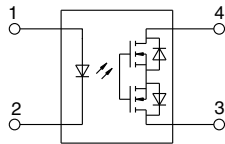
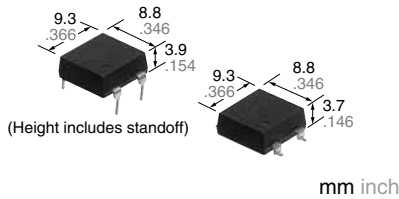




**Flat Power-DIP4-pin type  
with high capacity  
up to 2A load current**

**PhotoMOS®  
PD 1 Form A  
(AQY27○)**



**RoHS compliant**

### FEATURES

- 1. Flat-Packaged type**  
(W) 8.8 × (D) 9.3 × (H) 3.9 mm  
(W) .346 × (D) .366 × (H) .154 inch
- 2. High capacity of continuous load current 2A (AQY272)**
- 3. High sensitivity and low on-resistance**  
Max. 2A load can be controlled with 5mA input current. The on-resistance is low at Typ. 0.11Ω (AQY272).

### TYPICAL APPLICATIONS

- Measuring and Testing equipment
- IC Testers and Board Testers
- High speed inspection machines

### TYPES

| Type           | Output rating* |              | Package            | Part No.              |                              |                              |          | Packing quantity   |            |
|----------------|----------------|--------------|--------------------|-----------------------|------------------------------|------------------------------|----------|--|------------|
|                | Load voltage   | Load current |                    | Through hole terminal | Surface-mount terminal       |                              | Tube     | Tape and reel  |            |
|                |                |              |                    |                       | Tape and reel packing style  |                              |          |  |            |
|                |                |              | Tube packing style |                       | Picked from the 1/2-pin side | Picked from the 3/4-pin side |          |  |            |
| AC/DC dual use | 60V            | 2.0A         | Power-DIP4-pin     | AQY272                | AQY272A                      | AQY272AX                     | AQY272AZ | 1 tube contains: 50 pcs.<br>1 batch contains: 1,000 pcs. | 1,000 pcs. |
|                | 100V           | 1.3A         |                    | AQY275                | AQY275A                      | AQY275AX                     | AQY275AZ |  |            |
|                | 200V           | 0.65A        |                    | AQY277                | AQY277A                      | AQY277AX                     | AQY277AZ |  |            |
|                | 400V           | 0.35A        |                    | AQY274                | AQY274A                      | AQY274AX                     | AQY274AZ |  |            |

\* Indicate the peak AC and DC values.

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

### RATING

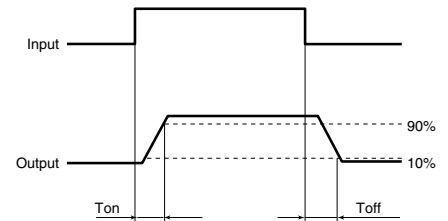
#### 1. Absolute maximum ratings (Ambient temperature: 25°C 77°F)

| Item                    |                         | Symbol            | AQY272(A)                   | AQY275(A) | AQY277(A) | AQY274(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>    | 60 V                        | 100 V     | 200 V     | 400 V     |                                     |
|                         | Continuous load current | I <sub>L</sub>    | 2.0 A                       | 1.3 A     | 0.65 A    | 0.35 A    | Peak AC, DC                         |
|                         | Peak load current       | I <sub>peak</sub> | 6.0 A                       | 4.0 A     | 2.0 A     | 1.0 A     | 100ms (1 shot), V <sub>L</sub> = DC |
|                         | Power dissipation       | P <sub>out</sub>  | 700 mW                      |           |           |           |                                     |
| Total power dissipation |                         | P <sub>T</sub>    | 750 mW                      |           |           |           |                                     |
| I/O isolation voltage   |                         | V <sub>iso</sub>  | 2,500 Vrms                  |           |           |           |                                     |
| Ambient temperature     | Operating               | T <sub>opr</sub>  | -40 to +85°C -40 to +185°F  |           |           |           | (Non-icing at low temperatures)     |
|                         | Storage                 | T <sub>stg</sub>  | -40 to +100°C -40 to +212°F |           |           |           |                                     |

