## Photomicrosensor (Transmissive) EE-SX1096

Be sure to read Precautions on page 25.

- Dimensions

Note: All units are in millimeters unless otherwise indicated.


| 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. | $\pm 0.3$ |
| $3<\mathrm{mm} \leq 6$ | $\pm 0.375$ |
| $6<\mathrm{mm} \leq 10$ | $\pm 0.45$ |
| $10<\mathrm{mm} \leq 18$ | $\pm 0.55$ |
| $18<\mathrm{mm} \leq 30$ | $\pm 0.65$ |

## Features

- General-purpose model with a 3.4-mm-wide slot.
- Mounts to PCBs or connects to connectors.
- High resolution with a 0.5 -mm-wide aperture.
- With a horizontal sensing slot.
- OMRON's XK8-series Connectors can be connected without soldering. Contact your OMRON representative for information on obtaining XK8-series Connectors.
- Absolute Maximum Ratings ( $\mathbf{T a}=\mathbf{2 5}{ }^{\circ} \mathrm{C}$ )

| Item |  |  |  |
| :--- | :--- | :--- | :--- |
| Emitter | Forward current | $\mathrm{I}_{\mathrm{F}}$ | 50 mA <br> (see note 1) |
|  | Pulse forward cur- <br> rent | $\mathrm{I}_{\mathrm{FP}}$ | 1 A <br> (see note 2) |
|  | Reverse voltage | $\mathrm{V}_{\mathrm{R}}$ | 4 V |
| Detector | Collector-Emitter <br> voltage | $\mathrm{V}_{\mathrm{CEO}}$ | 30 V |
|  | Emitter-Collector <br> voltage | $\mathrm{V}_{\mathrm{ECO}}$ | --- |
|  | Collector current | $\mathrm{I}_{\mathrm{C}}$ | 20 mA |
|  | Collector dissipa- <br> tion | $\mathrm{P}_{\mathrm{C}}$ | 100 mW <br> $($ see note 1) |
| Ambient tem- <br> perature | Operating | Topr | $-25^{\circ} \mathrm{C}$ to 85 ${ }^{\circ} \mathrm{C}$ |
|  | Storage | Tstg | $-30^{\circ} \mathrm{C}$ to 100 ${ }^{\circ} \mathrm{C}$ |
| Soldering temperature | Tsol | $260^{\circ} \mathrm{C}$ <br> $($ see note 3) |  |

Note: 1. Refer to the temperature rating chart if the ambient temperature exceeds $25^{\circ} \mathrm{C}$.
2. The pulse width is $10 \mu \mathrm{~s}$ maximum with a frequency of 100 Hz .
3. Complete soldering within 10 seconds.

Electrical and Optical Characteristics ( $\mathbf{T a}=\mathbf{2 5}{ }^{\circ} \mathrm{C}$ )

| Item |  | Symbol | Value | Condition |
| :---: | :---: | :---: | :---: | :---: |
| Emitter | Forward voltage | $\mathrm{V}_{\mathrm{F}}$ | 1.2 V typ., 1.5 V max. | $\mathrm{I}_{\mathrm{F}}=30 \mathrm{~mA}$ |
|  | Reverse current | $\mathrm{I}_{\mathrm{R}}$ | $0.01 \mu \mathrm{~A}$ typ., $10 \mu \mathrm{~A}$ max. | $\mathrm{V}_{\mathrm{R}}=4 \mathrm{~V}$ |
|  | Peak emission wavelength | $\lambda_{P}$ | 940 nm typ. | $\mathrm{I}_{\mathrm{F}}=20 \mathrm{~mA}$ |
| Detector | Light current | $\mathrm{I}_{\mathrm{L}}$ | 0.5 mA min., 14 mA max. | $\mathrm{I}_{\mathrm{F}}=20 \mathrm{~mA}, \mathrm{~V}_{\mathrm{CE}}=10 \mathrm{~V}$ |
|  | Dark current | $\mathrm{I}_{\mathrm{D}}$ | 2 nA typ., 200 nA max. | $\mathrm{V}_{\mathrm{CE}}=10 \mathrm{~V}, 0 \mathrm{~lx}$ |
|  | Leakage current | $\mathrm{I}_{\text {LEAK }}$ | --- | --- |
|  | Collector-Emitter saturated voltage | $\mathrm{V}_{\mathrm{CE}}$ (sat) | 0.1 V typ., 0.4 V max. | $\mathrm{I}_{\mathrm{F}}=20 \mathrm{~mA}, \mathrm{I}_{\mathrm{L}}=0.1 \mathrm{~mA}$ |
|  | Peak spectral sensitivity wavelength | $\lambda_{P}$ | 850 nm typ. | $\mathrm{V}_{\mathrm{CE}}=10 \mathrm{~V}$ |
| Rising time |  | tr | $4 \mu \mathrm{~s}$ typ. | $\mathrm{V}_{\mathrm{CC}}=5 \mathrm{~V}, \mathrm{R}_{\mathrm{L}}=100 \Omega, \mathrm{I}_{\mathrm{L}}=5 \mathrm{~mA}$ |
| Falling time |  | tf | $4 \mu \mathrm{~s}$ typ. | $\mathrm{V}_{\mathrm{CC}}=5 \mathrm{~V}, \mathrm{R}_{\mathrm{L}}=100 \Omega, \mathrm{I}_{\mathrm{L}}=5 \mathrm{~mA}$ |

## Engineering Data

Forward Current vs. Collector Dissipation Temperature Rating


Light Current vs. Collector-Emitter Voltage Characteristics (Typical)


Response Time vs. Load Resistance Characteristics (Typical)


Load resistance $\mathrm{R}_{\mathrm{L}}(\mathrm{k} \Omega)$
Response Time Measurement Circuit


Forward Current vs. Forward Voltage Characteristics (Typical)


Relative Light Current vs. Ambient Temperature Characteristics (Typical)


Sensing Position Characteristics (Typical)


Light Current vs. Forward Current Characteristics (Typical)


Dark Current vs. Ambient Temperature Characteristics (Typical)


Sensing Position Characteristics (Typical)


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