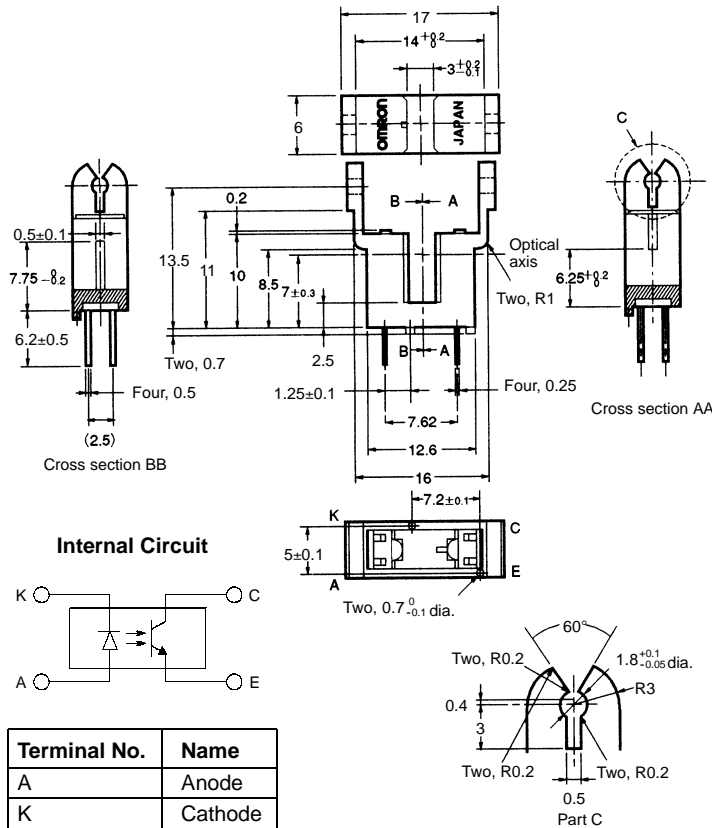


■ Dimensions

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 ±0.2.

■ Features

- An actuator can be attached.
- PCB mounting type.
- High resolution with a 0.5-mm-wide slit.

■ 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
Receiver	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)

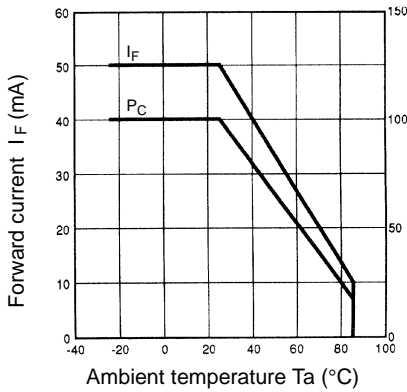
- Note:
1. Refer to the temperature rating chart if the ambient temperature exceeds 25°C.
 2. The pulse width is 10 μs maximum with a frequency of 100 Hz.
 3. Complete soldering within 10 seconds.

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

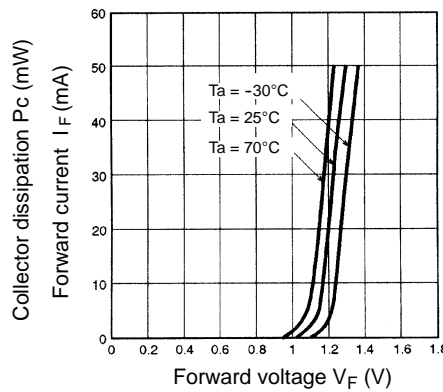
Item	Symbol	Value	Condition
Emitter	Forward voltage	V_F 1.2 V typ., 1.5 V max.	$I_F = 30$ mA
	Reverse current	I_R 0.01 μA typ., 10 μA max.	$V_R = 4$ V
	Peak emission wavelength	λ_P 940 nm typ.	$I_F = 20$ mA
Receiver	Light current	I_L 0.5 mA min., 14 mA max.	$I_F = 20$ mA, $V_{CE} = 10$ V
	Dark current	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.	$I_F = 20$ mA, $I_L = 0.1$ mA
	Peak spectral sensitivity wavelength	λ_P 850 nm typ.	$V_{CE} = 10$ V
Rising time	t_r	4 μs typ.	$V_{CC} = 5$ V, $R_L = 100 \Omega$, $I_L = 5$ mA
Falling time	t_f	4 μs typ.	$V_{CC} = 5$ V, $R_L = 100 \Omega$, $I_L = 5$ mA

■ Engineering Data

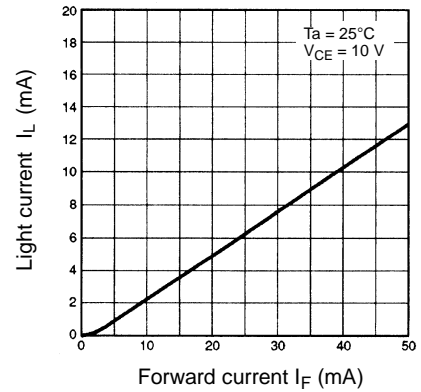
Forward Current vs. Collector Dissipation Temperature Rating



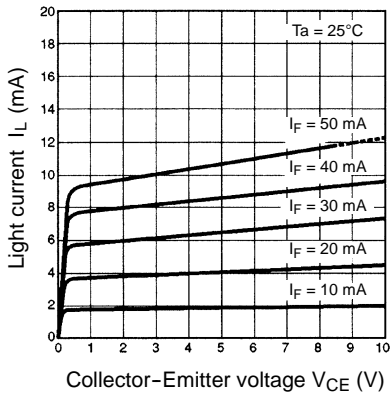
Forward Current vs. Forward Voltage Characteristics (Typical)



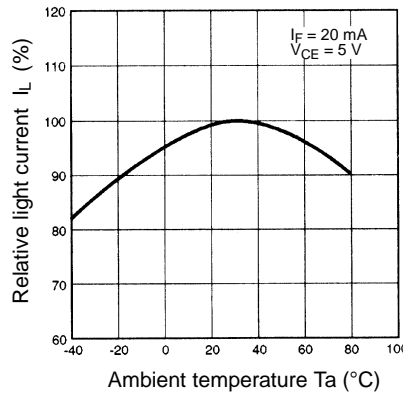
Light Current vs. Forward Current Characteristics (Typical)



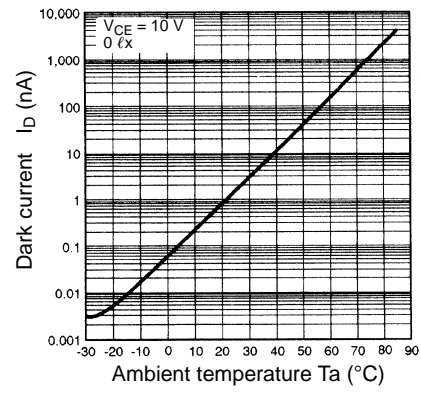
Light Current vs. Collector-Emitter Voltage Characteristics (Typical)



