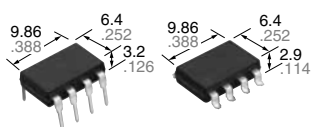




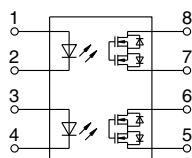
**Normally closed type
with reinforced insulation**

**PhotoMOS®
GE 2 Form B
(AQW414EH)**



(Height includes standoff)

mm inch



RoHS compliant

FEATURES

- 1. Reinforced insulation of 5,000 V**
More than 0.4 mm internal insulation distance between inputs and outputs. Con-forms to EN41003, EN60950 (reinforced insulation).
- 2. Applicable for 2 Form B use as well as two independent 1 Form B use**
- 3. Controls low-level analog signals**
PhotoMOS feature extremely low closed-circuit offset voltage to enable control of low-level analog signals without distortion.
- 4. High sensitivity and high speed response**
Can control max. 0.13 A load current with 5 mA input current. Fast operation speed of Typ. 0.8 ms.
- 5. Low-level off state leakage current**

TYPICAL APPLICATIONS

- Modem
- Telephone equipment
- Electricity, plant equipment
- Security equipment
- Sensing equipment

TYPES

| | I/O isolation voltage | Output rating* | | Package | Part No. | | | | Packing quantity | |
|----------------|-----------------------|----------------|--------------|----------------------------------|----------------------------------|------------------------|-----------------------------|------------|---|---------------|
| | | | | | Through hole terminal | Surface-mount terminal | | | | |
| | | 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 | Reinforced 5,000 Vrms | 400 V | 100 mA | DIP8-pin | AQW414EH | AQW414EHA | AQW414EHAX | AQW414EHAZ | 1 tube contains : 50 pcs. 1 batch contains: 500 pcs. | 1,000 pcs. |

*Indicate the peak AC and DC values.

Note: The surface mount terminal shape indicator "A" and the packing style indicator "X" or "Z" are not marked on the device.

RATING

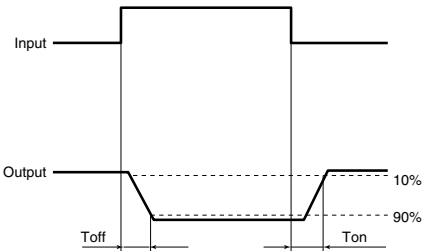
1. Absolute maximum ratings (Ambient temperature: 25°C 77°F)

| Item | | Symbol | AQW414EH(A) | Remarks |
|-------------------------|-------------------------|------------|-----------------------------|--|
| Input | LED forward current | I_F | 50mA | |
| | LED reverse voltage | V_R | 5V | |
| | Peak forward current | I_{FP} | 1A | f = 100 Hz, Duty factor = 0.1% |
| | Power dissipation | P_{in} | 75mW | |
| Output | Load voltage (peak AC) | V_L | 400 V | |
| | Continuous load current | I_L | 0.1 A (0.13 A) | Peak AC, DC (): in case of using only 1 channel. |
| | Peak load current | I_{peak} | 0.3 A | 100 ms (1 shot), $V_L = DC$ |
| | Power dissipation | P_{out} | 800mW | |
| Total power dissipation | | P_T | 850mW | |
| I/O isolation voltage | | V_{iso} | 5,000 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 | |

