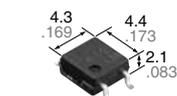
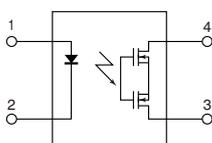


**Miniature SOP4-pin type  
featuring low C×R  
60V/80V load voltage**

**PhotoMOS®  
RF SOP 1 Form A C×R  
(AQY22○ROS)**



mm inch



**RoHS compliant**

### FEATURES

**1. Low capacitance and low on resistance (Load voltage: 60 to 80V)**

	AQY222R1S	AQY225R1S	AQY225R2S
Output capacitance (C <sub>out</sub> )	24.5pF (typ.)	37.5pF (typ.)	<b>4.5pF</b> (typ.)
On resistance (R <sub>on</sub> )	<b>0.8Ω</b> (typ.)	<b>0.8Ω</b> (typ.)	10.5Ω (typ.)

**2. Miniature SOP4-pin package**

(W)4.3 × (L)4.4 × (H)2.1 mm

(W).169 × (L).173 × (H).083 inch

**3. Low-level off-state leakage current of typ. 0.01 nA (AQY225R2S)**

**4. Controls low-level analog signals**

### TYPICAL APPLICATIONS

- 1. Measuring and testing equipment**  
IC tester, Liquid crystal driver tester, Semiconductor performance tester, Bare 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-pin side	Picked from the 3/4-pin side		
AC/DC dual use	60V	0.5A	SOP4-pin	AQY222R1S	AQY222R1SX	AQY222R1SZ	1 tube contains: 100 pcs. 1 batch contains: 2,000 pcs.	1,000 pcs.
	80V	0.35A		AQY225R1S	AQY225R1SX	AQY225R1SZ		
	80V	0.15A		AQY225R2S	AQY225R2SX	AQY225R2SZ		

\* Indicate the peak AC and DC values.

Note: For space reasons, the three initial letters of the part number "AQY", the package (SOP) indicator "S" and the packing style indicator "X" or "Z" are not marked on the device. (Ex. the label for product number AQY222R1SX is 222R1)

### RATING

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

	Item	Symbol	AQY222R1S	AQY225R1S	AQY225R2S	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>	60V	80V		
	Continuous load current	I <sub>L</sub>	0.5A	0.35A	0.15A	Peak AC, DC
	Peak load current	I <sub>peak</sub>	1A	0.7A	0.45A	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>	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			

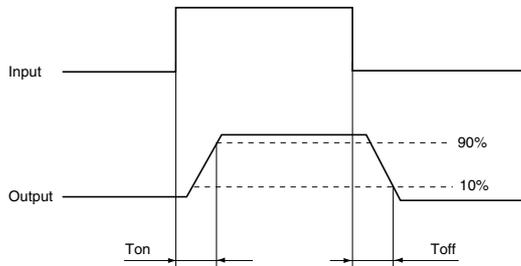
# RF SOP 1 Form A CxR (AQY22OROS)

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

Item			Symbol	AQY222R1S	AQY225R1S	AQY225R2S	Condition
Input	LED operate current	Typical	I <sub>Fon</sub>	0.5 mA			I <sub>L</sub> = Max.
		Maximum		3.0 mA			
	LED turn off current	Minimum	I <sub>Foff</sub>	0.1 mA			I <sub>L</sub> = Max.
		Typical		0.45 mA			
LED dropout voltage	Typical	V <sub>F</sub>	1.32 V (1.14 V at I <sub>F</sub> = 5 mA)			I <sub>F</sub> = 50 mA	
	Maximum		1.5 V				
Output	On resistance	Typical	R <sub>on</sub>	0.8Ω	10.5Ω		I <sub>F</sub> = 5 mA I <sub>L</sub> = Max.
		Maximum		1.2Ω		15Ω	
	Output capacitance	Typical	C <sub>out</sub>	24.5 pF	37.5 pF	4.5 pF	I <sub>F</sub> = 0 mA, f = 1 MHz, V <sub>B</sub> = 0 V (amplitude of 30mV) Measured from 10s onward after application
		Maximum		30 pF	45 pF	6.0 pF	
	Off state leakage current	Typical	I <sub>Leak</sub>	0.05 nA	0.03 nA	0.01 nA	I <sub>F</sub> = 0 mA V <sub>L</sub> = Max.
		Maximum		10 nA (1 nA or less)*			
Transfer characteristics	Turn on time**	Typical	T <sub>on</sub>	0.15 ms	0.25 ms	0.05 ms	I <sub>F</sub> = 5 mA V <sub>L</sub> = 10V R <sub>L</sub> = 100Ω
		Maximum		0.5ms	0.75ms	0.5ms	
	Turn off time**	Typical	T <sub>off</sub>	0.06 ms	0.08 ms	0.05 ms	I <sub>F</sub> = 5 mA V <sub>L</sub> = 10V R <sub>L</sub> = 100Ω
		Maximum		0.2 ms			
	I/O capacitance	Typical	C <sub>iso</sub>	0.8 pF			f = 1 MHz V <sub>B</sub> = 0 V
		Maximum		1.5 pF			
Initial I/O isolation resistance	Minimum	R <sub>iso</sub>	1,000MΩ			500 V 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 <sub>F</sub>	5	mA

