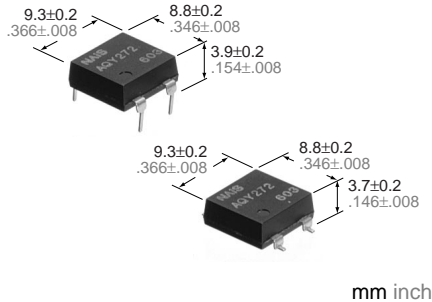


NAIS

PD Type 1- channel (Form A) Type

PhotoMOS RELAYS



mm inch

FEATURES

1. Flat-Packaged Type (W) 8.8× (D) 9.3× (H) 3.9mm (W) .346× (D) .366× (H) .154inch

2. High capacity
Supports the various types of load control, from very small loads to a maximum 2A at the rated load voltage 60V (AQY272)

3. High sensitivity
• Low ON resistance
A maximum 2A load can be controlled with a 5mA input current. The ON resistance is low at 0.11Ω (AQY272)

TYPICAL APPLICATIONS

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

TYPES

| Type | Output rating* | | Part No. | | | | Packing quantity | |
|-------|----------------|--------------|-----------------------|------------------------------|------------------------------|----------|--|------------|
| | Load voltage | Load current | Through hole terminal | Surface-mount terminal | | Tube | Tape and reel | |
| | | | Tube packing style | Tape and reel packing style | | | | |
| | | | | Picked from the 1/2-pin side | Picked from the 3/4-pin side | | | |
| AC/DC | 60V | 2.0A | 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: For space reasons, the SMD terminal shape indicator "A" and the package type indicator "X" and "Z" are omitted from the seal.

RATING

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

| Item | | Symbol | AQY272 | AQY275 | AQY277 | AQY274 | Remarks |
|-------------------------|-----------------------------------|------------|---------------------------------|--------|--------|--------|------------------------------------|
| Input | LED forward current | I_F | 50 mA | | | | |
| | LED reverse voltage | V_R | 3 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 (Peak AC) | I_L | 2.0 A | 1.3 A | 0.65 A | 0.35 A | |
| | 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 | | | | |

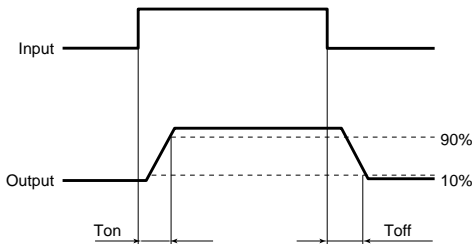
AQY270

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

| Item | | Symbol | AQY272 | AQY275 | AQY277 | AQY274 | 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 | | | | $I_F = 0$ $V_L = \text{Max.}$ |
| Transfer characteristics | Turn on time* | Typical | 2.46 ms | 2.40 ms | 2.40 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 | |
| | | Maximum | 10.0 ms | | | | |
| | Turn off time* | Typical | 0.22 ms | 0.21 ms | 0.10 ms | 0.08 ms | $I_F = 5 \text{ mA or } 10 \text{ mA}$ $I_L = 100 \text{ mA}$ $V_L = 10 \text{ V}$ |
| | | Maximum | 3.0 ms | | | | |
| | I/O capacitance | Typical | 0.8 pF | | | | $f = 1 \text{ MHz}$ $V_B = 0$ |
| | | Maximum | 1.5 pF | | | | |
| Initial I/O isolation resistance | Minimum | 1,000 M Ω | | | | 500 V DC | |
| Maximum operating speed | Maximum | — | 0.5 cps | 0.5 cps | 0.5 cps | 0.5 cps | $I_F = 10 \text{ mA}$ Duty factor = 50% $I_L = \text{Max.}, V_L = \text{Max.}$ |

Note: Recommendable LED forward current $I_F = 5$ to 10 mA.

