恒拓电子
HENGTUO ELECTRONICS

HT series

Photo Coupler
Product Specification

HTM-304X_306X_308X

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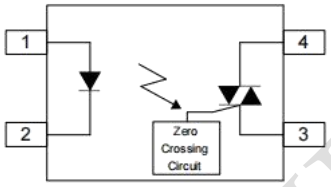
■ Package



Pin Configuration
1 Anode
2 Cathode
3 Terminal
4 Terminal

■ Description

The HTM-304X_306X_308X series devices are optocouplers composed of a GaAs infrared light emitting diode and a single-crystal silicon chip Zero-cross photoelectric bidirectional thyristor.

■ Features

- Peak breakdown voltage
  HTM-304X：Min.400V
  HTM-306X：Min.600V
  HTM-308X：Min.800V
- 4pin 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(304X/306X/308X，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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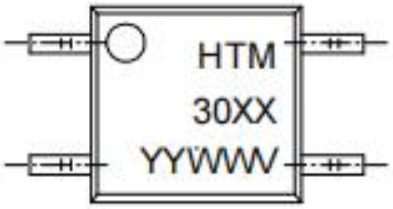
■ Marking Information



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	120	MW
	Junction Temperature		T_J	100	℃
Output	Off-State Output Terminal Voltage	HTM-304X	V_{DRM}	400	V
		HTM-306X		600	
		HTM-308X		800	
	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}	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

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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}	-	10	100	nA	V_{DRM} = Rated V_{DRM}
	Inhibit Voltage (MT1-MT2 voltage above which device will not trigger)		V_{INH}	-	-	20	-	I_F= Rated I_F
	Peak On-State Voltage, Either Dire		V_{TM}	-	-	3	V	I_{TM}=100mA Peak
	Critical rate of Rise of Off-State Voltage (2)		dv/dt	1000	-	-	V/μs	V_{in}=240Vrms
Transfer Characteristics	Led Trigger Current,Current Required to Latch Output, Either Direction	HTM-3041 HTM-3061 HTM-3081	I_{FT}	-	-	15	mA	Main Terminal Voltage = 3V
		HTM-3041 HTM-3062 HTM-3082		-	-	10		
		HTM-3041 HTM-3063 HTM-3083		-	-	5		
	Holding Current, Either Direction		I_H	-	280	-	uA	
ZERO CROSSING	Leakage in Inhibited State		I_{DRM2}	-	-	500	uA	I_F = Rated I_{FT} , Rated V_{DRM} , Off State

