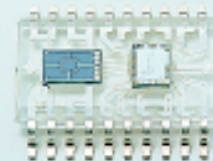


Photo IC for photometry

S6840

Photo IC incorporating a 5-element photodiode



S6840 is designed for camera exposure meters. It consists of a 5-element photodiode and an IC integrating a logarithmic amplifier circuit with gain switching and a thermosensor.

Features

- 5-element photodiode (1 element in center, 4 elements at peripheral) allows independent photometry in each area
- Clear plastic package (9.5 × 5.2 mm)
- Low noise
- Built-in thermosensor
- Wide photometric range

Applications

- Camera auto exposure meter

■ Absolute maximum ratings (Ta=25 °C)

Parameter	Symbol	Value	Unit
Supply voltage	Vcc	-0.3 to +7	V
Input voltage	Terminals D1 to D3	-0.3 to Vcc+0.3	V
	Other terminals	Do not input voltage	
Operating temperature	Topr	-20 to +60	°C
Storage temperature	Tstg	-30 to +80	°C
Soldering	-	230 °C, 5 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, Vcc=5 V)

Parameter	Symbol	Condition		Min.	Typ.	Max.	Unit
Spectral response range	λ			320 to 1100			nm
		*		320 to 730			
Peak sensitivity wavelength	λ_p			-	960	-	nm
		*		-	560	-	
Short circuit current	Isc	100 lx "A" light source	Center	-	421	-	nA
			Peripheral	-	727	-	
			* Center	-	37	-	
			Peripheral	-	64	-	

* 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=5.0 V, unless otherwise noted)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit	Terminal
Terminal voltage change	ΔV_{rf5}	Terminal (10) open	-30	-	30	mV	VR (11)
Output voltage temperature coefficient	α		-	16.5	-	mV/°C	TO (7)
Output voltage temperature coefficient	β	Vpo - V'po [terminal (14) GND]	-	3350	-	ppm/°C	PO (12)

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

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit	Terminal	
Current consumption	I _{cc}	100 lx "A" light source, V _{cc} =6.5 V, *3		5.0	8.4	mA	-	
H Input voltage	V _{IH}		V _{cc} × 0.7	-	-	V	D1 (15) D2 (14) D3 (13)	
L Input voltage	V _{IL}		-	-	V _{cc} × 0.3			
L Input current	I _{IL}	V _{IN} =0 V	-220	-110	-52	μA	Output switching	
Terminal voltage	V _{rf}		2.05	2.20	2.35	V	VR (11)	
Load regulation *2	ΔV _{rf}	Load current: 0 to 2 mA (with respect to 0.5 mA)	-12	-	12	mV	Reference voltage	
	ΔV _{TO}	R _L =100 kΩ (with respect to no load)	-10	-	10	mV	TO (7) Thermo-sensor	
	ΔV _{PO1}	R _L =100 kΩ (with respect to no load)	-10	-	10	mV	PO (12)	
Thermosensor output	V _{TO}		1.2	1.44	1.68	V	TO (7) Thermo-sensor	
Photometric output	V _{POB} ~ V _{POE}	100 lx "A" light source VF terminal (8)	*4	1264	1344	1424	mV	PO (12) Photometric output
	V _{POA}	resistance: 24 kΩ, *3	*5	1329	1409	1489		
Photometric output change	ΔV _{PO2}	100 lx→1 lx "A" light source, *3	*4	503	527	551		
		100 lx→0.1 lx "A" light source, *3	*4	770	818			
			*5	746	842			
Switching response	t _s	Time required to reach within specified V _{POA} value after output is switched from V _{POB} ~ V _{POE} to V _{POA}	-	0.005	5	ms		
Power supply response	t _p	Time required reach within specified ΔV _{PO2} value after power is turned on	-	-	80	ms		

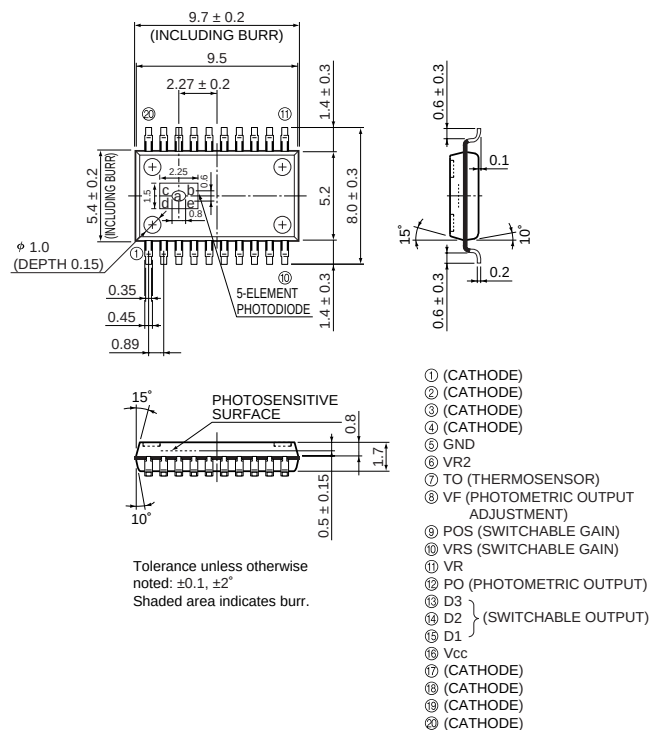
*2: Variation in output voltage when load varies

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

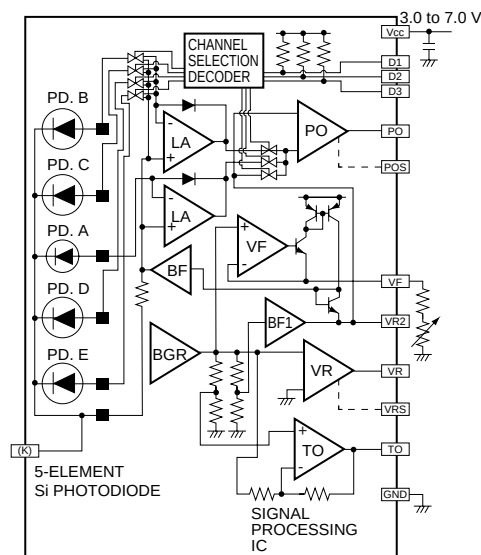
*4: When peripheral photodiodes are selected

*5: When center photodiode is selected

■ Dimensional outline (unit: mm)



■ Equivalent circuit



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