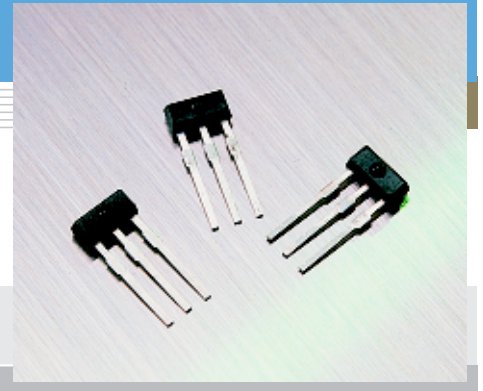


# Low-voltage operation photo IC S4810, S6289

## Operation at low voltage from 2.2 V



S4810 and S6289 are digital output photo ICs consisting of a photodiode, schmitt trigger circuit and output transistor, all integrated on a single chip and molded into a visible-cut, subminiature plastic package.

### Features

- Low-voltage operation: 2.2 to 7 V
- Subminiature plastic package with lens
- Low current consumption
- Open collector output
- S4810: "H" level output at light input  
S6289: "L" level output at light input

### Applications

- Cameras
- Tape start/end mark sensor for VTRs, cassette tape recorders, etc.
- Optical switches
- Encoders

### ■ 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
Output current	Io	8	mA
Power dissipation	P	150	mW
Operating temperature	Topr	-25 to +85	°C
Storage temperature	Tstg	-40 to +100	°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, light source: λp=890 nm LED, unless otherwise noted)

Parameter	Symbol	Condition	S4810			S6289			Unit
			Min.	Typ.	Max.	Min.	Typ.	Max.	
Supply voltage	Vcc		2.2	-	7.0	2.2	-	7.0	V
Low level output voltage	VoL	IoL=4 mA *1	-	-	0.4	-	-	0.4	V
High level output current	IoH	Vo=5 V *2	-	-	10	-	-	10	μA
Current consumption	Icc		-	1.3	3	-	1.3	3	mA
L→H Threshold illuminance	ELH	RL=1.2 kΩ	-	-	1.5	-	-	-	μW/mm <sup>2</sup>
H→L Threshold illuminance	EHL	RL=1.2 kΩ	-	-	-	-	-	1.5	μW/mm <sup>2</sup>
Hysteresis	-	*3	-	0.9	-	-	0.85	-	-
L→H Propagation delay time	tPLH	2 μW/mm <sup>2</sup> RL=1.2 kΩ	-	-	10	-	-	15	μs
H→L Propagation delay time	tPHL		-	-	15	-	-	10	μs
Rise time	tr		-	0.07	-	-	0.07	-	μs
Fall time	tf		-	0.03	-	-	0.03	-	μs
Peak sensitivity wavelength	λp		-	850	-	-	850	-	nm

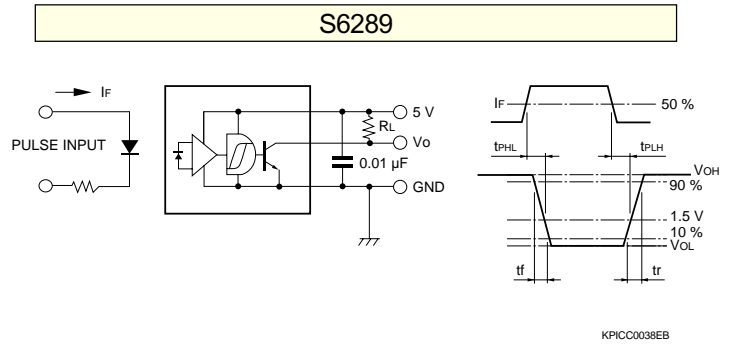
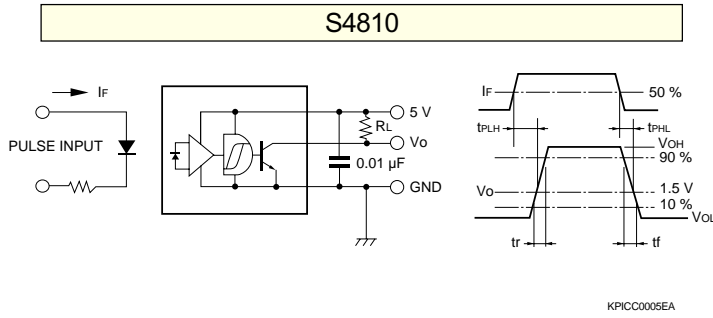
\*1: S4810: E (illuminance) =0 μW/mm<sup>2</sup>, S6289: E=2 μW/mm<sup>2</sup>