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

| Item                             |                           | Symbol                                    | AQY272(A) | AQY275(A) | AQY277(A) | AQY274(A)             | Condition  |
|----------------------------------|---------------------------|---|-----------|-----------|-----------|-----------------------|--|
| Input                            | LED operate current       | Typical                                   | 1.0 mA    |           |           |                       | $I_L = 100 \text{ mA}$<br>$V_L = 10 \text{ V}$   |
|                                  |                           | Maximum                                   | 3.0 mA    |           |           |                       |  |
|                                  | LED turn off current      | Minimum                                   | 0.4 mA    |           |           |                       | $I_L = 100 \text{ mA}$<br>$V_L = 10 \text{ V}$   |
|                                  |                           | Typical                                   | 0.9 mA    |           |           |                       |  |
| LED dropout voltage              | Typical                   | 1.25 V (1.16 V at $I_F = 10 \text{ mA}$ ) |           |           |           | $I_F = 50 \text{ mA}$ |  |
|                                  | Maximum                   | 1.5 V                                     |           |           |           |                       |  |
| Output                           | On resistance             | Typical                                   | 0.11 Ω    | 0.23 Ω    | 0.7 Ω     | 2.1 Ω                 | $I_F = 10 \text{ mA}$ , $I_L = \text{Max.}$<br>Within 1 s                                |
|                                  |                           | Maximum                                   | 0.18 Ω    | 0.34 Ω    | 1.1 Ω     | 3.2 Ω                 |  |
|                                  | Off state leakage current | Maximum                                   | 10 μA     |           |           |                       | $I_F = 0 \text{ mA}$ , $V_L = \text{Max.}$   |
| Transfer characteristics         | Turn on time*             | Typical                                   | 2.46 ms   | 2.40 ms   | 1.12 ms   | 1.65 ms               | $I_F = 10 \text{ mA}$ , $I_L = 100 \text{ mA}$<br>$V_L = 10 \text{ V}$                   |
|                                  |                           | Maximum                                   | 5.0 ms    |           |           |                       |  |
|                                  |                           | Typical                                   | 5.64 ms   | 5.65 ms   | 2.57 ms   | 3.88 ms               | $I_F = 5 \text{ mA}$ , $I_L = 100 \text{ mA}$<br>$V_L = 10 \text{ V}$                    |
|                                  |                           | Maximum                                   | 10.0 ms   |           |           |                       |  |
|                                  | Turn off time*            | Typical                                   | 0.22 ms   | 0.21 ms   | 0.10 ms   | 0.08 ms               | $I_F = 5 \text{ mA}$ or $10 \text{ mA}$ , $I_L = 100 \text{ mA}$<br>$V_L = 10 \text{ V}$ |
|                                  |                           | Maximum                                   | 3.0 ms    |           |           |                       |  |
|                                  | I/O capacitance           | Typical                                   | 0.8 pF    |           |           |                       | $f = 1 \text{ MHz}$<br>$V_B = 0 \text{ V}$   |
|                                  |                           | Maximum                                   | 1.5 pF    |           |           |                       |  |
| Initial I/O isolation resistance | Minimum                   | $R_{iso}$                                 | 1,000 MΩ  |           |           |                       | 500 V DC   |
| Max. operating frequency         | Maximum                   | —   | 0.5 cps   |           |           |                       | $I_F = 10 \text{ mA}$ , Duty factor = 50%<br>$I_L = \text{Max.}$ , $V_L = \text{Max.}$   |

\*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                  | Min.  | Max. | Unit |   |
|-------------|-------------------------|-------|------|------|---|
| LED current | $I_F$                   | 5     | 30   | mA   |   |
| AQY272(A)   | Load voltage (Peak AC)  | $V_L$ | —    | 48   | V |
|             | Continuous load current | $I_L$ | —    | 2.0  | A |
| AQY275(A)   | Load voltage (Peak AC)  | $V_L$ | —    | 80   | V |
|             | Continuous load current | $I_L$ | —    | 1.3  | A |
| AQY277(A)   | Load voltage (Peak AC)  | $V_L$ | —    | 160  | V |
|             | Continuous load current | $I_L$ | —    | 0.65 | A |
| AQY274(A)   | Load voltage (Peak AC)  | $V_L$ | —    | 320  | V |
|             | Continuous load current | $I_L$ | —    | 0.35 | A |

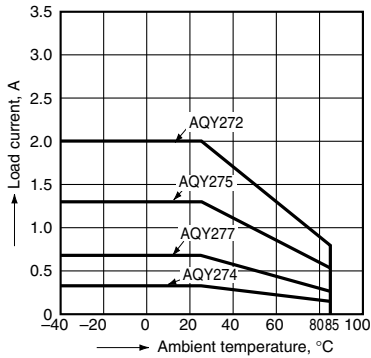
■ These products are not designed for automotive use.

