On9668 Ambient Light Switch Sensor

■ General Description

The On9668 is a photoelectric integration switch with double sensitive receiver in it designed at λp=520nm. Its valve value can be modulated by adjusting a external resistor, and it's output voltage can be logical "L" or "H". The peripheral circuit is very simple. Especially, it is used to save energy, automatic sensitization in toy, lamps and lanterns, instruments, industry device etc. domain.

■ Electric Characteristic

- Small dark current, low illumination response, high sensibility;
- Built in double sensitive receiver, Optical filter-less, attenuation spectral response close to human eye sensitivity;
- Embedded micro signal CMOS amplifier, high precision voltage source, and correct circuit; Output current is high to 30mA;
- Wide power supply voltage range, perfect temperature stability.
- Two Optics material packages to choose, to permeating visible light, cut off ultraviolet, relative damping infrared ray, and improve optical-filter effect;
- According with RoHS standard. Pb free, CdS free.

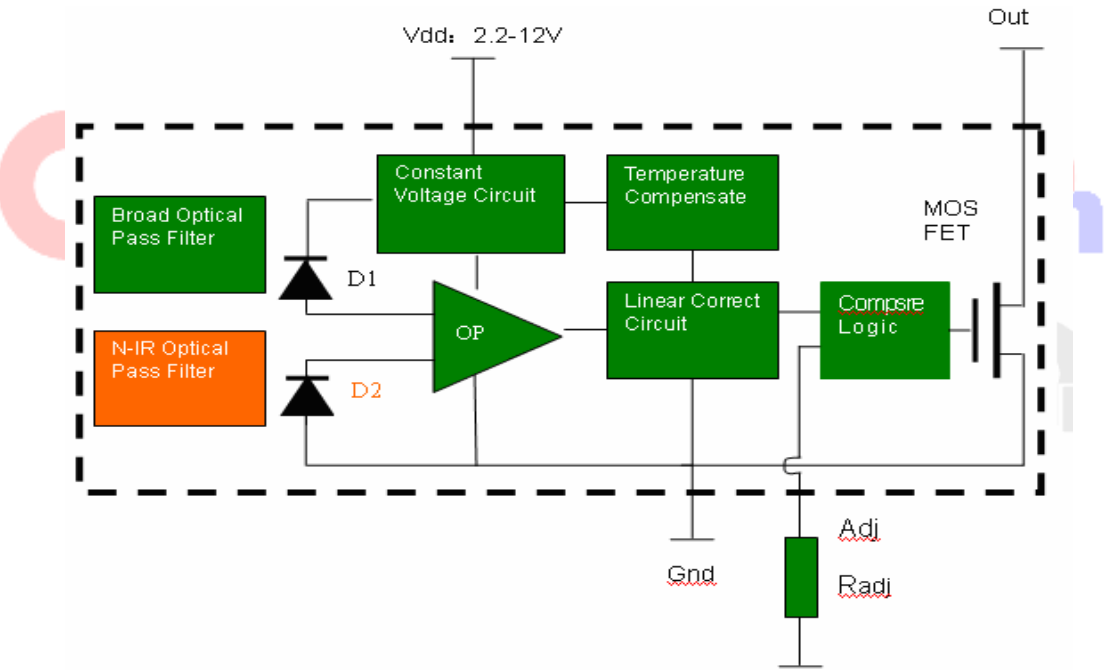

Fig.1 Visible Light Switch Sensor Schematics

Typical Application

- Energy saving: outdoor advertisement machine, inductive lightening utensil, and toy;
- Environment protection substitute: substitute for light sensitive resistor, photosensitive diode, photosensitive triode;
- Instrument: illuminometer and industry control.

Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Power Supply Voltage	Vdd	2.4-12	V
Power loss	P	150	mW
Operating Temperature Range	Topr.	-20 to +75	℃
Storage Temperature Range	Tstg.	-40 to +120	℃
Soldering Temperature	Tsol.	260	℃

Optic-electric characteristics

Parameter	Symbol	Test Conditions Vcc=5V,R=1KΩ,Ta=25℃	Min.	Typ.	Max.	Unit
Typical incident wave	λp	-	-	520	-	nm
Quiescent Current	I_D	Ev=0Lux,	0.3	0.4	0.6	mA
Output current	I_L	U_{ADJ}≤1.2V		20	30	mA
		U_{ADJ}≥1.6V		0		
		1.2V＜U_{ADJ}＜1.6V	---	Hold	---	
Response time	Tr	-	-	2	-	μs
	Tf	-	-	2	-	μs

Test Conditions：Ambient temperature 25ºC±3，external set resistor R=13KΩ@100 LUX ,Supply voltage Vdd=5V。If used the “ A” light sources that the sensor out haven’t same.

