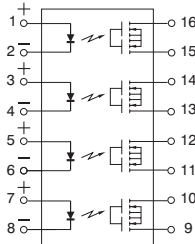


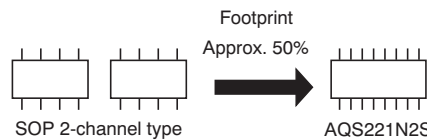
mm inch



### 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— approx. 50% of the footprint size of 8-pin (2-channel) type.



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

#### 3. Excellent electrical characteristics

Output capacitance 1.0pF (typ.)  
 Turn on time: 0.03ms (typ.)  
 Turn off time: 0.03ms (typ.)

### TYPICAL APPLICATIONS

For multi-circuit switching;

- 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.

### TYPES

	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 1/2/3/4/5/6/7/8-pin side	Picked from the 9/10/11/12/13/14/15/16-pin side		
AC/DC dual use	40V	60mA	SOP16-pin	AQS221N2S	AQS221N2SX	AQS221N2SZ	1 tube contains: 50 pcs. 1 batch contains: 1,000 pcs.	1,000 pcs.

\* Indicate the peak AC and DC values.

- Notes: 1. For space reasons, the package style indicator "X" or "Z" are not marked on the relay.  
 2. Types with a built-in resistor.

### RATING

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

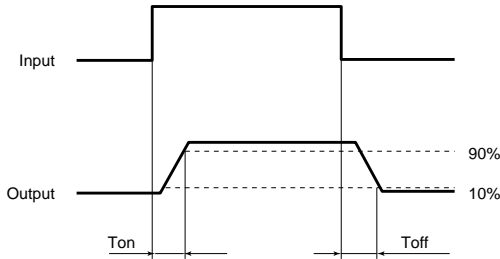
Item		Symbol	AQS221N2S	Remarks
Input	LED forward current	I <sub>F</sub>	50 mA	
	LED reverse voltage	V <sub>R</sub>	5 V	
	Peak forward current	I <sub>FP</sub>	1 A	f = 100 Hz, Duty factor = 0.1%
	Power dissipation	P <sub>in</sub>	75 mW	
Output	Load voltage (peak AC)	V <sub>L</sub>	40 V	
	Continuous load current	I <sub>L</sub>	0.06 A	Peak AC, DC
	Peak load current	I <sub>peak</sub>	0.12 A	100 ms (1 shot), V <sub>L</sub> = DC
	Power dissipation	P <sub>out</sub>	600 mW	
Total power dissipation		P <sub>T</sub>	650 mW	
I/O isolation voltage		V <sub>iso</sub>	500 V 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 4 Form A C×R10 (AQS221N2S)

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

Item		Symbol	AQS221N2S	Condition
Input	LED operate current	Typical	0.9 mA	I <sub>L</sub> = Max.
		Maximum	3.0 mA	
	LED turn off current	Minimum	0.1 mA	I <sub>L</sub> = Max.
		Typical	0.85 mA	
LED dropout voltage	Typical	1.25 V (1.14 V at I <sub>F</sub> = 5 mA)		I <sub>F</sub> = 50 mA
	Maximum	1.5 V		
Output	On resistance	Typical	9.5Ω	I <sub>F</sub> = 5 mA I <sub>L</sub> = Max. Within 1 s on time
		Maximum	12.5Ω	
	Output capacitance	Typical	1.0 pF	I <sub>F</sub> = 0 mA V <sub>B</sub> = 0 V f = 1 MHz
		Maximum	1.5 pF	
	Off state leakage current	Typical	0.01 nA	I <sub>F</sub> = 0 mA V <sub>L</sub> = Max.
		Maximum	10 nA	
Transfer characteristics	Turn on time*	Typical	0.03 ms	I <sub>F</sub> = 5 mA V <sub>L</sub> = 10V R <sub>L</sub> = 500Ω
		Maximum	0.2 ms	
	Turn off time*	Typical	0.03 ms	I <sub>F</sub> = 5 mA V <sub>L</sub> = 10V R <sub>L</sub> = 500Ω
		Maximum	0.2 ms	
	I/O capacitance	Typical	0.8 pF	f = 1 MHz V <sub>B</sub> = 0 V
		Maximum	1.5 pF	
Initial I/O isolation resistance	Minimum	R <sub>iso</sub>	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 <sub>F</sub>	5	mA

- **Dimensions**
- **Schematic and Wiring Diagrams**
- **Cautions for Use**

■ These products are not designed for automotive use.

