



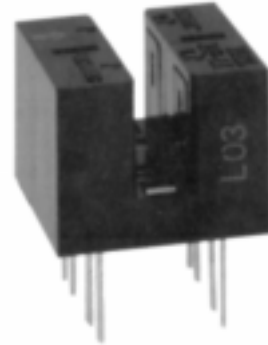
**THE DATASHEET OF  
EE-SX1031**




## EE-SX1031

### Dual Channel Phototransistor Output Ideal for Encoder Applications

- High resolution (0.5 mm) sensing
- Separate LED/Phototransistor combinations within a single housing
- PCB-mountable



### Ordering Information

Appearance	Sensing method	Slot width	Slot depth	Sensing object	Output configuration	Part number
	Transmissive	3.4 mm	7.2 mm	Opaque, 0.5 x 2.1 mm min.	Phototransistor	<b>EE-SX1031</b>

### Specifications

#### ■ ABSOLUTE MAXIMUM RATINGS (T<sub>A</sub> = 25°C (77°F))

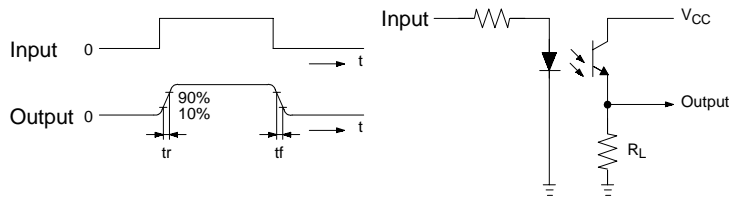
Item		Symbol	Rated value
Input	Forward current	I <sub>F</sub>	50 mA*
	Reverse voltage	V <sub>R</sub>	4 V
Output	Collector-emitter voltage	V <sub>CEO</sub>	30 V
	Collector current	I <sub>C</sub>	20 mA
	Collector dissipation	P <sub>C</sub>	100 mW
Ambient temperature	Operating	T <sub>opr</sub>	-25°C to 85°C (-13°F to 185°F)
	Storage	T <sub>stg</sub>	-30°C to 100°C (-22°F to 212°F)

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

**CHARACTERISTICS (T<sub>A</sub> = 25°C (77°F))**

Item	Symbol	Value	Condition
Emitter	Forward voltage	V <sub>F</sub>	1.2 V typ.; 1.5 V max.
	Reverse current	I <sub>R</sub>	0.01 μA typ.; 10 μA max.
	Peak emission wavelength	λ <sub>p(L)</sub>	940 nm typ.
Detector	Dark current	I <sub>D</sub>	2 nA typ.; 200 nA max.
	Peak spectral sensitivity wavelength	λ <sub>p(P)</sub>	850 nm typ.
Combination	Light current (collector current)	I <sub>L</sub>	0.5 to 14 mA
	Collector-emitter saturated voltage	V <sub>CE (sat)</sub>	0.15 V typ.; 0.4 V max.
	Rising time*	t <sub>r</sub>	4 μs typ.
	Falling time*	t <sub>f</sub>	4 μs typ.

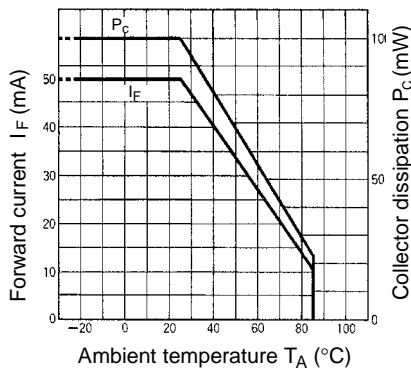
\*The following illustrations show the rising time, t<sub>r</sub>, and the falling time, t<sub>f</sub>.



