

FIBER OPTIC DATA LINK

DATA SHEET

MODEL NO. : DLT1160A

DATE : 2010-5-8

VERSION : A.0

DEVICE NO. : GM-FS-RD-018

CUSTOMER	DESIGNER	CHECKER	APPROVER
	勝 特 力 材 料 886-3-5753170 勝特力电子(上海) 86-21-34970699 勝特力电子(深圳) 86-755-83298787 Http://www.100y.com.tw		

Features

- High speed signal transmission
(16 Mbps, 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 DLT1160A 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.

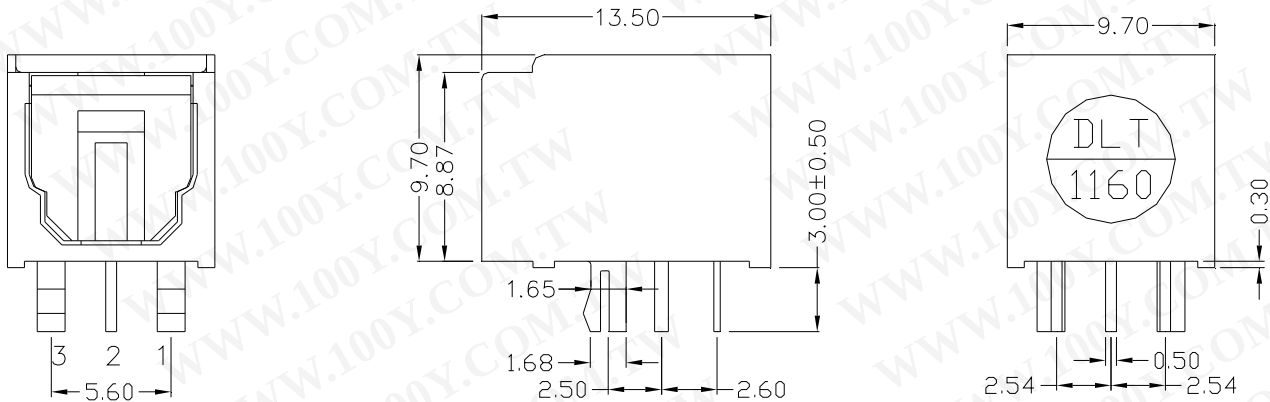
Applications

- 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 λ p(nm)			Min.	Typ.	Max.
Si	650	2.7~5.5	5.5	-21	-	-15

Package Dimensions



- Notes:** 1.All dimensions are in millimeters.
2.General Tolerance:±0.2mm
3Material:HTN (High Temperature Nylon)

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 ≤ 5s / 2 times.

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	-	-	16	Mbps
Transmission Distance		Using APF*	0.2	-	20	m
Pulse Width Distortion	Δtw	16 Mbps 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

*Light output after APF should satisfy P_f range.

The DLT1160A light transmitting unit satisfies EIAJ CP-1201 digital audio interface standard.

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

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%

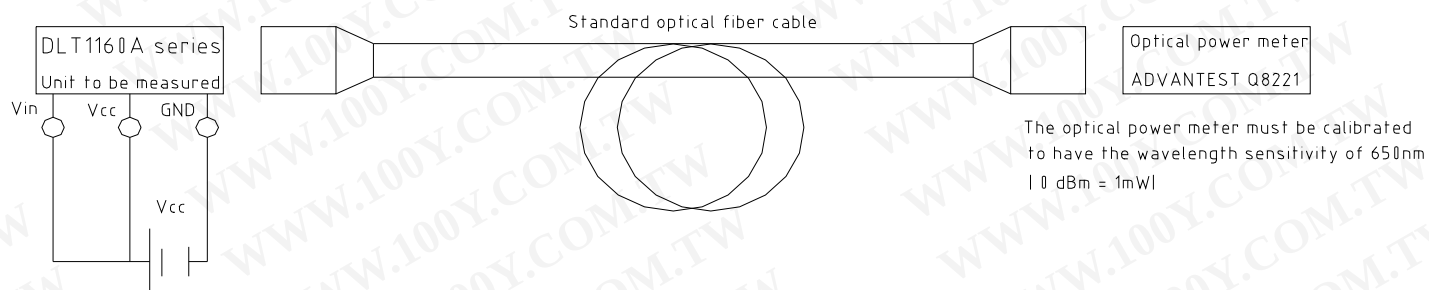
T_{PHL} (propagation H → L delay time): DELAY TIME DIFFERENCE < 20%

