

恒拓电子
HENG TUO ELECTRONICS

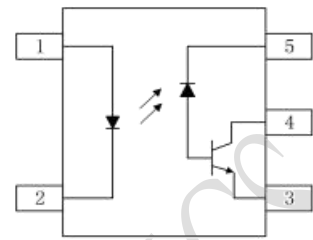


HT series

**Photo Coupler
Product Specification**

HTM-6XX

■ Package



Pin Configuration

- 1. Anode
- 2. Cathode
- 3. GND
- 4. VO
- 5. VCC

■ Description

The optocoupler HTM-6XX consist of a 850 nm AlGaAS LED, optically coupled to a very high speed integrated photo-detector logic gate with a strobable output. The devices are packaged in a 5-pin small outline package which conforms to the standard footprint.

■ Features

- High input-output isolation voltage($V_{iso} = 3,750V_{rms}$)
- High speed 10Mbit/s
- Operating Temperature: $-40^{\circ}C \sim 85^{\circ}C$
- Meet reinforced insulation standard
- Safety approval
 - UL approved
 - VDE approved
 - CQC approved

■ Applications

- Output interface to CMOS-LSTTL-TTL
- Ground loop elimination
- Computer peripheral interface
- Replacement for low speed phototransistor photocoupler

■ Product Nomenclature

The product name is designated as below:

HTM-6XX -X X- X X- XX

① ② ③ ④ ⑤

Designation:

HT =Hengtuo Technology Co.,LTD.

M= Packaging form

6XX=Product series(601/611...)

① = Lead form, NONE:SMD₍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

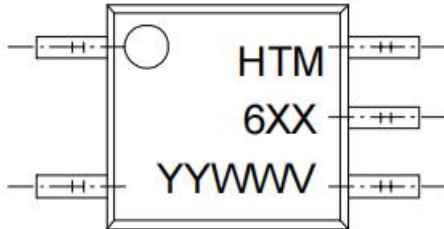
1. Lead form option:

Symbol	Description
NONE	SOP4

2. Tape and Reel option:

Symbol	Description
TP&TP1	Tape and Reel Type

■ Marking Information



Designation:

HT denotes Hengtuo
M Packaging form
6XX denotes Device
YY denotes year code
WW denotes week code
V denotes VDE

■ Maximum

Parameter		Symbol	Values	Unit
Input	Forward Current	IF	50	mA
	Reverse Input	VR	5	V
	Power Dissipation	PD	100	mW
Output	Supply Voltage	VCC	7	V
	Output Current	IO	50	mA
	Output Voltage	VO	7	V
	Collector Power Dissipation	PC	85	mW
Operating temperature range		Top	- 40 ~ 85	° C
Storage temperature range		Tstg	- 55 ~ 125	° C
Soldering Temperature		TSOL	260	° C

Recommended Operating Conditions

Parameter	Symbol	Min	Max	Unit
Supply Voltages	VCC	4.5	5.5	V
Input Current , High level	IFH	5	10	mA
Input Current	IFL	0	250	uA
Operating Temperature	TA	-40	+ 85	°C

■ Electronic Optical Characteristics

(TA = 25°C)

Parameter		Symbol	Min.	Typ.	Max.	Unit	Conditon
Input	Forward Voltage	VF	-	1.45	1.7	V	IF=16mA
	Reverse Breakdown Voltage	BVR	5	20	-	V	IR=10μA
	Diode Temperature Coefficient	ΔVF/ΔTA	-	-1.6	-	mV/°C	IF=10mA
	Capacitance	CIN	-	70	-	pF	V=0,f=1MHz
Output	High Level Supply Current	ICCH	-	6.0	9	mA	VCC=5.5V ,IF=0mA
	Low Level Supply Current	ICCL	-	7.5	10	mA	VCC=5.5V ,IF=0mA
Transfer Characteristics	HIGH Level Output	IOH	-	2.1	30	uA	VCC=5.5V VO=5.5V IF=250 μ A
	LOW Level Output	VOL	-	0.4	0.6	V	VCC=5.5V IF=5mA ICL=13mA
	Input Threshold Curre	ITH	-	2.4	5	V	VCC=5.5V VO=0.6V IOL=13mA
Isolation Voltag		VISO	3750	-	-	VRMS	RH<50% TA=25°C II-O ≤50μA
Resistance (Input)		RI-O	-	1012	-	Ω	VI-O=500V
Capacitance (Input to Output)		CI-O	-	0.6	-	pF	f=1MHz

