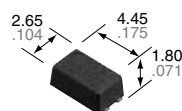


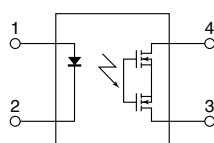
**C×R type, SSOP package,
60 V, 80 V and 100 V
load voltage**

**PhotoMOS[®]
RF SSOP 1 Form A C×R
(AQY22○○○V)**

New



mm inch



RoHS compliant

FEATURES

1. Miniature SSOP package

(Compared to SOP 4-pin models, volume ratio can be reduced by approximately 53%.)

2. Load voltage: 60 V, 80 V and 100 V

3. Low C×R

Low on resistance and low output capacitance available

- 60 V load voltage

Output capacitance: 27 pF (typical), On resistance: 0.8Ω (typical)

- 80 V load voltage

Output capacitance: 4.5 pF (typical), On resistance: 10.5Ω (typical)

- 100 V load voltage

Output capacitance: 5.8 pF (typical), On resistance: 8.8Ω (typical)

4. Turn on time

80 V and 100 V load voltage type: 0.05 ms (typical)

TYPICAL APPLICATIONS

1. Measuring and testing equipment

Semiconductor testing equipment, Probe cards, Datalogger, Board tester and other testing equipment

2. Telecommunication and broadcasting equipment

3. Medical equipment

Ultrasonic wave diagnostic machine

4. Multi-point recorder

Warping, Thermo couple, etc.

*Does not support automotive applications.

TYPES

| Type | Output rating*1 | | Part No. (Tape and reel packing style)*2 | | Packing quantity in the tape and reel |
|----------------|------------------|--------------|--|----------------------------------|---------------------------------------|
| | Load voltage | Load current | Picked from the 1 and 4-pin side | Picked from the 2 and 3-pin side | |
| AC/DC dual use | New 60 V | 400 mA | AQY222R2VY | AQY222R2VW | 3,500 pcs. |
| | 80 V | 120 mA | AQY225R2VY | AQY225R2VW | |
| | New 100 V | 120 mA | AQY225R3VY | AQY225R3VW | |

Notes: *1. Indicate the peak AC and DC values.

*2. Only tape and reel package is available. Packing quantity of 1,000 pieces is possible. Please consult us.

For space reasons, the three initial letters of the part number "AQY", the package (SSOP) indication "V", and the packaging style "Y" or "W" are not marked on the device.

RF SSOP 1 Form A CxR (AQY22000V)

RATING

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

| Item | | Symbol | AQY222R2V | AQY225R2V | AQY225R3V | Remarks |
|-------------------------|-------------------------|------------|---------------------------------|-----------|-----------|---|
| Input side | 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 side | Load voltage (peak AC) | V_L | 60 V | 80 V | 100 V | |
| | Continuous load current | I_L | 0.4 A | 0.12 A | | Peak AC, DC |
| | Peak load current | I_{peak} | 1.2 A | 0.3 A | | 100 ms (1shot), $V_L = \text{DC}$ |
| | Power dissipation | P_{out} | 250 mW | | | |
| Total power dissipation | | P_T | 300 mW | | | |
| I/O isolation voltage | | V_{iso} | 1,500 V AC | | | |
| Operating temperature | | T_{opr} | -40°C to +85°C -40°F to +185°F | | | Non-condensing at low temperatures |
| Storage temperature | | T_{stg} | -40°C to +100°C -40°F to +212°F | | | |

