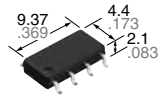
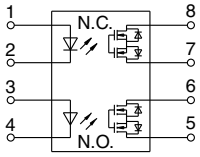
(AQW610S) (AQW612S)

Both N.O. and N.C. contacts incorporated in a small SOP8-pin package

PhotoMOS® GU SOP 1 Form A & 1 Form B (AQW61○S)



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

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

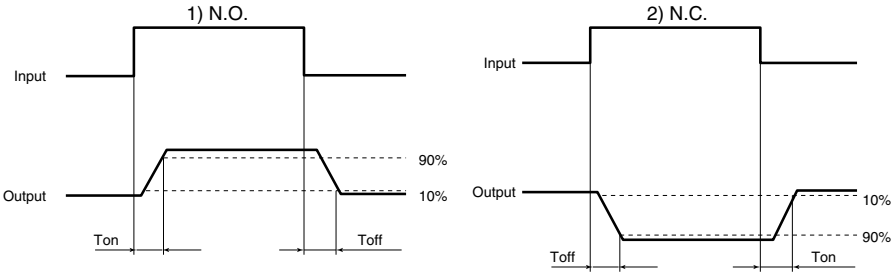
1. Absolute maximum ratings (Ambient temperature: 25°C 77°F)

Item		Symbol	AQW612S	AQW610S	Remarks
Input	LED forward current	I_F	50 mA		
	LED reverse voltage	V_R	5 V		
	Peak forward current	I_{FP}	1 A		f = 100 Hz, Duty factor = 0.1%
	Power dissipation	P_{in}	75 mW		
Output	Load voltage (peak AC)	V_L	60 V	350 V	
	Continuous load current	I_L	0.45 A (0.55 A)	0.1 A (0.13 A)	Peak AC, DC ( ): in case of using only 1a or 1b, 1 channel
	Peak load current	I_{peak}	1.5 A	0.3 A	100 ms (1 shot), V_L = DC
	Power dissipation	P_{out}	600 mW		
Total power dissipation		P_T	650 mW		
I/O isolation voltage		V_{iso}	1,500 Vrms		
Ambient temperature	Operating	T_{opr}	–40 to +85°C –40 to +185°F		(Non-icing at low temperatures)
	Storage	T_{stg}	–40 to +100°C –40 to +212°F		

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

Item			Symbol	AQW612S	AQW610S	Condition
Input	LED operate current	Typical	I_{Fon} (N.O.) I_{Foff} (N.C.)	0.9 mA		I_L = Max.
		Maximum		3 mA		
	LED reverse current	Minimum	I_{Foff} (N.O.) I_{Fon} (N.C.)	0.4 mA		I_L = Max.
		Typical		0.8 mA		
	LED dropout voltage	Typical	V_F	1.25 V (1.14 V at I_F = 5 mA)		I_F = 50 mA
		Maximum		1.5 V		
Output	On resistance	Typical	R_{on}	1 Ω	18 Ω	I_F = 5 mA (N.O.) I_F= 0 mA (N.C.) I_L = Max. Within 1 s
		Maximum		2.5 Ω	25 Ω	
	Off state leakage current	Maximum	I_{Leak}	1 μA		I_F = 0 mA (N.O.) I_F= 5 mA (N.C.) V_L = Max.
Transfer characteristics	Operate time*	Typical	T_{on} (N.O.) T_{off} (N.C.)	0.65 ms (N.O.), 0.9 ms (N.C.)	0.28 ms (N.O.), 0.52 ms (N.C.)	I_F = 0 mA → 5 mA I_L = Max.
		Maximum		3.0 ms	1.0 ms	
	Reverse time*	Typical	T_{off} (N.O.) T_{on} (N.C.)	0.08 ms (N.O.), 0.2 ms (N.C.)	0.04 ms (N.O.), 0.23 ms (N.C.)	I_F = 5 mA → 0 mA I_L = Max.
		Maximum		1.0 ms	1.0 ms	
	I/O capacitance	Typical	C_{iso}	0.8 pF		f = 1 MHz V_B = 0 V
		Maximum		1.5 pF		
	Initial I/O isolation resistance	Minimum	R_{iso}	1,000 MΩ		500 V DC

*Operate/Reverse time



3. Recommended operating conditions (Ambient temperature: 25°C 77°F)

Please use under recommended operating conditions to obtain expected characteristics.

