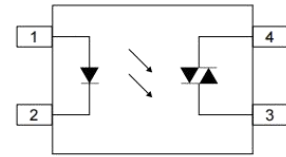


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Pin Configuration

- 1 Anode
- 2 Cathode
- 3 GND
- 4 VCC

■ Description

The KTPM302X,KTPM305X,KTPM307X 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
 - KTPM302X: Min.400V
 - KTPM305X: Min.600V
 - KTPM307X: Min.800V
- 4pin non zero-cross optoisolators triac driver outp
- High input-output isolation voltage($V_{iso} = 3,750V_{rms}$)
- Operating Temperature: $-40^{\circ}C \sim 110^{\circ}C$
- RoHS
- MSL1

■ Applications

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

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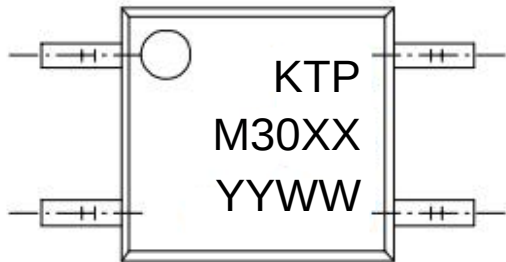
■ Product Nomenclature

The product name is designated as below:

KTPM30X X
① ②

Designation:

KTPM30XX=Product series(① 302X/305X/307X, ② X:1/2/3)

■ Marking Information

Designation:

KTP	denotes Brand LOGO
M30XX	denotes Device
YY	denotes year code
WW	denotes week code

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■ 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	°C
Output	Off-State Output Terminal Voltage	KTPM302X	V _{DRM}	400	V
		KTPM305X		600	
		KTPM307X		800	
	On state RMS curren		I _{T(RMS)}	100	mA(RMS)
	Peak Repetitive Surge Current (PW=1ms, 120 pps		I _{TSM}	1	A
	Junction Temperature		T _J	125	°C
	Collector Power Dissipation		P _C	300	mW
	Operating temperature range			T _{op}	- 40 ~ 110
Storage temperature range			T _{stg}	- 55 ~ 125	° C
Total Power consumption			P _(W)	330	mW
Isolation Voltage(1)			V _{ISO}	3750	V _{rms}
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	$I_F=10\text{mA}$
	Reverse Current	I_R	-	-	5	μA	$V_R=6\text{V}$
Output	⁽¹⁾ Peak Blocking Current, Either Directiot	I_{DRM}	-	-	100	nA	$V_{\text{DRM}} = \text{Rated VDRM}$
	Peak On-State Voltage, Either Dire	V_{TM}	-	-	2.5	V	$I_{\text{TM}}=100\text{mA}$ Peak
	⁽²⁾ Critical rate of Rise of Off-State Voltage	KTPM302X	-	100	-	V/ μs	$V_{\text{in}}=240\text{Vrms}$
		KTPM305X KTPM307X	1000	-	-		
Transfer Characteristics	Led Trigger Current, Current Required to Latch Output, Either Direction	KTPM3021 KTPM3051 KTPM3071	-	-	15	mA	Main Terminal Voltage = 3V
		KTPM3022 KTPM3052 KTPM3072	-	-	10		
		KTPM3023 KTPM3053 KTPM3073	-	-	5		
	Holding Current, Either Direction	I_H	0.5	1.0	5.0	mA	
	Turn-On Tim	T_{on}	-	-	100	μs	$V_D=6\text{V}$ $R_L=100\ \Omega$ $I_F=20\text{mA}$

