



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 °C to 100 °C

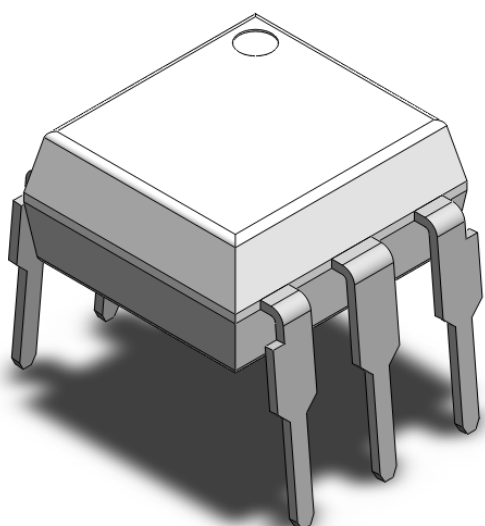
Applications

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

Description

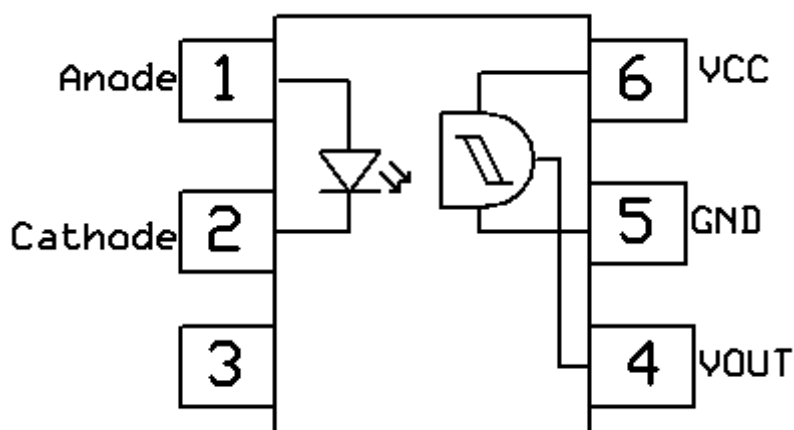
The H11L1, H11L2 and H11L3 series consist of a Schmitt Trigger optically coupled to a gallium arsenide Infrared-emitting diode in a 6-lead DIP package with different lead forming options.

Package Outline



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

Schematic





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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	
V _o	Output Voltage	0 to 16	V	
V _{CC}	Supply Voltage	3 to 16	V	
I _o	Output Current	50	mA	



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Electrical Characteristics $T_A = 25^\circ\text{C}$ (unless otherwise specified)

Emitter Characteristics

Symbol	Parameters	Test Conditions	Min	Typ	Max	Units	Notes
V_F	Forward voltage	$I_F = 10\text{mA}$		1.24	1.4	V	
I_R	Reverse Current	$V_R = 6\text{V}$	-	-	5	μA	
C_{IN}	Input Capacitance	$f = 1\text{MHz}$	-	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	$I_F = 0\text{mA}$, $V_{CC} = 5\text{V}$		1.5	5	mA	
I_{OH}	Logic High Output Current	$I_F = 0\text{mA}$, $V_{CC} = V_O = 15\text{V}$			100	μA	

