



## SPI-240-15-T1

### Ultraminiature photointerrupter supporting reflow soldering (Darlington-transistor type)

#### Features

- GaAs Infrared LED plus Darlington Phototransistor
- Photo-Interrupter for reflow soldering
- Compact type : H4.95 × L6.0 × W5.5mm
- Taping type

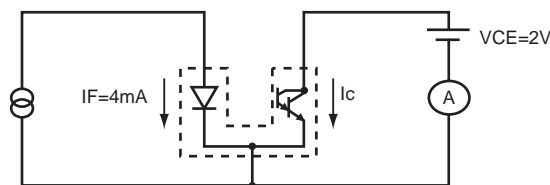
#### Absolute Maximum Ratings at Ta=25°C, 65%RH

Parameter		Symbol	Rating	Unit
Input LED	Forward Current	$I_F$	50	mA
	Reverse Voltage	$V_R$	5	V
	Power Dissipation	$P_D$	70	mW
Output Phototransistor	Collector-Emitter Voltage	$V_{CEO}$	20	V
	Emitter-Collector Voltage	$V_{ECO}$	5	V
	Collector Curren	$I_C$	20	mA
	Power Dissipation	$P_C$	70	mW
Operating Temperature		$T_{opr}$	-20 to +80	°C
Storage Temperature		$T_{stg}$	-30 to +85	°C

#### Electro-Optical Characteristics at Ta=25°C, 65%RH

Parameter		Symbol	Condition	Min.	Typ.	Max.	Unit
Input	Forward Voltage	$V_F$	$I_F=10\text{mA}$	1.0	1.15	1.4	V
	Reverse Current	$I_R$	$V_R=5\text{V}$	-	-	10	$\mu\text{A}$
Output	Dark Current	$I_{CEO}$	$I_F=0\text{mA}, V_{CE}=10\text{V}$	-	-	1	$\mu\text{A}$
Coupled	Collector Output Current	$I_C$	$I_F=4\text{mA}, V_{CE}=2\text{V}^{*1}$	0.5	3	-	mA
	Collector Emitter Saturation Voltage	$V_{CE(sat)}$	$I_F=4\text{mA}, I_C=250\mu\text{A}$	-	-	1.2	V
	Rise Time	$t_r$	$V_{CC}=5\text{V}, R_L=100\Omega$	-	100	-	$\mu\text{s}$
	Fall Time	$t_f$	$I_C=10\text{mA}$	-	100	-	$\mu\text{s}$

