

● Description

The KMOC3041、KMOC3042、KMOC3043 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 115 VAC lines, such as solid-state relays, industrial controls, motors, solenoids and consumer appliances, etc.

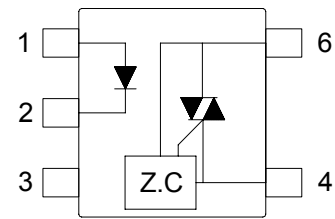
● Features

1. Pb free and RoHS compliant.
2. 400V peak blocking voltage.
3. Simplifies logic control of 115 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

● 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

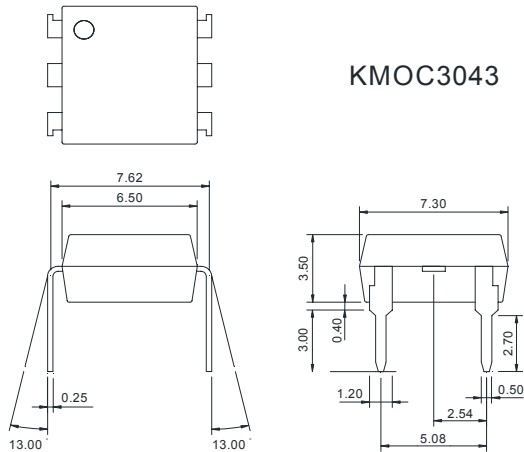


1. Anode
2. Cathode
3. NC
4. Main terminal
6. Main terminal

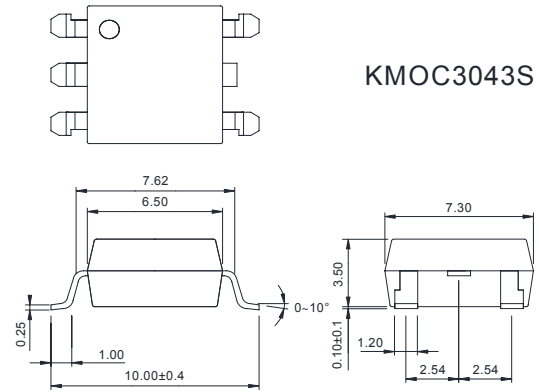
● **Outside Dimension**

Unit : mm

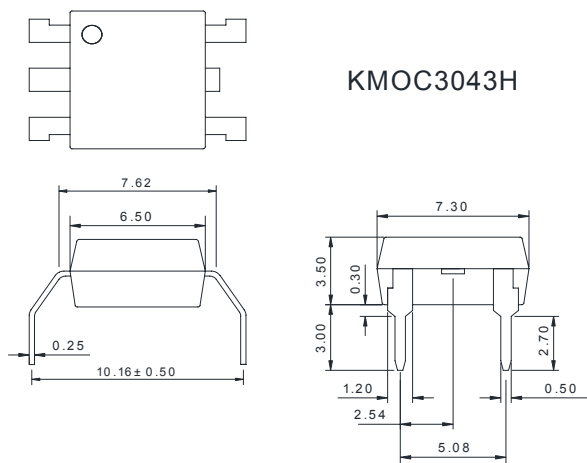
1. Dual-in-line type.



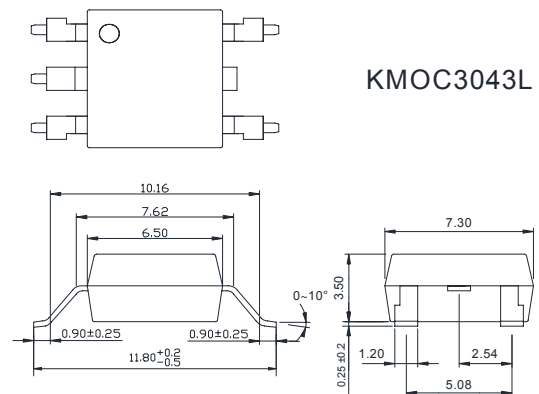
2. Surface mount type.



