

TOSHIBA PHOTO IC SILICON EPITAXIAL PLANAR

TPS806

PHOTO IC FOR PHOTO INTERRUPTER

PHOTOELECTRIC COUNTER

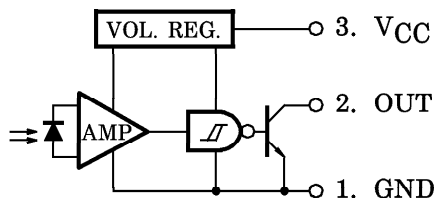
POSITION AND ROTATIONAL SPEED SENSOR

- TPS806 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 : $t_{pLH}=6\mu\text{s}$, $t_{pHL}=2\mu\text{s}$ (TYP.)
- When light is received, output becomes low level.

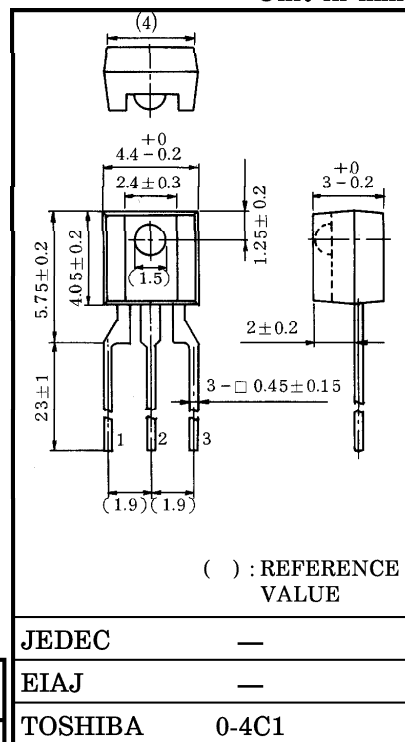
MAXIMUM RATINGS ($T_a = 25^\circ\text{C}$)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Supply Voltage	V_{CC}	17	V
High Level Output Voltage	V_{OH}	30	V
Low Level Output Voltage	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 Derating ($T_a > 25^\circ\text{C}$)	$\Delta P_O / ^\circ\text{C}$	-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	$^\circ\text{C}$

PIN CONNECTION



Unit in mm



Weight : 0.19g (TYP.)

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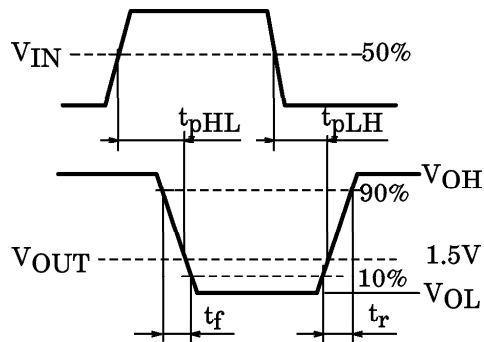
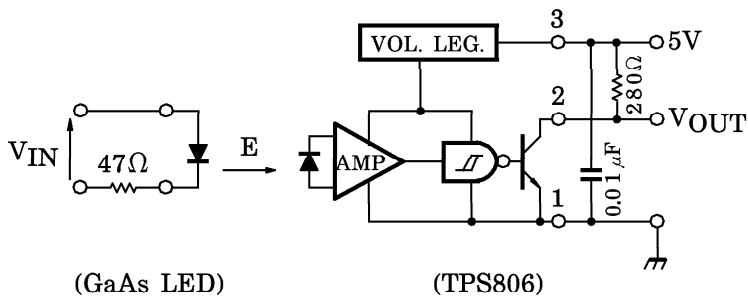
OPTO-ELECTRICAL CHARACTERISTICS (Ta = 25°C)

(Ta = 0~70°C, Characteristics with no entry of Ta = 25°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} = 16mA, V _{CC} = 5V E = 2mW/cm ²	—	0.07	0.4	V	
High Level Output Current		I _{OH}	V _{CC} = 5V, V _{OH} = 30V, E = 0	—	—	100	μA	
Supply Current	Low Level	I _{CCL}	V _{CC} = 5V, E = 2mW/cm ²	—	2.5	5	mA	
	High Level	I _{CCH}	V _{CC} = 5V, E = 0	—	1.2	3		
“H”→“L” Threshold Radiant Incidence (Note 1)		E _{HHL}	V _{CC} = 5V, Ta = 25°C	—	0.1	0.3	mW/cm ²	
			V _{CC} = 5V	—	—	0.6		
Histerisis Ratio		E _{LH} / E _{HHL}	Ta = 25°C, V _{CC} = 5V	—	0.65	—	—	
Peak Sensitivity Wavelength		λ _P		—	900	—	nm	
Switching Time	Propagation Delay Time	“L”→“H”	t _{pLH}	Ta = 25°C, V _{CC} = 5V E = 2mW/cm ² R _L = 280Ω (Note 2)	—	6	—	μs
		“H”→“L”	t _{pHL}		—	2	—	
	Rise Time		t _r		—	0.1	—	
	Fall Time		t _f		—	0.03	—	

Note 1 : Color temperature = 2870°K, Standard Tungsten Lamp.

