

### ● Description

The KMOC3081、KMOC3082、KMOC3083 series consist of a GaAs infrared emitting diode optically coupled to a monolithic silicon detector performing the function of a zero voltage crossing bilateral TRIAC driver. They are designed for use with a TRIAC in the interface of logic systems to equipment powered from 240 VAC lines, such as solid-state relays, industrial controls, motors, solenoids and consumer appliances, etc.

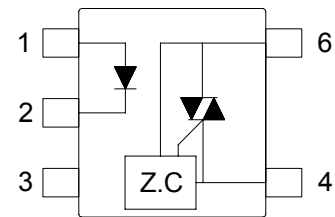
### ● Features

1. Pb free and RoHS compliant
2. 800V peak blocking voltage
3. Simplifies logic control of 240 VAC power
4. Zero voltage crossing
5. Isolation voltage between input and output (Viso : 5300Vms)
6. Agency Approvals :
  - UL1577, File No. E169586
  - CUL C22.2 No.1 & NTC No.5, File No. E169586
  - VDE EN60747-5-5, File No. 101347
  - FIMKO EN60065, File No. NCS/FI 23146 A1 / EN60950, FI 25802 (for KMOC3083 series only)
  - SEMKO EN60065, File No. 1016474 (for KMOC3083 series only)

### ● Applications

- Solenoid/Valve controls
- Lighting controls
- Static power switches
- AC motor drives
- Temperature controls
- E.M contactors
- AC motor contactors
- Solid state relay
- Programmable controllers

### ● Schematic

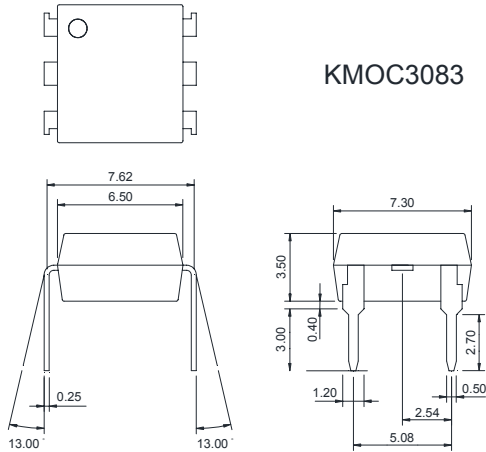


1. Anode
2. Cathode
3. NC
4. Main terminal
6. Main terminal

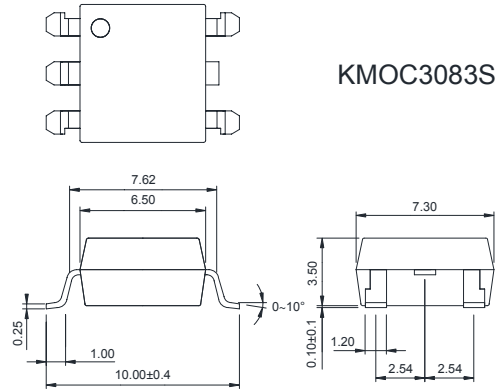
● **Outside Dimension**

Unit : mm

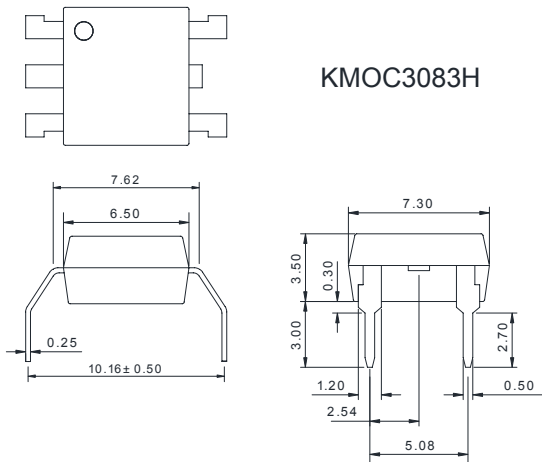
1. Dual-in-line type.



