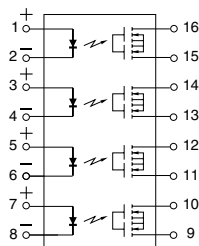


mm inch



FEATURES

1. 4-channel (4 Form A) in a small SOP16-pin package

The device comes in a miniature SOP measuring (W)10.37 × (L)4.4 × (H)2.1mm (W).408×(L).173×(H).083inch

This contributes to space-saving of PC board.

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

- R type: On resistance 0.8Ω (typ.)
Output capacitance 13pF (typ.)
- C type: On resistance 9.7Ω (typ.)
Output capacitance 1.0pF (typ.)

3. High-speed switching of 0.03ms (C type, typical turn on time)

4. Applicable for 4 Form A use, as well as 4 independent 1 Form A

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

3. Medical equipment

Ultrasonic wave diagnostic machine

4. Multi-point recorder

Warping, Thermo couple, etc.

Compliance with RoHS Directive

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	New Low on-resistance (R type)	40V	0.16A	SOP16-pin	AQS221R2S	AQS221R2SX	AQS221R2SZ	1 tube contains: 50 pcs.	1,000 pcs.
	Low capacitance (C type)	40V	0.06A		AQS221N2S	AQS221N2SX	AQS221N2SZ	1 batch contains: 1,000 pcs.	

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

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

RATING

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

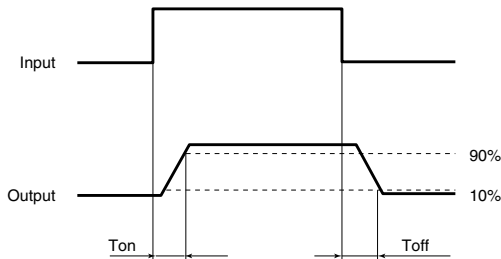
Item		Symbol	AQS221R2S (R type)	AQS221N2S (C type)	Remarks
Input	LED forward current	I _F	50 mA		
	LED reverse voltage	V _R	5 V		
	Peak forward current	I _{FP}	1 A		f = 100 Hz, Duty factor = 0.1%
	Power dissipation	P _{in}	75 mW		
Output	Load voltage (peak AC)	V _L	40 V		
	Continuous load current	I _L	0.16 A	0.06 A	Peak AC, DC
	Peak load current	I _{peak}	0.2 A	0.12 A	100 ms (1 shot), V _L = DC
	Power dissipation	P _{out}	600 mW		
Total power dissipation		P _T	650 mW		
I/O isolation voltage		V _{iso}	500 V AC		
Temperature limits	Operating	T _{opr}	-40°C to +85°C -40°F to +185°F		Non-condensing at low temperatures
	Storage	T _{stg}	-40°C to +100°C -40°F to +212°F		

RF SOP 4 Form A C×R10 (AQS221○2S)

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

Item			Symbol	AQS221R2S (R type)	AQS221N2S (C type)	Condition
Input	LED operate current	Typical	I _{Fon}	0.5 mA	0.9 mA	I _L = Max.
		Maximum		3.0 mA		
	LED turn off current	Minimum	I _{Foff}	0.1 mA		I _L = Max.
		Typical		0.4 mA	0.85 mA	
	LED dropout voltage	Typical	V _F	1.25 V (1.14 V at I _F = 5 mA)		I _F = 50 mA
		Maximum		1.5 V		
Output	On resistance	Typical	R _{on}	0.8Ω	9.5Ω	I _F = 5 mA I _L = Max. Within 1 s on time
		Maximum		1.25Ω	12.5Ω	
	Output capacitance	Typical	C _{out}	13.0 pF	1.0 pF	I _F = 0 mA V _B = 0 V f = 1 MHz
		Maximum		18.0 pF	1.5 pF	
	Off state leakage current	Typical	I _{Leak}	0.03 nA	0.01 nA	I _F = 0 mA V _L = Max.
		Maximum		10 nA		
Transfer characteristics	Turn on time*	Typical	T _{on}	0.1 ms	0.03 ms	I _F = 5 mA V _L = 10V R _L = 62.5Ω (R type), R _L = 500Ω (C type)
		Maximum		0.5 ms	0.2 ms	
	Turn off time*	Typical	T _{off}	0.06 ms	0.03 ms	I _F = 5 mA V _L = 10V R _L = 62.5Ω (R type), R _L = 500Ω (C type)
		Maximum		0.2 ms		
	I/O capacitance	Typical	C _{iso}	0.8 pF		f = 1 MHz V _B = 0 V
		Maximum		1.5 pF		
	Initial I/O isolation resistance	Minimum	R _{iso}	1,000 MΩ		500 V DC

*Turn on/Turn off time



RECOMMENDED OPERATING CONDITIONS

Please obey the following conditions to ensure proper relay 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 Electric Works technical representative.

