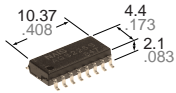


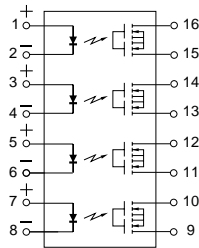


# THE DATASHEET OF AQS225S





mm inch



### FEATURES

**1. 4-channel(4 Form A) of RF PhotoMOS Relays**

**2. SO package 16-pin type in super miniature design**

The device comes in a super-miniature SO package 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.

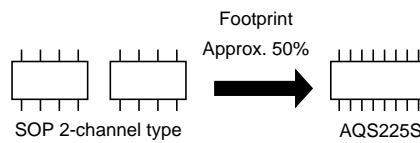
**3. Applicable for 4 Form A use, as well as 4 independent 1 Form A**

**4. Low capacitance between output terminals ensure high response speed:**

The capacitance between output terminals is small, typically 4.5pF. This enables for a fast operation speed of 0.1ms(typ.).

**5. Low-level off state leakage current**

**6. Controls low-level analog signals**  
PhotoMOS relays feature extremely low closed-circuit offset voltage to enable control of low-level analog signals without distortion



### TYPICAL APPLICATIONS

- Telephone and data communication equipment
- Measuring equipment
- Medical equipment
- Industrial equipment

### TYPES

Type	Output rating*		Part No.		Packing quantity in tape and reel
	Load voltage	Load current	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 type	80 V	50 mA	AQS225SX	AQS225SZ	1,000 pcs.

\* Indicate the peak AC and DC values.

Notes: (1) Tape package is the standard packing style. Also available in tube. (Part No. suffix "X" or "Z" is not needed when ordering; Tube: 50 pcs.; Case: 1,000 pcs.)

(2) For space reasons, the package type indicator "X" and "Z" are omitted from the seal.

### RATING

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

Item		Symbol	AQS225S	Remarks
Input	LED forward current	$I_F$	50 mA	
	LED reverse voltage	$V_R$	3 V	
	Peak forward current	$I_{FP}$	1 A	f = 100 Hz, Duty factor = 0.1%
	Power dissipation	$P_{in}$	75 mW	
Output	Load voltage	$V_L$	80 V	
	Continuous load current	$I_L$	0.05 A	
	Peak load current	$I_{peak}$	0.15 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	

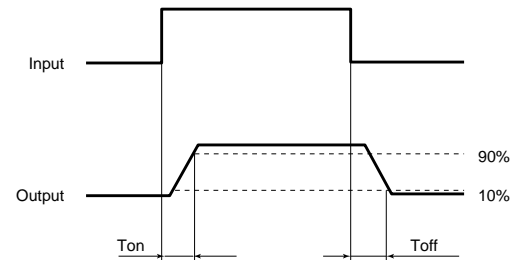
2. Electrical characteristics (Ambient temperature: 25°C 77°F)

Item		Symbol	AQS225S	Condition
Input	LED operate current	Typical	0.9 mA	$I_L = \text{Max.}$
		Maximum	3 mA	
	LED turn off current	Minimum	0.3 mA	$I_L = \text{Max.}$
		Typical	0.85 mA	
LED dropout voltage	Typical	1.14 (1.25 V at $I_F = 50\text{mA}$ )		$I_F = 5\text{mA}$
	Maximum	1.5 V		
Output	On resistance	Typical	21Ω	$I_F = 5\text{ mA}$ $I_L = \text{Max.}$ Within 1 s on time
		Maximum	35Ω	
	Output capacitance	Typical	4.5 pF	$I_F = 0$ $V_B = 0\text{ V}$ $f = 1\text{ MHz}$
		Maximum	6 pF	
Off state leakage current	Typical	30 pA	$I_F = 0$ $V_L = \text{Max.}$	
	Maximum	10 nA		
Transfer characteristics	Turn on time*	Typical	0.1 ms	$I_F = 5\text{ mA}$ $I_L = \text{Max.}$
		Maximum	0.3 ms	
	Turn off time*	Typical	0.03 ms	$I_F = 5\text{ mA}$ $I_L = \text{Max.}$
		Maximum	0.1 ms	
	I/O capacitance	Typical	0.8 pF	$f = 1\text{ MHz}$ $V_B = 0$
		Maximum	1.5 pF	
Initial I/O isolation resistance	Minimum	$R_{iso}$	1,000 MΩ	500 V DC

Note: Recommendable LED forward current  $I_F = 5\text{ mA}$ .