(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

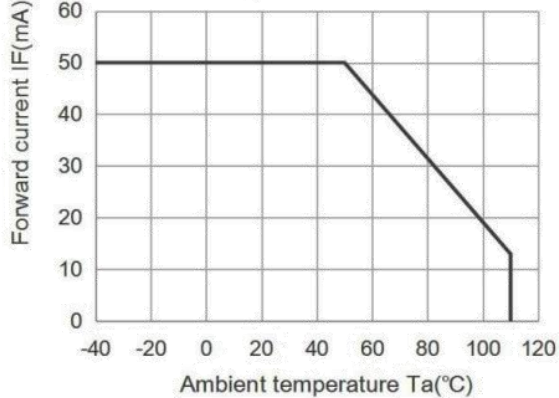


Fig.2 On-state current vs. Ambient temperature

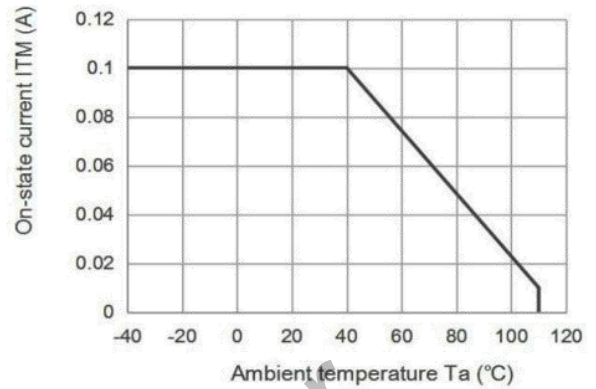


Fig.3 Minimum Trigger Current vs. Ambient temperature

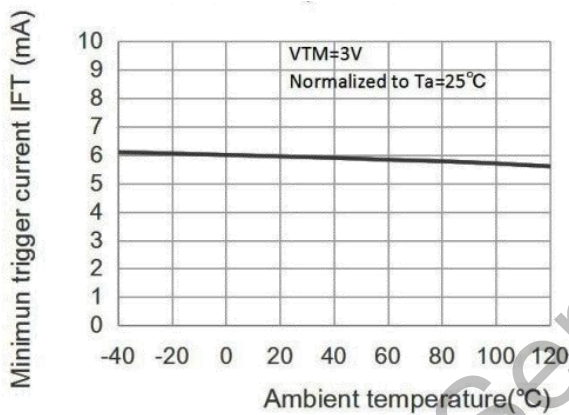


Fig.4 Forward current vs Forward Voltage

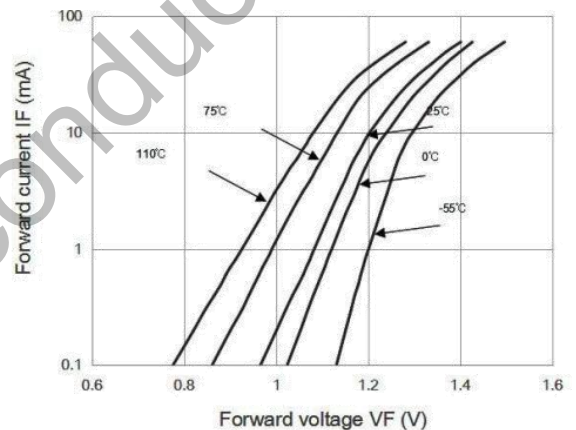


Fig.5 On-state voltage vs. Ambient temperature

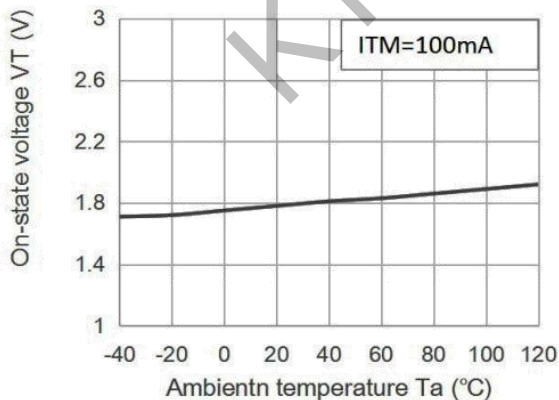
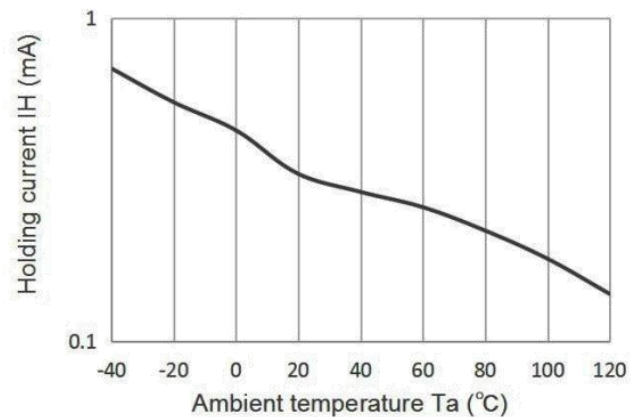


