

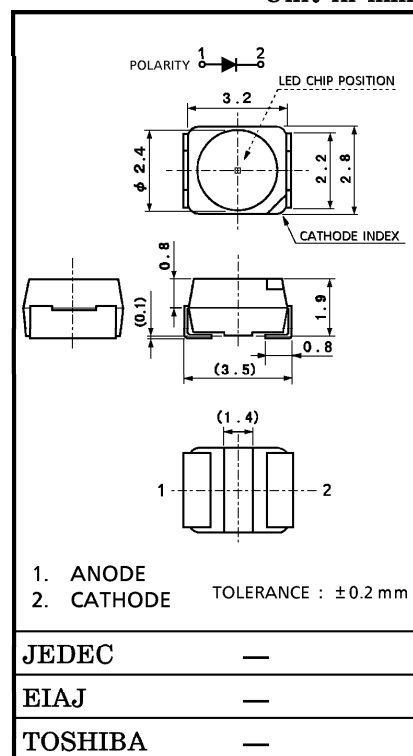
## TOSHIBA LED LAMP

**S4F42Q1 (T09), S4F42Z1 (T09)**

PANEL CIRCUIT INDICATOR

Unit in mm

- Surface Mount Device
- 3.2 (L) × 2.8 (W) × 1.9 (H) mm Size
- Flat-top Type
- InGaAlP LED (High-Bright type)
- Line-up
  - 2 Colors : Green, Pure Green
- Available of Automounting Machine Use
- Low Drive Current, High Intensity Light Emission
- Clear luminescence is obtained.
- High Operating Temperature :  $T_{opr} \cdot T_{stg}$   $-40 \sim 100^{\circ}\text{C}$
- Standard Embossed Taping
  - 8mm Pitch : T09 (1000 pcs / reel)
- Applications : Automotive use, Message Signboard, Backlight, etc.



Weight : 35 mg

## LINE-UP

| PRODUCT NAME | COLOR      | MATERIAL |
|--------------|------------|----------|
| S4F42Q1      | Green      | InGaAlP  |
| S4F42Z1      | Pure Green | InGaAlP  |

MAXIMUM RATINGS ( $T_a = 25^{\circ}\text{C}$ )

| PRODUCT NAME | FORWARD CURRENT<br>$I_F$ (mA) | REVERSE VOLTAGE<br>$V_R$ (V) | POWER DISSIPATION<br>$P_D$ (mW) | OPERATING TEMPERATURE<br>$T_{opr}$ ( $^{\circ}\text{C}$ ) | STORAGE TEMPERATURE<br>$T_{stg}$ ( $^{\circ}\text{C}$ ) |
|--------------|-------------------------------|------------------------------|---------------------------------|-----------------------------------------------------------|---------------------------------------------------------|
| S4F42Q1      | 50                            | 4                            | 140                             | $-40 \sim 100$                                            | $-40 \sim 100$                                          |
| S4F42Z1      | 50                            | 4                            | 140                             |                                                           |                                                         |

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## ELECTRICAL CHARACTERISTICS (Ta = 25°C)

| PRODUCT NAME | FORWARD VOLTAGE<br>$V_F$ |      |     |       | REVERSE CURRENT<br>$I_R$ |       |
|--------------|--------------------------|------|-----|-------|--------------------------|-------|
|              | MIN                      | TYP  | MAX | $I_F$ | MAX                      | $V_R$ |
| S4F42Q1      | —                        | 2.27 | 2.8 | 20    | 50                       | 4     |
| S4F42Z1      | —                        | 2.27 | 2.8 | 20    | 50                       | 4     |
| Unit         | V                        |      |     | mA    | $\mu A$                  | V     |

