

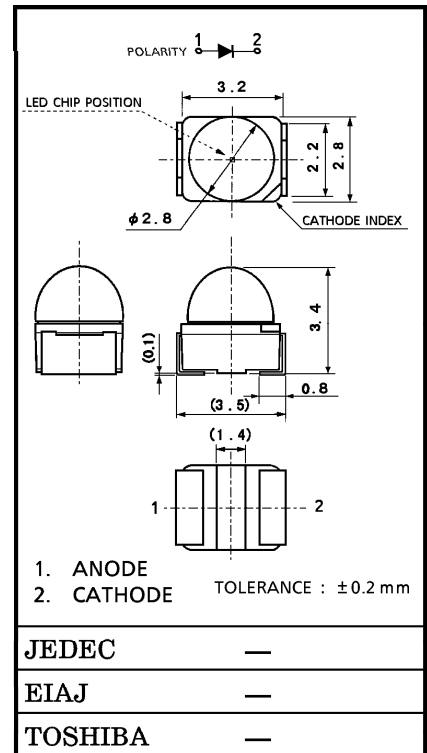
TOSHIBA LED LAMP

# S4F43Q1 (T10), S4F43Z1 (T10)

PANEL CIRCUIT INDICATOR

Unit in mm

- Surface Mount Device
- 3.2 (L) × 2.8 (W) × 3.4 (H) mm Size
- $\phi$ 2.8 mm Diameter Lens-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 :  $T_{opr} \cdot T_{stg} \quad -40 \sim 100^{\circ}\text{C}$
- Standard Embossed Taping  
8 mm Pitch : T10 (500 pcs / reel)
- Applications : Automotive use, Message Signboard, Backlight, etc.



Weight : 42 mg

LINE-UP

PRODUCT NAME	COLOR	MATERIAL
S4F43Q1	Green	InGaAlP
S4F43Z1	Pure Green	InGaAlP

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

PRODUCT NAME	FORWARD CURRENT $I_F$ (mA)	REVERSE VOLTAGE $V_R$ (V)	POWER DISSIPATION $P_D$ (mW)	OPERATING TEMPERATURE $T_{opr}$ ( $^{\circ}\text{C}$ )	STORAGE TEMPERATURE $T_{stg}$ ( $^{\circ}\text{C}$ )
S4F43Q1	50	4	140	-40~100	-40~100
S4F43Z1	50	4	140		

ELECTRICAL CHARACTERISTICS (Ta = 25°C)

PRODUCT NAME	FORWARD VOLTAGE $V_F$				REVERSE CURRENT $I_R$	
	MIN	TYP	MAX	$I_F$	MAX	$V_R$
S4F43Q1	—	2.27	2.8	20	50	4
S4F43Z1	—	2.27	2.8	20	50	4
Unit	V			mA	$\mu$ A	V

OPTICAL CHARACTERISTICS-1 (Ta = 25°C)

