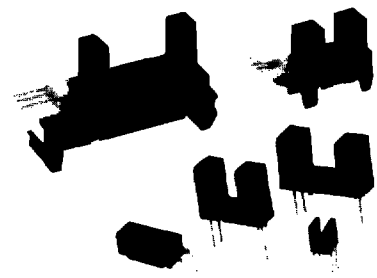
Features

- High 16mA output at 28 VDC max.
- Response frequency 3 KHz typical
- Built-in Schmitt trigger circuit
- Directly compatible with TTL, CMOS
- Excellent temperature characteristics assured by receiver with temperature compensating circuit



Ordering Information

Part number	Slot width/ sensing distance	Output logic	Absolute maximum ratings			Electrical characteristics									
			I_F	V_{CC}	T_{OPR}	V_{OL} (max.)	V_{OH} (min.)	Response frequency (min.)	P_{OUT}	V_F (max.) @ I_F = 20 mA	\ Hi (typ.)	Response delay time (typ.) t_{PLH} [t_{PHL}][2]	Response delay time (typ.) t_{PHL} [t_{PLH}][2]	I_{CC} (max.)	Dim. drawing
Actuator adaptable															
EE-SA407-P2	—	Light-ON	—	7	-20 ~ +75	0.35	Vcc x 0.9	3,000	250	—	—	—	—	30	p. 52
Reflective (PCB mount)															
EE-SY310	5 (.197)	Dark-ON	50	16	-40 ~ +65	0.4	15	50	250	1.5	17	3	20	—	p. 52
EE-SY313	4.4 (.173)	Dark-ON	50	16	-40 ~ +65	0.4	15	50	250	1.5	17	3	20	—	p. 53
EE-SY410	5 (.197)	Light-ON	50	16	-40 ~ +65	0.4	15	50	250	1.5	17	3	20	—	p. 52
EE-SY413	4.4 (.173)	Light-ON	50	16	-40 ~ +65	0.4	15	50	250	1.5	17	3	20	—	p. 53
Transmissive (with connector)															
EE-SX4009-P1	5 (.197)	Light-ON	—	10	-20 ~ +75	0.3	Vcc x 0.9	3,000	250	—	—	—	—	30	p. 53
EE-SX4009-P10	5 (.197)	Light-ON	—	10	-20 ~ +75	0.3	Vcc x 0.9	3,000	250	—	—	—	—	30	p. 56
EE-SX4235A-P2	5 (.197)	Light-ON	—	7	-20 ~ +75	0.35	Vcc x 0.9	3,000	250	—	—	—	—	16.5	p. 53
EE-SX460-P1	5 (.197)	Light-ON	—	10	-20 ~ +75	0.3	Vcc x 0.9	3,000	250	—	—	—	—	30	p. 53
EE-SX461-P11	15 (.591)	Light-ON	—	7	-20 ~ +75	0.3	Vcc x 0.9	3,000	250	—	—	—	—	35	p. 56
Transmissive (PCB mount)															
EE-SX3070	8 (.315)	Dark-ON	50	16	-40 ~ +75	0.4	15	3,000	250	1.5	15	3	20	10	p. 54
EE-SX3081	5 (.197)	Dark-ON	50	16	-40 ~ +75	0.4	15	3,000	250	1.5	15	3	20	10	p. 54
EE-SX3088	3.4 (.134)	Dark-ON	50	16	-40 ~ +75	0.4	15	3,000	250	1.5	15	3	20	10	p. 54
EE-SX398	3 (.118)	Dark-ON	50	16	-40 ~ +75	0.4	15	3,000	250	1.5	15	3	20	10	p. 55
EE-SX4070	8 (.315)	Light-ON	50	16	-40 ~ +75	0.4	15	3,000	250	1.5	15	3	20	10	p. 54
EE-SX4081	5 (.197)	Light-ON	50	16	-40 ~ +75	0.4	15	3,000	250	1.5	15	3	20	10	p. 54
EE-SX4088	3.4 (.134)	Light-ON	50	16	-40 ~ +75	0.4	15	3,000	250	1.5	15	3	20	10	p. 54
EE-SX4101	2 (.079)	Light-ON	50	9	-25 ~ +85	0.4	—	3,000	80	1.4	21	5	18	4	p. 54
EE-SX493	2 (.079)	Light-ON	50	16	-40 ~ +60	0.4	15	3,000	250	1.5	15	3	20	10	p. 55
EE-SX498	3 (.118)	Light-ON	50	16	-40 ~ +75	0.4	15	3,000	250	1.5	15	3	20	10	p. 55
Unit	**mm (in.)**	—	**mA**	**VDC**	**°C**	**V**	**V**	**P.P.S.**	**mW**	**V**	**%**	**µS**	**µS**	**mA**	—

