TOSHIBA PHOTO TRANSISTOR SILICON NPN EPITAXIAL PLANAR

# TPS612

FOR PHOTO SENSOR

PHOTOELECTRIC COUNTER

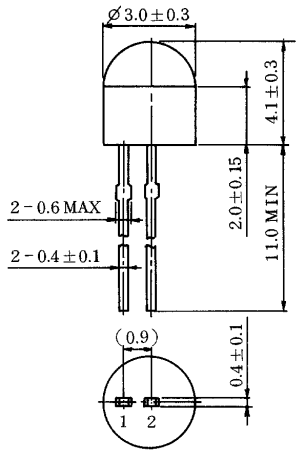
FLOPPY DISK DRIVE

POSITION DETECTION

CONTROLLER OF HOME ELECTRIC EQUIPMENT

- $\phi$3mm resin package (black)
- About medium sensitivity
- Half value angle : $\theta\frac{1}{2} = \pm 30°$ (TYP.)
- The same size TLN113 is available as in infrared LED.
- Protected from external light by black mold packaging.

Unit in mm




( ) : REFERENCE VALUE

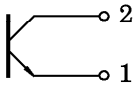
| | |
|---|---|
| JEDEC | — |
| EIAJ | — |
| TOSHIBA | 0-3C1 |

Weight : 0.08g (TYP.)

MAXIMUM RATINGS (Ta = 25°C)

| CHARACTERISTIC | SYMBOL | RATING | UNIT |
|---|---|---|---|
| Collector-Emitter Voltage | $V_{CEO}$ | 20 | V |
| Emitter-Collector Voltage | $V_{ECO}$ | 5 | V |
| Collector Current | $I_C$ | 20 | mA |
| Collector Power Dissipation | $P_C$ | 75 | mW |
| Collector Power Dissipation Derating (Ta > 25°C) | $\Delta P_C$ / °C | −1 | mW / °C |
| Operating Temperature Range | $T_{opr}$ | −20~75 | °C |
| Storage Temperature Range | $T_{stg}$ | −30~100 | °C |

PIN CONNECTION




1. EMITTER
2. COLLECTOR



961001EAA2

OPTO-ELECTRICAL CHARACTERISTICS (Ta = 25°C)

| CHARACTERISTIC | | SYMBOL | TEST CONDITION | MIN. | TYP. | MAX. | UNIT |
|---|---|---|---|---|---|---|---|
| Dark Current | | $I_D$ ($I_{CEO}$) | $V_{CE}$ = 10V, E = 0 | — | 0.01 | 0.1 | μA |
| Light Current | | $I_L$ (Note 1) | $V_{CE}$ = 3V, E = 0.1mW / cm² (Note 2) | 14 | — | 180 | μA |
| Collector-Emitter Saturation Voltage | | $V_{CE\ (sat)}$ | $I_C$ = 7μA, E = 0.1mW / cm² (Note 2) | — | 0.2 | 0.4 | V |
| Switching Time | Rise Time | $t_r$ | $V_{CC}$ = 10V, $I_C$ = 1mA, $R_L$ = 100Ω | — | 4 | — | μs |
| | Fall Time | $t_f$ | | — | 3 | — | |
| Peak Sensitivity Wavelength | | $\lambda_P$ | — | — | 870 | — | nm |
| Half Value Angle | | $\theta \frac{1}{2}$ | — | — | ±30 | — | ° |

Note 1. $I_L$ Classification AB : 14~60μA, BC : 24~105μA, A : 14~35μA, B : 24~60μA, C : 42~105μA

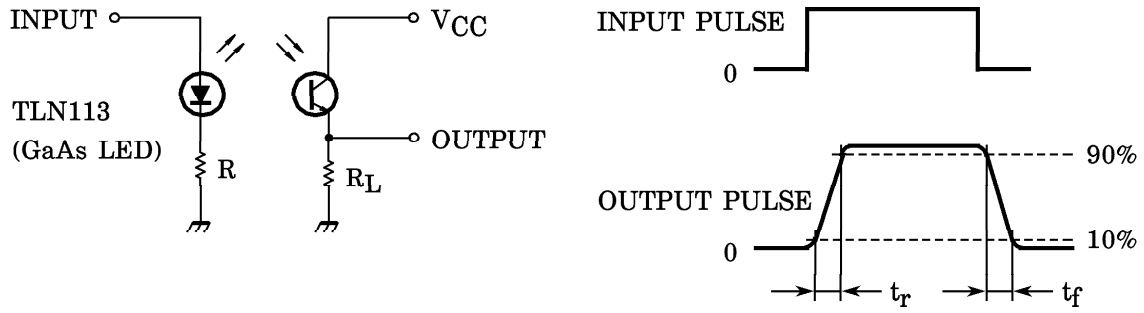
Note 2. Color temperature = 2870°K, Standard Tungsten Lamp.

