TOSHIBA Photo IC Silicon Epitaxial Planar

TPS818

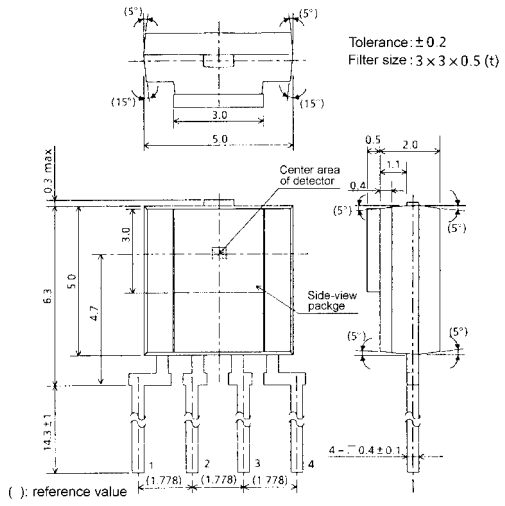
Luminosity Adjustment for TV Screens, CRT Monitors and Liquid-crystal Display Monitors

Notebook PCs and Portable Information Devices

Cellular and PHS Phones

Other Equipment Requiring Luminosity Adjustment

Unit: mm



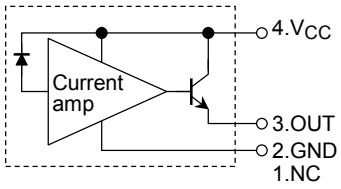
TOSHIBA	—

Weight: 0.22 g (typ.)

The TPS818 is a linear-output (current output type) photo-IC which incorporates a photodiode and a current amp circuit in a single chip. A luminous efficiency correction filter mounted on the detector ensures accurate luminosity output levels. The device's excellent output linearity enables automatic adjustment of the luminosity of a TV screen or PC monitor in accordance with the ambient brightness of the operating environment.

- High sensitivity
  : Light current I_L = 240 μA (typ.) @E_V = 100 lx
- Little fluctuation in light current
  : 1.67 times width (±25° typ.)
- Low current consumption
  : I_{CC} = 1 μA (max) @V_{CC} = 5.5 V
- Excellent illumination output linearity
- Luminous efficiency correction filter mounted on detector: λ_p = 560 mm (typ.)
- Open-emitter output
- Side-view package
- Environmentally friendly silicon used as chip material instead of CdS
  Suitable as a substitute for CdS-based products

Pin Connection



Maximum Ratings (Ta = 25°C)

Characteristics	Symbol	Rating	Unit
Supply voltage	V_{CC}	−0.5~7	V
Output voltage	V_{OUT}	≦ V_{CC}	V
Light current	I_L	10	mA
Permissible power dissipation	P	150	mW
Operating temperature range	T_{opr}	−25~85	°C
Storage temperature range	T_{stg}	−40~100	°C
Soldering temperature range (5s) (Note 1)	T_{sol}	260	°C

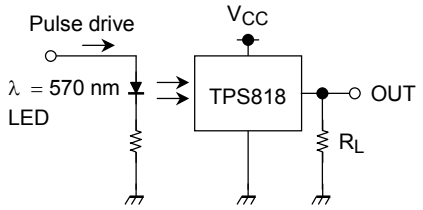
Note 1: Solder under the lead stopper.

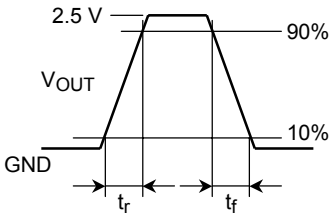
Electrical and Optical Characteristics (Ta = 25°C, V_{CC} = 5 V)

Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Supply voltage	V_{CC}	—	4.5	5	5.5	V
Supply current	I_{CC}	V_{CC} = 5.5 V, E_V = 0	—	0.01	1	μA
Light current (1)	I_L (1)	E_V = 10 lx (Note 2)	18	24	30	μA
Light current (2)	I_L (2)	E_V = 100 lx (Note 2)	180	240	300	μA
Dark current	I_{LEAK}	V_{CC} =5.5 V, E_V = 0	—	—	0.5	μA
Peak sensitivity wavelength	λ_P	—	—	560	—	nm
Switching time	t_r	R_L = 10 kΩ, λ = 570 nm	—	0.3	—	ms
	t_f		—	0.8	—	

Note 2: A CIE Standard A light source is used (color temperature = 2870°K).