*Turn on/Turn off time

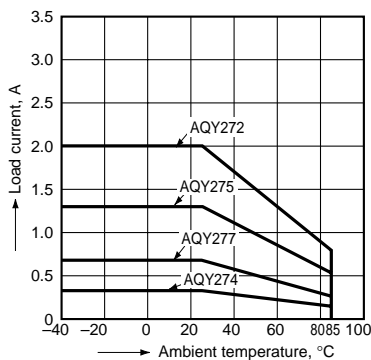


- For Dimensions, see Page 442.
- For Schematic and Wiring Diagrams, see Page 444.
- For Cautions for Use, see Page 449.

REFERENCE DATA

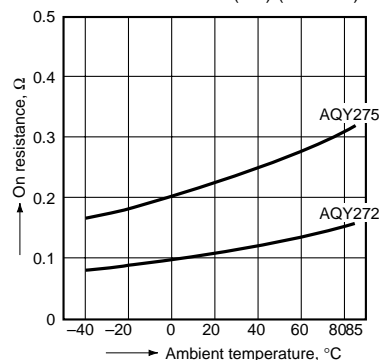
1. Load current vs. ambient temperature characteristics

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



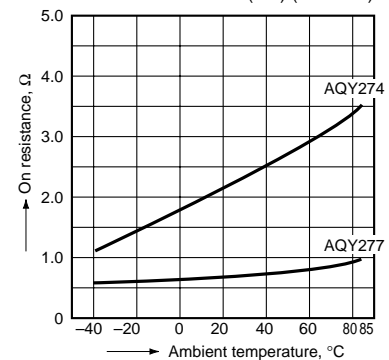
2.-(1) On resistance vs. ambient temperature characteristics

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



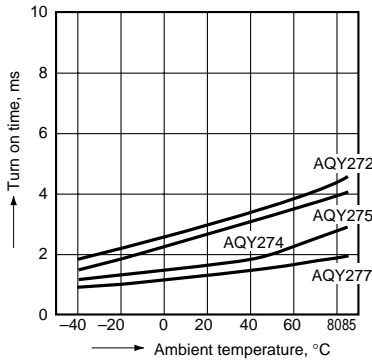
2.-(2) On resistance vs. ambient temperature characteristics

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



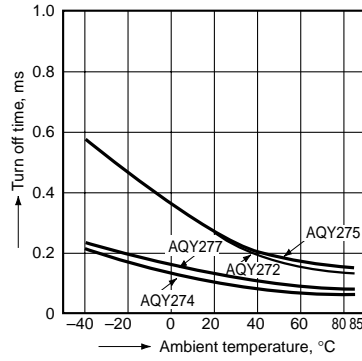
3. Turn on time vs. ambient temperature characteristics

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



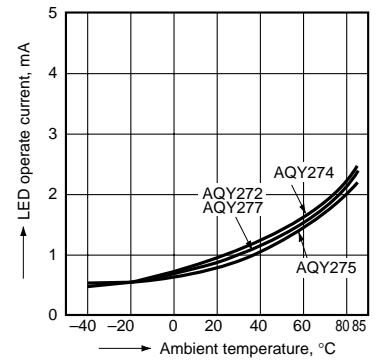
4. Turn off time vs. ambient temperature characteristics

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



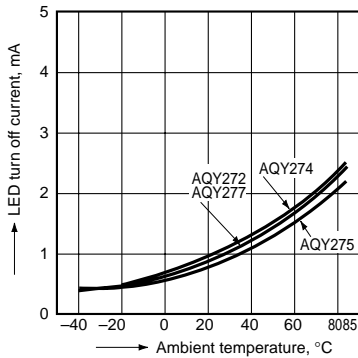
5. LED operate vs. ambient temperature characteristics

