

### ● Description

The KTLP3616 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 115/240 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.

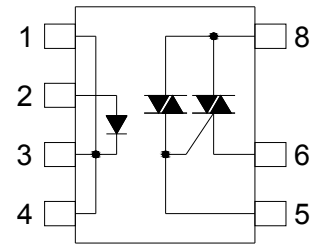
### ● Features

1. Pb free and RoHS compliant
2. 600V peak blocking voltage
3. On-state R.M.S Current 1.2A
4. Simplifies logic control of 115/240 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

### ● Schematic

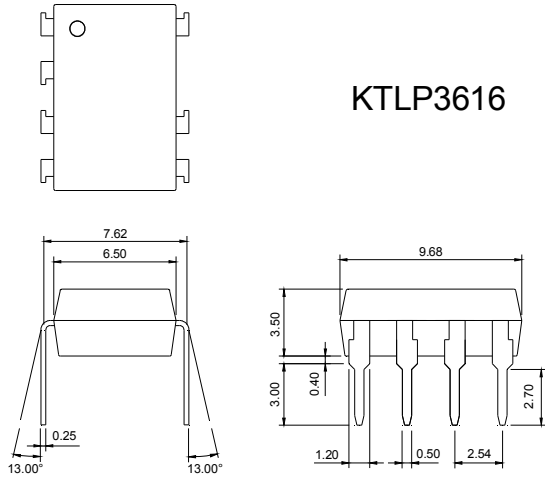


- |            |         |
|------------|---------|
| 1. Cathode | 5. Gate |
| 2. Anode   | 6. T1   |
| 3. Cathode | 8. T2   |
| 4. Cathode |         |

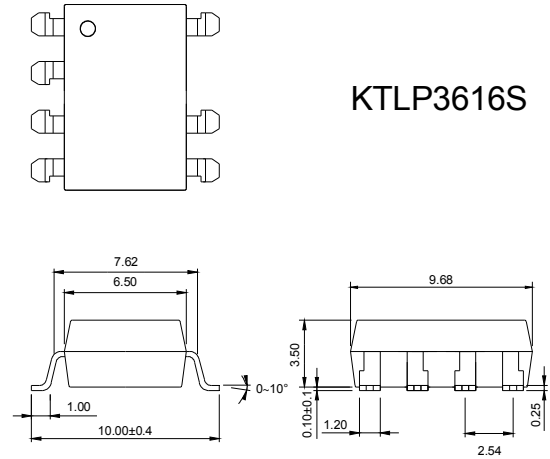
● **Outside Dimension**

Unit : mm

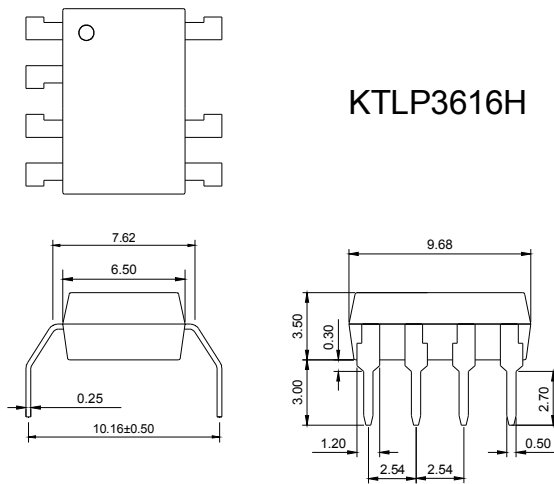
1. Dual-in-line type.



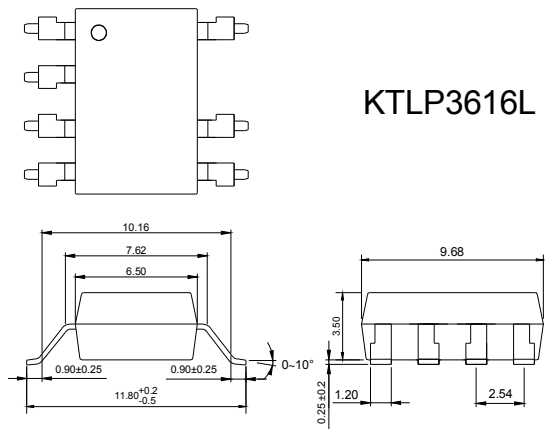
2. Surface mount type.



