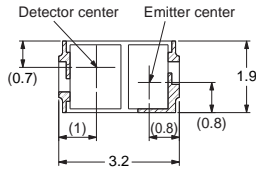


Photomicrosensor (Reflective) EE-SY1200

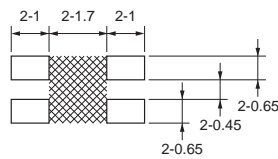
⚠ Be sure to read *Precautions* on page 24.

■ Dimensions



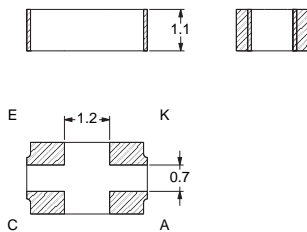
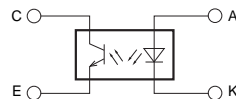
Note:
Unless otherwise specified tolerances are ± 0.15 .
No burrs dimensions are included in outline dimensions.
The burrs dimensions are 0.15 MAX.
Diagonal line indicate the region is part Au plating area.

Recommended Soldering Pattern



Note:1. The shaded portion in the above figure may cause shorting. Do not wire in this portion.
2. The dimensional tolerance for the recommended soldering pattern is ± 0.1 mm.

Internal Circuit



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

■ Features

- Ultra-compact model.
- PCB surface mounting type.
- High S/N ratio (High light current / Low leakage current)
- Recommended sensing distance = 1.0 to 4.0 mm

■ Absolute Maximum Ratings (Ta=25°C)

Item	Symbol	Rated value	Unit
Emitter	Forward current	I_F	50^{*1} mA
	Pulse forward current	I_{FP}	500^{*2} mA
	Reverse voltage	V_R	4 V
Detector	Collector-Emitter voltage	V_{CEO}	30 V
	Emitter-Collector voltage	V_{ECO}	5 V
	Collector current	I_C	20 mA
	Collector dissipation	P_C	50^{*1} mW
Operating temperature	T_{opr}	-25 to +85	°C
Storage temperature	T_{stg}	-40 to +100	°C
Reflow soldering temperature	T_{sol}	240^{*3}	°C

*1 Refer to the temperature rating chart if the ambient temperature exceeds 25°C.

*2 The pulse width is 10 μ s maximum with a frequency of 100 Hz.

*3 Complete soldering within 10 seconds for reflow soldering.

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

Item	Symbol	Value			Unit	Condition	
		MIN.	TYP.	MAX.			
Emitter	Forward voltage	V_F	---	1.2	1.4	V	$I_F = 20$ mA
	Reverse current	I_R	---	---	10	μ A	$V_R = 4$ V
	Peak emission wavelength	λ_P	---	940	---	nm	---
Detector	Light current 1	I_{L1}	200	---	1000	μ A	$I_F = 10$ mA, $V_{CE} = 2$ V, Aluminum-deposited surface, $d = 4$ mm ^{*1}
	Light current 2	I_{L2}	150	---	---	μ A	$I_F = 4$ mA, $V_{CE} = 2$ V, Aluminum-deposited surface, $d = 1$ mm ^{*1}
	Dark current	I_D	---	2	200	nA	$V_{CE} = 10$ V, 0 lx
	Leakage current 1	I_{LEAK1}	---	---	500	nA	$I_F = 10$ mA, $V_{CE} = 2$ V, with no reflection ^{*2}
	Leakage current 2	I_{LEAK2}	---	---	200	nA	$I_F = 4$ mA, $V_{CE} = 2$ V, with no reflection ^{*2}
	Collector-Emitter saturated voltage	$V_{CE(sat)}$	---	---	---	V	---
	Peak spectral sensitivity wavelength	λ_P	---	850	---	nm	---
Rising time	t_r	---	30	---	μ s	$V_{CC} = 2$ V, $R_L = 1$ k Ω , $I_L = 100$ μ A, $d = 1$ mm ^{*1}	
Falling time	t_f	---	30	---	μ s	$V_{CC} = 2$ V, $R_L = 1$ k Ω , $I_L = 100$ μ A, $d = 1$ mm ^{*1}	

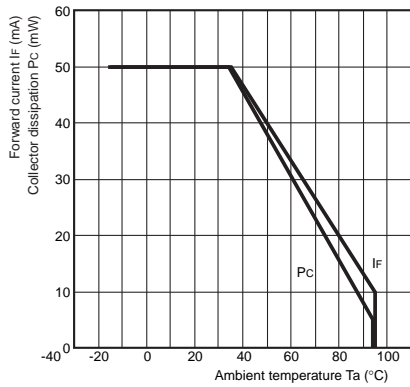
*1. The letter "d" indicates the distance between the top surface of the sensor and the sensing object.