3. Long creepage distance type.

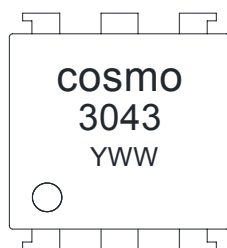


4. Long creepage distance for surface mount type.



TOLERANCE : ±0.2mm

● **Device Marking**



Notes :

cosmo

3041 、 3042 、 3043

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 | $I_{T(RMS)}$ | 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 | μA |
| 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 | $V_{DRM}=(1/\sqrt{2})*\text{Rated}$ | 1000 | - | - | V/ μs |
| | Inhibit voltage (MT1-MT2 voltage above which device will not trigger) | V_{INH} | $I_F = \text{Rated } I_{FT}$ | - | 10 | 20 | V |
| | Leakage in inhibited state | I_{DRM2} | $I_F = \text{Rated } I_{FT}, \text{ Rated } V_{DRM}, \text{ Off State}$ | - | - | 500 | μA |
| | Isolation resistance | R_{iso} | DC500V | 5×10^{10} | 10^{11} | - | Ω |
| | Minimum trigger current | I_{FT} | Main terminal voltage=3V | KMOC3041 | - | - | 15 |
| | | | KMOC3042 | - | - | 10 | mA |
| | | | KMOC3043 | - | - | 5 | mA |

