

## DC Input, Schmitt Trigger Photo Coupler

### Description

The SLH11LX 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.

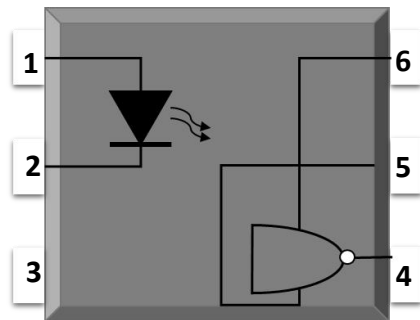
### Features

- 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

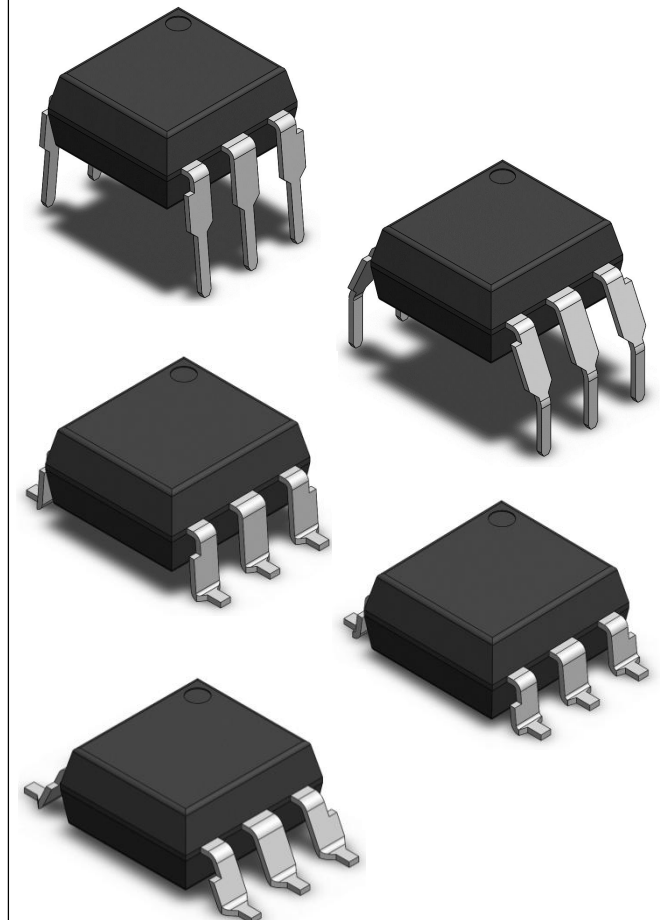
### SCHEMATIC



### PIN DEFINITION

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

### PACKAGE OUTLINE



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

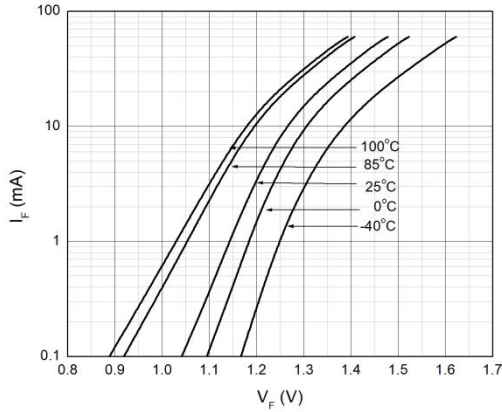
Note 2. AC For 1 Minute, R.H. = 40 ~ 60%

Note 3. For 10 seconds

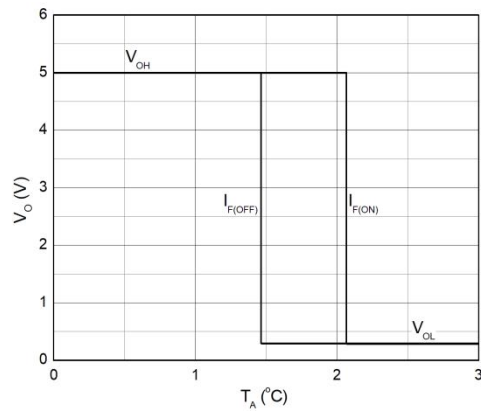
ELECTRICAL OPTICAL CHARACTERISTICS at Ta=25°C							
PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITION	NOTE
INPUT							
Forward Voltage	VF	-	1.24	1.5	V	IF=10mA	
Reverse Current	IR	-	-	10	µA	VR=5V	
Input Capacitance	Cin	-	60	-	pF	V=0, f=1MHz	
OUTPUT							
Operation Voltage Range	VCC	3	-	15	V		
Off 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	SLH11L1	IFon	-	-	1.6	mA	VCC=5V, RL=270Ω
	SLH11L2		-	-	10		
	SLH11L3		-	-	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	

