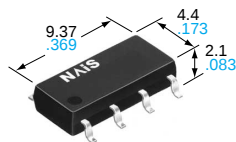
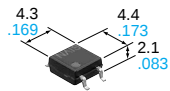


**Panasonic**  
ideas for life

**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 <sub>F</sub>    | 50 mA                           |         |         | f = 100 Hz,<br>Duty factor = 0.1%       |
|                         | LED reverse voltage               | V <sub>R</sub>    | 5 V                             |         |         |                                         |
|                         | Peak forward current              | I <sub>FP</sub>   | 1 A                             |         |         |                                         |
|                         | Power dissipation                 | P <sub>in</sub>   | 75 mW                           |         |         |                                         |
| Output                  | Load voltage (peak AC)            | V <sub>L</sub>    | 60 V                            | 350 V   | 400 V   | 100 ms (1 shot),<br>V <sub>L</sub> = DC |
|                         | 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  |                                         |
|                         | 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                           |              |              | f = 100 Hz,<br>Duty factor = 0.1%                                               |
|                         | LED reverse voltage               | V <sub>R</sub>    | 5 V                             |              |              |                                                                                 |
|                         | Peak forward current              | I <sub>FP</sub>   | 1 A                             |              |              |                                                                                 |
|                         | Power dissipation                 | P <sub>in</sub>   | 75 mW                           |              |              |                                                                                 |
| Output                  | Load voltage (peak AC)            | V <sub>L</sub>    | 60 V                            | 350 V        | 400 V        | ( ): in case of using only 1 channel<br>100 ms (1 shot),<br>V <sub>L</sub> = DC |
|                         | Continuous load current (peak AC) | I <sub>L</sub>    | 0.35 (0.5) A                    | 0.1 (0.13) A | 0.08 (0.1) A |                                                                                 |
|                         | Peak load current                 | I <sub>peak</sub> | 1.05 A                          | 0.3 A        | 0.24 A       |                                                                                 |
|                         | 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 |              |              |                                                                                 |

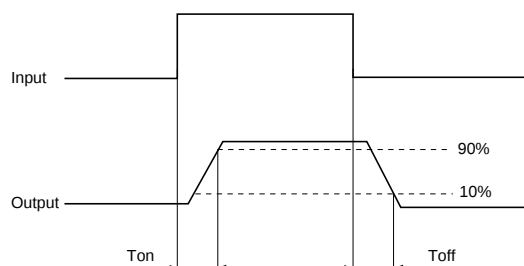
2. Electrical characteristics (Ambient temperature: 25°C 77°F)  
SOP 4pin

| 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<br>I <sub>L</sub> = Max.<br>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<br>V <sub>L</sub> = Max.                       |
|                                  | Transfer characteristics  | Turn on time* | Typical           | T <sub>on</sub>                          | 0.9 ms                | 0.3 ms                |                                                                      |
| Maximum                          |                           |               | 3 ms              |                                          | I <sub>L</sub> = Max. |                       |                                                                      |
| Turn off time*                   |                           | Typical       | T <sub>off</sub>  | 0.5 ms                                   |                       | I <sub>F</sub> = 5 mA |                                                                      |
|                                  |                           | Maximum       |                   | 2 ms                                     |                       | I <sub>L</sub> = Max. |                                                                      |
| I/O capacitance                  |                           | Typical       | C <sub>iso</sub>  | 0.8 pF                                   |                       | f = 1 MHz             |                                                                      |
|                                  |                           | Maximum       |                   | 1.5 pF                                   |                       | V <sub>B</sub> = 0V   |                                                                      |
| Initial I/O isolation resistance |                           | Minimum       | R <sub>Iso</sub>  | 1,000 MΩ                                 |                       |                       | 500 V DC                                                             |

SOP 8pin

| Item                     |                                  |         | Symbol            | AQW282S                                  | AQW280S | AQW284S                                        | 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<br>I <sub>L</sub> = Max.<br>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<br>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<br>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<br>I <sub>L</sub> = Max. |                                                                      |
|                          |                                  | Maximum |                   | 2 ms                                     |         |                                                |                                                                      |
|                          | I/O capacitance                  | Typical | C <sub>iso</sub>  | 0.8 pF                                   |         | f = 1 MHz<br>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                                       |                                                                      |

\*Turn on/Turn off time



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

## REFERENCE DATA

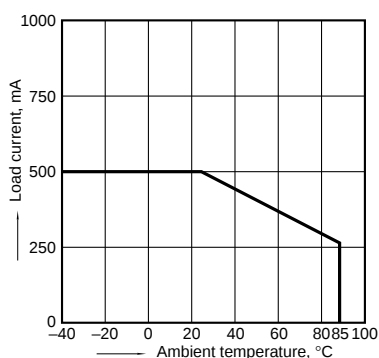
### [SOP type]

1. Load current vs. ambient temperature characteristics

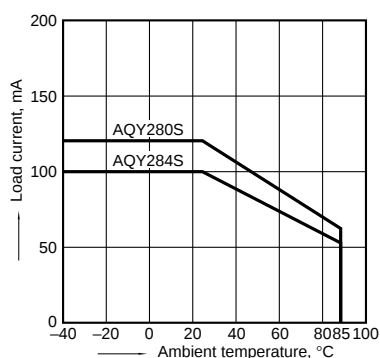
Allowable ambient temperature: -40°C to +85°C  
-40°F to +185°F