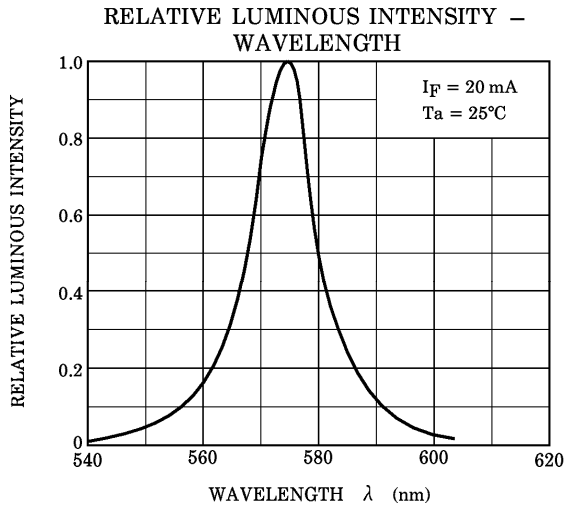
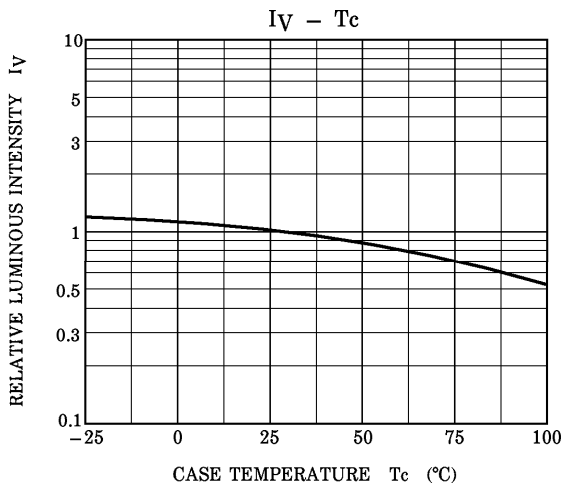
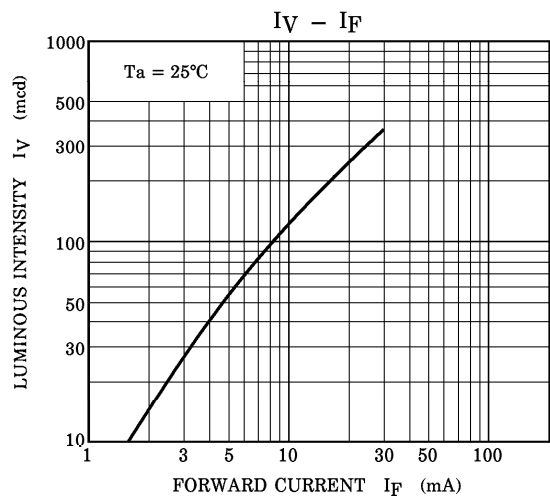
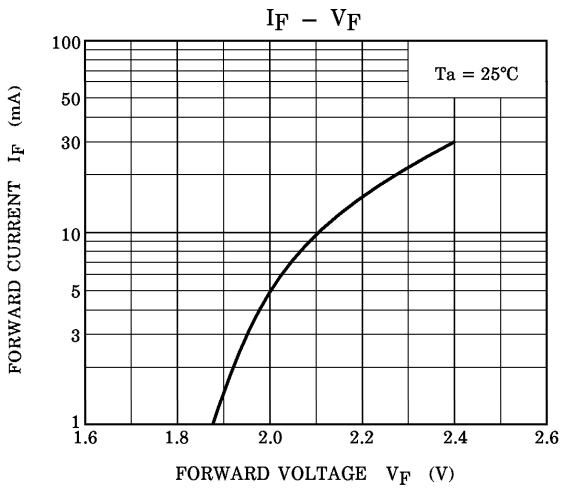
PRODUCT NAME	LUMINOUS INTENSITY $I_V$			
	MIN	TYP.	MAX	$I_F$
S4F43Q1	85	250	—	20
S4F43Z1	27.2	60	—	20
Unit	mcd			mA

OPTICAL CHARACTERISTICS-2 (Ta = 25°C)

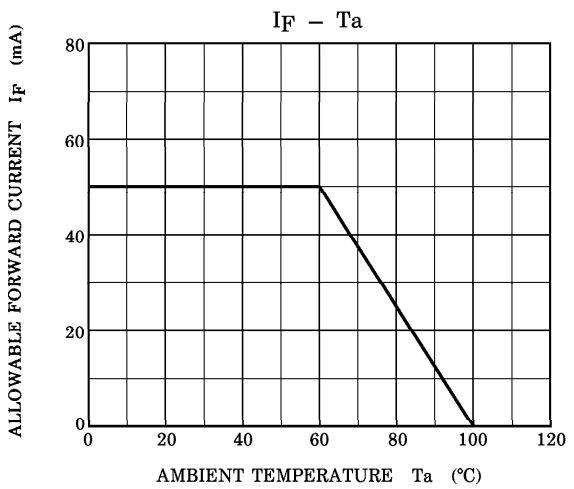
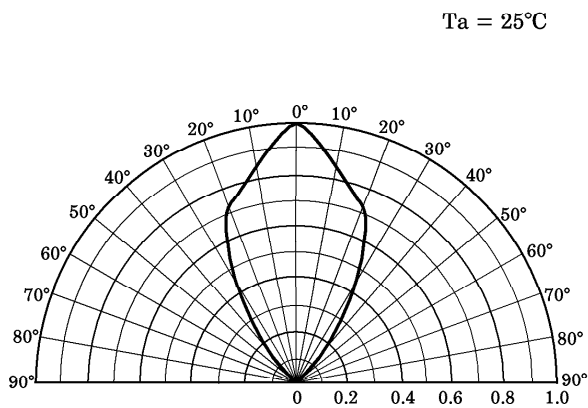
PRODUCT NAME	EMISSION SPECTRUM							$I_F$
	Peak Emission Wavelength $\lambda_p$			$\Delta\lambda$	Dominant Wavelength $\lambda_d$			
	MIN	TYP.	MAX		MIN	TYP.	MAX	
S4F43Q1	—	574	—	11	—	571	—	20
S4F43Z1	—	562	—	11	—	558	—	20
UNIT	nm			nm	nm			mA

