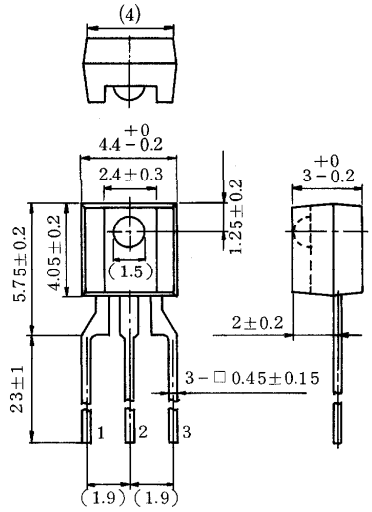
TOSHIBA PHOTO IC SILICON EPITAXIAL PLANAR

TPS808

PHOTO IC FOR PHOTO INTERRUPTER

Unit in mm



( ) : REFERENCE VALUE

JEDEC	—
EIAJ	—
TOSHIBA	

Weight : 0.19g (TYP.)

PHOTOELECTRIC COUNTER

POSITION AND ROTATIONAL SPEED SENSOR

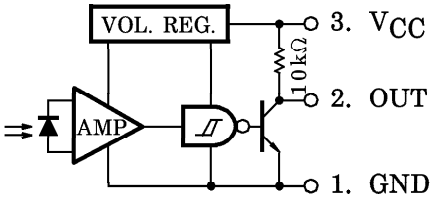
- TPS808 is a photo IC integrating photo diode, amplifier circuit and waveform shaping circuit in 1 chip.
- Visible light cut resin is used. : $\lambda P = 900mm$ (TYP.)
- The same external shape as the infrared LED TLN107A, and is best suited for combination with TLN107A as a photo interrupter.
- High speed response : $t_{pLH} = 6\mu s$, $t_{pHL} = 2\mu s$ (TYP.)
- When light is received, output becomes low level.

MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Supply Voltage	V_{CC}	17	V
High Level Output Voltage	V_{OH}	V_{CC} (Note)	V
Low Level Output Voltage	I_{OL}	50	mA
Low Level Output Current Derating (Ta > 25°C)	ΔI_{OL} / °C	−0.67	mA / °C
Power Dissipation	P_O	250	mW
Power Dissipation Derating (Ta > 25°C)	ΔP_O / °C	−3.33	mW / °C
Operating Temperature Range	T_{opr}	−25~85	°C
Storage Temperature Range	T_{stg}	−40~100	°C
Soldering Temperature (5s)	T_{sol}	260	°C

Note : V_{OH} keeps under V_{CC} Voltage.

PIN CONNECTION



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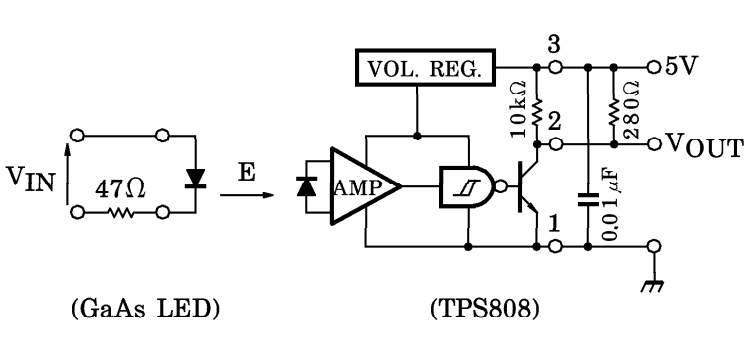
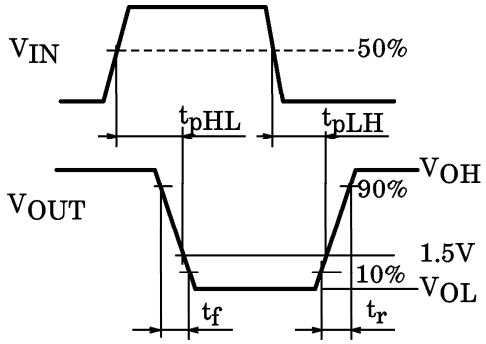
OPTO-ELECTRICAL CHARACTERISTICS (Ta = 25°C)
(Ta = 0 ~ 70°C, Characteristics with no entry of Ta = 25°C in the test conditions. Typical values are all at 25°C.)