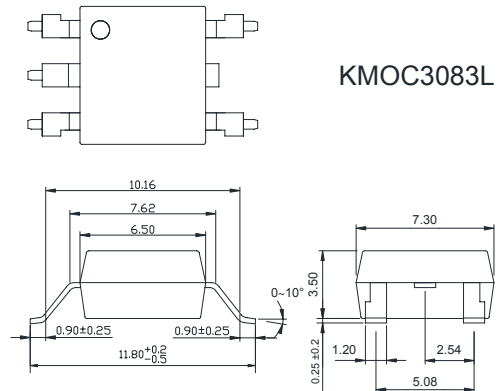
2. Surface mount type.



3. Long creepage distance type.

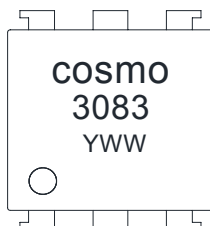


4. Long creepage distance for surface mount type.



TOLERANCE : ±0.2mm

● **Device Marking**



**Notes :**

**COSMO**  
3081、3082、3083  
YWW Y : Year code / W : Week code

### ● Absolute Maximum Ratings

(Ta=25°C)

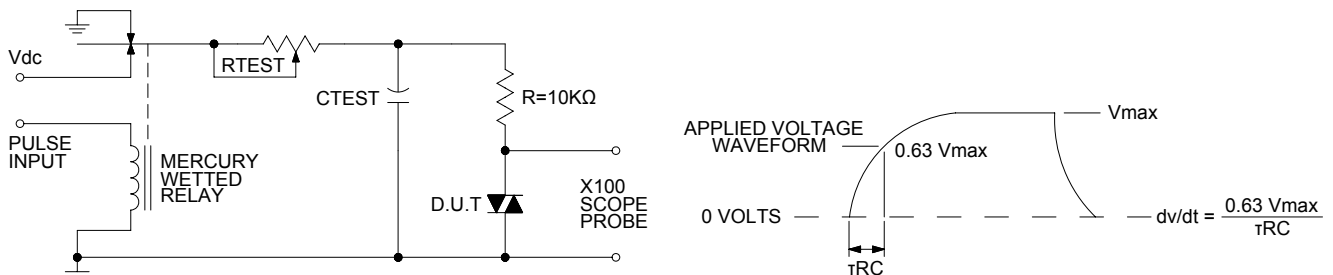
Parameter		Symbol	Rating	Unit
Input	Forward current	$I_F$	50	mA
	Peak forward current	$I_{FM}$	1	A
	Reverse voltage	$V_R$	6	V
	Power dissipation	$P_D$	70	mW
Output	Off-state output terminal voltage	$V_{DRM}$	800	$V_{PEAK}$
	On-state R.M.S. current	$I_{T(RMS)}$	100	mA
	Peak repetitive surge current (PW=10ms.DC 10%)	$I_{TSM}$	1	A
	Power dissipation	$P_D$	300	mW
Total power dissipation		$P_{tot}$	330	mW
Isolation voltage 1 minute		$V_{iso}$	5300	Vrms
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

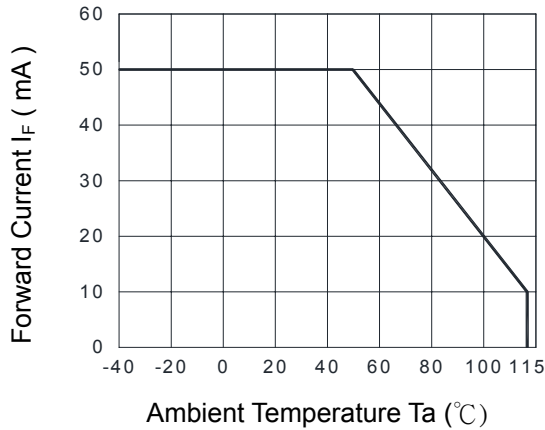
(Ta=25°C)

