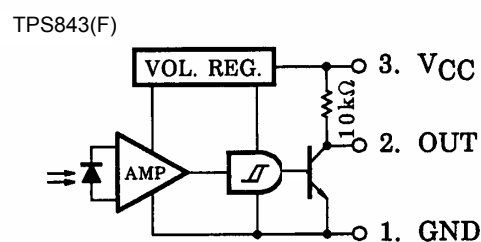
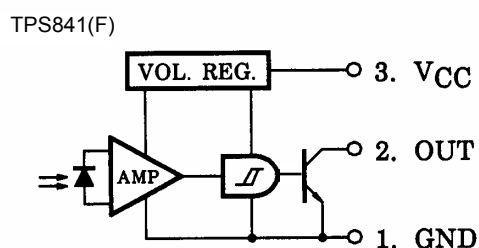


Pin Connection



Opto-Electrical Characteristics

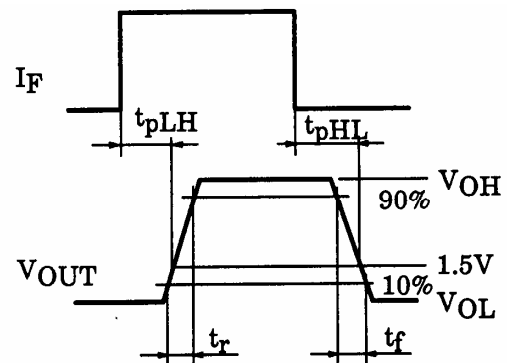
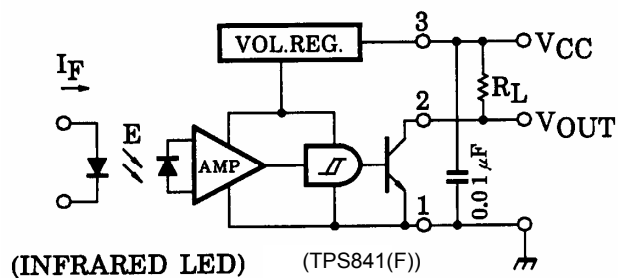
($T_a = -30$ to 95°C , $V_{CC} = 2.7$ to 15 V , typical values are all at 25°C .)

Characteristics			Symbol	Test Condition	Min	Typ.	Max	Unit
Supply voltage			V _{CC}	—	2.7	—	15	V
High level supply current			I _{CCH}	E = 2 mW/cm ² (Note 2)	—	0.5	1.2	mA
Low level supply current	TPS841(F)	I _{CCL}	E = 0	—	0.9	2	mA	
	TPS843(F)			—	2.9	4		
High level output current	TPS841(F)	I _{OH}	E = 2 mW/cm ² V _O = 15 V (Note 2)	—	—	6.3	μA	
High level output voltage	TPS843(F)	V _{OH}	E = 2 mW/cm ² (Note 2)	0.9*V _{CC}	—	—	V	
Low level output voltage			V _{OL}	I _{OL} = 16 mA, E = 0	—	0.07	0.4	V
“L→H” Threshold radiant incidence			E _{LH}	Ta = 25°C	—	0.2	0.3	mW/ cm ²
				—	—	—	0.6	
Hysteresis ratio			E _{HL} /E _{LH}	Ta = 25°C	0.5	0.65	0.9	—
Peak sensitivity wavelength			λ _P	—	—	900	—	nm
Switching time	Propagation delay time	“L→H”	t _{pLH}	Ta = 25°C V _{CC} = 3.3 V E = 2 mW/cm ² R _L = 10 kΩ (Note 3)	—	—	9	μs
		“H→L”	t _{pHL}		—	—	15	
	Rise time		t _r		—	0.02	0.5	
	Fall time		t _f		—	0.8	3	

