

EE-SB5/SB5-B

Sensor Housing with Mounting Tabs Assures Secure Installation

- Excellent output characteristics
- Designed to effectively reduce influence of external light interference
- Models with soldering terminals (EE-SB5) or PCB terminals (EE-SB5-B)



Ordering Information

Appearance	Sensing method	Sensing distance	Sensing object	Output configuration	Weight	Part number
Soldering terminals 	Reflective	5 mm	White paper with reflection factor of 90%	Phototransistor	Approx. 1.0 g	EE-SB5
PCB terminals 						EE-SB5-B

Specifications

■ ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ (77°F))

Item		Symbol	Rated value
Input	Forward current	I_F	50 mA*
	Pulse forward current	I_{FP}	1 A**
	Reverse voltage	V_R	4 V
Output	Collector-emitter voltage	V_{CEO}	30 V
	Emitter-collector voltage	V_{ECO}	5 V
	Collector current	I_C	20 mA
	Collector dissipation	P_C	100 mW**
Ambient temperature	Operating	T_{opr}	-25°C to 80°C** (-13°F to 176°F)
	Storage	T_{stg}	-30°C to 80°C (-22°F to 176°F)

*Refer to Engineering Data if the ambient temperature is not within the normal room temperature range.

**This value was measured with a pulse width of 10 μs and a repeating frequency of 100 Hz.

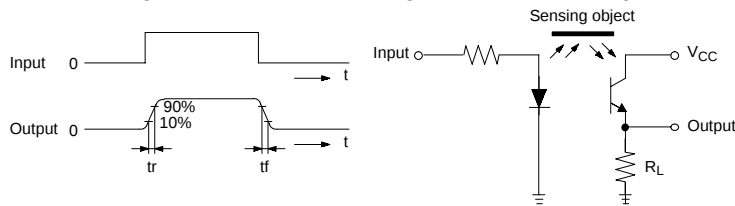
CHARACTERISTICS (T_A = 25°C (77°F))

Item		Symbol	Value	Condition
Input	Forward voltage	V _F	1.5 V max.	I _F = 30 mA
	Reverse current	I _R	10 μA max.	V _R = 4 V
	Peak emission wavelength	λ _p (L)	940 nm typ.	I _F = 20 mA
Output	Dark current	I _D	200 nA max.	V _{CE} = 10 V, 0/x
	Peak spectral sensitivity wavelength	λ _p (P)	850 nm typ.	V _{CE} = 10 V
Combination	Light current	I _L	200 to 2,000 μA	I _F = 20 mA*, V _{CE} = 10 V
	Leakage current	I _{LEAK}	2 μA max.	I _F = 20 mA**, V _{CE} = 10 V
	Rising time***	t _r	30 μs typ.	V _{CC} = 5 V, R _L = 1 kΩ
	Falling time***	t _f	30 μs typ.	I _L = 1 mA

*The sensing object is white paper with a reflection factor of 90% at a sensing distance of 5 mm.

**The sensing object reflects no light.

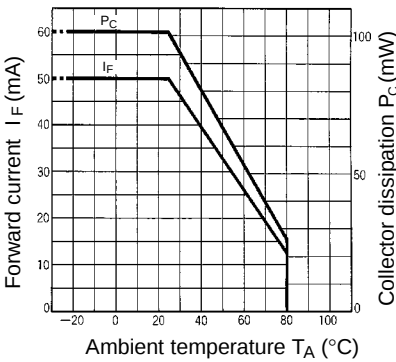
***The following illustrations show the rising time, t_r, and the falling time, t_f.



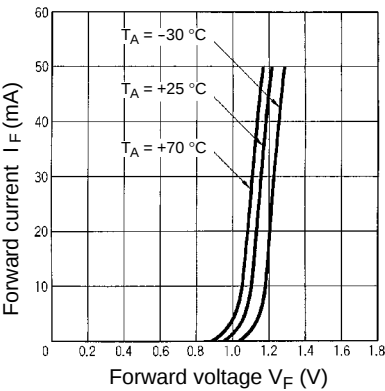
Engineering Data

Note: The operating conditions of the photomicrosensor must be within the absolute maximum rating ranges.

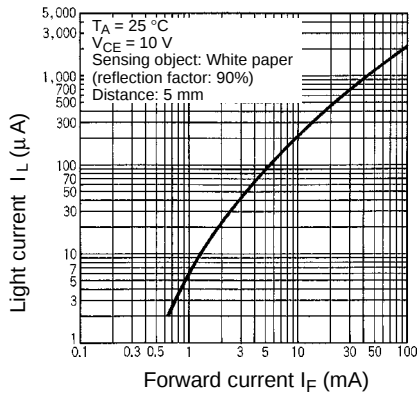
TEMPERATURE CHARACTERISTICS



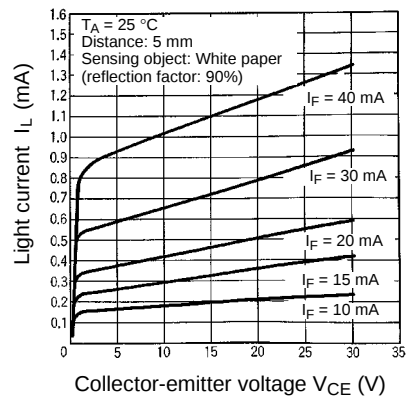
INPUT CHARACTERISTICS (TYPICAL)



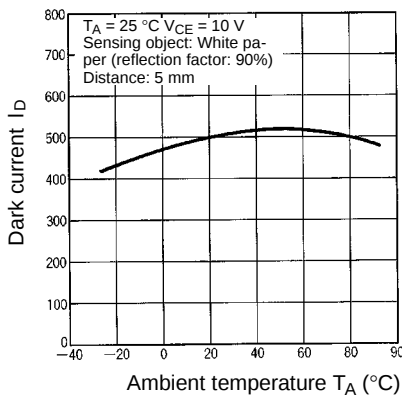
INPUT/OUTPUT CHARACTERISTICS (TYPICAL)