Fig.6 Holding current vs Ambient temperature



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Fig.7 Repetitive peak off-state current vs Temperature

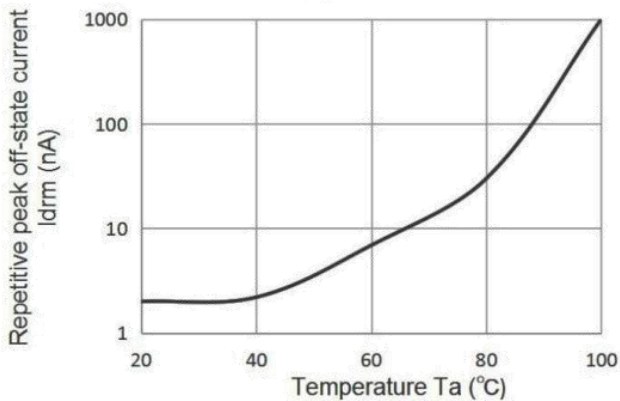


Fig.8 On-state current vs On-state voltage

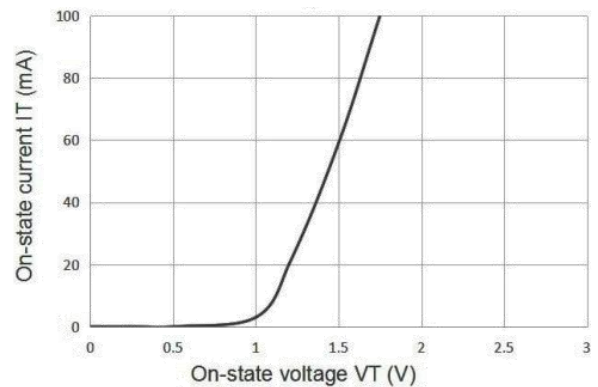