\*2: S4810: E=2 μW/mm<sup>2</sup>, S6289: E=0 μW/mm<sup>2</sup>

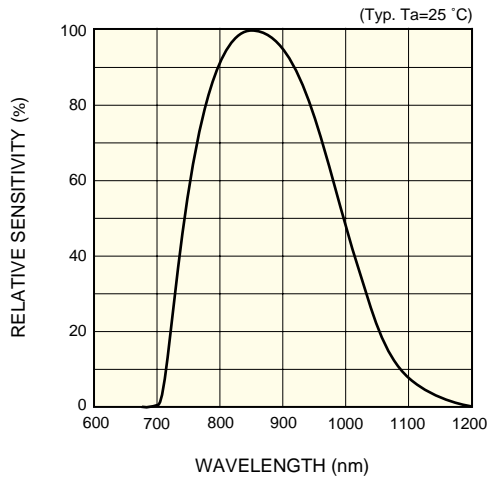
\*3: S4810: EHL/ELH, S6289: ELH/EHL

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

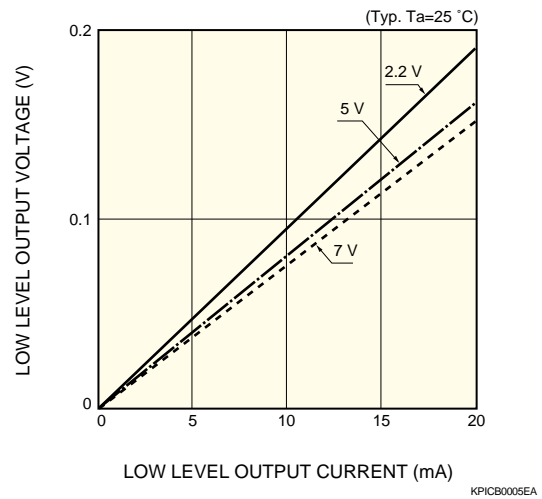
## ■ Response time measurement circuit



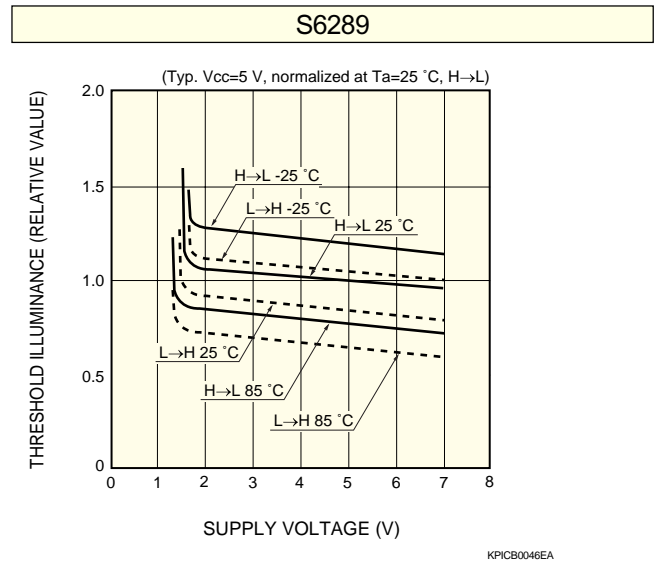
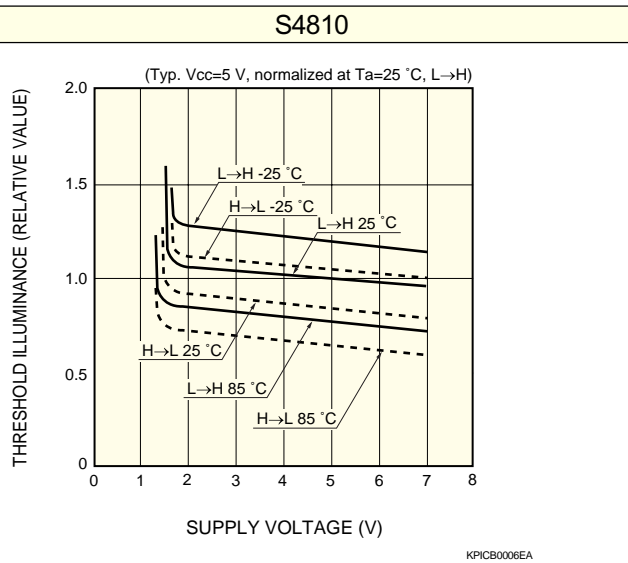
## ■ Spectral response



