

恒拓电子
HENG TUO ELECTRONICS

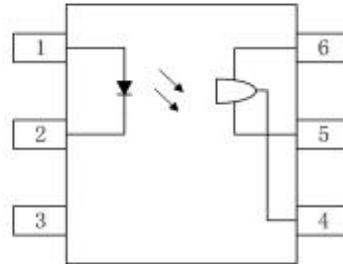
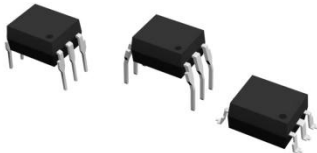


HT series

**Photo Coupler
Product Specification**

HT-H11LX

■ Package



Pin Configuration

1. Anode
2. Cathode
3. No Connection
4. VO
5. GND
6. VCC

■ Description

The HT-H11LX series of devices each consist of a GaAs infrared emitting diode optically coupled a high speed integrated circuit detector. The output detector incorporates a Schmitt trigger, which provides hysteresis for noise immunity and pulse shaping.

The devices are in a 6-pin DIP package and available in wide-lead spacing and SMD option.

■ Features

- High data rate, 1MHz typical (NRZ)
- Free from latch up and oscillation throughout voltage and temperature ranges
- Microprocessor compatible drive
- Logic compatible output sinks 16mA at 0.4V maximum
- Guaranteed on/off threshold hysteresis
- Wide supply voltage capability, compatible with all popular logic systems
- High isolation voltage between input and output (Viso=5000 V rms)
- Compact dual-in-line package
- The product itself will remain within RoHS compliant version
- UL approved
- VDE approved
- CQC approved

■ 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

■ Product Nomenclature

The product name is designated as below:

HT - H11LX - X X - X X - XX
① ② ③ ④ ⑤

Designation:

HT =Hengtuo Technology Co.,LTD.

H11LX= Product Series (X: 1, 2, 3)

① = Lead form option(S1,M,NONE)⁽¹⁾

② = Tape and Reel option(TA,TA1,NONE)⁽²⁾

③ = VDE order option(fixed code "V")

④ = Halogen free option(fixed code"G")

⑤ = Customer code

Notes

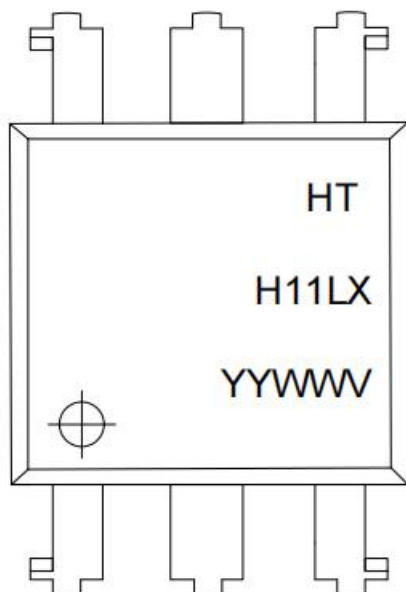
1.Lead form option:

Symbol	Description
S1	DIP6-S1
M	DIP6-M
NONE	DIP6 Normal

2.Tape and Reel option:

Symbol	Description
TA&TA1	Tape and Reel Type
NONE	DIP Type

■ Marking Information



Designation:

HT denotes Hengtuo
30XX denotes Device
YY denotes year code
WW denotes week code
V denotes VDE

■ Maximum Ratings

Parameter		Symbol	Values	Unit
Input	Forward Current	I_F	50	mA
	Reverse Voltage	V_R	6	V
	Power Dissipation	P	120	mW
	Junction Temperature	T_j	125	°C
Output	V45 Allowed Range	V_o	0 to 16	V
	V65 Allowed Range	VCC	3 to 16	V
	Output Current	I_o	50	mA
	Power dissipation	PD	150	mW
Total power dissipation		P_{tot}	250	mW
Isolation voltage ⁽¹⁾		V_{iso}	5000	V rms
Operating temperature		T_{opr}	-55~+100	°C
Storage temperature		T_{stg}	-55~+125	°C
Soldering temperature ⁽²⁾		T_{sol}	260	°C

Notes:

(1) AC for 1 minute, R.H.= 40 ~ 60% R.H. In this test, pins 1, 2 & 3 are shorted together, and pins 4, 5 & 6 are shorted together.

