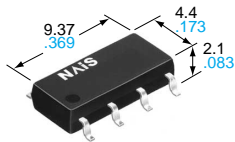
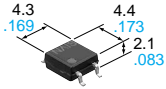


# NAIS

## GU (General Use) Type [1, 2-Channel (Form A) 4, 8-Pin Type]

# PhotoMOS RELAYS



mm inch

### FEATURES

- 1. Low cost type.**
- 2. High sensitivity, Low ON resistance**  
Can control a maximum 0.5A (AQY282S, AQW282S) load current with a 5mA input current.  
Low ON resistance of 2.5Ω (AQY282S, AQW282S).  
Stable operation because there are no metallic contact parts.
- 3. Various package design (DIP4, SOP4, DIP8, SOP8 packages are available)**
- 4. Low-level off state leakage current**  
The SSR has an off state leakage current of several milliamperes, where as the PhotoMOS relay has only 100pA even with the rated load voltage of 350V (AQY280S, AQW280S).

### TYPICAL APPLICATIONS

- Modem
- Telephone equipment
- Security equipment
- Sensors
- Amusement

## SOP TYPE

### SOP 4pin

Type	Output rating*		Part No.		Packing quantity in tape and reel
	Load voltage	Load current	Picked from the 1/2-pin side	Picked from the 3/4-pin side	
AC/DC type	60 V	500 mA	AQY282SX	AQY282SZ	1,000 pcs.
	350 V	120 mA	AQY280SX	AQY280SZ	
	400 V	100 mA	AQY284SX	AQY284SZ	

\*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: 100 pcs.; Case: 2,000 pcs.)

(2) For space reasons, the initial letters of the product number "AQY" and "S", the package type indicator "X" and "Z" are omitted from the seal.

### SOP 8pin

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 type	60 V	350 mA	AQW282SX	AQW282SZ	1,000 pcs.
	350 V	100 mA	AQW280SX	AQW280SZ	
	400 V	80 mA	AQW284SX	AQW284SZ	

\* Indicate the peak AC and DC values.

Notes: (1) Tape package is the standard 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)

SOP 4pin

Item		Symbol	AQY282S	AQY280S	AQY284S	Remarks
Input	LED forward current	$I_F$	50 mA			f = 100 Hz, Duty factor = 0.1%
	LED reverse voltage	$V_R$	5 V			
	Peak forward current	$I_{FP}$	1 A			
	Power dissipation	$P_{in}$	75 mW			
Output	Load voltage (peak AC)	$V_L$	60 V	350 V	400 V	100 ms (1 shot), $V_L = DC$
	Continuous load current (peak AC)	$I_L$	0.5 A	0.12 A	0.1 A	
	Peak load current	$I_{peak}$	1.5 A	0.3 A	0.24 A	
	Power dissipation	$P_{out}$	300 mW			
Total power dissipation		$P_T$	350 mW			
I/O isolation voltage		$V_{iso}$	1,500 V AC			
Operating temperature		$T_{opr}$	-40°C to +85°C -40°F to +185°F			Non-condensing at low temperature
Storage temperature		$T_{stg}$	-40°C to +100°C -40°F to +212°F			

SOP 8pin

Item		Symbol	AQW282S	AQW280S	AQW284S	Remarks
Input	LED forward current	$I_F$	50 mA			f = 100 Hz, Duty factor = 0.1%
	LED reverse voltage	$V_R$	5 V			
	Peak forward current	$I_{FP}$	1 A			
	Power dissipation	$P_{in}$	75 mW			
Output	Load voltage (peak AC)	$V_L$	60 V	350 V	400 V	( ): in case of using only 1 channel 100 ms (1 shot), $V_L = DC$
	Continuous load current (peak AC)	$I_L$	0.35 (0.5) A	0.1 (0.13) A	0.08 (0.1) A	
	Peak load current	$I_{peak}$	1.05 A	0.3 A	0.24 A	
	Power dissipation	$P_{out}$	600 mW			
Total power dissipation		$P_T$	650 mW			
I/O isolation voltage		$V_{iso}$	1,500 V AC			
Operating temperature		$T_{opr}$	-40°C to +85°C -40°F to +185°F			Non-condensing at low temperature
Storage temperature		$T_{stg}$	-40°C to +100°C -40°F to +212°F			

