

## 阅读申明

- 1.本站收集的数据手册和产品资料都来自互联网，版权归原作者所有。如读者和版权方有任何异议请及时告之，我们将妥善解决。
- 2.本站提供的中文数据手册是英文数据手册的中文翻译，其目的是协助用户阅读，该译文无法自动跟随原稿更新，同时也可能存在翻译上的不当。建议读者以英文原稿为参考以便获得更精准的信息。
- 3.本站提供的产品资料，来自厂商的技术支持或者使用者的心得体会等，其内容可能存在描述上的差异，建议读者做出适当判断。
- 4.如需与我们联系，请发邮件到marketing@iczoom.com，主题请标有“数据手册”字样。

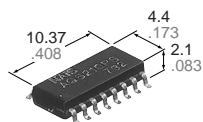
## Read Statement

1. The datasheets and other product information on the site are all from network reference or other public materials, and the copyright belongs to the original author and original published source. If readers and copyright owners have any objections, please contact us and we will deal with it in a timely manner.
2. The Chinese datasheets provided on the website is a Chinese translation of the English datasheets. Its purpose is for reader's learning exchange only and do not involve commercial purposes. The translation cannot be automatically updated with the original manuscript, and there may also be improper translations. Readers are advised to use the English manuscript as a reference for more accurate information.
3. All product information provided on the website refer to solutions from manufacturers' technical support or users the contents may have differences in description, and readers are advised to take the original article as the standard.
4. If you have any questions, please contact us at marketing@iczoom.com and mark the subject with "Datasheets" .

# NAIS

## GU (General Use) Type SOP Series Multi-function (DAA) 16pin Type

# PhotoMOS RELAYS



mm inch

- (1) PhotoMOS Relay (for hookswitch, dial pulse)
- (2) Optocoupler (for ring detection)
- (3) Darlington for transistor (for electronic inductance)
- (4) Diode bridge (for polarity protection)

2. Ultra-small package size

### 2. SO package 16-Pin type in super miniature design

The device comes in a super-miniature SO package 16-Pin type measuring (W)4.4 × (L)10.37 × (H) 2.1mm (W).173 × (L).408 × (H).083inch

### 3. Ideal for PC card and Fax/Modem applications

The small size provides additional space for increased functionality. The new device has been specifically designed for the PCMCIA embedded and handheld device markets.

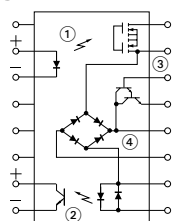
### 4. Tape and reel

The device comes standard in tape and reel (1,000 pcs./reel) for use with automatic insertion machines.

### 5. Internal zener diode type also available

## FEATURES

### 1. DAA (Data Access Arrangement) circuit package



## TYPICAL APPLICATIONS

- PCMCIA Modem card (Data/fax modem)
- Laptop and notebook computers
- PDA's
- Mobile computing equipment
- Medical equipment
- Security systems
- Meters (Water, Gas, Vending machine)

## TYPES

Type	Relay portion 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	350V	120mA	AQS210PSX	AQS210PSZ	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)

#### 1) Relay portion (2, 3, 15, 16 pins)

Item		Symbol	AQS210PS	Remarks
Input	LED forward current	I <sub>F</sub>	50mA	
	LED reverse voltage	V <sub>R</sub>	3V	
	Peak forward current	I <sub>FP</sub>	1A	f=100 Hz, Duty factor=0.1%
	Power dissipation	P <sub>in</sub>	75mW	
Output	Load voltage (peak AC)	V <sub>L</sub>	350V	
	Continuous load current	I <sub>L</sub>	0.12A	Peak AC,DC
	Peak load current	I <sub>peak</sub>	0.36A	100 ms (1 shot), V <sub>L</sub> = DC
	Power dissipation	P <sub>out</sub>	400mW	

