Schmitt Schmitt Trigger Photo Coupler

Description

The SLH11Lx consists of a high efficient AlGaAs Light Emitting Diode and a high speed optical detector with DIP6 package.The operating parameters are guaranteed over the tempterature range of - 55 ° C to 100 ° C

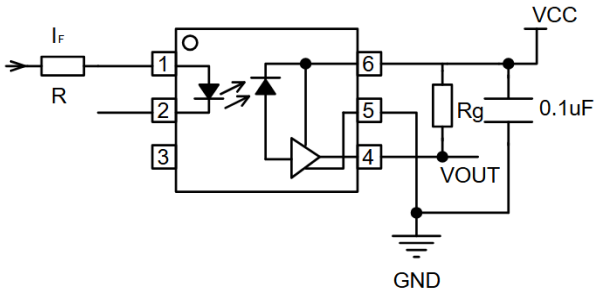
Features

- High isolation 5000 VRMS
- DC input with Schmitt trigger output
- Max forward current 60mA
- REACH&ROHS compliance
- MSL class 1

Applications

- Digital isolation for A/D D/A conversion
- Programmable current level sensor
- Line receiver
- AC to TTL conversion - square wave shaping
- Digital programming of power supplies
- Industrial control

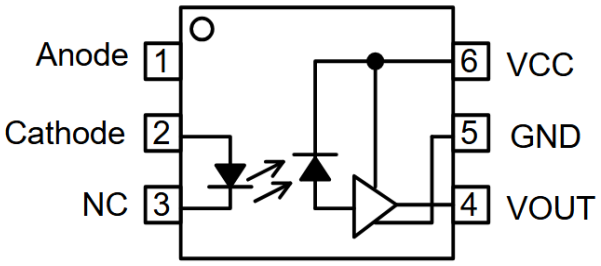
Schematic

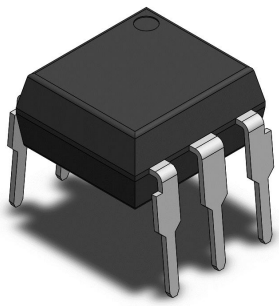


Fruth Table Positive Logic

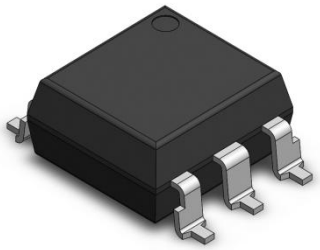
LED	VO
ON	LOW
OFF	HIGH

Functional Diagram





SLH11Lx DIP-6



SLH11LxS SMD-6

ABSOLUTE MAXIMUM RATINGS (TA = 25°C unless otherwise noted)

PARAMETER	SYMBOL	VALUE	UNIT	Note
Forward Current	IF	60	mA	
Peak Transient Current	IF(trans)	1	A	1
Reverse Voltage	VR	6	V	
Input Power Dissipation	PI	120	mW	
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	
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 (TA = 25°C unless otherwise noted)

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITION	NOTE
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	
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	10^12	10^14	-	Ω	DC500V, 40 ~ 60% R.H.	
Floating Capacitance		CIO	-	0.3	1	pF	V=0, f=1MHz	