## CHARACTERISTIC CURVES

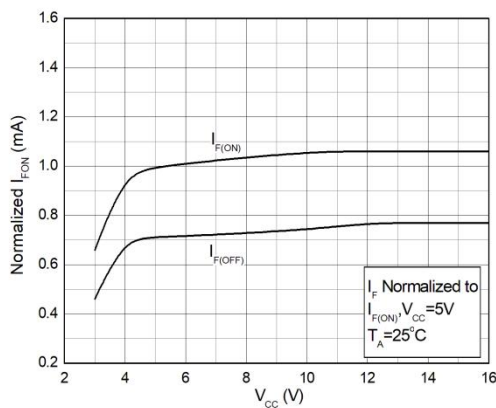
**Fig.1 Forward Current vs. Forward Voltage**



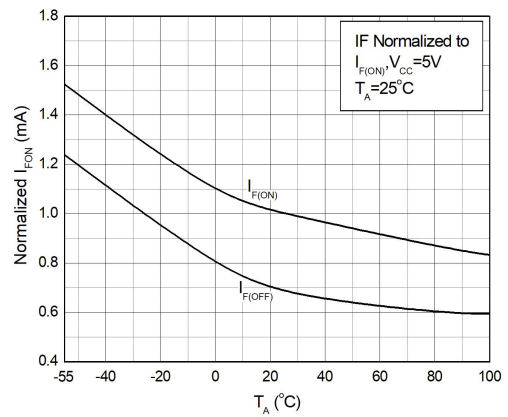
**Fig.2 Output Voltage vs. Forward Current**



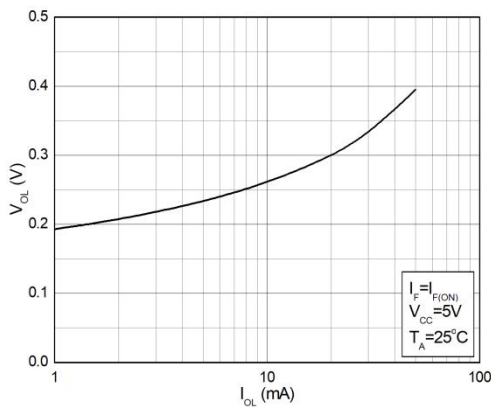
**Fig.3 Normalized Turn on Threshold Current vs. Supply Voltage**



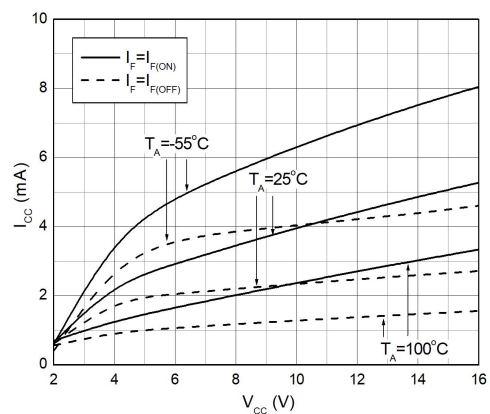
**Fig.4 Normalized Turn on Threshold Current vs. Ambient Temperature**



