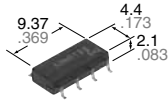


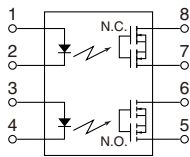


**Both NO and NC contacts incorporated in a small SOP8-pin package**

**PhotoMOS<sup>®</sup>  
GU SOP 1 Form A & 1 Form B  
(AQW610S)**



mm inch



**RoHS compliant**

### FEATURES

**1. Normally open and normally closed contacts in a SOP package**

The device comes in a miniature SOP measuring (W) 4.4 × (L) 9.37 × (H) 2.1 mm (W) .173 × (L) .369 × (H) .083 inch — approx. 38% of the volume and 66% of the footprint size of DIP type.

**2. 60V type couples high capacity (0.45A) with low on-resistance (typ. 1Ω) (AQW612S).**

**3. Applicable for 1 Form A and 1 Form B use as well as two independent 1 Form A and 1 Form B use**

**4. Controls low-level analog signals**  
PhotoMOS feature extremely low closed-circuit offset voltage to enable control of low-level analog signals without distortion

**5. Low-level off-state leakage current of max. 1 μA**

### TYPICAL APPLICATIONS

- Power supply
- Measuring equipment
- Security equipment
- Telephone equipment
- Computer input machines
- Industrial robots
- High-speed inspection machines

### TYPES

	Output rating*		Package	Part No.			Packing quantity	
	Load voltage	Load current		Tube packing style	Tape and reel packing style		Tube	Tape and reel
					Picked from the 1/2/3/4-pin side	Picked from the 5/6/7/8-pin side		
AC/DC dual use	60V	450mA	SOP8-pin	AQW612S	AQW612SX	AQW612SZ	1 tube contains: 50 pcs. 1 batch contains: 1,000 pcs.	1,000 pcs.
	350V	100mA		AQW610S	AQW610SX	AQW610SZ		

\* Indicate the peak AC and DC values.  
Note: The packing style indicator "X" or "Z" are not marked on the device.

### RATING

**1. Absolute maximum ratings (Ambient temperature: 25°C 77°F)**

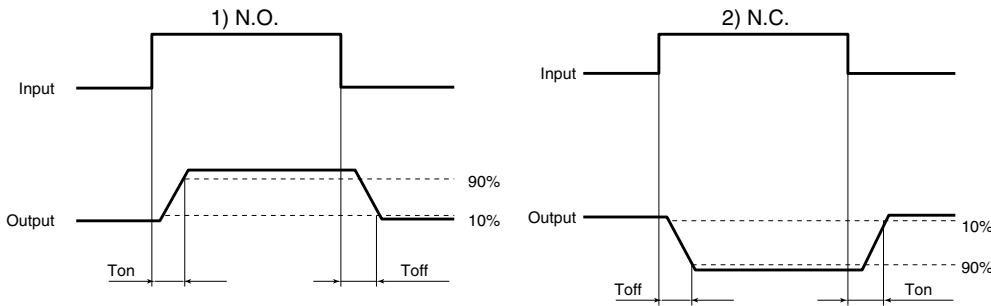
Item	Symbol	AQW612S	AQW610S	Remarks
Input	LED forward current	I <sub>F</sub>	50 mA	
	LED reverse voltage	V <sub>R</sub>	5 V	
	Peak forward current	I <sub>FP</sub>	1 A	f = 100 Hz, Duty factor = 0.1%
	Power dissipation	P <sub>in</sub>	75 mW	
Output	Load voltage (peak AC)	V <sub>L</sub>	60 V	350 V
	Continuous load current	I <sub>L</sub>	0.45 A (0.55 A)	0.1 A (0.13 A)
	Peak load current	I <sub>peak</sub>	1.5 A	0.3 A
	Power dissipation	P <sub>out</sub>	600 mW	
Total power dissipation	P <sub>T</sub>	650 mW		
I/O isolation voltage	V <sub>iso</sub>	1,500 V AC		
Temperature limits	Operating	T <sub>opr</sub>	-40°C to +85°C -40°F to +185°F	
	Storage	T <sub>stg</sub>	-40°C to +100°C -40°F to +212°F	

