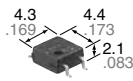


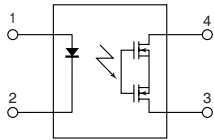


<R type>



<C type>

mm inch



RoHS compliant

## FEATURES

**1. Both low on-resistance (R type) and low capacitance (C type) available at excellent characteristics of C×R10**

|                           | AQY221R2S<br>(R type) | AQY221N2S<br>(C type) |
|---------------------------|-----------------------|-----------------------|
| Low on resistance: R      | 0.8Ω                  | 9.5Ω                  |
| Low output capacitance: C | 13pF                  | 1pF                   |

**2. High speed switching**

Turn on time: 0.03ms (typ.)

Turn off time: 0.03ms (typ.)

(AQY221N2S)

**3. Small profile of miniature SOP4-pin**

**4. Low-level off state leakage current of typ. 0.01nA (AQY221N2S)**

## TYPICAL APPLICATIONS

**1. Measuring and testing equipment**

IC tester, Liquid crystal driver tester, Semiconductor performance tester, Bare board tester, In-circuit tester, Function tester, etc.

**2. Telecommunication and broadcasting equipment**

Ultrasonic wave diagnostic machine

**4. Multi-point recorder**

Warping, Thermo couple, etc.

## TYPES

|                | Type                       | Output rating* |              | Package  | Part No.           |                              |                              | Packing quantity  |               |
|----------------|----------------------------|----------------|--------------|----------|--------------------|------------------------------|------------------------------|---|---------------|
|                |                            | Load voltage   | Load current |          | Tube packing style | Tape and reel packing style  |                              | Tube  | Tape and reel |
|                |                            |                |              |          |                    | Picked from the 1/2-pin side | Picked from the 3/4-pin side |   |               |
| AC/DC dual use | Low on resistance (R type) | 40V            | 250mA        | SOP4-pin | AQY221R2S          | AQY221R2SX                   | AQY221R2SZ                   | 1 tube contains:<br>100 pcs.<br>1 batch contains:<br>2,000 pcs. | 1,000 pcs.    |
|                | Low capacitance (C type)   | 40V            | 120mA        |          | AQY221N2S          | AQY221N2SX                   | AQY221N2SZ                   |   |               |

\* Indicate the peak AC and DC values.

Note: For space reasons, the initial letters of the part number "AQY", the package (SOP) indicator "S" and the packing style indicator "X" or "Z" are not marked on the device. (Ex. the label for product number AQY221R2SX is 221R2)

## RATING

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

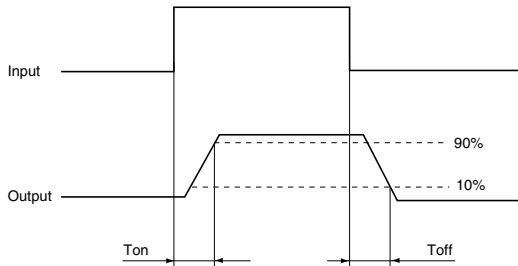
| Item                    |                         | Symbol            | AQY221R2S<br>(R type)           | AQY221N2S<br>(C type) | Remarks                              |
|-------------------------|-------------------------|-------------------|---------------------------------|-----------------------|--------------------------------------|
| 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>    | 40V                             |                       |                                      |
|                         | Continuous load current | I <sub>L</sub>    | 0.25A                           | 0.12A                 | Peak AC, DC                          |
|                         | Peak load current       | I <sub>peak</sub> | 0.75A                           | 0.30A                 | 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>  | 500V AC                         | 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 SOP 1 Form A C×R10 (AQY221○2S)

