

QT-Brightek Opto-Coupler Series

6-PIN DIP PHOTOCOUPLER SCHMITT TRIGGER

Part No.: H11L1_H11L2_H11L3



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Introduction

Feature:

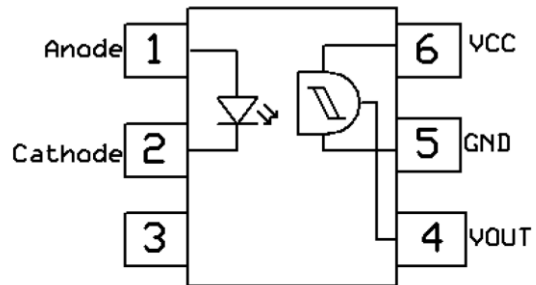
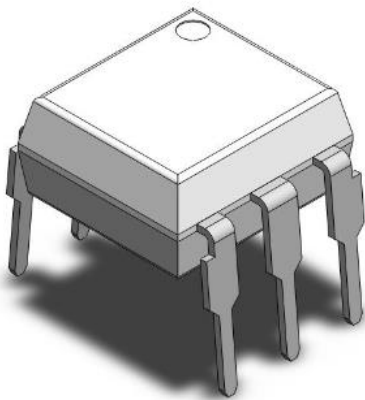
- High isolation 5000 V_{RMS}
- 1MHz (NRZ) data rate
- Coplanar structure DMC-isolator
- DC input with schmitt trigger output
- External creepage ≥ 7.4mm
- Distance through isolation ≥ 0.4mm
- Clearance distance ≥ 7.5mm (S/SL type)
- Clearance distance ≥ 8.0mm (M type)
- Logic compatible output sinks 16mA at 0.4V max.
- Available packaged in tube or tape & reel

Certification & Compliance:

- Pb free and RoHS Compliant
- UL recognized (File #E338132)
- VDE recognized (File # 40049050)

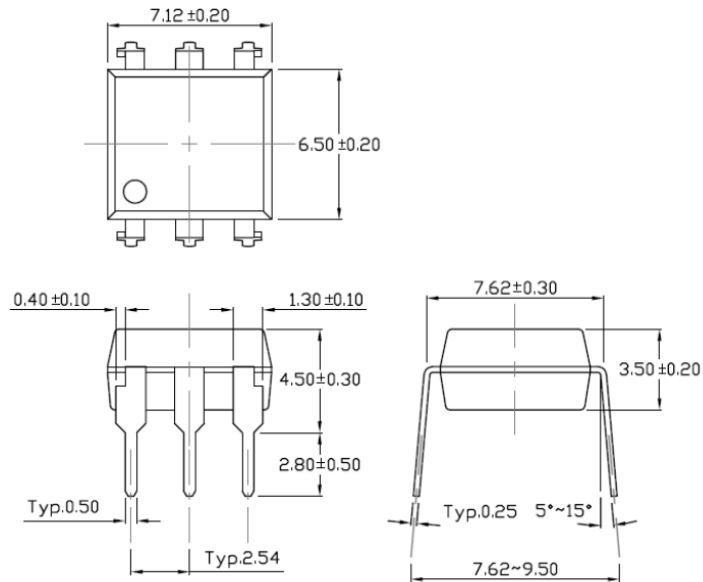


Schematic:

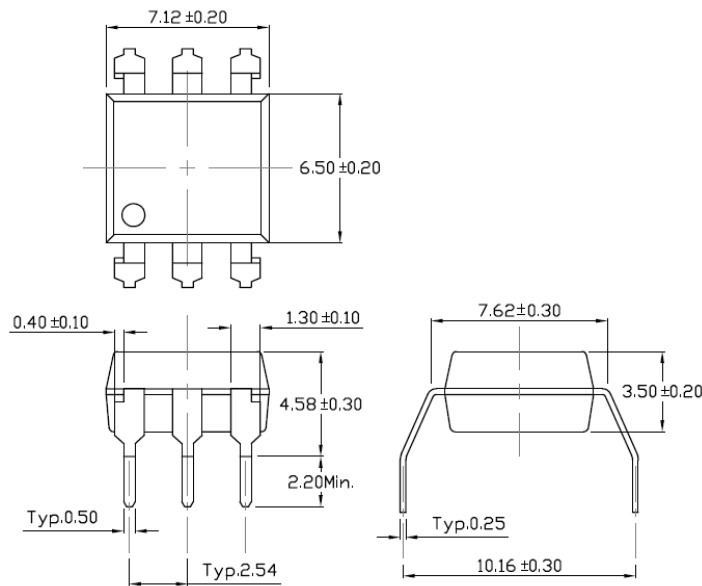


Dimension: (Dot location indicates pin 1)