T_r (rise time): TIME DIFFERENCE < 20%

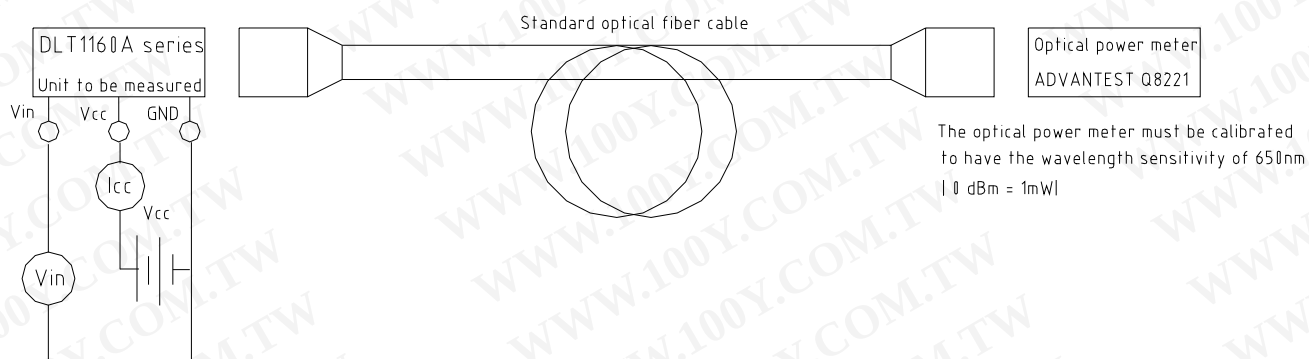
T_f (fall time): TIME DIFFERENCE < 20%

Measuring Method

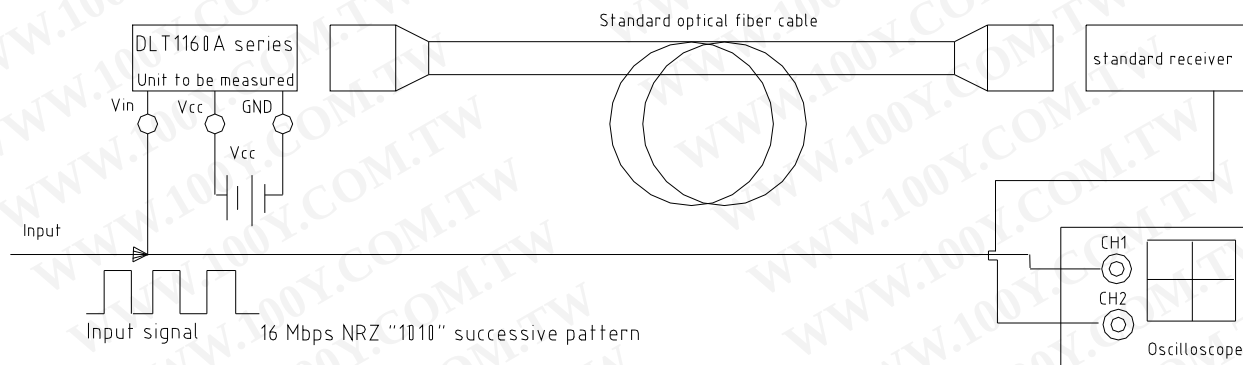
*1 Measuring method of optical output coupling fiber



