恒拓电子
HENGTUO ELECTRONICS

HT series

Photo Coupler
Product Specification

HTM-302X_305X

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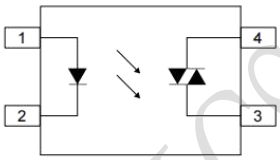
■ Package



Pin Configuration
1 Anode
2 Cathode
3 GND
4 VCC

■ Description

The HTM-302X_305X series devices are optocouplers composed of a GaAs infrared light emitting diode and a single-crystal silicon chip random phase photoelectric bidirectional thyristor.

■ Features

- Peak breakdown voltage
  HTM-302X：Min.400V
  HTM-305X：Min.600V
- 4pin non zero-cross optoisolators triac driver outp
- High input-output isolation voltage(Viso = 3,750Vrms)
- Operating Temperature: -40℃~110℃
- Safety approval
  UL approved
  VDE approved
  CQC approved
- RoHS
- MSL1

■ Applications

- Lighting Control
- AC Motor Starter
- Static power switc
- Temperature Controls

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■ Product Nomenclature

The product name is designated as below:

HT M-30XX -X X X-XX
① ② ③ ④

Designation:

HT =Hengtuo Technology Co.,LTD.
M= Packaging form
30XX=Product series(302X/305X，X:1/2/3)
① = Tape and Reel option(TP,TP1,NONE)
② = VDE order option(fixed code “V”)
③ = Halogen free option(fixed code“G”)
④ = Customer code

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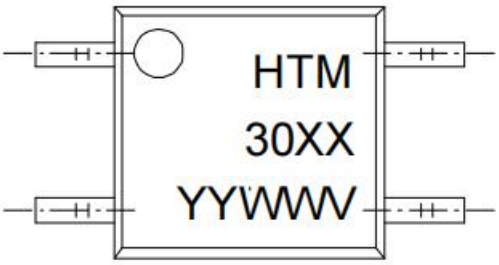
■ Marking Information



Designation:

HT	denotes Hengtuo
M	Packaging form
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	100	MW
	Junction Temperature		T_J	125	℃
Output	Off-State Output Terminal Voltage	HTM-302X	V_{DRM}	400	V
		HTM-305X		600	
	On state RMS current		$I_{T(RMS)}$	100	mA(RMS)
	Peak Repetitive Surge Current (PW=1ms，120 pps）		I_{TSM}	1	A
	Junction Temperature		T_J	125	℃
	Collector Power Dissipation		P_C	300	mW
Operating temperature range			T_{op}	－40 ~ 110	° C
Storage temperature range			T_{stg}	－55 ~ 125	° C
Total Power consumption			$P_{(W)}$	330	mW
Isolation Voltage(1)			V_{ISO}	3750	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

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■ 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=10mA
	Reverse Current		I_R	-	-	5	μA	V_R=6V
Output	Peak Blocking Current, Either Directiot (1)		I_{DRM}	-	-	100	nA	V_{DRM} = Rated VDRM
	Peak On-State Voltage, Either Dire		V_{TM}	-	-	2.5	V	I_{TM}=100mA Peak
	Critical rate of Rise of Off-State Voltage (2)	HTM-302X	dv/dt	-	100	-	V/μs	V_{in}=240Vrms
		HTM-305X		1000	-	-		
Transfer Characteristics	Led Trigger Current,Current Required to Latch Output, Either Direction	HTM-3021 HTM-3051	I_{FT}	-	-	15	mA	Main Terminal Voltage = 3V
		HTM-3022 HTM-3052		-	-	10		
		HTM-3023 HTM-3053		-	-	5		
	Holding Current, Either Direction		I_H	0.5	1.0	5.0	mA	
	Turn-On Time		T_{on}	-	-	100	us	V_D=6V R_L=100Ω I_F=20mA

(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.