Fig.9 Basic Operation Circuit Medium/High Power Triac Drive Circuit

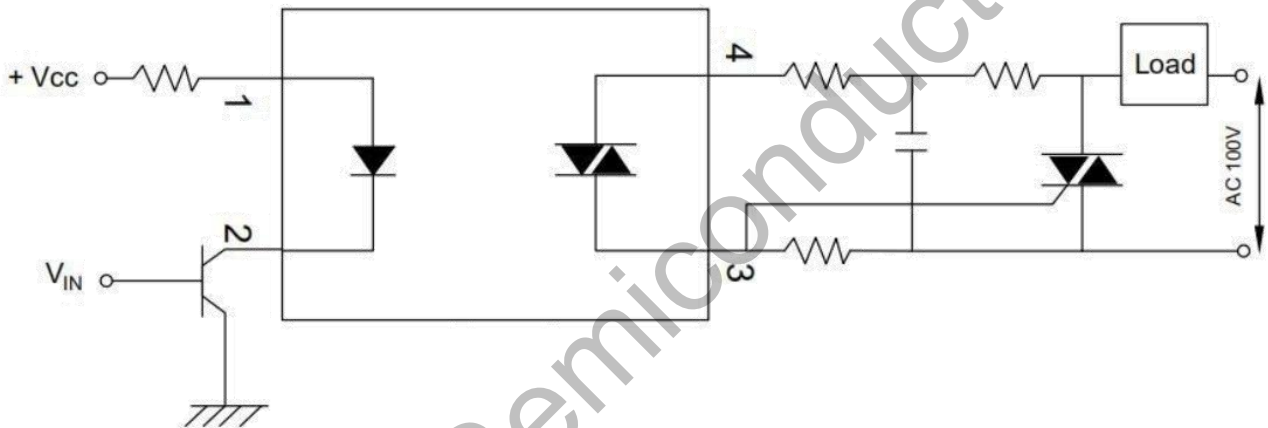
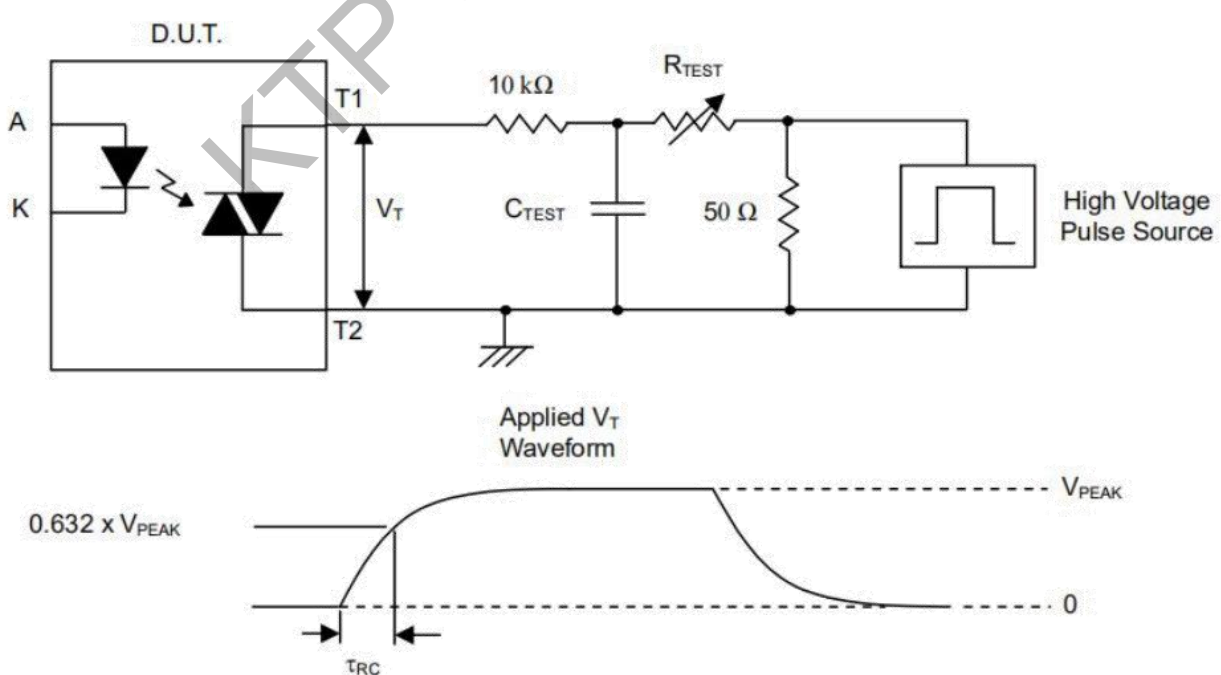
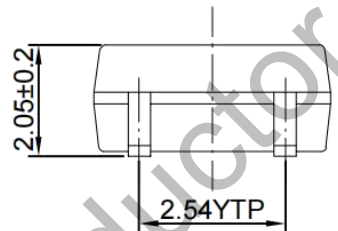
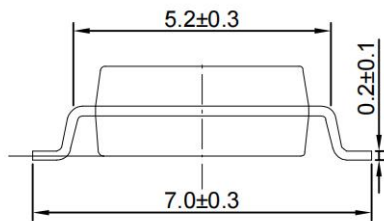
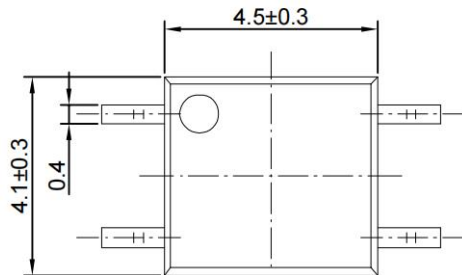
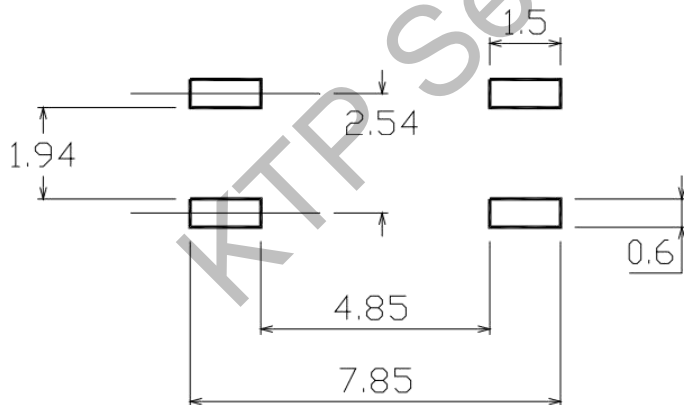


