

## DIP6, DC Input, Schmitt Trigger Photo Coupler

### Description

The H11LX series combine an AlGaAs infrared emitting diode as the emitter which is optically coupled to a Schmitt Trigger detector in a plastic DIP6 package with different lead forming options.

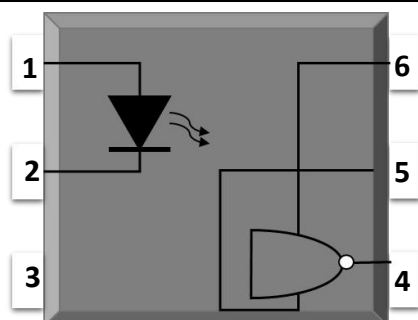
### Features

- High isolation 5000 VRMS
- DC input with Schmitt trigger output
- Operating temperature range - 55 °C to 100 °C
- REACH & RoHS compliance
- MSL class 1
- Regulatory Approvals
  - UL - UL1577
  - VDE - EN60747-5-5(VDE0884-5)
  - CQC - GB4943.1, GB8898
  - cUL- CSA Component Acceptance Service Notice No. 5A

### Applications

- Logic to logic isolator
- Programmable current level sensor
- Line receiver – eliminate noise and transient problems
- AC to TTL conversion – square wave shaping
- Digital programming of power supplies
- Interfaces computers with peripherals

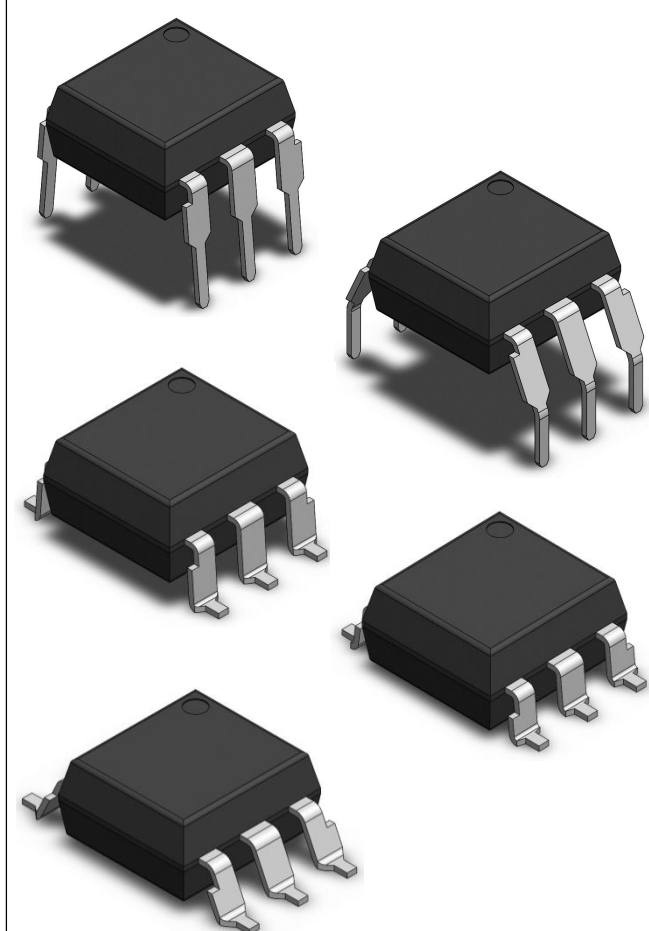
### SCHEMATIC



### PIN DEFINITION

1. Anode	6. VCC
2. Cathode	5. GND
3. NC	4. VOUT

### PACKAGE OUTLINE



**DIP6, DC Input, Schmitt Trigger Photo Coupler****ABSOLUTE MAXIMUM RATINGS**

PARAMETER	SYMBOL	VALUE	UNIT	Note
INPUT				
Forward Current	IF	60	mA	
Peak Transient Current	IF(trans)	1	A	1
Reverse Voltage	VR	6	V	
Input Power Dissipation	PI	120	mW	
OUTPUT				
Supply Voltage	VCC	3 to 16	V	
Output Voltage	VO	0 to 16	V	
Output Current	IO	50	mA	
Output Power Dissipation	PO	150	mW	
COMMON				
Total Power Dissipation	Ptot	250	mW	
Isolation Voltage	Viso	5000	Vrms	2
Operating Temperature	Topr	-55~100	°C	
Storage Temperature	Tstg	-55~150	°C	
Soldering Temperature	Tsol	260	°C	3

