




**THE DATASHEET OF
AQW284EH**

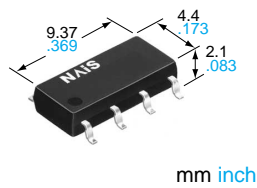
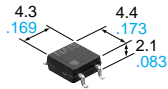




Panasonic
ideas for life

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_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 | 60 V | 350 V | 400 V | |
| | 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 | 100 ms (1 shot), $V_L = DC$ |
| | 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 | | | |
| | 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 | 60 V | 350 V | 400 V | |
| | Continuous load current (peak AC) | I_L | 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_{peak} | 1.05 A | 0.3 A | 0.24 A | 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 | | | |
| 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

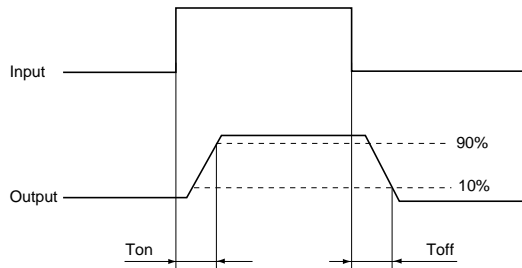
| Item | | Symbol | AQY282S | AQY280S | AQY284S | Condition |
|----------------------------------|---------------------------|----------------------------------|---------|---------|--------------|--|
| Input | LED operate current | Typical | 1.8 mA | | | $I_L = Max.$ |
| | | Maximum | 3.0 mA | | | |
| | LED turn off current | Minimum | 0.2 mA | | | $I_L = Max.$ |
| | | Typical | 1.6 mA | | | |
| LED dropout voltage | Typical | 1.14 V (1.25 V at $I_F = 50mA$) | | | $I_F = 5 mA$ | |
| | Maximum | 1.5 V | | | | |
| Output | On resistance | Typical | 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 | 1μA | | | $I_F = 0 mA$ $V_L = Max.$ |
| Transfer characteristics | Turn on time* | Typical | 0.9 ms | 0.3 ms | | $I_F = 5 mA$ $I_L = Max.$ |
| | | Maximum | 3 ms | | | |
| | Turn off time* | Typical | 0.5 ms | | | $I_F = 5 mA$ $I_L = Max.$ |
| | | Maximum | 2 ms | | | |
| | I/O capacitance | Typical | 0.8 pF | | | f = 1 MHz $V_B = 0V$ |
| | | Maximum | 1.5 pF | | | |
| Initial I/O isolation resistance | Minimum | 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

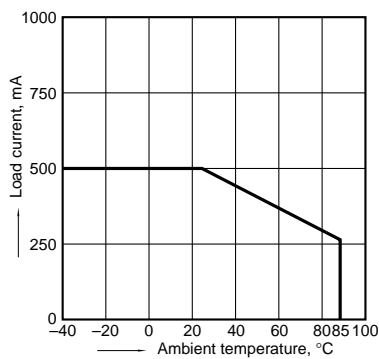
[SOP type]

1. Load current vs. ambient temperature characteristics

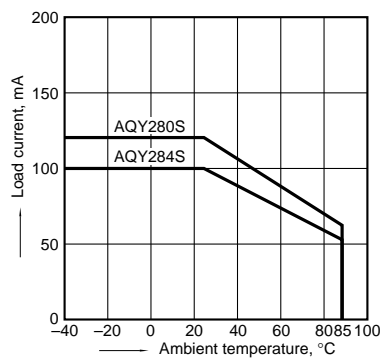
Allowable ambient temperature: -40°C to +85°C
-40°F to +185°F

