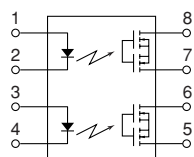
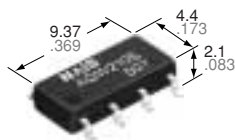


**Panasonic**  
ideas for life

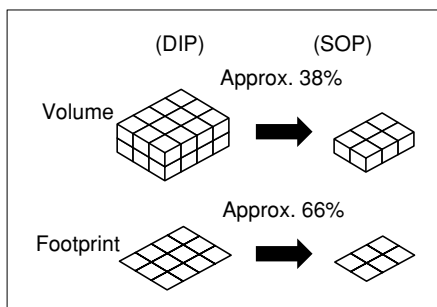
**Super miniature design,  
SOP (2 Form A) 8-pin type.  
Controls load voltage  
350V, 400V.**

**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)

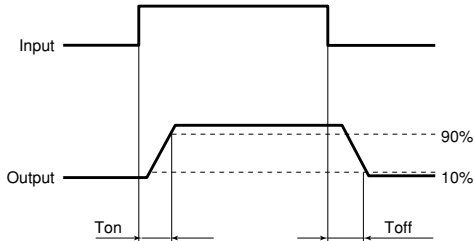
Item		Symbol	AQW210S	AQW214S	Remarks
Input	LED forward current	$I_F$	50 mA		
	LED reverse voltage	$V_R$	5 V		
	Peak forward current	$I_{FP}$	1 A		$f = 100$ Hz, Duty factor = 0.1%
	Power dissipation	$P_{in}$	75 mW		
Output	Load voltage (peak AC)	$V_L$	350 V	400 V	
	Continuous load current	$I_L$	0.1 A (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), $V_L = DC$
	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 <sub>L</sub> = Max.
		Maximum	3 mA		
	LED turn off 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	16 Ω	30 Ω	I <sub>F</sub> = 5 mA I <sub>L</sub> = Max. Within 1 s on time
		Maximum	35 Ω	50 Ω	
	Off state leakage current	Maximum	1 μA		I <sub>F</sub> = 0 mA V <sub>L</sub> = Max.
Transfer characteristics	Turn on time*	Typical	0.23 ms	0.21 ms	I <sub>F</sub> = 5 mA I <sub>L</sub> = Max.
		Maximum	0.5 ms		
	Turn off time*	Typical	0.04 ms		I <sub>F</sub> = 5 mA I <sub>L</sub> = Max.
		Maximum	0.2 ms		
	I/O capacitance	Typical	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

Note: Recommendable LED forward current I<sub>F</sub> = 5 mA.

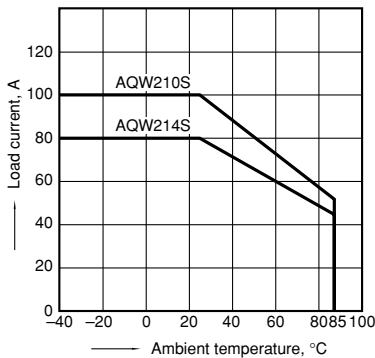
\*Turn on/ Turn off time



## REFERENCE DATA

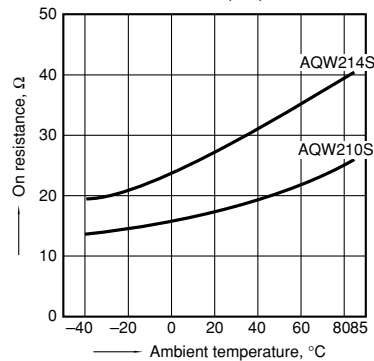
### 1. Load current vs. ambient temperature characteristics

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



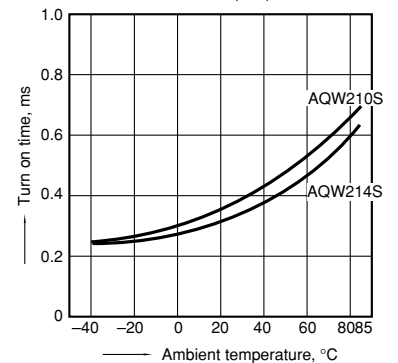
### 2. On resistance vs. ambient temperature characteristics