Switching Specification(Ta=25°C,IF=7.5mA,VCC=5.0V)

Parameter		Symbol	Min.	Typ.	Max.	Unit	Conditon
Propagation Delay Time to Output HIGH Level		TPLH	-	41	100	ns	CL=15pF RL=350Ω TA=25° C
Propagation Delay Time to Output Low Leve		TPHL	-	50	100	ns	
Pulse Width Distort		TPHL - TPLH	-	9	35	ns	
Output Rise Time (10 to 90		tr	-	40	-	ns	
Output Fall Time (90 to 10		tf	-	10	-	ns	
Propagation Delay Skew		tpsk	-	-	40	ns	
Common Mode Transient Immunity at High Output Level	M601	CMH	5000	-	-	V/us	TA=25° C,IF=0mA VCM =50V(Peak) VOH=2.0V,RL=350Ω
	M611		20000	-	-		TA=25° C,IF=0mA VCM =1000V(Peak) VOH=2.0V,RL=350Ω
Common Mode Transient Immunity at Low Output Level	M601	CML	5000	-	-	V/us	IF=7.5mA,VOL=0.8V RL=350Ω ,TA=25°C VCM =50V(Peak)
	M611		20000	-	-		IF=7.5mA,VOL=0.8V RL=350Ω ,TA=25°C VCM =1000V(Peak)

