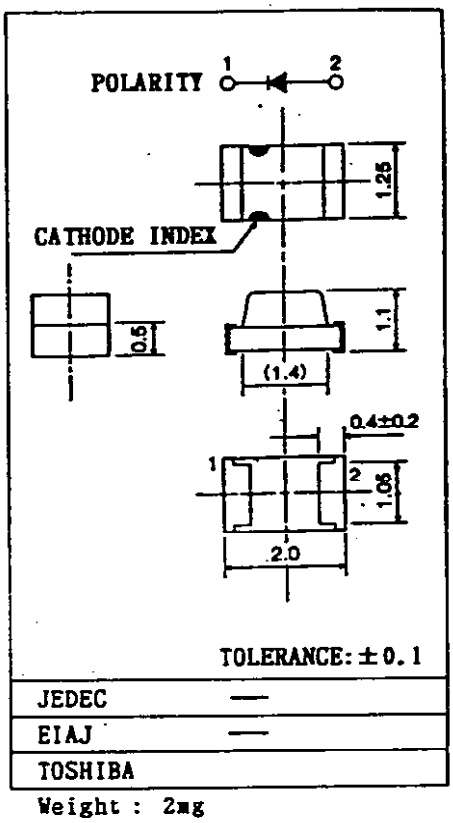
LED Surface Mount Device

Unit in mm



Features

- 2.0(L) x 1.25(W) x 1.1(H) mm Size
  - Small Package - High Density Mounting is Available
- Available for Automounting Machine Use
- Reflow Soldering is Applicable
- Low Drive Current, High Intensity Light Emission
  - Recommended Forward Current: I_F = 10 mA (DC)
- Fast Response Time
  - Capable of Pulse Operation
- High Power Luminous Intensity
- Applications:
  - Telephone Cordless/Cellular
  - Portable Instrument
  - Backlight, etc.

Line-Up

Product Name	Color	Material
TLPG1002	Pure Green	GaP
TLG1002	Green	GaP
TLGD1002	Green	GaP
TLYE1002	Yellow	InGaAlP
TLOE1002	Orange	InGaAlP
TLS1002	Red	GaAsP
TLRA1002	Red	GaAlAs

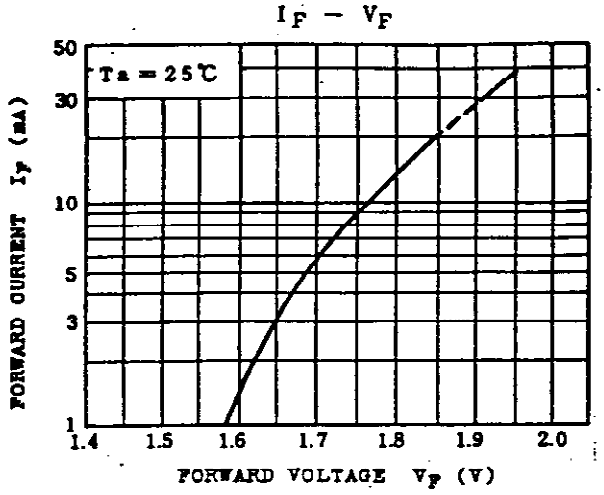
Maximum Ratings (T_a = 25°C)

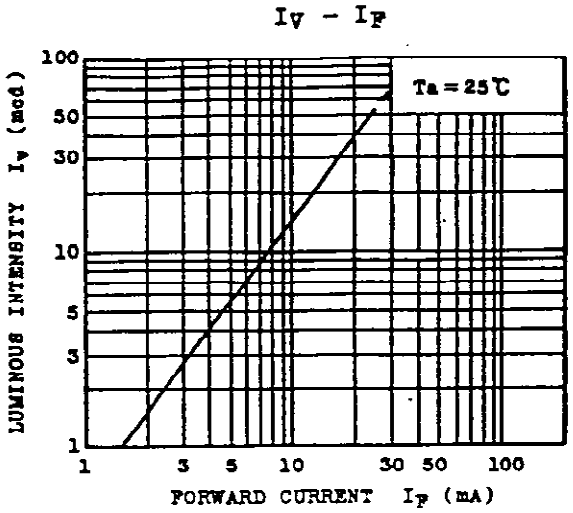
Product Name	Forward Current (DC) I_F (mA)	Reverse Voltage V_R (V)	Power Dissipation P_D (mW)	Operating Temperature T_{opr} (°C)	Storage Temperature T_{stg} (°C)
TLPG1002	25	4	65.0	–25 ~ 80	–30 ~ 85
TLG1002	25	4	62.5		
TLGD1002	25	4	62.5		
TLYE1002	25	4	62.5		
TLOE1002	25	4	60.0		
TLS1002	25	4	65.0		
TLRA1002	25	4	60.0		

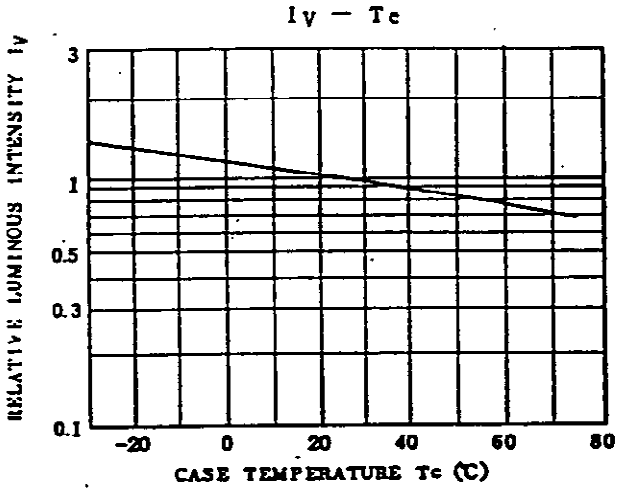
Electro-Optical Characteristics (T_a = 25°C)