● Static dv/dt Test Circuit

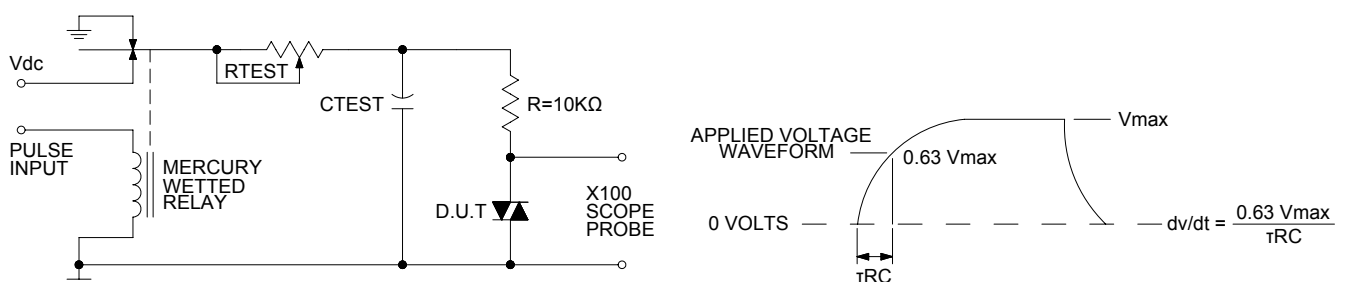


Fig.1 Forward Current vs. Ambient Temperature

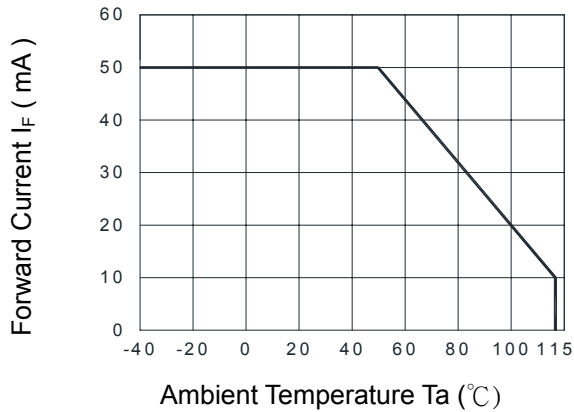


Fig.2 Diode Power Dissipation vs. Ambient Temperature

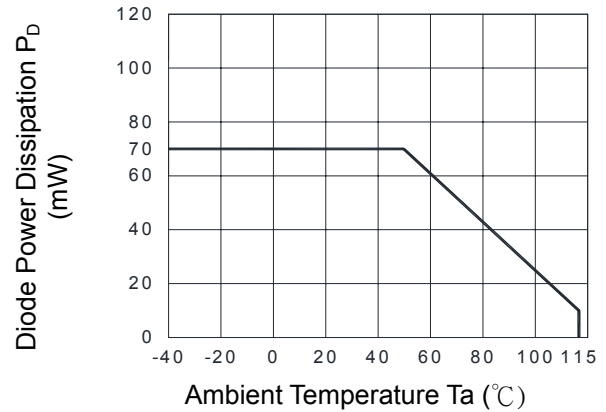


Fig.3 On-state R.M.S. Current vs. Ambient Temperature

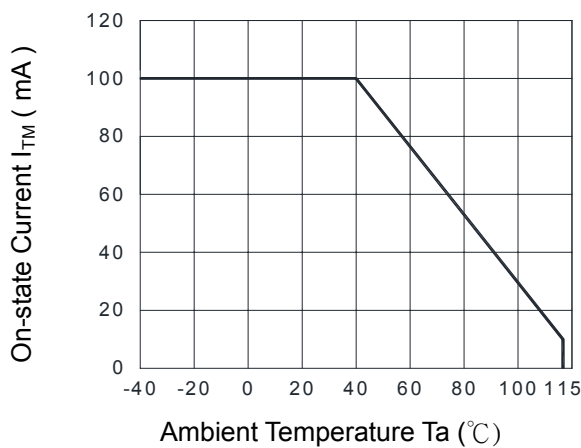


Fig.4 Total Power Dissipation vs. Ambient Temperature

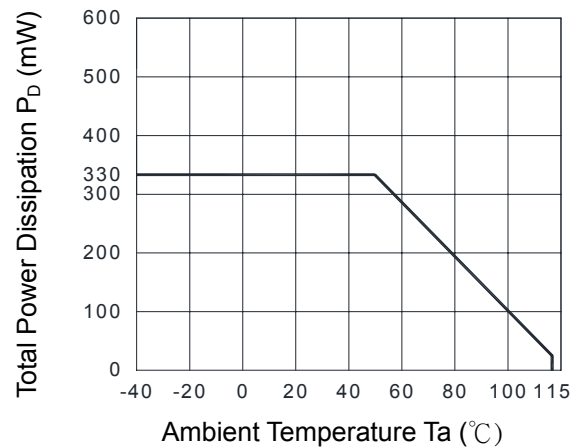


Fig.5 Peak Forward Current vs. Duty Ratio

