EN: This Datasheet/Document is presented by the manufacturer.

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Cliff Electronic Components Ltd.
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FIBER OPTIC DATA LINK

DATA SHEET

MODEL NO. : FCR684205T

DATE : 2023-0몽ㅌㅌ

VERSION : 2.ㅌ

DEVICE NO. : OTJ-5 (OPTICAL TRANSMITTER JACK)



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Features

- High speed signal transmission
  (16Mbps, NRZ signal)
- Input TTL compatible
- +3~+5V power source

Descriptions

The light transmitting unit is a standard-package product with connector and opto-electric component packaged with LED and drive IC. The function of unit changes the electric signal into light signal and be transmitted by plastic fiber.

The unit is operated at single+3V~ +5V and the input signal is TTL compatible. FCR684205T has a maximum operating speed of 16Mbps. The light signal is coupled into plastic fiber by connector. The unit has high performance at low dissipation current, steady light output and efficient light coupling.

Applications

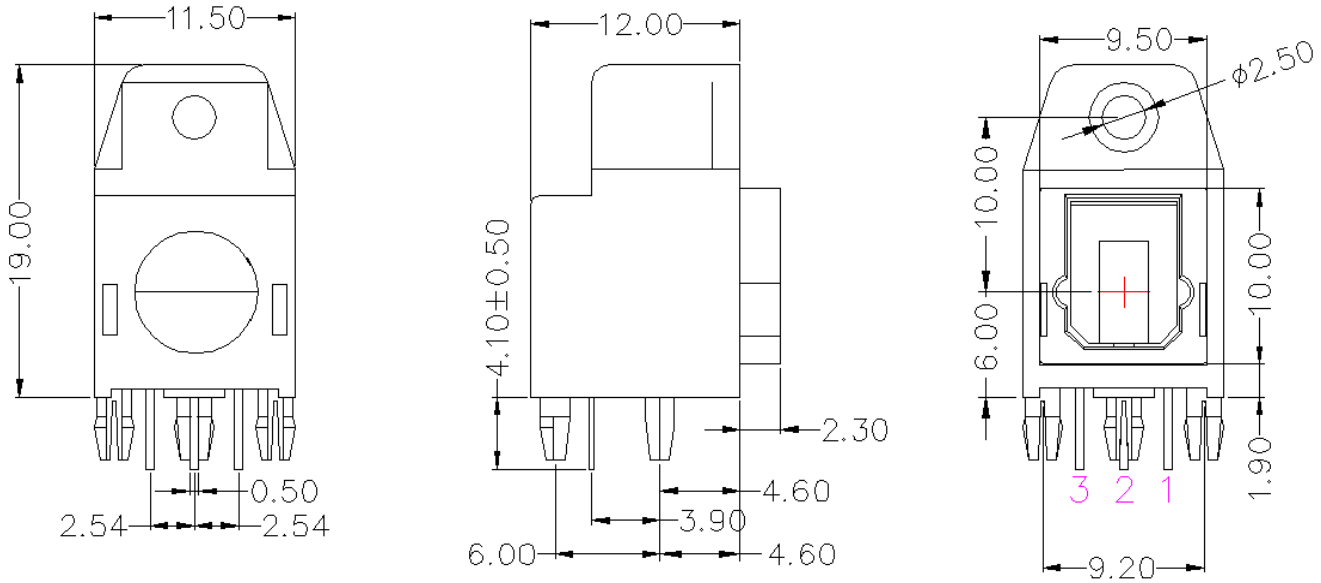
- DVD player
- TV
- MD
- Digital optical data link
- Sound Card
- Set-top box

Device Selection Guide

Chip		Operating Voltage (Vcc)	Dissipation Current(mA)	Fiber Coupling Light Output (dBm)		
IC Material	LED λ p(nm)		Typ.	Min.	Typ.	Max.
Si	650	2.7~5.5V	4	-21	-	-15

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Package Dimensions



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

Pin Function

1. GND
2. Vcc
3. Vin

DESCRIPTION	MATERIAL	FINISH
BODY	PBT UL94 V-0	BLACK
FRAME	PBT UL94 V-0	BLACK
SHUTTER	PBT UL94 V-0	GREY
IR	PHOSPHOR BRONZE	TIN PLATE