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	-	-	500	nA
	On-state voltage	$V_{TM}$	$I_{TM}=100mA$	-	1.8	3	V
Transfer characteristics	Holding current	$I_H$		-	0.1	-	mA
	Critical rate of rise of off-state voltage	dv/dt	$V_{DRM}=(1/\sqrt{2})*Rated$	1000	-	-	V/ $\mu s$
	Inhibit voltage (MT1-MT2 voltage above which device will not trigger)	$V_{INH}$	$I_F=Rated I_{FT}$	-	10	20	V
	Leakage in inhibited state	$I_{DRM2}$	$I_F=Rated I_{FT}, Rated V_{DRM}, Off State$	-	-	500	$\mu A$
	Isolation resistance	$R_{iso}$	DC500V	$5 \times 10^{10}$	$10^{11}$	-	$\Omega$
	Minimum trigger current	$I_{FT}$	Main terminal voltage=3V	KMOC3081	-	-	15
			KMOC3082	-	-	10	mA
			KMOC3083	-	-	5	mA

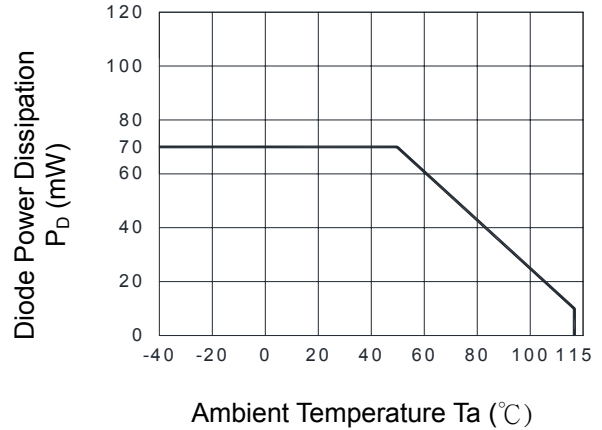
### ● Static dv/dt Test Circuit



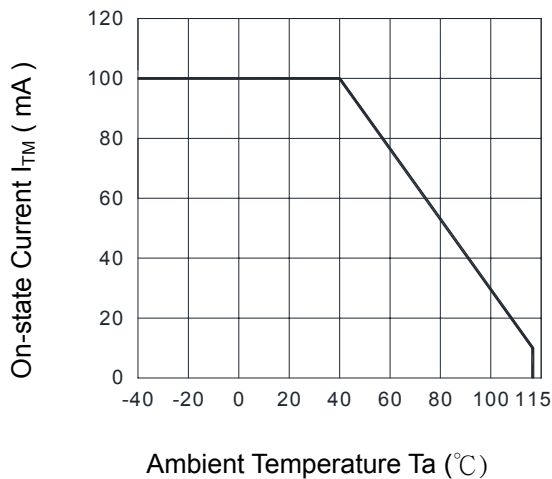
**Fig.1 Forward Current vs. Ambient Temperature**



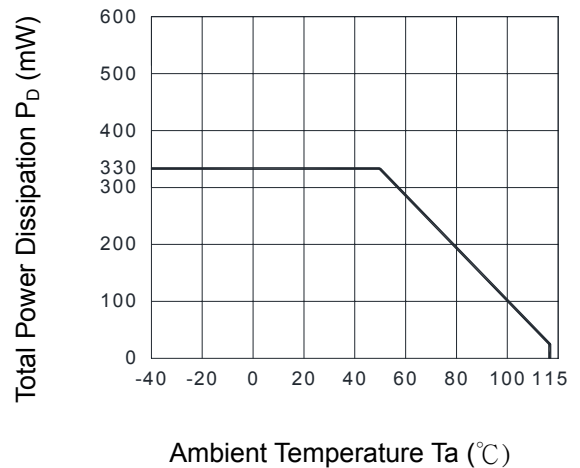
**Fig.2 Diode Power Dissipation vs. Ambient Temperature**