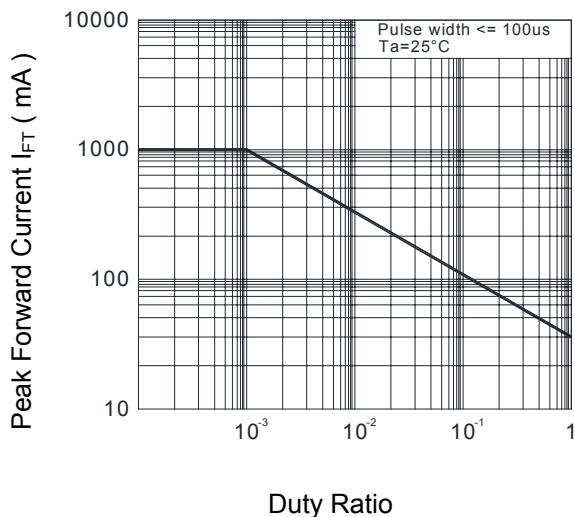


Fig.6 Forward Current vs. Forward Voltage

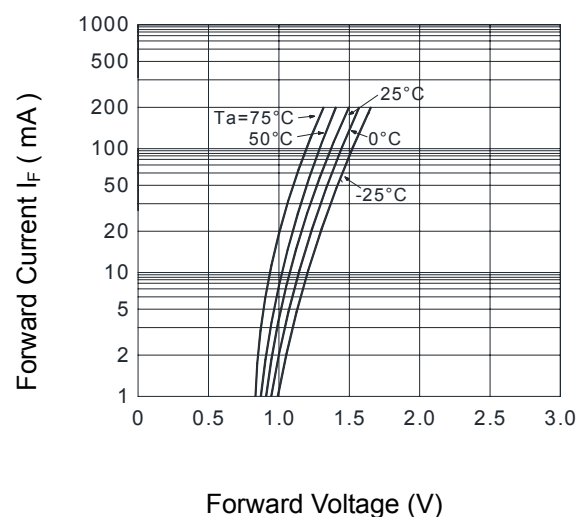


Fig.7 On-state Characteristics

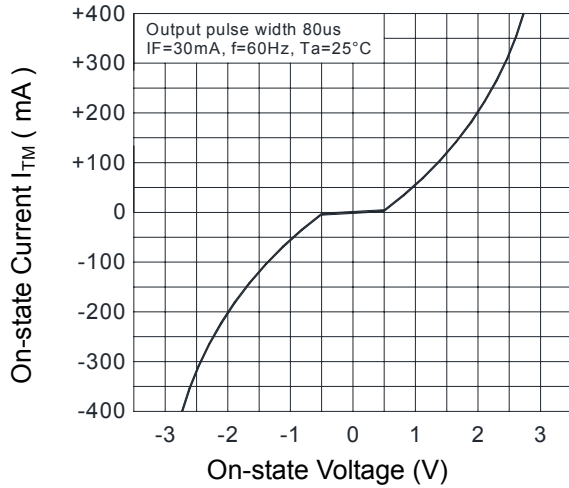


Fig.8 Inhibit Voltage vs. Ambient Temperature

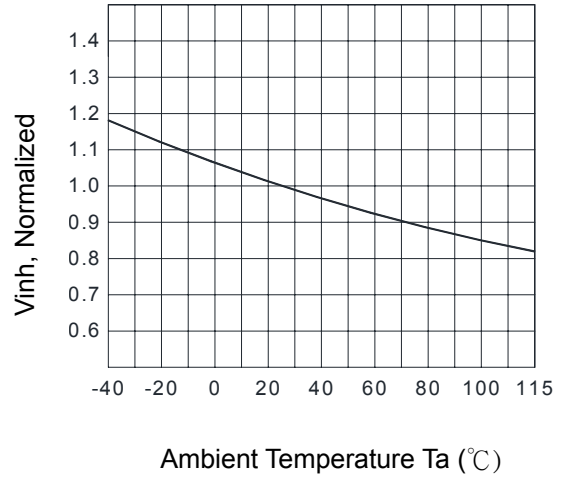


Fig.9 Leakage with LED off vs. Ambient Temperature

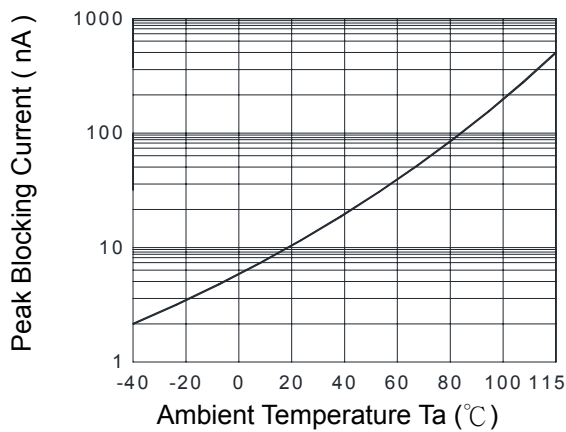


Fig.10 I_DRM2 ,Leakage in Inhibited State vs. Ambient Temperature

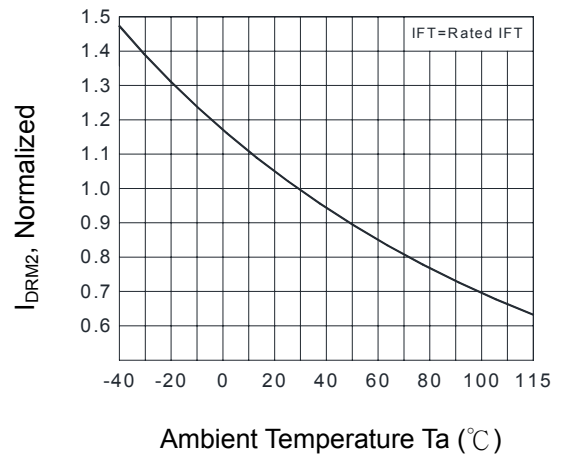
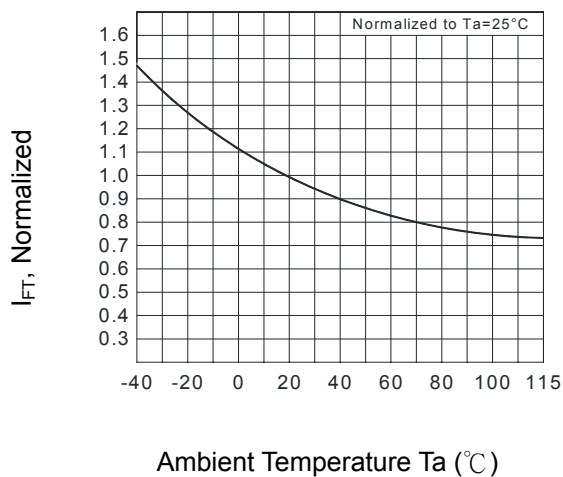


