TOSHIBA Phototransistor Silicon NPN Epitaxial Planar

TPS604(F)

Lead Free Product

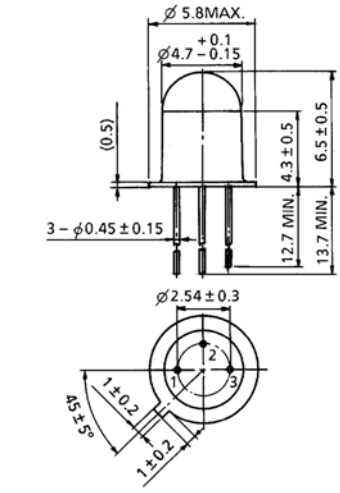
Photoelectric Counter

Various Kinds Of Readers

Position Detection

- TO−18 metal can package
- High sensitivity.
- Sharp directivity. Incident light can be effectively used.
  : θ1 / 2 = ±10° (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 TPS604(F) with the base pin kept open.
- The same size TPS601A(F) with the base pin is available.

Unit in mm



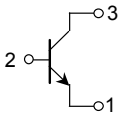
TOSHIBA	0−5B1

Weight: 0.37 g (typ.)

Maximum Ratings (Ta = 25°C)

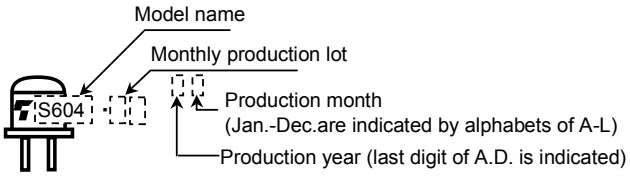
Characteristics	Symbol	Rating	Unit
Collector−emitter voltage	V_{CEO}	40	V
Collector−base voltage	V_{CBO}	50	V
Emitter−base voltage	V_{EBO}	5	V
Emitter−collector voltage	V_{ECO}	5	V
Collector current	I_C	50	mA
Collector power dissipation	P_C	150	mW
Collector power dissipation derating (Ta > 25°C)	ΔP_C / °C	−1.2	mW / °C
Operating temperature range	T_{opr}	−40~125	°C
Storage temperature range	T_{stg}	−55~150	°C

Pin Connection



1 . Emitter
2 . Base
3 . Collector(case)

Product Indication



Letter color : red

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 = 0.1mW/cm^2 (Note)	60	200	—	μA
Collector–emitter saturation voltage		$V_{CE\ (sat)}$	I_C = 30μA, E = 0.1mW/cm^2 (Note)	—	0.25	0.4	V
Switching time	Rise time	t_r	V_{CC} = 10V, I_C = 10mA	—	2	—	μs
	Fall time	t_f	R_L = 100Ω	—	2	—	
Peak Sensitivity wavelength		λ_P	—	—	800	—	nm
Half value angle		$\theta\frac{1}{2}$	—	—	±10	—	°

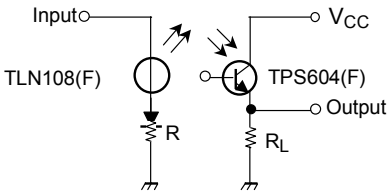
Note: Color temperature = 2870K, standard tungsten lamp

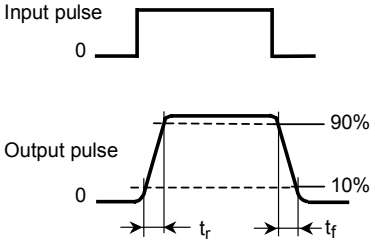
Precaution

Please be careful of the followings.