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

| Item                             |                           | Symbol                                   | AQY221R2S (R type) | AQY221N2S (C type)    | Condition   |
|----------------------------------|---------------------------|--|--------------------|-----------------------|---|
| Input                            | LED operate current       | Typical                                  | 0.5 mA             | 0.9 mA                | $I_L = 250 \text{ mA (R type)}$<br>$I_L = 80 \text{ mA (C type)}$   |
|                                  |                           | Maximum                                  | 3.0 mA             |                       |   |
|                                  | LED turn off current      | Minimum                                  | 0.1 mA             | 0.2 mA                | $I_L = 250 \text{ mA (R type)}$<br>$I_L = 80 \text{ mA (C type)}$   |
|                                  |                           | Typical                                  | 0.4 mA             | 0.85 mA               |   |
| LED dropout voltage              | Typical                   | 1.25 V (1.14 V at $I_f = 5 \text{ mA}$ ) |                    | $I_f = 50 \text{ mA}$ |   |
|                                  | Maximum                   | 1.5 V                                    |                    |                       |   |
| Output                           | On resistance             | Typical                                  | 0.8Ω               | 9.5Ω                  | $I_f = 5 \text{ mA}$<br>$I_L = 250 \text{ mA (R type)}$<br>$I_L = 80 \text{ mA (C type)}$<br>Within 1 s on time   |
|                                  |                           | Maximum                                  | 1.25Ω              | 12.5Ω                 |   |
|                                  | Output capacitance        | Typical                                  | 13 pF              | 1.0 pF                | $I_f = 0 \text{ mA}$<br>$V_B = 0 \text{ V}$<br>$f = 1 \text{ MHz}$  |
|                                  |                           | Maximum                                  | 18 pF              | 1.5 pF                |   |
|                                  | Off state leakage current | Typical                                  | 0.03 nA            | 0.01 nA               | $I_f = 0 \text{ mA}$<br>$V_L = \text{Max.}$   |
|                                  |                           | Maximum                                  | 10 nA              |                       |   |
| Transfer characteristics         | Turn on time*             | Typical                                  | 0.1 ms             | 0.03 ms               | $I_f = 5 \text{ mA}$<br>$V_L = 10 \text{ V}$<br>$R_L = 40\Omega \text{ (R type)}$<br>$125\Omega \text{ (C type)}$ |
|                                  |                           | Maximum                                  | 0.5ms              |                       |   |
|                                  | Turn off time*            | Typical                                  | 0.06 ms            | 0.03 ms               | $I_f = 5 \text{ mA}$<br>$V_L = 10 \text{ V}$<br>$R_L = 40\Omega \text{ (R type)}$<br>$125\Omega \text{ (C type)}$ |
|                                  |                           | Maximum                                  | 0.2 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                   | 1,000MΩ                                  |                    | 500 V DC              |   |

\*Turn on/Turn off time



## RECOMMENDED OPERATING CONDITIONS

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

| Item              | Symbol | Recommended value | Unit |
|-------------------|--------|-------------------|------|
| Input LED current | $I_f$  | 5                 | mA   |

■ For Dimensions.

■ For Schematic and Wiring Diagrams.

■ For 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 Corporation technical representative.

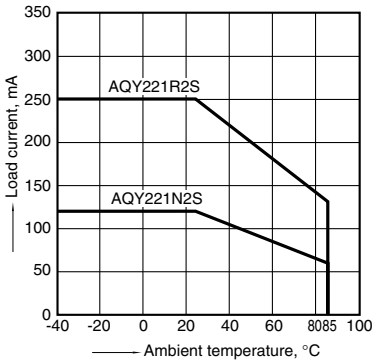
For more information.

# RF SOP 1 Form A C×R10 (AQY221○2S)

## REFERENCE DATA

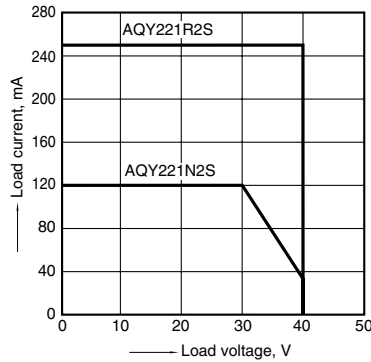
### 1. Load current vs. ambient temperature characteristics

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



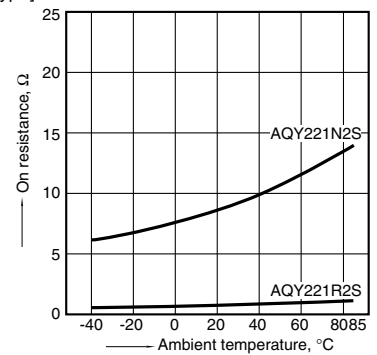
### 2. Load current vs. Load voltage characteristics

Ambient temperature: 25°C 77°F



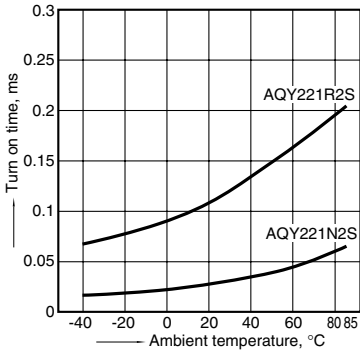
### 3. On resistance vs. ambient temperature characteristics

Measured portion: between terminals 3 and 4  
LED current: 5 mA; Load voltage: Max. (DC);  
Load current: 250mA (DC) [R type], 80mA (DC) [C type]