(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.

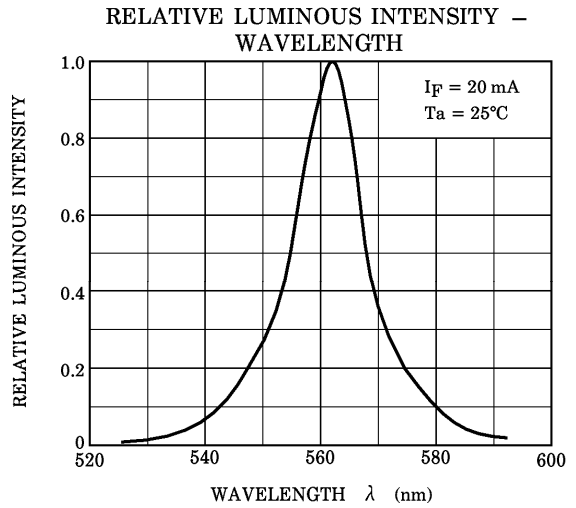
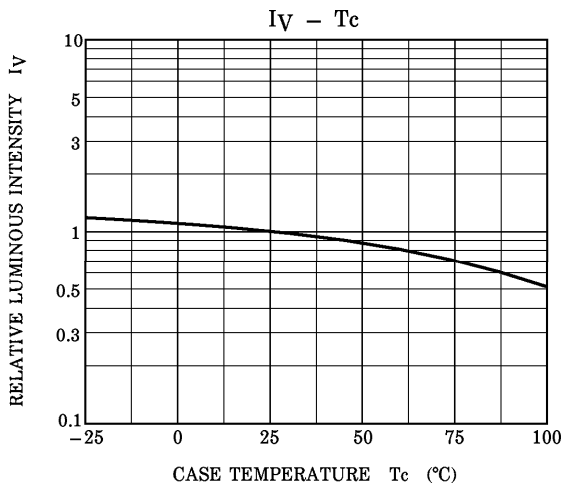
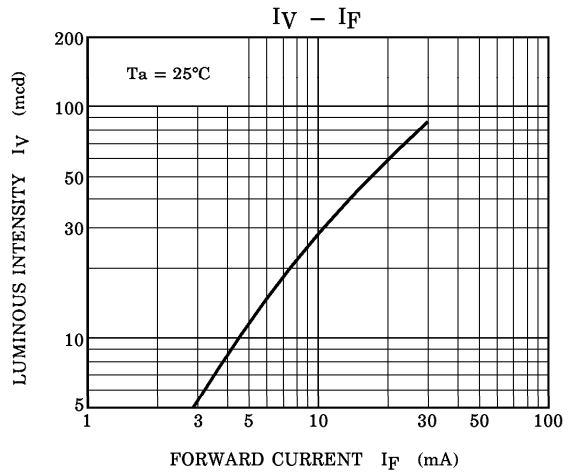
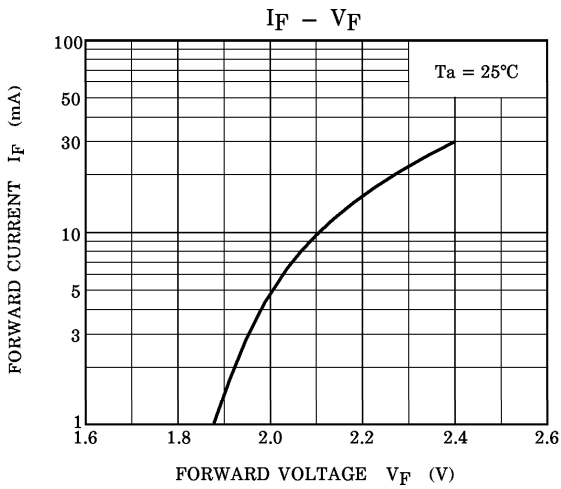
**S4F43Q1**



