

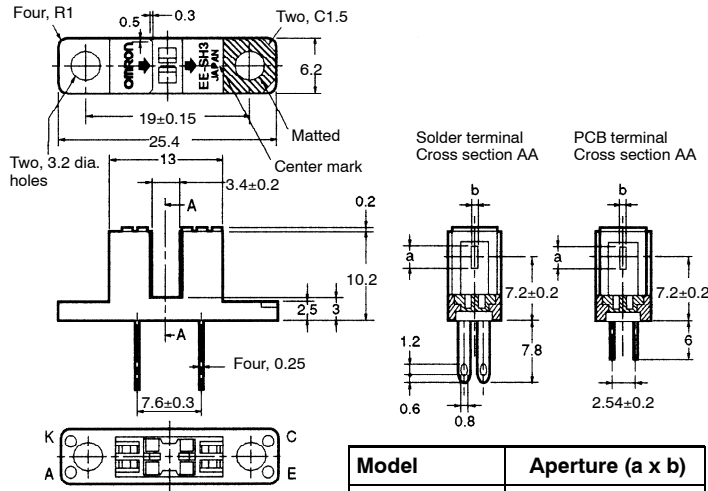
OMRON

# EE-SH3 Series

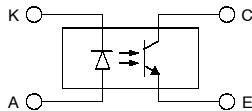
## Photomicrosensor (Transmissive)

### ■ Dimensions

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



Internal Circuit



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

Model	Aperture (a x b)
EE-SH3(-B)	2.1 x 0.5
EE-SH3-C(S)	2.1 x 1.0
EE-SH3-D(S)	2.1 x 0.2
EE-SH3-G(S)	0.5 x 2.1

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

- All models have 3.4 mm wide slot.
- Solder terminal models:  
EE-SH3/-SH3-CS/-SH3-DS/-SH3-GS
- PCB terminal models:  
EE-SH3-B/-SH3-C/-SH3-D/-SH3-G

### ■ 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	T <sub>opr</sub> -25°C to 85°C
	Storage	T <sub>stg</sub> -30°C to 100°C
Soldering temperature		T <sub>sol</sub> 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.

### ■ Ordering Information

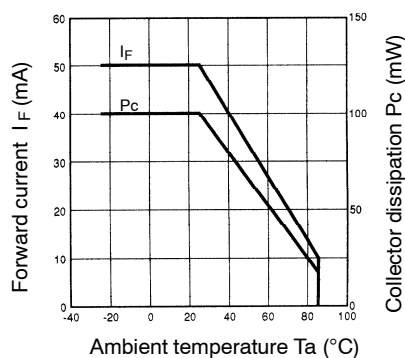
Description	Part number
Photomicrosensor (Transmissive)	EE-SH3(-B)
	EE-SH3-C(S)
	EE-SH3-D(S)
	EE-SH3-G(S)

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

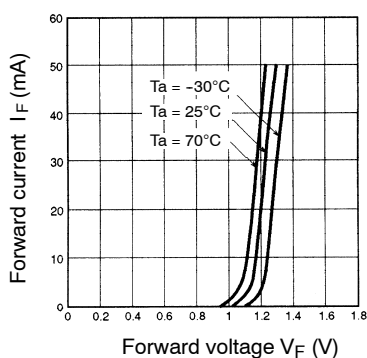
Item		Symbol	Value				Condition
			EE-SH3(-B)	EE-SH3-C(S)	EE-SH3-D(S)	EE-SH3-G(S)	
Emitter	Forward voltage	V <sub>F</sub>	1.2 V typ., 1.5 V max.				I <sub>F</sub> = 30 mA
	Reverse current	I <sub>R</sub>	0.01 μA typ., 10 μA max.				V <sub>R</sub> = 4 V
	Peak emission wavelength	λ <sub>P</sub>	940 nm typ.				I <sub>F</sub> = 20 mA
Detector	Light current	I <sub>L</sub>	0.5 to 14 mA typ.	1 to 28 mA typ.	0.1 mA min.	0.5 to 14 mA	I <sub>F</sub> = 20 mA, V <sub>CE</sub> = 10 V
	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>	---				---
	Collector-Emitter saturated voltage	V <sub>CE</sub> (sat)	0.1 V typ., 0.4 V max.		---	0.1 V typ., 0.4 V max.	I <sub>F</sub> = 20 mA, I <sub>L</sub> = 0.1 mA
	Peak spectral sensitivity wavelength	λ <sub>P</sub>	850 nm typ.				V <sub>CE</sub> = 10 V
Rising time		t <sub>r</sub>	4 μs typ.				V <sub>CC</sub> = 5 V, R <sub>L</sub> = 100 Ω, I <sub>L</sub> = 5 mA
Falling time		t <sub>f</sub>	4 μs typ.				

