

TOSHIBA PHOTO IC SILICON EPITAXIAL PLANAR

TPS805

PHOTO IC FOR PHOTO INTERRUPTER

Unit in mm

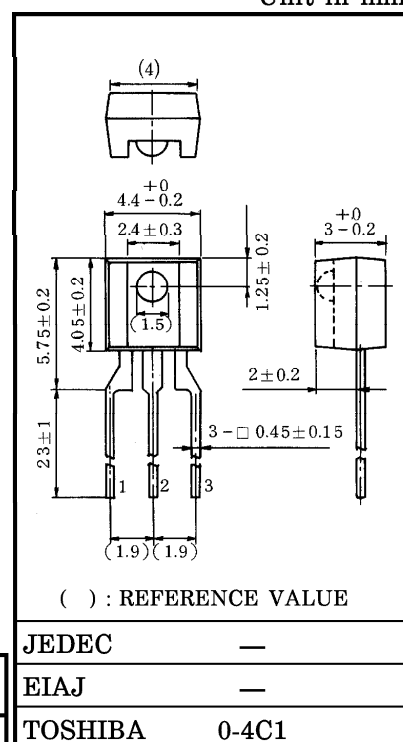
PHOTOELECTRIC COUNTER

POSITION AND ROTATIONAL SPEED SENSOR

- TPS805 is a photo IC integrating photo diode, amplifier circuit and waveform shaping circuit in 1 chip.
- Visible light cut resin is used. : $\lambda_p=900\text{nm}$ (TYP.)
- The same external shape as the infrared LED TLN107A, and is best suited for combination with TLN107A as a photo interrupter.
- High speed response : $t_{pLH}=2\mu\text{s}$, $t_{pHL}=6\mu\text{s}$ (TYP.)
- When light is received, output become high level.

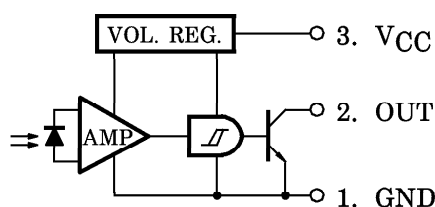
MAXIMUM RATINGS ($T_a = 25^\circ\text{C}$)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Supply Voltage	V_{CC}	17	V
High Level Output Voltage	V_{OH}	30	V
Low Level Output Current	I_{OL}	50	mA
Low Level Output Current Derating ($T_a > 25^\circ\text{C}$)	$\Delta I_{OL} / ^\circ\text{C}$	-0.67	mA / $^\circ\text{C}$
Power Dissipation	P_O	250	mW
Power Dissipation Dissipation ($T_a > 25^\circ\text{C}$)	$\Delta P_O / ^\circ\text{C}$	-3.33	mW / $^\circ\text{C}$
Operating Temperature Range	T_{opr}	-25~85	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	-40~100	$^\circ\text{C}$
Soldering Temperature (5s)	T_{sol}	260	$^\circ\text{C}$



Weight : 0.19g (TYP.)

PIN CONNECTION



961001EAA2

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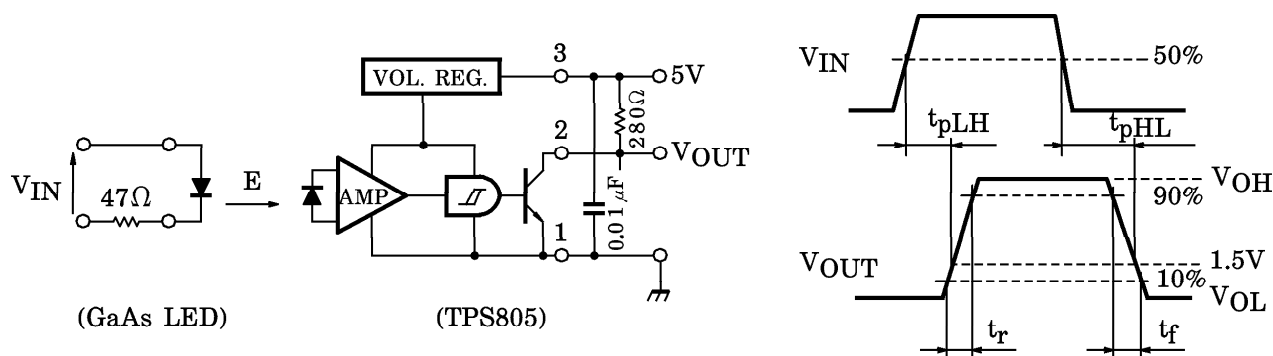
OPTO-ELECTRICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$)

