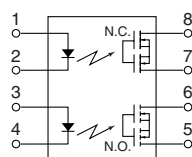
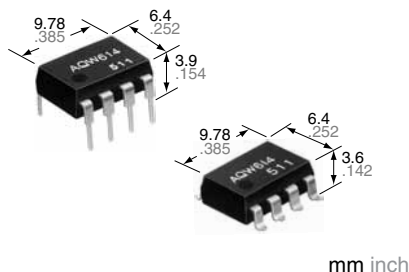


Both NO and NC contacts  
incorporated in a  
DIP8-pin package

PhotoMOS<sup>®</sup>  
GU Form A & B  
(AQW614)



RoHS compliant

## FEATURES

1. Approx. 1/2 the space compared with the mounting of a set of 1 Form A and 1 Form B PhotoMOS
2. Applicable for 1 Form A 1 Form B use as well as two independent 1 Form A and 1 Form B use
3. Controls load currents up to 0.13 A with 5 mA input current
4. Extremely low closed-circuit offset voltages to enable control of small analog signals without distortion
5. Stable on-resistance

## TYPICAL APPLICATIONS

- High-speed inspection machines
- Telephone equipment
- Computers
- Sensing equipment

## TYPES

|                | Output rating* |              | Package  | Part No.              |                                |                                |          | Packing quantity                                             |            |
|----------------|----------------|--------------|----------|-----------------------|--------------------------------|--------------------------------|----------|--------------------------------------------------------------|------------|
|                | Load voltage   | Load current |          | Through hole terminal | Surface-mount terminal         |                                |          |                                                              |            |
|                |                |              |          | Tube packing style    | Tape and reel packing style    |                                | Tube     | Tape and reel                                                |            |
|                |                |              |          |                       | Picked from the 1/2/3-pin side | Picked from the 4/5/6-pin side |          |                                                              |            |
| AC/DC dual use | 400 V          | 100 mA       | DIP8-pin | AQW614                | AQW614A                        | AQW614AX                       | AQW614AZ | 1 tube contains:<br>50 pcs.<br>1 batch contains:<br>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

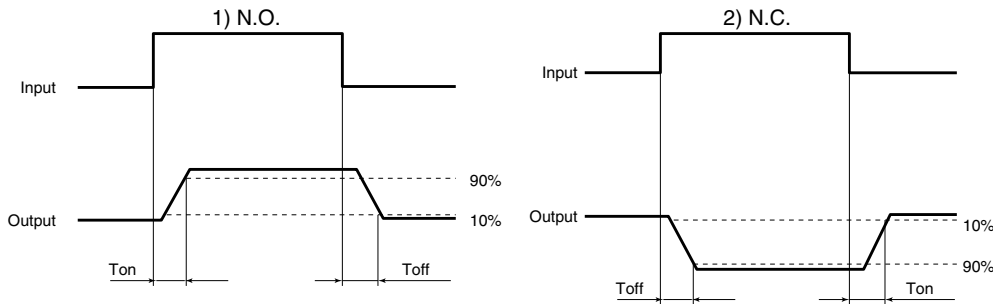
1. Absolute maximum ratings (Ambient temperature: 25°C 77°F)

|                         | Item                    | Symbol            | AQW614(A)                       | Remarks                                                          |
|-------------------------|-------------------------|-------------------|---------------------------------|------------------------------------------------------------------|
| Input                   | LED forward current     | I <sub>F</sub>    | 50 mA                           |                                                                  |
|                         | LED reverse voltage     | V <sub>R</sub>    | 5 V                             |                                                                  |
|                         | Peak forward current    | I <sub>FP</sub>   | 1 A                             | f = 100 Hz, Duty factor = 0.1%                                   |
|                         | Power dissipation       | P <sub>in</sub>   | 75 mW                           |                                                                  |
| Output                  | Load voltage (peak AC)  | V <sub>L</sub>    | 400 V                           |                                                                  |
|                         | Continuous load current | I <sub>L</sub>    | 0.1 A (0.13 A)                  | Peak AC, DC<br>( ): in case of using only 1a or 1b,<br>1 channel |
|                         | Peak load current       | I <sub>peak</sub> | 0.3 A                           | 100 ms (1 shot), V <sub>L</sub> = DC                             |
|                         | Power dissipation       | P <sub>out</sub>  | 800 mW                          |                                                                  |
| Total power dissipation |                         | P <sub>T</sub>    | 850 mW                          |                                                                  |
| I/O isolation voltage   |                         | V <sub>iso</sub>  | 1,500 V AC                      | Between input and output/between<br>contact sets                 |
| Temperature limits      | Operating               | T <sub>opr</sub>  | −40°C to +85°C −40°F to +185°F  | Non-condensing at low temperatures                               |
|                         | Storage                 | T <sub>stg</sub>  | −40°C to +100°C −40°F to +212°F |                                                                  |

