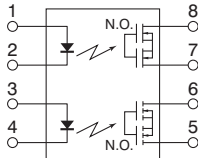


**CAD Data**



mm inch

## FEATURES

**1. With high load voltage of 250V, low output capacitance and low on-resistance.**

Output capacitance (Cout): 33 pF (typ.)

On-resistance (Ron): 11Ω (typ.)

**2. 2-channel (Form A) in miniature SOP8-pin package**

(W) 4.4 × (L) 9.37 × (H) 2.1 mm

(W) .173 × (L) .369 × (H) .083 inch

**3. Low-level off-state leakage current of typ. 0.03 nA**

**4. Controls low-level analog signals**

## 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**

**4. Multi-point recorder**

Warping, Thermo couple

## 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-pin side	Picked from the 5/6/7/8-pin side		
AC/DC dual use	250V	0.14A	SOP8-pin	AQW223R2S	AQW223R2SX	AQW223R2SZ	1 tube contains: 50 pcs. 1 batch contains: 1,000 pcs.	1,000 pcs.

\* Indicate the peak AC and DC values.

Note: 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	AQW223R2S	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>	250 V	
	Continuous load current	I <sub>L</sub>	0.14 A (0.17 A)	Peak AC, DC ( ): in case of using only 1a (1 channel)
	Peak load current	I <sub>peak</sub>	0.42 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>	1,500 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	

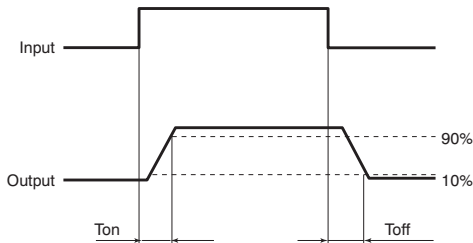
# RF SOP 2 Form A C×R (AQW223R2S)

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

Item		Symbol	AQW223R2S	Condition	
Input	LED operate current	Typical	0.5mA	I <sub>L</sub> =Max.	
		Maximum	3.0mA		
	LED turn off current	Minimum	0.1mA	I <sub>L</sub> =Max.	
		Typical	0.45mA		
LED dropout voltage	Typical	V <sub>F</sub>	1.32V (1.14V at I <sub>F</sub> =5mA)	I <sub>F</sub> =50mA	
	Maximum		1.5V		
Output	On resistance	Typical	11Ω	I <sub>F</sub> =5mA I <sub>L</sub> =Max.	
		Maximum	15Ω		
	Output capacitance	Typical	C <sub>out</sub>	33pF	I <sub>F</sub> =0mA f=1 MHz V <sub>B</sub> =0V
		Maximum		40pF	
	Off state leakage current	Typical	I <sub>Leak</sub>	0.03nA	I <sub>F</sub> =0mA V <sub>L</sub> =Max.
		Maximum		10nA (1 nA or less)*	
Transfer characteristics	Turn on time**	Typical	0.15ms	I <sub>F</sub> =5mA I <sub>L</sub> =Max.	
		Maximum	0.5ms		
	Turn off time**	Typical	T <sub>off</sub>	0.05ms	I <sub>F</sub> =5mA or 10mA I <sub>L</sub> =Max.
		Maximum		0.2ms	
	I/O capacitance	Typical	C <sub>iso</sub>	0.8pF	f=1MHz V <sub>B</sub> =0V
		Maximum		1.5pF	
	Initial I/O isolation resistance	Minimum	R <sub>iso</sub>	1,000MΩ	500V DC

\* Available as custom orders (1 nA or less)

\*\*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.

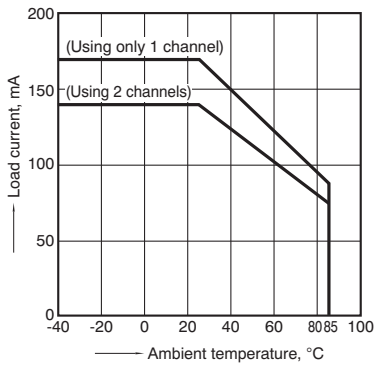
If you are considering to use these products for automotive applications, please contact your local Panasonic technical representative.

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

## REFERENCE DATA

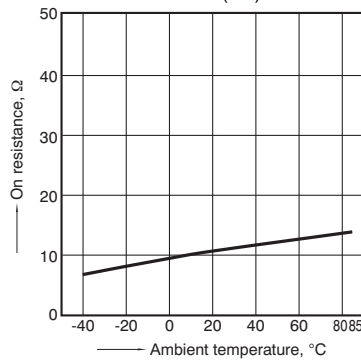
### 1. Load current vs. ambient temperature characteristics

Allowable ambient temperature:  $-40^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$   
 $-40^{\circ}\text{F}$  to  $+185^{\circ}\text{F}$



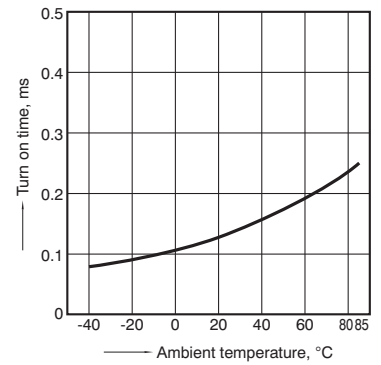
### 2. On resistance vs. ambient temperature characteristics

