H11L1, H11L2, H11L3

Schmitt Trigger Output 6-Pin Optocoupler

Features

- High isolation 5000 VRMS
- DC input with Schmitt Trigger output
- 1MHz(NRZ) data rate
- Temperature range - 55 ℃ to 100 ℃

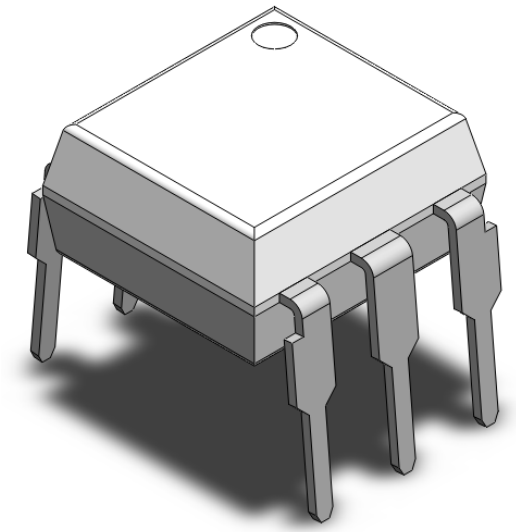
Applications

- Line Receiver
- Logic to Logic Isolator
- Microprocessor system interface
- AC to TTL conversion

Description

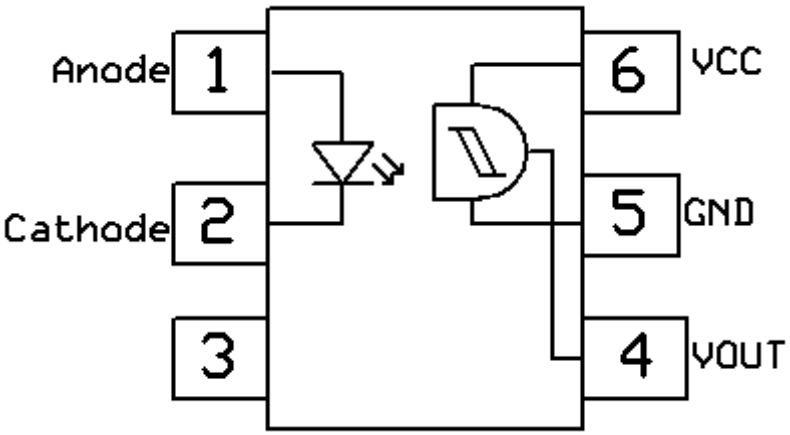
The H11L1, H11L2 and H11L3 series consist of a Schmitt Trigger optically coupled to a gallium arsenide Infrared-emitting diode in a 6-lead DIP package with different lead forming options.

Package Outline



Note: Different lead forming options available. See package dimension.

Schematic



Absolute Maximum Rating at 25°C

Symbol	*Parameters*	*Ratings*	*Units*	*Notes*
V_{ISO}	Isolation voltage	5000	V_{RMS}	
T_{OPR}	Operating temperature	-55 ~ +100	°C	
T_{STG}	Storage temperature	-55 ~ +150	°C	
T_{SOL}	Soldering temperature	260	°C	
Emitter				
I_F	Forward current	60	mA	
$I_{F(TRANS)}$	Peak transient current (≤1μs P.W,300pps)	1	A	
V_R	Reverse voltage	6	V	
P_D	Power dissipation	100	mW	
Detector				
P_D	Power dissipation	150	mW	
Vo	Output Voltage	0 to 16	V	
Vcc	Supply Voltage	3 to 16	V	
Io	Output Current	50	mA	

Electrical Characteristics T_A = 25℃ (unless otherwise specified)

Emitter Characteristics

Symbol	Parameters	Test Conditions	Min	Typ	Max	Units	Notes
V_F	Forward voltage	I_F=10mA		1.24	1.4	V	
I_R	Reverse Current	V_R = 6V	-	-	5	μA	
C_{IN}	Input Capacitance	f= 1MHz	-	45	-	pF	