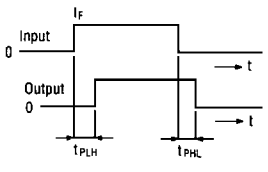
Notes: [1] Hysteresis denotes the difference in forward LED current value, expressed in percentage, calculated from the respective forward LED currents when the photo IC is turned ON from OFF and when the photo IC is turned OFF from ON.

[2] [ ] denotes response delay time for Light-ON type sensors.

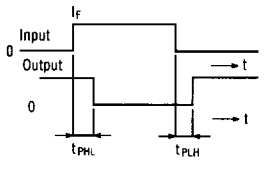
Timing Charts

Response Delay Time

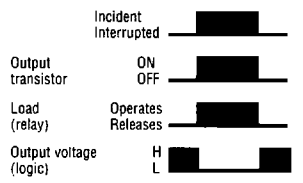
EE-SY3___



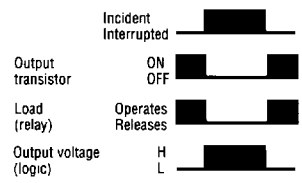
EE-SY4___



Light ON



Dark ON

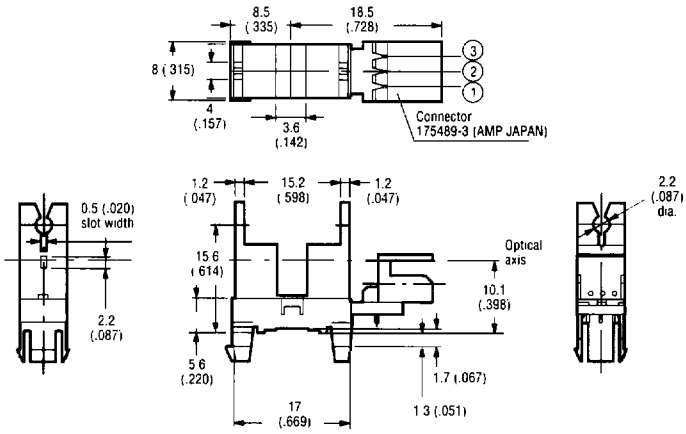


Dimensions [Unit: mm (inch)]

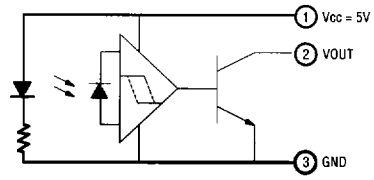
[ ] = Reference dimensions only.

Actuator Adaptable

EE-SA407-P2

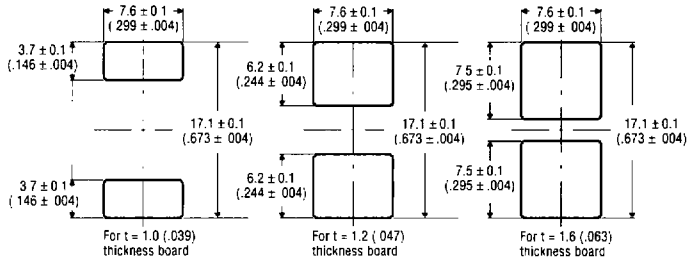


Internal circuit



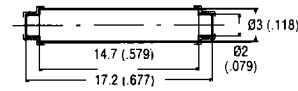
Terminal number	Name
V	Supply voltage (Vcc)
O	Output (OUT)
G	Ground (GND)

Recommended mounting holes



Note: Each corner must be R0.5 (.020) max.

