H11LX Series

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.

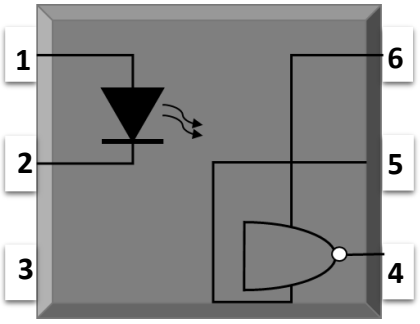
Features

- 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

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

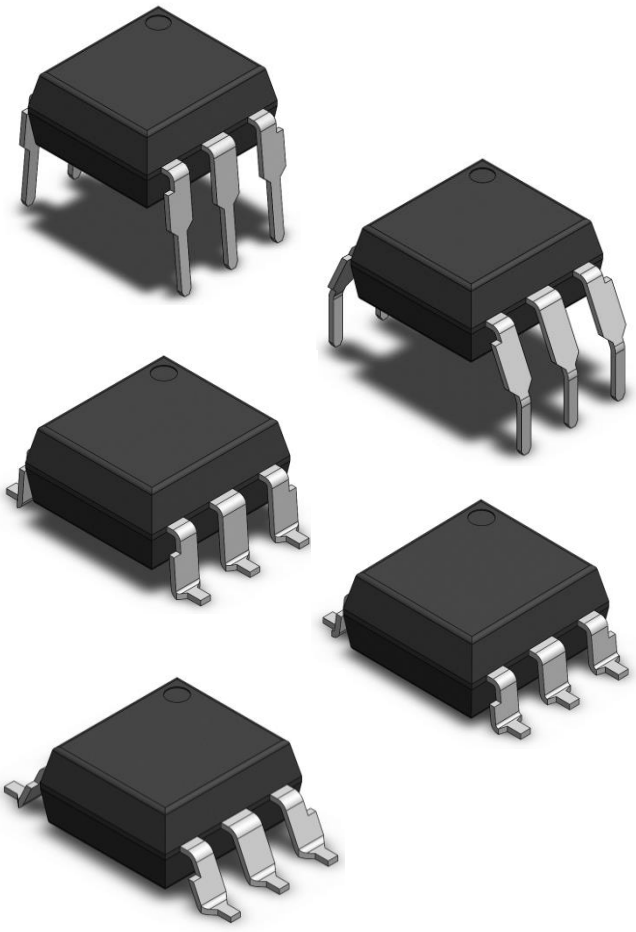
SCHEMATIC



PIN DEFINITION

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

PACKAGE OUTLINE



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. ≤1μs P.W,300pps

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

Note 3. For 10 seconds

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=0mA, 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, RL=270Ω	
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		
Common Mode Transient Immunity at Logic High		CMH	10	-	-	KV/μs	VCM=1KV VCC=5V RL=270Ω IF=0mA	
Common Mode Transient Immunity at Logic Low		CML	10	-	-	KV/μs	VCM=1KV VCC=5V RL=270Ω IF=IFon	
Isolation Resistance		Riso	10^12	10^14	-	Ω	DC500V, 40 ~ 60% R.H.	
Floating Capacitance		CIO	-	0.3	1	pF	V=0, f=1MHz	