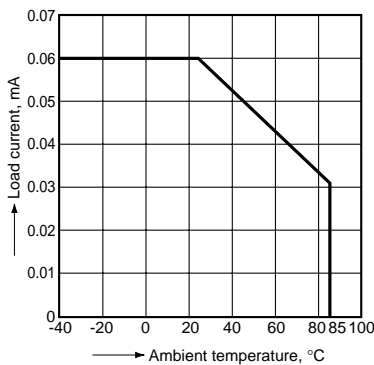
If you are considering to use these products for automotive applications, please contact your local Panasonic Electric Works technical representative.

Please refer to our information on [PhotoMOS Relays for Automotive Applications](#).

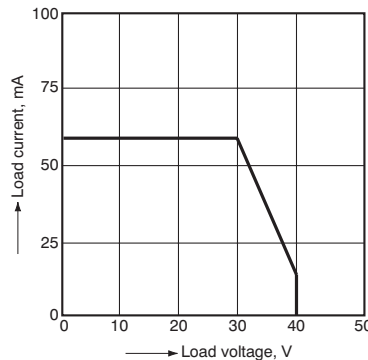
## REFERENCE DATA

1. Load current vs. ambient temperature characteristics

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

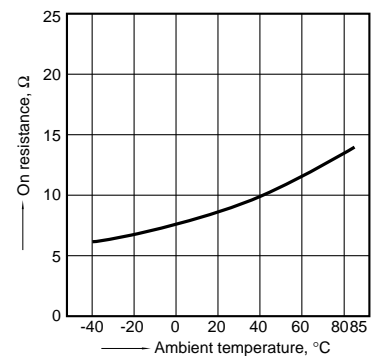


2. Load current vs. load voltage characteristics  
Ambient temperature: 25°C 47°F



3. On resistance vs. ambient temperature characteristics

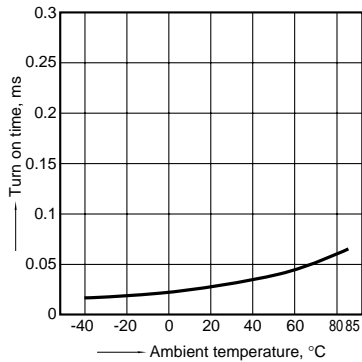
LED current: 5 mA; Load voltage: Max. (DC);  
Load current: Max. (DC)



# RF SOP 4 Form A C×R10 (AQS221N2S)

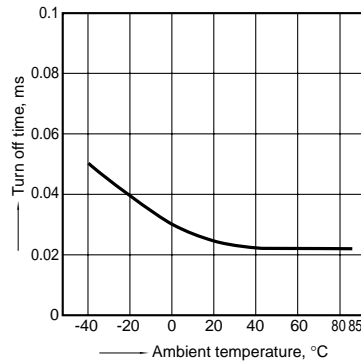
## 4. Turn on time vs. ambient temperature characteristics

LED current: 5 mA; Load voltage: 10 V (DC);  
Continuous load current: 20 mA (DC)



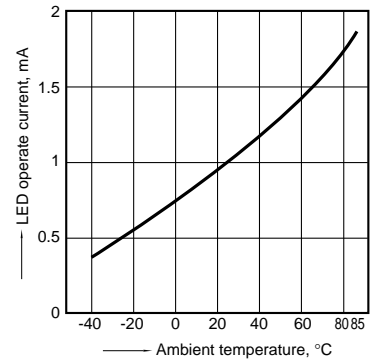
## 5. Turn off time vs. ambient temperature characteristics

LED current: 5 mA; Load voltage: 10 V (DC);  
Continuous load current: 20 mA (DC)



