

## Technical Data Sheet- Light Transmitting Unit

### TY LINK : DLT11R3-D2

#### Features

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

#### Descriptions

The TYLINK is a new design connector including traditional MINI DIN 4POS and Data Link inner opto-electric component. Not only does TYLINK transmit electric digital signal but also light signal.

The optic unit is operated at single +3V~ +5V. The DLT11R3-D2 has a maximum operating speed of 16 Mbps. The optic unit has high performance at low dissipation current, steady light output and efficient light coupling.

#### Applications

- DVD player



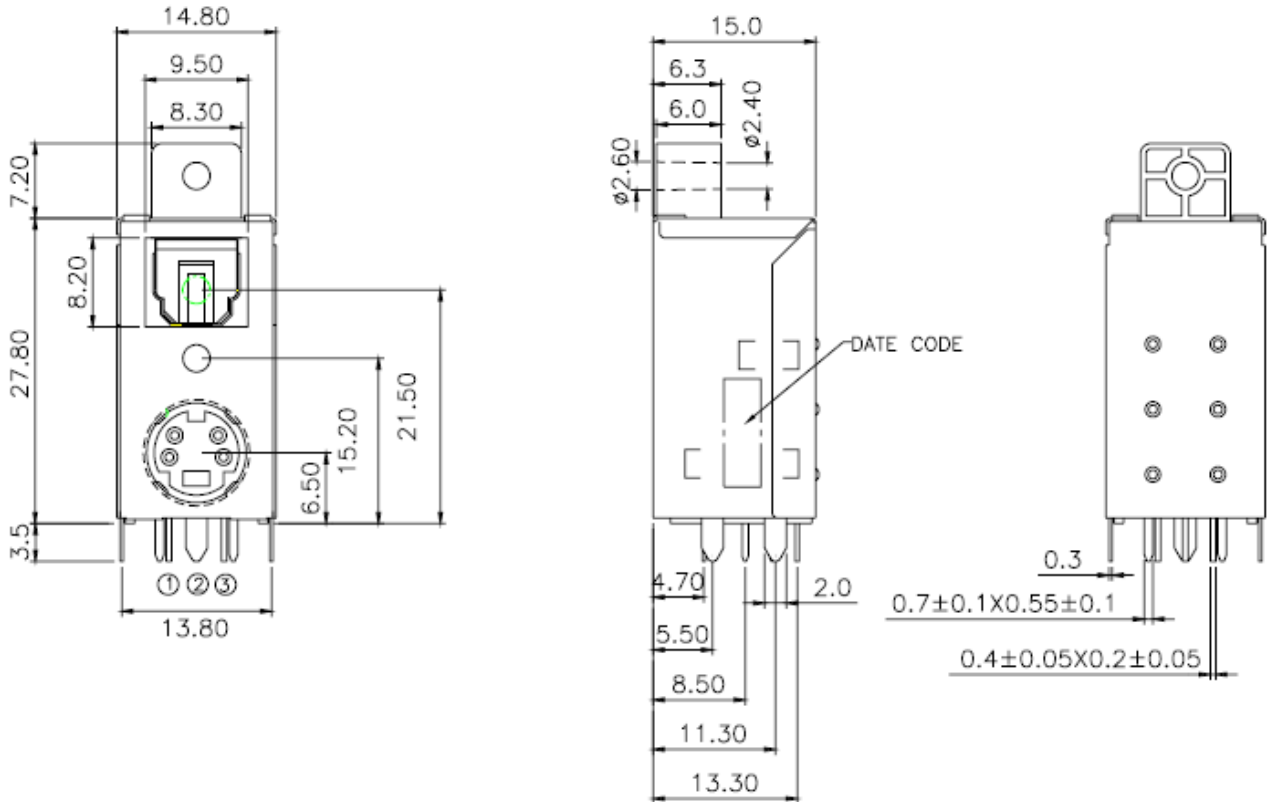
#### Device Selection Guide

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

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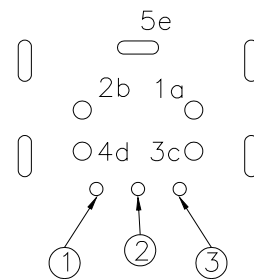
### Package Dimensions