## OPTICAL CHARACTERISTICS-1 (Ta = 25°C)

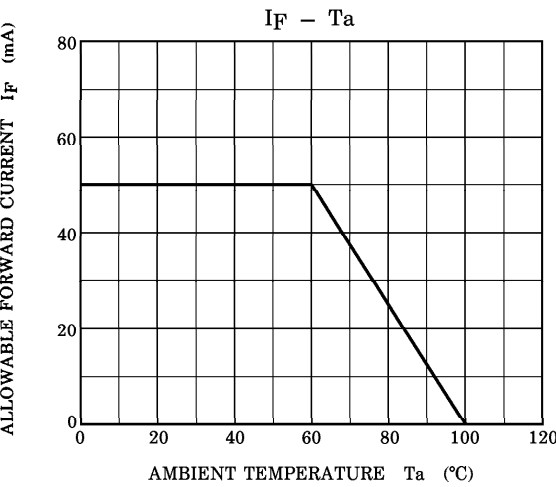
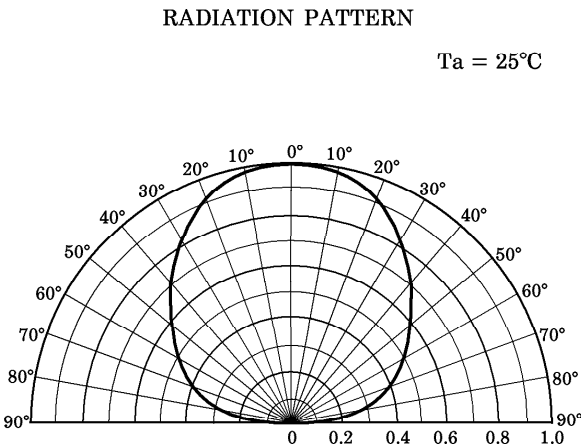
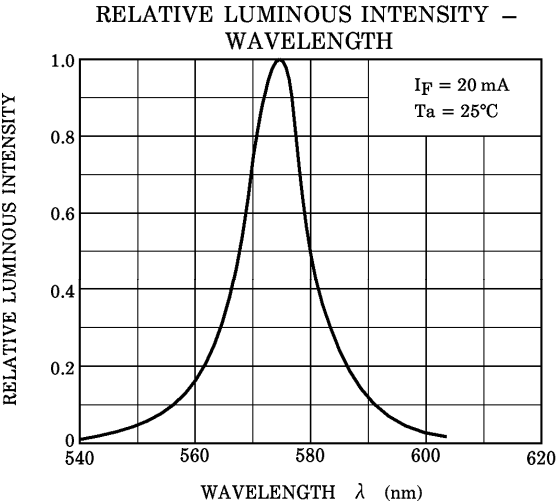
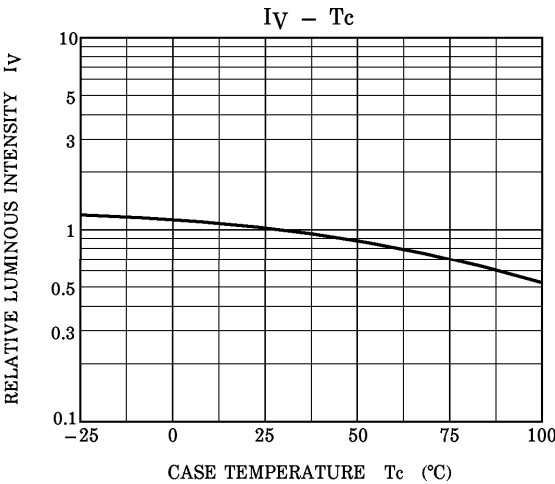
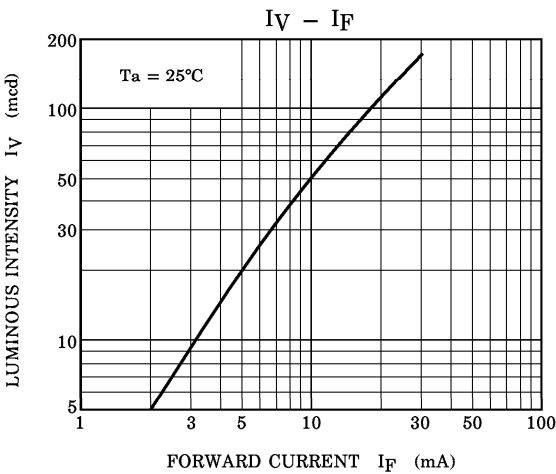
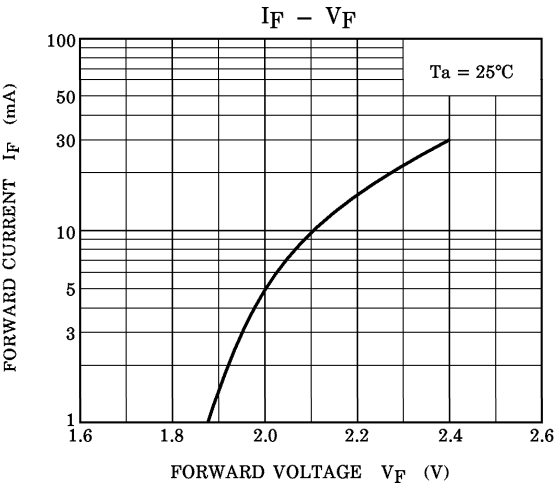
| PRODUCT NAME | LUMINOUS INTENSITY<br>$I_V$ |      |     |       |
|--------------|-----------------------------|------|-----|-------|
|              | MIN                         | TYP. | MAX | $I_F$ |
| S4F42Q1      | 47.6                        | 110  | —   | 20    |
| S4F42Z1      | 8.5                         | 25   | —   | 20    |
| Unit         | mcd                         |      |     | mA    |

