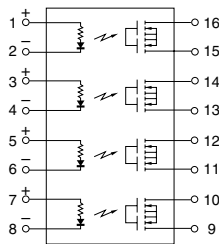


mm inch



RoHS compliant

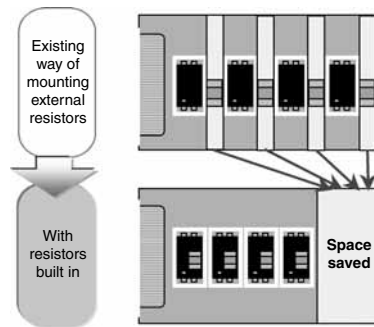
FEATURES

1. Built-in input resistor means less man-hours when mounting

The voltage-sensitive type, which eliminates the need to mount an external input resistor, is now available in a small package. Man-hours spent mounting external input resistors are cut and board designing is simplified.

2. Saves space on PC board

Since the small package size remains the same while including a built-in input resistor, space on the PC board is saved. This makes it easier to incorporate space savings when designing miniature devices.



<Artistic impression of PC board space savings due to built-in resistor>
In case of SSOP.

3. Both low on-resistance (R type) and low capacitance (C type) available at excellent electrical characteristics of CxR10

- R type: On resistance 0.8Ω (typ.)
Output capacitance 14pF (typ.)
- C type: On resistance 9.5Ω (typ.)
Output capacitance 1.1pF (typ.)

TYPICAL APPLICATIONS

For multi-circuit switching;

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

TYPES

| | Type | Output rating*1 | | Package | Part No.*2 | | | Packing quantity | |
|----------------|----------------------------|-----------------|--------------|-----------|--------------------|--|---|--|---------------|
| | | Load voltage | Load current | | Tube packing style | Tape and reel packing style | | Tube | Tape and reel |
| | | | | | | Picked from the 1/2/3/4/5/6/7/8-pin side | Picked from the 9/10/11/12/13/14/15/16-pin side | | |
| AC/DC dual use | Low on resistance (R type) | 40 V | 0.16A | SOP16-pin | AQS221FR2S | AQS221FR2SX | AQS221FR2SZ | 1 tube contains: 50 pcs. 1 batch contains: 1,000 pcs. | 1,000 pcs. |
| | Low capacitance (C type) | 40 V | 0.06A | | AQS221FN2S | AQS221FN2SX | AQS221FN2SZ | | |

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

*2 The packing style indicator "X" or "Z" is not marked on the device.

RATING

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

| Item | | Symbol | AQS221FR2S | AQS221FN2S | Remarks |
|-------------------------|------------------------|-------------------|---------------------------------|------------|------------------------------------|
| Input | Input voltage | V _{IN} | 6V | | |
| | Input reverse voltage | V _{RIN} | 5V | | |
| | Power dissipation | P _{in} | 260mW | | 65mW for 1a |
| Output | Load voltage (peak AC) | V _L | 40V | 40V | |
| | Load current | I _L | 0.16A | 0.06A | Peak AC, DC |
| | Peak load current | I _{peak} | 0.2A | 0.12A | 100ms (1shot), V _L =DC |
| | Power dissipation | P _{out} | 600mW | | |
| Total power dissipation | | P _T | 650mW | | |
| I/O isolation voltage | | V _{iso} | 500V 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 | | |

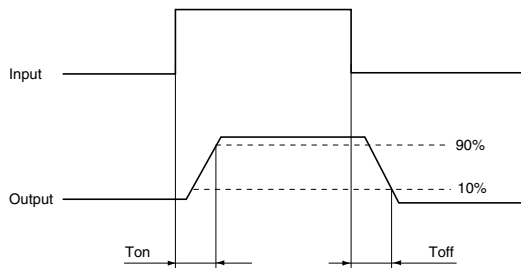
RF SOP 4 Form A C×R10 Voltage-sensitive (AQS221F○2S)

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

| Item | | Symbol | AQS221FR2S | AQS221FN2S | Condition |
|----------------------------------|---------------------------|---------|------------|----------------------|--|
| Input | Operate voltage | Typ. | 1.3V | | I _L = Max. |
| | | Max. | 4V | | |
| | Turn off voltage | Min. | 0.8V | | |
| | | Typ. | 1.3V | | |
| Input current | Typ. | 8.5mA | | V _{IN} = 5V | |
| Output | On resistance | Typ. | 0.75Ω | 9.5Ω | V _{IN} = 5V I _L = Max. Within 1 s on time |
| | | Max. | 1.25Ω | 12.5Ω | |
| | Output capacitance | Typ. | 12.5pF | 1pF | V _{IN} = 0V V _B = 0V f = 1MHz |
| | | Max. | 18pF | 1.5pF | |
| | Off state leakage current | Typ. | 0.02nA | 0.01nA | V _{IN} = 0V V _L = Max. |
| | | Max. | 10nA | | |
| Transfer characteristics | Turn on time* | Typ. | 0.07ms | 0.02ms | AQS221FR2S: V _{IN} = 5V, V _L = 10V, R _L = 80Ω |
| | | Max. | 0.5ms | | |
| | Turn off time* | Typ. | 0.07ms | 0.02ms | AQS221FN2S: V _{IN} = 5V, V _L = 10V, R _L = 500Ω |
| | | Max. | 0.2ms | | |
| | I/O capacitance | Typ. | 0.8pF | | f = 1MHz, V _B = 0V |
| | | Max. | 1.5pF | | f = 1MHz, V _B = 0V |
| Initial I/O isolation resistance | Min. | 1,000MΩ | | 500V DC | |

Note: If you wish to change the input voltage, rating or performance, please inquire with our sales.