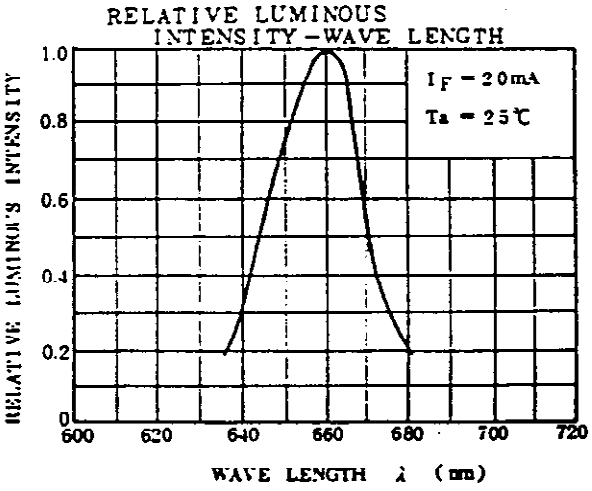
Product Name	Emission Spectrum			Luminous Intensity			Forward Voltage			Reverse Current	
	λ_P	$\Delta\lambda$		I_V			V_F			I_R	
	Typ.	Typ.	I_F	Min.	Typ.	I_F	Typ.	Max.	I_F	Max.	V_R
TLPG1002	555	20	20	0.85	2.0	20	2.15	2.6	20	5	4
TLG1002	567	25	20	2.72	9.0	20	2.15	2.5	20	5	4
TLGD1002	570	25	20	4.76	15.0	20	2.1	2.5	20	5	4
TLYE1002	590	13	20	27.2	60.0	20	2.1	2.5	20	50	4
TLOE1002	612	15	20	27.2	60.0	20	2.0	2.4	20	50	4
TLS1002	635	40	20	1.53	5.0	20	2.05	2.6	20	50	4
TLRA1002	660	25	20	15.3	40.0	20	1.85	2.4	20	50	4
UNIT	nm		mA	mcd		mA	V		mA	μA	V

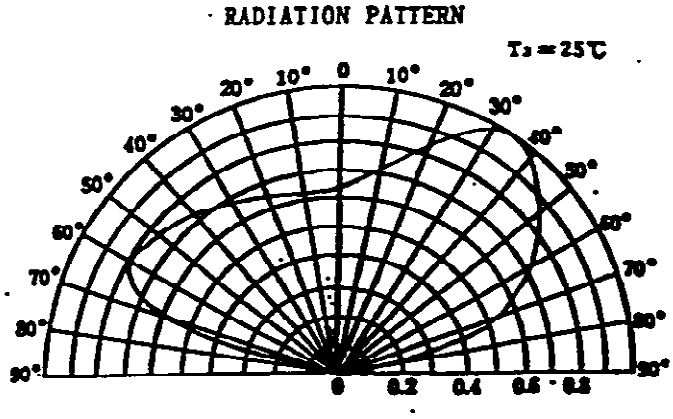
TLRA1002

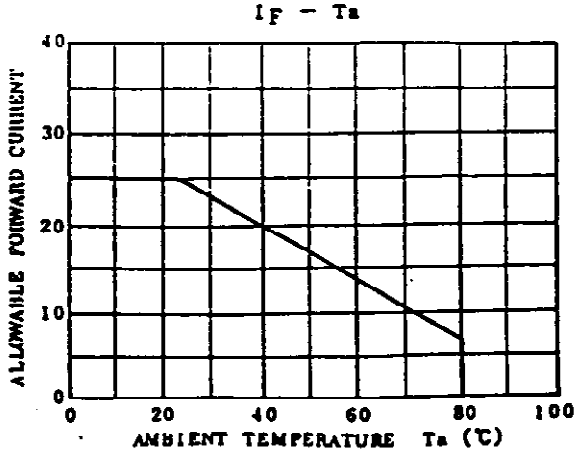

IF – VF
Ta = 25℃
FORWARD CURRENT IF (mA)
FORWARD VOLTAGE VF (V)


IV – IF
Ta = 25℃
LUMINOUS INTENSITY IV (mcd)
FORWARD CURRENT IF (mA)


IV – Tc
RELATIVE LUMINOUS INTENSITY IV
CASE TEMPERATURE Tc (℃)

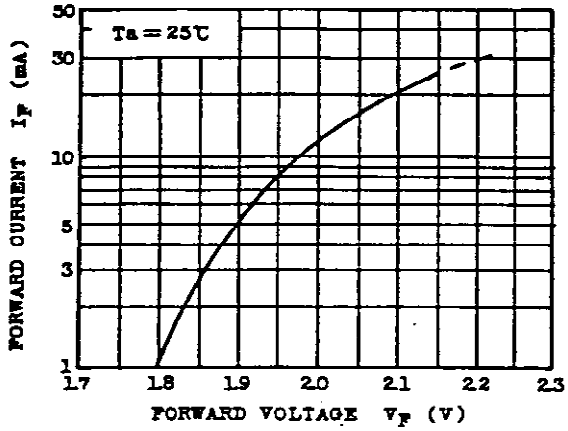

RELATIVE LUMINOUS
INTENSITY–WAVE LENGTH
IF = 20mA
Ta = 25℃
RELATIVE LUMINOUS INTENSITY
WAVE LENGTH λ (nm)


RADIATION PATTERN
Ta = 25℃

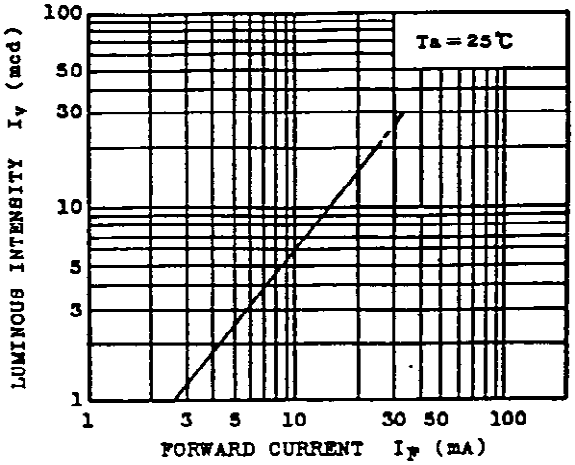

IF – Ta
ALLOWABLE FORWARD CURRENT
AMBIENT TEMPERATURE Ta (℃)