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

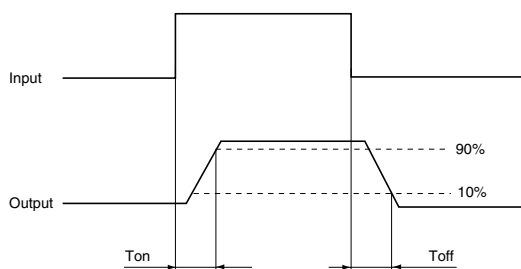
| Item | | | Symbol | AQY222R2V | AQY225R2V | AQY225R3V | Condition |
|----------------------------------|----------------------|------------|--|-----------|-----------|--|--|
| Input | LED operate current | Typical | I_{Fon} | 0.5 mA | | | AQY222R2V: $I_L = 400 \text{ mA}$ AQY225R2V: $I_L = 80 \text{ mA}$ AQY225R3V: $I_L = 80 \text{ mA}$ |
| | | Maximum | | 3.0 mA | | | |
| | LED turn off current | Minimum | I_{Foff} | 0.1 mA | | | |
| | | 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 | 8.8Ω | AQY222R2V: $I_F = 5 \text{ mA}$, $I_L = 400 \text{ mA}$ AQY225R2V: $I_F = 5 \text{ mA}$, $I_L = 80 \text{ mA}$ AQY225R3V: $I_F = 5 \text{ mA}$, $I_L = 80 \text{ mA}$ Within 1 s on time |
| | | Maximum | | 1.25Ω | 15Ω | 14Ω | |
| | Output capacitance | Typical | C_{out} | 27 pF | 4.5 pF | 5.8 pF | |
| | | Maximum | | 40 pF | 6 pF | 8 pF | |
| Off state leakage current | Typical | I_{Leak} | — | | | $I_F = 0 \text{ mA}$, $V_L = \text{Max.}$ | |
| | Maximum | | 10 nA* | | | | |
| Transfer characteristics | Turn on time** | Typical | T_{on} | 0.15 ms | 0.05 ms | | AQY222R2V: $I_F = 5 \text{ mA}$, $V_L = 10 \text{ V}$, $R_L = 100\Omega$ AQY225R2V: $I_F = 5 \text{ mA}$, $V_L = 10 \text{ V}$, $R_L = 125\Omega$ AQY225R3V: $I_F = 5 \text{ mA}$, $V_L = 10 \text{ V}$, $R_L = 125\Omega$ |
| | | Maximum | | 0.5 ms | | | |
| | Turn off time** | Typical | T_{off} | 0.08 ms | 0.05 ms | | |
| | | Maximum | | 0.2 ms | | | |
| I/O capacitance | Typical | C_{iso} | 0.8 pF | | | $f = 1 \text{ MHz}$, $V_B = 0 \text{ V}$ | |
| | Maximum | | 1.5 pF | | | | |
| Initial I/O isolation resistance | Minimum | R_{iso} | 1,000 MΩ | | | 500 V DC | |

Notes: 1. Please refer to the "Schematic and Wiring Diagrams" for connection method.

2. Variation possible through combinations of output capacitance and on resistance. For more information, please contact our sales office in your area.

*Available as custom orders (1 nA or less)

**Turn on/Turn off time



RECOMMENDED OPERATING CONDITIONS

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

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

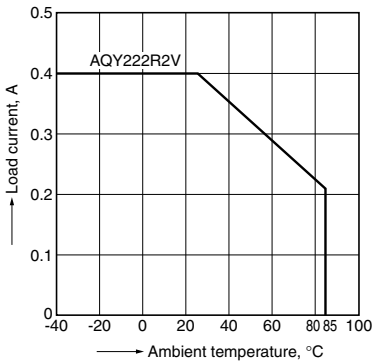
■ These products are not designed for automotive use.

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

REFERENCE DATA

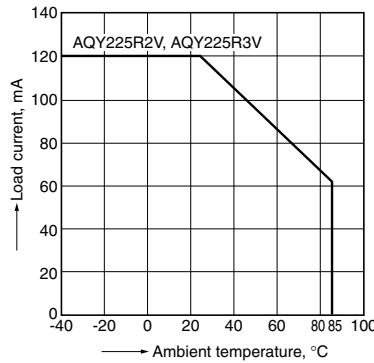
1.-(1) Load current vs. ambient temperature characteristics

