

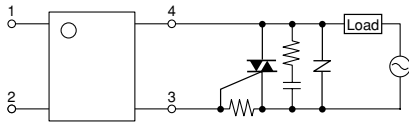
# Cautions For Use of Phototriac Coupler

**1. The internal IC could be damaged if a short forms between the I/O terminals while the phototriac coupler is powered.**

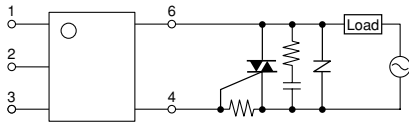
## 2. Output spike voltages

1) The figure below shows an ordinary triac drive circuit. Please add a snubber circuit or varistor, as noise/surge on the load side could damage the unit or cause malfunctions.

### SOP4, DIP4



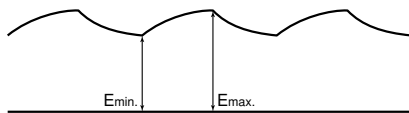
### DIP6



2) Even if spike voltages generated at the load are limited with a clamp diode if the circuit wires are long, spike voltages will occur by inductance. Keep wires as short as possible to minimize inductance.

## 3. Ripple in the input power supply

1) For LED operate current at  $E_{min}$ , maintain min. 10 mA  
2) Keep the LED operate current at 50 mA or less at  $E_{max}$ .



## 4. Storage

Phototriac couplers implemented in SO packages (SOP 4-pin type) are sensitive to moisture and come in sealed moisture-proof packages. Observe the following cautions on storage.

- After the moisture-proof package is unsealed, take the devices out of storage as soon as possible (within 1 month at the most).
- If the devices are to be left in storage for a considerable period after the moisture-proof package has been unsealed, it is recommended to keep them in another moisture-proof bag containing silica gel (within 3 months at the most).

## 5. Important Notes for Mounting

1) Temperature rise in the lead portion is highly dependent on package size. If multiple different packages are mounted on the same board, please check your board beforehand in an actual product, ensuring that the temperature conditions of the phototriac coupler fall within the parameters listed above.

## 6. Cleaning

The phototriac coupler forms an optical path by coupling a light-emitting diode (LED) and photodiode via transparent silicon resin. For this reason, unlike other directory element molded resin products (e.g., MOS transistors and bipolar transistors), avoid ultrasonic cleansing if at all possible. We recommend cleaning with an organic solvent. If you cannot avoid using ultrasonic cleansing, please ensure that the following conditions are met, and check beforehand for defects.

- Frequency: 27 to 29 kHz
- Ultrasonic output: No greater than 0.25 W/cm<sup>2</sup>
- Cleaning time: No longer than 30 s
- Cleanser used: Asahiklin AK-225
- Other: Submerge in solvent in order to prevent the PCB and elements from being contacted directly by the ultrasonic vibrations.

Note: Applies to unit area ultrasonic output for ultrasonic baths.

## 7. Transportation and storage

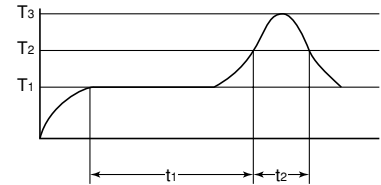
- 1) Extreme vibration during transport will warp the lead or damage the relay. Handle the outer and inner boxes with care.
- 2) Storage under extreme conditions will cause soldering degradation, external appearance defects, and deterioration of the characteristics. The following storage conditions are recommended:
  - Temperature: 0 to 45°C 32 to 113°F
  - Humidity: Less than 70% R.H.
  - Atmosphere: No harmful gasses such as sulfurous acid gas, minimal dust.

## 8. Soldering

1) When soldering PC board terminals, keep soldering time to within 10 s at 260°C 500°F.

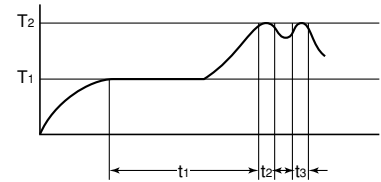
2) When soldering surface-mount terminals, the following conditions are recommended.

