TOSHIBA Photo Darlington Transistor Silicon NPN Epitaxial Planar

TPS605, TPS605(LB)

Home Electric Equipment Such As Audio, Vcr, Etc.

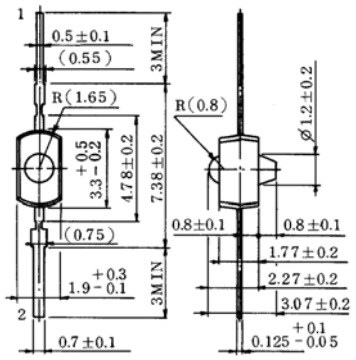
OA Equipment Such As Copying Machine, Printer, Etc.

Optical Switch

- Micro−package (epoxy resin package)
  Double end type: TPS605
  DIP type: TPS605(LB)
- Mountable at a 2.5mm pitch
- High sensitivity: I_L = 0.2mA (min.)
- Half value angle: θ1/2 = ±20° (typ.)
- Maximum distance when used as an optical switch
  TLN104 at DC drive ≃ 100mm at TPS605 I_L ≃ 500μA

Unit in mm

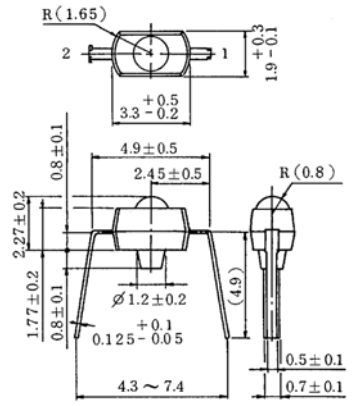
TPS605



( ) : REFERENCE VALUE

TOSHIBA 0−2C1

TPS605 (LB)



( ) : REFERENCE VALUE

TOSHIBA 0−2C101

Weight: 0.08 g (typ.)

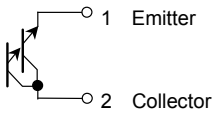
Maximum Ratings (Ta = 25°C)

Characteristic	Symbol	Rating	Unit
Collector−emitter voltage	V_{CEO}	30	V
Emitter−collector voltage	V_{ECO}	5	V
Collector current	I_C	40	mA
Collector power dissipation	P_C	75	mW
Collector power dissipation derating (Ta > 25°C)	ΔP_C / °C	−1	mW/°C
Operating temperature range	T_{opr}	−25~85	°C
Storage temperature range	T_{stg}	−30~100	°C
Soldering temperature (3s)	T_{sol}	260	°C

Recommended Operating Conditions

Characteristic	Symbol	Min.	Typ.	Max	Unit
Supply voltage	V_{CC}	—	5	16	V
Operating temperature	T_{opr}	0	—	70	°C

Pin Connection



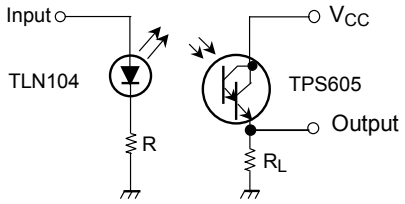
Opto–Electrical Characteristics (Ta = 25°C)

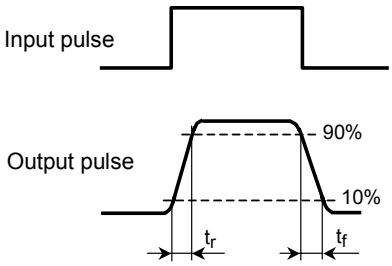
Characteristic		Symbol	Test Condition	Min.	Typ.	Max.	Unit
Dark current		I_D (I_{CEO})	V_{CE} = 16 V, E = 0	—	0.03	0.25	μA
Light current (Note 1)		I_L	V_{CE} = 3 V, E = 0.01mW / cm^2 (Note 2)	0.2	1	—	mA
Collector–emitter saturation Voltage		$V_{CE(sat)}$	I_C = 0.08 mA, E = 0.01mW / cm^2	—	0.9	12	V
Peak sensitivity wavelength		λ_P	—	—	720	—	nm
Half vaule angle		$\theta\frac{1}{2}$	—	—	±20	—	°
Switching time	Rise time	t_r	V_{CC} = 5 V, I_C = 10 mA R_L = 100 Ω (Note 3)	—	200	—	μs
	Fall time	t_f		—	150	—	

