

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.

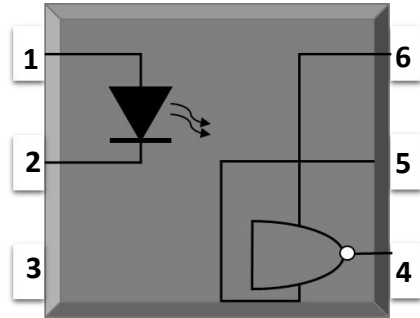
Features

- 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

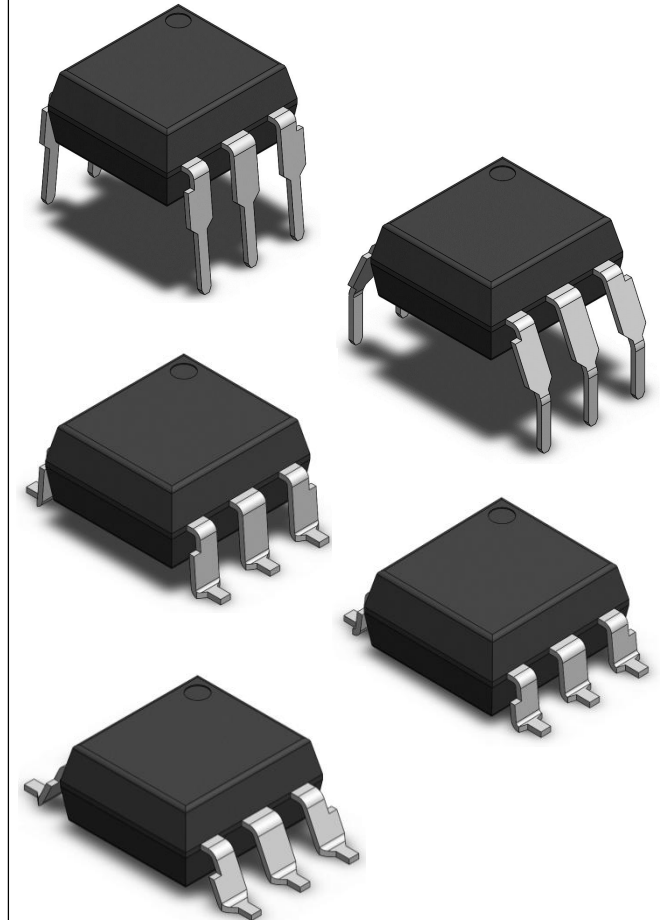
SCHEMATIC



PIN DEFINITION

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

PACKAGE OUTLINE





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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



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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	mA	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 ¹²	10 ¹⁴	-	Ω	DC500V, 40 ~ 60% R.H.	
Floating Capacitance	CIO	-	0.3	1	pF	V=0, f=1MHz	