Absolute Maximum Ratings(Ta = 25℃)

Parameter	Symbol	Rating	Unit
Supply Voltage	Vcc	-0.5 to 7	V
DC Input Voltage	Vin	-0.5 to Vcc+0.5	V
Power Dissipation	P	120	mW
Storage Temperature	Tstg	-30 to 80	℃
Operating Temperature	Topr	-20 to 70	℃
Soldering Temperature	Tsol	260*	℃

* Soldering time ≤ 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	Vcc	-	2.7	-	5.5	V
Peak Emission Wavelength	λp	-	640	-	670	nm
Transmission Speed		NRZ signal	DC	-	16	Mbps
Transmission Distance		Using APF	0.2	-	20	m
Pulse Width Distortion	Δtw	16Mbps NRZ Signal	-15	-	15	ns
Fiber Coupling Light Output	Pf	*1	-21	-	-15	dBm
Dissipation Current	Icc	*2	-	4	10	mA
High Level Input Voltage	V_{IH}		2.0	-	-	v
Low Level Input Voltage	V_{IL}		-	-	0.8	v
Rise Time	t_r	*3	-	-	30	ns
Fall Time	t_f	*3	-	-	30	ns
Low→ High propagation delay time	t_{PLH}	*3	-	-	100	ns
High→ Low propagation delay time	t_{PHL}	*3	-	-	100	ns
Jitter	Δtj	*3	-	1.5	15	ns

FCR684205T light transmitting unit satisfies EIAJ CP-1201 digital audio interface standard.

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Reliability Test Items

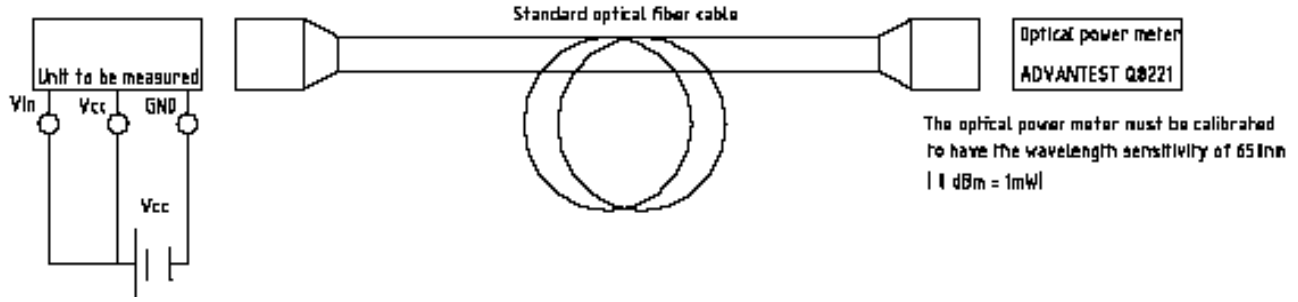
No.	Item	Test Condition	Test Hour/Cycle	Samples	Number (n) Failure (c)
1	Soldering Heat	260℃±5℃	5 sec./2times	22	n=22, c=0
2	High temp. & Hum. storage	Ta=40℃, 90%RH	500	22	n=22, c=0
3	High temp. storage	Ta=80℃	500	22	n=22, c=0
4	Low Temp. storage	Ta=-30℃	500	22	n=22, c=0
5	Temp. cycling	-30℃ ~ 80℃ (30min) (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%
Pf (fiber coupling light output): BRIGHTNESS 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%
T_r (rise time): TIME DIFFERENCE < 20%
Tf (fall time): TIME DIFFERENCE < 20%