Detector Characteristics

Symbol	Parameters	Test Conditions	Min	Typ	Max	Units	Notes
V_{CC}	Supply Voltage		3	-	15	V	
I_{CCH}	Logic High Supply Current	I_F= 0mA, V_{CC}= 5V		1.5	5	mA	
I_{OH}	Logic High Output Current	I_F= 0mA, V_{CC}=V_O=15V			100	μA	

Transfer Characteristics

Symbol	Parameters		Test Conditions	Min	Typ	Max	Units	Notes
I_{CCL}	Logic Low Supply Current		I_F= 10mA, V_{CC}= 5V		1.5	5	mA	
$I_{F(ON)}$	Input Threshold Current	H11L1	V_{CC}= 5V, R_L= 270 Ω			1.6	mA	
		H11L2				10	mA	
		H11L3				5	mA	
$I_{F(OFF)}$	Off Threshold Current		V_{CC}= 5V, R_L= 270 Ω	0.3	1		mA	
$I_{F(ON)}$/ $I_{F(OFF)}$	Hysteresis Ratio			0.5		0.9		
V_{OL}	Logic Low Output Voltage		I_F= $I_{F(ON)}$ Max, V_{CC}= 5V, R_L= 270 Ω			0.4	V	
R_{IO}	Isolation Resistance		V_{IO}= 500V_{DC}	$1x10^{11}$			Ω	
C_{IO}	Isolation Capacitance		f= 1MHz		0.25		pF	

Switching Characteristics

Symbol	Parameters	Test Conditions	Min	Typ	Max	Units	Notes
t_{ON}	Turn On Time	I_F= $I_{F(ON)}$, V_{CC}= 5V, R_L= 270Ω	-	-	3.8	μs	
t_r	Rise Time		-	0.1	-		
t_{OFF}	Turn Off Time		-	-	3.8		
t_f	Fall Time		-	0.1	-		
	Data Rate		-	1	-	MHz	