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■ Characteristics Curves

Fig.1 Forward current vs.Ambient temperature

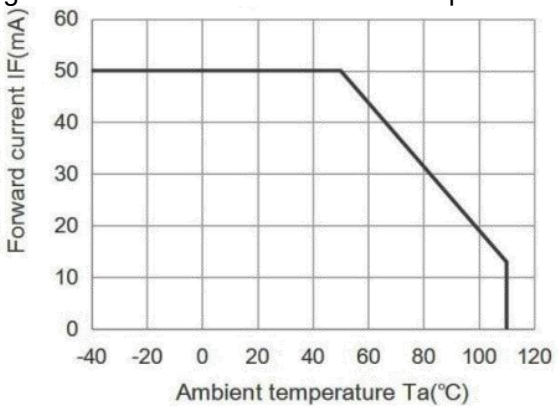


Fig.2 On-state current vs.Ambient temperature

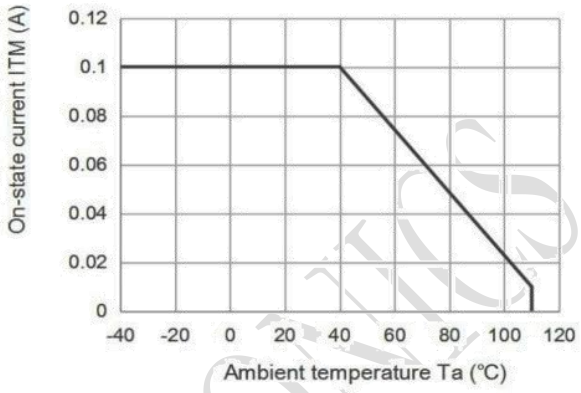


Fig.3 Minimun Trigger Current vs.Ambient temperature

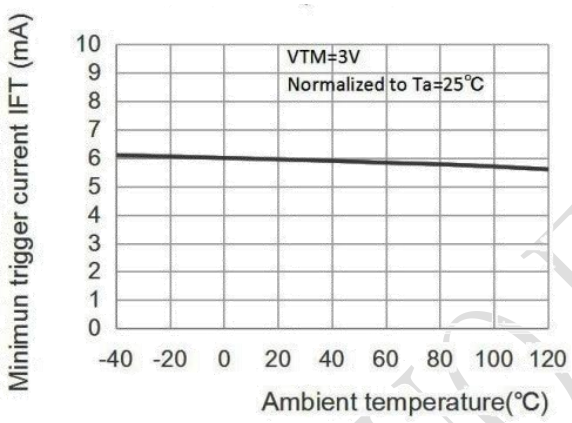


Fig.4 Forward current vs Forward Voltage

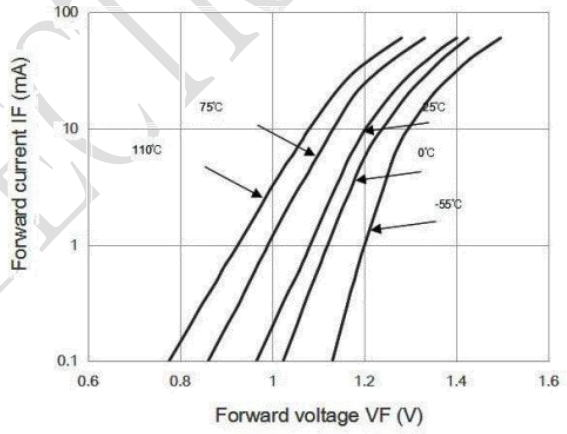


Fig.5 On-state voltage vs . Ambient temperature

