This version: Jun. 2000
Previous version: Jan. 1998

OKI electronic components

OPU872CP

Capsule Sensor with Light Emitter and Photosensor

GENERAL DESCRIPTION

The OPU872CP is a capsule sensor which includes both a light emitting diode and a phototransistor in the package with connector.
The transmission type photointerruptor is implemented by combining the OPU872CP with a rectangular prism (Option); optically set with face to face.
Since the sensor and LED are in one side, compared to the conventional sensor in which a sensor is in opposite side of a LED, the OPU872CP will need only a small wiring space.
The capsuled type has the advantages of easy mounting and dustproof construction, so the OPU872CP is best suitable for paper detection sensor applications.

FEATURES

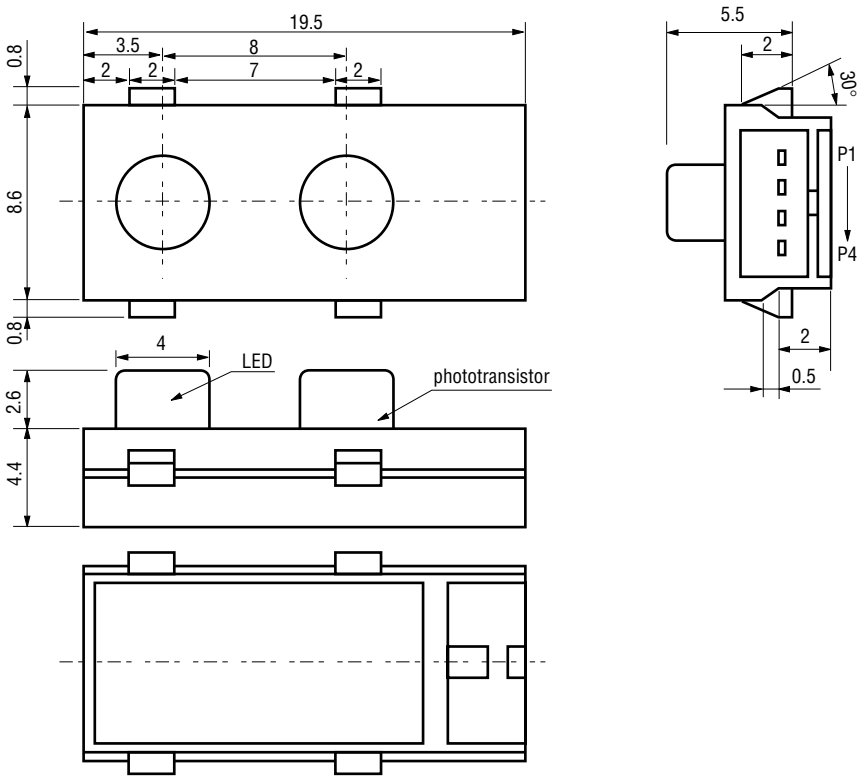
- Easy mounting
- No need to use soldering since the connector is built in
- Small size
- Superior dustproof

APPLICATIONS

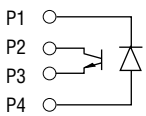
- Passing object sensor
- Position detector