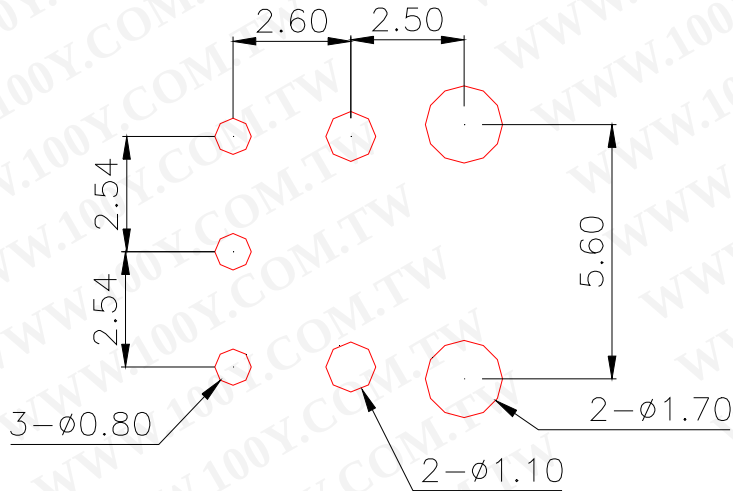
*2 Input voltage/power dissipation measuring method



*3 Pulse response and jitter measuring method



PCB Layout For Electrical Circuit

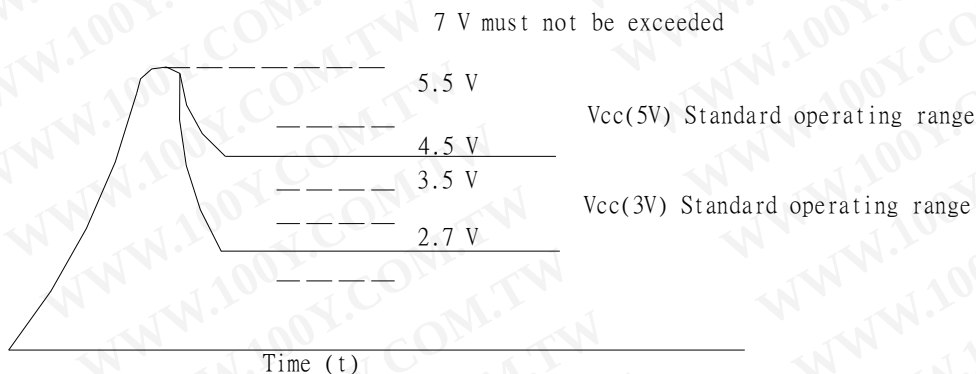


Notes:

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

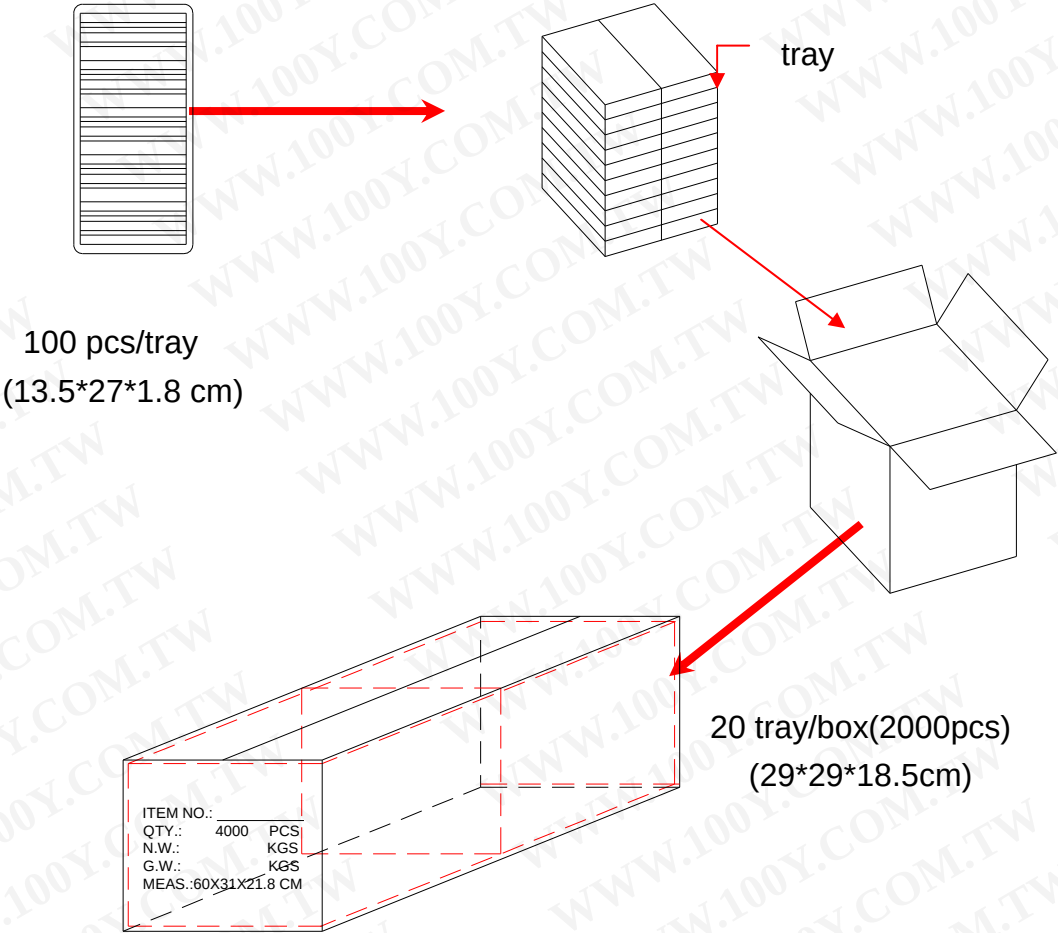
Precautions for Using Method

1. Connect a by-pass capacitor (0.1 μF) close to the DLT1160A 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.
4. Please follow the conditions described in the diagram below.



Package

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



REV	DESCRIPTION	RELEASE DATE

FIBER OPTIC DATA LINK

DATA SHEET

MODEL NO : DLR1160

DATE : 2010-06-01

VERSION : A.0

DEVICE NO. : GM-FS-RD-068

CUSTOMER	DESIGNER	CHECKER	APPROVER

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. The DLR1160 has a maximum operating speed of 16 Mbps.

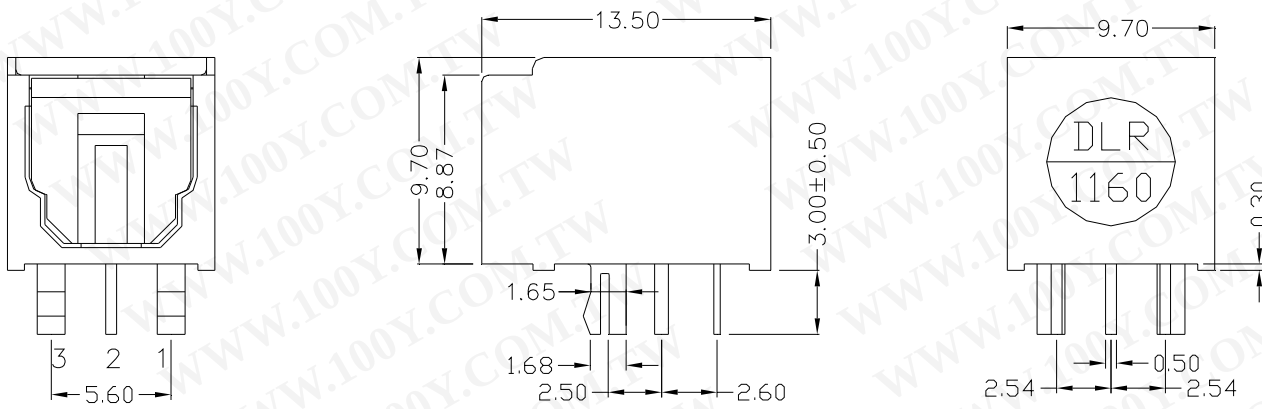
Applications

- 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 λ p(nm)			Min.	Typ.	Max.
Si	650	2.7~5.5	6.5	-24	-	-14.5

