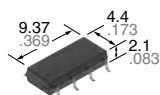
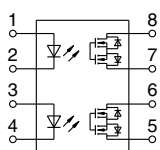


**Miniature SOP8-pin type  
Low C×R High load  
voltage of 250V**

**PhotoMOS®  
RF SOP 2 Form A C×R  
(AQW223R2S)**



mm inch



**RoHS compliant**

### FEATURES

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

Output capacitance (C<sub>out</sub>): Typ. 33 pF  
On-resistance (R<sub>on</sub>): Typ. 11Ω

**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, Bear board tester, In-circuit tester, Function tester, etc.

**2. Telecommunication and broadcasting equipment**

**3. Medical equipment**

**4. Multi-point recorder**

Data logger, Warping and Thermocouple, 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-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 device.

### 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 Vrms		
Ambient temperature	Operating	T <sub>opr</sub>	-40 to +85°C -40 to +185°F	(Non-icing at low temperatures)
	Storage	T <sub>stg</sub>	-40 to +100°C -40 to +212°F	

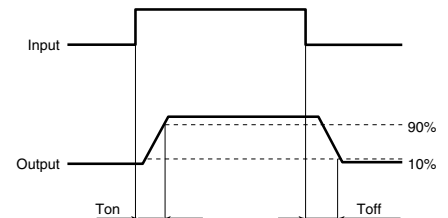
# RF SOP 2 Form A C×R (AQW223R2S)

## 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			
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 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



## 3. Recommended operating conditions (Ambient temperature: 25°C 77°F)

Please use under recommended operating conditions to obtain expected characteristics.

Item	Symbol	Number of used channels	Min.	Max.	Unit
LED current	I <sub>F</sub>		5	30	mA
Load voltage (Peak AC)	V <sub>L</sub>		—	125	V
AQW223R2S	Continuous load current	1ch	—	0.17	A
		2ch	—	0.14	

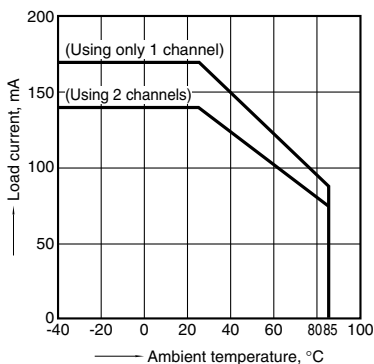
■ These products are not designed for automotive use.

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

## REFERENCE DATA

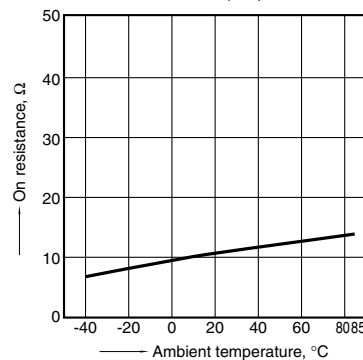
1. Load current vs. ambient temperature characteristics

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



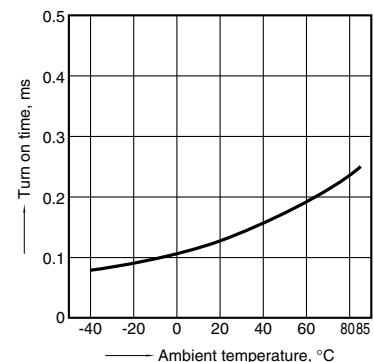
2. On resistance vs. ambient temperature characteristics

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



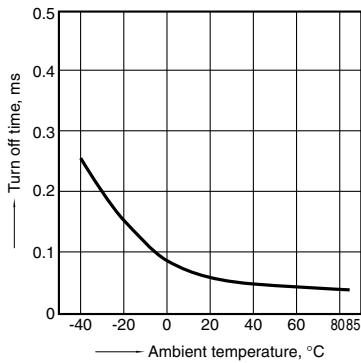
3. Turn on time vs. ambient temperature characteristics

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



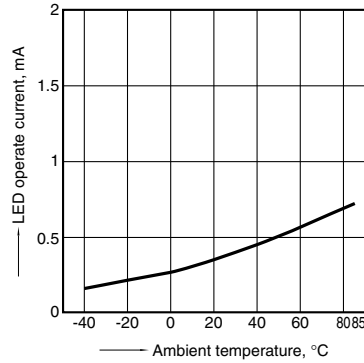
4. Turn off time vs. ambient temperature characteristics