(2) For 10 seconds

■ Electronic Optical Characteristics

(TA = 25°C)

Parameter		Symbol	Min.	Typ.	Max.	Unit	Conditon
Input	Forward Voltage	V_F	-	1.2	1.4	V	$I_F=20\text{mA}$
	Reverse Current	I_R	-	-	5	μA	$V_R=6\text{V}$
Output	Operation Voltage Range	V_{CC}	3	-	15	V	
	Supply Current	$I_{CC}(\text{off})$	-	1.6	5	V	$I_F=0\text{mA}$, $V_{CC}=5\text{V}$
	Output Current, High	I_{OH}	-	-	100 μA	V/ μs	$I_F=0\text{mA}$, $V_{CC}=V_O=15\text{V}$
	Isolation Resistance	R_{ISO}	10^{11}	-	-	Ω	$V_{I-O}=500\text{VDC}$
Transfer Charact eristics	Supply Current	$I_{CC}(\text{on})$	-	1.6	5	mA	$I_F=10\text{mA}$, $V_{CC}=5\text{V}$
	Output Voltage .low	V_{OL}	-	-	0.4	V	$V_{CC}=5\text{V}$, $I_F=$ $I_{Fon}(\text{max.})$, $R_L=270\Omega$
	Turn on Threshold Current 1	HT-H11L1	I_{Fon}	-	1.6	mA	$V_{CC}=5\text{V}$, $R_L=270\Omega$
		HT-H11L2		-	10		
		HT-H11L3		-	5		
	Turn off Threshold Current	I_{Foff}	0.5	-	0.9	mA	$V_{CC}=5\text{V}$, $R_L=270\Omega$
	Hysteresis Ratio	I_{Foff} / I_{Fon}	-	-	4	mA	$V_{CC}=5\text{V}$, $R_L=270\Omega$
	Turn on Time	t_{on}	-	-	4	μs	$V_{CC}=5\text{V}$, $I_F=I_{Fon}$, $R_L=270\Omega$
	Fall Time	t_r	-	0.1	-	μs	
	Turn off Time	t_{off}	-	-	4	μs	
	Rise Time	t_r	-	0.1	-	μs	
	Data Rate		-	1	-	MHz	