Note 1.  $\leq 1\mu\text{s}$  P.W,300pps

Note 2. AC For 1 Minute, R.H. = 40 ~ 60%

Note 3. For 10 seconds

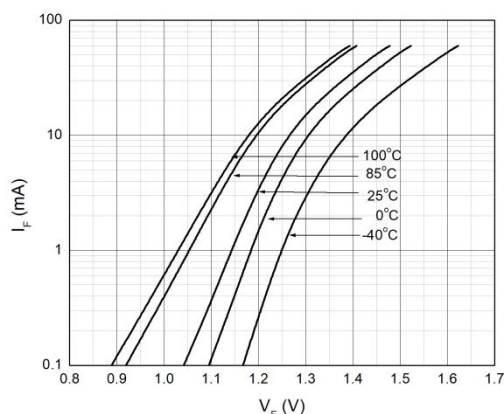

**DIP6, DC Input, Schmitt Trigger Photo Coupler**
**ELECTRICAL OPTICAL CHARACTERISTICS at Ta=25°C**

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITION	NOTE
INPUT							
Forward Voltage	VF	-	1.24	1.5	V	IF=10mA	
Reverse Current	IR	-	-	10	μA	VR=5V	
Input Capacitance	Cin	-	60	-	pF	V=0, f=1MHz	
OUTPUT							
Operation Voltage Range	VCC	3	-	15	V		
Off State Supply Current	ICC(off)	-	1.6	5	mA	IF=0mA, VCC=5V	
On State Supply Current	ICC(on)	-	1.6	5	mA	IF=10mA, VCC=5V	
High Level Output Current	IOH	-	-	100	μA	IF=10mA, VCC=VO=15V	
TRANSFER CHARACTERISTICS (Ta=-40 to 85°C)							
Low Level Output Voltage	VOL	-	0.35	0.6	V	VCC=5.5V, IF=5mA, VE=2.0V, ICL=13mA	
Turn On Threshold Current	H11L1	IFon	-	-	1.6	VCC=5V, RL=270Ω	
	H11L2		-	-	10		
	H11L3		-	-	5		
Turn Off Threshold Current	IFoff	-	1	-	mA	VCC=5V, RL=270Ω	
Turn On Time	ton	-	-	4	μs	VCC=5V, IF=IFon, RL=270Ω	
Fall Time	tr	-	0.1	-	μs		
Turn Off Time	toff	-	-	4	μs		
Rise Time	tr	-	0.1	-	μs		
Data Rate		-	1	-	MHz		
Isolation Resistance	Riso	10 <sup>12</sup>	10 <sup>14</sup>	-	Ω	DC500V, 40 ~ 60% R.H.	
Floating Capacitance	CIO	-	0.3	1	pF	V=0, f=1MHz	

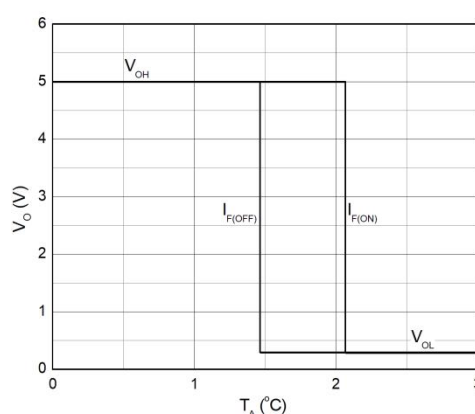
## DIP6, DC Input, Schmitt Trigger Photo Coupler

### CHARACTERISTIC CURVES

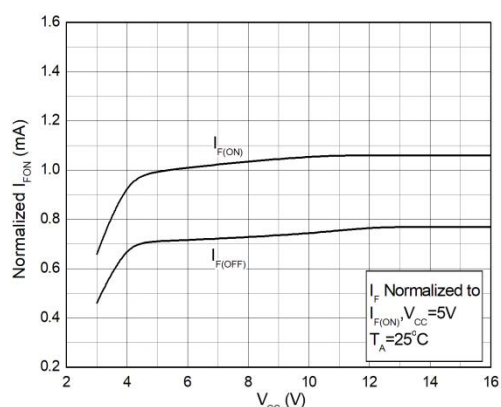
**Fig.1 Forward Current vs. Forward Voltage**



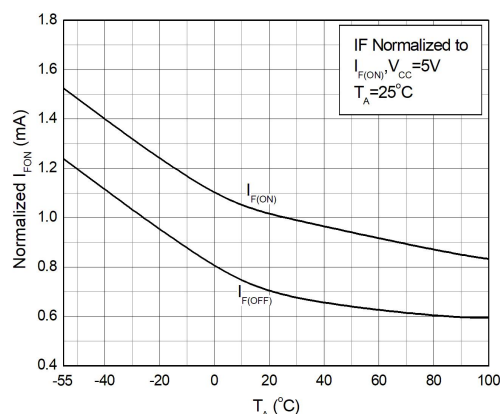
**Fig.2 Output Voltage vs. Forward Current**



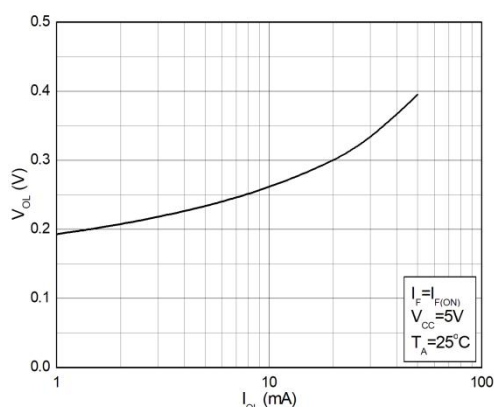
**Fig.3 Normalized Turn on Threshold Current vs. Supply Voltage**



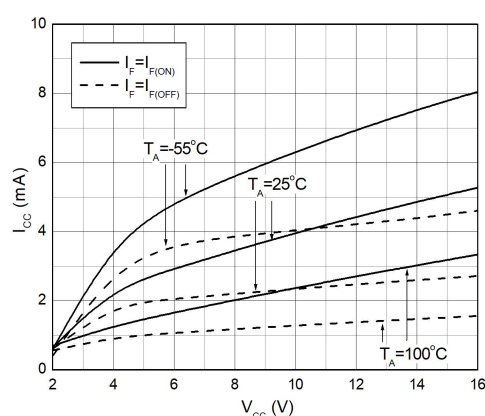
**Fig.4 Normalized Turn on Threshold Current vs. Ambient Temperature**



