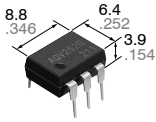
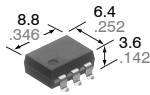


Load current greatly increased using next-generation MOSFET High Capacity 6-pin Type

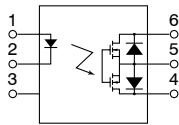
## HE PhotoMOS (AQV252G)



(Height includes standoff)



mm inch



### FEATURES

1. Greatly increased load current in the same package size.
2. Greatly improved specs allow you to use this in place of mercury and mechanical relays.

### TYPICAL APPLICATIONS

- Crime and fire prevention market (use in I/O for alarm and security devices, etc.)
- Amusement market
- Measuring instrument market (circuit testers, etc.)

### TYPES

| Type       | Output rating* |              | Part No.              |                        |                                |                                | Packing quantity                                     |               |
|------------|----------------|--------------|-----------------------|------------------------|--------------------------------|--------------------------------|--|---------------|
|            |                |              | Through hole terminal | Surface-mount terminal |                                |                                | Tube   | Tape and reel |
|            | Load voltage   | Load current | Tube packing style    |                        | Tape and reel packing style    |                                |  |               |
|            |                |              |                       |                        | Picked from the 1/2/3-pin side | Picked from the 4/5/6-pin side |  |               |
| AC/DC type | 60 V           | 2.5 A        | AQV252G               | AQV252GA               | AQV252GAX                      | AQV252GAZ                      | 1 tube contains 50 pcs.<br>1 batch contains 500 pcs. | 1,000 pcs.    |

\*Indicate the peak AC and DC values.

Note: For space reasons, the SMD terminal shape indicator "A" and the package style indicator "X" or "Z" are not marked on the relay.

### RATING

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

| Item                    |                                   | Symbol     | Type of connection | AQV252G(A)                      | Remarks                                   |  |
|-------------------------|-----------------------------------|------------|--------------------|---------------------------------|---|--|
| Input                   | LED forward current               | $I_F$      |                    | 50 mA                           |   |  |
|                         | LED reverse voltage               | $V_R$      |                    | 5 V                             |   |  |
|                         | Peak forward current              | $I_{FP}$   |                    | 1 A                             | $f = 100 \text{ Hz}$ , Duty factor = 0.1% |  |
|                         | Power dissipation                 | $P_{in}$   |                    | 75 mW                           |   |  |
| Output                  | Load voltage (peak AC)            | $V_L$      |                    | 60 V                            |   |  |
|                         | Continuous load current (peak AC) | $I_L$      |                    | A                               | 2.5 A                                     | A connection: Peak AC, DC<br>B, C connection: DC |
|                         |                                   |            |                    | B                               | 3.5 A                                     |  |
|                         |                                   |            |                    | C                               | 5.0 A                                     |  |
|                         | Peak load current                 | $I_{peak}$ |                    |                                 | 6.0 A                                     | 100ms (1 shot), $V_L = DC$                       |
| Power dissipation       | $P_{out}$                         |            | 500 mW             |                                 |   |  |
| Total power dissipation |                                   | $P_T$      |                    | 550 mW                          |   |  |
| I/O isolation voltage   |                                   | $V_{iso}$  |                    | 1,500 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 |   |  |

# HE PhotoMOS (AQV252G)

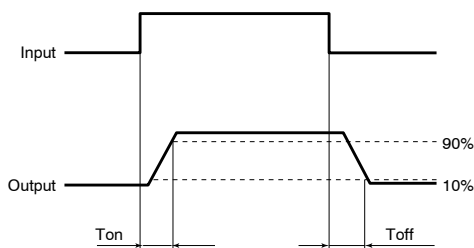
## 2. Electrical characteristics (Ambient temperature: 25°C 77°F)

