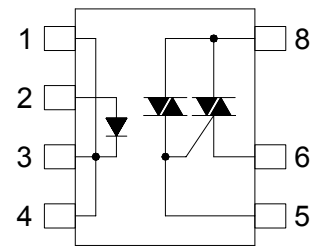


### ● Description

The KTLP3502 series consist of a GaAs infrared emitting diode optically coupled to an non-zero-crossing silicon bilateral TRIAC and a main output power TRIAC. These devices isolate low voltage logic from 115 VAC lines to provide random phase control of high current TRIACs or thyristors. These devices feature greatly enhanced static dv/dt capability to ensure stable switching performance of inductive loads.

### ● Schematic



- |            |         |
|------------|---------|
| 1. Cathode | 5. Gate |
| 2. Anode   | 6. T1   |
| 3. Cathode | 8. T2   |
| 4. Cathode |         |

### ● Features

1. Pb free and RoHS compliant
2. 400V peak blocking voltage
3. On-State R.M.S Current 0.5A.
4. Simplifies logic control of 115 VAC power
5. Non zero voltage crossing
6. Isolation voltage between input and output (Viso : 5300Vms)
7. MSL class 1
8. Agency Approvals :
  - UL Approved (No. E169586): UL1577
  - c-UL Approved (No. E169586)
  - VDE Approved (No. 40020973): DIN EN60747-5-5

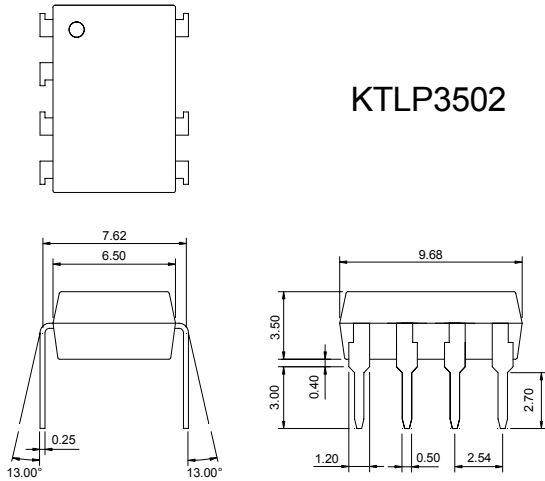
### ● Applications

- TRIAC driver
- Programmable controllers
- AC-output module
- Solid state relay
- Isolated interface between high voltage AC devices and lower voltage DC control circuitry
- Switching motors, fans, heaters, solenoids and valves
- Phase or power control in applications, such as lighting and temperature control equipment

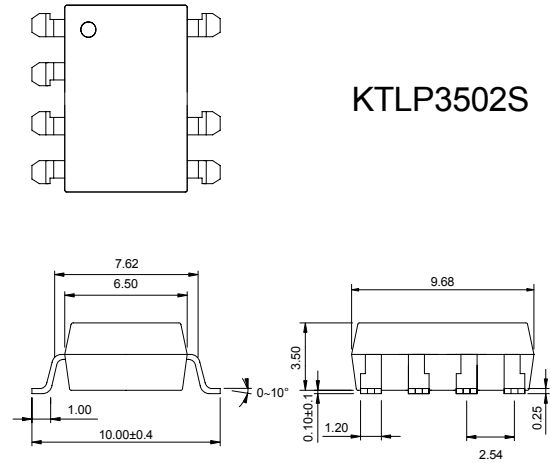
● Outside Dimension

Unit : mm

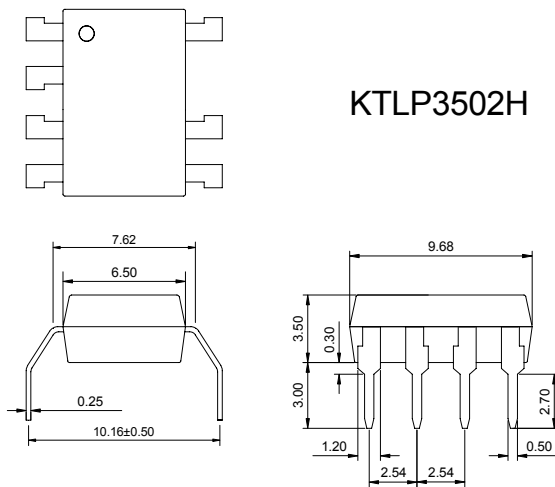
1. Dual-in-line type.