CHARACTERISTIC CURVES

Fig.1 Forward Current vs. Forward Voltage

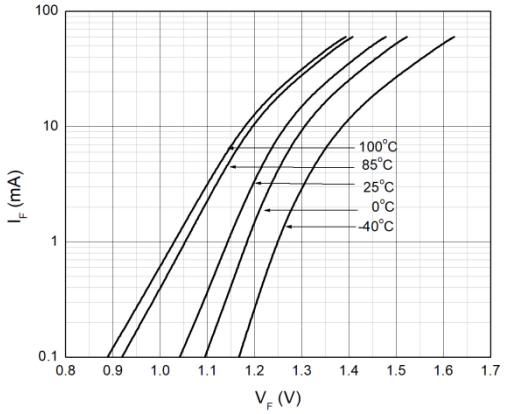


Fig.2 Output Voltage vs. Forward Current

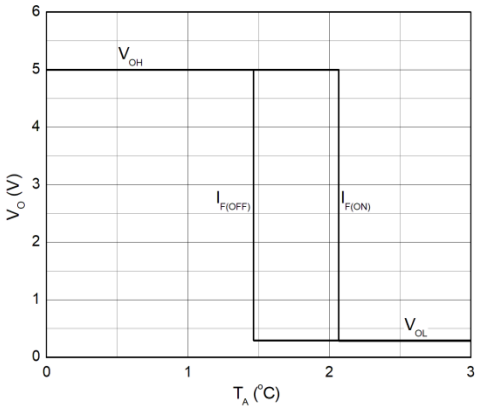


Fig.3 Normalized Turn on Threshold Current vs. Supply Voltage

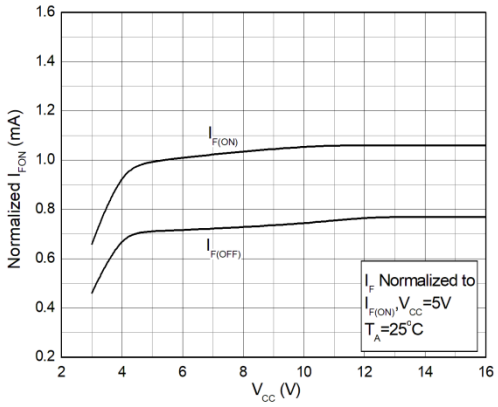


Fig.4 Normalized Turn on Threshold Current vs. Ambient Temperature

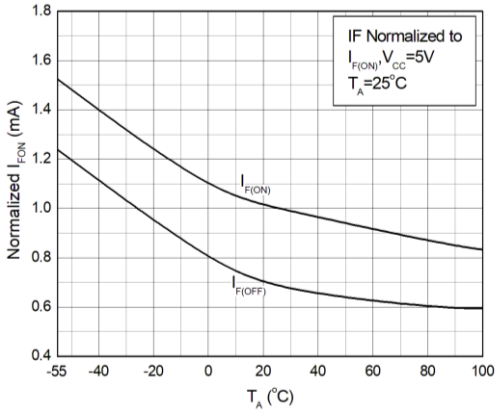


Fig.5 Low Level Output Voltage vs. Load Current

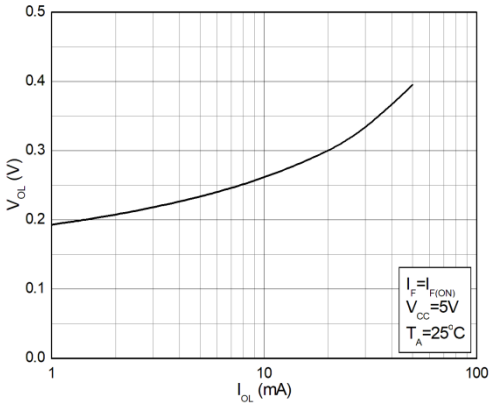
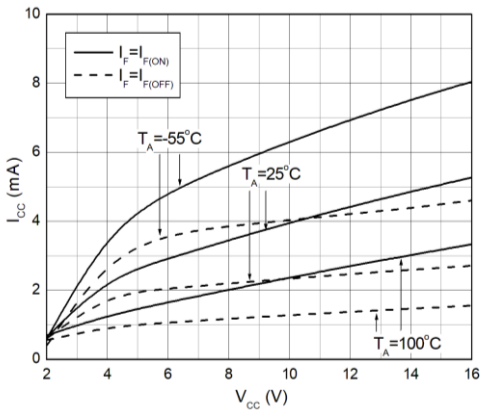
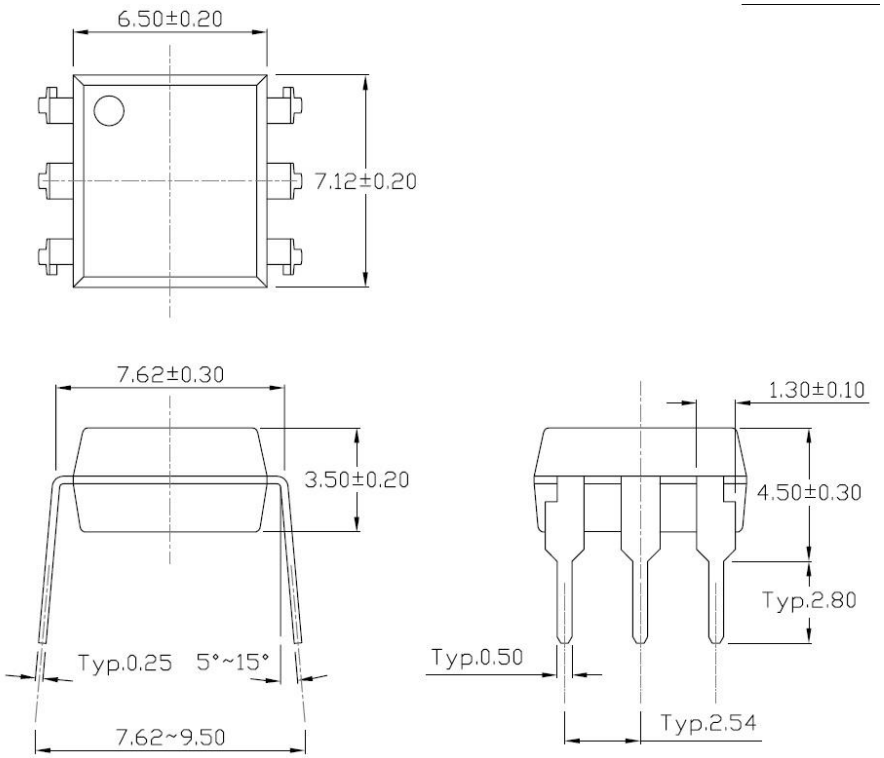