(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

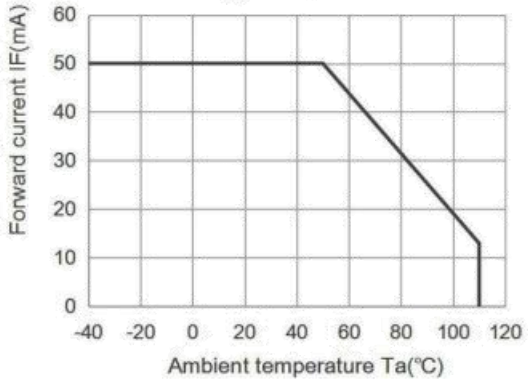


Fig.2 On-state current vs Ambient temperature

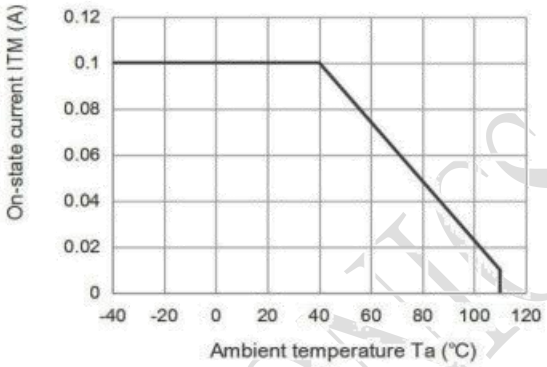


Fig.3 Minimun Trigger Current vs.Ambient temperature

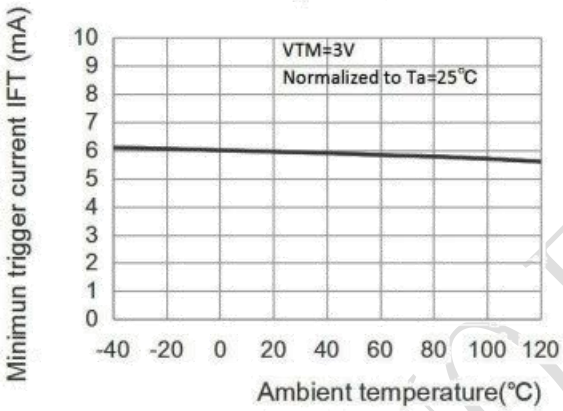


Fig.4 Forward current vs Forward Voltage

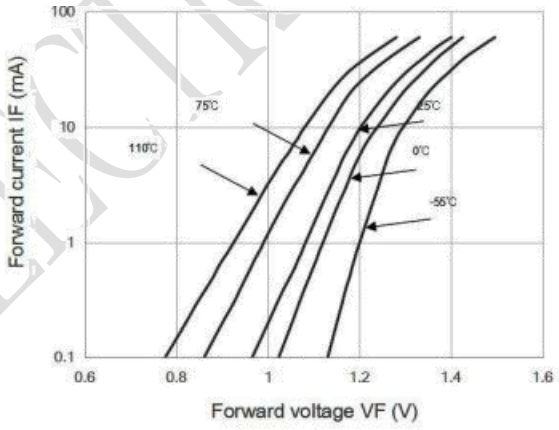


Fig.5 On-state voltage vs Ambient temperature

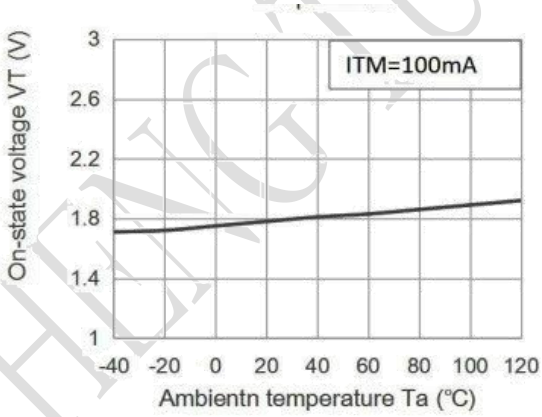