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

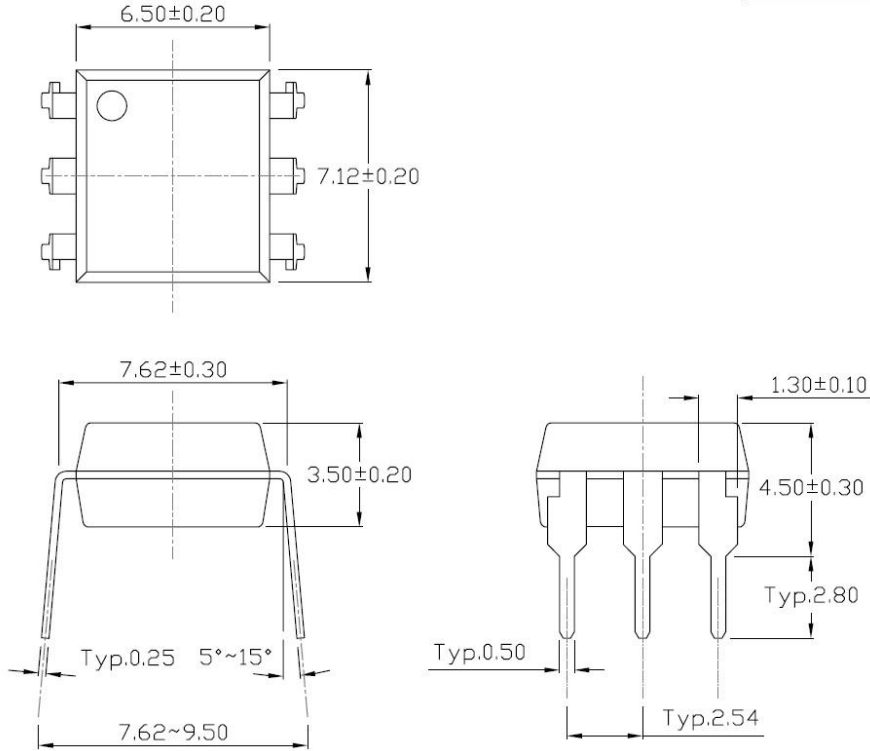


**Fig.6 Supply Current vs. Supply Voltage**

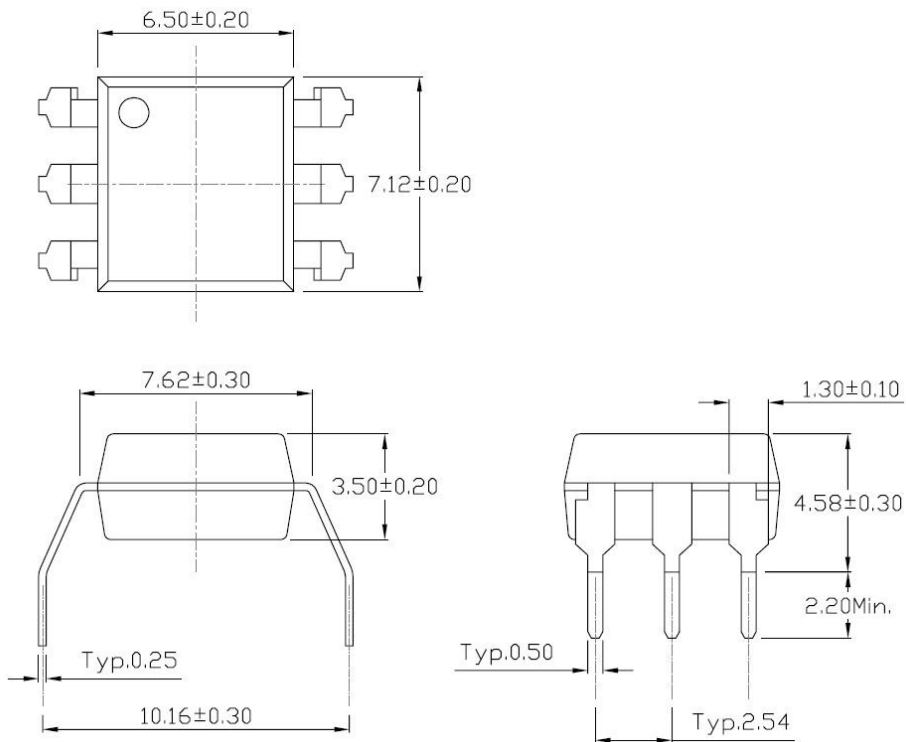


## PACKAGE DIMENSIONS (Dimensions in mm unless otherwise stated)

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

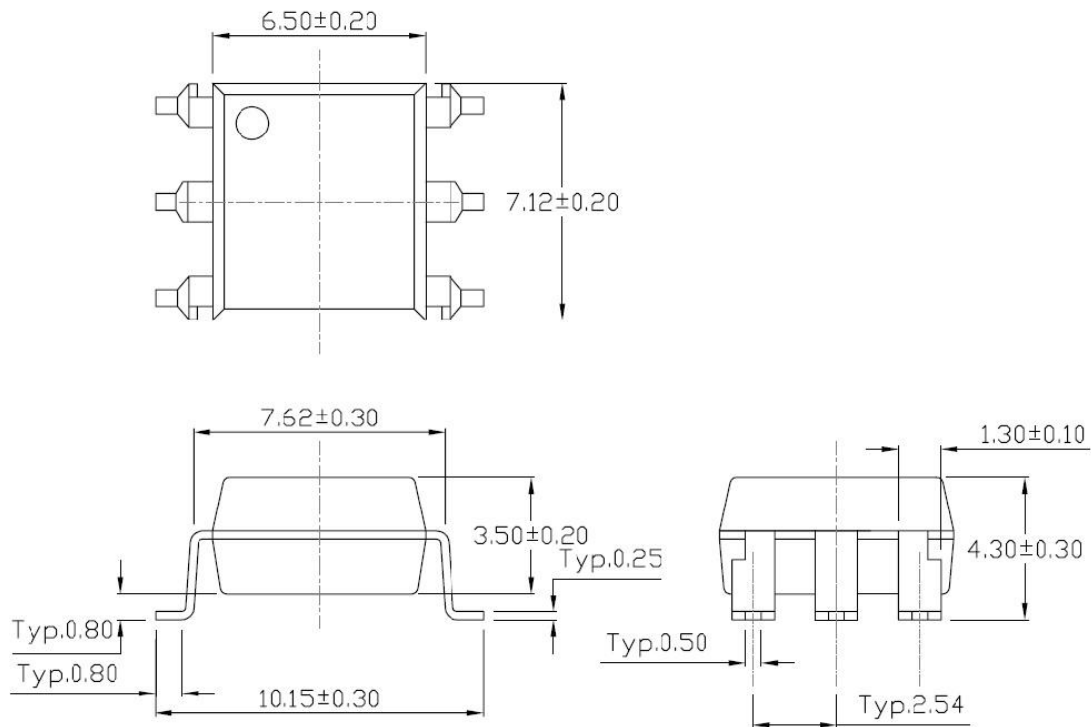


### Gullwing (400mil) Lead Forming – Through Hole (M Type)

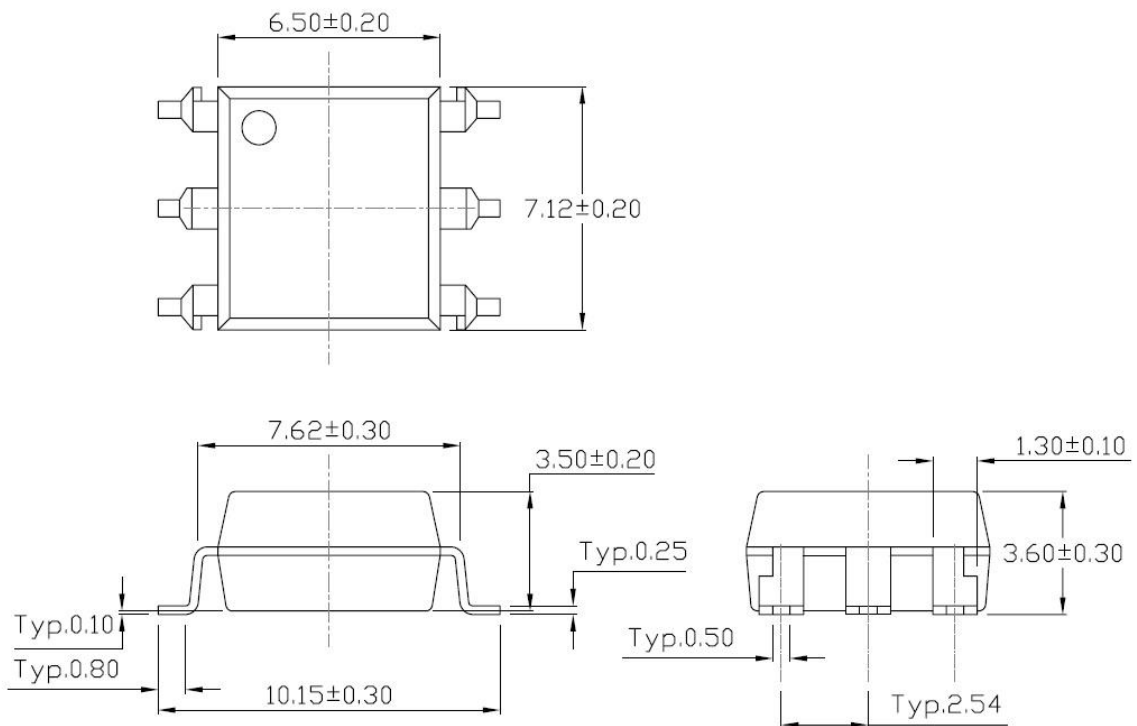


