

TOSHIBA PHOTO TRANSISTOR SILICON NPN EPITAXIAL PLANAR

# TPS610

FOR PHOTO SENSOR

Unit in mm

PHOTOELECTRIC COUNTER

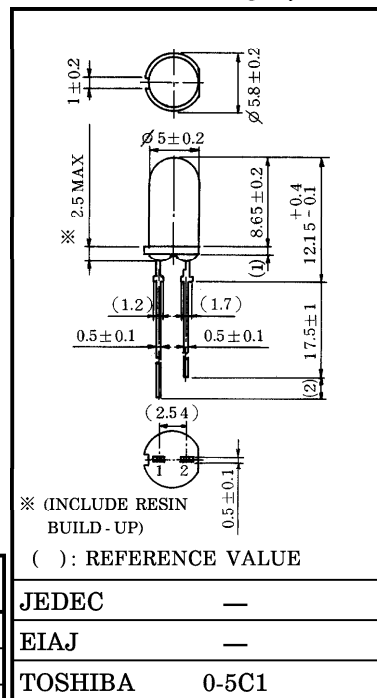
VARIOUS KINDS OF READERS

POSITION DETECTION

- $\phi 5\text{mm}$  epoxy resin package
- High sensitivity :  $I_L = 250\mu\text{A}$  (TYP.)
- Half value angle :  $\theta_{\frac{1}{2}} = \pm 8^\circ$  (TYP.)
- The TLN110 in the same size and TLN205 in the similar external size are available as infrared LEDs.

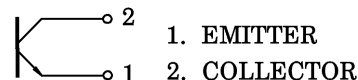
MAXIMUM RATINGS ( $T_a = 25^\circ\text{C}$ )

CHARACTERISTIC	SYMBOL	RATING	UNIT
Collector-Emitter Voltage	$V_{CEO}$	30	V
Emitter-Collector Voltage	$V_{ECO}$	5	V
Collector Current	$I_C$	50	mA
Collector Power Dissipation	$P_C$	150	mW
Collector Power Dissipation Derating ( $T_a > 25^\circ\text{C}$ )	$\Delta P_C / ^\circ\text{C}$	-2	mW/ $^\circ\text{C}$
Operating Temperature Range	$T_{opr}$	-20~75	$^\circ\text{C}$
Storage Temperature Range	$T_{stg}$	-30~100	$^\circ\text{C}$



Weight : 0.3g (TYP.)

PIN CONNECTION



OPTO-ELECTRICAL CHARACTERISTICS ( $T_a = 25^\circ\text{C}$ )

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Dark Current	$I_D (I_{CEO})$	$V_{CE} = 24\text{V}, E = 0$	—	0.005	0.1	$\mu\text{A}$
Light Current	$I_L$	$V_{CE} = 3\text{V}, E = 0.1\text{mW}/\text{cm}^2$ (Note)	100	250	—	$\mu\text{A}$
Collector-Emitter Saturation Voltage	$V_{CE} (\text{sat})$	$I_C = 50\mu\text{A}, E = 0.1\text{mW}/\text{cm}^2$ (Note)	—	0.25	0.4	V
Switching Time	Rise Time	$V_{CC} = 5\text{V}, I_C = 2\text{mA}$ $R_L = 100\Omega$	—	6	—	$\mu\text{s}$
	Fall Time		—	6	—	
Peak Sensitivity Wavelength	$\lambda_p$	—	—	800	—	nm
Half Value Angle	$\theta_{\frac{1}{2}}$	—	—	$\pm 8$	—	$^\circ$