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

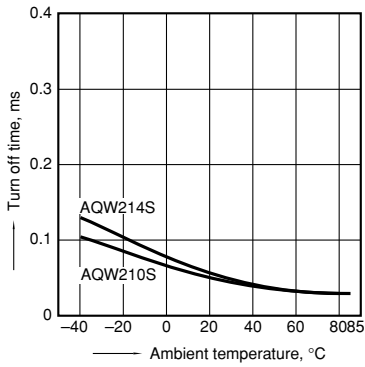
LED current: 5 mA;  
Load voltage: Max. (DC);  
Continuous load current: Max. (DC)



# GU PhotoMOS (AQW210S)

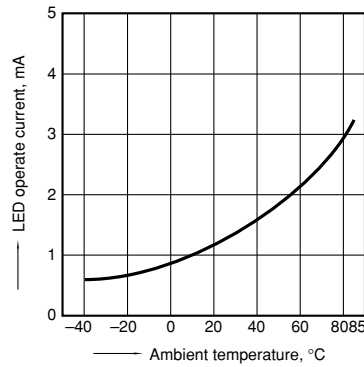
## 4. Turn off time vs. ambient temperature characteristics

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



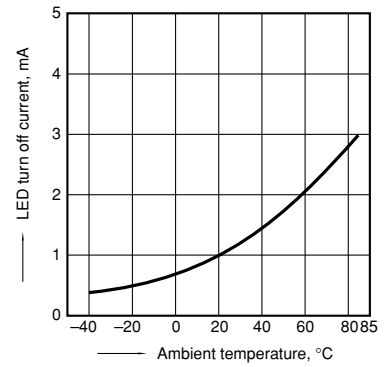
## 5. LED operate current vs. ambient temperature characteristics

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



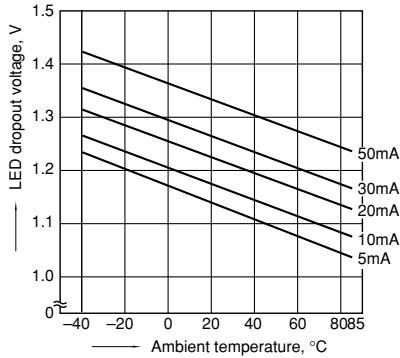
## 6. LED turn off current vs. ambient temperature characteristics

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



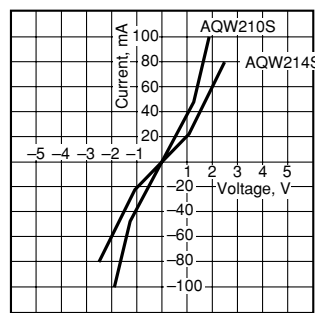
## 7. LED dropout voltage vs. ambient temperature characteristics

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



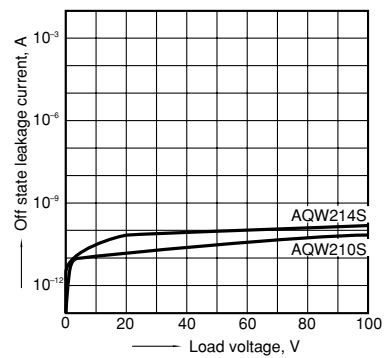
## 8. Current vs. voltage characteristics of output at MOS portion

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



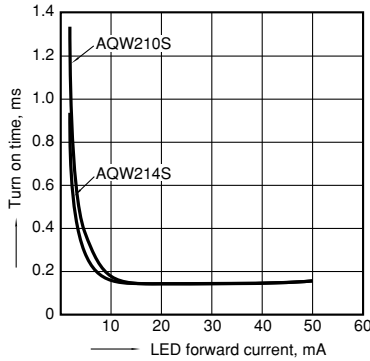
## 9. Off state leakage current vs. load voltage characteristics

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



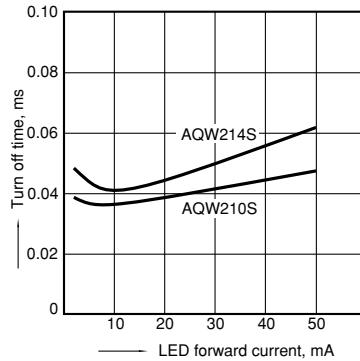
## 10. Turn on time vs. LED forward current characteristics

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

