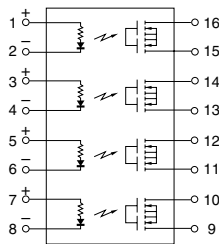


mm inch



RoHS compliant

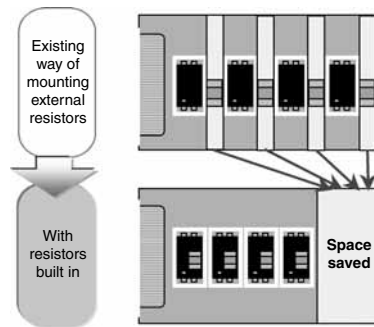
### FEATURES

#### 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 <sub>IN</sub>	6V		
	Input reverse voltage	V <sub>RIN</sub>	5V		
	Power dissipation	P <sub>in</sub>	260mW		65mW for 1a
Output	Load voltage (peak AC)	V <sub>L</sub>	40V	40V	
	Load current	I <sub>L</sub>	0.16A	0.06A	Peak AC, DC
	Peak load current	I <sub>peak</sub>	0.2A	0.12A	100ms (1shot), V <sub>L</sub> =DC
	Power dissipation	P <sub>out</sub>	600mW		
Total power dissipation		P <sub>T</sub>	650mW		
I/O isolation voltage		V <sub>iso</sub>	500V AC		
Operating temperature		T <sub>opr</sub>	-40°C to +85°C -40°F to +185°F		Non-condensing at low temperatures
Storage temperature		T <sub>stg</sub>	-40°C to +100°C -40°F to +212°F		

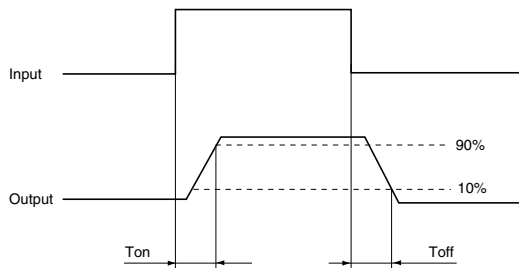
# RF SOP 4 Form A C×R10 Voltage-sensitive (AQS221F○2S)

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

Item		Symbol	AQS221FR2S	AQS221FN2S	Condition
Input	Operate voltage	Typ.	1.3V		I <sub>L</sub> = Max.
		Max.	4V		
	Turn off voltage	Min.	0.8V		
		Typ.	1.3V		
Input current	Typ.	8.5mA		V <sub>IN</sub> = 5V	
Output	On resistance	Typ.	0.75Ω	9.5Ω	V <sub>IN</sub> = 5V I <sub>L</sub> = Max. Within 1 s on time
		Max.	1.25Ω	12.5Ω	
	Output capacitance	Typ.	12.5pF	1pF	V <sub>IN</sub> = 0V V <sub>B</sub> = 0V f = 1MHz
		Max.	18pF	1.5pF	
	Off state leakage current	Typ.	0.02nA	0.01nA	V <sub>IN</sub> = 0V V <sub>L</sub> = Max.
		Max.	10nA		
Transfer characteristics	Turn on time*	Typ.	0.07ms	0.02ms	AQS221FR2S: V <sub>IN</sub> = 5V, V <sub>L</sub> = 10V, R <sub>L</sub> = 80Ω
		Max.	0.5ms		
	Turn off time*	Typ.	0.07ms	0.02ms	AQS221FN2S: V <sub>IN</sub> = 5V, V <sub>L</sub> = 10V, R <sub>L</sub> = 500Ω
		Max.	0.2ms		
	I/O capacitance	Typ.	0.8pF		f = 1MHz, V <sub>B</sub> = 0V
		Max.	1.5pF		f = 1MHz, V <sub>B</sub> = 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 <sub>IN</sub>	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.