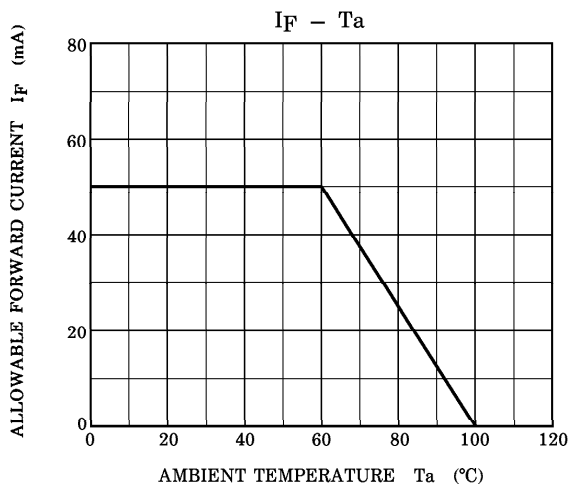
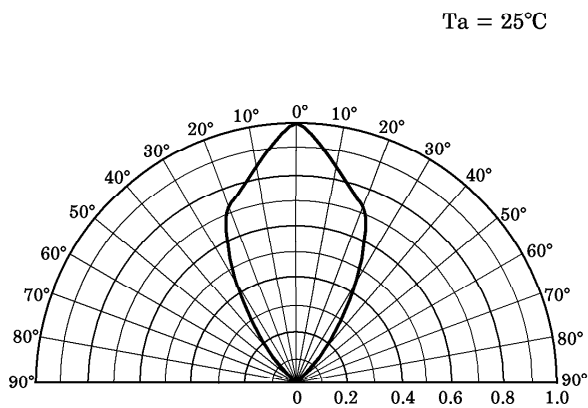
**RADIATION PATTERN**



**S4F43Z1**



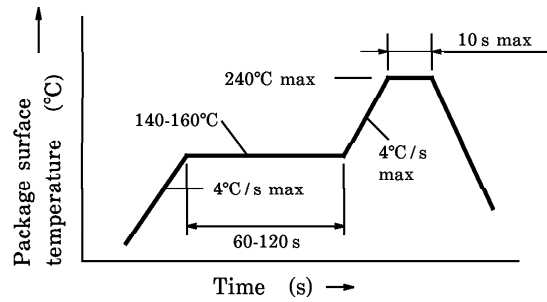
**RADIATION PATTERN**



**SOLDERING**

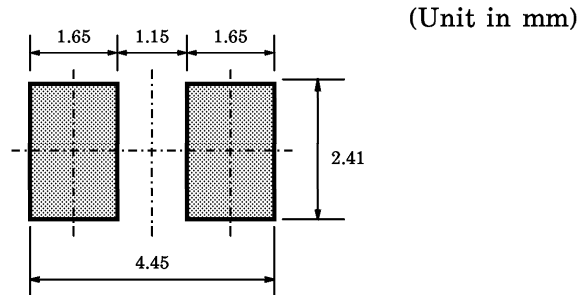
Reflow soldering

Temperature profile



(\*) Reflow is permitted just one time.