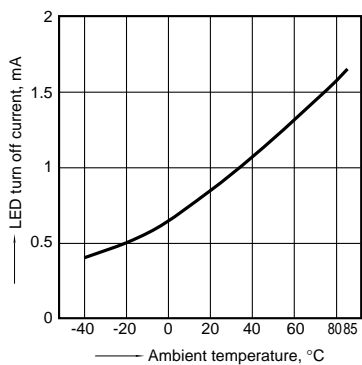
## 6. LED operate current vs. ambient temperature characteristics

Load voltage: 10 V (DC);  
Continuous load current: 60 mA (DC)



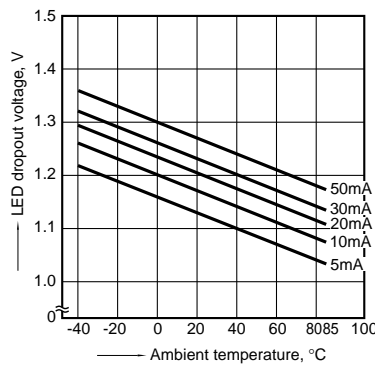
## 7. LED turn off current vs. ambient temperature characteristics

Load voltage: 10 V (DC);  
Continuous load current: 60 mA (DC)



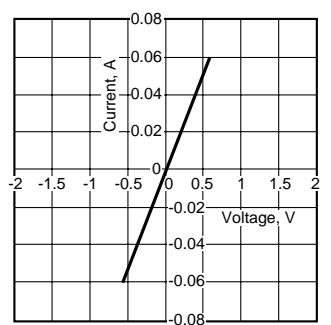
## 8. LED dropout voltage vs. ambient temperature characteristics

LED current: 5 to 50 mA



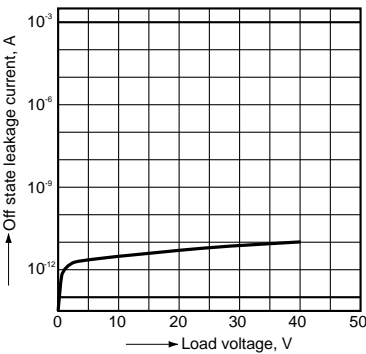
## 9. Current vs. voltage characteristics of output at MOS portion

Ambient temperature: 25°C 77°F



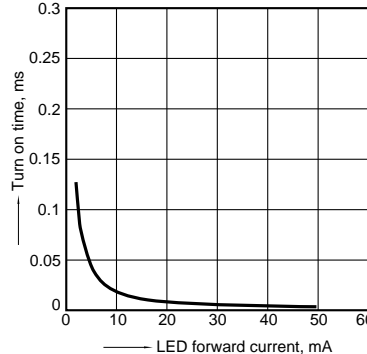
## 10. Off state leakage current vs. load voltage characteristics

Ambient temperature: 25°C 77°F



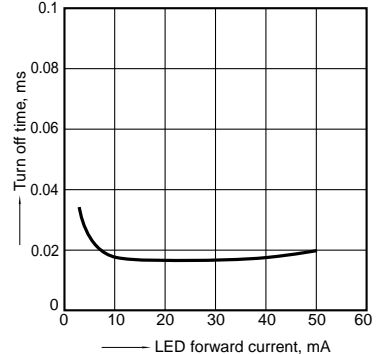
## 11. Turn on time vs. LED forward current characteristics

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



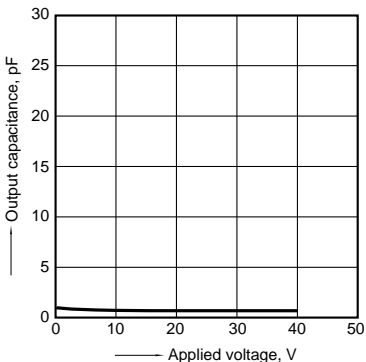
## 12. Turn off time vs. LED forward current characteristics

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



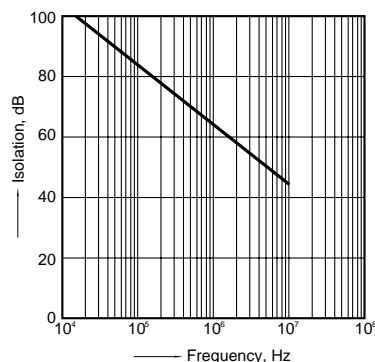
## 13. Output capacitance vs. applied voltage characteristics

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