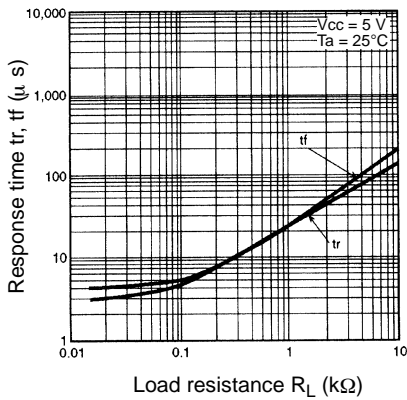
Relative Light Current vs. Ambient Temperature Characteristics (Typical)



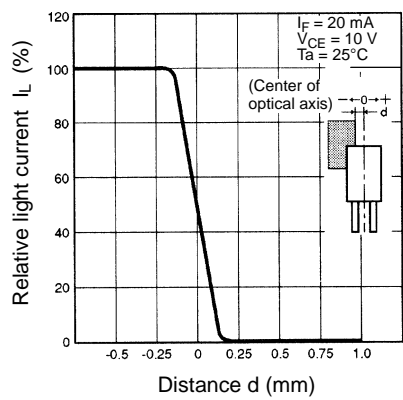
Dark Current vs. Ambient Temperature Characteristics (Typical)



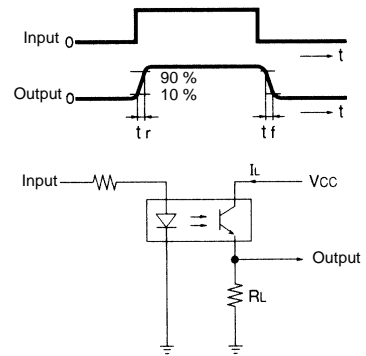
Response Time vs. Load Resistance Characteristics (Typical)



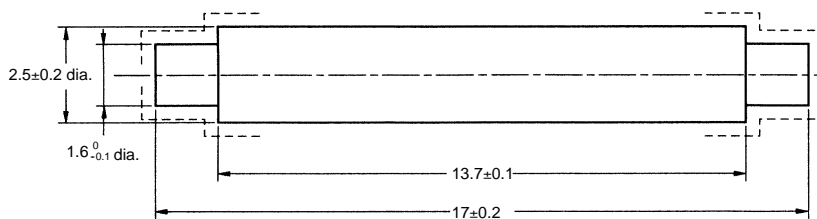
Sensing Position Characteristics (Typical)



Response Time Measurement Circuit



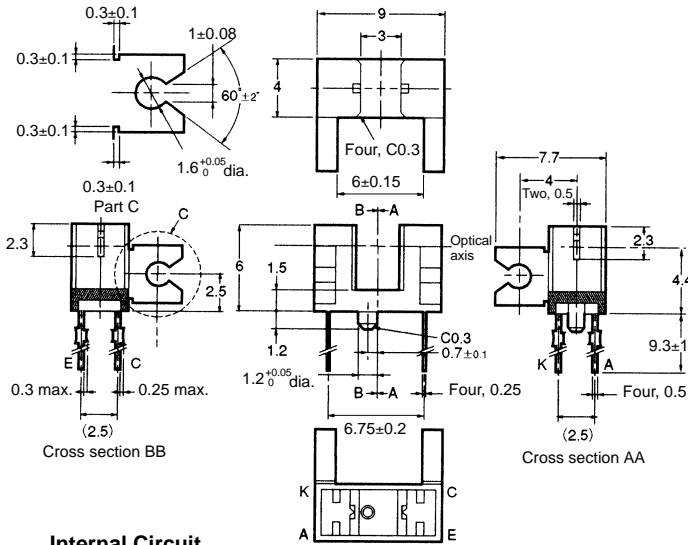
Actuator Dimensions



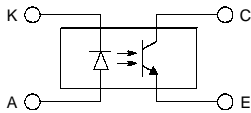
- Note:**
1. Make sure that the portions marked with dotted lines have no burrs.
 2. The material of the actuator must be selected by considering the infrared permeability of the actuator.

■ Dimensions

Note: All units are in millimeters unless otherwise indicated.



Internal Circuit



Unless otherwise specified, the tolerances are as shown below.

Dimensions	Tolerance
3 mm max.	±0.3
3 < mm ≤ 6	±0.375
6 < mm ≤ 10	±0.45
10 < mm ≤ 18	±0.55
18 < mm ≤ 30	±0.65

Terminal No.	Name
A	Anode
K	Cathode
C	Collector
E	Emitter

■ Features

- An actuator can be attached.
- PCB mounting type.
- High resolution with a 0.5-mm-wide slit.

■ 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
Receiver	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)

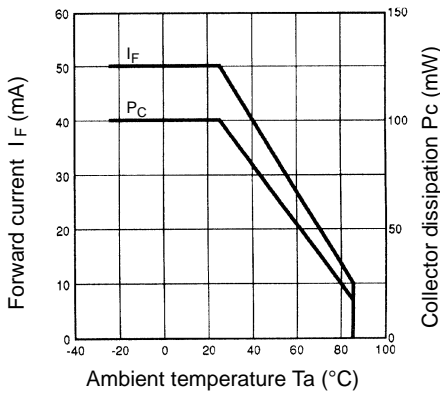
- Note:
1. Refer to the temperature rating chart if the ambient temperature exceeds 25°C.
 2. The pulse width is 10 μs maximum with a frequency of 100 Hz.
 3. Complete soldering within 10 seconds.

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

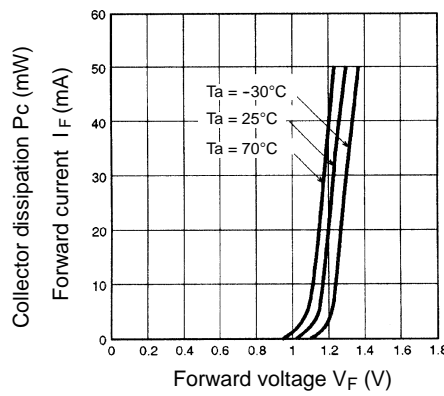
Item	Symbol	Value	Condition
Emitter	Forward voltage	V_F 1.2 V typ., 1.5 V max.	$I_F = 30$ mA
	Reverse current	I_R 0.01 μA typ., 10 μA max.	$V_R = 4$ V
	Peak emission wavelength	λ_P 940 nm typ.	$I_F = 20$ mA
Receiver	Light current	I_L 0.5 mA min., 14 mA max.	$I_F = 20$ mA, $V_{CE} = 10$ V
	Dark current	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.	$I_F = 20$ mA, $I_L = 0.1$ mA
	Peak spectral sensitivity wavelength	λ_P 850 nm typ.	$V_{CE} = 10$ V
Rising time	t_r	4 μs typ.	$V_{CC} = 5$ V, $R_L = 100 \Omega$, $I_L = 5$ mA
Falling time	t_f	4 μs typ.	$V_{CC} = 5$ V, $R_L = 100 \Omega$, $I_L = 5$ mA