Rise Time/Fall Time Measurement Method

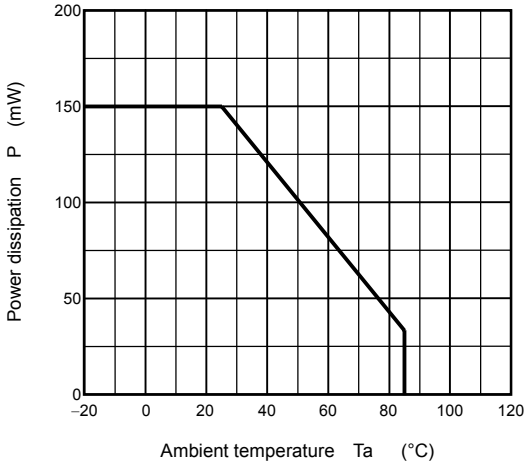




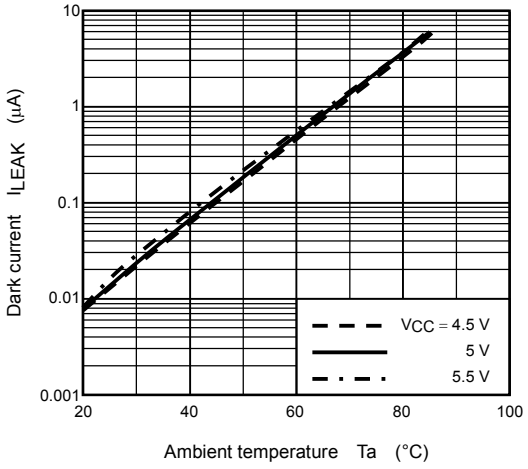
Handling Precautions

- When forming the leads, bend each lead under the lead stopper. Soldering must be performed after the leads have been formed.
- Soldering must be performed under the stopper.
- To stabilize the power line, insert a bypass capacitor of up to 0.01 μF between V_{CC} and GND, close to the device.

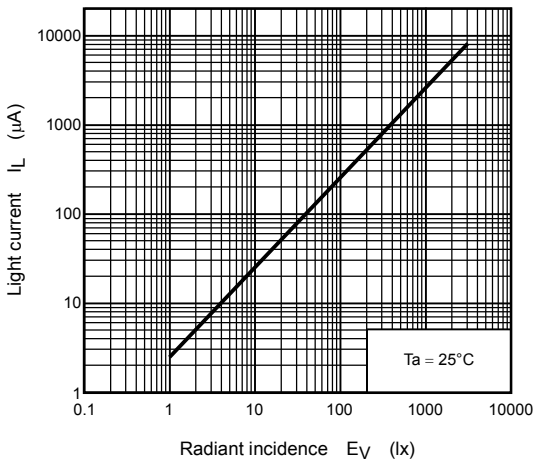
P – Ta



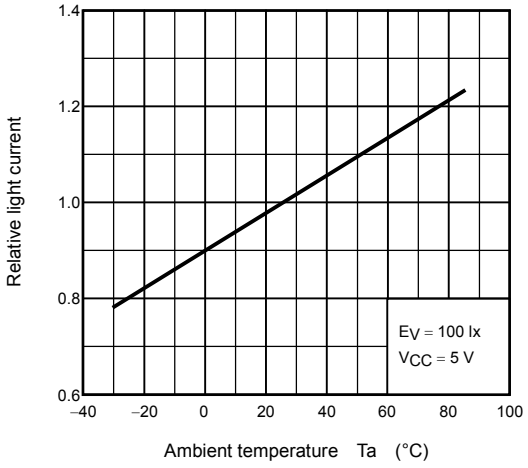
I_{LEAK} – Ta (typ.)