**Fig.5 Low Level Output Voltage vs. Load Current**



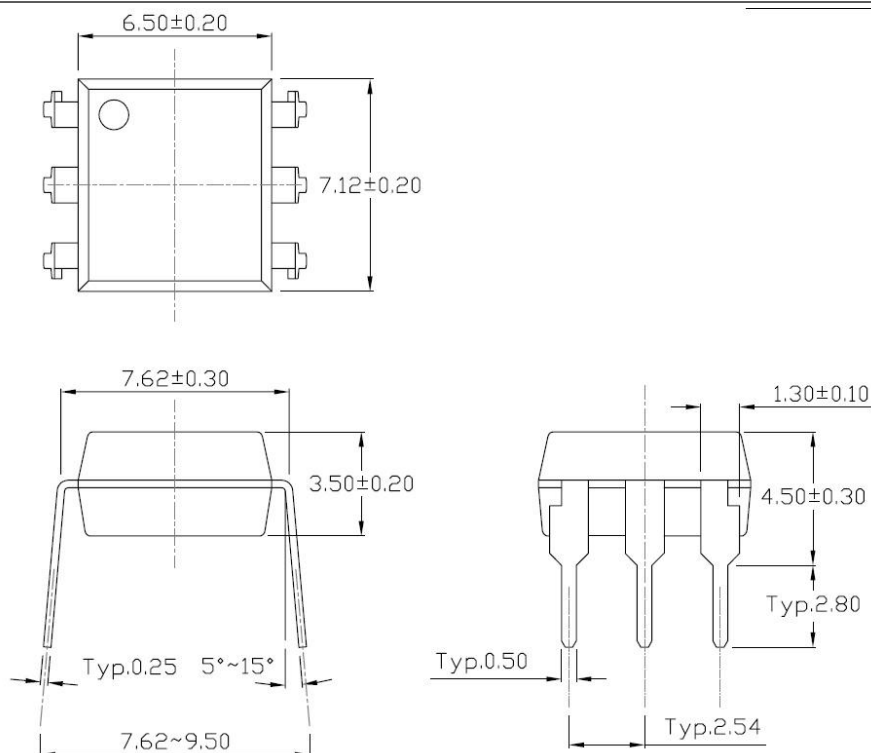
**Fig.6 Supply Current vs. Supply Voltage**



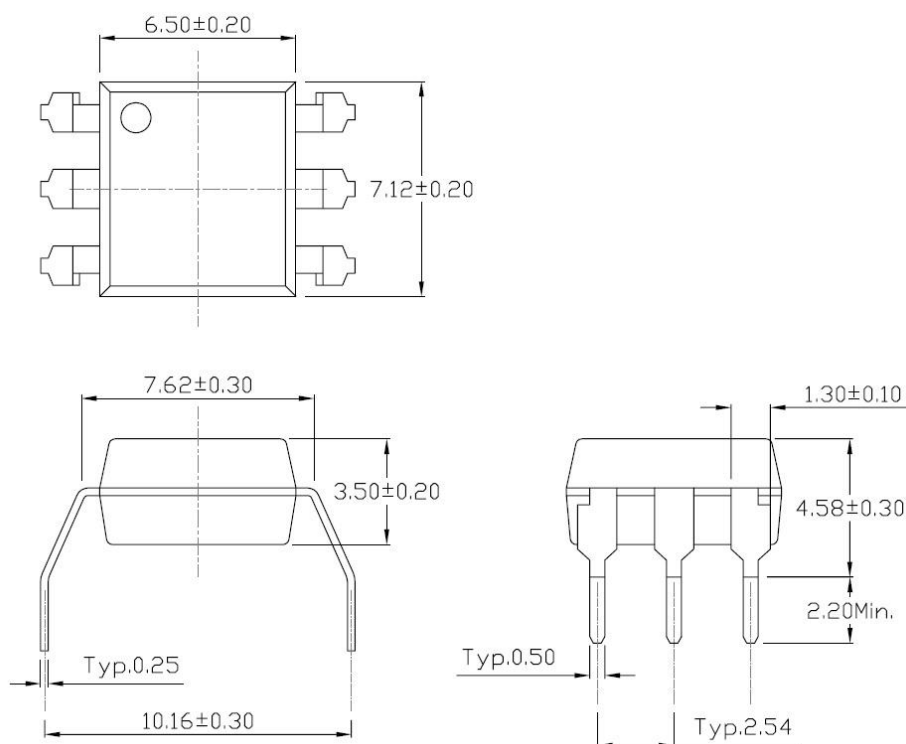
**DIP6, DC Input, Schmitt Trigger Photo Coupler**

**PACKAGE DIMENSIONS (Dimensions in mm unless otherwise stated)**

**Standard DIP – Through Hole (DIP Type)**



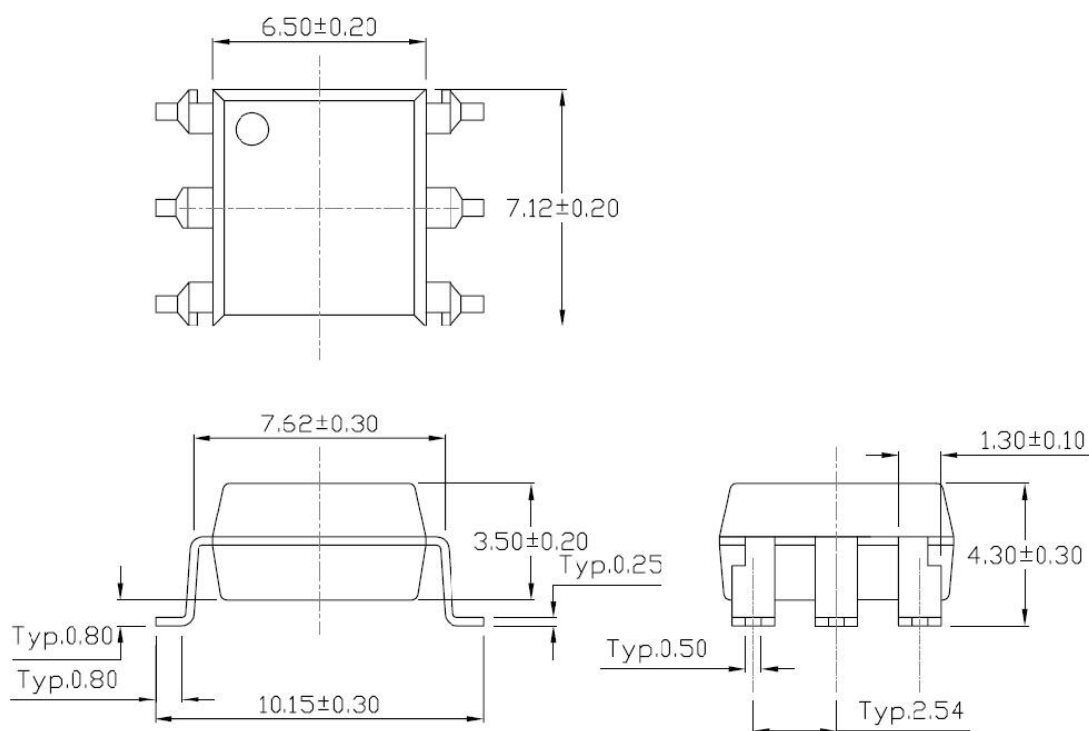
**Gullwing (400mil) Lead Forming – Through Hole (M Type)**