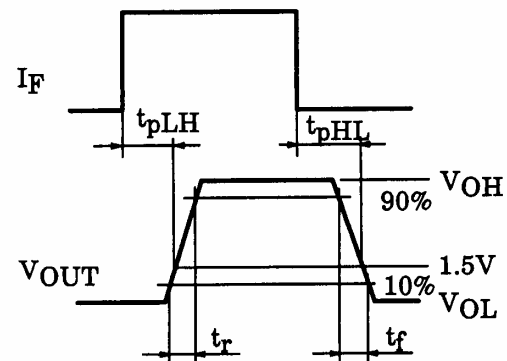
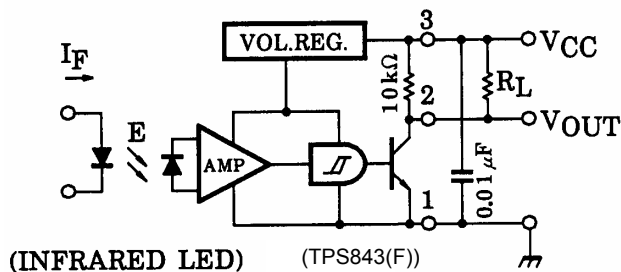
Note 2: CIE standard light source A (standard tungsten bulb) with color temperature = 2856 K.

Note 3: Switching time measurement circuit and waveform.

TPS841(F)

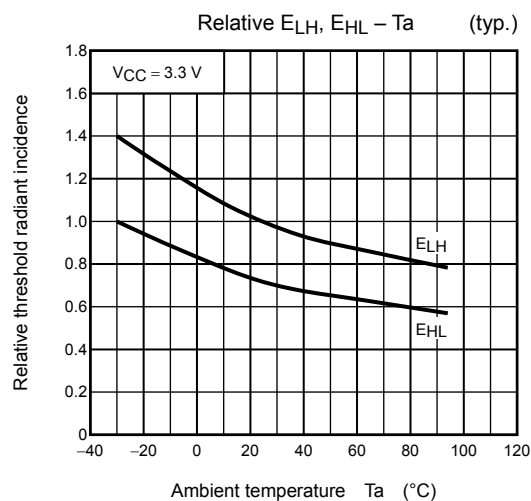
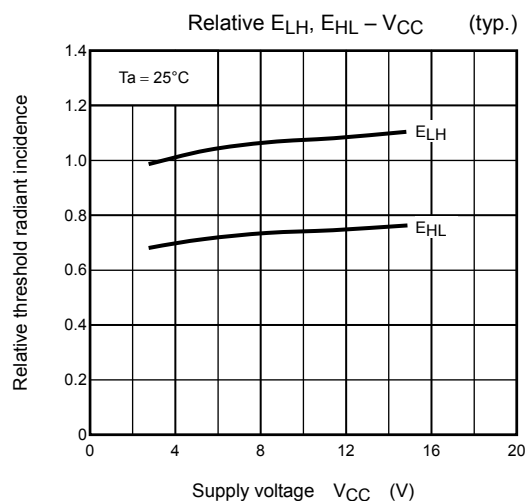
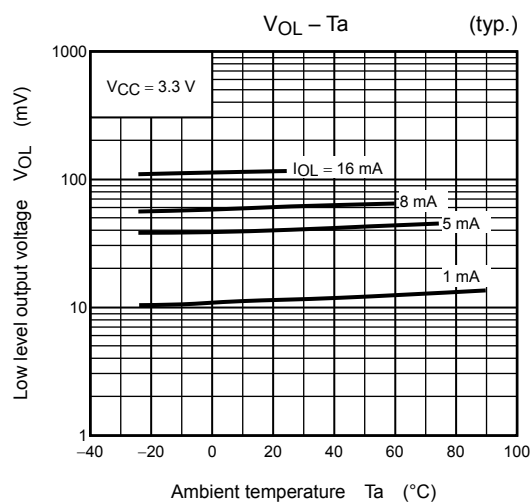
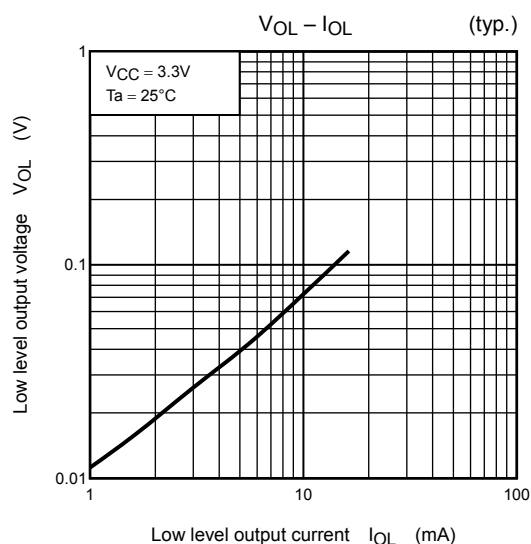
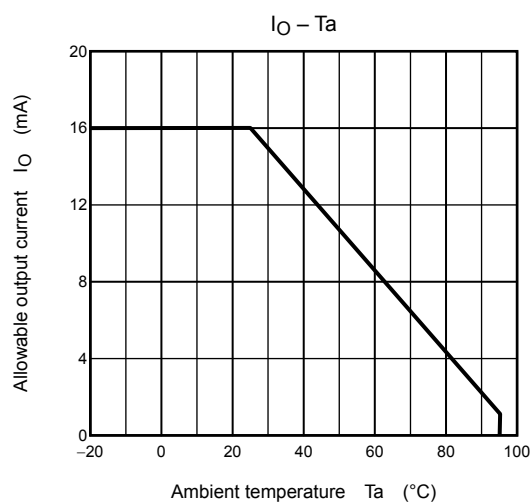
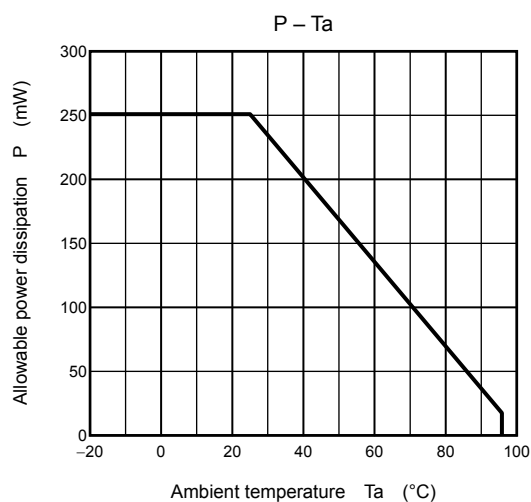