($T_a = 0 \sim 70^\circ\text{C}$, Characteristics with no entry of $T_a = 25^\circ\text{C}$ in the test conditions. Typical values are all at 25°C .)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Supply Voltage	V_{CC}	—	4.5	—	17	V
Low Level Output Voltage	V_{OL}	$I_{OL} = 16\text{mA}$, $V_{CC} = 5\text{V}$, $E = 0$	—	0.07	0.4	V
High Level Output Current	I_{OH}	$V_{CC} = 5\text{V}$, $V_{OH} = 30\text{V}$ $E = 2\text{mW}/\text{cm}^2$	—	—	100	μA
Low Level Supply Current	I_{CCL}	$V_{CC} = 5\text{V}$, $E = 0$	—	2.5	5	mA
High Level Supply Current	I_{CCH}	$V_{CC} = 5\text{V}$, $E = 2\text{mW}/\text{cm}^2$	—	1.2	3	mA
“L”→“H” Threshold Radiant Incidence (Note 1)	E_{LH}	$V_{CC} = 5\text{V}$, $T_a = 25^\circ\text{C}$	—	0.1	0.3	mW/cm^2
		$V_{CC} = 5\text{V}$	—	—	0.6	
Histerisis Ratio	E_{HL}/E_{LH}	$T_a = 25^\circ\text{C}$, $V_{CC} = 5\text{V}$	—	0.65	—	—
Peak Sensitivity Wavelength	λ_P		—	900	—	nm
Switching Time	Propagation Delay Time	“L”→“H” “H”→“L”	t_{pLH} t_{pHL}	$T_a = 25^\circ\text{C}$, $V_{CC} = 5\text{V}$ $E = 2\text{mW}/\text{cm}^2$ $R_L = 280\Omega$ (Note 2)		μs
	Rise Time		t_r			
	Fall Time		t_f			