Characteristics Curves

Fig.1 Forward current vs Ambient temperature

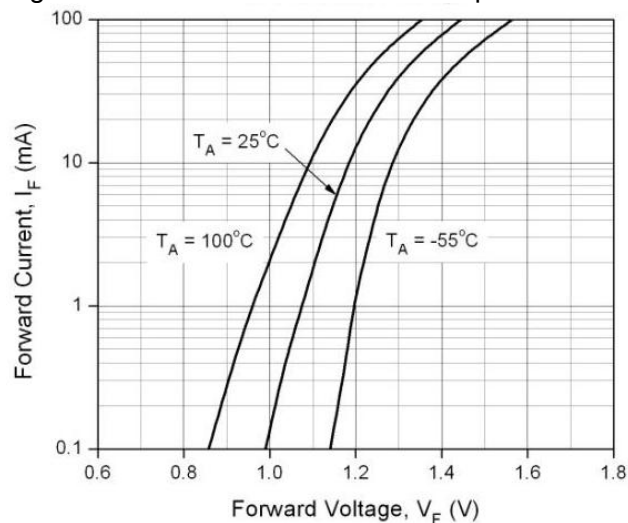


Fig.2 Transfer characteristics

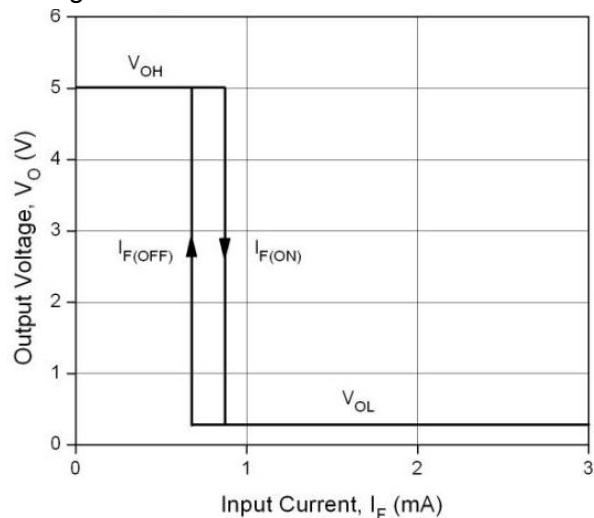


Fig.3 Turn on threshold current vs Supply voltage

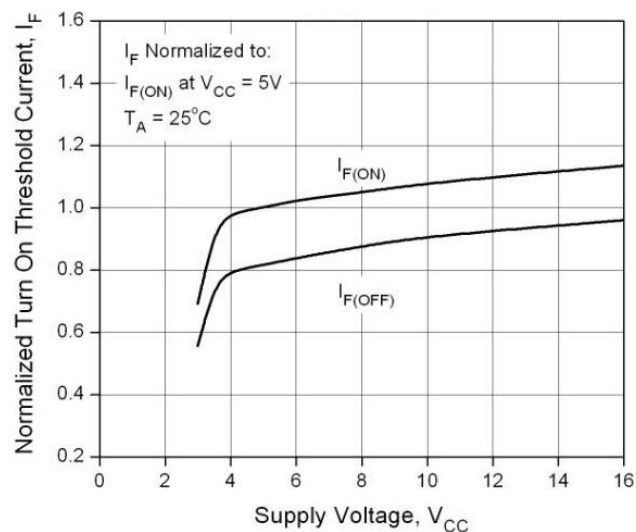


Fig.4 Turn on threshold current vs Ambient temperature