(Note) Color temperature = 2870°K, Standard Tungsten Lamp

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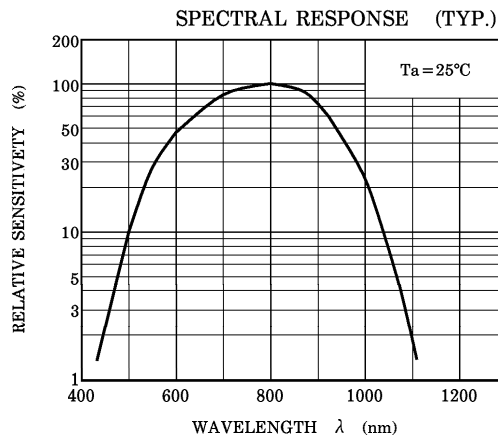
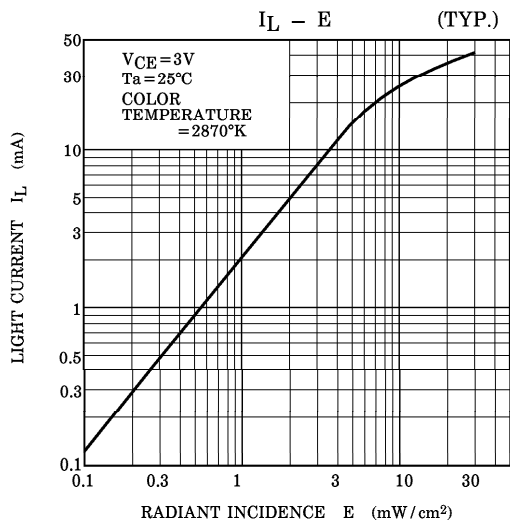
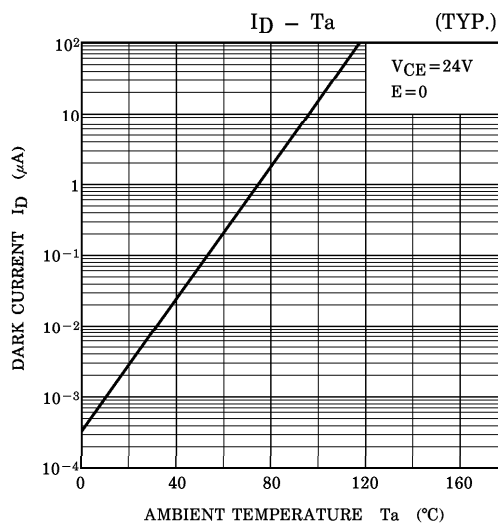
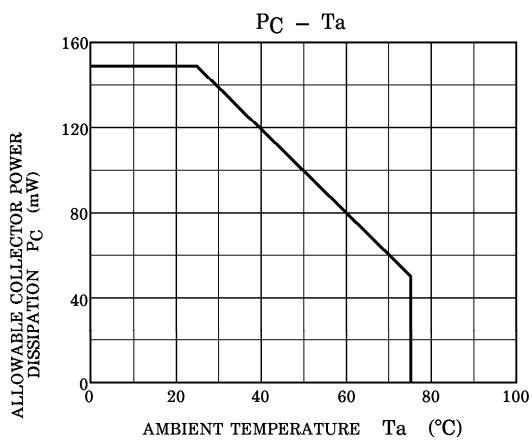
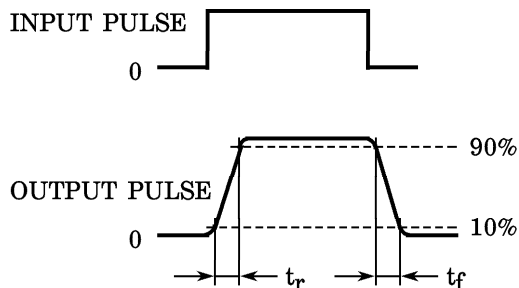
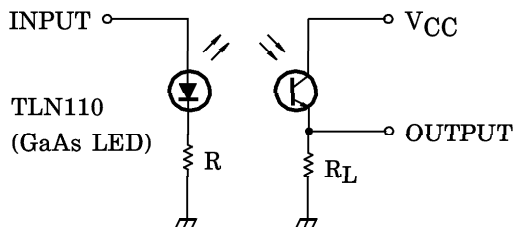
**PRECAUTION**

Please be careful of the followings.

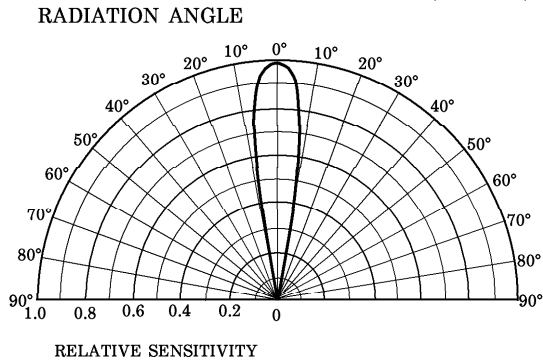
1. Soldering shall be performed at the top portion from the lead stopper.
2. Soldering temperature : 260°C MAX. Soldering time : 5s MAX.
3. When the lead is formed, the lead shall be formed at the top portion of the stopper without leaving forming stress to the body of the device. Soldering shall be performed after lead forming.

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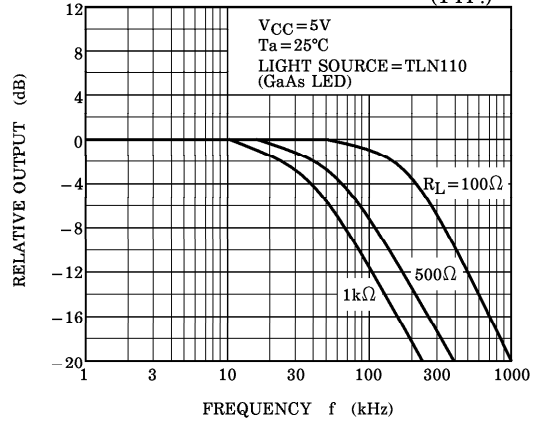
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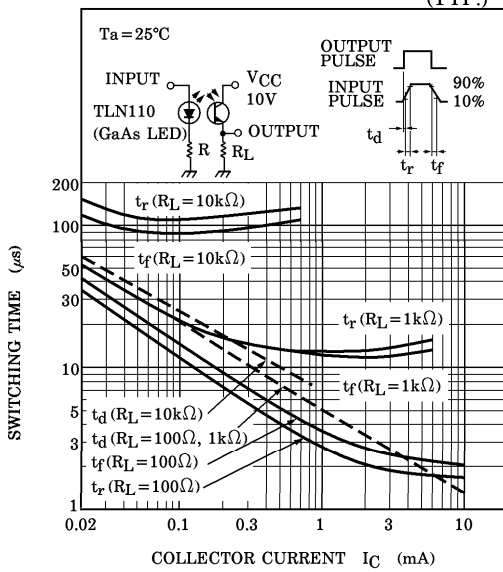
DIRECTIONAL SENSITIVITY CHARACTERISTIC (TYP.)  
(Ta = 25°C)



FREQUENCY CHARACTERISTICS (TYP.)



SWITCHING CHARACTERISTICS (TYP.)



COUPLING CHARACTERISTICS WITH TLN110