Note 2 : Switching time test circuit.



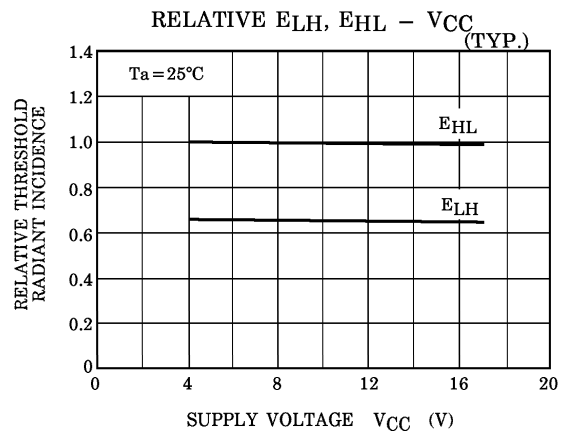
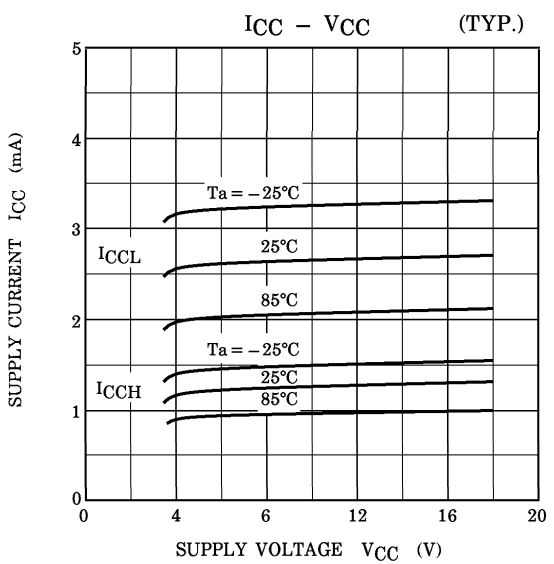
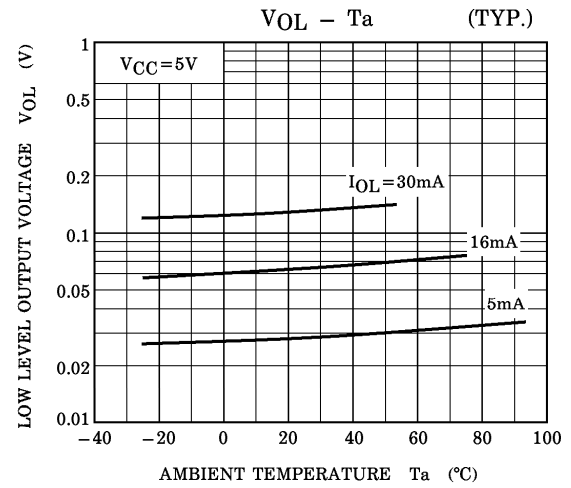
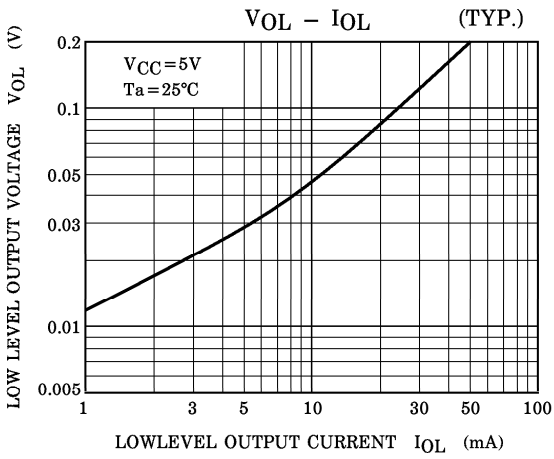
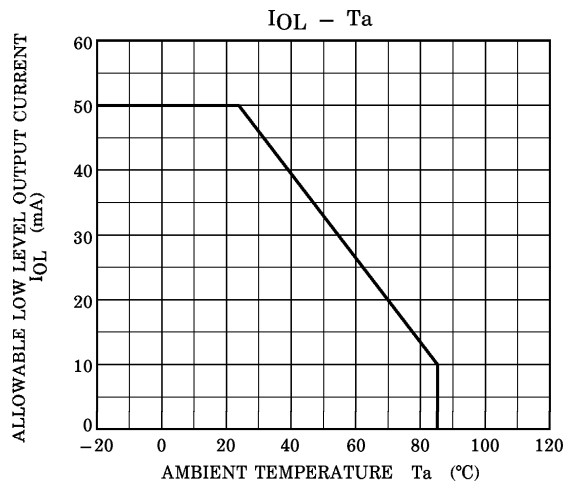
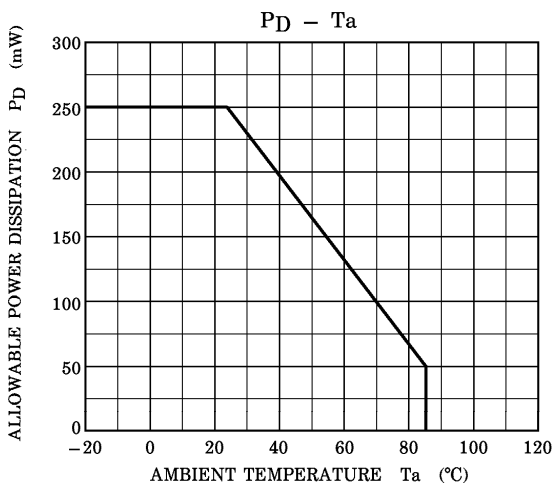
RECOMMENDED OPERATING CONDITIONS