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



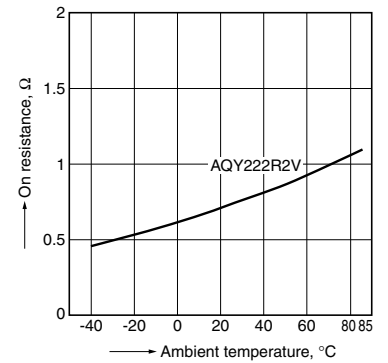
1.-(2) Load current vs. ambient temperature characteristics

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



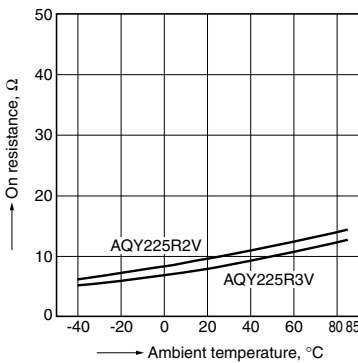
2.-(1) On resistance vs. ambient temperature characteristics

Measured portion: between terminals 3 and 4
LED current: 5 mA; Load voltage: 10V (DC)
Continuous load current: Max. (DC)



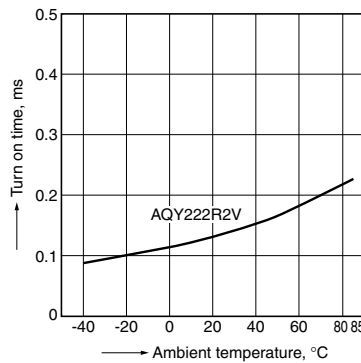
2.-(2) On resistance vs. ambient temperature characteristics

Measured portion: between terminals 3 and 4;
LED current: 5 mA; Load voltage: 10V (DC);
Continuous load current: 80mA (DC)



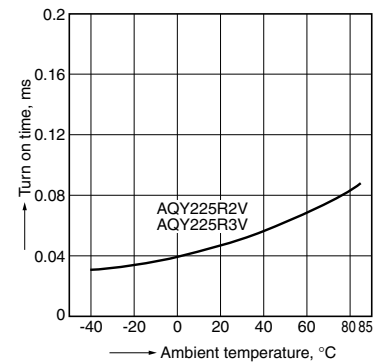
3.-(1) Turn on time vs. ambient temperature characteristics

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



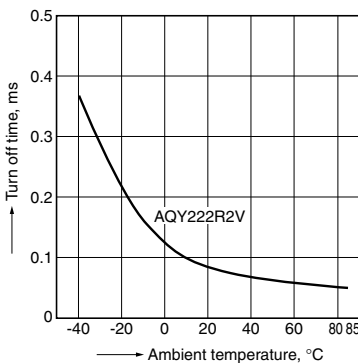
3.-(2) Turn on time vs. ambient temperature characteristics

LED current: 5 mA; Load voltage: 10V (DC);
Continuous load current: 80mA (DC)



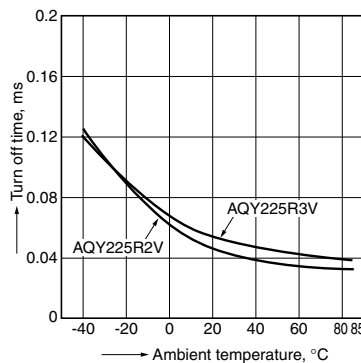
4.-(1) Turn off time vs. ambient temperature characteristics

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



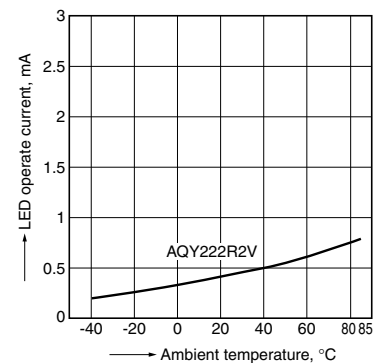
4.-(2) Turn off time vs. ambient temperature characteristics