(Note 1) Color temperature = 2870°K , Standard Tungsten Lamp

(Note 2) Switching time test circuit



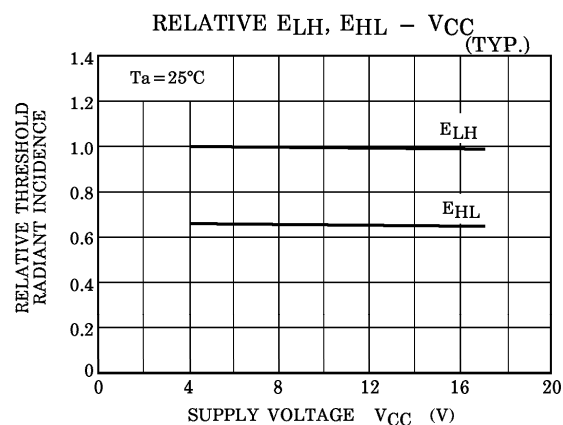
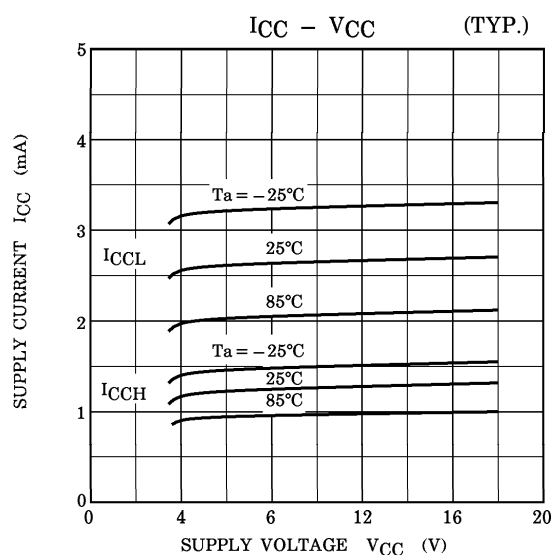
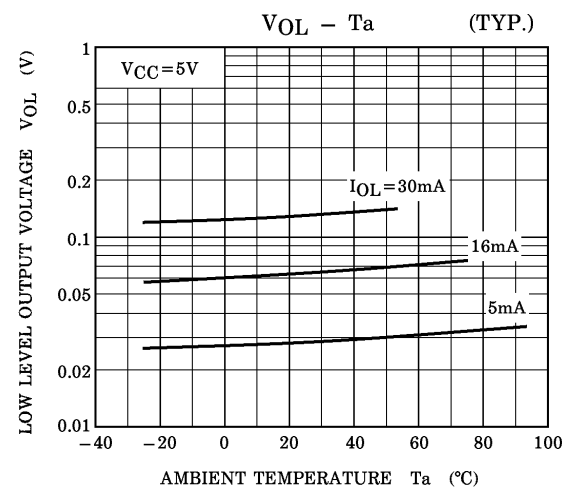
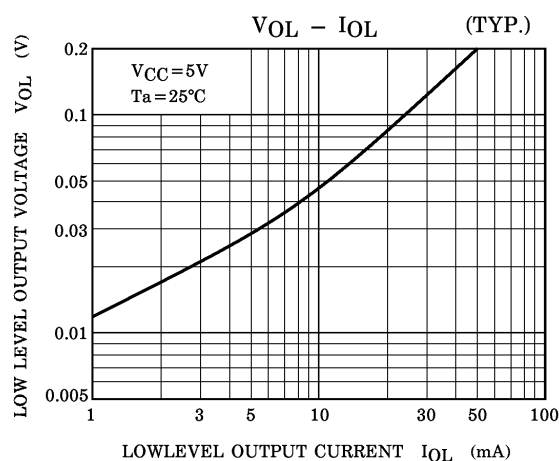
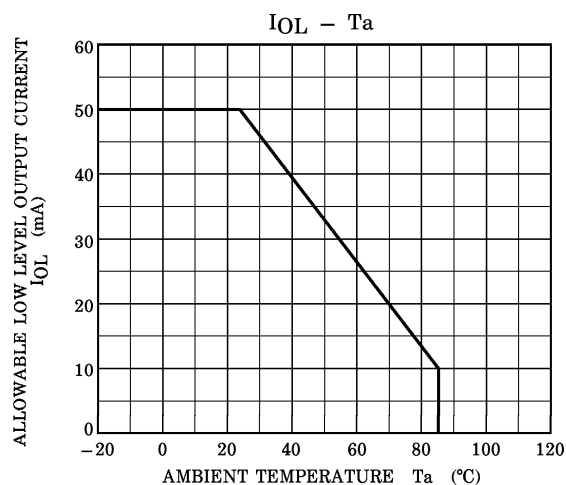
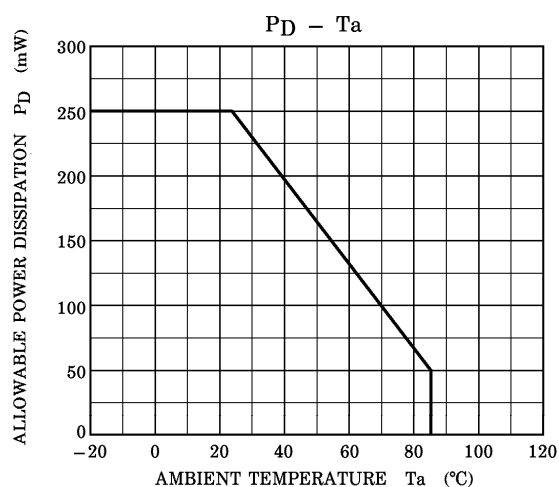
RECOMMENDED OPERATING CONDITIONS