For type of connection, see page 34.

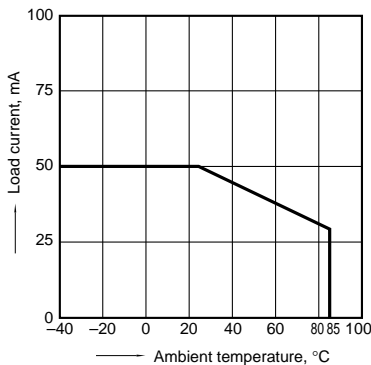
\*Turn on/Turn off time



REFERENCE DATA

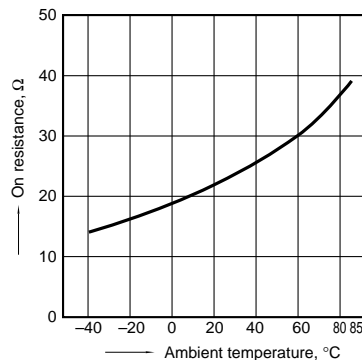
1. Load current vs. ambient temperature characteristics

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



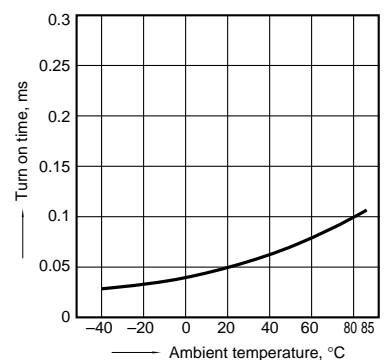
2. On resistance vs. ambient temperature characteristics

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



3. Turn on time vs. ambient temperature characteristics

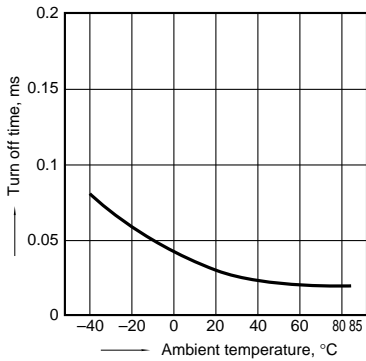
LED current: 5 mA; Load voltage: Max. (DC);  
Continuous load current: Max. (DC)



# AQS225S

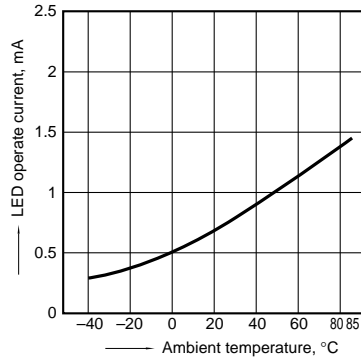
## 4. Turn off time vs. ambient temperature characteristics

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



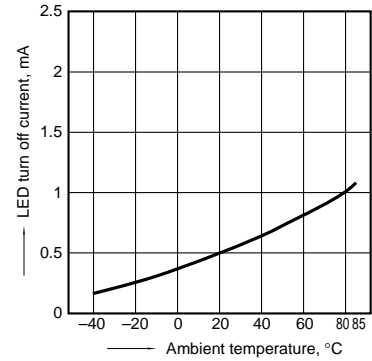
## 5. LED operate current vs. ambient temperature characteristics

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



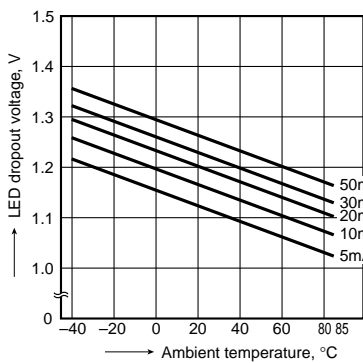
## 6. LED turn off current vs. ambient temperature characteristics