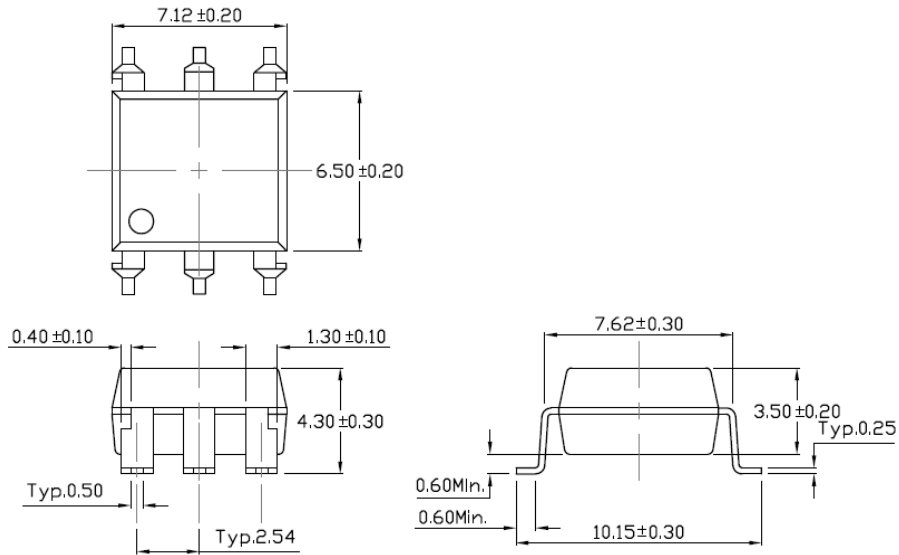
6-Pin Dip (Through Hole):



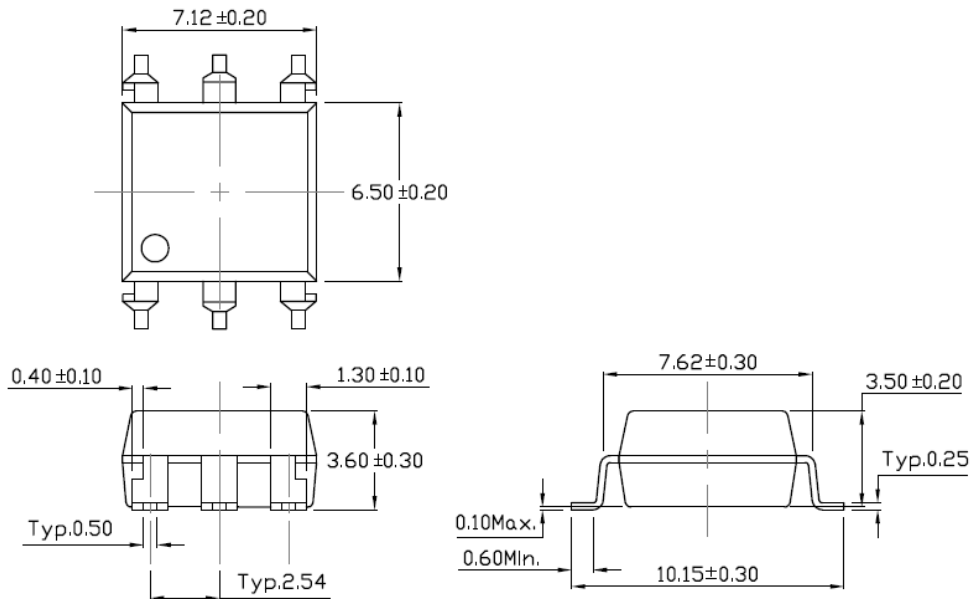
Wide lead bend (Option M):