Fig.6 Supply Current vs. Supply Voltage

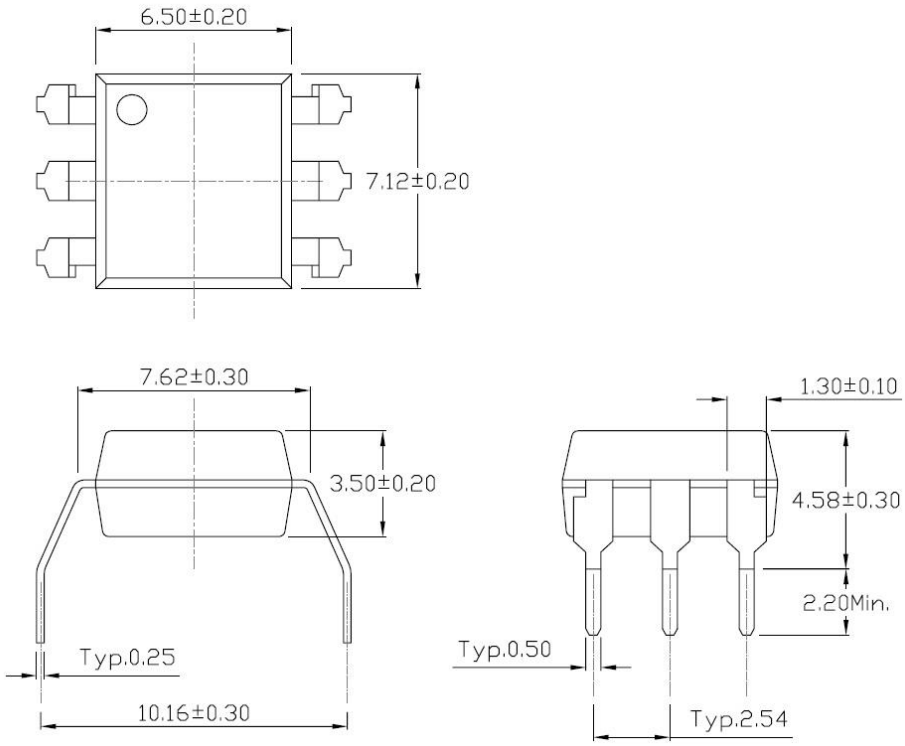


PACKAGE DIMENSIONS (Dimensions in mm unless otherwise stated)

Standard DIP – Through Hole (DIP Type)

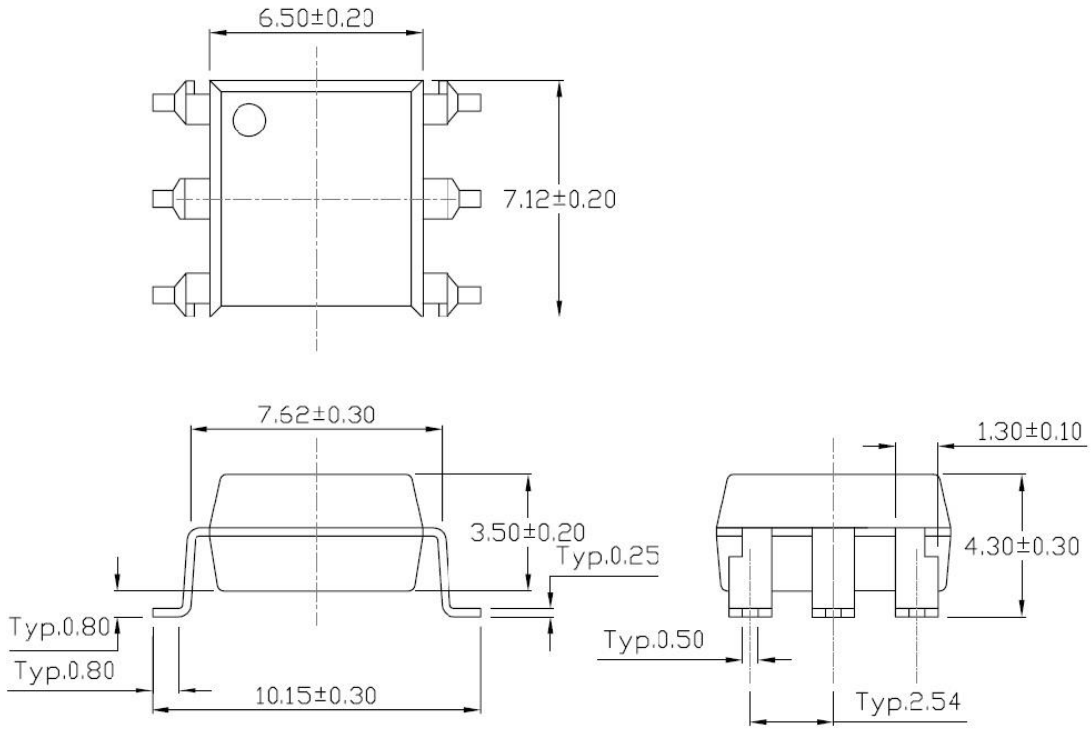


Gullwing (400mil) Lead Forming – Through Hole (M Type)