■ Characteristics Curves

Fig.1 Low-level voltage vs. Ambient Temperature

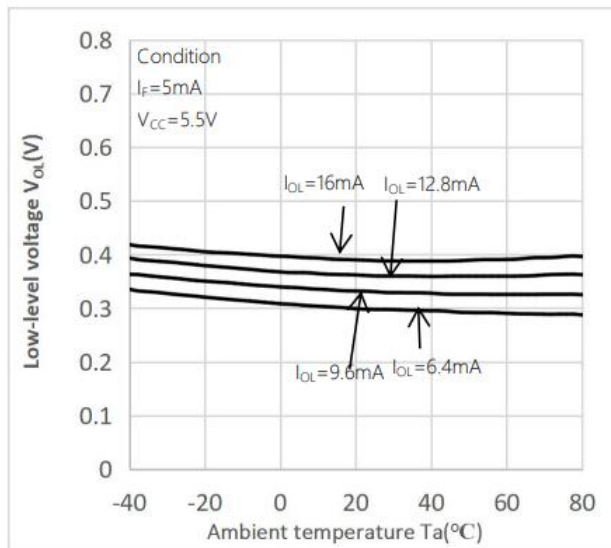


Fig.2 Forward current voltage vs. Forward voltage

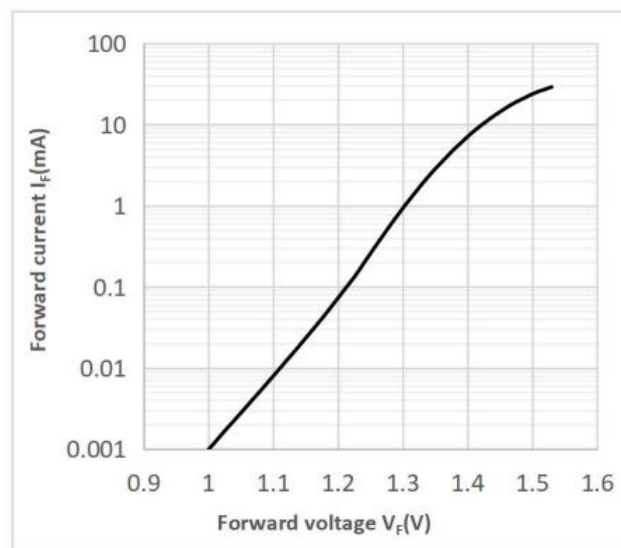


Fig.3 Switch time vs. Forward current