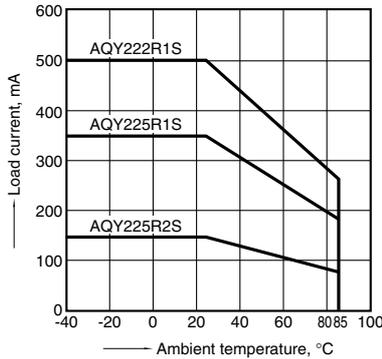
■ These products are not designed for automotive use.

If you are considering to use these products for automotive applications, please contact your local Panasonic Corporation technical representative.

## REFERENCE DATA

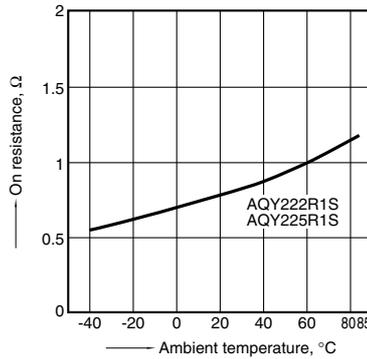
### 1. Load current vs. ambient temperature characteristics

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



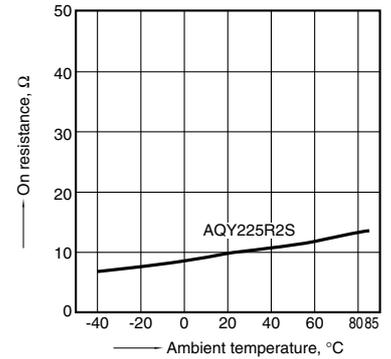
### 2.-(1) On resistance vs. ambient temperature characteristics

Measured portion: between terminals 3 and 4  
LED current: 5 mA; Load voltage: Max. (DC)  
Continuous load current: Max. (DC)



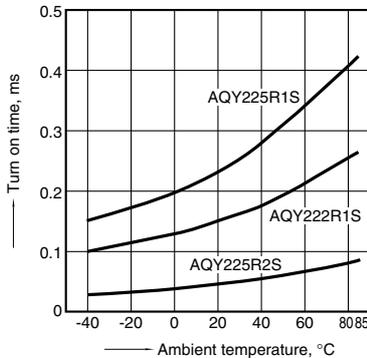
### 2.-(2) On resistance vs. ambient temperature characteristics

Measured portion: between terminals 3 and 4  
LED current: 5 mA; Load voltage: Max. (DC)  
Continuous load current: Max. (DC)



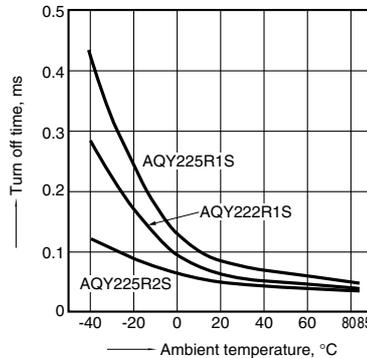
### 3. Turn on time vs. ambient temperature characteristics

LED current: 5 mA; Load voltage: 10V (DC)  
Continuous load current: 100mA (DC)



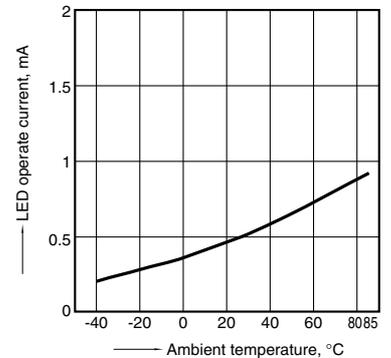
### 4. Turn off time vs. ambient temperature characteristics

LED current: 5 mA; Load voltage: 10V (DC)  
Continuous load current: 100mA (DC)



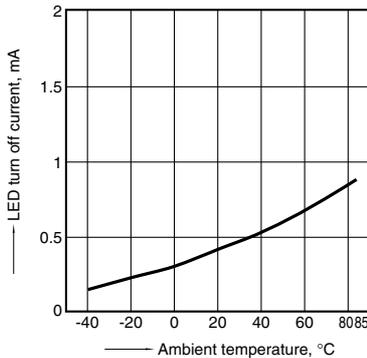
### 5. LED operate current vs. ambient temperature characteristics

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



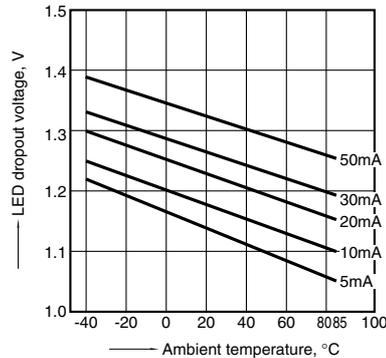
### 6. LED turn off current vs. ambient temperature characteristics

