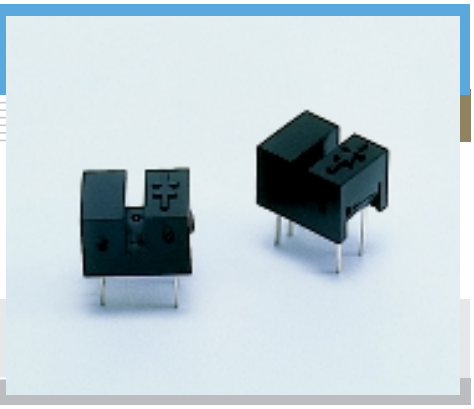
Photointerrupter
P6291

Photo IC output



P6921 is a photointerrupter consisting of a high-power infrared LED and a photo IC. The photo IC incorporates a high-sensitivity photodiode, an amplifier, a Schmitt trigger circuit and an output transistor, all integrated in a single chip. These elements are enclosed in a miniature C-shape plastic package with a gap of 1.2 mm and a slit width of 0.2 mm, allowing object detection with high precision.

Features

- Photo IC output
- Miniature package

Applications

- Timing detection for copier, printer, etc.
- Rotary encoder
- Tape end detection for VTR, tape recorder, etc.

■ Absolute maximum ratings (Ta=25 °C)

Parameter		Symbol	Value	Unit
Input	Forward current	I_F	50	mA
	Reverse voltage	V_R	5	V
	Power dissipation	P	80	mW
Output	Supply voltage	Vcc	-0.5 to +7	V
	Output voltage	Vo	-0.5 to +7	V
	Output current	I_O	8	mA
	Power dissipation	Po	80	mW
Operating temperature		Topr	-25 to +85	°C
Storage temperature		Tstg	-30 to +85	°C
Soldering		-	260 °C, 3 s, at least 1 mm away from package surface	-

■ Electrical and optical characteristics (Ta=25 °C, Vcc=5 V, unless otherwise noted)

Parameter		Symbol	Condition	Min.	Typ.	Max.	Unit
Input	Forward voltage	V_F	I_F=20 mA	-	1.25	1.45	V
	Reverse current	I_R	V_R=5 V	-	-	10	μA
	Terminal capacitance	Ct	V_R=0 V, f=1 MHz	-	30	-	pF
Output	Supply voltage	Vcc		2.2	-	7	V
	Low level output voltage	V_{OL}	I_{OL}=4 mA, I_F=0 mA	-	0.1	0.4	V
	High level output current	I_{OH}	Vo=5 V, I_F=10 mA	-	-	10	μA
	Current consumption	I_{CC}		-	1.3	3.0	mA
Transfer characteristics	L→H threshold input current	I_{FLH}	R_L=1.2 kΩ	-	0.6	6	mA
	Hysterisis	-	I_{FHL}/I_{FLH}	-	0.8	-	-
	L→H propagation delay time	t_{PLH}	I_F=10 mA R_L=1.2 kΩ	-	-	20	μs
	H→L propagation delay time	t_{PHL}		-	-	30	μs
	Rise time	tr		-	0.07	-	μs
	Fall time	tf		-	0.03	-	μs

Note) Connect a capacitor of 0.01 μF or more between Vcc and GND.

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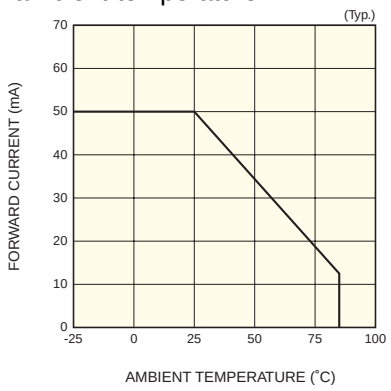
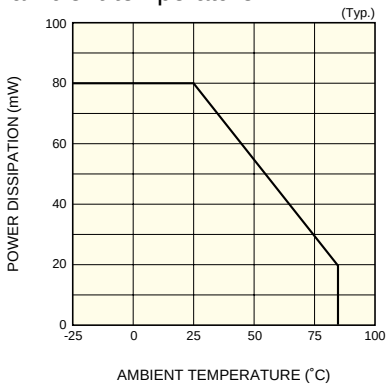
■ LED forward current vs. ambient temperature



