Volts (Max)	-	-
IEC Ball Pressure	IEC 60695-10-2	°C	-	200
ISO Heat Deflection (1.80 MPa)	ISO 75-2	°C	-	-
ISO Tensile Strength	ISO 527-2	MPa	-	-
ISO Flexural Strength	ISO 178	MPa	-	-
ISO Tensile Impact	ISO 8256	kJ/m <sup>2</sup>	-	-
ISO Izod Impact	ISO 180	kJ/m <sup>2</sup>	-	-
ISO Charpy Impact	ISO 179-1	kJ/m <sup>2</sup>	-	-