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



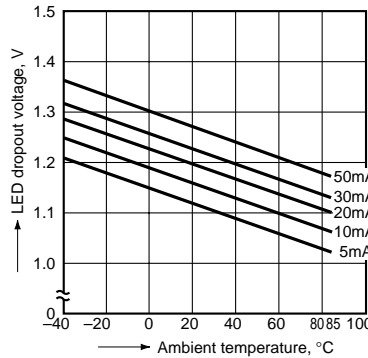
6. LED turn off current vs. ambient temperature characteristics

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



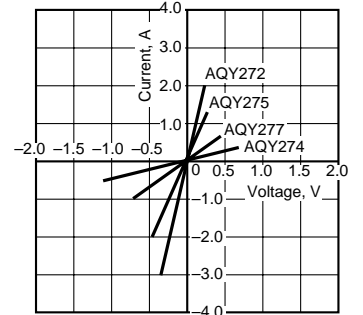
7. LED dropout voltage vs. ambient temperature characteristics

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



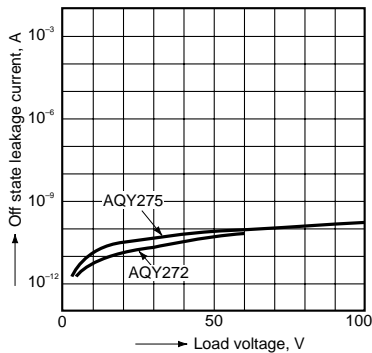
8. Voltage vs. current characteristics of output at MOS portion

Ambient temperature: 25°C 77°F



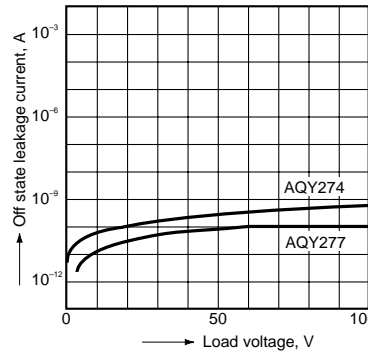
9.-(1) Off state leakage current

Ambient temperature: 25°C 77°F



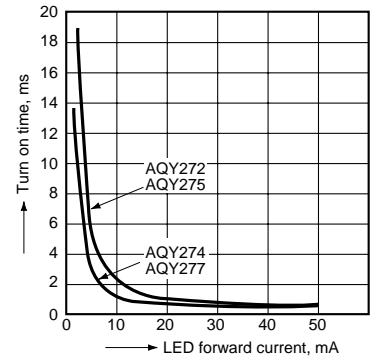
9.-(2) Off state leakage current

Ambient temperature: 25°C 77°F



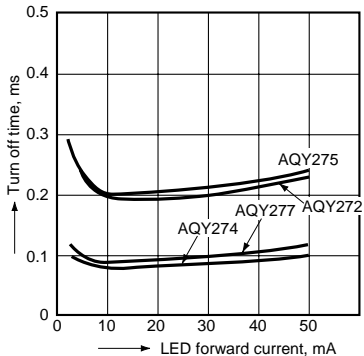
10. LED forward current vs. turn on time characteristics

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



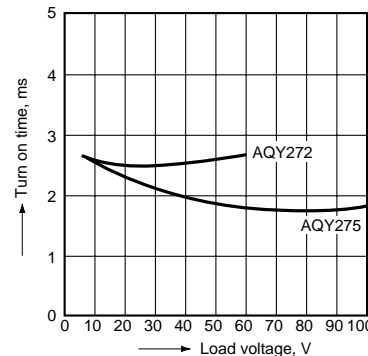
11. LED forward current vs. turn off time characteristics

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



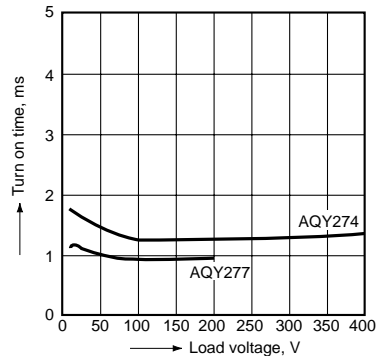
12.-(1) Load voltage vs. turn on time characteristics