Fig10. Static dv/dt Test Circuit & Waveform



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Unit: mm

Tolerance: $\pm 0.1\text{mm}$ **■ Recommended solder pad Design**

Unit: mm

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

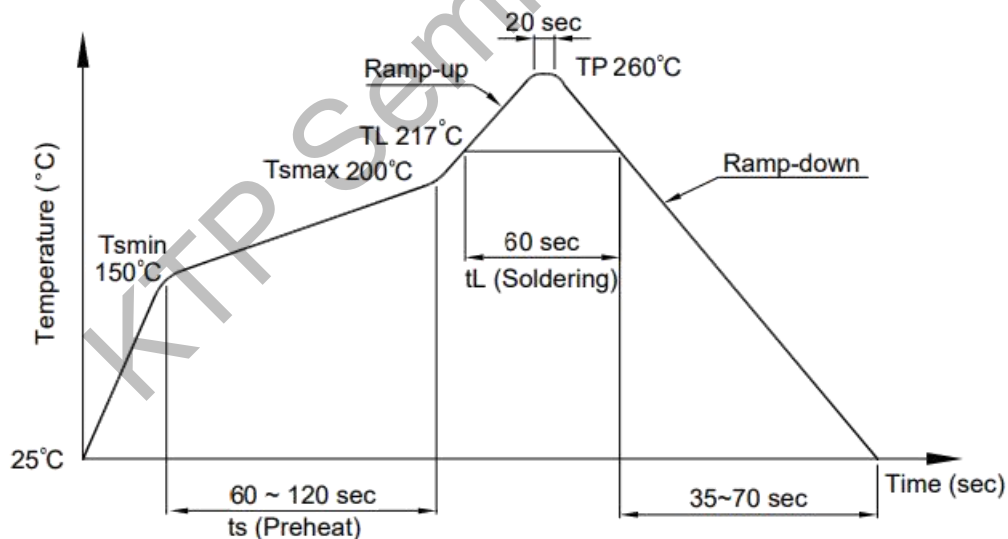
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■ Temperature Profile Of Soldering

1. IR Reflow soldering

(JEDEC-STD-020 compliant)

Profile item	Conditon
Preheat	150°C
-Temperature Min (TSmin)	200°C
-Temperature Max (TSmax)	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

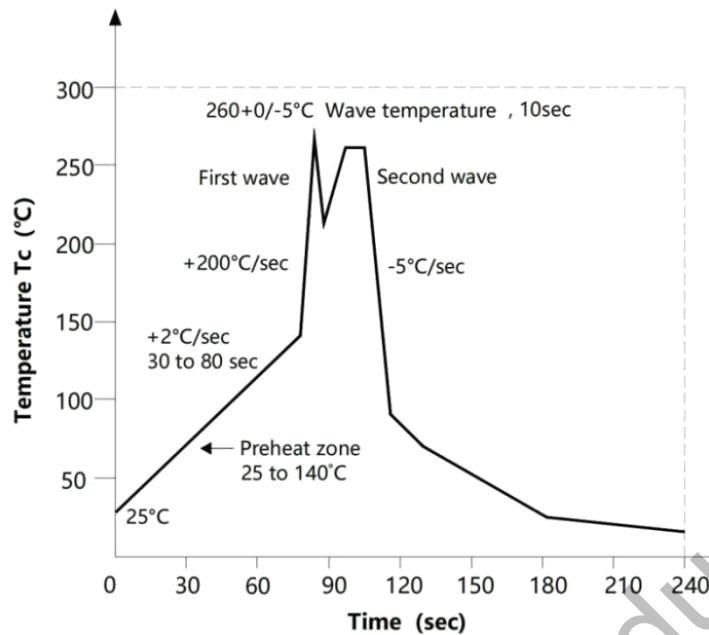


Notes:

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

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2. Wave soldering (JEDEC22A111 compliant)



3. Hand soldering by soldering iron

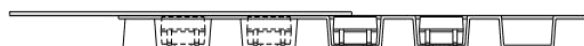
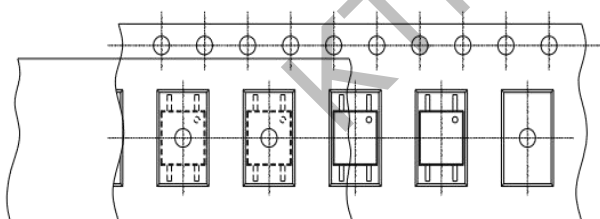
Allow single lead soldering in every single process. One time soldering is recommended.

Temperature: 380+0/-5°C

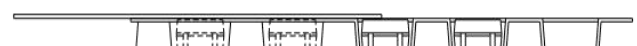
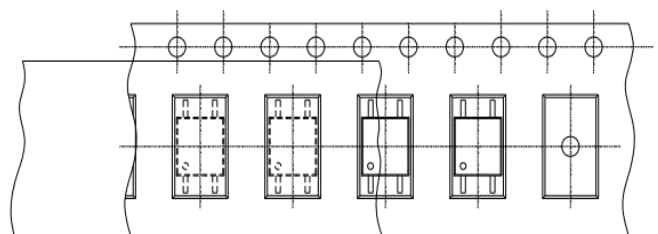
Time: 3 sec max.

■ Packing Tape and Reel

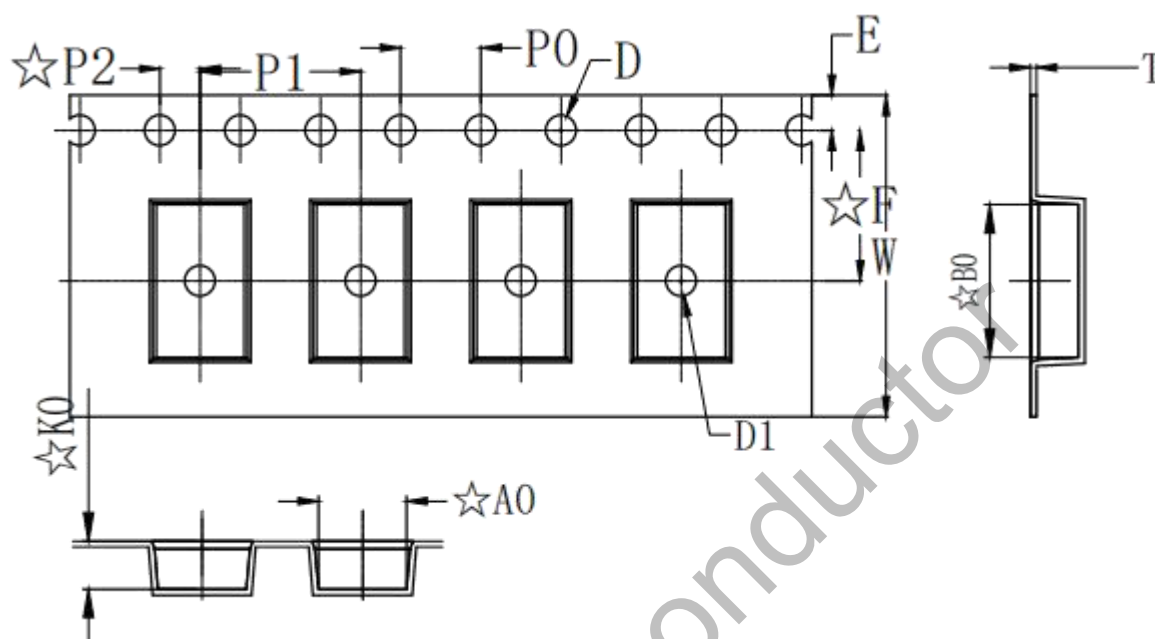
Option TP:



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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