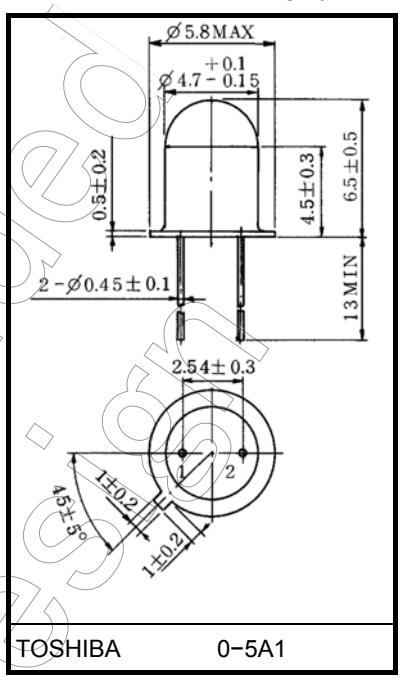
TOSHIBA Phototransistor Silicon NPN Epitaxial Planar

TPS601A(F)

Photoelectric Counter
Position Detection
Various Kinds Of Readers

Unit in mm



TOSHIBA 0−5A1

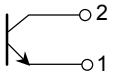
Weight: 0.39 g (typ.)

- TO−18 metal CAN package
- High sensitivity.
- Sharp directivity. Incident light can be effectively used.
  : θ1/2 = ± 10° (typ.)

Absolute 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)	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 . Collector

Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) are within the absolute maximum ratings.
Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook (“Handling Precautions”/“Derating Concept and Methods”) and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

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)	TPS601A (F)	100	—	—	μA
				TPS601A (A,F)	100	—	300	
				TPS601A (B,F)	200	—	600	
				TPS601A (C,F)	400	—	1200	
Collector–emitter saturation voltage		$V_{CE\ (sat)}$	I_C = 30 μA, E = 0.1mW / cm^2 (Note)		—	0.25	0.4	V
Switching time	rise time	t_r	V_{CC} = 5V, I_C = 10mA R_L = 100Ω		—	2	—	μs
	fall time	t_f			—	2	—	
Peak sensitivity wavelength		λ_P			—	800	—	nm
Half value angle		$\theta\frac{1}{2}$			—	±10	—	°

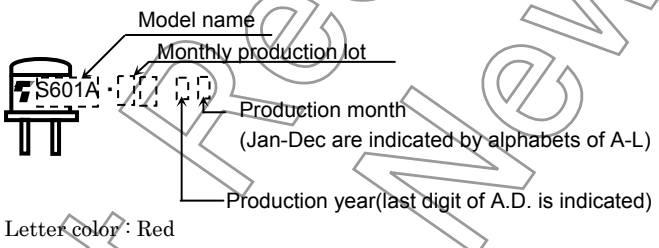
Note: Color temperature = 2870K, standard tungsten lamp.

Precaution

Please be careful of the followings.

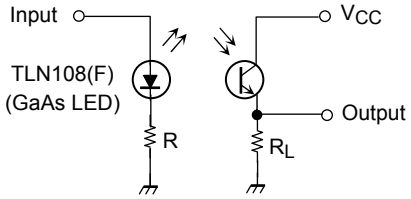
1. Soldering temperature: 260°C max.
   Soldering time: 5s max.
   (Soldering portion of lead: Above 1.5mm from the body of the device.)
2. If the lead is formed, the lead should be formed at a distance of 2mm from the body of the device.
   Soldering shall be performed after lead forming.