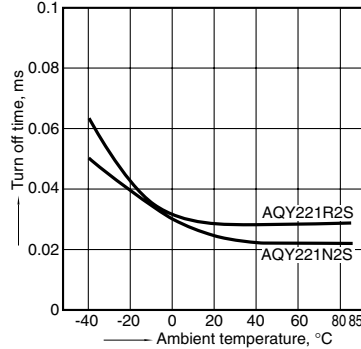
### 4. Turn on time vs. ambient temperature characteristics

Measured portion: between terminals 3 and 4  
LED current: 5 mA; Load voltage: 10V (DC);  
Continuous load current: 250mA (DC) [R type],  
80mA (DC) [C type]



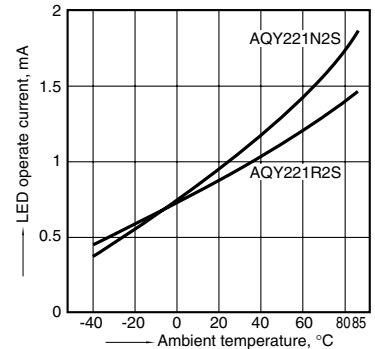
### 5. Turn off time vs. ambient temperature characteristics

LED current: 5 mA; Load voltage: 10V (DC);  
Continuous load current: 250mA (DC) [R type],  
80mA (DC) [C type]



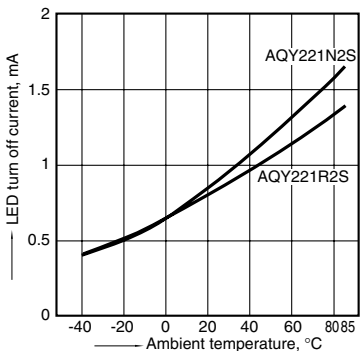
### 6. LED operate current vs. ambient temperature characteristics

Load voltage: Max. (DC);  
Continuous load current: 250mA (DC) [R type],  
80mA (DC) [C type]



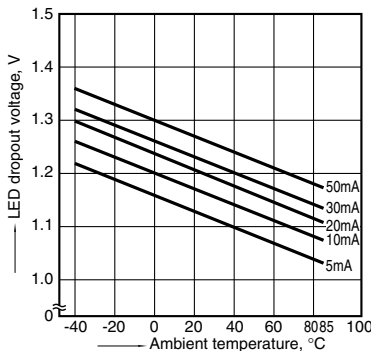
### 7. LED turn off current vs. ambient temperature characteristics

Load voltage: Max. (DC); Continuous load current:  
250mA (DC) [R type], 80mA (DC) [C type];



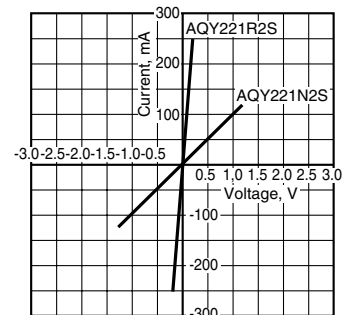
### 8. LED dropout voltage vs. ambient temperature characteristics

LED current: 5 to 50 mA



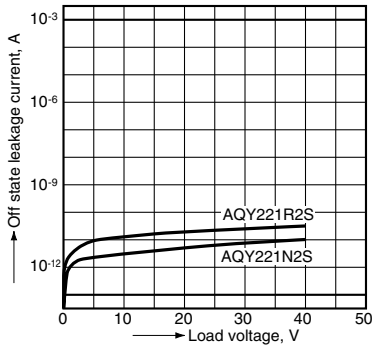
### 9. Current vs. voltage characteristics of output at MOS portion

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

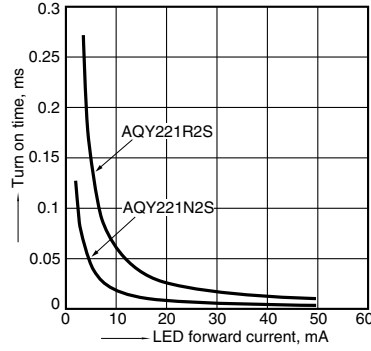


# RF SOP 1 Form A C×R10 (AQY221○2S)

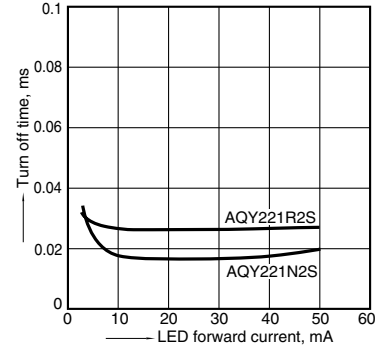
**10. Off state leakage current vs. load voltage characteristics**  
 Measured portion: between terminals 3 and 4  
 Ambient temperature: 25°C 77°F