PIN CONFIGURATION

OPU872CP **(Unit: mm)**

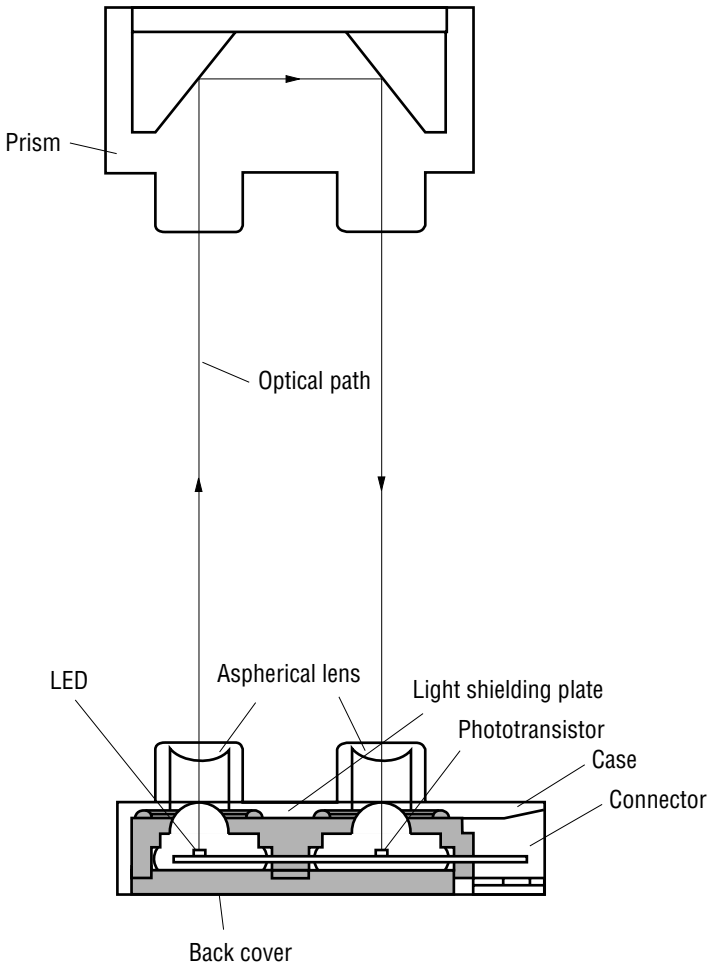


- Pin Connection Diagram



P1 Cathode
P2 Collector
P3 Emitter
P4 Anode

OPTICAL LAYOUT



ABSOLUTE MAXIMUM RATINGS

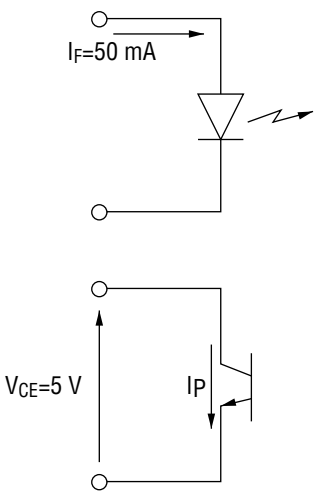
Parameter		Symbol	Test Condition	Rating	Unit	Note
Light Emitter	Forward Current	I_F	Ta=25°C	60	mA	—
	Pulse Forward Current	I_{FM}		0.5	A	tw=100μs T=10ms
	Reverse Voltage	V_R		6	V	—
	Power Dissipation	P_D		120	mW	—
	Forward Current Derating Factor	—	Ta≥25°C	1.7	mA/°C	—
Photosensor	Collector-emitter Voltage	V_{CEO}	Ta=25°C	20	V	—
	Collector Current	I_C		10	mA	—
	Collector Power Dissipation	P_C		150	mW	—
	Emitter-collector Voltage	V_{ECO}		5	V	—
Operating Temperature		T_{opr}	—	–10 to +60	°C	—
Storage Temperature		T_{stg}	—	–10 to +60	°C	—

ELECTRICAL CHARACTERISTICS

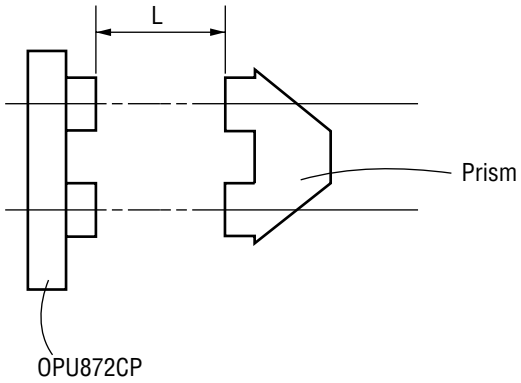
Parameter		Symbol	Test Condition	Min.	Typ.	Max.	Unit
Light Emitter	Forward Voltage	V_F	I_F=60 mA	—	1.55	2.00	V
	Reverse Current	I_R	V_R=6 V	—	—	10	μA
	Peak-emission Wavelength	λ_P	I_F=60 mA	—	910	—	nm
Photosensor	Collector-emitter Voltage	V_{CEO}	I_C=100 μA	20	—	—	V
	Dark Current	I_D	V_{CE}=9 V	—	—	100	nA
Leakage Current *1 *3		I_{LEAK}	I_F=50 mA V_{EC}=5 V	—	—	200	μA
Output Photocurrent *1 *2		I_P	I_F=50 mA V_{CE}=5 V L=25 mm	2000	—	—	μA
S/N Ratio		—	I_P/I_{LEAK}	30	—	—	—

