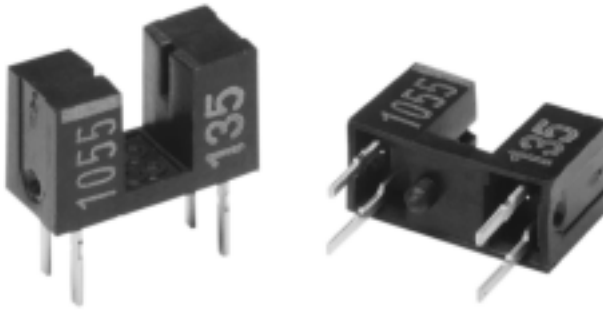
OMRON®

# EE-SX1055

## Miniature Transmissive Photomicrosensor has 3.6 mm Lead Length for 1.6 mm PCB thickness

- Physically and electrically identical to EE-SX1025 except with longer leads.
- Infrared LED and phototransistor assure long life and high reliability.
- Narrow aperture slit (0.5 mm) assures high resolution sensing.
- Compact size ideal for applications with restricted space.




## Ordering Information

| Appearance | Sensing Method | Slot Width | Sensing Object | Output Configuration | Weight | **Part Number** |
|---|---|---|---|---|---|---|
|  | Transmissive | 2.8 mm | Opaque, 0.5 x 1.5 mm min. | Phototransistor | Approx. 0.2 g | **EE-SX1055** |

## Specifications

### ■ ABSOLUTE MAXIMUM RATINGS ($T_A$ = 25°C)

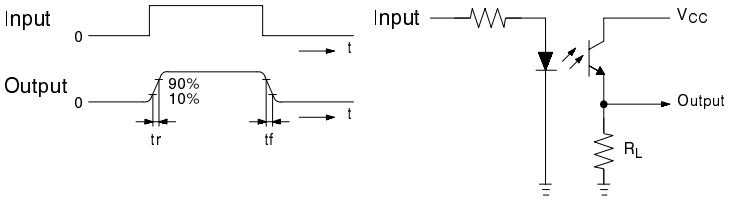
| Item | | Symbol | Rated Value |
|---|---|---|---|
| Emitter | Continuous Forward current | $I_F$ | 50 mA* |
| | Pulse Forward current | $I_{FP}$ | 1 A (frequency: 100 Hz; pulse width: 10 μs) |
| | Reverse voltage | $V_R$ | 4 V |
| Detector | Collector-emitter voltage | $V_{CEO}$ | 30 V |
| | Collector current | $I_C$ | 20 mA |
| | Collector power dissipation* | $P_C$ | 100 mW |
| Ambient temperature | Operating temperature** | Topr | −25° to 85°C |
| | Storage temperature | Tstg | −30° to 100°C |
| | Soldering temperature | Tsol | 260°C at 10 seconds max. |

*Continuous forward current ($I_F$) and collector power dissipation ($P_C$) must be derated complying with the temperature characteristics shown in Engineering Data.
**The product must be used in applications where neither freezing nor condensation takes place.

## ■ CHARACTERISTICS ($T_A$ = 25°C)

| Item | | Symbol | EE-SX1055 | |
|---|---|---|---|---|
| | | | Value | Condition |
| Emitter | Forward voltage | $V_F$ | 1.2 V typ.<br>1.5 V max. | $I_F$ = 30 mA |
| | Reverse current | $I_R$ | 0.01 μA typ.<br>10 μA max. | $V_R$ = 4 V |
| | Peak emission wavelength | λp(L) | 940 nm typ. | $I_F$ = 20 mA |
| Detector | Dark current | $I_D$ | 2 nA typ.<br>200 nA max. | $V_{CE}$ = 10 V<br>0/x |
| | Peak spectral sensitivity wavelength | λp(P) | 850 nm typ. | $V_{CE}$ = 10 V |
| Combination | Light current (collector current) | $I_L$ | 0.5 mA min.<br>14 mA max. | $I_F$ = 20 mA<br>$V_{CE}$ = 10 V |
| | Collector-emitter saturated voltage | $V_{CE}$ (sat) | 0.1 V typ.<br>0.4 V max. | $I_F$ = 20 mA<br>$I_L$ = 0.1 mA |
| | Rising time (see note) | tr | 4 μs typ. | $V_{CC}$ = 5 V<br>$R_L$ = 100 Ω<br>$I_L$ = 5 mA |
| | Falling time (see note) | tf | 4 μs typ. | |

Note: The following illustrations show the rising time, tr, and the falling time, tf.