## ■ Engineering Data

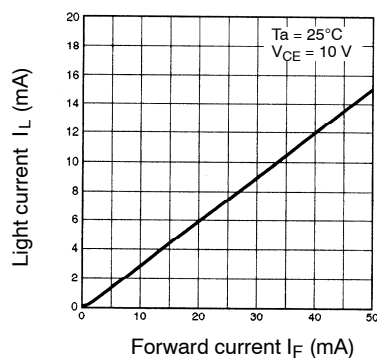
**Forward Current vs. Collector Dissipation Temperature Rating**



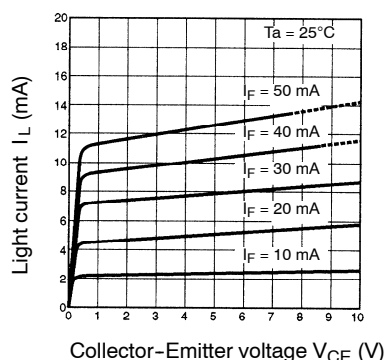
**Forward Current vs. Forward Voltage Characteristics (Typical)**



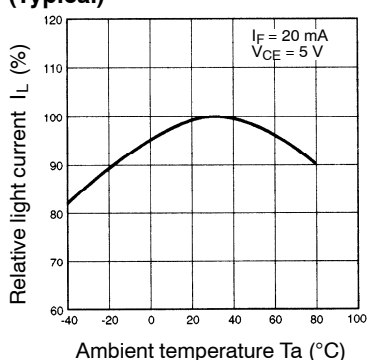
**Light Current vs. Forward Current Characteristics (Typical)**



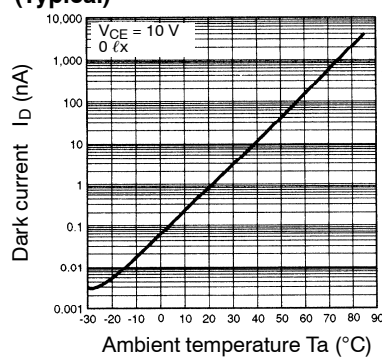
**Light Current vs. Collector-Emitter Voltage Characteristics (EE-SH3(B))**



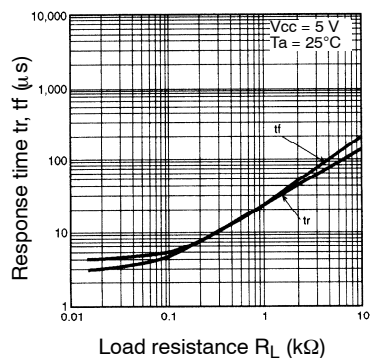
**Relative Light Current vs. Ambient Temperature Characteristics (Typical)**



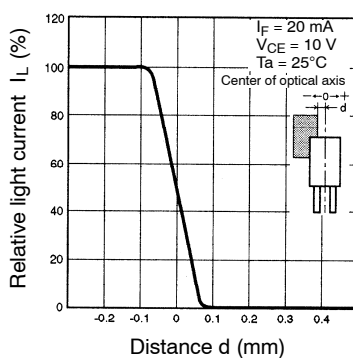
**Dark Current vs. Ambient Temperature Characteristics (Typical)**



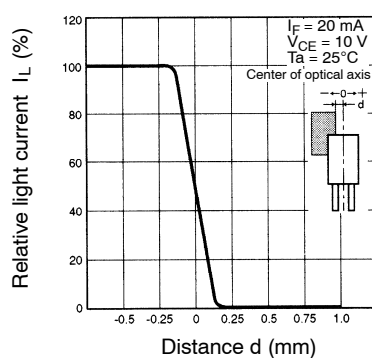
**Response Time vs. Load Resistance Characteristics (Typical)**



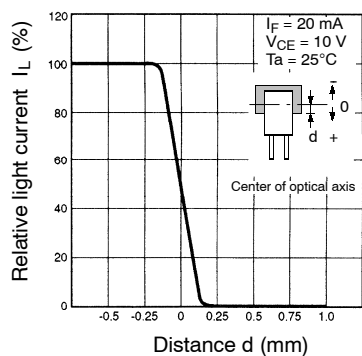
**Sensing Position Characteristics (EE-SH3-D(S))**



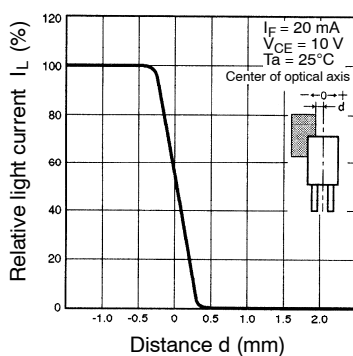
**Sensing Position Characteristics (EE-SH3(B))**



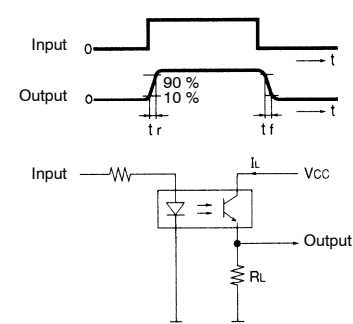
**Sensing Position Characteristics (EE-SH3-G(S))**



**Sensing Position Characteristics (EE-SH3-C(S))**



**Response Time Measurement Circuit**



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

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