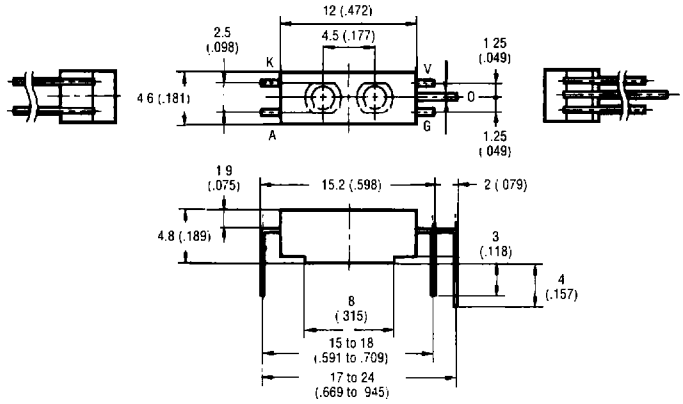
Recommended actuator design



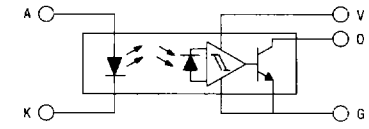
Note: 1. No flash is located at the sections indicated by dotted lines.
2. Material must be opaque in infrared light range (900 to 950 nm).

Reflective PCB Mount

EE-SY310/SY410



Internal circuit
(all models)

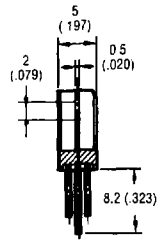


Terminal number	Name
A	Anode
K	Cathode
V	Supply voltage (Vcc)
O	Output (OUT)
G	Ground (GND)

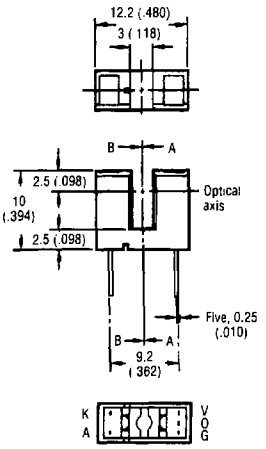
Dimensions [Unit: mm (inch)]

[ ] = Reference dimensions only.

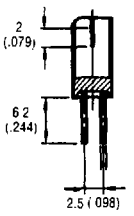
EE-SX398/SX498



Cross section BB

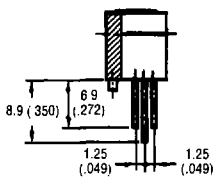


(bottom view)

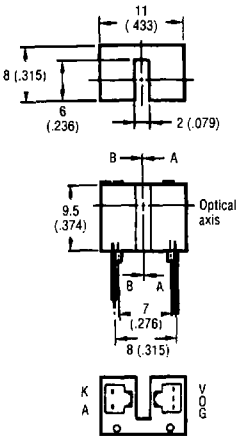


Cross section AA

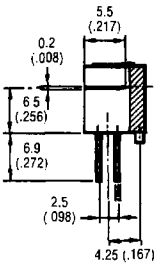
EE-SX493



Cross section BB

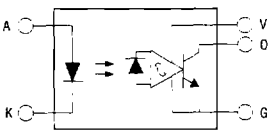


(bottom view)



Cross section AA

Internal circuit
(all models)



Terminal number	Name
A	Anode
K	Cathode
V	Supply voltage (Vcc)
O	Output (OUT)
G	Ground (GND)

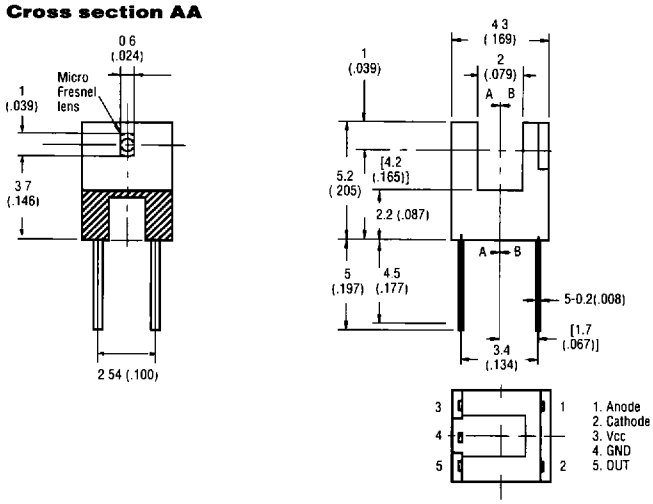
Dimensions [Unit: mm (inch)]

[ ] = Reference dimensions only.