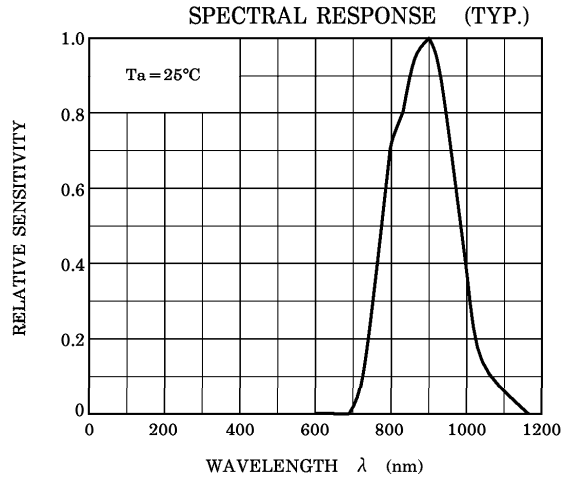
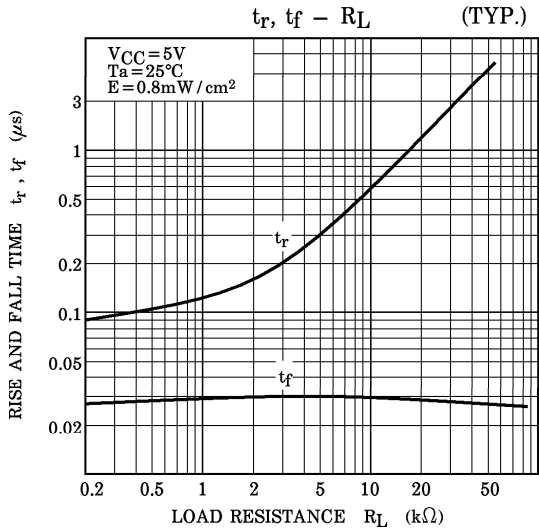
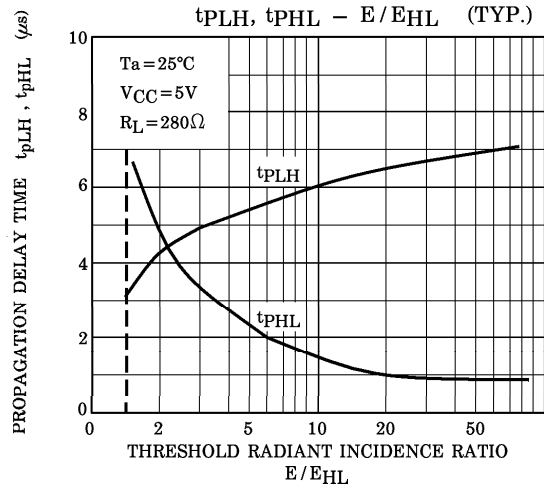
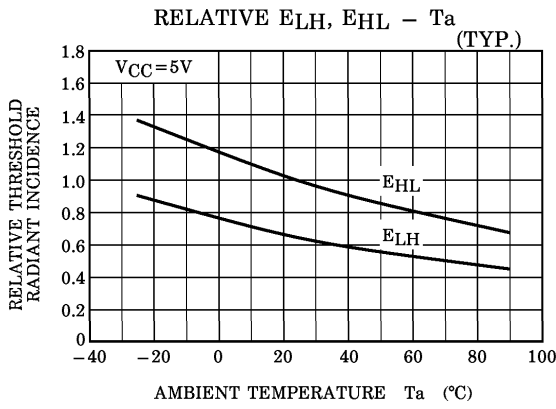
CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT
Supply Voltage	V _{CC}	4.5	5	16	V
High Level Output Voltage	V _{OH}	4.5	—	27	V
Radiant Incidence	E	0.8	—	—	mW/cm ²
Operating Temperature	T _{opr}	0	—	70	°C

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