Typical Characteristic Curves

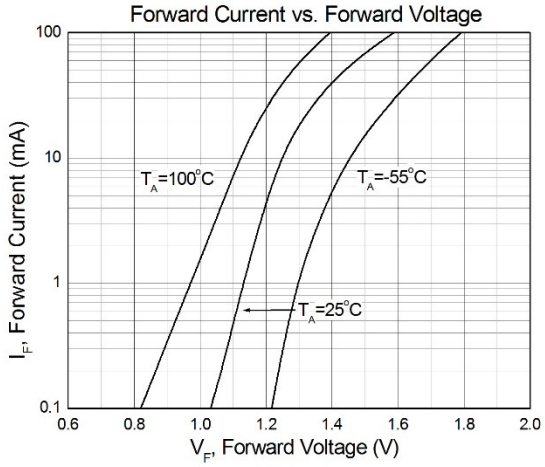


Figure 1

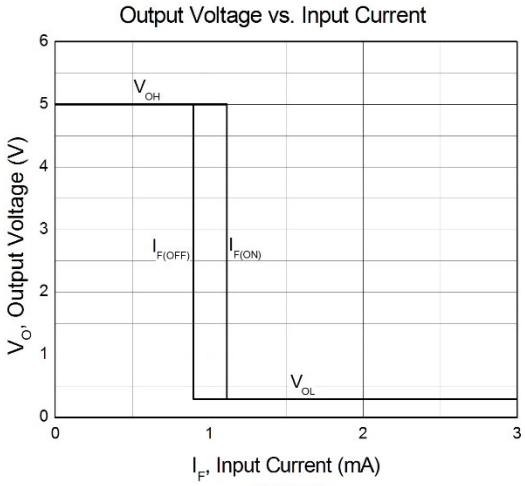


Figure 2

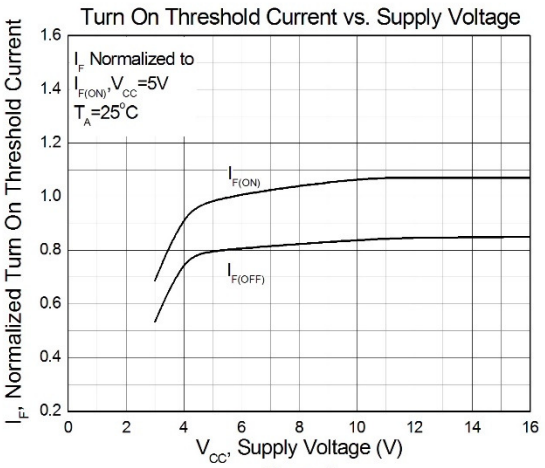


Figure 3

