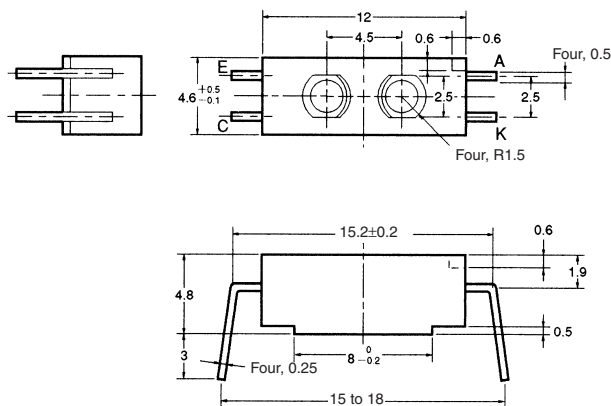


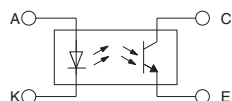
Photomicrosensor (Reflective) EE-SY110

■ Dimensions

Note: All units are in millimeters unless otherwise indicated.



Internal Circuit



Unless otherwise specified, the tolerances are as shown below.

| Dimensions | Tolerance |
|--------------|-----------|
| 3 mm max. | ±0.2 |
| 3 < mm ≤ 6 | ±0.24 |
| 6 < mm ≤ 10 | ±0.29 |
| 10 < mm ≤ 18 | ±0.35 |
| 18 < mm ≤ 30 | ±0.42 |

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

■ Features

- Compact reflective model with a molded housing.
- 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 |
| Detector | Collector–Emitter voltage | V_{CEO} 30 V |
| | Emitter–Collector voltage | V_{ECO} --- |
| | Collector current | I_C 20 mA |
| | Collector dissipation | P_C 100 mW (see note 1) |
| Ambient temperature | Operating | T_{opr} -40°C to 85°C |
| | Storage | T_{stg} -40°C to 85°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 (reflective) | EE-SY110 |

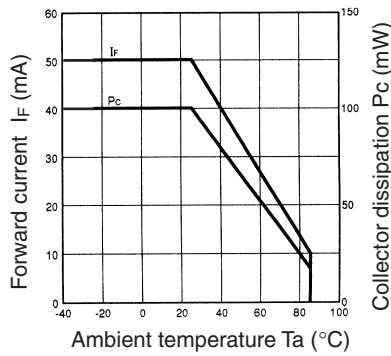
■ Electrical and Optical Characteristics (Ta = 25°C)

| 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 200 μ A min., 2,000 μ A max. | $I_F = 20$ mA, $V_{CE} = 10$ V White paper with a reflection ratio of 90%, d = 5 mm (see note) | |
| | Dark current | I_D 2 nA typ., 200 nA max. | $V_{CE} = 10$ V, 0 lx | |
| | Leakage current | I_{LEAK} 2 μ A max. | $I_F = 20$ mA, $V_{CE} = 10$ V with no reflection | |
| | Collector–Emitter saturated voltage | $V_{CE(sat)}$ | --- | --- |
| | Peak spectral sensitivity wavelength | λ_p | 850 nm typ. | $V_{CE} = 10$ V |
| Rising time | t_r | 30 μ s typ. | $V_{CC} = 5$ V, $R_L = 1$ k Ω , $I_L = 1$ mA | |
| Falling time | t_f | 30 μ s typ. | $V_{CC} = 5$ V, $R_L = 1$ k Ω , $I_L = 1$ mA | |

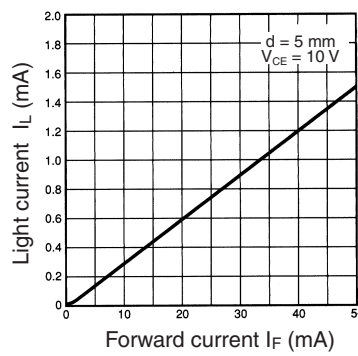
Note: The letter “d” indicates the distance between the top surface of the sensor and the sensing object.