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 Voltage			V_{OH}	V_{CC} = 5V, E = 0	4.5	5	—	V
Supply Current		Low Level	I_{CCL}	V_{CC} = 5V, E = 2mW / cm^2	—	3.0	5.5	mA
		High Level	I_{CCH}	V_{CC} = 5V, E = 0	—	1.2	3	mA
"H"→"L" Threshold Radiant Incidence (Note 1)			E_{HL}	V_{CC} = 5V, Ta = 25°C	—	0.1	0.3	mW / cm^2
				V_{CC} = 5V	—	—	0.6	
Histerisis Ratio			E_{LH} / E_{HL}	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

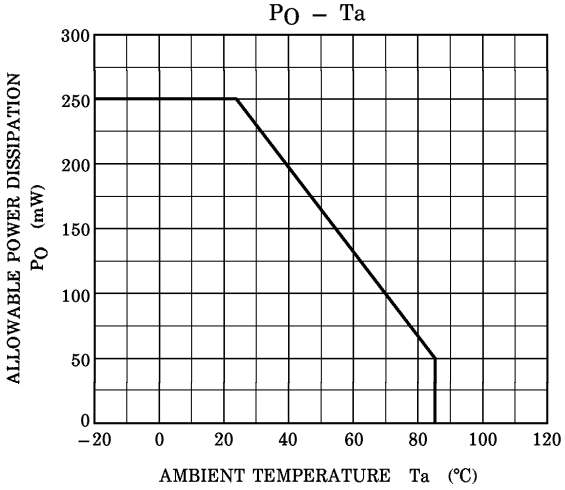
CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT
Supply Voltage	V_{CC}	4.5	5	16	V
High Level Output Voltage	V_{OH}	4.5	—	V_{CC}	V
Radiant Incidence	E	0.8	—	—	mW/cm^2
Operating Temperature	T_{opr}	0	—	70	°C

PRECAUTION

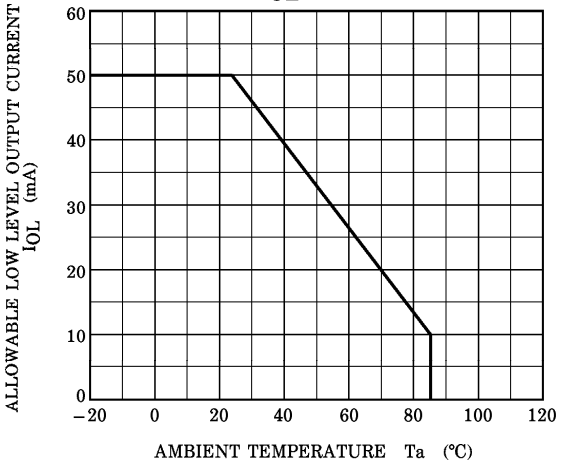
Please be careful of the followings.

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 0.01μF between V_{CC} and GND near device to stabilize the power supply line.
3. During 100μs after turning on V_{CC}, output voltage changes for stabilizing the inner circuit.

