

恒拓电子
HENG TUO ELECTRONICS

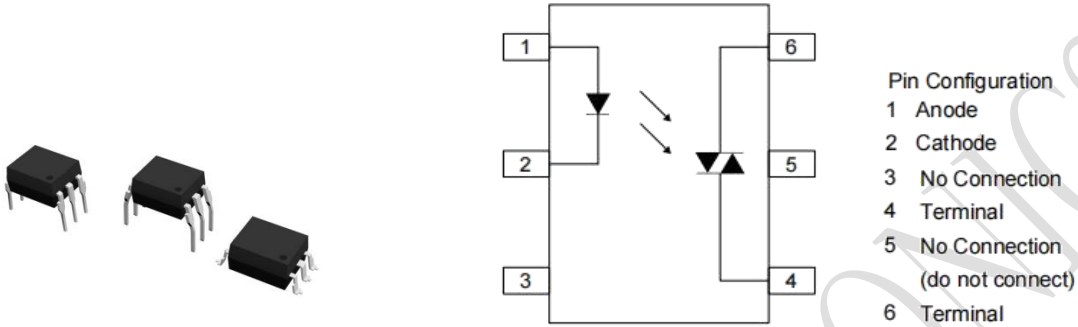


HT series

**Photo Coupler
Product Specification**

HT-302X_305X

■ Package



■ Description

The HT-302X_305X series of devices each consist of a GaAs infrared emitting diode optically coupled to a monolithic silicon non zero voltage crossing photo triac. They are designed for use with a discrete power triac in the interface of logic systems , such as solid-state relays, industrial controls, motors, solenoids and consumer appliances.

■ Features

- 6pin Non-zero-cross optoisolators triac driver
- High input-output isolation voltage($V_{iso} = 5,000V_{rms}$)
- High repetitive peak off-state voltage VDRM.
 - HT-302X: Min. 400V;
 - HT-305X: Min. 600V;
- High critical rate of rise of off-state voltage(dV/dt : MIN. 1000V /s)
- Operating Temperature: $-40^{\circ}C \sim 110^{\circ}C$
- Safety approval
 - UL approved; VDE approved; CQC approved
- RoHS
- MSL1

■ Applications

- Solenoid/valve controls
- Static power switch
- AC motor drivers
- Temperature Control



■ Product Nomenclature

The product name is designated as below:

HT-30XX X - X X X- XX
① ② ③ ④ ⑤

Designation:

HT =Hengtuo Technology Co.,LTD.

30XX= Product Series (302X/305X, X:1/2/3)

① = Lead form option(S1,M,NONE)⁽¹⁾

② = Tape and Reel option(TP,TP1,NONE)⁽²⁾

③ = VDE order option(fixed code "V")

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

⑤ = Customer code

Notes

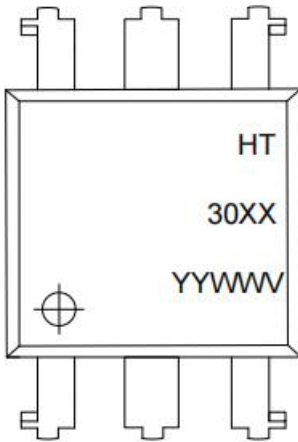
1.Lead form option:

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

2.Tape and Reel option:

Symbol	Description
TP&TP1	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

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	Off-State Output Terminal Voltage	V_{DRM}	HT-302X 400	V
	HT-305X 600			
	Peak Repetitive Surge Current (PW=1ms, 120 pps)	I_{TSM}	1	A
	On-State RMS Current	$I_{T(RMS)}$	100	mA
	Junction Temperature	T_J	125	°C
	Collector Power Dissipation	P_C	150	mW
Operating temperature range		T_{opr}	- 40 ~ 110	° C
Storage temperature range		T_{stg}	- 55 ~ 125	° C
Total Power consumption		P(W)	250	mW
Isolation Voltage ⁽¹⁾		V_{ISO}	5000	Vrms
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 are shorted together, and pins 3, 4 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	1.6	V	$I_F=20mA$
	Reverse Current	V_R	-	-	5	μA	$V_R=6V$
Output	Peak Blocking Current, Either Direction ⁽¹⁾	I_{DRM}	-	-	500	nA	$V_{DRM} = \text{Rated } V_{DRM}$
	Peak On-State Voltage, Either Direction	V_{TM}	-	-	3	V	$I_{TM}=100mA$ Peak
	Critical rate of Rise of Off-State Voltage ⁽²⁾	dv/dt	6	-	-	V/ μs	$V_{in}=240V_{rms}$
Couple	Led Trigger Current, Current Required to Latch Output, Either Direction	HT-3021 HT-3051	-	-	15	mA	Main Terminal Voltage = 3V
		HT-3022 HT-3052	-	-	10		
		HT-3023 HT-3053	-	-	5		
	Holding Current, Either Direction	I_H	-	200	-	μA	

(1) Test voltage must be applied within dv/dt rating.

