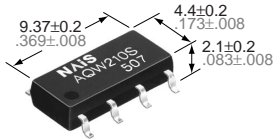


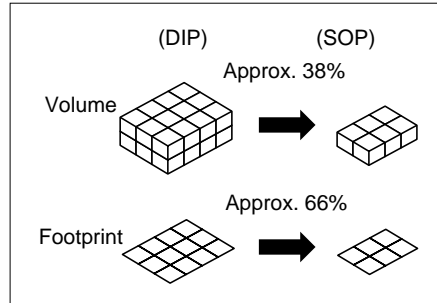
NAIS

GU (General Use) Type SOP Series [2-Channel (Form A) Type]

PhotoMOS RELAYS



mm inch



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)

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.

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)

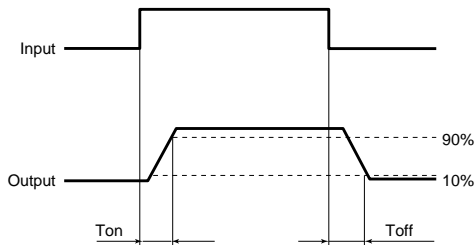
Item		Symbol	AQW210S	AQW214S	Remarks
Input	LED forward current	I_F	50 mA	50 mA	
	LED reverse voltage	V_R	3 V	3 V	
	Peak forward current	I_{FP}	1 A	1 A	$f = 100 \text{ Hz}$, Duty factor = 0.1%
	Power dissipation	P_{in}	75 mW	75 mW	
Output	Load voltage (peak AC)	V_L	350 V	400 V	
	Continuous load current	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: 100 ms (1 shot), $V_L = \text{DC}$
	Power dissipation	P_{out}	600 mW	600 mW	
Total power dissipation		P_T	650 mW	650 mW	
I/O isolation voltage		V_{iso}	1,500 V AC	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 = Max.
		Maximum	3 mA		
	LED turn off current	Minimum	0.4 mA		I _L = Max.
		Typical	0.8 mA		
LED dropout voltage	Typical	1.14 V (1.25 V at I _F = 50 mA)		I _F = 5 mA	
	Maximum	1.5 V			
Output	On resistance	Typical	16 Ω	30 Ω	I _F = 5 mA I _L = Max. Within 1 s on time
		Maximum	35 Ω	50 Ω	
	Off state leakage current	Maximum	1 μA		I _F = 0 V _L = Max.
Transfer characteristics	Turn on time*	Typical	0.23 ms	0.21 ms	I _F = 5 mA I _L = Max.
		Maximum	0.5 ms		
	Turn off time*	Typical	0.04 ms		I _F = 5 mA I _L = Max.
		Maximum	0.2 ms		
	I/O capacitance	Typical	0.8 pF		f = 1 MHz V _B = 0
		Maximum	1.5 pF		
Initial I/O isolation resistance	Minimum	R _{iso}	1,000 MΩ		500 V DC

Note: Recommendable LED forward current I_F = 5 mA.

*Turn on/ Turn off time

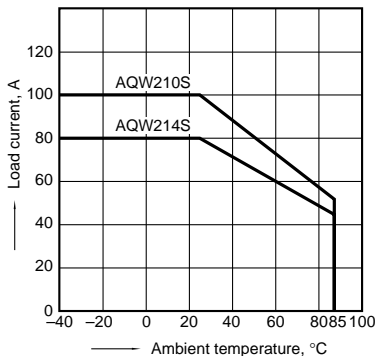


- For Dimensions, see Page 441.
- For Schematic and Wiring Diagrams, see Page 445.
- For Cautions for Use, see Page 449.

REFERENCE DATA

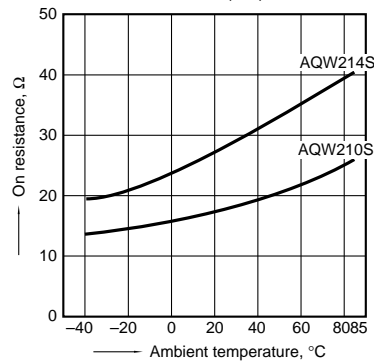
1. Load current vs. ambient temperature characteristics

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



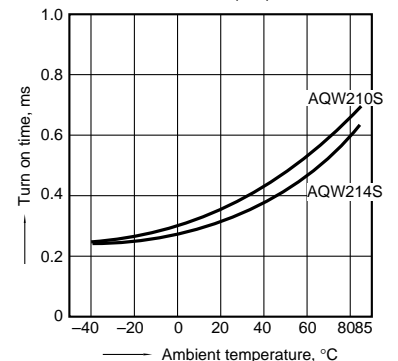
2. On resistance vs. ambient temperature characteristics