Fig.11 Trigger Current vs. Ambient Temperature

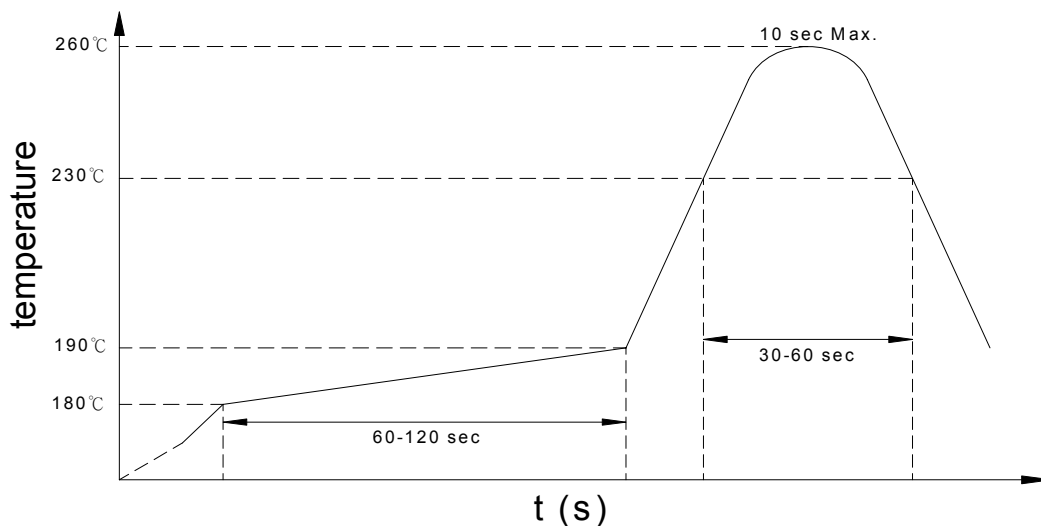


● Recommended Soldering Conditions

(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**

KMOC3041 X (Y)

KMOC3042 X (Y)

KMOC3043 X (Y)

Notes :

KMOC3041 / KMOC3042 / KMOC3043 = Part No.

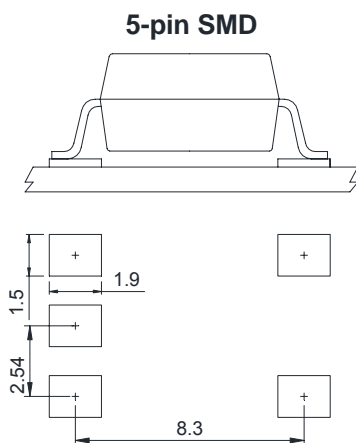
X = Lead form option (blank 、 S 、 H 、 L)

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

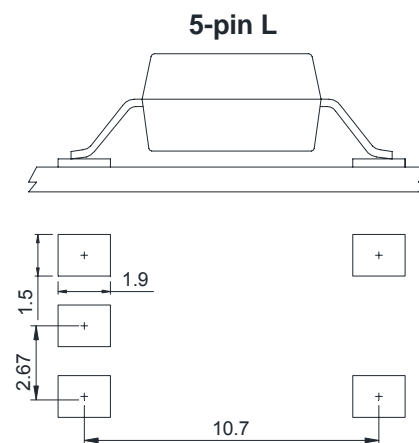
| Option | Description | Packing quantity |
|---------|--|---------------------|
| S (TL) | surface mount type package + TL tape & reel option | 1000 units per reel |
| S (TR) | surface mount type package + TR tape & reel option | 1000 units per reel |
| L (TLD) | long creepage distance for surface mount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