(2) This is static dv/dt. Commutating dv/dt is a function of the load-driving thyristor(s) only.

Characteristics Curves

Fig.1 Forward current vs.Ambient temperature

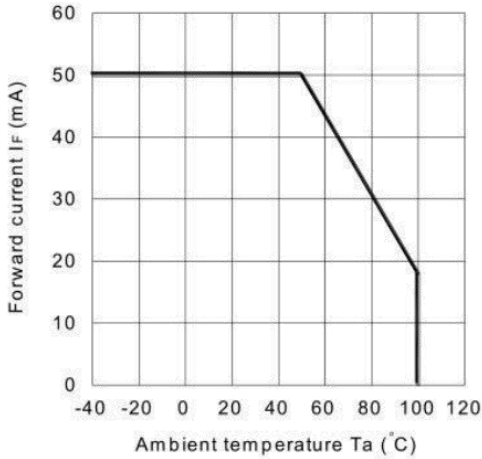


Fig.2 On-state current vs.Ambient temperature

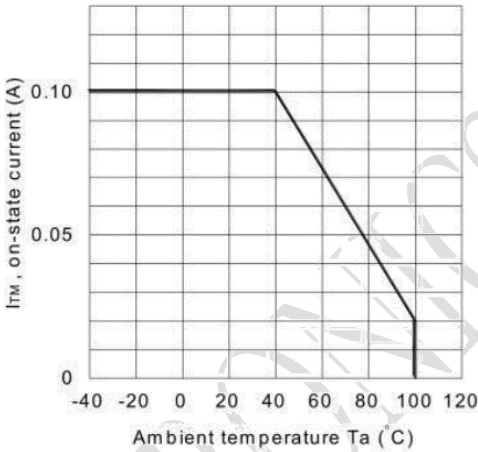


Fig.3 Minimun Trigger Current vs.Ambient temperature

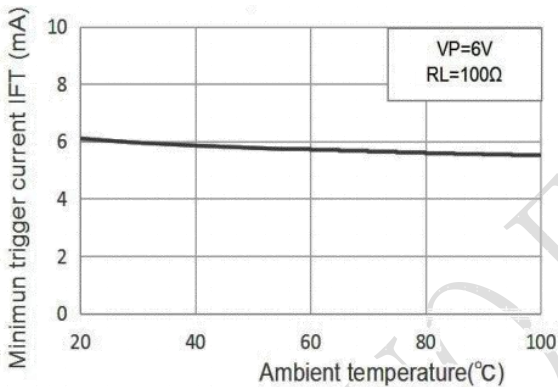


Fig.4 Forward current vs Forward Voltage

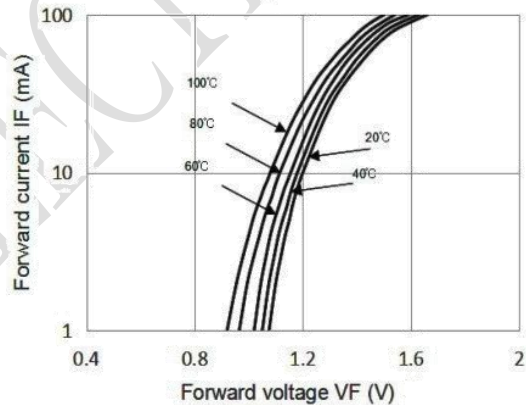