TLGD1002

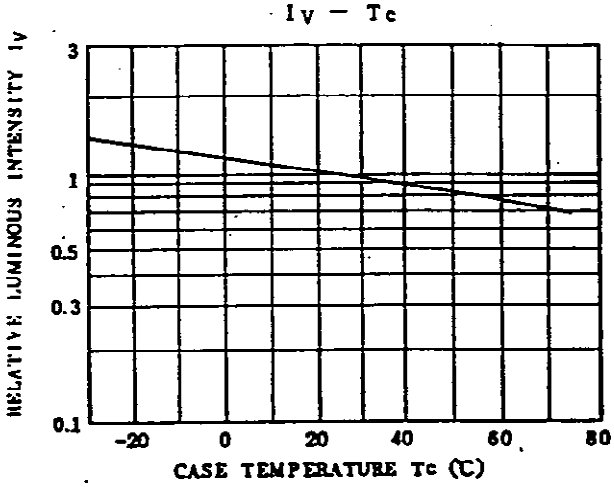
$I_F - V_F$



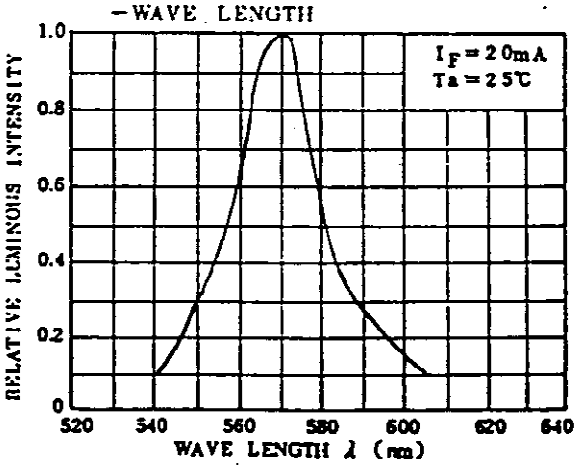
$I_V - I_F$



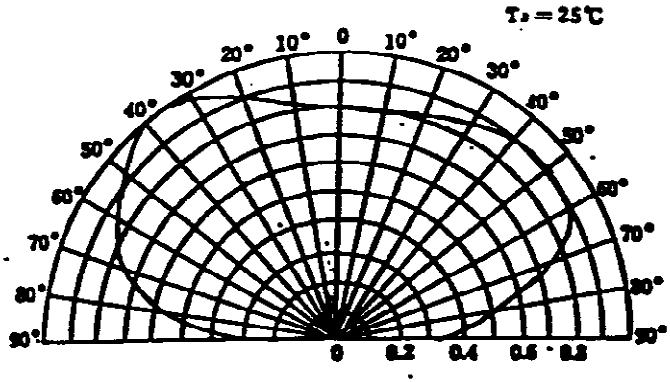
$I_V - T_c$



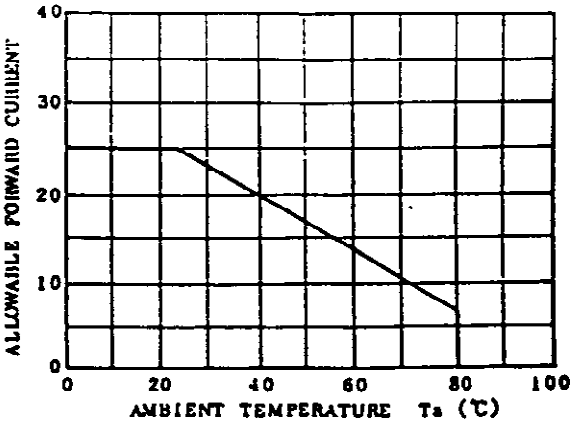
RELATIVE LUMINOUS INTENSITY
—WAVE LENGTH



