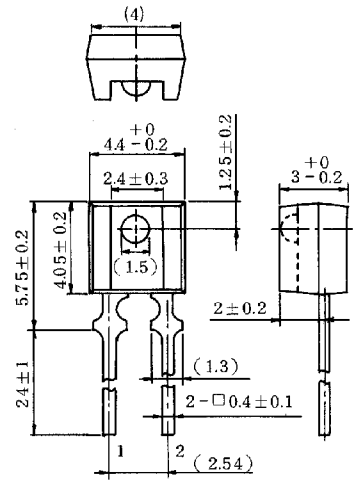
TOSHIBA PHOTO DARLINGTON TRANSISTOR SILICON NPN EPITAXIAL PLANAR

TPS617

PHOTO DARINGTON TRANSISTOR FOR PHOTO INTERRUPTER

Unit in mm



( ) : REFERENCE VALUE

JEDEC	—
EIAJ	—
TOSHIBA	0-4B1

Weight : 0.16g (TYP.)

PHOTOELECTRIC COUNTER

POSITION DETECTION

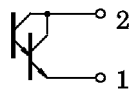
AUTOMATIC CONTROL UNIT

- Visible light cut type (black package)
- High sensitivity : I_L = 1.4mA (TYP.)
- The same external shape as the infrared LED TLN107A, and is best suited for combination with TLN107A as a photo interrupter.
- Maximum distance when used as a photo sensor :
  TLN107A at DC drive ≃ 40mm When
  TPS617 I_L ≃ 350μA

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	50	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}	−40~100	°C

PIN CONNECTION



1. EMITTER
2. COLLECTOR

961001EAA2

OPTO-ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Dark Current		I_D (I_{CEO})	V_{CE} = 16V, E = 0	—	0.03	0.25	μA
Light Current (Note 1)		I_L	V_{CE} = 3V, E = 0.1mW / cm² (Note 2)	0.4	1.4	—	mA
Collector-Emitter Saturation Voltage		$V_{CE\ (sat)}$	V_{CE} = 0.2mA, E = 0.1mW / cm² (Note 2)	—	0.9	1.2	V
Switching Time	Rise Time	t_r	V_{CC} = 5V, I_C = 10mA R_L = 100Ω	—	200	—	μs
	Fall Time	t_f		—	100	—	
Peak Sensitivity Wavelength		λ_P	—	—	870	—	nm
Half Value Angle		$\theta \frac{1}{2}$	—	—	±15	—	°

Note 1. I_L Classification A : 0.4~2.4mA, B : 1.7~10.2mA, C : 3mA~more
2. Color temperature = 2870°K, Standard Tungsten Lamp

RECOMMENDED OPERATING CONDITIONS

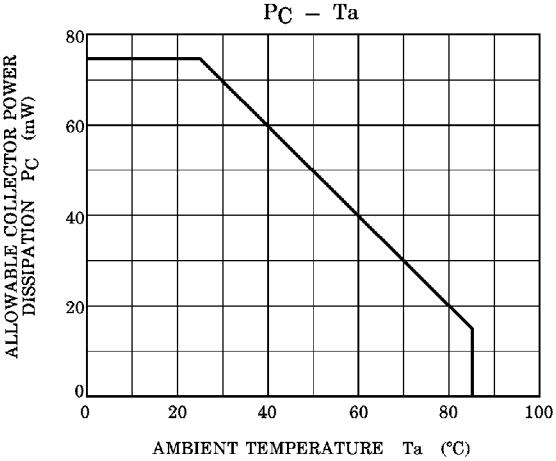
CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT
Supply Voltage	V_{CC}	—	5	16	V
Operating Temperature	T_{opr}	−25	—	75	°C

PRECAUTION

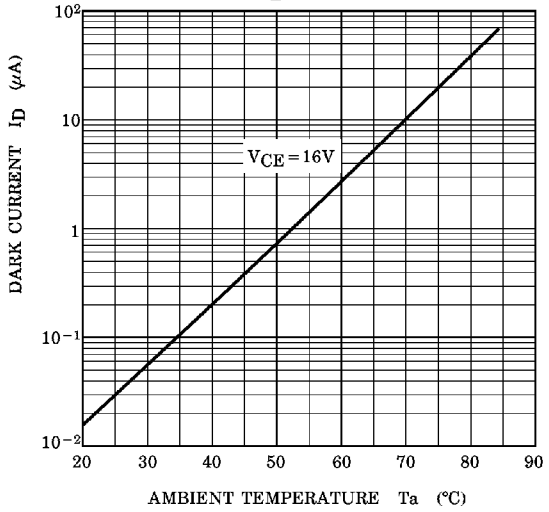
Please be careful of the followings.

1. Soldering temperature : 260°C MAX. Soldering time : 5s MAX.
(Soldering portion of lead : above 2mm 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.