■ Engineering Data

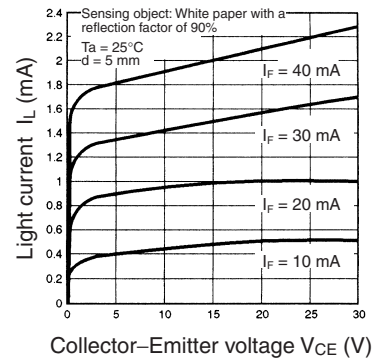
Forward Current vs. Collector Dissipation Temperature Rating



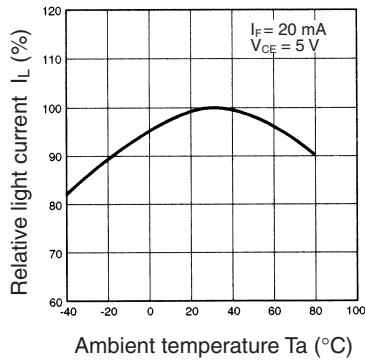
Light Current vs. Forward Current Characteristics (Typical)



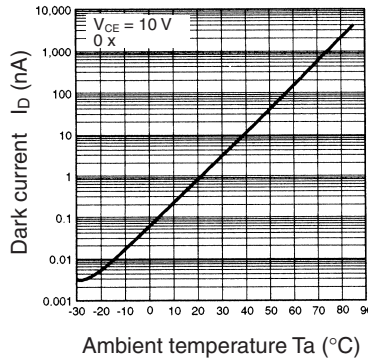
Light Current vs. Collector-Emitter Voltage Characteristics (Typical)



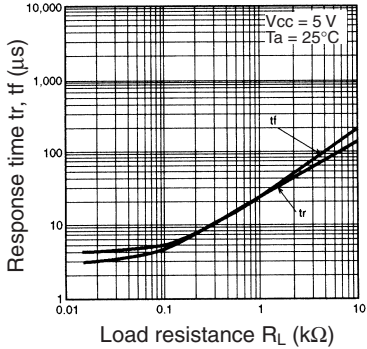
Relative Light Current vs. Ambient Temperature Characteristics (Typical)



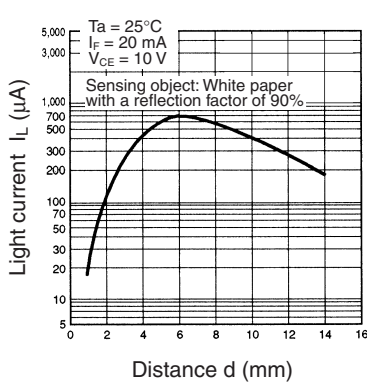
Dark Current vs. Ambient Temperature Characteristics (Typical)



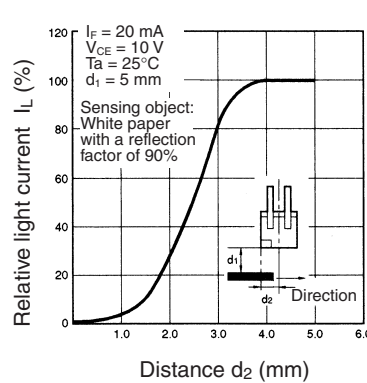
Response Time vs. Load Resistance Characteristics (Typical)



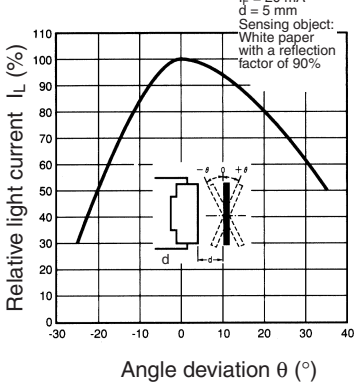
Sensing Distance Characteristics (Typical)



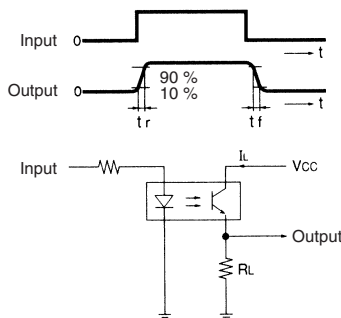
Sensing Position Characteristics (Typical)



Sensing Angle Characteristics (Typical)



Response Time Measurement Circuit





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To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

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