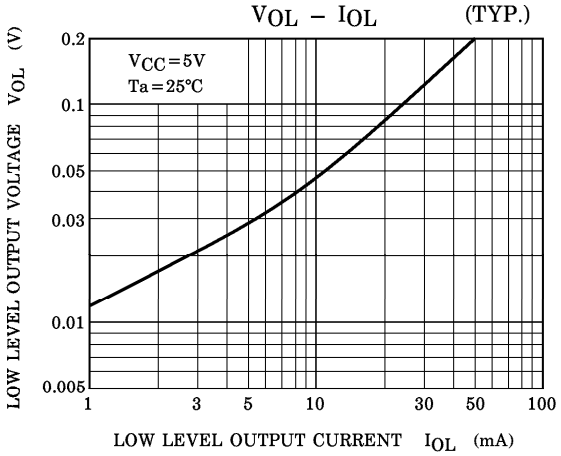
P_O – Ta



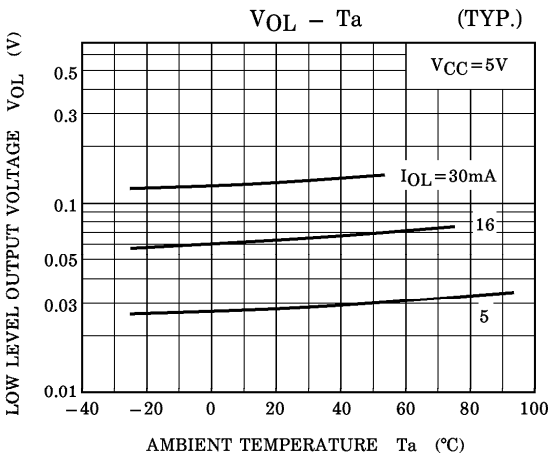
I_{OL} – Ta



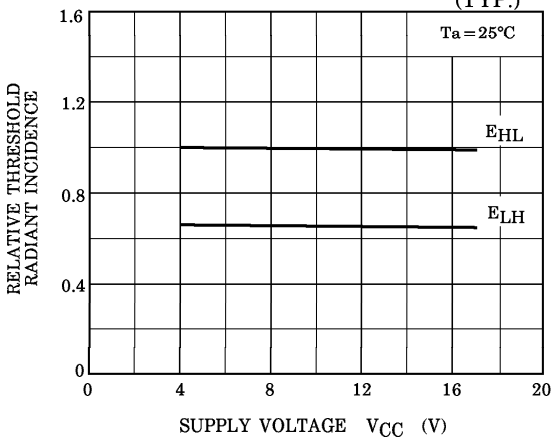
V_{OL} – I_{OL} (TYP.)



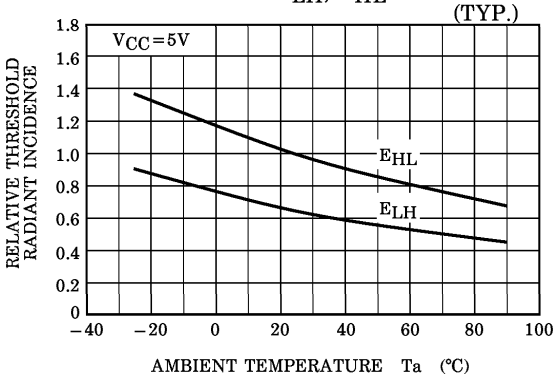
V_{OL} – Ta (TYP.)



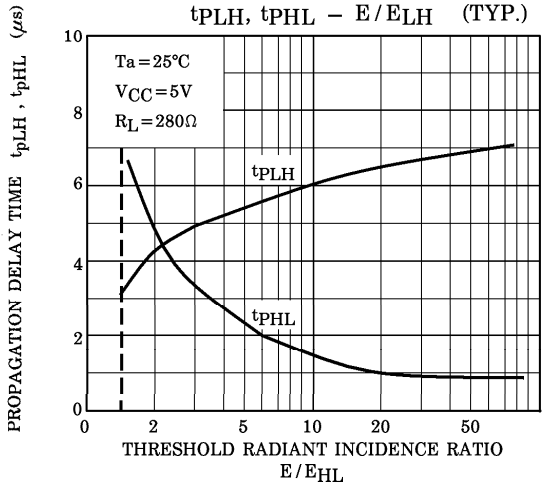
RELATIVE E_{LH}, E_{HL} – V_{CC} (TYP.)



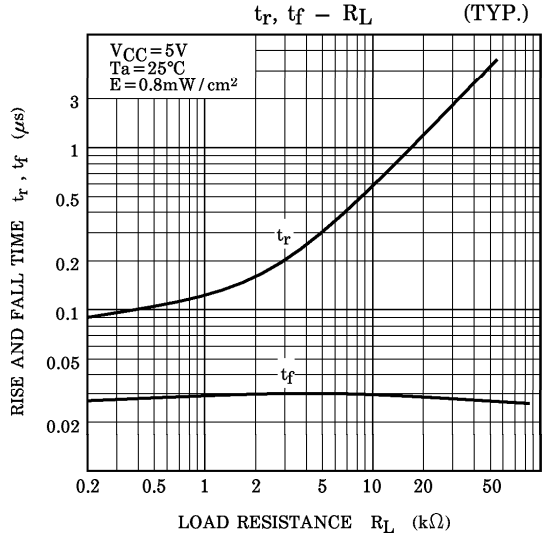
RELATIVE E_{LH}, E_{HL} – Ta (TYP.)



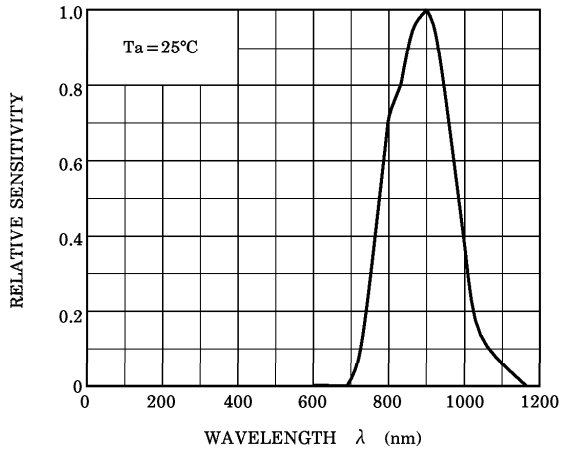
t_{PLH}, t_{PHL} – E/E_{LH} (TYP.)



t_r, t_f – R_L (TYP.)



SPECTRAL RESPONSE (TYP.)



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