SMD lead bend (Option S):



SMD (Low Profile) bend (Option SL):



All Dimensions are in mm
Tolerance = +/- 0.1mm

Absolute Maximum Rating

Symbol	Parameter	Rating	Units
T _{STG}	Storage Temperature	-55 ~ +150	°C
T _{OPR}	Operating Temperature	-40 ~ +100	°C
T _{SOL}	Lead Solder Temperature	260	°C
V _{ISO}	Isolation voltage	5000	VRMS
EMITTER			
I _F	Continuous Forward Current	60	mA
I _{PF}	Peak Forward Current (300us pulse, ≤1 μs P.W)	1	A
V _R	Reverse Voltage	6	V
P _D	Power Dissipation	100	mW
DETECTOR			
V _O	Output Voltage	0 to 16	V
V _{CC}	Supply Voltage	3 to 16	V
I _O	Output Current	50	mA
P _D	Power Dissipation	150	mW

Electrical Characteristic: (Ta=25 °C)

Emitter

Symbol	Characteristic	Test Condition	Range			Unit
			Min	Typ	Max	
V _F	Forward voltage	I _F =10mA	-	1.2	1.4	V
I _R	Reverse current	V _R =6V	-	-	5	μA
C _{IN}	Input capacitance	f=1MHz	-	45	-	pF

Detector

Symbol	Characteristic	Test Condition	Range			Unit
			Min	Typ	Max	
V _{CC}	Supply		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	Characteristic		Test Condition	Range			Unit
				Min	Typ	Max	
I _{CCL}	Logic Low Supply Current		I _F = 10mA, V _{CC} = 5V	-	1.5	5	mA
V _{OL}	Logic Low Output Voltage		V _{CC} = 5V, I _F = I _{FON} (Max), R _L = 270Ω	-	-	0.4	V
I _{F(ON)}	Turn on Threshold Current	H11L1	V _{CC} = 5V, R _L = 270Ω	-	-	1.6	mA
		H11L2		-	-	10	mA
		H11L3		-	-	5	mA
I _{F(OFF)}	Turn off Threshold Current		V _{CC} = 5V, R _L = 270Ω	0.3	1	-	mA
I _{F(OFF)} /I _{F(ON)}	Hysteresis Ratio			0.5	-	0.9	
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	Unit
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	3.8	
	Data rate		-	1	-	MHz