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

| Item                     |                                  |         | Symbol            | AQW614(A)                       | Condition                                                                          |
|--------------------------|----------------------------------|---------|-------------------|---------------------------------|------------------------------------------------------------------------------------|
| Input                    | LED operate current              | Typical | $I_{Fon}$ (N.O.)  | 0.9 mA                          | $I_L = 100$ mA                                                                     |
|                          |                                  | Maximum | $I_{Foff}$ (N.C.) | 3 mA                            |                                                                                    |
|                          | LED reverse current              | Minimum | $I_{Foff}$ (N.O.) | 0.4 mA                          | $I_L = 100$ mA                                                                     |
|                          |                                  | Typical | $I_{Fon}$ (N.C.)  | 0.8 mA                          |                                                                                    |
| Output                   | LED dropout voltage              | Typical | $V_F$             | 1.25 V (1.14 V at $I_F = 5$ mA) | $I_F = 50$ mA                                                                      |
|                          |                                  | Maximum |                   | 1.5 V                           |                                                                                    |
|                          | On resistance                    | Typical | $R_{on}$          | 27 $\Omega$                     | $I_F = 5$ mA (N.O.)<br>$I_F = 0$ mA (N.C.)<br>$I_L = 100$ mA<br>within 1 s on time |
|                          |                                  | Maximum |                   | 50 $\Omega$                     |                                                                                    |
| Transfer characteristics | Off state leakage current        | Maximum | $I_{Leak}$        | 1 $\mu$ A                       | $I_F = 0$ mA (N.O.)<br>$I_F = 5$ mA (N.C.)<br>$V_L = 400$ V                        |
|                          |                                  |         |                   |                                 |                                                                                    |
|                          | Operate time*                    | Typical | $T_{on}$ (N.O.)   | 0.28 ms (N.O.) 0.43 ms (N.C.)   | $I_F = 0$ mA $\rightarrow$ 5 mA<br>$I_L = 100$ mA                                  |
|                          |                                  | Maximum | $T_{off}$ (N.C.)  | 1 ms                            |                                                                                    |
|                          | Reverse time*                    | Typical | $T_{off}$ (N.O.)  | 0.04 ms (N.O.) 0.3 ms (N.C.)    | $I_F = 5$ mA $\rightarrow$ 0 mA<br>$I_L = 100$ mA                                  |
|                          |                                  | Maximum | $T_{on}$ (N.C.)   | 1 ms                            |                                                                                    |
|                          | I/O capacitance                  | Typical | $C_{iso}$         | 0.8 pF                          | $f = 1$ MHz<br>$V_B = 0$ V                                                         |
|                          |                                  | Maximum |                   | 1.5 pF                          |                                                                                    |
|                          | Initial I/O isolation resistance | Minimum | $R_{iso}$         | 1,000 M $\Omega$                | 500 V DC                                                                           |

\*Operate/Reverse time



## RECOMMENDED OPERATING CONDITIONS

Please obey the following conditions to ensure proper device operation and resetting.

| Item              | Symbol | Recommended value | Unit |
|-------------------|--------|-------------------|------|
| Input LED current | $I_F$  | 5                 | mA   |

■ For Dimensions.

■ For Schematic and Wiring Diagrams.

■ For Cautions for Use.

■ These products are not designed for automotive use.

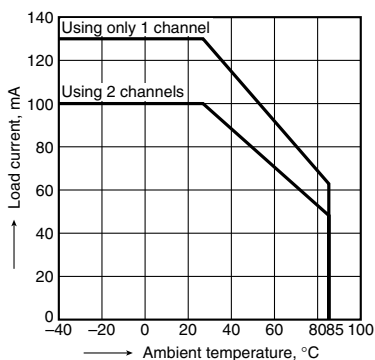
If you are considering to use these products for automotive applications, please contact your local Panasonic Corporation technical representative.

For more information.

## REFERENCE DATA

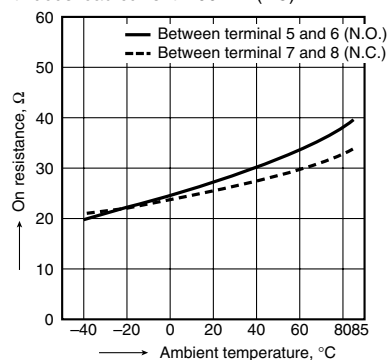
1. Load current vs. ambient temperature characteristics

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



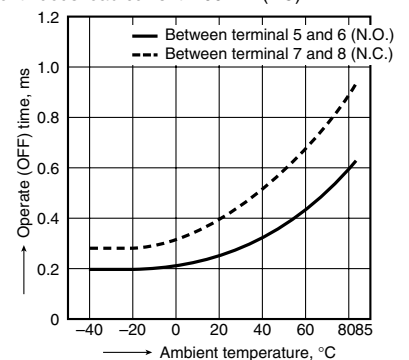
2. On resistance vs. ambient temperature characteristics

Measured portion: between terminals 5 and 6, 7 and 8;  
LED current: 5 mA; Load voltage: 400 V (DC);  
Continuous load current: 100 mA (DC)