## PACKAGE DIMENSIONS (Dimensions in mm unless otherwise stated)

### Surface Mount Lead Forming (S Type)

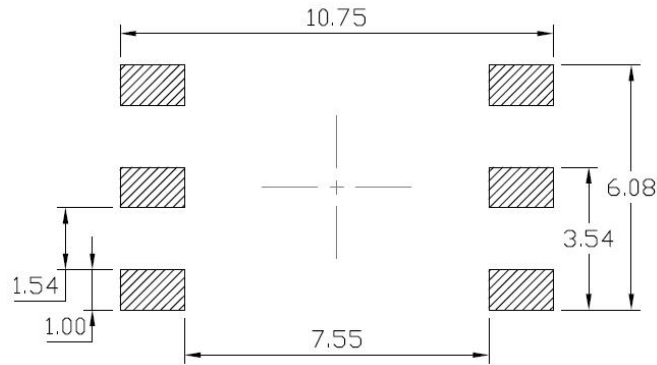


### Surface Mount (Low Profile) Lead Forming (SL Type)

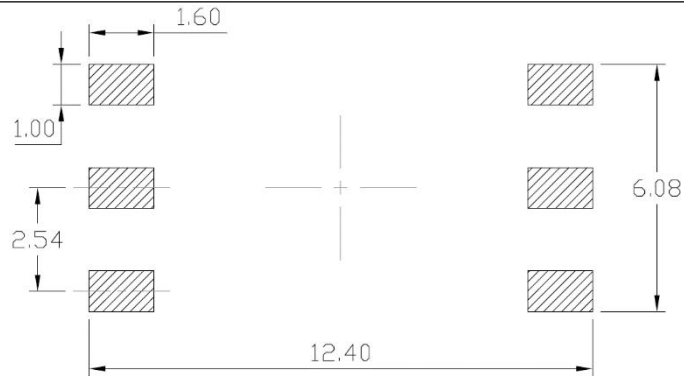


## RECOMMENDED SOLDER MASK (Dimensions in mm unless otherwise stated)

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

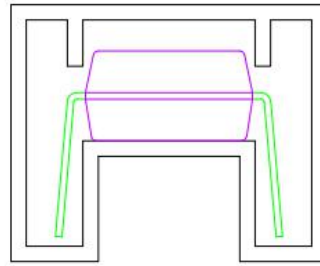
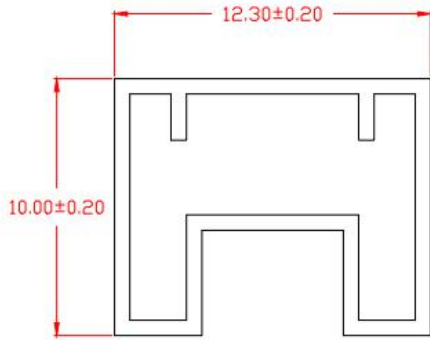