3. Long creepage distance type.

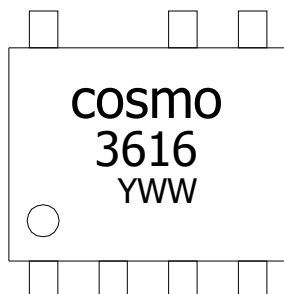


4. Long creepage distance for surface mount type.



TOLERANCE : ±0.2mm

● **Device Marking**



**Notes :**

cosmo  
3616  
YWW      Y : Year code / W : Week code

**● Absolute Maximum Ratings**

(Ta=25°C)

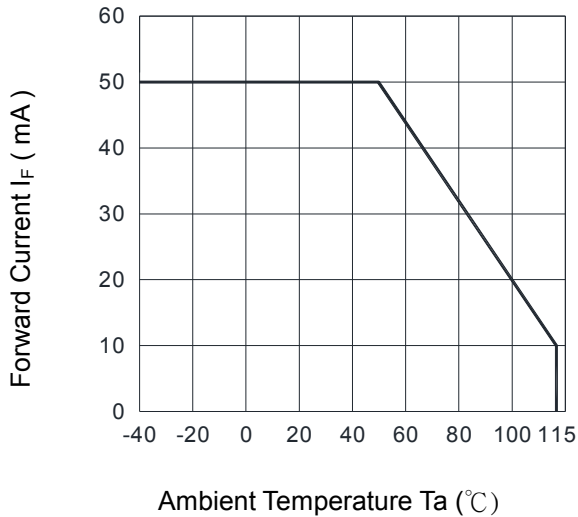
Parameter		Symbol	Rating	Unit
Input	Forward current	$I_F$	50	mA
	Peak forward current	$I_{FM}$	1	A
	Reverse voltage	$V_R$	6	V
	Power dissipation	$P_D$	70	mW
Output	Off-state output terminal voltage	$V_{DRM}$	600	$V_{PEAK}$
	On-state R.M.S. current	$I_{T(RMS)}$	1.2	A
	Peak repetitive surge current (60Hz , Peak)	$I_{TSM}$	10	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**

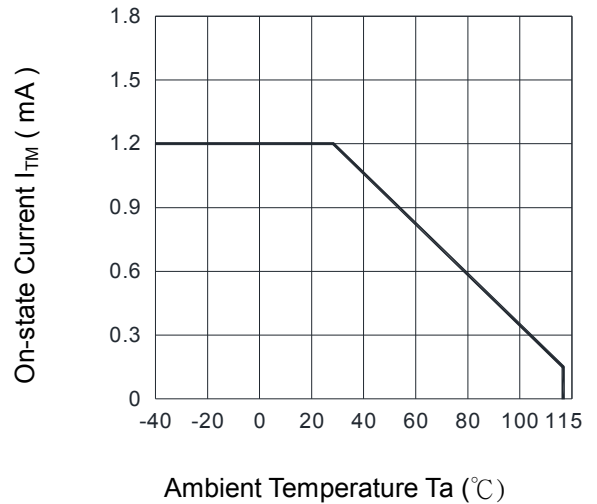
(Ta=25°C)

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	$V_{TM}$	$I_{TM}=1.2A$	-	-	3	V
Transfer characteristics	Holding current	$I_H$		-	-	25	mA
	Critical rate of rise of off-state voltage	dv/dt	$V_{DRM}=(1/\sqrt{2})*Rated$	-	1000	-	V/ $\mu s$
	Isolation resistance	$R_{iso}$	DC500V	$5 \times 10^{10}$	-	-	$\Omega$
	Minimum trigger current	$I_{FT}$	Main terminal voltage=3V	-	-	10	mA

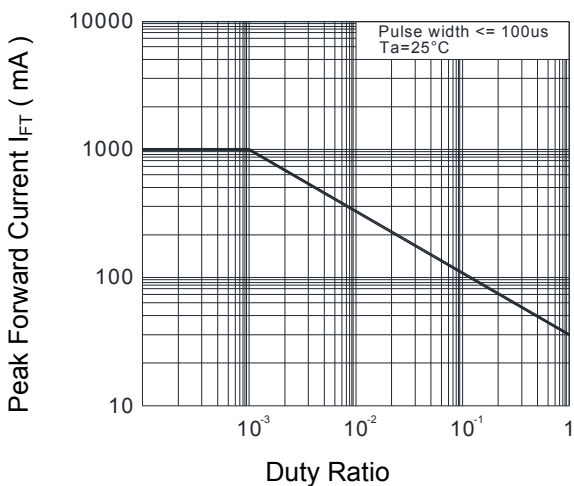
**Fig.1 Forward Current  $I_F$  vs. Ambient Temperature**