Characteristic Curves

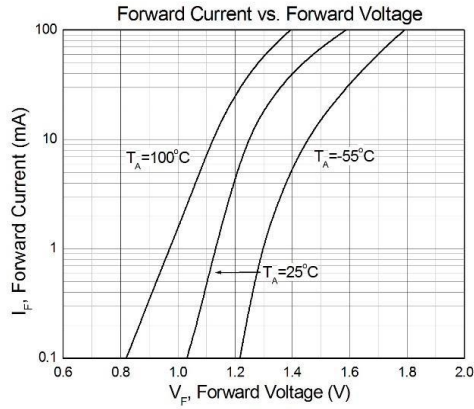


Figure 1

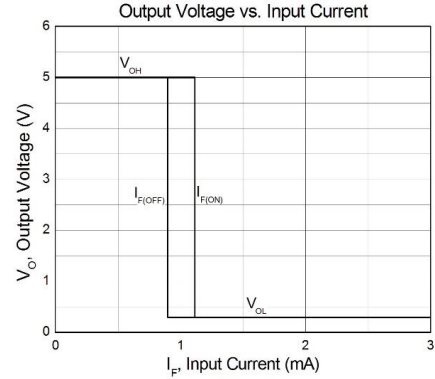


Figure 2

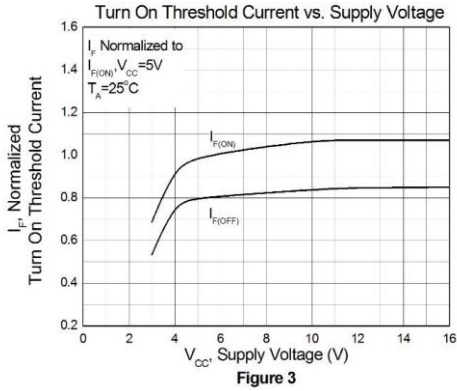


Figure 3