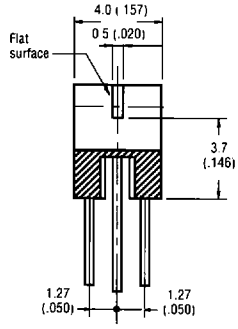
Transmissive **PCB mount**

EE-SX4101

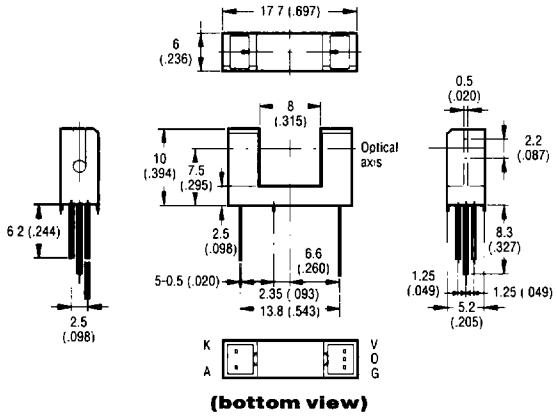
Cross section AA



Cross section BB

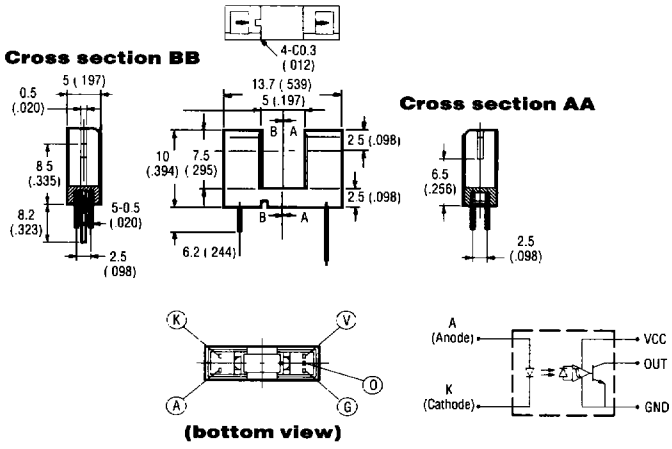


EE-SX3070/SX4070

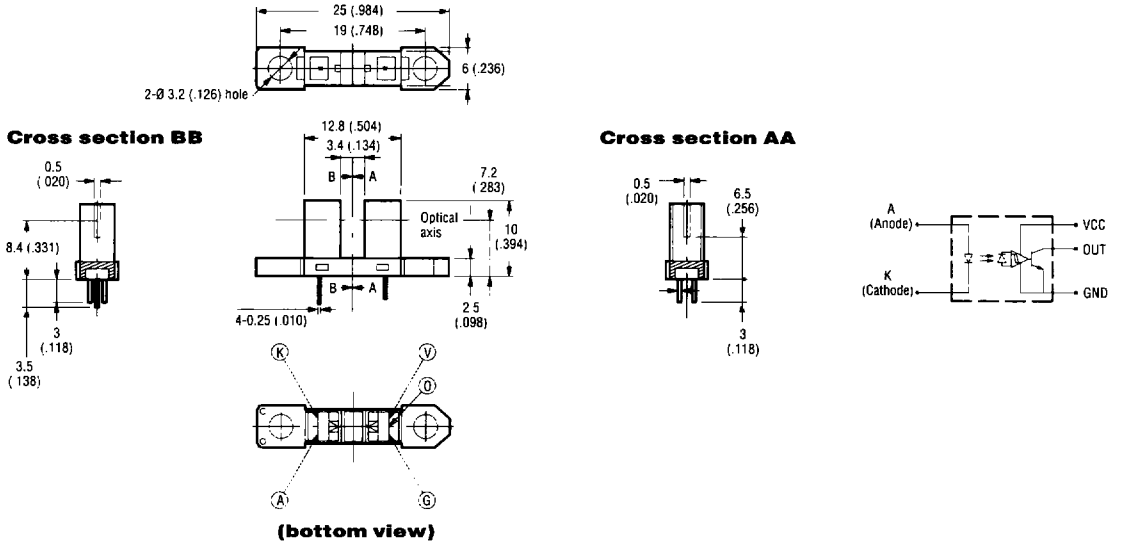


EE-SX3081/SX4081

Cross section BB



EE-SX3088/SX4088

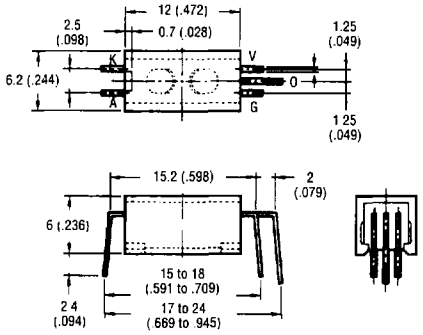


Dimensions [Unit: mm (inch)]

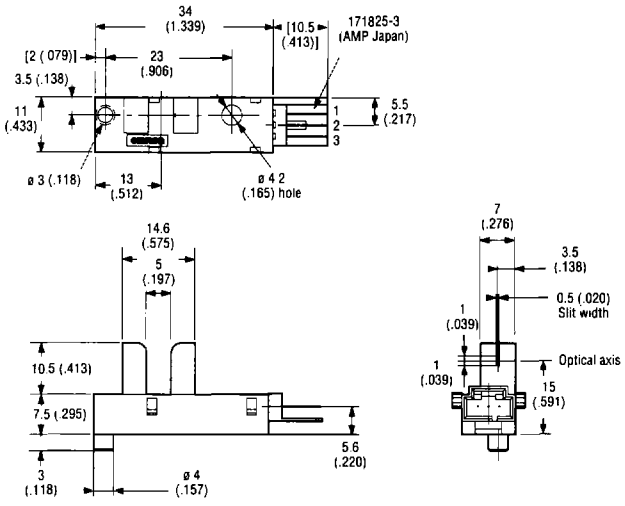
[ ] = Reference dimensions only.

