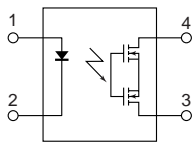
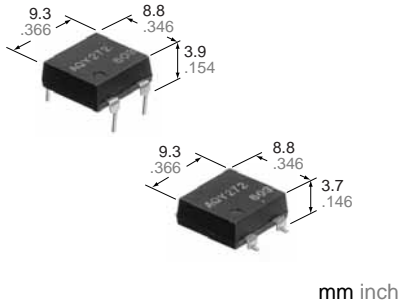


**Flat Power-DIP4-pin type
with high capacity
up to 2A load current**

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



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. 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 relay.

RATING

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

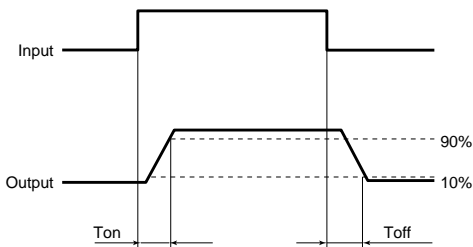
| Item | | Symbol | AQY272(A) | AQY275(A) | AQY277(A) | AQY274(A) | Remarks |
|-------------------------|-------------------------|-------------------|---------------------------------|-----------|-----------|-----------|-------------------------------------|
| Input | LED forward current | I _F | 50 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 | 100 V | 200 V | 400 V | |
| | Continuous load current | I _L | 2.0 A | 1.3 A | 0.65 A | 0.35 A | Peak AC, DC |
| | Peak load current | I _{peak} | 6.0 A | 4.0 A | 2.0 A | 1.0 A | 100ms (1 shot), V _L = DC |
| | Power dissipation | P _{out} | 700 mW | | | | |
| Total power dissipation | | P _T | 750 mW | | | | |
| I/O isolation voltage | | V _{iso} | 2,500 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 | | | | |

PD 1 Form A (AQY27○)

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 | | | | $I_L = 100 \text{ mA}$ $V_L = 10 \text{ V}$ |
| | | Maximum | 3.0 mA | | | | |
| | LED turn off current | Minimum | 0.4 mA | | | | $I_L = 100 \text{ mA}$ $V_L = 10 \text{ V}$ |
| | | 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 | $I_F = 10 \text{ mA}$, $I_L = \text{Max.}$ Within 1 s on time |
| | | 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 | $I_F = 10 \text{ mA}$, $I_L = 100 \text{ mA}$ $V_L = 10 \text{ V}$ |
| | | Maximum | 5.0 ms | | | | |
| | | Typical | 5.64 ms | 5.65 ms | 2.57 ms | 3.88 ms | $I_F = 5 \text{ mA}$, $I_L = 100 \text{ mA}$ $V_L = 10 \text{ V}$ |
| | | 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 mA , $I_L = 100 \text{ mA}$ $V_L = 10 \text{ V}$ |
| | | Maximum | 3.0 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 M Ω | | | | 500 V DC | |
| Maximum operating speed | Maximum | — | | | | $I_F = 10 \text{ mA}$, Duty factor = 50% $I_L = \text{Max.}$, $V_L = \text{Max.}$ | |

*Turn on/Turn off time



RECOMMENDED OPERATING CONDITIONS

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

| Item | Symbol | Recommended value | Unit |
|-------------------|--------|-------------------|------|
| Input LED current | I_F | 5 to 10 | mA |

■ Dimensions

■ Schematic and Wiring Diagrams

■ Cautions for Use

■ These products are not designed for automotive use.

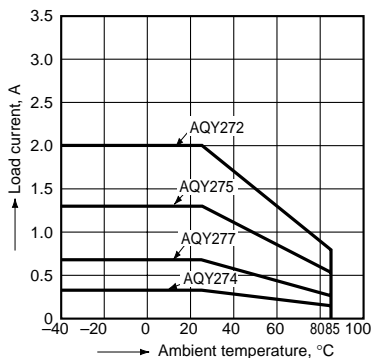
If you are considering to use these products for automotive applications, please contact your local Panasonic Electric Works technical representative.

Please refer to our information on [PhotoMOS Relays for Automotive Applications](#).

REFERENCE DATA

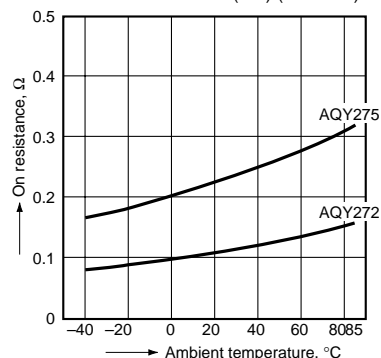
1. Load current vs. ambient temperature characteristics

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



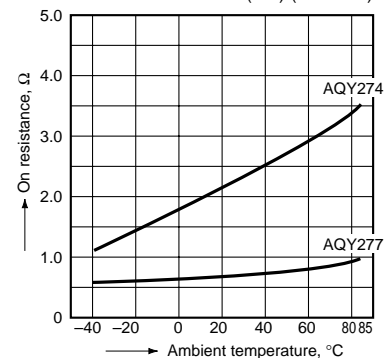
2.-(1) On resistance vs. ambient temperature characteristics

