

NAiS

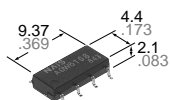
GU (General Use) Type SOP Series [2-Channel (Form A Form B) Type]

PhotoMOS RELAYS

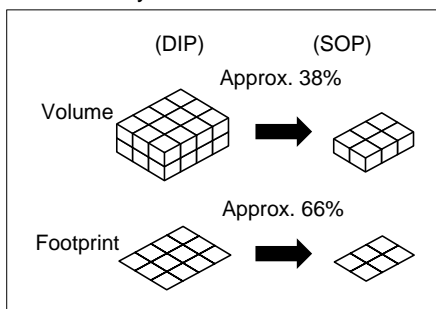
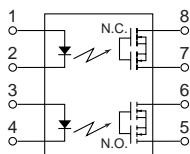
FEATURES

1. 2 channels in super miniature design

The device comes in a super-miniature SO package measuring (W) 4.4 × (L) 9.37 × (H) 2.1 mm (W) .173 × (L) .369 × (H) .083 inch —approx. 38% of the volume and 66% of the footprint size of DIP type PhotoMOS Relays.



mm inch



2. Tape and reel

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

Applicable for 1 Form A 1 Form B use as well as two independent 1 Form A and 1 Form B use

Controls low-level analog signals
PhotoMOS relays feature extremely low closed-circuit offset voltage to enable control of low-level analog signals without distortion

5. Low-level off state leakage current

TYPICAL APPLICATIONS

- Telephones
- Measuring instruments
- Computer
- Industrial robots
- High-speed inspection machines.

TYPES

1. AC/DC 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 | |
| 350 V | 100 mA | AQW610SX | AQW610SZ | 1,000 pcs. |

*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: 50 pcs.; Case: 1,000 pcs.)

(2) For space reasons, the package type indicator "X" and "Z" are omitted from the seal.

RATING

1. AC/DC type

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

| Item | Symbol | AQW610S | Remarks | |
|-------------------------|-------------------------|------------|---------------------------------|--|
| Input | LED forward current | I_F | 50 mA | |
| | LED reverse voltage | V_R | 3 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 | 350 V | |
| | Continuous load current | I_L | 0.1 A (0.13 A) | Peak AC, DC (): in case of using only 1a or 1b, 1 channel |
| | Peak load current | I_{peak} | 0.3 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 | | |
| Temperature limits | Operating | T_{opr} | -40°C to +85°C -40°F to +185°F | Non-condensing at low temperatures |
| | Storage | T_{stg} | -40°C to +100°C -40°F to +212°F | |

AQW610S

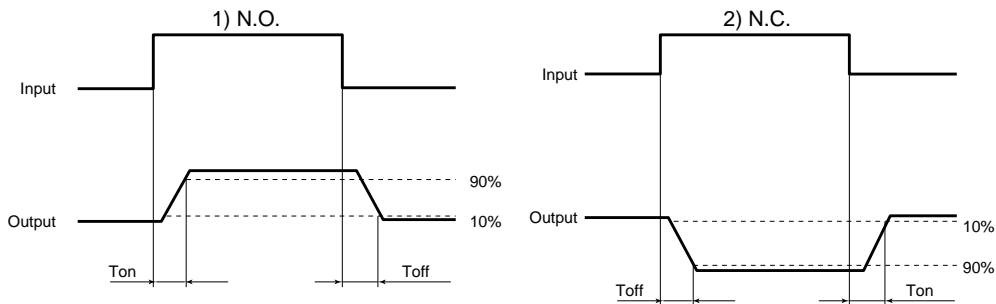
2. Electrical characteristics (Ambient temperature : 25°C 77°F)