Reflective **PCB mount**

EE-SY313/SY413

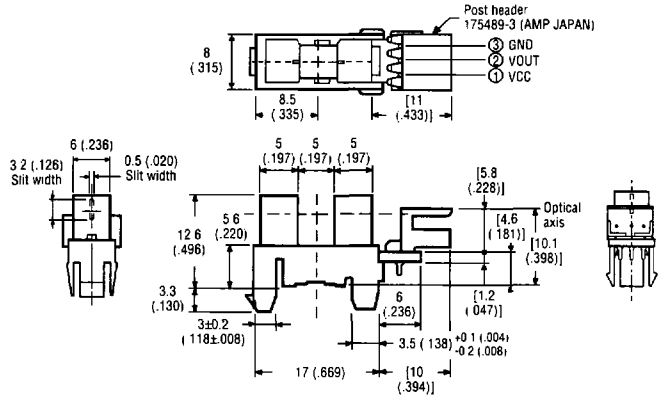


EE-SX4009-P1

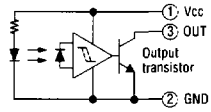


Transmissive **with connector**

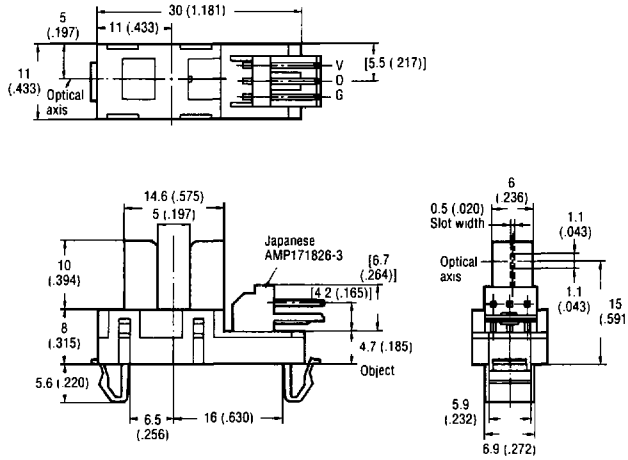
EE-SX4235A-P2



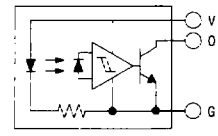
Output transistor



EE-SX460-P1

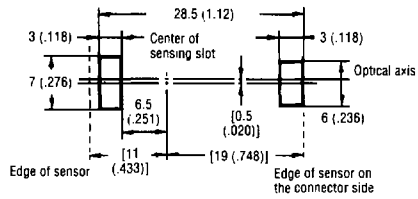


Internal circuit



Terminal number	Name
V	Supply voltage (Vcc)
O	Output (OUT)
G	Ground (GND)