*2. Depends on the installed condition of the Photomicrosensor, the detector may receive the sensor's LED light and/or the external light which is reflected from surroundings of the Photomicrosensor and/or the background object.

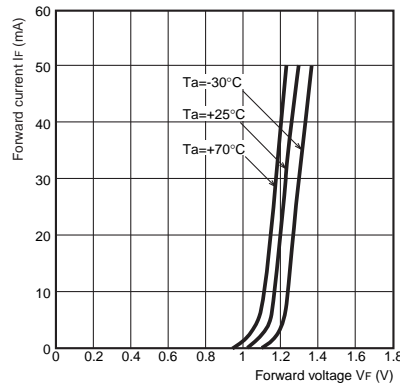
Please confirm the condition of the Photomicrosensor by actual intended application prior to the mass production use.

Engineering Data

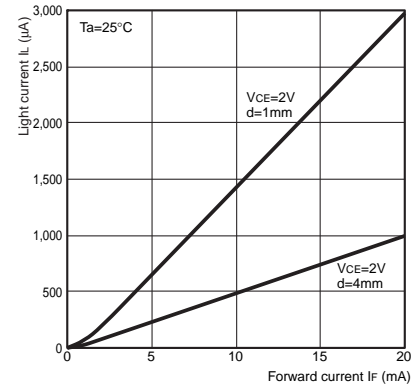
Forward Current vs. Collector Dissipation Temperature Rating



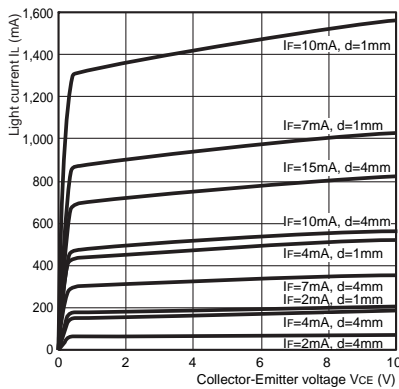
Forward Current vs. Forward Voltage Characteristics (Typical)



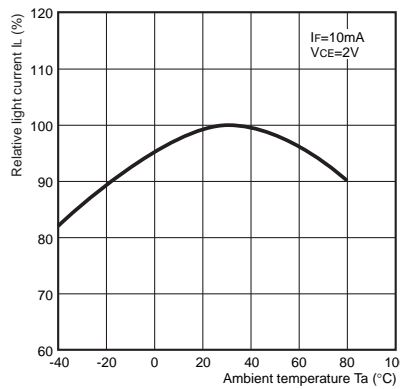
Light Current vs. Forward Current Characteristics (Typical)



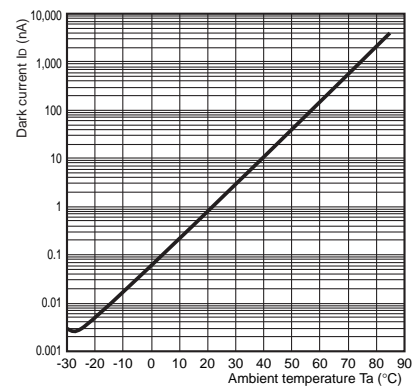
Light Current vs. Collector-Emitter Voltage Characteristics (Typical)



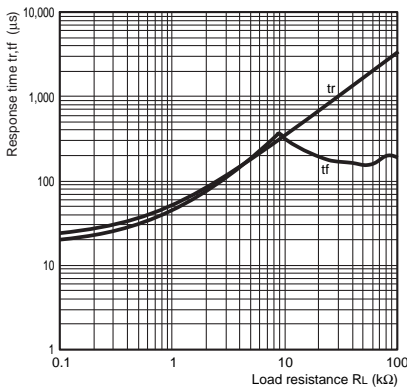
Relative Light Current vs. Ambient Temperature Characteristics (Typical)



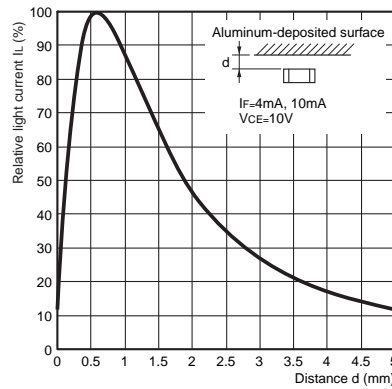
Dark Current vs. Ambient Temperature Characteristics (Typical)