Transfer Characteristics

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

Switching Characteristics

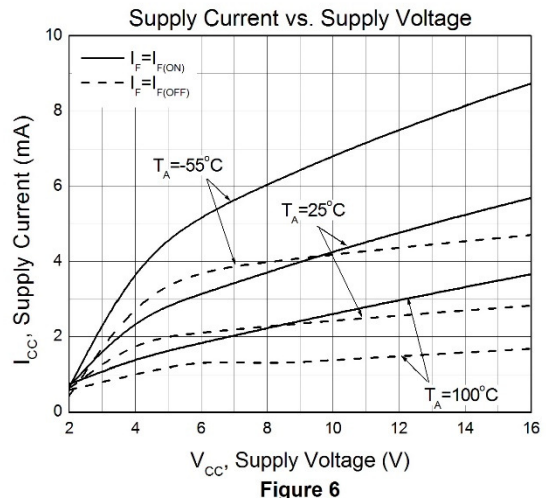
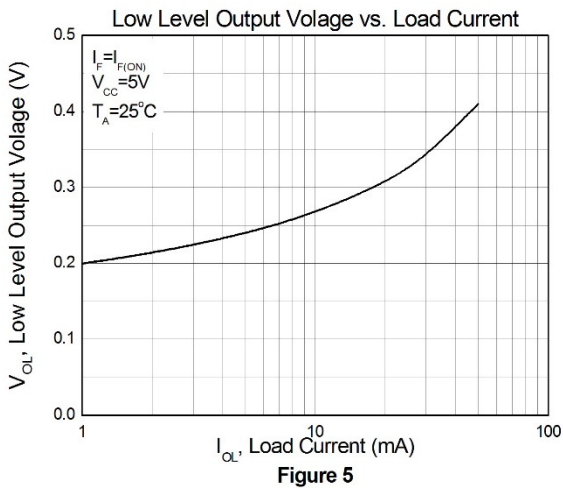
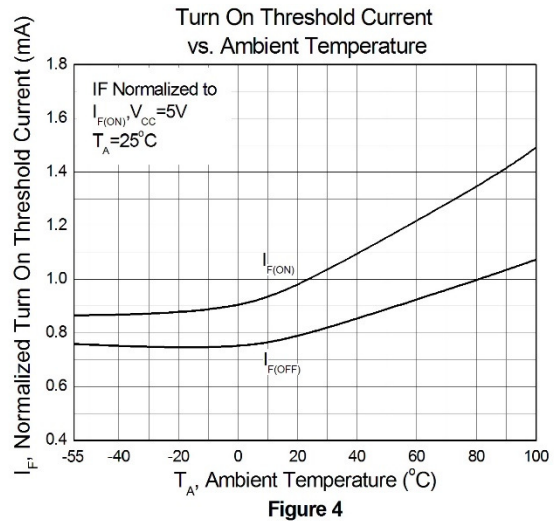
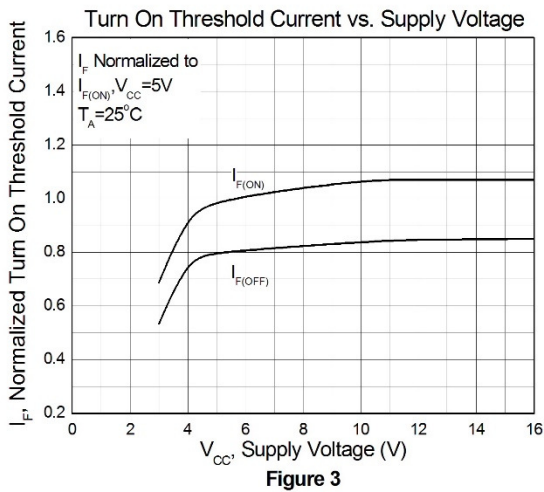
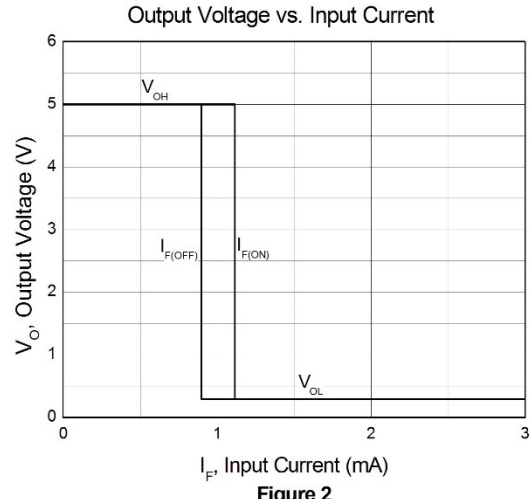
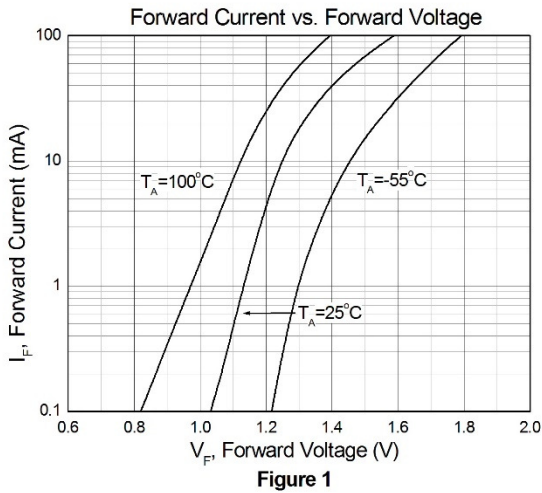
Symbol	Parameters	Test Conditions	Min	Typ	Max	Units	Notes
t_{ON}	Turn On Time	$I_F = I_{F(ON)}$, $V_{CC} = 5\text{V}$, $R_L = 270\ \Omega$	-	-	3.8	μs	
t_r	Rise Time		-	0.1	-		
t_{OFF}	Turn Off Time		-	-	3.8		
t_f	Fall Time		-	0.1	-		
	Data Rate		-	1	-	MHz	