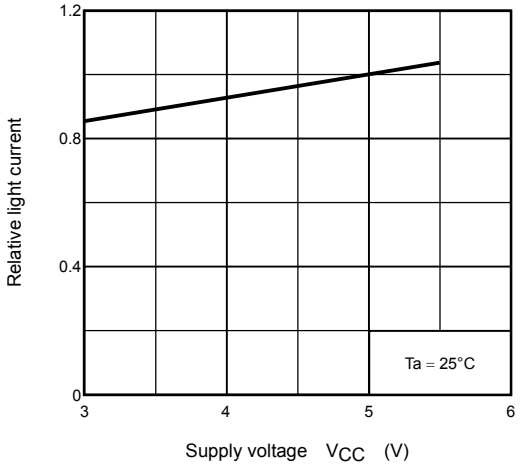
I_L – E_V (typ.)



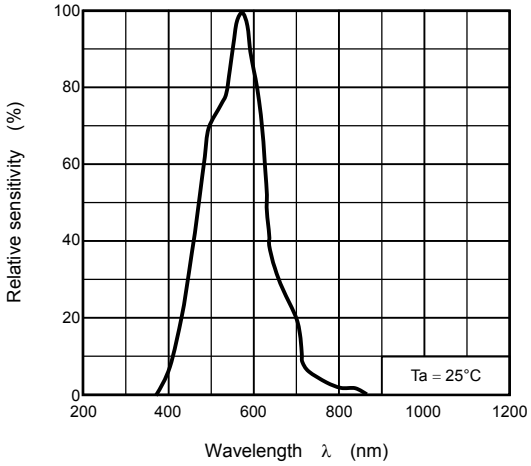
I_L – Ta (typ.)



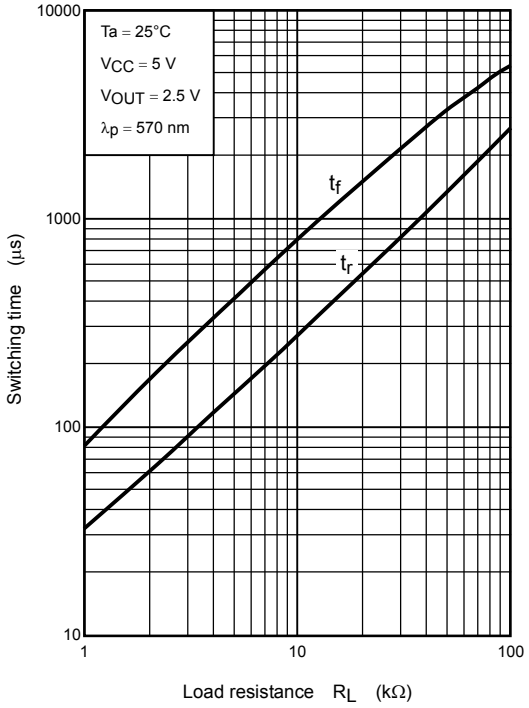
I_L – V_{CC} (typ.)



Spectral response



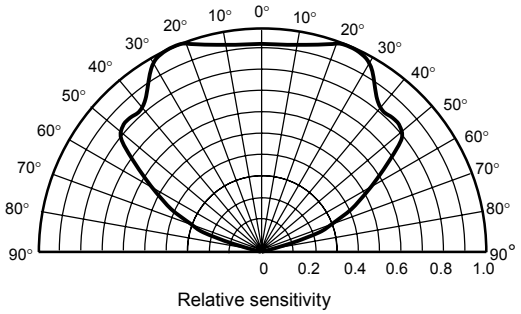
Switching characteristics (typ.)



Radiation pattern (typ.)

Ta = 25°C

Luminosity angle



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