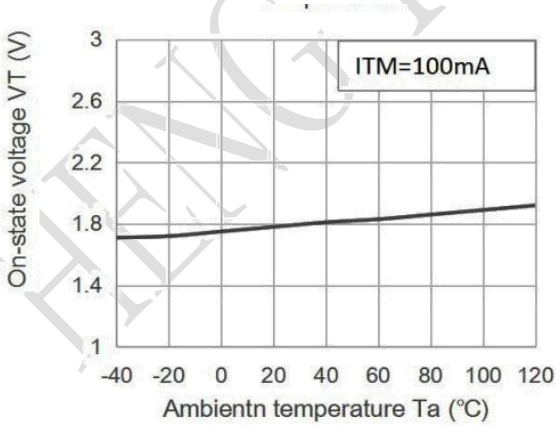


Fig.6 Holding current vs Ambient temperature

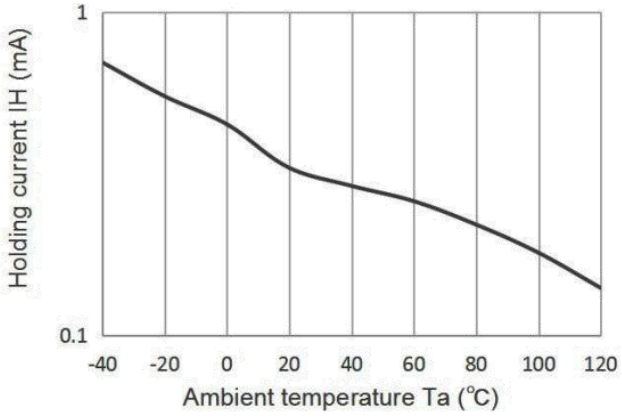


Fig.7 Repetitive peak off-state current vs Temperature

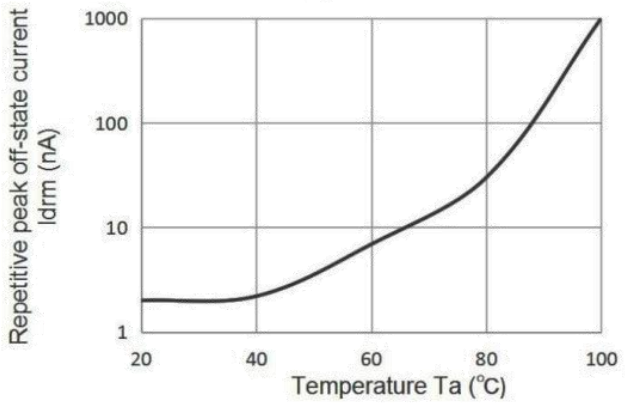


Fig.8 On-state current vs On-state voltage

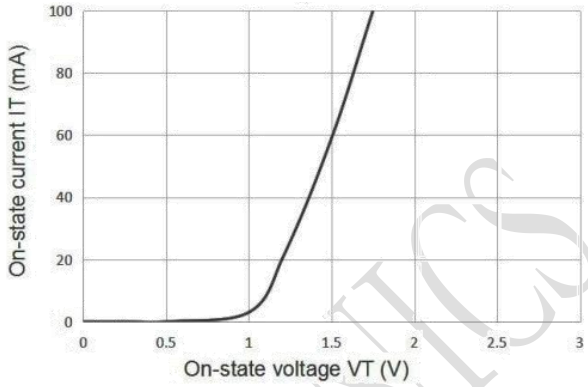


Fig.9 Basic Operation Circuit Medium/High Power Triac Drive Circuit

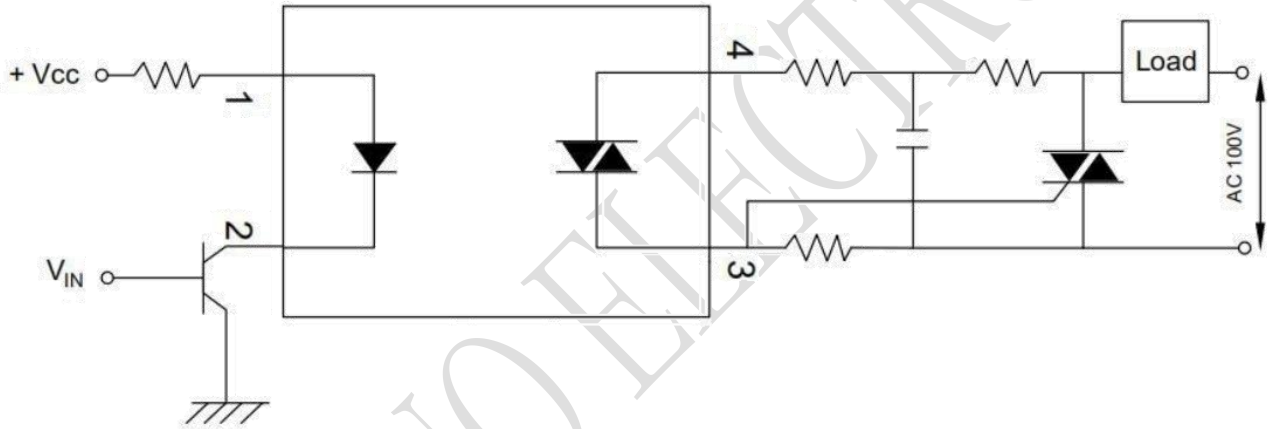
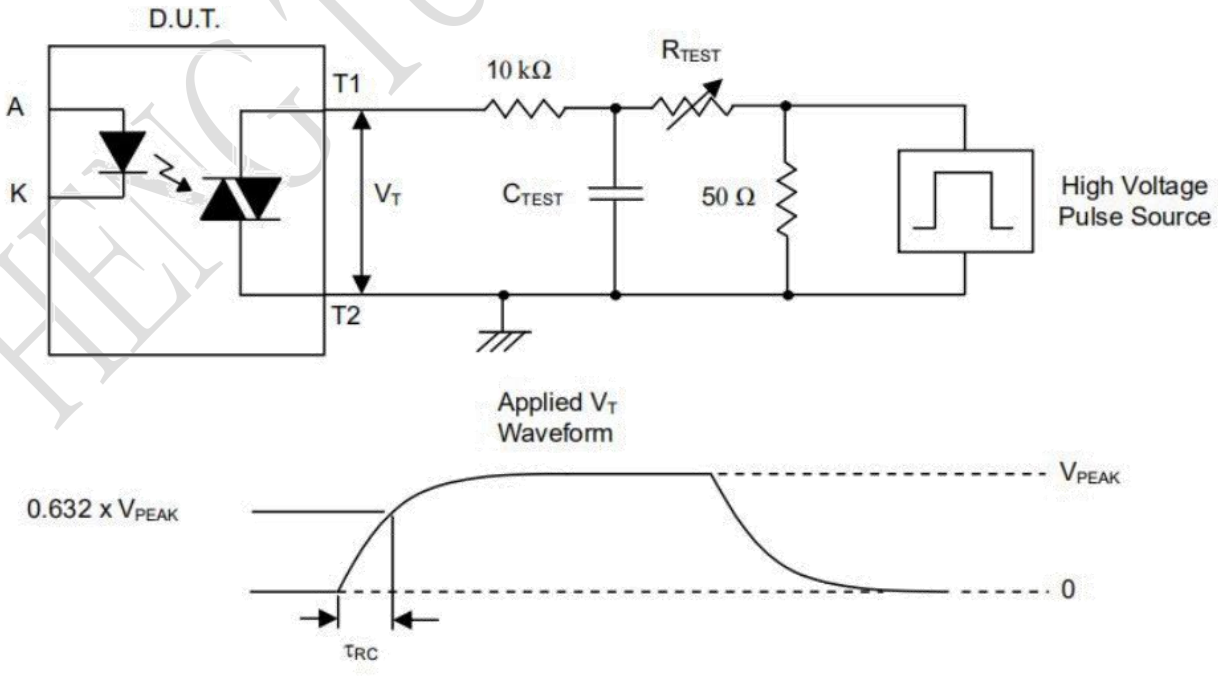


