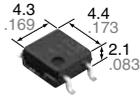
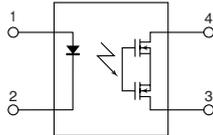


New



mm inch



### FEATURES

**1. Low output capacitance between output terminals, and low ON-resistance (Load voltage: 60 to 80V)**

|                           | AQY222R1S     | AQY225R1S     | AQY225R2S    |
|---------------------------|---------------|---------------|--------------|
| Output capacitance (Cout) | 24.5pF (typ.) | 37.5pF (typ.) | 4.5pF (typ.) |
| On resistance (Ron)       | 0.8Ω (typ.)   | 0.8Ω (typ.)   | 10.5Ω (typ.) |

**2. SO package 4-pin type in super miniature design**

Size: (W)4.3 × (L)4.4 × (H)2.1 mm  
(W).169 × (L).173 × (H).083 inch

**3. Low-level off-state leakage current of 10pA**

The SSR has an off-state leakage current of several milliamperes, where as this PhotoMOS relay has typ. 10pA (typical) even with the rated load voltage (AQY225R2S)

**4. Controls low-level analog signals**

### TYPICAL APPLICATIONS

Measuring and testing equipment

**1. Testing equipment for semiconductor performance**

IC tester, Liquid crystal driver tester, semiconductor performance tester

**2. Board tester**

Bare board tester, In-circuit tester, function tester

**3. Multi-point recorder**

Warping, thermo couple

RoHS Directive compatibility information  
<http://www.mew.co.jp/ac/e/environment/>

### TYPES

| Type       | Output rating* |              | Part No.               |                             |            | Packing quantity                                                |               |
|------------|----------------|--------------|------------------------|-----------------------------|------------|-----------------------------------------------------------------|---------------|
|            | Load voltage   | Load current | Surface mount terminal |                             |            | Tube                                                            | Tape and reel |
|            |                |              | Tube packing style     | Tape and reel packing style |            |                                                                 |               |
| AC/DC type | 60V            | 0.5A         | AQY222R1S              | AQY222R1SX                  | AQY222R1SZ | 1 tube contains:<br>100 pcs.<br>1 batch contains:<br>2,000 pcs. | 1,000 pcs.    |
|            | 80V            | 0.35A        | AQY225R1S              | AQY225R1SX                  | AQY225R1SZ |                                                                 |               |
|            | 80V            | 0.15A        | AQY225R2S              | AQY225R2SX                  | AQY225R2SZ |                                                                 |               |

\* Indicate the peak AC and DC values.

Note: For space reasons, the initial letters of the part number "AQY", the SMD terminal shape indicator "S" and the packaging style indicator "X" or "Z" are not marked on the relay. (Ex. the label for product number AQY225R1S is 225R1)

### RATING

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

|                         | Item                    | Symbol            | AQY222R1S                       | AQY225R1S | AQY225R2S | Remarks                              |
|-------------------------|-------------------------|-------------------|---------------------------------|-----------|-----------|--------------------------------------|
| Input                   | LED forward current     | I <sub>F</sub>    | 50mA                            |           |           |                                      |
|                         | LED reverse voltage     | V <sub>R</sub>    | 5V                              |           |           |                                      |
|                         | Peak forward current    | I <sub>FP</sub>   | 1A                              |           |           | f=100 Hz, Duty factor=0.1%           |
|                         | Power dissipation       | P <sub>in</sub>   | 75mW                            |           |           |                                      |
| Output                  | Load voltage (peak AC)  | V <sub>L</sub>    | 60V                             | 80V       |           |                                      |
|                         | Continuous load current | I <sub>L</sub>    | 0.5A                            | 0.35A     | 0.15A     | Peak AC,DC                           |
|                         | Peak load current       | I <sub>peak</sub> | 1A                              | 0.7A      | 0.45A     | 100 ms (1 shot), V <sub>L</sub> = DC |
|                         | Power dissipation       | P <sub>out</sub>  | 300mW                           |           |           |                                      |
| Total power dissipation |                         | P <sub>T</sub>    | 350mW                           |           |           |                                      |
| I/O isolation voltage   |                         | V <sub>iso</sub>  | 1,500V AC                       |           |           |                                      |
| 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 |           |           |                                      |