Output logic

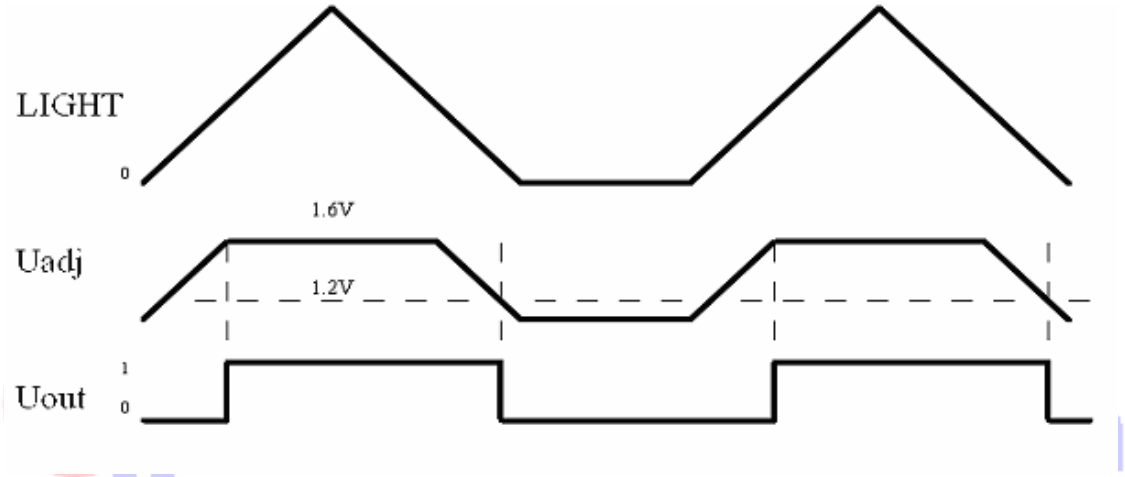

Fig.2 Logic timing diagram

Spectral Response

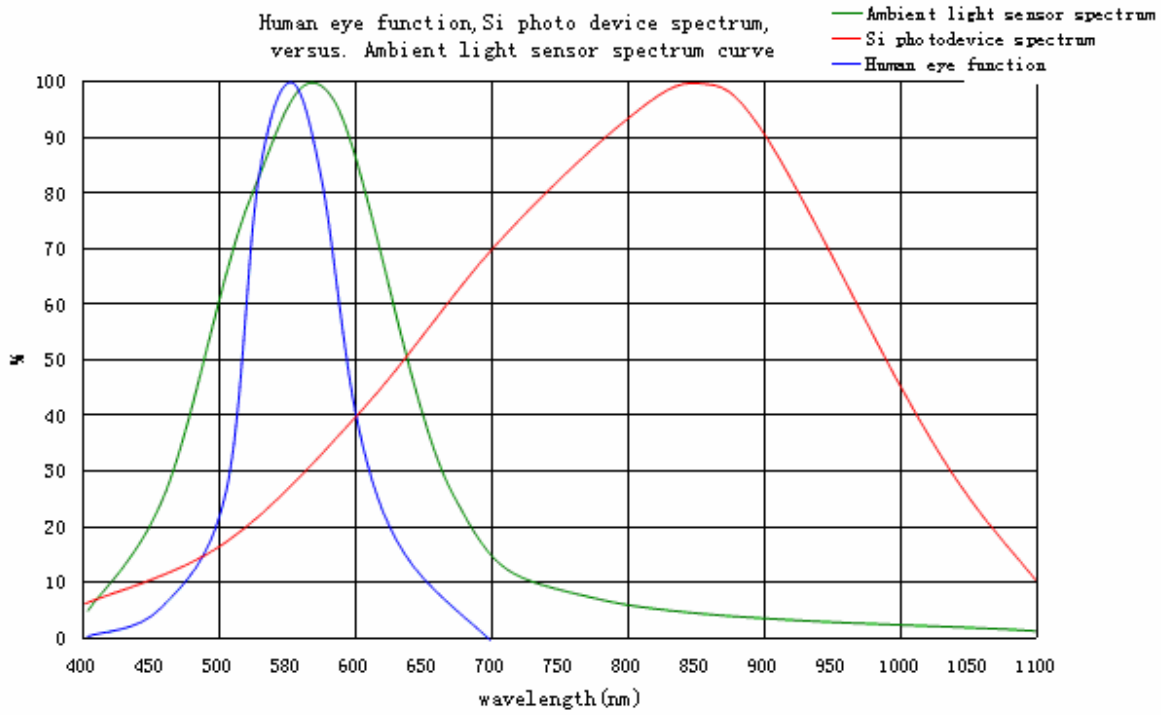

Fig.3 Human eye function,Si photo device spectrum versus. Illumination sensor spectrum curve