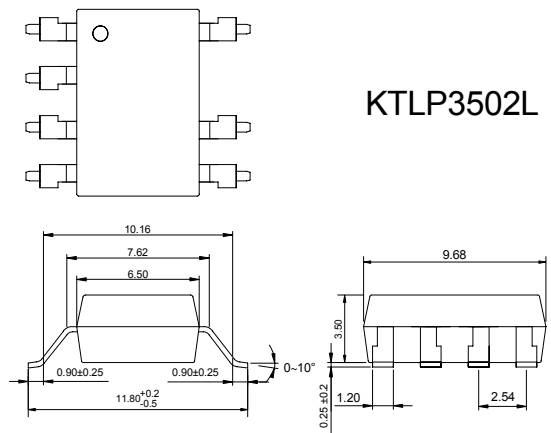
2. Surface mount type.



3. Long creepage distance type.

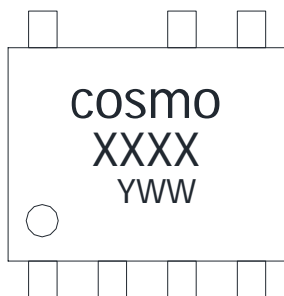


4. Long creepage distance for surface mount type.



TOLERANCE : ±0.2mm

● Device Marking



Notes :

cosmo

XXXX XXXX : 3616 or 3506 or 3502

YWW Y : Year code / W : Week code

**● Absolute Maximum Ratings**

(Ta=25°C)

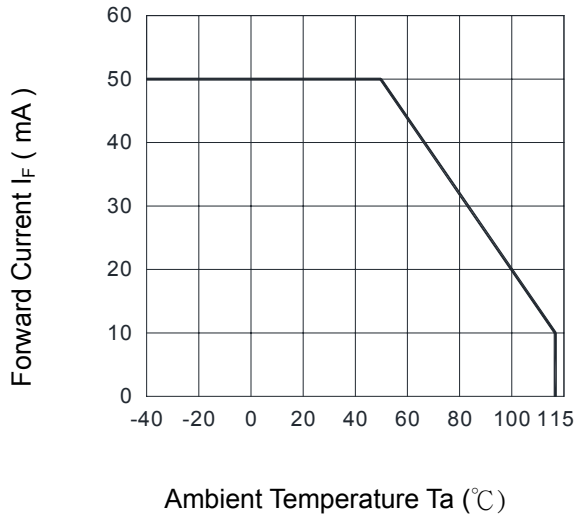
Parameter		Symbol	Rating	Unit
Input	Forward current	$I_F$	50	mA
	Peak forward current	$I_{FM}$	1	A
	Reverse voltage	$V_R$	6	V
	Power dissipation	$P_D$	70	mW
Output	Off-state output terminal voltage	$V_{DRM}$	400	$V_{PEAK}$
	On-state R.M.S. current	$I_{T(RMS)}$	0.5	A
	Peak repetitive surge current (60Hz , Peak)	$I_{TSM}$	5	A
Isolation voltage 1 minute		$V_{iso}$	5300	$V_{rms}$
Operating temperature		$T_{opr}$	-40 to +115	°C
Storage temperature		$T_{stg}$	-50 to +125	°C
Soldering temperature 10 seconds		$T_{sol}$	260	°C