#### 2) Detector portion (7, 8, 9, 10 pins)

Item		Symbol	AQS210PS	Remarks
Input	LED forward current	I <sub>F</sub>	50mA	
	Peak forward current	I <sub>FP</sub>	1A	f = 100 Hz, Duty factor=0.1%
	Power dissipation	P <sub>in</sub>	75mW	
Output	Voltage between collector and emitter	BV <sub>CEO</sub>	30V	
	Power dissipation	P <sub>out</sub>	150mW	

#### 3) Bridge rectifier portion (10, 11, 12, 15 pins)

Item		Symbol	AQS210PS	Remarks
Forward current		I <sub>F</sub>	140mA	
Peak forward current		I <sub>FP</sub>	500mA	t=10ms
Reverse voltage		V <sub>R</sub>	100V	

# AQS210PS

## 4) Darlington portion (12, 13, 14 pins)

Item	Symbol	AQS210PS	Remarks
Output voltage	$BV_{CEC}$	40V	
Collector current	$I_c$	120mA	$V_{CE}=3.5V$
Power dissipation	$P_{out}$	500mW	

## 5) Others

Item	Symbol	AQS210PS	Remarks	
Total power dissipation	$P_T$	650mW		
I/O isolation voltage	$V_{iso}$	1500V AC		
Temperature limits	Operating	$T_{opr}$	$-40^{\circ}C$ to $+85^{\circ}C$ $-40^{\circ}F$ to $+185^{\circ}F$	Non-condensing at low temperatures
	Storage	$T_{stg}$	$-40^{\circ}C$ to $+100^{\circ}C$ $-40^{\circ}F$ to $+212^{\circ}F$	

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

### 1) Relay portion (2, 3, 15, 16 pins)

Item		Symbol	AQS210PS	Condition
Input	LED operate current	Typical	0.9mA	$I_L=Max.$
		Maximum	3mA	
	LED turn off current	Minimum	0.4mA	$I_L=Max.$
		Typical	0.8mA	
LED dropout voltage	Typical	1.14 (1.25 V at $I_F=50mA$ )		$I_F=5mA$
	Maximum	1.5V		
Output	On resistance	Typical	18Ω	$I_F=5mA$ $I_L=Max.$ Within 1 s on time
		Maximum	25Ω	
	Off state leakage current	Maximum	$I_{Leak}$	
Transfer characteristics	Turn on time*	Typical	0.23ms	$I_F=5mA$ $I_L=Max.$
		Maximum	2.0ms	
	Turn off time*	Typical	0.04ms	$I_F=5mA$ $I_L=Max.$
		Maximum	1.0ms	

Note: Recommendable LED forward current  $I_F=5mA$ .

### 2) Detector portion (7, 8, 9, 10 pins)

Item		Symbol	AQS210PS	Condition
Input	LED operate current	Typical	2mA	$I_c=2mA$ $V_{CE}=0.5V$
		Maximum	6mA	
	LED turn off current	Minimum	5μA	$I_c=1μA$ $V_{CE}=5V$
		Typical	35μA	
LED dropout voltage	Typical	1.14 (1.25 V at $I_F=50mA$ )		$I_F=5mA$
	Maximum	1.5V		
Output	Saturation voltage	Typical	0.08V	$I_F=15mA$ $I_c=2mA$
		Maximum	0.5V	
	Off state leakage current	Typical	0.01nA	$I_F=0$ $V_{CE}=5V$
		Maximum	500nA	
Current transfer ratio	Minimum	33%	$I_F=5mA$ $V_{CE}=0.5V$	
	Typical	100%		
Transfer characteristics	Turn on time*	Typical	$T_{on}$	$I_F=5mA$ $V_{CE}=5V$ $I_c=2mA$
	Turn off time*	Typical	$T_{off}$	$I_F=5mA$ $V_{CE}=5V$ $I_c=2mA$

### 3) Diode Bridge portion (10, 11, 12, 15 pins)

Item		Symbol	AQS210PS	Condition
Forward dropout voltage	Typical	$I_F$	0.9V	$I_F=120mA$
	Maximum		1.2V	
Reverse leakage current	Maximum	$I_R$	10μA	$V_R=100V$