RADIATION PATTERN

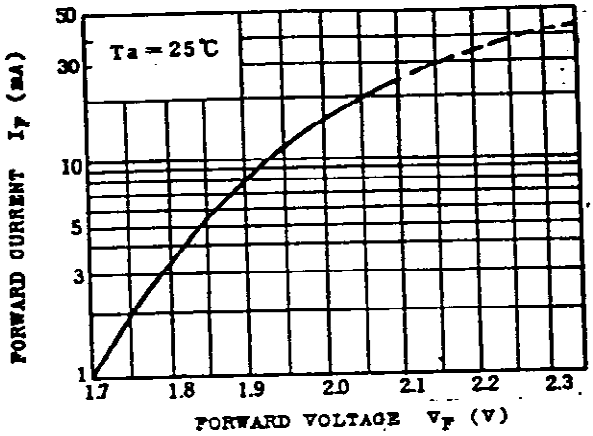


$I_F - T_a$

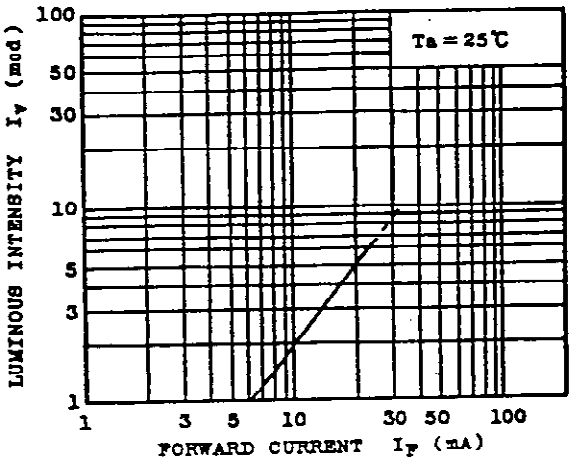


TLS1002

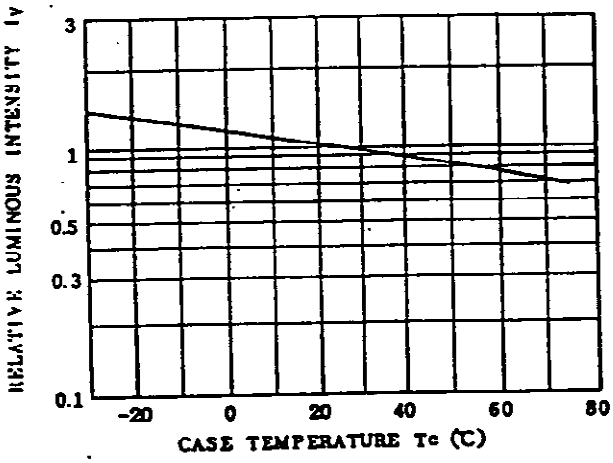
$I_F - V_F$



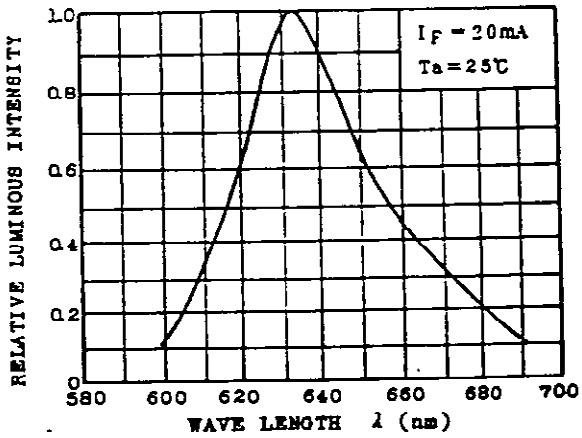
$I_V - I_F$



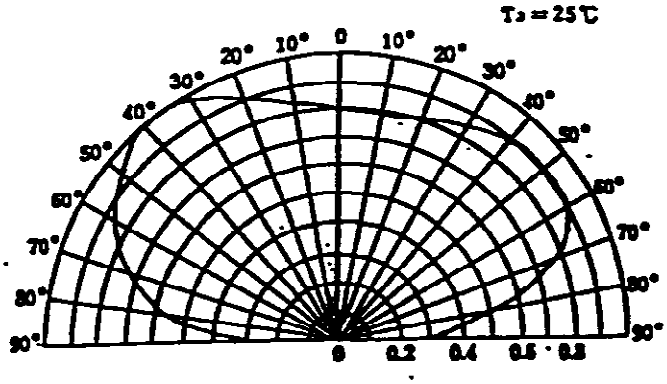
$I_V - T_c$



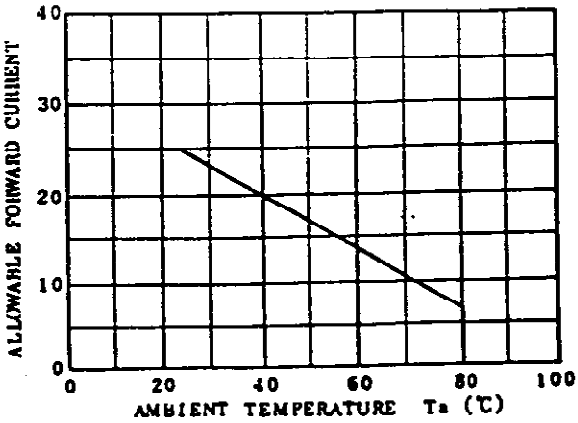
RELATIVE LUMINOUS INTENSITY —WAVE LENGTH