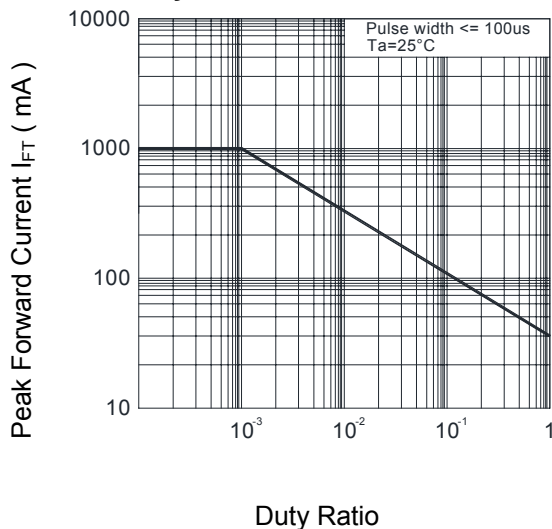
**Fig.3 On-state R.M.S. Current vs. Ambient Temperature**



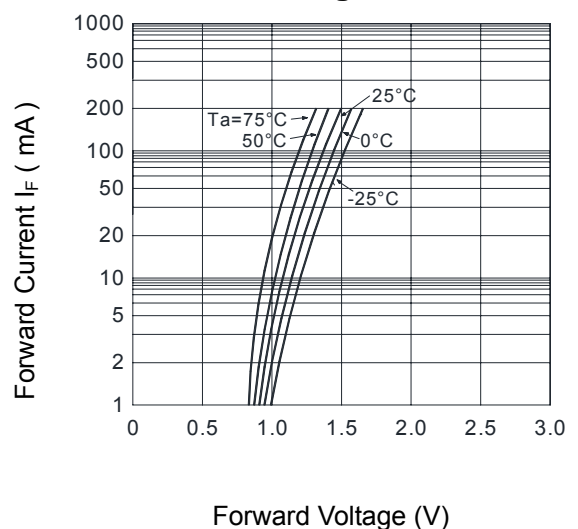
**Fig.4 Total Power Dissipation vs. Ambient Temperature**



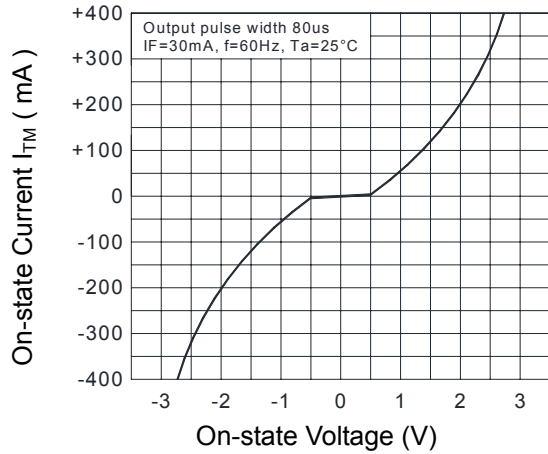
**Fig.5 Peak Forward Current vs. Duty Ratio**



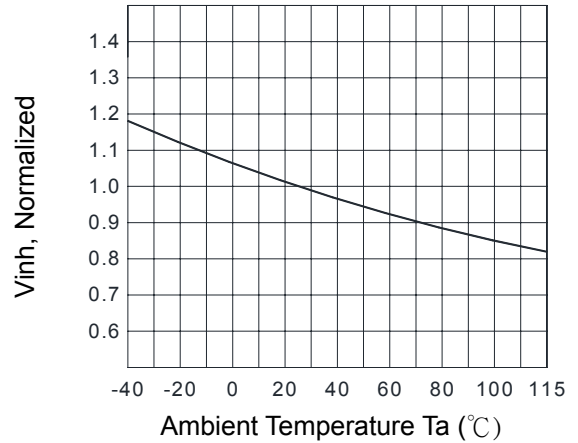
**Fig.6 Forward Current vs. Forward Voltage**



