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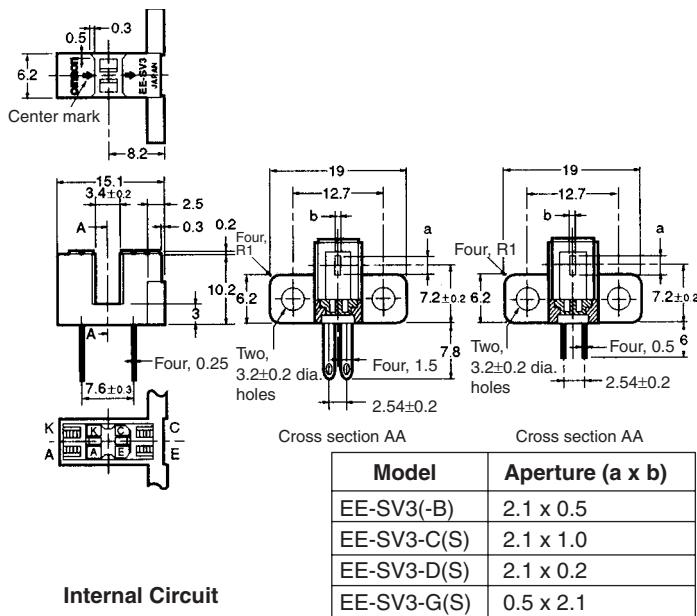
Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China

# Photomicrosensor (Transmissive) EE-SV3 Series

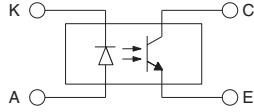
**⚠ Be sure to read *Precautions* on page 25.**

## 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     |

## Features

- High-resolution model with a 0.2-mm-wide or 0.5-mm-wide sensing aperture, high-sensitivity model with a 1-mm-wide sensing aperture, and model with a horizontal sensing aperture are available.
- Solder terminal models:  
EE-SV3/-SV3-CS/-SV3-DS/-SV3-GS
- PCB terminal models  
EE-SV3-B/-SV3-C/-SV3-D/-SV3-G

## Absolute Maximum Ratings ( $T_a = 25^\circ\text{C}$ )

| Item                  | Symbol                    | Rated value   |
|-----------------------|---------------------------|---|
| Emitter               | Forward current           | $I_F$<br>50 mA<br>(see note 1)  |
|                       | Pulse forward current     | $I_{FP}$<br>1 A<br>(see note 2)   |
|                       | Reverse voltage           | $V_R$<br>4 V  |
| Detector              | Collector-Emitter voltage | $V_{CEO}$<br>30 V   |
|                       | Emitter-Collector voltage | $V_{ECO}$<br>---  |
|                       | Collector current         | $I_C$<br>20 mA  |
|                       | Collector dissipation     | $P_C$<br>100 mW<br>(see note 1)   |
|                       | Ambient temperature       | Operating<br>$T_{opr}$<br>-25°C to 85°C<br>Storage<br>$T_{stg}$<br>-30°C to 100°C |
| Soldering temperature |                           | $T_{sol}$<br>260°C<br>(see note 3)  |

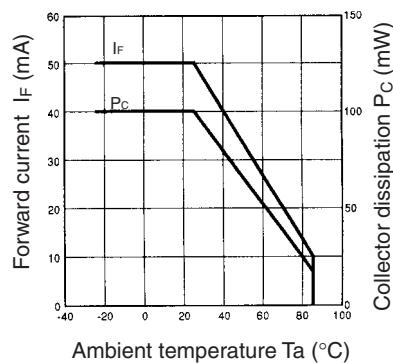
- Note:
- Refer to the temperature rating chart if the ambient temperature exceeds 25°C.
  - The pulse width is 10  $\mu\text{s}$  maximum with a frequency of 100 Hz.
  - Complete soldering within 10 seconds.

## Electrical and Optical Characteristics ( $T_a = 25^\circ\text{C}$ )

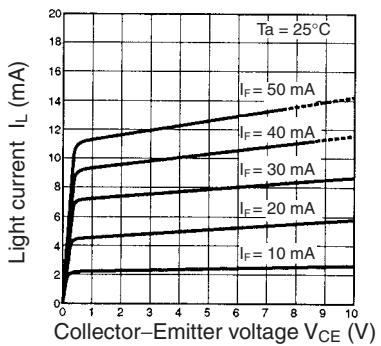
| Item         | Symbol                               | Value                 |  |             |                        | Condition   |
|--------------|--------------------------------------|-----------------------|--|-------------|------------------------|---|
|              |                                      | EE-SV3(-B)            | EE-SV3-C(S)                                    | EE-SV3-D(S) | EE-SV3-G(S)            |   |
| Emitter      | Forward voltage                      | $V_F$                 | 1.2 V typ., 1.5 V max.                         |             |                        | $I_F = 30 \text{ mA}$   |
|              | Reverse current                      | $I_R$                 | 0.01 $\mu\text{A}$ typ., 10 $\mu\text{A}$ max. |             |                        | $V_R = 4 \text{ V}$   |
|              | Peak emission wavelength             | $\lambda_p$           | 940 nm typ.                                    |             |                        | $I_F = 20 \text{ mA}$   |
| Detector     | Light current                        | $I_L$                 | 0.5 to 14 mA                                   | 1 to 28 mA  | 0.1 mA min.            | 0.5 to 14 mA  |
|              | Dark current                         | $I_D$                 | 2 nA typ., 200 nA max.                         |             |                        | $V_{CE} = 10 \text{ V}$ , $0 \text{ } \Omega$                               |
|              | Leakage current                      | $I_{LEAK}$            | ---  |             |                        | ---   |
|              | Collector-Emitter saturated voltage  | $V_{CE} (\text{sat})$ | 0.1 V typ., 0.4 V max.                         | ---         | 0.1 V typ., 0.4 V max. | $I_F = 20 \text{ mA}$ , $I_L = 0.1 \text{ mA}$                              |
|              | Peak spectral sensitivity wavelength | $\lambda_p$           | 850 nm typ.                                    |             |                        | $V_{CE} = 10 \text{ V}$   |
| Rising time  | $t_r$                                | 4 $\mu\text{s}$ typ.  |  |             |                        | $V_{CC} = 5 \text{ V}$ , $R_L = 100 \text{ } \Omega$ , $I_L = 5 \text{ mA}$ |
| Falling time | $t_f$                                | 4 $\mu\text{s}$ typ.  |  |             |                        |   |