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

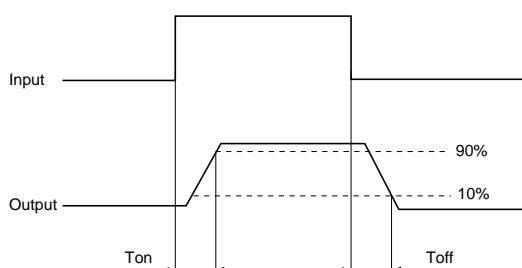
SOP 4pin

Item			Symbol	AQY282S	AQY280S	AQY284S	Condition
Input	LED operate current	Typical	$I_{Fon}$	1.8 mA			$I_L = Max.$
		Maximum		3.0 mA			
	LED turn off current	Minimum	$I_{Foff}$	0.2 mA			$I_L = Max.$
		Typical		1.6 mA			
	LED dropout voltage	Typical	$V_F$	1.14 V (1.25 V at $I_F = 50mA$ )			$I_F = 5 mA$
Maximum		1.5 V					
Output	On resistance	Typical	$R_{on}$	0.85Ω	20Ω	28Ω	$I_F = 5 mA$ $I_L = Max.$ Within 1 s on time
		Maximum		2.5Ω	25Ω	35Ω	
	Off state leakage current	Maximum	$I_{Leak}$	1μA			$I_F = 0 mA$ $V_L = Max.$
Transfer characteristics	Turn on time*	Typical	$T_{on}$	0.9 ms	0.3 ms		$I_F = 5 mA$ $I_L = Max.$
		Maximum		3 ms			
	Turn off time*	Typical	$T_{off}$	0.5 ms			$I_F = 5 mA$ $I_L = Max.$
		Maximum		2 ms			
	I/O capacitance	Typical	$C_{iso}$	0.8 pF			f = 1 MHz $V_B = 0V$
Maximum		1.5 pF					
	Initial I/O isolation resistance	Minimum	$R_{iso}$	1,000 MΩ		500 V DC	

SOP 8pin

Item		Symbol	AQW282S	AQW280S	AQW284S	Condition
Input	LED operate current	Typical	1.8 mA			I <sub>L</sub> = Max.
		Maximum	3.0 mA			
	LED turn off current	Minimum	0.2 mA			I <sub>L</sub> = Max.
		Typical	1.6 mA			
LED dropout voltage	Typical	1.14 V (1.25 V at I <sub>F</sub> = 50mA)			I <sub>F</sub> = 5 mA	
	Maximum	1.5 V				
Output	On resistance	Typical	0.85Ω	20Ω	28Ω	I <sub>F</sub> = 5 mA I <sub>L</sub> = Max. Within 1 s on time
		Maximum	2.5Ω	25Ω	35Ω	
	Off state leakage current	Maximum	1μA			I <sub>F</sub> = 0 mA V <sub>L</sub> = Max.
Transfer characteristics	Turn on time*	Typical	0.9 ms	0.3 ms		I <sub>F</sub> = 5 mA I <sub>L</sub> = Max.
		Maximum	3 ms			
	Turn off time*	Typical	0.5 ms			I <sub>F</sub> = 5 mA I <sub>L</sub> = Max.
		Maximum	2 ms			
	I/O capacitance	Typical	0.8 pF			f = 1 MHz V <sub>B</sub> = 0V
		Maximum	1.5 pF			
Initial I/O isolation resistance	Minimum	1,000 MΩ			500 V DC	

\*Turn on/Turn off time



3-4 the terminal leads receive solder plating or solder dip plating.

## REFERENCE DATA

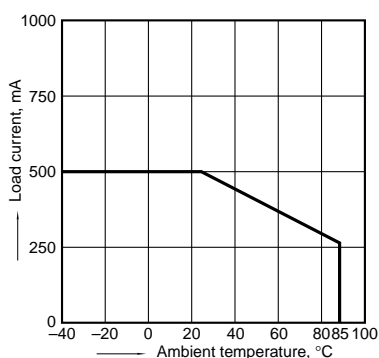
[SOP type]

1. Load current vs. ambient temperature characteristics

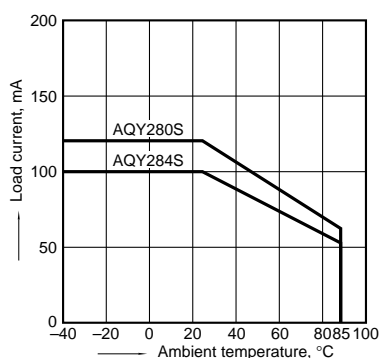
Allowable ambient temperature: -40°C to +85°C  
-40°F to +185°F