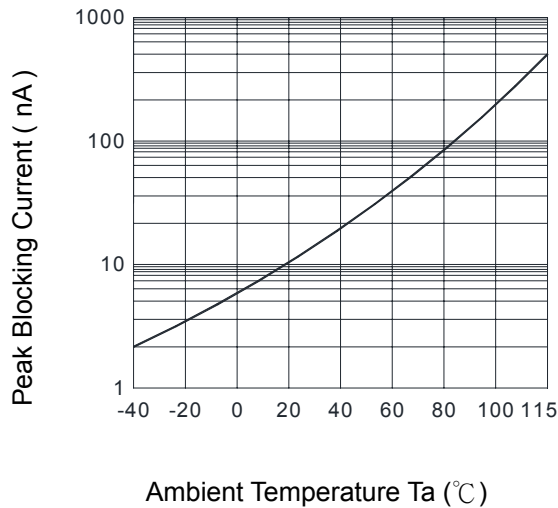
**Fig.7 On-state Characteristics**



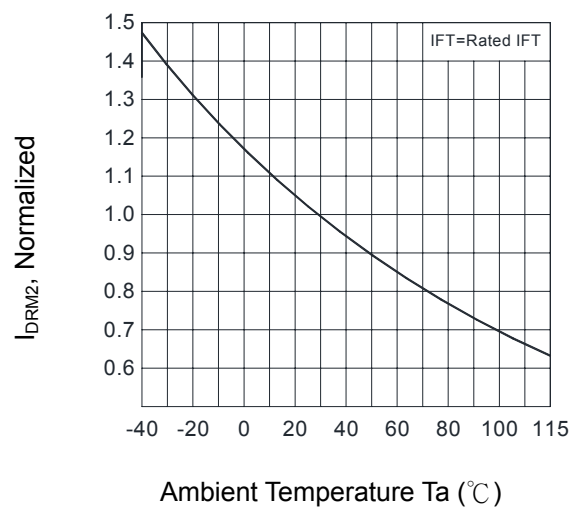
**Fig.8 Inhibit Voltage vs. Ambient Temperature**



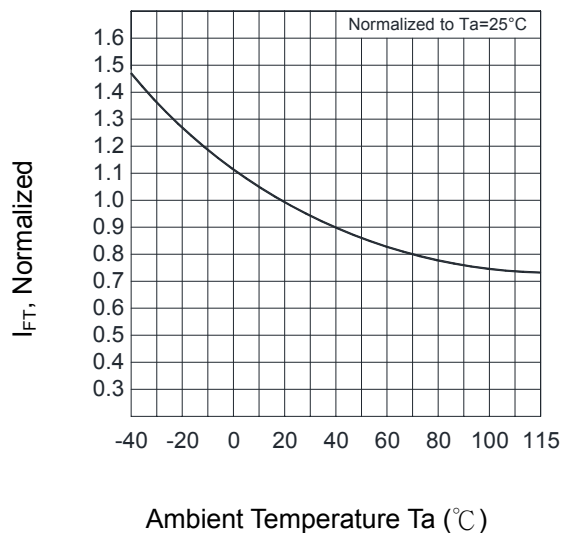
**Fig.9 Leakage with LED off vs. Ambient Temperature**