CHARACTERISTIC CURVES

Fig.1 Normalized Turn on Threshold Current vs. Ambient Temperature

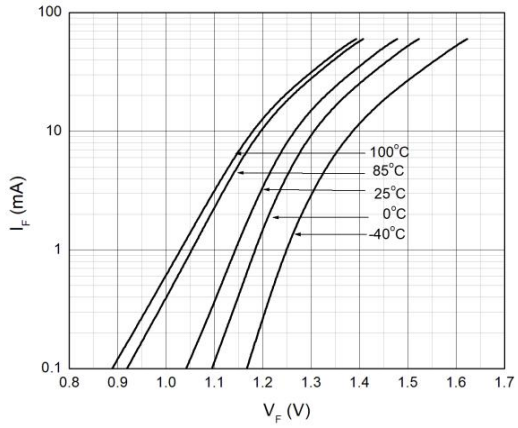


Fig.2 Normalized Turn on Threshold Current vs. Supply Voltage

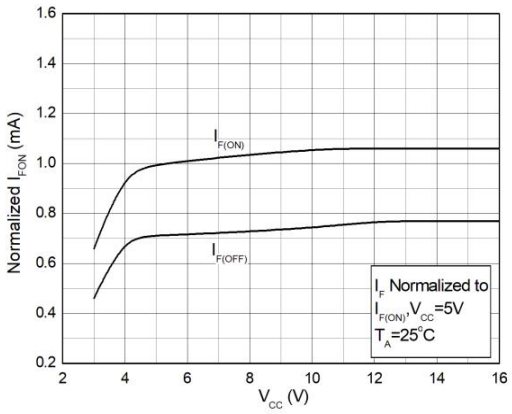


Fig.3 Output Voltage vs. Forward Current

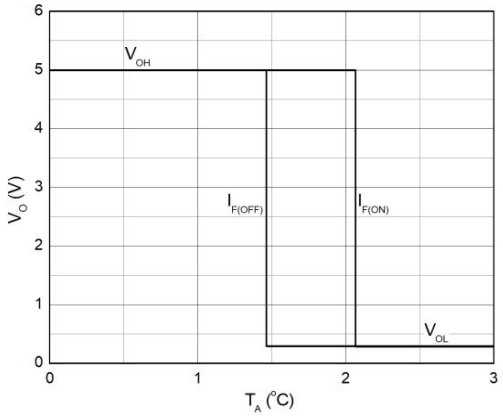


Fig.4 Forward Current vs. Forward Voltage

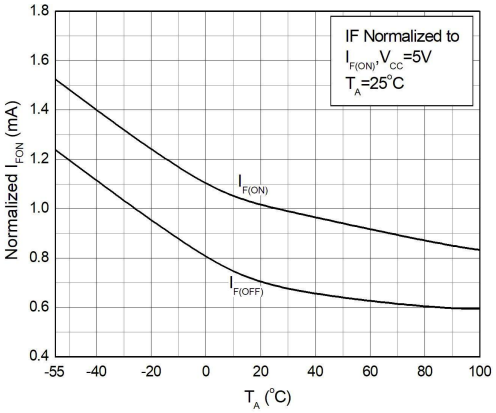


Fig.5 Supply Current vs. Supply Voltage

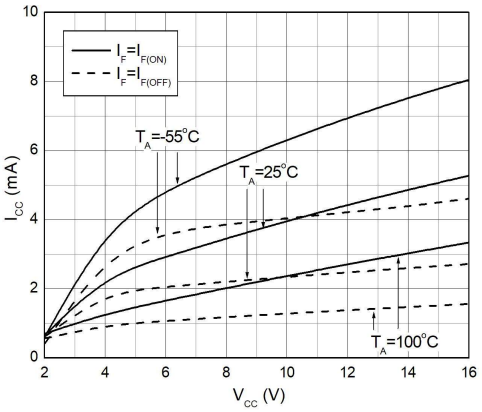
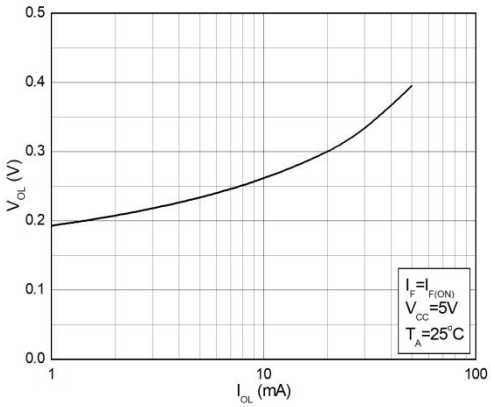
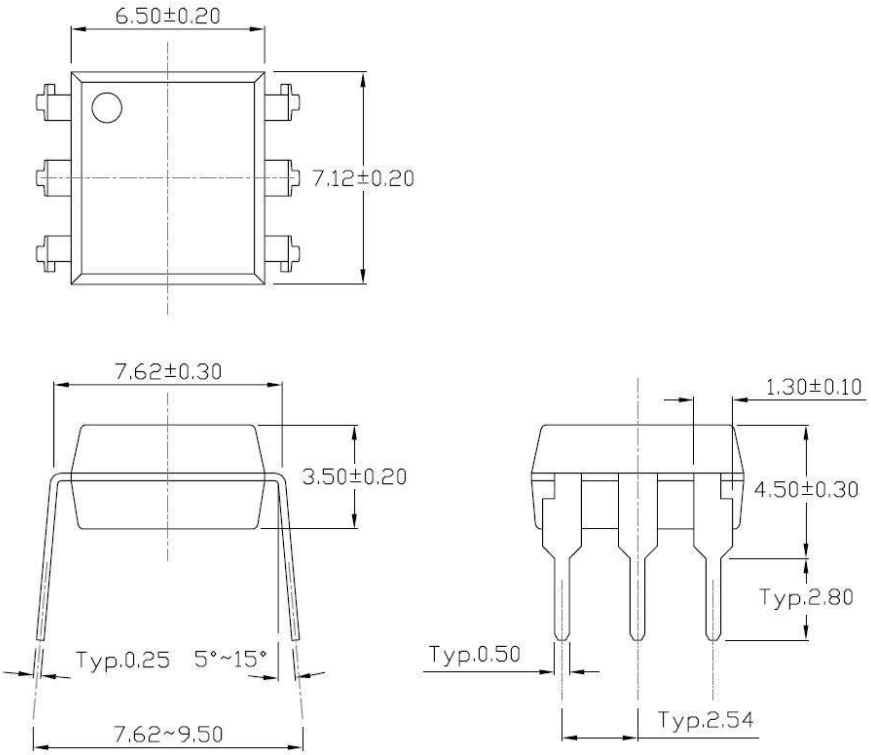