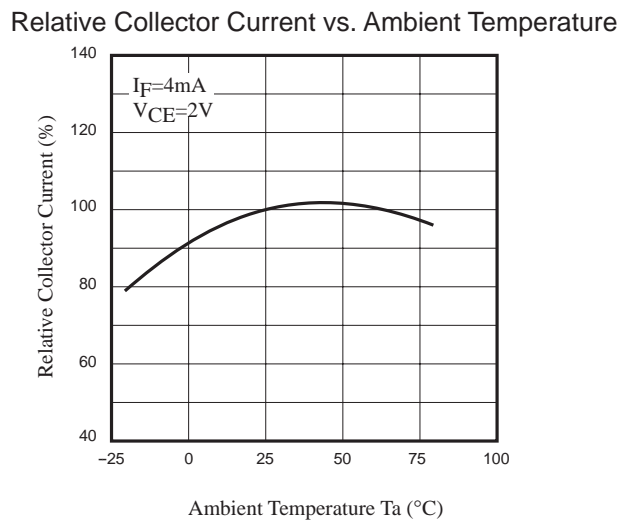
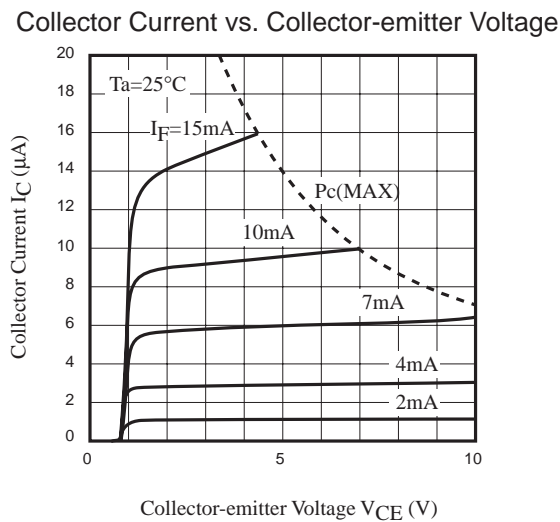
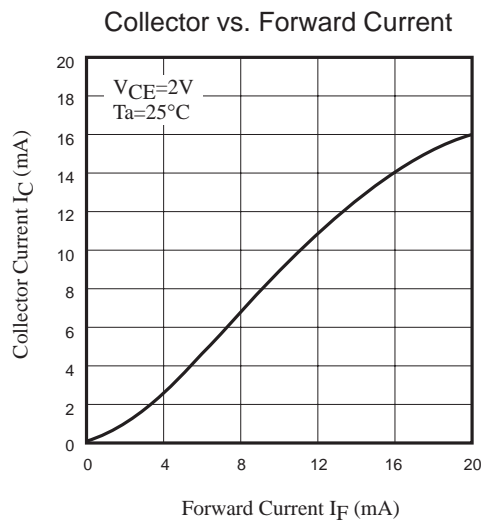
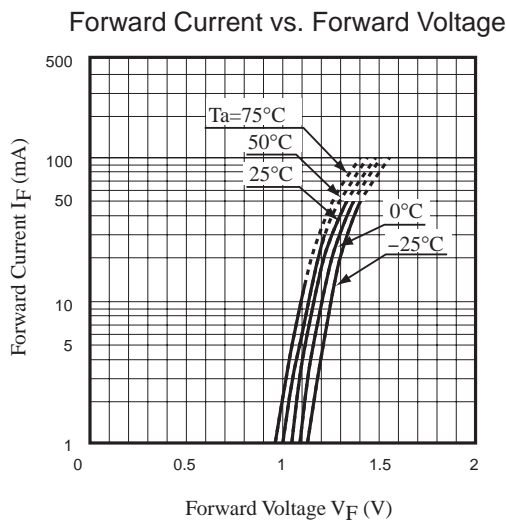
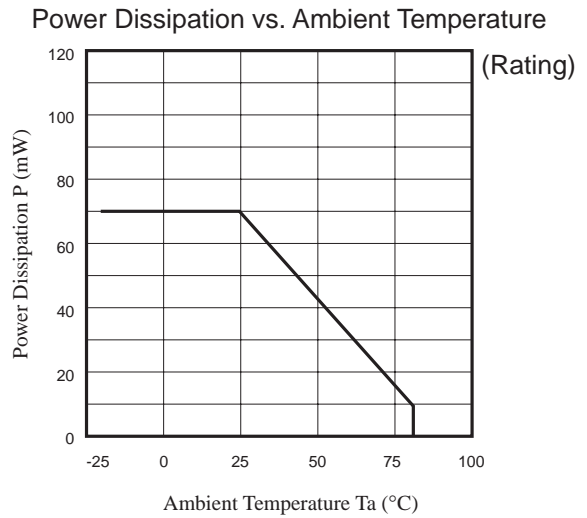
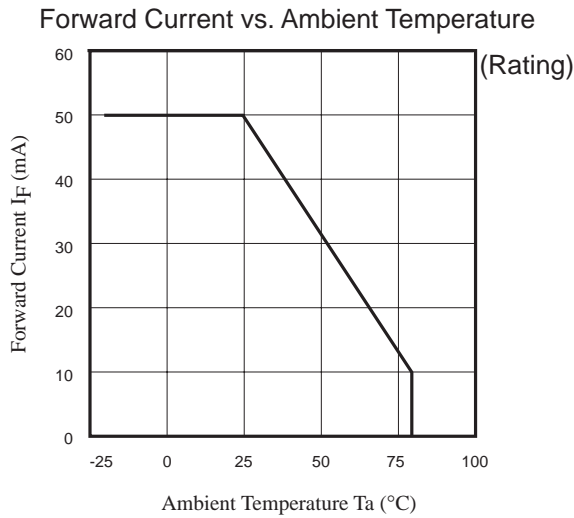
\*1 Measurement Circuit of Collector Current