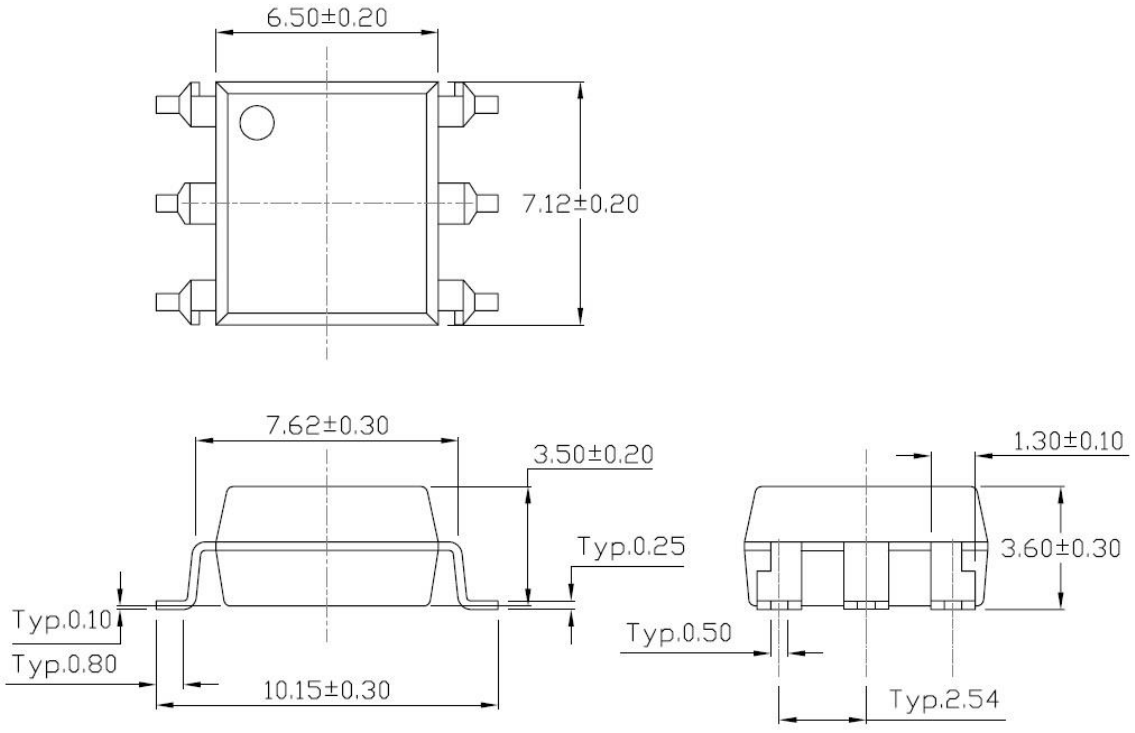


PACKAGE DIMENSIONS (Dimensions in mm unless otherwise stated)

Surface Mount Lead Forming (S Type)

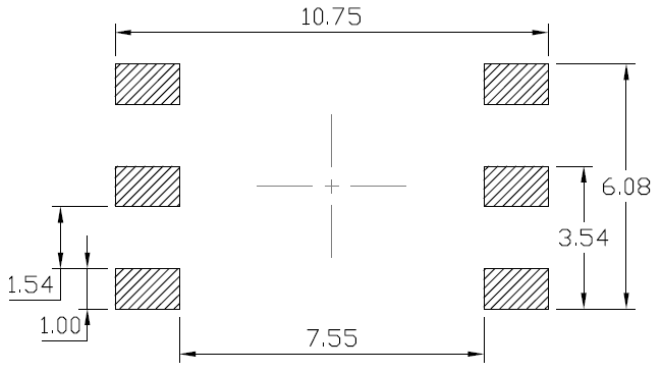


Surface Mount (Low Profile) Lead Forming (SL Type)

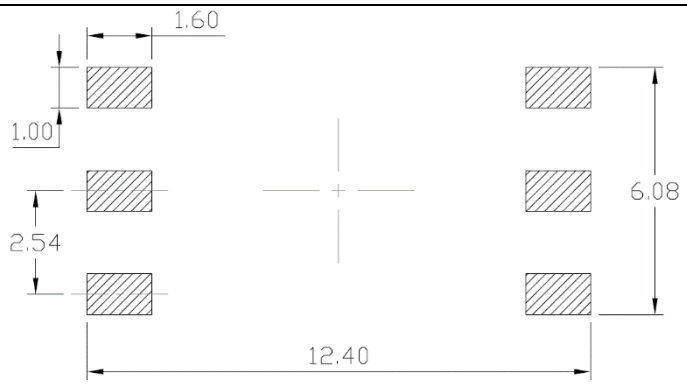


RECOMMENDED SOLDER MASK (Dimensions in mm unless otherwise stated)