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CHARACTERISTIC CURVES

Fig.1 Forward Current vs. Forward Voltage

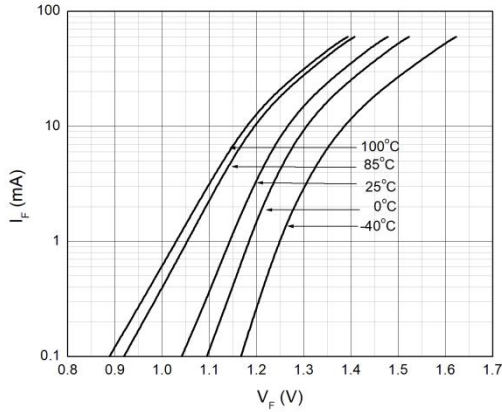


Fig.2 Output Voltage vs. Forward Current

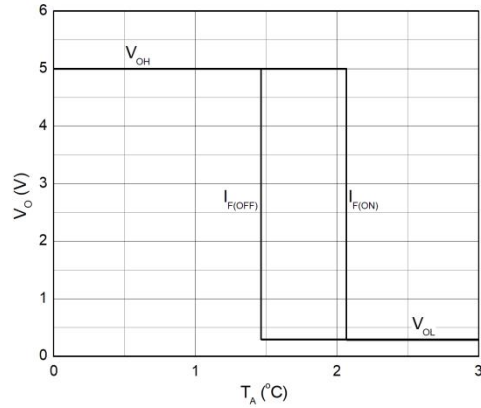


Fig.3 Normalized Turn on Threshold Current vs. Supply Voltage

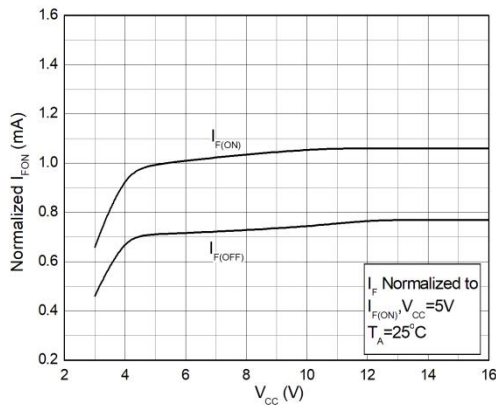


Fig.4 Normalized Turn on Threshold Current vs. Ambient Temperature

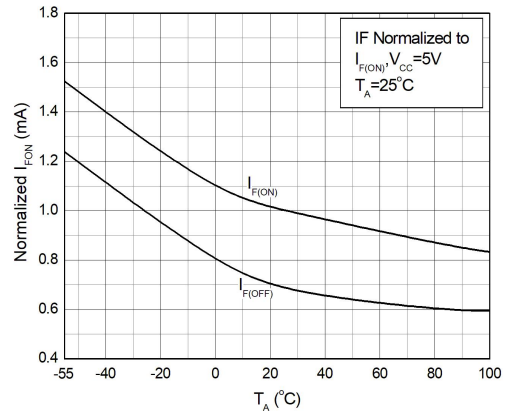


Fig.5 Low Level Output Voltage vs. Load Current

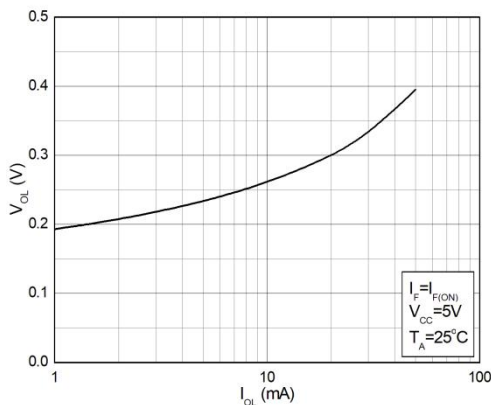
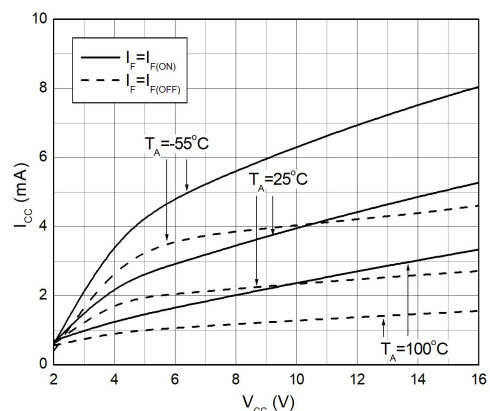


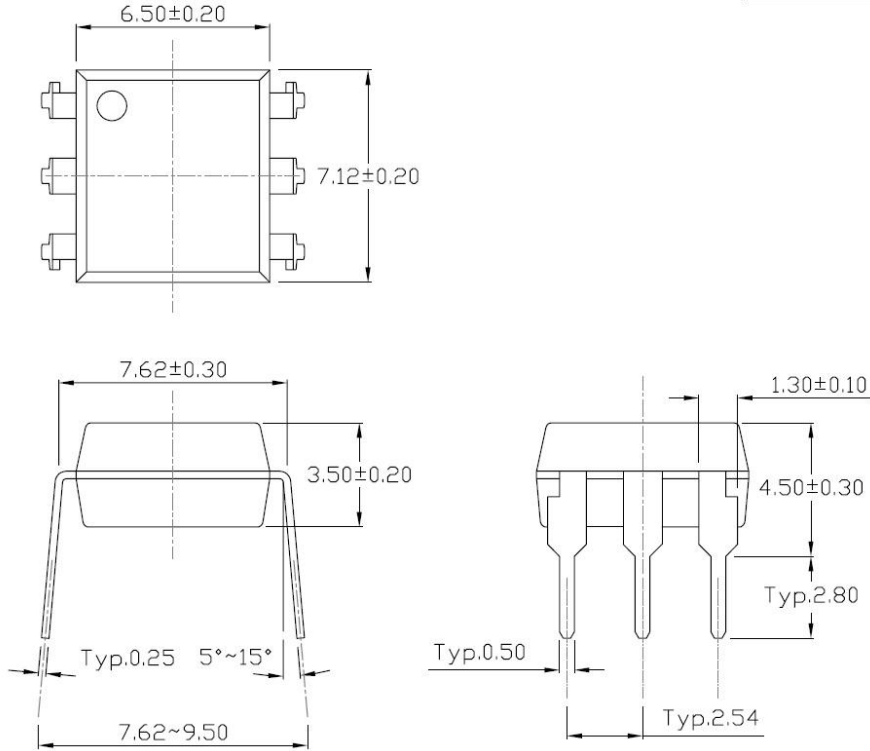
Fig.6 Supply Current vs. Supply Voltage



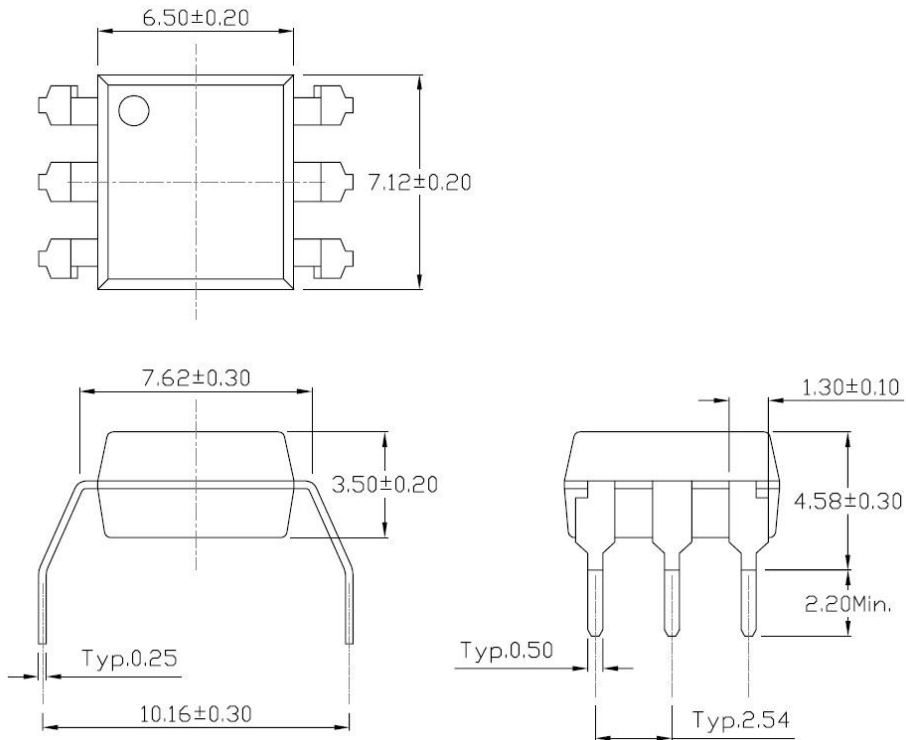
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PACKAGE DIMENSIONS (Dimensions in mm unless otherwise stated)