Typical Characteristics



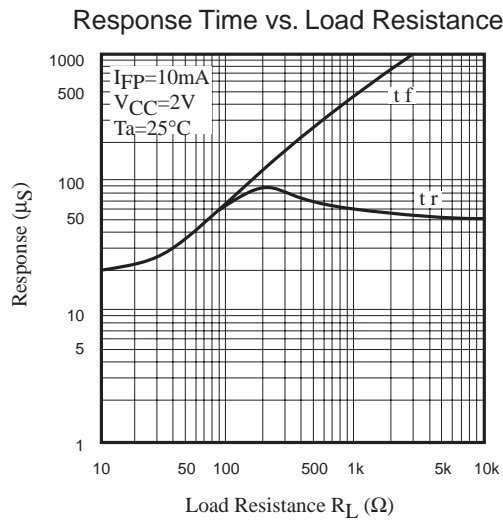
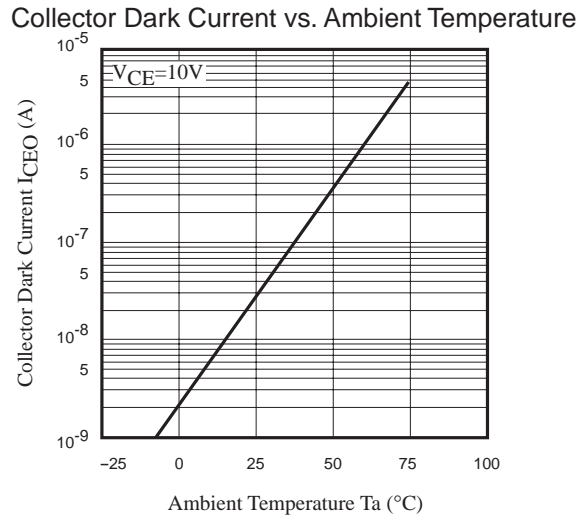
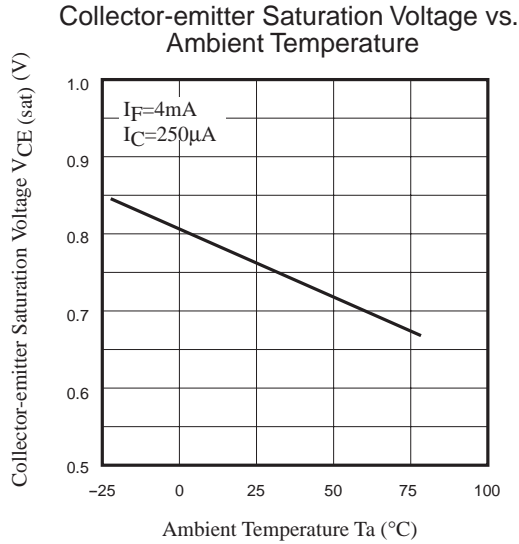
These numerical value show the electrical and optical characteristics of this product, and not assure this contents.



