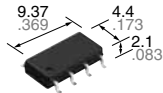
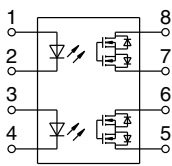




| | |
|--|--|
| Miniature SOP8-pin type of 60V/350V/400V load voltage | PhotoMOS® GU SOP 2 Form A (AQW210S) |
|--|--|



mm inch



RoHS compliant

FEATURES

1. 2 channels in miniature SOP8-pin 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 DIP8-pin type.

2. Controls low-level analog signals

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

3. Low-level off state leakage current of max. 1 μA

TYPICAL APPLICATIONS

- Measuring instruments
- Data communications
- Computers
- Industrial robots

TYPES

| | Output rating* | | Package | Part No. | | | Packing quantity | |
|----------------|----------------|--------------|----------|--------------------|----------------------------------|----------------------------------|--|---------------|
| | Load voltage | Load current | | Tube packing style | Tape and reel packing style | | Tube | Tape and reel |
| | | | | | Picked from the 1/2/3/4-pin side | Picked from the 5/6/7/8-pin side | | |
| AC/DC dual use | 60V | 400mA | SOP8-pin | AQW212S | AQW212SX | AQW212SZ | 1 tube contains: 50 pcs. 1 batch contains: 1,000 pcs. | 1,000 pcs. |
| | 350V | 100mA | | AQW210S | AQW210SX | AQW210SZ | | |
| | 400V | 80mA | | AQW214S | AQW214SX | AQW214SZ | | |

* Indicate the peak AC and DC values.
Note: The packing style indicator "X" or "Z" are not marked on the device.

RATING

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

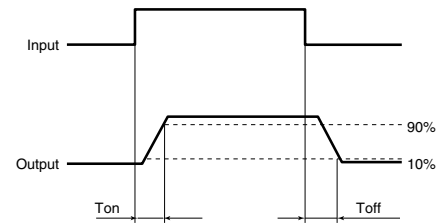
| Item | | Symbol | AQW212S | AQW210S | AQW214S | Remarks |
|-------------------------|-------------------------|-------------------|-----------------------------|----------------|----------------|---|
| Input | LED forward current | I _F | 50 mA | | | |
| | LED reverse voltage | V _R | 5 V | | | |
| | 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 | I _L | 0.4 A (0.5 A) | 0.1 A (0.13 A) | 0.08 A (0.1 A) | Peak AC, DC (): in case of using only 1 channel |
| | Peak load current | I _{peak} | 1.5 A | 0.3 A | 0.24 A | A connection: 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 Vrms | | | |
| Ambient temperature | Operating | T _{opr} | -40 to +85°C -40 to +185°F | | | (Non-icing at low temperatures) |
| | Storage | T _{stg} | -40 to +100°C -40 to +212°F | | | |

GU SOP 2 Form A (AQW210S)

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

| Item | | Symbol | AQW212S | AQW210S | AQW214S | Condition |
|----------------------------------|---------------------------|--|---------|---------|-----------------------|---|
| Input | LED operate current | Typical | 0.9 mA | | | $I_L = \text{Max.}$ |
| | | Maximum | 3 mA | | | |
| | LED turn off current | Minimum | 0.4 mA | | | $I_L = \text{Max.}$ |
| | | Typical | 0.8 mA | | | |
| LED dropout voltage | Typical | 1.25 V (1.14 V at $I_F = 5 \text{ mA}$) | | | $I_F = 50 \text{ mA}$ | |
| | Maximum | 1.5 V | | | | |
| Output | On resistance | Typical | 0.83 Ω | 16 Ω | 30 Ω | $I_F = 5 \text{ mA}$ $I_L = \text{Max.}$ Within 1 s |
| | | Maximum | 2.5 Ω | 35 Ω | 50 Ω | |
| | Off state leakage current | Maximum | 1 μA | | | $I_F = 0 \text{ mA}$ $V_L = \text{Max.}$ |
| Transfer characteristics | Turn on time* | Typical | 0.65 ms | 0.23 ms | 0.21 ms | $I_F = 5 \text{ mA}$ $I_L = \text{Max.}$ |
| | | Maximum | 2 ms | 0.5 ms | | |
| | Turn off time* | Typical | 0.08 ms | 0.04 ms | | $I_F = 5 \text{ mA}$ $I_L = \text{Max.}$ |
| | | Maximum | 0.2 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. Recommended operating conditions (Ambient temperature: 25°C 77°F)

