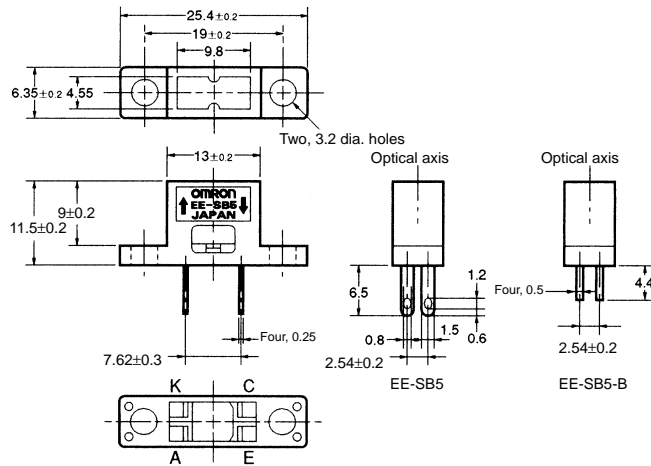
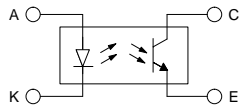


### ■ Dimensions

**Note:** All units are in millimeters unless otherwise indicated.



### Internal Circuit



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

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

### ■ Features

- Dust-tight construction.
- With a visible-light intercepting filter which allows objects to be sensed without being greatly influenced by the light radiated from fluorescent lamps.
- Mounted with M3 screws.
- Model with soldering terminals (EE-SB5).
- Model with PCB terminals (EE-SB5-B).

### ■ Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	Rated value
Emitter	Forward current	I <sub>F</sub> 50 mA (see note 1)
	Pulse forward current	I <sub>FP</sub> 1 A (see note 2)
	Reverse voltage	V <sub>R</sub> 4 V
Detector	Collector–Emitter voltage	V <sub>CEO</sub> 30 V
	Emitter–Collector voltage	V <sub>ECO</sub> ---
	Collector current	I <sub>C</sub> 20 mA
	Collector dissipation	P <sub>C</sub> 100 mW (see note 1)
Ambient temperature	Operating	Topr –25°C to 80°C
	Storage	Tstg –30°C to 80°C
Soldering temperature		Tsol 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 μs maximum with a frequency of 100 Hz.
  3. Complete soldering within 10 seconds.

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

Item	Symbol	Value	Condition
Emitter	Forward voltage	V <sub>F</sub> 1.2 V typ., 1.5 V max.	I <sub>F</sub> = 30 mA
	Reverse current	I <sub>R</sub> 0.01 μA typ., 10 μA max.	V <sub>R</sub> = 4 V
	Peak emission wavelength	λ <sub>P</sub> 940 nm typ.	I <sub>F</sub> = 20 mA
Detector	Light current	I <sub>L</sub> 200 μA min., 2,000 μA max.	I <sub>F</sub> = 20 mA, V <sub>CE</sub> = 10 V White paper with a reflection ratio of 90%, d = 5 mm (see note)
	Dark current	I <sub>D</sub> 2 nA typ., 200 nA max.	V <sub>CE</sub> = 10 V, 0 ℓx
	Leakage current	I <sub>LEAK</sub> 2 μA max.	I <sub>F</sub> = 20 mA, V <sub>CE</sub> = 10 V with no reflection
	Collector–Emitter saturated voltage	V <sub>CE (sat)</sub> ---	---
	Peak spectral sensitivity wavelength	λ <sub>P</sub> 850 nm typ.	V <sub>CE</sub> = 10 V
Rising time	t <sub>r</sub> 30 μs typ.	V <sub>CC</sub> = 5 V, R <sub>L</sub> = 1 kΩ, I <sub>L</sub> = 1 mA	
Falling time	t <sub>f</sub> 30 μs typ.	V <sub>CC</sub> = 5 V, R <sub>L</sub> = 1 kΩ, I <sub>L</sub> = 1 mA	

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