RADIATION PATTERN

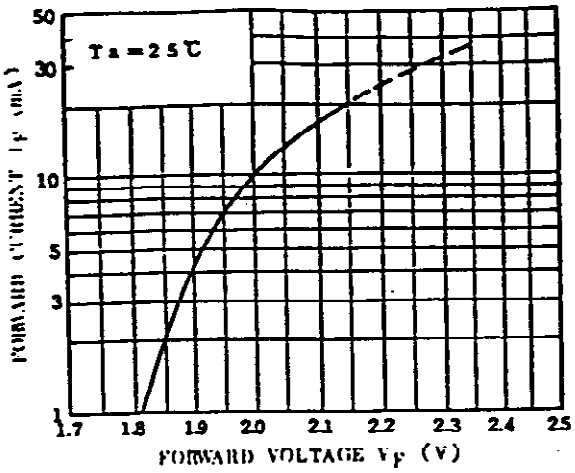


$I_F - T_a$

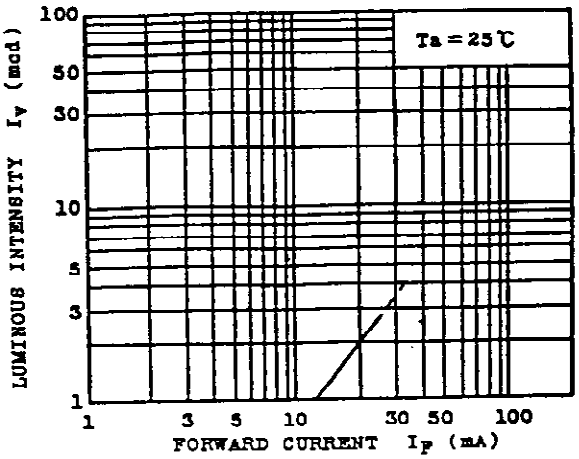


TLPG1002

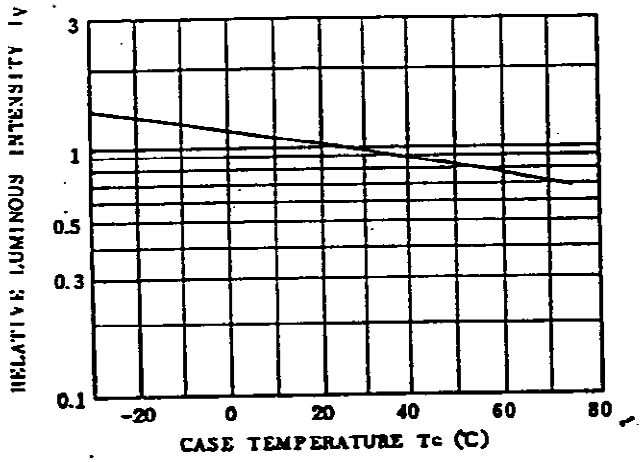
$I_F - V_F$



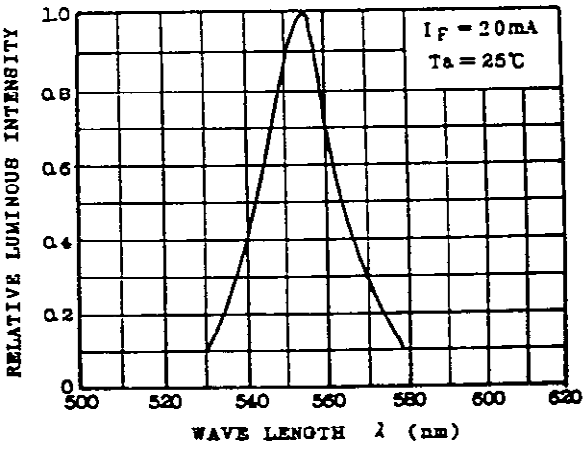
$I_V - I_F$



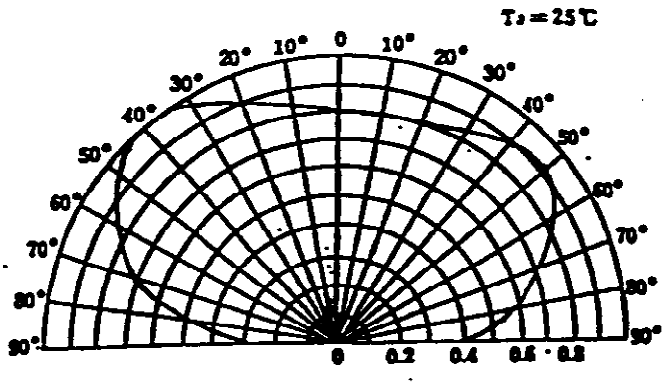
$I_V - T_c$



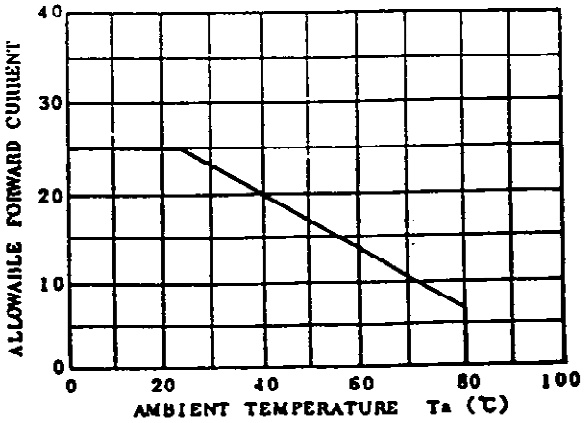
RELATIVE LUMINOUS INTENSITY — WAVE LENGTH