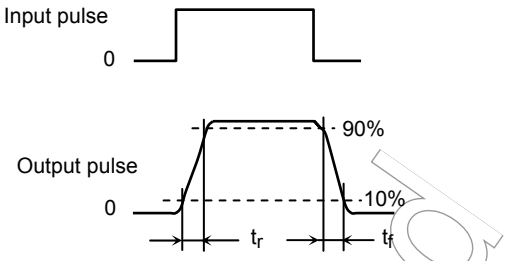
Product Indication

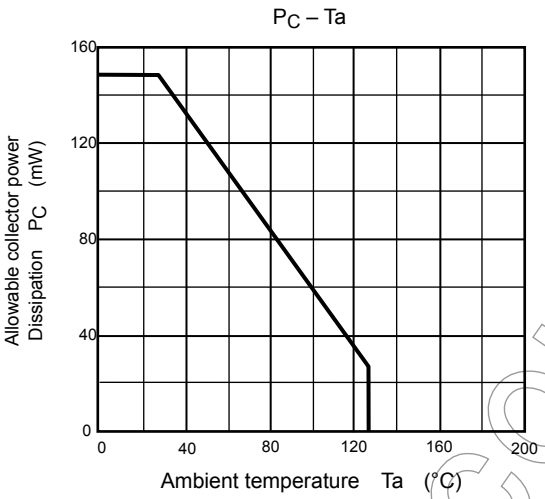


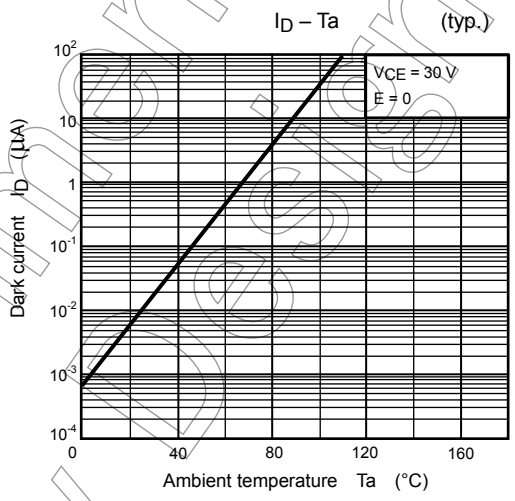
Letter color: Red

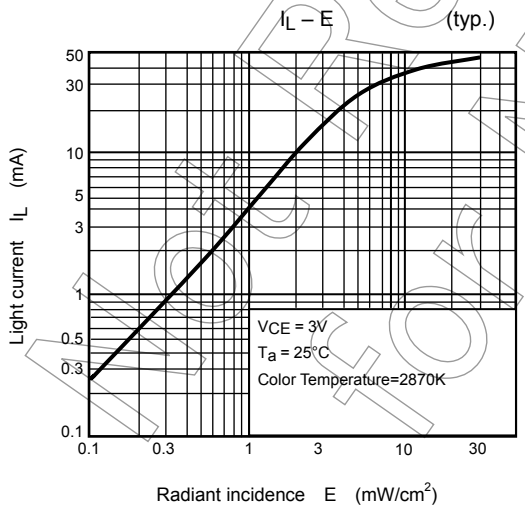
Fig.1 Switching time test circuit

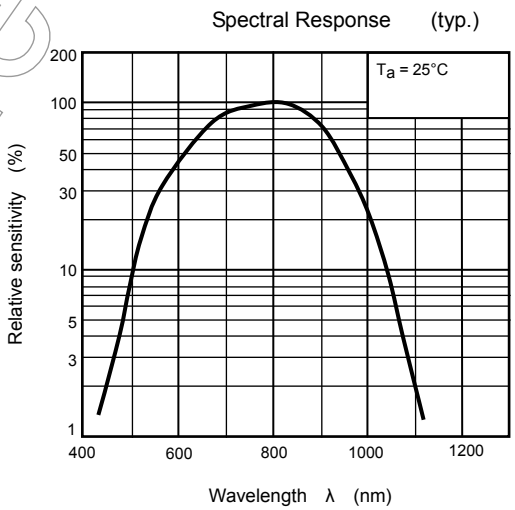






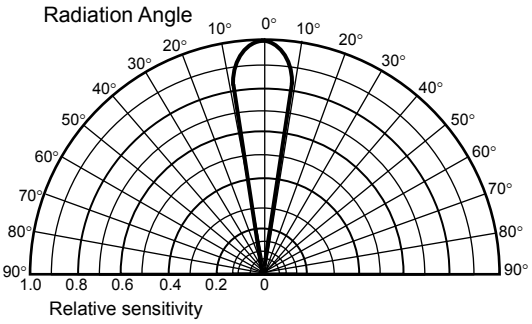




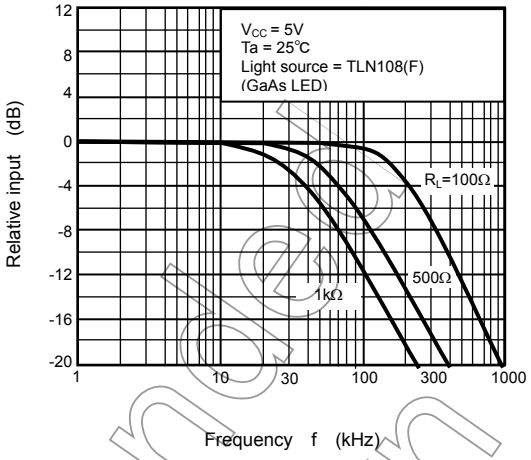


Directional Sensitivity Characteristic (typ.)

