




**THE DATASHEET OF  
AQW280SX**

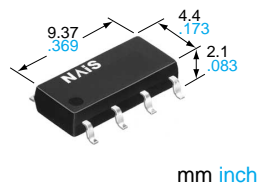
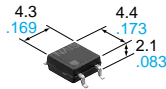




**Panasonic**  
ideas for life

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

**PhotoMOS**  
**RELAYS**



### 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.

**PhotoMOS Relays**  
ASCT1B257E '03.3

# AQO28OS

## RATING

1. Absolute maximum ratings (Ambient temperature: 25°C 77°F)  
SOP 4pin

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

SOP 8pin

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

2. Electrical characteristics (Ambient temperature: 25°C 77°F)  
SOP 4pin

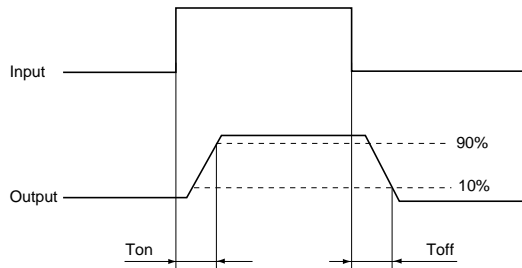
Item			Symbol	AQY282S	AQY280S	AQY284S	Condition
Input	LED operate current	Typical	I <sub>Fon</sub>	1.8 mA			I <sub>L</sub> = Max.
		Maximum		3.0 mA			
	LED turn off current	Minimum	I <sub>Foff</sub>	0.2 mA			I <sub>L</sub> = Max.
		Typical		1.6 mA			
LED dropout voltage	Typical	V <sub>F</sub>	1.14 V (1.25 V at I <sub>F</sub> = 50mA)			I <sub>F</sub> = 5 mA	
	Maximum		1.5 V				
Output	On resistance	Typical	R <sub>on</sub>	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	I <sub>Leak</sub>	1μA			I <sub>F</sub> = 0 mA V <sub>L</sub> = Max.
Transfer characteristics	Turn on time*	Typical	T <sub>on</sub>	0.9 ms	0.3 ms		I <sub>F</sub> = 5 mA I <sub>L</sub> = Max.
		Maximum		3 ms			
	Turn off time*	Typical	T <sub>off</sub>	0.5 ms			I <sub>F</sub> = 5 mA I <sub>L</sub> = Max.
		Maximum		2 ms			
	I/O capacitance	Typical	C <sub>iso</sub>	0.8 pF			f = 1 MHz V <sub>B</sub> = 0V
		Maximum		1.5 pF			
Initial I/O isolation resistance		Minimum	R <sub>iso</sub>	1,000 MΩ			500 V DC

# AQO28OS

SOP 8pin

Item		Symbol	AQW282S	AQW280S	AQW284S	Condition
Input	LED operate current	Typical	1.8 mA			$I_L = \text{Max.}$
		Maximum	3.0 mA			
	LED turn off current	Minimum	0.2 mA			$I_L = \text{Max.}$
		Typical	1.6 mA			
LED dropout voltage	Typical	1.14 V (1.25 V at $I_F = 50\text{mA}$ )			$I_F = 5 \text{ mA}$	
	Maximum	1.5 V				
Output	On resistance	Typical	0.85Ω	20Ω	28Ω	$I_F = 5 \text{ mA}$ $I_L = \text{Max.}$ Within 1 s on time
		Maximum	2.5Ω	25Ω	35Ω	
	Off state leakage current	Maximum	1μA			$I_F = 0 \text{ mA}$ $V_L = \text{Max.}$
Transfer characteristics	Turn on time*	Typical	0.9 ms	0.3 ms		$I_F = 5 \text{ mA}$ $I_L = \text{Max.}$
		Maximum	3 ms			
	Turn off time*	Typical	0.5 ms			$I_F = 5 \text{ mA}$ $I_L = \text{Max.}$
		Maximum	2 ms			
	I/O capacitance	Typical	0.8 pF			$f = 1 \text{ MHz}$ $V_B = 0\text{V}$
		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

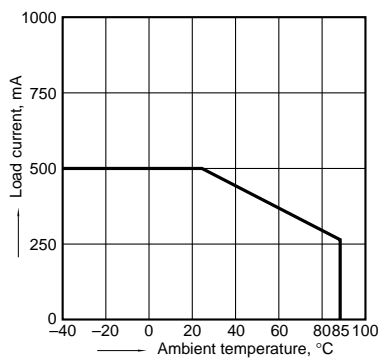
[SOP type]

1. Load current vs. ambient temperature characteristics

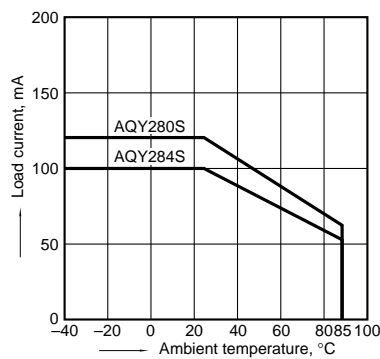
Allowable ambient temperature: -40°C to +85°C  
-40°F to +185°F