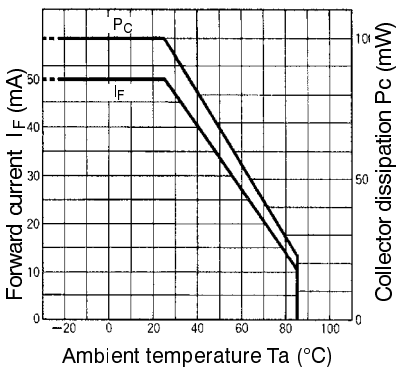



# Engineering Data

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

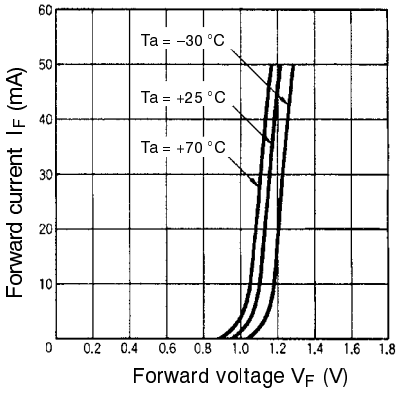
## ■ TEMPERATURE CHARACTERISTICS

**EE-SX1055**



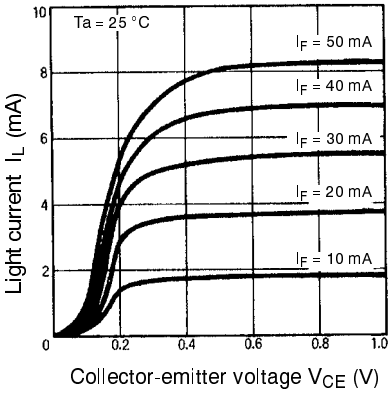

## ■ INPUT CHARACTERISTICS (TYPICAL)

**EE-SX1055**



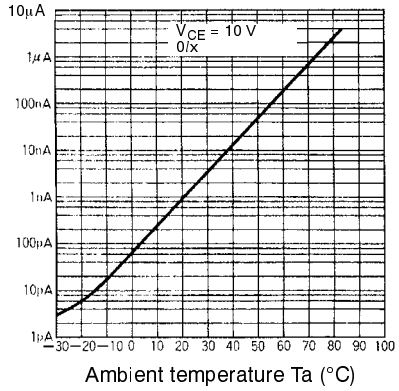

## ■ OUTPUT CHARACTERISTICS (TYPICAL)

**EE-SX1055**



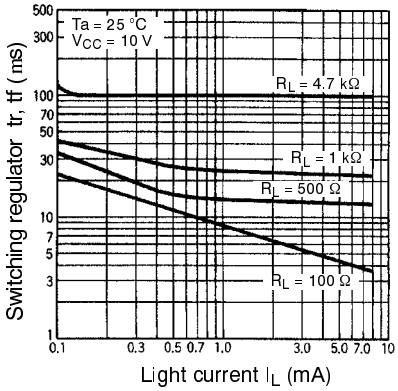
## ■ DARK CURRENT TEMPERATURE DEPENDENCY (TYPICAL)