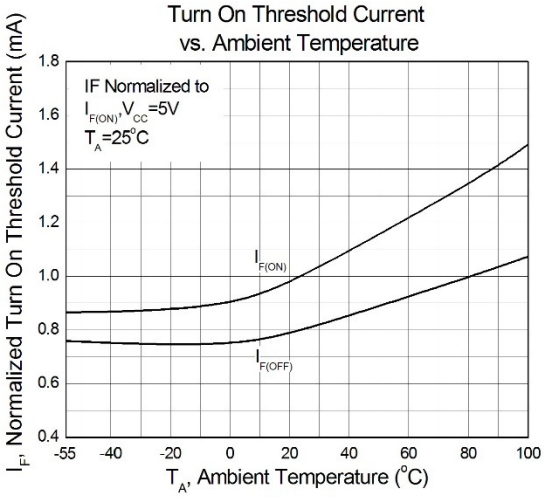


Figure 4

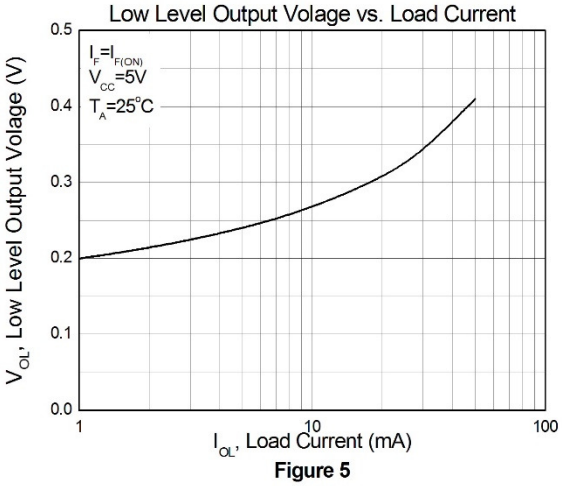


Figure 5

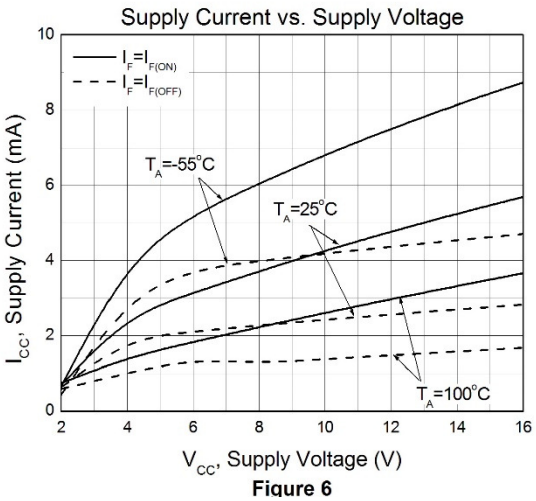
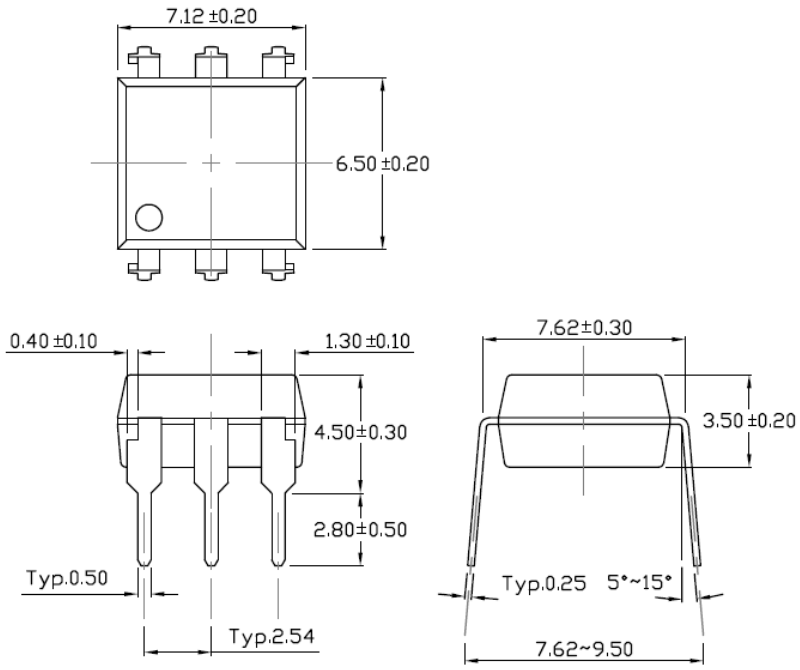