Fig10.Static dv/dt Test Circuit & Waveform



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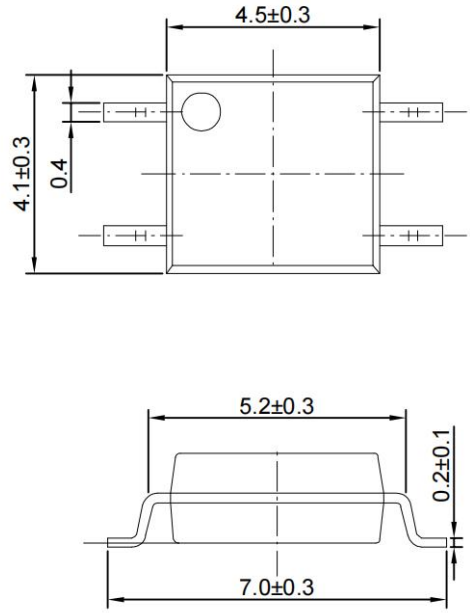
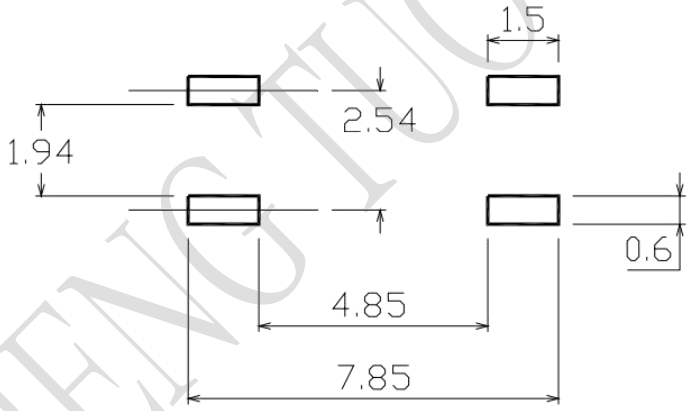
■ Outline Dimension