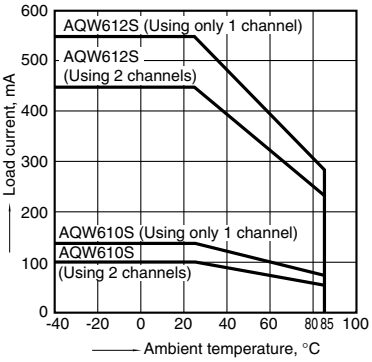
Item		Symbol	Number of used channels	Min.	Max.	Unit
LED current		I_F		5	30	mA
AQW612S	Load voltage (Peak AC)	V_L		—	48	V
	Continuous load current	I_L	1ch 2ch	—	0.55 0.45	A
AQW610S	Load voltage (Peak AC)	V_L		—	280	V
	Continuous load current	I_L	1ch 2ch	—	0.13 0.1	A

■ **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

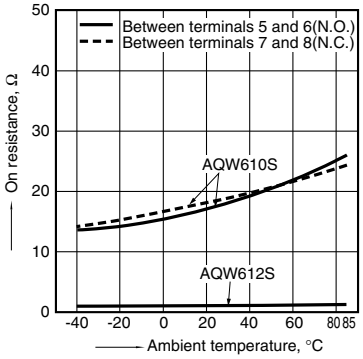
1. Load current vs. ambient temperature characteristics

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



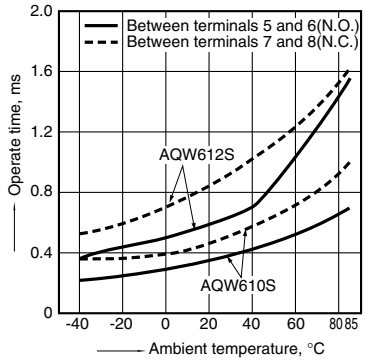
2. On resistance vs. ambient temperature characteristics

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



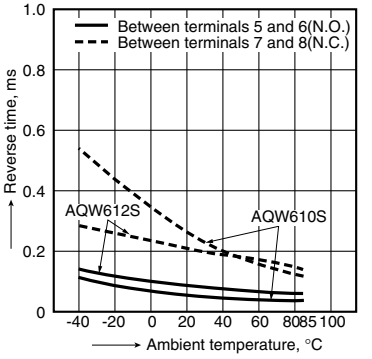
3. Operate time vs. ambient temperature characteristics

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



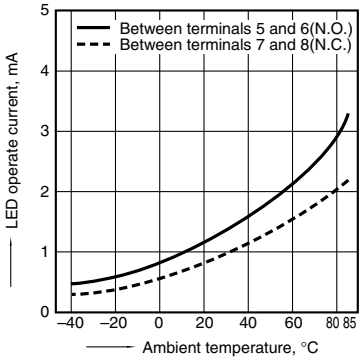
4. Reverse time vs. ambient temperature characteristics

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



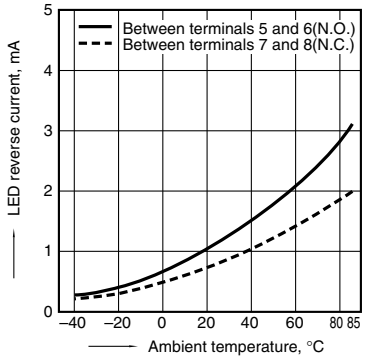
5. LED operate current vs. ambient temperature characteristics

