

TOSHIBA Phototransistor Silicon NPN Epitaxial Planar

TPS622(F)

Lead(Pb)-Free

Opto-electronic Switch

Optical Mouse

Optical Touch Switch

- Compact side view epoxy resin package
- High response speed: $t_r, t_f = 6\mu s$ (typ.)
- Half value angle: $\theta_{1/2} = \pm 15^\circ$ (typ.)
- Visible light cut type (black package)
- Optimum in combination with infrared LED TLN117(F) with identical external dimensions.

Absolute Maximum Ratings ($T_a = 25^\circ C$)

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	75	mW
Collector power dissipation derating ($T_a > 25^\circ C$)	$\Delta P_C / ^\circ C$	-1	mW / $^\circ C$
Operating temperature range	T_{opr}	-25~85	$^\circ C$
Storage temperature range	T_{stg}	-40~100	$^\circ C$
Soldering temperature (5s)	T_{sol}	260 (Note 1)	$^\circ C$

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.

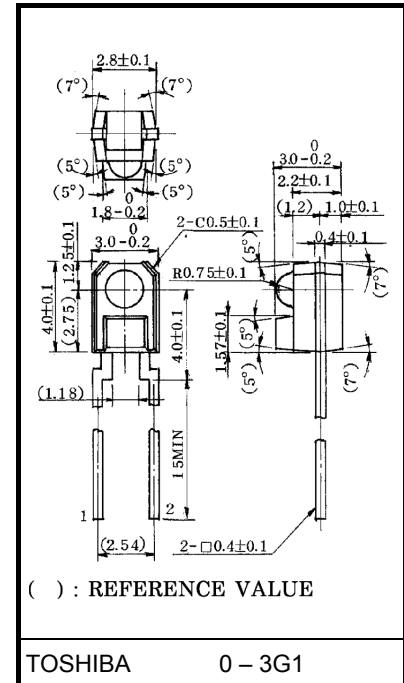
Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/"Derating Concept and Methods") and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

Note 1: Soldering portion of lead: At least 2mm from the body of the device.

Opto-electrical Characteristics ($T_a = 25^\circ C$)

Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Dark current	$I_D(I_{CEO})$	$V_{CE} = 24V, E = 0$	—	0.005	0.1	μA
Light current	I_L	$E = 0.1mW / cm^2, V_{CE} = 3V$ (Note 2,3)	27	70	—	μA
Collector-emitter saturation voltage	$V_{CE(sat)}$	$E = 0.1mW / cm^2, I_L = 15\mu A$	—	0.15	0.4	V
Peak sensitivity wavelength	λ_P	—	—	870	—	nm
Half value angle	$\theta_{1/2}$	—	—	± 15	—	$^\circ$
Switching time	Rise time	$V_{CC} = 5V, I_C = 2mA, R_L = 100\Omega$	—	6	—	μs
	Fall time		—	6	—	

Unit in : mm



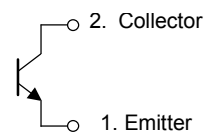
Weight: 0.1 g (typ.)

Note 2: Color temperature = 2870K standard tungsten lamp

Note 3: I_L classification

Rank	I_L (μA)
(A)	27~80
(B)	55~165
—	27min.

