EDISON
Lighting Design Manufacturing Service

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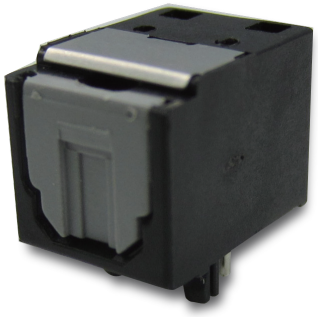
Data Link Series

DLR1160-2-N
Datasheet



Features :

- High PD sensitivity for red light
- High speed up to 16 Mbps
- Low power consumption and current dissipation
- +3V power source

Typical Applications :

- Audio equipment
- Digital optical data link
- MD
- Sound card

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General Information

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 +3V and the input signal is TTL compatible. The DLR1160-2-N has a maximum operating speed of 16 Mbps.

Package Dimensions

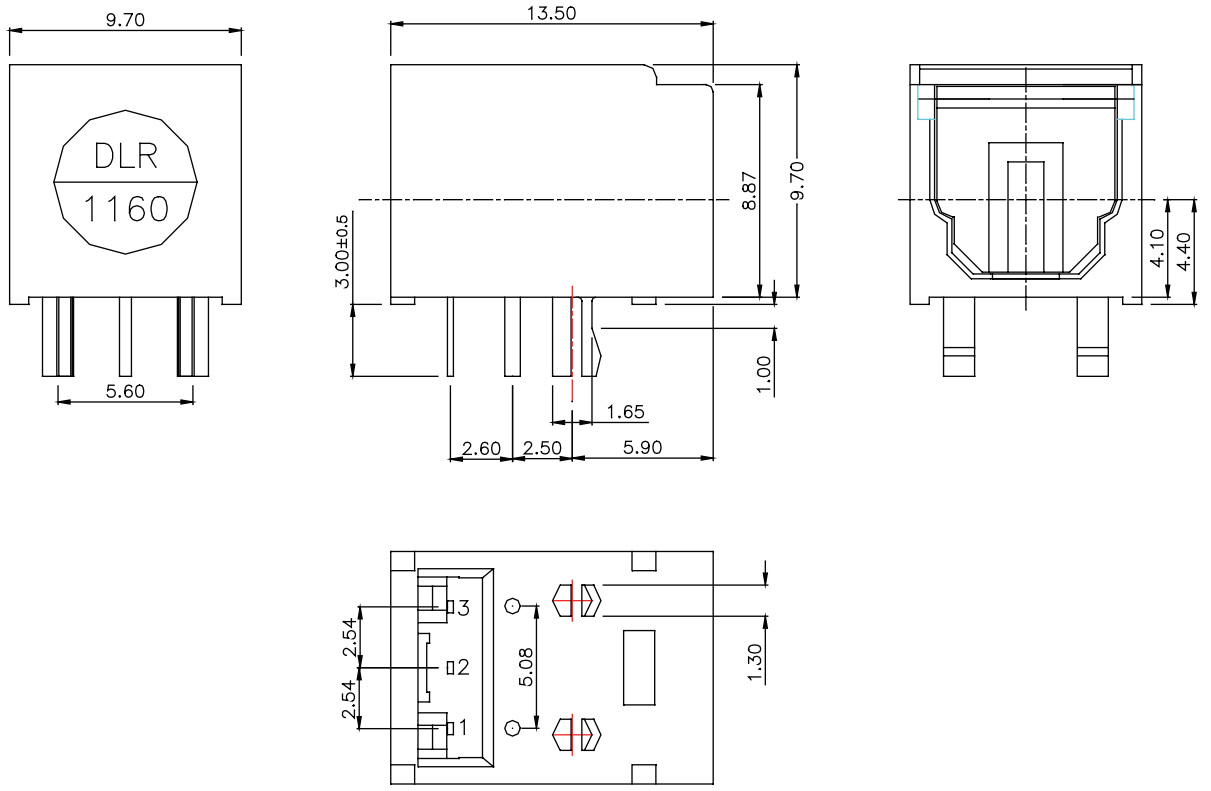

Figure 1. DLR1160-2-N series dimensions

Notes:
1. All dimensions are in millimeters.
2. General Tolerance:±0.2mm
3. Shutter color : Gray
4. Matrial : HTN (High Temperature Nylon

Pin Function

1. Vout
2. GND
3. Vcc

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Device Selection Guide

Table 1. Device selection guide for DLR1160-2-N series.