Fig.6 Holding current vs Ambient temperature

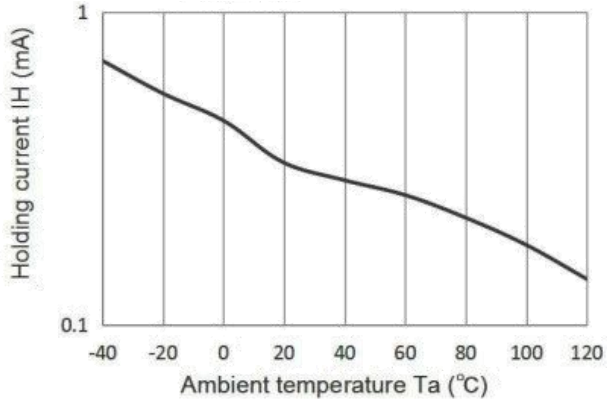


Fig.7 Repetitive peak off-state current vs Temperature

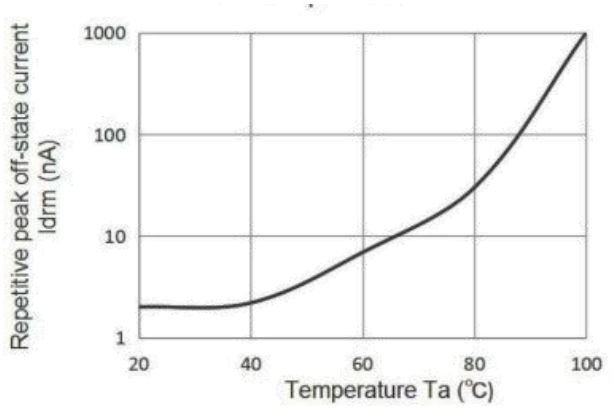


Fig.8 On-state current vs On-state voltage

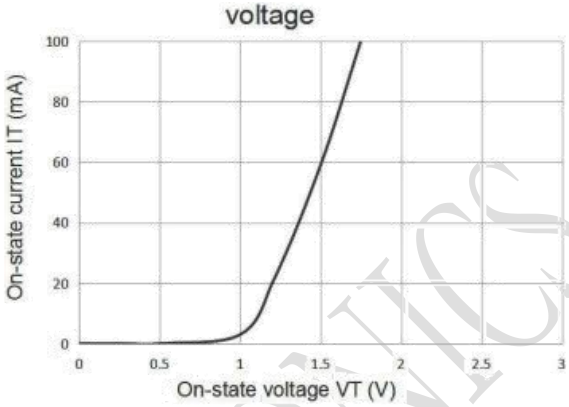


Fig.9 Basic Operation Circuit Medium/High Power Triac Drive Circuit

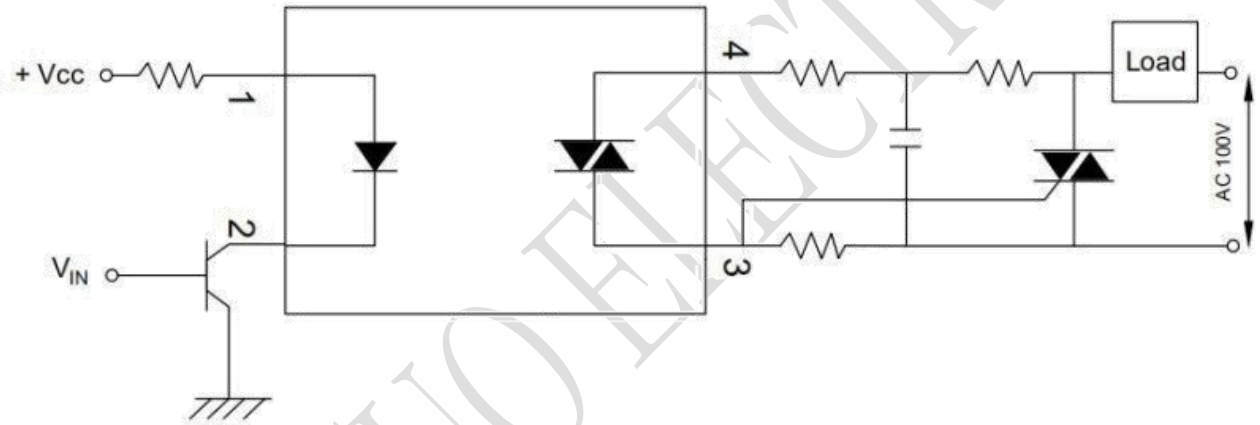
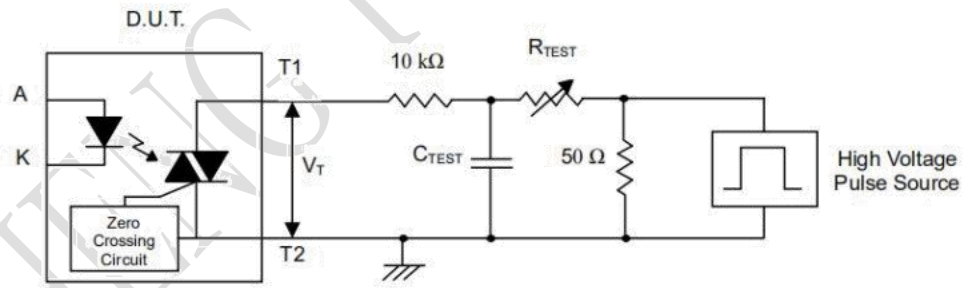
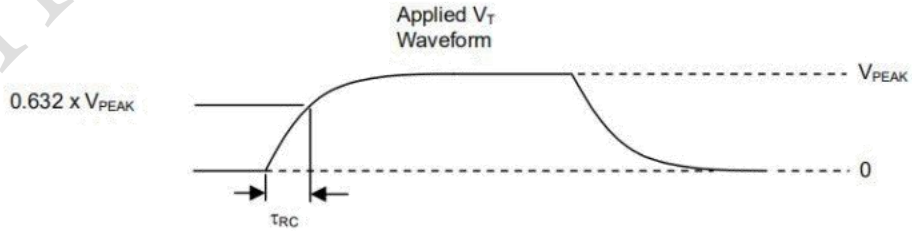