**Fig.10  $I_{DRM2}$ , Leakage in Inhibited State vs. Ambient Temperature**



**Fig.11 Trigger Current vs. Ambient Temperature**

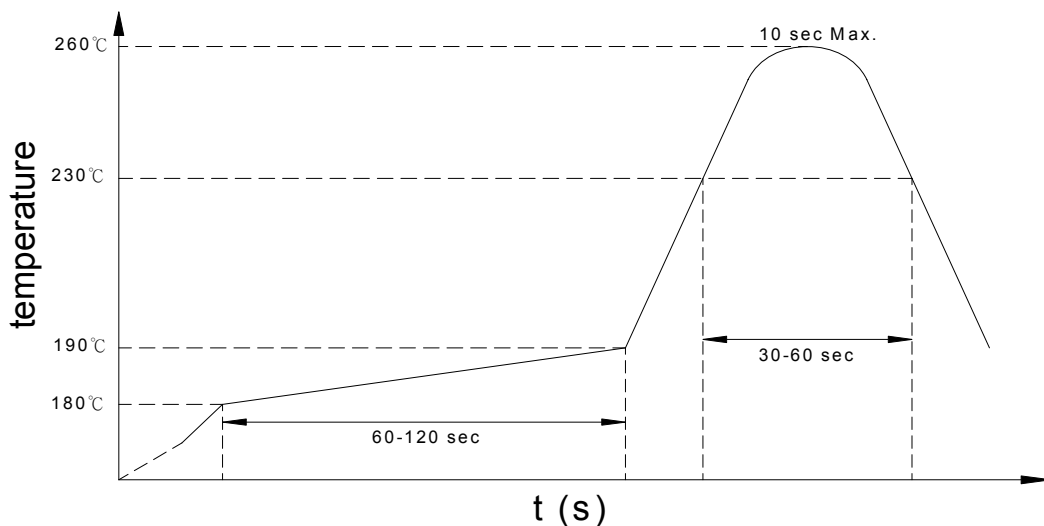


### ● Recommended Soldering Conditions

#### (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



#### (b) 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.)

#### (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

**KMOC3081 X (Y)**

**KMOC3082 X (Y)**

**KMOC3083 X (Y)**

#### Notes :

KMOC3081 / KMOC3082 / KMOC3083 = Part No.

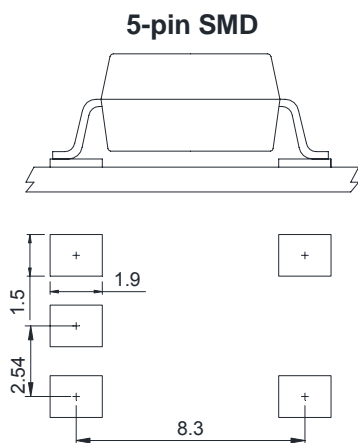
X = Lead form option ( blank 、 S 、 H 、 L )

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

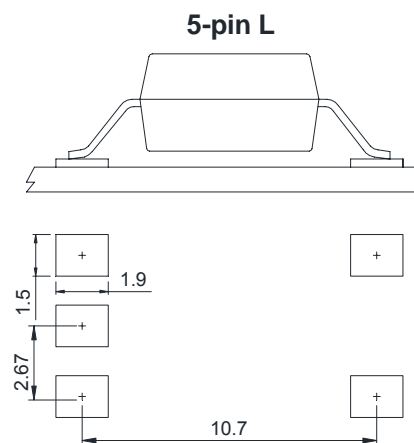
Option	Description	Packing quantity
S (TL)	surface mount type package + TL tape & reel option	1000 units per reel
S (TR)	surface mount type package + TR tape & reel option	1000 units per reel
L (TLD)	long creepage distance for surface mount type package + TLD tape & reel option	1000 units per reel
L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