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Typical Characteristic Curves



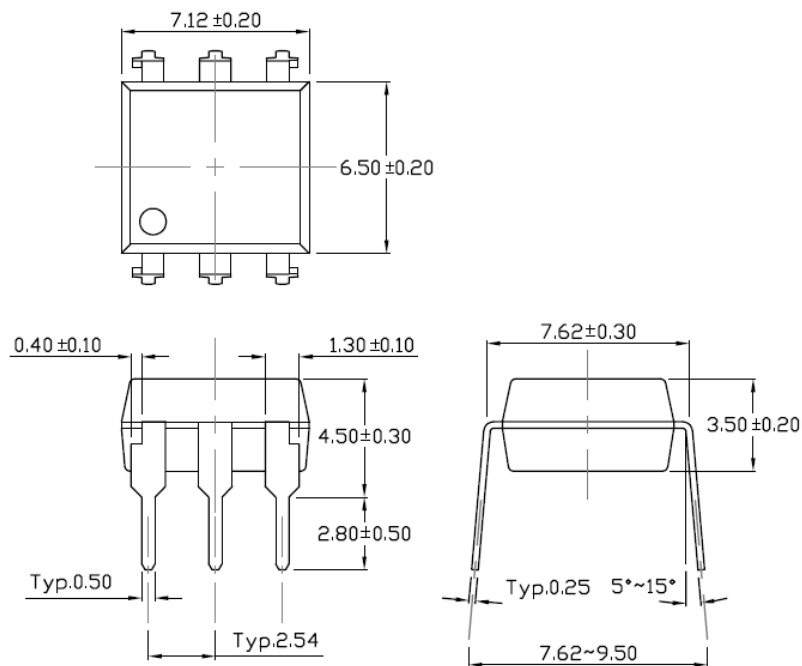


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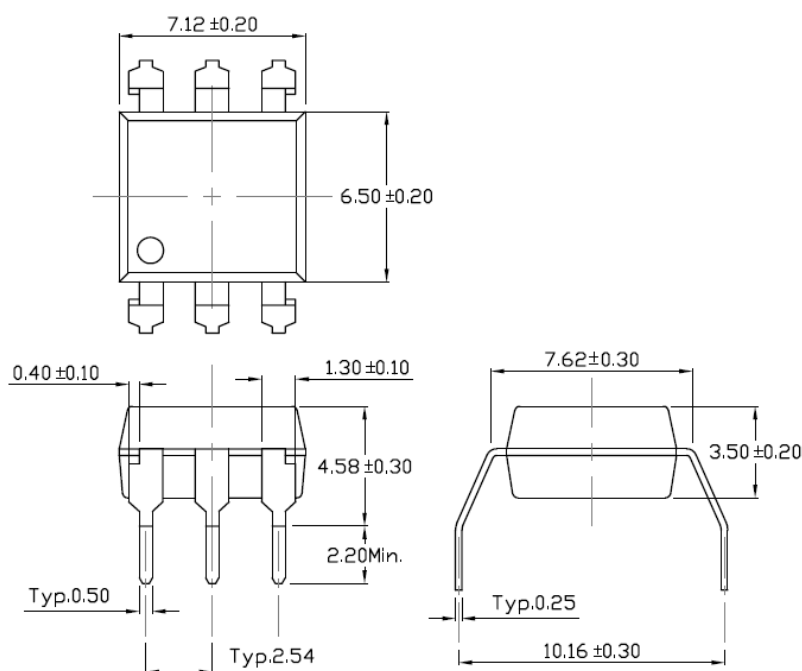
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Package Dimension *Dimensions in mm unless otherwise stated*

