

Technical Data Sheet- Light Transmitting Unit

DATA LINK : DLT11F0A

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. The DLT11F0A has a maximum operating speed of 16 Mbps. 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

- Audio equipment
- DVD player
- PC, Notebook
- Sound card

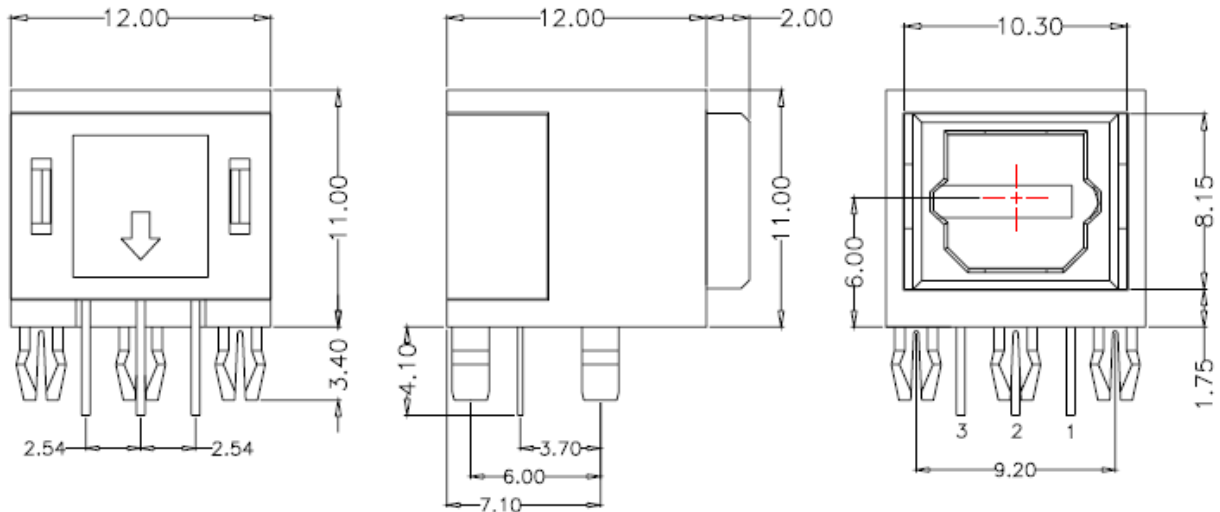
Device Selection Guide

| 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: $\pm 0.2\text{mm}$

Pin Function

1. GND
2. Vcc
3. Vin

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 $\leq 5\text{s}/2\text{times}$.

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Electro-Optical Characteristics

| Parameter | Symbol | Conditions | MIN. | TYP. | MAX. | Unit |
|-----------------------------------|------------------|-------------------|------|------|------|------|
| Operating Voltage | V _{cc} | - | 2.7 | - | 5.5 | V |
| Peak Emission Wavelength | λ_p | - | 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 | -25 | - | 25 | ns |
| Fiber Coupling Light Output | P _f | *1 | -21 | -17 | -15 | dBm |
| Dissipation Current | I _{cc} | *2 | - | 5 | 10 | mA |
| High Level Input Voltage | V _{IH} | | 2 | - | - | v |
| Low Level Input Voltage | V _{IL} | | - | - | 0.8 | v |
| Rise Time | t _r | *3 | - | 30 | 40 | ns |
| Fall Time | t _f | *3 | - | 20 | 30 | ns |
| Low → High propagation delay time | t _{PLH} | *3 | - | - | 100 | ns |
| High → Low propagation delay time | t _{PHL} | *3 | - | - | 100 | ns |
| Jitter | Δt_j | *3 | - | 1.5 | 15 | ns |

The DLT11F0A 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/s ² 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_{cc} (dissipation current): CURRENT ATTENUATE DIFFERENCE < 20%

