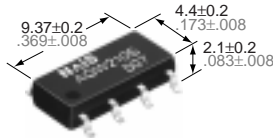


UL File No.: E43149  
CSA File No.: LR26550

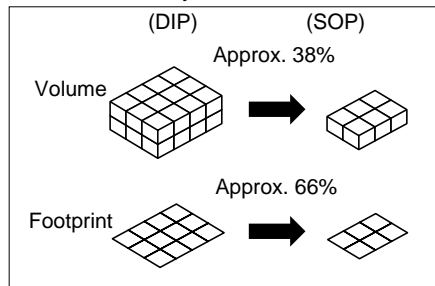


mm inch

### FEATURES

#### 1. 2 channels in super miniature design

The device comes in a super-miniature SO package 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 PhotoMOS Relays.



#### 2. Tape and reel

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

#### 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 milliamps, the PhotoMOS relay features a very small off state leakage current of only 100 pA even with the rated load voltage of 400 V (AQW214S).

### TYPICAL APPLICATIONS

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

Datasheet.Live

### TYPES

	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 type	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)

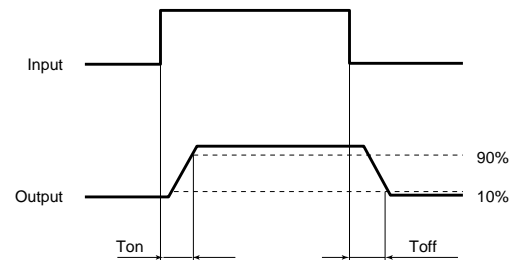
Item		Symbol	AQW210S	AQW214S	Remarks
Input	LED forward current	$I_F$	50 mA		
	LED reverse voltage	$V_R$	3 V		
	Peak forward current	$I_{FP}$	1 A		$f = 100$ Hz, Duty factor = 0.1%
	Power dissipation	$P_{in}$	75 mW		
Output	Load voltage (peak AC)	$V_L$	350 V	400 V	
	Continuous load current	$I_L$	0.1 A (0.13 A)	0.08 A (0.1 A)	( ): in case of using only 1 channel
	Peak load current	$I_{peak}$	0.3 A	0.24 A	A connection: 100ms (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 V AC		
Temperature limits	Operating	$T_{opr}$	-20°C to +80°C -4°F to +176°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	Condition
Input	LED operate current	Minimum Typical Maximum	$I_{Fon}$	0.9 mA 3 mA		$I_L = \text{Max.}$
	LED turn off current	Minimum Typical Maximum	$I_{Foff}$	0.4 mA 0.8 mA		$I_L = \text{Max.}$
	LED dropout voltage	Minimum Typical Maximum	$V_F$	1.14 V (1.25 V at $I_F = 50 \text{ mA}$ ) 1.5 V		$I_F = 5 \text{ mA}$
Output	On resistance	Minimum Typical Maximum	$R_{on}$	16 $\Omega$ 35 $\Omega$	30 $\Omega$ 50 $\Omega$	$I_F = 5 \text{ mA}$ $I_L = \text{Max.}$ Within 1 s on time
	Off state leakage current	Minimum Typical Maximum	$I_{Leak}$	1 $\mu\text{A}$		$I_F = 0 \text{ mA}$ $I_L = \text{Max.}$
Transfer characteristics	Turn on time*	Minimum Typical Maximum	$T_{on}$	0.23 ms 0.5 ms	0.21 ms 0.5 ms	$I_F = 5 \text{ mA}$ $I_L = \text{Max.}$
	Turn off time*	Minimum Typical Maximum	$T_{off}$	0.04 ms 0.2 ms		$I_F = 5 \text{ mA}$ $I_L = \text{Max.}$
	I/O capacitance	Minimum Typical Maximum	$C_{iso}$	0.8 pF 1.5 pF		$f = 1 \text{ MHz}$ $V_B = 0$
	Initial I/O isolation resistance	Minimum Typical Maximum	$R_{iso}$	1,000 M $\Omega$		500 V DC

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

\*Turn on/Turn off time

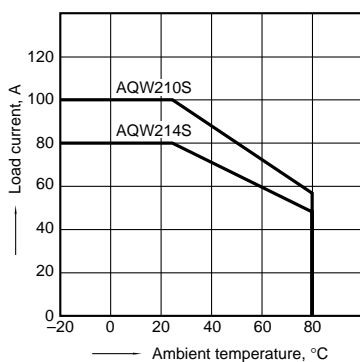


- For Dimensions
- For Schematic and Wiring Diagrams
- For Cautions for Use

## REFERENCE DATA

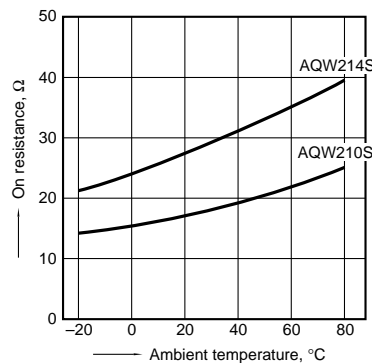
1. Load current vs. ambient temperature characteristics

