

TOSHIBA PHOTO TRANSISTOR SILICON NPN EPITAXIAL PLANAR

TPS613

FOR PHOTO SENSOR

Unit in mm

PHOTOELECTRIC COUNTER

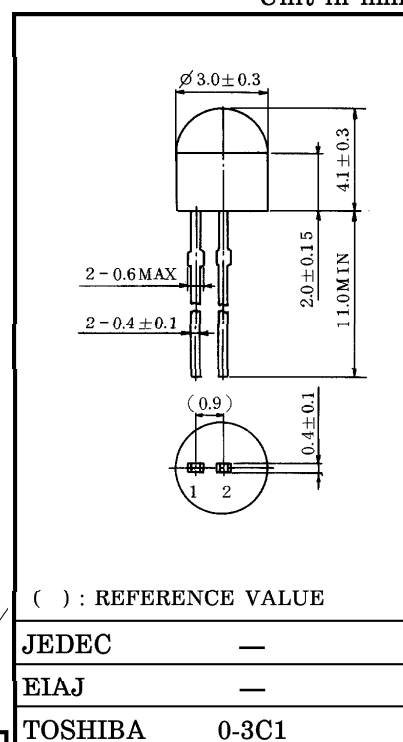
FLOPPY DISK DRIVE

POSITION DETECTION

CONTROLLER OF HOME ELECTRIC EQUIPMENT

DETECTOR FOR STROBOSCOPIC CONTROL

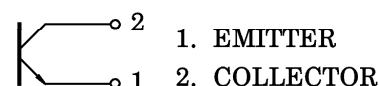
- $\phi 3\text{mm}$ resin package
- About medium sensitivity
- Half value angle : $\theta_{\frac{1}{2}} = \pm 30^\circ$ (TYP.)
- The same size TLN113 is available as in infrared LED.

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

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 ($T_a > 25^\circ\text{C}$)	$\Delta P_C / ^\circ\text{C}$	-1	mW / $^\circ\text{C}$
Operating Temperature Range	T_{opr}	$-20 \sim 75$	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	$-30 \sim 100$	$^\circ\text{C}$

Weight : 0.08g (TYP.)

PIN CONNECTION



961001EAA2

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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)	$V_{CE} = 3V, E = 0.1mW / cm^2$ (Note 2)	20	—	260	μA
Collector-Emitter Saturation Voltage		$V_{CE(sat)}$	$I_C = 7\mu A, E = 0.1mW / cm^2$ (Note 2)	—	0.2	0.4	V
Switching Time	Rise Time	t_r	$V_{CC} = 10V, I_C = 1mA$ $R_L = 100\Omega$	—	4	—	μs
	Fall Time	t_f		—	3	—	
Peak Sensitivity Wavelength		λ_P	—	—	720	—	nm
Half Value Angle		$\theta_{\frac{1}{2}}$	—	—	± 30	—	°

Note 1. I_L Classification AB : 20~85 μA , BC : 34~150 μA , CD : 60~260 μA ,
A : 20~50 μA , B : 34~85 μA , C : 60~150 μA