Type of connection: A

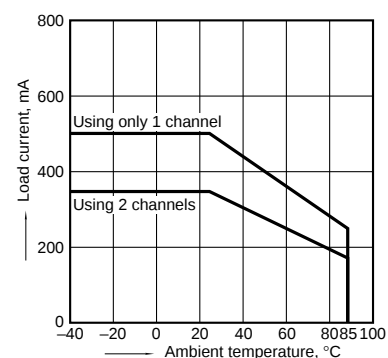
(1) AQY282S



(2) AQY280S, AQY284S

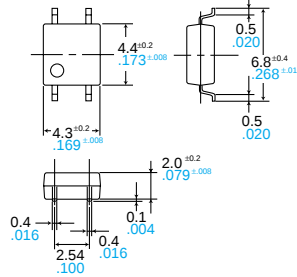
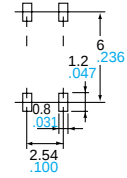


(3) AQW282S



## DIMENSIONS

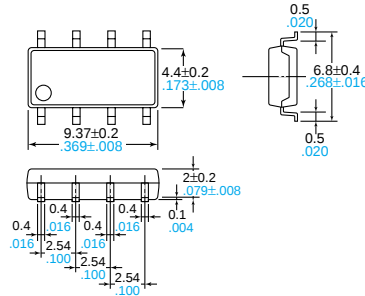
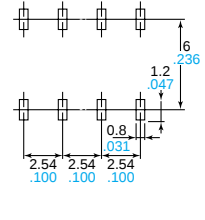
## AQY28○S

Recommended mounting pad  
(Top view)

Terminal thickness =  $0.15 \pm 0.006$   
General tolerance:  $\pm 0.1 \pm 0.004$

Tolerance:  $\pm 0.1 \pm 0.004$

## AQW28○S

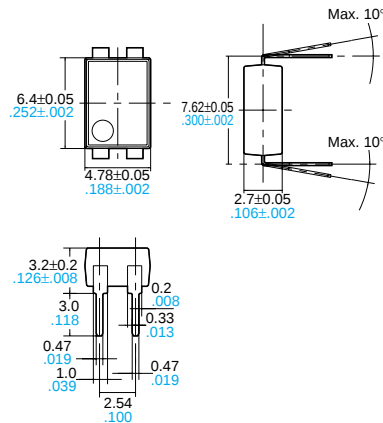
Recommended mounting pad  
(Top view)

Terminal thickness =  $0.15 \pm 0.006$   
General tolerance:  $\pm 0.1 \pm 0.004$

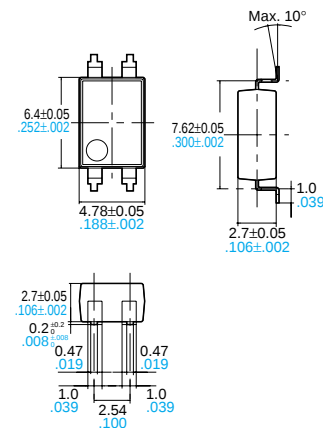
Tolerance:  $\pm 0.1 \pm 0.004$

## AQY28○EH(A)

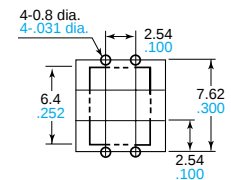
## Through hole terminal type



## Surface mount terminal type

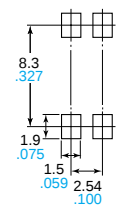


## PC board pattern (Bottom view)



Tolerance:  $\pm 0.1 \pm 0.004$

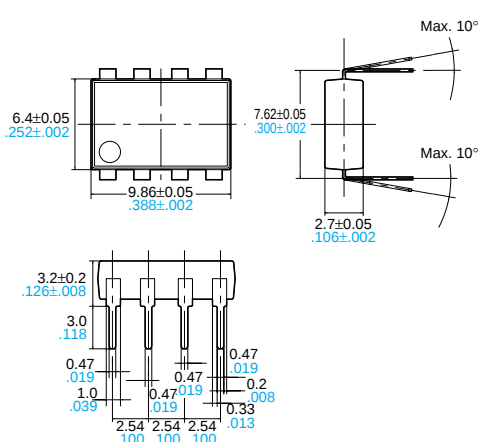
## Mounting pad (Top view)



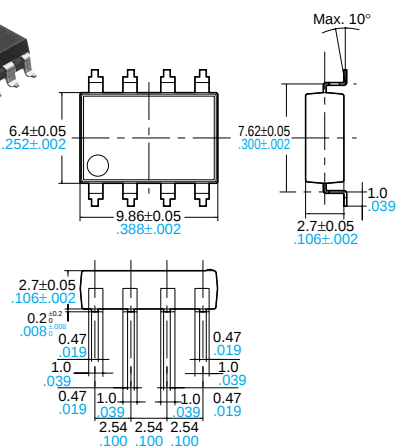
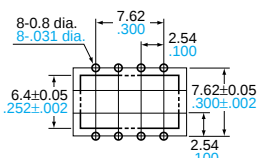
Tolerance:  $\pm 0.1 \pm 0.004$

## AQW28○EH(A)

## Through hole terminal type

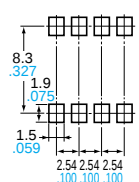


## Surface mount terminal type

PC board pattern  
(Bottom view)

Tolerance:  $\pm 0.1 \pm 0.004$

## Mounting pad (Top view)



Tolerance:  $\pm 0.1 \pm 0.004$