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

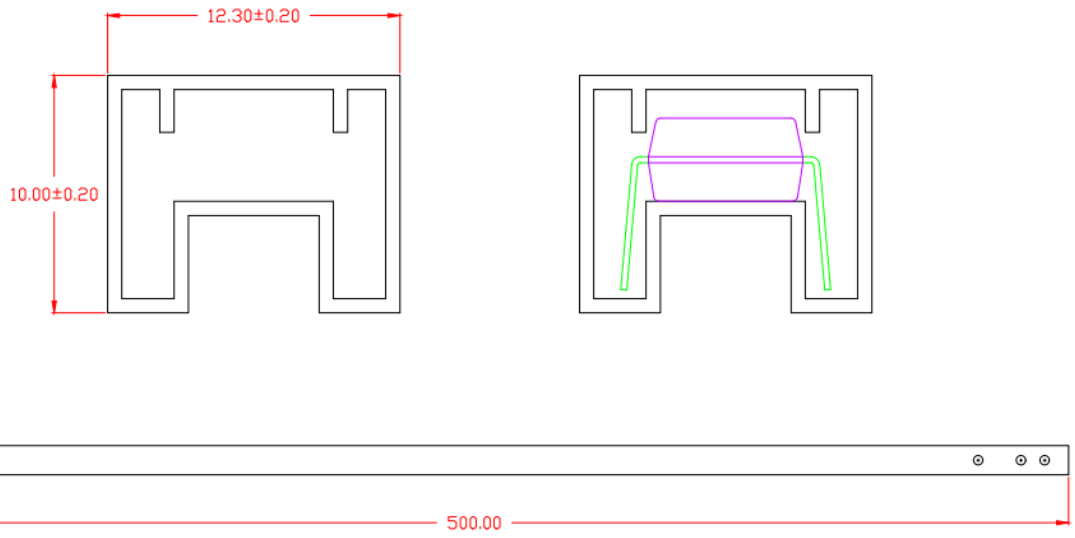


Surface Mount (Gullwing) Lead Forming



TUBE SPECIFICATIONS (Dimensions in mm unless otherwise stated)

Standard DIP

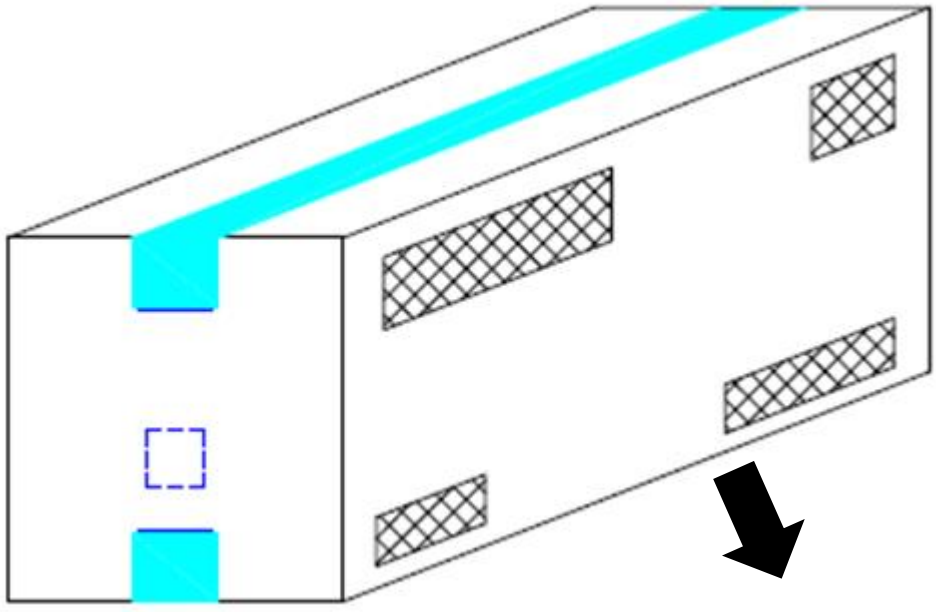


BOX SPECIFICATIONS (Tube Type)