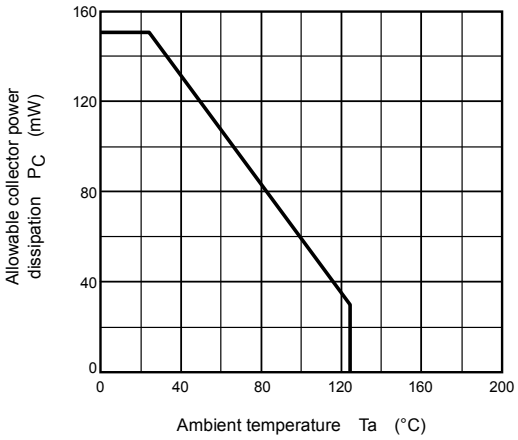
1. Soldering temperature: 260°C max.
   Soldering time: 5s max.
   (Soldering portion of lead: Above 1.5mm from the body of the device)
2. If the lead is formed, the lead should be formed at a distance of 2mm from the body of the device.
   Soldering shall be performed after lead forming.

Fig. 1 Switching time test circuit

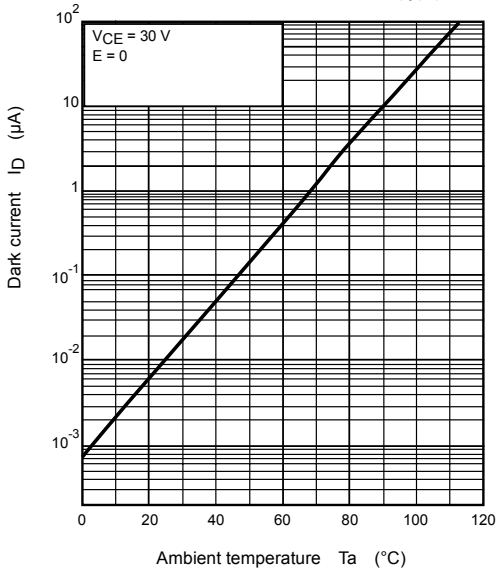




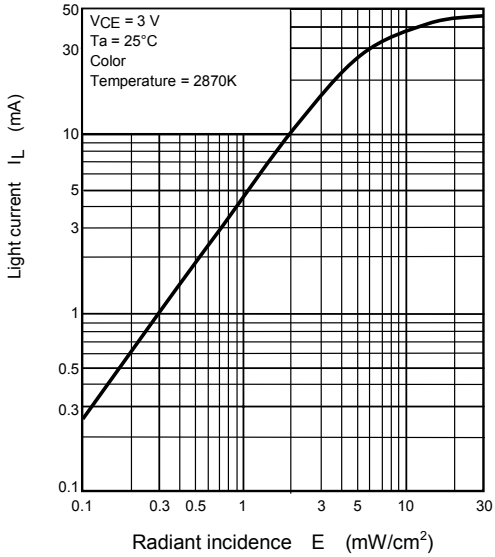
P_C – Ta



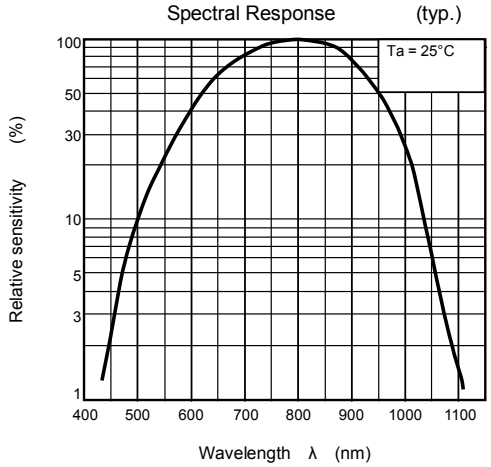
I_D – Ta (typ.)



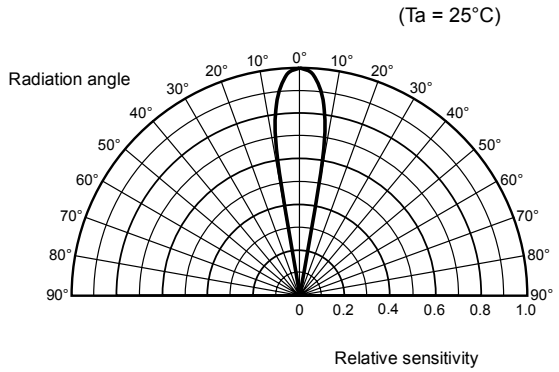
I_L – E (typ.)