Fig10.Static dv/dt Test Circuit & Wave form





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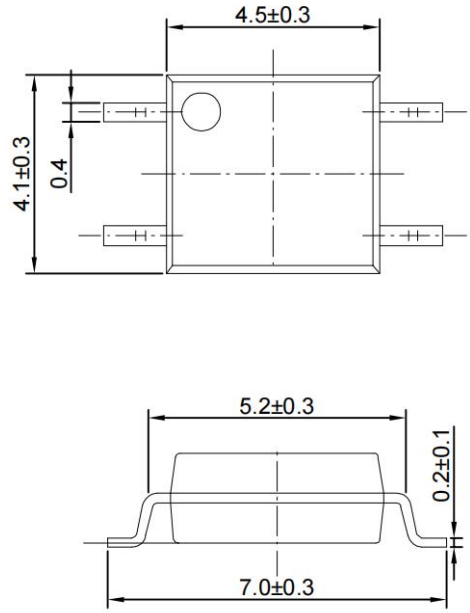
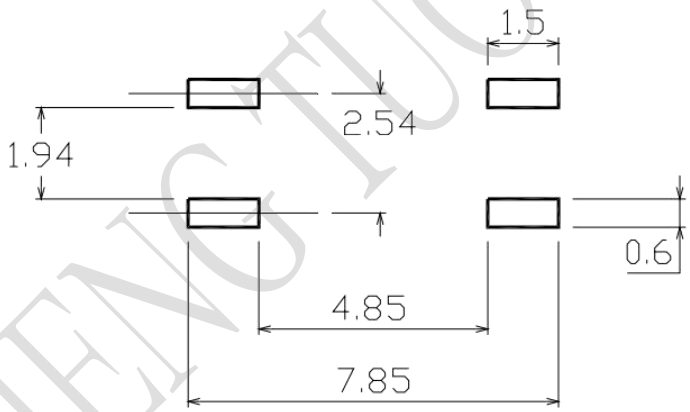
■ Outline Dimension



