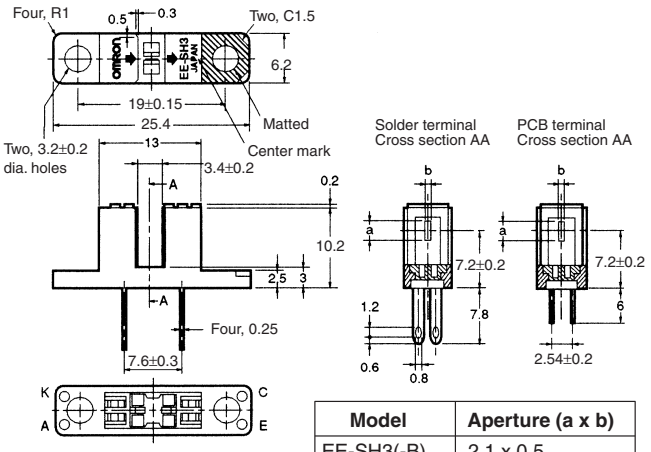
Photomicrosensor (Transmissive)
EE-SH3 Series

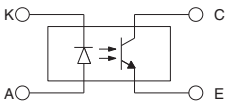
■ Dimensions

Note: All units are in millimeters unless otherwise indicated.



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

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.	±0.2
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-SH3/-SH3-CS/-SH3-DS/-SH3-GS
- PCB terminal models: EE-SH3-B/-SH3-C/-SH3-D/-SH3-G
- 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}	–25°C to 85°C
	Storage	T_{stg}	–30°C to 100°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 μs maximum with a frequency of 100 Hz.
3. Complete soldering within 10 seconds.

■ Ordering Information

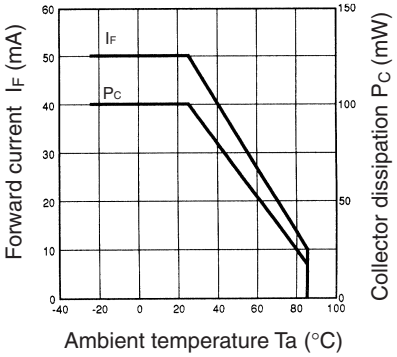
Description	Aperture (a x b)	Model
Photomicrosensor (transmissive)	2.1 x 0.5	**EE-SH3(-B)**
	2.1 x 1.0	**EE-SH3-C(S)**
	2.1 x 0.2	**EE-SH3-D(S)**
	0.5 x 2.1	**EE-SH3-G(S)**

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

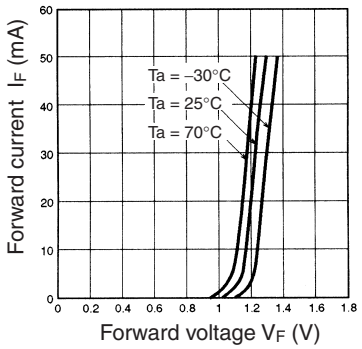
Item		Symbol	Value				Condition
			EE-SH3(-B)	EE-SH3-C(S)	EE-SH3-D(S)	EE-SH3-G(S)	
Emitter	Forward voltage	V_F	1.2 V typ., 1.5 V max.				I_F = 30 mA
	Reverse current	I_R	0.01 μA typ., 10 μA max.				V_R = 4 V
	Peak emission wavelength	λ_P	940 nm typ.				I_F = 20 mA
Detector	Light current	I_L	0.5 to 14 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 saturated 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

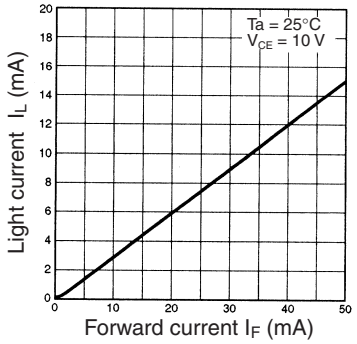
Forward Current vs. Collector Dissipation Temperature Rating



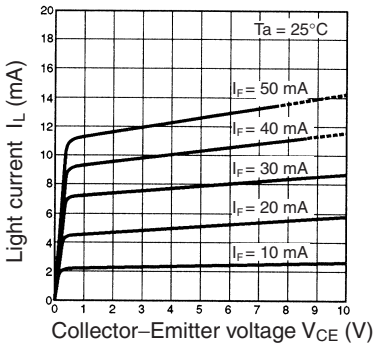
Forward Current vs. Forward Voltage Characteristics (Typical)