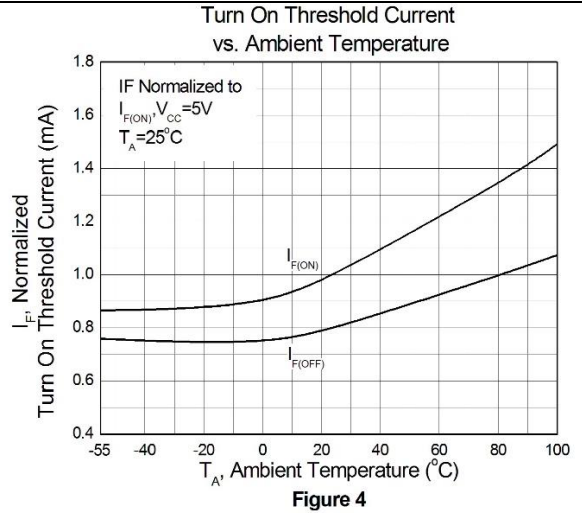


Figure 4

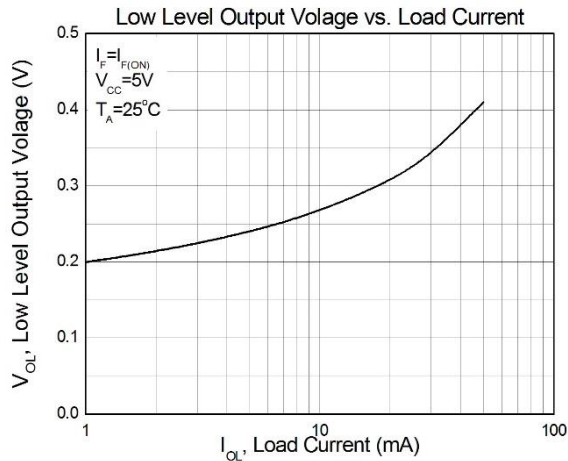


Figure 5

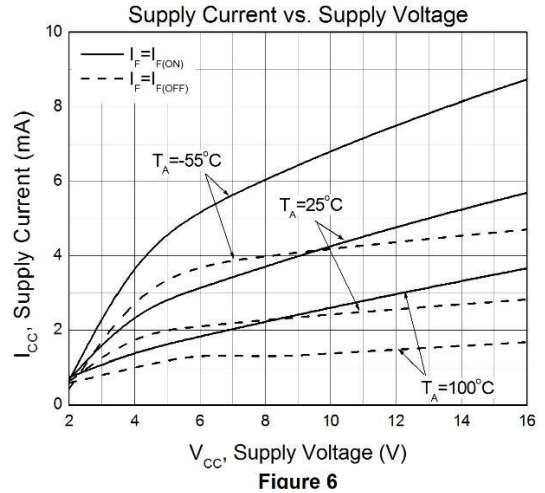
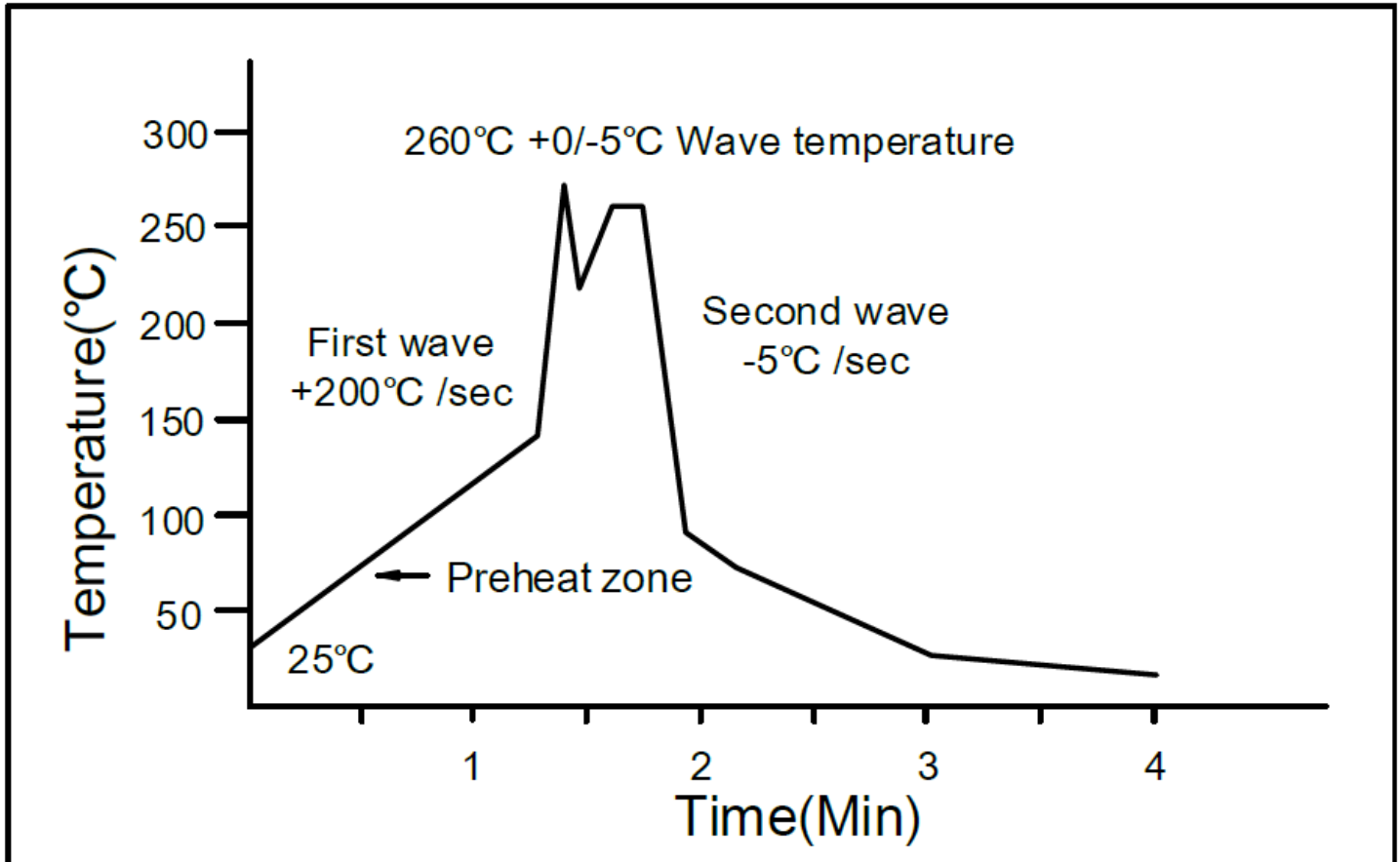