Standard DIP – Through Hole



Wide Lead Forming – Through Hole (M Type)

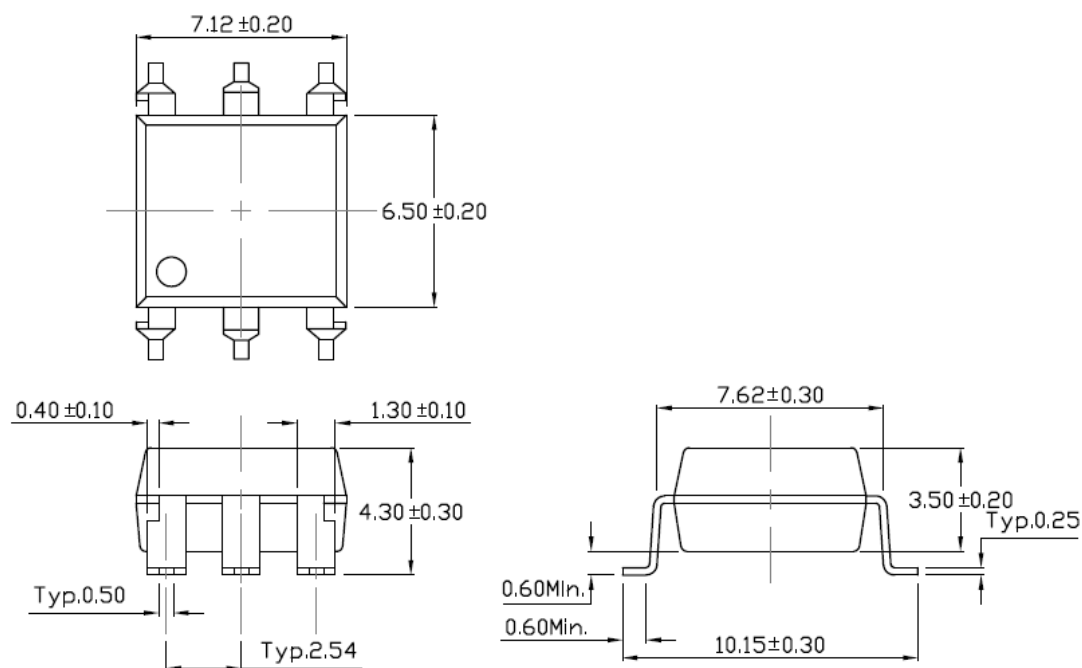




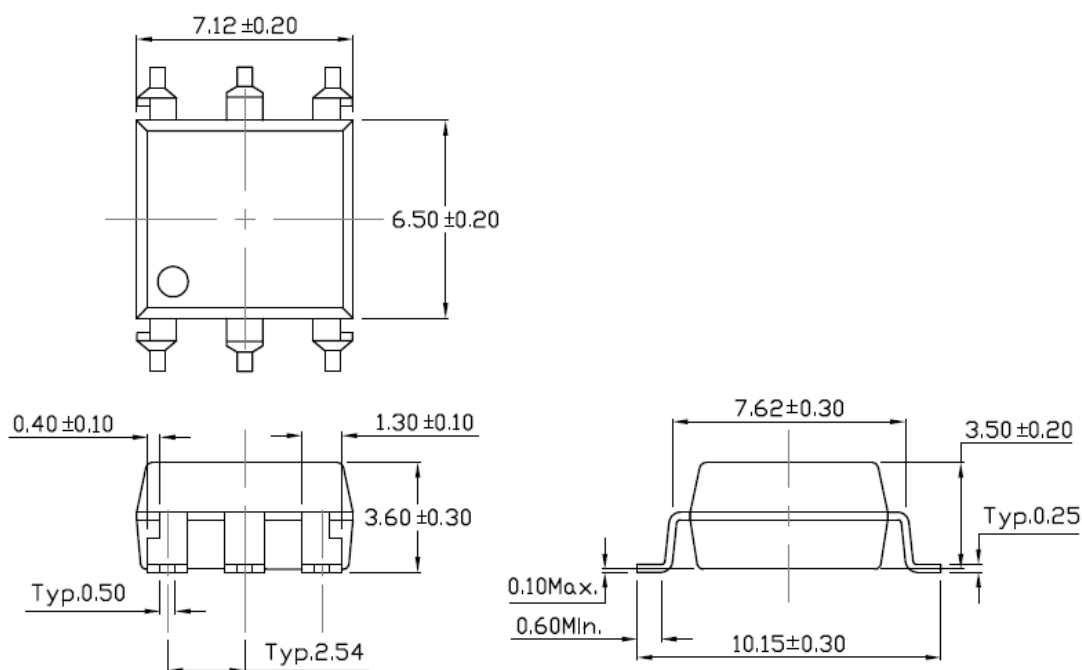
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Surface Mount Forming (S Type)



Surface Mount Forming (Low Profile) (SL Type)

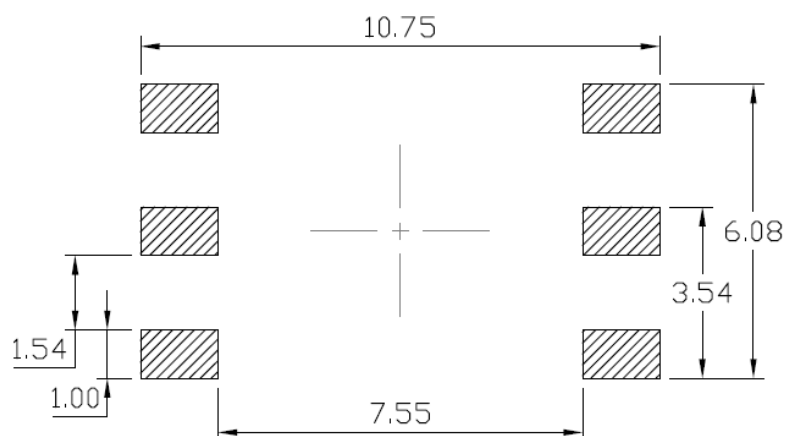




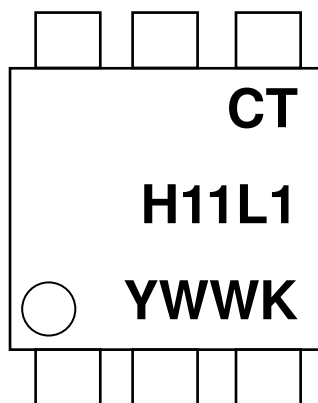
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Recommended Solder Mask *Dimensions in mm unless otherwise stated*



Marking Information



Note:

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



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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