Type of connection: A

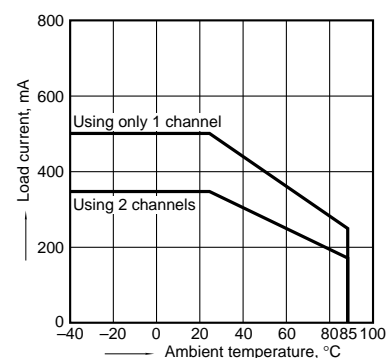
(1) AQY282S



(2) AQY280S, AQY284S

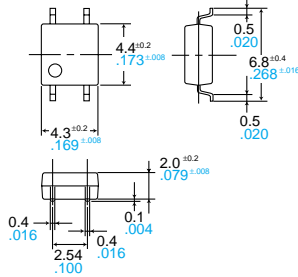


(3) AQW282S

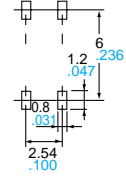


**DIMENSIONS**

**AQY28○S**



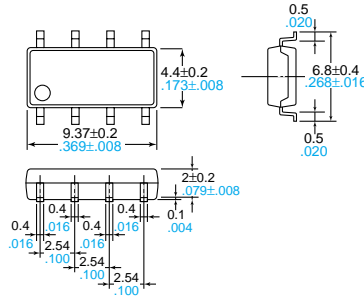
Recommended mounting pad  
(Top view)



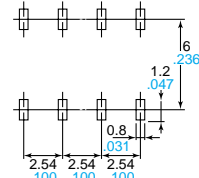
Terminal thickness = 0.15 .006  
General tolerance: ±0.1 ±.004

Tolerance: ±0.1 ±.004

**AQW28○S**



Recommended mounting pad  
(Top view)



Terminal thickness = 0.15 .006  
General tolerance: ±0.1 ±.004

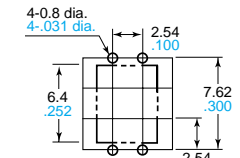
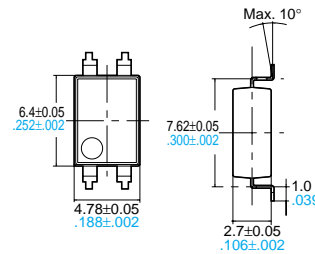
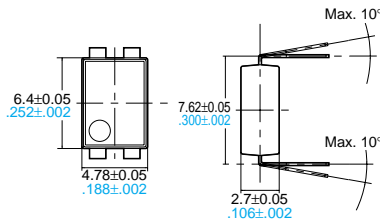
Tolerance: ±0.1 ±.004

**AQY28○EH(A)**

Through hole terminal type

Surface mount terminal type

PC board pattern (Bottom view)

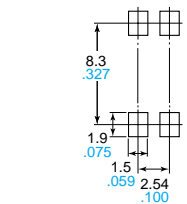
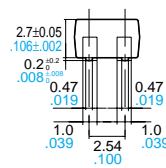
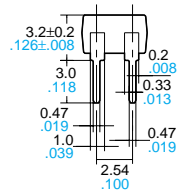


Terminal thickness = 0.2 .008  
General tolerance: ±0.1 ±.004

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General tolerance: ±0.1 ±.004

Tolerance: ±0.1 ±.004

Mounting pad (Top view)



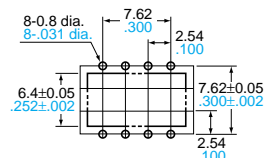
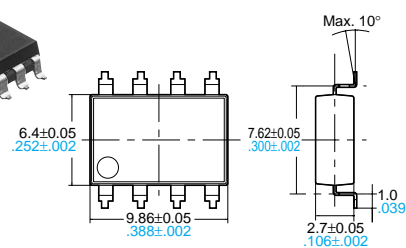
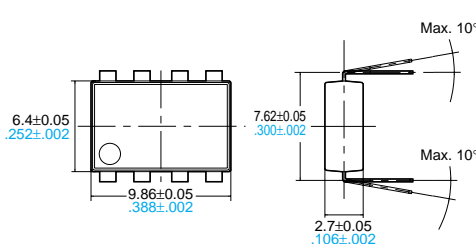
Tolerance: ±0.1 ±.004

**AQW28○EH(A)**

Through hole terminal type

Surface mount terminal type

PC board pattern  
(Bottom view)

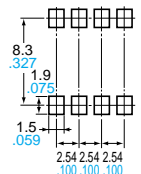
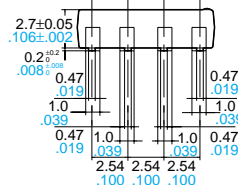
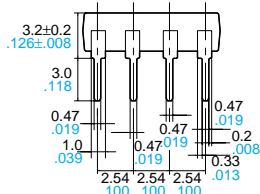


Terminal thickness = 0.2 .008  
General tolerance: ±0.1 ±.004

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General tolerance: ±0.1 ±.004

Tolerance: ±0.1 ±.004

Mounting pad (Top view)



Tolerance: ±0.1 ±.004