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

# REFERENCE DATA

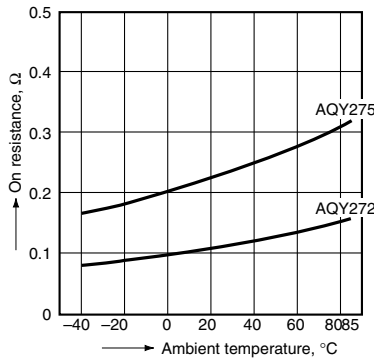
## 1. Load current vs. ambient temperature characteristics

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



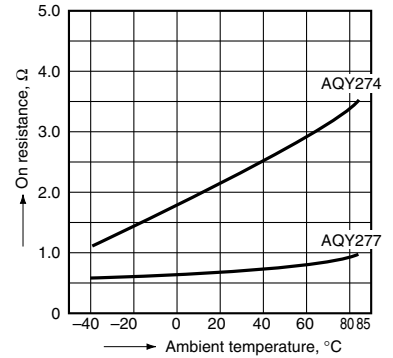
## 2-(1) On resistance vs. ambient temperature characteristics

LED current: 10 mA;  
Continuous load current: 2.0 A (DC) (AQY272),  
1.3 A (DC) (AQY275)



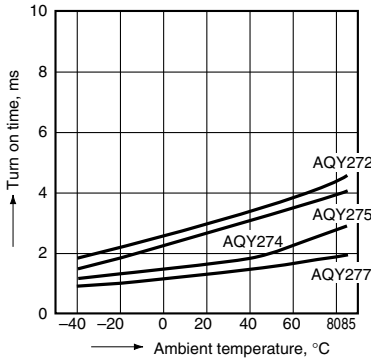
## 2-(2) On resistance vs. ambient temperature characteristics

LED current: 10 mA;  
Continuous load current: 0.65 A (DC) (AQY277),  
0.35 A (DC) (AQY274)



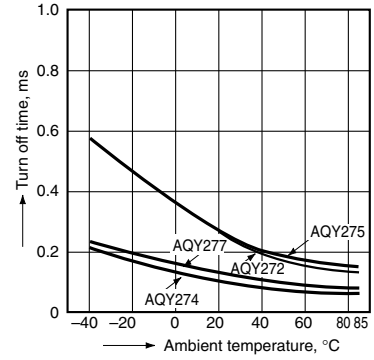
## 3. Turn on time vs. ambient temperature characteristics

LED current: 10 mA; Load voltage: 10 V (DC);  
Continuous load current: 100 mA (DC)



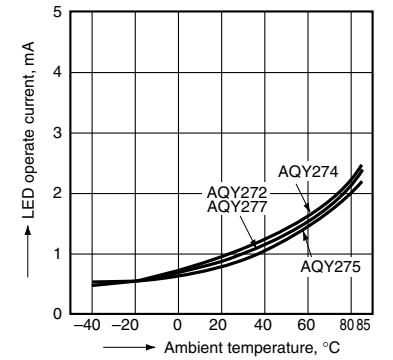
## 4. Turn off time vs. ambient temperature characteristics

LED current: 10 mA; Load voltage: 10 V (DC);  
Continuous load current: 100 mA (DC)



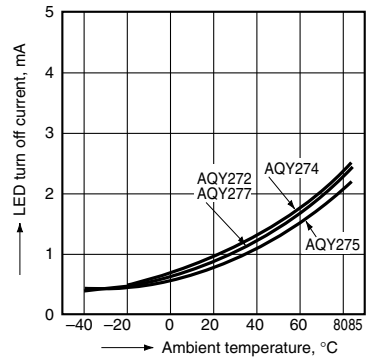
## 5. LED operate vs. ambient temperature characteristics

Load voltage: 10 V (DC);  
Continuous load current: 100 mA (DC)



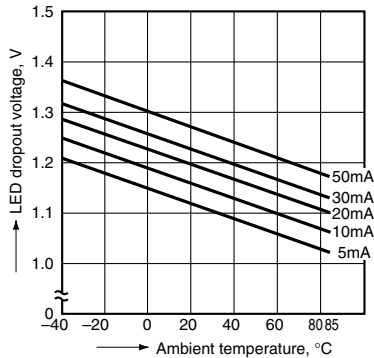
## 6. LED turn off current vs. ambient temperature characteristics

Load voltage: 10 V (DC);  
Continuous load current: 100 mA (DC)



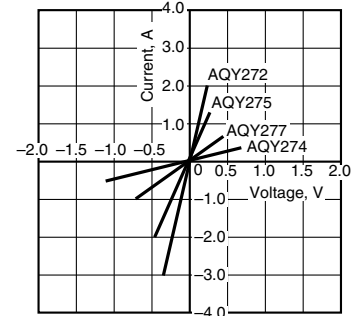
## 7. LED dropout voltage vs. ambient temperature characteristics