■ Engineering Data

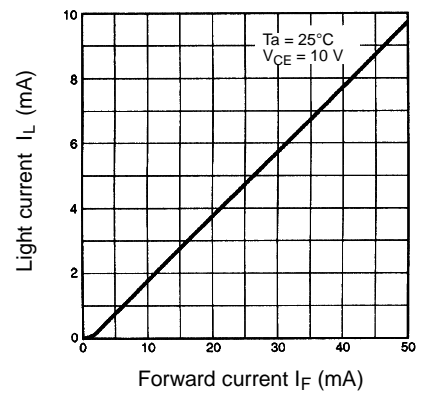
Forward Current vs. Collector Dissipation Temperature Rating



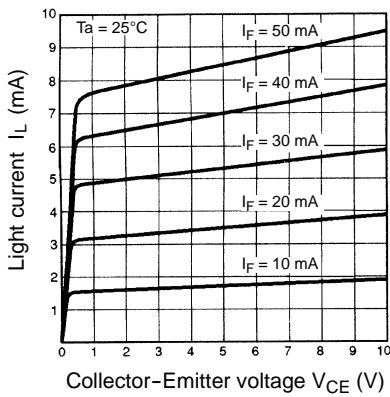
Forward Current vs. Forward Voltage Characteristics (Typical)



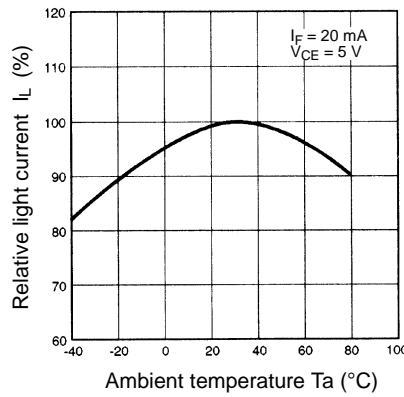
Light Current vs. Forward Current Characteristics (Typical)



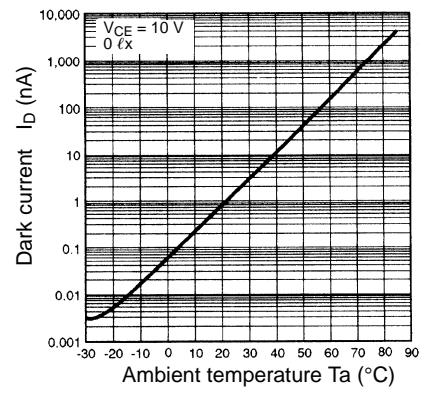
Light Current vs. Collector-Emitter Voltage Characteristics (Typical)



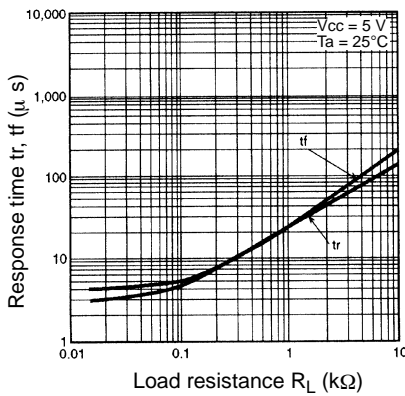
Relative Light Current vs. Ambient Temperature Characteristics (Typical)



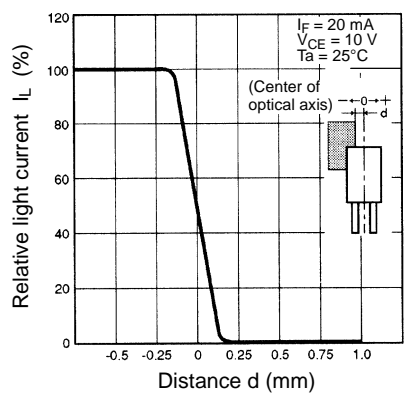
Dark Current vs. Ambient Temperature Characteristics (Typical)



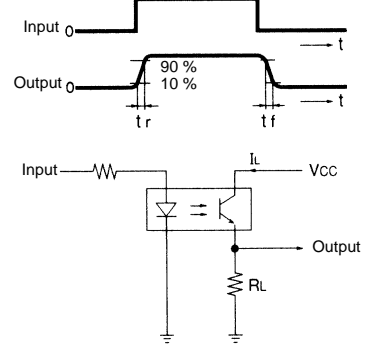
Response Time vs. Load Resistance Characteristics (Typical)



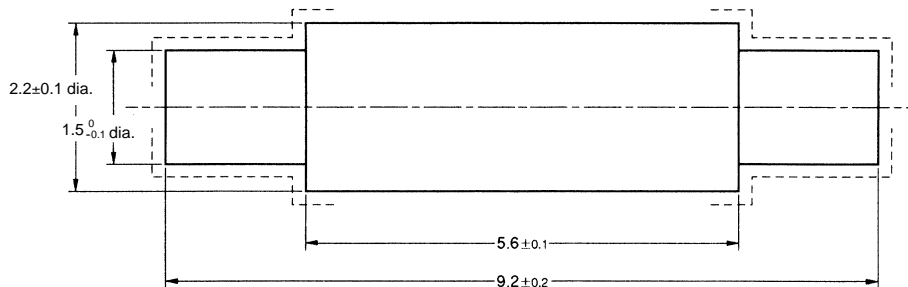
Sensing Position Characteristics (Typical)



Response Time Measurement Circuit



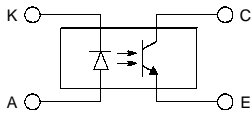
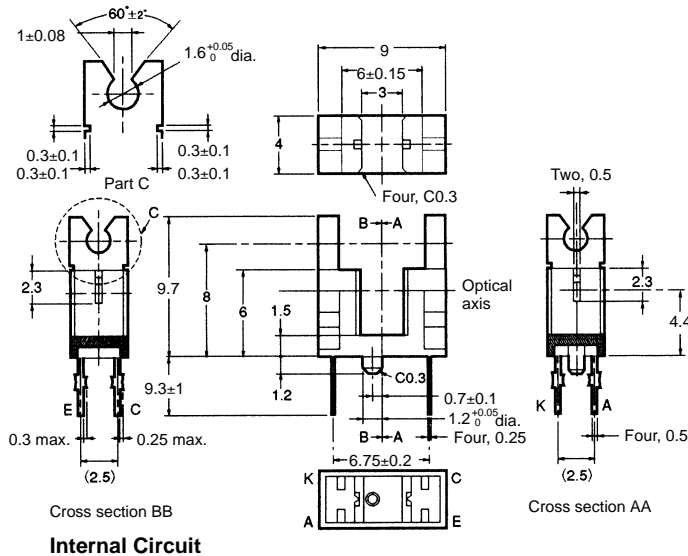
Actuator Dimensions



- Note:**
1. Make sure that the portions marked with dotted lines have no burrs.
 2. The material of the actuator must be selected by considering the infrared permeability of the actuator.

■ Dimensions

Note: All units are in millimeters unless otherwise indicated.



Unless otherwise specified, the tolerances are as shown below.

Dimensions	Tolerance
3 mm max.	±0.3
3 < mm ≤ 6	±0.375
6 < mm ≤ 10	±0.45
10 < mm ≤ 18	±0.55
18 < mm ≤ 30	±0.65

Terminal No.	Name
A	Anode
K	Cathode
C	Collector
E	Emitter

■ Features

- An actuator can be attached.
- PCB mounting type.
- High resolution with a 0.5-mm-wide slit.