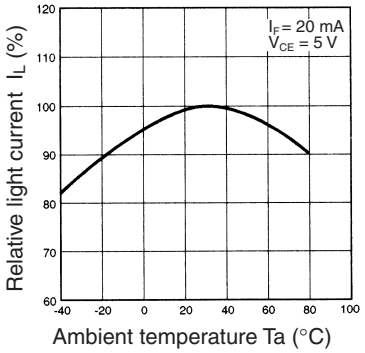
Light Current vs. Forward Current Characteristics (Typical)



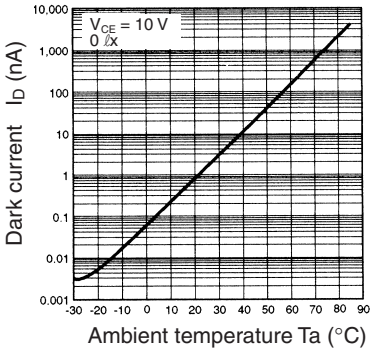
Light Current vs. Collector–Emitter Voltage Characteristics (EE-SH3(-B))



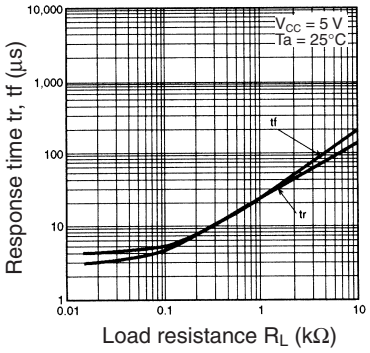
Relative Light Current vs. Ambient Temperature Characteristics (Typical)



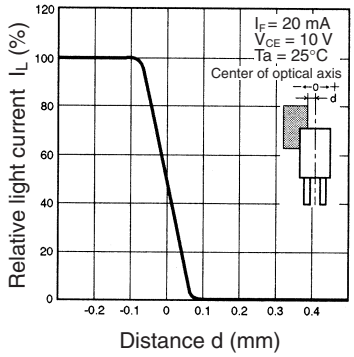
Dark Current vs. Ambient Temperature Characteristics (Typical)



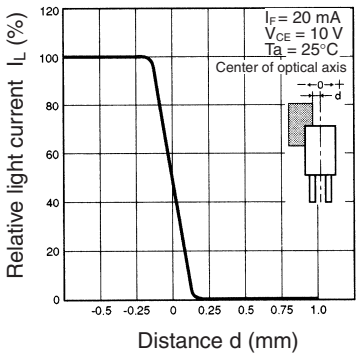
Response Time vs. Load Resistance Characteristics (Typical)



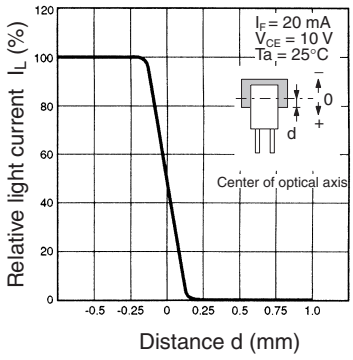
Sensing Position Characteristics (EE-SH3-D(S))



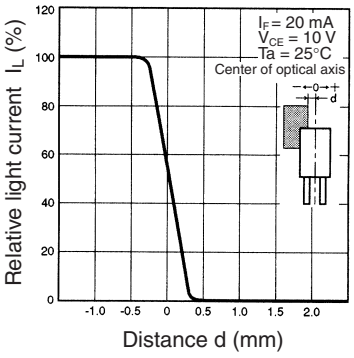
Sensing Position Characteristics (EE-SH3(-B))



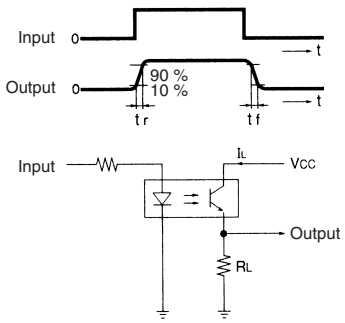
Sensing Position Characteristics (EE-SH3-G(S))



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



Response Time Measurement Circuit



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