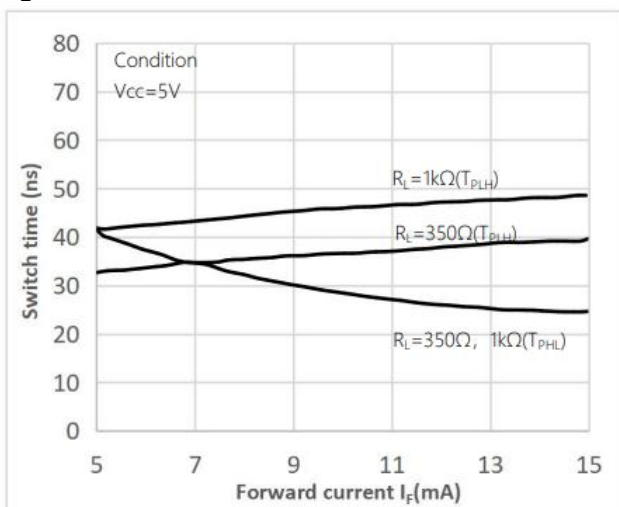


Fig.4 Low-level output current vs. Ambient

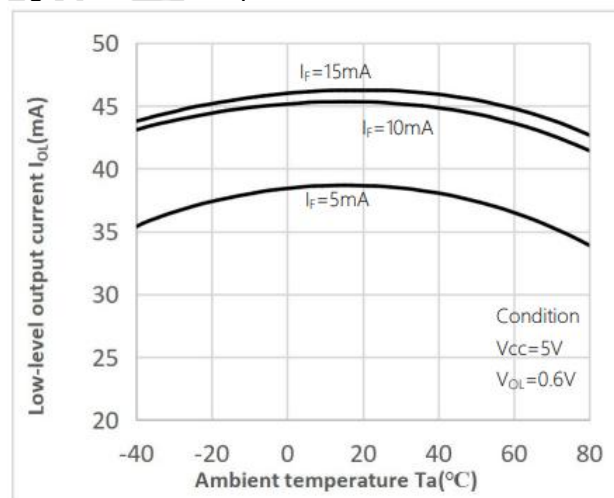


Fig.5 Starting current vs. Ambient

Fig.6 Output voltage vs. Input Forward current