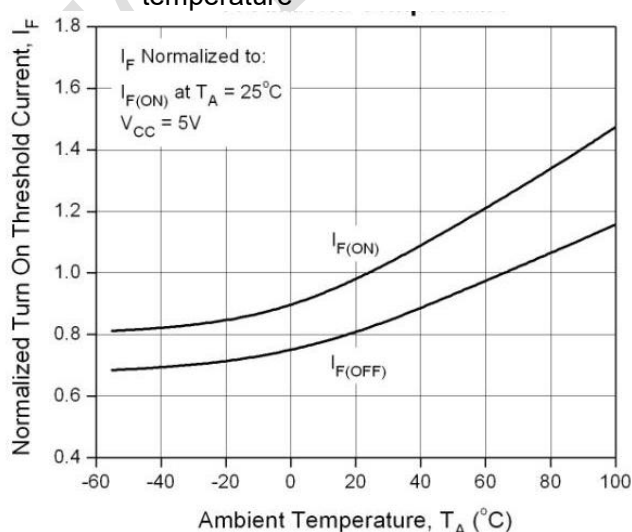


Fig.5 Low level output voltage vs Load current

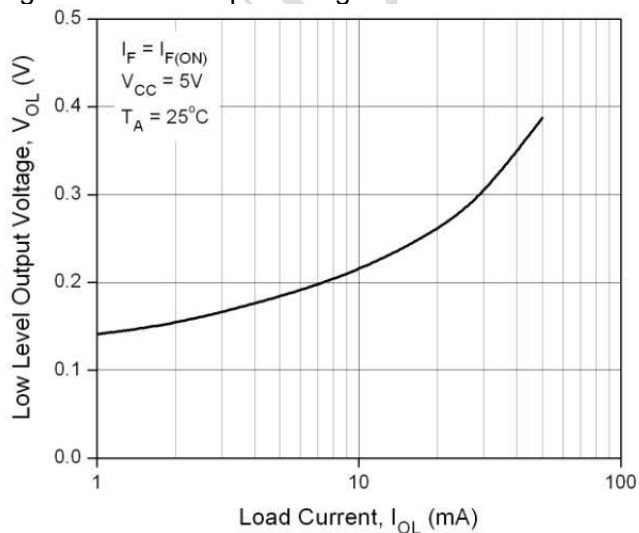


Fig.6 Supply current vs Supply voltage

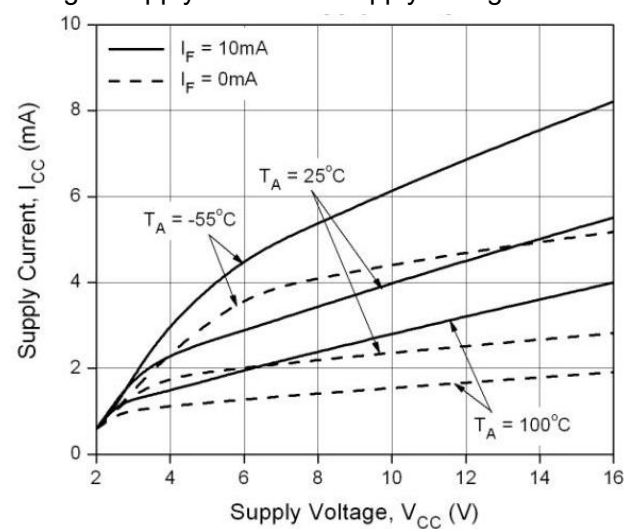
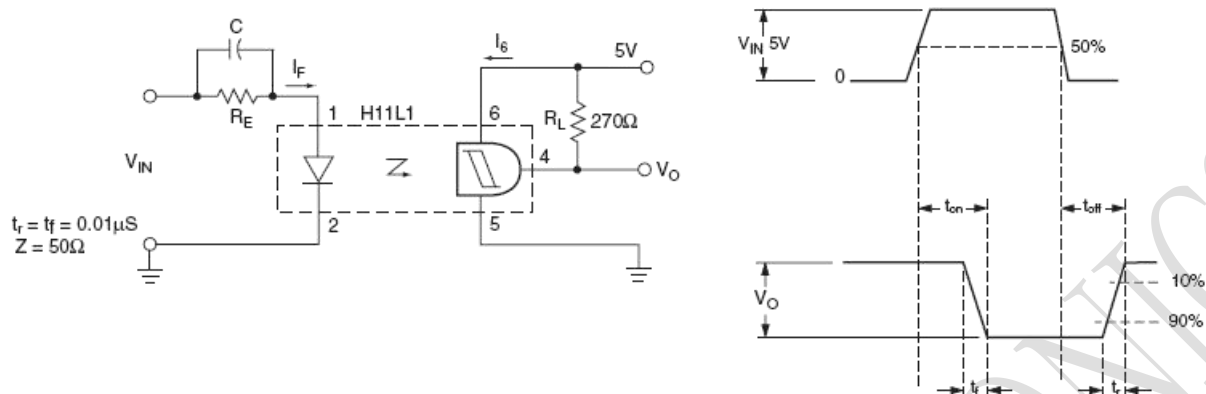
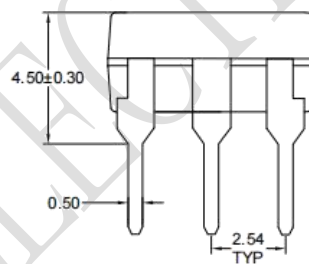
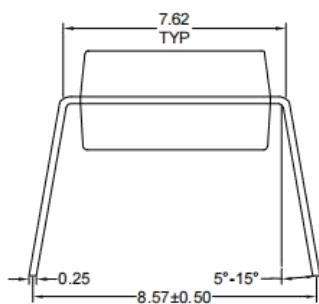
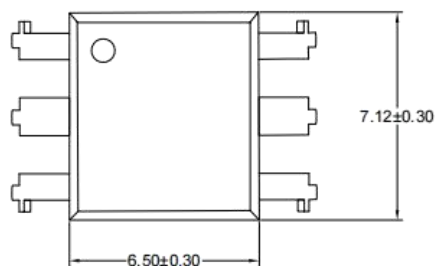