Note 1. I_L Classification A: 0.2 ~ 1.2 mA, B: 0.8 ~ 4.8 mA

2. Color temperature = 2870K, standard tungsten lamp

3. Switching time test circuit

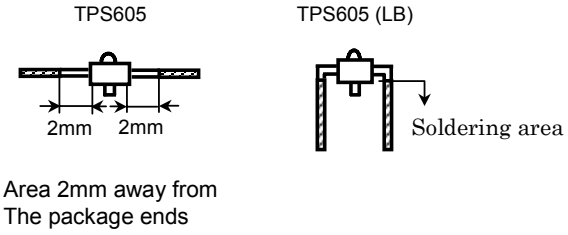




Precaution

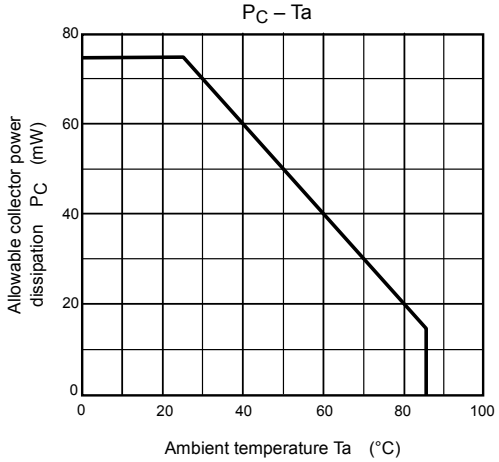
Please be careful of the followings.

1. If the lead is formed, the lead should be formed at a distance of 0.8mm from the body of the device. Soldering shall be performed after lead forming. However, in case of TPS605 (LB), no lead forming shall be performed.
2. Soldering shall be performed within the range show below.

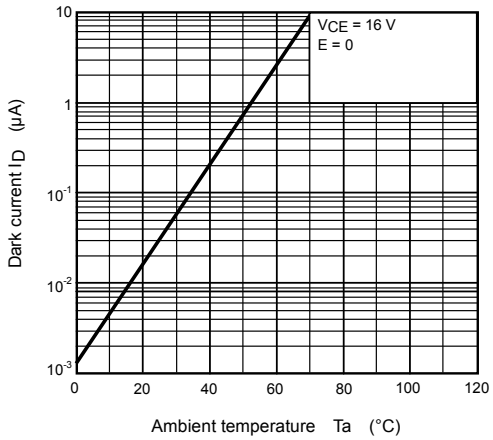


Area 2mm away from
The package ends

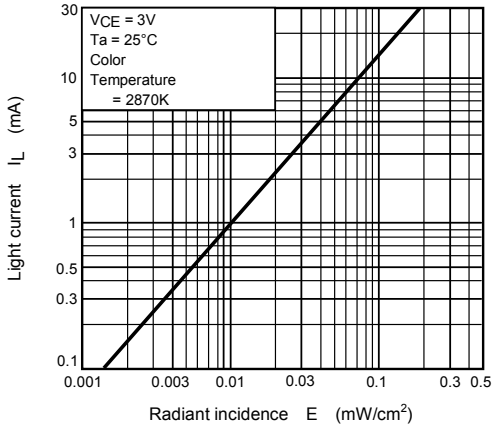
P_C – Ta



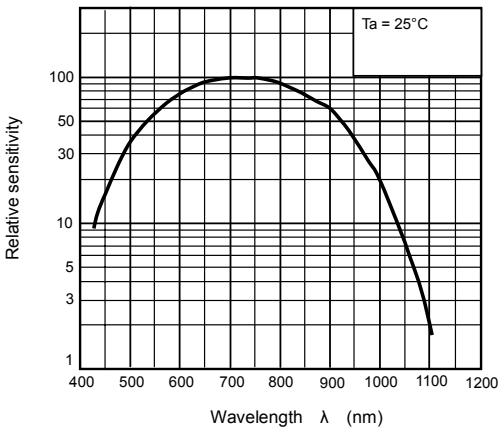
I_D – Ta (typ.)