**● Electro-optical Characteristics**

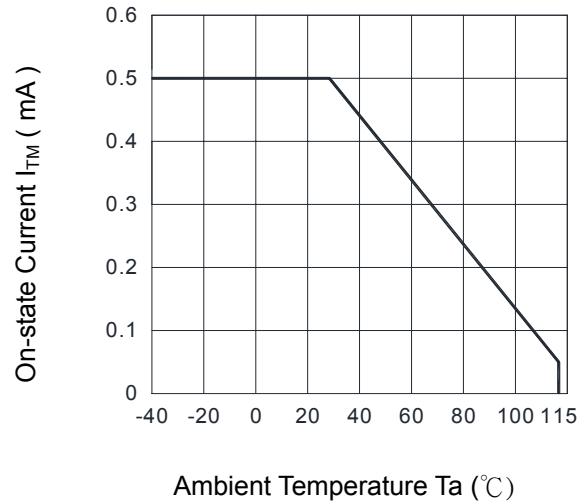
(Ta=25°C)

Parameter		Symbol	Conditions	Min.	Typ.	Max.	Unit
Input	Forward voltage	$V_F$	$I_F=10mA$	-	1.2	1.4	V
	Reverse current	$I_R$	$V_R=4V$	-	-	10	$\mu A$
Output	Peak blocking current	$I_{DRM}$	$V_{DRM}$ Rated	-	-	100	$\mu A$
	On-state voltage	$V_{TM}$	$I_{TM}=0.5A$	-	-	3	V
Transfer characteristics	Holding current	$I_H$		-	-	25	mA
	Critical rate of rise of off-state voltage	$dv/dt$	$V_{DRM}=(1/\sqrt{2})*Rated$	200	-	-	$V/\mu s$
	Isolation resistance	$R_{iso}$	DC500V	$5 \times 10^{10}$	-	-	$\Omega$
	Minimum trigger current	$I_{FT}$	Main terminal voltage=3V	-	-	10	mA

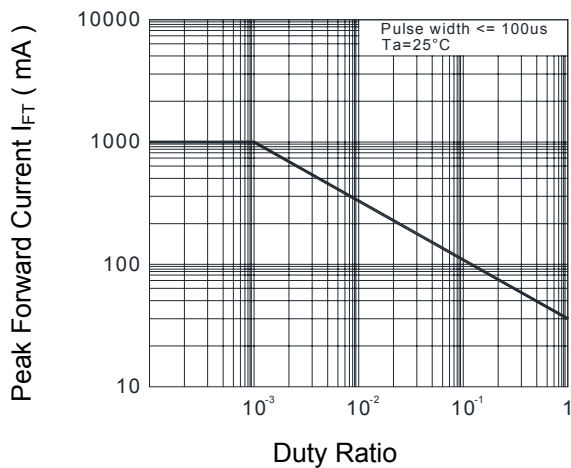
**Fig.1 Forward Current  $I_F$  vs. Ambient Temperature**



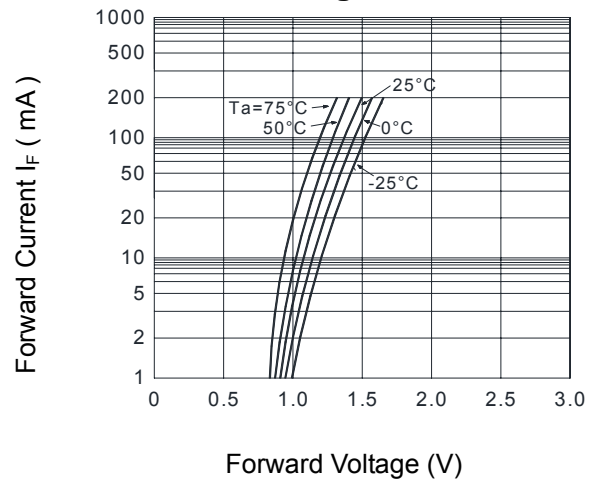
**Fig.2 On-State R.M.S. Current vs. Ambient Temperature**