## 4) Darlington transistor portion (12, 13, 14 pins)

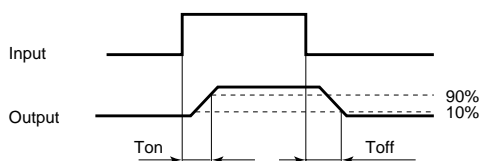
Item		Symbol	AQS210PS	Condition
Saturation voltage	Typical	$V_{CE(SAT)}$	0.73V	$I_C=120mA$
	Maximum		1.5V	
Collector leakage current	Maximum	$I_{CEX}$	1 $\mu A$	$V_{CE}=10V, I_B=0mA$
DC current gain	Minimum	$h_{FE}$	10,000	$I_C=120mA$ $V_{CE}=10V$
	Typical		30,000	
Total harmonic distortion	Maximum	—	-80dB	$I_C=40mA, f_o=300Hz$ @-10dBm

## 5) Others

Item		Symbol	AQS210PS	Condition
Transfer characteristics	I/O capacitance	Typical	0.8pF	—
		Maximum	1.5pF	
	Initial I/O isolation resistance	Minimum	$R_{iso}$	1,000M $\Omega$

\*Turn on/Turn off time

For type of connection, see page 33.



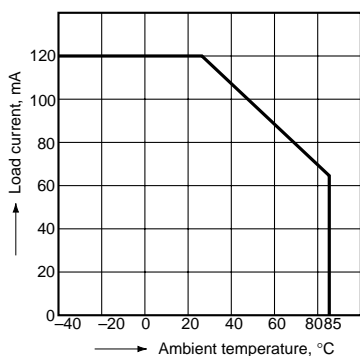
**For Dimensions, Cautions for Us, Schematics and Wiring Diagrams, see Technical Information**

## REFERENCE DATA

### [1] Relay portion (2, 3, 15, 16 pins) [AQS210PS]

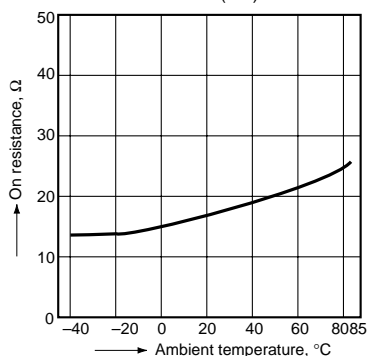
1. Load current vs. ambient temperature characteristics

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



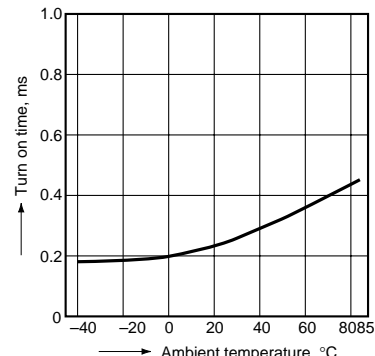
2. On resistance vs. ambient temperature characteristics

Measured portion: between terminals 15 and 16  
LED current: 5 mA; Load voltage: Max. (DC);  
Continuous load current: Max. (DC)



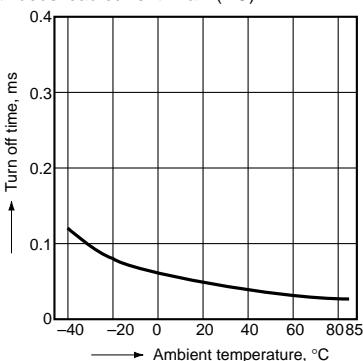
3. Turn on time vs. ambient temperature characteristics

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



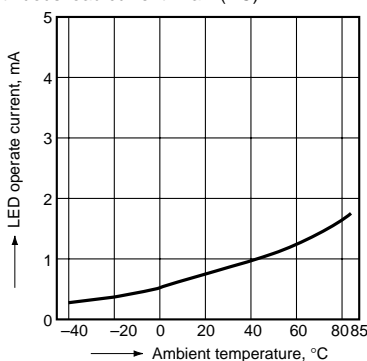
4. Turn off time vs. ambient temperature characteristics