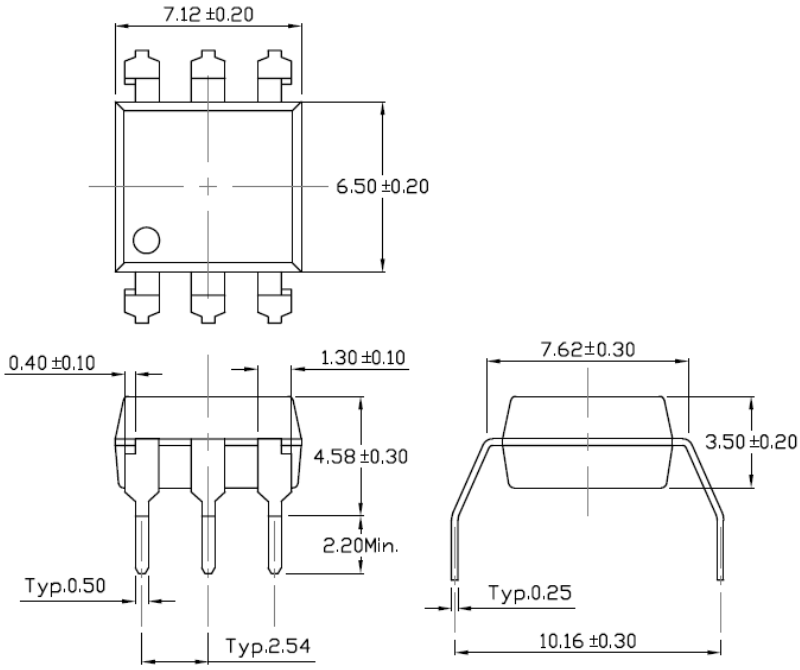
Figure 6

Package Dimension *Dimensions in mm unless otherwise stated*

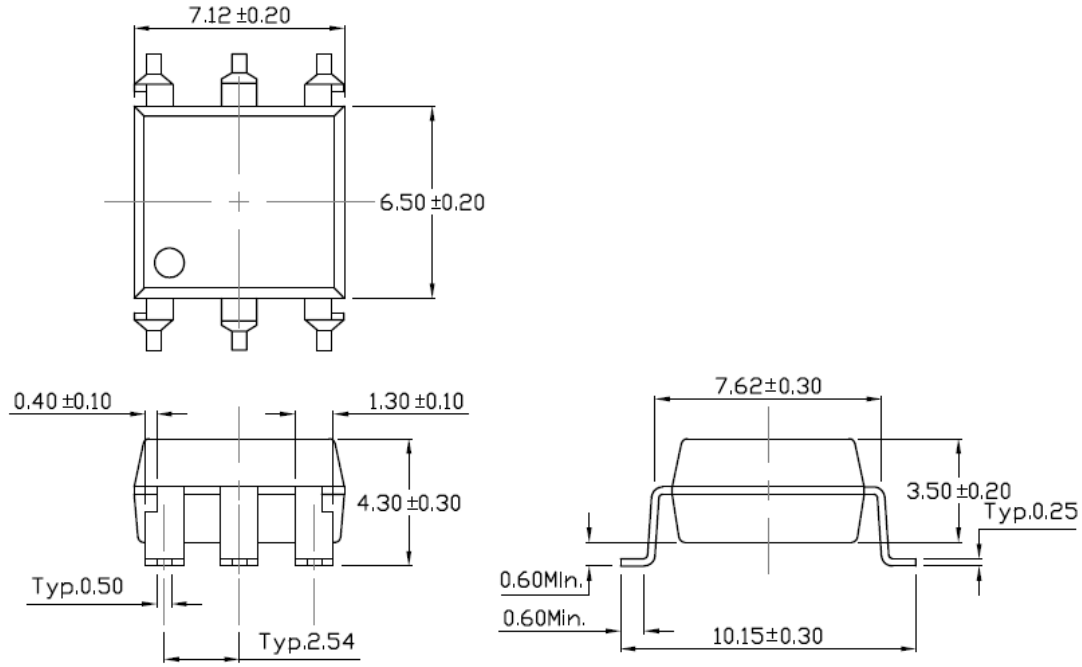
Standard DIP – Through Hole



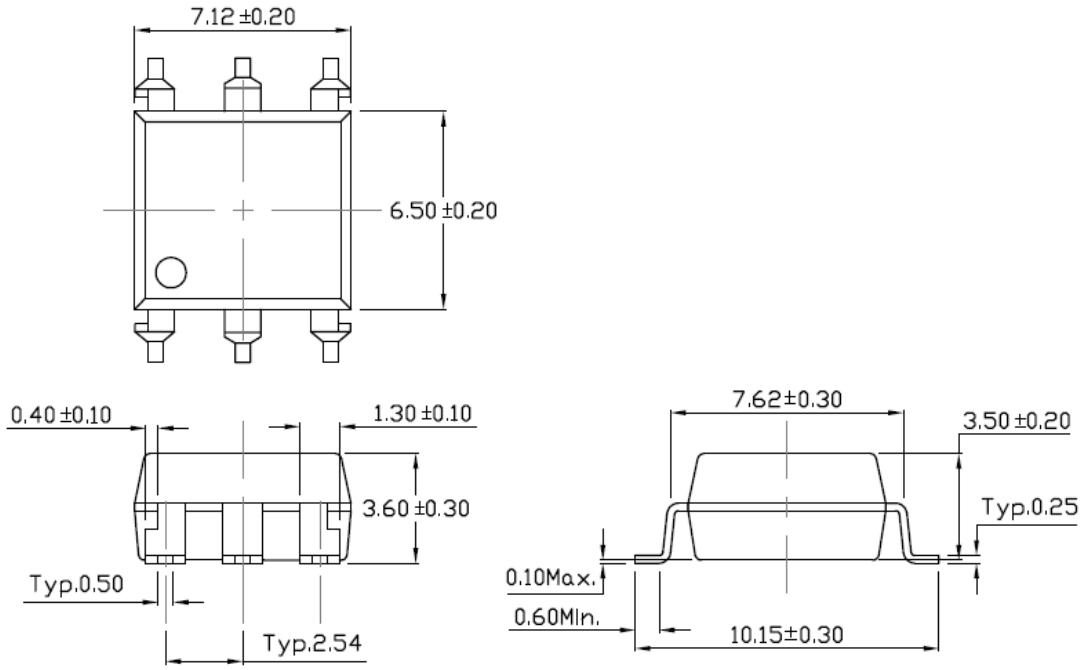
Wide Lead Forming – Through Hole (M Type)