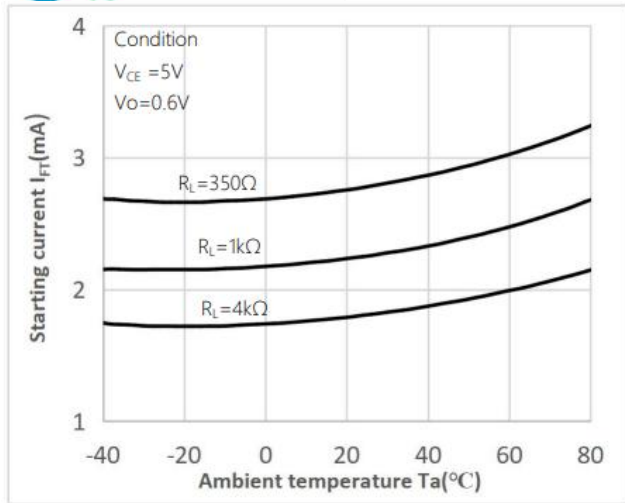


Fig.7 Pulse-width distortion vs. Ambient Temperature

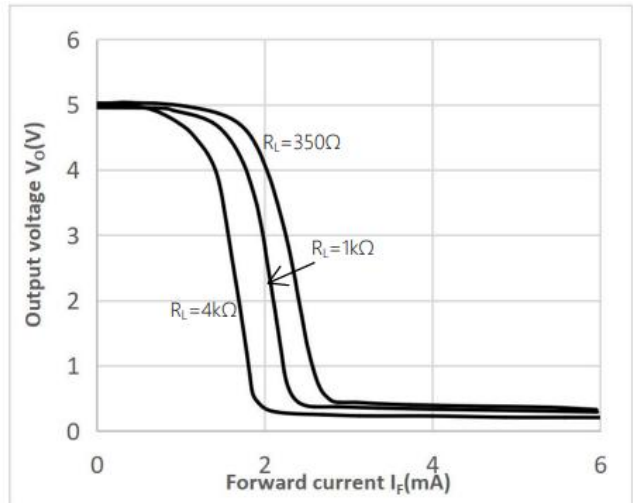
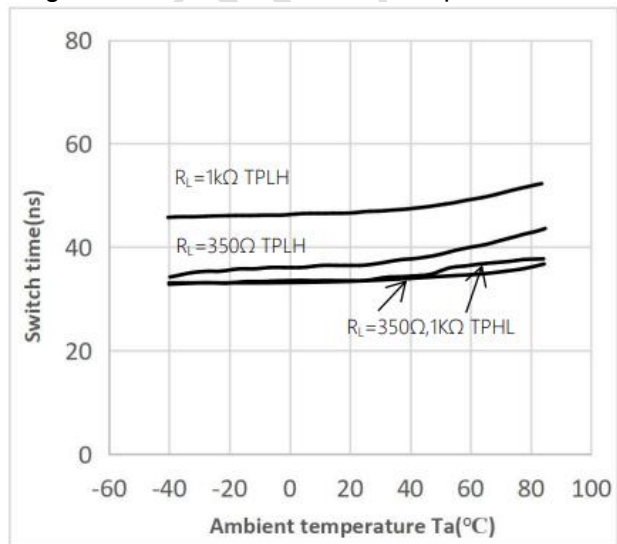
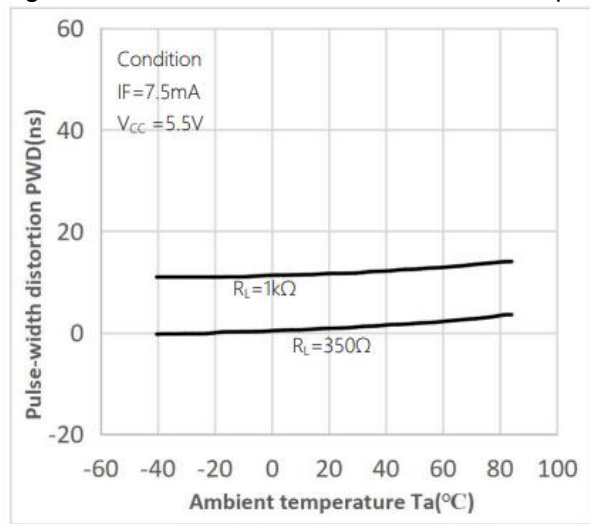
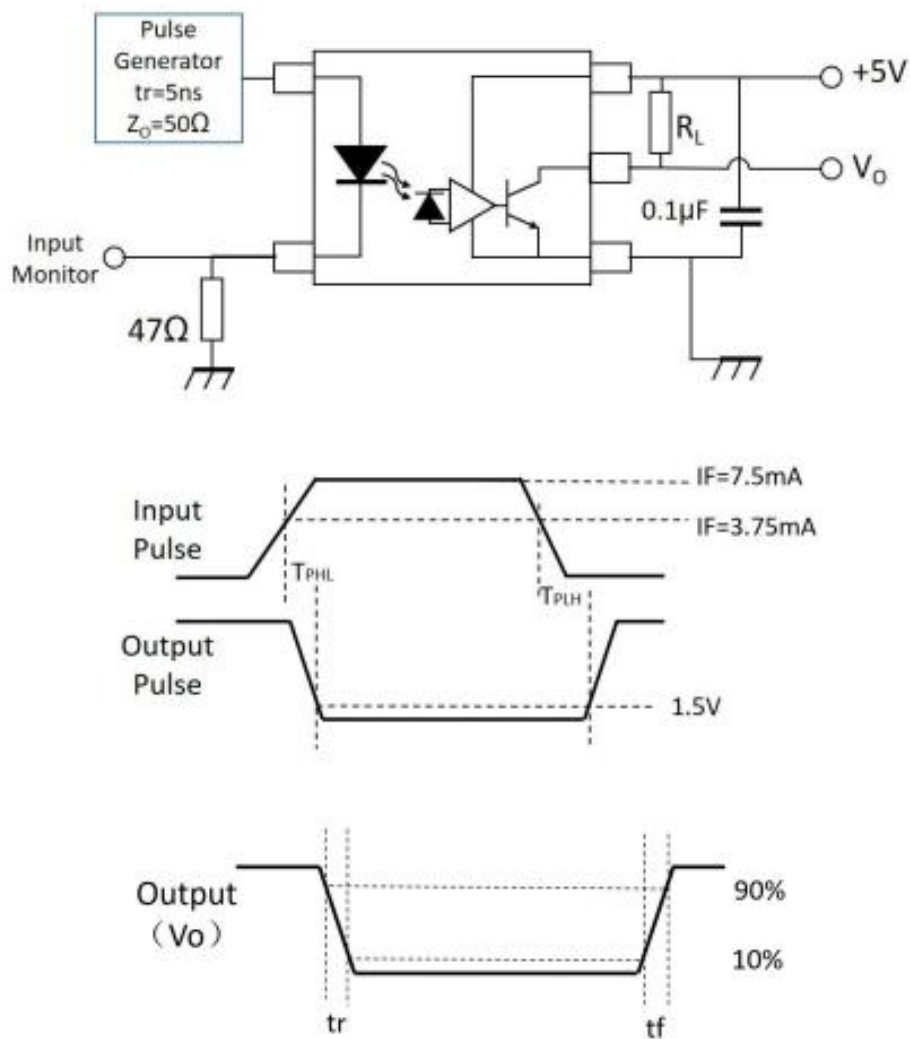