*Turn on/Turn off time



RECOMMENDED OPERATING CONDITIONS

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

| Item | Symbol | Minimum | Typical | Maximum | Unit |
|---------------|-----------------|---------|---------|---------|------|
| Input voltage | V _{IN} | 4.5 | 5 | 5.5 | V |

■ 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.

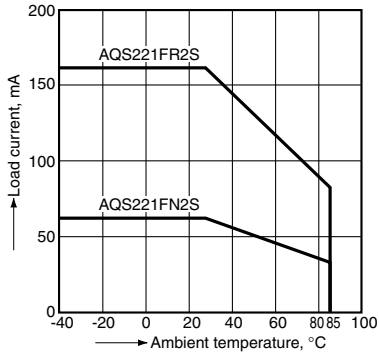
For more information.

RF SOP 4 Form A C×R10 Voltage-sensitive (AQS221F○2S)

REFERENCE DATA

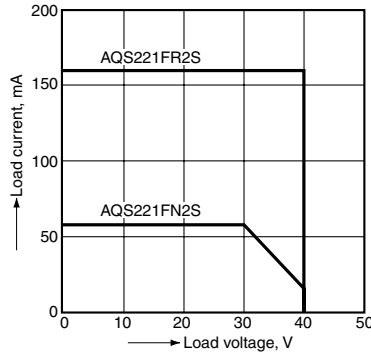
1. Load current vs. ambient temperature characteristics

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



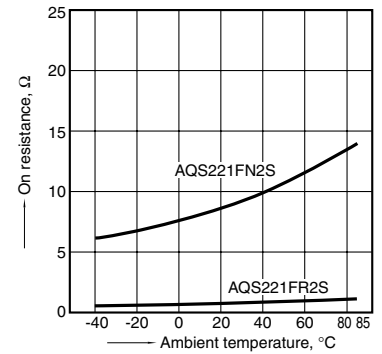
2. Load current vs. Load voltage characteristics

Ambient temperature: 25°C 77°F



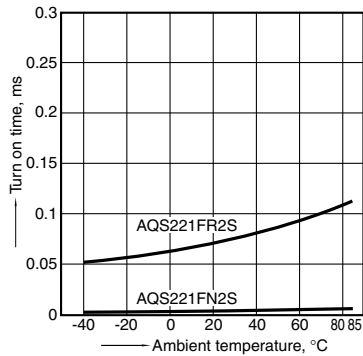
3. On resistance vs. ambient temperature characteristics

Input voltage: 5V; Load voltage: 10V (DC);
Continuous load current: 160mA (DC) R type,
60mA (DC) C type



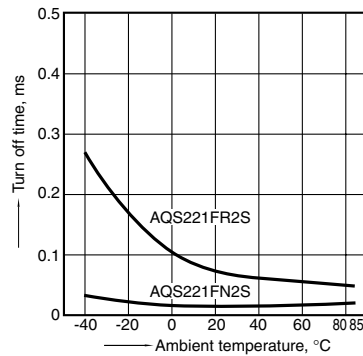
4. Turn on time vs. ambient temperature characteristics

Input voltage: 5V; Load voltage: 10V (DC);
Continuous load current: 125mA (DC) R type,
20mA (DC) C type



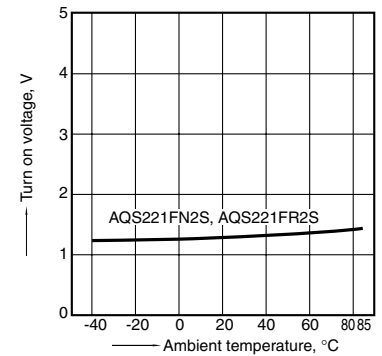
5. Turn off time vs. ambient temperature characteristics

Input voltage: 5V; Load voltage: 10V (DC);
Continuous load current: 125mA (DC) R type,
20mA (DC) C type



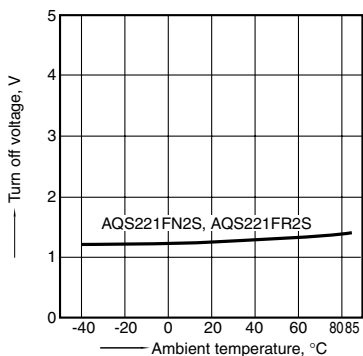
6. Turn on voltage vs. ambient temperature characteristics

Load voltage: 10V (DC);
Continuous load current: 160mA (DC) R type,
60mA (DC) C type