LED current: 5 mA; Load voltage: 10V (DC);
Continuous load current: 80mA (DC)



5.-(1) LED operate current vs. ambient temperature characteristics

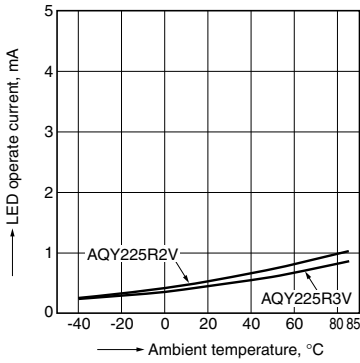
Load voltage: 10V (DC);
Continuous load current: 400mA (DC)



RF SSOP 1 Form A CxR (AQY22000V)

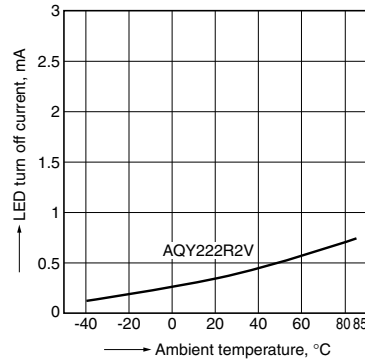
5.-(2) LED operate current vs. ambient temperature characteristics

Load voltage: 10V (DC);
Continuous load current: 80mA (DC)



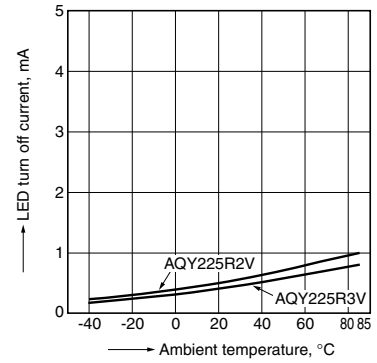
6.-(1) LED turn off current vs. ambient temperature characteristics

Load voltage: 10V (DC);
Continuous load current: 400mA (DC)



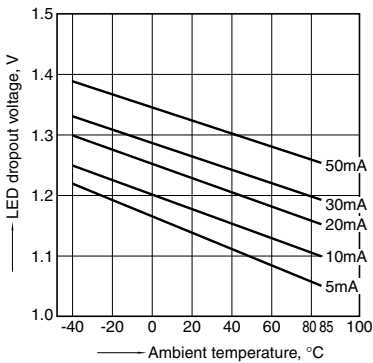
6.-(2) LED turn off current vs. ambient temperature characteristics

Load voltage: 10V (DC);
Continuous load current: 80mA (DC)



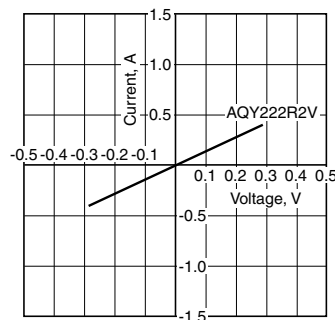
7. LED dropout voltage vs. ambient temperature characteristics

LED current: 5 to 50 mA



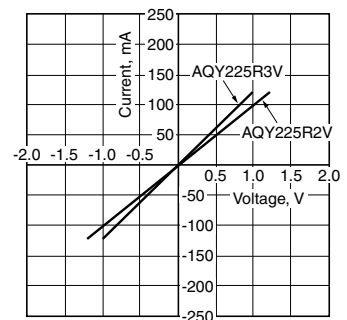
8.-(1) Current vs. voltage characteristics of output at MOS portion

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



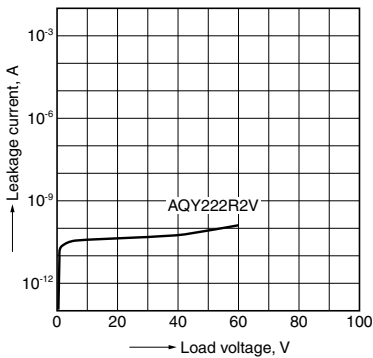
8.-(2) Current vs. voltage characteristics of output at MOS portion