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

### Pin Function

1. Vin                      2.Vcc                      3.GND



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

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### Electro-Optical Characteristics

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Operating Voltage(optic unit)	V <sub>cc</sub>	-	2.7	-	5.5	V
Peak Emission Wavelength	$\lambda_p$	-	640	-	670	nm
Transmission Speed		NRZ signal	DC	-	16	Mbps
Transmission Distance		Using APF	0.2	-	20	m
Pulse Width Distortion	$\Delta tw$	16Mbps NRZ Signal	-25	-	25	ns
Fiber Coupling Light Output	P <sub>f</sub>	*1	-21	-17	-15	dBm
Dissipation Current	I <sub>cc</sub>	*2	-	5	10	mA
High Level Input Voltage	V <sub>IH</sub>		2	-	-	v
Low Level Input Voltage	V <sub>IL</sub>		-	-	0.8	v
Rise Time	t <sub>r</sub>	*3	-	30	40	ns
Fall Time	t <sub>f</sub>	*3	-	20	30	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 (rise time)	$\Delta tr$	*3	-	1.5	15	ns
Jitter (fall time)	$\Delta tf$	*3	-	1.5	15	ns

The DLT11R3-D2 light transmitting unit satisfies EIAJ CP-1201 digital audio interface standard.

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### Electrical ( MINI DIN CONN. )

Contact Resistance	30mΩ Max. 60mΩ Max.(After salt spray)	1KHz, 100mA max. JIS C 5402,paragraph 5.3
Insulation Resistance	50MΩ Min.	Apply 500V DC for 1 minutes JIS C 5402, paragraph 5.2
Dielectric Withstanding Resistance	No discharge or flashes occur	250V AC rms., for 1 minutes applied between adjacent contacts. JIS C 5402, paragraph 5.1

### Mechanical

Durability		See Note	500cycles. JIS C 5402, paragraph 6.3
Mating Force	MINI DIN	45N MAX.	Mating connectors at maximum rate of 20mm Per minute, JIS C 5402, paragraph 6.19
	S/PDIF	39.2N MAX.	
Unmating Force	MINI DIN	6N~30N	Mating connectors at maximum rate of 20mm Per minute, JIS C 5402, paragraph 6.19
	S/PDIF	5.9~39.2N	
Chape Test (For optical connector)		Mated without mechanical abnormality	5 times of either upper or lower side gain 1N-m for 5 sec.
Vibration test		Plug and receptacle shall not be come off during test	Frequency 10 to 55Hz,amplitude 0.75mm per minute. Applied to each of the X,Y and Z axis for 2h(Total of 6 hours) JIS C 5402, paragraph 6.1

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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/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%

P<sub>f</sub> (fiber coupling light output): BRIGHTNESS 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%

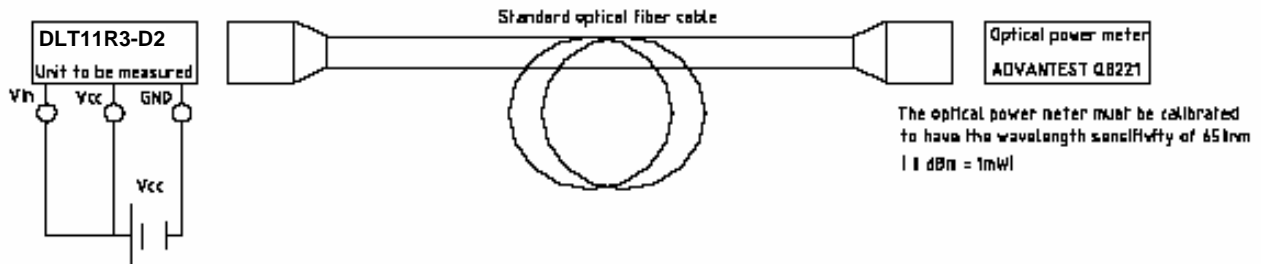
T<sub>f</sub> (fall time): TIME DIFFERENCE < 20%