| Item | | | Symbol | AQW610S | Condition |
|--------------------------|----------------------------------|---------|---|--------------------------------|--|
| Input | LED operate current | Typical | I_{Fon} | 0.9 mA | $I_L = \text{Max.}$ |
| | | Maximum | | 3 mA | |
| | LED reverse current | Minimum | I_{Foff} | 0.4 mA | $I_L = \text{Max.}$ |
| | | Typical | | 0.8 mA | |
| LED dropout voltage | Typical | V_F | 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 | R_{on} | 18 Ω | $I_F = 5 \text{ mA (N.O.)}$ $I_F = 0 \text{ mA (N.C.)}$ $I_L = \text{Max.}$ Within 1 s on time |
| | | Maximum | | 25 Ω | |
| | Off state leakage current | Maximum | I_{leak} | 1 μA | $I_F = 0 \text{ mA (N.O.)}$ $I_F = 5 \text{ mA (N.C.)}$ $V_L = \text{Max.}$ |
| Transfer characteristics | Operate time* | Typical | T_{on} | 0.28 ms (N.O.), 0.52 ms (N.C.) | $I_F = 0 \text{ mA} \rightarrow 5 \text{ mA}$ $I_L = \text{Max.}$ |
| | | Maximum | | 1.0 ms | |
| | Reverse time* | Typical | T_{off} | 0.04 ms (N.O.), 0.23 ms (N.C.) | $I_F = 5 \text{ mA} \rightarrow 0 \text{ mA}$ $I_L = \text{Max.}$ |
| | | Maximum | | 1.0 ms | |
| | I/O capacitance | Typical | C_{iso} | 0.8 pF | $f = 1 \text{ MHz}$ $V_B = 0$ |
| | Maximum | 1.5 pF | | | |
| | Initial I/O isolation resistance | Minimum | R_{iso} | 1,000 M Ω | 500 V DC |

Note: Recommendable LED forward current $I_F = 5 \text{ mA}$.

For type of connection, see page 32.

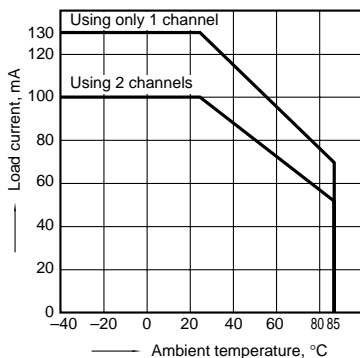
*Operate/Reverse time



REFERENCE DATA

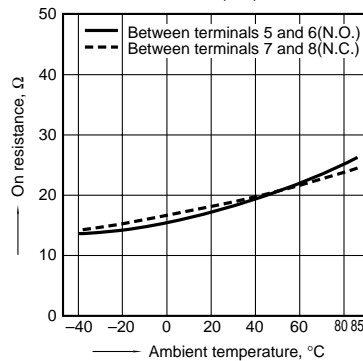
1. Load current vs. ambient temperature characteristics

Allowable ambient temperature: -40°C to $+85^\circ\text{C}$
 -40°F to $+185^\circ\text{F}$



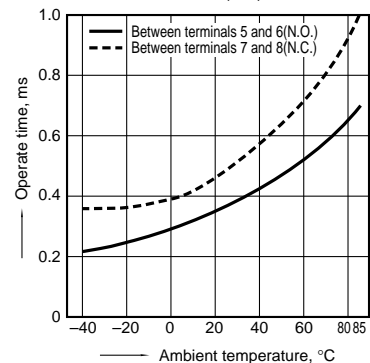
2. On resistance vs. ambient temperature characteristics

Measured portion: between terminals 5 and 6, 7 and 8; LED current: 5 mA; Load voltage: Max. (DC); Continuous load current: Max. (DC)



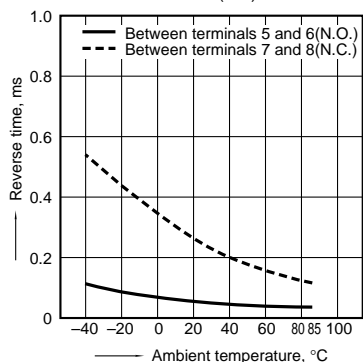
3. Operate time vs. ambient temperature characteristics

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



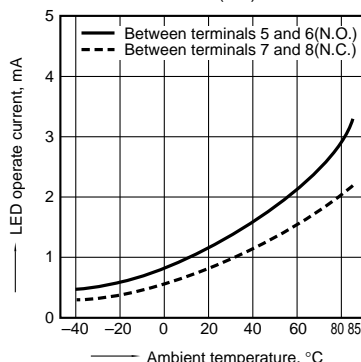
4. Reverse time vs. ambient temperature characteristics