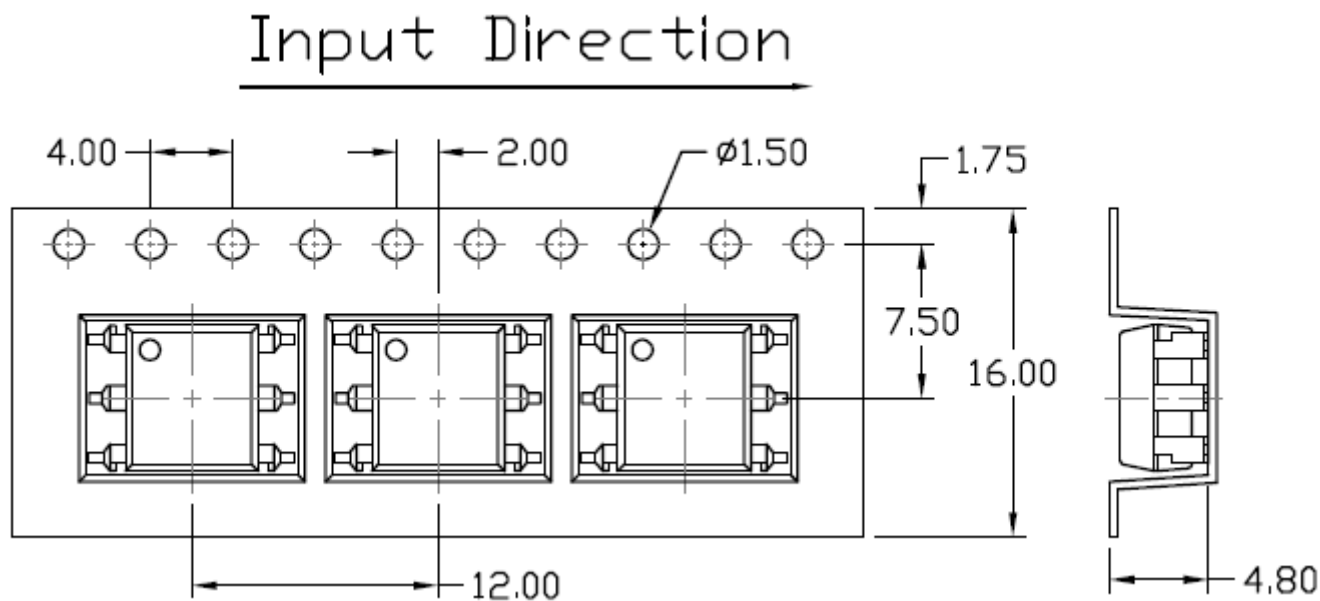


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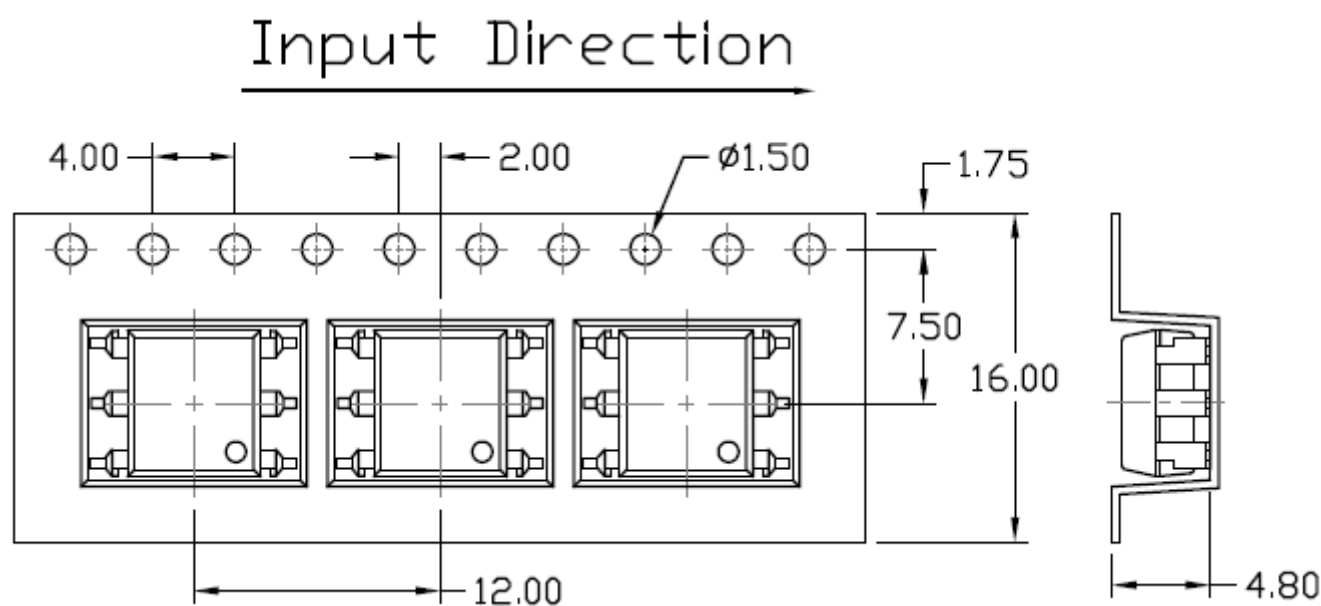
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Carrier Tape Specifications *Dimensions in mm unless otherwise stated*

