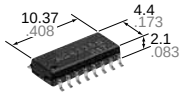
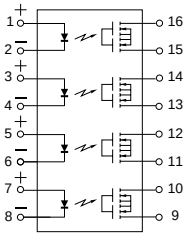
Panasonic
ideas for life

Space-saving SOP16-pin type featuring low on-resistance with 80V load voltage

PhotoMOS Relays
RF SOP 4 Form A
Low on-resistance (AQS225R2S)



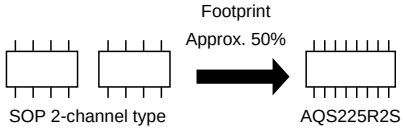
mm inch



Compliance with RoHS Directive

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. Low C×R and high response speed
- Output capacitance: 4.5pF (typ.)
- On resistance: 10.5Ω (typ.)
- Turn on time: 0.04ms (typ.)

3. Applicable for 4 Form A use, as well as 4 independent 1 Form A
4. Low-level off state leakage current of typ. 0.01nA
5. Controls low-level analog signals

TYPICAL APPLICATIONS

For multi-circuit switching;
1. Measuring and testing equipment
IC tester, Liquid crystal driver tester, Probe card, Bear board tester, In-circuit tester, Function tester, etc.
2. Communication and broadcasting equipment
3. Medical equipment
Ultrasonic wave diagnostic machine
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 1/2/3/4/5/6/7/8-pin side	Picked from the 9/10/11/12/13/14/15/16-pin side		
AC/DC dual use	80V	70mA	SOP16-pin	AQS225R2S	AQS225R2SX	AQS225R2SZ	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)

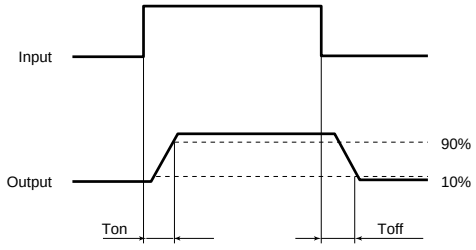
Item		Symbol	AQS225R2S	Remarks
Input	LED forward current	I_F	50 mA	
	LED reverse voltage	V_R	5 V	
	Peak forward current	I_{FP}	1 A	f = 100 Hz, Duty factor = 0.1%
	Power dissipation	P_{in}	75 mW	
Output	Load voltage (peak AC)	V_L	80 V	
	Continuous load current	I_L	0.07 A	Peak AC, DC
	Peak load current	I_{peak}	0.2 A	100 ms (1 shot), V_L= DC
	Power dissipation	P_{out}	600 mW	
Total power dissipation		P_T	650 mW	
I/O isolatiom 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	

RF SOP 4 Form A Low on-resistance (AQS225R2S)

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

Item			Symbol	AQS225R2S	Condition
Input	LED operate current	Typical	I_{Fon}	0.9 mA	I_L = Max.
		Maximum		3 mA	
	LED turn off current	Minimum	I_{Foff}	0.3 mA	I_L = Max.
		Typical		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}	10.5Ω	I_F = 5 mA I_L = Max. Within 1 s on time
		Maximum		15Ω	
	Output capacitance	Typical	C_{out}	4.5 pF	I_F = 0 V_B = 0 V f = 1 MHz
		Maximum		6 pF	
	Off state leakage current	Typical	I_{Leak}	0.01 nA	I_F = 0 V_L = Max.
		Maximum		10 nA	
Transfer characteristics	Turn on time*	Typical	T_{on}	0.04 ms	I_F = 5 mA I_L = Max.
		Maximum		0.3 ms	
	Turn off time*	Typical	T_{off}	0.07 ms	I_F = 5 mA I_L = Max.
		Maximum		0.2 ms	
	I/O capacitance	Typical	C_{iso}	0.8 pF	f = 1 MHz V_B = 0
		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

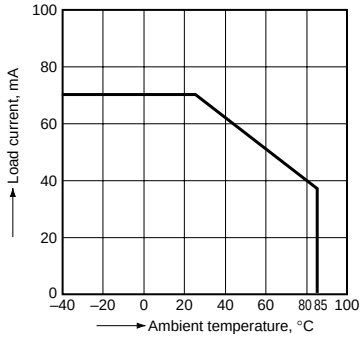
■ For Cautions for Use

■ 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

REFERENCE DATA

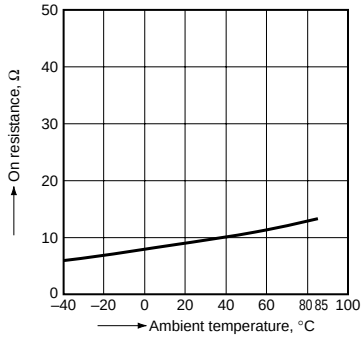
1. Load current vs. ambient temperature characteristics

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



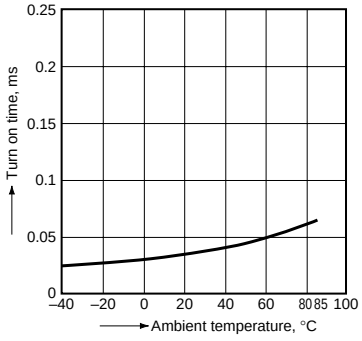
2. On resistance vs. ambient temperature characteristics

LED current: 5 mA;
Continuous load current: 70 mA (DC)