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

| Item | | | Symbol | AQW414EH(A) | Condition |
|--------------------------|----------------------------------|---------|--------------------|--------------------------------------|---|
| Input | LED operate (OFF) current | Typical | I _{Off} | 1.3mA | I _L =Max. |
| | | Maximum | | 3.0mA | |
| | LED reverse (ON) current | Minimum | I _{Fon} | 0.4mA | I _L =Max. |
| | | Typical | | 1.2mA | |
| | LED dropout voltage | Typical | V _F | 1.25 (1.14 V at I _F =5mA) | I _F =50mA |
| Maximum | | 1.5V | | | |
| Output | On resistance | Typical | R _{On} | 26Ω | I _F =0mA I _L =Max. Within 1 s |
| | | Maximum | | 35Ω | |
| | Off state leakage current | Maximum | I _{LLeak} | 10μA | I _F =5mA V _L =Max. |
| Transfer characteristics | Operate (OFF) time* | Typical | T _{Off} | 0.8ms | I _F =0mA→5mA I _L =Max. |
| | | Maximum | | 3.0ms | |
| | Reverse (ON) time* | Typical | T _{On} | 0.2ms | I _F =5mA→0mA I _L =Max. |
| | | Maximum | | 1.0ms | |
| | I/O capacitance | Typical | C _{iso} | 0.8pF | f =1MHz V _B =0V |
| | | Maximum | | 1.5pF | |
| | Initial I/O isolation resistance | Minimum | R _{iso} | 1,000MΩ | 500V DC |

*Operate/Reverse time



3. Recommended operating conditions (Ambient temperature: 25°C 77°F)

Please use under recommended operating conditions to obtain expected characteristics.

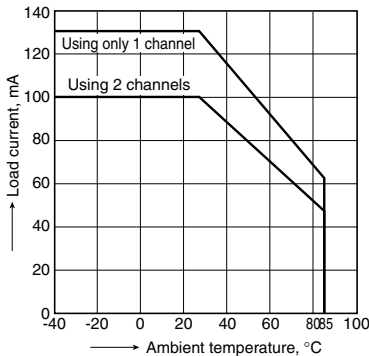
| Item | | Symbol | Number of used channels | Min. | Max. | Unit |
|-------------|-------------------------|----------------|-------------------------|------|-------------|------|
| AQW414EH(A) | LED current | I _F | | 5 | 30 | mA |
| | Load voltage (Peak AC) | V _L | | — | 320 | V |
| | Continuous load current | I _L | 1ch 2ch | — | 0.13 0.1 | 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

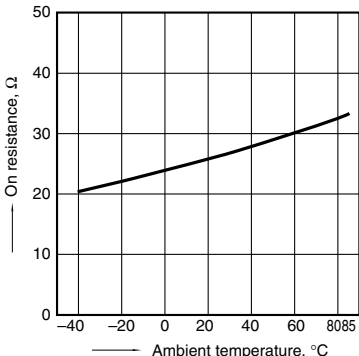
1. Load current vs. ambient temperature characteristics

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



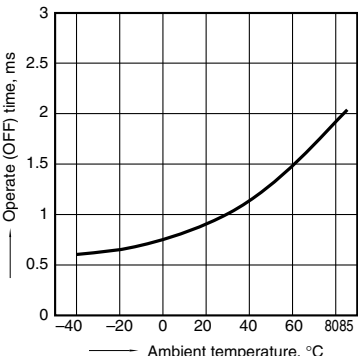
2. On resistance vs. ambient temperature characteristics

Measured portion: between terminals 5 and 6, 7 and 8;
LED current: 0 mA; Load voltage: Max. (DC);
Continuous load current: Max. (DC)



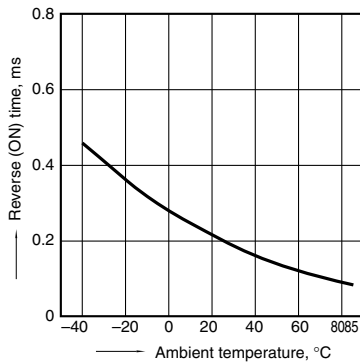
3. Operate (OFF) time vs. ambient temperature characteristics

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



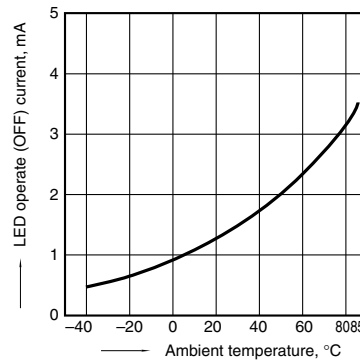
4. Reverse (ON) time vs. ambient temperature characteristics