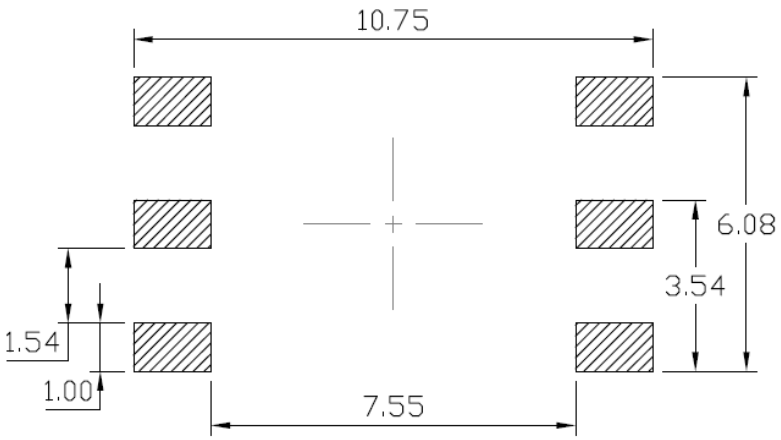
Surface Mount Forming (S Type)



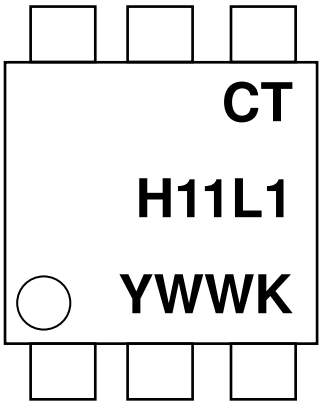
Surface Mount Forming (Low Profile) (SL Type)



Recommended Solder Mask *Dimensions in mm unless otherwise stated*



Marking Information



Note:

CT : Denotes “CT Micro”
H11L1 : Part Number
Y : Fiscal Year
WW : Work Week
K : Manufacturing Code

Ordering Information

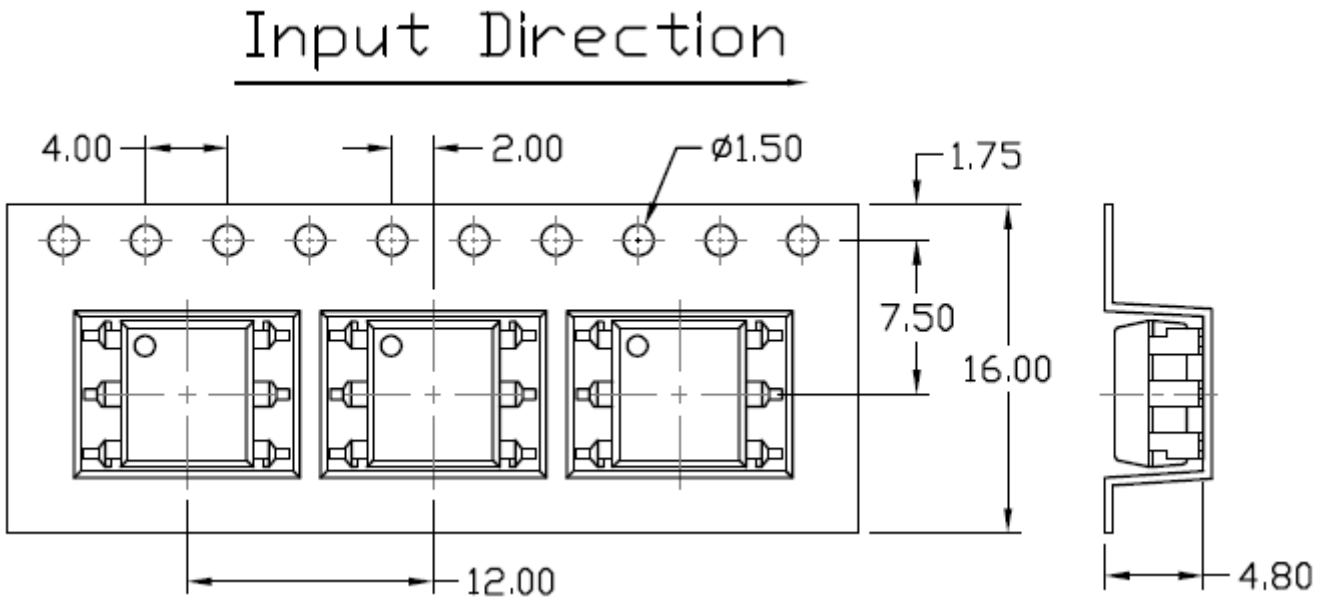
H11LX(Y)(Z)-G

X = Part No. (X=1,2,3)
Y = Lead form option (S, SL, M or none)
Z = Tape and reel option (T1, T2 or none)
G= Material option (G: Green, None: Non-green)