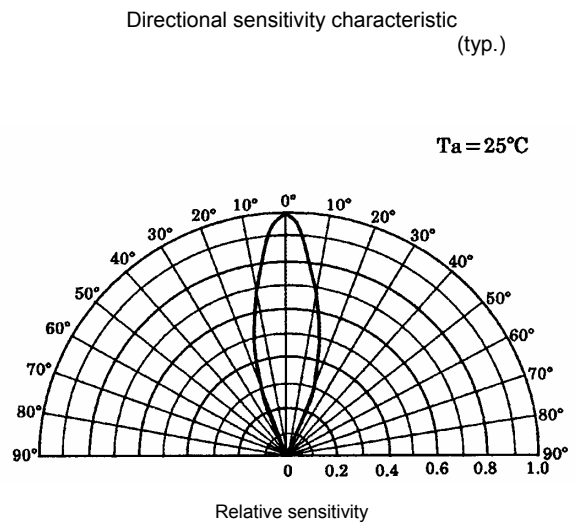
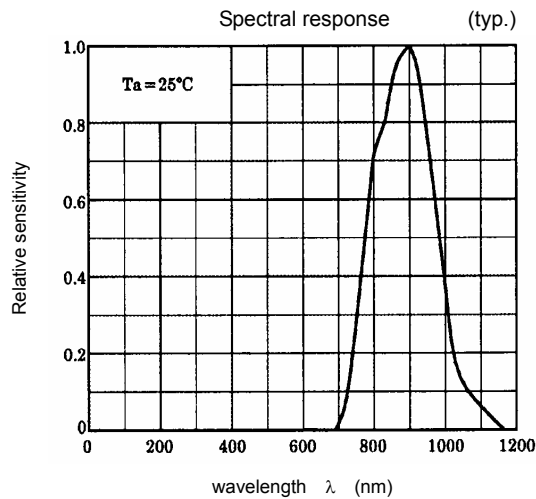
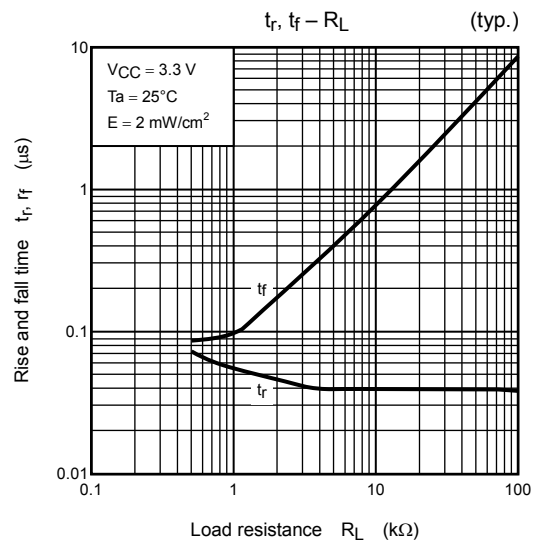
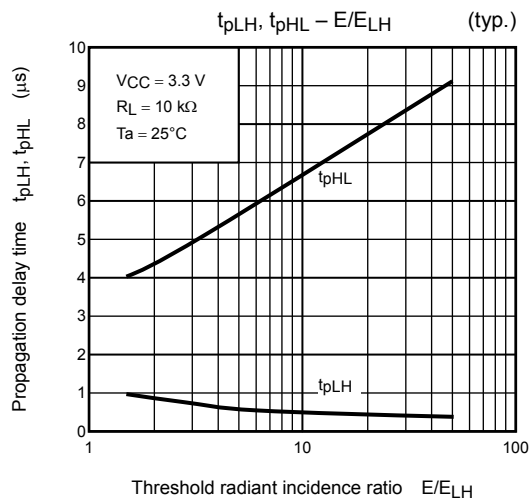
TPS843(F)