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



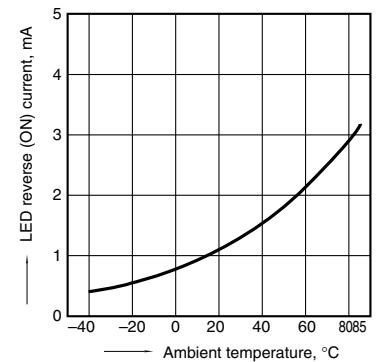
5. LED operate (OFF) current vs. ambient temperature characteristics

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



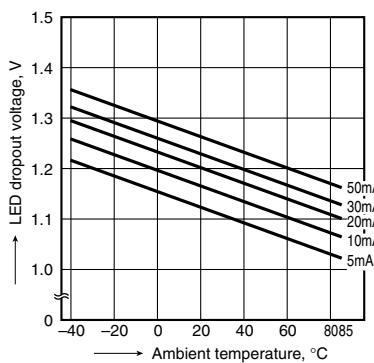
6. LED reverse (ON) current vs. ambient temperature characteristics

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



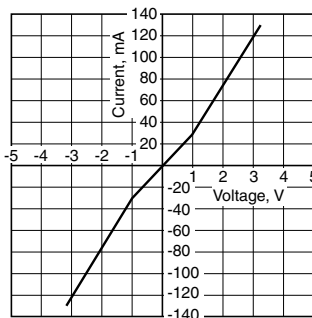
7. LED dropout voltage vs. ambient temperature characteristics;

LED current: 5 to 50 mA



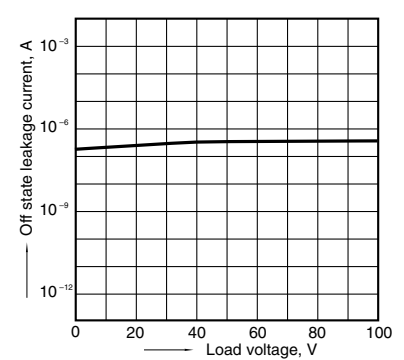
8. Current vs. voltage characteristics of output at MOS portion

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



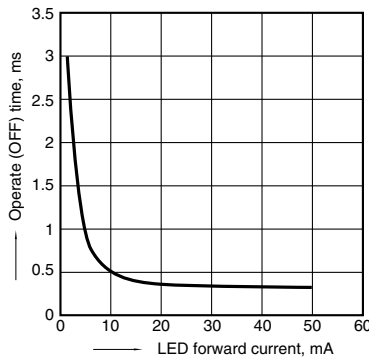
9. Off state leakage current vs. load voltage characteristics

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



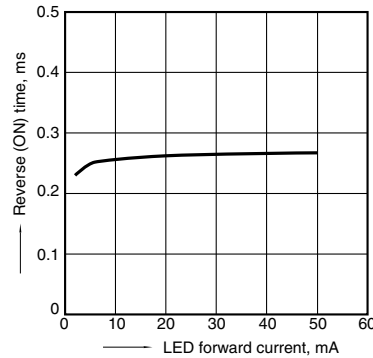
10. Operate (OFF) time vs. LED forward current characteristics

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



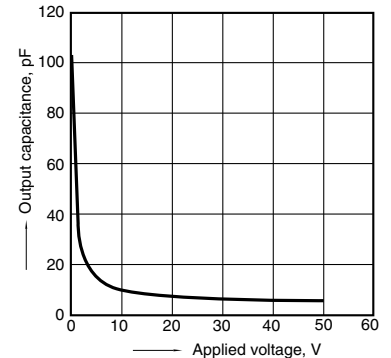
11. Reverse (ON) time vs. LED forward current characteristics

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



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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