Figure 6

Solder Profile & Footprint

Wave soldering



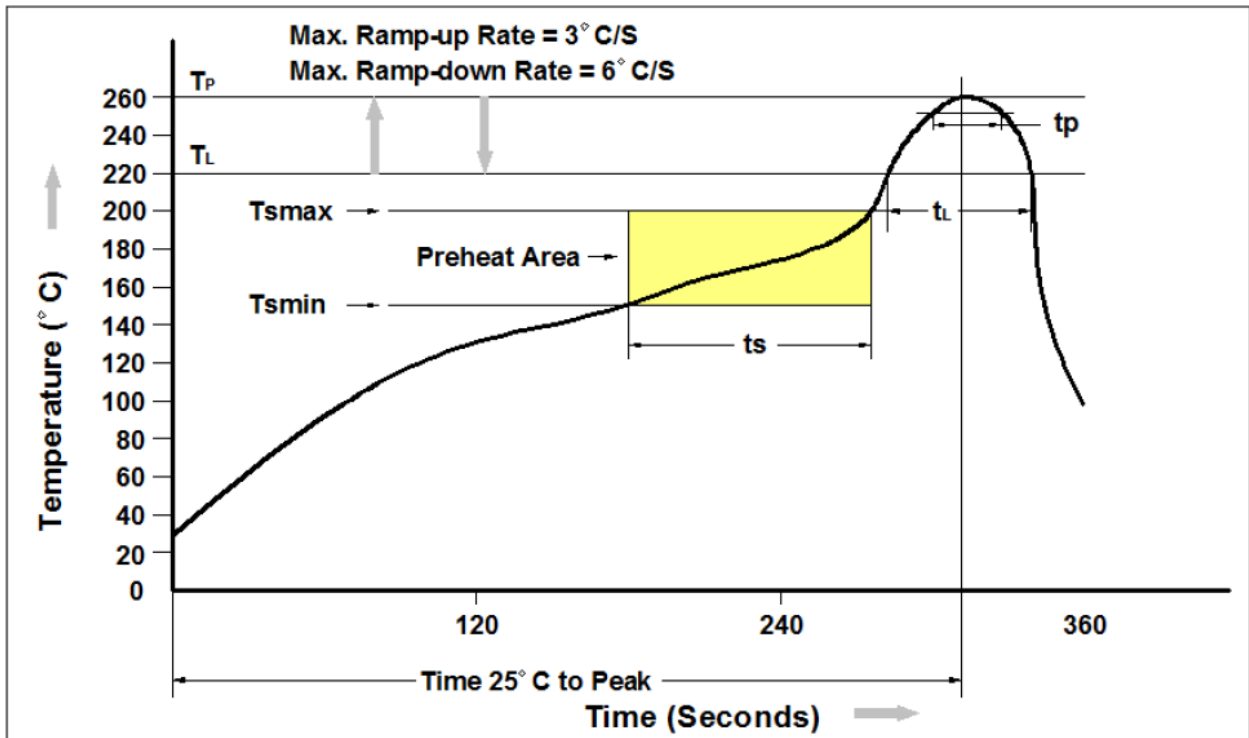
Temperature: 260 +0/-5 °C

Time: 10 Sec

Preheat temperature: 25 to 140 °C

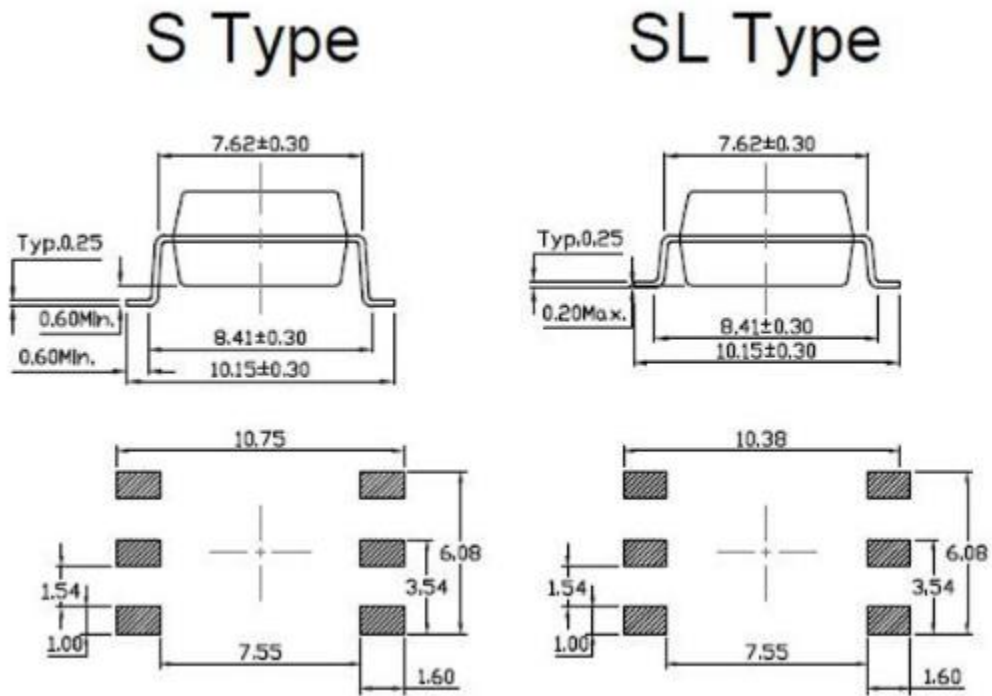
Preheat time: 30 to 80 sec.