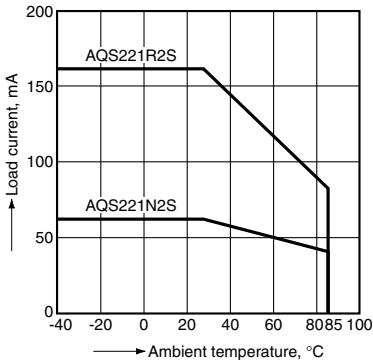
For more information.

RF SOP 4 Form A C×R10 (AQS221○2S)

REFERENCE DATA

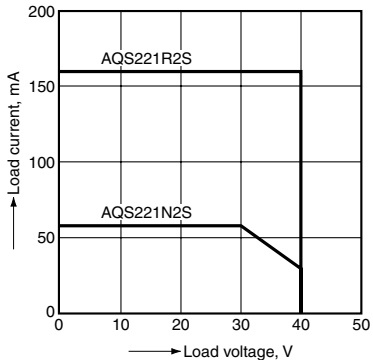
1. Load current vs. ambient temperature characteristics

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



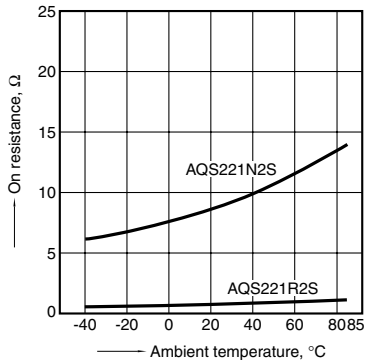
2. Load current vs. load voltage characteristics

Ambient temperature: 25°C 47°F



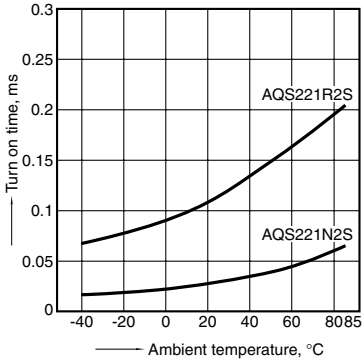
3. On resistance vs. ambient temperature characteristics

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



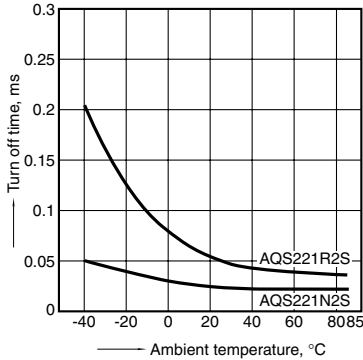
4. Turn on time vs. ambient temperature characteristics

LED current: 5 mA; Load voltage: 10 V (DC);
Continuous load current: 160 mA (DC) R type/
20 mA (DC) C type



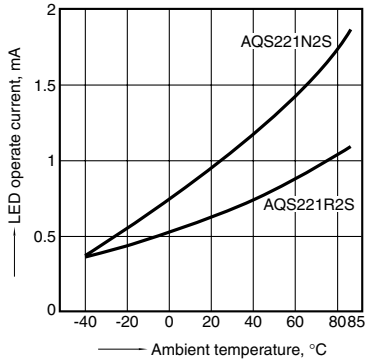
5. Turn off time vs. ambient temperature characteristics

LED current: 5 mA; Load voltage: 10 V (DC);
Continuous load current: 160 mA (DC) R type/
20 mA (DC) C type



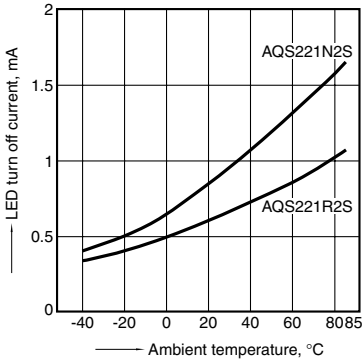
6. LED operate current vs. ambient temperature characteristics