Fig.7 Switching time test circuit & Wave forms

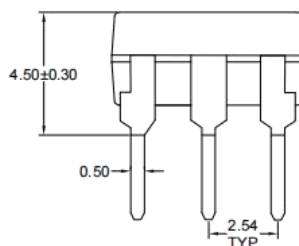
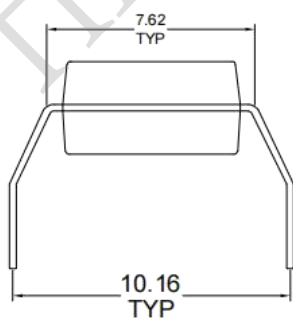
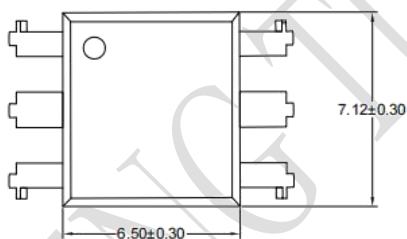


■ Outline Dimension

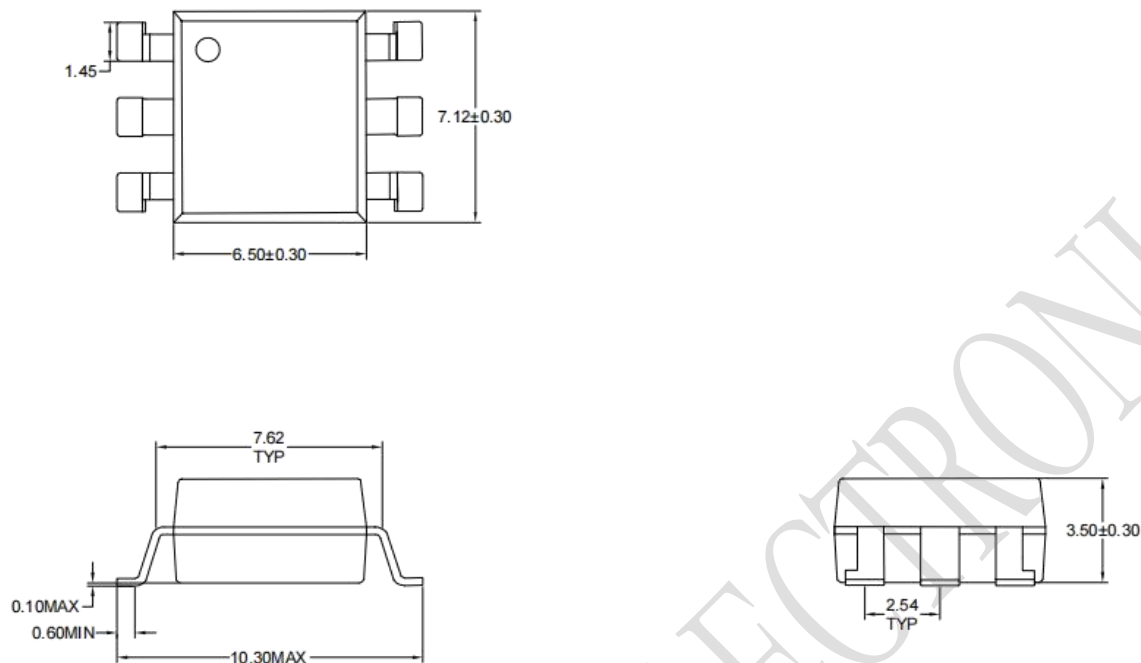
DIP Normal Type:



DIP M Type:



SMD S1 Type:

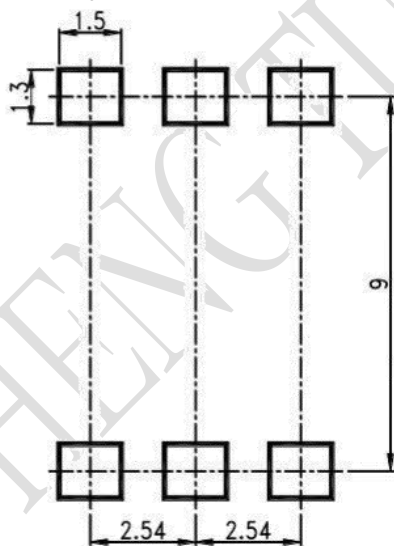


Unit: mm

Tolerance: ± 0.1 mm

■ Recommended solder pad Design

For S1 type:



Unit: mm

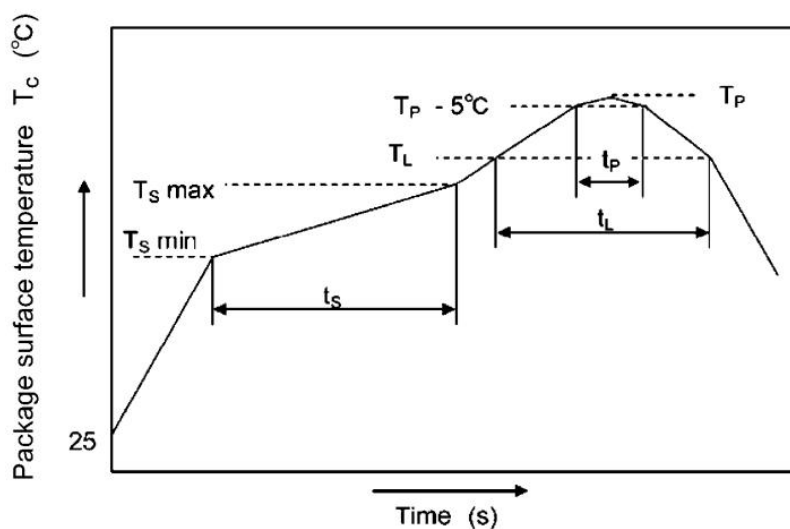
Tolerance: ± 0.1 mm

■ Temperature Profile Of Soldering

1. IR Reflow soldering

(JEDEC-STD-020D compliant)

Profile item	Conditon
Preheat	
-Temperature Min (TSmin)	150°C
-Temperature Max (TSmax)	200°C
-Time (min to max) (ts)	90 ± 30 sec
Soldering zone	
-Temperature (TL)	217°C
-Time (tL)	60-150 sec
Peak Temperature (TP)	260°C
-Time (TP-5°C to TP) (ts)	30 sec
Ramp-up rate	3°C / sec max
Ramp-down rate	3~6°C/ sec



Notes:

One time soldering reflow is recommended within the condition of temperature and time profile shown below. Do not solder more than three times.

2. Wave soldering (JEDEC22A111 compliant)

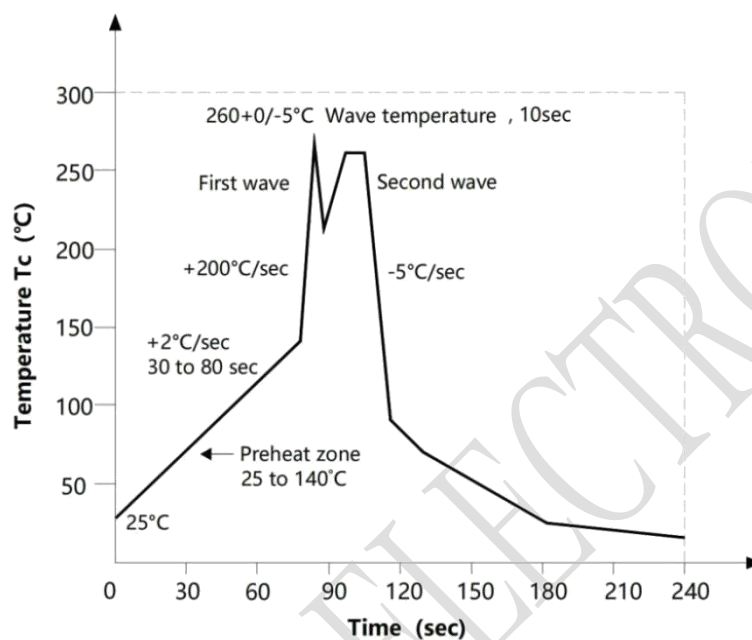
One time soldering is recommended within the condition.

Temperature: $260 \pm 0/-5^\circ\text{C}$.

Time: 10 sec.

Preheat temperature: 25 to 140°C .

Preheat time: 30 to 80 sec.