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



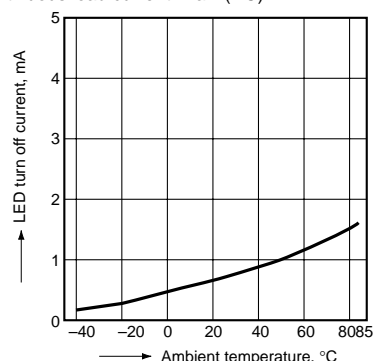
5. LED operate current vs. ambient temperature characteristics

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



6. LED turn off current vs. ambient temperature characteristics

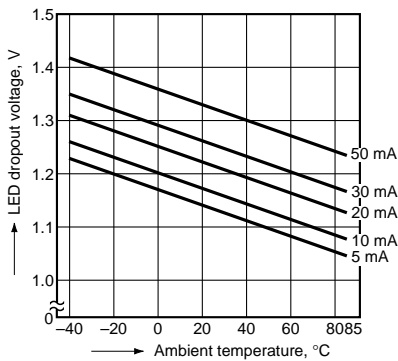
Load voltage: Max. (DC);  
Continuous load current: Max. (DC)



# AQS210PS

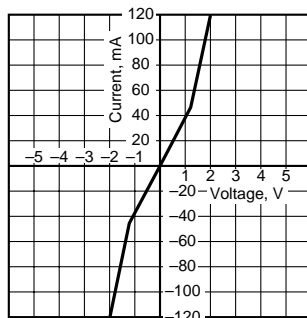
## 7. LED dropout voltage vs. ambient temperature characteristics

LED current: 5 to 50 mA



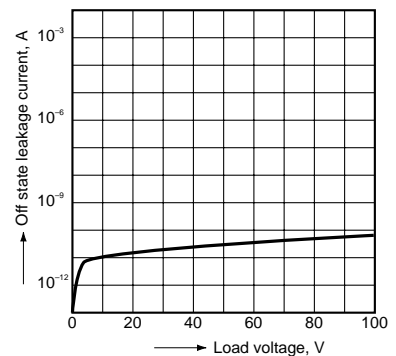
## 8. Voltage vs. current characteristics of output at MOS portion

Measured portion: between terminals 15 and 16  
Ambient temperature: 25°C 77°F



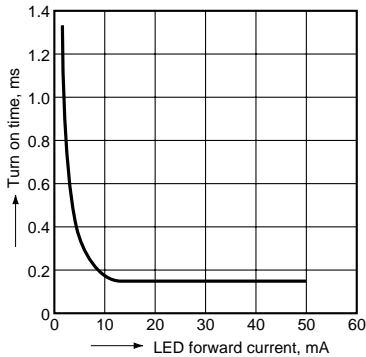
## 9. Off state leakage current

Measured portion: between terminals 15 and 16  
Ambient temperature: 25°C 77°F



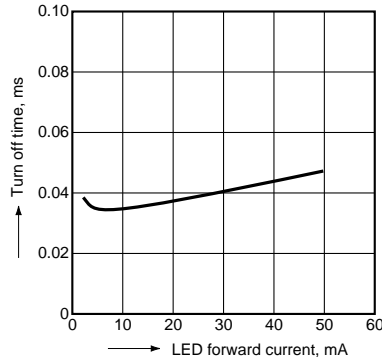
## 10. LED forward current vs. turn on time characteristics

Measured portion: between terminals 15 and 16  
Load voltage: Max. (DC); Continuous load current: Max. (DC); Ambient temperature: 25°C 77°F



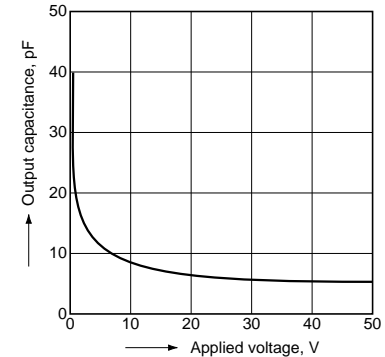
## 11. LED forward current vs. turn off time characteristics

