

TOSHIBA Photo Transistor Silicon NPN Epitaxial Planar

TPS614(F)

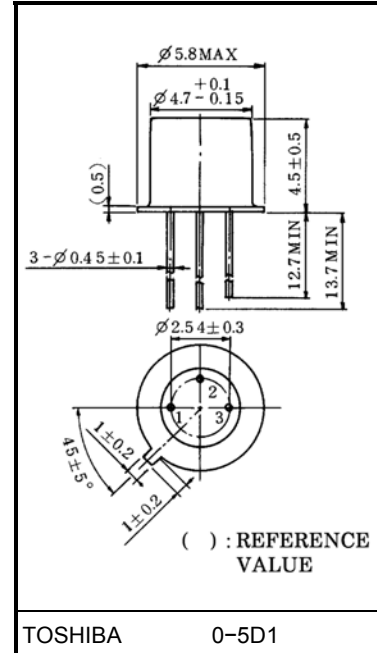
Lead Free Product
 Photoelectric Counter
 Various Kinds Of Readers
 Position Detection

- TO-18 metal package
- High sensitivity: $I_L=1.5\text{mA}$ (typ.)
- Wide half value angle facilitates mechanical design.
 : $\theta_{1/2}=\pm 42^\circ$ (typ.)
- Countermeasure against disturbance light, improvement of response speed and enable operation can be taken by use of the base pin. Avoid the use of TPS614 with the base pin kept open.
- TLN108(F), TLN201(F), etc. are available as the recommended infrared LEDs.

Maximum Ratings (Ta = 25°C)

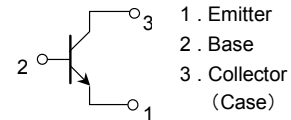
Characteristic	Symbol	Rating	Unit
Collector-emitter voltage	V_{CEO}	40	V
Emitter-collector voltage	V_{ECO}	5	V
Collector current	I_C	50	mA
Collector power dissipation	P_C	150	mW
Collector power dissipation derating(Ta>25°C)	$\Delta P_C/^\circ\text{C}$	-1.2	mW/°C
Operating temperature range	T_{opr}	-40~125	°C
Storage temperature range	T_{stg}	-55~150	°C

Unit: mm



Weight: 0.27 g (typ.)

Pin Connection



Opto-Electrical Characteristics (Ta = 25°C)

Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Dark current	$I_D(I_{CEO})$	$V_{CE}=30V, E=0$	—	0.01	0.2	μA
Light current	I_L	$V_{CE}=3V, E=10mW/cm^2$ (Note)	0.6	1.5	—	mA
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C=0.3mA, E=10mW/cm^2$ (Note)	—	0.25	0.4	V
Switching time	Rise time	$V_{CC}=5V, I_C=10mA, R_L=100\Omega$ (Fig. 1)	—	2	—	μs
	Fall time		—	2	—	
Peak sensitivity wavelength	λ_P	—	—	800	—	nm
Half value angle	$\theta \frac{1}{2}$	—	—	± 42	—	$^\circ$

(Note): Color temperature=2870K, standard tungsten lamp.

Precaution

Please be careful of the followings.

- Soldering temperature : 260°C max Soldering time : 5s max
(Soldering portion of lead: Above 1.5mm from the body of the device)
- 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.