Fig.6 Low Level Output Voltage vs. Load Current

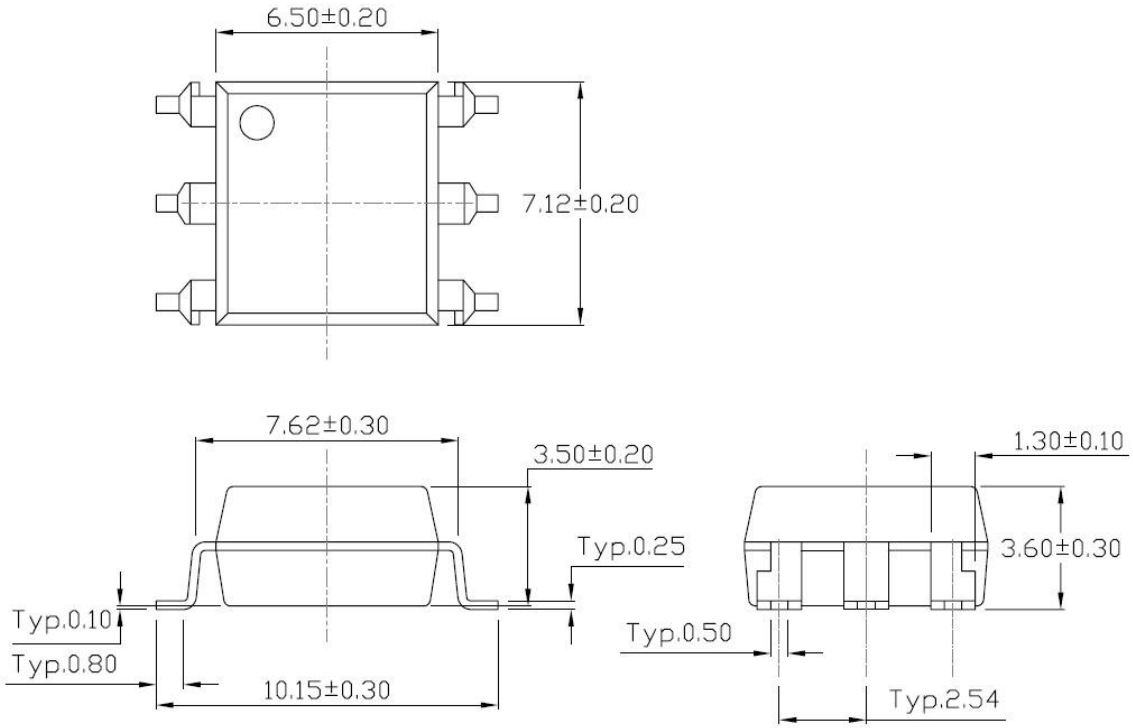


PACKAGE DIMENSIONS (Dimensions in mm unless otherwise stated)

DIP-6

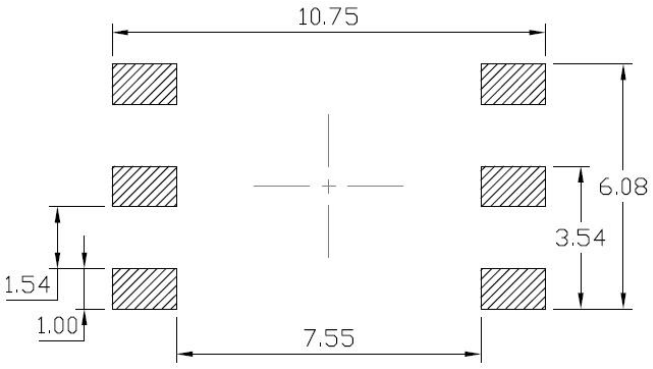


SMD-6

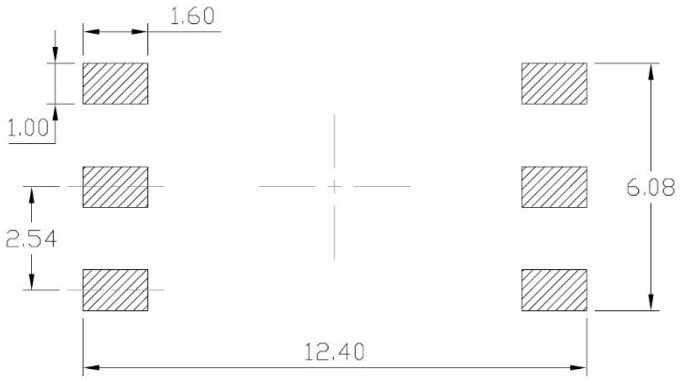


RECOMMENED SOLDER MASK (Dimensions in mm unless otherwise stated)