### Surface Mount (Gullwing) Lead Forming



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

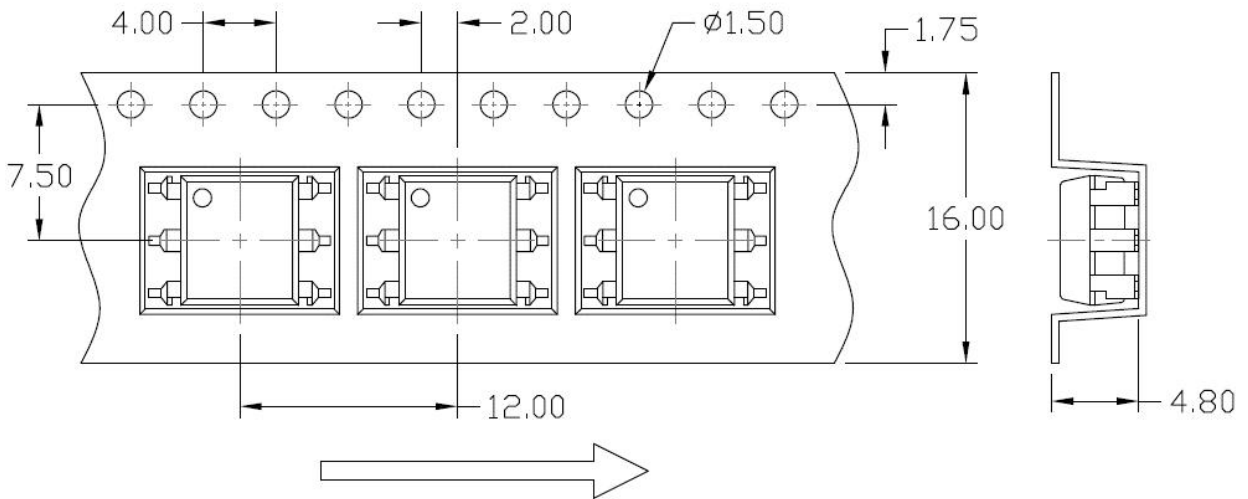
### Standard DIP



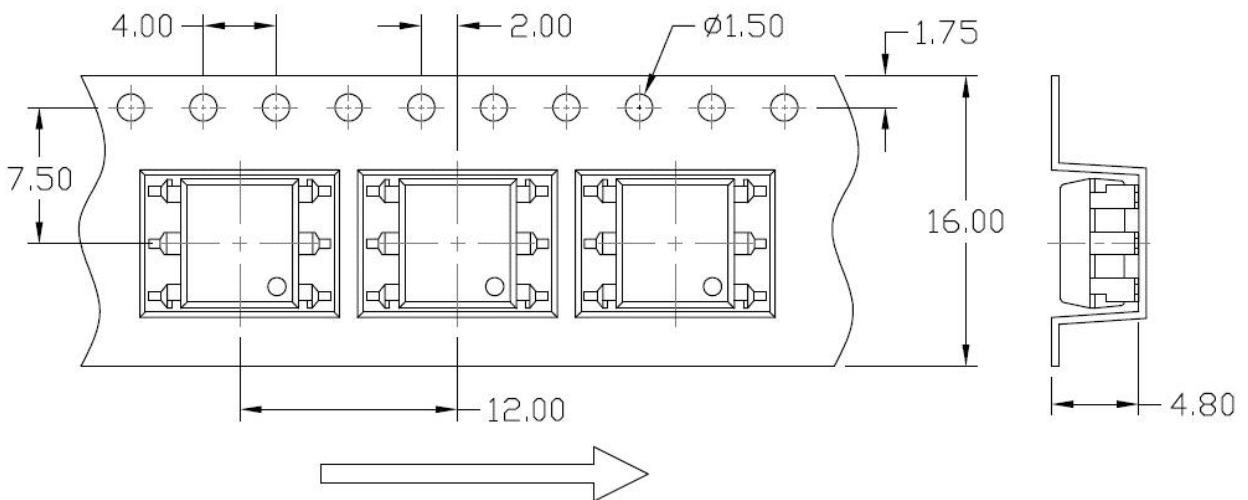