■ 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
Receiver	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
	Storage	T_{stg} -30°C to 100°C
Soldering temperature	T_{sol}	260°C (see note 3)

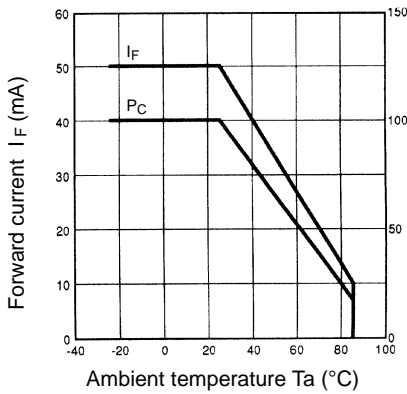
- Note:**
1. Refer to the temperature rating chart if the ambient temperature exceeds 25°C.
 2. The pulse width is 10 μs maximum with a frequency of 100 Hz.
 3. Complete soldering within 10 seconds.

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

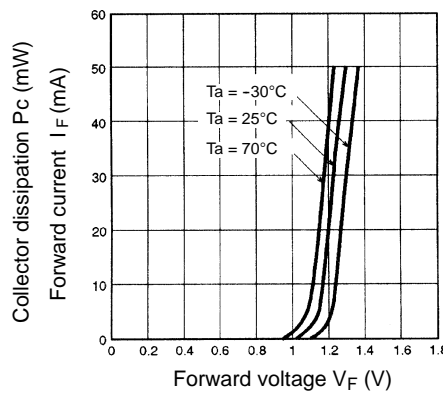
Item	Symbol	Value	Condition
Emitter	Forward voltage	V_F 1.2 V typ., 1.5 V max.	$I_F = 30$ mA
	Reverse current	I_R 0.01 μA typ., 10 μA max.	$V_R = 4$ V
	Peak emission wavelength	λ_P 940 nm typ.	$I_F = 20$ mA
Receiver	Light current	I_L 0.5 mA min., 14 mA max.	$I_F = 20$ mA, $V_{CE} = 10$ V
	Dark current	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.	$I_F = 20$ mA, $I_L = 0.1$ mA
	Peak spectral sensitivity wavelength	λ_P 850 nm typ.	$V_{CE} = 10$ V
Rising time	t_r	4 μs typ.	$V_{CC} = 5$ V, $R_L = 100$ Ω, $I_L = 5$ mA
Falling time	t_f	4 μs typ.	$V_{CC} = 5$ V, $R_L = 100$ Ω, $I_L = 5$ mA

■ Engineering Data

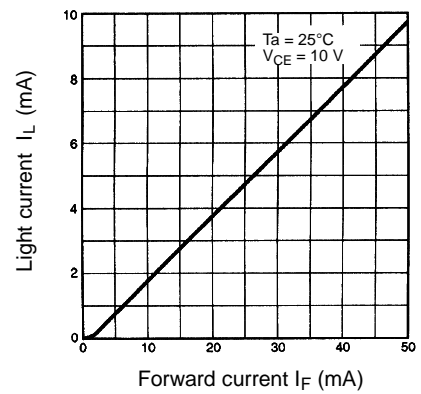
Forward Current vs. Collector Dissipation Temperature Rating



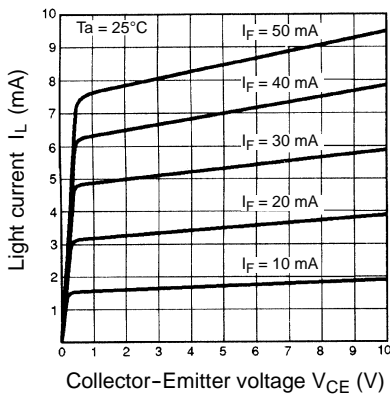
Forward Current vs. Forward Voltage Characteristics (Typical)



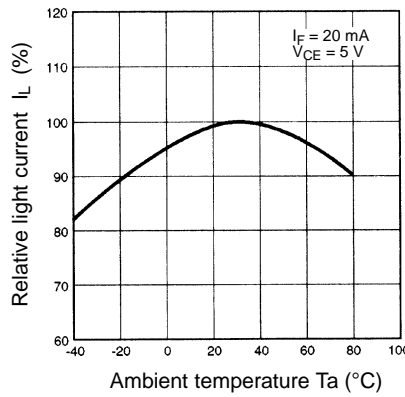
Light Current vs. Forward Current Characteristics (Typical)



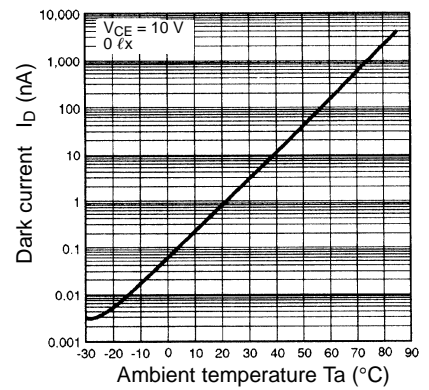
Light Current vs. Collector-Emitter Voltage Characteristics (Typical)



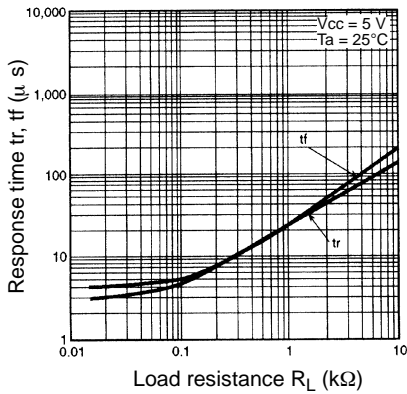
Relative Light Current vs. Ambient Temperature Characteristics (Typical)



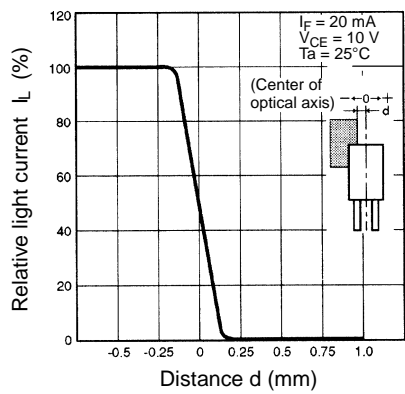
Dark Current vs. Ambient Temperature Characteristics (Typical)



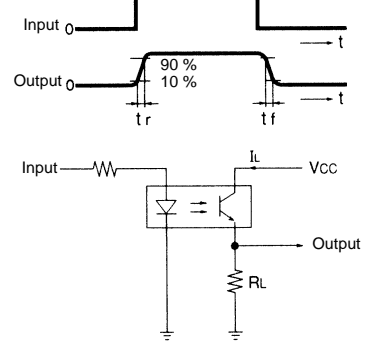
Response Time vs. Load Resistance Characteristics (Typical)