Type of connection: A

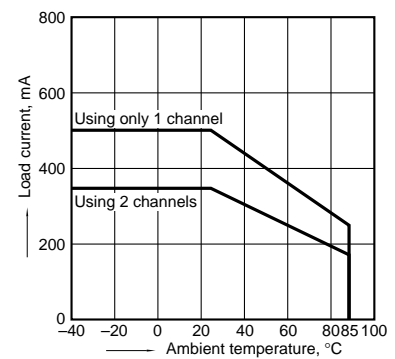
(1) AQY282S



(2) AQY280S, AQY284S



(3) AQW282S

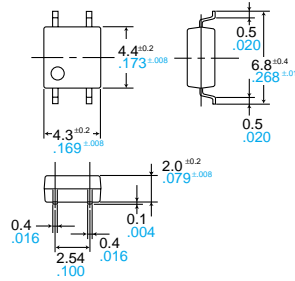


AQ○28○S, AQ○28○EH

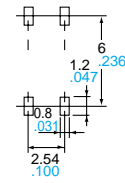
DIMENSIONS

mm inch

AQY28○S



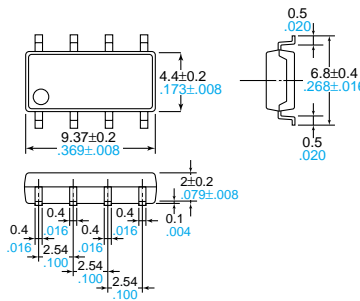
Recommended mounting pad (Top view)



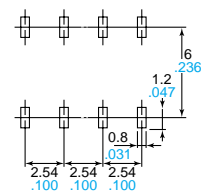
Terminal thickness = 0.15 .006
 General tolerance: ±0.1 ±.004

Tolerance: ±0.1 ±.004

AQW28○S



Recommended mounting pad (Top view)



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

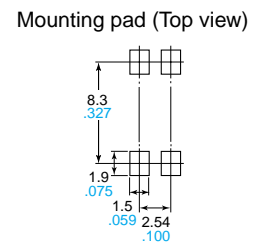
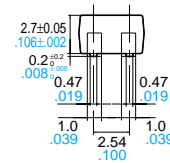
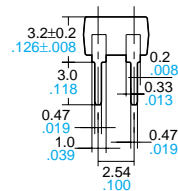
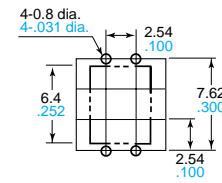
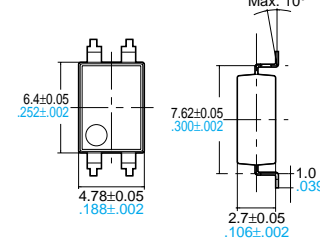
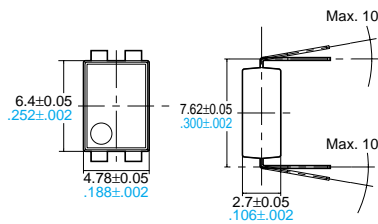
Tolerance: ±0.1 ±.004

AQY28○EH(A)

Through hole terminal type

Surface mount terminal type

PC board pattern (Bottom view)



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

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

Tolerance: ±0.1 ±.004

Mounting pad (Top view)

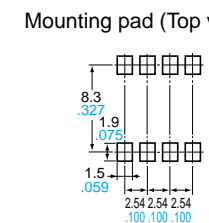
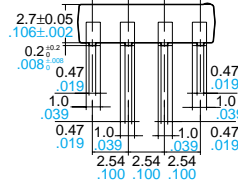
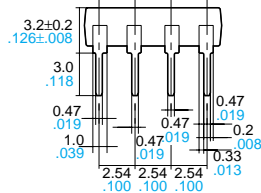
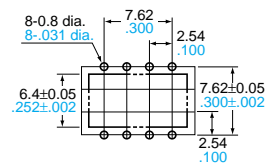
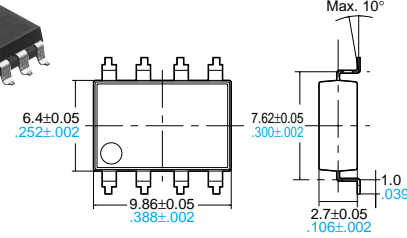
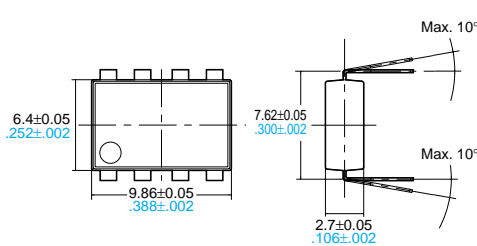
Tolerance: ±0.1 ±.004

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

Terminal thickness = 0.2 .008
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Tolerance: ±0.1 ±.004

Mounting pad (Top view)

Tolerance: ±0.1 ±.004

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