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

#### 1. Surface mount type.

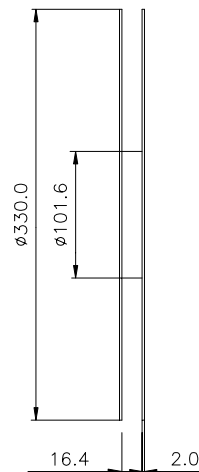
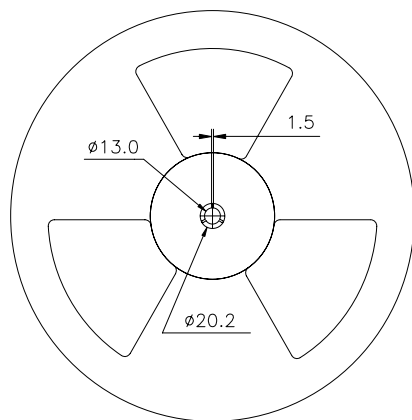
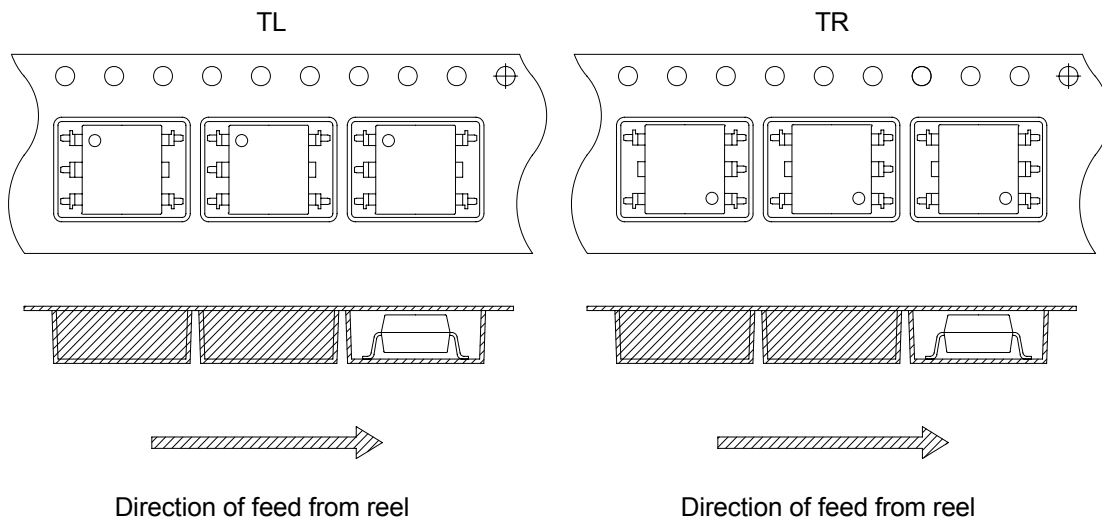
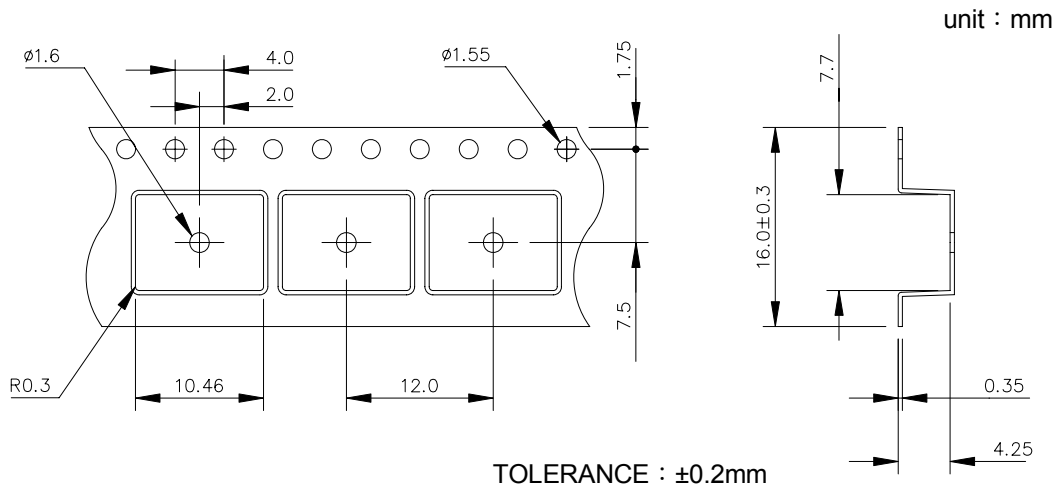