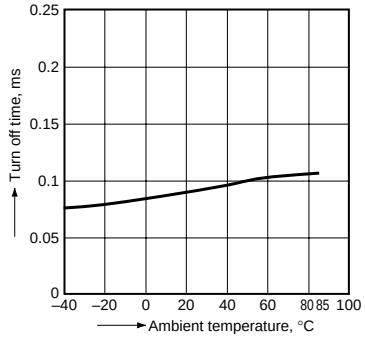


3. Turn on time vs. ambient temperature characteristics

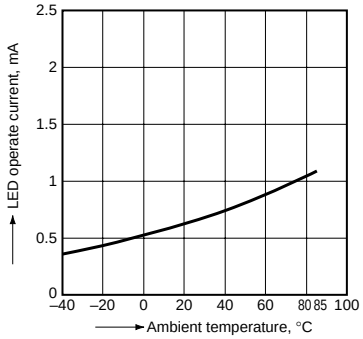
LED current: 5 mA; Load voltage: 80 V (DC);
Continuous load current: 70 mA (DC)



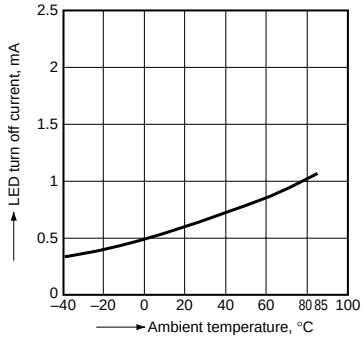
4. Turn off time vs. ambient temperature characteristics
LED current: 5 mA; Load voltage: 80 V (DC);
Continuous load current: 70 mA (DC)



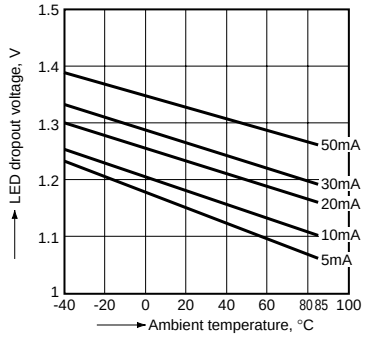
5. LED operate current vs. ambient temperature characteristics
Continuous load current: 70 mA (DC)



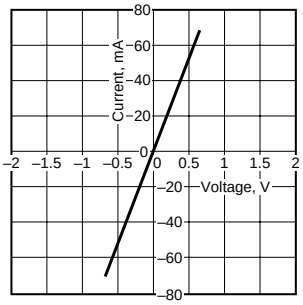
6. LED turn off current vs. ambient temperature characteristics
Continuous load current: 70 mA (DC)



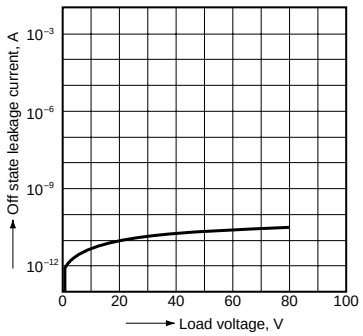
7. LED dropout voltage vs. ambient temperature characteristics
LED current: 5 to 50 mA



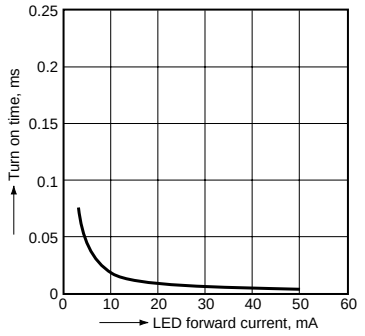
8. Current vs. voltage characteristics of output at MOS portion
Ambient temperature: 25°C 77°F



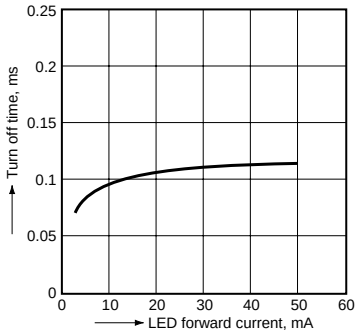
9. Off state leakage current vs. load voltage characteristics
Ambient temperature: 25°C 77°F



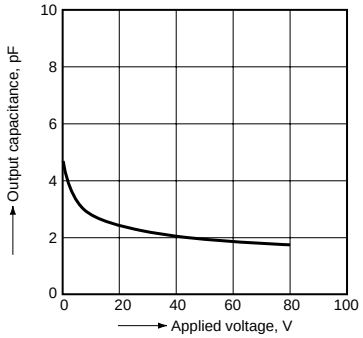
10. Turn on time vs. LED forward current characteristics
Load voltage: 80 V (DC); Continuous load current: 70 mA (DC); Ambient temperature: 25°C 77°F



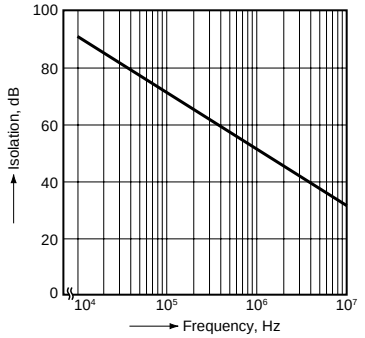
11. Turn off time vs. LED forward current characteristics
Load voltage: 80 V (DC); Continuous load current: 70 mA (DC); Ambient temperature: 25°C 77°F



12. Output capacitance vs. applied voltage characteristics
Frequency: 1 MHz, 30 m Vrms;
Ambient temperature: 25°C 77°F



13. Isolation vs. frequency characteristics (50Ω impedance)
Ambient temperature: 25°C 77°F



14. Insertion loss vs. frequency characteristics (50Ω impedance)
Ambient temperature: 25°C 77°F