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



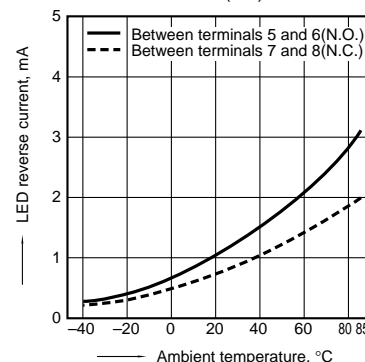
5. LED operate current vs. ambient temperature characteristics

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



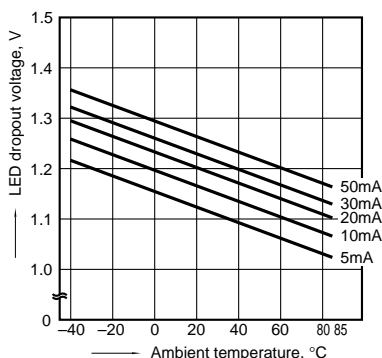
6. LED Reverse current vs. ambient temperature characteristics

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



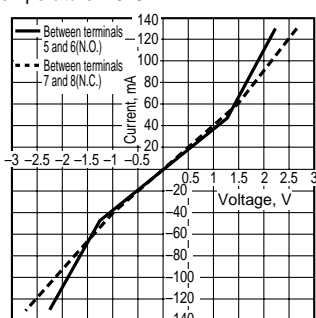
7. LED dropout voltage vs. ambient temperature characteristics

LED current: 5 to 50 mA



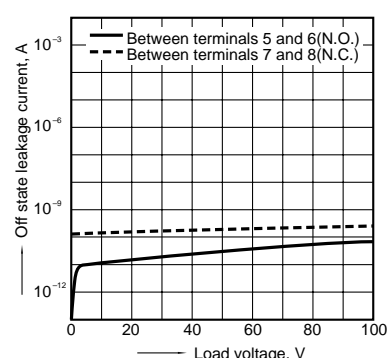
8. Voltage vs. current characteristics of output at MOS portion

Measured portion: between terminals 5 and 6, 7 and 8;
Ambient temperature: 25°C 77°F



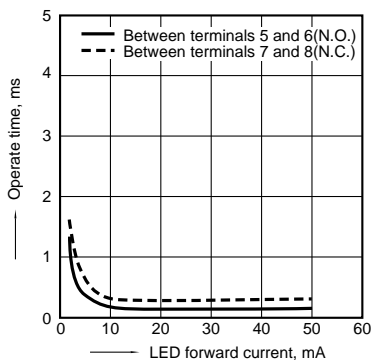
9. Off state leakage current

Measured portion: between terminals 5 and 6, 7 and 8;
Ambient temperature: 25°C 77°F



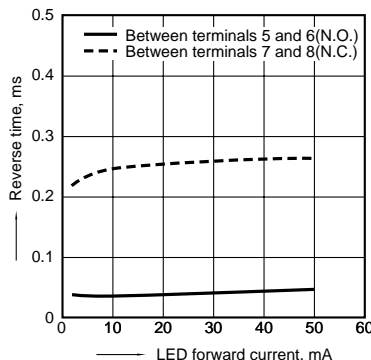
10. LED forward current vs. operate time characteristics

Measured portion: between terminals 5 and 6, 7 and 8;
Load voltage: Max. (DC); Continuous load current: Max. (DC); Ambient temperature: 25°C 77°F



11. LED forward current vs. reverse time characteristics

Measured portion: between terminals 5 and 6, 7 and 8;
Load voltage: Max. (DC); Continuous load current: Max. (DC); Ambient temperature: 25°C 77°F



12. Applied voltage vs. output capacitance characteristics

Measured portion: between terminals 5 and 6, 7 and 8;
Frequency: 1 MHz; Ambient temperature: 25°C 77°F