Recommended soldering pattern



**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.

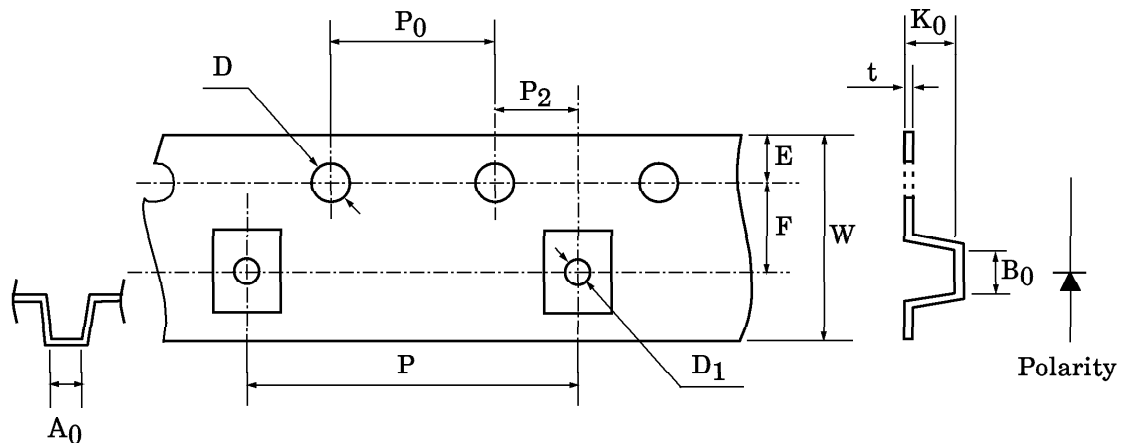
**TAPING SPECIFICATIONS**

1. Taping Number

- (1) Name : T10
  - (2) Example : S4F43□ (T10)
- └─ Tape Specification  
└─ Device Identifier