## OPTICAL CHARACTERISTICS-2 (Ta = 25°C)

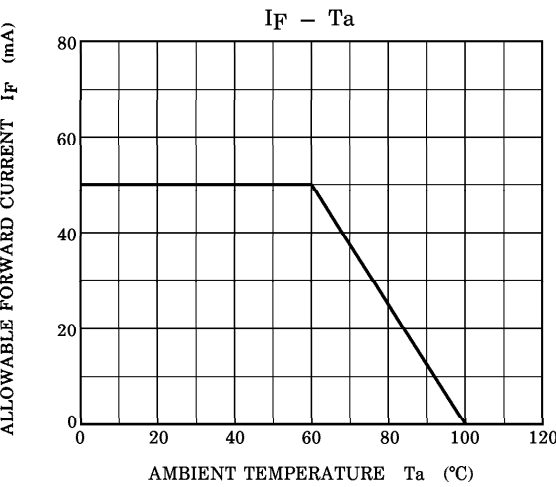
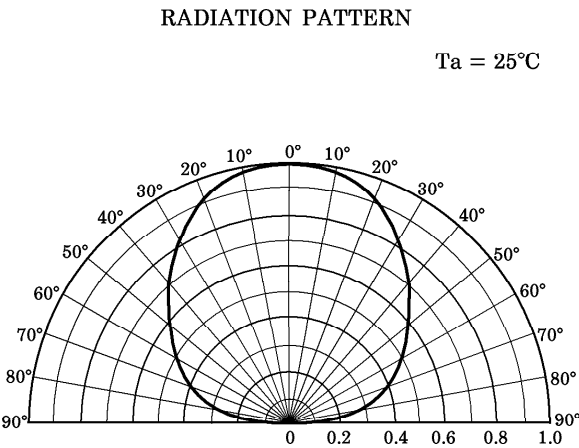
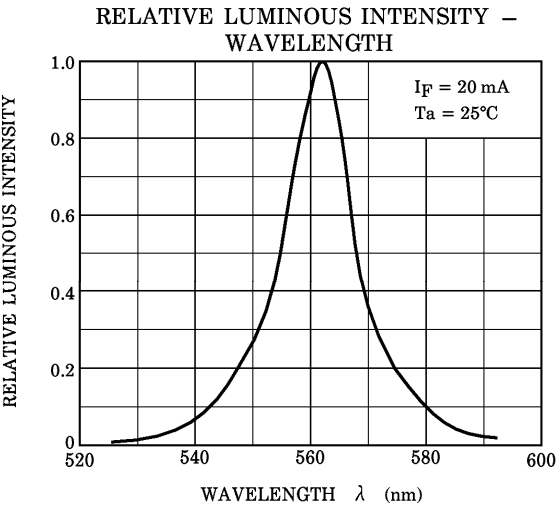
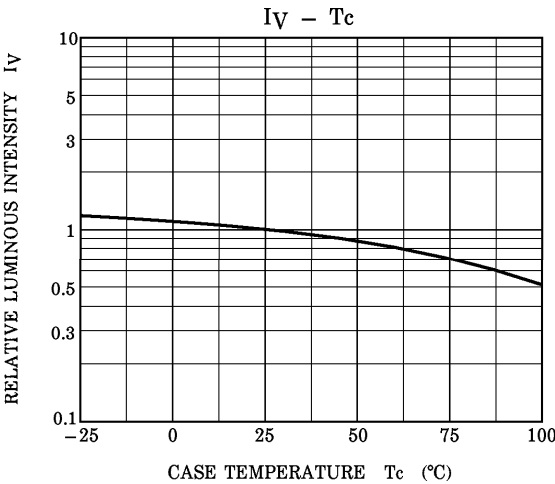
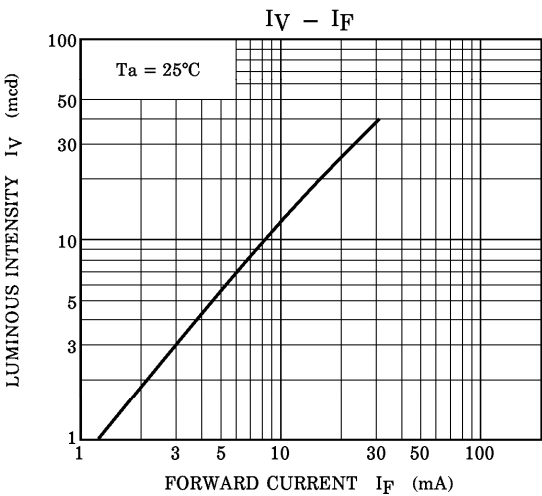
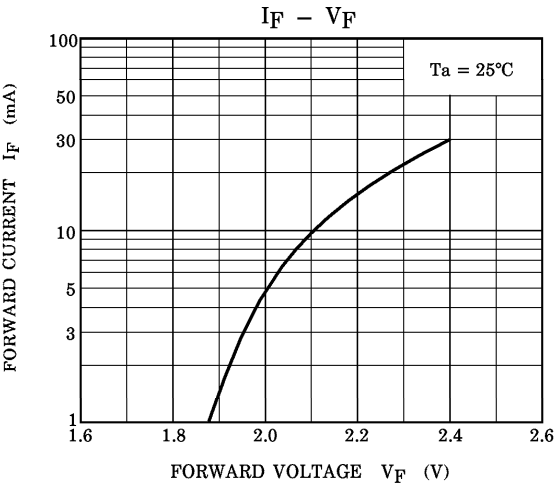
| PRODUCT<br>NAME | EMISSION SPECTRUM                          |      |     |    |                                       |      |     | I <sub>F</sub> |
|-----------------|--------------------------------------------|------|-----|----|---------------------------------------|------|-----|----------------|
|                 | Peak Emission<br>Wavelength λ <sub>p</sub> |      |     | Δλ | Dominant<br>Wavelength λ <sub>d</sub> |      |     |                |
|                 | MIN                                        | TYP. | MAX |    | MIN                                   | TYP. | MAX |                |
|                 |                                            |      |     |    |                                       |      |     |                |
| S4F42Q1         | —                                          | 574  | —   | 11 | —                                     | 571  | —   | 20             |
| S4F42Z1         | —                                          | 562  | —   | 11 | —                                     | 558  | —   | 20             |
| UNIT            | nm                                         |      |     | nm | nm                                    |      |     | mA             |

(Note) : This visible LED lamp also emits some IR light.  
If a photodetector is located near the LED lamp, please ensure that it will not be affected by this IR light.

