

TOSHIBA INFRARED LED GaAs INFRARED EMITTER

TLN103A

INFRARED LED FOR PHOTSENSORS

Unit : mm

OPTO-ELECTRONIC SWITCHES

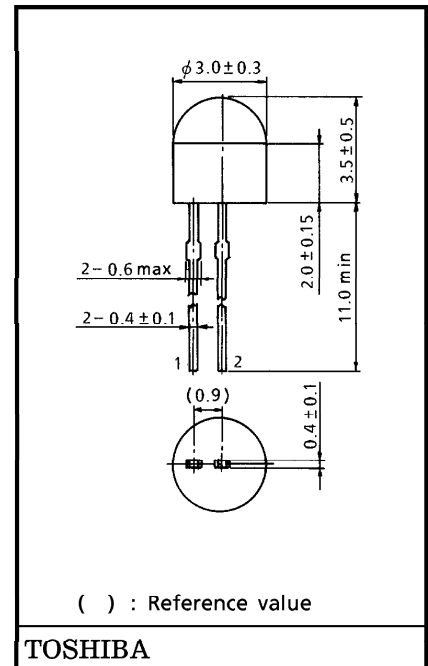
SELECTORS

TAPE AND CARD READERS

EQUIPMENT USING INFRARED TRANSMISSION

- Wide half-angle value : $\theta_{\frac{1}{2}} = \pm 80^\circ$ (typ.)
- Excellent radiant-intensity linearity. Modulation by pulse operation and high frequency is possible.
- Same external shape as TPS603A phototransistors
- Maximum distance when used as photosensor :

| | | |
|----------------------------------|---|--------------------------------------|
| with DC drive ≈ 5 mm | } | When TPS603A $I_L \approx 100 \mu A$ |
| with pulse drive ≈ 30 mm | | |

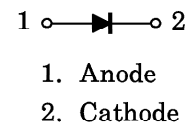


Weight : 0.08 g (typ.)

MAXIMUM RATINGS (Ta = 25°C)

| CHARACTERISTIC | SYMBOL | RATING | UNIT |
|--------------------------------------|-------------------------|---------|---------|
| Forward Current | I_F | 60 | mA |
| Pulse Forward Current (Note) | I_{FP} | 1 | A |
| Reverse Voltage | V_R | 5 | V |
| Forward Current Derating (Ta > 25°C) | $\Delta I_F / ^\circ C$ | -0.8 | mA / °C |
| Operating Temperature Range | T_{opr} | -20~75 | °C |
| Storage Temperature Range | T_{stg} | -30~100 | °C |

PIN CONNECTION



(Note) : Pulse width $\leq 100 \mu s$, repetitive frequency = 100 Hz

OPTICAL AND ELECTRICAL CHARACTERISTICS (Ta = 25°C)