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



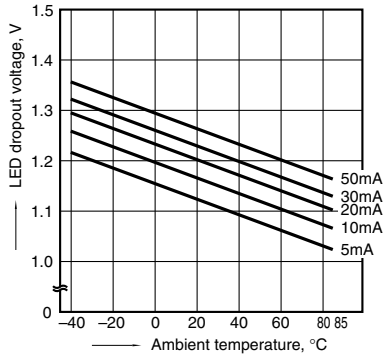
6. LED reverse current vs. ambient temperature characteristics

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



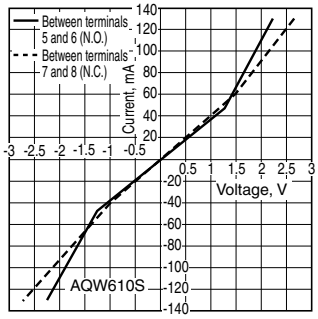
7. LED dropout voltage vs. ambient temperature characteristics

LED current: 5 to 50 mA



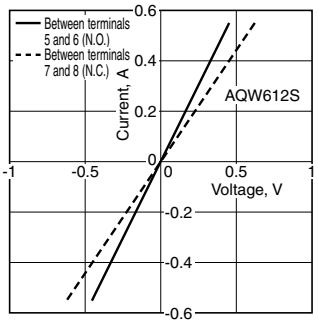
8-(1). Current vs. voltage characteristics of output at MOS portion

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



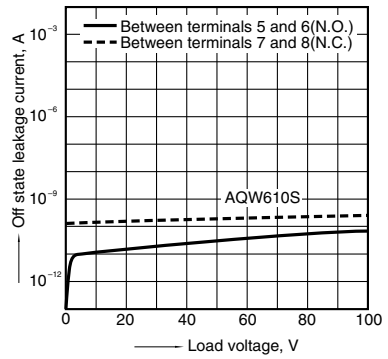
8-(2). Current vs. voltage characteristics of output at MOS portion

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



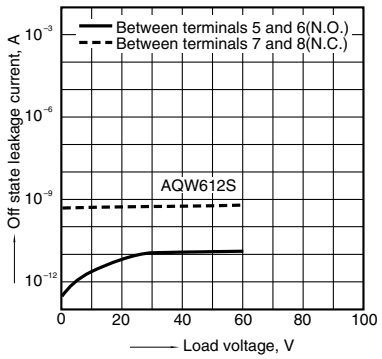
9-(1). Off state leakage current vs. load voltage characteristics

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



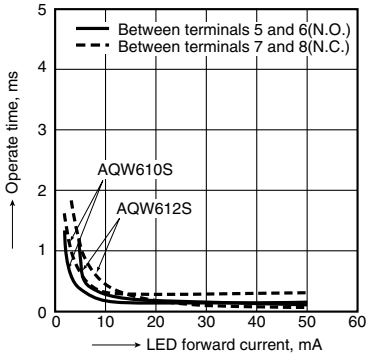
9-(2). Off state leakage current vs. load voltage characteristics

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



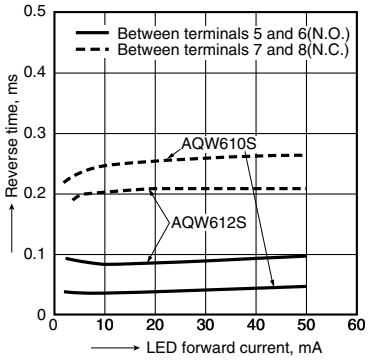
10. Operate time vs. LED forward current characteristics

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



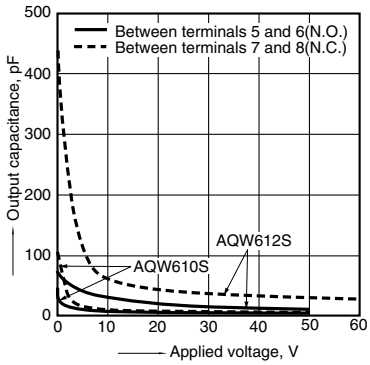
11. Reverse time vs. LED forward current characteristics

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



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