## CARRIER TAPE SPECIFICATIONS (Dimensions in mm unless otherwise stated)

### Option S(T1) & SL(T1)

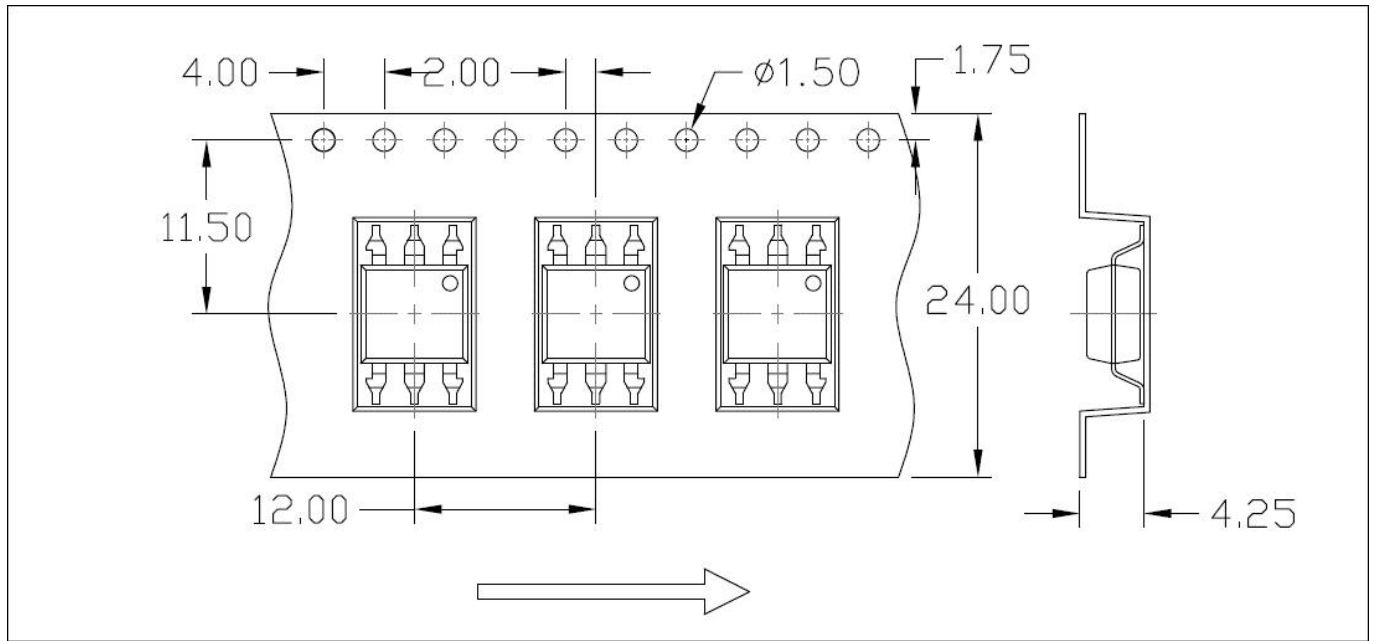


### Option S(T2) & SL(T2)

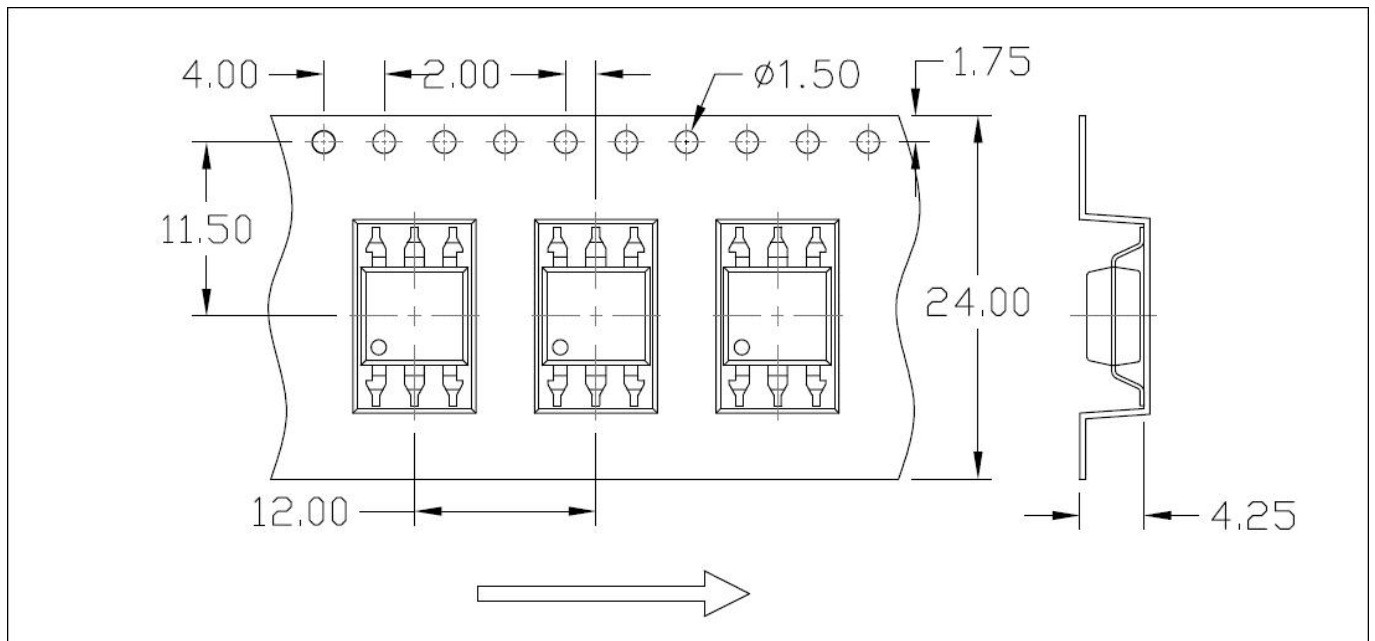