Fig.5 On-state voltage vs. Ambient temperature

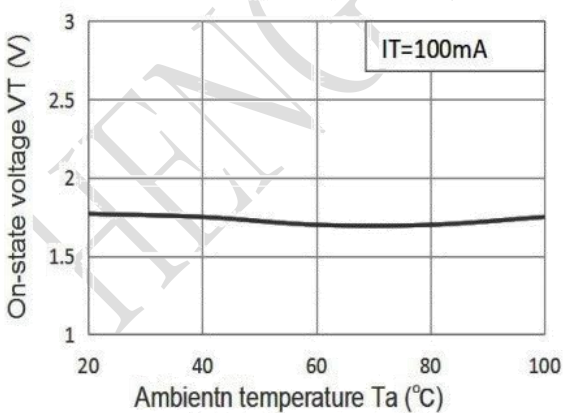


Fig.6 Holding current vs Ambient temperature

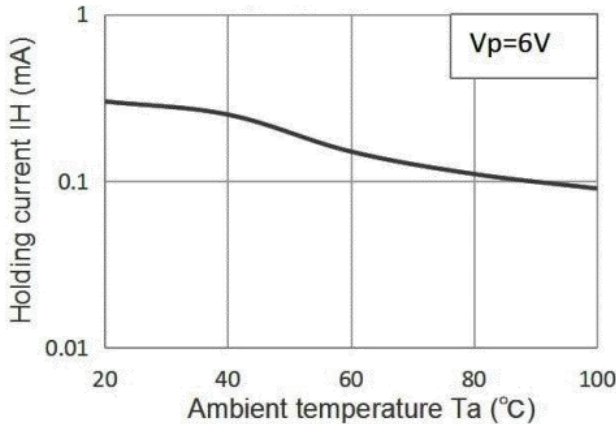


Fig.7 Repetitive peak off-state current vs Temperature

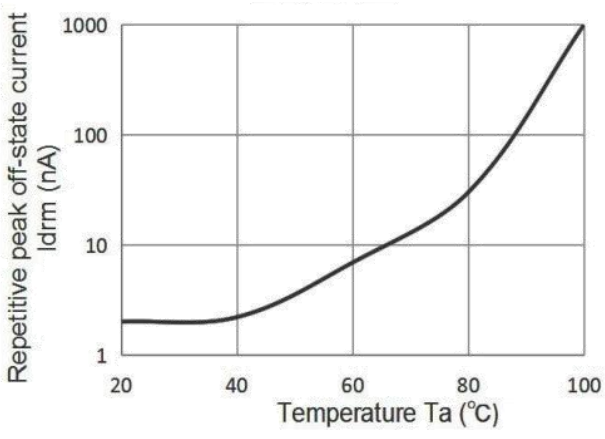


Fig.8 On-state current vs On-state voltage

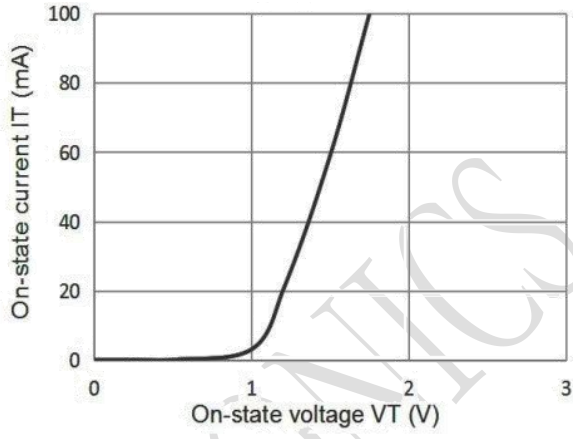
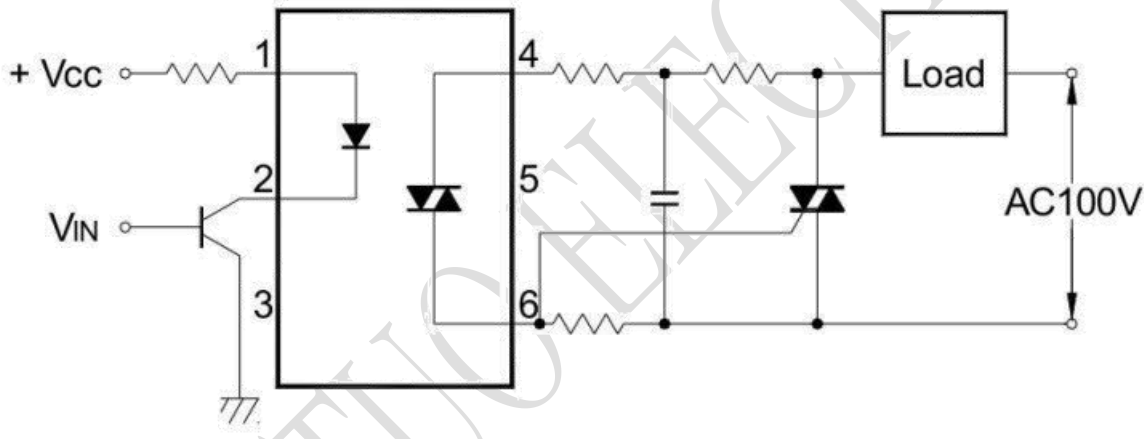
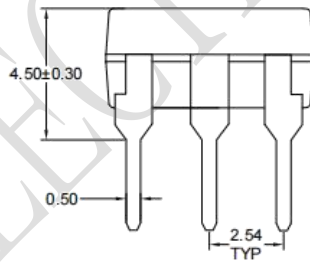
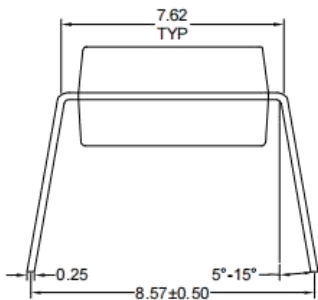
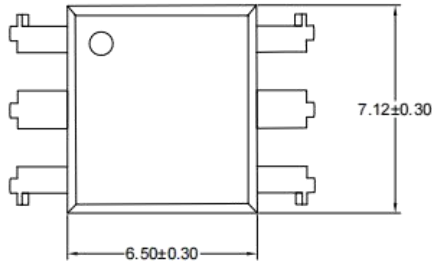