RADIATION PATTERN

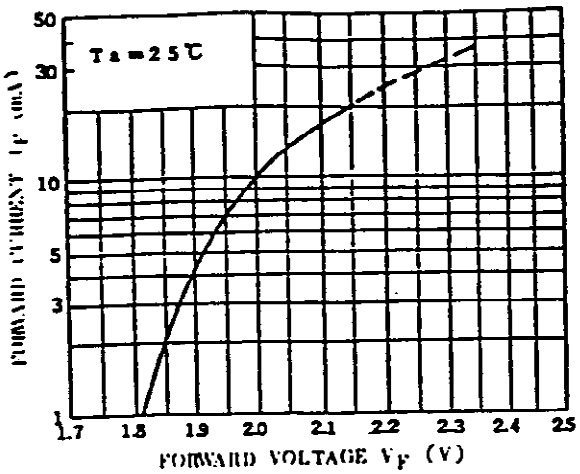


$I_F - T_a$

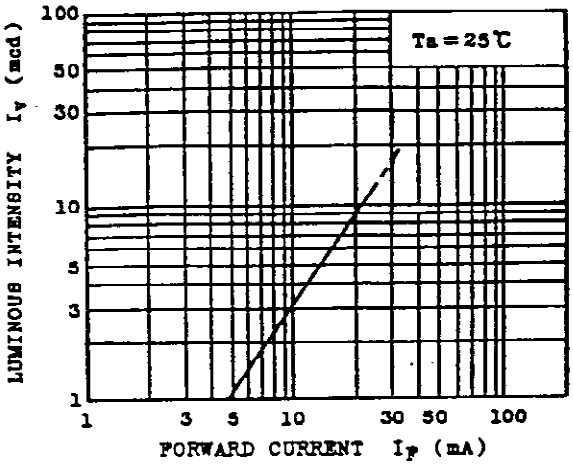


TLG1002

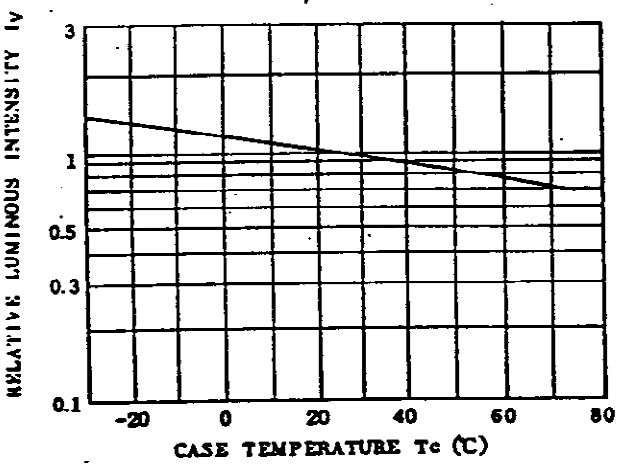
$I_F - V_F$



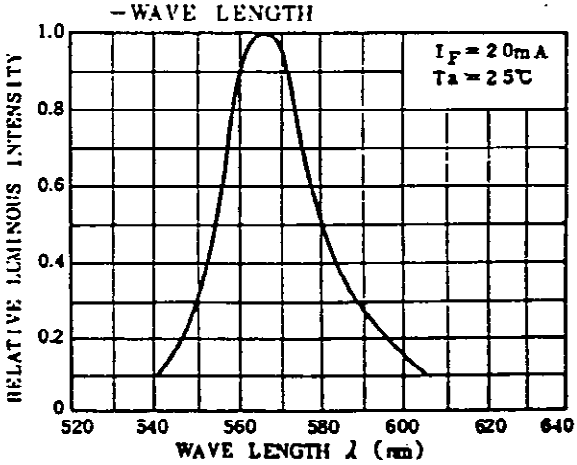
$I_V - I_F$



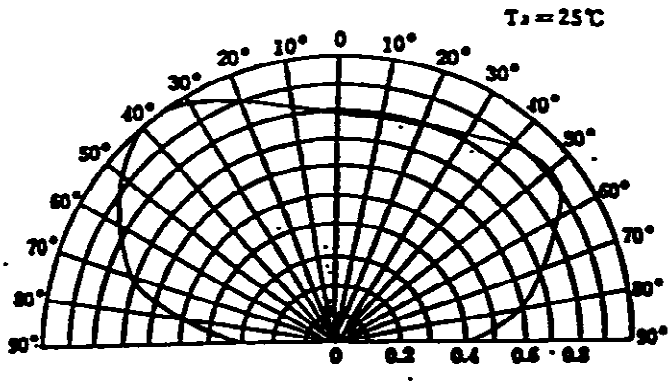
$I_V - T_c$



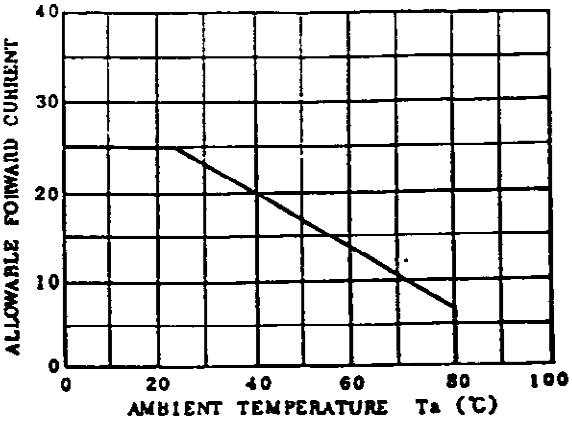
RELATIVE LUMINOUS INTENSITY
−WAVE LENGTH



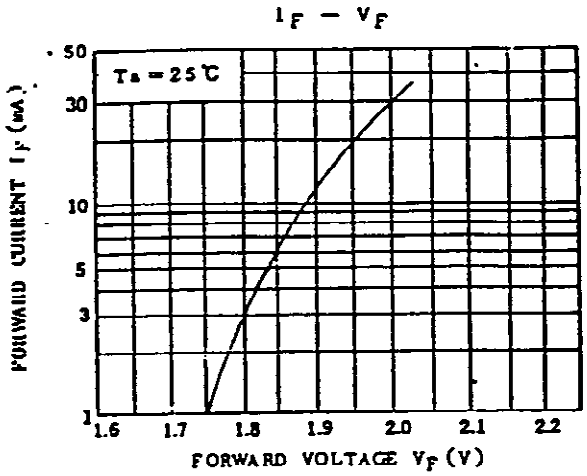
RADIATION PATTERN

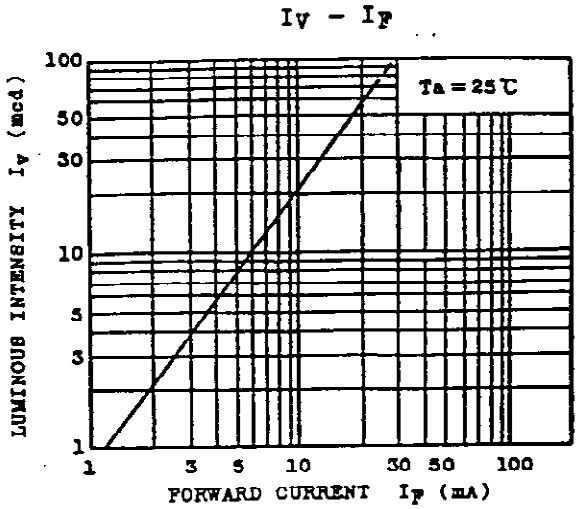


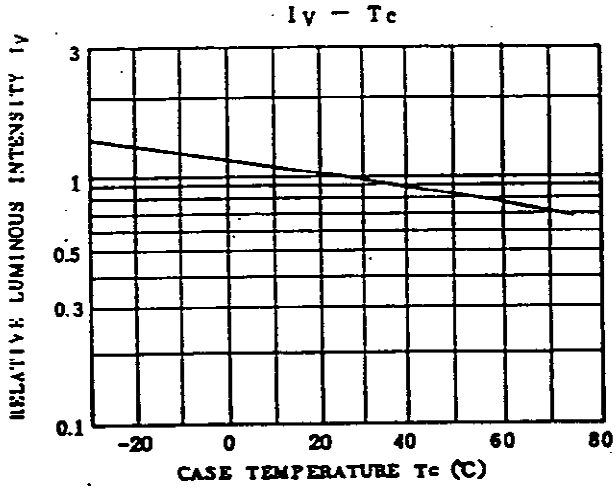
$I_F - T_a$

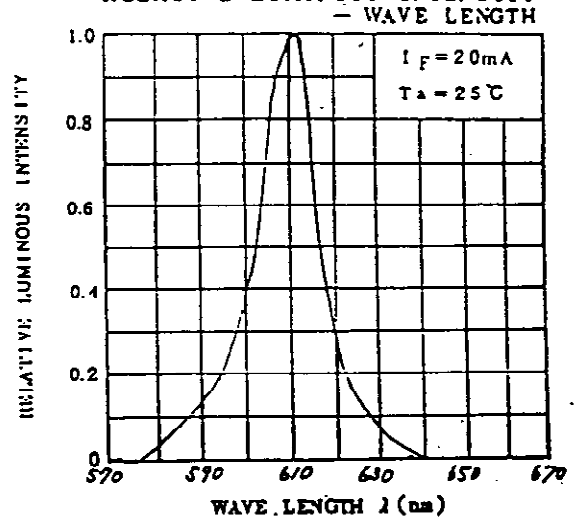


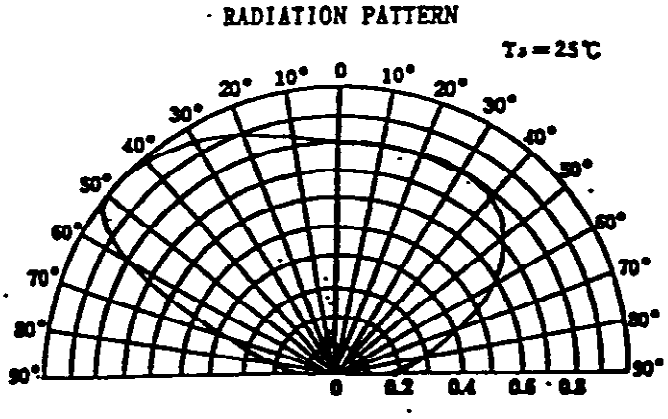
TLOE1002

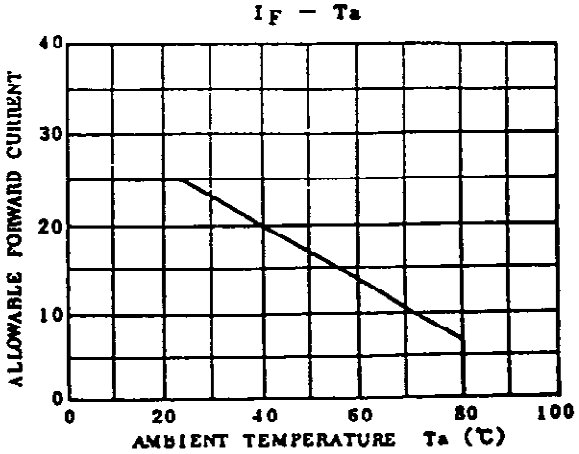

IF – VF
Ta = 25℃
FORWARD CURRENT IF (mA)
FORWARD VOLTAGE VF (V)


