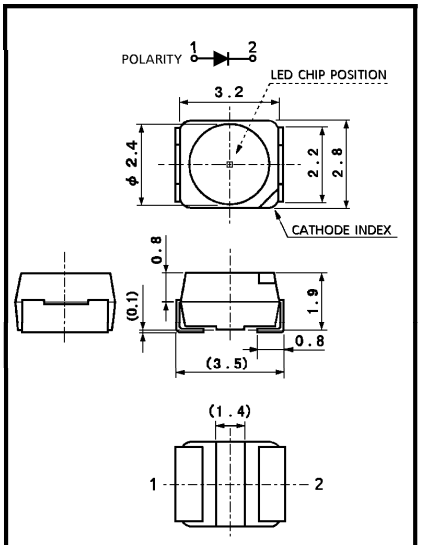
TOSHIBA LED LAMP

S4F42Q1 (T09), S4F42Z1 (T09)

PANEL CIRCUIT INDICATOR

Unit in mm



1. ANODE
2. CATHODE

TOLERANCE : ±0.2 mm

JEDEC	—
EIAJ	—
TOSHIBA	—

Weight : 35 mg

- 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 : $T_{opr} \cdot T_{stg}$ −40~100°C
- Standard Embossed Taping
  8mm Pitch : T09 (1000 pcs / reel)
- Applications : Automotive use, Message Signboard, Backlight, etc.

LINE-UP

PRODUCT NAME	COLOR	MATERIAL
S4F42Q1	Green	InGaAℓP
S4F42Z1	Pure Green	InGaAℓP

MAXIMUM RATINGS (Ta = 25°C)

PRODUCT NAME	FORWARD CURRENT I_F (mA)	REVERSE VOLTAGE V_R (V)	POWER DISSIPATION P_D (mW)	OPERATING TEMPERATURE T_{opr} (°C)	STORAGE TEMPERATURE T_{stg} (°C)
S4F42Q1	50	4	140	−40~100	−40~100
S4F42Z1	50	4	140		

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- TOSHIBA is continually working to improve the quality and the reliability of its products. Nevertheless, semiconductor devices in general can malfunction or fail due to their inherent electrical sensitivity and vulnerability to physical stress. It is the responsibility of the buyer, when utilizing TOSHIBA products, to observe standards of safety, and to avoid situations in which a malfunction or failure of a TOSHIBA product could cause loss of human life, bodily injury or damage to property. In developing your designs, please ensure that TOSHIBA products are used within specified operating ranges as set forth in the most recent products specifications. Also, please keep in mind the precautions and conditions set forth in the TOSHIBA Semiconductor Reliability Handbook.
- Gallium arsenide (GaAs) is a substance used in the products described in this document. GaAs dust and fumes are toxic. Do not break, cut or pulverize the product, or use chemicals to dissolve them. When disposing of the products, follow the appropriate regulations. Do not dispose of the products with other industrial waste or with domestic garbage.
- The information contained herein is presented only as a guide for the applications of our products. No responsibility is assumed by TOSHIBA CORPORATION for any infringements of intellectual property or other rights of the third parties which may result from its use. No license is granted by implication or otherwise under any intellectual property or other rights of TOSHIBA CORPORATION or others.
- The information contained herein is subject to change without notice.

ELECTRICAL CHARACTERISTICS (Ta = 25°C)

PRODUCT NAME	FORWARD VOLTAGE V_F				REVERSE CURRENT 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	μA	V

OPTICAL CHARACTERISTICS-1 (Ta = 25°C)

PRODUCT NAME	LUMINOUS INTENSITY I_V			
	MIN	TYP.	MAX	I_F
S4F42Q1	47.6	110	—	20
S4F42Z1	8.5	25	—	20
Unit	mcd			mA

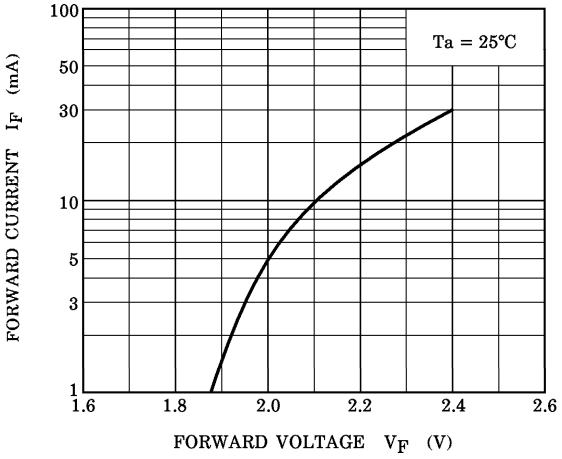
OPTICAL CHARACTERISTICS-2 (Ta = 25°C)

