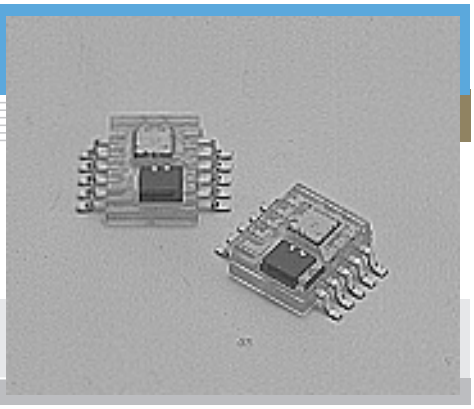
Photo IC for photometry
S6969

Built-in single-element photodiode and log amp



S6969 is designed for camera exposure meters. It consists of a single-element photodiode and an IC integrating a logarithmic amplifier circuit and a thermosensor.

Features

- Miniature clear plastic package (4.5 × 5.5 mm)
- Low noise
- Built-in thermosensor

Applications

- Camera auto exposure meter
- Various photometric applications

■ Absolute maximum ratings (Ta=25 °C)

Parameter	Symbol	Value	Unit	Note
Supply voltage	Vcc	-0.3 to +7	V	
Input voltage	-	Do not input voltage	-	Other terminals
Operating temperature	Topr	-20 to +60	°C	
Storage temperature	Tstg	-30 to +80	°C	
Soldering	-	230 °C, 3 s	-	

■ Recommended operating conditions

Parameter	Symbol	Value	Unit
Supply voltage	Vcc	3.0 to 3.5	V
		4.5 to 5.5	
Operating temperature	Topr	-15 to +40	°C

■ Optical characteristics (Ta=25 °C)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Spectral response range	λ		-	320 to 1100	-	nm
		*	-	320 to 730	-	
Peak sensitivity wavelength	λp		-	960	-	nm
		*	-	560	-	
Short circuit current	Isc	100 *lx*, "A" light source	-	2.75	-	μA
		100 *lx*, "A" light source *	-	240	-	nA

* When used with a standard visual compensation filter (0.5 mm thick)

■ Temperature characteristics (Ta= -15 to +40 °C, based on a value at 25 °C, Vcc=3.2 V, unless otherwise noted)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit	Terminal
Terminal voltage change	ΔVrf4		-30	-	30	mV	VR⑥
Output voltage temperature coefficient	α		-	17.8	-	mV/°C	TO④
Output voltage temperature coefficient	β	Output voltage: 500 mV	-	2500	-	ppm/°C	PO⑧
		Output voltage: 1000 mV	-	2900	-		
		Output voltage: 1500 mV	-	3000	-		
		Output voltage: 2000 mV	-	3100	-		