■Typical Test Application Circuit

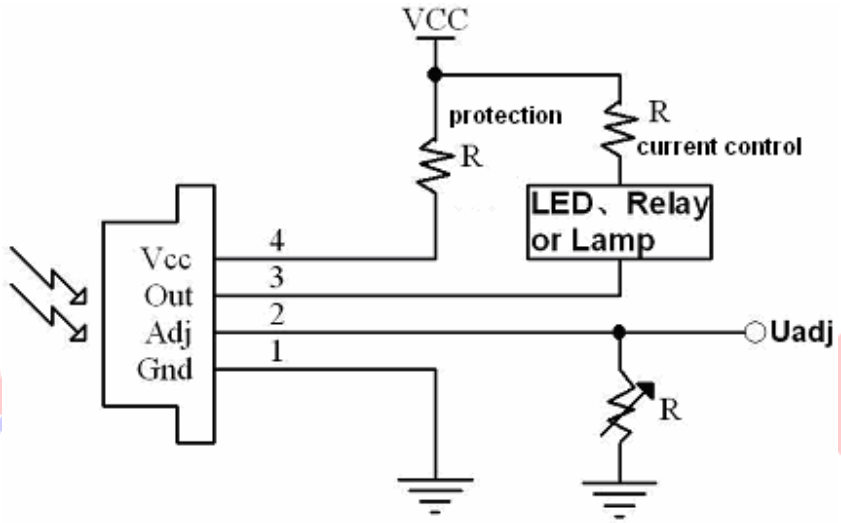

Fig.4 Light control typical circuit used the On-9668 sensor

Turn on LED/relay by adjusting Vadj to let illumination under a fixed value. A noisy input light to the sensor could cause unwanted state changes near the illumination threshold. Schmitt trigger logic reduces this problem by using two voltage thresholds: a high threshold to switch the circuit during low-to-high transitions and a lower threshold to switch the circuit during high-to-low transitions. The noise under 10% won't affect the output.

■ Package Dimensions

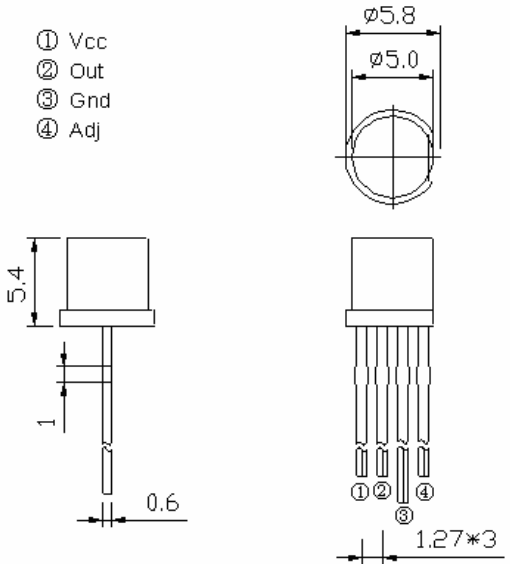

Fig.5 Φ5mm Package Dimensions unit:mm

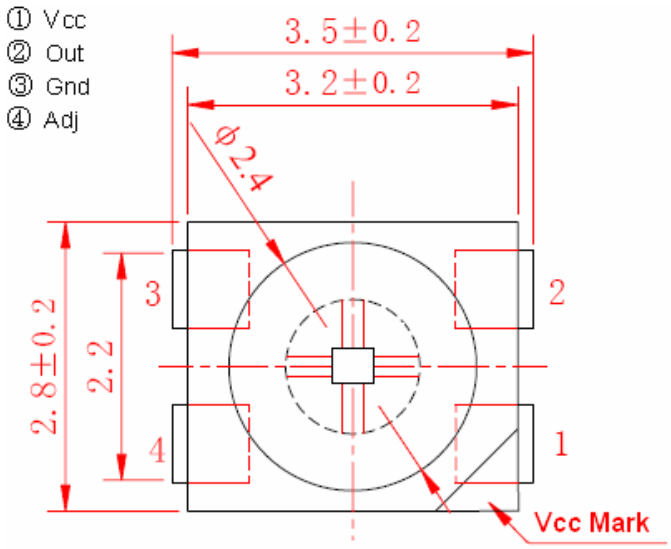

Fig.6 SMD 3528 Package Dimensions unit:mm

■ Enclosure material

Component	Material	Color	Characteristic	environmental protection
Chip	Si	---	---	RoHS
Package Material	Epoxy	Achromaticity	Light be effected by near infrared light	RoHS

■ Attention

Don't use the sensor out of the domain of Product Standards;

The application circuit in Product Standards only used for example, please attention the periphery establishment to design circuit and adjust the parameter;

The sensor have CMOS IC in it, please avoid static electrical breakdown;

Please ensure soldering temperature in max rated range. Don't put outside force on the feet in soldering and just soldered. Don't solder repeatedly.

The product accord with European RoHS instruction

Photocurrent may be affected by damnification and pollution on the surface, protection against the tide;

Common Φ5mm packaged as 1000 per bag，SMD3528 packaged as 2000 per bag tray；

If the specification is modified in future, forgive us not to inform you.

■ Law declaration

The product has obtain patent right from Chinese Knowledge Property Right Bureau. The patent right number is ZL200520060170.5. Any unit or individual can copy, modify, and sale the CMOS chip sample in any form until obtain clear permission in affidavit. For market reason, all mutuality manufacturers must obtain the usufruct to use through justice channel and agreement. Any tortuous action must take in law sequence and amends economy loss for patentee.