## ■ Engineering Data

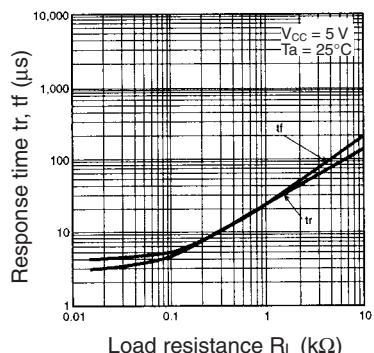
**Forward Current vs. Collector Dissipation Temperature Rating**



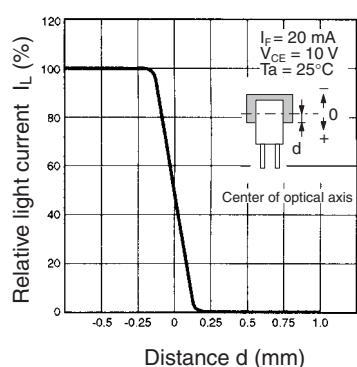
**Light Current vs. Collector-Emitter Voltage Characteristics (EE-SV3-(B))**



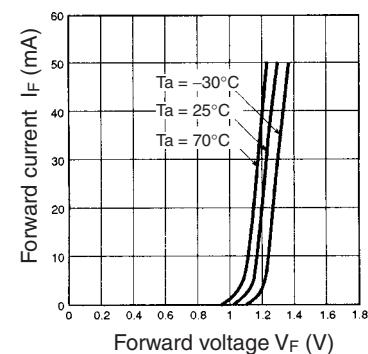
**Response Time vs. Load Resistance Characteristics (Typical)**



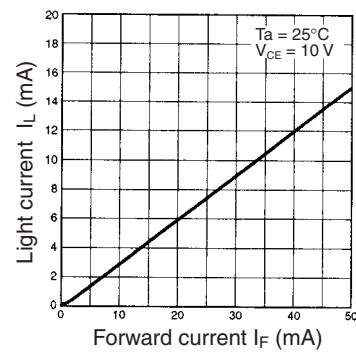
**Sensing Position Characteristics (EE-SV3-G(S))**



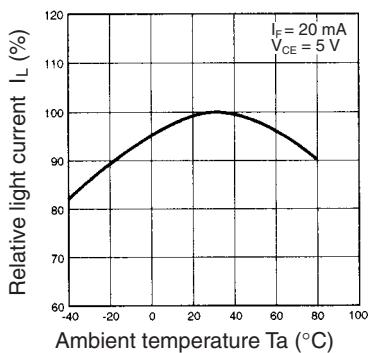
**Forward Current vs. Forward Voltage Characteristics (Typical)**



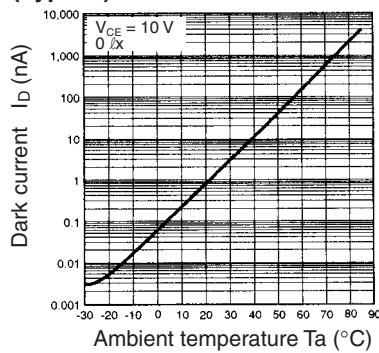
**Light Current vs. Forward Current Characteristics (Typical)**



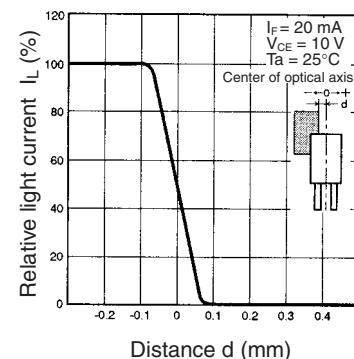
**Relative Light Current vs. Ambient Temperature Characteristics (Typical)**



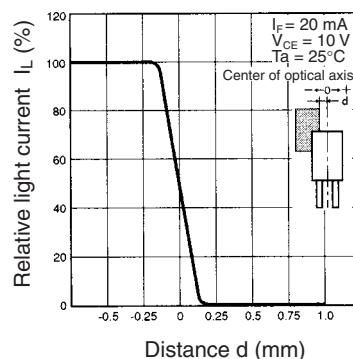
**Dark Current vs. Ambient Temperature Characteristics (Typical)**



**Sensing Position Characteristics (EE-SV3-D(S))**



**Sensing Position Characteristics (EE-SV3-(B))**



**Response Time Measurement Circuit**