Reflow soldering



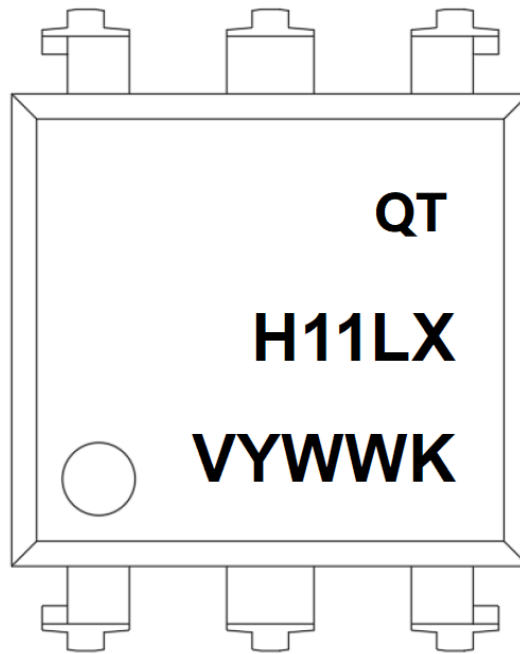
Profile Feature	Pb-Free Assembly Profile
Temperature Min. (T Amin)	150°C
Temperature Max. (Tsmax)	200°C
Time (ts) from (T Amin to Tsmax)	60-120 seconds
Ramp-up Rate (tL to tp)	3°C/second max.
Liquidous Temperature (Tl)	217°C
Time (tL) Maintained Above (Tl)	60 – 150 seconds
Peak Body Package Temperature	260°C +0°C / -5°C
Time (tp) within 5°C of 260°C	30 seconds
Ramp-down Rate (Tp to Tl)	6°C/second max
Time 25°C to Peak Temperature	8 minutes max.

Solder Profile & Footprint



Recommended Solder Footprint for SMD Leadform

Units: mm

Device Marking

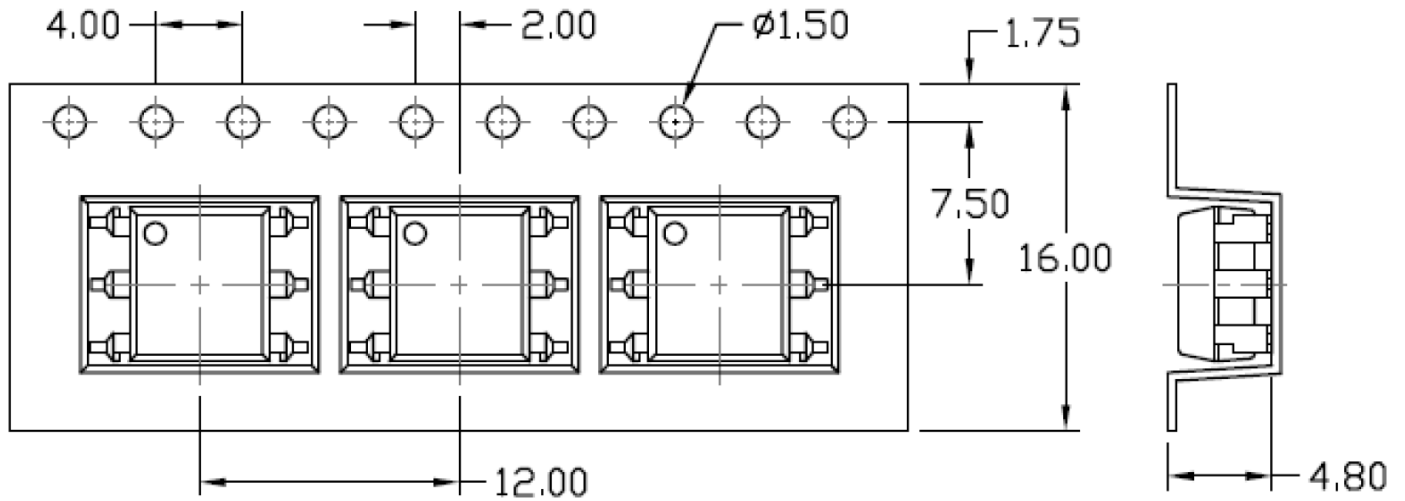
QT = QT-Brightek Corporation
H11LX = part number (X=1, 2, or 3)
Y = Year
WW = Week
V = VDE Option
K = Manufacturing code