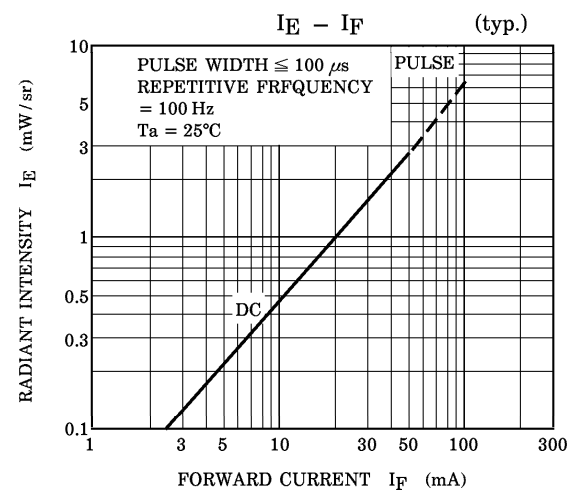
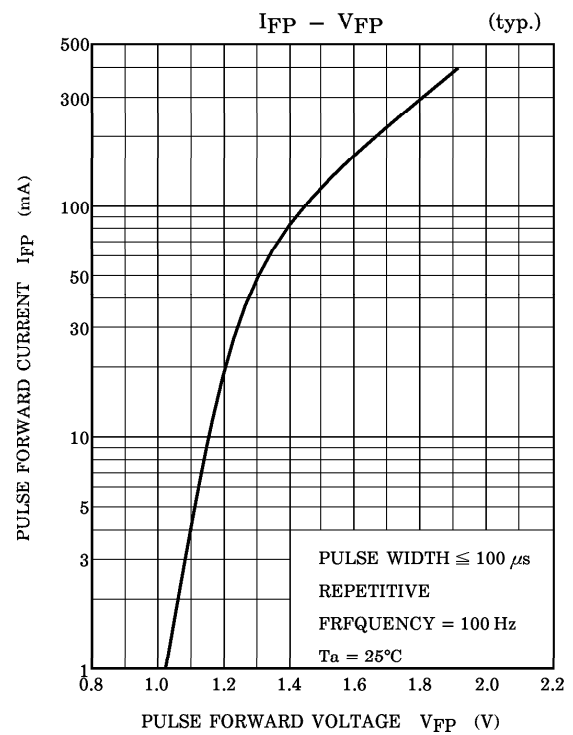
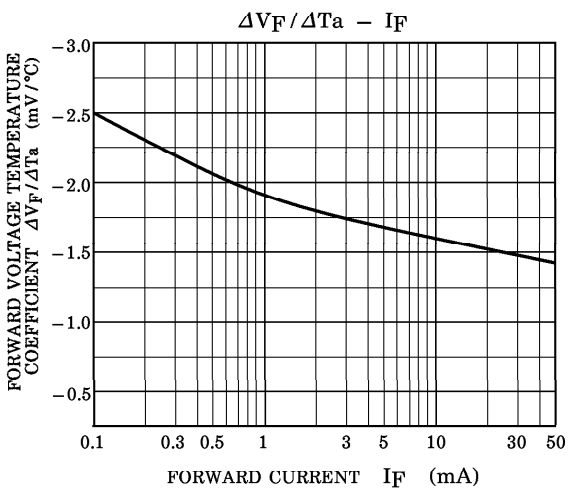
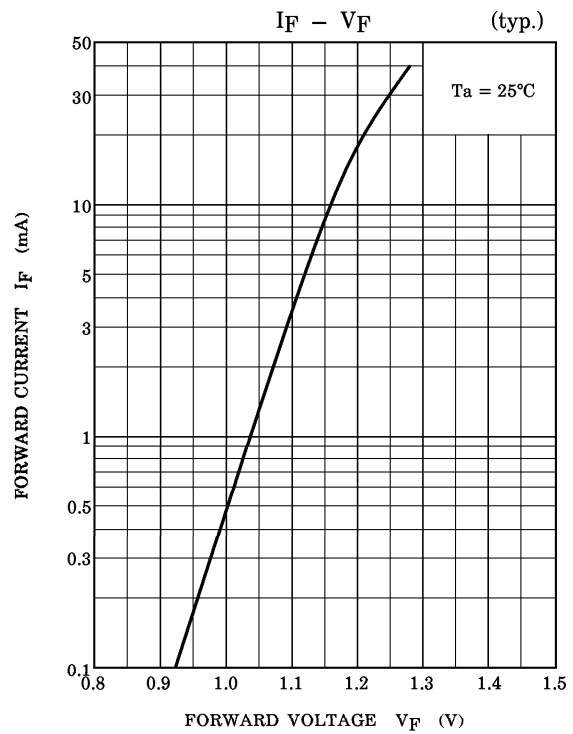
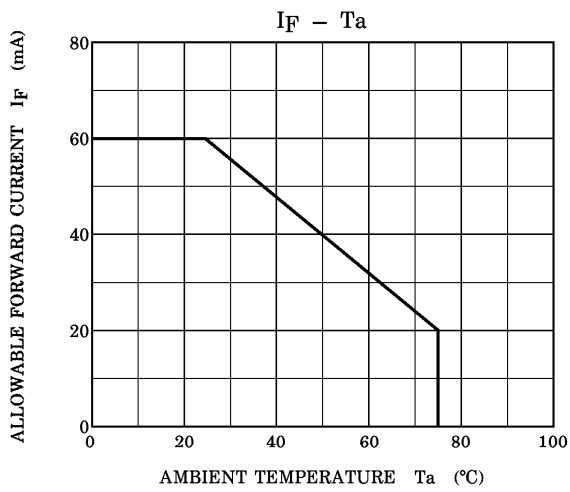
| CHARACTERISTIC | SYMBOL | TEST CONDITION | Min | Typ. | Max | UNIT |
|--------------------------|------------------------|----------------------|------|----------|------|---------|
| Forward Voltage | V_F | $I_F = 10$ mA | 1.00 | 1.15 | 1.30 | V |
| Reverse Current | I_R | $V_R = 5$ V | — | — | 10 | μA |
| Radiant Intensity | I_E | $I_F = 20$ mA | 0.5 | 1.0 | — | mW / sr |
| Radiant Power | P_o | $I_F = 20$ mA | — | 2.5 | — | mW |
| Half Value Angle | $\theta_{\frac{1}{2}}$ | $I_F = 20$ mA | — | ± 80 | — | ° |
| Capacitance | C_T | $V_R = 0, f = 1$ MHz | — | 30 | — | pF |
| Peak Emission Wavelength | λ_P | $I_F = 20$ mA | — | 940 | — | nm |
| Spectral Line Half Width | $\Delta \lambda$ | $I_F = 20$ mA | — | 50 | — | nm |