Option S(T1) & SL(T1)



Option S(T2) & SL(T2)

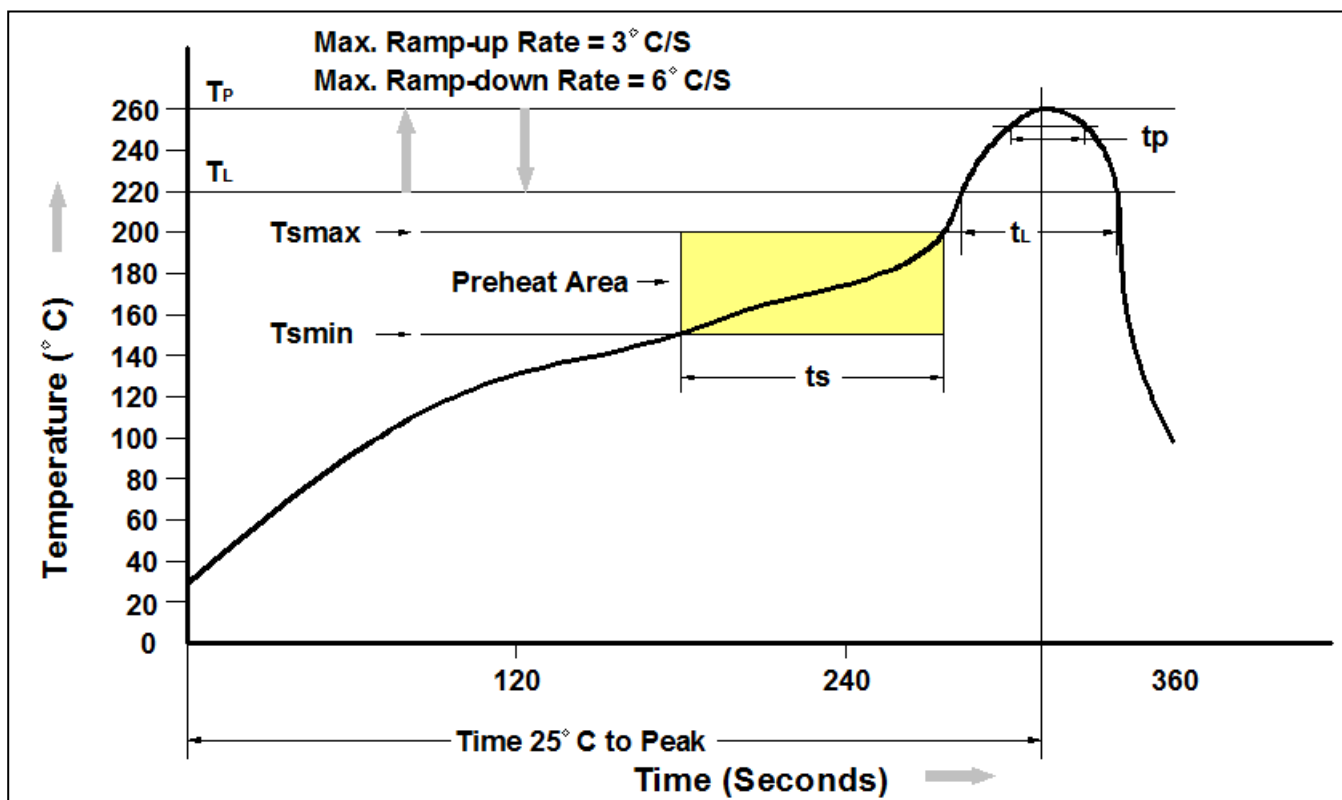




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Reflow Profile



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



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