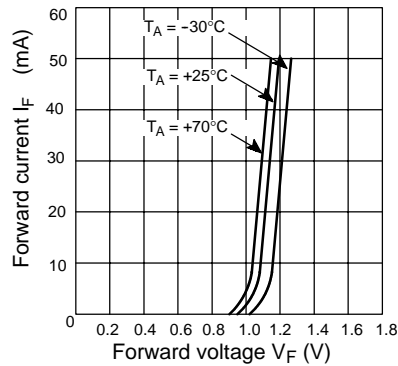
**Engineering Data**

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

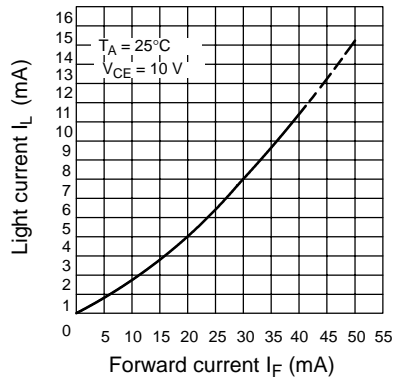
**TEMPERATURE CHARACTERISTICS**



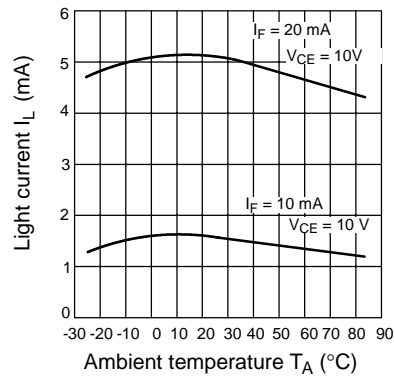
**INPUT CHARACTERISTICS (TYPICAL)**



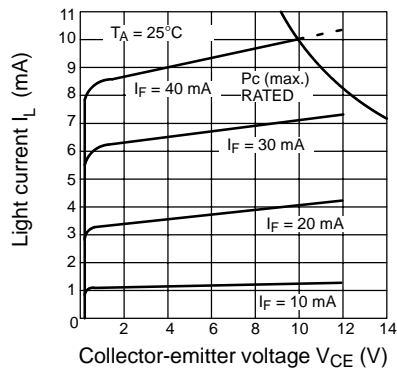
**INPUT/OUTPUT CHARACTERISTICS (TYPICAL)**



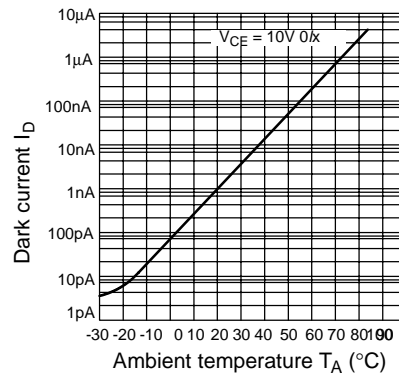
**LIGHT CURRENT TEMPERATURE DEPENDENCY (TYPICAL)**



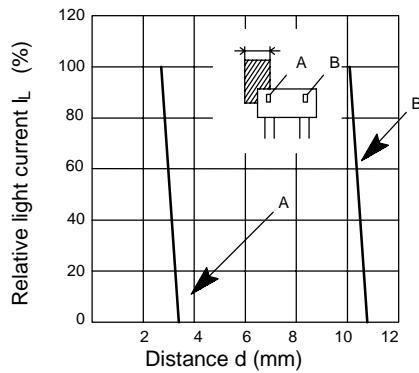
**OUTPUT CHARACTERISTIC (TYPICAL)**



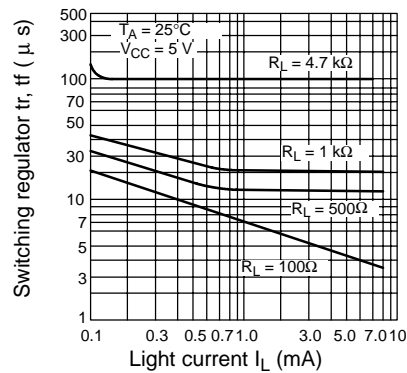
**DARK CURRENT TEMPERATURE DEPENDENCY (TYPICAL)**



**SENSING POSITION CHARACTERISTICS (TYPICAL)**



**SWITCHING CHARACTERISTICS (TYPICAL)**

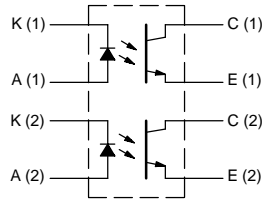
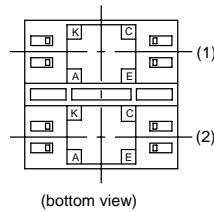
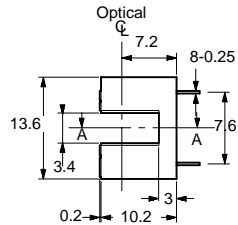
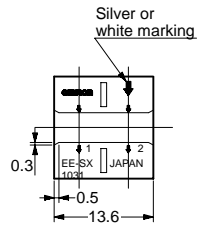
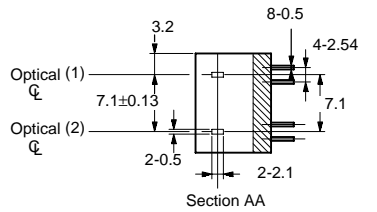
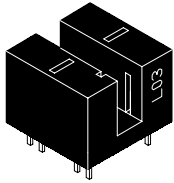


The  $t_r$  and  $t_f$  are almost the same in length.

# Dimensions

Unit: mm (inch)

## ■ EE-SX1031



# 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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