Inner Box

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

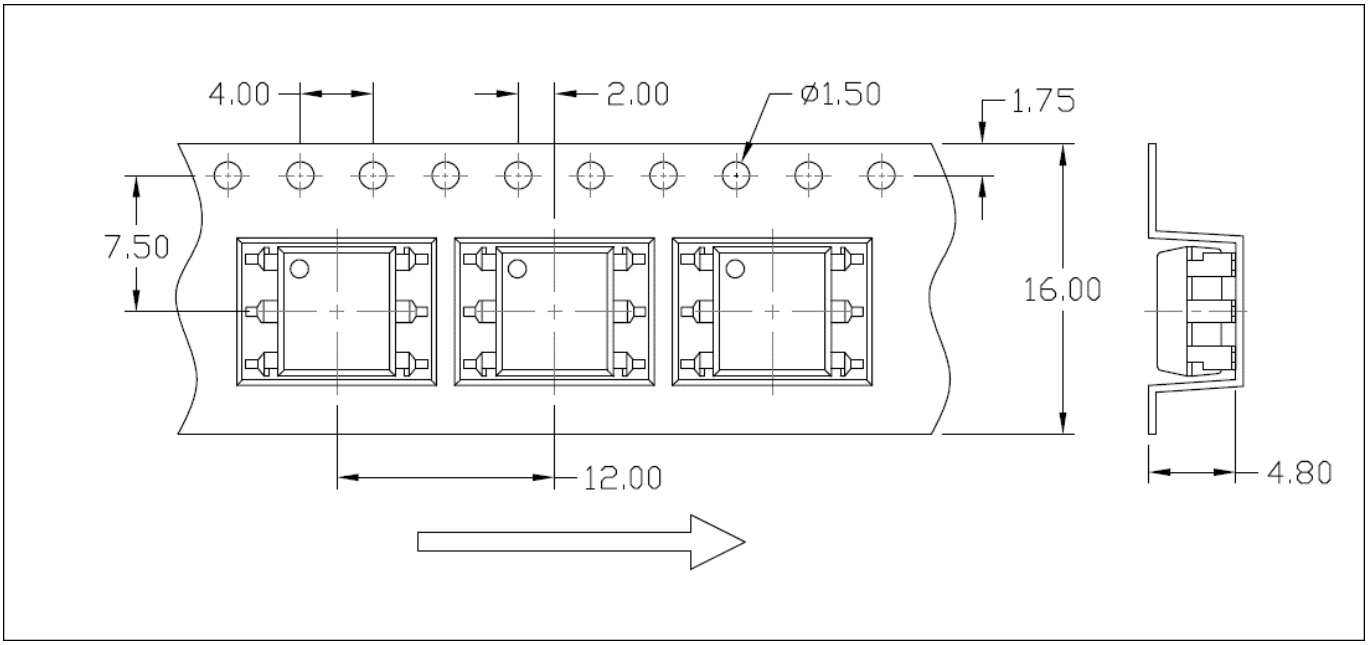
Outer Box



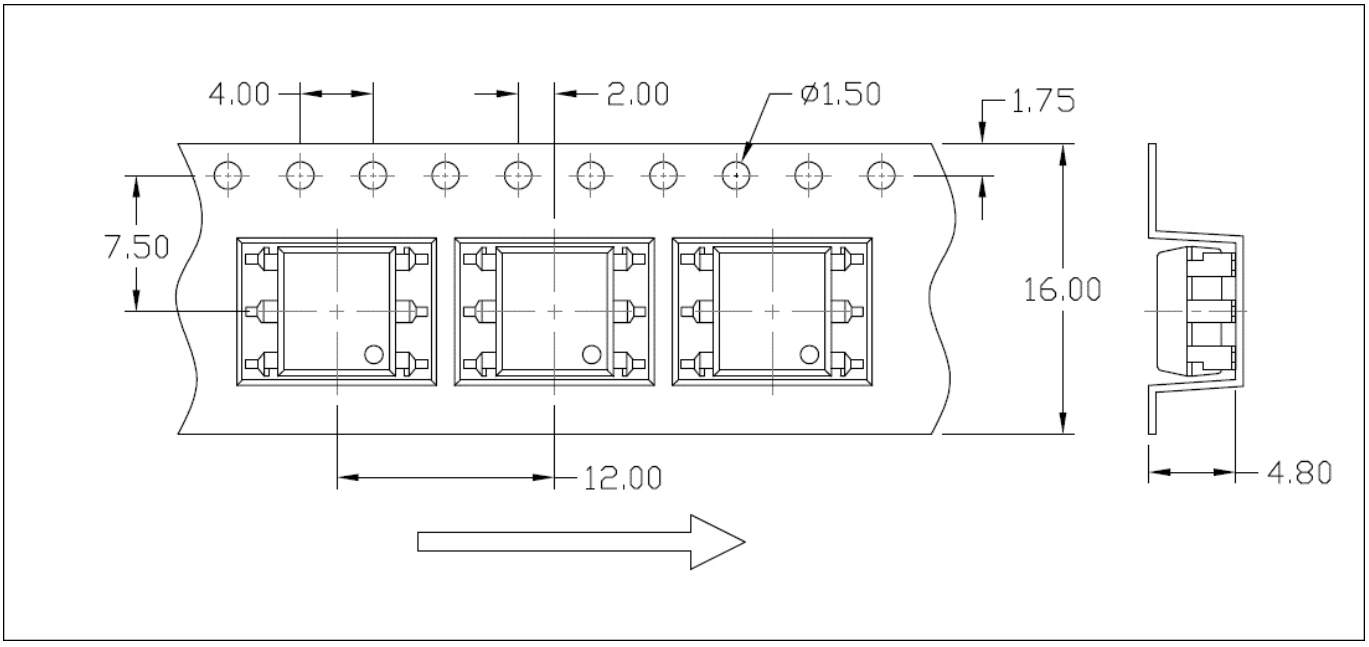
- L x W x H = 53.5cm x 23.5cm x 25.5cm

CARRIER TAPE SPECIFICATIONS (Dimensions in mm unless otherwise stated)

Option S(T1) & SL(T1)

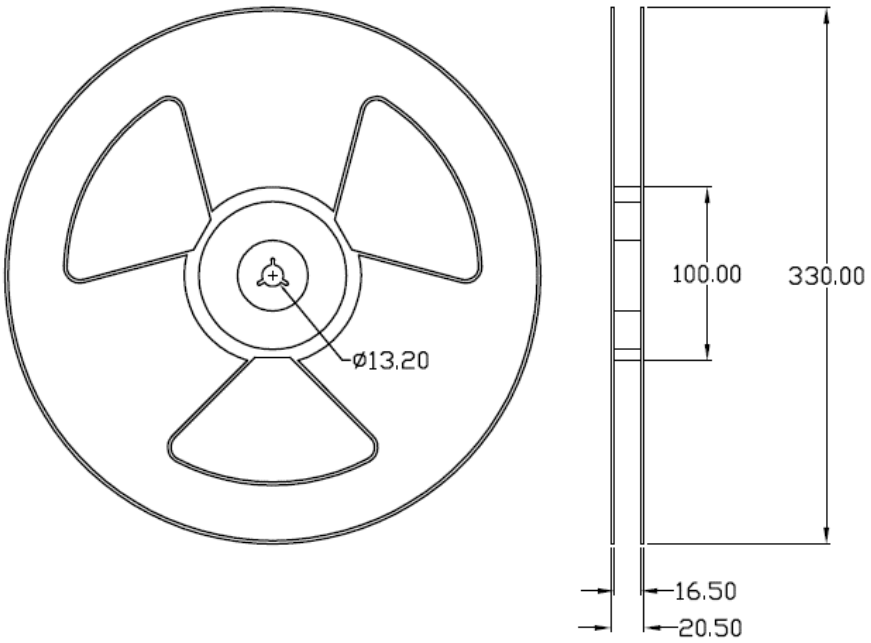


Option S(T2) & SL(T2)