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



12.-(2) Load voltage vs. turn on time characteristics

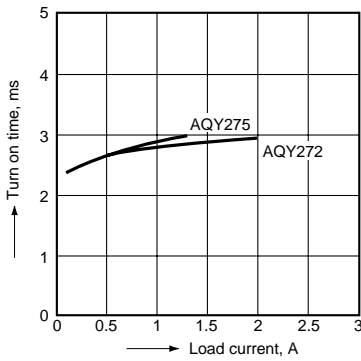
LED current: 10 mA; Continuous load current: 100 mA; Ambient temperature: 25°C 77°F



AQY270

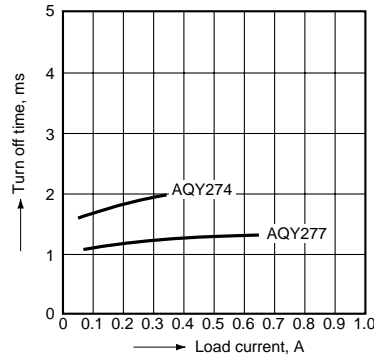
13.-(1) Load current vs. turn on time characteristics

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



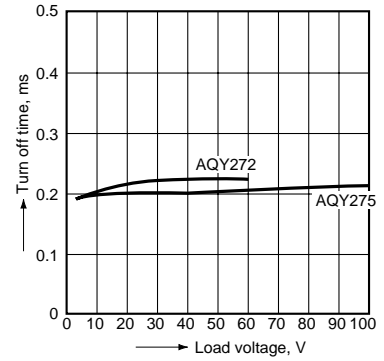
13.-(2) Load current vs. turn on time characteristics

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



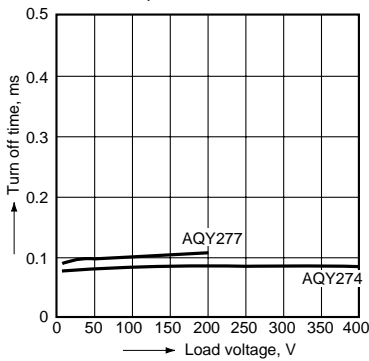
14.-(1) Load voltage vs. turn off time characteristics

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



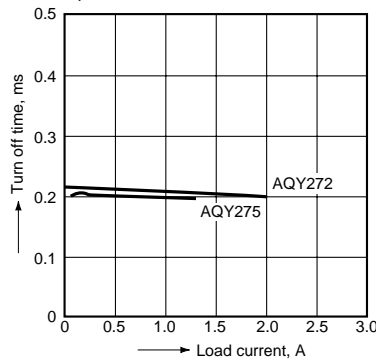
14.-(2) Load voltage vs. turn off time characteristics

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



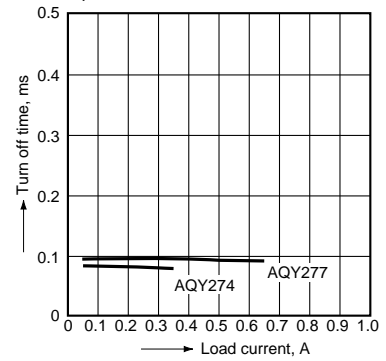
15.-(1) Load current vs. turn off time characteristics

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



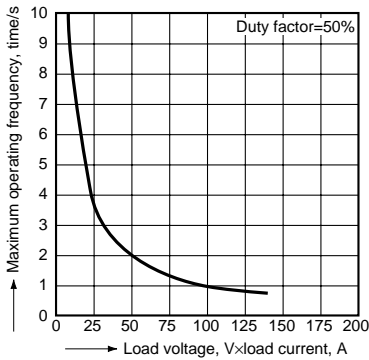
15.-(2) Load current vs. turn off time characteristics

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. Applied voltage vs. output capacitance characteristics

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