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



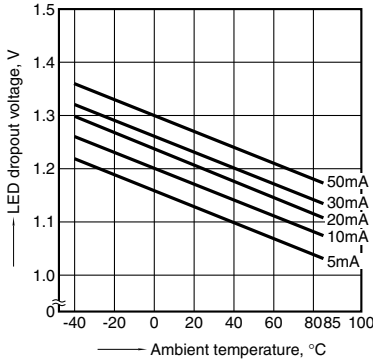
7. LED turn off current vs. ambient temperature characteristics

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



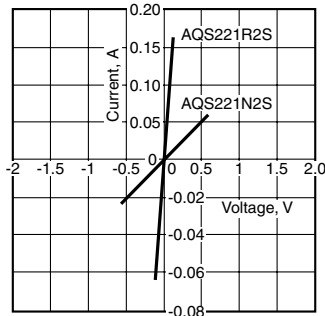
8. LED dropout voltage vs. ambient temperature characteristics

LED current: 5 to 50 mA



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

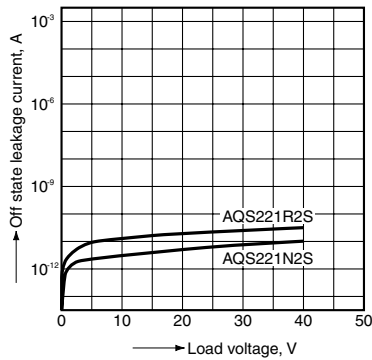
Ambient temperature: 25°C 77°F



RF SOP 4 Form A C×R10 (AQS221○2S)

10. Off state leakage current vs. load voltage characteristics

Ambient temperature: 25°C 77°F

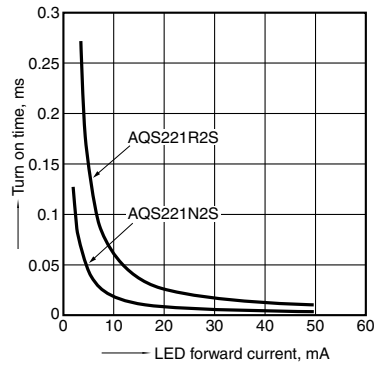


11. Turn on time vs. LED forward current characteristics

Load voltage: 10 V (DC);

Continuous load current: 160 mA (DC) R type/
20 mA (DC) C type

Ambient temperature: 25°C 77°F

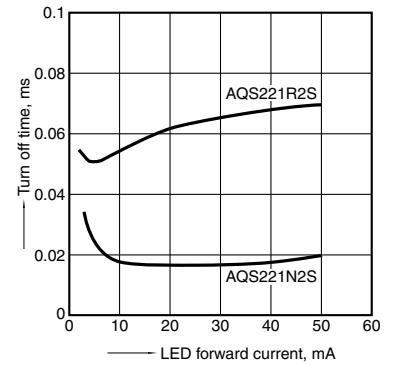


12. Turn off time vs. LED forward current characteristics

Load voltage: 10 V (DC);

Continuous load current: 160 mA (DC) R type/
20 mA (DC) C type

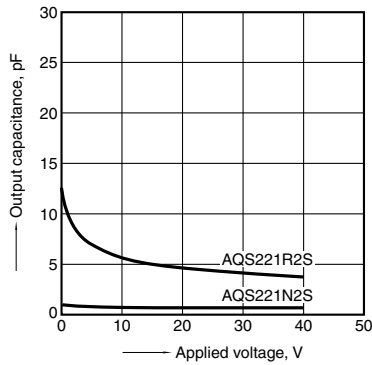
Ambient temperature: 25°C 77°F



13. Output capacitance vs. applied voltage characteristics

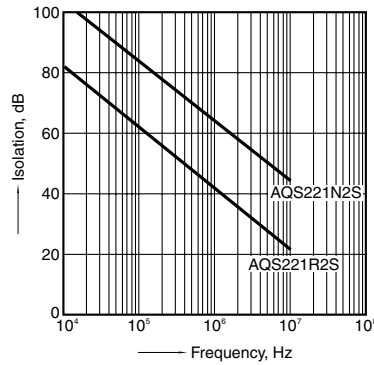
Frequency: 1 MHz, 30 mVrms;

Ambient temperature: 25°C 77°F



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

Ambient temperature: 25°C 77°F



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

Ambient temperature: 25°C 77°F