MEASURING CIRCUITS AND CONDITIONS

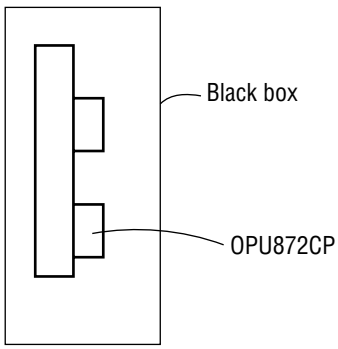
Measuring circuit (*1)



Measuring circuit (*2)



Measuring circuit (*3)

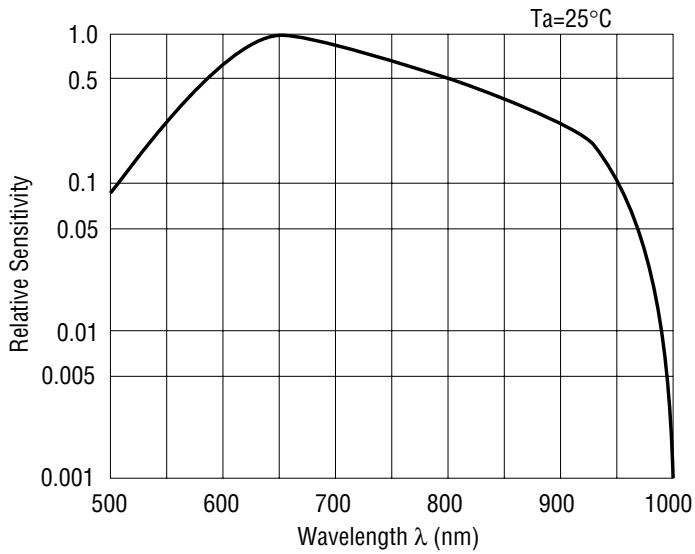


Recommended Connector for Capsule Sensor (Female Connector)

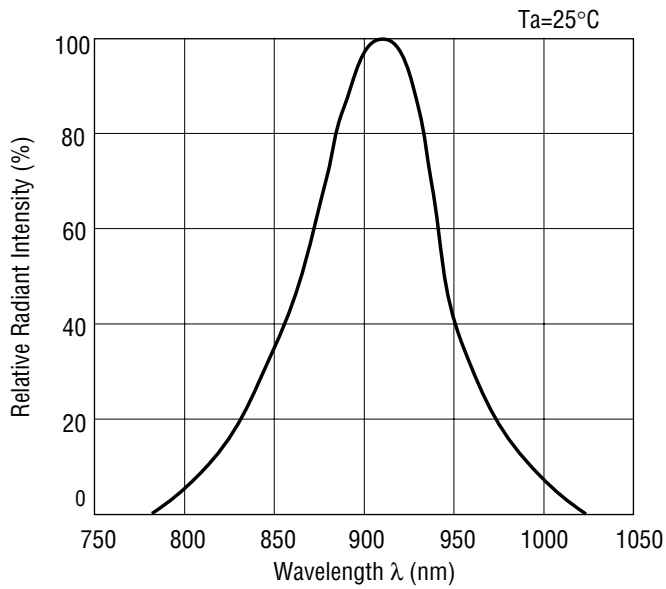
Product Name	Type	Maker
Connector	IL-Y-3S-S15C3	Japan Aviation Electronics Ind., Ltd.

