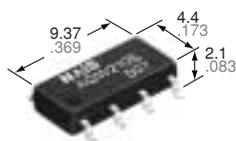


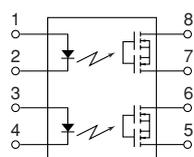
Panasonic
ideas for life

**Super miniature design,
SOP (2 Form A) 8-pin type.
Controls load voltage
350V, 400V.**

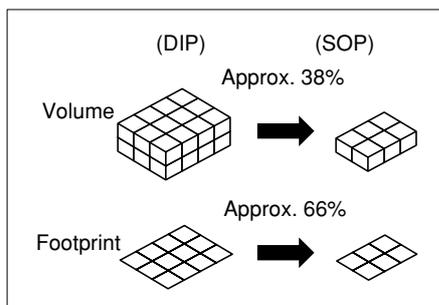
**GU PhotoMOS
(AQW210S)**



mm inch



× (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 PhotoMOS Relays.



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

4. Low-level off state leakage current
In contrast to the SSR with an off state leakage current of several milliamperes, the PhotoMOS relay features a very small off state leakage current of typ. 100 pA even with the rated load voltage of 400 V (AQW214S)

FEATURES

1. 2 channels in super miniature design

The device comes in a super-miniature SO package measuring (W) 4.4 × (L) 9.37

2. Tape and reel

The device comes standard in a tape and reel (1,000 pcs./reel) to facilitate automatic insertion machines.

TYPICAL APPLICATIONS

- Telephones
- Measuring instruments
- Computer
- Industrial robots
- High-speed inspection machines.

TYPES

Type	Output rating*		Part No.		Packing quantity in tape and reel
	Load voltage	Load current	Picked from the 1/2/3/4-pin side	Picked from the 5/6/7/8-pin side	
AC/DC	350 V	100 mA	AQW210SX	AQW210SZ	1,000 pcs.
	400 V	80 mA	AQW214SX	AQW214SZ	

*Indicate the peak AC and DC values.

Notes: (1) Tape package is the standard packing style. Also available in tube. (Part No. suffix "X" or "Z" is not needed when ordering; Tube: 50 pcs.; Case: 1,000 pcs.)

(2) For space reasons, the package type indicator "X" and "Z" are omitted from the seal.

RATING

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

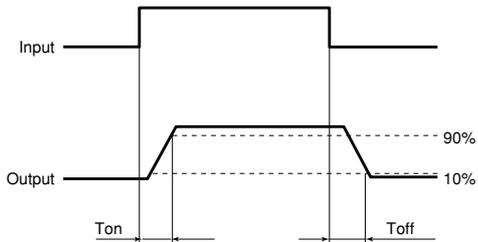
Item		Symbol	AQW210S	AQW214S	Remarks
Input	LED forward current	I_F	50 mA		
	LED reverse voltage	V_R	5 V		
	Peak forward current	I_{FP}	1 A		$f = 100 \text{ Hz}$, Duty factor = 0.1%
	Power dissipation	P_{in}	75 mW		
Output	Load voltage (peak AC)	V_L	350 V	400 V	
	Continuous load current	I_L	0.1 A (0.13 A)	0.08 A (0.1 A)	(): in case of using only 1 channel Peak AC, DC
	Peak load current	I_{peak}	0.3 A	0.24 A	A connection: 100 ms (1 shot), $V_L = \text{DC}$
	Power dissipation	P_{out}	600 mW		
Total power dissipation		P_T	650 mW		
I/O isolation voltage		V_{iso}	1,500 V AC		
Temperature limits	Operating	T_{opr}	-40°C to +85°C -40°F to +185°F		Non-condensing at low temperatures
	Storage	T_{stg}	-40°C to +100°C -40°F to +212°F		

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

Item		Symbol	AQW210S	AQW214S	Remarks
Input	LED operate current	Typical	0.9 mA		$I_L = \text{Max.}$
		Maximum	3 mA		
	LED turn off current	Minimum	0.4 mA		$I_L = \text{Max.}$
		Typical	0.8 mA		
LED dropout voltage	Typical	1.25 V (1.14 V at $I_F = 5 \text{ mA}$)		$I_F = 50 \text{ mA}$	
	Maximum	1.5 V			
Output	On resistance	Typical	16 Ω	30 Ω	$I_F = 5 \text{ mA}$ $I_L = \text{Max.}$ Within 1 s on time
		Maximum	35 Ω	50 Ω	
	Off state leakage current	Maximum	1 μA		$I_F = 0 \text{ mA}$ $V_L = \text{Max.}$
Transfer characteristics	Turn on time*	Typical	0.23 ms	0.21 ms	$I_F = 5 \text{ mA}$ $I_L = \text{Max.}$
		Maximum	0.5 ms		
	Turn off time*	Typical	0.04 ms		$I_F = 5 \text{ mA}$ $I_L = \text{Max.}$
		Maximum	0.2 ms		
	I/O capacitance	Typical	0.8 pF		$f = 1 \text{ MHz}$ $V_B = 0 \text{ V}$
		Maximum	1.5 pF		
Initial I/O isolation resistance	Minimum	R_{iso}	1,000 M Ω		500 V DC

Note: Recommendable LED forward current $I_F = 5 \text{ mA}$.