# GU SOP 1 Form A & 1 Form B (AQW61OS)

## 2. Electrical characteristics (Ambient temperature: 25°C 77°F)

Item		Symbol	AQW612S	AQW610S	Condition	
Input	LED operate current	Typical	0.9 mA		I <sub>L</sub> = Max.	
		Maximum	3 mA			
	LED reverse current	Minimum	0.4 mA		I <sub>L</sub> = Max.	
		Typical	0.8 mA			
LED dropout voltage	Typical	1.25 V (1.14 V at I <sub>F</sub> = 5 mA)		I <sub>F</sub> = 50 mA		
	Maximum	1.5 V				
Output	On resistance	Typical	1 Ω	18 Ω	I <sub>F</sub> = 5 mA (N.O.) I <sub>F</sub> = 0 mA (N.C.) I <sub>L</sub> = Max. Within 1 s on time	
		Maximum	2.5 Ω	25 Ω		
	Off state leakage current	Maximum	1 μA			I <sub>F</sub> = 0 mA (N.O.) I <sub>F</sub> = 5 mA (N.C.) V <sub>L</sub> = Max.
Transfer characteristics	Operate time*	Typical	T <sub>On</sub> (N.O.)	0.65 ms (N.O.), 0.9 ms (N.C.)	0.28 ms (N.O.), 0.52 ms (N.C.)	I <sub>F</sub> = 0 mA → 5 mA I <sub>L</sub> = Max.
		Maximum	T <sub>Off</sub> (N.C.)	3.0 ms		
	Reverse time*	Typical	T <sub>Off</sub> (N.O.)	0.08 ms (N.O.), 0.2 ms (N.C.)	0.04 ms (N.O.), 0.23 ms (N.C.)	I <sub>F</sub> = 5 mA → 0 mA I <sub>L</sub> = Max.
		Maximum	T <sub>On</sub> (N.C.)	1.0 ms		
	I/O capacitance	Typical	C <sub>iso</sub>	0.8 pF		f = 1 MHz V <sub>B</sub> = 0 V
Maximum	1.5 pF					
Initial I/O isolation resistance	Minimum	R <sub>iso</sub>	1,000 MΩ		500 V DC	

\*Operate/Reverse time



## RECOMMENDED OPERATING CONDITIONS

Please obey the following conditions to ensure proper device operation and resetting.

Item	Symbol	Recommended value	Unit
Input LED current	I <sub>F</sub>	5	mA

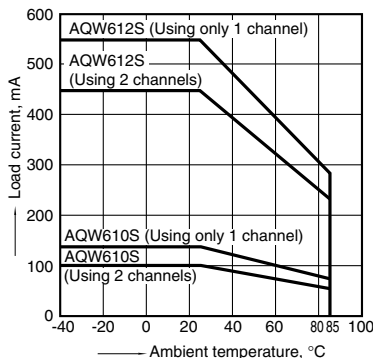
■ These products are not designed for automotive use.

If you are considering to use these products for automotive applications, please contact your local Panasonic Corporation technical representative.

## REFERENCE DATA

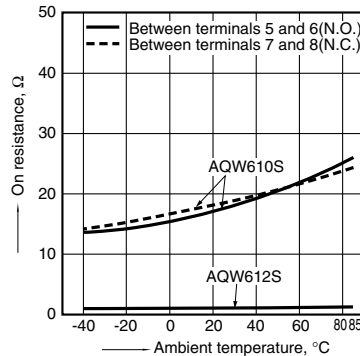
1. Load current vs. ambient temperature characteristics

Allowable ambient temperature: -40°C to +85°C  
-40°F to +185°F



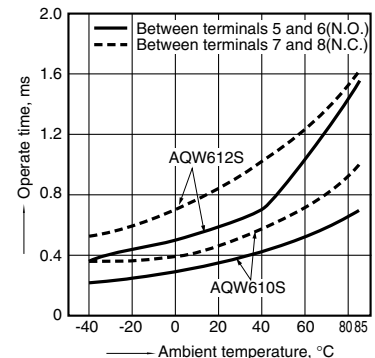
2. On resistance vs. ambient temperature characteristics

Measured portion: between terminals 5 and 6, 7 and 8; LED current: 5 mA; Load voltage: Max. (DC); Continuous load current: Max. (DC)



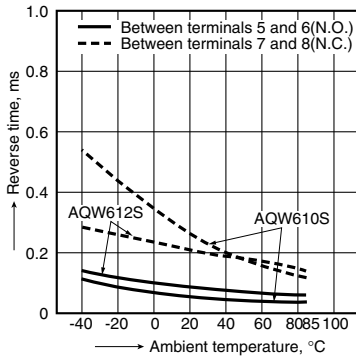
3. Operate time vs. ambient temperature characteristics

LED current: 5 mA;  
Load voltage: Max. (DC);  
Continuous load current: Max. (DC)



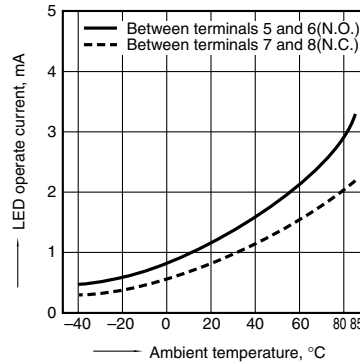
4. Reverse time vs. ambient temperature characteristics

LED current: 5 mA; Load voltage: Max. (DC); Continuous load current: Max. (DC)