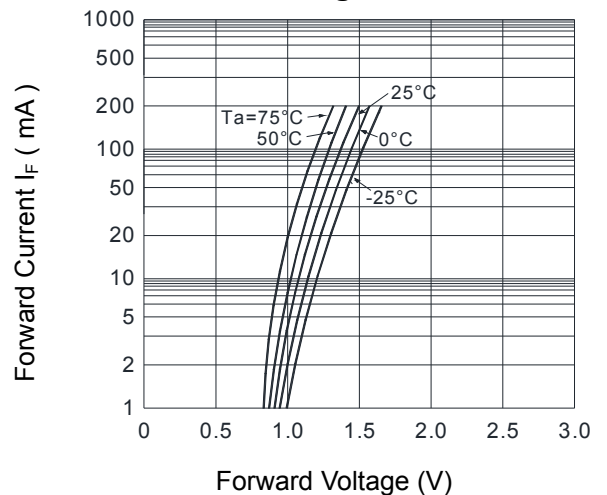
**Fig.2 On-state R.M.S. Current  $I_{TM}$  vs. Ambient Temperature**



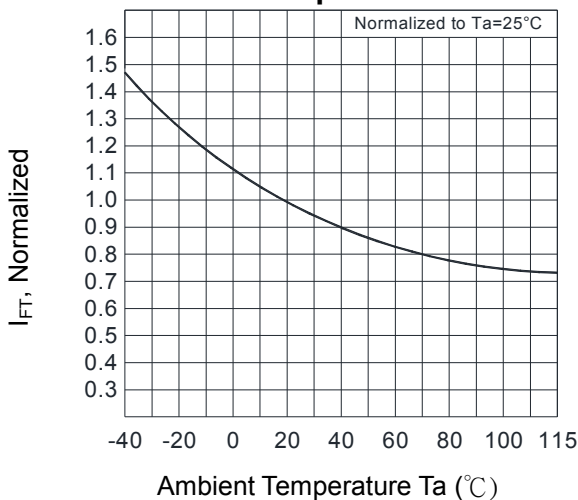
**Fig.3 Peak Forward Current  $I_{FT}$  vs. Duty Ratio**



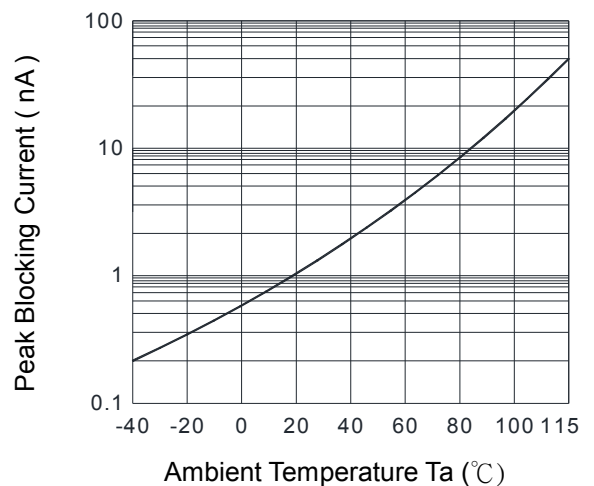
**Fig.4 Forward Current  $I_F$  vs. Forward Voltage**



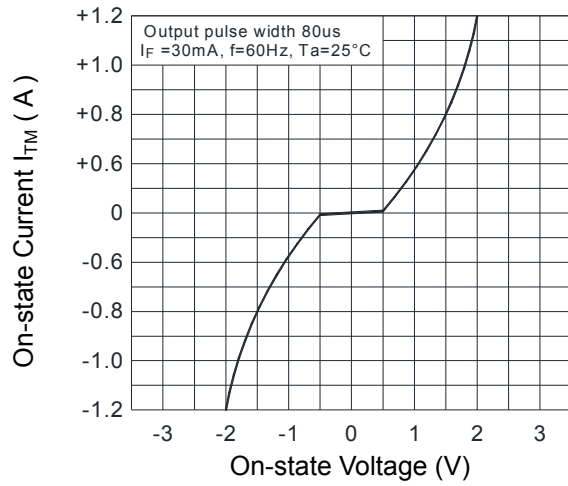
**Fig.5 Trigger Current  $I_{FT}$  vs. Ambient Temperature**