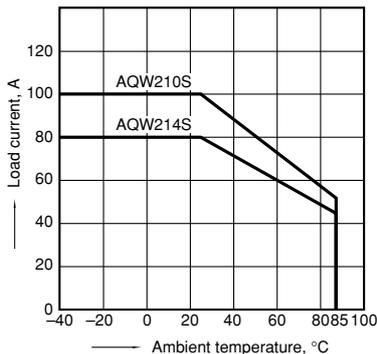
*Turn on/ Turn off time



REFERENCE DATA

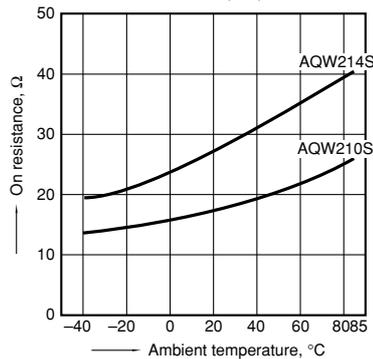
1. Load current vs. ambient temperature characteristics

Allowable ambient temperature: -40°C to $+85^\circ\text{C}$
 -40°F to $+185^\circ\text{F}$



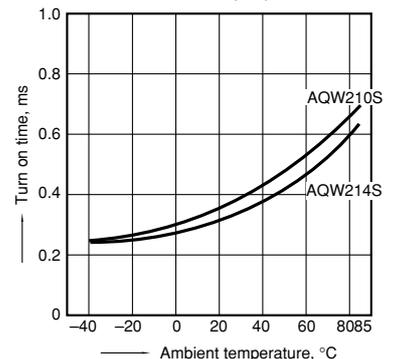
2. On resistance vs. ambient temperature characteristics

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



3. Turn on time vs. ambient temperature characteristics

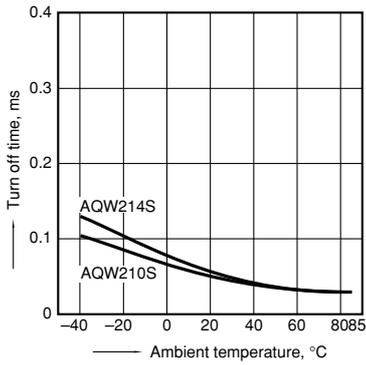
LED current: 5 mA;
Load voltage: Max. (DC);
Continuous load current: Max. (DC)



GU PhotoMOS (AQW210S)

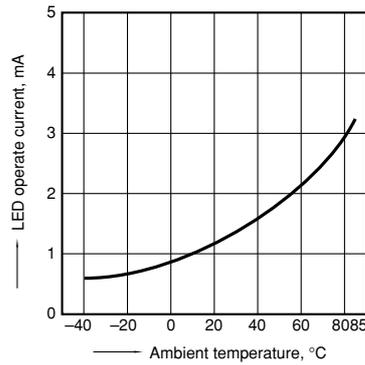
4. Turn off time vs. ambient temperature characteristics

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



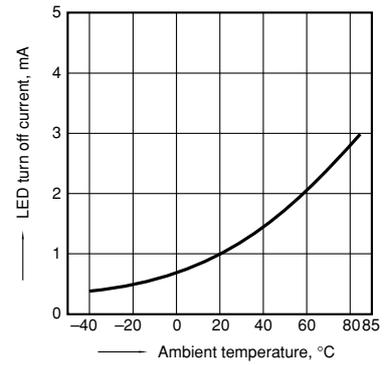
5. LED operate current vs. ambient temperature characteristics

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



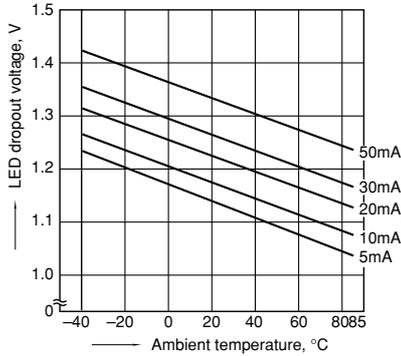
6. LED turn off current vs. ambient temperature characteristics

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



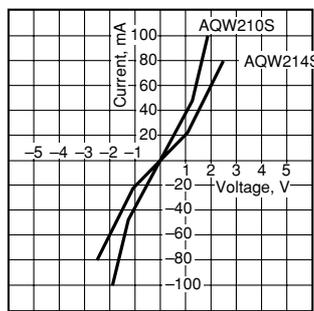
7. LED dropout voltage vs. ambient temperature characteristics

Sample: All types; LED current: 5 to 50 mA



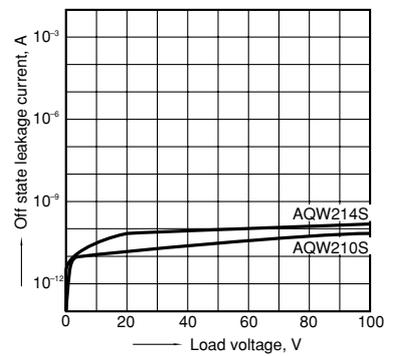
8. Current vs. voltage characteristics of output at MOS portion

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



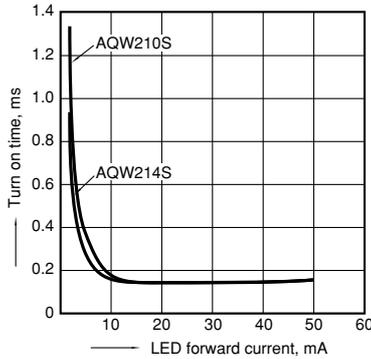
9. Off state leakage current vs. load voltage characteristics

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



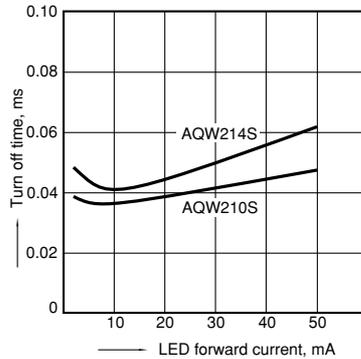
10. Turn on time vs. LED forward current characteristics

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. Turn off 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; Frequency: 1 MHz; Ambient temperature: 25°C 77°F

