

TOSHIBA PHOTO DARLINGTON TRANSISTOR SILICON NPN EPITAXIAL PLANAR

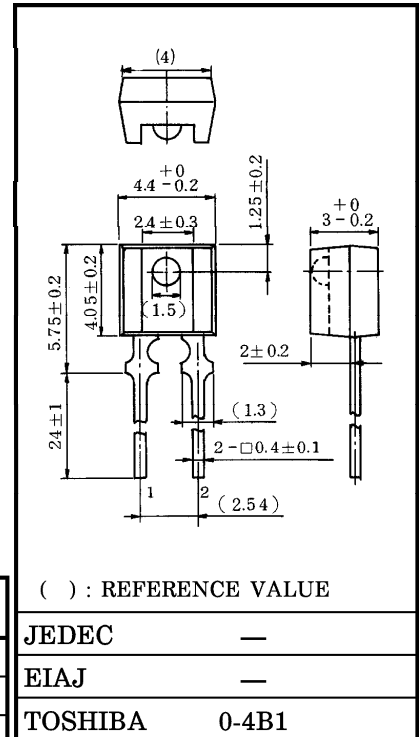
# TPS607A

PHOTO DARLINGTON TRANSISTOR FOR PHOTO INTERRUPTER

Unit in mm

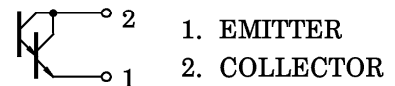
PHOTOELECTRIC COUNTER  
POSITION DETECTION  
AUTOMATIC CONTROL UNIT

- High sensitivity :  $I_L = 2\text{mA}$  (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  
TPS607A  $I_L \approx 500\mu\text{A}$



Weight : 0.16g (TYP.)

PIN CONNECTION



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	$^\circ\text{C}$

OPTO-ELECTRICAL CHARACTERISTICS ( $T_a = 25^\circ\text{C}$ )

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Dark Current	$I_D (I_{CEO})$	$V_{CE} = 16\text{V}, E = 0$	—	0.03	0.25	$\mu\text{A}$
Light Current	$I_L$ (Note 1)	$V_{CE} = 3\text{V}, E = 0.1\text{mW} / \text{cm}^2$ (Note 2)	0.6	2	—	mA
Collector-Emitter Saturation Voltage	$V_{CE}(\text{sat})$	$V_{CE} = 0.3\text{mA}, E = 0.1\text{mW} / \text{cm}^2$ (Note 2)	—	0.9	1.2	V
Switching Time	Rise Time	$V_{CC} = 5\text{V}, I_C = 10\text{mA}$ $R_L = 100\Omega$	—	200	—	$\mu\text{s}$
	Fall Time		—	150	—	
Peak Sensitivity Wavelength	$\lambda_P$	—	—	720	—	nm
Half Value Angle	$\theta_{\frac{1}{2}}$	—	—	$\pm 15$	—	$^\circ$

- Note 1.  $I_L$  Classification A : 0.6~3.6mA, B : 2.5~15mA, C : 5mA or more.  
2. Color temperature = 2870°K Standard Tungsten Lamp.

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## RECOMMENDED OPERATING CONDITIONS

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT
Supply Voltage	V <sub>CC</sub>	—	5	16	V
Operating Temperature	T <sub>opr</sub>	-25	—	75	°C

## PRECAUTION

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.

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