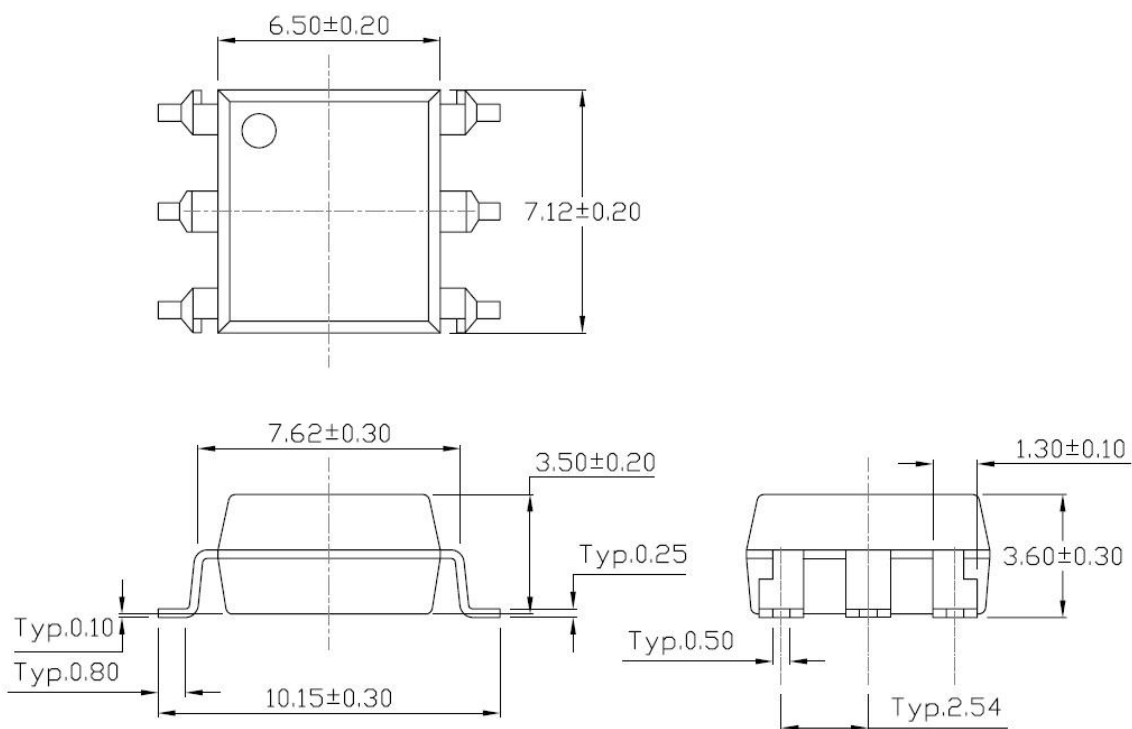
**DIP6, DC Input, Schmitt Trigger Photo Coupler**

**PACKAGE DIMENSIONS (Dimensions in mm unless otherwise stated)**

**Surface Mount Lead Forming (S Type)**



**Surface Mount (Low Profile) Lead Forming (SL Type)**

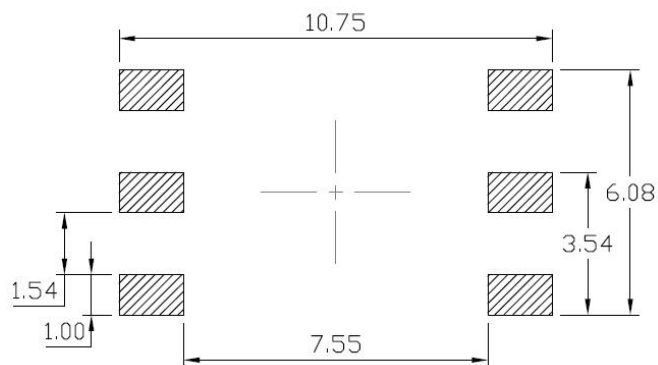




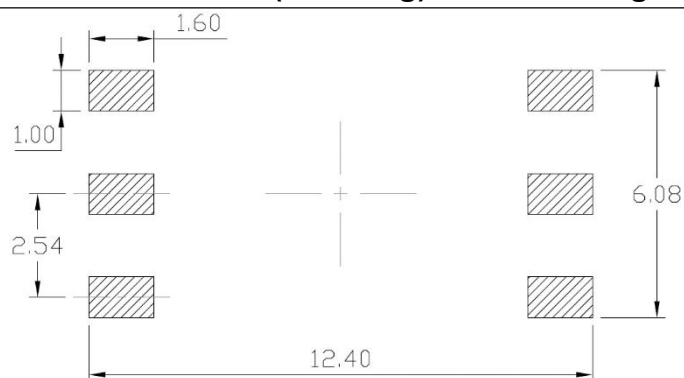
**DIP6, DC Input, Schmitt Trigger Photo Coupler**

**RECOMMENDED SOLDER MASK (Dimensions in mm unless otherwise stated)**

**Surface Mount Lead Forming & Surface Mount (Low Profile) Lead Forming**



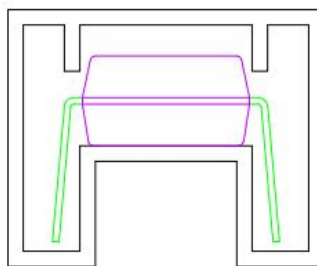
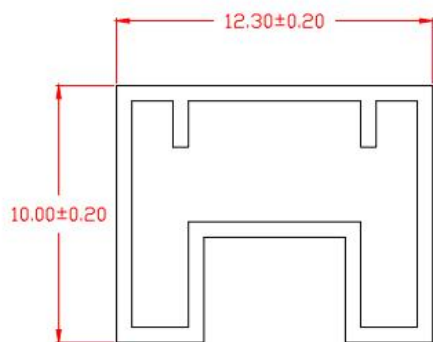
**Surface Mount (Gullwing) Lead Forming**