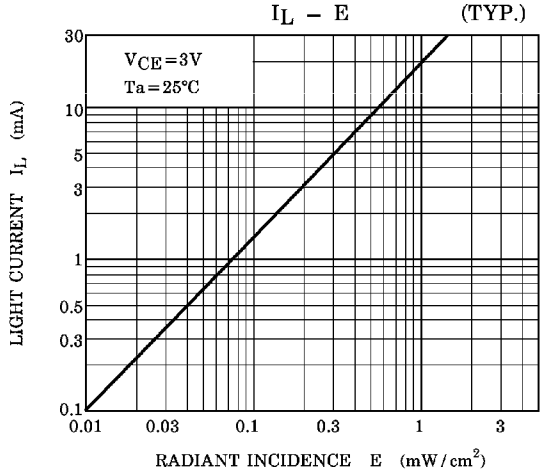
P_C – Ta



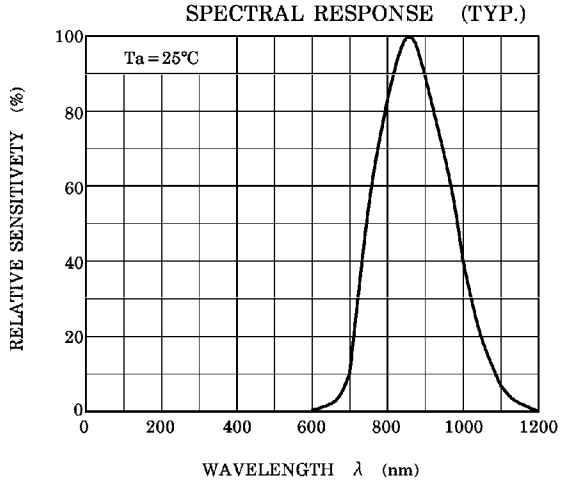
I_D – Ta (TYP.)



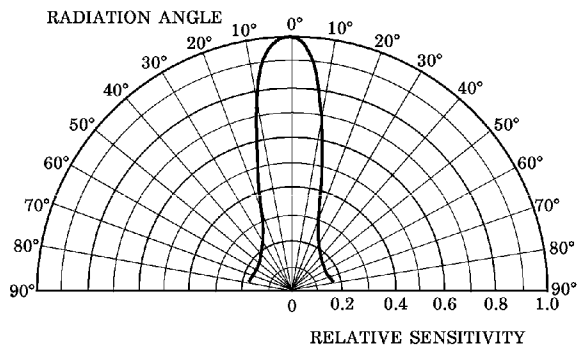
I_L – E (TYP.)



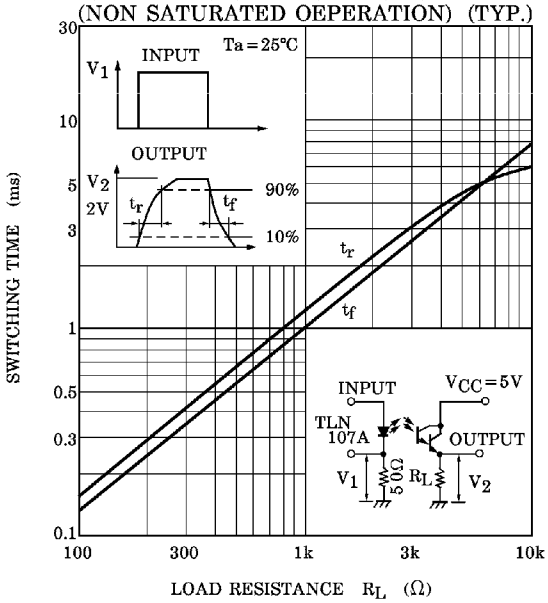
SPECTRAL RESPONSE (TYP.)



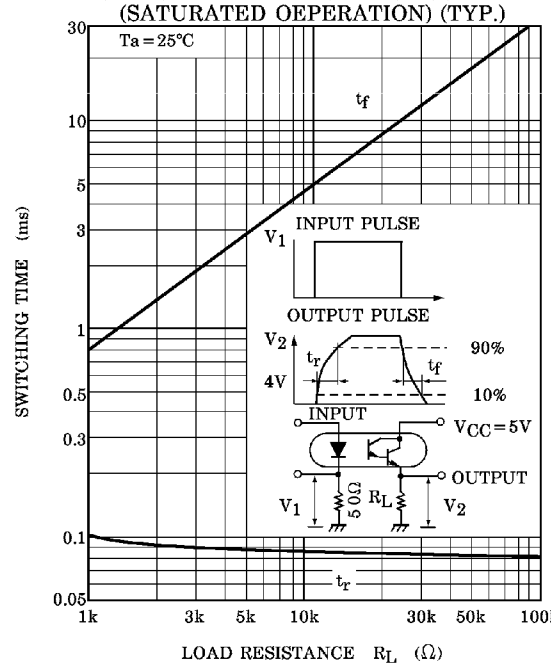
DIRECTIONAL SENSITIVITY CHARACTERISTIC (TYP.)
(Ta = 25°C)



SWITCHING CHARACTERISTICS
(NON SATURATED OEPERATION) (TYP.)



SWITCHING CHARACTERISTICS
(SATURATED OEPERATION) (TYP.)



RELATIVE I_L – Ta (TYP.)