Unit: mm
Tolerance: ±0.1mm

■ Recommended solder pad Design



Unit: mm
Tolerance: ±0.1mm

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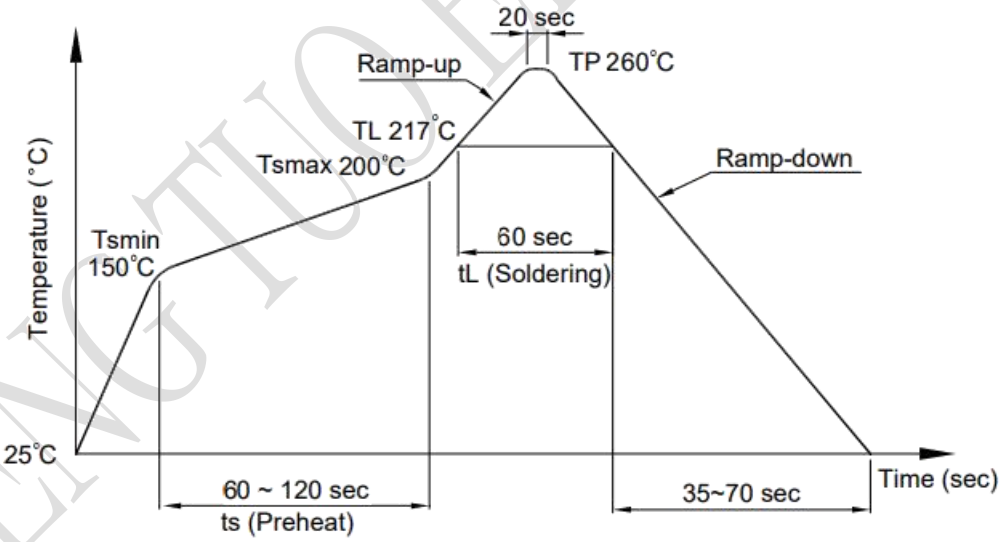
■ Temperature Profile Of Soldering

1. IR Reflow soldering

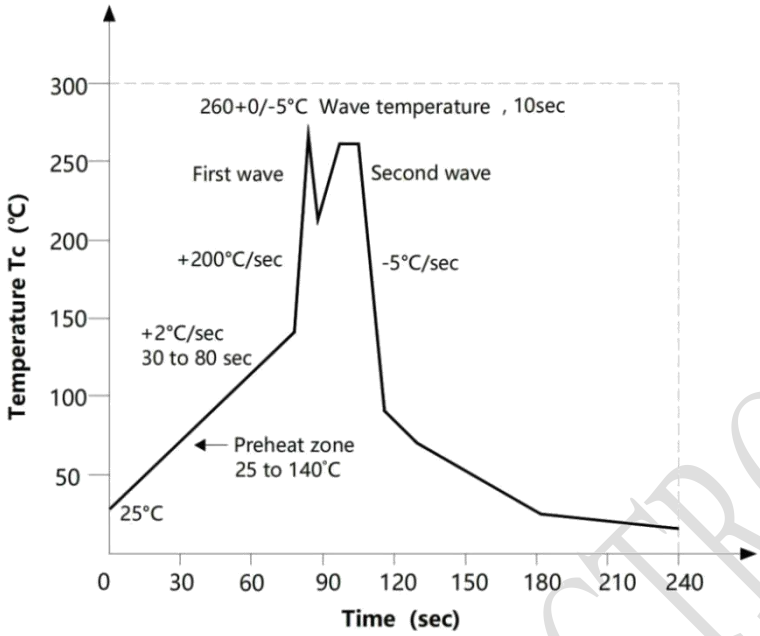
(JEDEC-STD-020 compliant)

Profile item	Conditon
Preheat -Temperature Min (TSmin) -Temperature Max (TSmax) -Time (min to max) (ts)	 150°C 200°C 90±30 sec
Soldering zone -Temperature (TL) -Time (tL)	 217°C 60 sec
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)



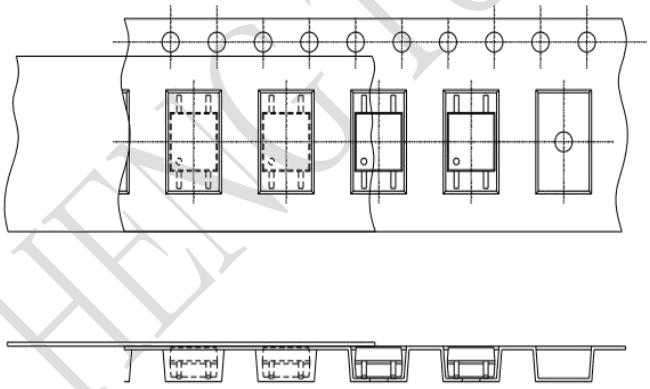
3. Hand soldering by soldering iron

Allow single lead soldering in every single process. One time soldering is recommended.
Temperature: 380+0/-5˚C
Time: 3 sec max.