S4F42Q1



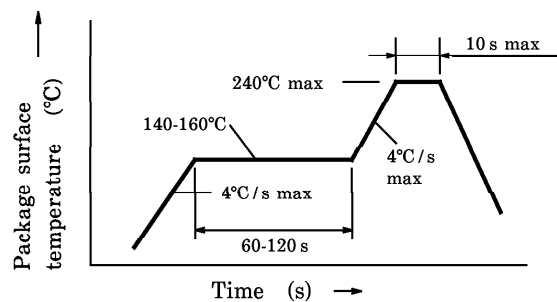
S4F42Z1



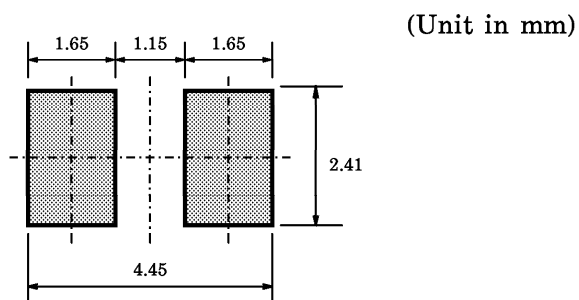
## SOLDERING

### Reflow soldering

#### Temperature profile



#### Recommended soldering pattern



## RECOMMENDATION FOR MANUAL SOLDERING

|                |                                    |
|----------------|------------------------------------|
| Soldering iron | : Less than 25 W                   |
| Temperature    | : Lower than $300^{\circ}\text{C}$ |
| Time           | : Within 3 s                       |

## POST SOLDERING CLEANING

When cleaning after soldering is needed, the following condition must be adhered to.

|                   |                                                                                               |
|-------------------|-----------------------------------------------------------------------------------------------|
| Cleaning solvents | : AK225 or Alcohol                                                                            |
| Temperature       | : $50^{\circ}\text{C}$ (max) for 30 s (max) or $30^{\circ}\text{C}$ (max) for 3 minutes (max) |
| Ultrasonic        | : 300 W max                                                                                   |

PACKAGING

This LED device is packed in an aluminum envelope with silica gel to avoid moisture absorption. The optical characteristics may be affected by exposure to moisture in the air before soldering and it should be stored under the following conditions.

- Temperature : 5~30°C
- Relative Humidity : 60% or lower

Baking is required if the device have been stored with unopened for more than 6 months or if the aluminum envelope has been opened for more than 168 h.  
Recommended baking condition is 60°C for 12 h minimum in the dry atmosphere.

PRECAUTION FOR MOUNTING

Do not apply force to the plastic part of the LED in high temperature conditions.  
Do not apply friction using a hard materials for avoid injuring the plastic part of the LED.  
Keep the LED away from any other parts when assembling boards into the set.

TAPING SPECIFICATIONS

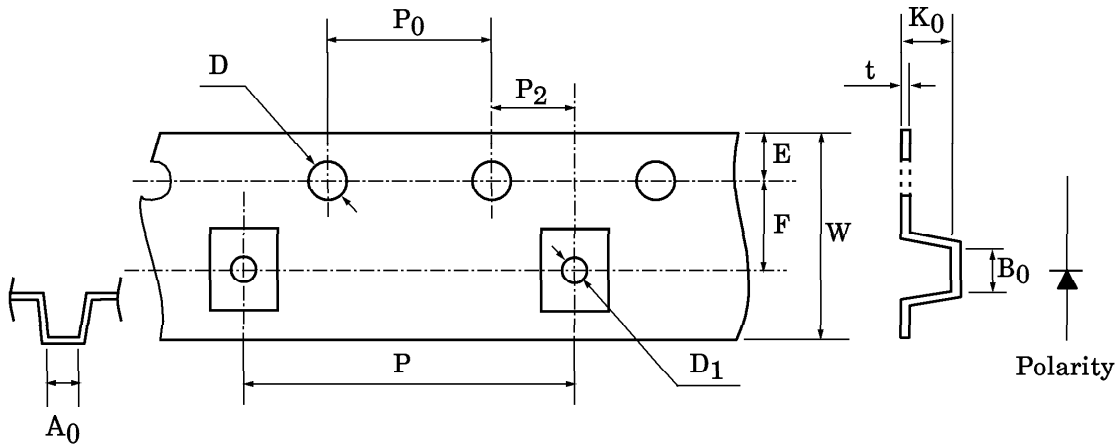
1. Taping Number

- (1) Name : T09
- (2) Example : S4F42□ (T09)  
Tape Specification  
Device Identifier