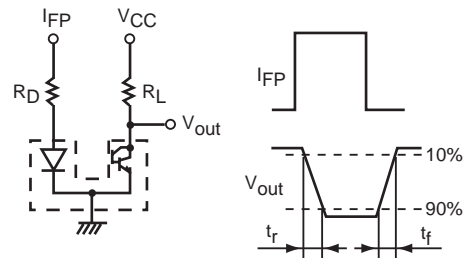
Typical Characteristics



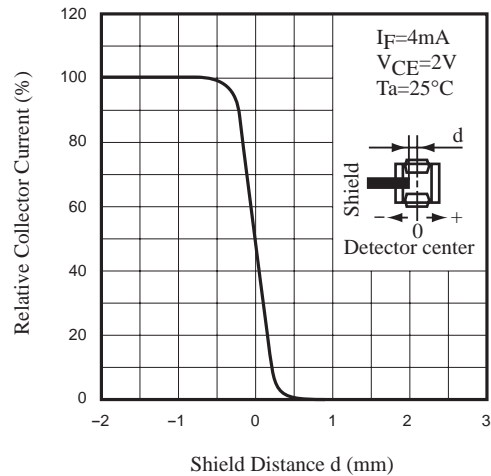
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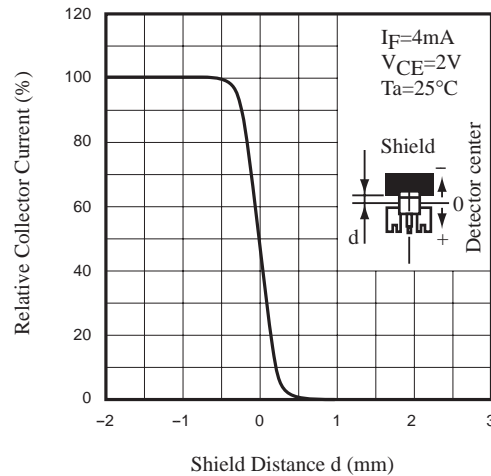
Test Circuit for Response Time



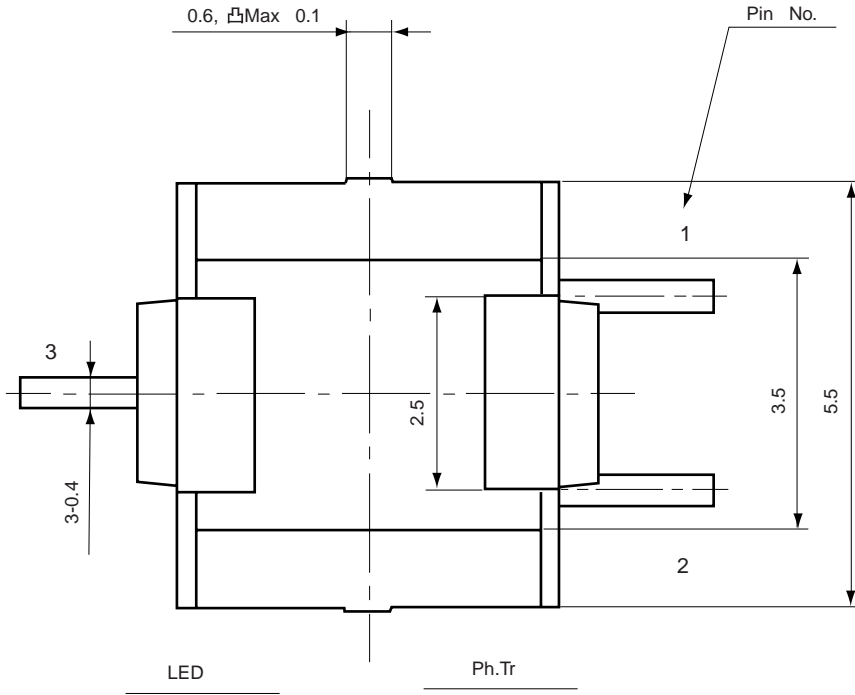
Relative Collector Current vs. Shield Distance (1)