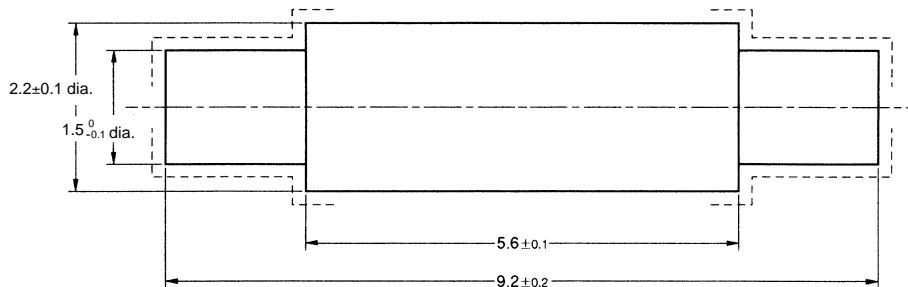
Sensing Position Characteristics (Typical)



Response Time Measurement Circuit



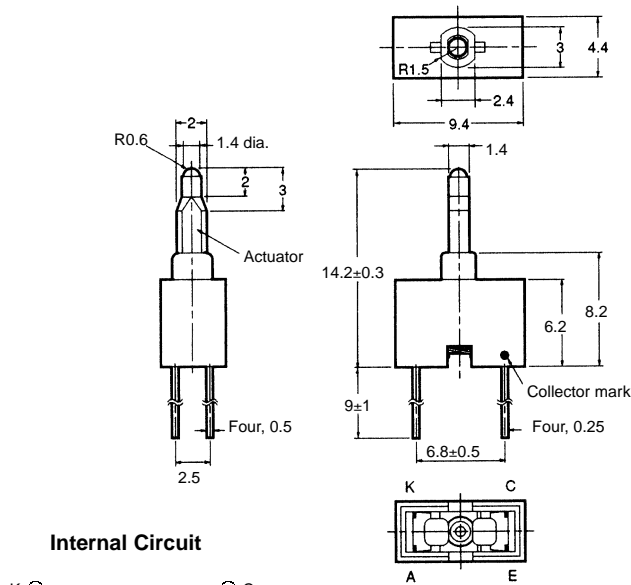
Actuator Dimensions



- Note:**
1. Make sure that the portions marked with dotted lines have no burrs.
 2. The material of the actuator must be selected by considering the infrared permeability of the actuator.

■ Dimensions

Note: All units are in millimeters unless otherwise indicated.



Unless otherwise specified, the tolerances are as shown below.

Dimensions	Tolerance
3 mm max.	±0.3
3 < mm ≤ 6	±0.375
6 < mm ≤ 10	±0.45
10 < mm ≤ 18	±0.55
18 < mm ≤ 30	±0.65

Terminal No.	Name
A	Anode
K	Cathode
C	Collector
E	Emitter

■ Features

- Model has an actuator.
- Low operating force (0.15 N (15 gf)).
- Connects to circuits with ease.

■ 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
	Collector-Emitter voltage	V _{CEO} 30 V
Receiver	Emitter-Collector voltage	V _{ECO} 5 V
	Collector current	I _C 20 mA
	Collector dissipation	P _C 100 mW (see note 1)
Ambient temperature	Operating	T _{opr} -25°C to 70°C
	Storage	T _{stg} -40°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.

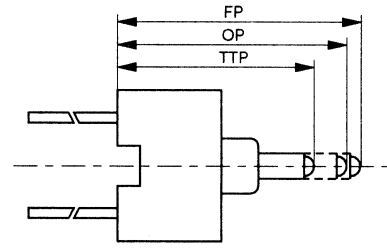
■ Electrical and Optical Characteristics (Ta = 25°C)

Item	Symbol	Value	Condition
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
Receiver	Light current	I _L 0.5 mA min.	I _F = 20 mA, V _{CE} = 5 V at free position (FP)
	Dark current	I _D 2 nA typ., 200 nA max.	V _{CE} = 10 V, 0 lx
	Leakage current	I _{LEAK} 10 μA max.	I _F = 20 mA, V _{CE} = 5 V at operating position (OP)
	Collector-Emitter saturated voltage	V _{CE (sat)} 0.15 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	t _r	---	---
Falling time	t _f	---	---

■ Mechanical Characteristics

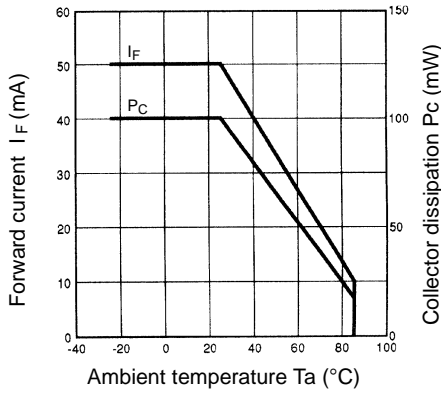
Actuator operation (I _F = 20 mA, V _{CE} = 5 V) (see note 1)	Free position (FP): 14.2±0.3 mm Operating position (OP): 13.0 mm min. Total travel position (TTP): 12.1 mm max.
Operating force (see note 2)	0.15 N (15 gf) max.
Mechanical life expectancy	500,000 operations min. (The actuator traveling from its FP to FP via TTP is regarded as one operation.)

- Note:** 1. Free position (FP): The distance between the bottom of the housing to the top of the actuator without any external force imposed on the actuator.
- Operating position (OP): The distance between the bottom of the housing to the top of the actuator when the actuator is pressed and the I_L becomes I_{LEAK} or less.
- Total travel position (TTP): The distance between the bottom of the housing to the top of the actuator when the actuator is fully pressed.
2. Operating force: The force required to press the actuator from its FP to OP.

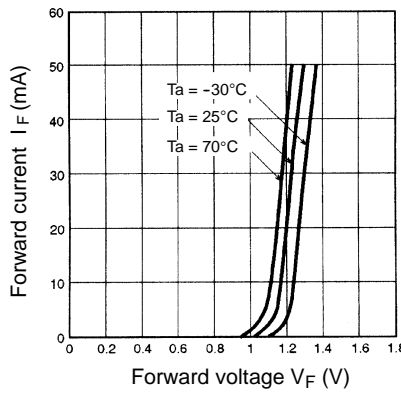


■ Engineering Data

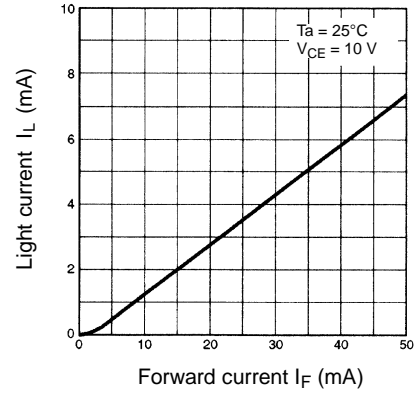
Forward Current vs. Collector Dissipation Temperature Rating



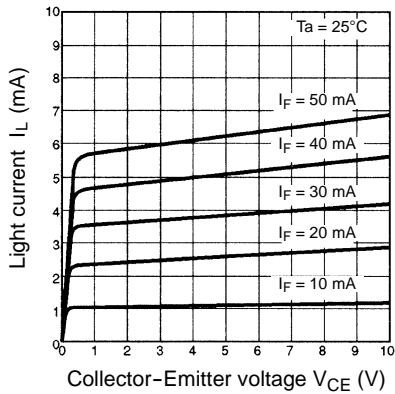
Forward Current vs. Forward Voltage Characteristics (Typical)