P_f (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%

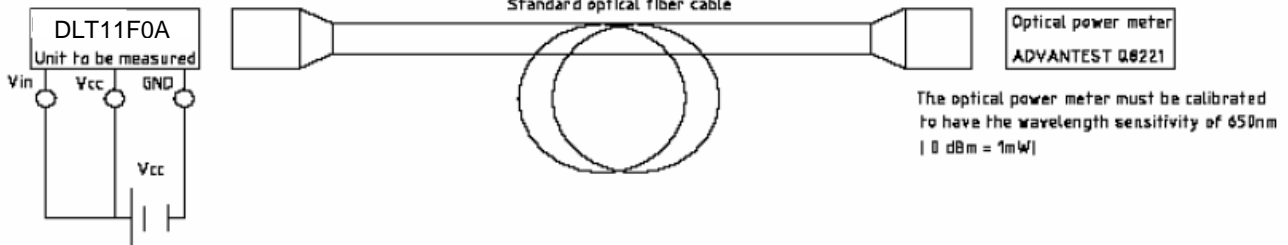
T_f (fall time): TIME DIFFERENCE < 20%

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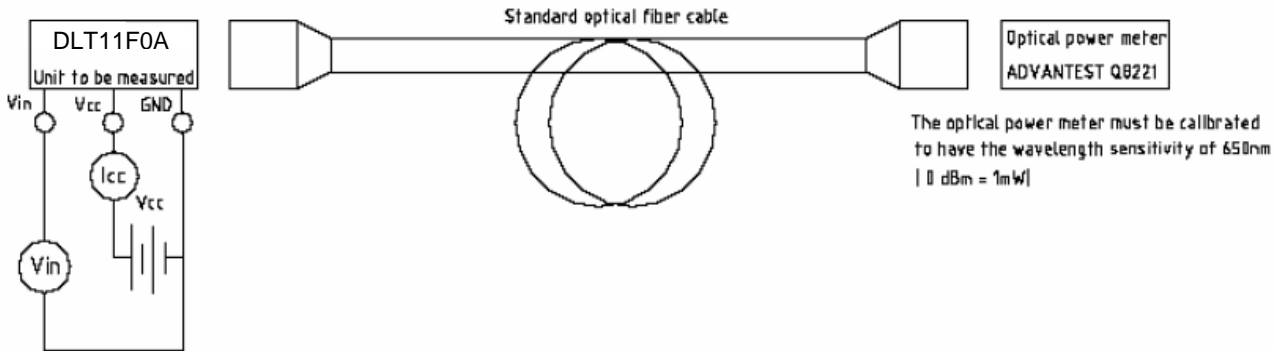
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Measuring Method

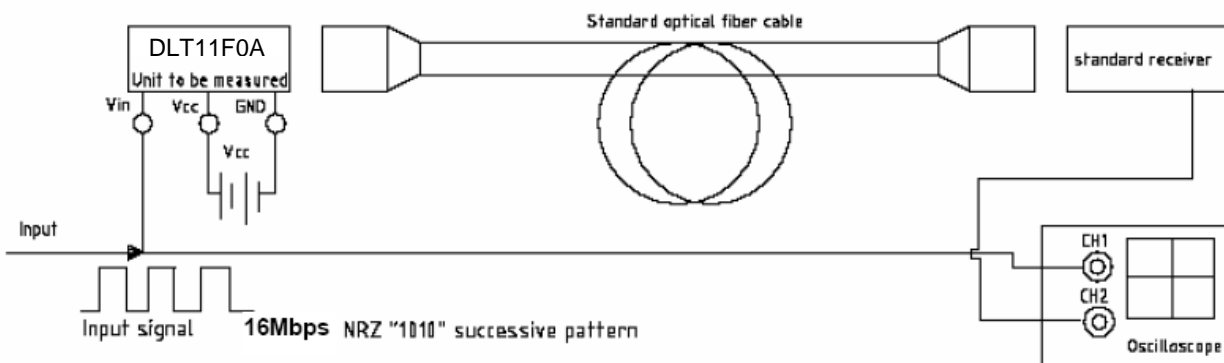
*1 Measuring method of optical output coupling fiber



*2 Input voltage/power dissipation measuring method



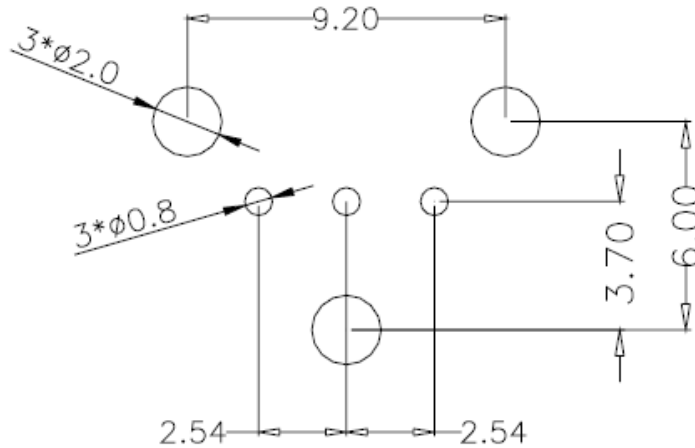
*3 Pulse response and jitter measuring method



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PCB Layout For Electrical Circuit