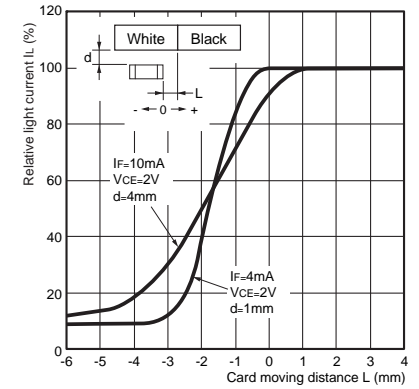
Response Time vs. Load Resistance Characteristics (Typical)



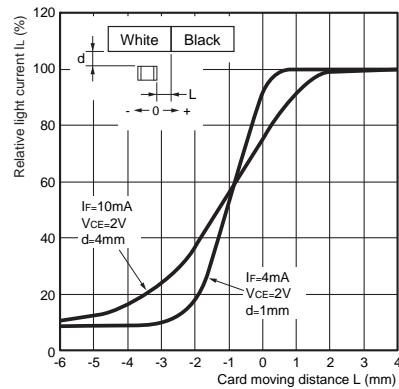
Sensing Distance Characteristics (Typical)



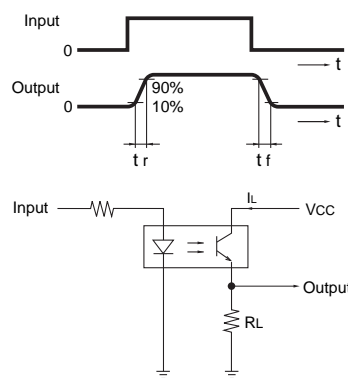
Sensing Position Characteristics (Typical)



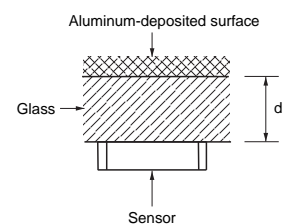
Sensing Position Characteristics (Typical)



Response Time Measurement Circuit

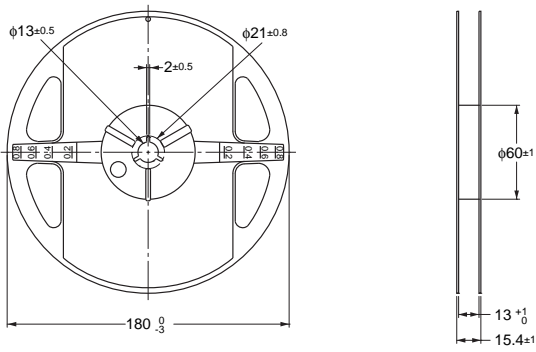


Light Current Measurement Setup Diagram

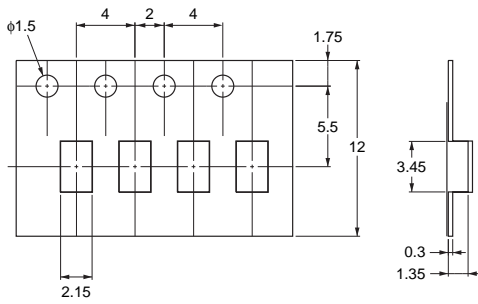


■ Tape and Reel

Reel Dimension (Unit: mm)

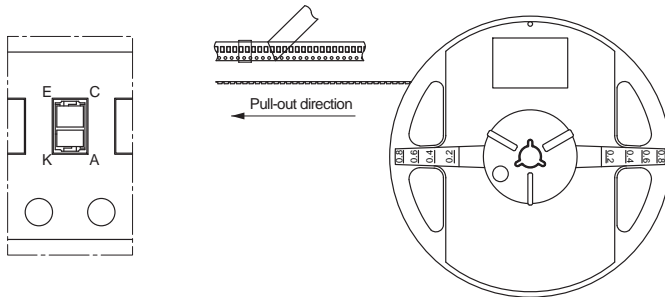


Tape Dimension (Unit: mm)



Part Mounting Direction

- The devices are oriented in the rectangular holes in the carrier tape so that the edge with the LED faces the round feeding holes.



Tape Quantity

2,000 pcs./reel