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



**Fig.7 On-State characteristics**

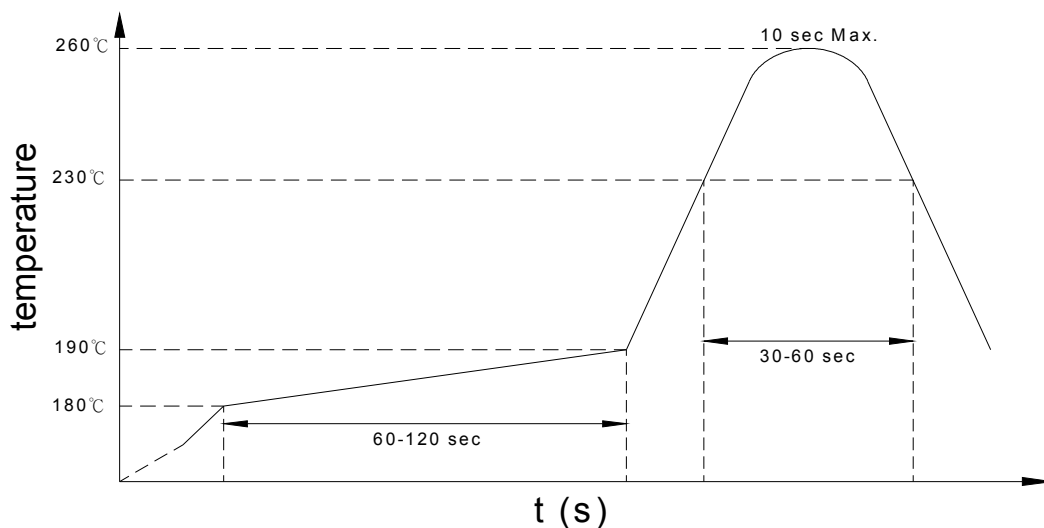


### ● Recommended Soldering Conditions

#### (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  
Two
- Time(s) of reflow : Rosin flux containing small amount of chlorine (The flux with a maximum chlorine content of 0.2 Wt% is recommended.)
- Flux :

#### Recommended Temperature Profile of Infrared Reflow



#### (b) Wave soldering :

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

#### (c) 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**

### KTLP3616 X (Y)

**Notes :**

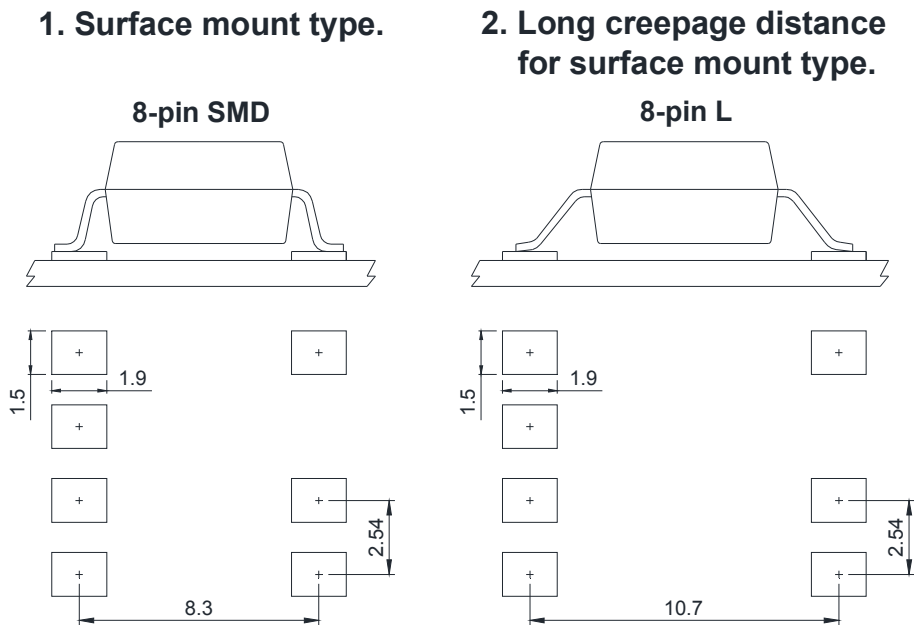
KTLP3616 = Part No.