PRODUCT NAME	EMISSION SPECTRUM							
	Peak Emission Wavelength λ_p			$\Delta\lambda$	Dominant Wavelength λ_d			I_F
	MIN	TYP.	MAX	TYP.	MIN	TYP.	MAX	
S4F42Q1	—	574	—	11	—	571	—	20
S4F42Z1	—	562	—	11	—	558	—	20
UNIT	nm			nm	nm			mA

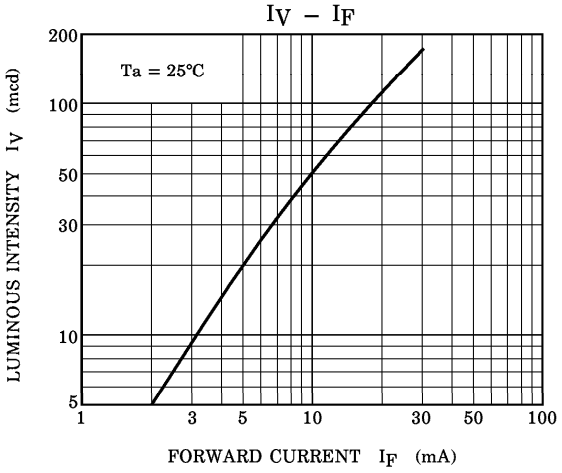
(Note) : This visible LED lamp also emits some IR light.
If a photodetector is located near the LED lamp, please ensure that it will not be affected by this IR light.