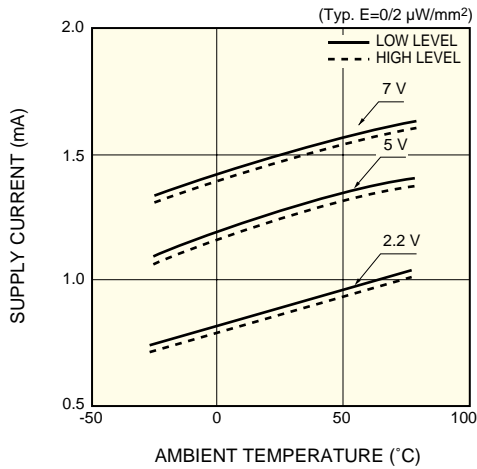
## ■ Low level output voltage vs. low level output current



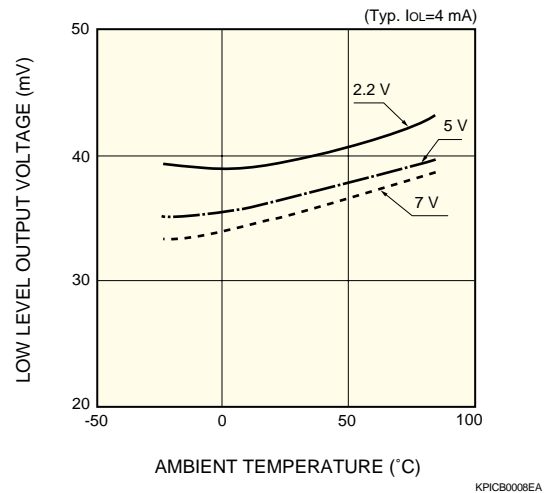
## ■ Threshold illuminance vs. supply voltage



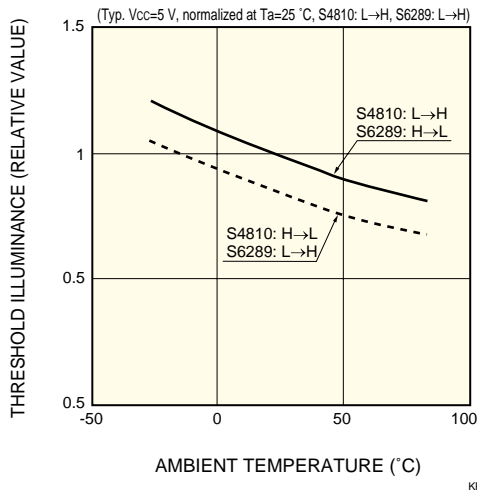
## Supply current vs. ambient temperature



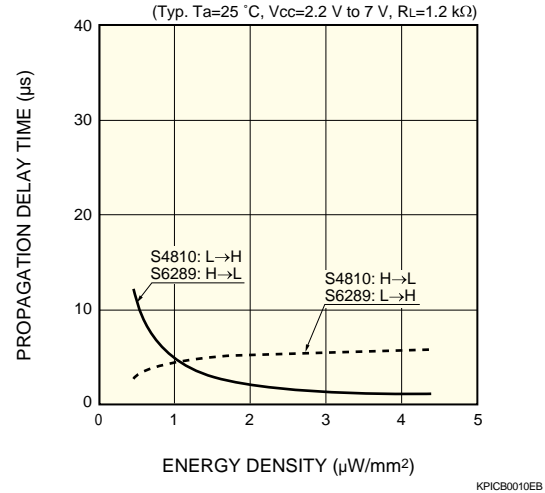
## Low level output voltage vs. ambient temperature