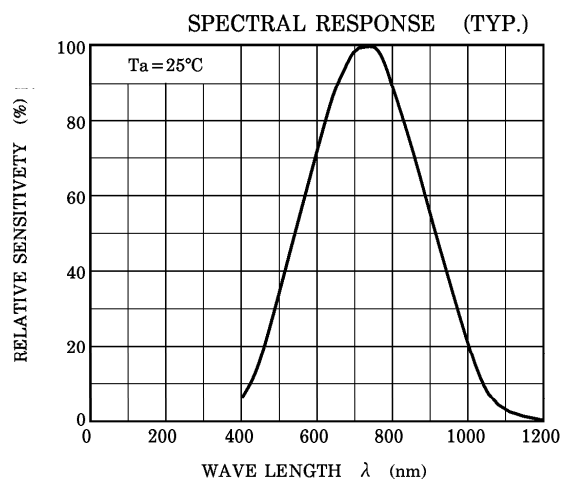
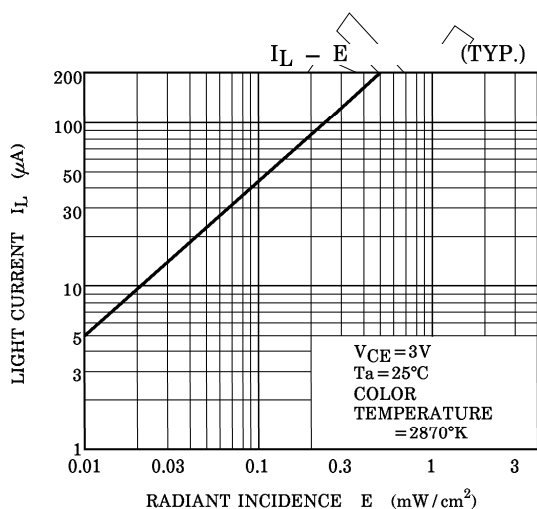
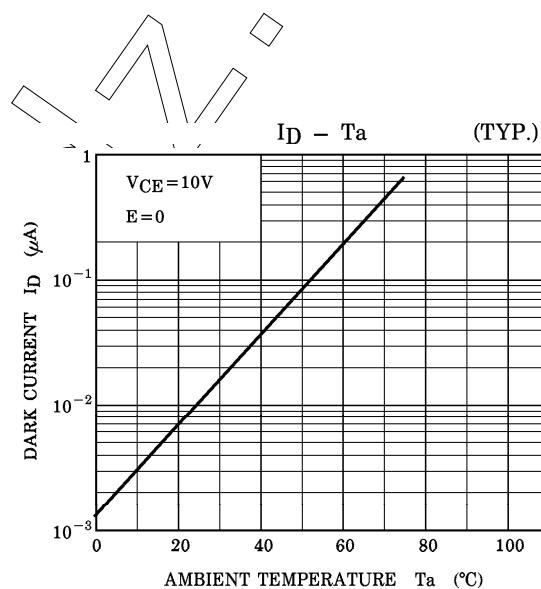
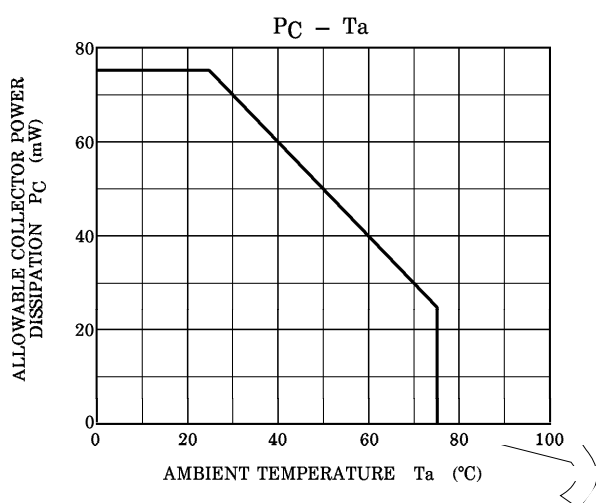
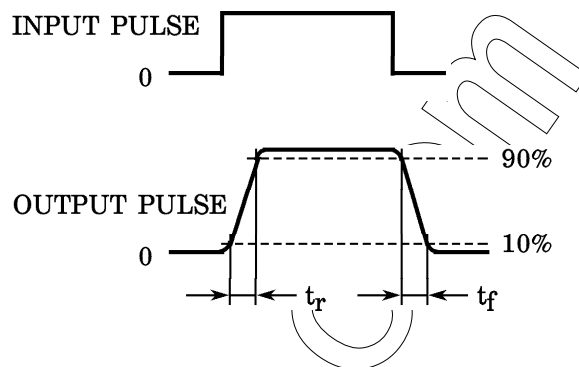
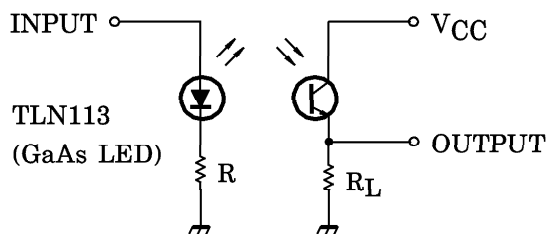
Note 2. Color temperature = 2870°K, Standard Tungsten Lamp.