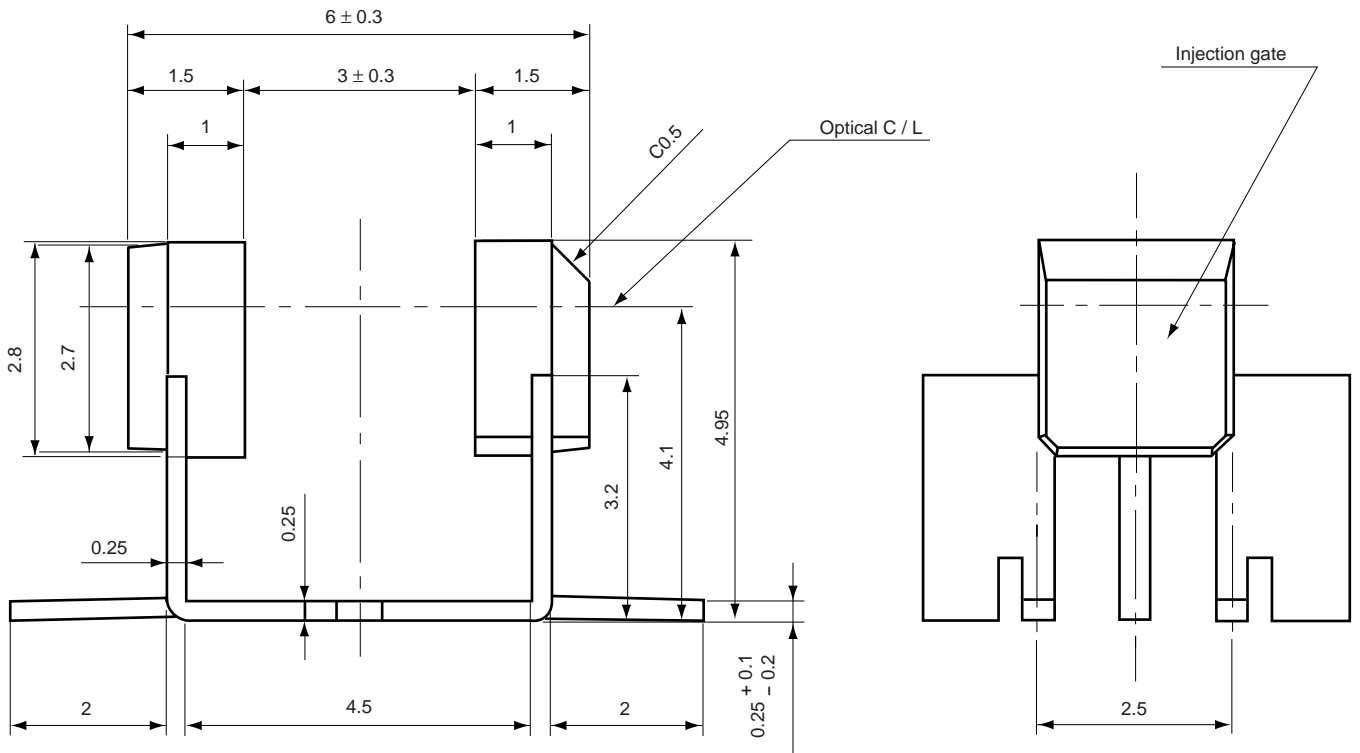
Relative Collector Current vs. Shield Distance (2)



# SPI-240-15-T1



Pin connection  
 1. Ph. Tr Collector  
 2. Common (Cathode)  
 3. LED Anode



Tolerance : ±0.2  
 Unit : mm

**Package dimensions and Pin connection**

As stated in the sttached paper. (No.6027 4/7)

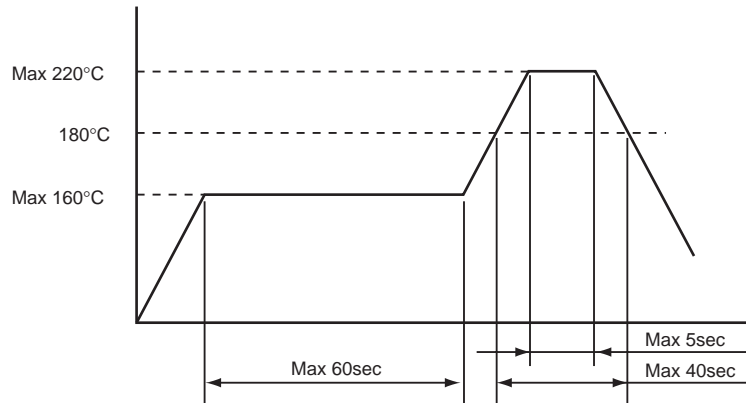
**Soldering conditions**

(1) Reflow soldering

The temperature of the reflow furnace is to be set in accordance with the following temperature profile.

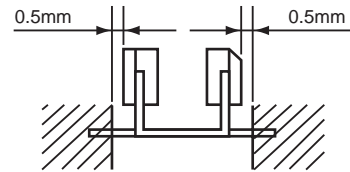
Soldering must be done only one time.