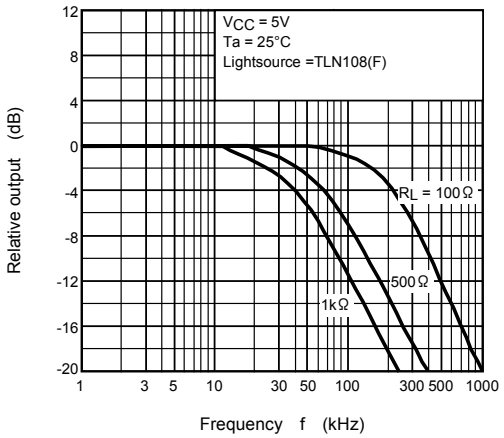
Spectral Response (typ.)



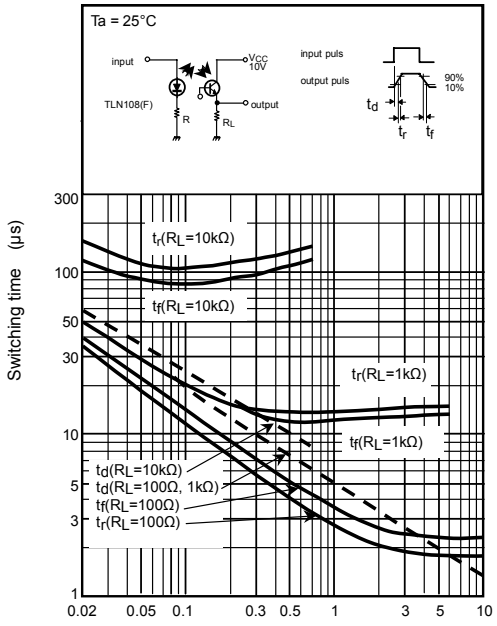
Directional Sensitivity Characteristic (typ.)



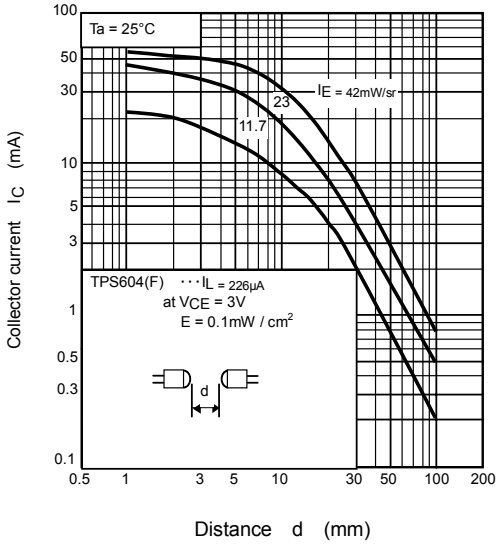
Frequency Characteristics (typ.)



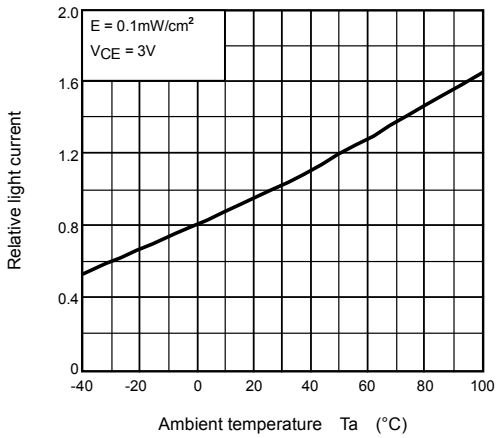
Switching Characteristics (typ.)



Coupling Characteristics With TLN108(F)



Relative I_L – Ta (typ.)



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