Pin Connection

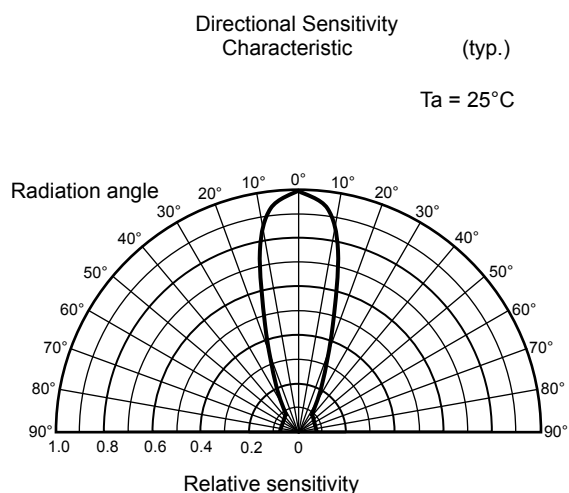
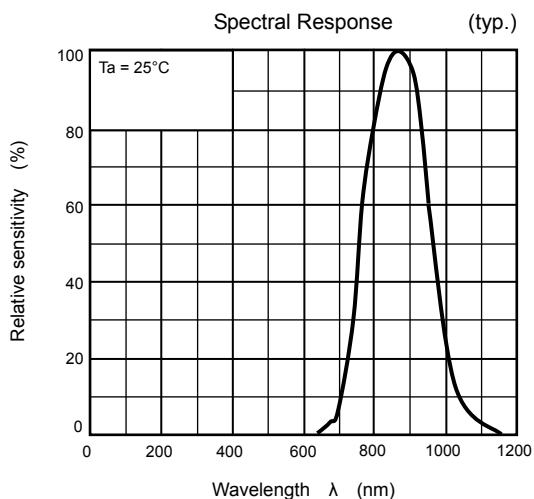
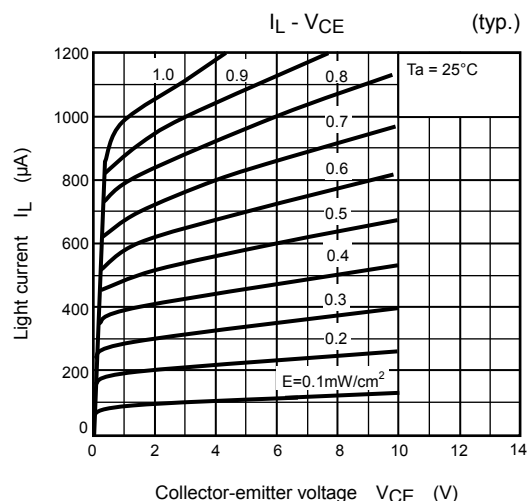
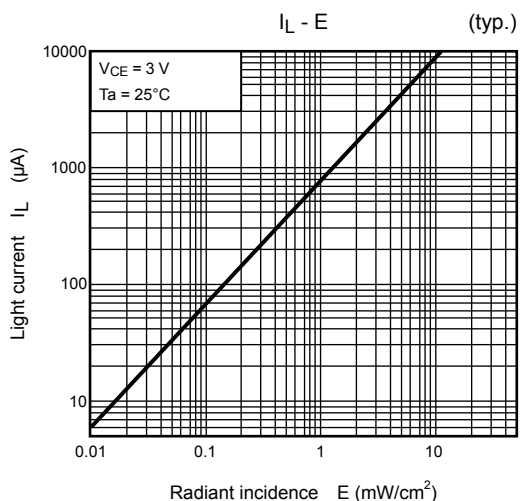
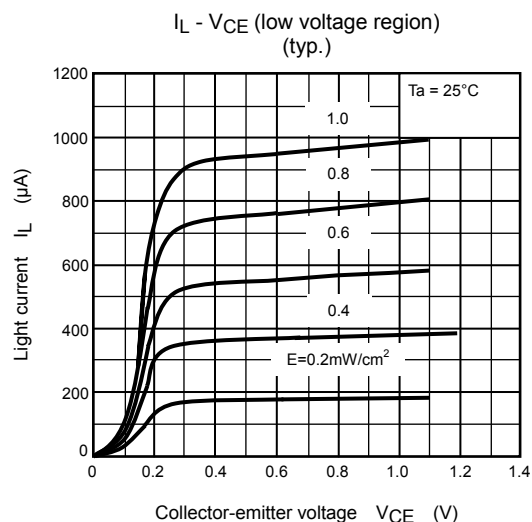
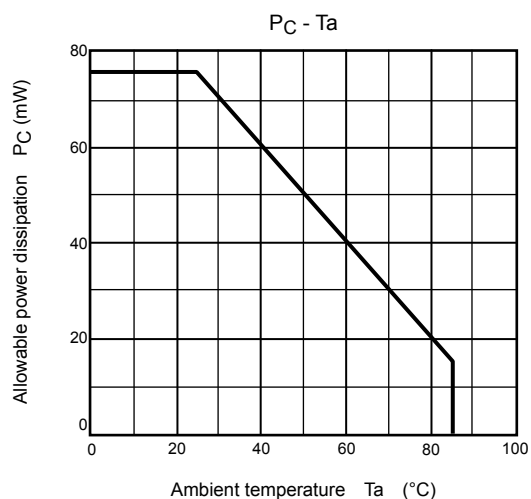