Type of connection: A

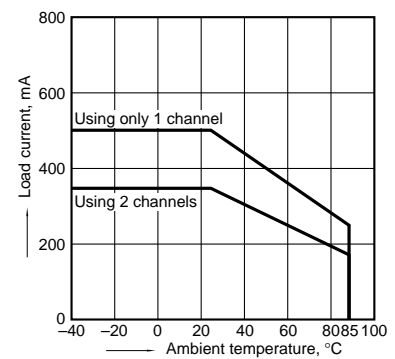
(1) AQY282S



(2) AQY280S, AQY284S



(3) AQW282S

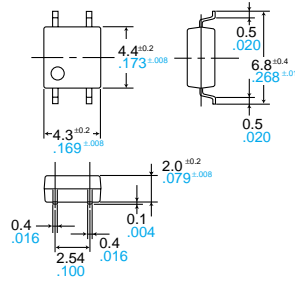


# AQ○28○S, AQ○28○EH

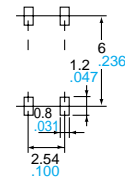
## DIMENSIONS

mm inch

### AQY28○S



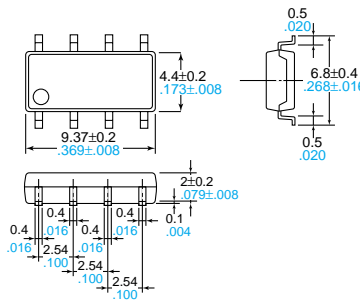
### Recommended mounting pad (Top view)



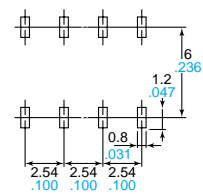
Terminal thickness = 0.15 .006  
 General tolerance: ±0.1 ±.004

Tolerance: ±0.1 ±.004

### AQW28○S



### Recommended mounting pad (Top view)

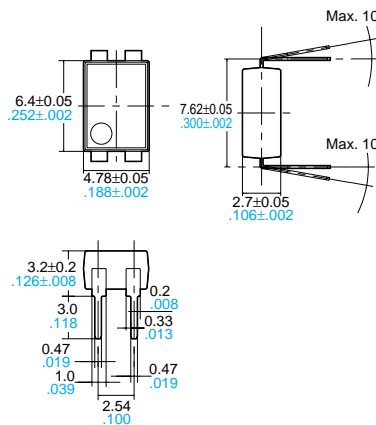


Terminal thickness = 0.15 .006  
 General tolerance: ±0.1 ±.004

Tolerance: ±0.1 ±.004

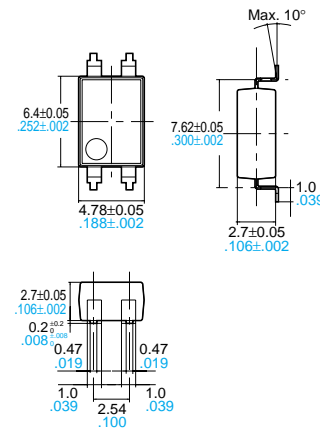
### AQY28○EH(A)

#### Through hole terminal type



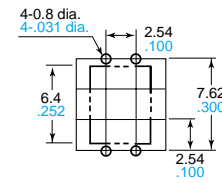
Terminal thickness = 0.2 .008  
 General tolerance: ±0.1 ±.004

#### Surface mount terminal type



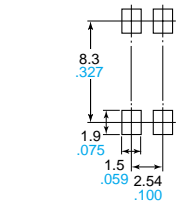
Terminal thickness = 0.2 .008  
 General tolerance: ±0.1 ±.004

#### PC board pattern (Bottom view)



Tolerance: ±0.1 ±.004

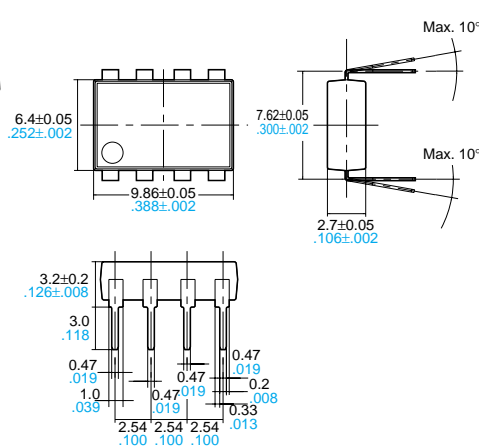
#### Mounting pad (Top view)



Tolerance: ±0.1 ±.004

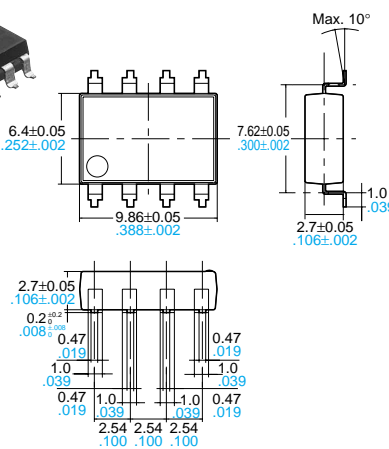
### AQW28○EH(A)

#### Through hole terminal type



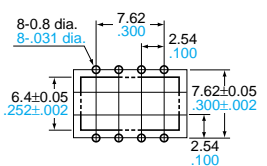
Terminal thickness = 0.2 .008  
 General tolerance: ±0.1 ±.004

#### Surface mount terminal type



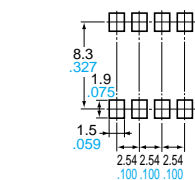
Terminal thickness = 0.2 .008  
 General tolerance: ±0.1 ±.004

#### PC board pattern (Bottom view)



Tolerance: ±0.1 ±.004

#### Mounting pad (Top view)



Tolerance: ±0.1 ±.004

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