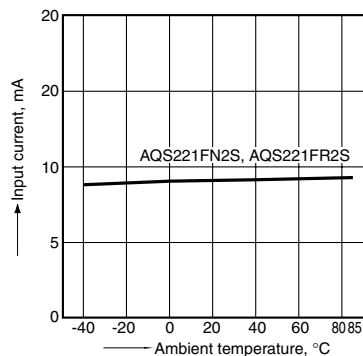
7. Turn off voltage vs. ambient temperature characteristics

Load voltage: 10V (DC);
Continuous load current: 160mA (DC) R type,
60mA (DC) C type



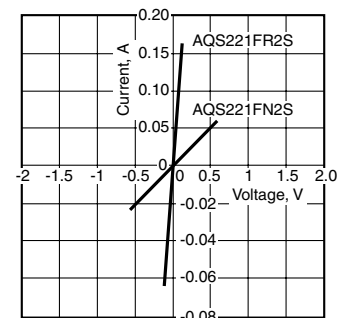
8. Input current vs. ambient temperature characteristics

Input voltage: 5V



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

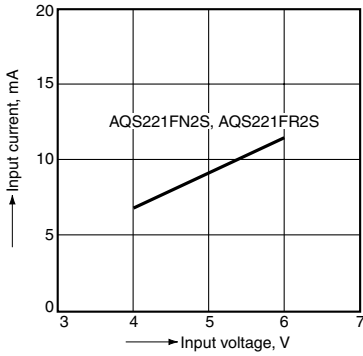
Ambient temperature: 25°C 77°F



RF SOP 4 Form A C×R10 Voltage-sensitive (AQS221F○2S)

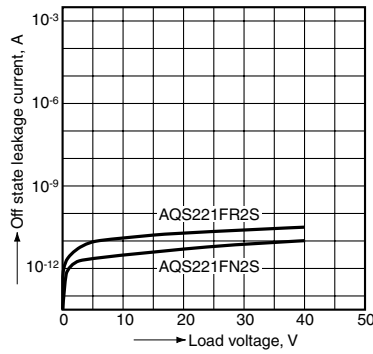
10. Input current vs. input voltage characteristics

Ambient temperature: 25°C 77°F
(Recommended input voltage: 5±0.5V)



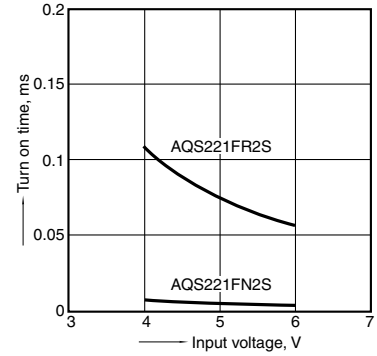
11. Off state leakage current vs. load voltage characteristics

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



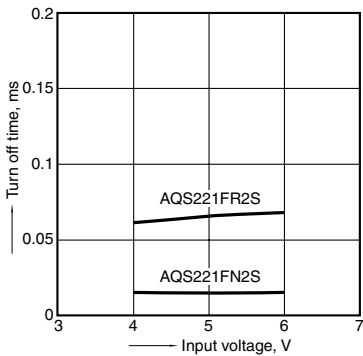
12. Turn on time vs. input voltage characteristics

Load voltage: 10V (DC);
Continuous load current: 125mA (DC) R type,
20mA (DC) C type; Ambient temperature: 25°C 77°F



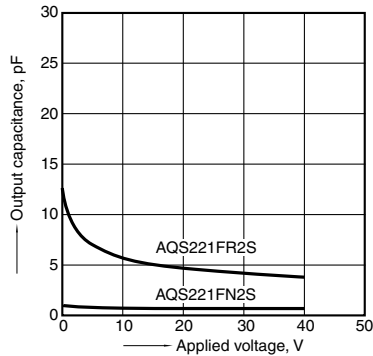
13. Turn off time vs. input voltage characteristics

Load voltage: 10V (DC);
Continuous load current: 125mA (DC) R type,
20mA (DC) C type; Ambient temperature: 25°C 77°F



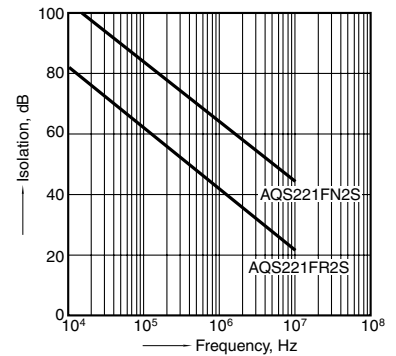
14. Output capacitance vs. applied voltage characteristics

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



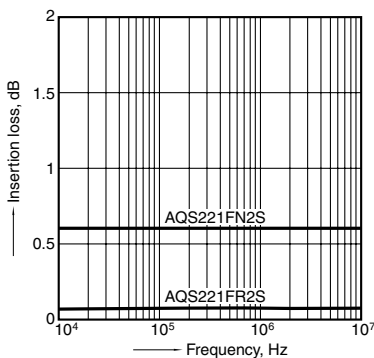
15. Isolation vs. frequency characteristics (50Ω impedance)

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



16. Insertion loss vs. frequency characteristics (50Ω impedance)

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



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