| Item                             |                      | Symbol     | Type of connection | AQV252G(A)                               | Condition   |
|----------------------------------|----------------------|------------|--------------------|--|---|
| Input                            | LED operate current  | Typical    | —                  | 0.5 mA                                   | $I_L = 100\text{mA}$  |
|                                  |                      | Maximum    |                    | 3 mA                                     |   |
|                                  | LED turn off current | Minimum    | —                  | 0.2 mA                                   | $I_L = 100\text{mA}$  |
|                                  |                      | Typical    |                    | 0.45 mA                                  |   |
| LED dropout voltage              | Typical              | $V_F$      | —                  | 1.14 V (1.32 V at $I_F = 50\text{ mA}$ ) | $I_F = 5\text{ mA}$   |
|                                  | Maximum              |            |                    | 1.5 V                                    |   |
| Output                           | On resistance        | Typical    | A                  | 0.08 $\Omega$                            | $I_F = 5\text{ mA}$<br>$I_L = \text{Max.}$<br>Within 1 s on time    |
|                                  |                      | Maximum    |                    | 0.12 $\Omega$                            |   |
|                                  |                      | Typical    | B                  | 0.04 $\Omega$                            |   |
|                                  |                      | Maximum    |                    | 0.06 $\Omega$                            |   |
|                                  |                      | Typical    | C                  | 0.02 $\Omega$                            |   |
|                                  |                      | Maximum    |                    | 0.03 $\Omega$                            |   |
| Off state leakage current        | Maximum              | $I_{Leak}$ | —                  | 1 $\mu\text{A}$                          | $I_F = 0\text{ mA}$<br>$V_L = \text{Max.}$                          |
| Transfer characteristics         | Turn on time*        | Typical    | —                  | 1.1 ms                                   | $I_F = 5\text{ mA}$<br>$I_L = 100\text{ mA}$<br>$V_L = 10\text{ V}$ |
|                                  |                      | Maximum    |                    | 5.0 ms                                   |   |
|                                  | Turn off time*       | Typical    | —                  | 0.25 ms                                  | $I_F = 5\text{ mA}$<br>$I_L = 100\text{ mA}$<br>$V_L = 10\text{ V}$ |
|                                  |                      | Maximum    |                    | 0.5 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 M $\Omega$                         | 500 V DC  |

Notes: 1. [Type of connection](#)

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

\*Turn on/Turn off time

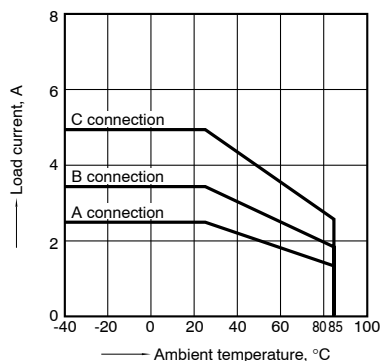


- [Dimensions](#)
- [Schematic and Wiring Diagrams](#)
- [Cautions for Use](#)

## REFERENCE DATA

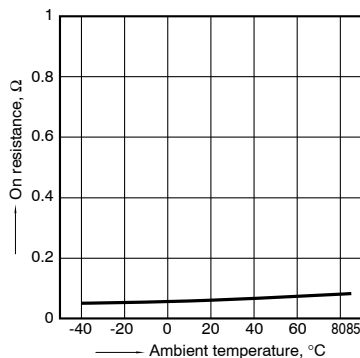
### 1. Load current vs. ambient temperature characteristics

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



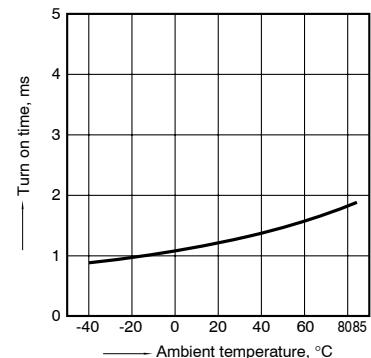
### 2. On resistance vs. ambient temperature characteristics

Measured portion: between terminals 4 and 6;  
LED current: 5 mA; Load voltage: Max. (DC)  
Continuous load current: Max. (DC)



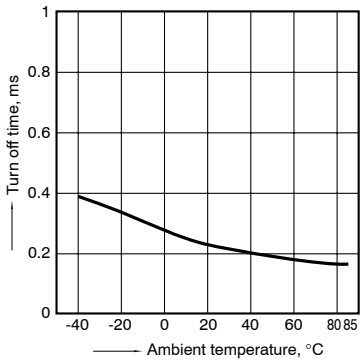
### 3. Turn on time vs. ambient temperature characteristics

LED current: 5 mA; Load voltage: 10 V (DC);  
Continuous load current: 100 mA (DC)