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**TUBE SPECIFICATIONS (Dimensions in mm unless otherwise stated)**

**Standard DIP**

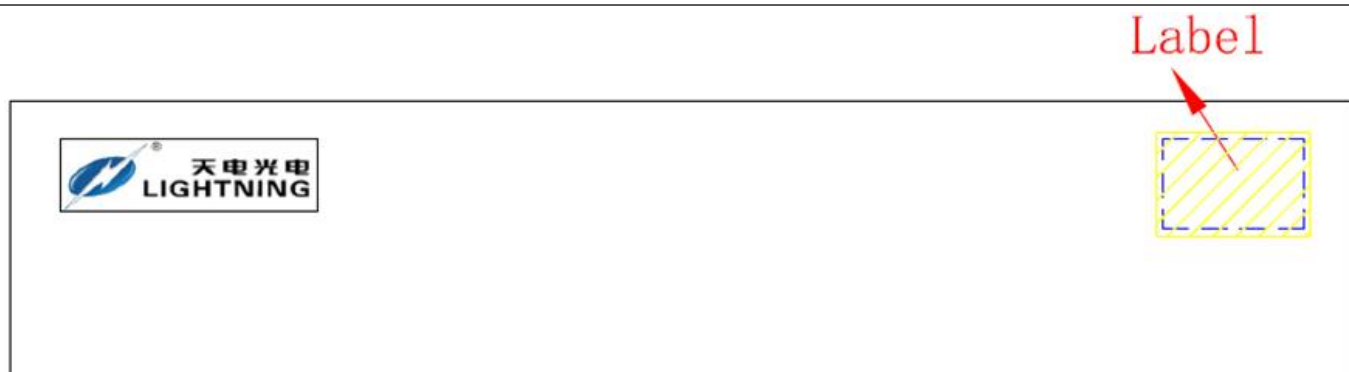




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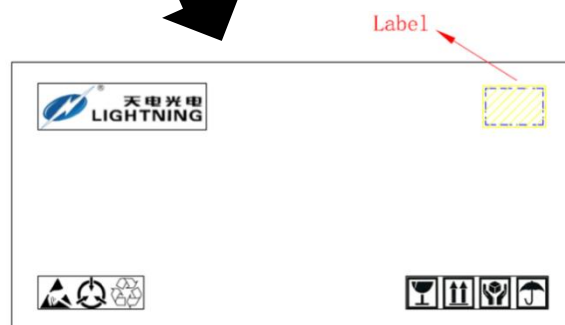
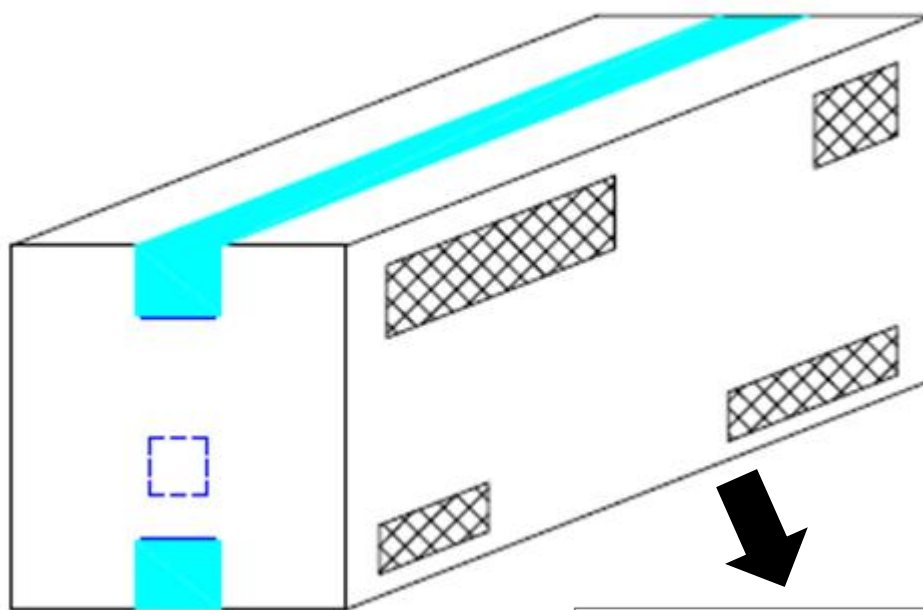
**BOX SPECIFICATIONS (Tube Type)**