Please use under recommended operating conditions to obtain expected characteristics.

| Item | | Symbol | Number of used channels | Min. | Max. | Unit |
|-------------|-------------------------|--------|-------------------------|------|-------------|------|
| LED current | | I_F | 5 | | 30 | mA |
| AQW212S | Load voltage (Peak AC) | V_L | — | | 48 | V |
| | Continuous load current | I_L | 1ch 2ch | — | 0.5 0.4 | A |
| AQW210S | Load voltage (Peak AC) | V_L | — | | 280 | V |
| | Continuous load current | I_L | 1ch 2ch | — | 0.13 0.1 | A |
| AQW214S | Load voltage (Peak AC) | V_L | — | | 320 | V |
| | Continuous load current | I_L | 1ch 2ch | — | 0.1 0.08 | A |

■ These products are not designed for automotive use.

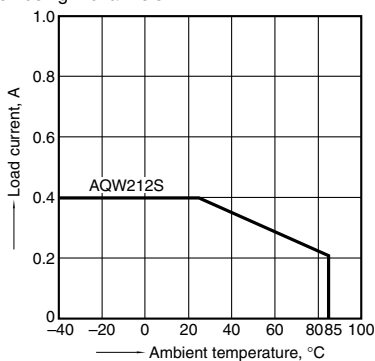
If you are considering to use these products for automotive applications, please contact your local Panasonic Corporation technical representative.

REFERENCE DATA

1.-(1) Load current vs. ambient temperature characteristics

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

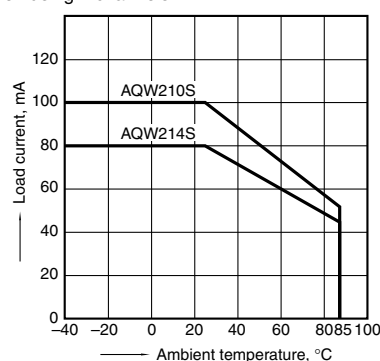
When using 2 channels



1.-(2) Load current vs. ambient temperature characteristics

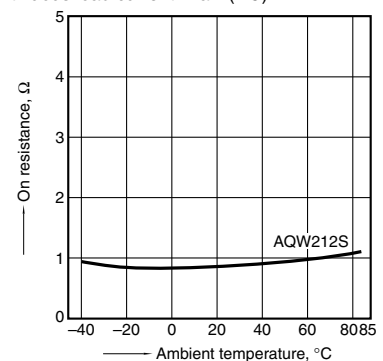
Allowable ambient temperature: -40 to +85°C
-40 to +185°F

When using 2 channels



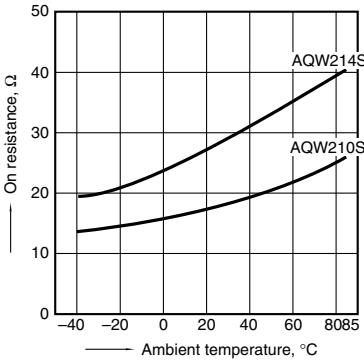
2.-(1) On resistance vs. ambient temperature characteristics

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



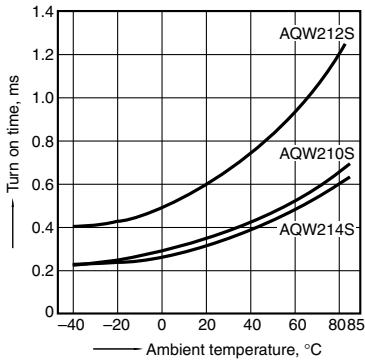
2.-(2) On resistance vs. ambient temperature characteristics

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



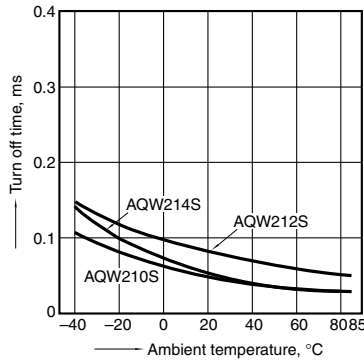
3. Turn on time vs. ambient temperature characteristics