IV – IF
Ta = 25℃
LUMINOUS INTENSITY IV (mcd)
FORWARD CURRENT IF (mA)


IV – Tc
RELATIVE LUMINOUS INTENSITY IV
CASE TEMPERATURE Tc (℃)

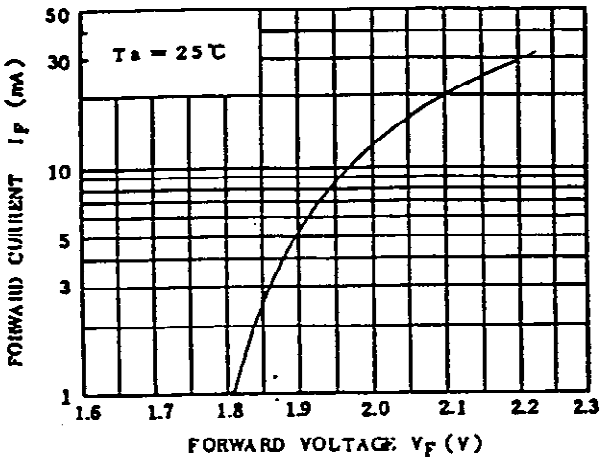

RELATIVE LUMINOUS INTENSITY
– WAVE LENGTH
IF = 20mA
Ta = 25℃
WAVE LENGTH λ (nm)


RADIATION PATTERN
Ta = 25℃

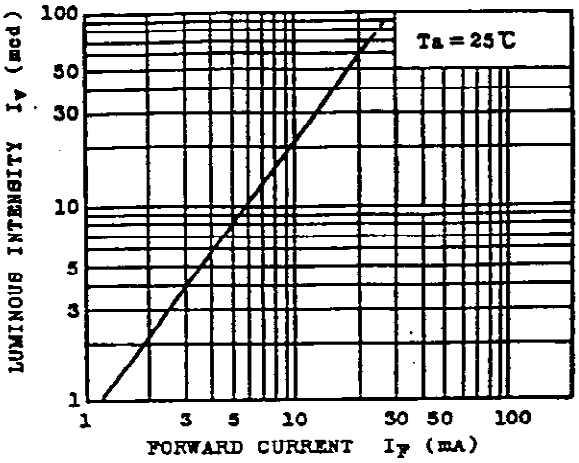

IF – Ta
ALLOWABLE FORWARD CURRENT
AMBIENT TEMPERATURE Ta (℃)

TLYE1002

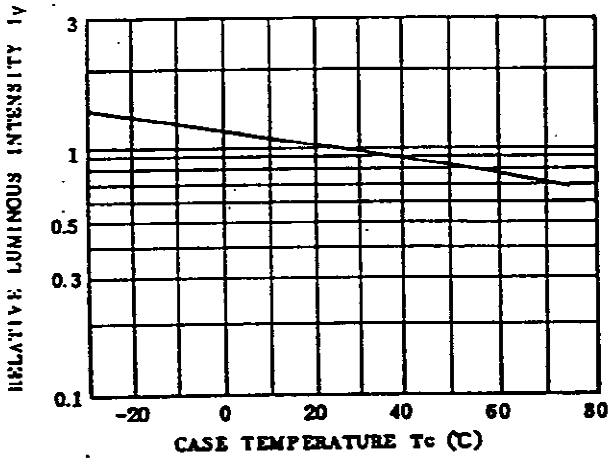
$I_F - V_F$



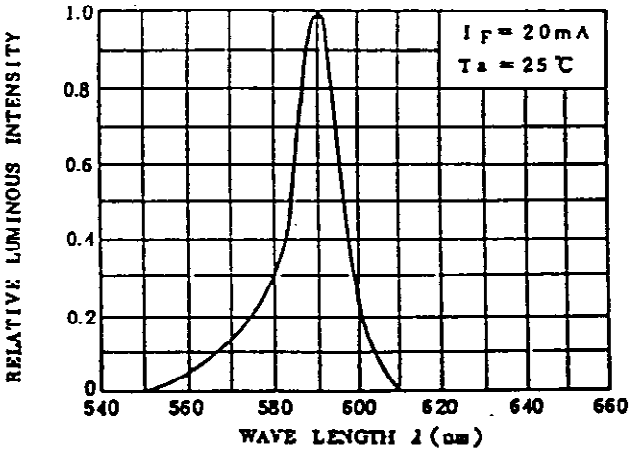
$I_V - I_F$



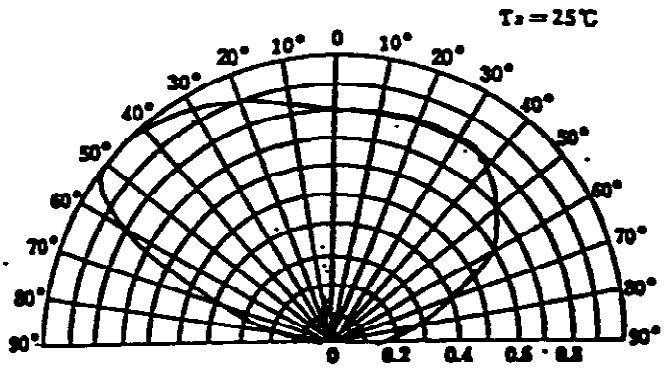
$I_V - T_c$



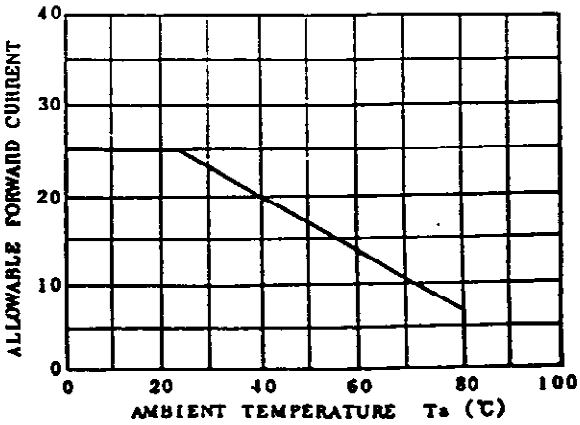
RELATIVE LUMINOUS INTENSITY — WAVE LENGTH