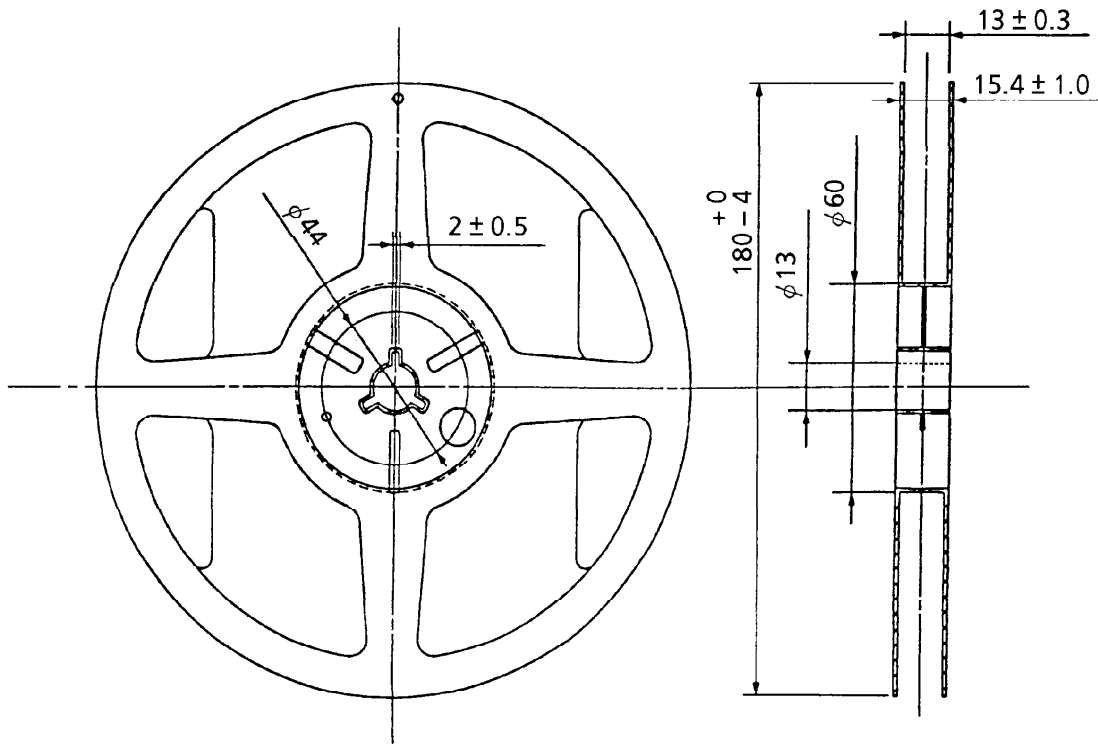
2. Dimension of tape

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>	3.6	±0.1



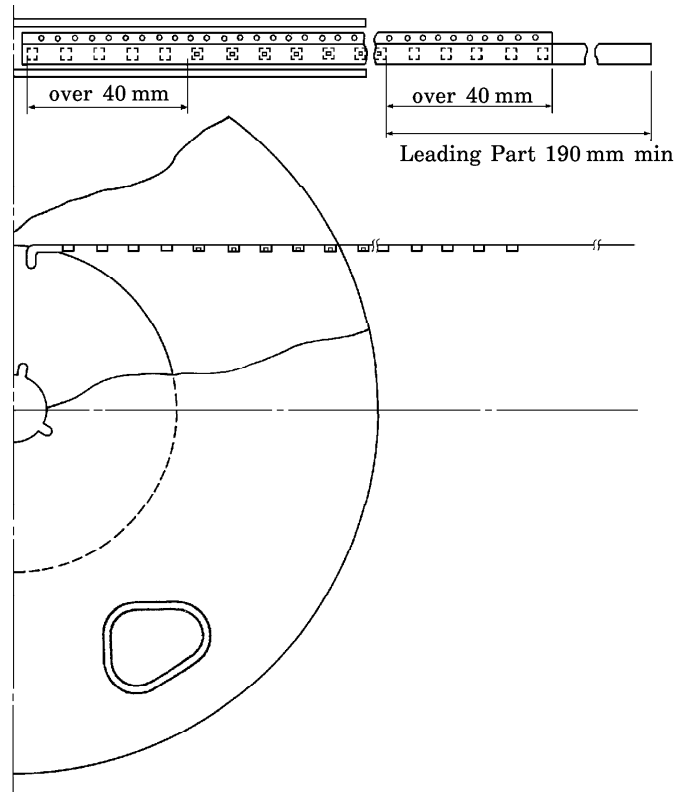
3. Dimension of reel

(Unit in mm)



4. Leading part

(Unit in mm)



5. Packing Form

(1) Number of Devices per Reel and Carton

Reel	500 devices
Carton	2500 devices

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

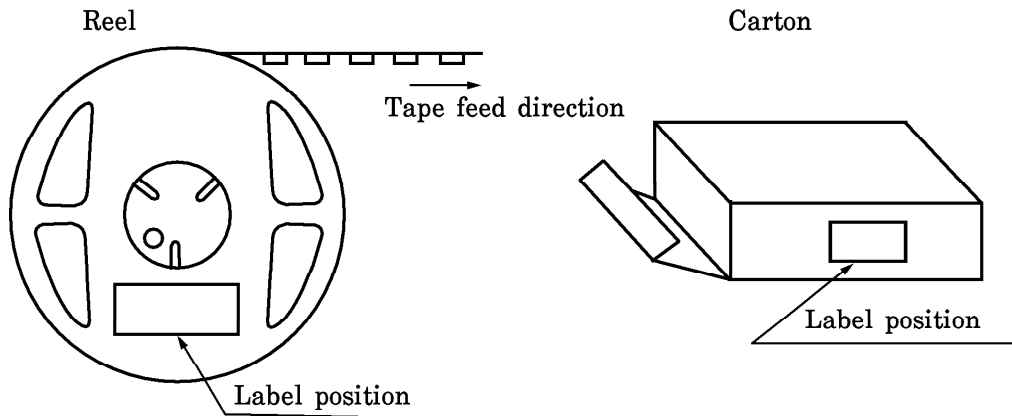
6. Notation Method

(1) Example : S4F43Q1 (T09)

P/N :

TYPE	S4F43Q1		
ADD. C	(T09)	Q'TY	500 pcs
NOTE	(rank symbol)		Lot Number

(2) Label location :



Aluminum pack : Attached to center of one side



**RESTRICTIONS ON PRODUCT USE**

000707EAC

- TOSHIBA is continually working to improve the quality and 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 comply with the standards of safety in making a safe design for the entire system, and to avoid situations in which a malfunction or failure of such TOSHIBA products 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 TOSHIBA products specifications. Also, please keep in mind the precautions and conditions set forth in the "Handling Guide for Semiconductor Devices," or "TOSHIBA Semiconductor Reliability Handbook" etc..
- The TOSHIBA products listed in this document are intended for usage in general electronics applications (computer, personal equipment, office equipment, measuring equipment, industrial robotics, domestic appliances, etc.). These TOSHIBA products are neither intended nor warranted for usage in equipment that requires extraordinarily high quality and/or reliability or a malfunction or failure of which may cause loss of human life or bodily injury ("Unintended Usage"). Unintended Usage include atomic energy control instruments, airplane or spaceship instruments, transportation instruments, traffic signal instruments, combustion control instruments, medical instruments, all types of safety devices, etc.. Unintended Usage of TOSHIBA products listed in this document shall be made at the customer's own risk.
- 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.