S4F42Q1

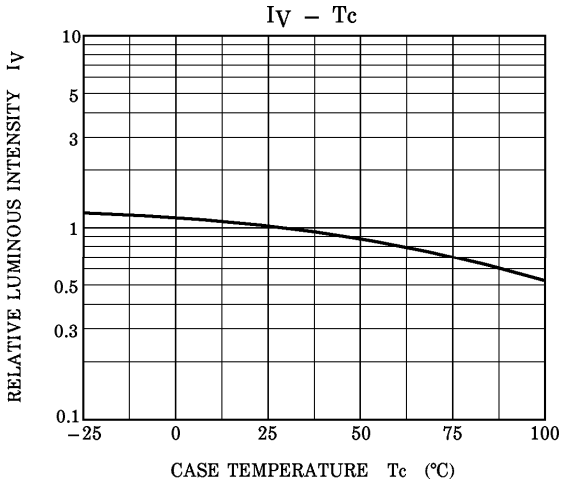
$I_F - V_F$



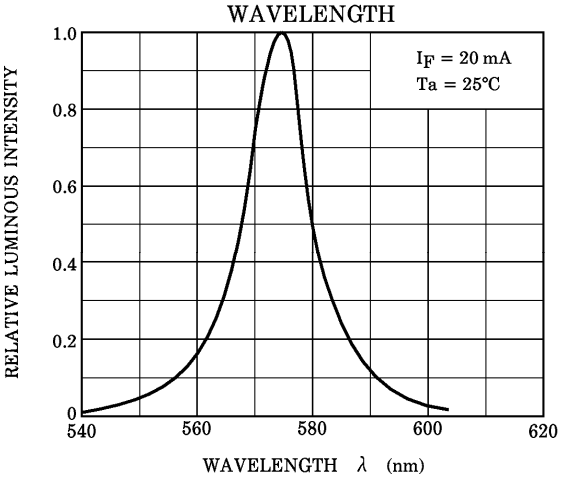
$I_V - I_F$



$I_V - Tc$

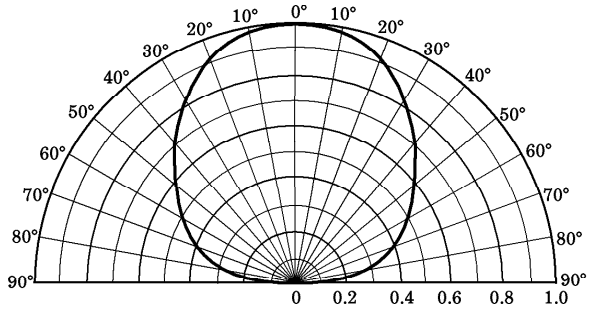


RELATIVE LUMINOUS INTENSITY − WAVELENGTH

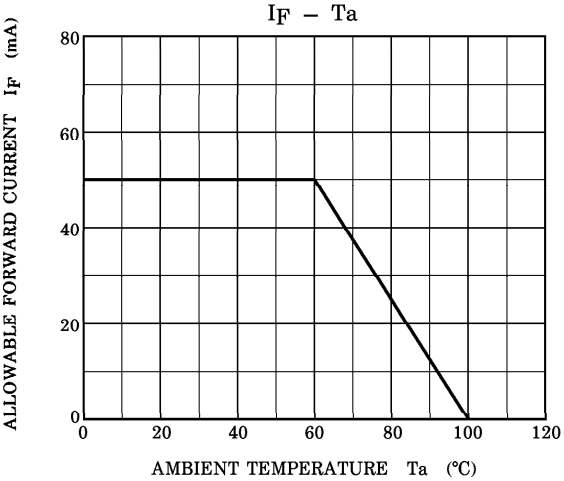


RADIATION PATTERN

Ta = 25°C

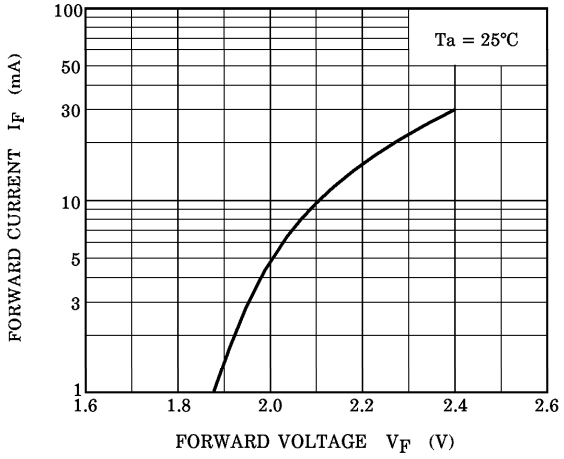


$I_F - Ta$

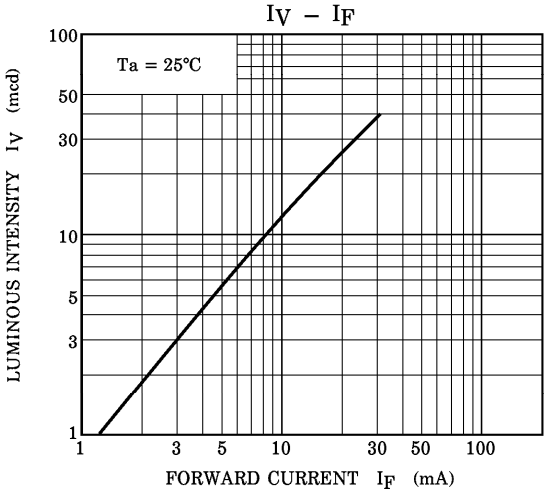


S4F42Z1

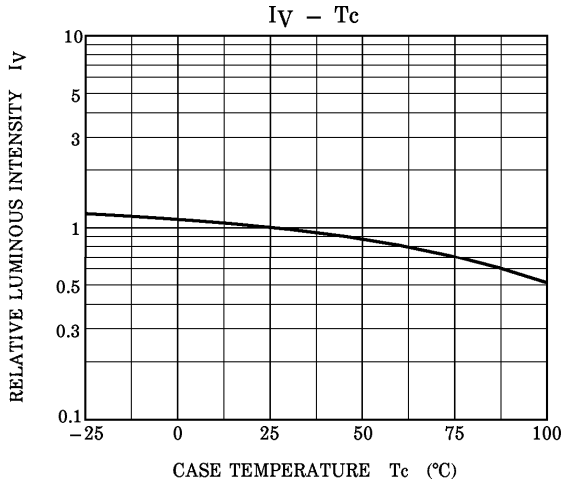
$I_F - V_F$



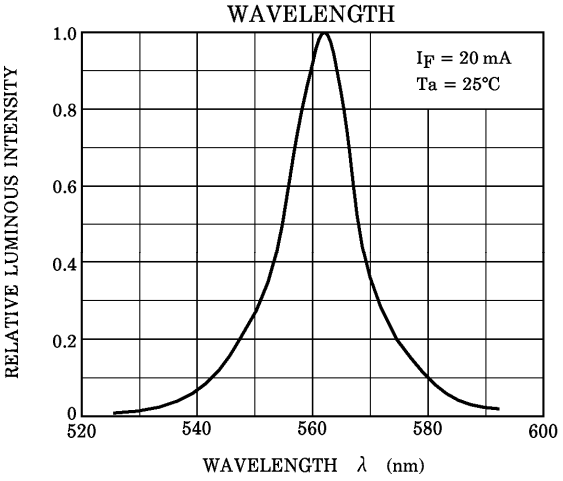
$I_V - I_F$



$I_V - Tc$

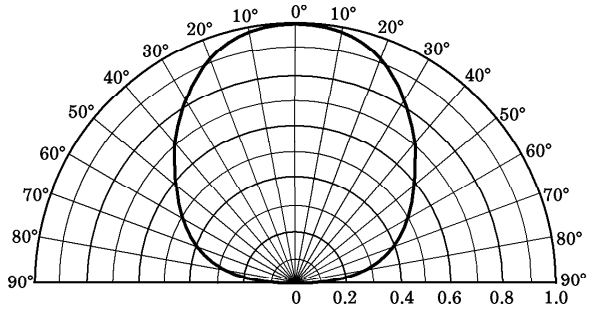