Package Dimensions



- Notes:** 1.All dimensions are in millimeters.
2.General Tolerance:±0.2mm
3.Material:HTN (High Temperature Nylon)

Pin Function

- 1. Vout
- 2. GND
- 3. Vcc

Absolute Maximum Ratings(Ta = 25℃)

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

* Soldering time ≤ 5s / 2 times.

Electro-Optical Characteristics

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Operating Voltage	V _{CC}	-	2.7	-	5.5	V
Peak Detective Wavelength	λ_p	-	-	650	-	nm
Transfer Speed		NRZ signal	0.1	-	16	Mbps
Receiving Distance		Using APF	0.2	-	20	m
Pulse Width Distortion	Δt_w	16Mbps NRZ Signal	-20	-	20	ns
Input Light power	P _i	*1	-24	-	-14.5	dBm
Dissipation Current	I _{CC}	*2	-	6	10	mA
High Level Output Voltage	V _{OH}		2.4	-	-	v
Low Level Output Voltage	V _{OL}		-	-	0.4	v
Rise Time	t _r	*3	-	-	25	ns
Fall Time	t _f	*3	-	-	25	ns
Low→ High propagation delay time	t _{PLH}	*3	-	-	100	ns
High→ Low propagation delay time	t _{PHL}	*3	-	-	100	ns
Jitter time	Δt_j	*3	-	1.5	15	ns

The DLR1160 light receiving unit satisfies EIAJ CP-1201 digital audio interface standard.

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 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

Icc (dissipation current): CURRENT ATTENUATE DIFFERENCE < 20%

T_{PLH} (propagation L → H delay time): DELAY TIME DIFFERENCE < 20%

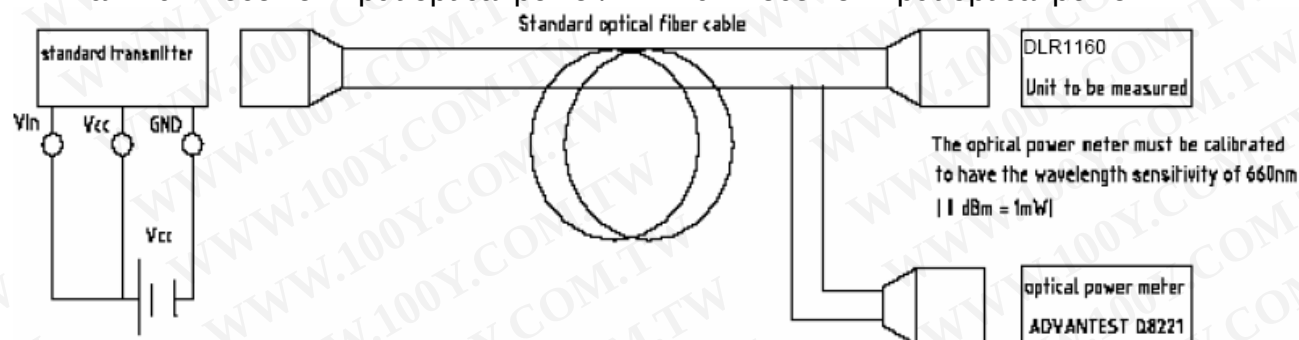
T_{PHL} (propagation H → L delay time): DELAY TIME DIFFERENCE < 20%