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

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

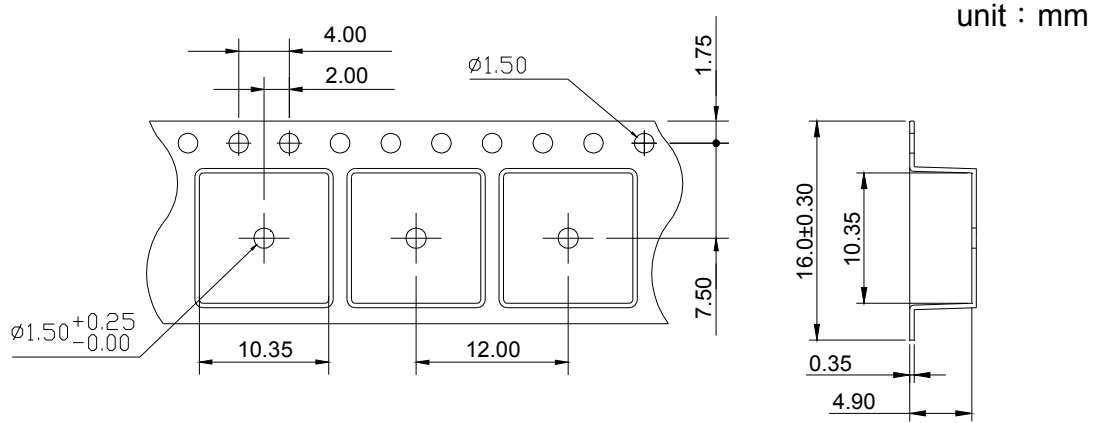
Option	Description	Packing quantity
S (TL)	surface mount type package + TL tape & reel option	1000 units per reel
S (TR)	surface mount type package + TR tape & reel option	1000 units per reel
L (TLD)	long creepage distance for surface mount type package + TLD tape & reel option	800 units per reel
L (TRU)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

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



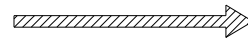
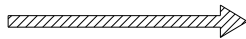
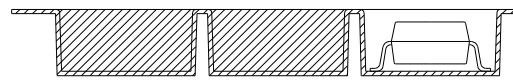
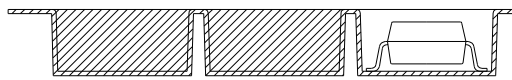
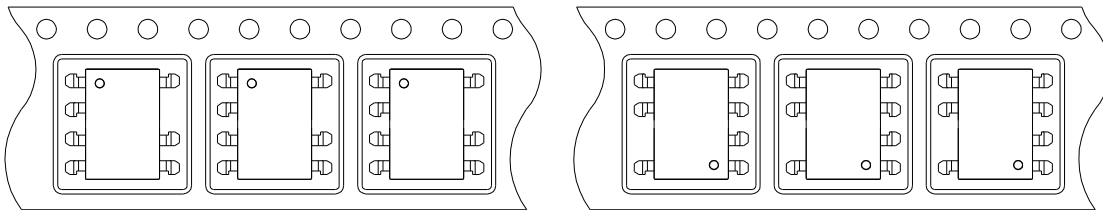
Unit : mm

● SMD Carrier Tape & Reel



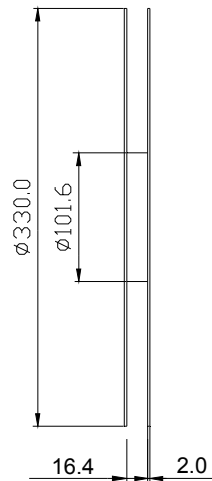
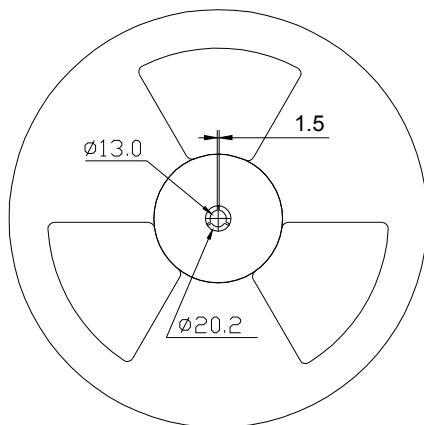
TL

