

TOSHIBA PHOTO DARLINGTON TRANSISTOR SILICON NPN EPITAXIAL PLANAR

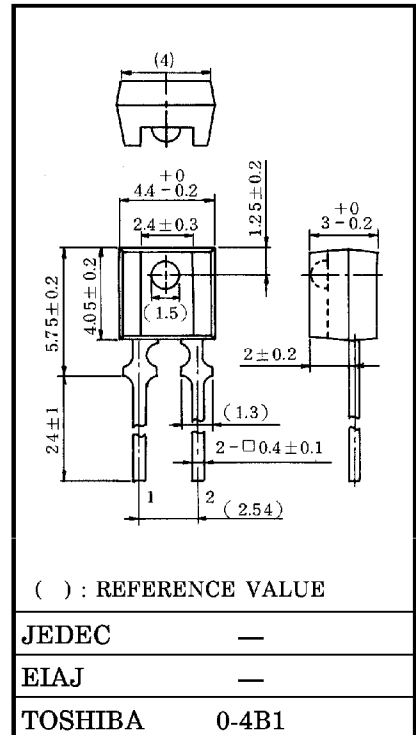
# TPS617

PHOTO DARLINGTON TRANSISTOR FOR PHOTO INTERRUPTER

Unit in mm

PHOTOELECTRIC COUNTER  
 POSITION DETECTION  
 AUTOMATIC CONTROL UNIT

- Visible light cut type (black package)
- High sensitivity :  $I_L = 1.4\text{mA}$  (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  $\approx 40\text{mm}$     When  
 TPS617  $I_L \approx 350\mu\text{A}$

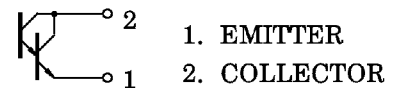


MAXIMUM RATINGS ( $T_a = 25^\circ\text{C}$ )

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 ( $T_a > 25^\circ\text{C}$ )	$\Delta P_C / ^\circ\text{C}$	-1	mW / $^\circ\text{C}$
Operating Temperature Range	$T_{opr}$	-25~85	$^\circ\text{C}$
Storage Temperature Range	$T_{stg}$	-40~100	$^\circ\text{C}$

Weight : 0.16g (TYP.)

PIN CONNECTION



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## 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	$\mu A$
Light Current (Note 1)		$I_L$	$V_{CE} = 3V, E = 0.1mW/cm^2$ (Note 2)	0.4	1.4	—	mA
Collector-Emitter Saturation Voltage		$V_{CE} (sat)$	$V_{CE} = 0.2mA, E = 0.1mW/cm^2$ (Note 2)	—	0.9	1.2	V
Switching Time	Rise Time	$t_r$	$V_{CC} = 5V, I_C = 10mA$ $R_L = 100\Omega$	—	200	—	$\mu s$
	Fall Time	$t_f$		—	100	—	
Peak Sensitivity Wavelength		$\lambda_P$	—	—	870	—	nm
Half Value Angle		$\theta_{\frac{1}{2}}$	—	—	$\pm 15$	—	°

- 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.

- Soldering temperature : 260°C MAX. Soldering time : 5s MAX.  
(Soldering portion of lead : above 2mm from the body of the device)
- 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.