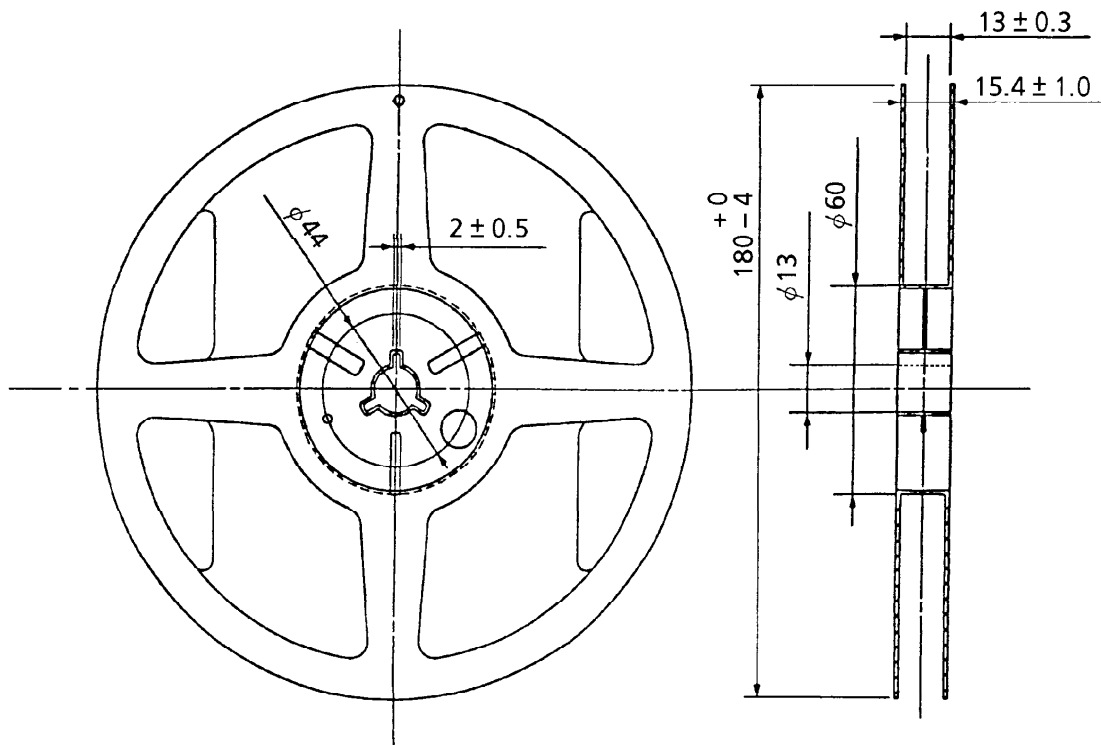
2. Dimension of tape

(Unit in mm)