Chip		Operating Voltage (Vcc)	Dissipation Current(mA)	Fiber Coupling Light Input (dBm)		
IC Material	PD λp(nm)		Typ.	Min.	Typ.	Max.
Si	700	3.0	3.5	-24	-	-14.5

Absolute Maximum Ratings

Table 2. Absolute maximum ratings for DLR1160-2-N series.

Parameter	Symbol	Rating	Unit
Supply Voltage	Vcc	6	V
Storage Temperature	Tstg	-30 to 80	°C
Operating Temperature	Topr	-20 to 70	°C
Soldering Temperature	Tsol	260*	°C

Note: *Soldering time ≤5s / 2 times.

Electro-Optical Characteristics

Table 3. DLR1160-2-N series electrico-optical characteristics.

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Operating Voltage	V_{cc}	-	2.7	3.0	3.6	V
Peak Detective Wavelength	λ_p	-	-	700	-	nm
Transfer Speed		NRZ signal	0.1	-	16	Mbps
Receiving Distance		Using APF*	0.2	-	20	m
Pulse Width Distortion	Δ_{tw}	8 Mbps NRZ Signal	-20	-	20	ns
Input Light Power	P_i	*1	-24	-	-14.5	dBm
Dissipation Current	I_{cc}	*2	-	-	15	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	Δ_{tj}	*3	-	1.5	15	ns

Note: *Light Input after APF should satisfy Pi range.

The DLR1160-2-N light receiving unit satisfies EIAJ CP-1201 digital audio interface standard.

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Reliability Test Items

The following table describes operating life, mechanical, and environmental tests performed on DLR1160-2-N series package.

Table 4. Operating life, mechanical, and environmental characteristics for DLR1160-2-N

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=80˚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) (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 0.4 kg<Detaching force <2kg	22	n=22, c=0

Notes:
I_{cc} (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%

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Measuring Method

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

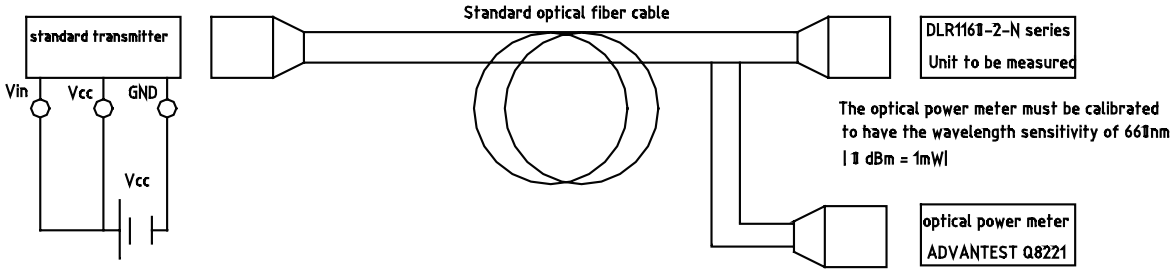

Figure 2. DLR1160-2-N maximum receiver input optical power / minimum receiver input optical power