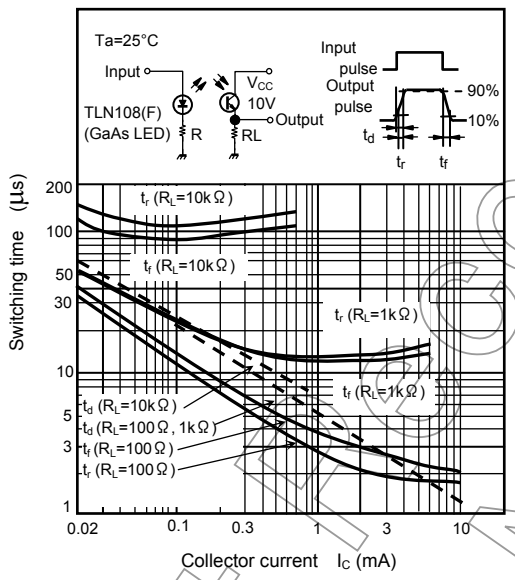
(Ta = 25°C)



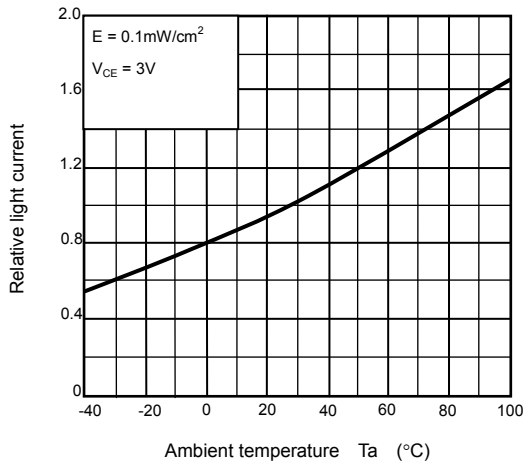
Frequency Characteristics (typ.)



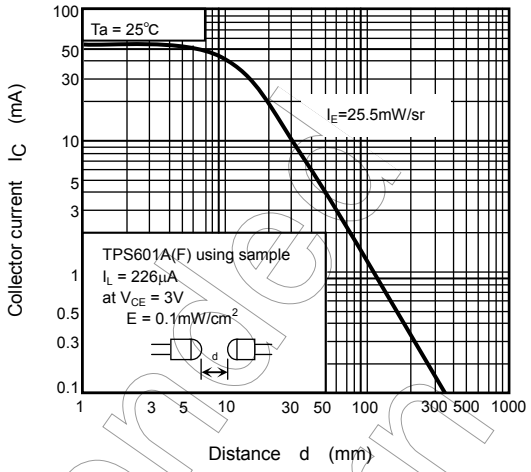
Switching Characteristics (typ.)



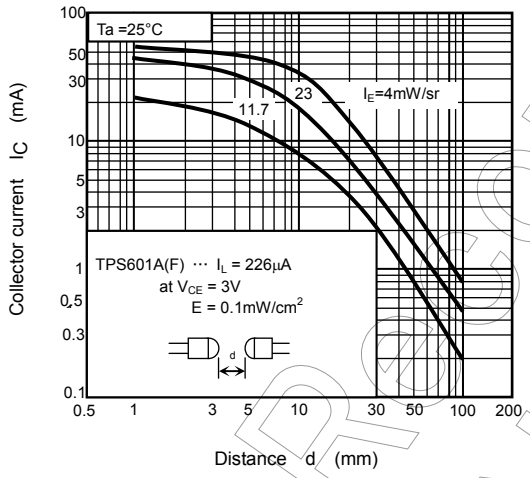
Relative I_L – Ta (typ.)



Coupling Characteristics With TLN201(F)



Coupling Characteristics With TLN108(F)



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