Standard DIP – Through Hole (DIP Type)



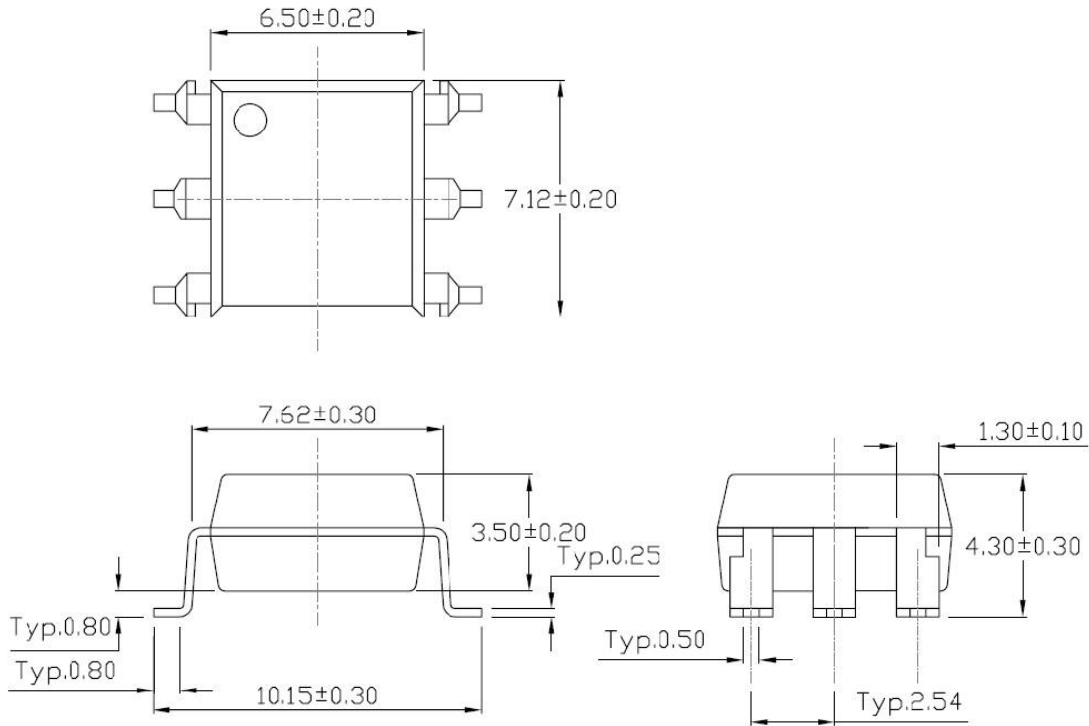
Gullwing (400mil) Lead Forming – Through Hole (M Type)



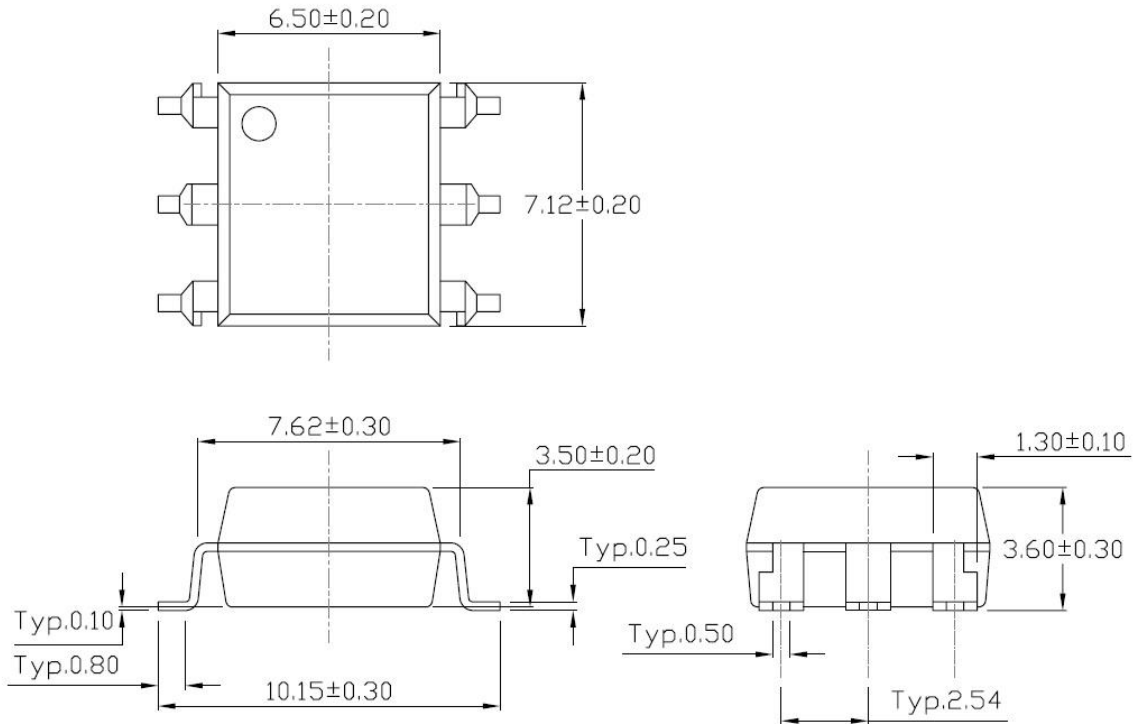
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PACKAGE DIMENSIONS (Dimensions in mm unless otherwise stated)