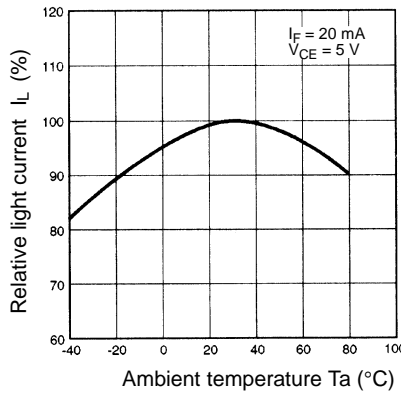
Light Current vs. Forward Current Characteristics (Typical)



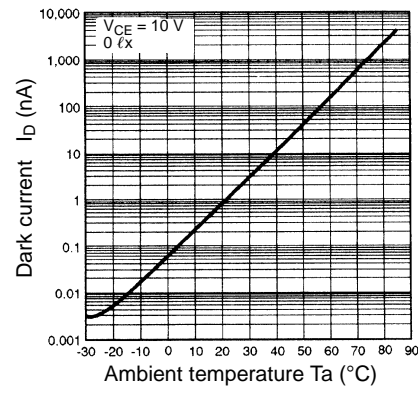
Light Current vs. Collector-Emitter Voltage Characteristics (Typical)



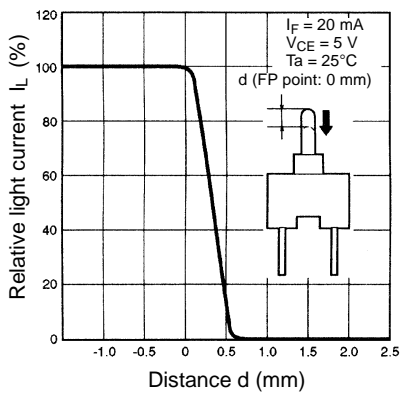
Relative Light Current vs. Ambient Temperature Characteristics (Typical)



Dark Current vs. Ambient Temperature Characteristics (Typical)



Sensing Position Characteristics (Typical)

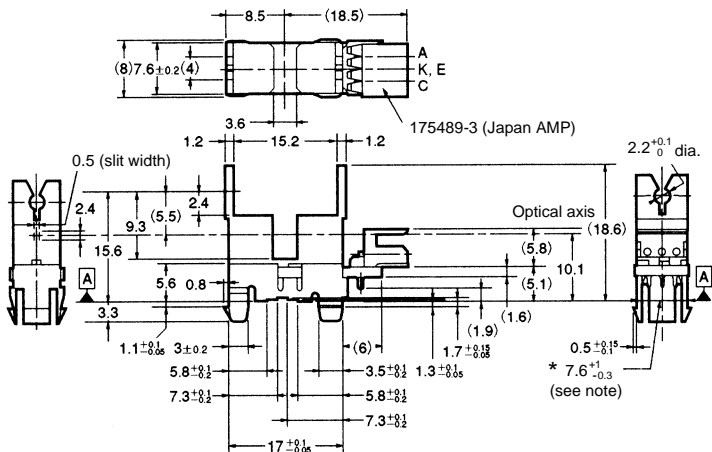


EE-SA107-P2

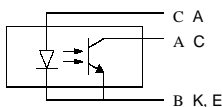
Photomicrosensor (Actuator Mounted)

■ Dimensions

Note: All units are in millimeters unless otherwise indicated.



Internal Circuit



Note: The asterisked dimension is specified by datum A only.

Unless otherwise specified, the tolerances are as shown below.

Dimensions	Tolerance
3 mm max.	±0.3
3 < mm ≤ 6	±0.375
6 < mm ≤ 10	±0.45
10 < mm ≤ 18	±0.55
18 < mm ≤ 30	±0.65

Terminal No.	Name
A	Anode
C	Collector
K, E	Cathode, Emitter

Recommended Connectors:

- Japan AMP 173977-3 (insulation displacement-type connector)
- 175778-3 (crimp-type connector)
- 179228-3 (crimp-type connector)

■ Features

- An actuator can be attached.
- Snap-in mounting model.
- Mountable to 1.0-, 1.2- and 1.6-mm-thick boards.
- Connects to Japan AMP's CT-series connectors.

■ Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	Rated value
Emitter	Forward current	I_F 50 mA (see note)
	Pulse forward current	I_{FP} ---
	Reverse voltage	V_R 4 V
Receiver	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 (see note 1)
Ambient temperature	Operating	T_{opr} -25°C to 85°C
	Storage	T_{stg} -40°C to 85°C
Soldering temperature	T_{sol}	---

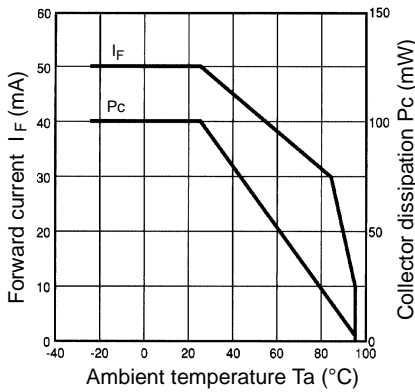
Note: Refer to the temperature rating chart if the ambient temperature exceeds 25°C.

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

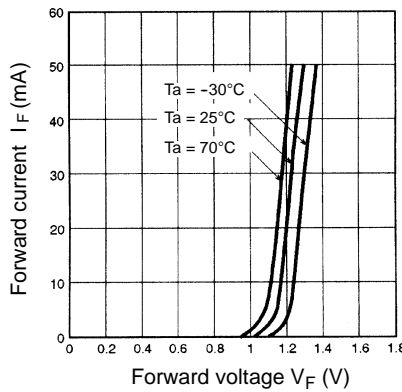
Item	Symbol	Value	Condition
Emitter	Forward voltage	V_F 1.2 V typ., 1.5 V max.	$I_F = 30$ mA
	Reverse current	I_R 0.01 μ A typ., 10 μ A max.	$V_R = 4$ V
	Peak emission wavelength	λ_P 940 nm typ.	$I_F = 30$ mA
Receiver	Light current	I_L 0.5 mA min., 14 mA max.	$I_F = 20$ mA, $V_{CE} = 5$ V
	Dark current	I_D 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.	$I_F = 20$ mA, $I_L = 0.3$ mA
	Peak spectral sensitivity wavelength	λ_P 850 nm typ.	$V_{CE} = 5$ V
Rising time	t_r	8 μ s typ.	$V_{CC} = 5$ V, $R_L = 100 \Omega$, $I_L = 1$ mA
Falling time	t_f	8 μ s typ.	$V_{CC} = 5$ V, $R_L = 100 \Omega$, $I_L = 1$ mA