RELATIVE LUMINOUS INTENSITY − WAVELENGTH

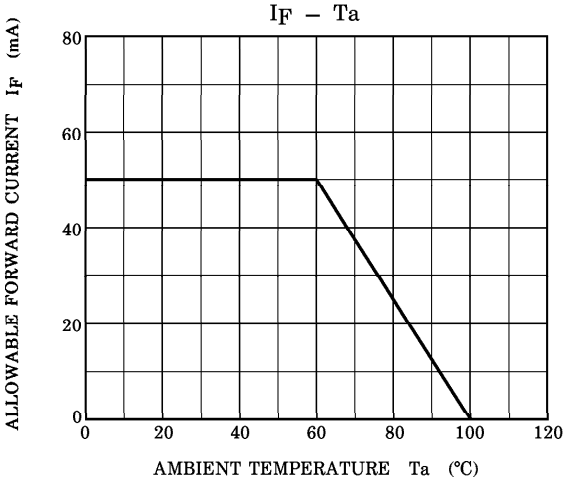


RADIATION PATTERN

Ta = 25°C



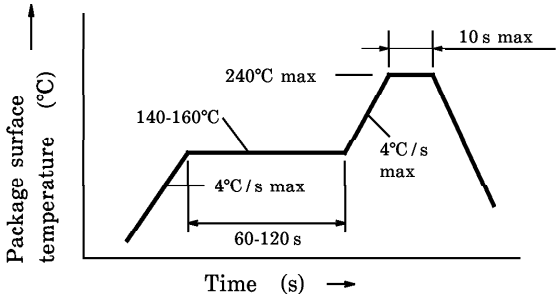
$I_F - Ta$



SOLDERING

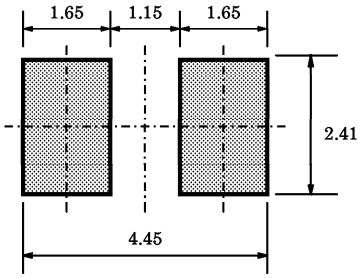
Reflow soldering

Temperature profile



Recommended soldering pattern

(Unit in mm)



RECOMMENDATION FOR MANUAL SOLDERING

Soldering iron	:	Less than 25 W
Temperature	:	Lower than 300°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°C (max) for 30 s (max) or 30°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