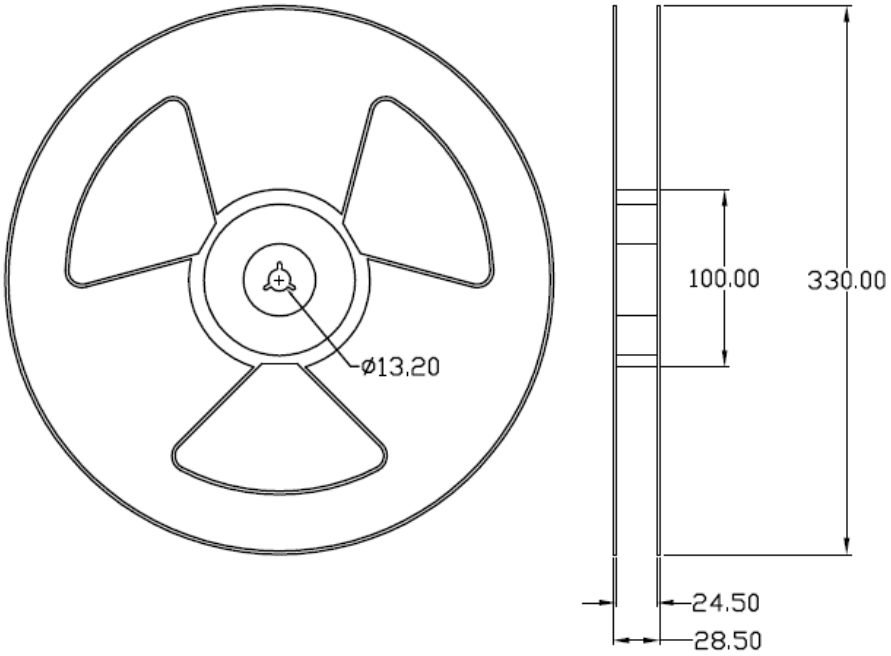


REEL SPECIFICATIONS (Dimensions in mm unless otherwise stated)

Option S & Option SL



Option SLM

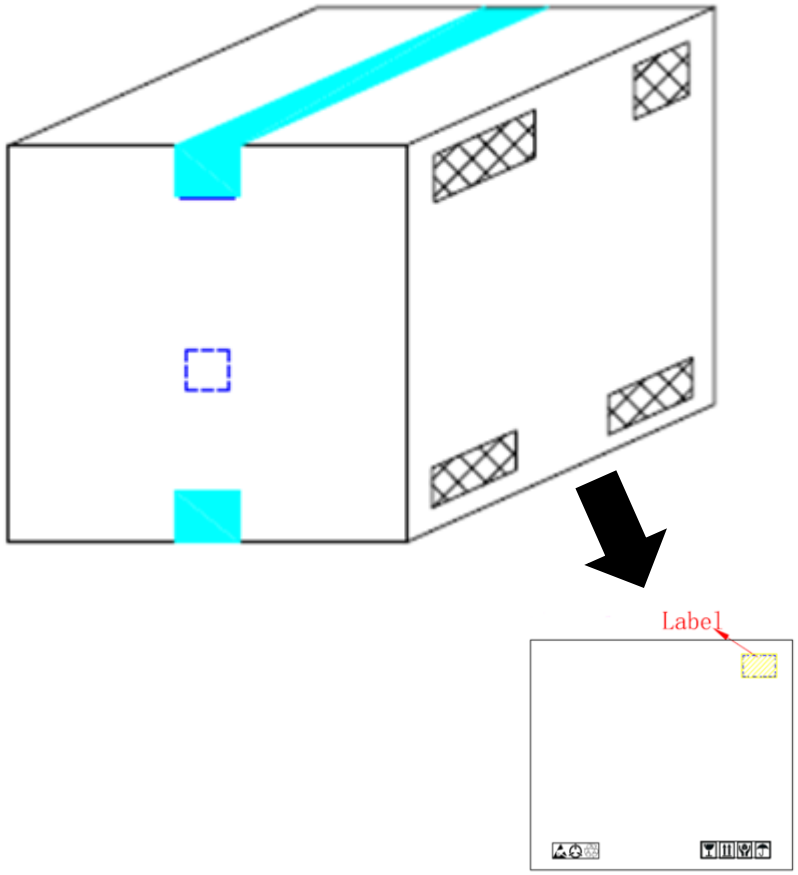


BOX SPECIFICATIONS (Reel Type)

Inner Box

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

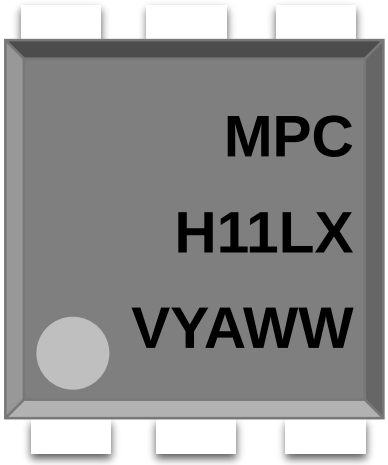
Outer Box



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

Inner Box

MARKING INFORMATION



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

ORDERING INFORMATION

H11LX(Y)(Z)-GV

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)