Product Indication

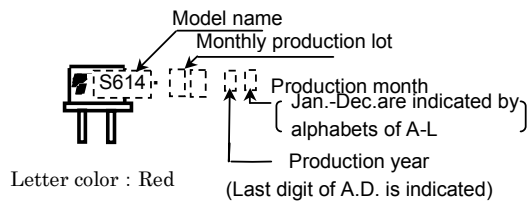
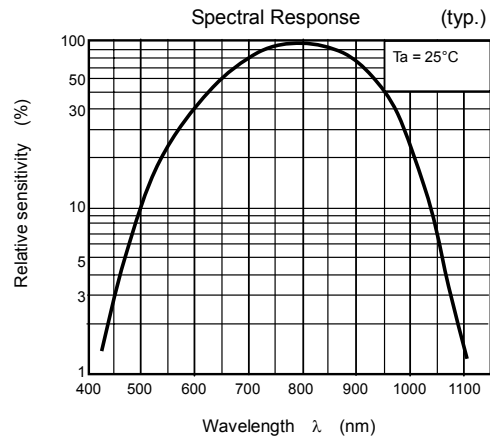
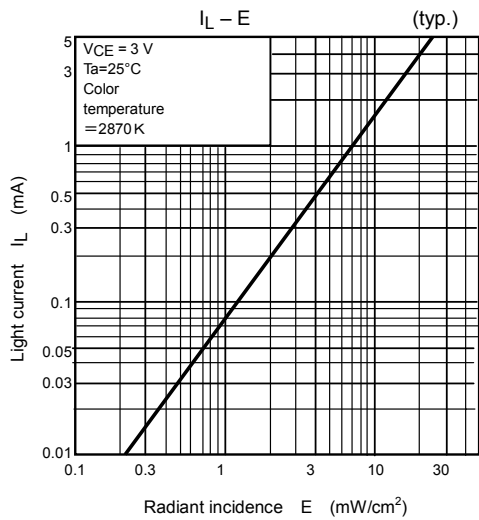
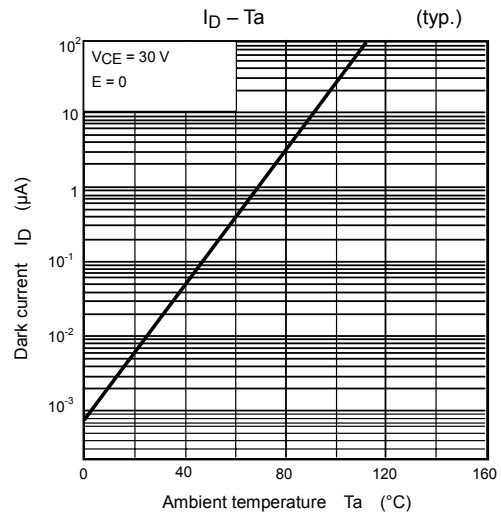
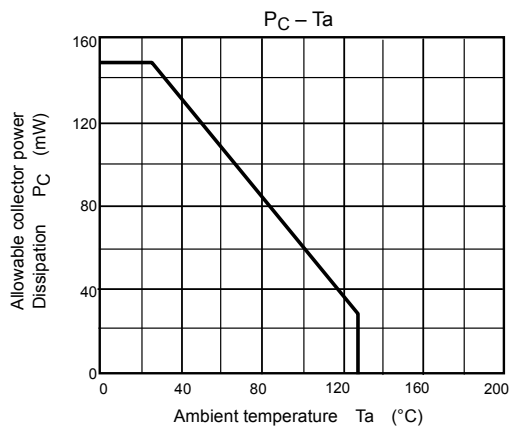
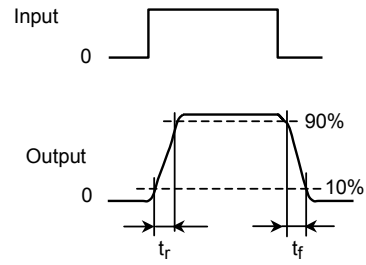
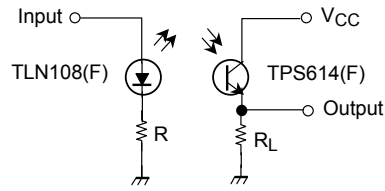
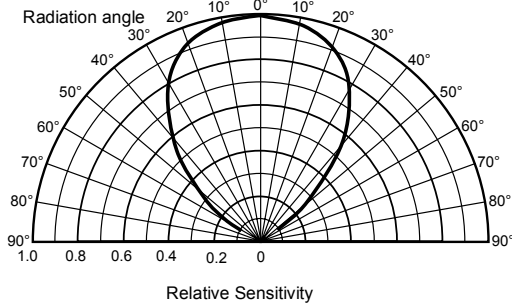


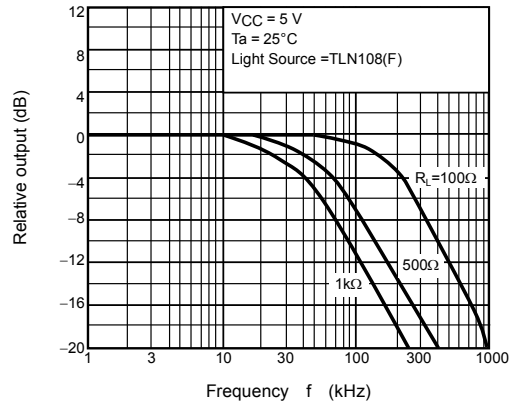
Fig. 1 Switching time test circuit



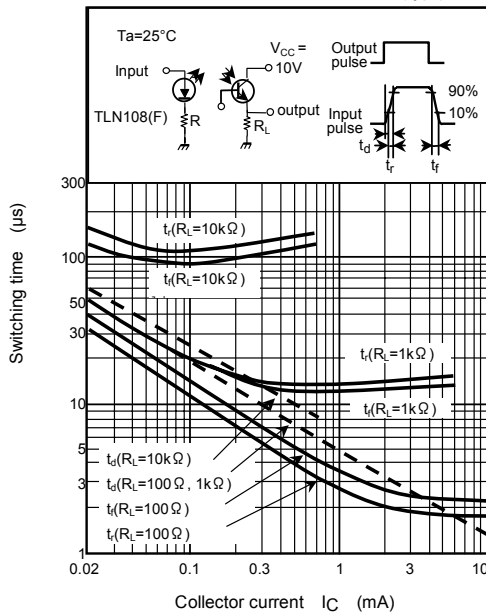
Directional Sensitivity characteristic
(typ.)
($T_a = 25^\circ\text{C}$)



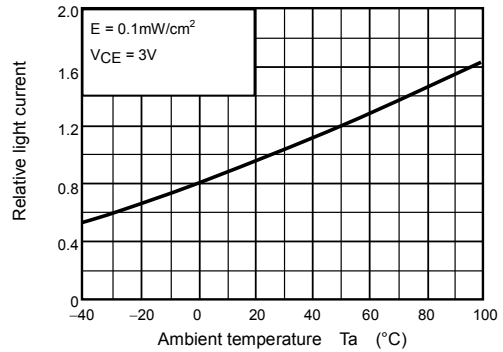
Frequency Characteristics
(typ.)



Switching Characteristics
(typ.)



Relative $I_L - T_a$
(typ.)



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