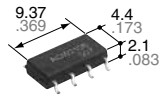
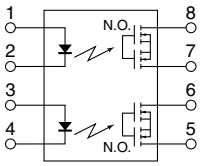
Miniature SOP8-pin type featuring low C×R High load voltage of 250V

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 (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, Bear 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 device.

RATING

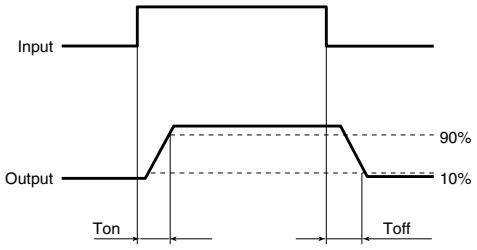
1. Absolute maximum ratings (Ambient temperature: 25°C 77°F)

Item		Symbol	AQW223R2S	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	250 V	
	Continuous load current	I_L	0.14 A (0.17 A)	Peak AC, DC ( ): in case of using only 1a (1 channel)
	Peak load current	I_{peak}	0.42 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}	1,500 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	

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

Item			Symbol	AQW223R2S	Condition
Input	LED operate current	Typical	I_{Fon}	0.5mA	I_L=Max.
		Maximum		3.0mA	
	LED turn off current	Minimum	I_{Foff}	0.1mA	I_L=Max.
		Typical		0.45mA	
	LED dropout voltage	Typical	V_F	1.32V (1.14V at I_F=5mA)	I_F=50mA
		Maximum		1.5V	
Output	On resistance	Typical	R_{on}	11Ω	I_F=5mA I_L=Max.
		Maximum		15Ω	
	Output capacitance	Typical	C_{out}	33pF	I_F=0mA f=1 MHz V_B=0V
		Maximum		40pF	
	Off state leakage current	Typical	I_{Leak}	0.03nA	I_F=0mA V_L=Max.
		Maximum		10nA (1nA or less)*	
Transfer characteristics	Turn on time**	Typical	T_{on}	0.15ms	I_F=5mA I_L=Max.
		Maximum		0.5ms	
	Turn off time**	Typical	T_{off}	0.05ms	I_F=5mA or 10mA I_L=Max.
		Maximum		0.2ms	
	I/O capacitance	Typical	C_{iso}	0.8pF	f=1MHz V_B=0V
		Maximum		1.5pF	
	Initial I/O isolation resistance	Minimum	R_{iso}	1,000MΩ	500V DC

*Available as custom orders (1 nA or less)
**Turn on/Turn off time



RECOMMENDED OPERATING CONDITIONS

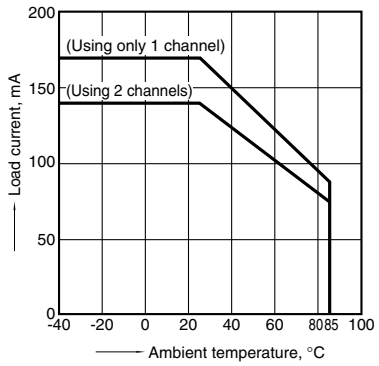
Please obey the following conditions to ensure proper device operation and resetting.

Item	Symbol	Recommended value	Unit
Input LED current	I_F	5	mA

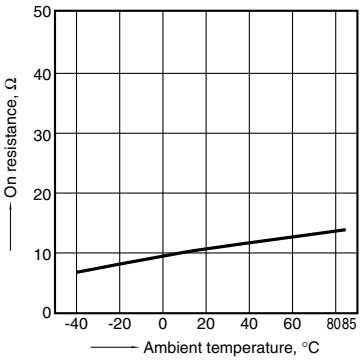
■ **These products are not designed for automotive use.**
If you are considering to use these products for automotive applications, please contact your local Panasonic Corporation technical representative.

REFERENCE DATA

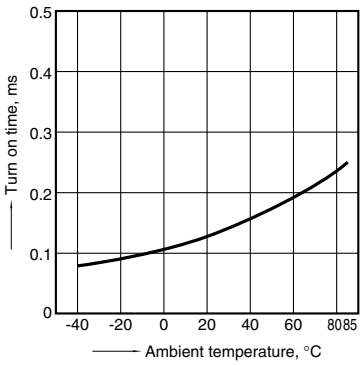
1. Load current vs. ambient temperature characteristics
Allowable ambient temperature: –40°C to +85°C
–40°F to +185°F