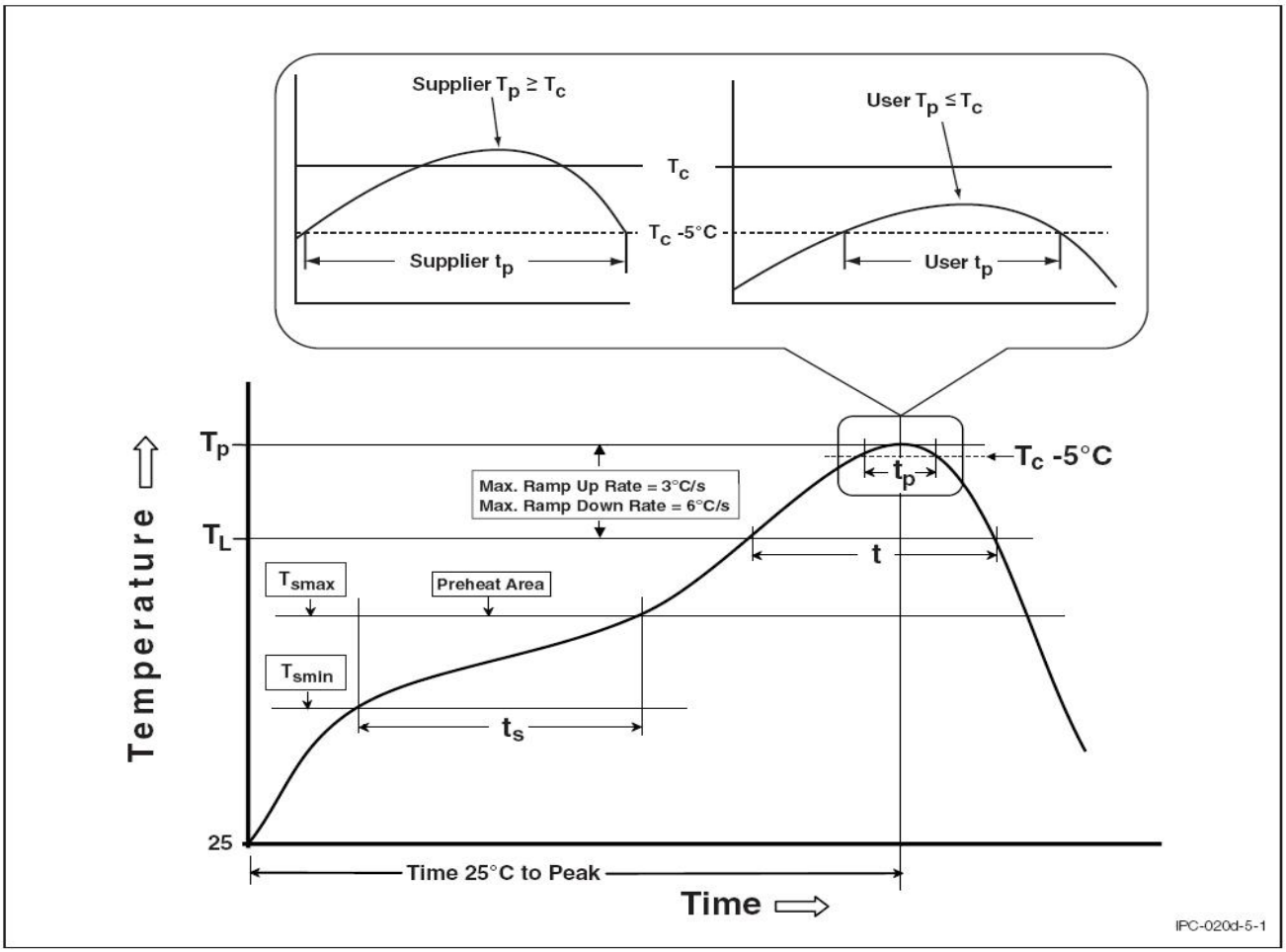
LABEL INFORMATION

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	32 Tubes/Inner box	10 Inner box/Outer box = 16k 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

REFLOW INFORMATION

REFLOW PROFILE



Profile Feature	Sn-Pb Assembly Profile	Pb-Free Assembly Profile
Temperature Min. (Tsmin)	100	150°C
Temperature Max. (Tsmax)	150	200°C
Time (ts) from (Tsmin to Tsmax)	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.

DISCLAIMER

- WISELITE is continually improving the quality, reliability, function and design. WISELITE reserves the right to make changes without further notices.
- The characteristic curves shown in this datasheet are representing typical performance which are not guaranteed.
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- This product is not intended to be used for military, aircraft, automotive, medical, life sustaining or lifesaving applications or any other application which can result in human injury or death.
- Please contact WISELITE sales agent for special application request.
- Immerge unit’s body in solder paste is not recommended.
- Parameters provided in datasheets may vary in different applications and performance may vary over time. All operating parameters, including typical parameters, must be validated in each customer application by the customer’s technical experts. Product specifications do not expand or otherwise modify WISELITE’s terms and conditions of purchase, including but not limited to the warranty expressed therein.
- Discoloration might be occurred on the package surface after soldering, reflow or long-time use. It neither impacts the performance nor reliability.