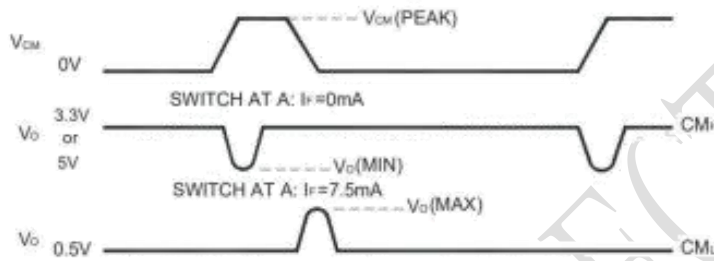
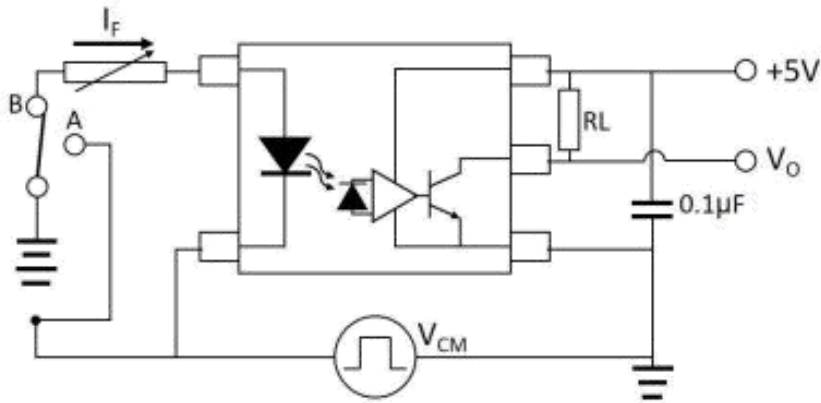
Fig.8 Switch time vs. Ambient temperature