- Temperature : On the topsurface of product
- Reflow type : Hot air



(2) Manuasl soldering

- Temperature : Max. 290°C (Soldering iron tip temperature)
- Time : Max. 3 sec
- Clearance : Min. 0.5mm from package



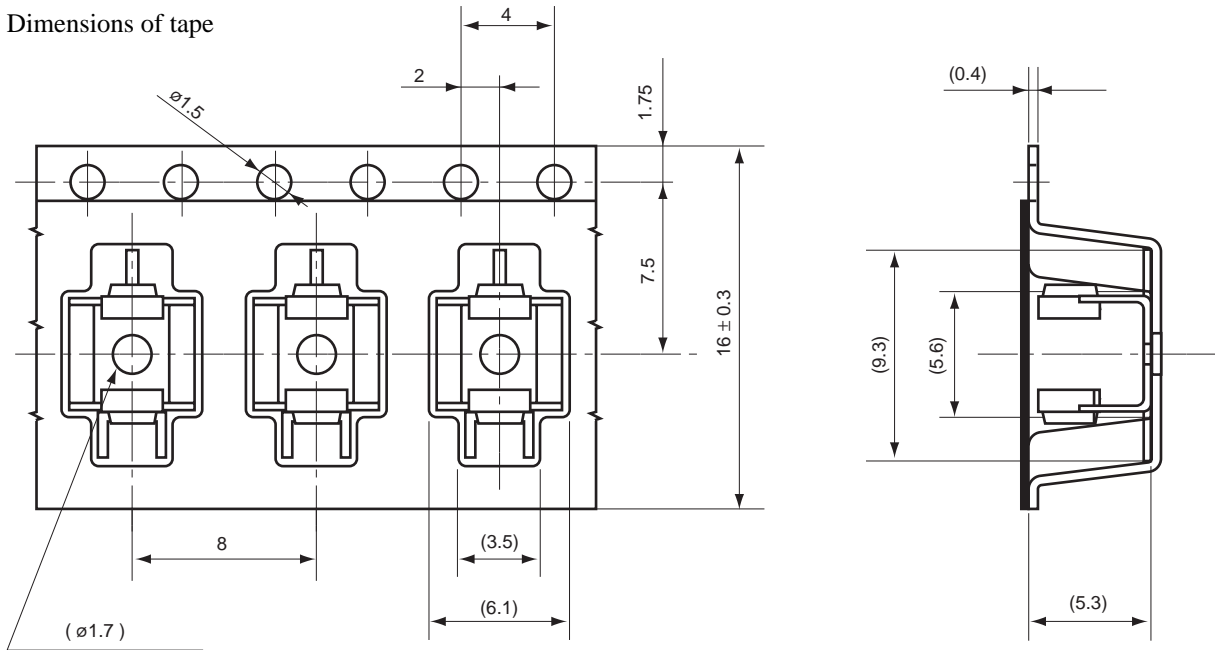
**⚠ PRECAUTIONS**

- (1) Bending a lead should avoid. However, when bending is necessary, take care the next items.
  - ① Bending a lead must be done before soldering.
  - ② Bending a lead must be done in the states of fixing leads and no stress for the regin part. Because it is possible that stress for the regin part cause troubles such as gold wire breaking and so on.
  - ③ A lead must be bend under the stay.
  - ④ Do not bend the same position of leads more than twice.
- (2) The hole pitch of a circuit board must fit to the recommended mounting dimension.
- (3) Take core the following when soldering.
  - ① Do not heat a product under any stress (a twist and so on) to leads.
  - ② Do not heat a product in the states of operating force to the regin part.
- (4) Use the flux which contain no chlorine, have no corrosion and do not need washing.
- (5) Be careful that flux or other chemicals do not attach to the luminous surface and passive surface.
- (6) Precautions of the product after the open dry packing
  - ① The product after the open dry packing should be stored in the dry packing again.
    - The product should be kept under the conditions below, if the product is not stored in the dry paking.
    - Temperature : 5 to 30°C
    - Humidity : Max 70%RH
    - Term : Max 7days
  - ② The product to be out the term without dry packing must be practiced baking.
    - Baking conditions : +60±5°C, 10 to 20Hr
- (7) The reflow conditions must be confirmed that no problem by your reflow furnace.