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



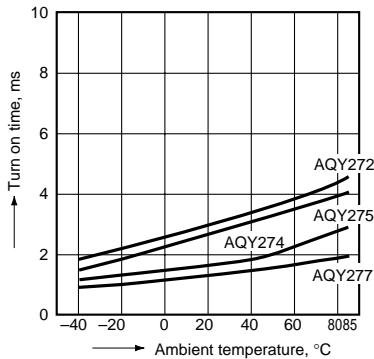
2.-(2) On resistance vs. ambient temperature characteristics

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



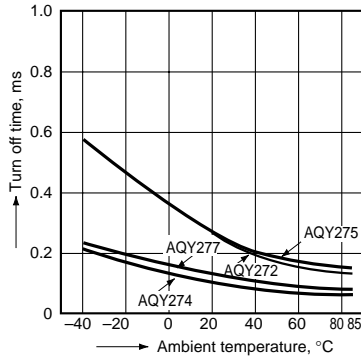
3. Turn on time vs. ambient temperature characteristics

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



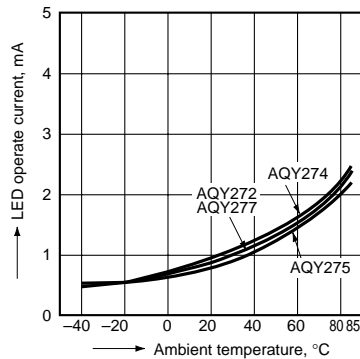
4. Turn off time vs. ambient temperature characteristics

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



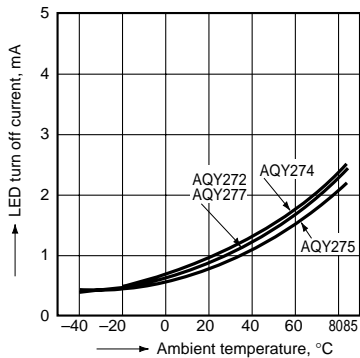
5. LED operate vs. ambient temperature characteristics

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



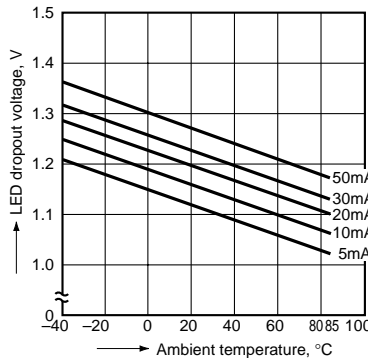
6. LED turn off current vs. ambient temperature characteristics

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



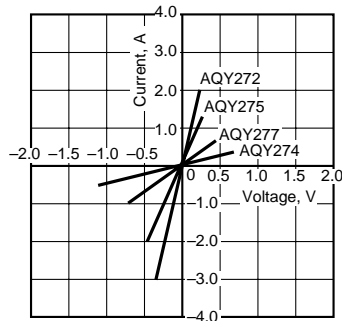
7. LED dropout voltage vs. ambient temperature characteristics

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



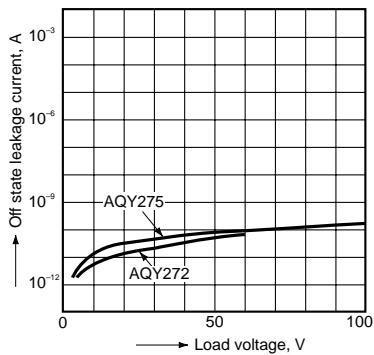
8. Current vs. voltage characteristics of output at MOS portion

Ambient temperature: 25°C 77°F



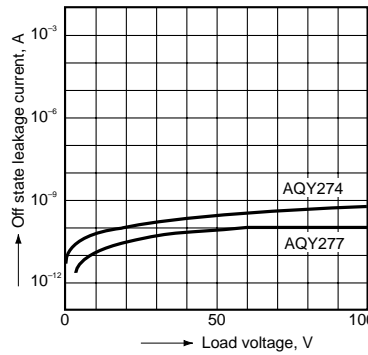
9.-(1) Off state leakage current vs. load voltage characteristics

Ambient temperature: 25°C 77°F



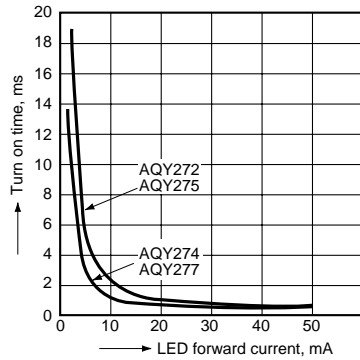
9.-(2) Off state leakage current vs. load voltage characteristics

Ambient temperature: 25°C 77°F



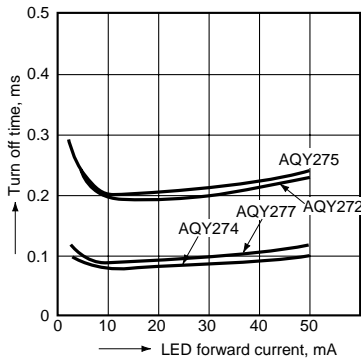
10. Turn on time vs. LED forward current characteristics