Allowable ambient temperature:  $-20^\circ\text{C}$  to  $+80^\circ\text{C}$   
 $-4^\circ\text{F}$  to  $+176^\circ\text{F}$



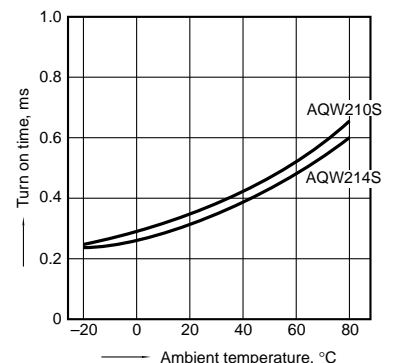
2. On resistance vs. ambient temperature characteristics

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



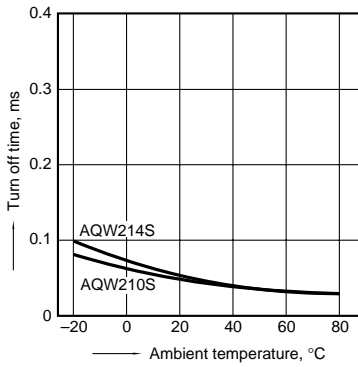
3. Turn on time vs. ambient temperature characteristics

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



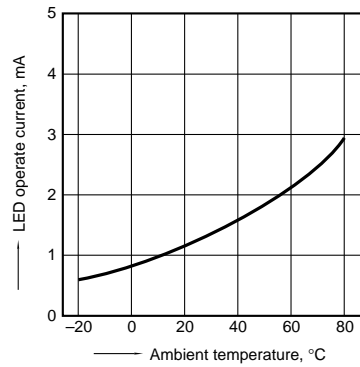
4. Turn off time vs. ambient temperature characteristics

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



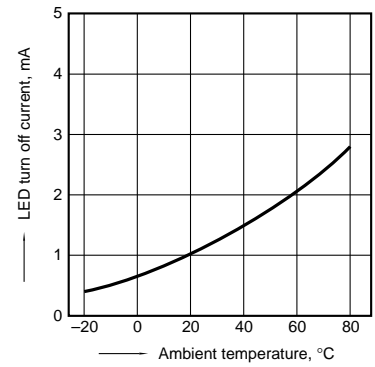
5. LED operate current vs. ambient temperature characteristics

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



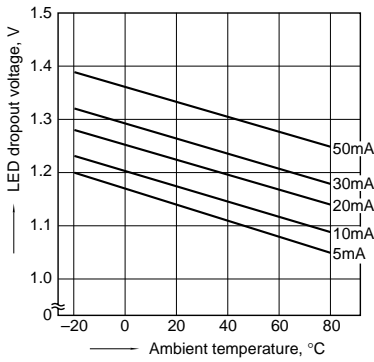
6. LED turn off current vs. ambient temperature characteristics

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



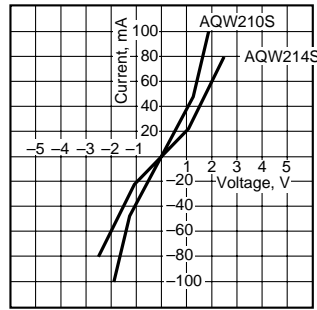
7. LED dropout voltage vs. ambient temperature characteristics

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



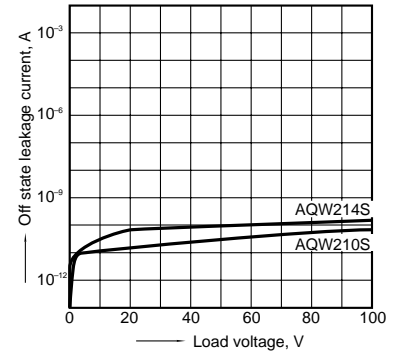
8. Voltage vs. current characteristics of output at MOS portion

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



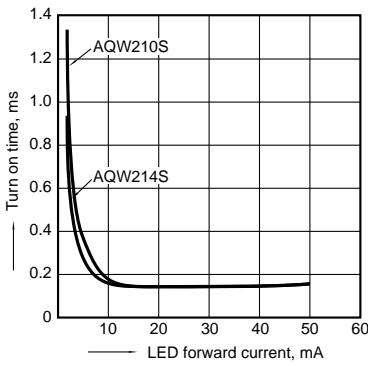
9. Off state leakage current

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



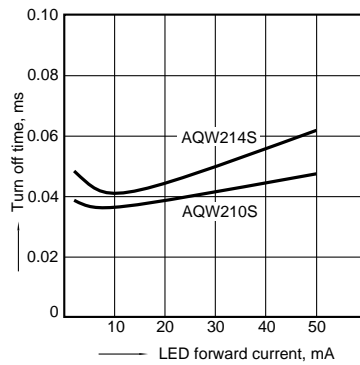
10. LED forward current vs. turn on time characteristics

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. LED forward current vs. turn off time 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. Applied voltage vs. output capacitance characteristics

Measured portion: between terminals 5 and 6, 7 and 8; Frequency: 1 MHz; Ambient temperature: 25°C 77°F