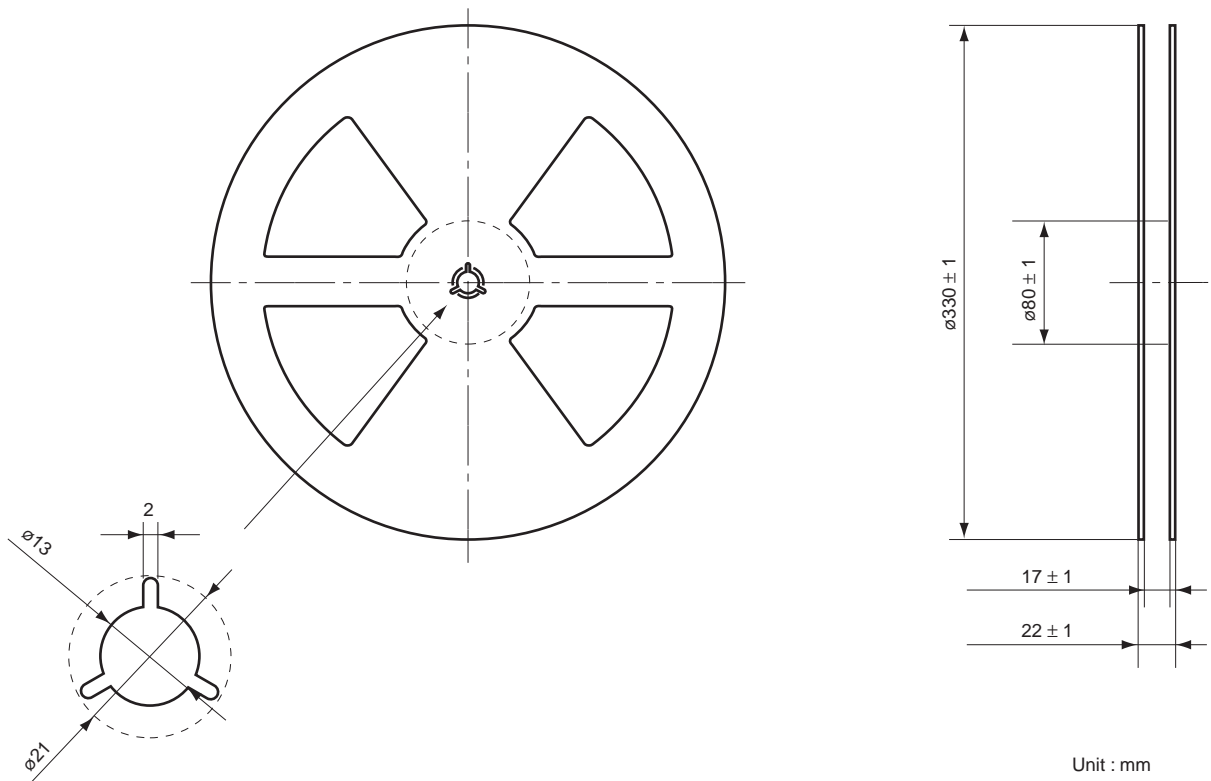
# SPI-240-15-T1

## Taping Specifications

### (1) Dimensions of tape



### (2) Dimensions of reel



 **CAUTION**

1. No products described or contained herein are intended for use in surgical implants, life-support systems, aerospace equipment, nuclear power control systems, vehicles, disaster / crime-prevention equipment or the like, and the failure of which may directly or indirectly cause injury, death or property loss.
2. Anyone purchasing any products described or contained herein for an above-mentioned use shall:
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## Precautionary instructions in handling gallium arsenic products

Special precautions must be taken in handling this product because it contains, gallium arsenic, which is designated as a toxic substance by law. Be sure to adhere strictly to all applicable laws and regulations enacted for this substance, particularly when it comes to disposal.

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