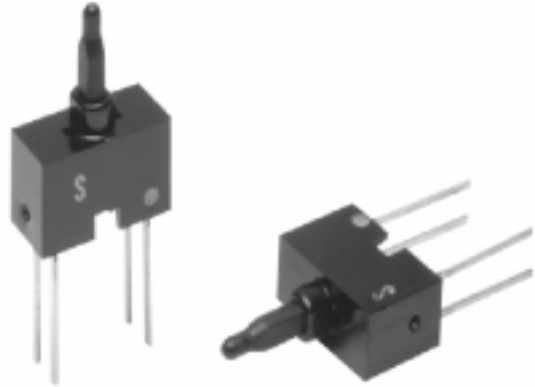


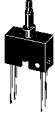
EE-SA105

Phototransistor Optical Switch with Spring Actuator

- No mechanical contacts ensure long service life
- Ideal component for confined spaces
- Easy detection of object due to small operating force and actuator travel



Ordering Information

Appearance	Sensing method	Actuator travel	Output configuration	Weight	Part number
PCB terminals 	Actuator	3.1 mm	Phototransistor	Approx. 0.4 g	EE-SA105

Specifications

■ ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ (77°F))

Item		Symbol	Rated value
Emitter	Forward current	I_F	50 mA*
	Pulse forward current	I_{FP}	1 A
	Reverse voltage	V_R	4 V
Receiver	Collector-emitter voltage	V_{CEO}	30 V
	Emitter-collector voltage	V_{ECO}	5 V
	Collector current	I_C	20 mA
	Collector dissipation	P_C	100 mW*
Ambient temperature	Operating	T_{opr}	-25°C to 70°C (-13°F to 158°F)
	Storage	T_{stg}	-40°C to 85°C (-40°F to 185°F)

*Refer to Engineering Data if the ambient temperature is not within the normal room temperature range.

■ ELECTRICAL CHARACTERISTICS (T_A = 25°C (77°F))

Item		Symbol	Value	Condition
Emitter	Forward voltage	V _F	1.2 V typ., 1.5 V max.	I _F = 30 mA
	Reverse current	I _R	0.01 μA type., 10 μA max.	V _R = 4 V
	Peak emission wavelength	λ _p (L)	940 nm typ.	I _F = 20 mA
Receiver	Light current (collector current)	I _L	0.5 mA min.	I _F = 20 mA, V _{CE} = 5 V
	Dark current	I _D	2 nA typ., 200 nA max.	V _{CE} = 10 V 0/x
	Peak spectral sensitivity wavelength	λ _p (P)	850 nm typ.	V _{CE} = 10 V
	Leakage current	I _{LEAK}	10 μA max.	I _F = 20 mA, V _{CE} = 5 V at operating position (OP)
	Collector-emitter saturated voltage	V _{CE} (sat)	0.15 V typ., 0.4 V max.	I _F = 20 mA, I _L = 0.1 mA

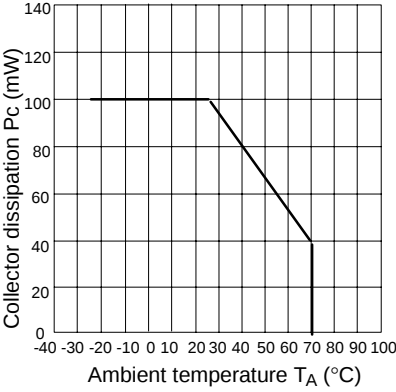
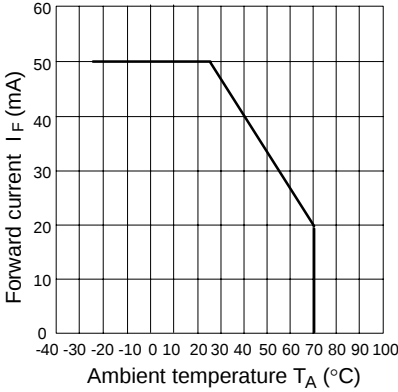
■ MECHANICAL CHARACTERISTICS (T_A = 25°C (77°F))

Actuator operation	Free position (FP): 14.2±0.3 mm Operating position (OP): 13.0 mm min. Total travel position (TTP): 12.1 mm max.
Operating force	15 gf (0.15 N) max.
Life expectancy	500,000 operation min.
Vibration resistance	Destruction: 5 to 50 Hz (with a peak acceleration of 1G) for 30 min each in X, Y, and Z directions
Shock resistance	Destruction: 300 m/s ² (approx. 30G) each in X, Y, and Z directions

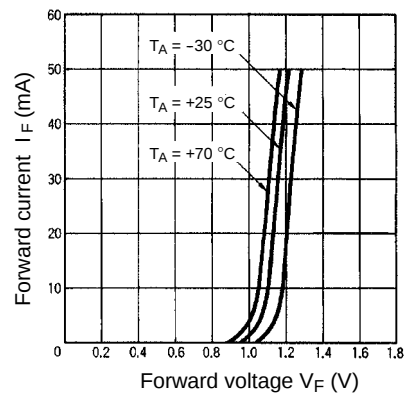
Engineering Data

Note: The operating conditions of the photomicrosensor must be within the absolute maximum rating ranges.