## CARRIER TAPE SPECIFICATIONS (Dimensions in mm unless otherwise stated)

### Option SLM(T1)

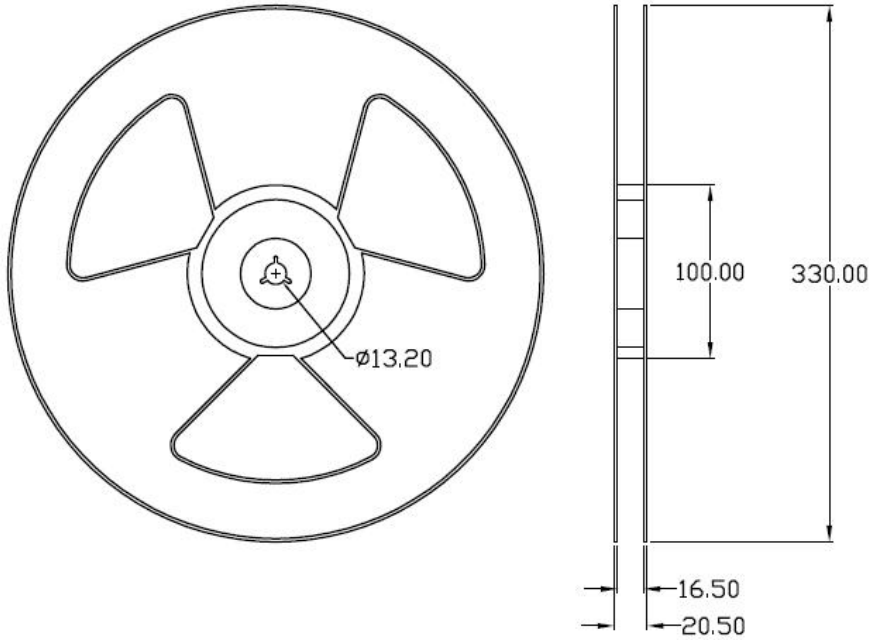


### Option SLM(T2)

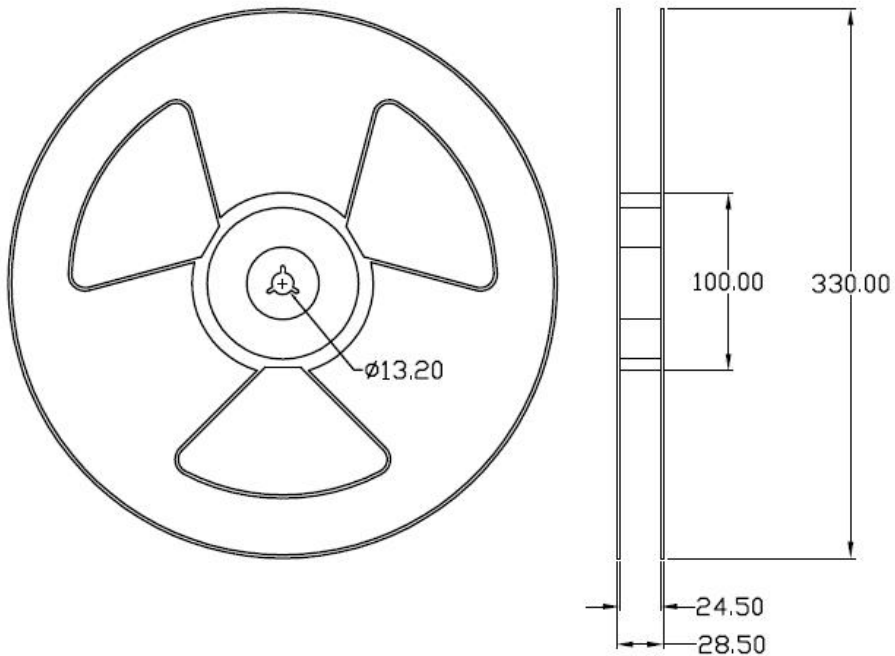


## REEL SPECIFICATIONS (Dimensions in mm