T_r (rise time): TIME DIFFERENCE < 20%

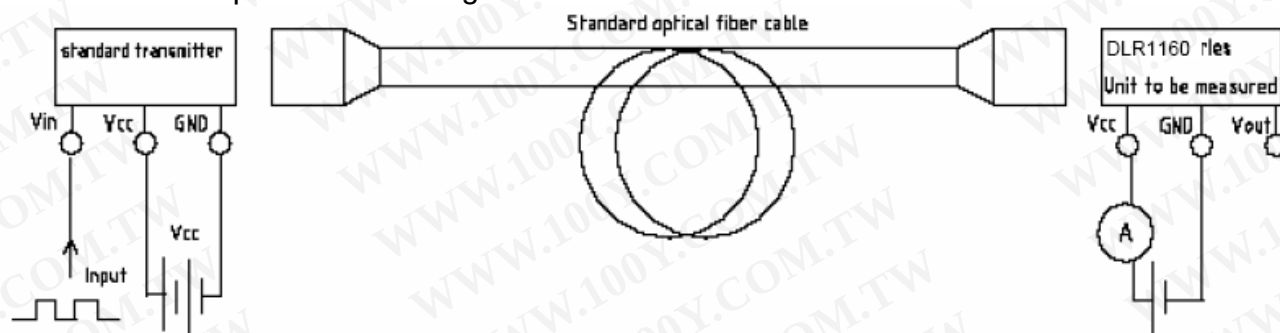
T_f (fall time): TIME DIFFERENCE < 20%

Measuring Method

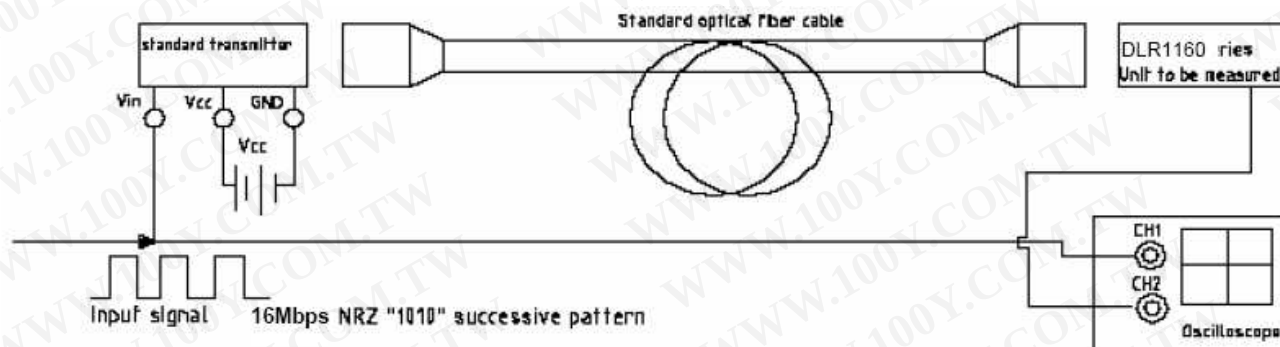
*1 Maximum receiver input optical power/Minimum receiver input optical power