(1) IR (Infrared reflow) soldering method



$T_1 = 155$  to  $165^\circ\text{C}$  311 to  $329^\circ\text{F}$   
 $T_2 = 180^\circ\text{C}$  200°C 356 to  $392^\circ\text{F}$   
 $T_3 = 245^\circ\text{C}$  473°F or less  
 $t_1 = 120$  s or less  
 $t_2 = 30$  s or less

(2) Double wave soldering method



$T_1 = 120^\circ\text{C}$  248°F or less  
 $T_2 = 260^\circ\text{C}$  500°F or less  
 $t_1 = 60$  s or less  
 $t_2+t_3 = 5$  s or less

(3) Soldering iron method

Tip temperature: 280 to 300°C 536 to 572°F

Wattage: 30 to 60 W

Soldering time: within 5 s

(4) Others

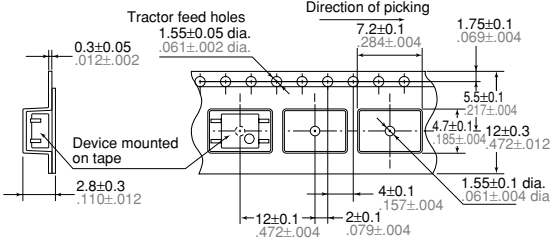
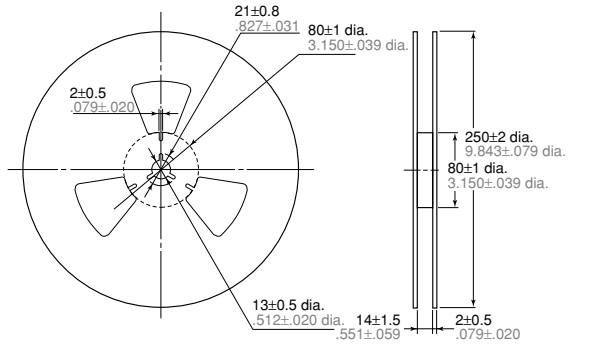
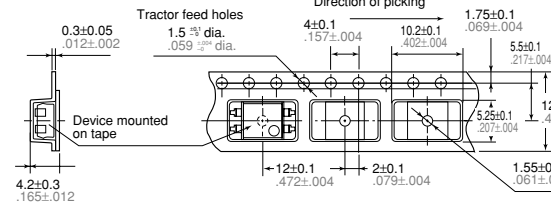

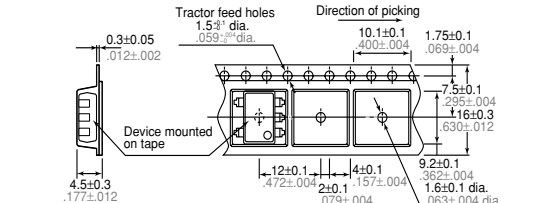
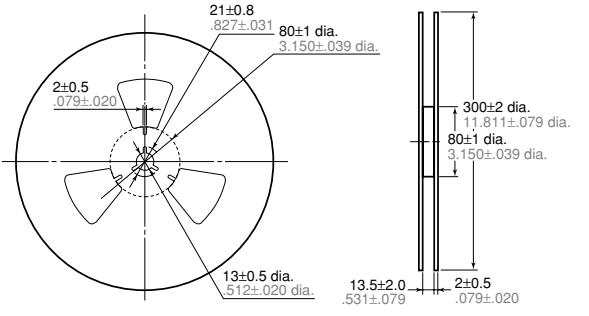
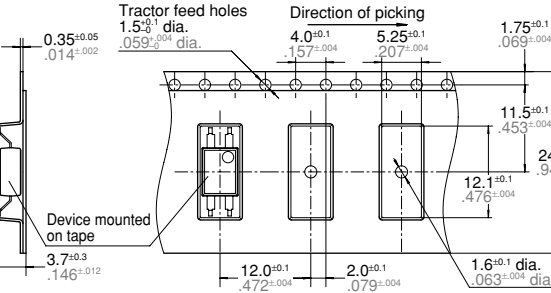
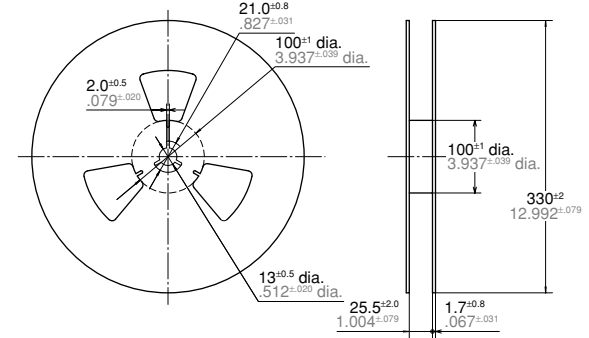
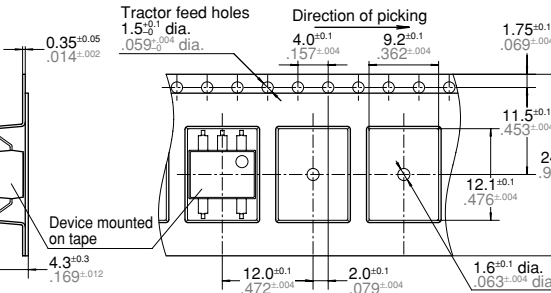
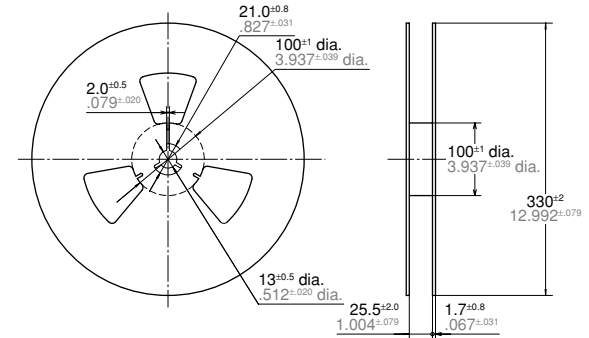
Check mounting conditions before using other soldering methods (hot-air, hot plate, pulse heater, etc.)