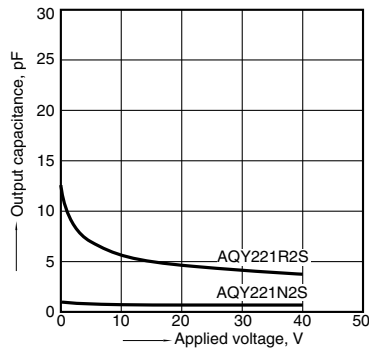
**11. Turn on time vs. LED forward current characteristics**  
 Measured portion: between terminals 3 and 4  
 Load voltage: 10V (DC); Continuous load current: 250mA (DC) [R type], 80mA (DC) [C type];  
 Ambient temperature: 25°C 77°F



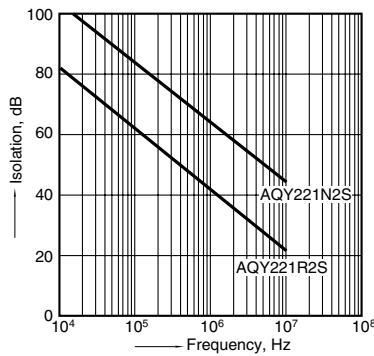
**12. Turn off time vs. LED forward current characteristics**  
 Measured portion: between terminals 3 and 4  
 Load voltage: 10V (DC); Continuous load current: 250mA (DC) [R type], 80mA (DC) [C type];  
 Ambient temperature: 25°C 77°F



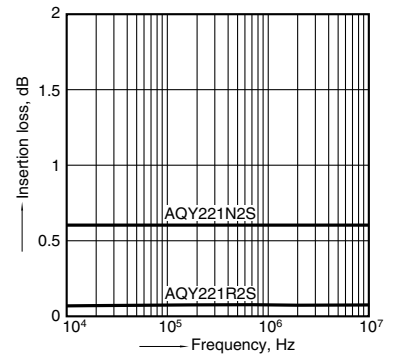
**13. Output capacitance vs. applied voltage characteristics**  
 Measured portion: between terminals 3 and 4  
 Frequency: 1 MHz, 30m Vrms; Ambient temperature: 25°C 77°F



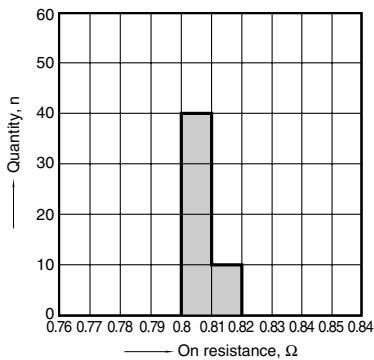
**14. Isolation vs. frequency characteristics (50Ω impedance)**  
 Measured portion: between terminals 3 and 4  
 Ambient temperature: 25°C 77°F



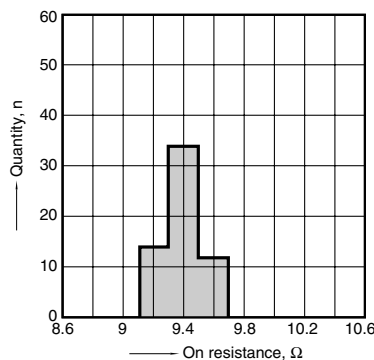
**15. Insertion loss vs. frequency characteristics (50Ω impedance)**  
 Measured portion: between terminals 3 and 4  
 Ambient temperature: 25°C 77°F



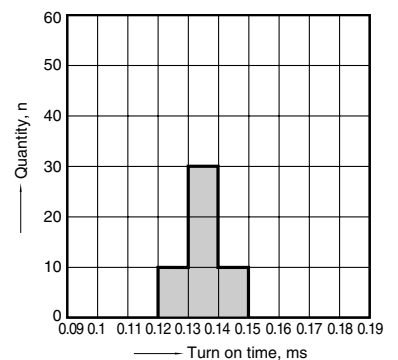
**16-(1). On resistance distribution (R type)**  
 Measured portion: between terminals 3 and 4  
 Continuous load current: 250mA (DC)  
 Ambient temperature: 25°C 77°F



**16-(2). On resistance distribution (C type)**  
 Measured portion: between terminals 3 and 4  
 Continuous load current: 80mA (DC)  
 Ambient temperature: 25°C 77°F