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



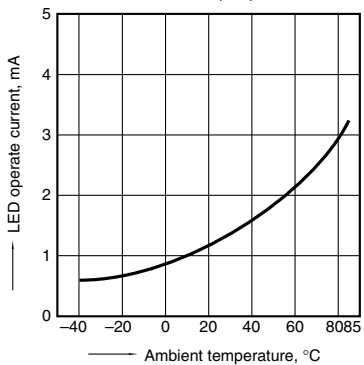
4. Turn off time vs. ambient temperature characteristics

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



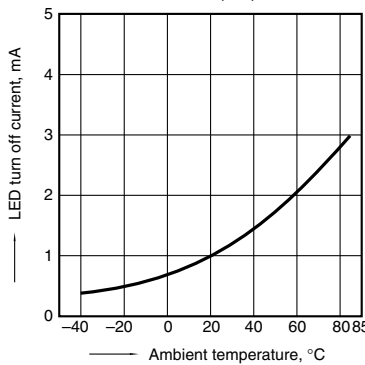
5. LED operate current vs. ambient temperature characteristics

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



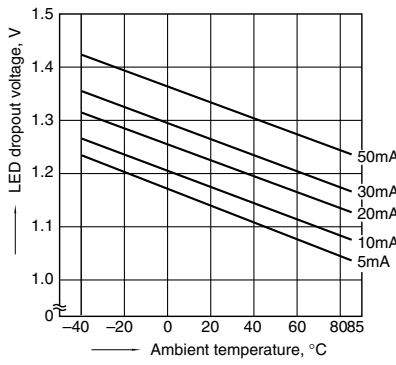
6. LED turn off current vs. ambient temperature characteristics

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



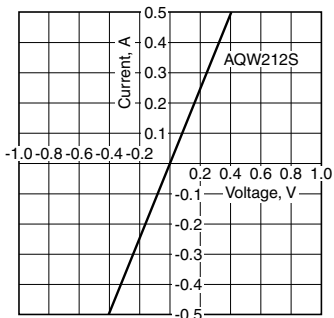
7. LED dropout voltage vs. ambient temperature characteristics

Sample: All types;
LED current: 5 to 50 mA



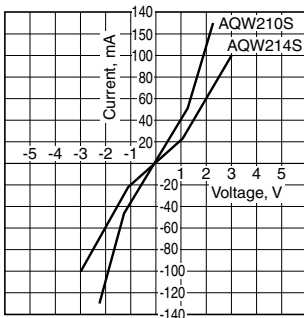
8.-(1) Current vs. voltage characteristics of output at MOS portion

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



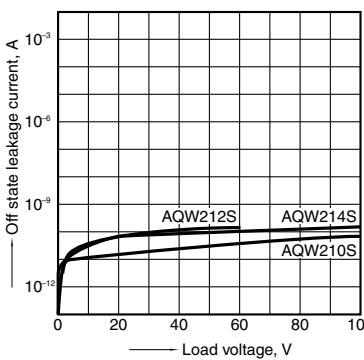
8.-(2) Current vs. voltage characteristics of output at MOS portion

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



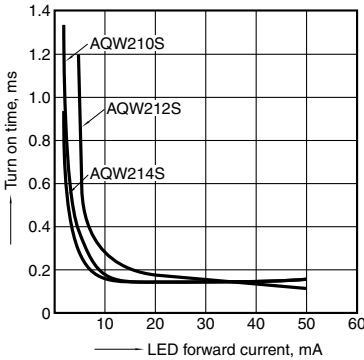
9. Off state leakage current vs. load voltage characteristics

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



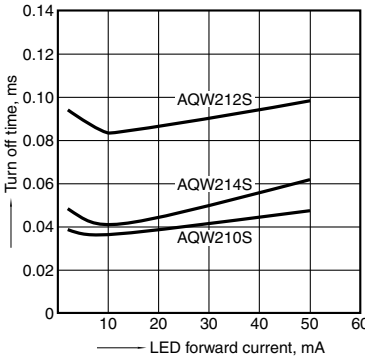
10. Turn on time vs. LED forward current characteristics

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



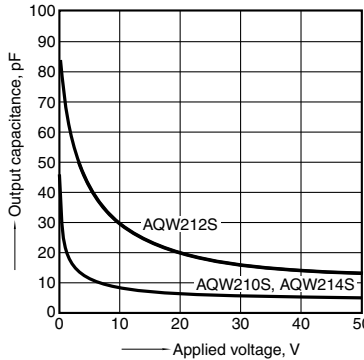
11. Turn off time vs. LED forward current characteristics

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. Output capacitance vs. applied voltage characteristics

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



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- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



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