PRECAUTIONS

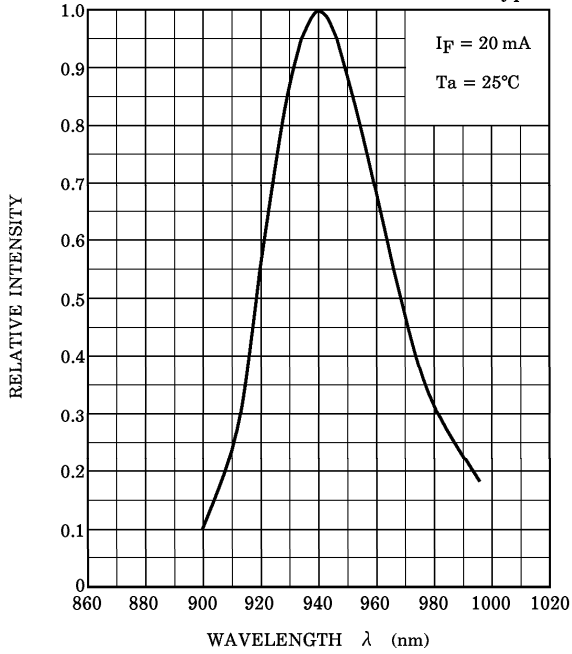
Please be careful of the followings.

1. Soldering temperature : 260°C max
Soldering time : 3 s max
(Soldering must be performed 2 mm from the bottom of the package.)
2. When forming the leads, bend each lead under the 2 mm from the body of the device.
Soldering must be performed after the leads have been formed.
3. Radiation intensity falls over time due to the current which flows in the infrared LED.
When designing a circuit, take into account this change in radiant power over time.
The ratio of fluctuation in radiation intensity to fluctuation in optical output is 1 : 1.

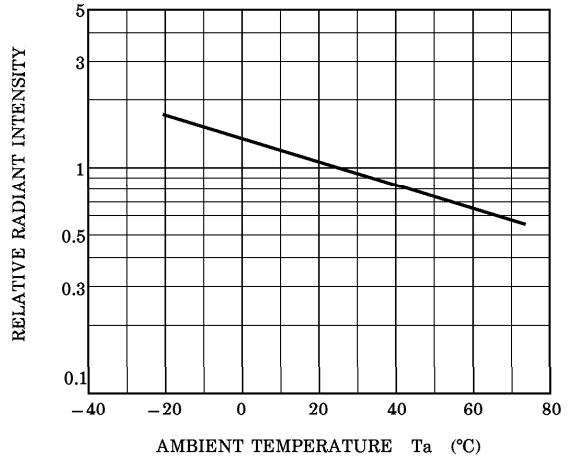
$$\frac{I_E(t)}{I_E(0)} = \frac{P_O(t)}{P_O(0)}$$



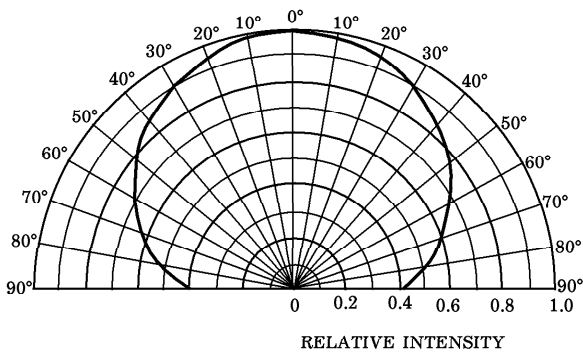
WAVELENGTH CHARACTERISTIC (typ.)



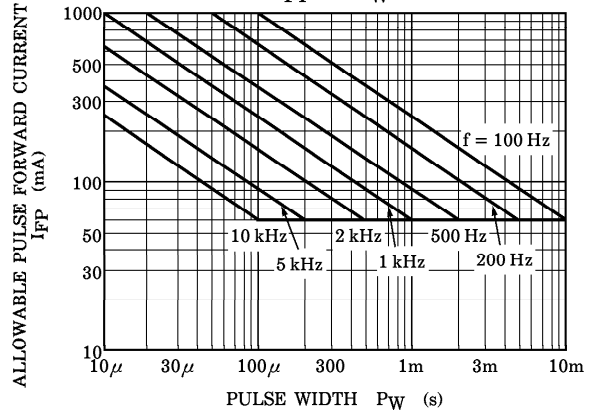
RELATIVE $I_E - T_a$ (typ.)



RADIATION PATTERN (typ.) ($T_a = 25^\circ\text{C}$)



$I_{FP} - P_W$



RESTRICTIONS ON PRODUCT USE

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