# RF PhotoMOS (AQY22○ROS)

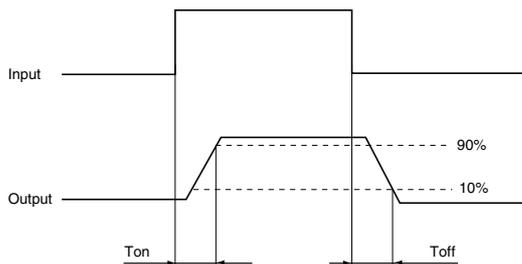
## 2. Electrical characteristics (Ambient temperature: 25°C 77°F)

| Item                             |                           |                | Symbol                                   | AQY222R1S | AQY225R1S | AQY225R2S             | Condition                                                                                                                              |                                                                   |
|----------------------------------|---------------------------|----------------|------------------------------------------|-----------|-----------|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| Input                            | LED operate current       | Typical        | $I_{Fon}$                                | 0.5 mA    |           |                       | $I_L = \text{Max.}$                                                                                                                    |                                                                   |
|                                  |                           | Maximum        |                                          | 3.0 mA    |           |                       |                                                                                                                                        |                                                                   |
|                                  | LED turn off current      | Minimum        | $I_{Foff}$                               | 0.1 mA    |           |                       | $I_L = \text{Max.}$                                                                                                                    |                                                                   |
|                                  |                           | Typical        |                                          | 0.45 mA   |           |                       |                                                                                                                                        |                                                                   |
| LED dropout voltage              | Typical                   | $V_F$          | 1.32 V (1.14 V at $I_F = 5 \text{ mA}$ ) |           |           | $I_F = 50 \text{ mA}$ |                                                                                                                                        |                                                                   |
|                                  | Maximum                   |                | 1.5 V                                    |           |           |                       |                                                                                                                                        |                                                                   |
| Output                           | On resistance             | Typical        | $R_{on}$                                 | 0.8Ω      |           | 10.5Ω                 | $I_F = 5 \text{ mA}$<br>$I_L = \text{Max.}$                                                                                            |                                                                   |
|                                  |                           | Maximum        |                                          | 1.2Ω      |           | 15Ω                   |                                                                                                                                        |                                                                   |
|                                  | Output capacitance        | Typical        | $C_{out}$                                | 24.5 pF   | 37.5 pF   | 4.5 pF                | $I_F = 0 \text{ mA}, f = 1 \text{ MHz}$<br>$V_B = 0 \text{ V}$<br>(amplitude of 30mV)<br>Measured from 10s<br>onward after application |                                                                   |
|                                  |                           | Maximum        |                                          | 30 pF     | 45 pF     | 6.0 pF                |                                                                                                                                        |                                                                   |
|                                  | Off state leakage current | Typical        | $I_{Leak}$                               | 0.05 nA   | 0.03 nA   | 0.01 nA               |                                                                                                                                        |                                                                   |
|                                  |                           | Maximum        |                                          | 10 nA     |           |                       |                                                                                                                                        |                                                                   |
| Transfer characteristics         | Switching speed           | Turn on time*  | $T_{on}$                                 | Typical   | 0.15 ms   | 0.25 ms               | 0.05 ms                                                                                                                                | $I_F = 5 \text{ mA}$<br>$V_L = 10 \text{ V}$<br>$R_L = 100\Omega$ |
|                                  |                           |                |                                          | Maximum   | 0.5ms     | 0.75ms                | 0.5ms                                                                                                                                  |                                                                   |
|                                  |                           | Turn off time* | $T_{off}$                                | Typical   | 0.06 ms   | 0.08 ms               | 0.05 ms                                                                                                                                |                                                                   |
|                                  |                           |                |                                          | Maximum   | 0.2 ms    |                       |                                                                                                                                        |                                                                   |
|                                  | I/O capacitance           | Typical        | $C_{iso}$                                | 0.8 pF    |           |                       | $f = 1 \text{ MHz}$<br>$V_B = 0 \text{ V}$                                                                                             |                                                                   |
|                                  |                           | Maximum        |                                          | 1.5 pF    |           |                       |                                                                                                                                        |                                                                   |
| Initial I/O isolation resistance | Minimum                   | $R_{iso}$      | 1,000MΩ                                  |           |           | 500 V DC              |                                                                                                                                        |                                                                   |

Note: Recommendable LED forward current  $I_F = 5 \text{ mA}$ .

For type of connection.

\*Turn on/Turn off time

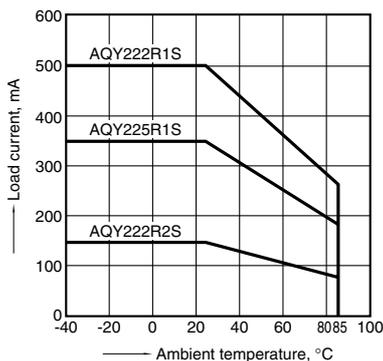


- For Dimensions.
- For Schematic and Wiring Diagrams.
- For Cautions for Use.