Unit: mm
Tolerance: ±0.1mm

■ Recommended solder pad Design



Unit: mm
Tolerance: ±0.1mm

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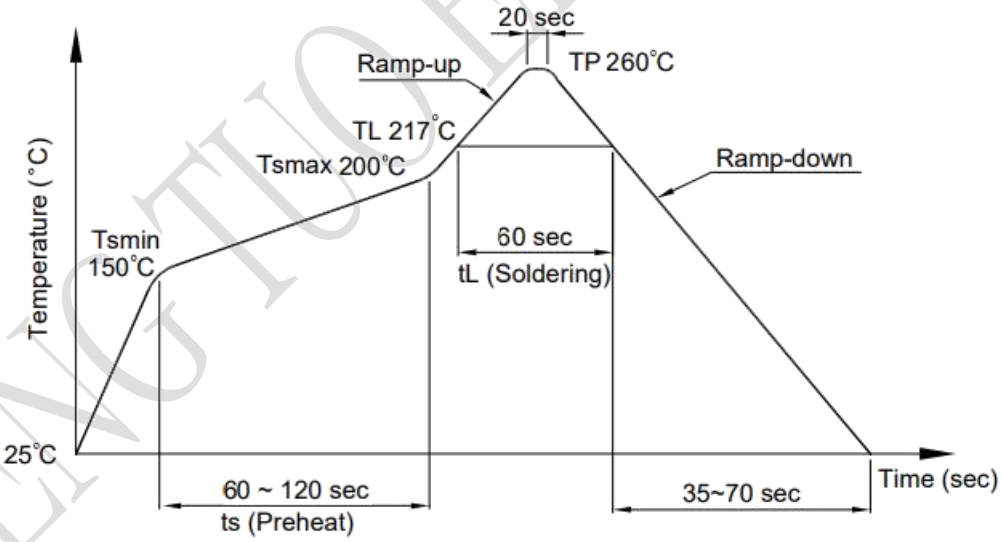
■ Temperature Profile Of Soldering

1. IR Reflow soldering

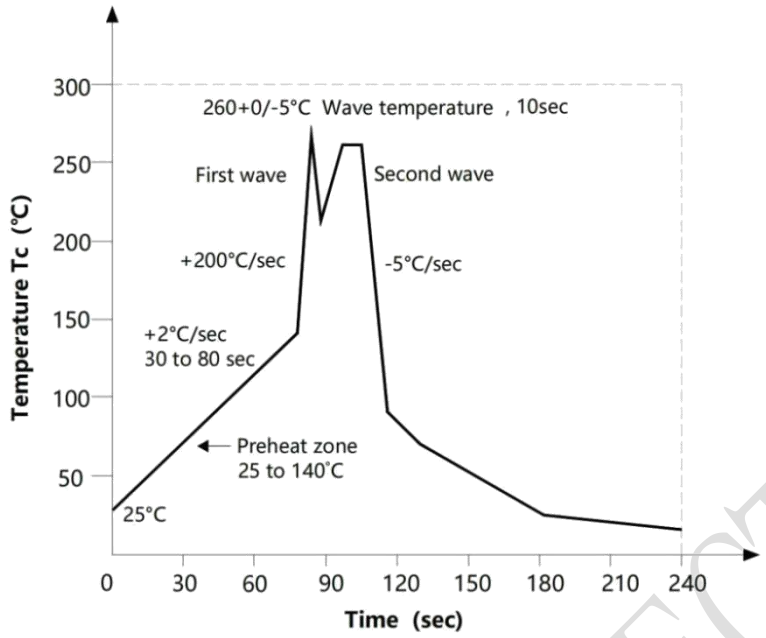
(JEDEC-STD-020 compliant)

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)