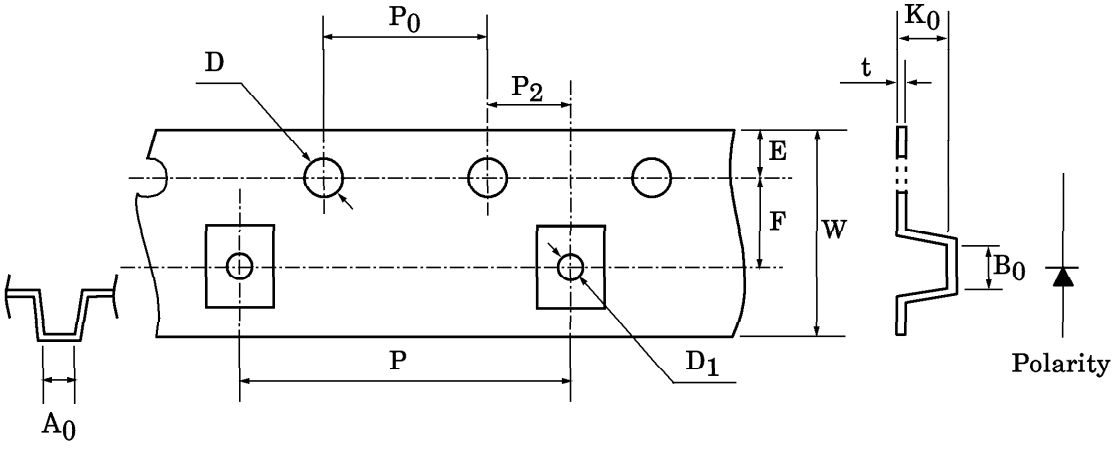
(2) Example : S4F42□ (T09)

Tape Specification
Device Identifier

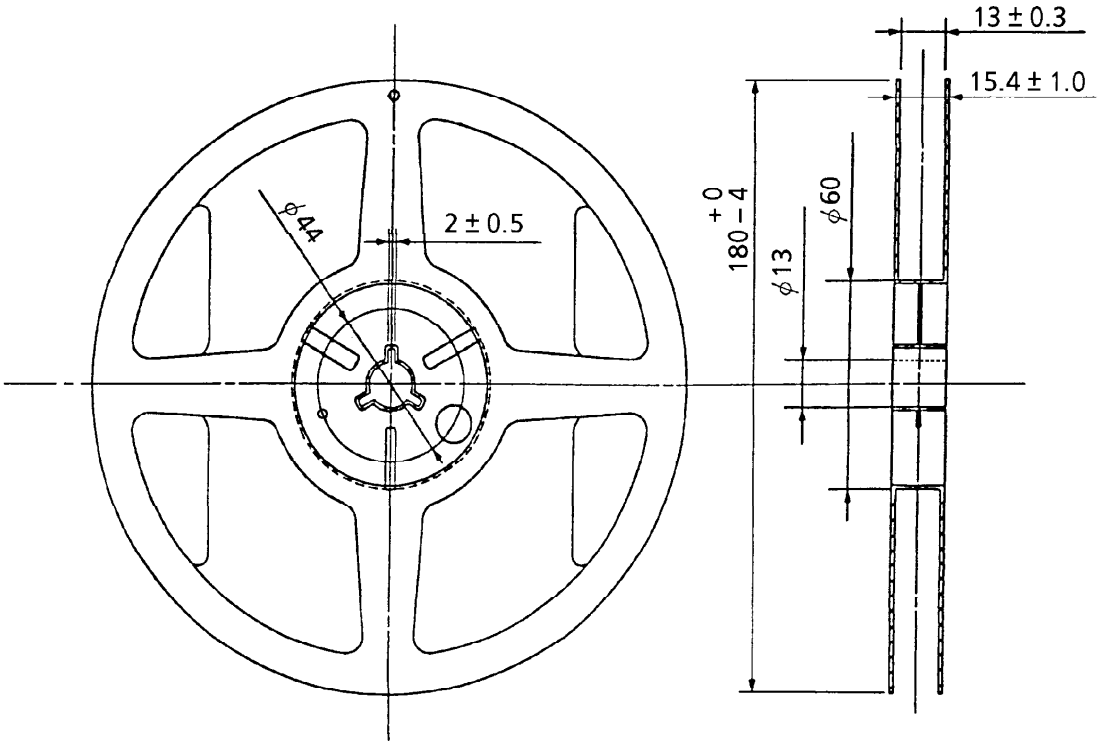
2. Dimension of tape

(Unit in mm)