## REFERENCE DATA

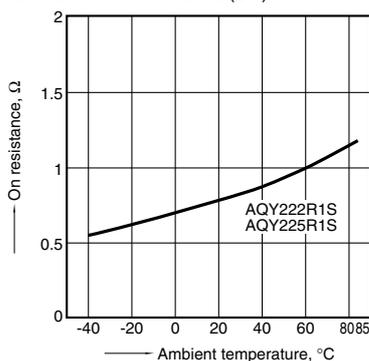
### 1. Load current vs. ambient temperature characteristics

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



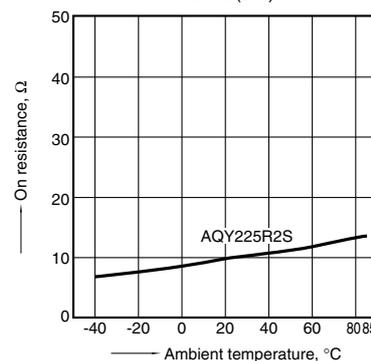
### 2.-(1) On resistance vs. ambient temperature characteristics

Measured portion: between terminals 3 and 4  
LED current: 5 mA; Load voltage: Max. (DC)  
Continuous load current: Max. (DC)



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

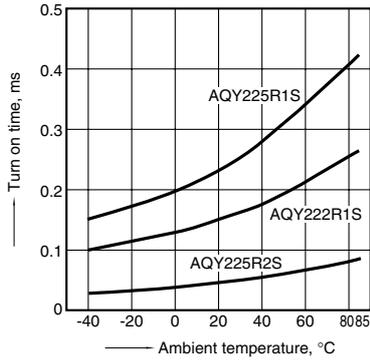
Measured portion: between terminals 3 and 4  
LED current: 5 mA; Load voltage: Max. (DC)  
Continuous load current: Max. (DC)



# RF PhotoMOS (AQY220ROS)

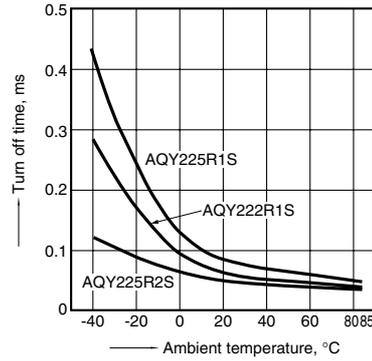
### 3. Turn on time vs. ambient temperature characteristics

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



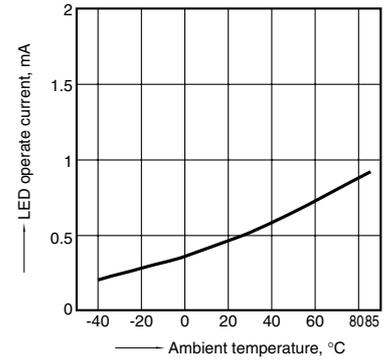
### 4. Turn off time vs. ambient temperature characteristics

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



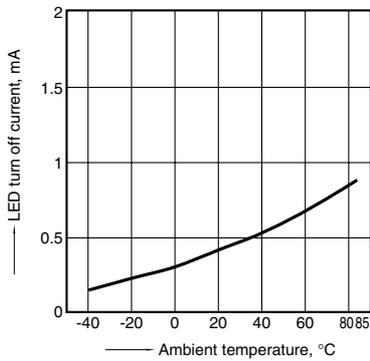
### 5. LED operate current vs. ambient temperature characteristics

Load voltage: Max. (DC)  
Continuous load current: Max. (DC)



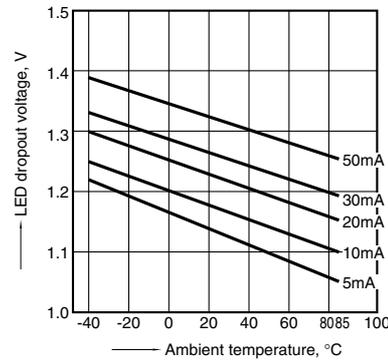
### 6. LED turn off current vs. ambient temperature characteristics

Load voltage: Max. (DC)  
Continuous load current: Max. (DC)



