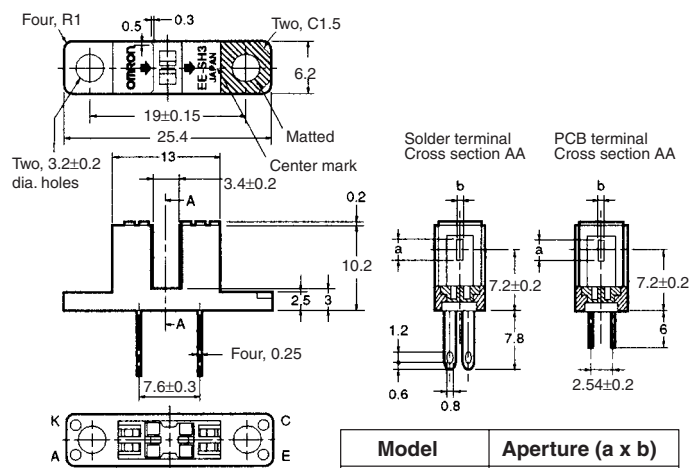


Photomicrosensor (Transmissive) EE-SH3 Series

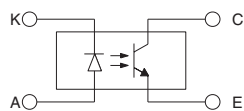
⚠ Be sure to read *Precautions* on page 25.

■ 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

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

■ 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-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_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} -25°C to 85°C
	Storage	T_{stg} -30°C to 100°C
Soldering temperature	T_{sol}	260°C (see note 3)

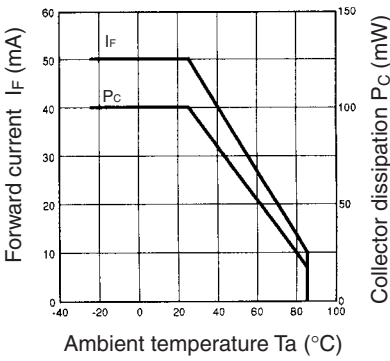
- Note:**
- Refer to the temperature rating chart if the ambient temperature exceeds 25°C.
 - The pulse width is 10 μ s maximum with a frequency of 100 Hz.
 - Complete soldering within 10 seconds.

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

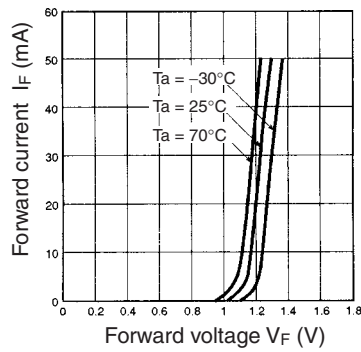
Item		Symbol	Value				Condition
			EE-SH3(-B)	EE-SH3-C(S)	EE-SH3-D(S)	EE-SH3-G(S)	
Emitter	Forward voltage	V _F	1.2 V typ., 1.5 V max.				I _F = 30 mA
	Reverse current	I _R	0.01 μA typ., 10 μA max.				V _R = 4 V
	Peak emission wave-length	λ _P	940 nm typ.				I _F = 20 mA
Detector	Light current	I _L	0.5 to 14 mA typ.	1 to 28 mA typ.	0.1 mA min.	0.5 to 14 mA	I _F = 20 mA, V _{CE} = 10 V
	Dark current	I _D	2 nA typ., 200 nA max.				V _{CE} = 10 V, 0 lx
	Leakage current	I _{LEAK}	---				---
	Collector–Emitter satu-rated voltage	V _{CE} (sat)	0.1 V typ., 0.4 V max.		---	0.1 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	4 μs typ.				V _{CC} = 5 V, R _L = 100 Ω, I _L = 5 mA
Falling time		tf	4 μs typ.				