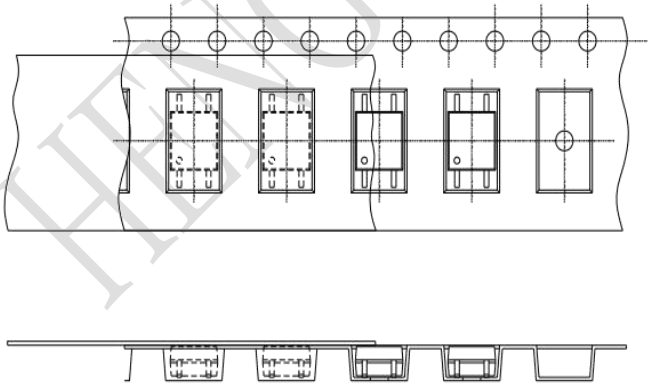
3. Hand soldering by soldering iron

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

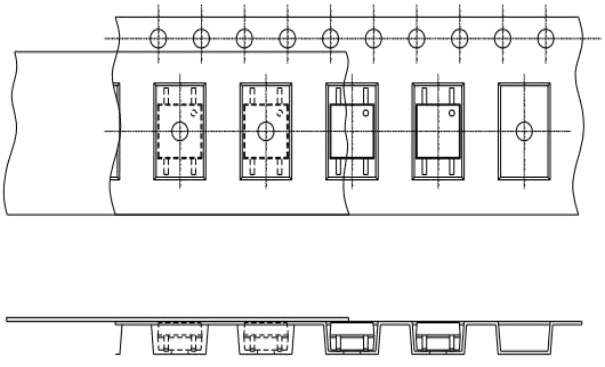
■ Packing

Tape and Reel

Option TP:



Option TP1:



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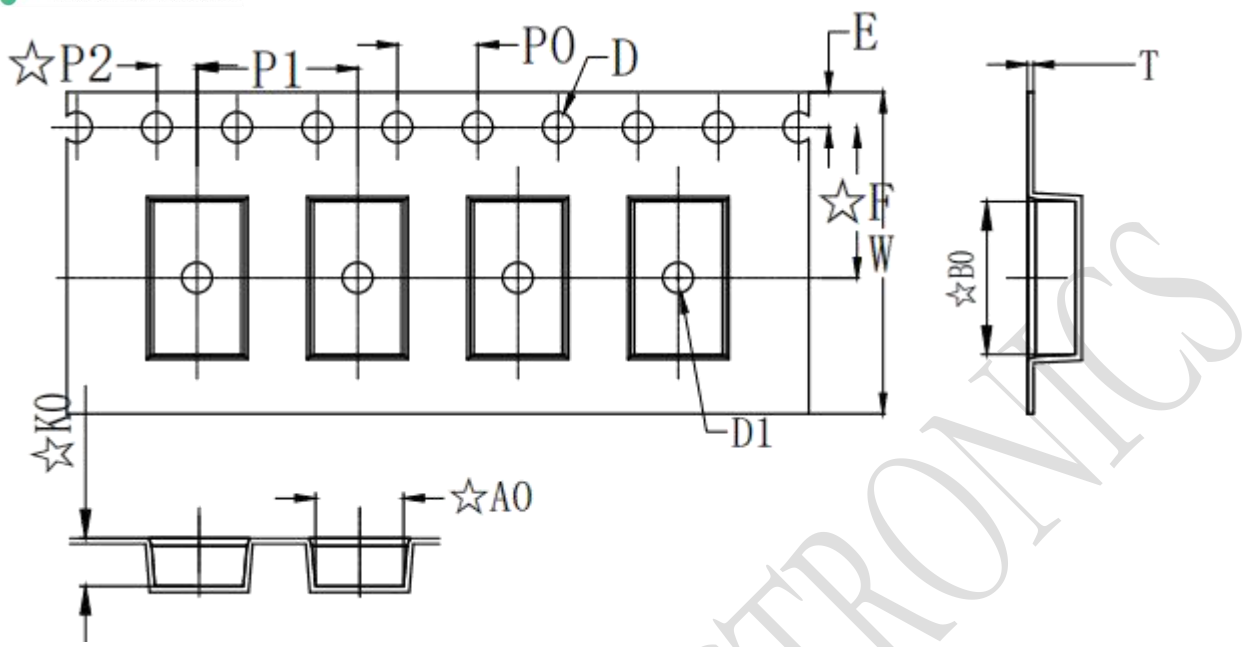

Deminsion/mm	W	E	F	P0	P1	P2
Packagetype:S	16±0.2	1.75±0.1	7.5±0.1	4±0.1	8±0.1	2±0.1

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	1K/reel	2K(2 reels)	20K

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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.
- For equipment/devices where high reliability or safety is required, such as space applications, nuclear power control equipment, medical equipment, etc, please contact our sales representatives.
- When requiring a device for any ”specific” application, please contact our sales in advice.
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