**Inner Box**



- L x W x H = 52.5cm x 10.7cm x 4.7cm

**Outer Box**

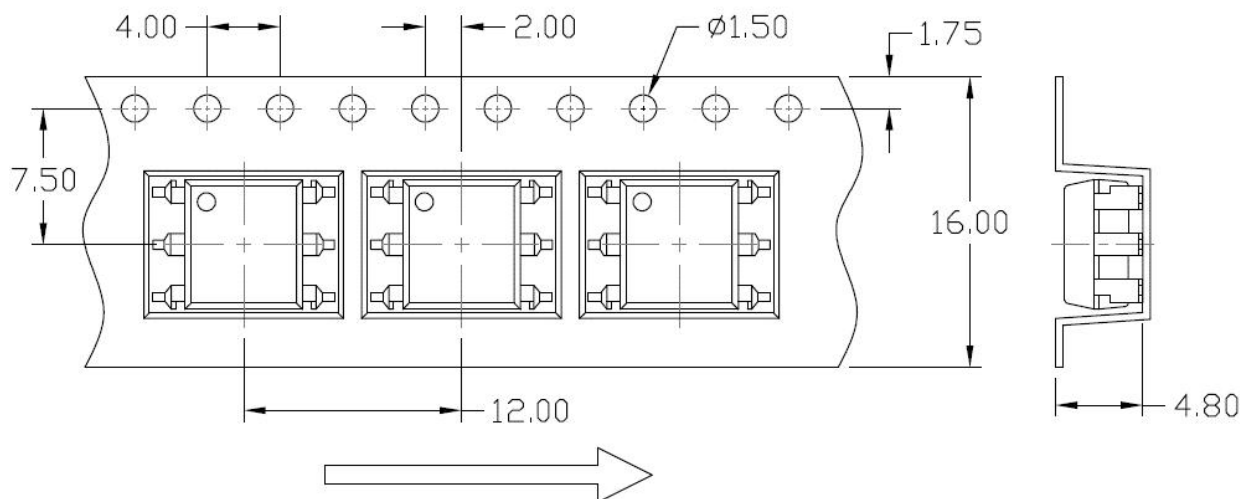


- L x W x H = 53.5cm x 23.5cm x 25.5cm

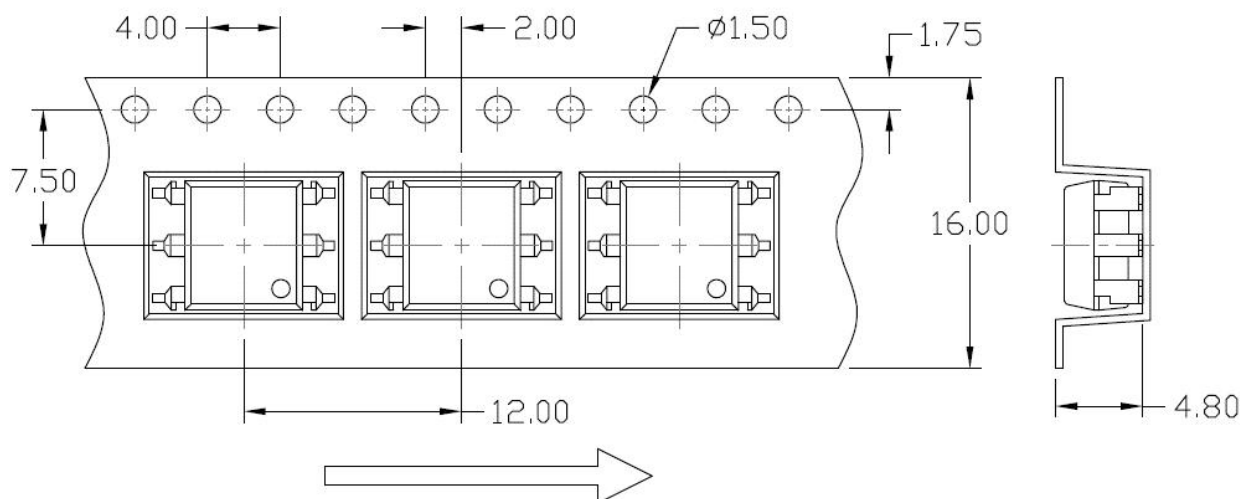
**DIP6, DC Input, Schmitt Trigger Photo Coupler**

**CARRIER TAPE SPECIFICATIONS (Dimensions in mm unless otherwise stated)**

**Option S(T1) & SL(T1)**



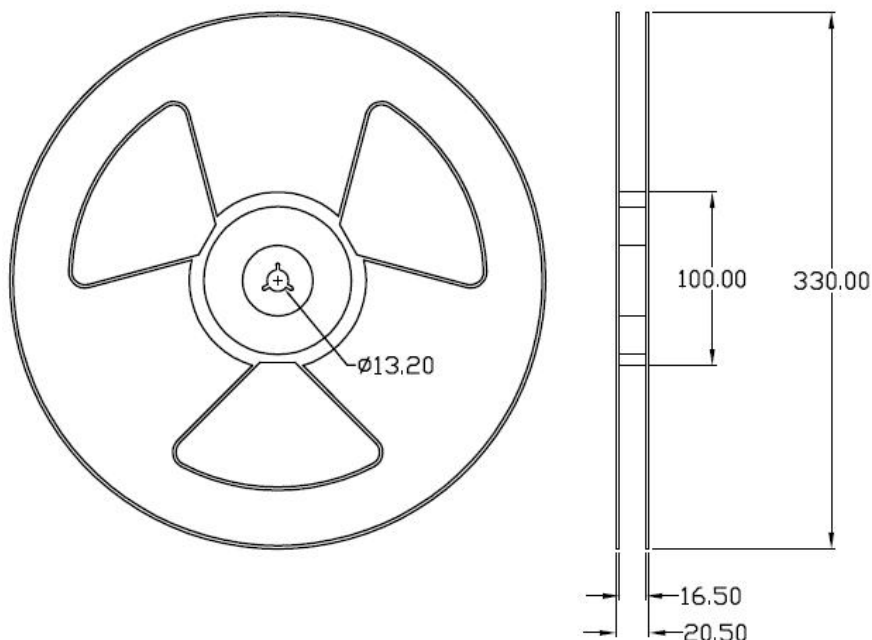
**Option S(T2) & SL(T2)**



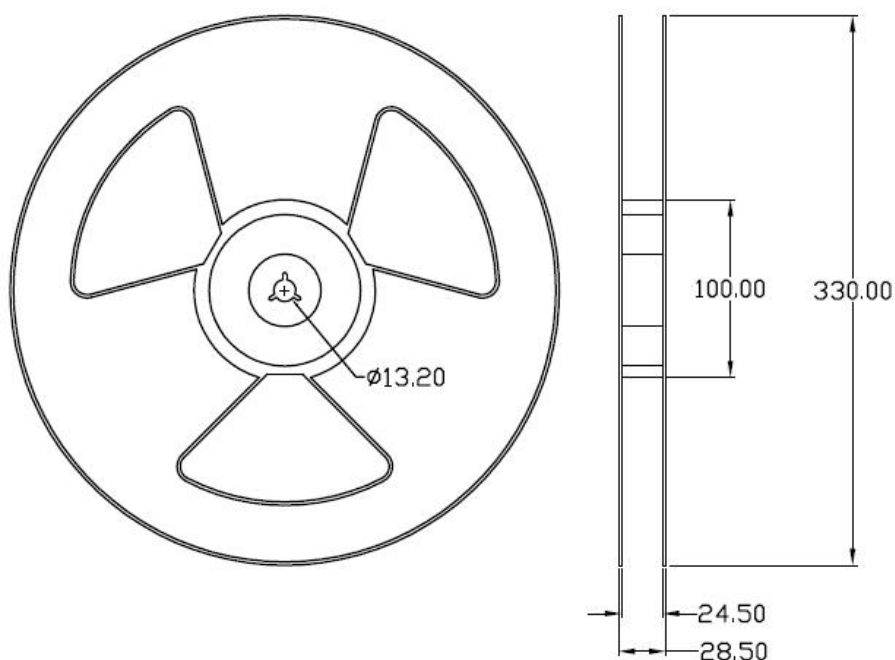
**DIP6, DC Input, Schmitt Trigger Photo Coupler**