Surface Mount Lead Forming (S Type)



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

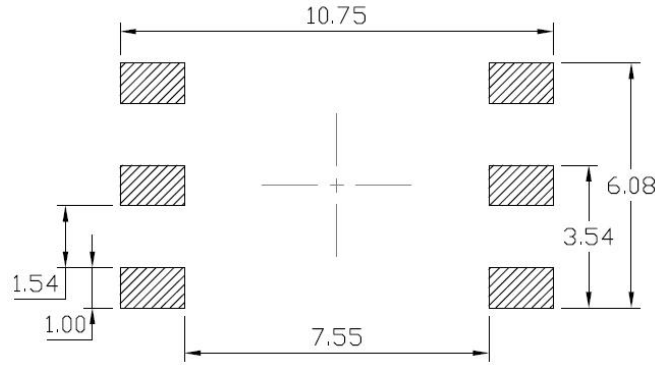




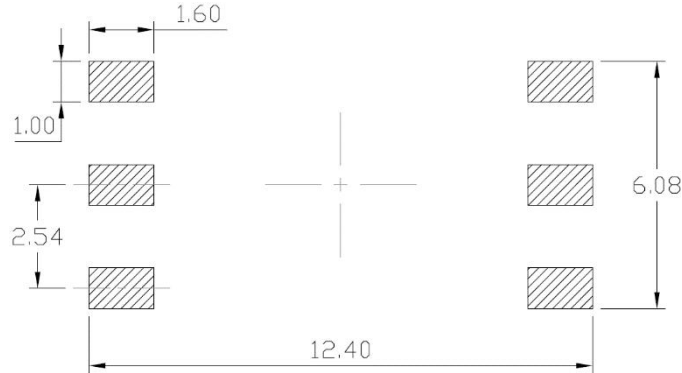
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RECOMMENDED SOLDER MASK (Dimensions in mm unless otherwise stated)

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



Surface Mount (Gullwing) Lead Forming

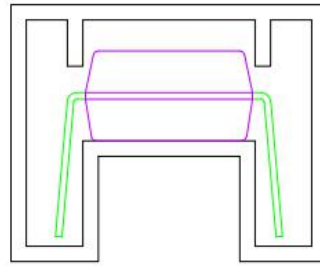
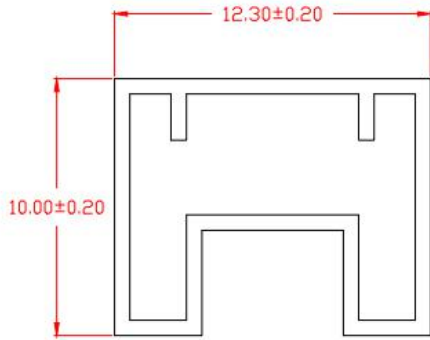




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TUBE SPECIFICATIONS (Dimensions in mm unless otherwise stated)