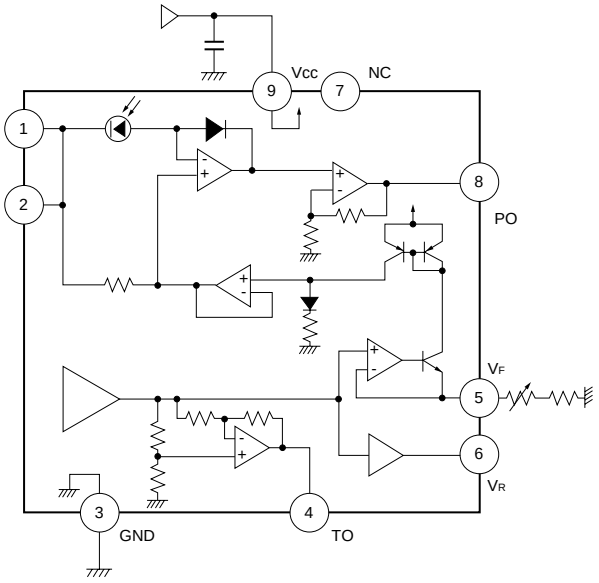
SOLID STATE DIVISION

■ Electrical and optical characteristics (Ta=25 °C, Vcc=3.2 V, unless otherwise noted)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit	Terminal
Current consumption	Icc	100 *lx*, "A" light source, Vcc=6.5 V *	-	3.5	6.0	mA	-
Terminal voltage	Vrf		2.05	2.20	2.35	V	VR⑥ Reference voltage
Load regulation	ΔVrf	Load current 0 to 2 mA (with respect to 0.5 mA)	-12	-	12	mV	
Output voltage	VTO		1.2	-	1.68	V	TO④ Thermo-sensor
Load regulation	ΔVTO	RL=100 kΩ (with respect to no load)	-10	-	10	mV	
Output voltage 1	VPOS	100 *lx*, "A" light source VF terminal ⑤ resistance 47 kΩ *	952	1092	1232	mV	PO⑧ Photometric output
Output voltage 1 load regulation	ΔVPO1	RL=100 kΩ (with respect to no load)	-10	-	10	mV	
Output voltage 1 change	ΔVPO2	VF terminal resistance 27 kΩ	140	170	270	mV	
	ΔVPO3	VF terminal resistance 100 kΩ	-270	-170	-140		
Output change 1	ΔVPO4	Difference between output voltage at 1 *lx* and output voltage 1 *	521	545	569	mV	
Output change 2	ΔVPO5	Difference between output voltage at 0.1 *lx* and output voltage 1 *	793	817	841	mV	
Power supply response	tp	Time required to reach within specified ΔVPO5 value after power is turned on	-	-	80	ms	

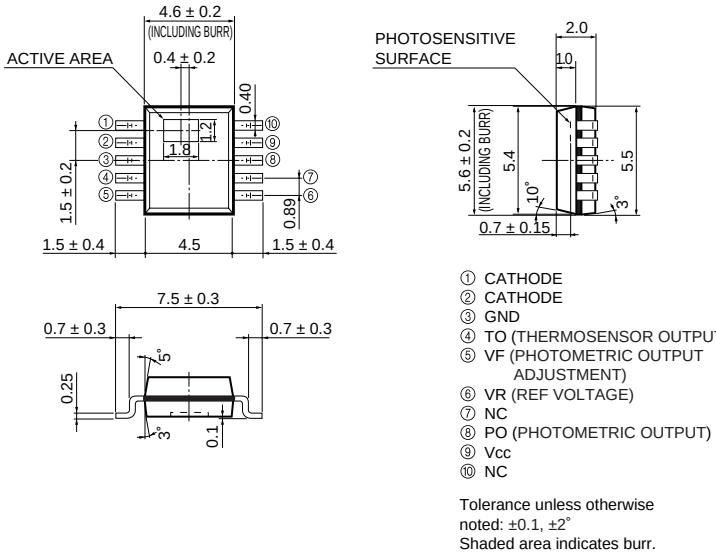
* When used with a standard visual compensation filter (0.5 mm thick)

■ Equivalent circuit



KPICC0037EA

■ Dimensional outline (unit: mm)



① CATHODE
② CATHODE
③ GND
④ TO (THERMOSENSOR OUTPUT)
⑤ VF (PHOTOMETRIC OUTPUT ADJUSTMENT)
⑥ VR (REF VOLTAGE)
⑦ NC
⑧ PO (PHOTOMETRIC OUTPUT)
⑨ Vcc
⑩ NC

Tolerance unless otherwise noted: ±0.1, ±2°
Shaded area indicates burr.

KPICA0021EA

HAMAMATSU PHOTONICS K.K., Solid State Division
1126-1 Ichino-cho, Hamamatsu City, 435-8558 Japan, Telephone: (81) 053-434-3311, Fax: (81) 053-434-5184, http://www.hamamatsu.com
U.S.A.: Hamamatsu Corporation: 360 Foothill Road, P.O.Box 6910, Bridgewater, N.J. 08807-0910, U.S.A., Telephone: (1) 908-231-0960, Fax: (1) 908-231-1218
Germany: Hamamatsu Photonics Deutschland GmbH: Arzbergerstr. 10, D-82211 Herrsching am Ammersee, Germany, Telephone: (49) 08152-3750, Fax: (49) 08152-2658
France: Hamamatsu Photonics France S.A.R.L.: 8, Rue du Saule Trapu, Parc du Moulin de Massy, 91882 Massy Cedex, France, Telephone: 33-(1) 69 53 71 00, Fax: 33-(1) 69 53 71 10
United Kingdom: Hamamatsu Photonics UK Limited: 2 Howard Court, 10 Tewin Road, Welwyn Garden City, Hertfordshire AL7 1BW, United Kingdom, Telephone: (44) 1707-294888, Fax: (44) 1707-325777
North Europe: Hamamatsu Photonics Norden AB: Smidesvägen 12, SE-171 41 Solna, Sweden, Telephone: (46) 8-509-031-00, Fax: (46) 8-509-031-01
Italy: Hamamatsu Photonics Italia S.R.L.: Strada della Moia, 1/E, 20020 Arese, (Milano), Italy, Telephone: (39) 02-935-81-733, Fax: (39) 02-935-81-741

Cat. No. KPIC1038E01
Feb. 2001 DN