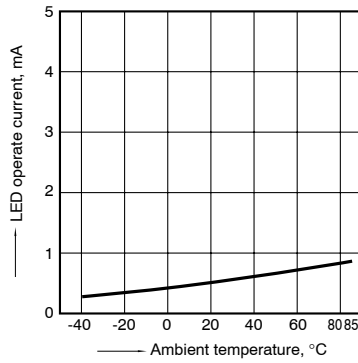
## 4. Turn off time vs. ambient temperature characteristics

LED current: 5 mA; Load voltage: 10 V (DC);  
Continuous load current: 100 mA (DC)



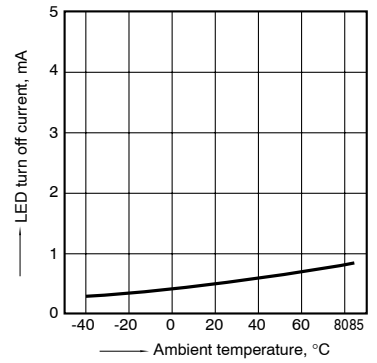
## 5. LED operate current vs. ambient temperature characteristics

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



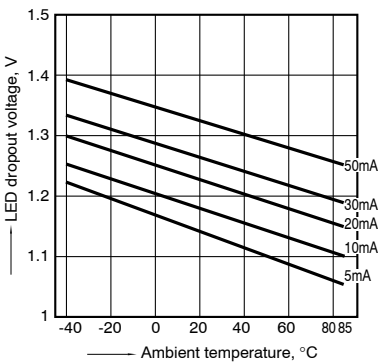
## 6. LED turn off current vs. ambient temperature characteristics

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



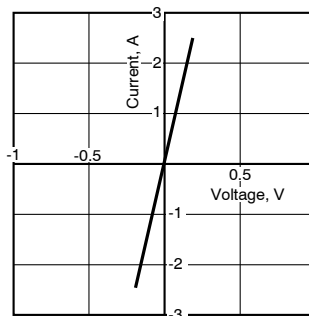
## 7. LED dropout voltage vs. ambient temperature characteristics

LED current: 5 to 50 mA



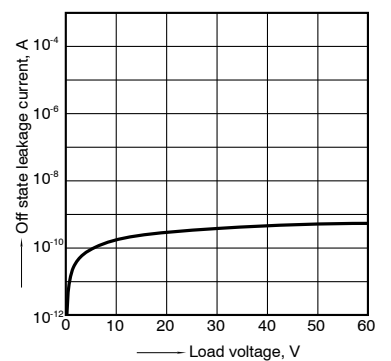
## 8. Current vs. voltage characteristics of output at MOS portion

Measured portion: between terminals 4 and 6;  
Ambient temperature: 25°C 77°F



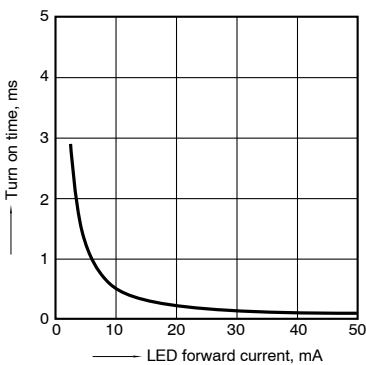
## 9. Off state leakage current vs. load voltage characteristics

Measured portion: between terminals 4 and 6;  
Ambient temperature: 25°C 77°F



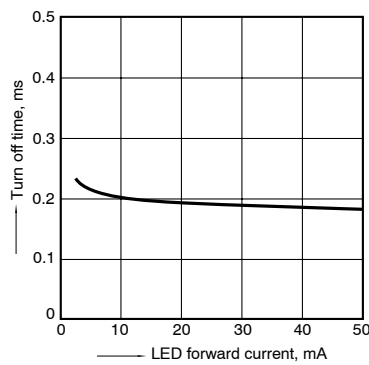
## 10. Turn on time vs. LED forward current characteristics

Measured portion: between terminals 4 and 6;  
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

Measured portion: between terminals 4 and 6;  
Load voltage: 10 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 4 and 6;  
Frequency: 1 MHz;  
Ambient temperature: 25°C 77°F

