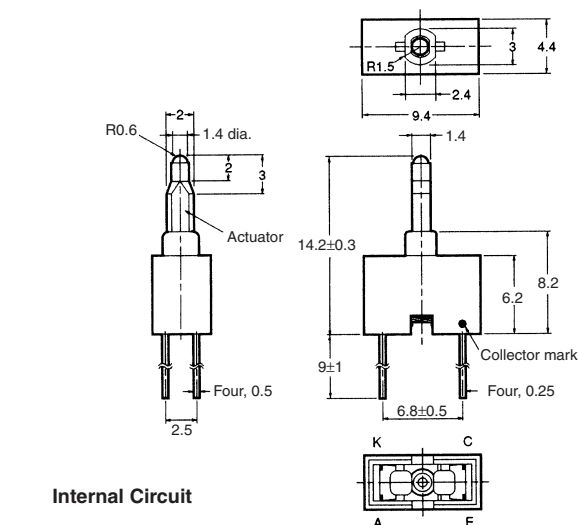


Photomicrosensor (Actuator) EE-SA105

■ Dimensions

Note: All units are in millimeters unless otherwise indicated.



Unless otherwise specified, the tolerances are as shown below.

| Dimensions | Tolerance |
|--------------|-----------|
| 3 mm max. | ±0.3 |
| 3 < mm ≤ 6 | ±0.375 |
| 6 < mm ≤ 10 | ±0.45 |
| 10 < mm ≤ 18 | ±0.55 |
| 18 < mm ≤ 30 | ±0.65 |

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

■ Features

- Model has an actuator and low operating force (0.15 N (15 gf)).
- Connects to circuits with ease.
- RoHS Compliant.

■ Absolute Maximum Ratings (Ta = 25°C)

| Item | Symbol | Rated value |
|-----------------------|---------------------------|---------------------------|
| Emitter | Forward current | I_F 50 mA (see note 1) |
| | Pulse forward current | I_{FP} 1 A (see note 2) |
| | Reverse voltage | V_R 4 V |
| | Collector–Emitter voltage | V_{CEO} 30 V |
| Detector | Emitter–Collector voltage | V_{ECO} 5 V |
| | Collector current | I_C 20 mA |
| | Collector dissipation | P_C 100 mW (see note 1) |
| Ambient temperature | Operating | T_{opr} –25°C to 70°C |
| | Storage | T_{stg} –40°C to 100°C |
| Soldering temperature | T_{sol} | 260°C (see note 3) |

Note: 1. Refer to the temperature rating chart if the ambient temperature exceeds 25°C.

2. The pulse width is 10 μ s maximum with a frequency of 100 Hz.
3. Complete soldering within 10 seconds.

■ Ordering Information

| Description | Model |
|-----------------------------|----------|
| Photomicrosensor (actuator) | EE-SA105 |

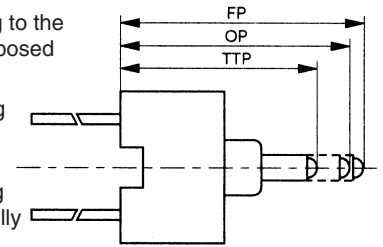
■ Electrical and Optical Characteristics (Ta = 25°C)

| 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 μ A typ., 10 μ A max. | $V_R = 4$ V |
| | Peak emission wavelength | λ_P 940 nm typ. | $I_F = 20$ mA |
| Detector | Light current | I_L 0.5 mA min. | $I_F = 20$ mA, $V_{CE} = 5$ V at free position (FP) |
| | Dark current | I_D 2 nA typ., 200 nA max. | $V_{CE} = 10$ V, 0 lx |
| | Leakage current | I_{LEAK} 10 μ A 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 |
| | Peak spectral sensitivity wavelength | λ_P 850 nm typ. | $V_{CE} = 10$ V |
| Rising time | tr | --- | --- |
| Falling time | tf | --- | --- |

■ Mechanical Characteristics

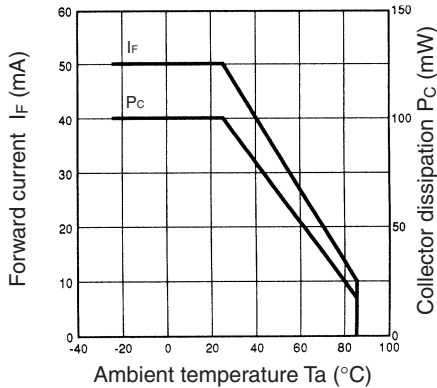
| | | |
|--|--|-------------------|
| Actuator operation ($I_F = 20$ mA, $V_{CE} = 5$ V) (see note 1) | Free position (FP): | 14.2 \pm 0.3 mm |
| | Operating position (OP): | 13.0 mm min. |
| | Total travel position (TTP): | 12.1 mm max. |
| Operating force (see note 2) | 0.15 N (15 gf) max. | |
| Mechanical life expectancy | 500,000 operations min. (The actuator traveling from its FP to FP via TTP is regarded as one operation.) | |