TR



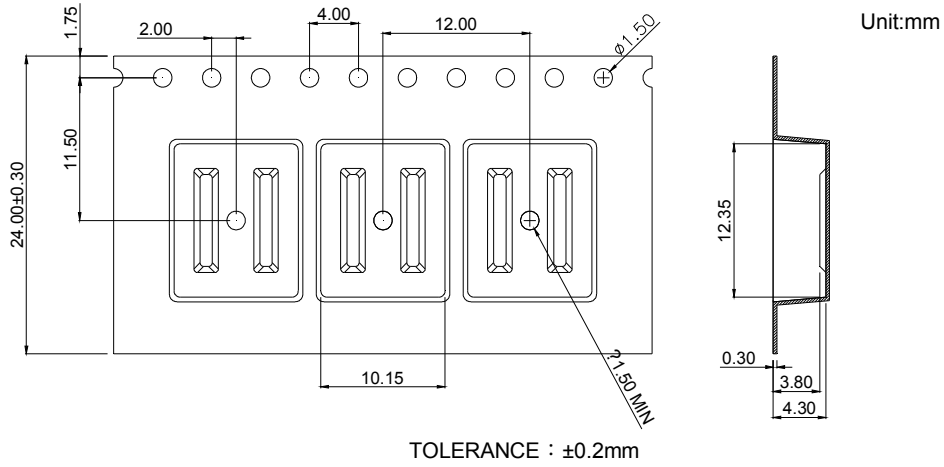
Direction of feed from reel

Direction of feed from reel



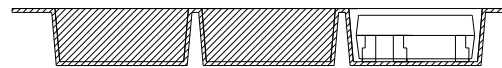
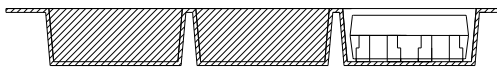
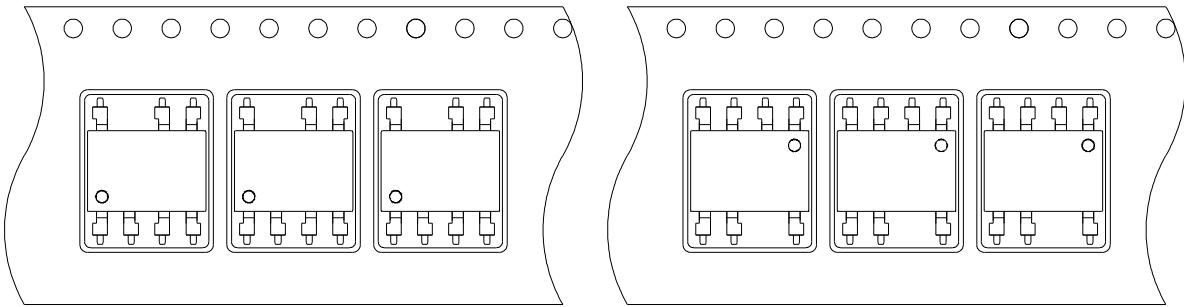


● L Carrier Tape & Reel



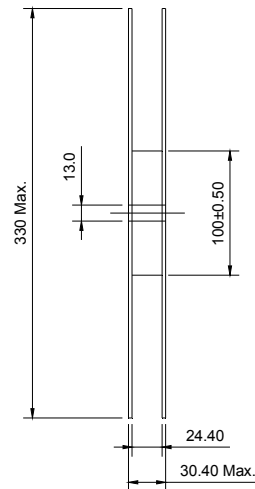
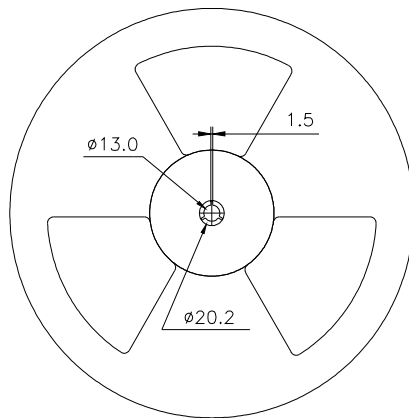
TLD

TRU



Direction of feed from reel

Direction of feed from reel





# KTLP3616 Series

## 8PIN RANDOM-PHASE TRIAC DRIVER PHOTOCOUPLER

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### ● Application Notice

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- e. Equipment used for automotive vehicles, trains, ships...etc.

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