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



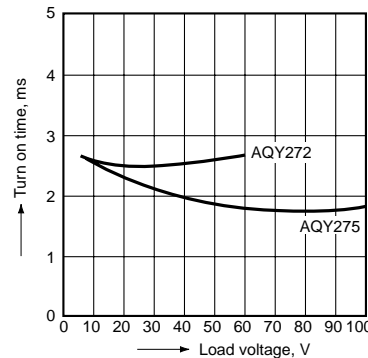
11. Turn off time vs. LED forward current characteristics

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



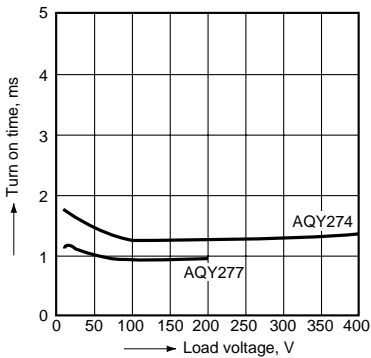
12.-(1) Turn on time vs. load voltage characteristics

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



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

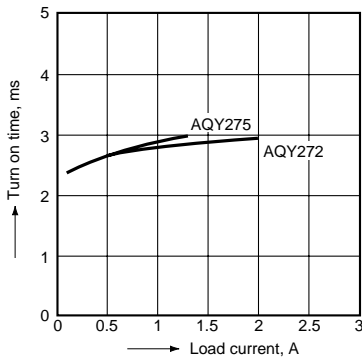
LED current: 10 mA; Continuous load current: 100 mA; Ambient temperature: 25°C 77°F



PD 1 Form A (AQY27○)

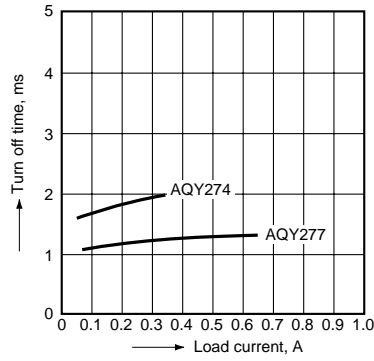
13.-(1) Turn on time vs. load current characteristics

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



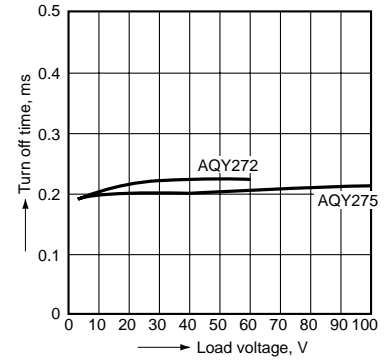
13.-(2) Turn on time vs. load current characteristics

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



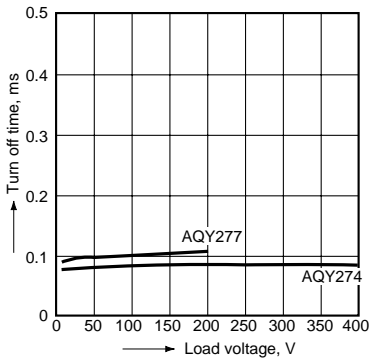
14.-(1) Turn off time vs. load voltage characteristics

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



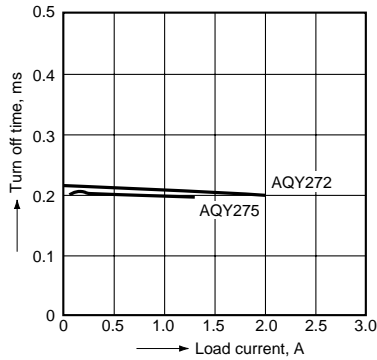
14.-(2) Turn off time vs. load voltage characteristics

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



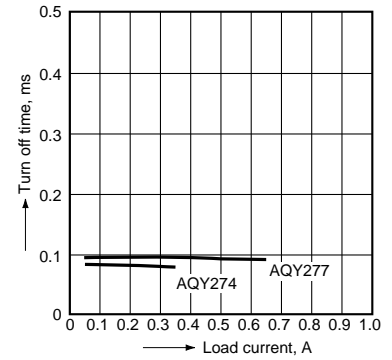
15.-(1) Turn off time vs. load current characteristics

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



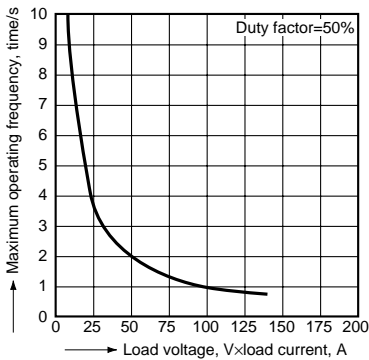
15.-(2) Turn off time vs. load current characteristics

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



16. Maximum operating frequency vs. load voltage/current characteristics

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



17. Output capacitance vs. applied voltage characteristics

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