#### 2. Long creepage distance for surface mount type.

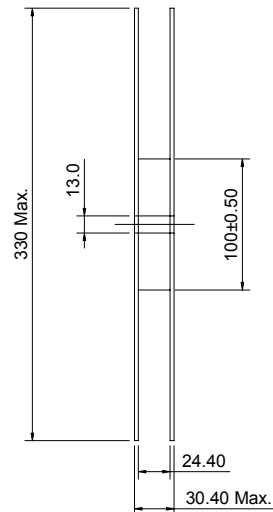
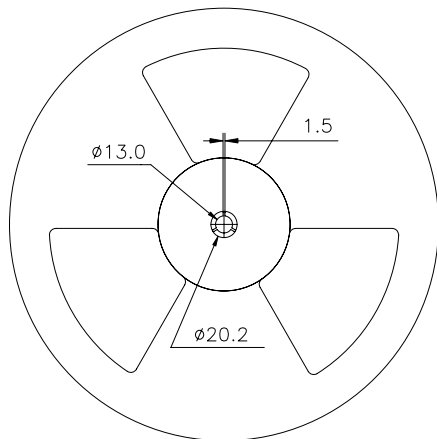
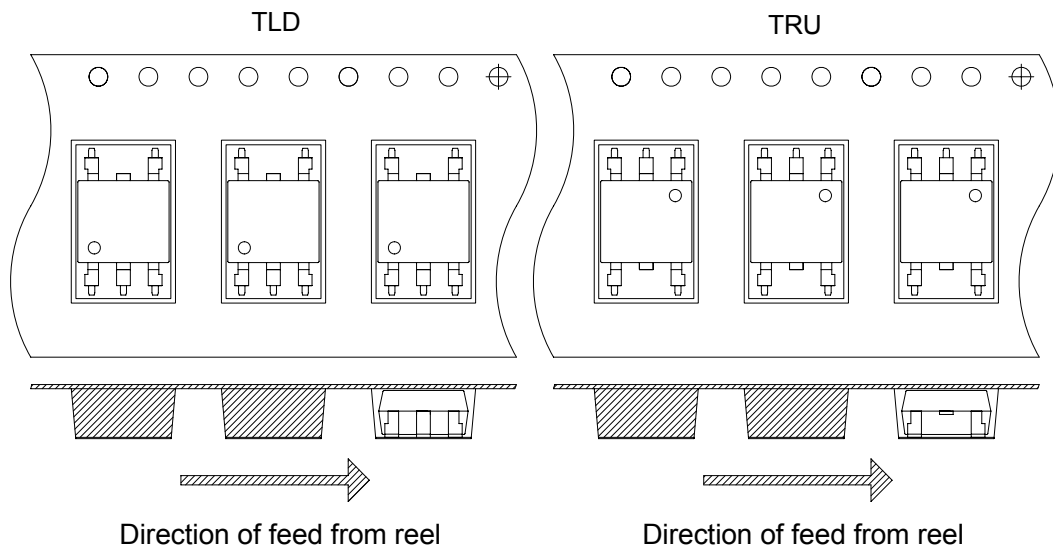
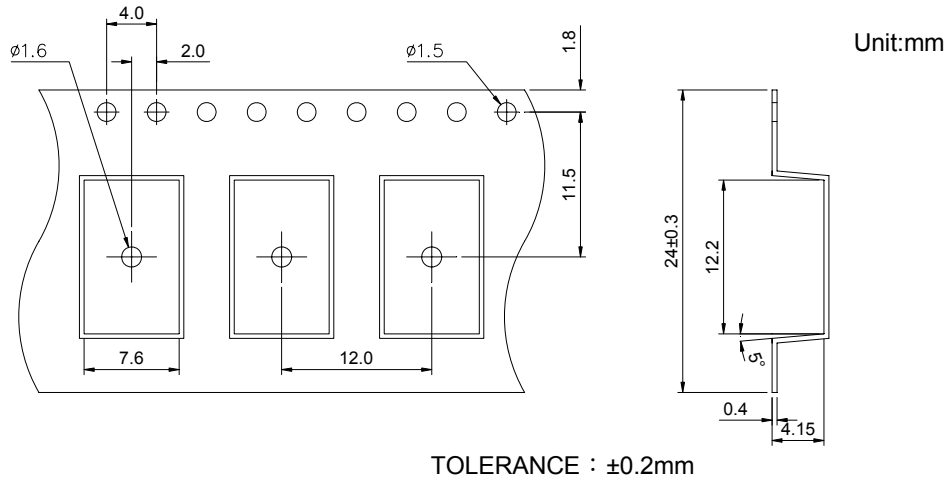


Unit : mm

● SMD Carrier Tape & Reel



● L Carrier Tape & Reel



### ● Application Notice

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