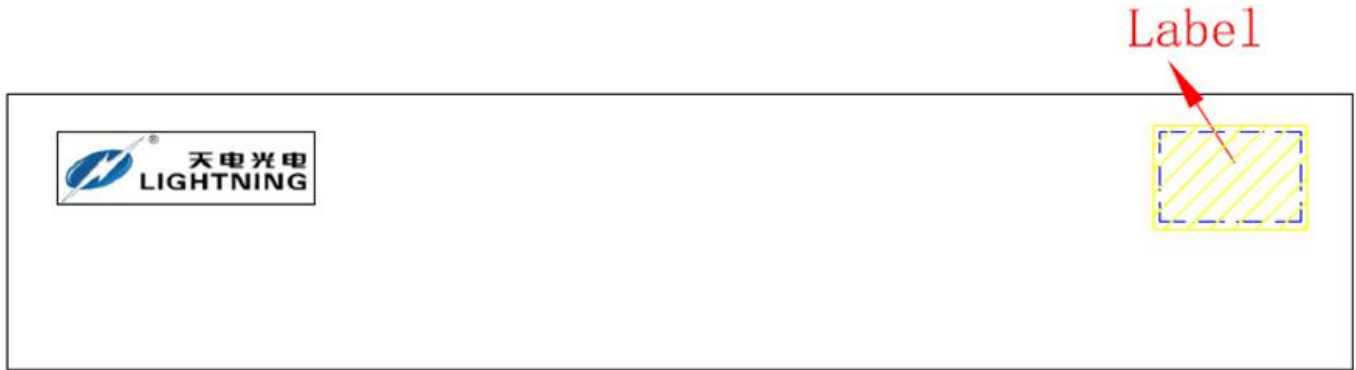
Standard DIP



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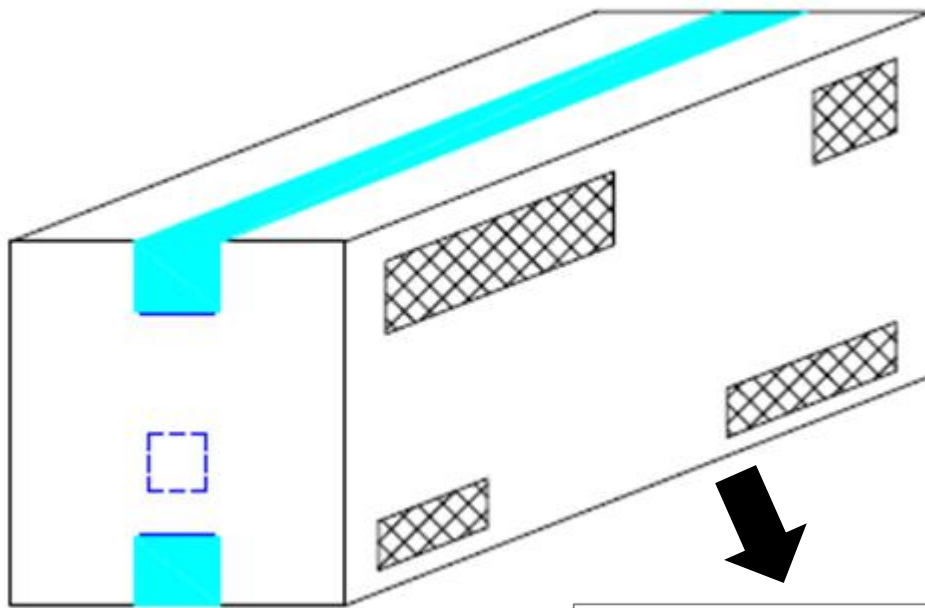
BOX SPECIFICATIONS (Tube Type)