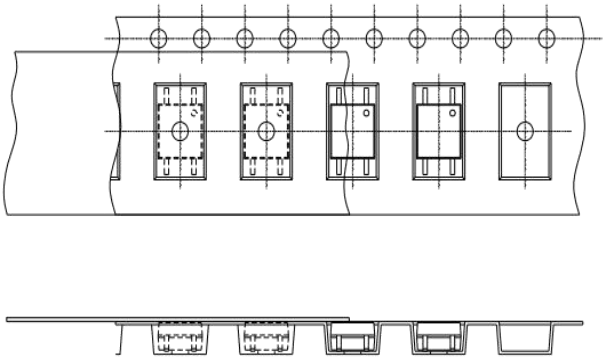
■ Packing

Tape and Reel

Option TP:



Option TP1:



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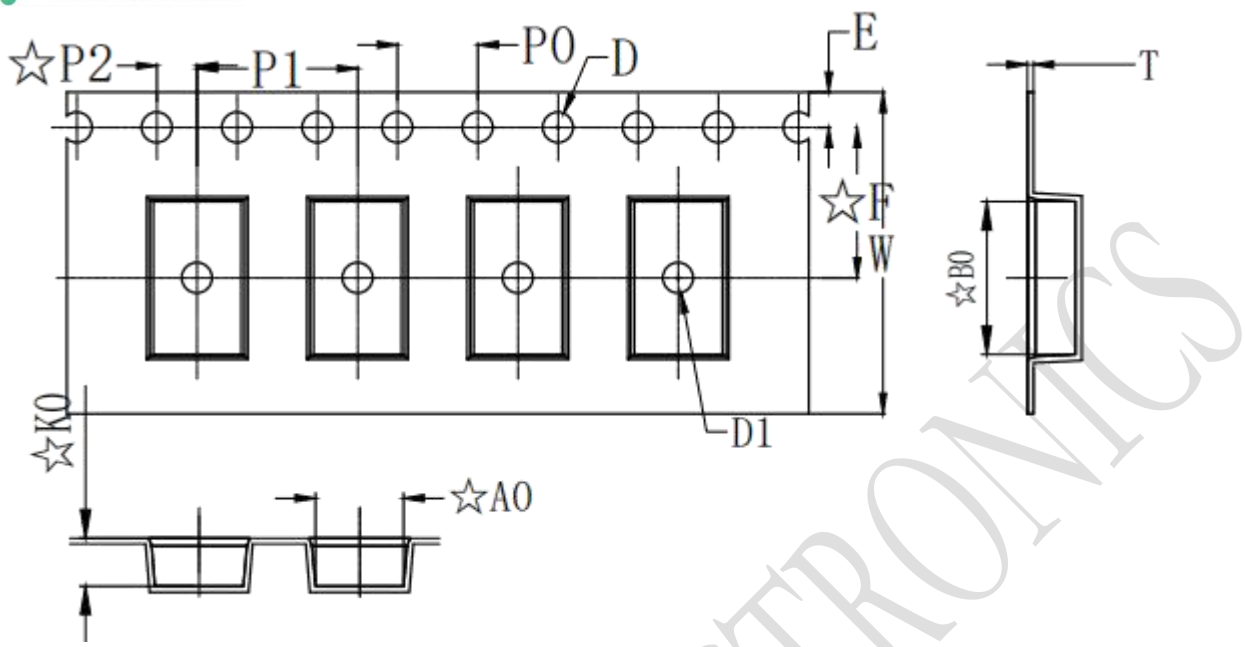

Deminsion/mm	W	E	F	P0	P1	P2
Packagetype:S	16±0.2	1.75±0.1	7.5±0.1	4±0.1	8±0.1	2±0.1

Deminsion/mm	A0	B0	D0	D1	K0
Packagetype:S	4.4±0.1	7.6±0.1	1.5±0.1	1.5±0.1	2.4±0.1

Packagetype:S	Reel	Inner carton	Outer carton
QTY/PCS	3K/reel	6K(2 reels)	60K

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■ 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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- When requiring a device for any ”specific” application, please contact our sales in advice.
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