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



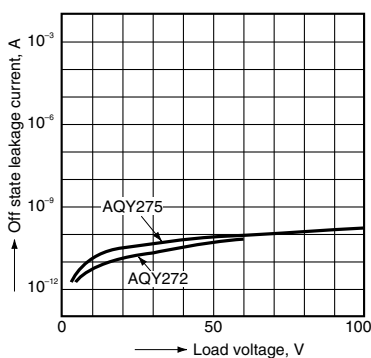
## 8. Current vs. voltage characteristics of output at MOS portion

Ambient temperature: 25°C 77°F



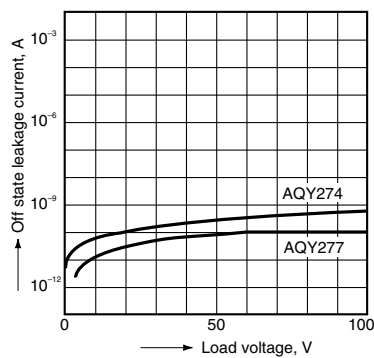
## 9-(1) Off state leakage current vs. load voltage characteristics

Ambient temperature: 25°C 77°F



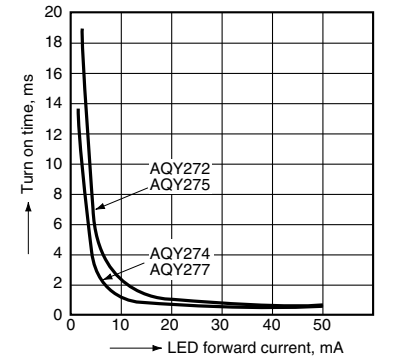
## 9-(2) Off state leakage current vs. load voltage characteristics

Ambient temperature: 25°C 77°F



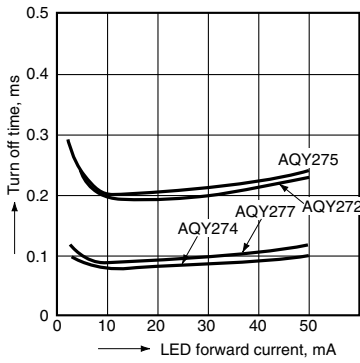
## 10. Turn on time vs. LED forward current characteristics

Load voltage: 10 V (DC); Continuous load current:  
100 mA (DC); Ambient temperature: 25°C 77°F



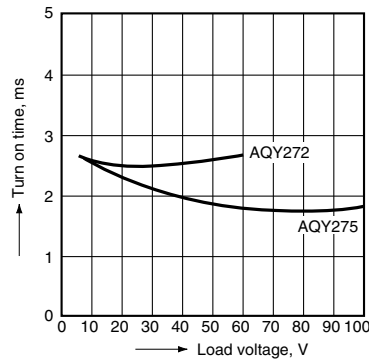
## 11. Turn off time vs. LED forward current characteristics

Load voltage: 10 V (DC); Continuous load current: 100 mA (DC); Ambient temperature: 25°C 77°F



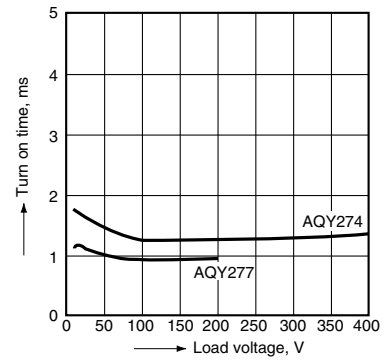
## 12.-(1) Turn on time vs. load voltage characteristics

LED current: 10 mA; Continuous load current: 100 mA; Ambient temperature: 25°C 77°F



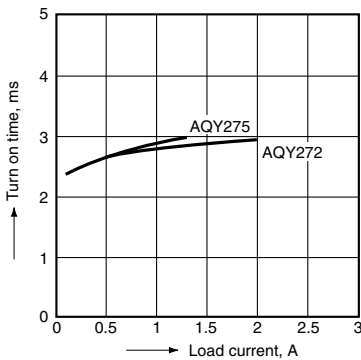
## 12.-(2) Turn on time vs. load voltage characteristics

LED current: 10 mA; Continuous load current: 100 mA; Ambient temperature: 25°C 77°F