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



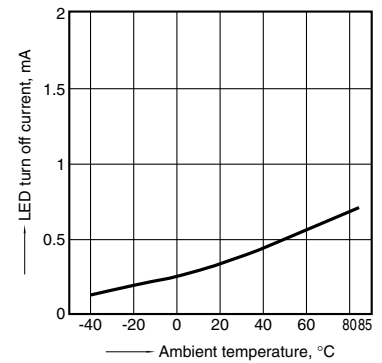
5. LED operate current vs. ambient temperature characteristics

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



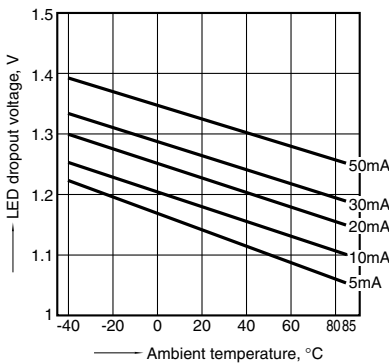
6. LED turn off current vs. ambient temperature characteristics

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



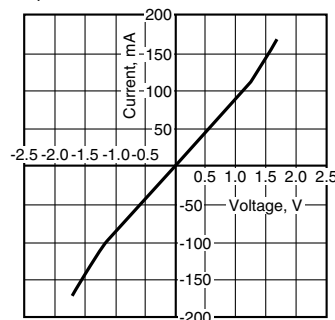
7. LED dropout voltage vs. ambient temperature characteristics

LED current: 5 to 50 mA



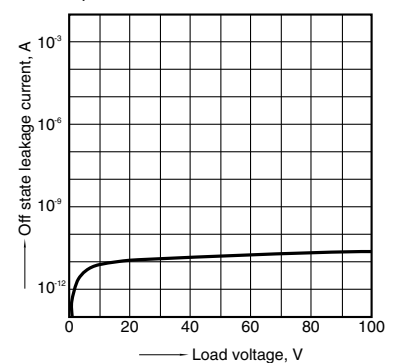
8. Current vs. voltage characteristics of output at MOS portion

Measured portion: between terminals 5 and 6, 7 and 8;  
Ambient temperature: 25°C 77°F



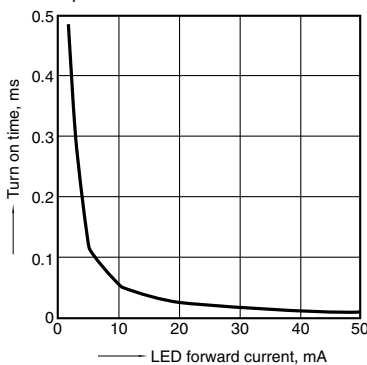
9. Off state leakage current vs. load voltage characteristics

Measured portion: between terminals 5 and 6, 7 and 8;  
Ambient temperature: 25°C 77°F



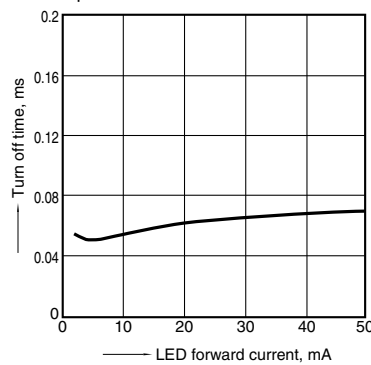
10. Turn on time vs. LED forward current characteristics

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



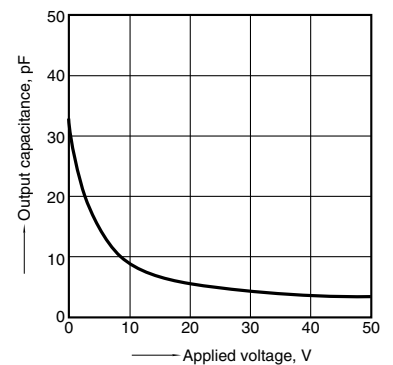
11. Turn off time vs. LED forward current characteristics

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, 30mVrms;  
Ambient temperature: 25°C 77°F



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