■ Engineering Data

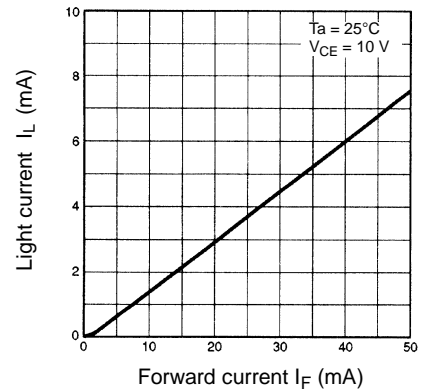
Forward Current vs. Collector Dissipation Temperature Rating



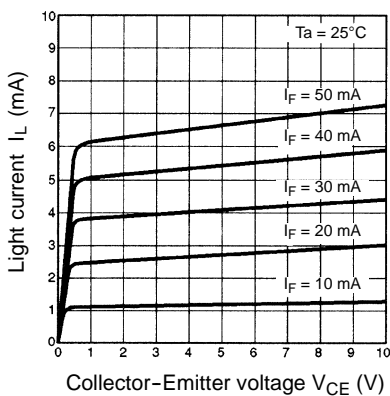
Forward Current vs. Forward Voltage Characteristics (Typical)



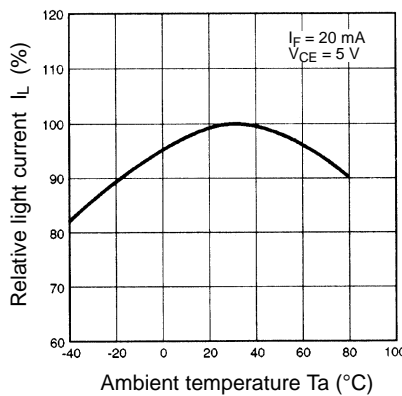
Light Current vs. Forward Current Characteristics (Typical)



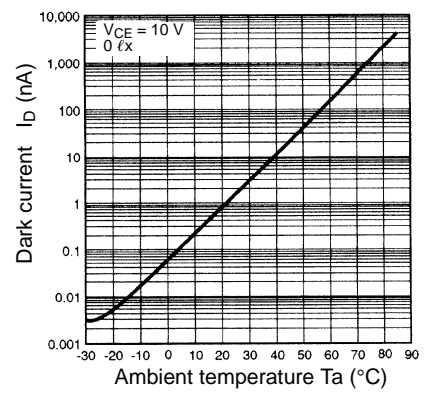
Light Current vs. Collector-Emitter Voltage Characteristics (Typical)



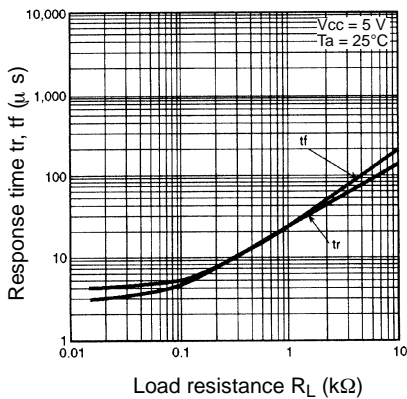
Relative Light Current vs. Ambient Temperature Characteristics (Typical)



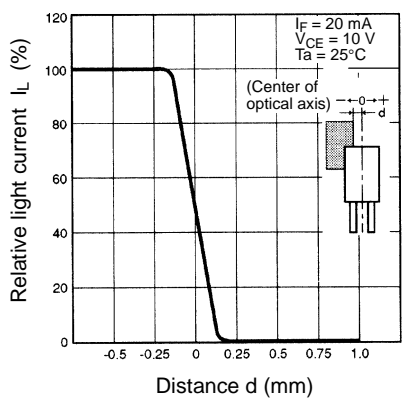
Dark Current vs. Ambient Temperature Characteristics (Typical)



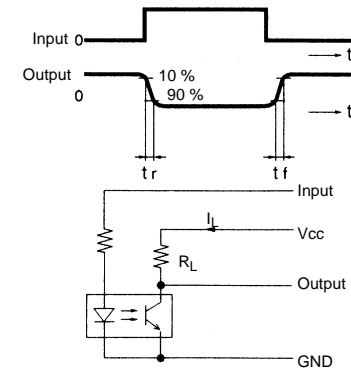
Response Time vs. Load Resistance Characteristics (Typical)



Sensing Position Characteristics (Typical)



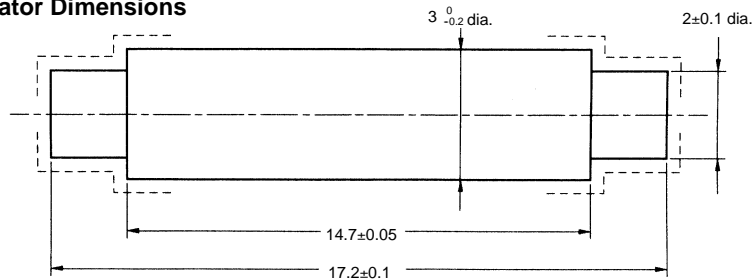
Response Time Measurement Circuit



Recommended Mounting Holes

Refer to EE-SA407-P2 on page 11.

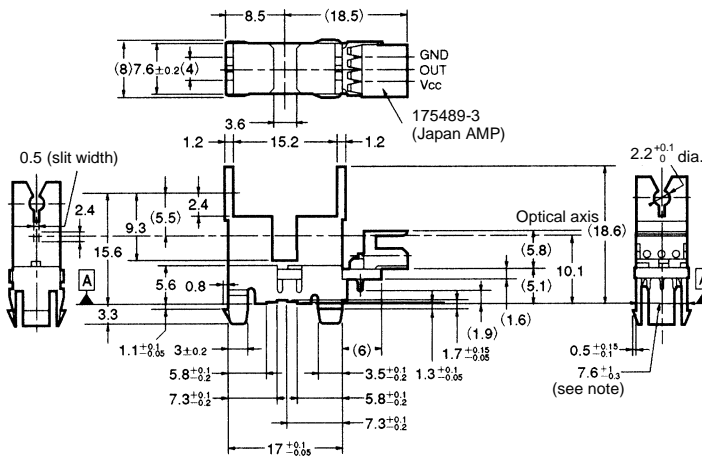
Actuator Dimensions



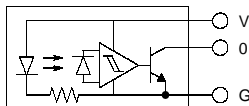
- Note:**
1. Make sure that the portions marked with dotted lines have no burrs.
 2. The material of the actuator must be selected by considering the infrared permeability of the actuator.

■ Dimensions

Note: All units are in millimeters unless otherwise indicated.



Internal Circuit



Terminal No.	Name
V	Power supply (V _{CC})
O	Output (OUT)
G	Ground (GND)

Note: The dimension is specified by datum A only.

Unless otherwise specified, the tolerances are as shown below.

Dimensions	Tolerance
3 mm max.	±0.3
3 < mm ≤ 6	±0.375
6 < mm ≤ 10	±0.45
10 < mm ≤ 18	±0.55
18 < mm ≤ 30	±0.65

Recommended Connectors:

- Japan AMP 179228-3 (crimp-type connector)
- 175778-3 (crimp-type connector)
- 173977-3 (press-fit connector)

■ Features

- An actuator can be attached.
- Snap-in mounting model.
- Mounts to 1.0-, 1.2- and 1.6-mm-thick panels.
- High resolution with a 0.5-mm-wide sensing slit.
- With a 3.6-mm-wide slot.
- Photo IC output signals directly connect to logic circuit and TTL.
- Connects to Japan AMP's CT-series connectors.