3. Operate time vs. ambient temperature characteristics

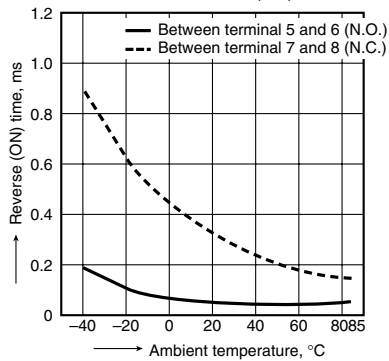
LED current: 5 mA;  
Load voltage: 400 V (DC);  
Continuous load current: 100 mA (DC)



# GU Form A & B (AQW614)

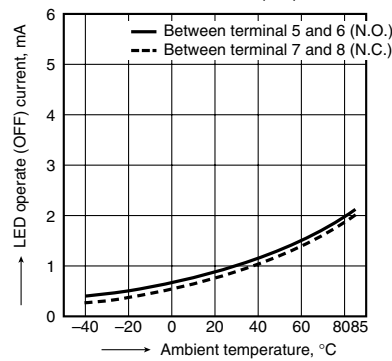
## 4. Reverse time vs. ambient temperature characteristics

LED current: 5 mA; Load voltage: 400 V (DC);  
Continuous load current: 100 mA (DC)



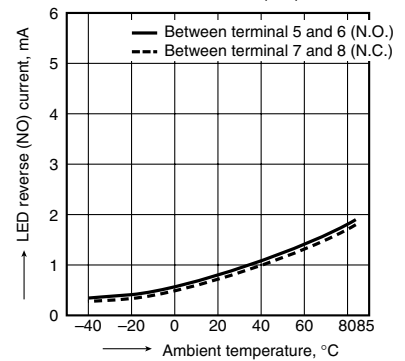
## 5. LED operate current vs. ambient temperature characteristics

Load voltage: 400 V (DC);  
Continuous load current: 100 mA (DC)



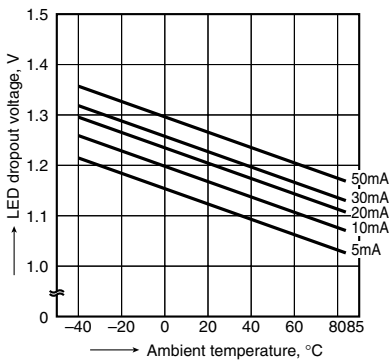
## 6. LED reverse current vs. ambient temperature characteristics

Load voltage: 400 V (DC);  
Continuous load current: 100 mA (DC)



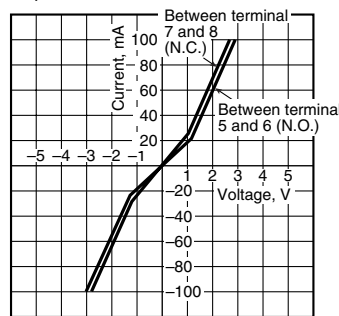
## 7. LED dropout voltage vs. ambient temperature characteristics

LED current: 5 to 50 mA



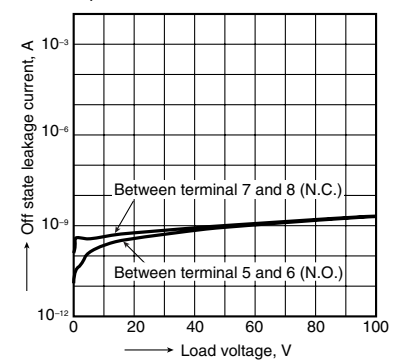
## 8. Current vs. voltage characteristics of output at MOS portion

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



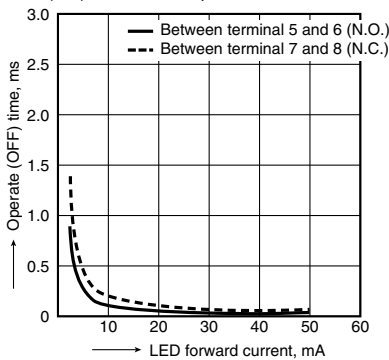
## 9. Off state leakage current vs. load voltage characteristics

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



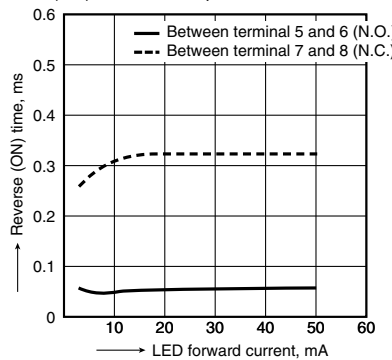
## 10. Operate time vs. LED forward current characteristics

Measured portion: between terminals 5 and 6, 7 and 8;  
Load voltage: 400 V (DC); Continuous load current:  
100 mA (DC); Ambient temperature: 25°C 77°F



## 11. Reverse time vs. LED forward current characteristics

Measured portion: between terminals 5 and 6, 7 and 8;  
Load voltage: 400 V (DC); Continuous load current:  
100 mA (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