*2 Current dissipation measuring method

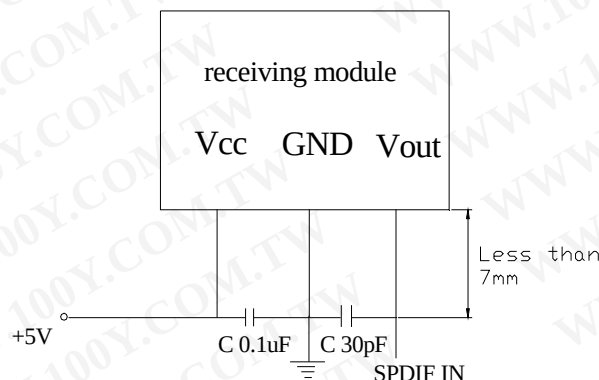


*3 Pulse response and jitter measuring method



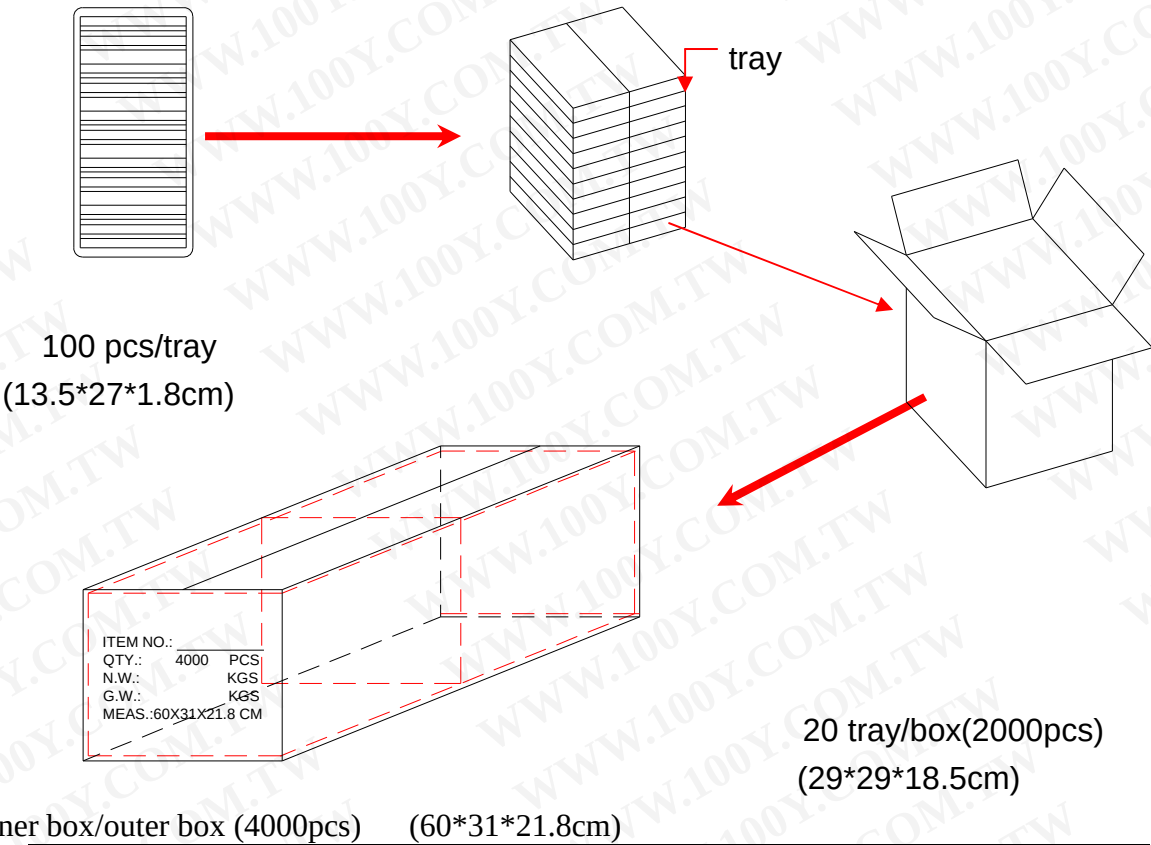
1. Unit: mm
2. Unspecified tolerance: $\pm 0.3\text{mm}$
3. Substrate Thickness: 1.6mm

1. Connect a by-pass capacitor (0.1 μ F) close to the DLR1160 within 7 mm 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.



Package

Item	Quantity	Total	Size (long*width*high)
Tray	1	100 pcs	13.5*27*1.8cm
Inner box	20 tray/box	2000 pcs	29*29*18.5 cm
Outer box	2 inner box/outer box	4000 pcs	60*31*21.8 cm



REV	DESCRIPTION	RELEASE DATE