Engineering Data

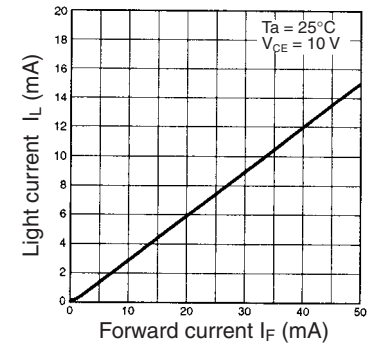
Forward Current vs. Collector Dissipation Temperature Rating



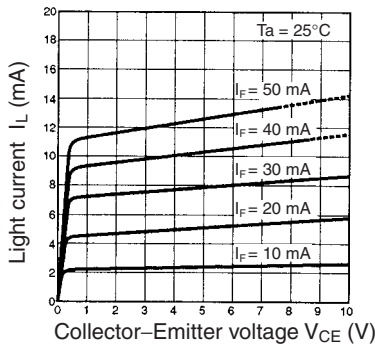
Forward Current vs. Forward Voltage Characteristics (Typical)



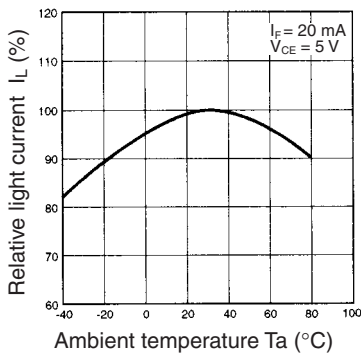
Light Current vs. Forward Current Characteristics (Typical)



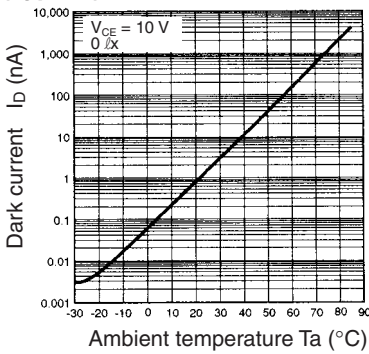
Light Current vs. Collector-Emitter Voltage Characteristics (EE-SH3(-B))



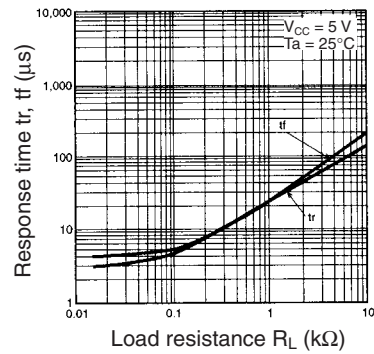
Relative Light Current vs. Ambient Temperature Characteristics (Typical)



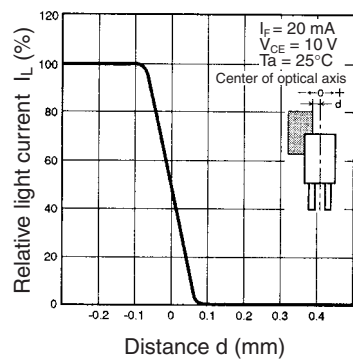
Dark Current vs. Ambient Temperature Characteristics (Typical)



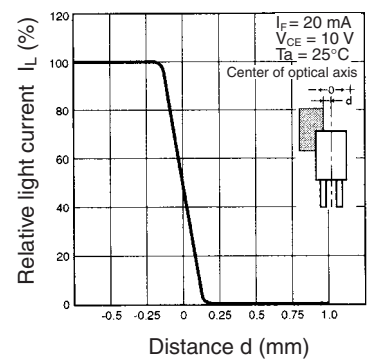
Response Time vs. Load Resistance Characteristics (Typical)



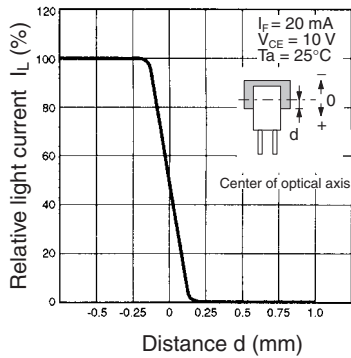
Sensing Position Characteristics (EE-SH3-D(S))



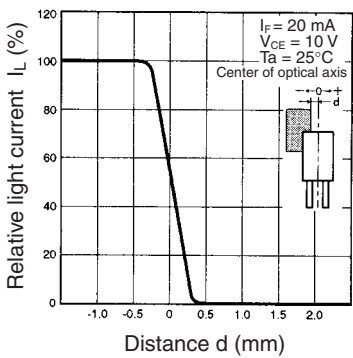
Sensing Position Characteristics (EE-SH3(-B))



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



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



Response Time Measurement Circuit