3. Hand soldering by soldering iron

Allow single lead soldering in every single process. One time soldering is recommended.

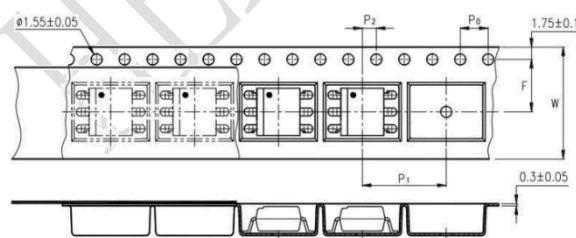
Temperature: $380 \pm 0/-5^\circ\text{C}$

Time: 3 sec max.

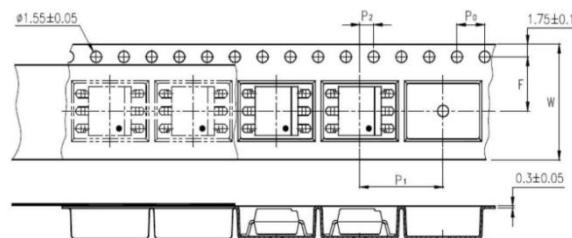
■ Packing

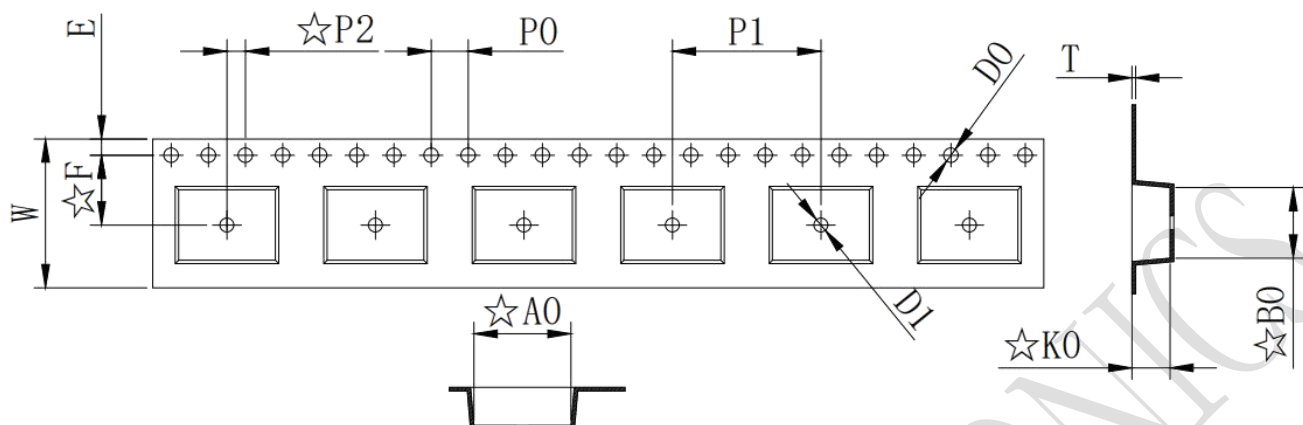
1. Tape and Reel

Option TA1:



Option TA:





Deminsion/mm	W	E	F	P0	P1	P2
Packagetype:S	16 ± 0.2	1.75 ± 0.1	7.5 ± 0.1	4 ± 0.1	16 ± 0.1	2 ± 0.1

Deminsion/mm	A0	B0	D0	D1	K0
Packagetype:S	10.45 ± 0.1	7.6 ± 0.1	1.5 ± 0.1	1.5 ± 0.1	4.1 ± 0.1

1.Reel

Packagetype:S	Reel	Inner carton	Outer carton
QTY/PCS	1K/reel	2K(2 reels)	20K

2.Tape and Tube

Package type:Normal&M	Tube	Outer carton
QTY/PCS	65	3.25K(50 tubes)

■ Attention:

- Hengtuo is continually improving the quality, reliability, function or design and Hengtuo reserves the right to make changes without further notices.
- The products shown in this publication are designed for the general use in electronic applications such as office automation equipment, communications devices, audio/visual equipment, electrical application and instrumentation.
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