**REEL SPECIFICATIONS (Dimensions in mm unless otherwise stated)**

**Option S & Option SL**



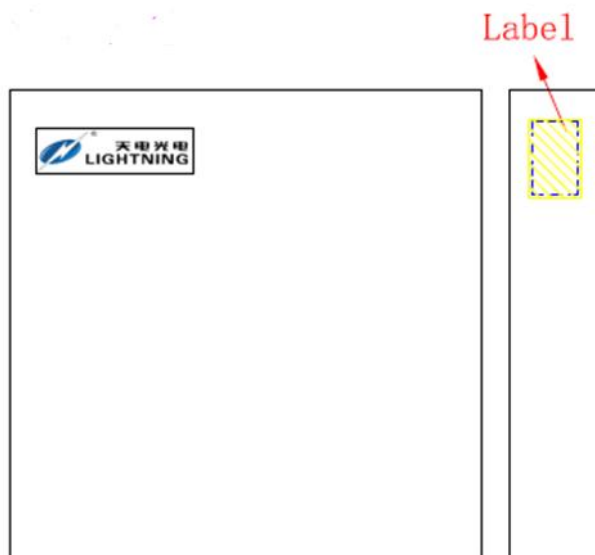
**Option SLM**



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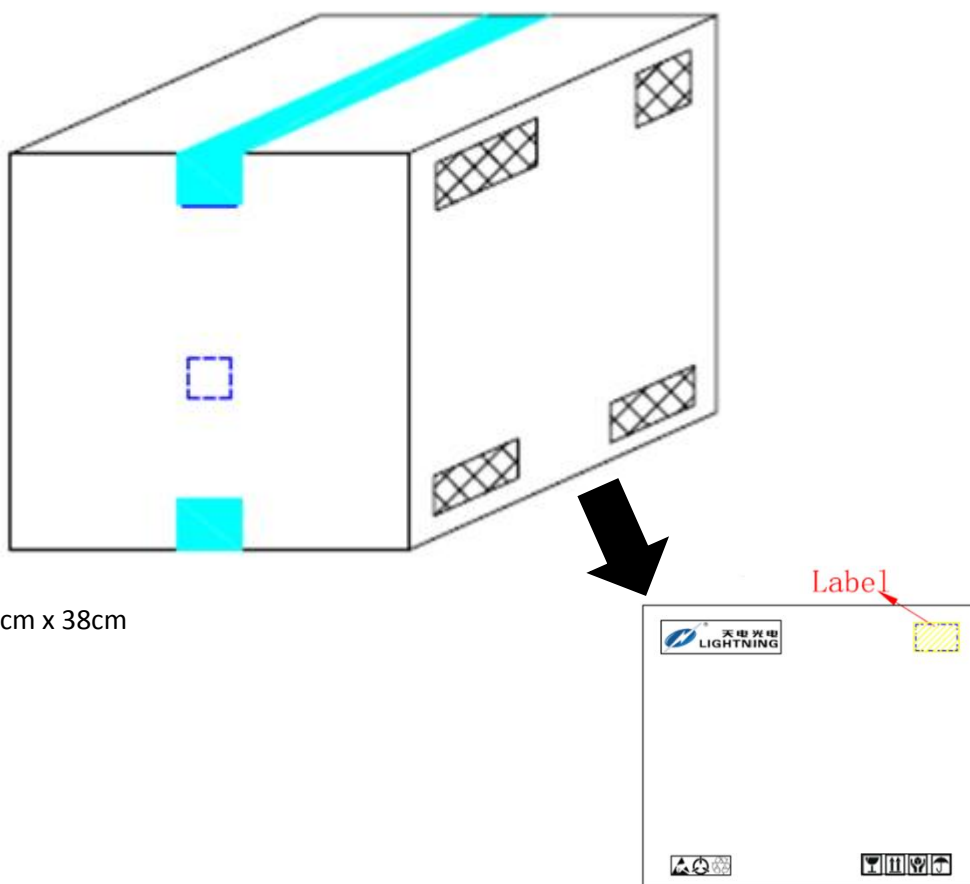
**BOX SPECIFICATIONS (Reel Type)**

**Inner Box**



- L x W x H = 36cm x 36cm x 6.9cm

**Outer Box**

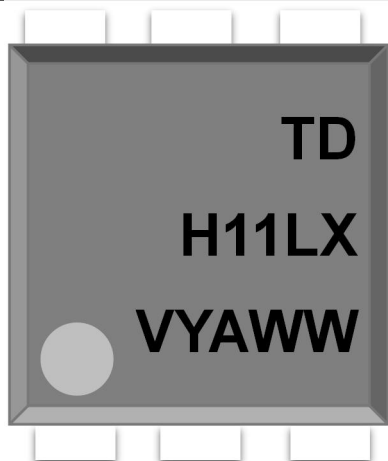


- L x W x H = 45cm x 38cm x 38cm

## DIP6, DC Input, Schmitt Trigger Photo Coupler

### ORDERING AND MARKING INFORMATION

#### MARKING INFORMATION



**TD** : Company Abbr.  
**H11LX** : Part Number & Rank  
**V** : VDE Option  
**Y** : Fiscal Year  
**A** : Manufacturing Code  
**WW** : Work Week