**EE-SX1055**



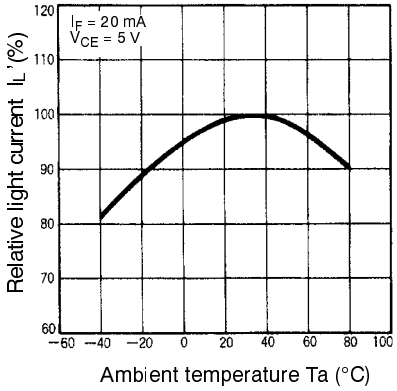

## ■ SWITCHING CHARACTERISTICS (TYPICAL)

**EE-SX1055**



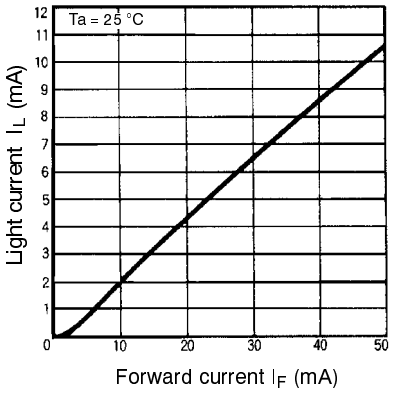

## ■ LIGHT CURRENT TEMPERATURE DEPENDENCY (TYPICAL)

**EE-SX1055**



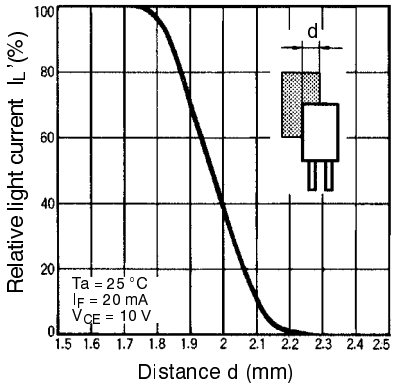

## ■ I/O CHARACTERISTICS (TYPICAL)

**EE-SX1055**




## ■ SENSING POSITION CHARACTERISTICS (TYPICAL)

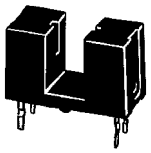
**EE-SX1055**

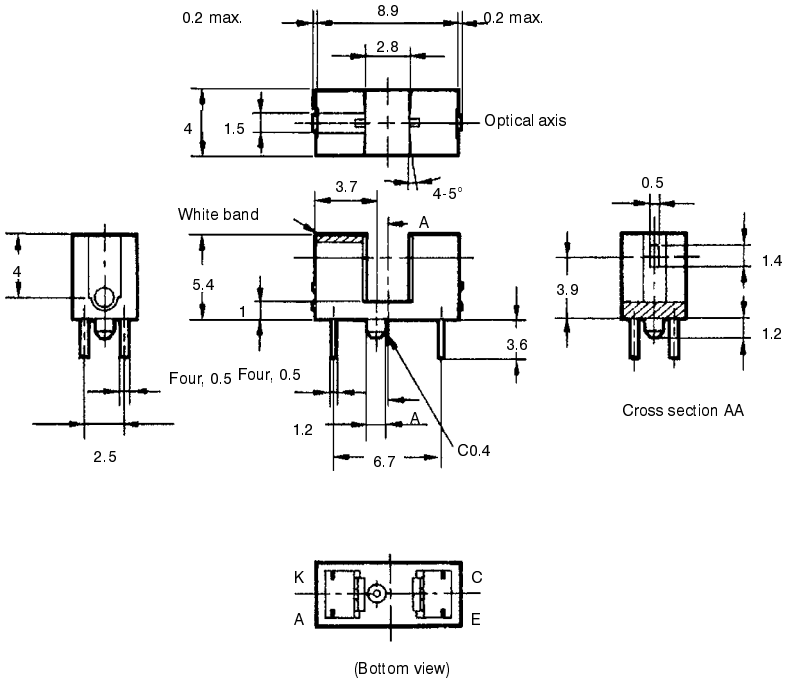


# Dimensions

Unit: mm

## ■ EE-SX1055






# Precautions

## ■ RATINGS

Using the photomicrosensor beyond its absolute maximum ratings can result in diminished life expectancy, reliability, or failure. OMRON does not assume responsibility for any change in the characteristics and/or performance of the device due to use beyond the absolute maximum ratings.

## ■ SURGE

Electrical surges, incorrect wiring or voltage could result in damage to the photomicrosensor.

## ■ INSTALLATION

Photomicrosensors with non-modulated light sources are not protected against incandescent lights or sunlight, and should not be located in areas where such external light sources exists. Photomicrosensors equipped with an internal modulated light source are not affected by external light sources.

When installing the photomicrosensor, always mount it on a flat surface. If mounted on a curved or irregular surface, the electrical characteristics of the sensor can be altered due to a change in the slot width.

For proper connection of the photomicrosensor, refer to the terminal diagram on the data sheet. Incorrect wiring or connections can result in damage to the photomicrosensor.

## ■ RELIABILITY

For maximum reliability and life expectancy use the photomicrosensor at temperatures within the rated operating temperature range. If the ambient temperature abruptly changes from a low (0°C or lower) to a high temperature, condensation may occur on the surface of the light source and/or receiver, thus causing a malfunction.

Mount the photomicrosensor in a dust-free environment. Check that the light-receiving window is clean. If necessary, clean-off the window using a dry cloth.

Keep the photomicrosensor in a dry storage location to prevent the terminals from corroding.

The sensing window and case of most photomicrosensor models are made of a polycarbonate resin which withstands alcohol and chloride solvents, but which is soluble in strong alkali, aromatic hydrocarbons, and aliphatic hydrocarbonate chloride solvents.

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

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