Product: H11L1 H11L2 H11L3	Date: February 09, 2018	Page 12 of 15
	Version# 1.4	

Tape and Reel Packing Specifications

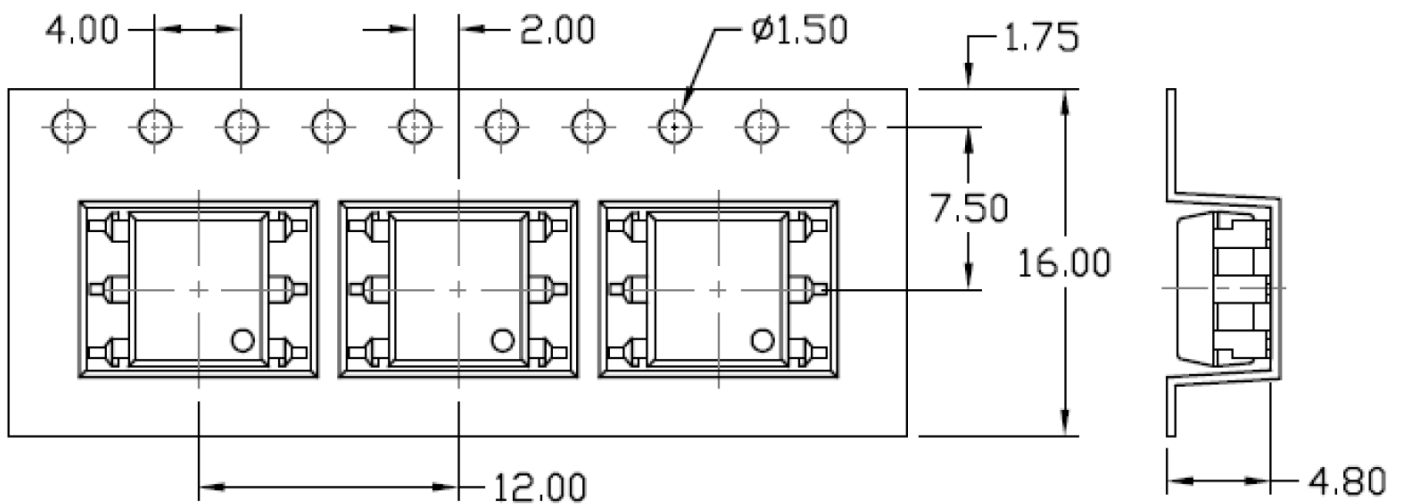
Option ST1 & SLT1

Input Direction



Option ST2 & SLT2

Input Direction



Ordering Information

H11LXVYZ

X= Part number (X=1, 2, or 3)

V = VDE option (V or None)

Y = Lead form option (S, SL or none)

Z=Tape and reel option (T1 or T2 or none)

Option	Description	Quantity
None	Standard 6-Pin DIP	50 Units/Tube
M	Gullwing lead forming	50 Units/Tube
ST1	Surface mount lead forming – with option 1 taping	1000 pcs/ reel
ST2	Surface mount lead forming – with option 2 taping	1000 pcs/ reel
SLT1	Surface mount lead forming (low profile) – with option 1 taping	1000 pcs/ reel
SLT2	Surface mount lead forming (low profile) – with option 2 taping	1000 pcs/ reel

Revision History

Description:	Revision #	Revision Date
Initial release of H11L1 H11L2 H11L3	1.0	4/22/2010
Information updates	1.1	04/07/2011
Amend packing information	1.2	12/16/2011
Update to new format/update packing spec	1.3	07/17/2012
Amend the spec and packing information	1.4	02/09/2018

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2. A critical component in any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.