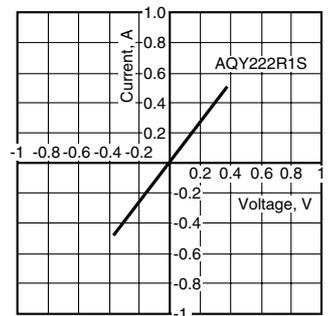
### 7. LED dropout voltage vs. ambient temperature characteristics

LED current: 5 to 50 mA



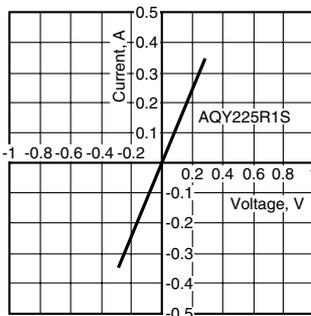
### 8.-(1) Current vs. voltage characteristics of output at MOS portion

Measured portion: between terminals 3 and 4  
Ambient temperature: 25°C 77°F



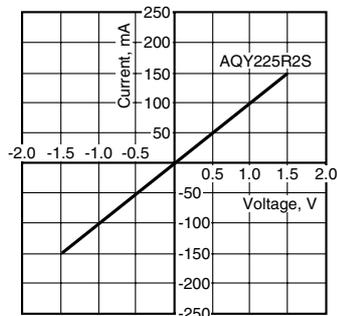
### 8.-(2) Current vs. voltage characteristics of output at MOS portion

Measured portion: between terminals 3 and 4  
Ambient temperature: 25°C 77°F



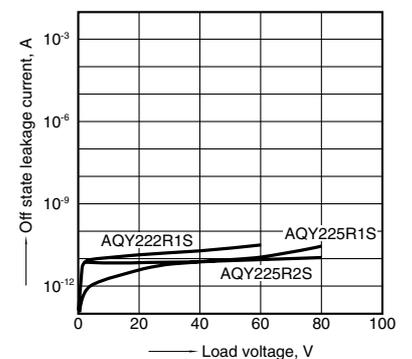
### 8.-(3) Current vs. voltage characteristics of output at MOS portion

Measured portion: between terminals 3 and 4  
Ambient temperature: 25°C 77°F



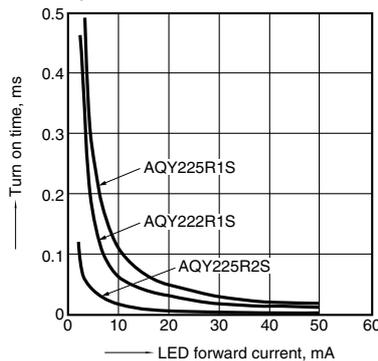
### 9. Off state leakage current vs. load voltage characteristics

Measured portion: between terminals 3 and 4  
Ambient temperature: 25°C 77°F



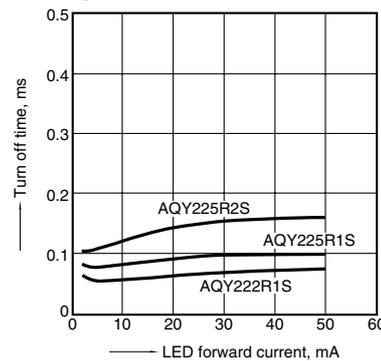
### 10. Turn on time vs. LED forward current characteristics

Measured portion: between terminals 3 and 4  
Load voltage: 10V (DC)  
Continuous load current: 100mA (DC)  
Ambient temperature: 25°C 77°F



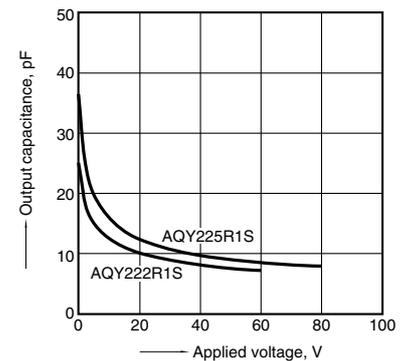
### 11. Turn off time vs. LED forward current characteristics

Measured portion: between terminals 3 and 4  
Load voltage: 10V (DC)  
Continuous load current: 100mA (DC)  
Ambient temperature: 25°C 77°F



### 12.-(1) Output capacitance vs. applied voltage characteristics

Measured portion: between terminals 3 and 4  
Frequency: 1 MHz, 30m Vrms  
Ambient temperature: 25°C 77°F



# RF PhotoMOS (AQY22OROS)

## 12.-(2) Output capacitance vs. applied voltage characteristics

characteristics

Measured portion: between terminals 3 and 4

Frequency: 1 MHz, 30m Vrms

Ambient temperature: 25°C 77°F