RADIATION PATTERN



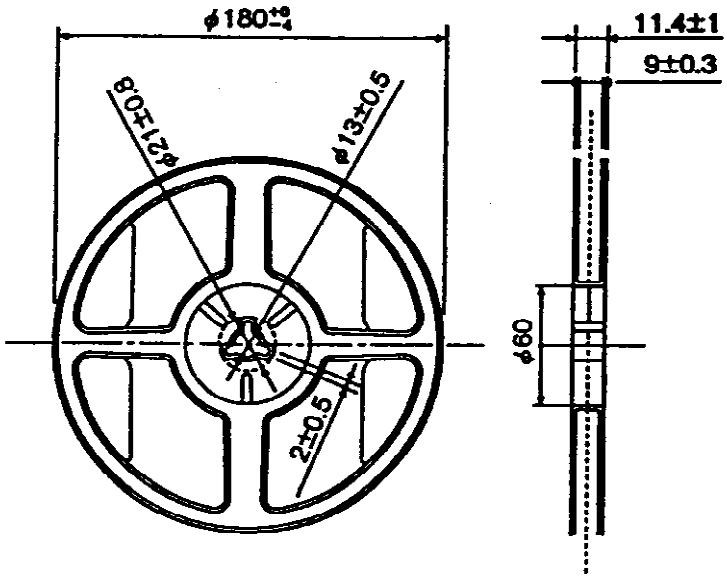
$I_F - T_a$



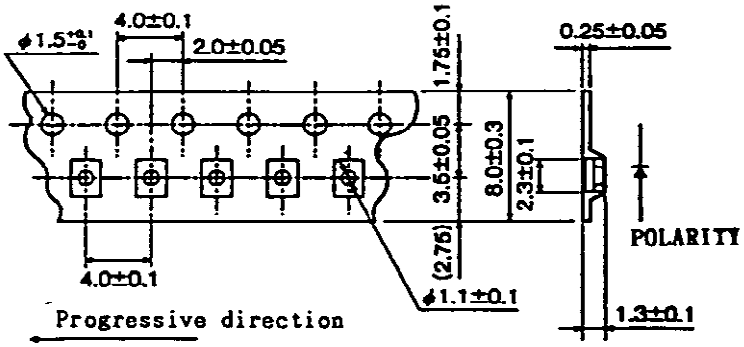
Taping Specifications:

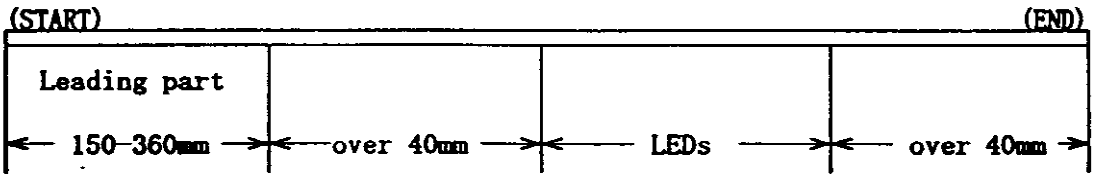
Unit: mm

Dimensions of reel



Dimensions of tape





Loaded quantity per reel : 3,000 PCS

Packaging

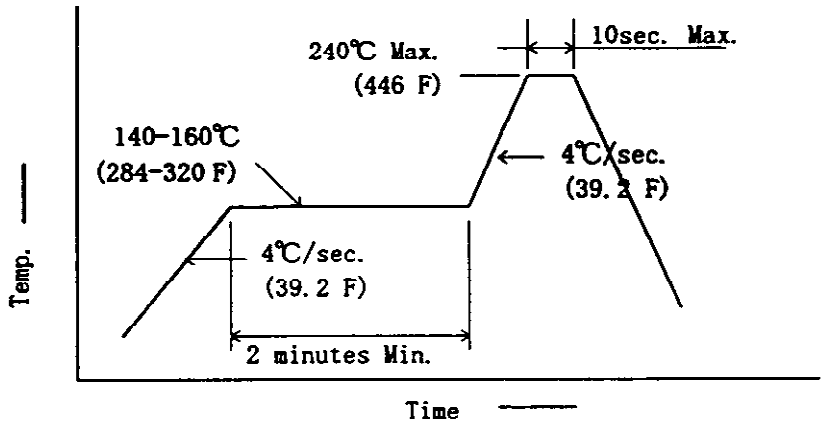
LEDs are packed in an aluminum envelope with silica gel to avoid moisture absorption. After opening the package, storage at the following conditions is recommended since air exposure at soldering according to the moisture absorption influences optical characteristics.

- Temperature 5 ~ 30°C
- Humidity 60% RH (MAX.)

Please execute baking if it has been 6 months under packed or 1 week under opened. Recommended baking condition: 60°C, over 12 hours.

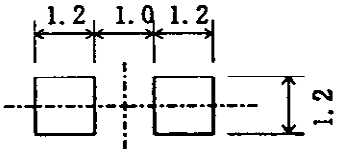
Soldering

1. Reflow soldering:
   * It is recommended to use a reflow furnace of the upper and lower heater type.* The temperature profile as shown in Fig. 1 is recommended for soldering LEDs by the reflow furnace.



<Fig. 1>

<Recommend soldering pattern>



Revision by manual soldering	:	Soldering iron	Less than 25W
		Temperature	Lower than 300℃
		Time	Within 3 seconds

2. Post-solder cleaning:
   When cleaning after soldering is needed, the following conditions must be adhered to.
   – Cleaning solvents: AK225 or Alcohol
   – Temperature: 50°C (122°F) MAX. for 30 seconds, or
   30°C (86°F) MAX. for 3 minutes MAX.
   – Ultrasonic: 300W MAX.

Precaution for Mounting

1. No force to plastic part of LED when LED is under high temperature.
2. No friction using a hard thing to avoid injuring plastic part of LED.
3. No contact between LED and the other parts, when installing an assembled board into the set.