Inner Box

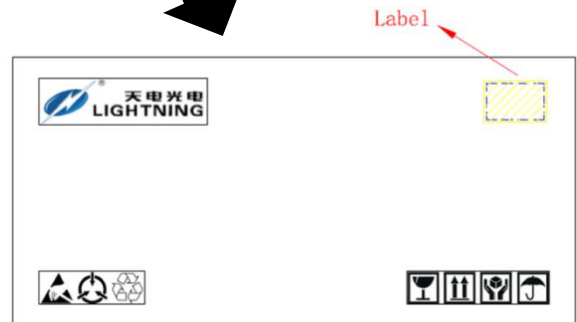


- L x W x H = 52.5cm x 10.7cm x 4.7cm

Outer Box



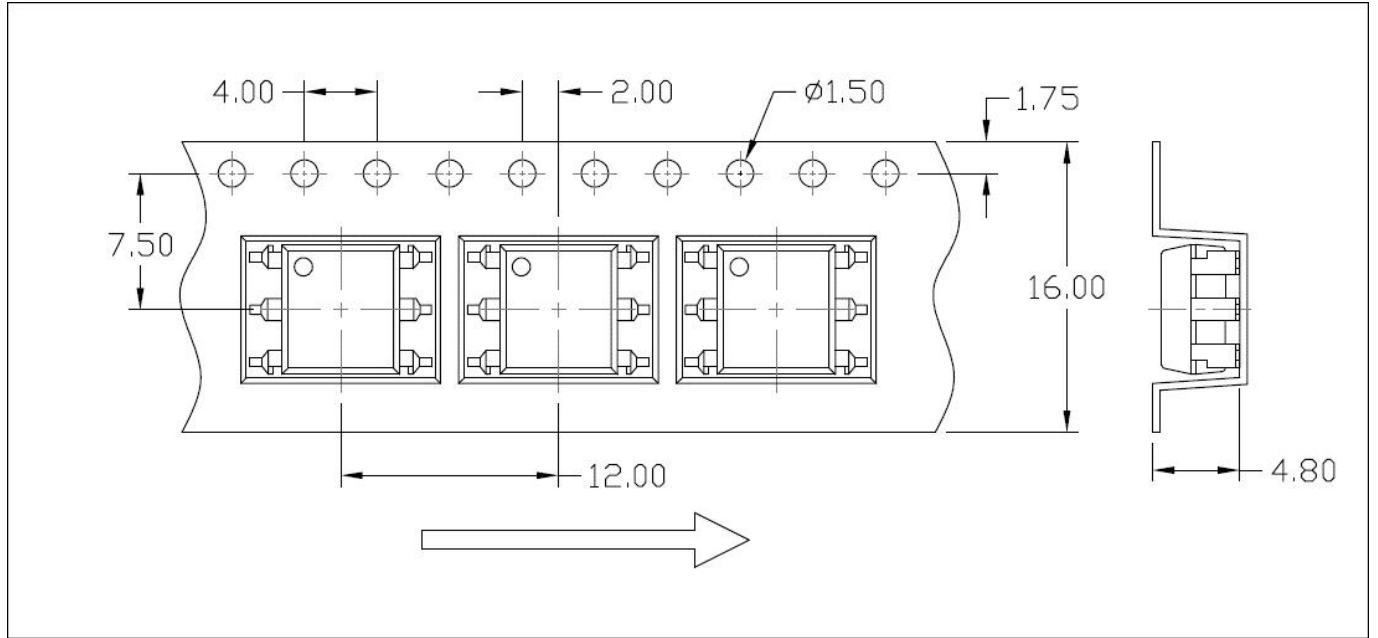
- L x W x H = 53.5cm x 23.5cm x 25.5cm



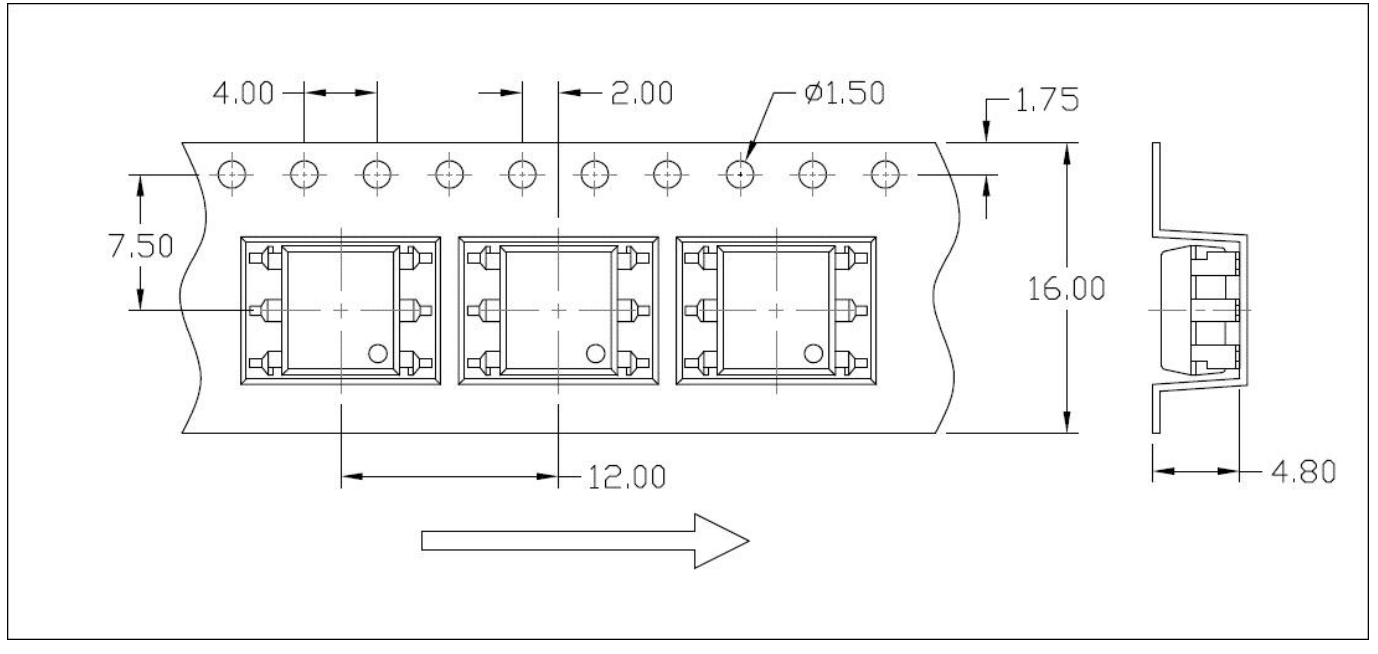
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CARRIER TAPE SPECIFICATIONS (Dimensions in mm unless otherwise stated)

Option S(T1) & SL(T1)



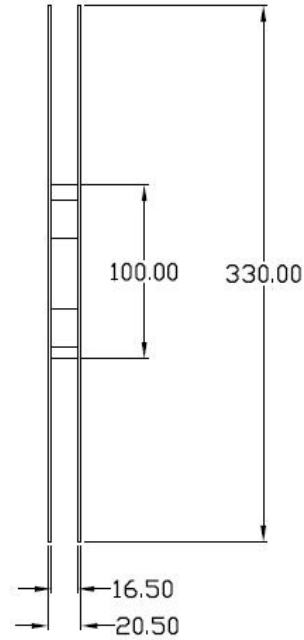
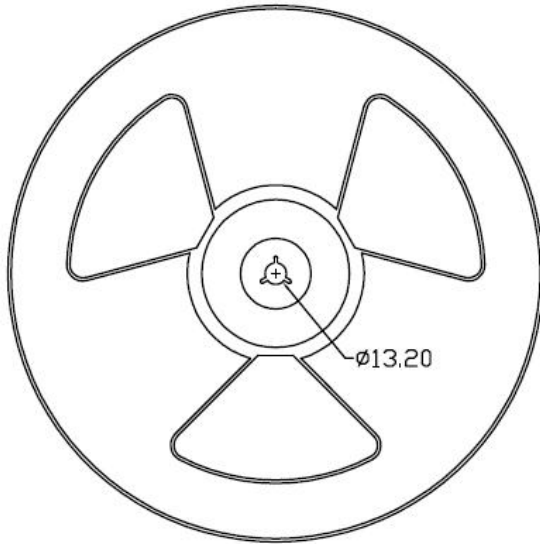
Option S(T2) & SL(T2)