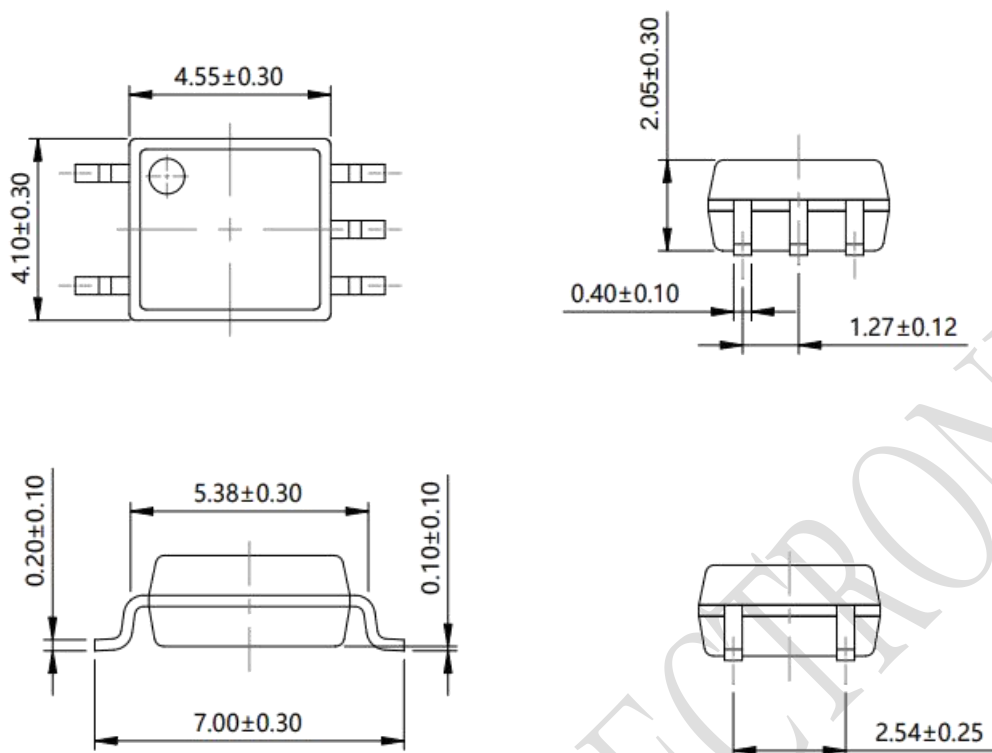
SWitch Time Test Circuit



Test Circuit for Common Mode Transient Immunity



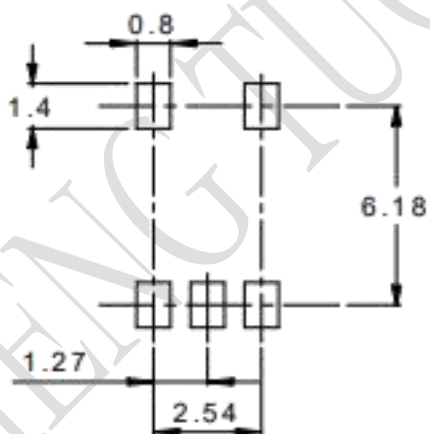
■ Outline Dimension



Unit: mm

Tolerance: $\pm 0.1\text{mm}$

■ Recommended solder pad Design

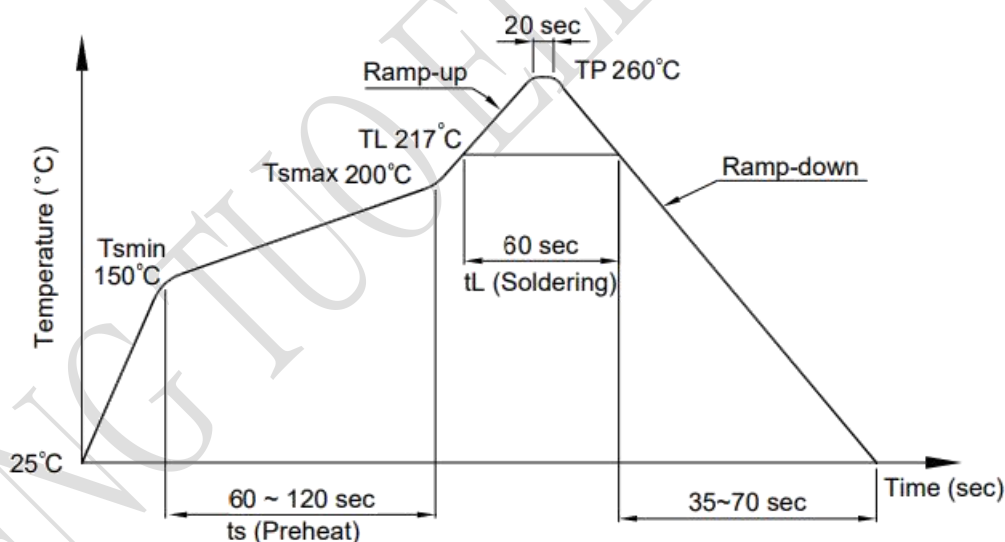
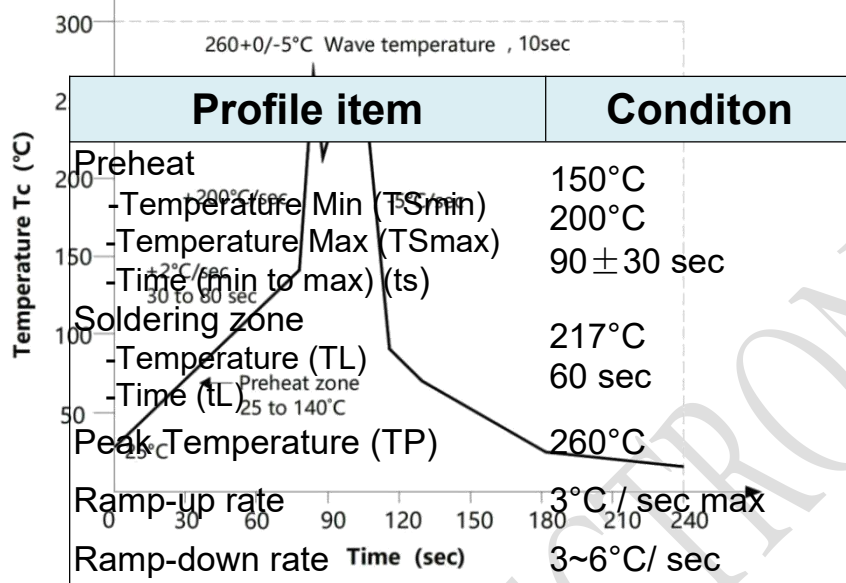


Unit: mm

Tolerance: $\pm 0.1\text{mm}$

■ Temperature Profile Of Soldering

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



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.