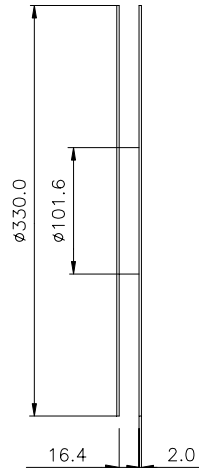
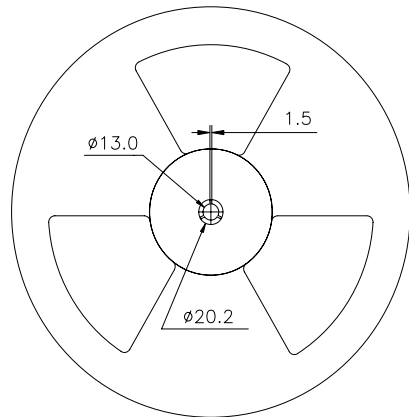
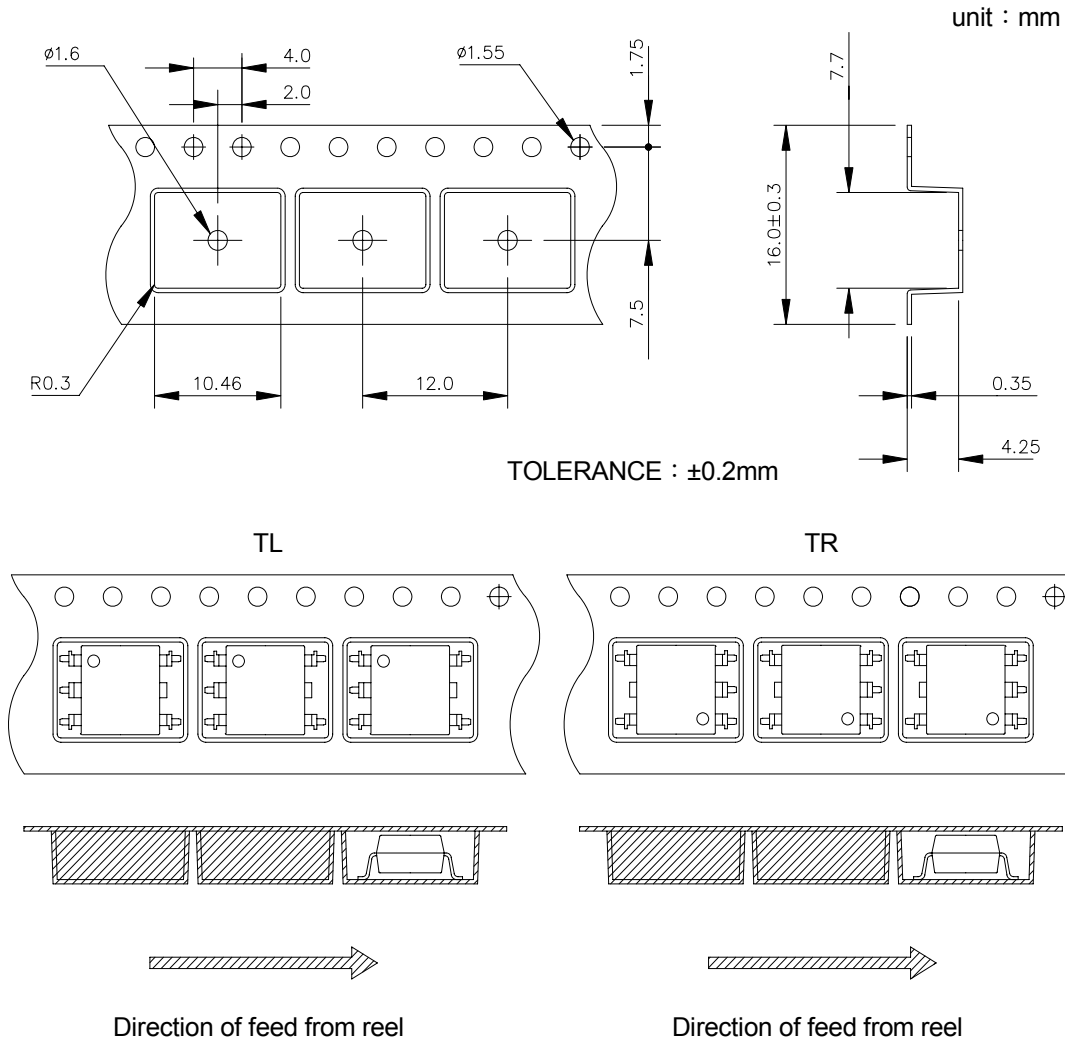