*2. Current dissipation measuring method

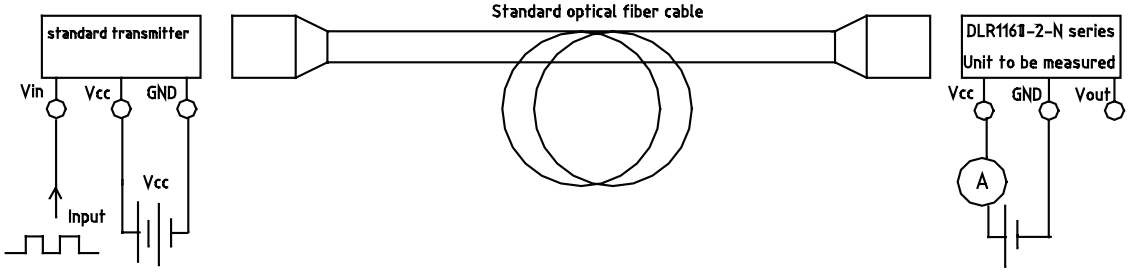

Figure 3. DLR1160-2-N Current dissipation measuring method

*3. Pulse response and jitter measuring method

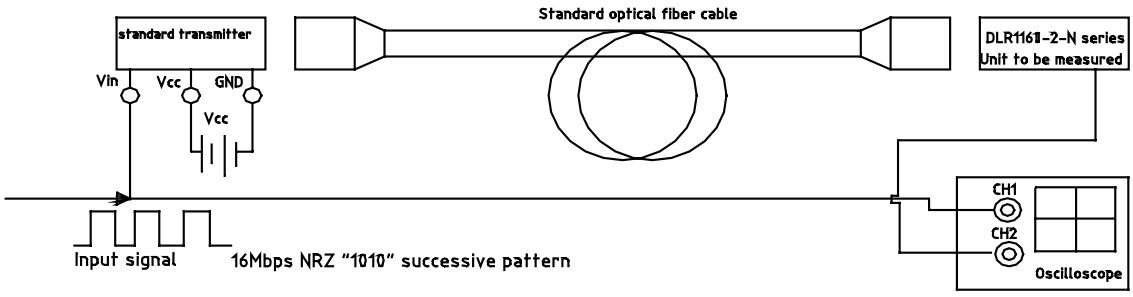

Figure 4. DLR1160-2-N pulse response and jitter measuring method

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PCB Layout For Electrical Circuit

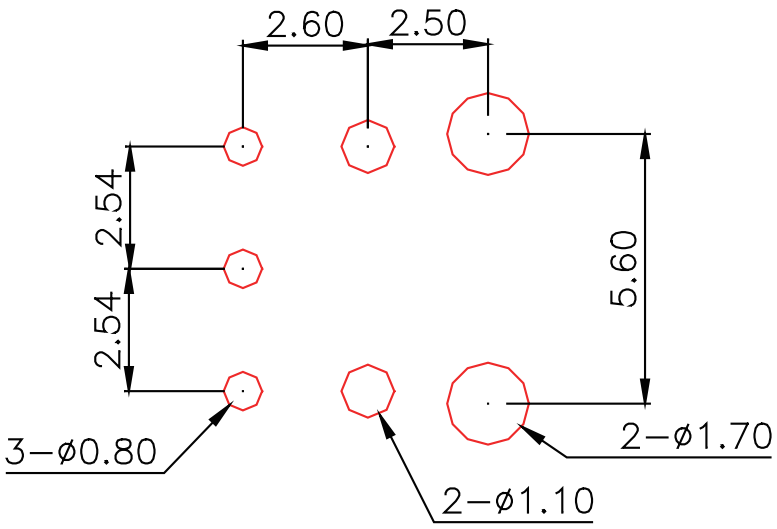

Figure 5. DLR1160-2-N PCB layout for electrical circuit

Notes:
1. Unit: mm
2. Unspecified tolerance: ±0.2mm
3. Substrate Thickness:1.6 mm

Precautions for Using Method

1.Connect a by-pass capacitor (0.1uF) close to the DLR1160-2-N 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.

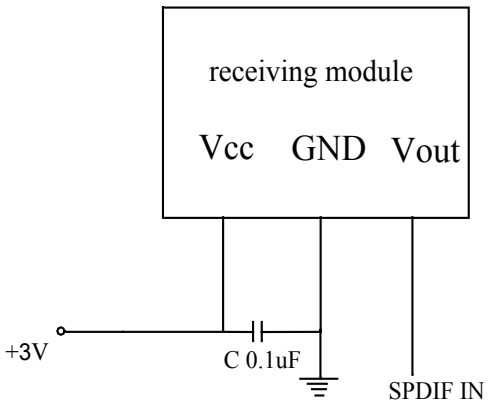

Figure 6. DLR1160-2-N precautions for using method

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Product Packaging Information

Table 5. Product packaging information for DLR1160-2-N series.

