

Super miniature design, SOP(1 Form A) 4-pin type Controls load voltage 60V, 350V, 400V

 $\begin{array}{l} (W)4.3\times(L)4.4\times(H)2.1\mbox{ mm (W)}.169\times\\ (L).173\times(H).083\mbox{ inch } \hfill \mbox{--approx}.70\%\mbox{ of the volume and 70\% of the footprint size of SO package 6-pin type PhotoMOS Relays.} \end{array}$



FEATURES

1. SO package 4-Pin type in super miniature design

The device comes in a super-miniature SO package 4-Pin type measuring

2. Tape and reel

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

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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 (AQY214S) even with the rated load voltage of 400 V.

TYPICAL APPLICATIONS

- Telecommunications (PC, Electronic Notepad)
- Measuring and Testing equipment
- Factory Automation Equipment
- Security equipment
- High speed inspection machines

TYPES

AC/DC type

Output rating*		Part	Packing quantity in tape		
Load voltage	Load current	Picked from the 1/2-pin side	Picked from the 3/4-pin side	and reel	
60 V	500 mA	AQY212SX	AQY212SZ		
350 V	120 mA	AQY210SX	AQY210SZ	1,000 pcs.	
400 V	100 mA	AQY214SX	AQY214SZ		

* Indicate the peak AC and DC values.

Notes: (1) Tape package is the standard packing style. Also available in tube. (Part No. suf x "X" or "Z" is not needed when ordering; Tube: 100 pcs.; Case: 2,000 pcs.)

(2) For space reasons, the top two letters of the product number "AQY" and "S" are omitted on the product seal. The package type indicator "X" and "Z" are omitted from the seal. (Ex. the label for product number AQY210S is 210).

RATING

AC/DC type

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

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Item		Symbol	AQY212S	AQY210S	AQY214S	Remarks
Input	LED forward current	IF	50 mA			
	LED reverse voltage	VR	5 V			
	Peak forward current	IFP	1 A			f = 100 Hz, Duty factor = 0.1%
	Power dissipation	Pin	75 mW			
Output	Load voltage (peak AC)	VL	60 V	350 V	400 V	
	Continuous load current (peak AC)	IL.	0.5 A	0.12 A	0.1 A	
	Peak load current	Ipeak	1.5 A	0.3 A	0.24 A	100ms (1 shot), V⊾ = DC
	Power dissipation	Pout	300 mW			
Total power dissipation		Рт	350 mW			
I/O isolation voltage		Viso	1,500 V AC			
Temperature limits	Operating	Topr	-40°C to +85°C -40°F to +185°F		Non-condensing at low temperatures	
	Storage	Tstg	-40°C to +100°C -40°F to +212°F			

mm inch

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2. Electrical cha	aracteristics (Ambient tempe	rature: 25°C	C77°F)				
Item			Symbol	AQY212S	AQY210S	AQY214S	Remarks
Input		Typical	IFon	0.9 mA			I∟ = Max.
	LED operate current	Maximum		3 mA			
	LED turn off ourront	Minimum	IFoff	0.4 mA			I∟ = Max.
	LED turn on current	Typical		0.85 mA			
		Typical	VF	1.25 V (1.14 V at I⊧ = 5 mA)			— I⊧ = 50 mA
	LED dropout voltage	Maximum		1.5 V			
Output	On resistance	Typical	Ron	0.83 Ω	17 Ω	25 Ω	I⊧ = 5 mA I∟ = Max. Within 1 s on time
		Maximum		2.5 Ω	25 Ω	35 Ω	
	Off state leakage current	Maximum	Leak	1 μΑ		I⊧ = 0 mA V∟ = Max.	
Transfer characteristics	Turn on time*	Typical	Ton	0.65 ms	0.23 ms	0.21 ms	I⊧ = 5 mA I∟ = Max.
		Maximum		2 ms	0.5 ms	0.5 ms	
	Turn off time*	Typical	т.,	0.04 ms			I⊧ = 5 mA I∟ = Max.
		Maximum	Ioff	0.2 ms			
	I/O capacitance	Maximum	Ciso	1.5 pF		f = 1 MHz Vв = 0 V	
	Initial I/O isolation resistance Minimum		Riso		1,000 MΩ		500 V DC

Note: Recommendable LED forward current IF = 5mA.

*Turn on/Turn off time



REFERENCE DATA

1. Load current vs. ambient temperature characteristics





2. On resistance vs. ambient temperature characteristics

Measured portion: between terminals 3 and 4; 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)



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



7. LED dropout voltage vs. ambient temperature characteristics



9. Off state leakage current vs. load voltage characteristics

Measured portion: between terminals 3 and 4; Ambient temperature: 25°C 77°F



12. Output capacitance vs. applied voltage characteristics

Measured portion: between terminals 3 and 4; Frequency: 1 MHz; Ambient temperature: 25°C 77°F



5. LED operate current vs. ambient temperature characteristics Sample: All types; Load voltage: Max. (DC); Continuous load current: Max. (DC)



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

Measured portion: between terminals 3 and 4; Ambient temperature: 25°C 77°F



Current 0.2 0.5 Voltage, V

11. Turn off time vs. LED forward current





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



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

0.4

-0.4

-0.6

AQY212S

Measured portion: between terminals 3 and 4; Ambient temperature: 25°C 77°F -0.6



10. Turn on time vs. LED forward current characteristics

Measured portion: between terminals 3 and 4; Load voltage: Max. (DC); Continuous load current: Max. (DC); Ambient temperature: 25°C 77°F



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6. LED turn off current vs. ambient temperature