2. Long creepage distance for surface mount type.

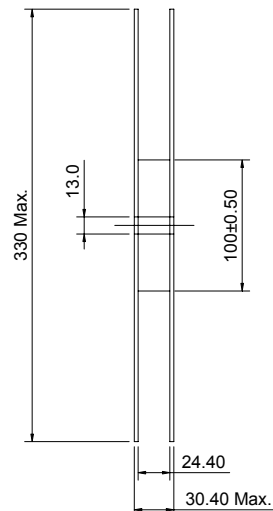
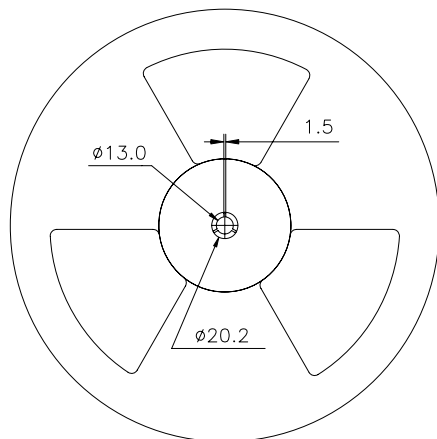
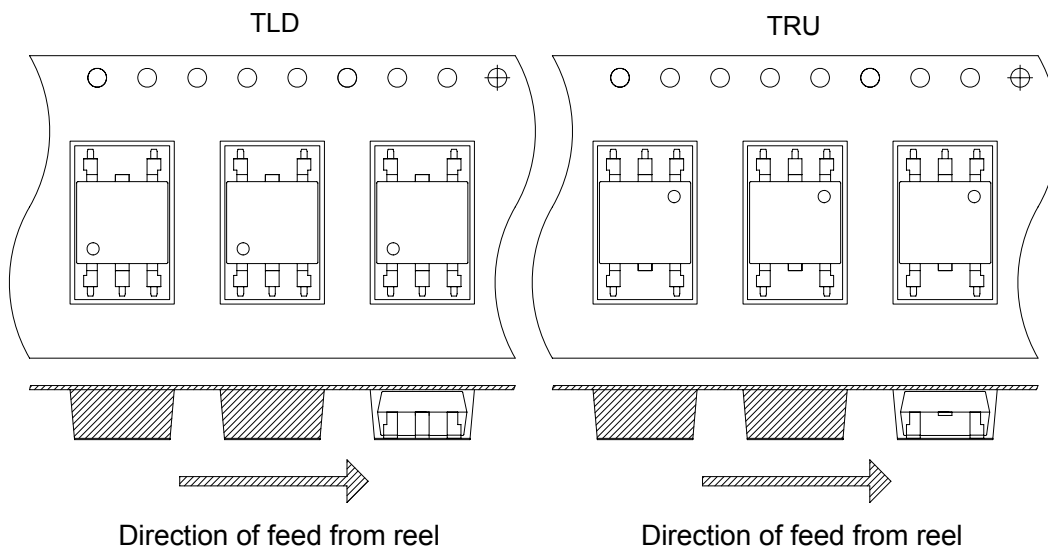
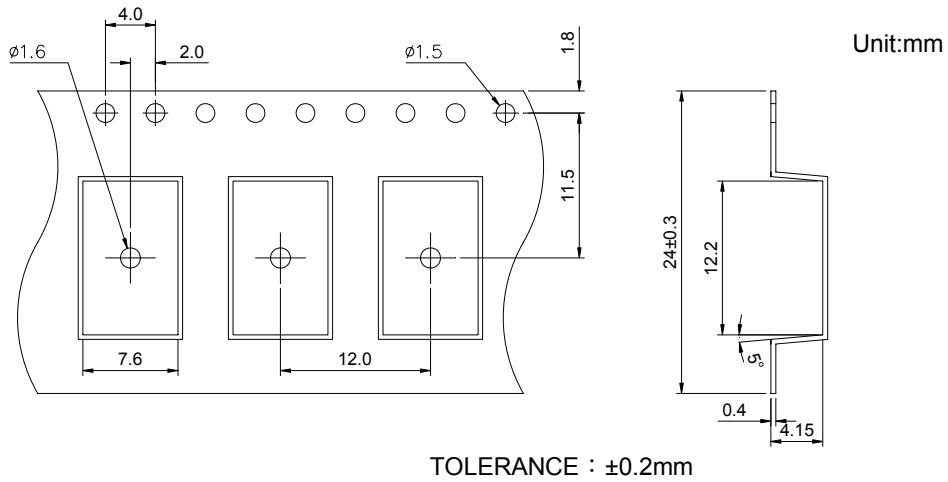


Unit : mm

● SMD Carrier Tape & Reel



● L Carrier Tape & Reel





KMOC304X Series

5PIN ZERO-CROSS TRIAC DRIVER PHOTOCOUPLER

● Application Notice

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- h. Telecommunication

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