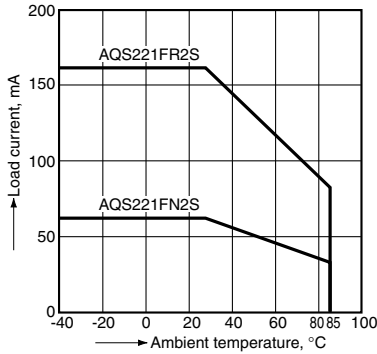
For more information.

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

## REFERENCE DATA

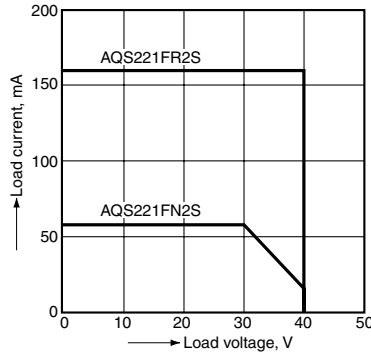
### 1. Load current vs. ambient temperature characteristics

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



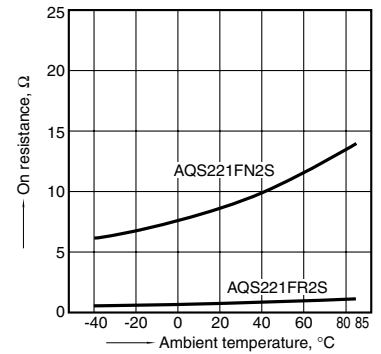
### 2. Load current vs. Load voltage characteristics

Ambient temperature: 25°C 77°F



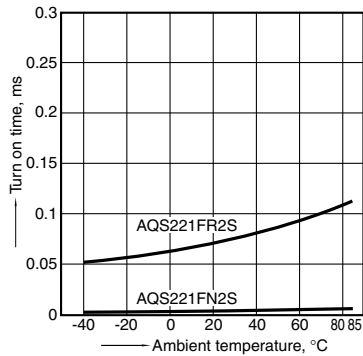
### 3. On resistance vs. ambient temperature characteristics

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



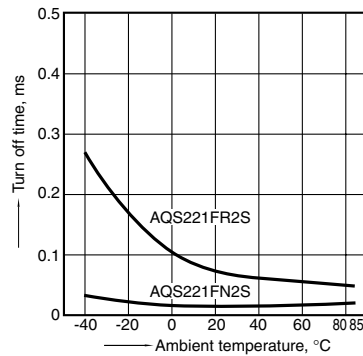
### 4. Turn on time vs. ambient temperature characteristics

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



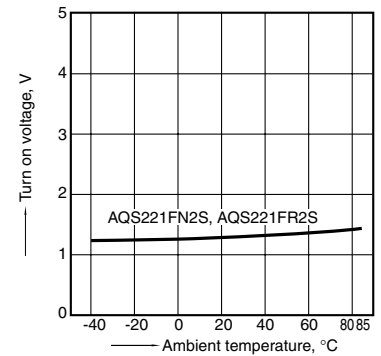
### 5. Turn off time vs. ambient temperature characteristics

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



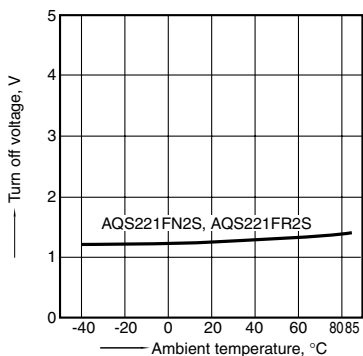
### 6. Turn on voltage vs. ambient temperature characteristics

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



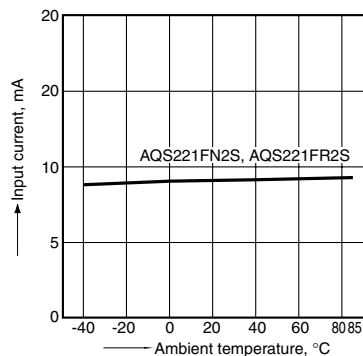
### 7. Turn off voltage vs. ambient temperature characteristics