PRECAUTION

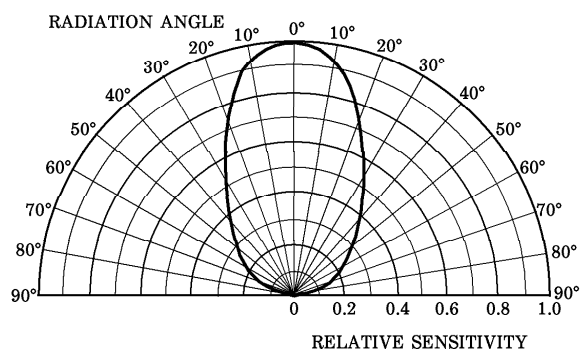
Please be careful of the followings.

1. Soldering temperature : 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.

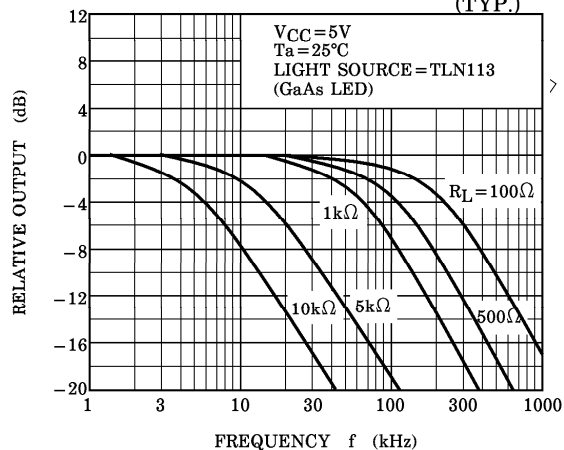
Fig.1 SWITCHING TIME TEST CIRCUIT



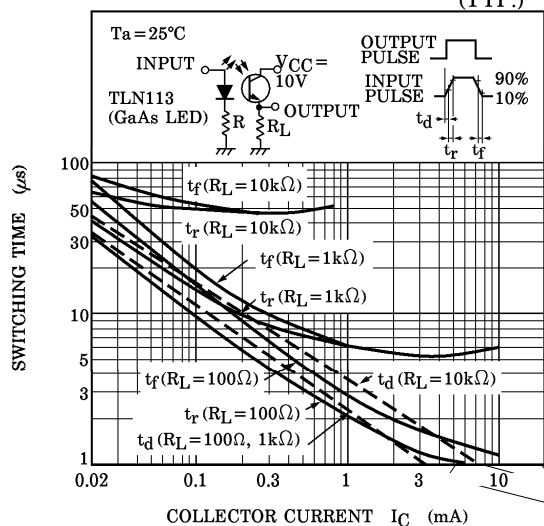
DIRECTIONAL SENSITIVITY CHARACTERISTIC
(TYP.)
($T_a = 25^\circ\text{C}$)



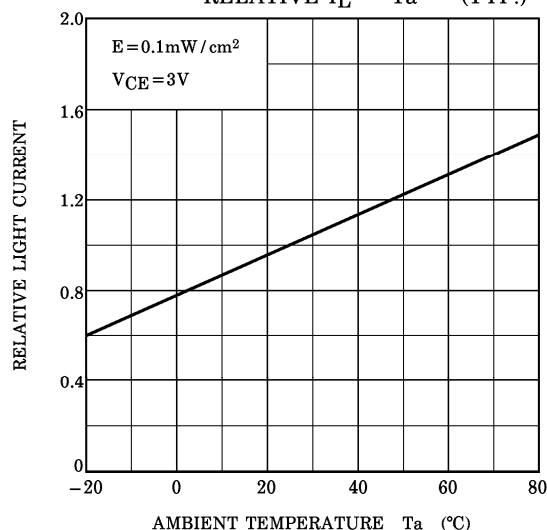
FREQUENCY CHARACTERISTICS
(TYP.)



SWITCHING CHARACTERISTICS
(TYP.)



RELATIVE $I_L - T_a$ (TYP.)



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