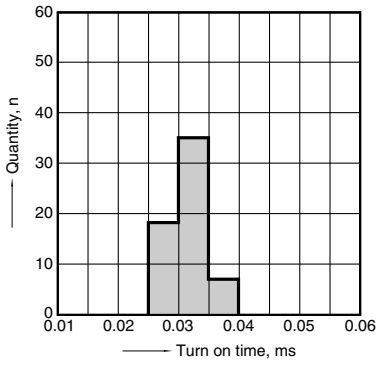
**17-(1). Turn on time distribution (R type)**  
 Load voltage: 10V (DC)  
 Continuous load current: 250mA (DC)  
 Ambient temperature: 25°C 77°F



# RF SOP 1 Form A C×R10 (AQY221○2S)

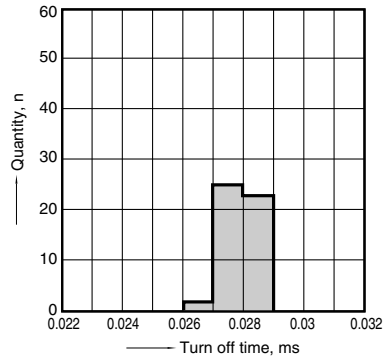
## 17-(2). Turn on time distribution (C type)

Load voltage: 10V (DC)  
 Continuous load current: 80mA (DC)  
 Ambient temperature: 25°C 77°F



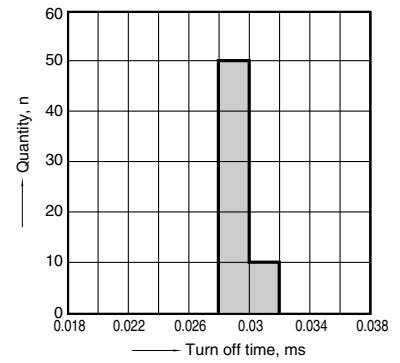
## 18-(1). Turn off time distribution (R type)

Load voltage: 10V (DC)  
 Continuous load current: 250mA (DC)  
 Ambient temperature: 25°C 77°F



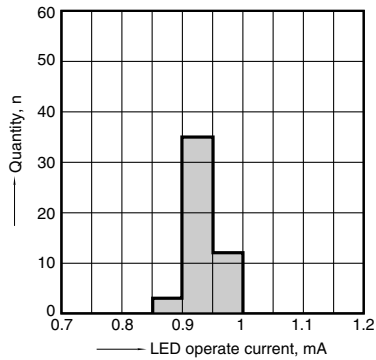
## 18-(2). Turn off time distribution (C type)

Load voltage: 10V (DC)  
 Continuous load current: 80mA (DC)  
 Ambient temperature: 25°C 77°F



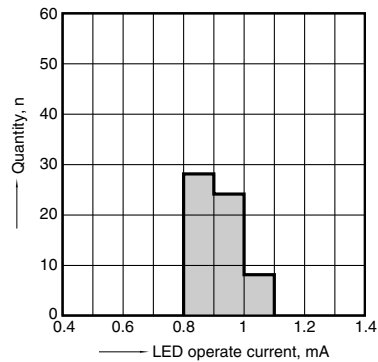
## 19-(1). LED operate current distribution (R type)

Load voltage: 10V (DC)  
 Continuous load current: 250mA (DC)  
 Ambient temperature: 25°C 77°F



## 19-(2). LED operate current distribution (C type)

Load voltage: 10V (DC)  
 Continuous load current: 80mA (DC)  
 Ambient temperature: 25°C 77°F



# Mouser Electronics

Authorized Distributor

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Panasonic:

[AQY221N2SX](#) [AQY221N2SZ](#)

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С конца 2013 года компания активно расширяет линейку поставок компонентов по направлению коаксиальный кабель, кварцевые генераторы и конденсаторы (керамические, пленочные, электролитические), за счёт заключения дистрибьюторских договоров

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- Специальные условия для постоянных клиентов.
- Подбор аналогов.
- Поставку компонентов в любых объемах, удовлетворяющих вашим потребностям.
- Приемлемые сроки поставки, возможна ускоренная поставка.
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- Комплексную поставку.
- Работу по проектам и поставку образцов.
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- Регистрацию проекта у производителя компонентов.
- Техническую поддержку проекта.
- Защиту от снятия компонента с производства.
- Оценку стоимости проекта по компонентам.
- Изготовление тестовой платы монтаж и пусконаладочные работы.



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