TYPICAL CHARACTERISTICS

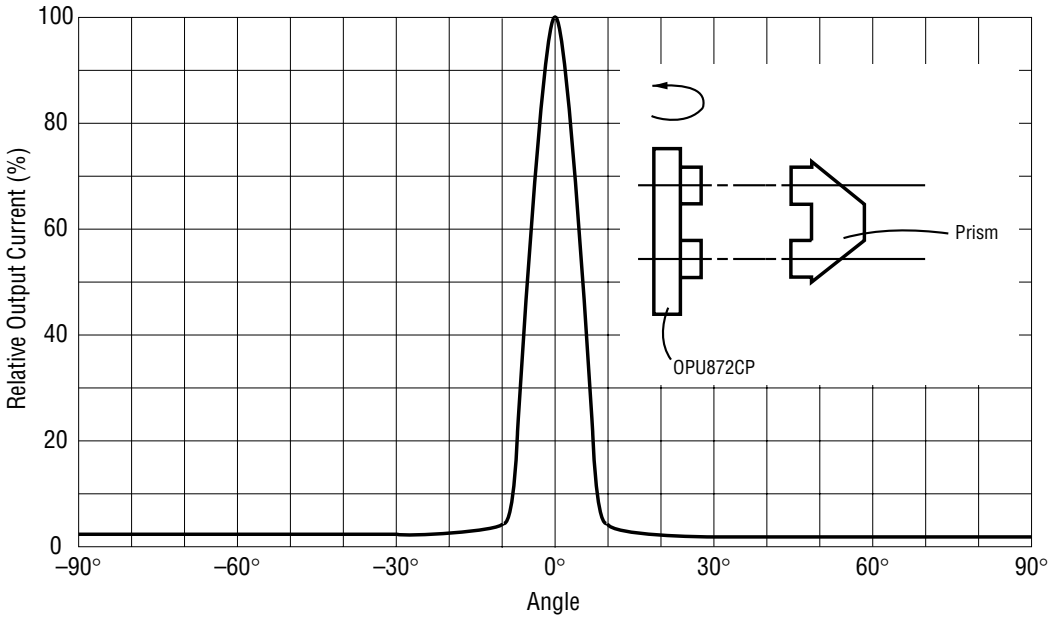
Spectral Sensitivity

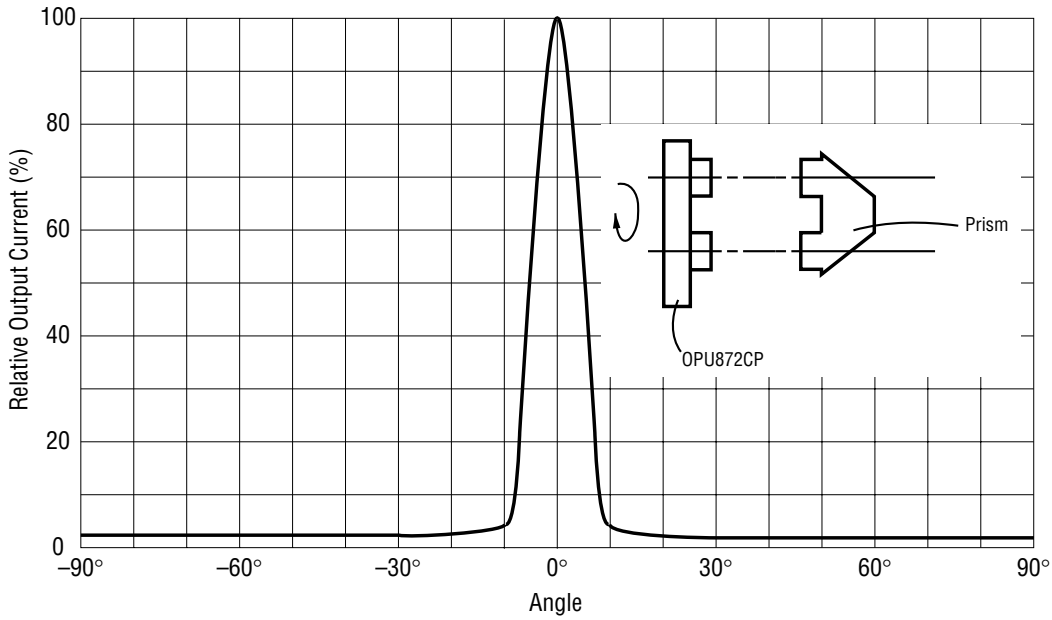


Emission Spectrum Measured at Sensing Part

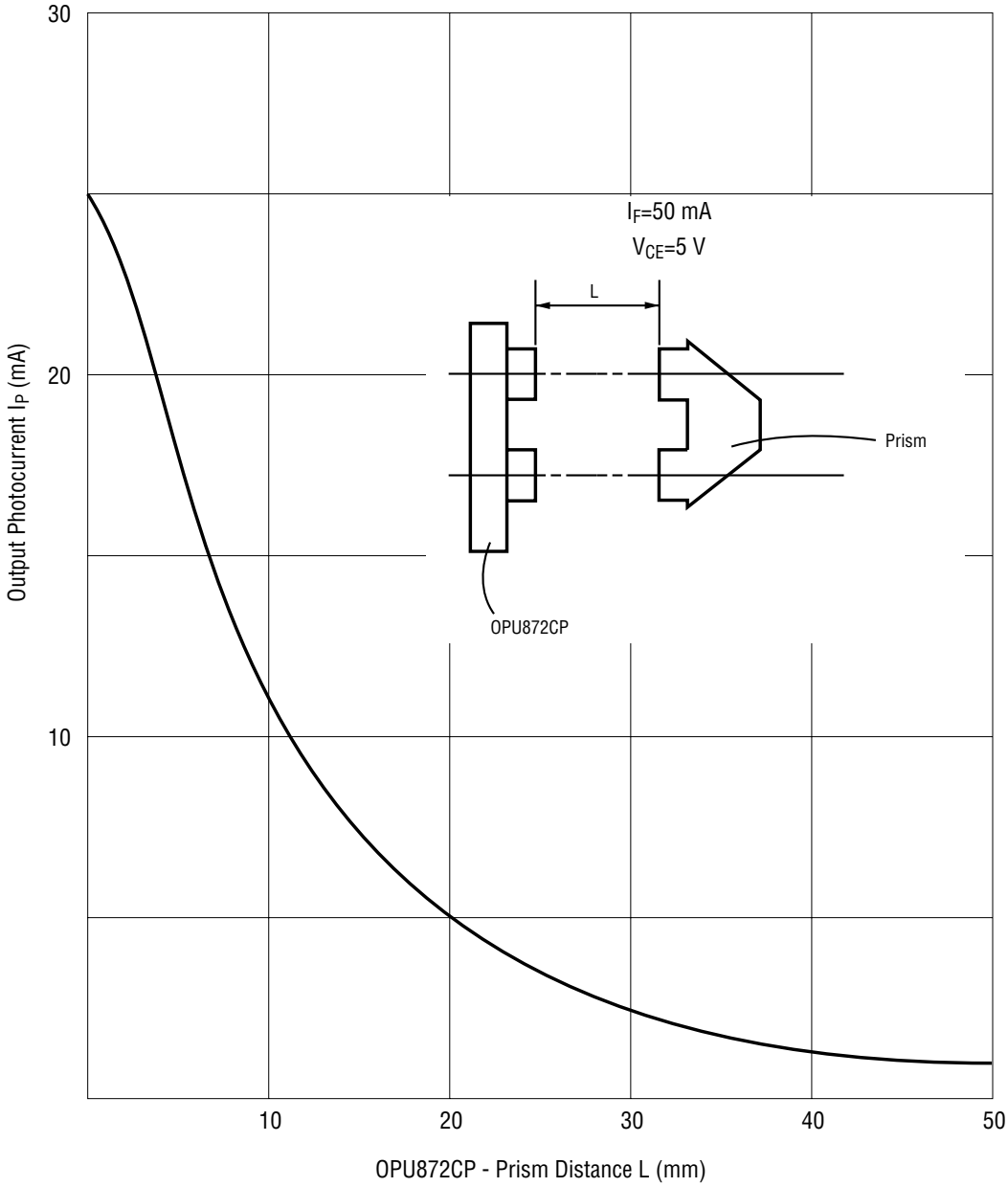