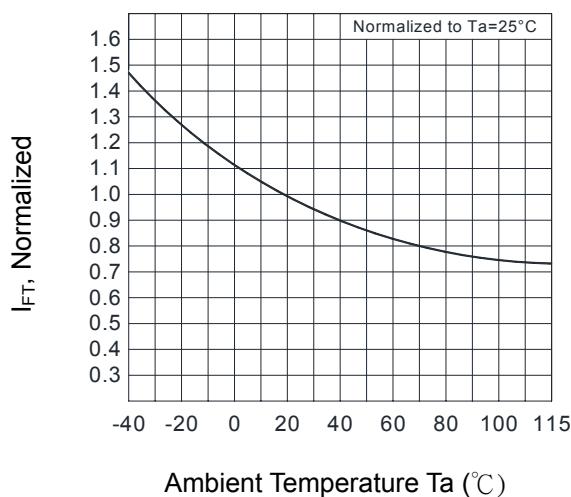
**Fig.3 Peak Forward Current  $I_{FT}$  vs. Duty Ratio**



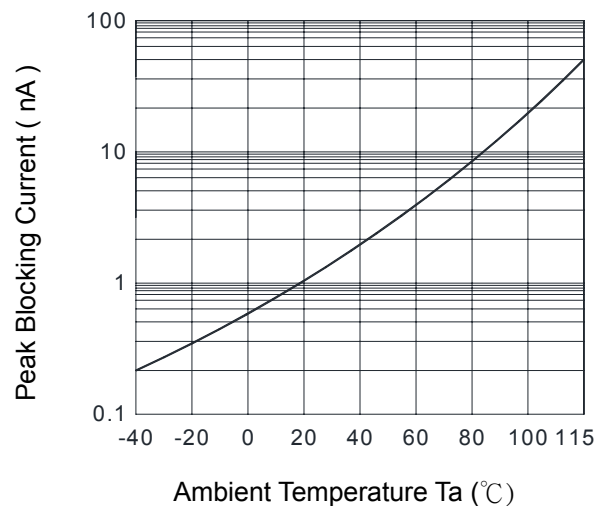
**Fig.4 Forward Current vs. Forward Voltage**



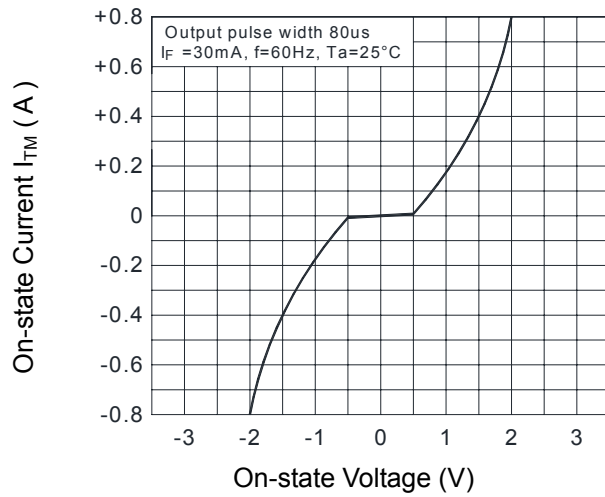
**Fig.5 Trigger Current vs. Ambient Temperature**