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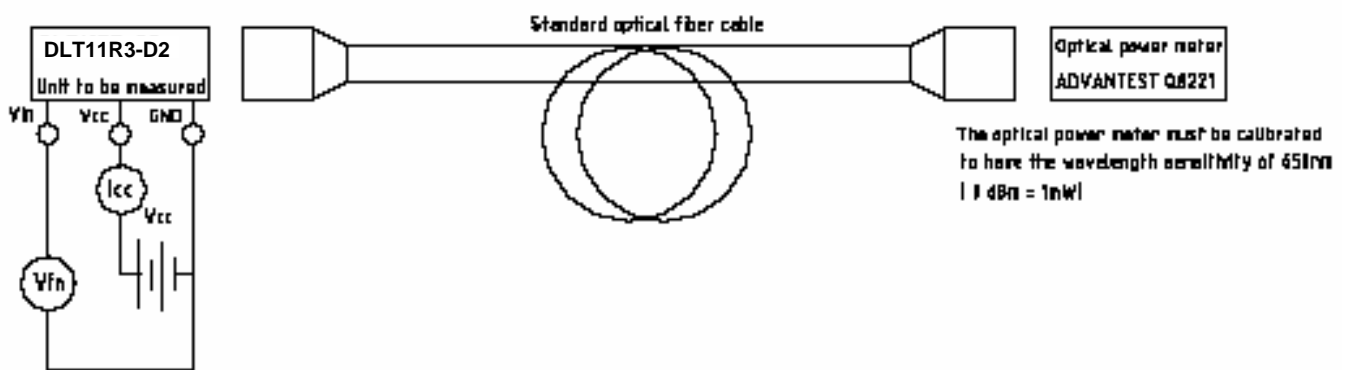
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### Measuring Method

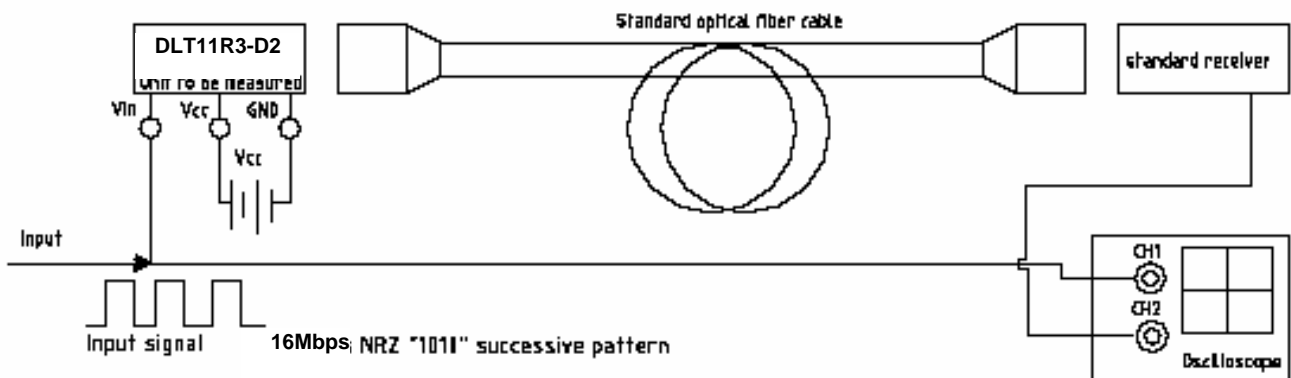
\*1 Measuring method of optical output coupling fiber