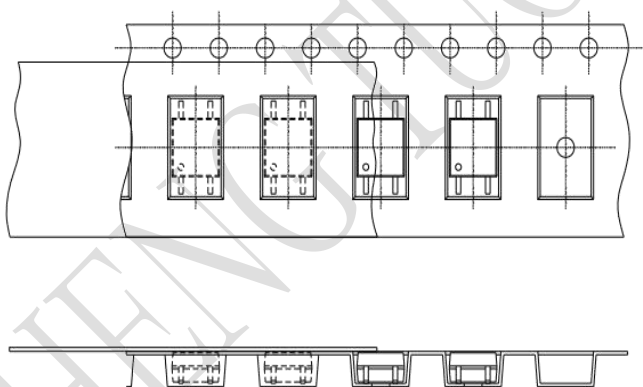
Temperature: $380 \pm 0/-5^{\circ}\text{C}$

Time: 3 sec max.

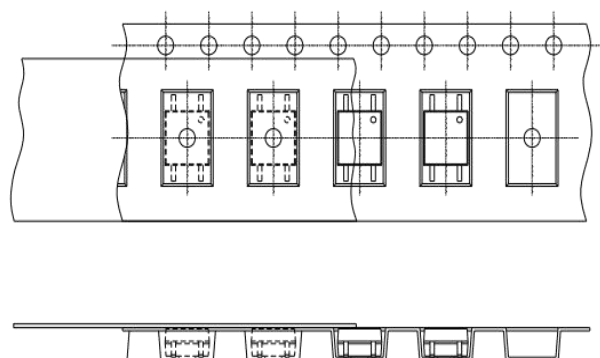
■ Packing

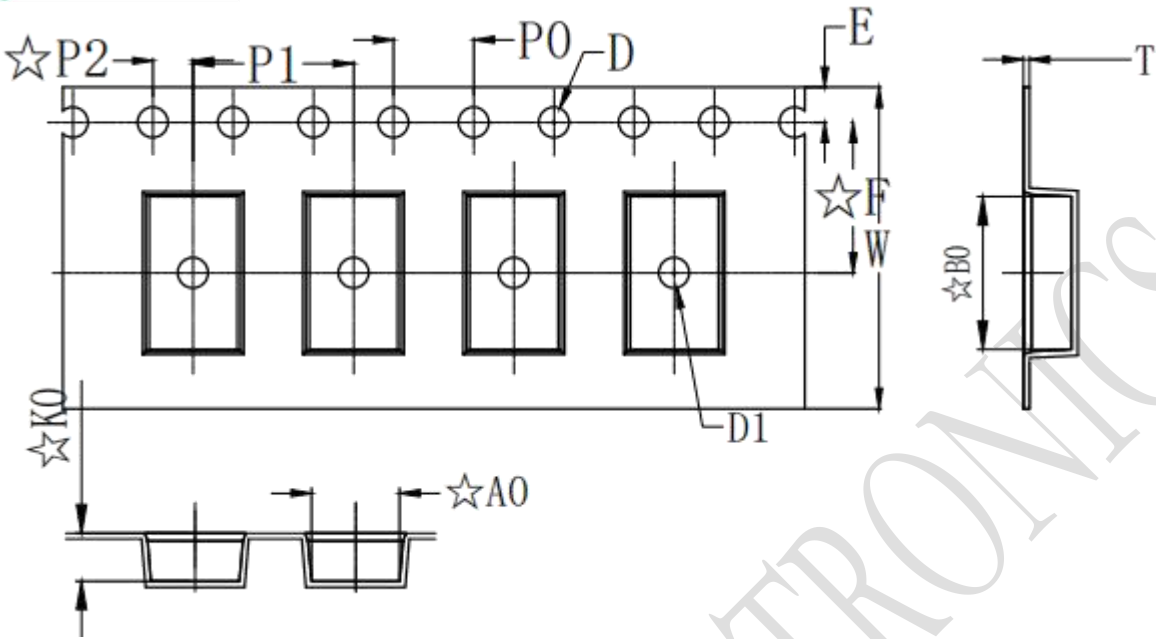
Tape and Reel

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	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

■ 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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