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



3. Turn on time vs. ambient temperature characteristics

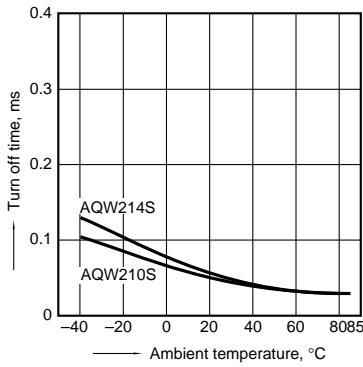
LED current: 5 mA;
Load voltage: Max. (DC);
Continuous load current: Max. (DC)



AQW210S

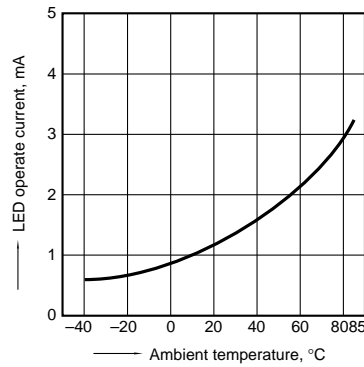
4. Turn off time vs. ambient temperature characteristics

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



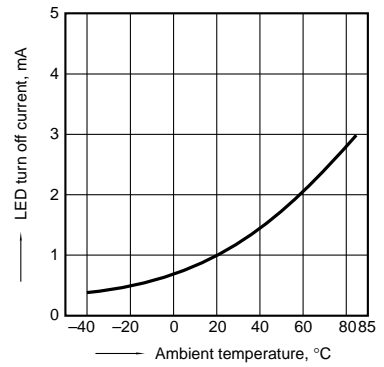
5. LED operate current vs. ambient temperature characteristics

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



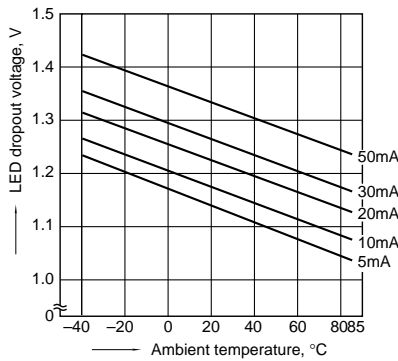
6. LED turn off current vs. ambient temperature characteristics

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



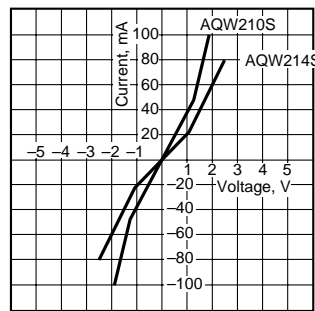
7. LED dropout voltage vs. ambient temperature characteristics

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



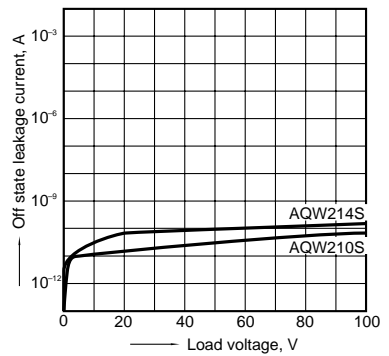
8. Voltage vs. current characteristics of output at MOS portion

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



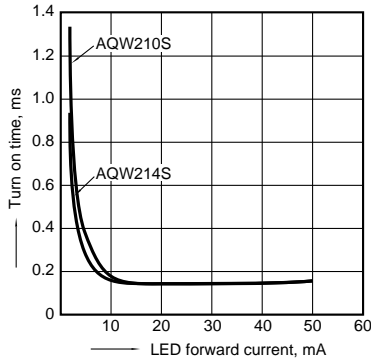
9. Off state leakage current

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



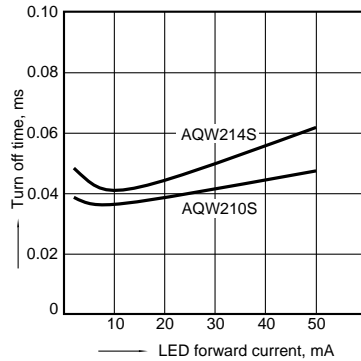
10. LED forward current vs. turn on time characteristics

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

