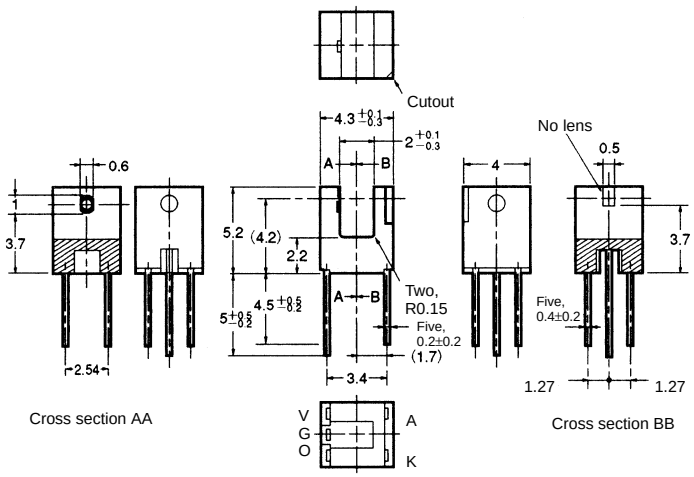
EE-SX4139

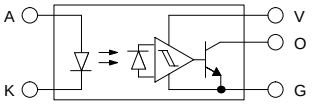
Photomicrosensor (Transmissive)

■ Dimensions

Note: All units are in millimeters unless otherwise indicated.



Internal Circuit



Unless otherwise specified, the tolerances are ±0.1 mm.

Terminal No.	Name
A	Anode
K	Cathode
V	Supply voltage (Vcc)
O	Output (OUT)
G	Ground (GND)

■ Features

- Ultra-compact model.
- Photo IC output model.
- Operates at a V_{CC} of 2.2 to 7 V.
- High-speed response.

■ Absolute Maximum Ratings (Ta = 25°C)

Item		Symbol	Rated value
Emitter	**Forward current**	I_F	50 mA (see note 1)
	Reverse voltage	V_R	4 V
Detector	**Supply voltage**	V_{CC}	9 V
	Output voltage	V_{OUT}	17 V
	Output current	I_{OUT}	8 mA
	Permissible output dissipation	P_{OUT}	80 mW (see note 1)
Ambient temperature	**Operating**	Topr	–25°C to 85°C
	Storage	Tstg	–40°C to 100°C
	Soldering	Tsol	260°C (see note 2)

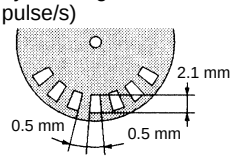
Note: 1. Refer to the temperature rating chart if the ambient temperature exceeds 25°C.
2. Complete soldering within 3 seconds.

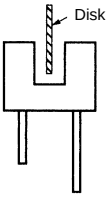
■ Electrical and Optical Characteristics (Ta = 25°C)

Item		Symbol	Value	Condition
Emitter	**Forward voltage**	V_F	1.2 V typ., 1.4 V max.	I_F = 20 mA
	Reverse current	I_R	0.01 μA typ., 10 μA max.	V_R = 4 V
	Peak emission wavelength	λ_P	940 nm typ.	I_F = 20 mA
Detector	**Power supply voltage**	V_{CC}	2.2 V min., 7 V max.	---
	Low-level output voltage	V_{OL}	0.12 V typ., 0.4 V max.	Vcc = 2.2 to 7 V, I_{OL} = 8 mA, I_F = 5 mA
	High-level output current	I_{OH}	10 μA max.	Vcc = 2.2 tp 7 V, I_F = 0 mA, V_O = 17 V
	Current consumption	I_{CC}	2.3 mA typ., 4 mA max.	Vcc = 7 V
	Peak spectral sensitivity wavelength	λ_P	870 mm typ.	Vcc = 2.2 to 7 V
LED current when output is ON		I_{FT}	1.1 mA typ., 2.5 mA max.	V_{CC} = 2.2 to 7 V
Hysteresis		ΔH	21% typ.	V_{CC} = 2.2 to 7 V (see note 1)
Response frequency		f	3 kHs min.	V_{CC} = 2.2 to 7 V, I_F = 5 mA, I_{OL} = 8 mA (see note 2)
Response delay time		t_{PHL}	5 μs typ.	V_{CC} = 2.2 to 7 V, I_F = 5 mA, I_{OL} = 8 mA (see note 3)
Response delay time		t_{PLH}	18 μs typ.	V_{CC} = 2.2 to 7 V, I_F = 5 mA, I_{OL} = 8 mA (see note 3)

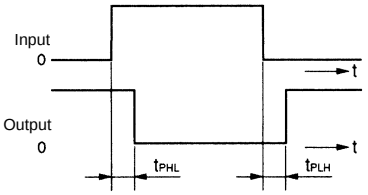
Note: 1. Hysteresis denotes the difference in forward LED current value, expressed in percentage, calculated from the respective forward LED currents when the photo IC in turned from ON to OFF and when the photo IC in turned from OFF to ON.

