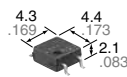


Lower output capacitance (C type) and on resistance (R type). (C×R10)  
High speed switching. (C type: Turn on time: 0.03ms, Turn off time: 0.03ms).

## RF PhotoMOS (AQY221○2S)

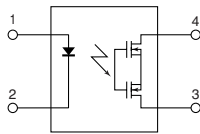


<R type>



<C type>

mm inch



## FEATURES

### 1. Two option package available.

R type offers greatly reduced on-resistance.

C type offers lower output capacitance.

	AQY221R2S (R type)	AQY221N2S (C type)
Output capacitance: C	13pF	1pF
On resistance: R	0.8Ω	9.5Ω

### 2. High speed switching

Turn on time: 30μs (AQY221N2S)

Turn off time: 30μs (AQY221N2S)

### 3. Super miniature design

SOP 4-pin type.

### 4. Low-level off state leakage current of 10pA

The SSR has an off state leakage current of several milliamperes, where as this PhotoMOS relay has typ. 10pA (typical) even with the rated load voltage (AQY221N2S)

## TYPICAL APPLICATIONS

### Measuring and testing equipment

#### 1. Testing equipment for semiconductor performance

IC tester, Liquid crystal driver tester, semiconductor performance tester

#### 2. Board tester

Bare board tester, In-circuit tester, function tester

#### 3. Medical equipment

Ultrasonic wave diagnostic machine

#### 4. Multi-point recorder

Warping, thermo couple

## TYPES

Type	Output rating*		Package size	Part No.			Packing quantity	
	Load voltage	Load current		Tube packing style	Tape and reel packing style		Tube	Tape and reel
R type	40V	250mA	SOP4pin	AQY221R2S	AQY221R2SX (Picked from the 1/2-pin side)	AQY221R2SZ (Picked from the 3/4-pin side)	1 tube contains: 100 pcs. 1 batch contains: 2,000 pcs.	1,000 pcs.
C type	40V	120mA		AQY221N2S	AQY221N2SX (Picked from the 1/2-pin side)	AQY221N2SZ (Picked from the 3/4-pin side)		

\* Indicate the peak AC and DC values.

Note: For space reasons, the initial letters of the part number "AQY", the SMD terminal shape indicator "S" and the packaging style indicator "X" or "Z" are not marked on the relay.

## RATING

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

Item		Symbol	AQY221R2S (R type)	AQY221N2S (C type)	Remarks
Input	LED forward current	I <sub>F</sub>	50mA		
	LED reverse voltage	V <sub>R</sub>	5V		
	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>	40V		
	Continuous load current	I <sub>L</sub>	0.25A	0.12A	Peak AC,DC
	Peak load current	I <sub>peak</sub>	0.75A	0.30A	100 ms (1 shot), V <sub>L</sub> = DC
	Power dissipation	P <sub>out</sub>	300mW		
Total power dissipation		P <sub>T</sub>	350mW		
I/O isolation voltage		V <sub>iso</sub>	500V AC	1,500V AC	
Temperature limits	Operating	T <sub>opr</sub>	-40°C to +85°C -40°F to +185°F		Non-condensing at low temperatures
	Storage	T <sub>stg</sub>	-40°C to +100°C -40°F to +212°F		

# RF PhotoMOS (AQY221O2S)

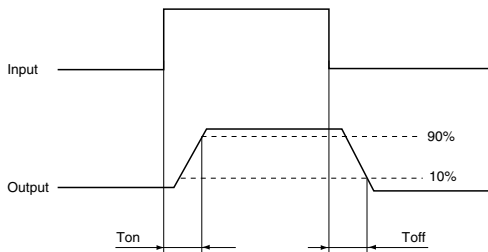
## 2. Electrical characteristics (Ambient temperature: 25°C 77°F)

Item		Symbol	AQY221R2S (R type)	AQY221N2S (C type)	Condition	
Input	LED operate current	Typical	0.5 mA	0.9 mA	$I_L = 250 \text{ mA}$ (R type) $I_L = 80 \text{ mA}$ (C type)	
		Maximum	3.0 mA			
	LED turn off current	Minimum	0.1 mA	0.2 mA	$I_L = 250 \text{ mA}$ (R type) $I_L = 80 \text{ mA}$ (C type)	
		Typical	0.4 mA	0.85 mA		
	LED dropout voltage	Typical	1.25 V (1.14 V at $I_F = 5 \text{ mA}$ )		$I_F = 50 \text{ mA}$	
Maximum		1.5 V				
Output	On resistance	Typical	0.8Ω	9.5Ω	$I_F = 5 \text{ mA}$ $I_L = 250 \text{ mA}$ (R type), $I_L = 80 \text{ mA}$ (C type) Within 1 s on time	
		Maximum	1.25Ω	12.5Ω		
	Output capacitance	Typical	13 pF	1.0 pF	$I_F = 0 \text{ mA}$ $V_B = 0 \text{ V}$ $f = 1 \text{ MHz}$	
		Maximum	18 pF	1.5 pF		
	Off state leakage current	Typical	0.03 nA	0.01 nA	$I_F = 0 \text{ mA}$ $V_L = \text{Max.}$	
		Maximum	10 nA			
Transfer characteristics	Switching speed	Turn on time*	Typical	0.1 ms	0.03 ms	$I_F = 5 \text{ mA}$ $V_L = 10 \text{ V}$ $R_L = 40\Omega$ (R type), $125\Omega$ (C type)
			Maximum	0.5ms		
		Turn off time*	Typical	0.06 ms	0.03 ms	
			Maximum	0.2 ms		
	I/O capacitance	Typical	0.8 pF		$f = 1 \text{ MHz}$ $V_B = 0 \text{ V}$	
		Maximum	1.5 pF			
	Initial I/O isolation resistance	Minimum	$R_{iso}$	1,000MΩ	500 V DC	

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

For type of connection

\*Turn on/Turn off time

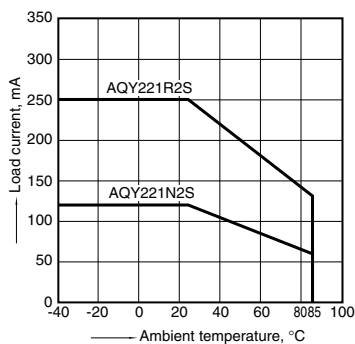


- For Dimensions.
- For Schematic and Wiring Diagrams.
- For Cautions for Use.

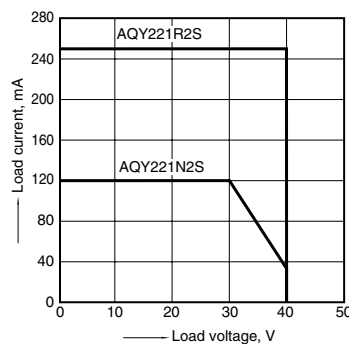
## REFERENCE DATA

1. Load current vs. ambient temperature characteristics

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



2. Load current vs. Load voltage characteristics  
Ambient temperature: 25°C 77°F



3. On resistance vs. ambient temperature characteristics

Measured portion: between terminals 3 and 4  
LED current: 5 mA; Load voltage: Max. (DC);  
Load current: 250mA (DC) [R type], 80mA (DC) [C type];