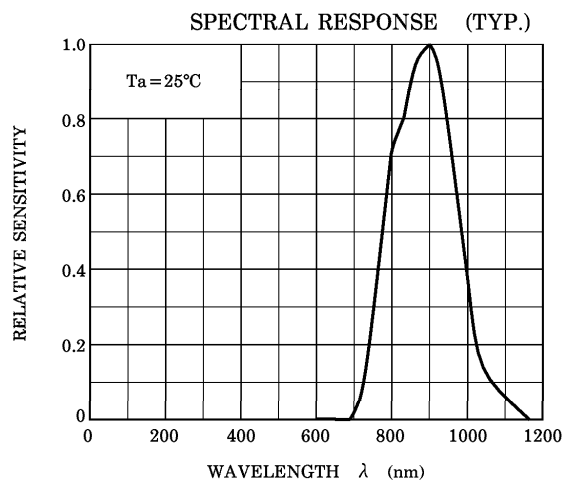
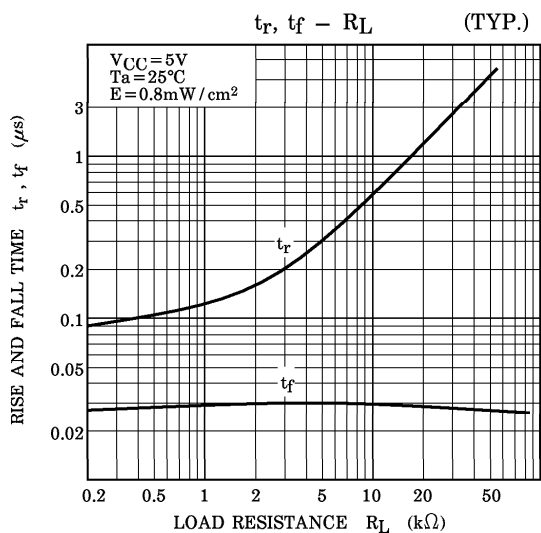
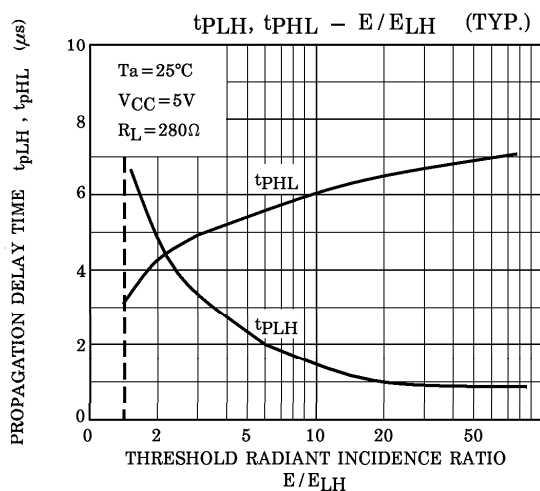
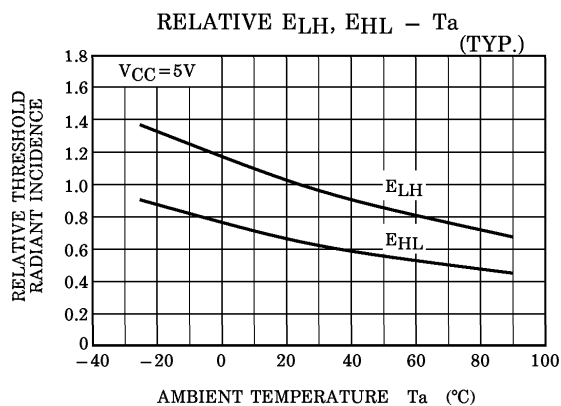
CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT
Supply Voltage	V_{CC}	4.5	5	16	V
High Level Output Voltage	V_{OH}	4.5	—	27	V
Radiant Incidence	E	0.8	—	—	mW / cm ²
Operating Temperature	T_{opr}	0	—	70	°C

PRECAUTION

Please be careful of the followings.

1. 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.
(Soldering portion of lead : above 2mm from the body of the device)
2. Supply the by-pass condenser up to 0.01 μ F between V_{CC} and GND near device to stabilize the power supply line.
3. During 100 μ s after turning on V_{CC} , output voltage changes for stabilizing the inner circuit.





DIRECTIONAL SENSITIVITY CHARACTERISTIC (TYP.)

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