**Fig.6 Leakage with LED off vs. Ambient Temperature**



**Fig.7 On-state Characteristics**

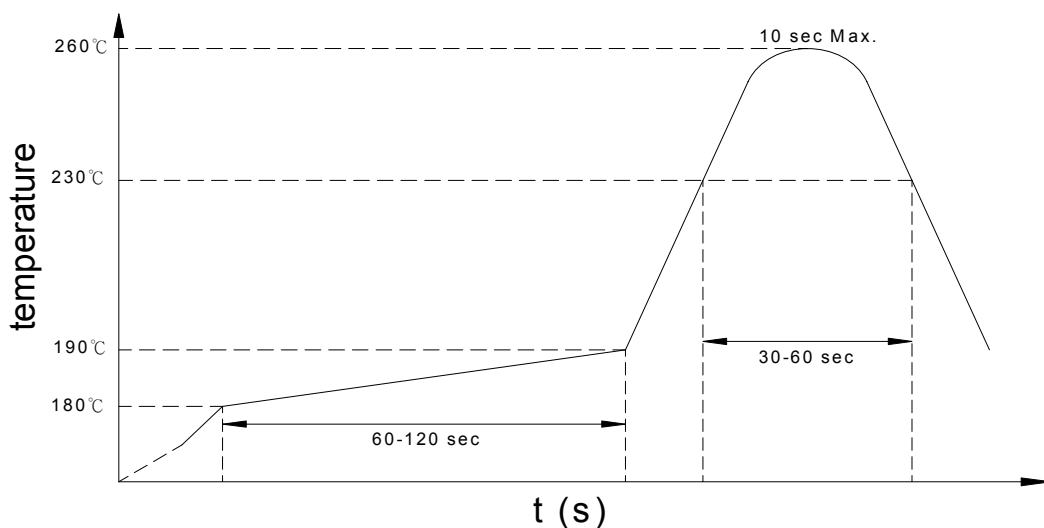


### ● Recommended Soldering Conditions

#### (a) Infrared reflow soldering :

- Peak reflow soldering : 260°C or below (package surface temperature)
- Time of peak reflow temperature : 10 sec
- Time of temperature higher than 230°C : 30-60 sec
- Time to preheat temperature from 180~190°C : 60-120 sec
- Time(s) of reflow : Two
- Flux : Rosin flux containing small amount of chlorine (The flux with a maximum chlorine content of 0.2 Wt% is recommended.)

#### Recommended Temperature Profile of Infrared Reflow



#### (a) Wave soldering :

- Temperature : 260°C or below (molten solder temperature)
- Time : 10 seconds or less
- Preheating conditions : 120°C or below (package surface temperature)
- Time(s) of reflow : One
- Flux : Rosin flux containing small amount of chlorine (The flux with a maximum chlorine content of 0.2 Wt% is recommended.)

#### (a) Cautions :

- Fluxes : Avoid removing the residual flux with freon-based and chlorine-based cleaning solvent.
- Avoid shorting between portion of frame and leads.

● **Numbering System**

## KTLP3502 X (Y)

**Notes:**

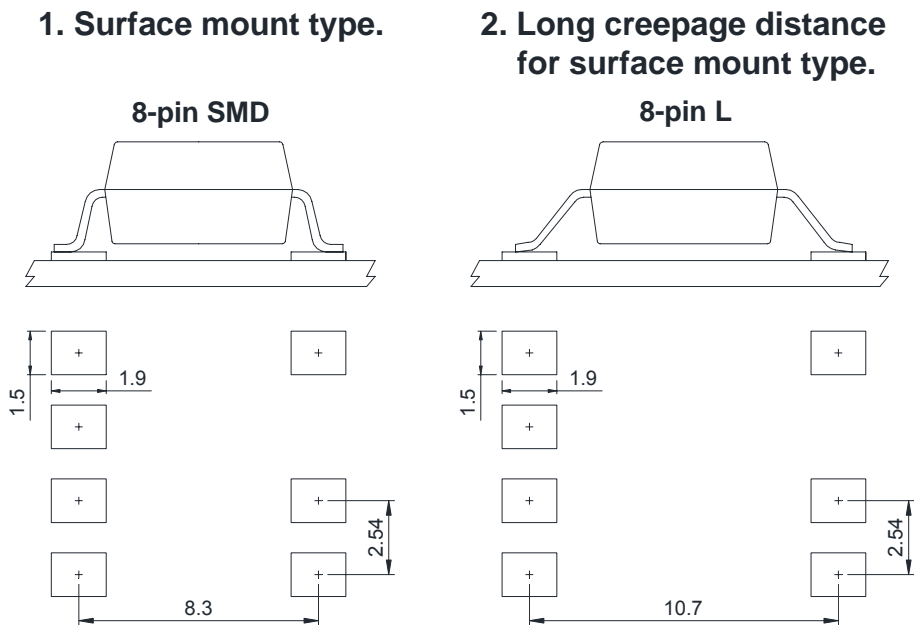
KTLP3502 = Part No.