2. The value of the response frequency is measured by rotating the disk as shown below. (P.P.S = pulse/s)



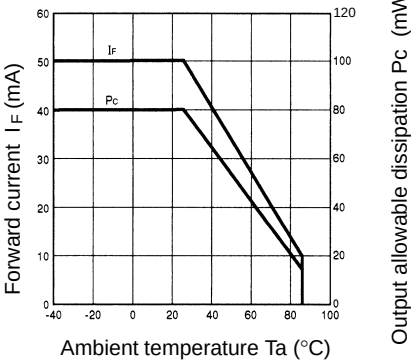


3. The following illustrations show the definition of response delay time.

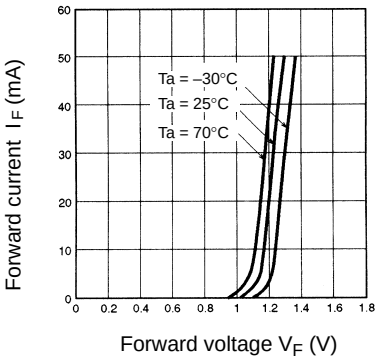


■ Engineering Data

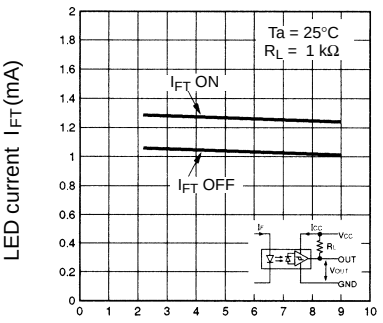
Forward Current vs. Collector Dissipation Temperature Rating



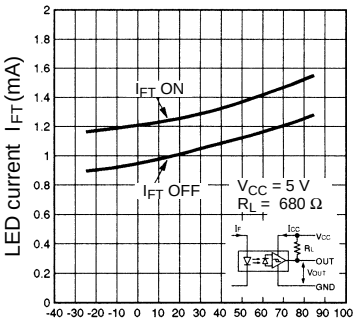
Forward Current vs. Forward Voltage Characteristics (Typical)



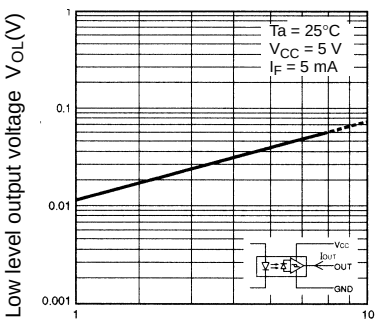
LED Current vs. Supply Voltage (Typical)



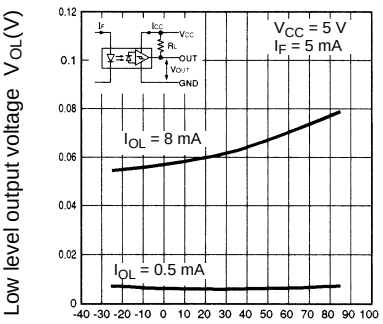
LED Current vs. Ambient Temperature Characteristics (Typical)



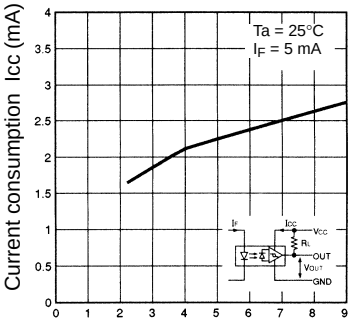
Low-level Output Voltage vs. Output Current (Typical)



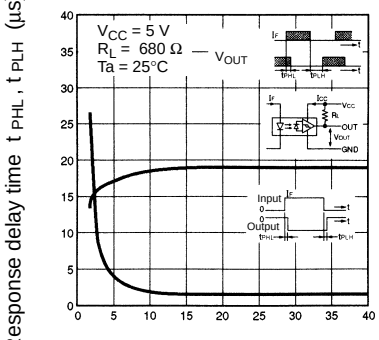
Low-level Output Voltage vs. Ambient Temperature Characteristics (Typical)



Current Consumption vs. Supply Voltage (Typical)



Response Delay Time vs. Forward Current (Typical)



Repeat Sensing Position Characteristics (Typical)