■ Absolute Maximum Ratings (Ta = 25°C)

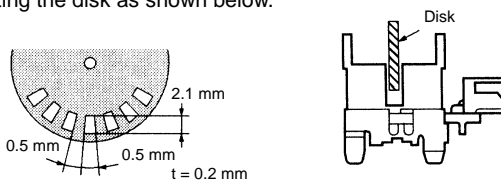
Item	Symbol	Rated value
Power supply voltage	V _{CC}	7 V
Output voltage	V _{OUT}	28 V
Output current	I _{OUT}	16 mA
Permissible output dissipation	P _{OUT}	250 mW (see note)
Ambient temperature	Operating	Topr -20°C to 75°C
	Storage	Tstg -40°C to 85°C
Soldering temperature	Tsol	---

Note: Refer to the temperature rating chart if the ambient temperature exceeds 25°C.

■ Electrical and Optical Characteristics (Ta = 25°C, V_{CC} = 5 V ±10%)

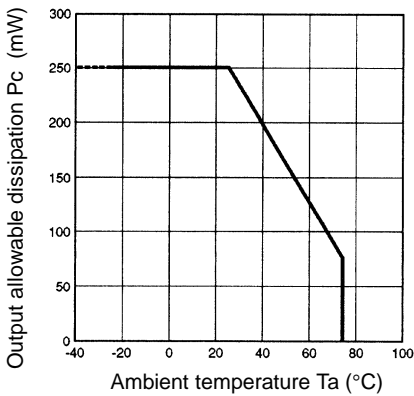
Item	Symbol	Value	Condition
Current consumption	I _{CC}	30 mA max.	With and without incident
Low-level output voltage	V _{OL}	0.35 V max.	I _{OUT} = 16 mA with incident
High-level output voltage	V _{OH}	(V _{CC} × 0.9) V min.	V _{OUT} = V _{CC} without incident, R _L = 47 kΩ
Response frequency	f	3 kHz min.	V _{OUT} = V _{CC} , R _L = 47 kΩ (see note)

Note: The value of the response frequency is measured by rotating the disk as shown below.

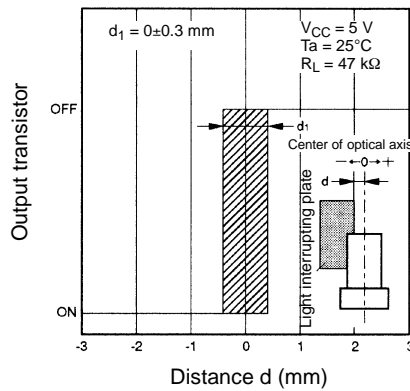


■ Engineering Data

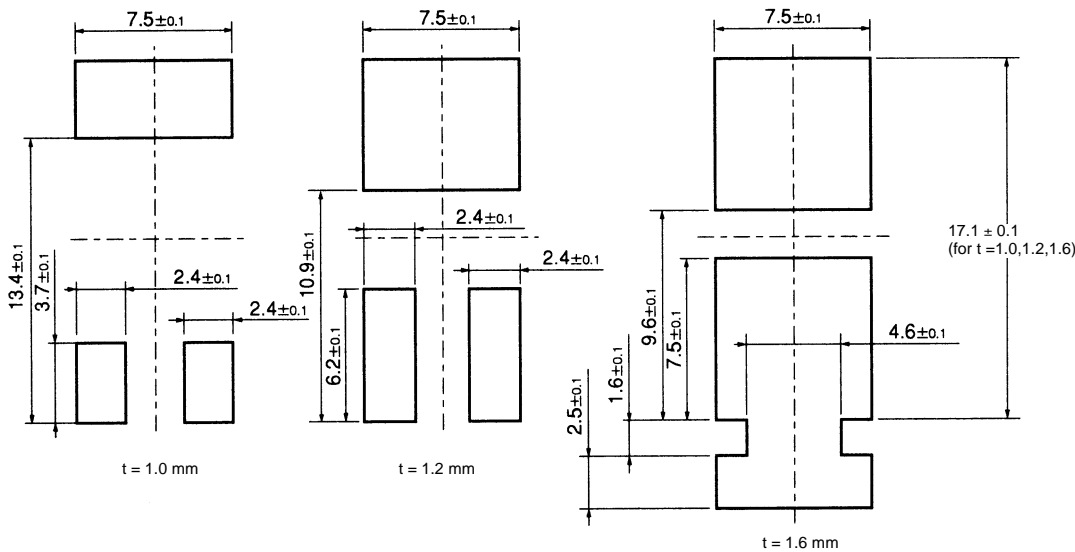
Output Allowable Dissipation vs. Ambient Temperature Characteristics



Sensing Position Characteristics (Typical)



■ Recommended Mounting Holes

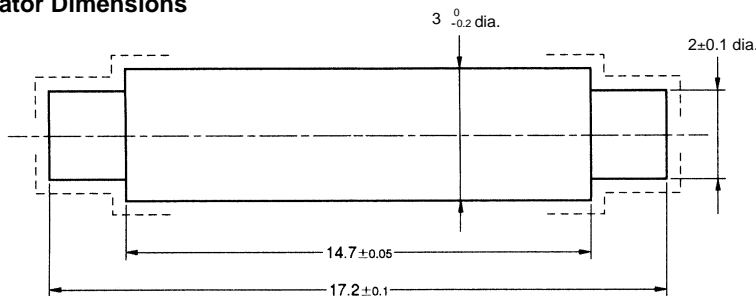


- When mounting the Photomicrosensor to a panel with a hole opened by pressing, make sure that the hole has no burrs. The mounting strength of the Photomicrosensor will decrease if the hole has burrs.
- When mounting the Photomicrosensor to a panel with a hole opened by pressing, be sure to mount the Photomicrosensor on the pressing side of the panel.
- The mounting strength of the Photomicrosensor will increase if the Photomicrosensor is mounted to a panel with a hole that is only a little larger than the size of the Photomicrosensor, in which case, however, it will be difficult to mount the Photomicrosensor to the panel. The mounting strength of the Photomicrosensor will

decrease if the Photomicrosensor is mounted to a panel with a hole that is comparatively larger than the size of the Photomicrosensor, in which case, however, it will be easy to mount the Photomicrosensor to the panel. When mounting the Photomicrosensor to a panel, open an appropriate hole for the Photomicrosensor according to the application.

- After mounting the Photomicrosensor to any panel, make sure that the Photomicrosensor does not wobble.
- When mounting the Photomicrosensor to a molding with a hole, make sure that the edges of the hole are sharp enough, otherwise the Photomicrosensor may come fall out.

Actuator Dimensions



- Note:**
1. Make sure that the portions marked with dotted lines have no burrs.
 2. The material of the actuator must be selected by considering the infrared permeability of the actuator.