Measured portion: between terminals 5 and 6, 7 and 8;  
 LED current: 5 mA;  
 Load voltage: Max. (DC);  
 Continuous load current: Max. (DC)



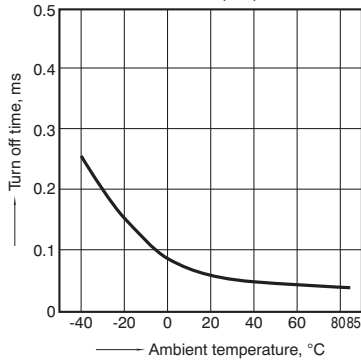
### 3. Turn on time vs. ambient temperature characteristics

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



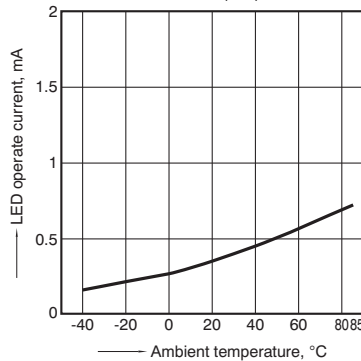
### 4. Turn off time vs. ambient temperature characteristics

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



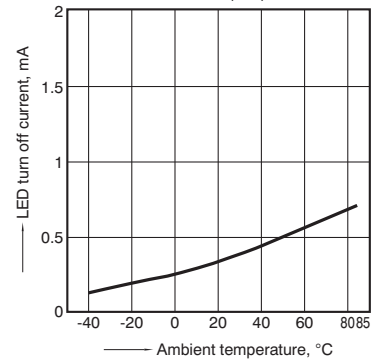
### 5. LED operate current vs. ambient temperature characteristics

Load voltage: Max. (DC);  
 Continuous load current: Max. (DC)



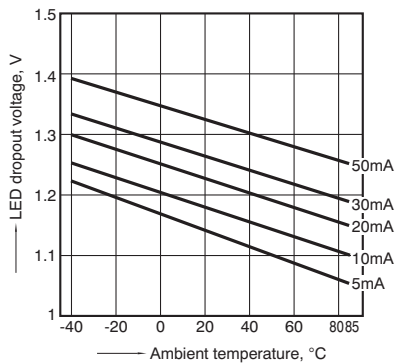
### 6. LED turn off current vs. ambient temperature characteristics

Load voltage: Max. (DC);  
 Continuous load current: Max. (DC)



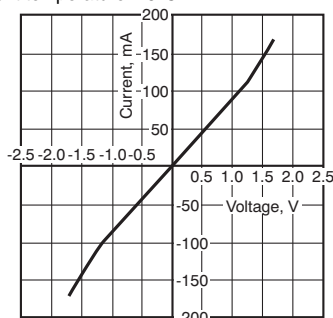
### 7. LED dropout voltage vs. ambient temperature characteristics

LED current: 5 to 50 mA



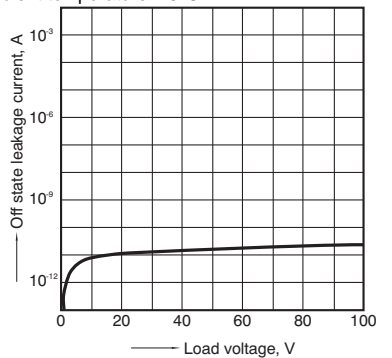
### 8. Current vs. voltage characteristics of output at MOS portion

Measured portion: between terminals 5 and 6, 7 and 8;  
 Ambient temperature:  $25^{\circ}\text{C}$   $77^{\circ}\text{F}$



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

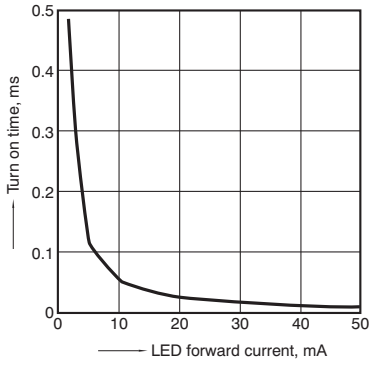
Measured portion: between terminals 5 and 6, 7 and 8;  
 Ambient temperature:  $25^{\circ}\text{C}$   $77^{\circ}\text{F}$



# RF SOP 2 Form A C×R (AQW223R2S)

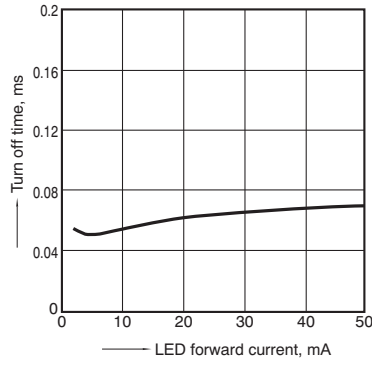
## 10. Turn on time vs. LED forward current characteristics

Measured portion: between terminals 5 and 6, 7 and 8;  
Load voltage: Max. (DC);  
Continuous load current: Max. (DC);  
Ambient temperature: 25°C 77°F



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

Measured portion: between terminals 5 and 6, 7 and 8;  
Load voltage: Max. (DC);  
Continuous load current: Max. (DC);  
Ambient temperature: 25°C 77°F



## 12. Output capacitance vs. applied voltage characteristics

Measured portion: between terminals 5 and 6, 7 and 8;  
Frequency: 1 MHz, 30 mVrms;  
Ambient temperature: 25°C 77°F