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



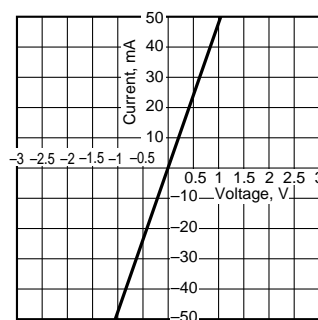
## 7. LED dropout voltage vs. ambient temperature characteristics

LED current: 5 to 50 mA



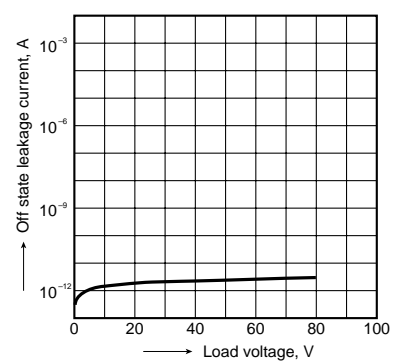
## 8. Voltage vs. current characteristics of output at MOS portion

Ambient temperature: 25°C 77°F



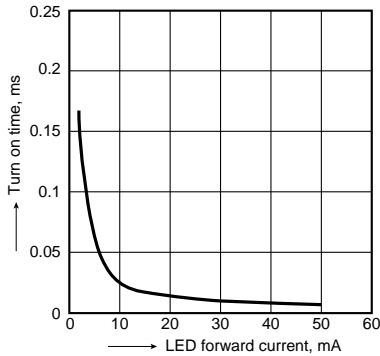
## 9. Off state leakage current

Ambient temperature: 25°C 77°F



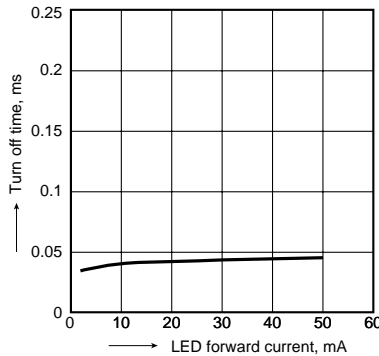
## 10. LED forward current vs. turn on time characteristics

Load voltage: Max. (DC); Continuous load current: Max. (DC); Ambient temperature: 25°C 77°F



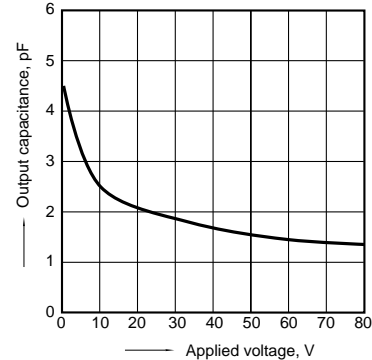
## 11. LED forward current vs. turn off time characteristics

Load voltage: Max. (DC); Continuous load current: Max. (DC); Ambient temperature: 25°C 77°F



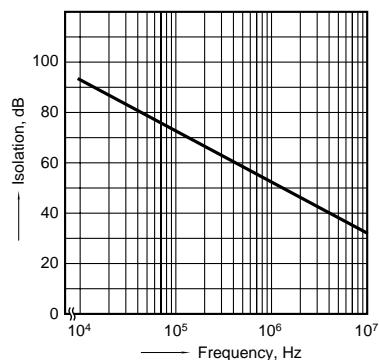
## 12. Applied voltage vs. output capacitance characteristics

Frequency: 1 MHz; Ambient temperature: 25°C 77°F



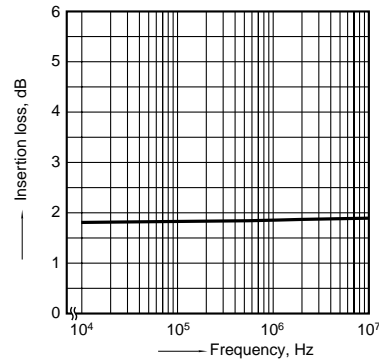
## 13. Isolation characteristics (50Ω impedance)

Ambient temperature: 25°C 77°F



## 14. Insertion loss characteristics (50Ω impedance)

Ambient temperature: 25°C 77°F



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