

Low-voltage operation photo IC

S7610-10

High reliability photo IC operable at 2.2 V



S7610-10 is a photo IC comprised of a photodiode, amplifier, schmitt trigger circuit and output transistor, all integrated onto a single chip and molded with clear resin into a miniature package. An optical encoder resistant to tough environmental conditions can be configured by combining S7610-10 with infrared LED L6895-10 (made by Hamamatsu).

Features

- Pd plated leads
- Miniature package with lens
- Open collector output
- "L" level output at light input

Applications

- Rotary encoders, etc.

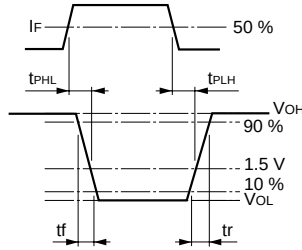
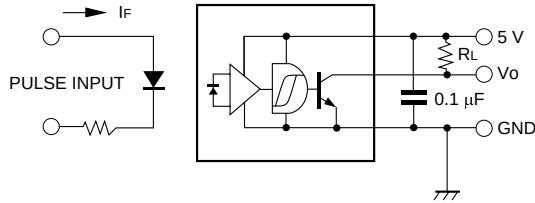
■ Absolute maximum ratings (Ta=25 °C)

Parameter	Symbol	Value	Unit
Supply voltage	Vcc	-0.5 to +7	V
Output voltage	Vo	-0.5 to +7	V
Low level output current	Io	8	mA
Power dissipation	P	250	mW
Operating temperature	Topr	-25 to +85	°C
Storage temperature	Tstg	-40 to +90	°C
Soldering	-	260 °C, 3 s, at least 2.5 mm away from package surface	-

■ Electrical and optical characteristics (Ta=25 °C, Vcc=5 V, unless otherwise noted, light source: λp=890 nm LED)

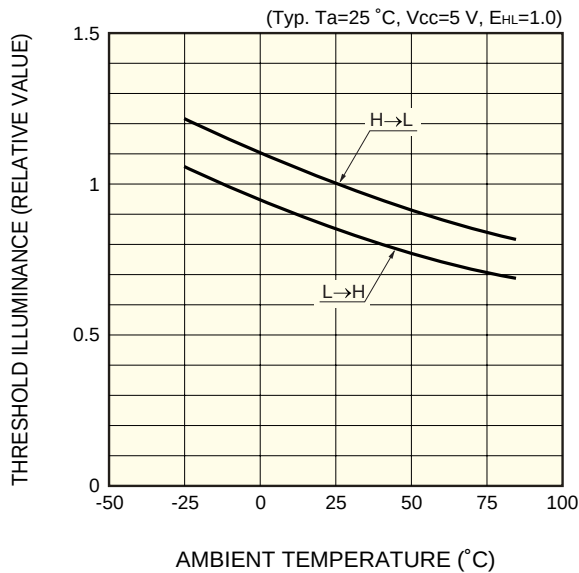
Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Supply voltage	Vcc		2.2	-	7.0	V
Low level output voltage	VOL	IoL=4 mA, E=0.4 μW/mm ²	-	0.05	0.4	V
High level output current	IOH	E=0 μW/mm ² , Vo=5 V	-	-	10	μA
Current consumption	Icc		-	1.3	3	mA
H→L threshold illuminance	EHL		-	0.10	0.25	μW/mm ²
Hysteresis	Hys	ELH/EHL	-	0.85	-	-
L→H propagation delay time	tPLH	E0=0 μW/mm ² E1=0.4 μW/mm ² RL=1.2 kΩ	-	4	15	μs
H→L propagation delay time	tPHL		-	1.5	10	μs
Peak sensitivity wavelength	λp		-	850	-	nm
Rise time	tr	E0=0 μW/mm ² E1=0.4 μW/mm ² RL=1.2 kΩ	-	0.07	1	μs
Fall time	tf		-	0.03	1	μs

Response time measurement circuit



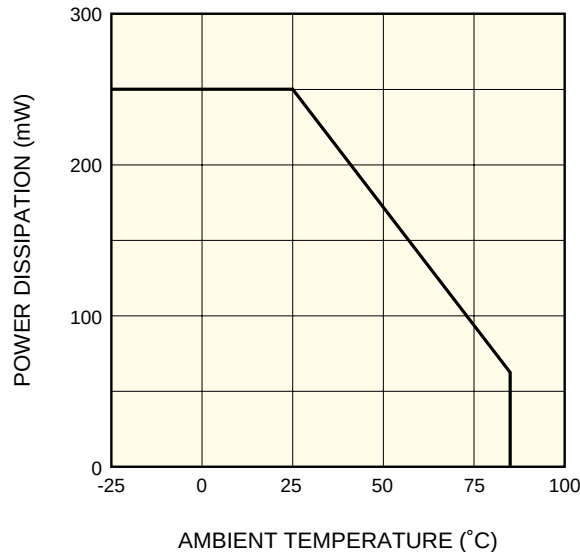
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Threshold illuminance vs. ambient temperature



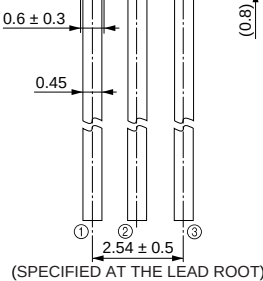
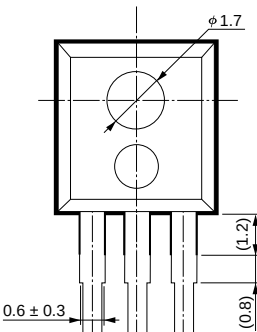
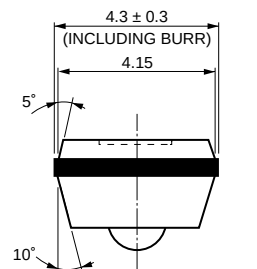
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Power dissipation vs. ambient temperature

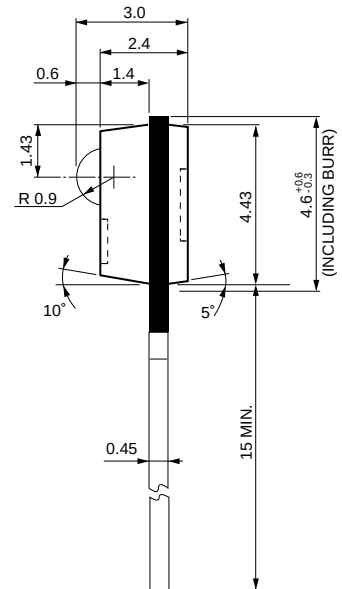


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Dimensional outline (unit: mm)



- ① GND
- ② V_0
- ③ V_{cc}



Tolerance unless otherwise noted: ± 0.2 , $\pm 2^\circ$
 Shaded area indicates burr.
 Values in parentheses are not guaranteed, but for reference.
 Lead surface process: Pd plated leads

KPICA0044EA

HAMAMATSU

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Cat. No. KPIC1027E03
 Oct. 2004 DN