- Note:** 1. Free position (FP): The distance between the bottom of the housing to the top of the actuator without any external force imposed on the actuator.
- Operating position (OP): The distance between the bottom of the housing to the top of the actuator when the actuator is pressed and the I_L becomes I_{LEAK} or less.
- Total travel position (TTP): The distance between the bottom of the housing to the top of the actuator when the actuator is fully pressed.
2. Operating force: The force required to press the actuator from its FP to OP.

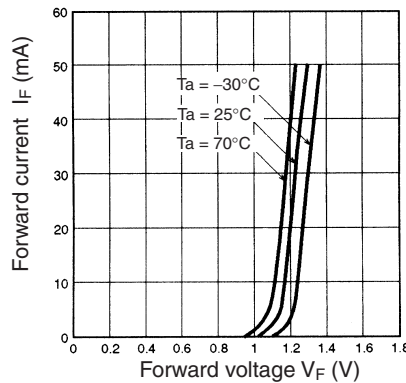


■ **Engineering Data**

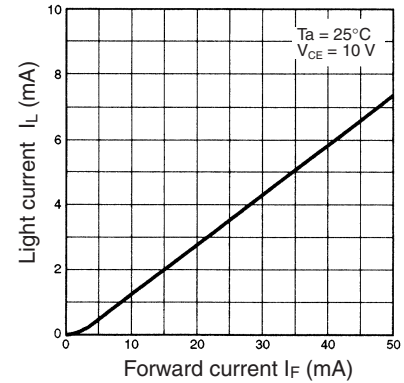
Forward Current vs. Collector Dissipation Temperature Rating



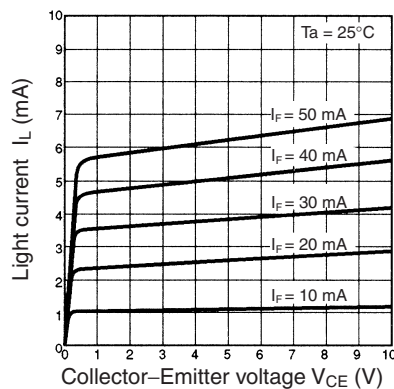
Forward Current vs. Forward Voltage Characteristics (Typical)



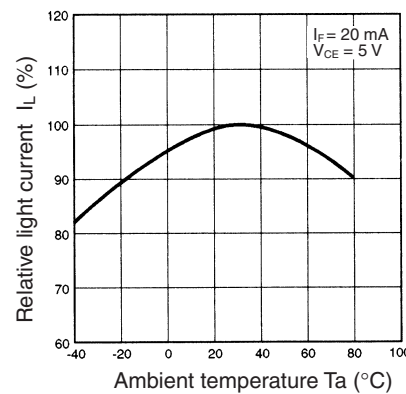
Light Current vs. Forward Current Characteristics (Typical)



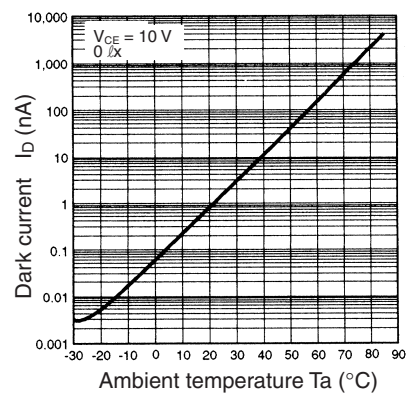
Light Current vs. Collector-Emitter Voltage Characteristics (Typical)



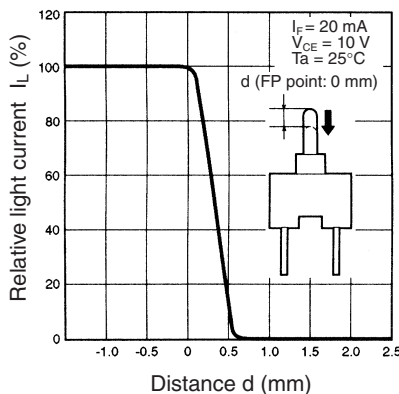
Relative Light Current vs. Ambient Temperature Characteristics (Typical)



Dark Current vs. Ambient Temperature Characteristics (Typical)



Sensing Position Characteristics (Typical)





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55 E. Commerce Drive, Suite B
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