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



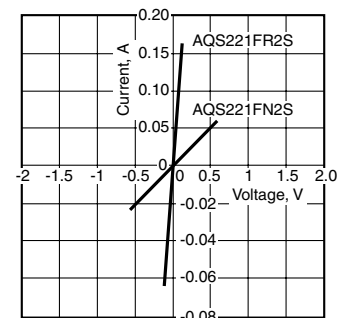
### 8. Input current vs. ambient temperature characteristics

Input voltage: 5V



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

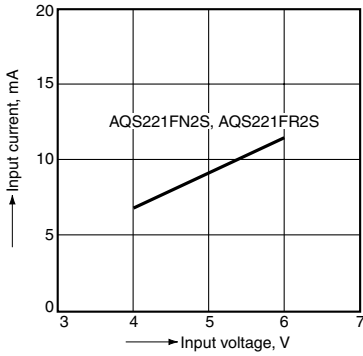
Ambient temperature: 25°C 77°F



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

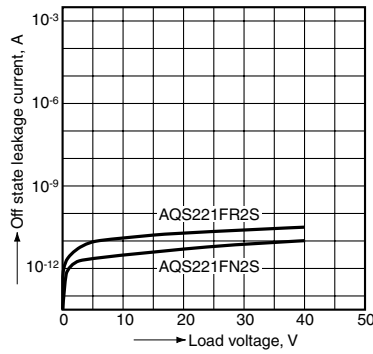
## 10. Input current vs. input voltage characteristics

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



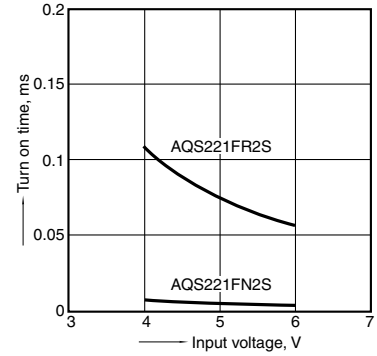
## 11. Off state leakage current vs. load voltage characteristics

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



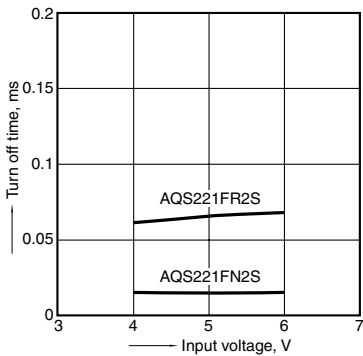
## 12. Turn on time vs. input voltage characteristics

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



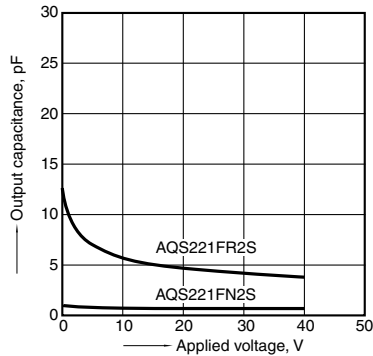
## 13. Turn off time vs. input voltage characteristics

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



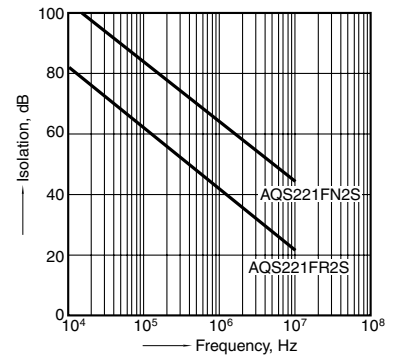
## 14. Output capacitance vs. applied voltage characteristics

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



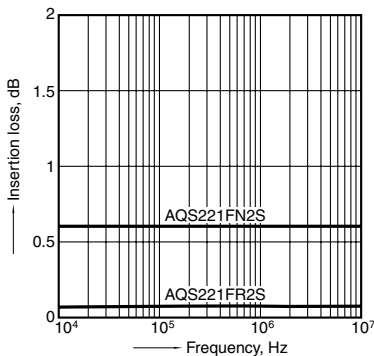
## 15. Isolation vs. frequency characteristics (50Ω impedance)

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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