unless otherwise stated)

### Option S & Option SL

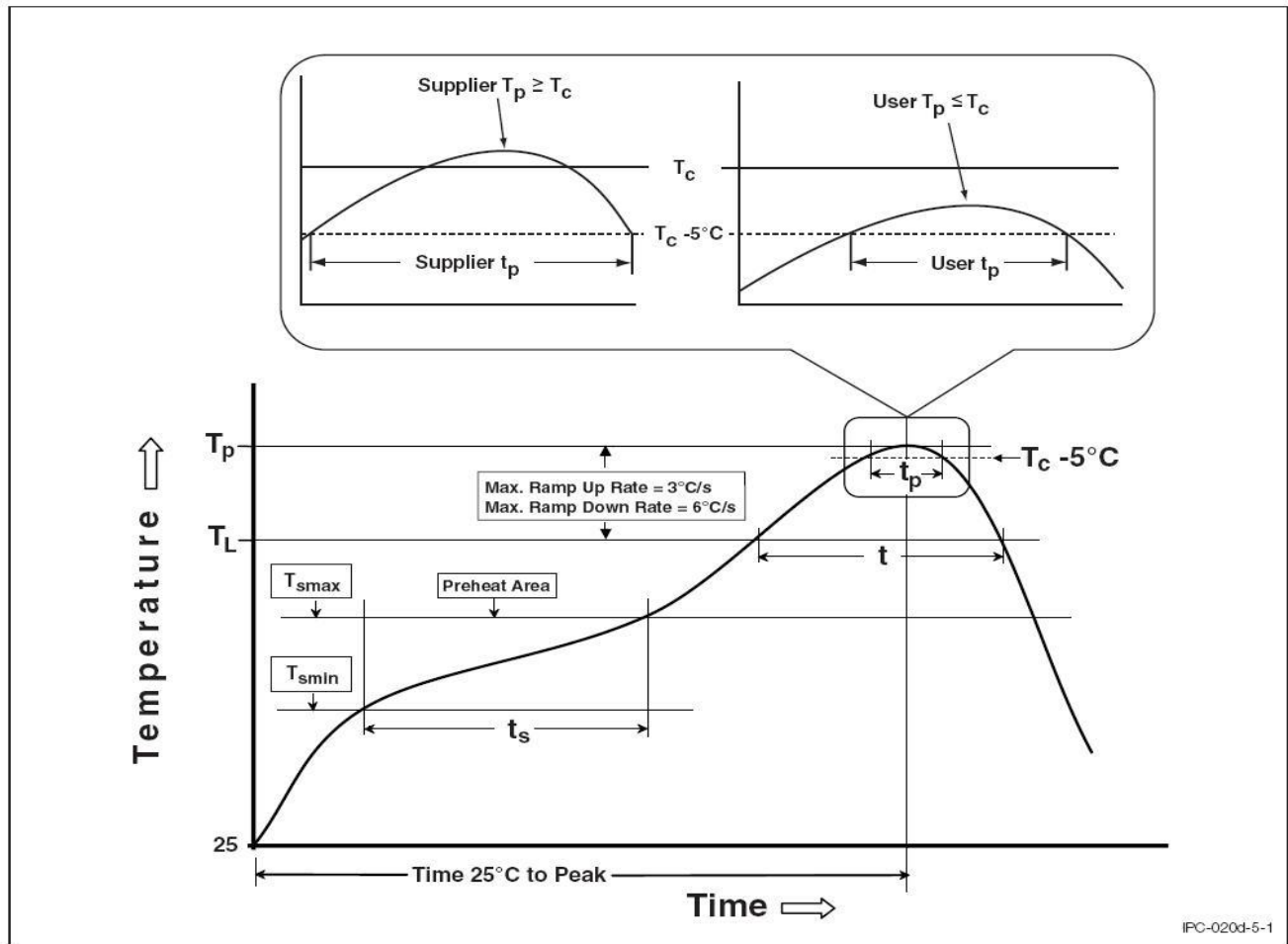


### Option SLM



## 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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