Measured portion: between terminals 15 and 16  
Load voltage: Max. (DC); Continuous load current: Max. (DC); Ambient temperature: 25°C 77°F



## 12. Applied voltage vs. output capacitance characteristics

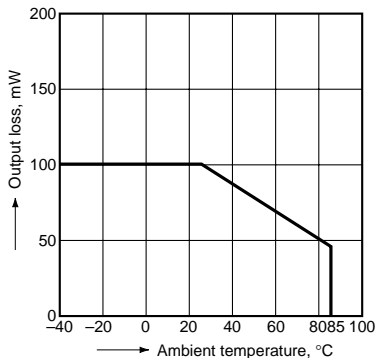
Measured portion: between terminals 15 and 16  
Frequency: 1 MHz; Ambient temperature: 25°C 77°F



## [2] Detector portion (7, 8, 9, 10 pins)

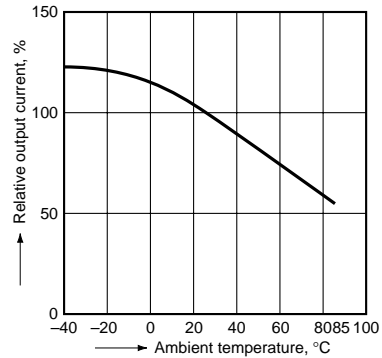
### 1. Output loss vs. ambient temperature characteristics

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



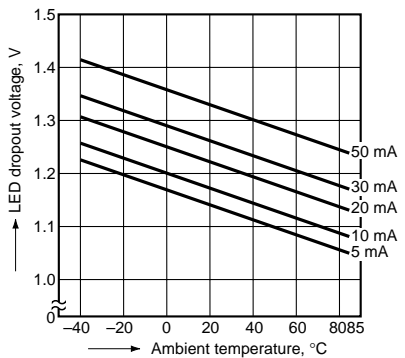
### 2. Relative output current vs. ambient temperature characteristics

Measured portion: between terminals 7 and 8  
I<sub>F</sub> = 5 mA, V<sub>CE</sub> = 0.5 V DC



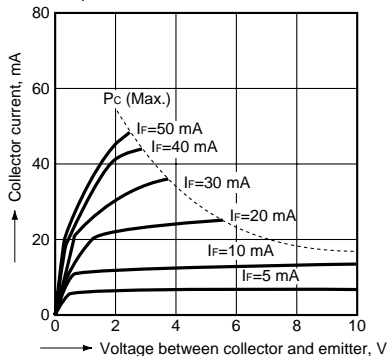
### 3. LED dropout voltage vs. ambient temperature characteristics

LED current: 5 to 50 mA



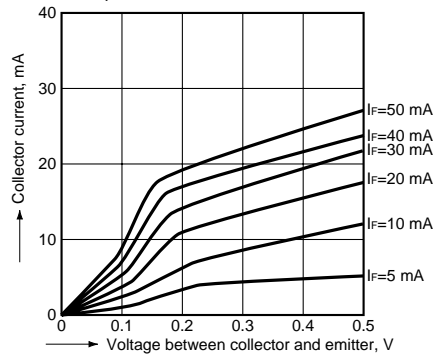
### 4-1. Collector current vs. voltage between collector and emitter characteristics (I<sub>C</sub>-V<sub>CE</sub>)

Measured portion: between terminals 7 and 8  
Ambient temperature: 25°C 77°F



### 4-2. Collector current vs. voltage between collector and emitter characteristics (I<sub>C</sub>-V<sub>CE</sub>)

Measured portion: between terminals 7 and 8  
Ambient temperature: 25°C 77°F



### 5. Off state leakage current

Measured portion: between terminals 7 and 8  
I<sub>F</sub> = 0 mA  
T<sub>a</sub> = 25°C 77°F