KLEDB0081EA

■ Allowable power dissipation vs. ambient temperature



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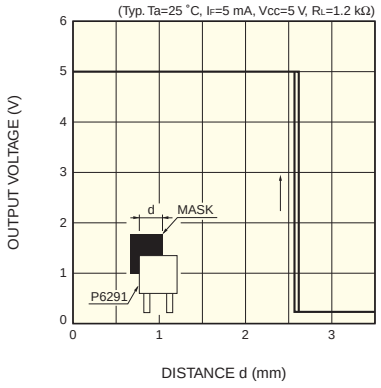
■ Position detection characteristic (1)



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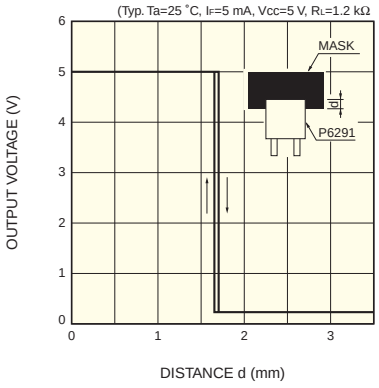
■ Position detection characteristic (2)



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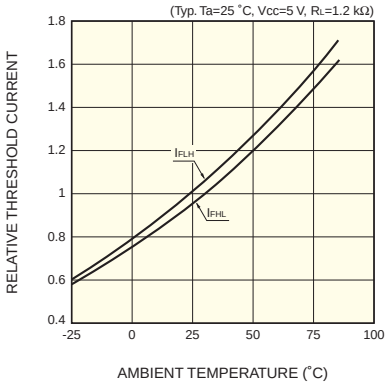
■ Threshold current vs. ambient temperature



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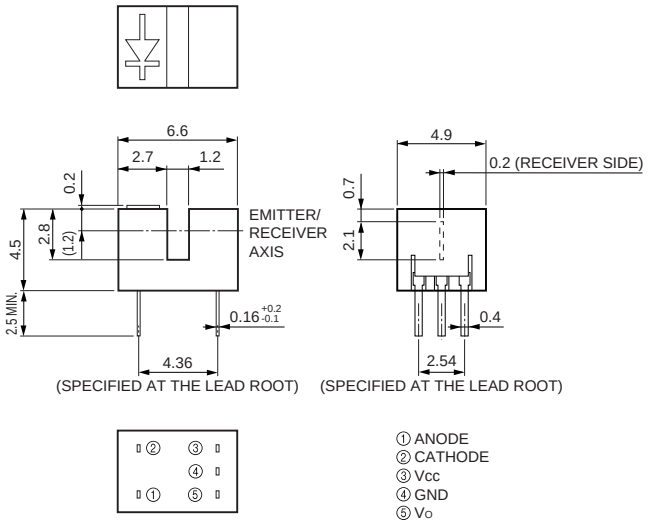
■ Dimensional outline (unit: mm)



Tolerance unless otherwise noted: ±0.2
Values in parentheses are not guaranteed, but for reference.

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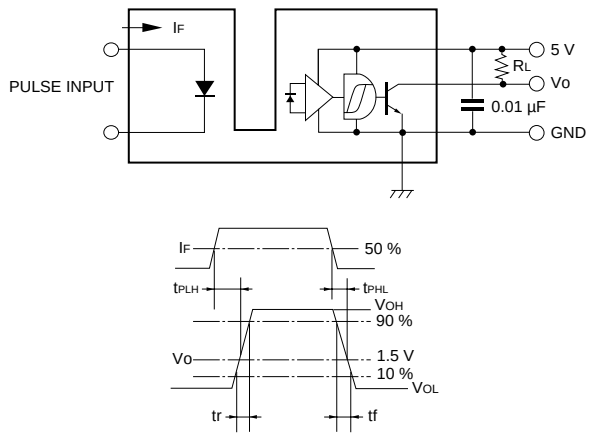
■ Response time measuring circuit



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