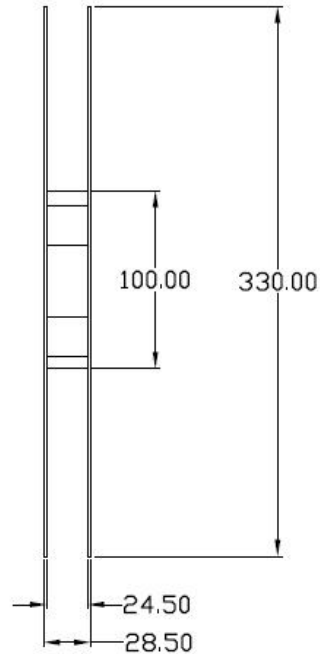
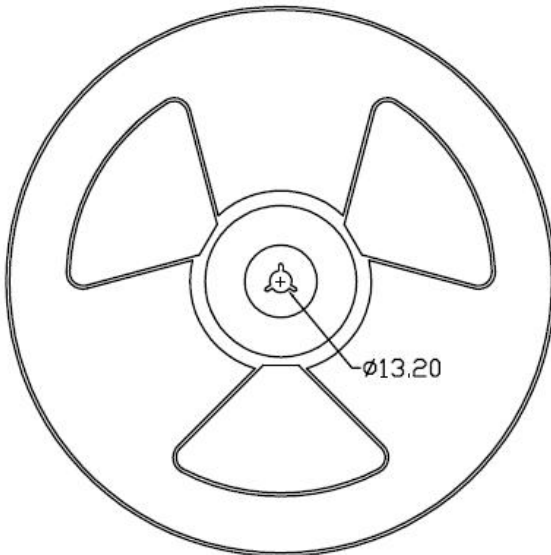
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REEL SPECIFICATIONS (Dimensions in mm unless otherwise stated)

Option S & Option SL



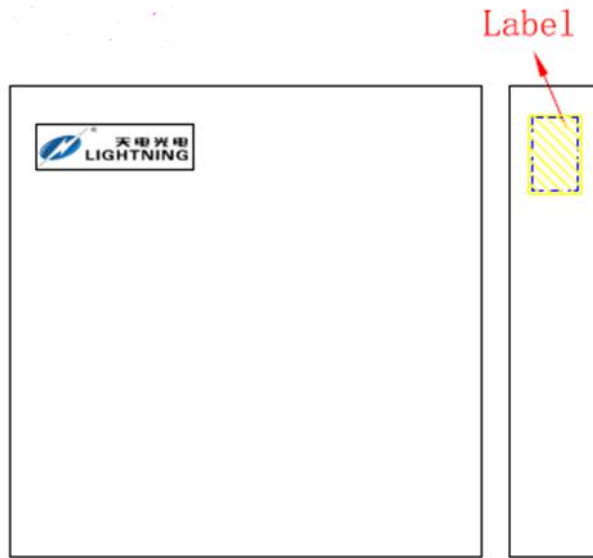
Option SLM



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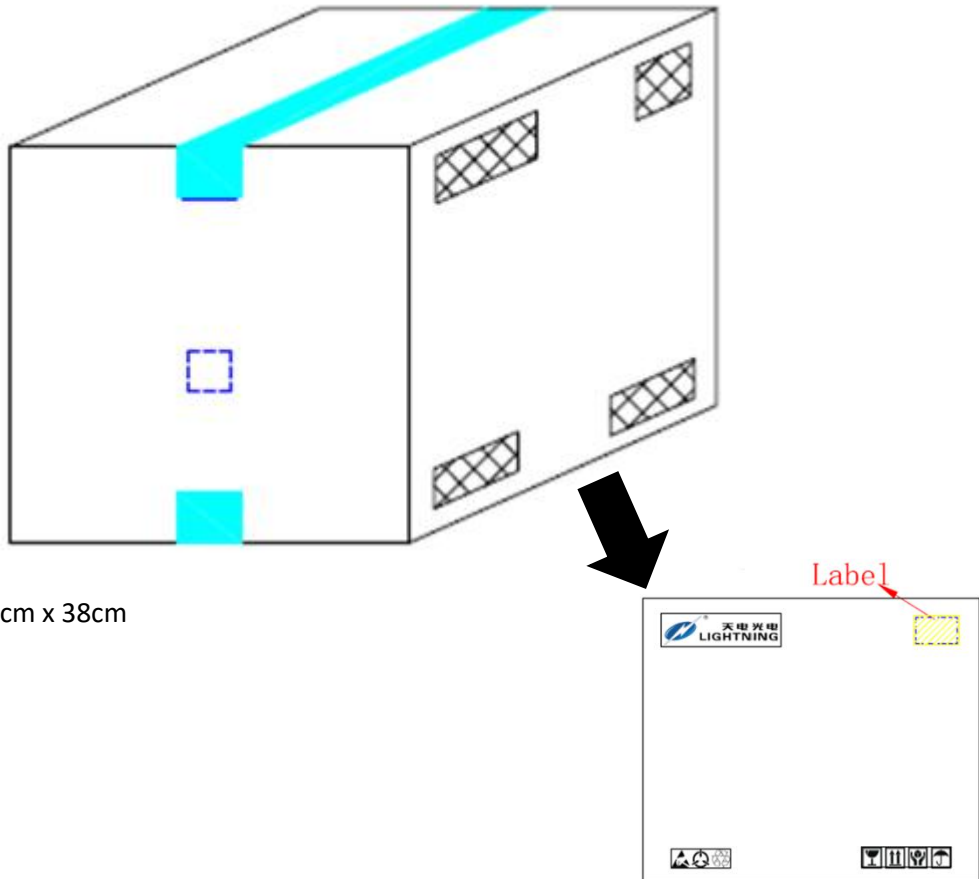
BOX SPECIFICATIONS (Reel Type)