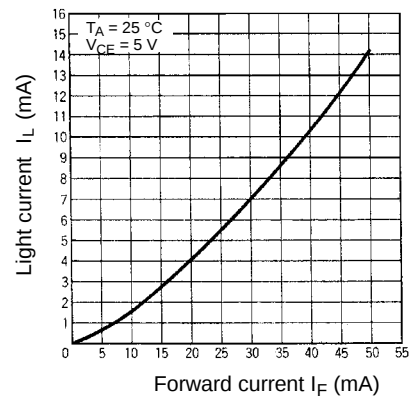
■ TEMPERATURE CHARACTERISTICS



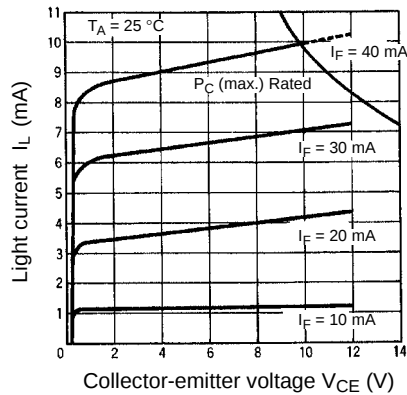
■ INPUT CHARACTERISTICS (TYPICAL)



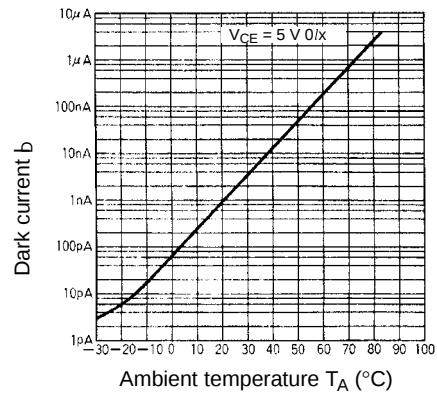
■ INPUT/OUTPUT CHARACTERISTICS (TYPICAL)



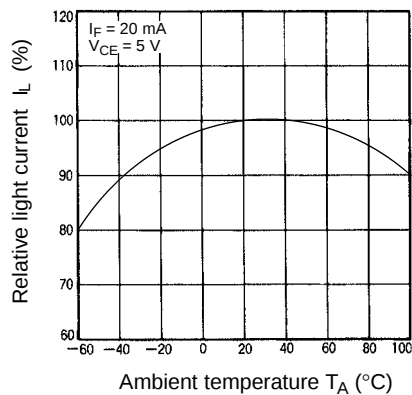
■ OUTPUT CHARACTERISTICS (TYPICAL)



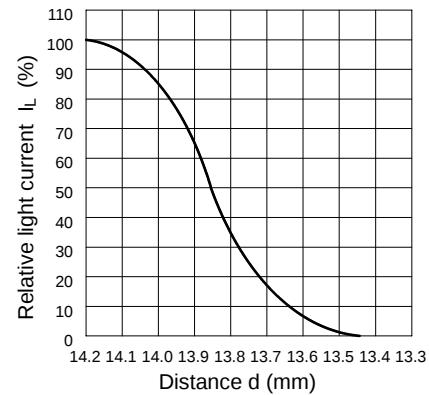
■ DARK CURRENT TEMPERATURE DEPENDENCY (TYPICAL)



■ LIGHT CURRENT TEMPERATURE DEPENDENCY (TYPICAL)



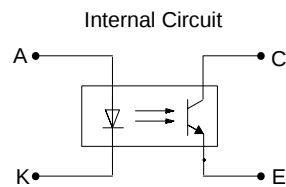
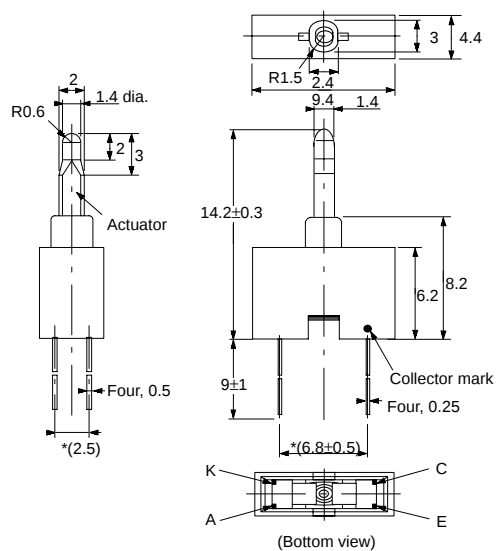
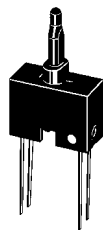
■ SENSING POSITION CHARACTERISTICS (TYPICAL)



Dimensions

Unit: mm (inch)

■ EE-SA105



Terminal No.	Name
A	Anode
K	Cathode
C	Collector
E	Emitter

Precautions

Refer to the Technical Information Section for general precautions.

Actuator Operation

Operating force must be applied to the actuator in the vertical direction only.

NOTE: DIMENSIONS SHOWN ARE IN MILLIMETERS. To convert millimeters to inches divide by 25.4.

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