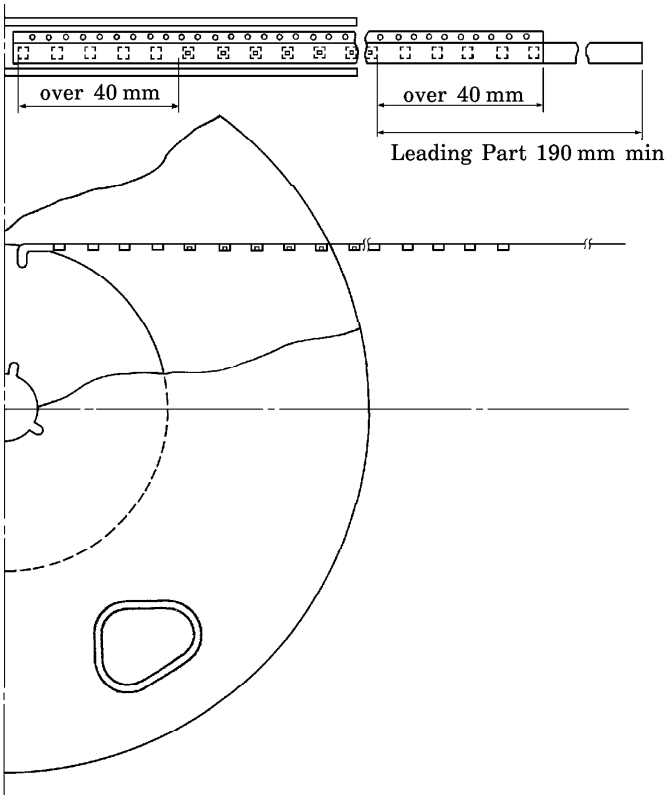
ITEM	DIMENSIONS	TOLERANCE	ITEM	DIMENSIONS	TOLERANCE
D	1.5	+0.1 / −0	P_2	2.0	±0.05
E	1.75	±0.1	W	12.0	±0.3
P_0	4.0	±0.1	P	8.0	±0.1
t	0.3	±0.05	A_0	2.9	±0.1
F	5.5	±0.05	B_0	3.7	±0.1
D_1	1.5	+0.1 / −0	K_0	2.3	±0.1



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.

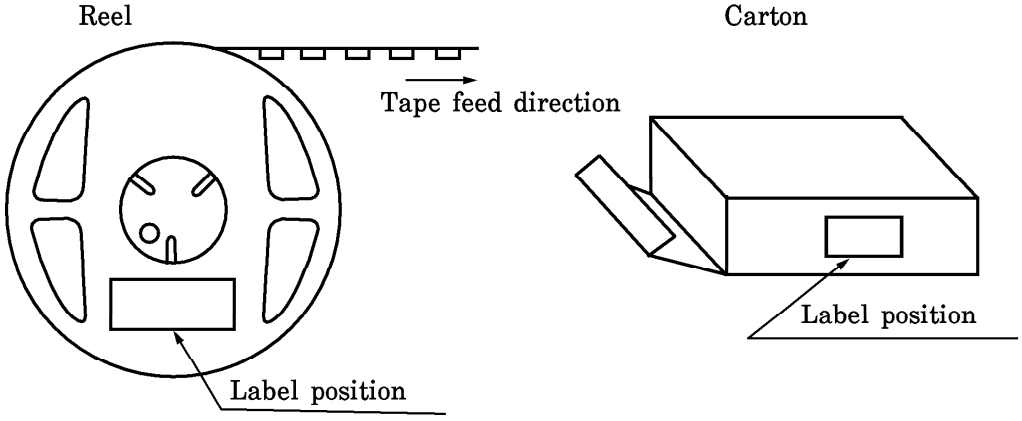
6. Notation Method

(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