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

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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

LABEL 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)

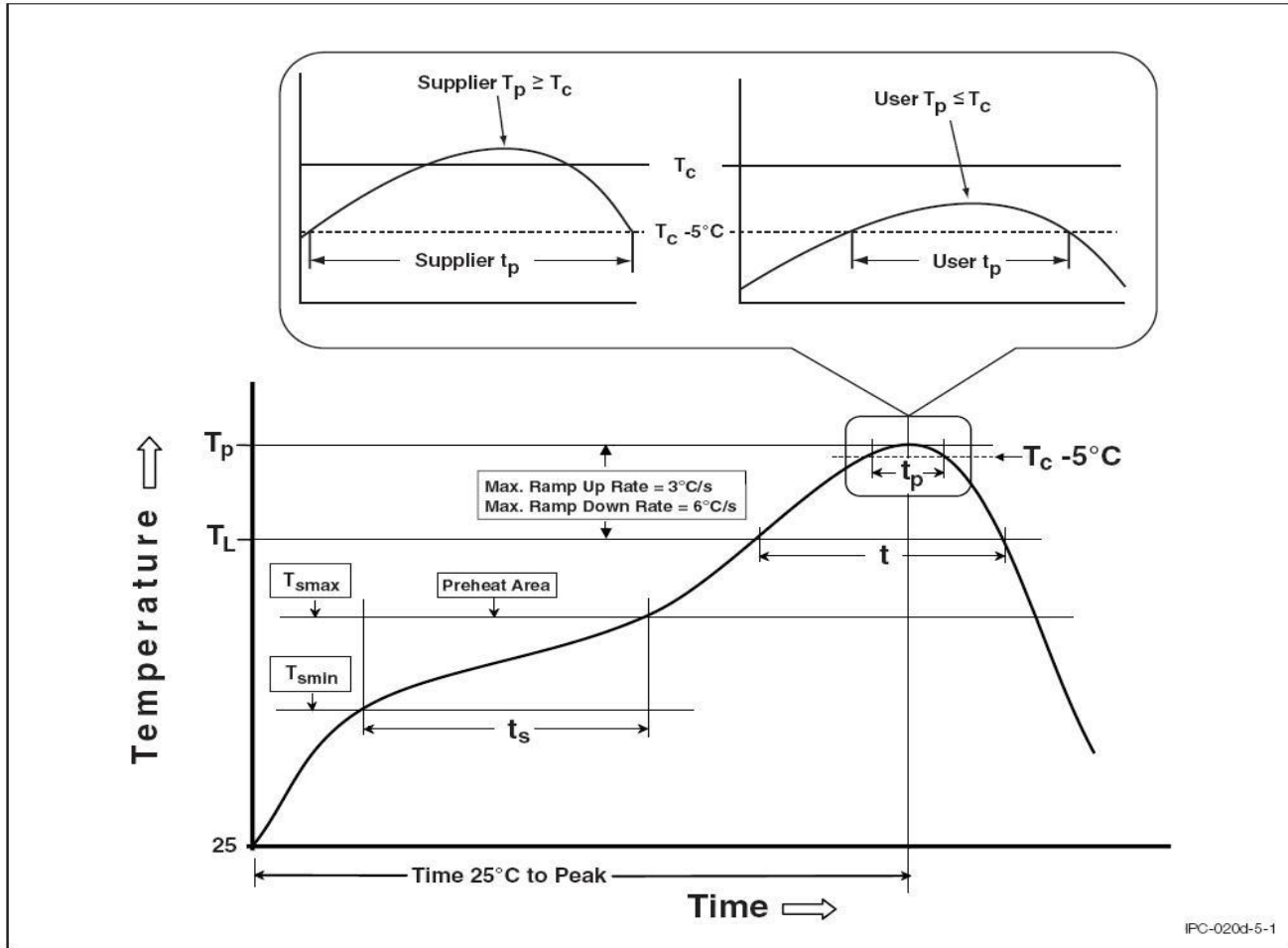
Packing Quantity

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. (T_{smin})	100	150°C
Temperature Max. (T_{smax})	150	200°C
Time (t_s) from (T_{smin} to T_{smax})	60-120 seconds	60-120 seconds
Ramp-up Rate (t_L to t_P)	3°C/second max.	3°C/second max.
Liquidous Temperature (T_L)	183°C	217°C
Time (t_L) Maintained Above (T_L)	60 – 150 seconds	60 – 150 seconds
Peak Body Package Temperature	235°C +0°C / -5°C	260°C +0°C / -5°C
Time (t_P) within 5°C of 260°C	20 seconds	30 seconds
Ramp-down Rate (T_P to T_L)	6°C/second max	6°C/second max
Time 25°C to Peak Temperature	6 minutes max.	8 minutes max.



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