- The temperature profile indicates the temperature of the soldered terminal on the surface of the PC board. The ambient temperature may increase excessively. Check the temperature under mounting conditions.

9. The following shows the packaging format

1) Tape and reel

mm inch

Type	Tape dimensions	Dimensions of paper tape reel
SO package 4-pin type	 <p>Tractor feed holes: 0.3±0.05, 1.55±0.05 dia., 0.61±.002 dia.</p> <p>Direction of picking: 7.2±0.1, 284±.004, 1.75±0.1, 0.69±.004</p> <p>Device mounted on tape: 2.8±0.3, .110±.012</p> <p>Other dimensions: 5.5±0.1, 217±.004, 4.7±0.1, 12±0.3, 185±.004, 4.72±.012, 12±0.1, 4±0.1, 157±.004, 2±0.1, 0.79±.004, 1.55±0.1 dia., 0.61±.004 dia., 4.72±.012, 12±0.1, 4.72±.012</p> <p>(1) When picked from 1/2-pin side: Part No. APT○○○○SX (Shown above)                  (2) When picked from 3/4-pin side: Part No. APT○○○○SZ</p>	 <p>21±0.8, .827±.031, 80±1 dia., 3.150±.039 dia.</p> <p>2±0.5, .079±.020</p> <p>250±2 dia., 9.843±.079 dia., 80±1 dia., 3.150±.039 dia.</p> <p>13±0.5 dia., 5.12±.020 dia., 14±1.5, .551±.059, 2±0.5, .079±.020</p>
4-pin SMD type	 <p>Tractor feed holes: 0.3±0.05, 1.5± dia., .059±.004 dia.</p> <p>Direction of picking: 4±0.1, 157±.004, 10.2±0.1, 402±.004, 1.75±0.1, 0.69±.004</p> <p>Device mounted on tape: 4.2±0.3, .165±.012</p> <p>Other dimensions: 5.5±0.1, 217±.004, 3.2±0.1, 207±.004, 12±0.3, 4.72±.012, 12±0.1, 4.72±.012, 2±0.1, 0.79±.004, 1.55±0.1 dia., 0.61±.004 dia.</p> <p>(1) When picked from 1/2-pin side: Part No. APT○○○○AX (Shown above)                  (2) When picked from 3/4-pin side: Part No. APT○○○○AZ</p>	 <p>21±0.8, .827±.031, 80±1 dia., 3.150±.039 dia.</p> <p>2±0.5, .079±.020</p> <p>300±2 dia., 11.811±.079 dia., 80±1 dia., 3.150±.039 dia.</p> <p>13±0.5 dia., 5.12±.020 dia., 13.5±2.0, .531±.079, 2±0.5, .079±.020</p>
6-pin SMD type	 <p>Tractor feed holes: 0.3±0.05, 1.5± dia., .059±.004 dia.</p> <p>Direction of picking: 10.1±0.1, 400±.004, 1.75±0.1, 0.69±.004</p> <p>Device mounted on tape: 4.5±0.3, .177±.012</p> <p>Other dimensions: 7.5±0.1, 295±.004, 1.6±0.3, 1.630±.012, 9.2±0.1, 362±.004, 1.6±0.1 dia., 0.63±.004 dia., 12±0.1, 4.72±.012, 4±0.1, 157±.004, 2±0.1, 0.79±.004</p> <p>(1) When picked from 1/2/3-pin side: Part No. APT○○○○AX (Shown above)                  (2) When picked from 4/5/6-pin side: Part No. APT○○○○AZ</p>	 <p>21±0.8, .827±.031, 80±1 dia., 3.150±.039 dia.</p> <p>2±0.5, .079±.020</p> <p>13±0.5 dia., 5.12±.020 dia., 13.5±2.0, .531±.079, 2±0.5, .079±.020</p>