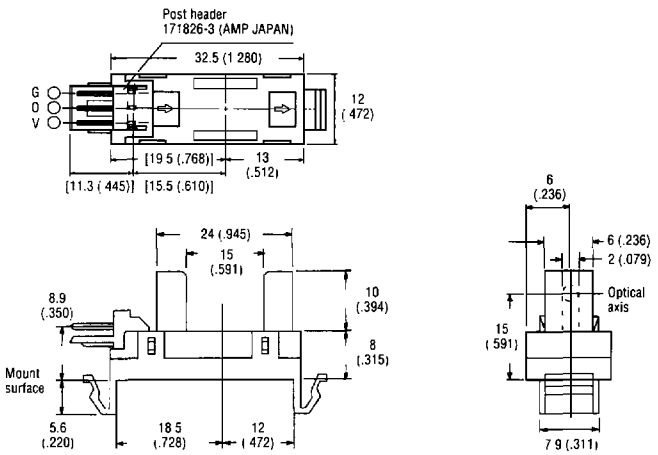
Mounting holes



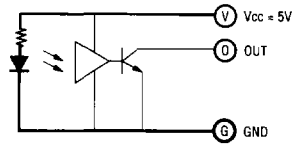
Dimensions [Unit: mm (inch)]

[ ] = Reference dimensions only.

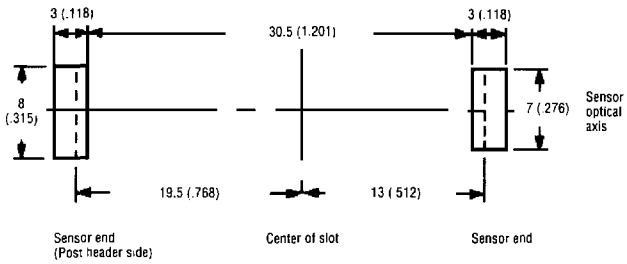
EE-SX461-P11



Pin assignment

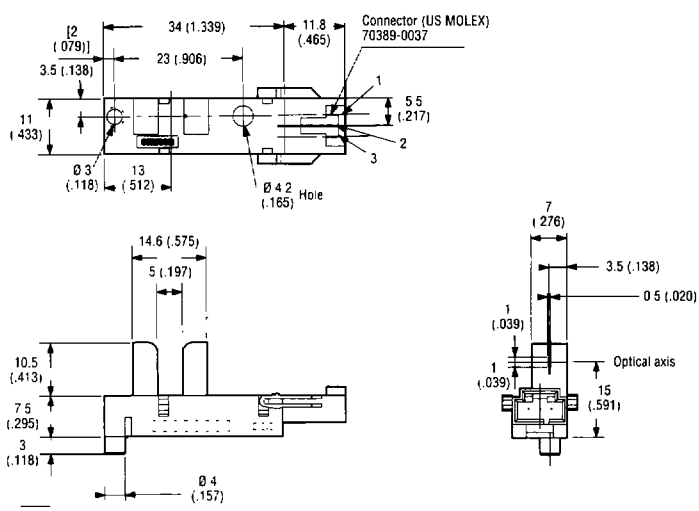


Recommended mounting holes



Note: 1. Applicable board thickness: t = 0.8 (.031) to 1.6 (.063) ± 0.2 (.008) mm.
2. Top view.
3. Corner of square must be R0.2 (.008) max.

EE-SX4009-P10



Pin assignment