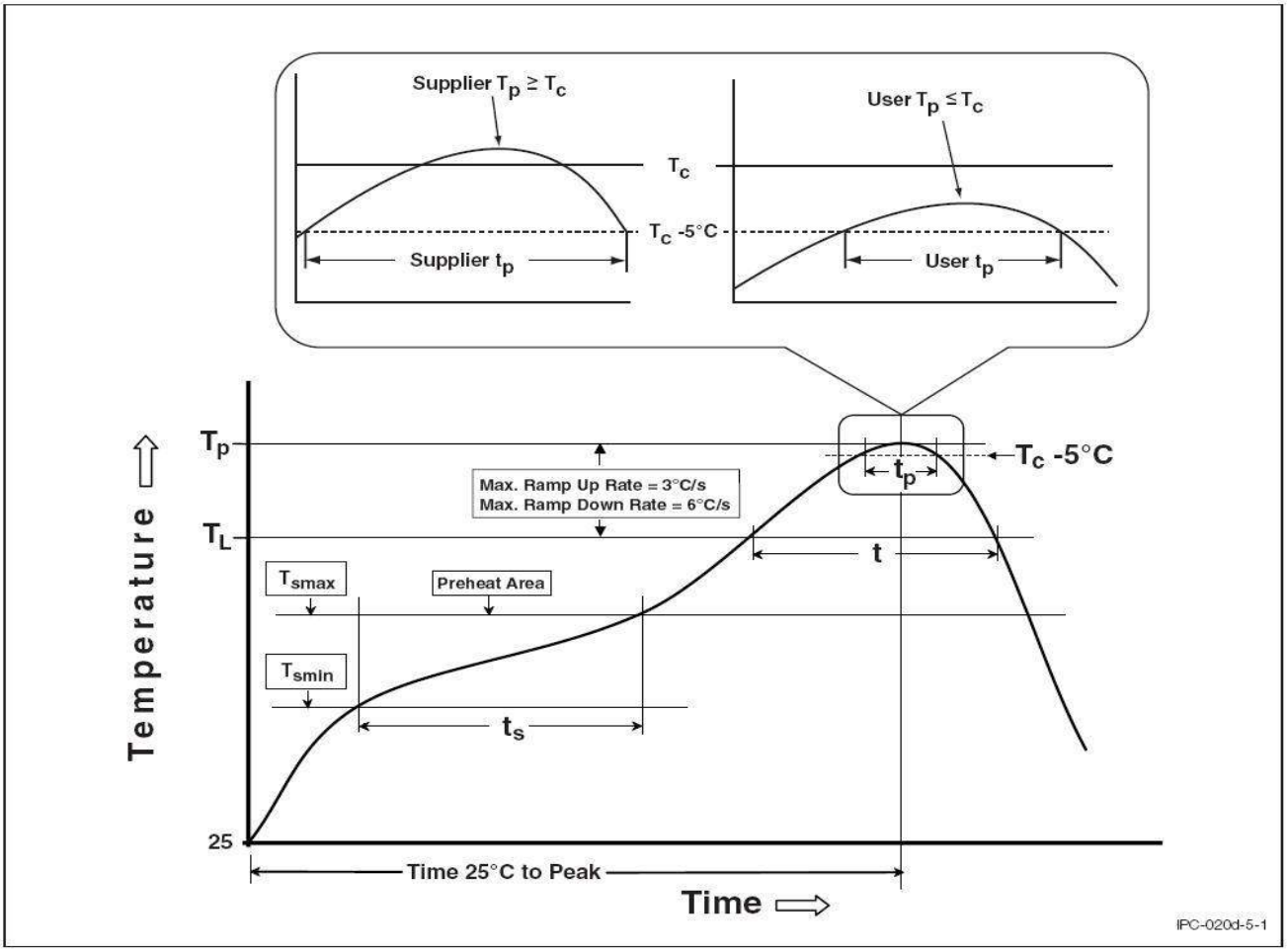
Surface Mount Lead Forming & Surface Mount (Low Profile) Lead Forming



Surface Mount (Gullwing) Lead Forming



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.