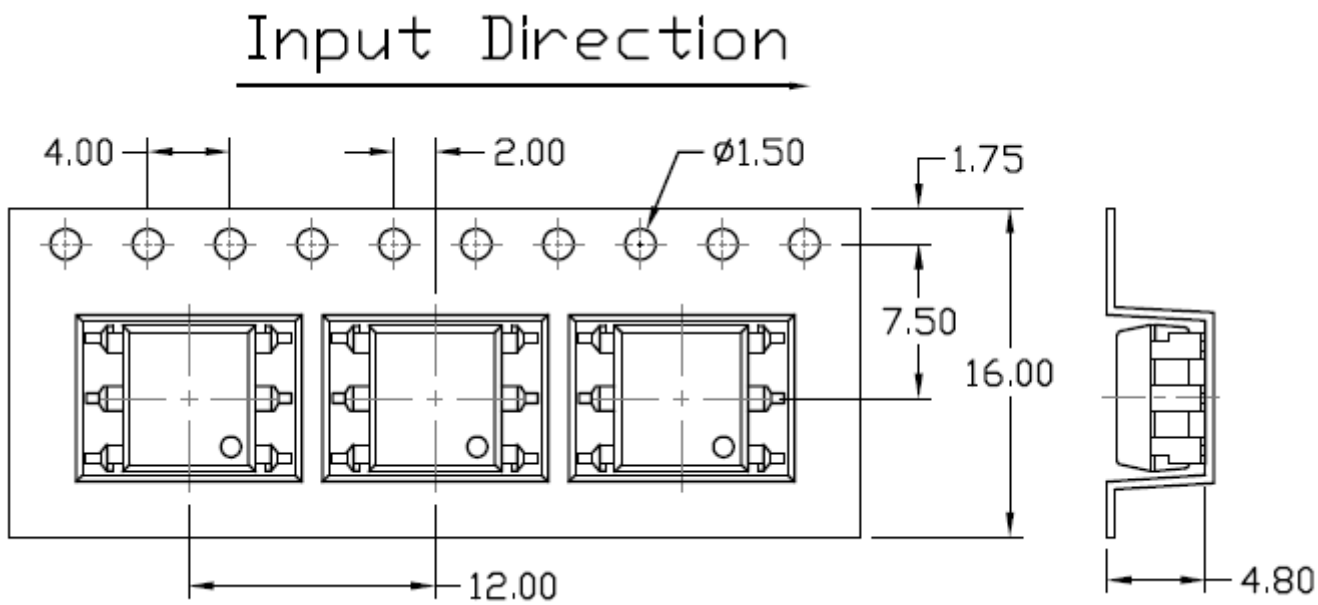
Option	***Description***	***Quantity***
None	Standard 6 Pin Dip	65Units/Tube
M	Gullwing (400mil) Lead Forming	65Units/Tube
S(T1)	Surface Mount Lead Forming – With Option 1 Taping	1000 Units/Reel
S(T2)	Surface Mount Lead Forming – With Option 2 Taping	1000 Units/Reel
SL(T1)	Surface Mount (Low Profile) Lead Forming– With Option 1 Taping	1000 Units/Reel
SL(T2)	Surface Mount (Low Profile) Lead Forming – With Option 2 Taping	1000 Units/Reel