\*2 Input voltage/power dissipation measuring method



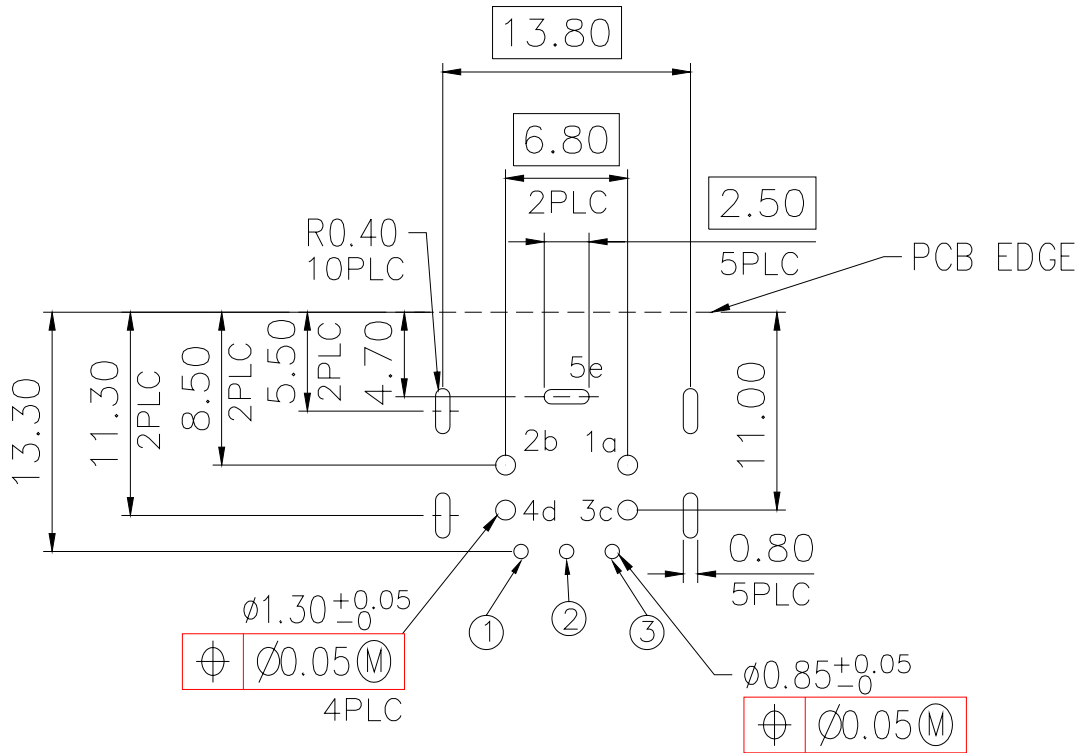
\*3 Pulse response and jitter measuring method



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### PCB Layout For Electrical Circuit



### Notes:

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

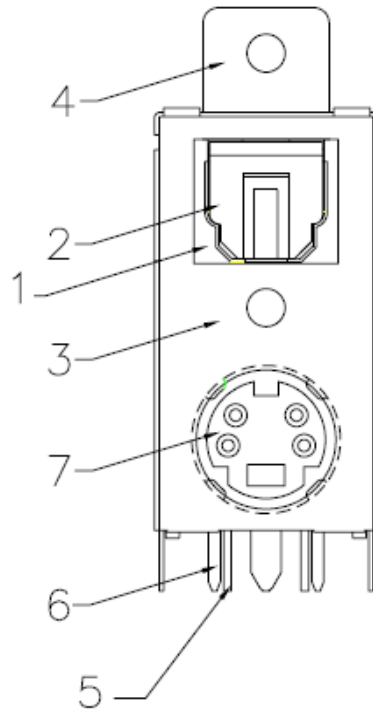
### Precautions for Using Method

1. Connect a by-pass capacitor (0.1uF) close to the DLT11R3-D2 within 7 mm of the unit lead frame between Vcc and GND.
2. Take proper electrostatic-discharge (ESD) precautions while handling these devices. These devices are sensitive to ESD.

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### Material Description



No.	Description	Material
1	Housing	Thermoplastic, UL94V-0
2	Shutter	PBT
3	Shield	Copper Alloy
4	Retainer	Thermoplastic, UL94V-0
5	Lead frame	Tin plated
6	Grounding Tab	Stainless Steel
7	Coil Spring	SWPA



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REV	DESCRIPTION	RELEASE DATE