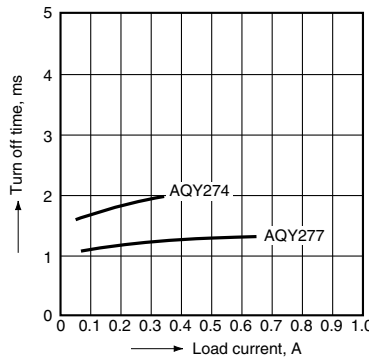
## 13.-(1) Turn on time vs. load current characteristics

LED current: 10 mA; Load voltage: 10 V (DC); Ambient temperature: 25°C 77°F



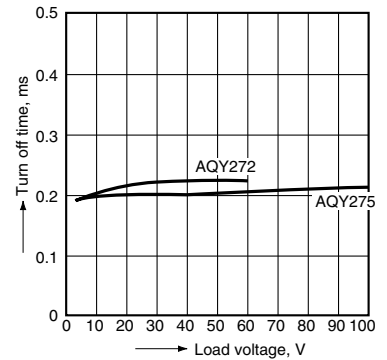
## 13.-(2) Turn on time vs. load current characteristics

LED current: 10 mA; Load voltage: 10 V (DC); Ambient temperature: 25°C 77°F



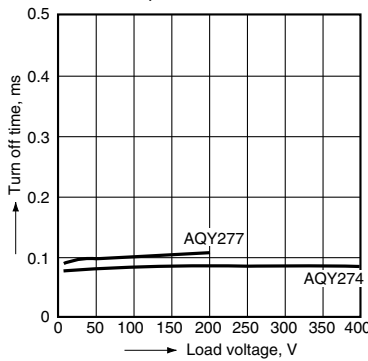
## 14.-(1) Turn off time vs. load voltage characteristics

LED current: 10 mA; Continuous load current: 100 mA; Ambient temperature: 25°C 77°F



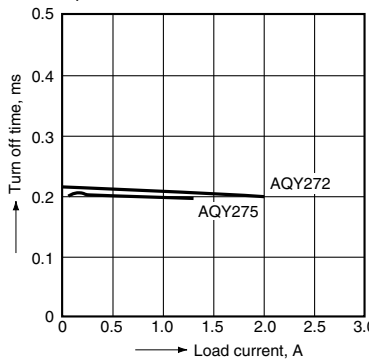
## 14.-(2) Turn off time vs. load voltage characteristics

LED current: 10 mA; Continuous load current: 100 mA; Ambient temperature: 25°C 77°F



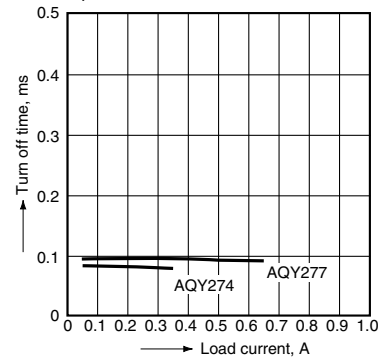
## 15.-(1) Turn off time vs. load current characteristics

LED current: 10 mA; Load voltage 10 V (DC); Ambient temperature: 25°C 77°F



## 15.-(2) Turn off time vs. load current characteristics

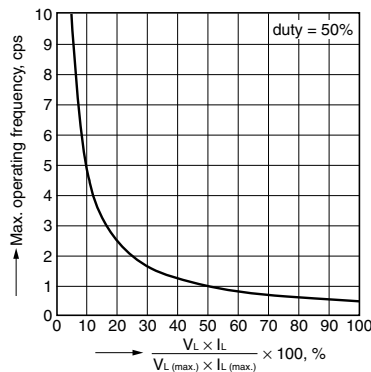
LED current: 10 mA; Load voltage 10 V (DC); Ambient temperature: 25°C 77°F



## 16. Max. operating frequency vs. load voltage/current characteristics

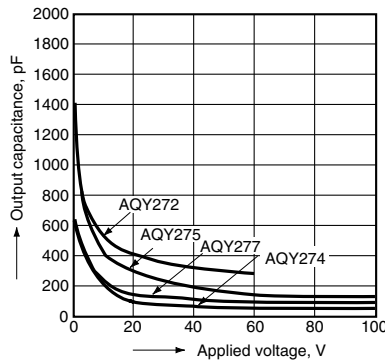
Sample: All types; LED current: 10 mA; Ambient temperature: 25°C 77°F

$V_L$ : Load voltage,  $V_L$  (Max.): Max. rated load voltage  
 $I_L$ : Load current,  $I_L$  (Max.): Max. rated continuous load current



## 17. Output capacitance vs. applied voltage characteristics

Frequency: 1 MHz; Ambient temperature: 25°C 77°F



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- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



#### Как с нами связаться

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