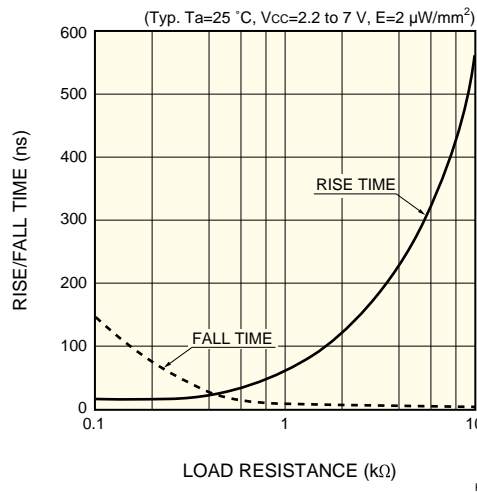
## Threshold illuminance vs. ambient temperature



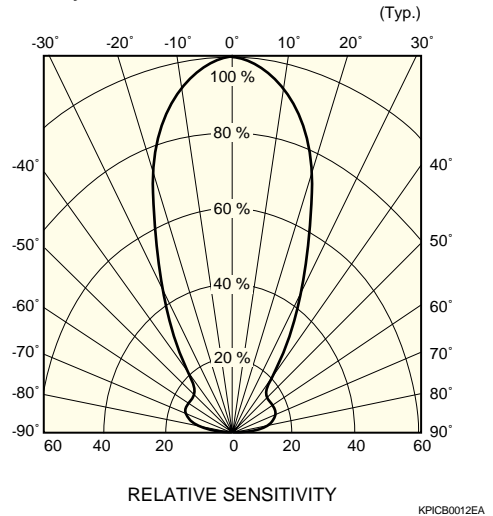
## Propagation delay time vs. input light strength



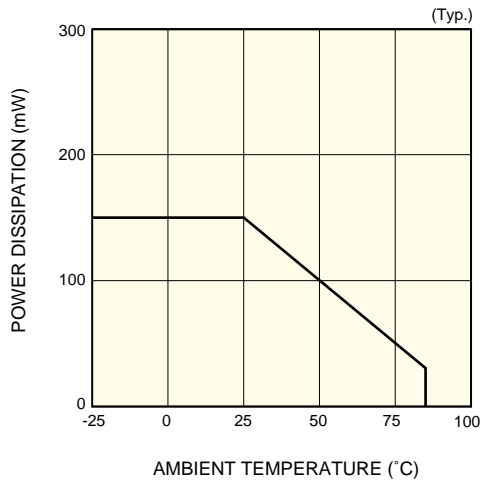
## Rise/fall time vs. load resistance



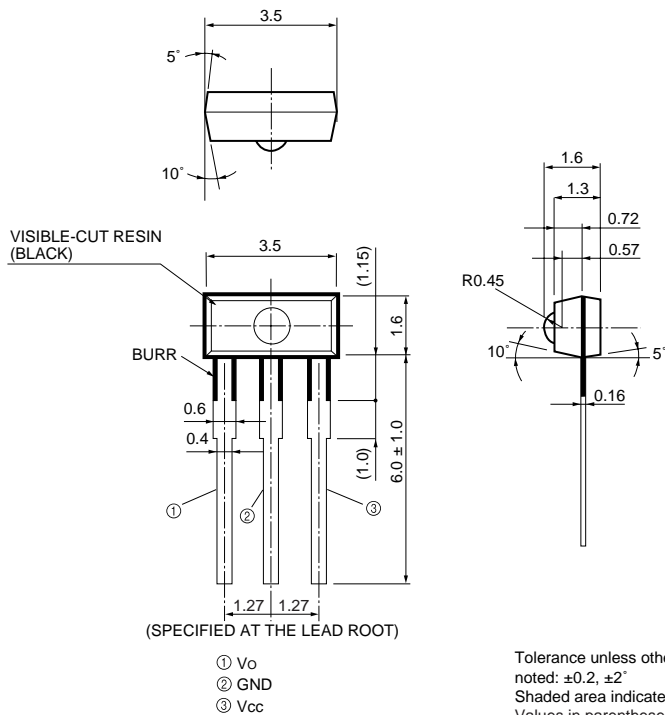
## Directivity



■ Power dissipation vs. ambient temperature



■ Dimensional outline (unit: mm)



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