Carrier Tape Specifications *Dimensions in mm unless otherwise stated*

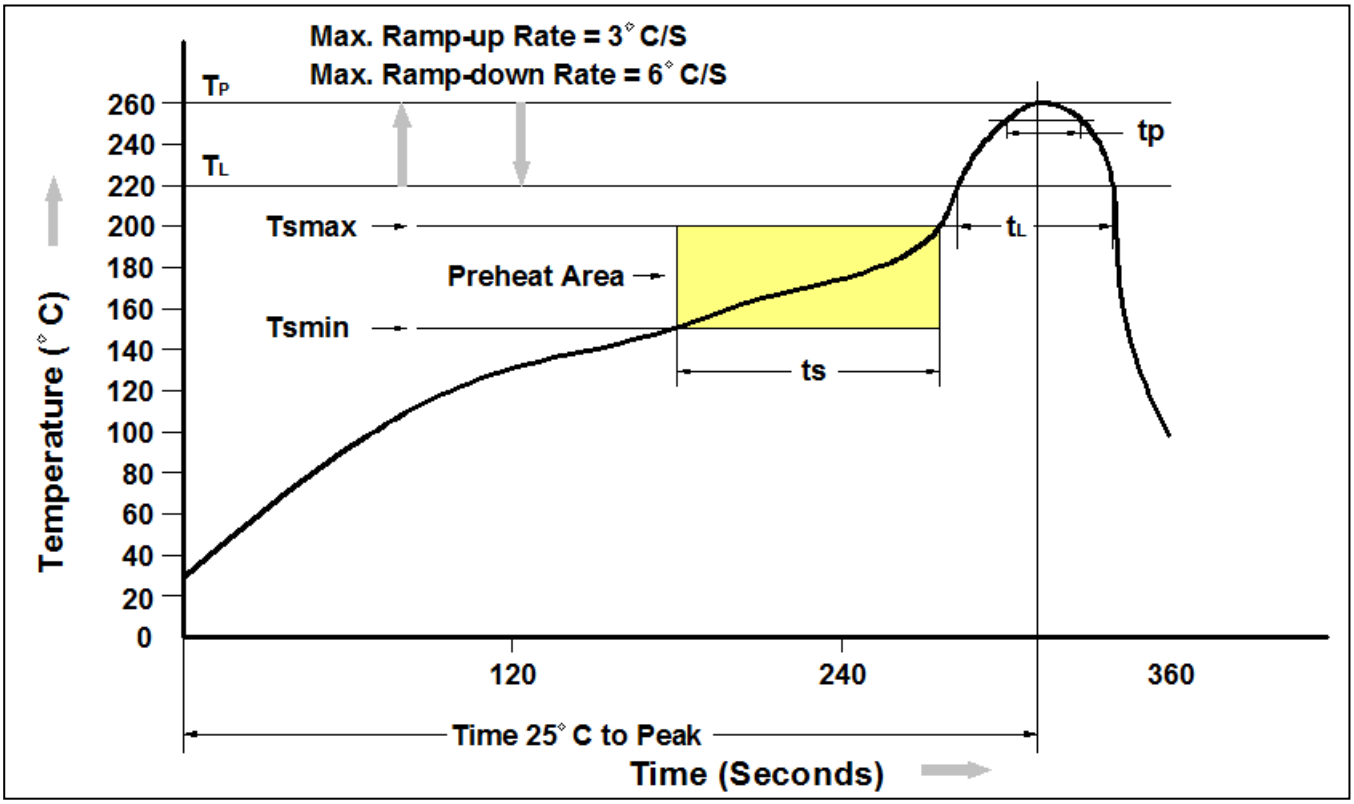
Option S(T1) & SL(T1)



Option S(T2) & SL(T2)



Reflow Profile



Profile Feature	Pb-Free Assembly Profile
Temperature Min. (Tsmin)	150℃
Temperature Max. (Tsmax)	200℃
Time (ts) from (Tsmin to Tsmax)	60-120 seconds
Ramp-up Rate (t_L to t_P)	3℃/second max.
Liquidous Temperature (T_L)	217℃
Time (t_L) Maintained Above (T_L)	60 – 150 seconds
Peak Body Package Temperature	260℃ +0℃ / -5℃
Time (t_P) within 5℃ of 260℃	30 seconds
Ramp-down Rate (T_P to T_L)	6℃/second max
Time 25℃ to Peak Temperature	8 minutes max.

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