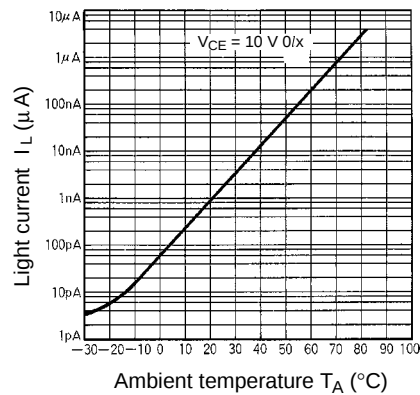
OUTPUT CHARACTERISTICS (TYPICAL)



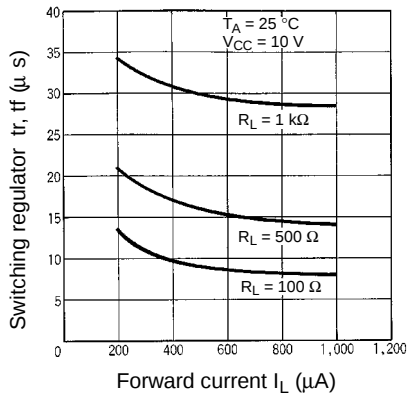
DARK CURRENT TEMPERATURE DEPENDENCY (TYPICAL)



LIGHT CURRENT TEMPERATURE DEPENDENCY (TYPICAL)

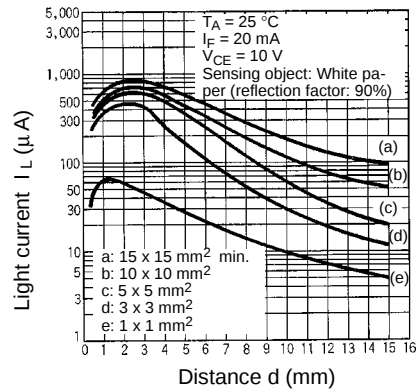


SWITCHING CHARACTERISTICS (TYPICAL)

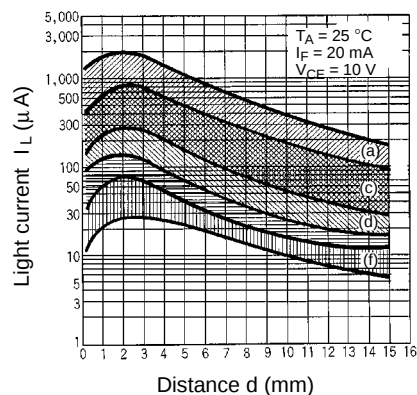


The t_r and t_f are almost the same in length.

SENSING DISTANCE CHARACTERISTICS (TYPICAL)



■ SENSING DISTANCE CHARACTERISTICS (TYPICAL 2)

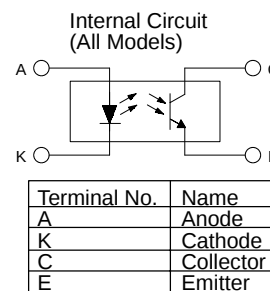
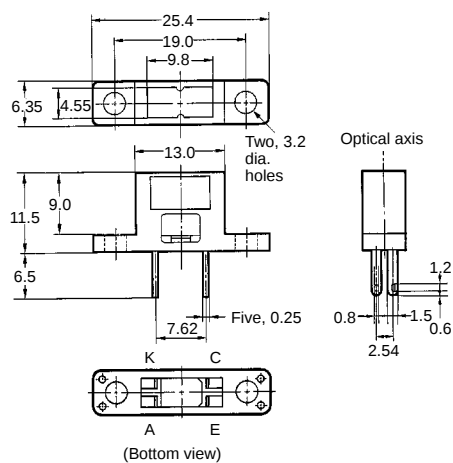
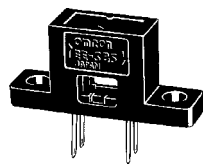


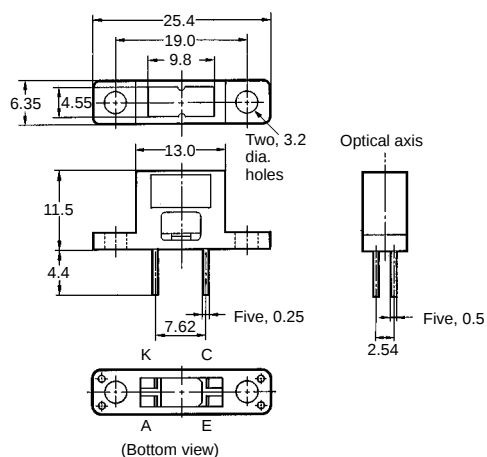
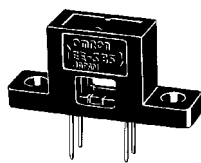
- a: Aluminum foil, glossy aluminum plate, glossy stainless steel plate with nickel plating
- b: White paper with a reflection factor of 90%
- c: Straw paper, pink paper, yellow paper, tracing paper
- d: Gray paper or black paper with a reflection distance of 18 mm
- e: Glass and OHP sheet with a transparency factor of 1.0 and glossy black Bakelite
- f: Matte black Bakelite, black copy toner
- g: Black sponge

Dimensions

Unit: mm (inch)

■ EE-SB5 (SOLDERING TERMINALS)



■ EE-SB5-B (PCB TERMINALS)

Precautions

Refer to the Technical Information section for general precautions.

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

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