Precautions

- When you consider a combined use with an LED, be sure to use an infrared LED. Visible rays in wavelength of less than 700 nm cannot be detected.
- Make sure the shielding plate that is used to detect positions is manufactured from materials with superior light-shielding characteristics. Insufficient shield can cause malfunction.
- Photo ICs contain a high-sensitivity amplifier. Toshiba recommends connecting a capacitor of about 0.01 μF that has good high-frequency characteristics between VCC and GND near the device to prevent unwanted oscillation.
- Please install so that disturbance light is not irradiated by these products.
When disturbance light (incandescence light etc.) 700 nm or more is detected, it may incorrect-operate. Please perform sufficient evaluation and verification by set.
- During 100 μs after turning on VCC, output voltage changes for stabilizing the inner circuit.





RESTRICTIONS ON PRODUCT USE

20070701-EN GENERAL

- The information contained herein is subject to change without notice.
- TOSHIBA is continually working to improve the quality and reliability of its products. Nevertheless, semiconductor devices in general can malfunction or fail due to their inherent electrical sensitivity and vulnerability to physical stress. It is the responsibility of the buyer, when utilizing TOSHIBA products, to comply with the standards of safety in making a safe design for the entire system, and to avoid situations in which a malfunction or failure of such TOSHIBA products could cause loss of human life, bodily injury or damage to property.
In developing your designs, please ensure that TOSHIBA products are used within specified operating ranges as set forth in the most recent TOSHIBA products specifications. Also, please keep in mind the precautions and conditions set forth in the "Handling Guide for Semiconductor Devices," or "TOSHIBA Semiconductor Reliability Handbook" etc.
- The TOSHIBA products listed in this document are intended for usage in general electronics applications (computer, personal equipment, office equipment, measuring equipment, industrial robotics, domestic appliances, etc.). These TOSHIBA products are neither intended nor warranted for usage in equipment that requires extraordinarily high quality and/or reliability or a malfunction or failure of which may cause loss of human life or bodily injury ("Unintended Usage"). Unintended Usage include atomic energy control instruments, airplane or spaceship instruments, transportation instruments, traffic signal instruments, combustion control instruments, medical instruments, all types of safety devices, etc.. Unintended Usage of TOSHIBA products listed in this document shall be made at the customer's own risk.
- The products described in this document shall not be used or embedded to any downstream products of which manufacture, use and/or sale are prohibited under any applicable laws and regulations.
- The information contained herein is presented only as a guide for the applications of our products. No responsibility is assumed by TOSHIBA for any infringements of patents or other rights of the third parties which may result from its use. No license is granted by implication or otherwise under any patents or other rights of TOSHIBA or the third parties.
- Please contact your sales representative for product-by-product details in this document regarding RoHS compatibility. Please use these products in this document in compliance with all applicable laws and regulations that regulate the inclusion or use of controlled substances. Toshiba assumes no liability for damage or losses occurring as a result of noncompliance with applicable laws and regulations.