Precaution

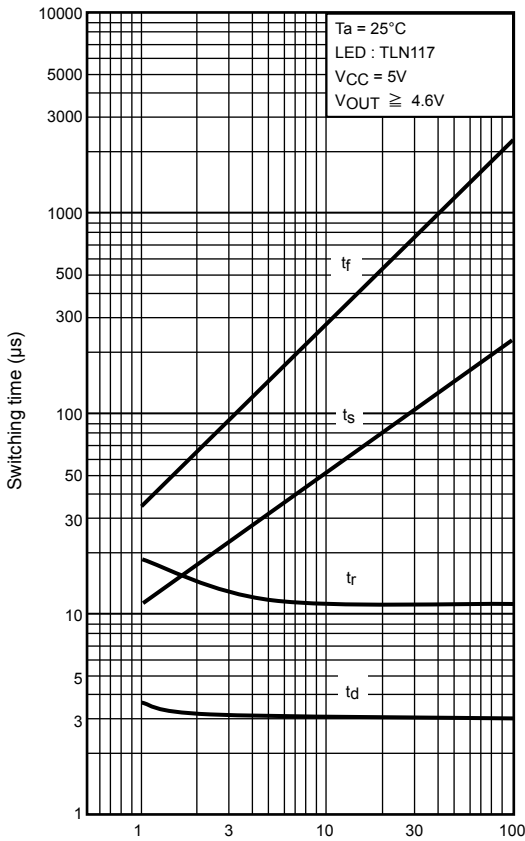
Take particular care with the following:

1. Lead forming should be carried out at least 2 mm from the body of the device without applying forming stress to the plastic.

Soldering should be performed after lead forming.

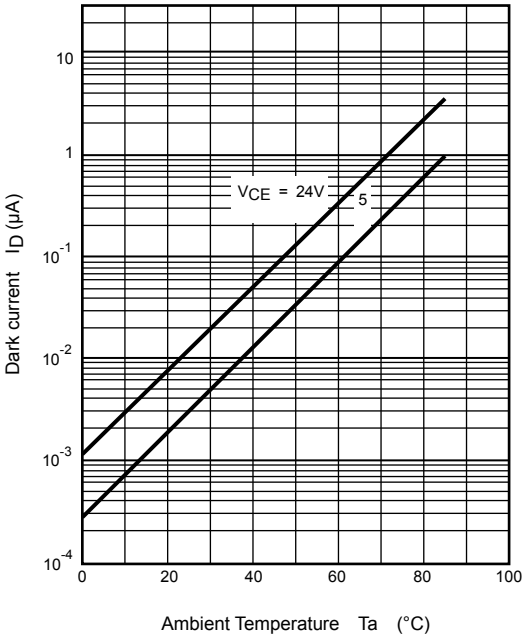


Switching Characteristics
(saturated operation) (typ.)

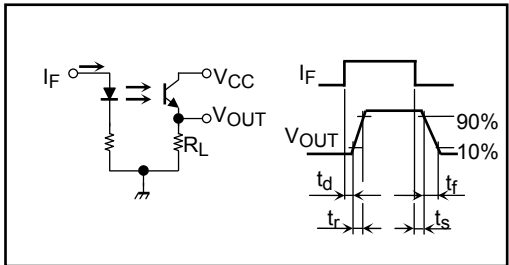


Load Resistance R_L (k Ω)

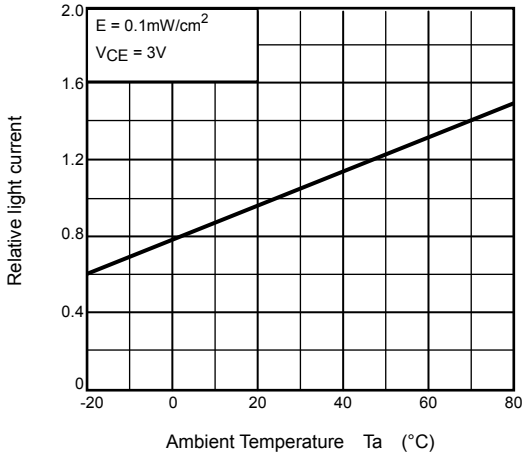
$I_D(I_{CEO}) - T_a$ (typ.)



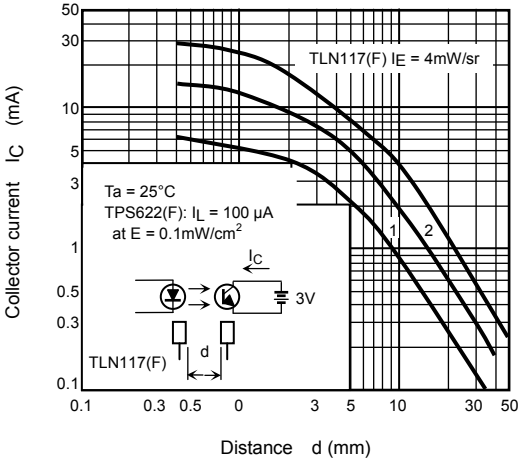
Switching Time Test Circuit



Relative $I_L - T_a$ (typ.)



Coupling Characteristics
with TLN117(F)



RESTRICTIONS ON PRODUCT USE

20070701-EN GENERAL

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