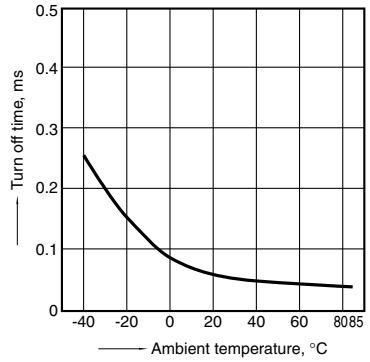
2. On resistance vs. ambient temperature characteristics
Measured portion: between terminals 5 and 6, 7 and 8:
LED current: 5 mA;
Load voltage: Max. (DC);
Continuous load current: Max. (DC)



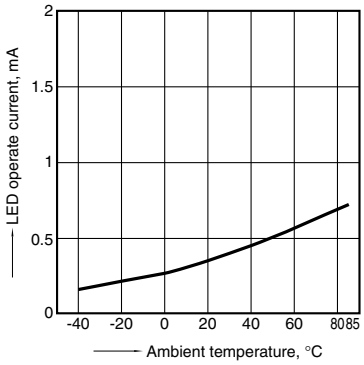
3. Turn on time vs. ambient temperature characteristics
LED current: 5 mA;
Load voltage: Max. (DC);
Continuous load current: Max. (DC)



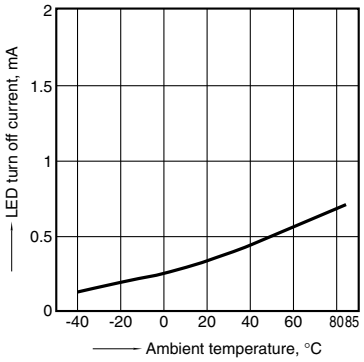
4. Turn off time vs. ambient temperature characteristics
LED current: 5 mA; Load voltage: Max. (DC);
Continuous load current: Max. (DC)



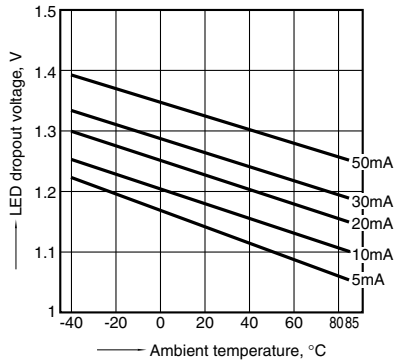
5. LED operate current vs. ambient temperature characteristics
Load voltage: Max. (DC);
Continuous load current: Max. (DC)



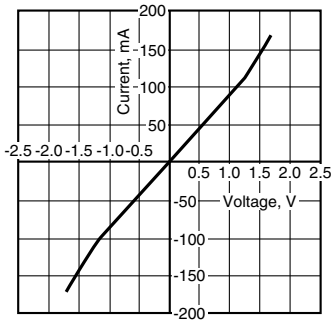
6. LED turn off current vs. ambient temperature characteristics
Load voltage: Max. (DC);
Continuous load current: Max. (DC)



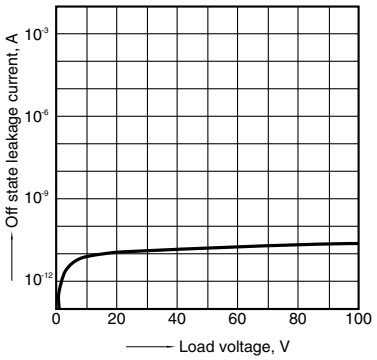
7. LED dropout voltage vs. ambient temperature characteristics
LED current: 5 to 50 mA



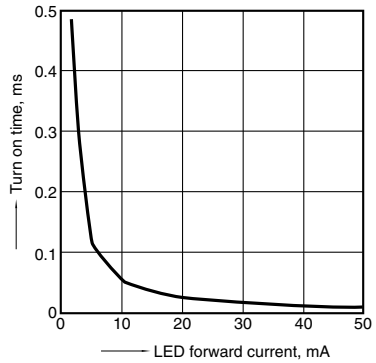
8. Current vs. voltage characteristics of output at MOS portion
Measured portion: between terminals 5 and 6, 7 and 8;
Ambient temperature: 25°C 77°F



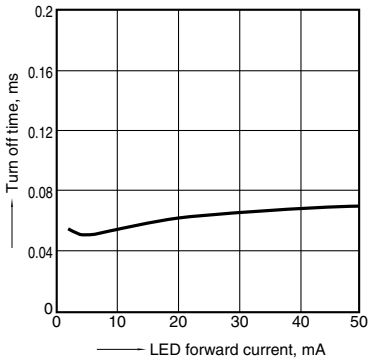
9. Off state leakage current vs. load voltage characteristics
Measured portion: between terminals 5 and 6, 7 and 8;
Ambient temperature: 25°C 77°F



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