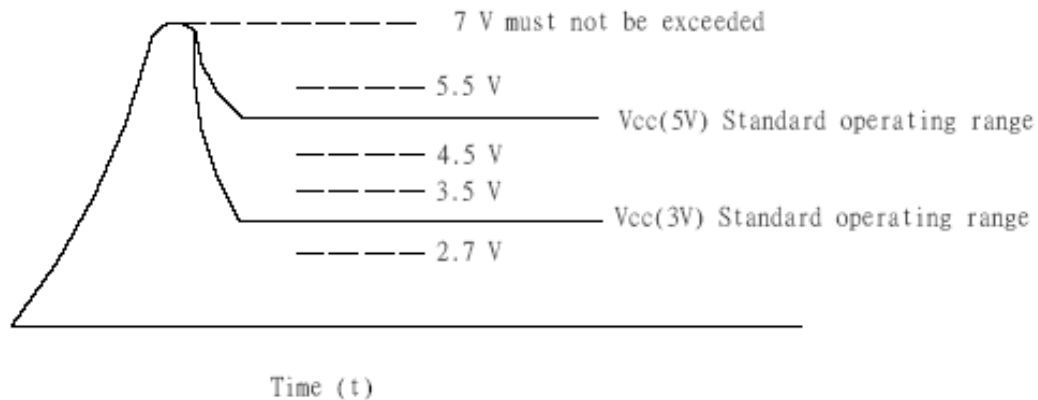


Notes:

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

Precautions for Using Method

1. Connect a by-pass capacitor (0.1uF) close to the DLT11F0A 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.

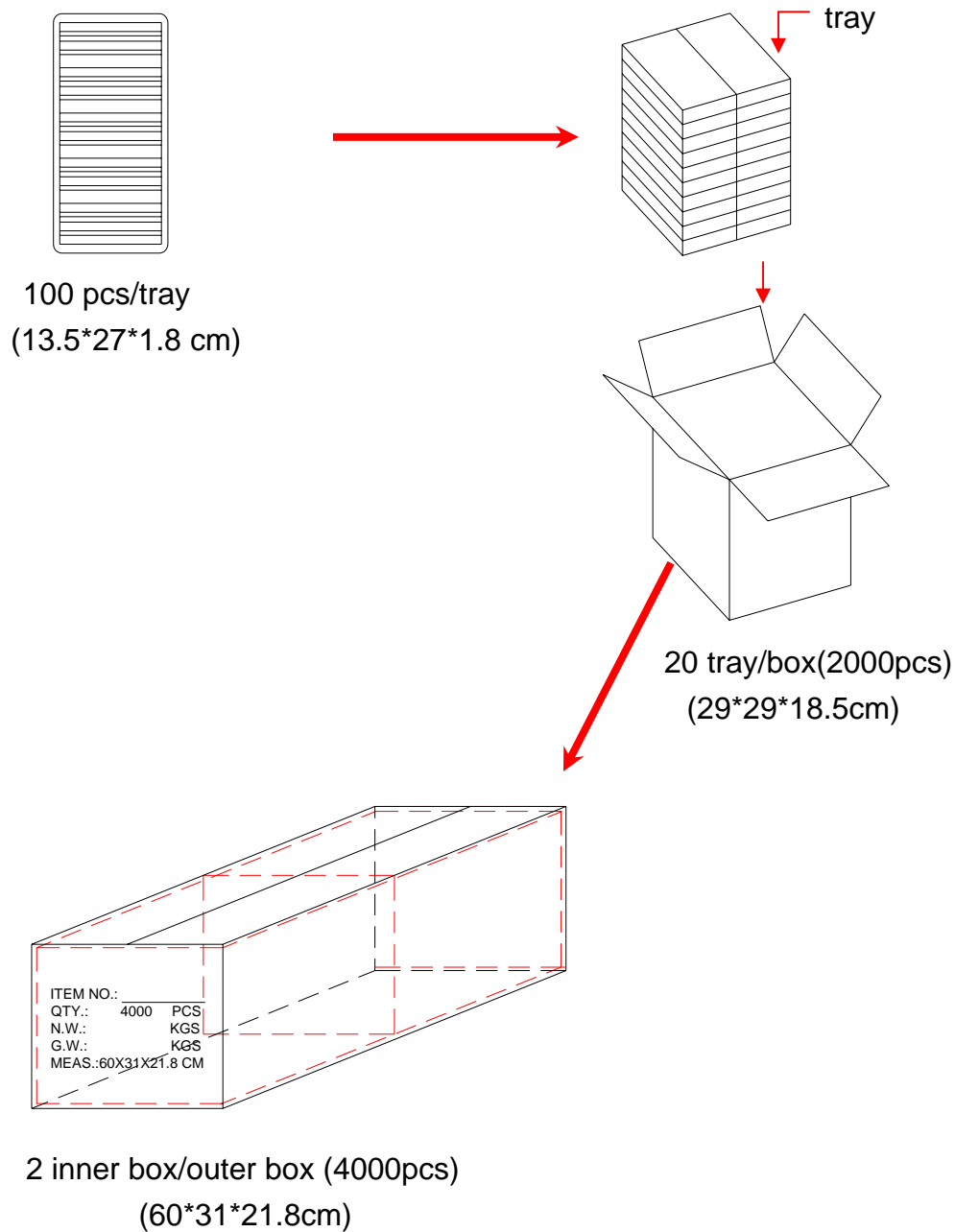


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Package

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



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| REV | DESCRIPTION | RELEASE DATE |
|-----|-------------|--------------|
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