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



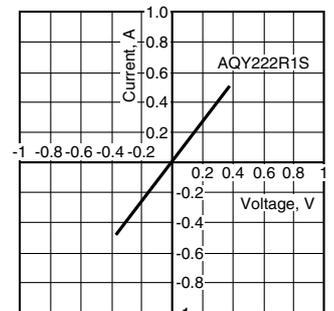
### 7. LED dropout voltage vs. ambient temperature characteristics

LED current: 5 to 50 mA



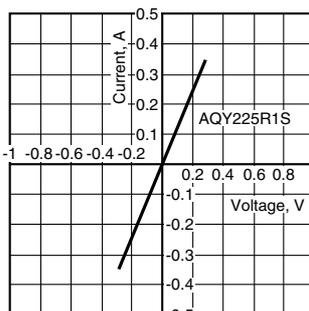
### 8.-(1) Current vs. voltage characteristics of output at MOS portion

Measured portion: between terminals 3 and 4  
Ambient temperature: 25°C 77°F



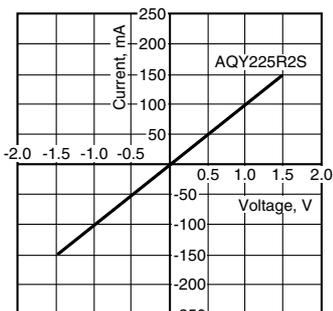
### 8.-(2) Current vs. voltage characteristics of output at MOS portion

Measured portion: between terminals 3 and 4  
Ambient temperature: 25°C 77°F



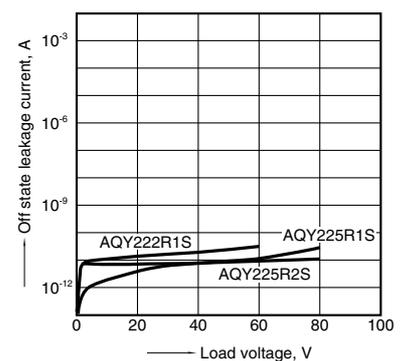
### 8.-(3) Current vs. voltage characteristics of output at MOS portion

Measured portion: between terminals 3 and 4  
Ambient temperature: 25°C 77°F



### 9. Off state leakage current vs. load voltage characteristics

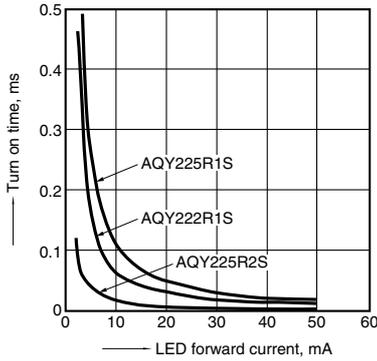
Measured portion: between terminals 3 and 4  
Ambient temperature: 25°C 77°F



# RF SOP 1 Form A CxR (AQY22OROS)

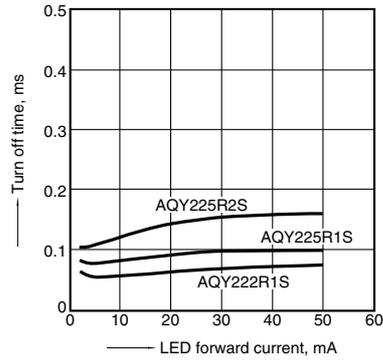
## 10. Turn on time vs. LED forward current characteristics

Measured portion: between terminals 3 and 4  
 Load voltage: 10V (DC)  
 Continuous load current: 100mA (DC)  
 Ambient temperature: 25°C 77°F



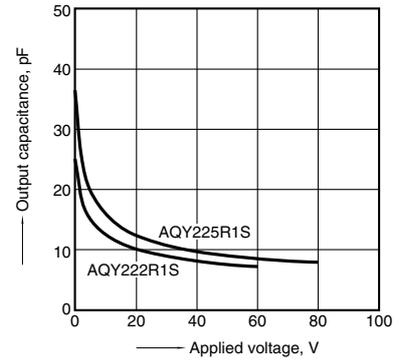
## 11. Turn off time vs. LED forward current characteristics

Measured portion: between terminals 3 and 4  
 Load voltage: 10V (DC)  
 Continuous load current: 100mA (DC)  
 Ambient temperature: 25°C 77°F



## 12.-(1) Output capacitance vs. applied voltage characteristics

Measured portion: between terminals 3 and 4  
 Frequency: 1 MHz, 30m Vrms  
 Ambient temperature: 25°C 77°F



## 12.-(2) Output capacitance vs. applied voltage characteristics

Measured portion: between terminals 3 and 4  
 Frequency: 1 MHz, 30m Vrms  
 Ambient temperature: 25°C 77°F