Fig.9 Basic Driver Circuit

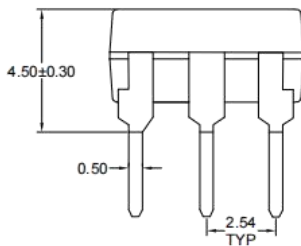
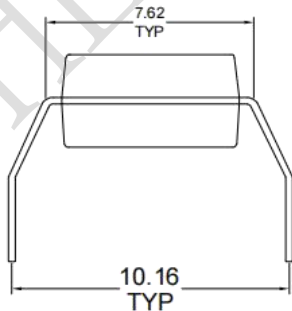
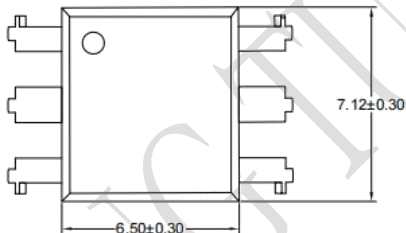


Outline Dimension

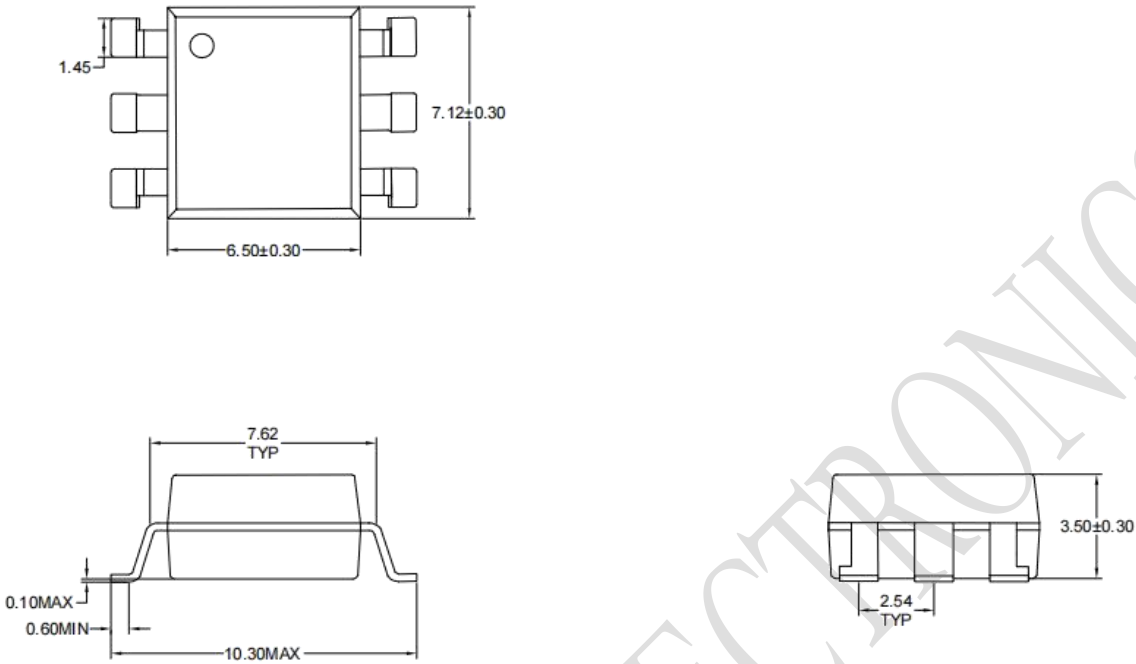
DIP Normal Type:



DIP M Type:

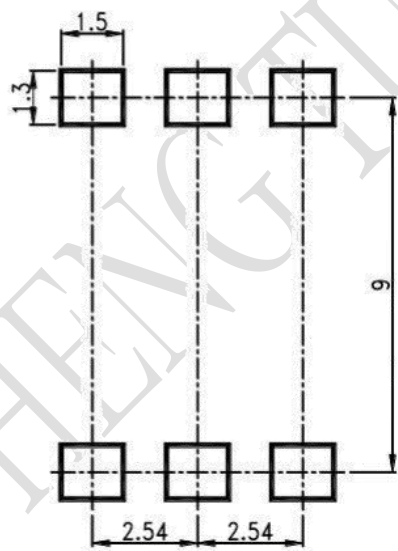


SMD S1 Type:



Unit: mm
Tolerance: ±0.1mm

■ Recommended solder pad Design



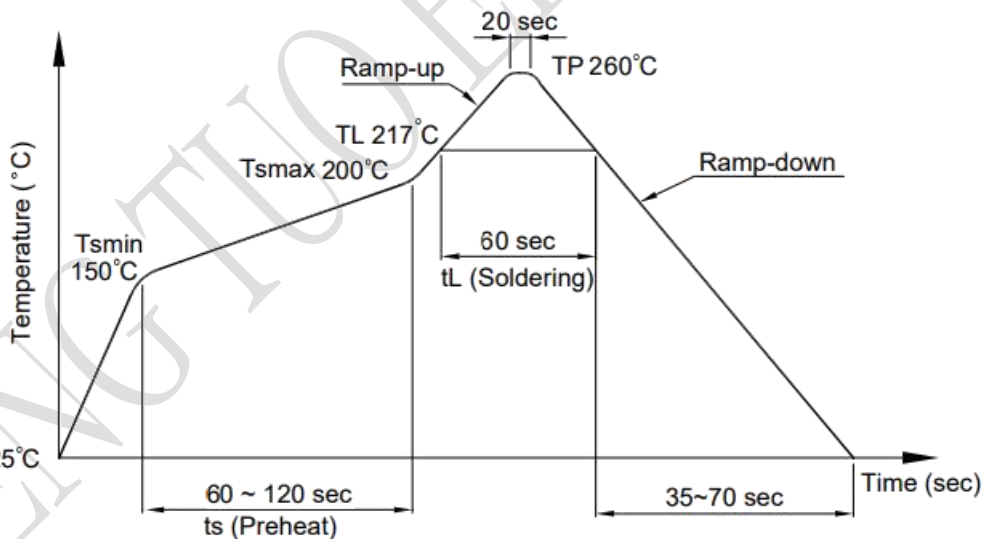
Unit: mm
Tolerance: ±0.1mm



Temperature Profile Of Soldering

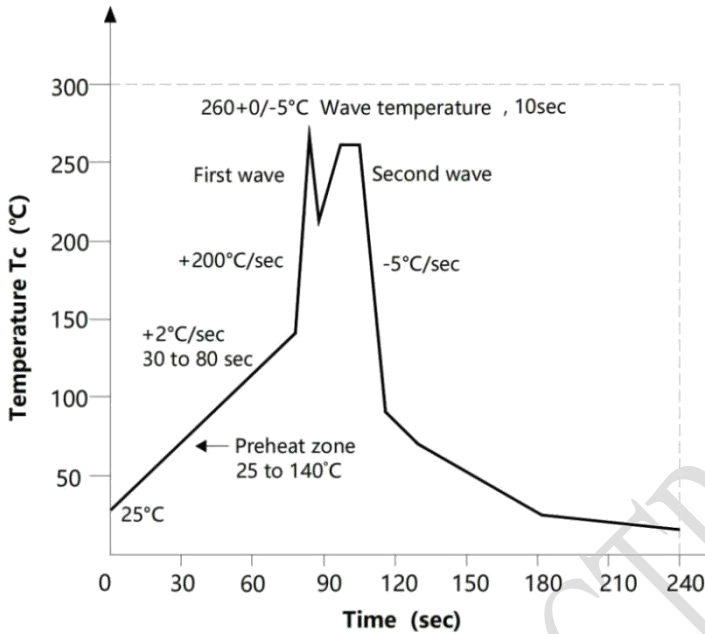
1. IR Reflow soldering (JEDEC-STD-020 compliant)

Profile item	Conditon
Preheat	150°C
-Temperature Min (T _{Smin})	200°C
-Temperature Max (T _{Smax})	90 ± 30 sec
-Time (min to max) (ts)	
Soldering zone	217°C
-Temperature (TL)	60 sec
-Time (tL)	
Peak Temperature (TP)	260°C