Item	Quantity	Total	Dimensions(mm)
Tray	100	100 pcs	13.5*27*2 cm
Box	10 tray/box	1000 pcs	29*29*10.5 cm
Carton	4 box/carton	4000 pcs	60*31*25.8 cm

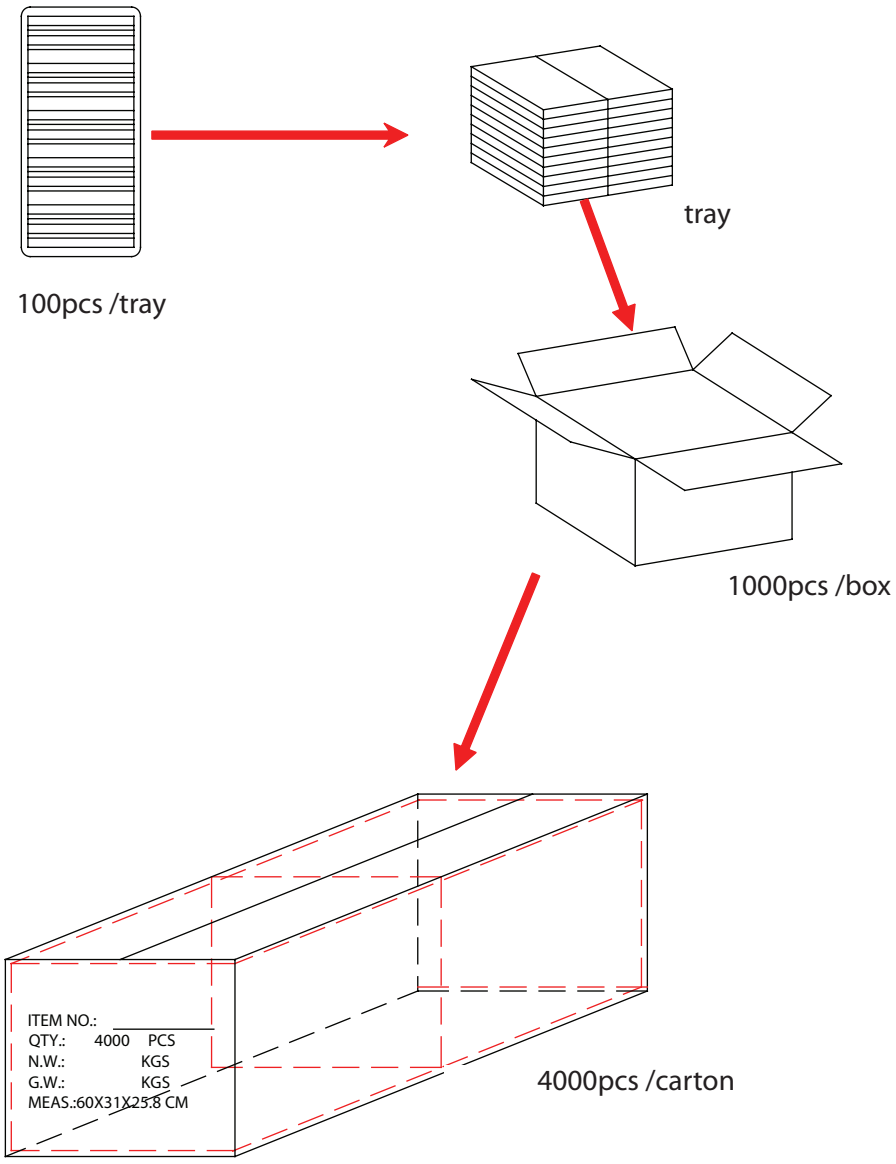

Figure 7. DLR1160-2-N product packaging information

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Material Description

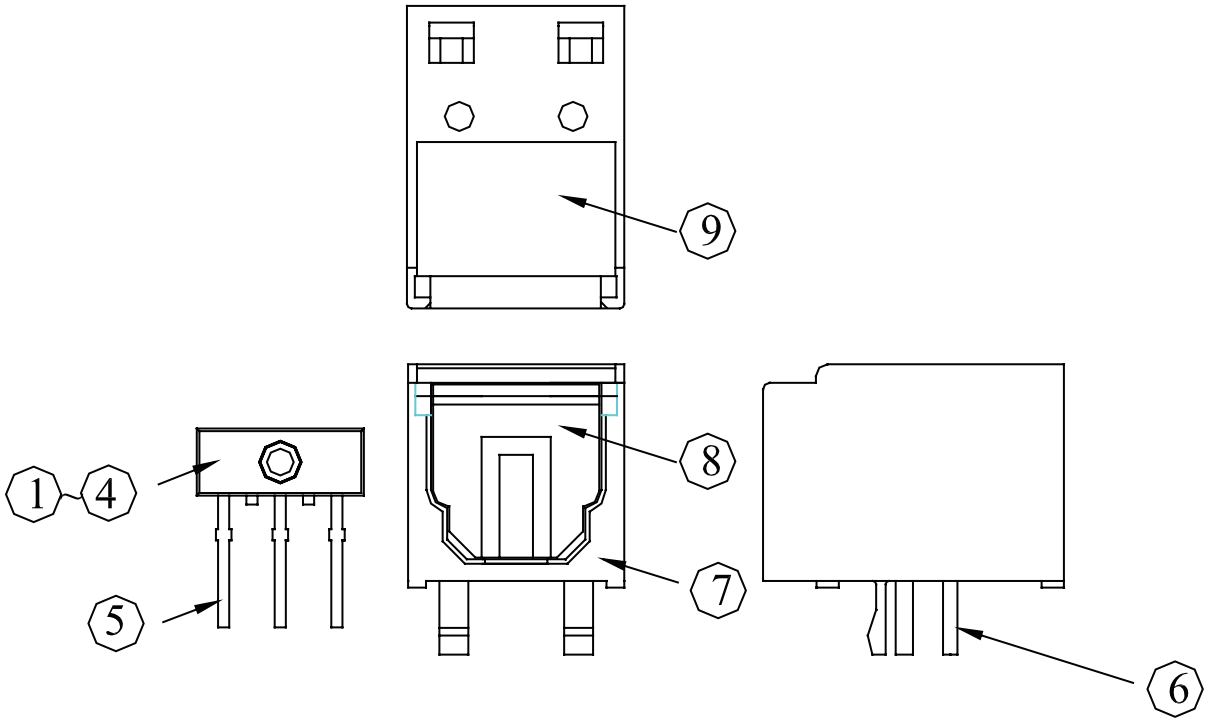

Figure 8. DLR1160-2-N material description

Table 6. Materail Description for DLR1160-2-N series.

ITEM	NAME	MATERIAL	FINISH	NOTE
1	IC	Si	-	-
2	Silver Epoxy	Ag+Epoxy	-	-
3	Gold Wire	Au	-	-
4	Mold Compound	Epoxy	-	-
5	Lead Frame	Phosphor Bronze	Tin	-
6	Fix Pin	Cu	Tin	-
7	Housing	HTN	-	UL94V-0
8	Shutter	HTN	-	UL94V-0
9	Springy	Stainless	-	-

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Revision History

Table 7. Revision history of DLR1160-2-N series datasheet

Versions	Description	Release Date
1	1. Establish a Datasheet.	2006/05/02
2	1. Modify packaging information.	2012/07/12

About Edison Opto

Edison Opto is a leading manufacturer of high power LED and a solution provider experienced in LDMS. LDMS is an integrated program derived from the four essential technologies in LED lighting applications- Thermal Management, Electrical Scheme, Mechanical Refinement, Optical Optimization, to provide customer with various LED components and modules. More Information about the company and our products can be found at www.edison-opto.com

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