#### ORDERING INFORMATION

### H11LX(Y)(Z)-GV

TD – Company Abbr.  
 H11LX – Part Number (X=1/2/3)  
 Y – Lead Form Option (M/S/SL/None)  
 Z – Tape and Reel Option (T1/T2)  
 G – Green Option (G or None)  
 V – VDE Option (V or None)

#### LABEL INFORMATION



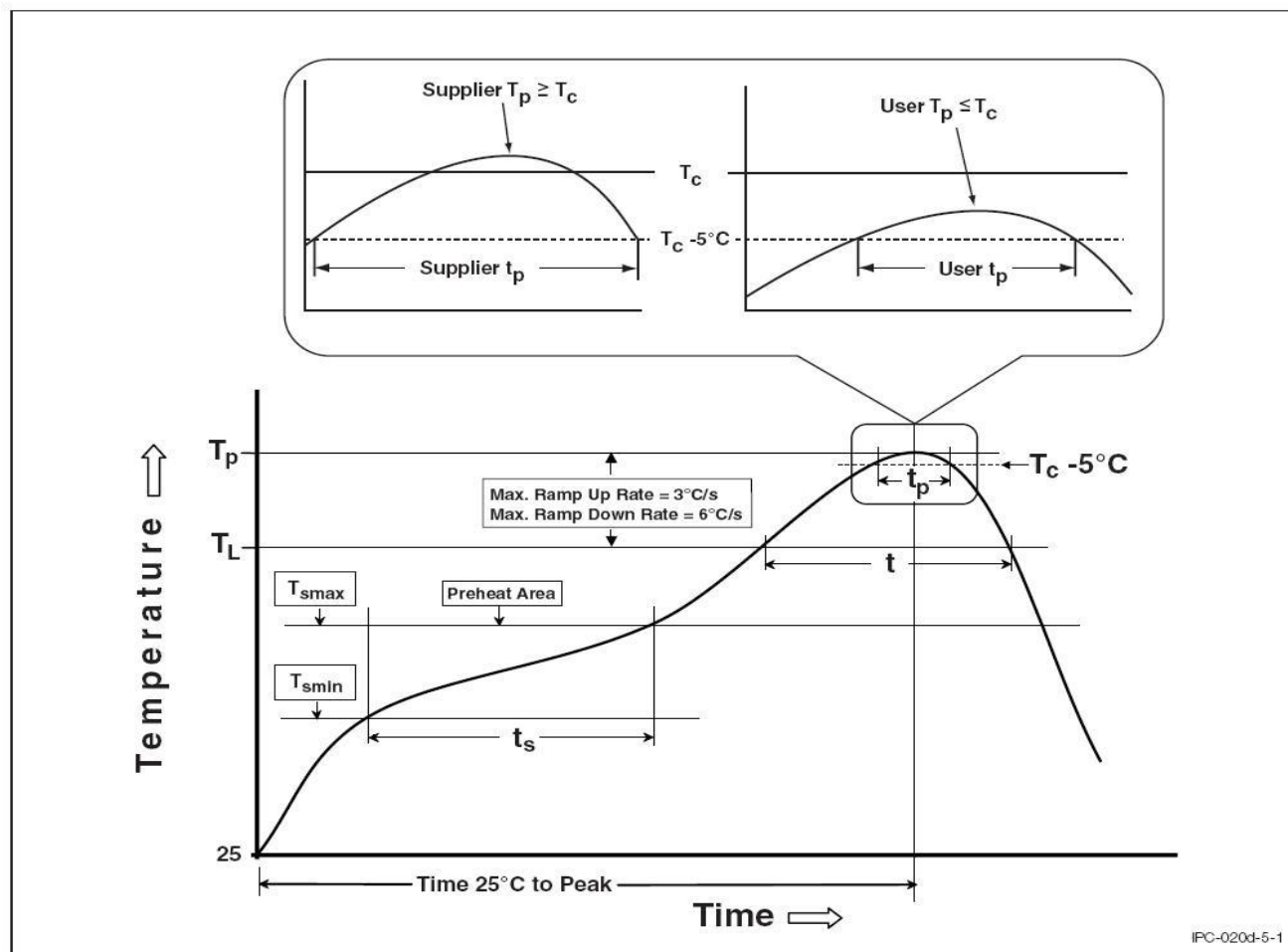
#### Packing Quantity

Option	Quantity	Quantity – Inner box	Quantity – Outer box
None	50 Units/Tube	32 Tubes/Inner box	10 Inner box/Outer box = 16k Units
M	50 Units/Tube	28 Tubes/Inner box	10 Inner box/Outer box = 14k Units
S(T1)	1000 Units/Reel	3 Reels/Inner box	5 Inner box/Outer box = 15k Units
S(T2)	1000 Units/Reel	3 Reels/Inner box	5 Inner box/Outer box = 15k Units
SL(T1)	1000 Units/Reel	3 Reels/Inner box	5 Inner box/Outer box = 15k Units
SL(T2)	1000 Units/Reel	3 Reels/Inner box	5 Inner box/Outer box = 15k Units

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**REFLOW INFORMATION**

**REFLOW PROFILE**



Profile Feature	Sn-Pb Assembly Profile	Pb-Free Assembly Profile
Temperature Min. (Tsmmin)	100	150°C
Temperature Max. (Tsmmax)	150	200°C
Time (ts) from (Tsmmin to Tsmmax)	60-120 seconds	60-120 seconds
Ramp-up Rate (tL to tP)	3°C/second max.	3°C/second max.
Liquidous Temperature (TL)	183°C	217°C
Time (tL) Maintained Above (TL)	60 – 150 seconds	60 – 150 seconds
Peak Body Package Temperature	235°C +0°C / -5°C	260°C +0°C / -5°C
Time (tP) within 5°C of 260°C	20 seconds	30 seconds
Ramp-down Rate (TP to TL)	6°C/second max	6°C/second max
Time 25°C to Peak Temperature	6 minutes max.	8 minutes max.



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