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



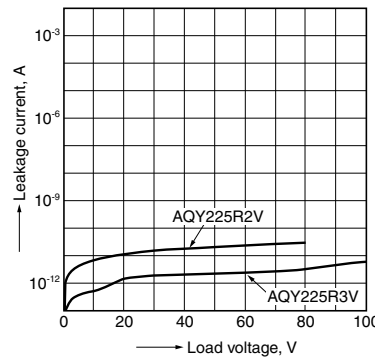
9.-(1) Off state leakage current vs. load voltage characteristics

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



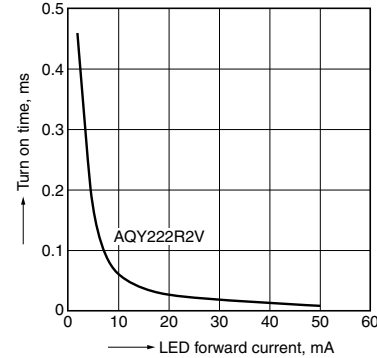
9.-(2) Off state leakage current vs. load voltage characteristics

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



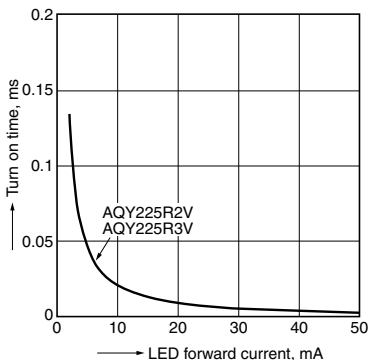
10.-(1) Turn on time vs. LED forward current characteristics

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



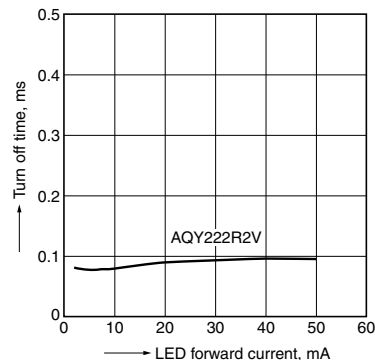
10.-(2) Turn on time vs. LED forward current characteristics

Measured portion: between terminals 3 and 4;
Load voltage: 10V (DC); Continuous load current: 80mA (DC); Ambient temperature: 25°C 77°F



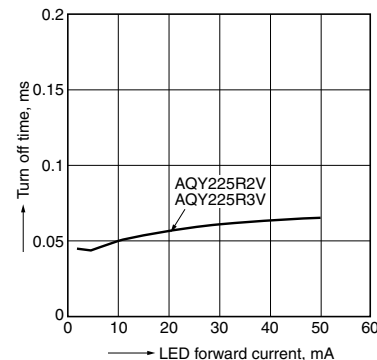
11.-(1) Turn off time vs. LED forward current characteristics

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



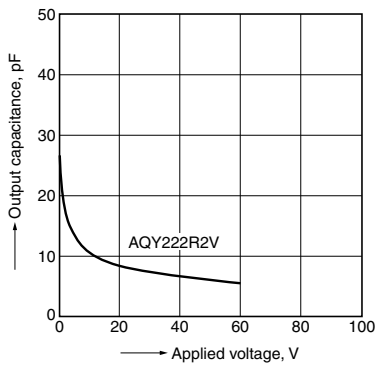
11.-(2) Turn off time vs. LED forward current characteristics

Measured portion: between terminals 3 and 4;
Load voltage: 10V (DC); Continuous load current: 80mA (DC); Ambient temperature: 25°C 77°F



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

Measured portion: between terminals 3 and 4;
 Measurement signal: 1 MHz;
 Ambient temperature: 25°C 77°F



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

Measured portion: between terminals 3 and 4;
 Measurement signal: 1 MHz (30m Vrms);
 Ambient temperature: 25°C 77°F