X = Lead form option ( blank · S · H · L )

Y = Tape and reel option ( TL · TR · TLD · TRU )

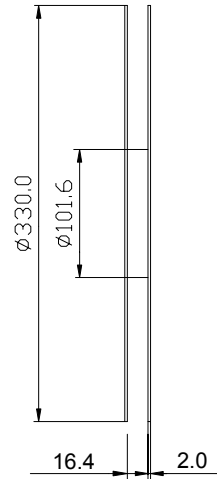
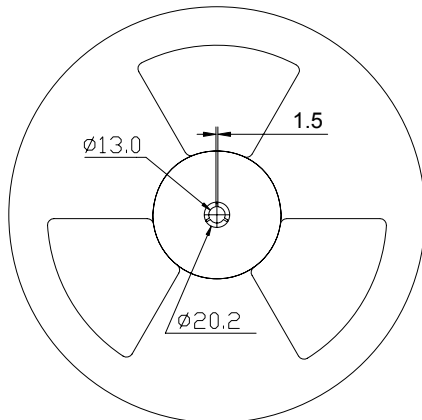
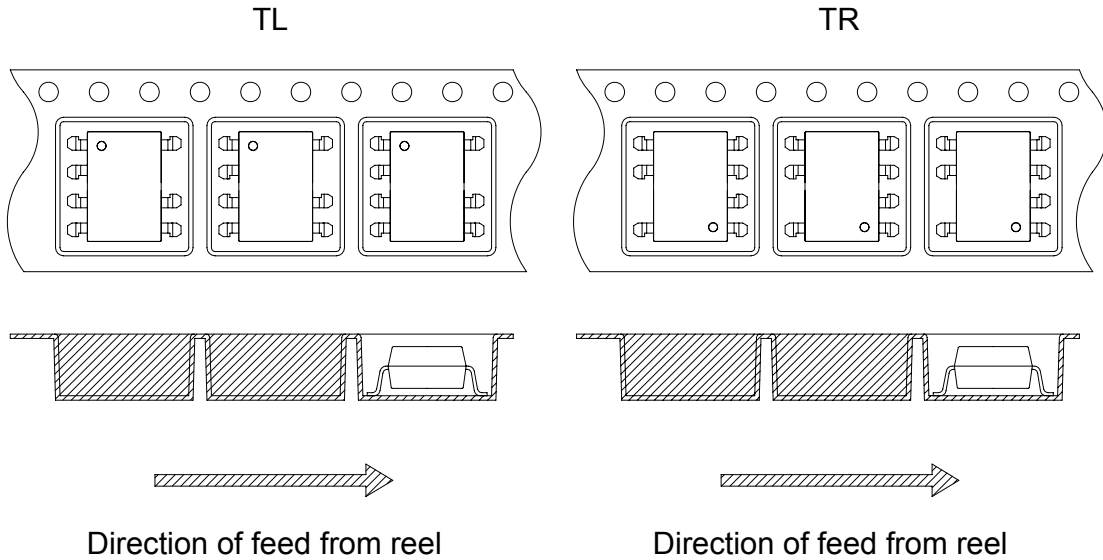
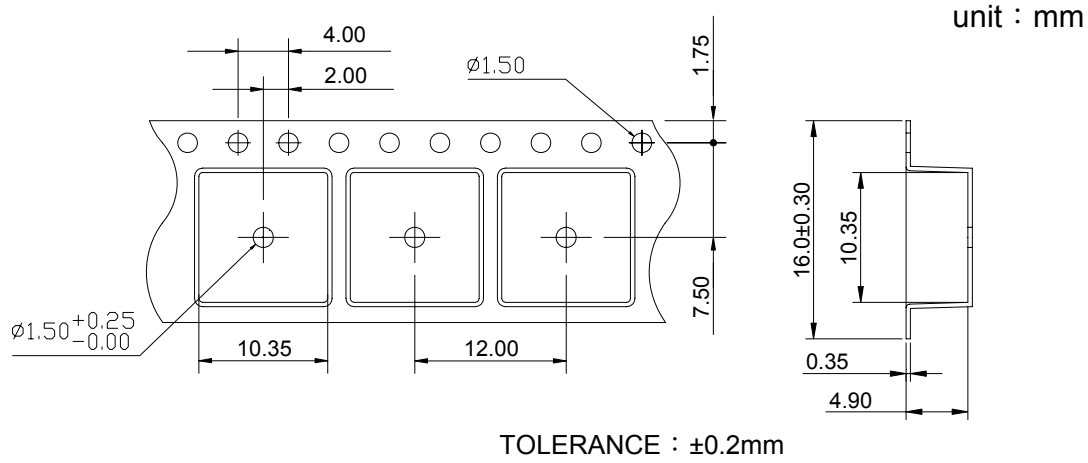
Option	Description	Packing quantity
S (TL)	surface mount type package + TL tape & reel option	1000 units per reel
S (TR)	surface mount type package + TR tape & reel option	1000 units per reel
L (TLD)	long creepage distance for surface mount type package + TLD tape & reel option	800 units per reel
L (TRU)	long creepage distance for surface mount type package + TRU tape & reel option	800 units per reel