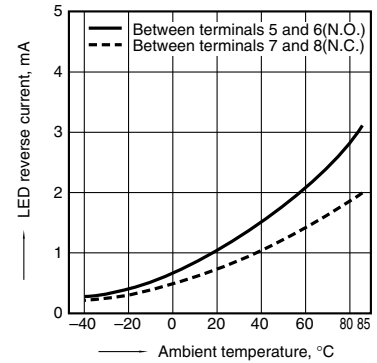
5. LED operate current vs. ambient temperature characteristics

Load voltage: Max. (DC); Continuous load current: Max. (DC)



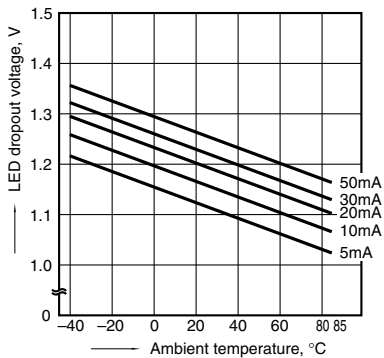
6. LED reverse current vs. ambient temperature characteristics

Load voltage: Max. (DC); Continuous load current: Max. (DC)



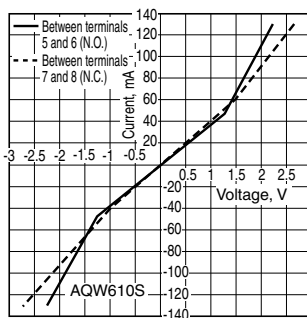
7. LED dropout voltage vs. ambient temperature characteristics

LED current: 5 to 50 mA



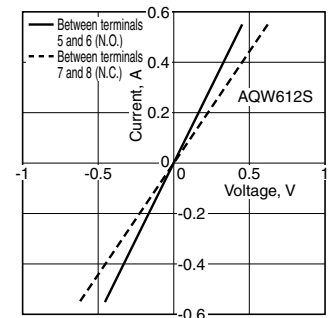
8-(1). Current vs. voltage characteristics of output at MOS portion

Measured portion: between terminals 5 and 6, 7 and 8; Ambient temperature: 25°C 77°F



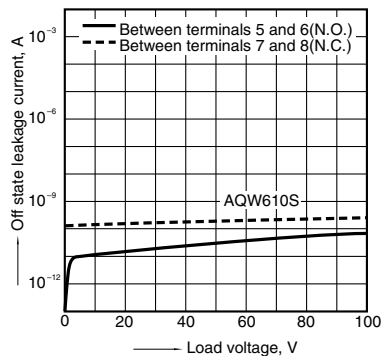
8-(2). Current vs. voltage characteristics of output at MOS portion

Measured portion: between terminals 5 and 6, 7 and 8; Ambient temperature: 25°C 77°F



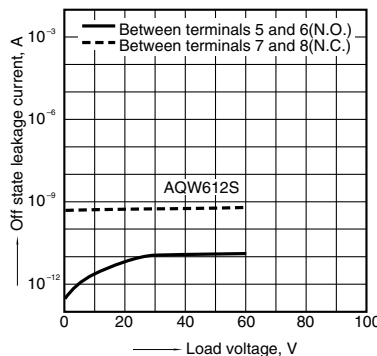
9-(1). Off state leakage current vs. load voltage characteristics

Measured portion: between terminals 5 and 6, 7 and 8; Ambient temperature: 25°C 77°F



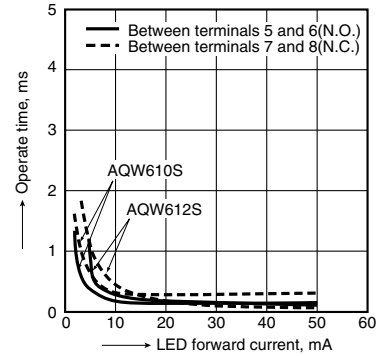
9-(2). Off state leakage current vs. load voltage characteristics

Measured portion: between terminals 5 and 6, 7 and 8; Ambient temperature: 25°C 77°F



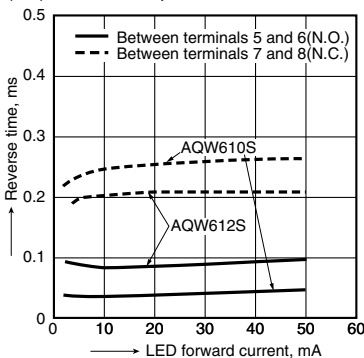
10. Operate time vs. LED forward current characteristics

Measured portion: between terminals 5 and 6, 7 and 8; Load voltage: Max. (DC); Continuous load current: Max. (DC); Ambient temperature: 25°C 77°F



11. Reverse time vs. LED forward current characteristics

Measured portion: between terminals 5 and 6, 7 and 8; Load voltage: Max. (DC); Continuous load current: Max. (DC); Ambient temperature: 25°C 77°F



12. Output capacitance vs. applied voltage characteristics

Measured portion: between terminals 5 and 6, 7 and 8; LED current: 0 mA (N.O.), 5 mA (N.C.); Frequency: 1 MHz; Ambient temperature: 25°C 77°F