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)



3. Hand soldering by soldering iron

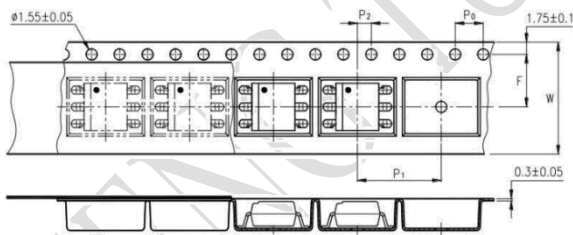
Allow single lead soldering in every single process. One time soldering is recommended.

Temperature: $380 \pm 0.5^\circ\text{C}$

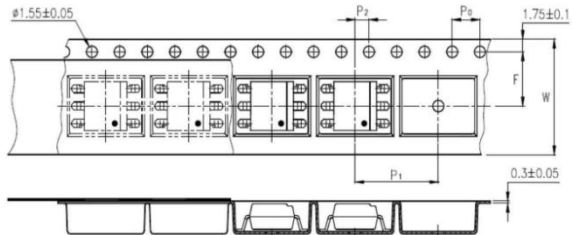
Time: 3 sec max.

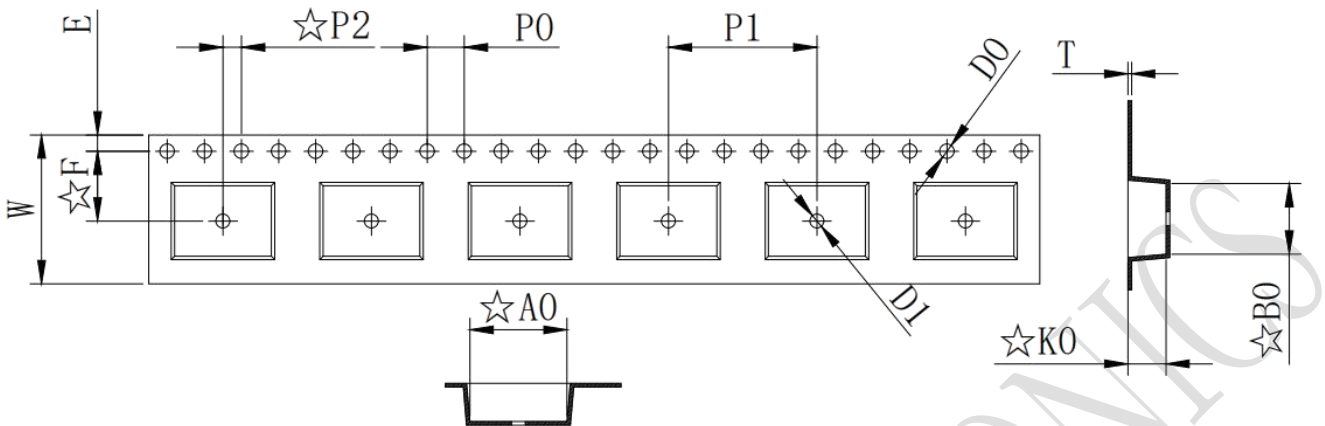
**■ Packing
Tape and Reel**

Option TP:



Option TP1:





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	66	3.3K(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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