● **Recommended Pad Layout for Surface Mount Lead Form**



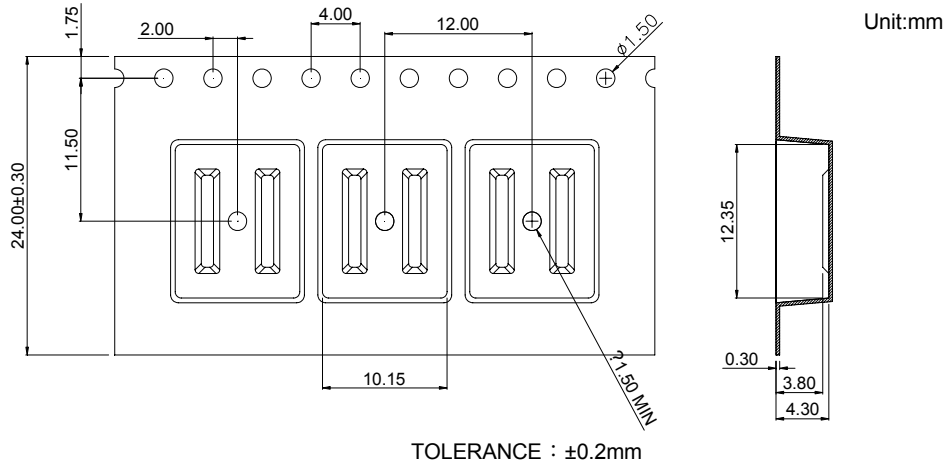
Unit : mm

● SMD Carrier Tape & Reel



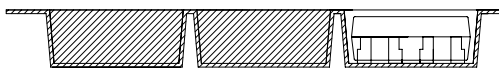
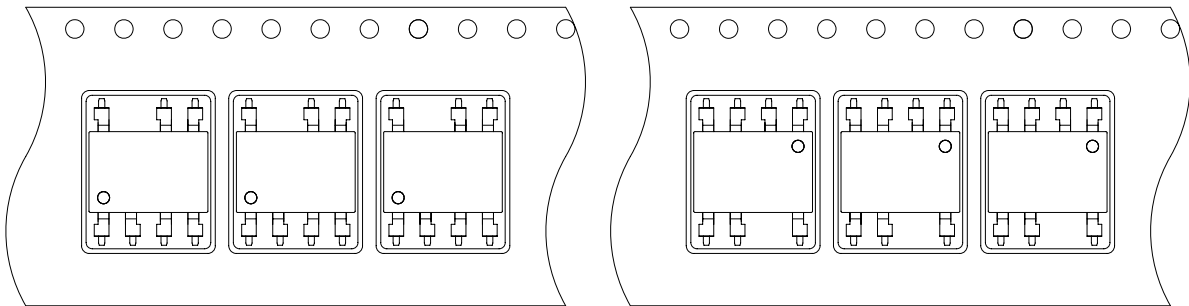


● L Carrier Tape & Reel

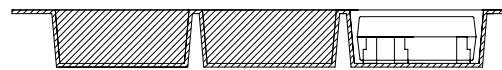


TLD

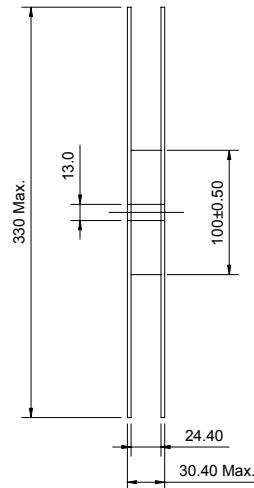
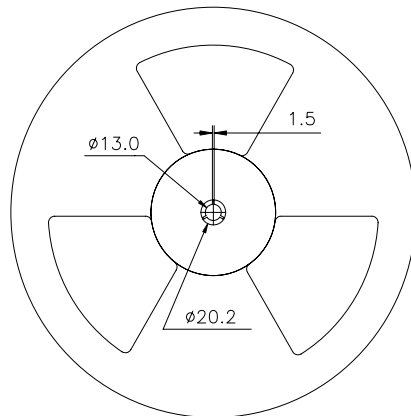
TRU



Direction of feed from reel



Direction of feed from reel





# KTLP3616 (3506), (3502) Series

## 8PIN RANDOM-PHASE TRIAC DRIVER PHOTOCOUPLER

---

### ● Application Notice

The statements regarding the suitability of products for certain types of applications are based on cosmo's knowledge of general applications of cosmo products. Such statements are not binding statements about the suitability of products for a particular application. It is the customer's responsibility to verify the specifications are suitable for use in a particular application. Customers are solely responsible for all aspects of their own product design or applications. The parameters provided in the datasheet may vary in different applications and performance may vary over time. All operating parameters (including typical parameters) must be validated by customer's technical experts for different applications. cosmo assumes no liability for customer' product design or applications. Product specifications do not expand or otherwise change cosmo's terms and conditions of purchase, including but not limited to the warranty expressed therein.

When using cosmo products, please comply with safety standards and instructions. cosmo has no liability and responsibility to the damage caused by improper use of the instructions specified in the specifications.

cosmo products are designed for use in general electronic equipment such as telecommunications, office automation equipments, personal computers, test and measurement equipments, consumer electronics, industrial control, instrumentation, audio, video.

cosmo devices shall not be used in equipment that requires higher level of reliability and safety, such as nuclear power control equipment, telecommunication equipment(trunk lines), space application, medical and other life supporting equipments, and equipment for aircraft, military, automotive or any other application that can cause human injury or death.

cosmo reserves the right to change the specifications, data, characteristics, structure, materials and other contents at any time without notice. Please contact cosmo to obtain the latest specification.

cosmo disclaim any and all liability for any errors, inaccuracies or incompleteness contained in any datasheet or in any other disclosure relating to any product.