Directional Characteristics

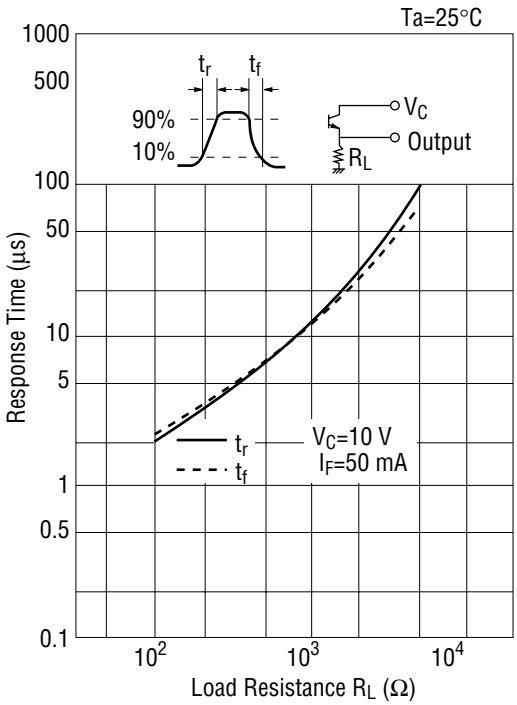




Output Photocurrent vs. OPU872CP-Prism Spacing



Switching Time vs. Load Resistance



Maximum Pulse Forward Current Tolerance