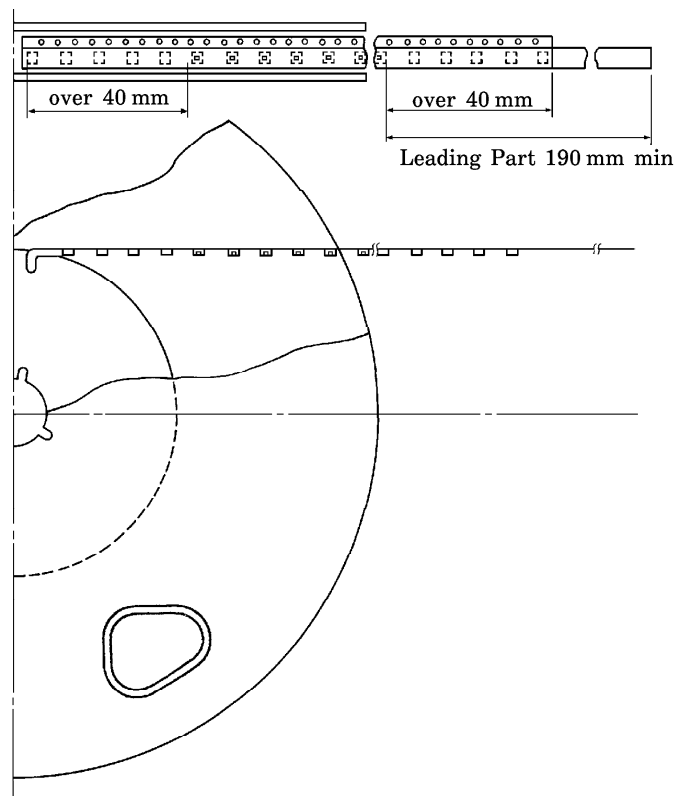
| ITEM           | DIMENSIONS | TOLERANCE | ITEM           | DIMENSIONS | TOLERANCE |
|----------------|------------|-----------|----------------|------------|-----------|
| D              | 1.5        | +0.1 / -0 | P <sub>2</sub> | 2.0        | ±0.05     |
| E              | 1.75       | ±0.1      | W              | 12.0       | ±0.3      |
| P <sub>0</sub> | 4.0        | ±0.1      | P              | 8.0        | ±0.1      |
| t              | 0.3        | ±0.05     | A <sub>0</sub> | 2.9        | ±0.1      |
| F              | 5.5        | ±0.05     | B <sub>0</sub> | 3.7        | ±0.1      |
| D <sub>1</sub> | 1.5        | +0.1 / -0 | K <sub>0</sub> | 2.3        | ±0.1      |



3. Dimension of reel (Unit in mm)



4. Leading part (Unit in mm)



## 5. Packing Form

## (1) Number of Devices per Reel and Carton

|        |              |
|--------|--------------|
| Reel   | 1000 devices |
| Carton | 5000 devices |

(2) Packing : Silica gel and reel are packed into sealed aluminum pack.

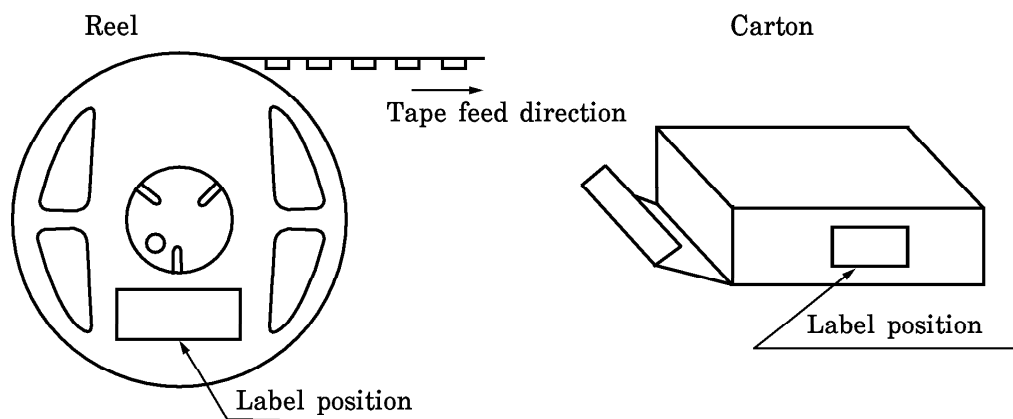
## 6. Notation Method

## (1) Example : S4F42Q1 (T09)

P/N :

|        |                          |      |          |
|--------|--------------------------|------|----------|
| TYPE   | S4F42Q1                  |      |          |
| ADD. C | (T09)                    | Q'TY | 1000 pcs |
| NOTE   | (rank symbol) Lot Number |      |          |

## (2) Label location :



Aluminum pack : Attached to center of one side