DIP 4-pin wide type	 <p>Tractor feed holes: 0.35±0.05, 1.5± dia., .059±.004 dia.</p> <p>Direction of picking: 4.0±0.1, 157±.004, 5.25±0.1, 207±.004, 1.75±0.1, 0.69±.004</p> <p>Device mounted on tape: 3.7±0.3, .146±.012</p> <p>Other dimensions: 11.5±0.1, 453±.004, 24.0±0.3, .945±.012, 12.1±0.1, 4.76±.004, 1.6±0.1 dia., 0.63±.004 dia., 12.0±0.1, 4.72±.012, 2.0±0.1, 0.79±.004</p> <p>(1) When picked from 1/4-pin side: Part No. APT○○○○WAY (Shown above)                  (2) When picked from 2/3-pin side: Part No. APT○○○○WAW</p>	 <p>21.0±0.8, .827±.031, 100±1 dia., 3.937±.039 dia.</p> <p>2.0±0.5, .079±.020</p> <p>13±0.5 dia., 5.12±.020 dia., 25.5±2.0, 1.004±.079, 1.7±0.8, .067±.031, 100±1 dia., 3.937±.039 dia., 330±2, 12.992±.079</p>
DIP 6-pin wide type	 <p>Tractor feed holes: 0.35±0.05, 1.5± dia., .059±.004 dia.</p> <p>Direction of picking: 4.0±0.1, 157±.004, 9.2±0.1, 362±.004, 1.75±0.1, 0.69±.004</p> <p>Device mounted on tape: 4.3±0.3, .169±.012</p> <p>Other dimensions: 11.5±0.1, 453±.004, 24.0±0.3, .945±.012, 12.1±0.1, 4.76±.004, 1.6±0.1 dia., 0.63±.004 dia., 12.0±0.1, 4.72±.012, 2.0±0.1, 0.79±.004</p> <p>(1) When picked from 1/6-pin side: Part No. APT○○○○WAY (Shown above)                  (2) When picked from 3/4-pin side: Part No. APT○○○○WAW</p>	 <p>21.0±0.8, .827±.031, 100±1 dia., 3.937±.039 dia.</p> <p>2.0±0.5, .079±.020</p> <p>13±0.5 dia., 5.12±.020 dia., 25.5±2.0, 1.004±.079, 1.7±0.8, .067±.031, 100±1 dia., 3.937±.039 dia., 330±2, 12.992±.079</p>

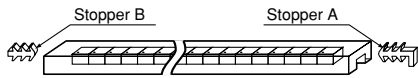
## 2) Tube

(1) Devices are packaged in a tube so pin No. 1 is on the stopper B side. Observe correct orientation when mounting them on PC boards.

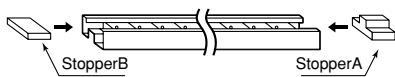
(SOP 4-pin type)



(DIP 4-pin type)



(DIP 6-pin type)



## (2) Storage

Phototriac Coupler implemented in SO packages are sensitive to moisture and come in sealed moisture-proof packages. Observe the following cautions on storage.

- After the moisture-proof package is unsealed, take the devices out of storage as soon as possible (within 1 month at the most).
- If the devices are to be left in storage for a considerable period after the moisture-proof package has been unsealed, it is recommended to keep them in another moisture-proof bag containing silica gel (within 3 months at the most).

## 10. Applying stress that exceeds the absolute maximum rating

If the voltage or current value for any of the terminals exceeds the absolute maximum rating, internal elements will deteriorate because of the excessive voltage or current. In extreme cases, wiring may melt, or silicon P/N junctions may be destroyed.

As a result, the design should ensure that the absolute maximum ratings will never be exceeded, even momentarily.