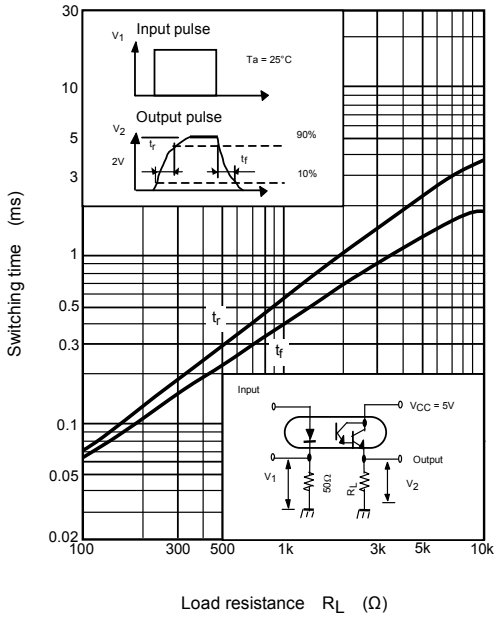
I_L – E (typ.)



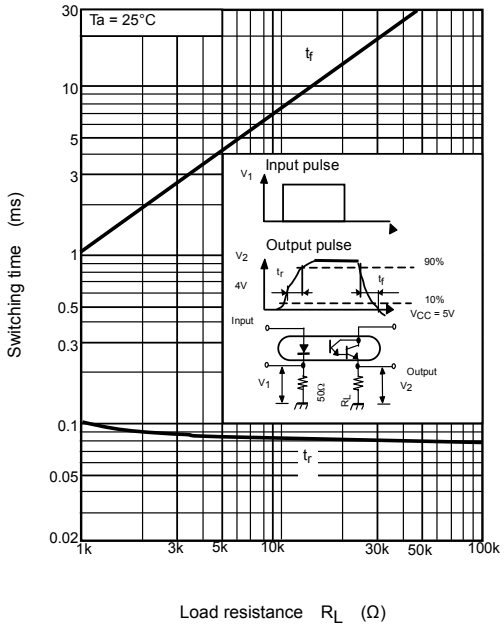
Spectral Response (typ.)



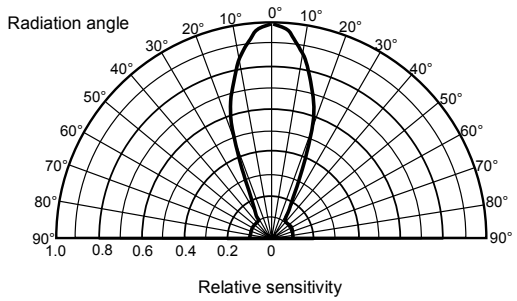
Switching Characteristics(non Saturated Operation (typ.)



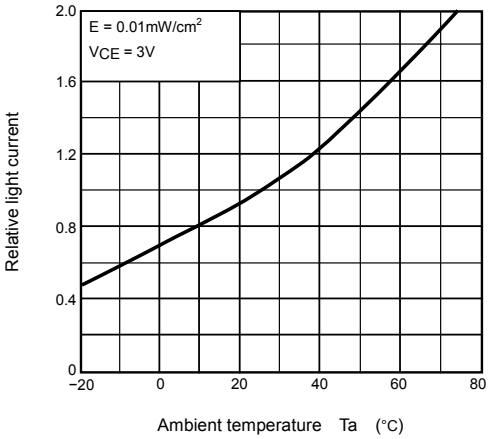
Switching Characteristics (saturated operation) (typ.)



Directional Sensitivity Characteristic (typ.) (Ta = 25°C)



Relative I_L – Ta (typ.)



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