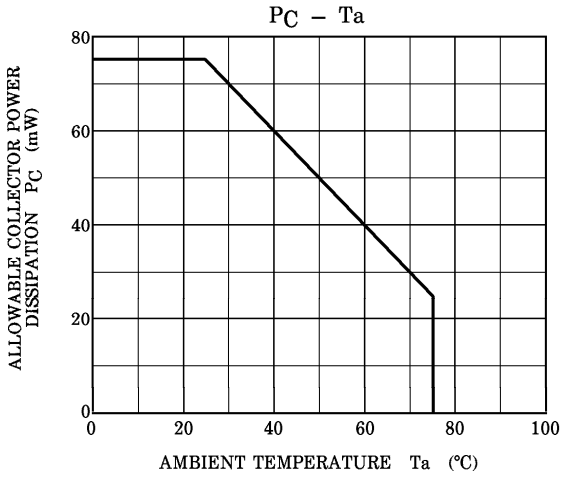
PRECAUTION

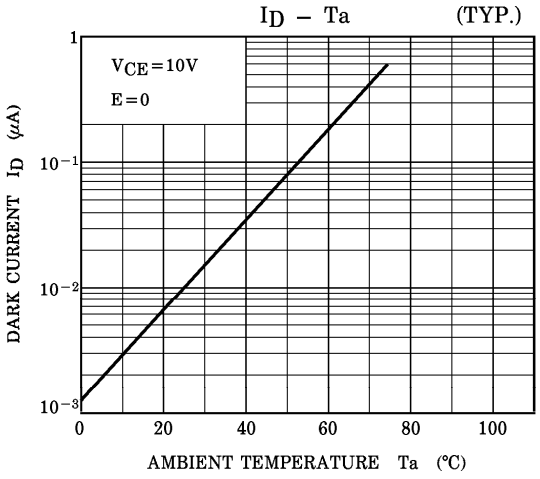
Please be careful of the followings.

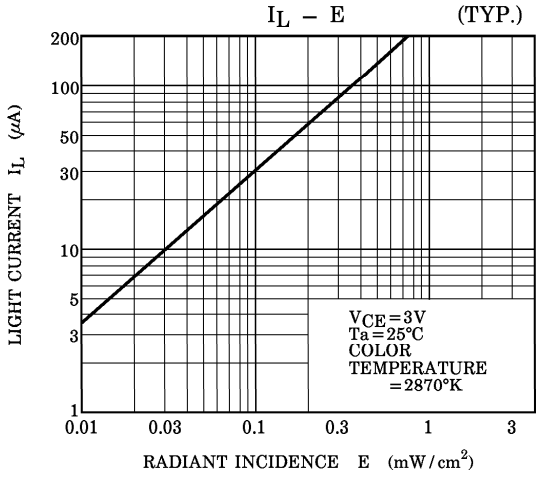
1. Soldering temerature : 260°C MAX. Soldering time : 3s MAX.
   (Soldering portion of lead : above 1.5mm from the body of the device)
2. If the lead is formed, the lead should be formed at a distance of 2mm from the body of the device. Soldering shall be performed after lead forming.

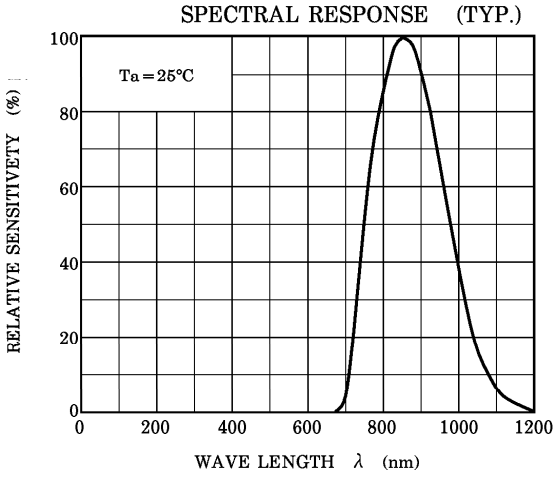
Fig. 1 SWITCHING TIME TEST CIRCUIT



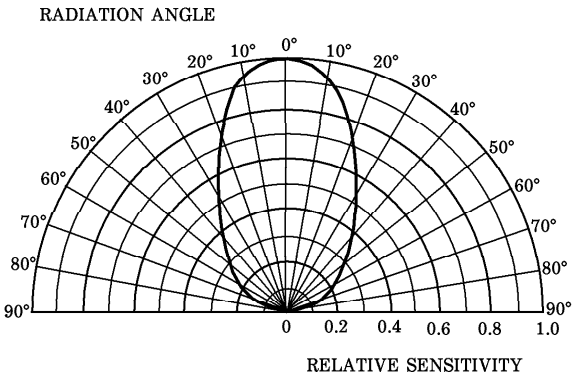



DIRECTIONAL SENSITIVITY CHARACTERISTIC

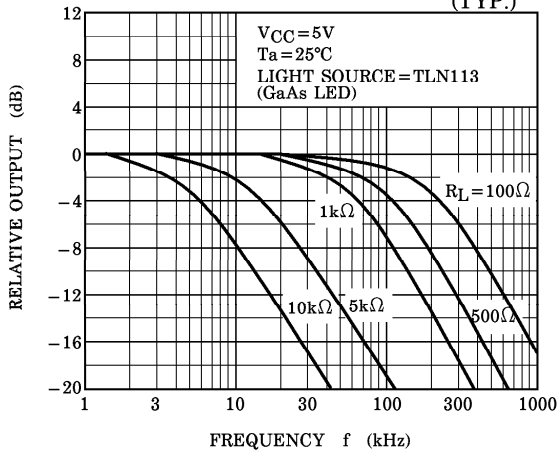
(TYP.)

(Ta = 25°C)




FREQUENCY CHARACTERISTICS

(TYP.)




SWITCHING CHARACTERISTICS

(TYP.)