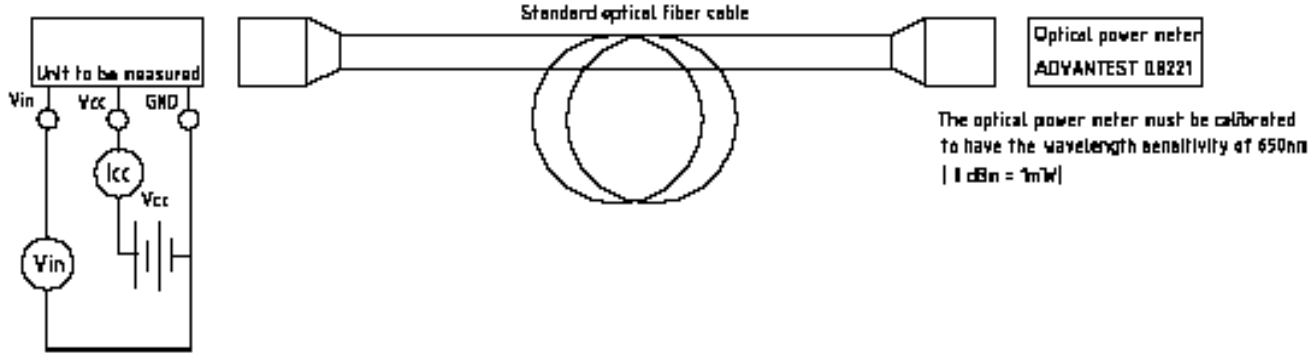
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Measuring Method

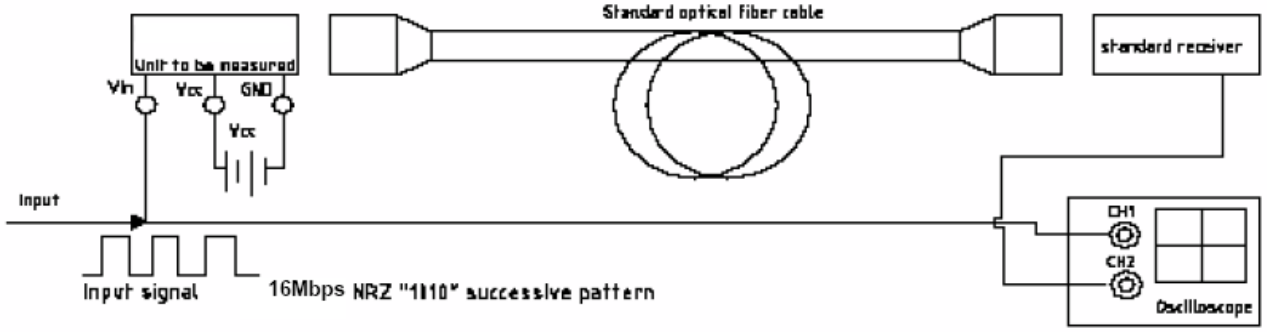
*1 Measuring method of optical output coupling fiber



*2 Input voltage/power dissipation measuring method

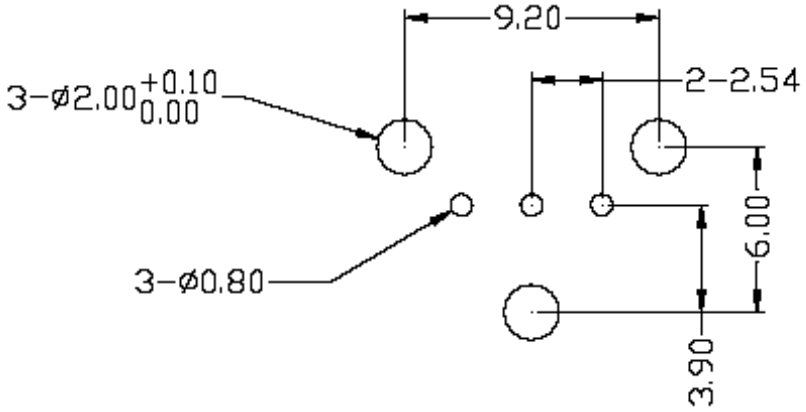


*3 Pulse response and jitter measuring method



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PCB Layout For Electrical Circuit

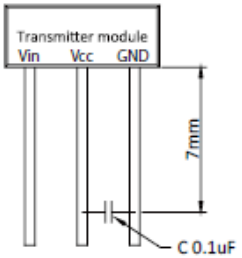


Notes:

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

Precautions for Using Method

1. Connect a by-pass capacitor (0.1uF) close to the FCR684205T within 7 mm of the unit lead frame.



2. Take proper electrostatic-discharge (ESD) precautions while handling these devices. These devices are sensitive to ESD.
3. Please follow the conditions described in the diagram below.

