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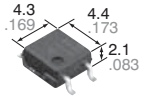
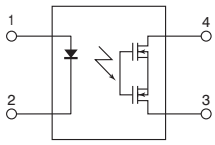
Miniature SOP4-pin type featuring low C×R 60V/80V load voltage

PhotoMOS Relays
RF SOP 1 Form A C×R
(AQY22○R○S)



CAD Data

mm inch



FEATURES

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

	AQY222R1S	AQY225R1S	AQY225R2S
Output capacitance (Cout)	24.5pF (typ.)	37.5pF (typ.)	**4.5pF** (typ.)
On resistance (Ron)	**0.8**Ω (typ.)	**0.8**Ω (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 relay. (Ex. the label for product number AQY222R1SX is 222R1)

RATING

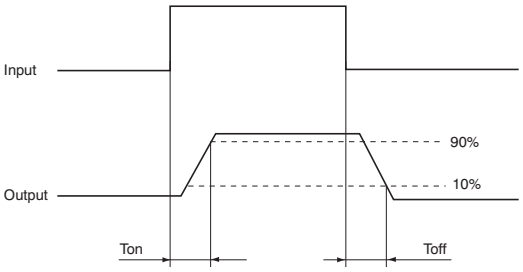
1. Absolute maximum ratings (Ambient temperature: 25°C 77°F)

Item		Symbol	AQY222R1S	AQY225R1S	AQY225R2S	Remarks
Input	LED forward current	I_F	50mA			
	LED reverse voltage	V_R	5V			
	Peak forward current	I_{FP}	1A			f=100 Hz, Duty factor=0.1%
	Power dissipation	P_{in}	75mW			
Output	Load voltage (peak AC)	V_L	60V	80V		
	Continuous load current	I_L	0.5A	0.35A	0.15A	Peak AC, DC
	Peak load current	I_{peak}	1A	0.7A	0.45A	100 ms (1 shot), V_L= DC
	Power dissipation	P_{out}	300mW			
Total power dissipation		P_T	350mW			
I/O isolation voltage		V_{iso}	1,500V 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	AQY222R1S	AQY225R1S	AQY225R2S	Condition
Input	LED operate current	Typical	I_{Fon}	0.5 mA			I_L = Max.
		Maximum		3.0 mA			
	LED turn off current	Minimum	I_{Foff}	0.1 mA			I_L = Max.
		Typical		0.45 mA			
	LED dropout voltage	Typical	V_F	1.32 V (1.14 V at I_F = 5 mA)			I_F = 50 mA
		Maximum		1.5 V			
Output	On resistance	Typical	R_{on}	0.8Ω		10.5Ω	I_F = 5 mA I_L = Max.
		Maximum		1.2Ω		15Ω	
	Output capacitance	Typical	C_{out}	24.5 pF	37.5 pF	4.5 pF	I_F = 0 mA, f = 1 MHz, V_B = 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_{Leak}	0.05 nA	0.03 nA	0.01 nA	I_F = 0 mA V_L = Max.
		Maximum		10 nA			
Transfer characteristics	Turn on time*	Typical	T_{on}	0.15 ms	0.25 ms	0.05 ms	I_F = 5 mA V_L = 10V R_L = 100Ω
		Maximum		0.5ms	0.75ms	0.5ms	
	Turn off time*	Typical	T_{off}	0.06 ms	0.08 ms	0.05 ms	I_F = 5 mA V_L = 10V R_L = 100Ω
		Maximum		0.2 ms			
	I/O capacitance	Typical	C_{iso}	0.8 pF			f = 1 MHz V_B = 0 V
		Maximum		1.5 pF			
	Initial I/O isolation resistance	Minimum	R_{iso}	1,000MΩ			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

■ Dimensions

■ Schematic and Wiring Diagrams

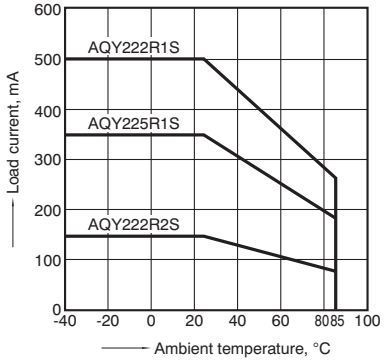
■ Cautions for Use

■ 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.
Please refer to our information on PhotoMOS Relays for Automotive Applications.

REFERENCE DATA

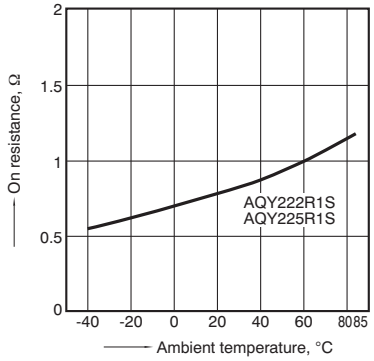
1. Load current vs. ambient temperature characteristics

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



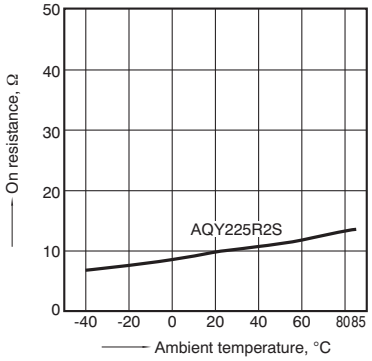
2-(1) On resistance vs. ambient temperature characteristics

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



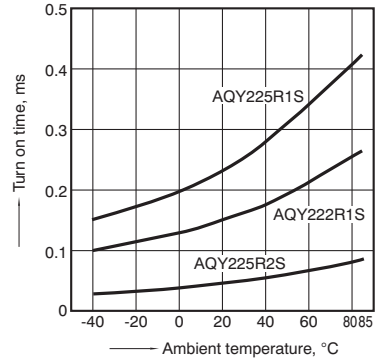
2.-(2) On resistance vs. ambient temperature characteristics

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



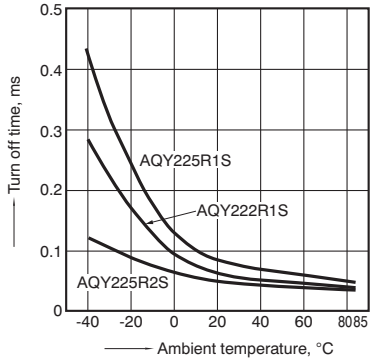
3. Turn on time vs. ambient temperature characteristics

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



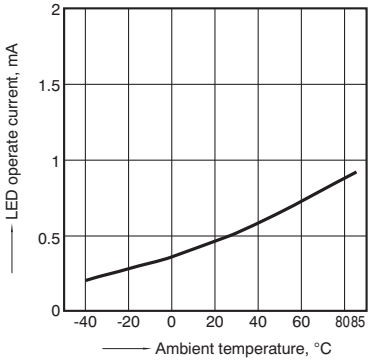
4. Turn off time vs. ambient temperature characteristics

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



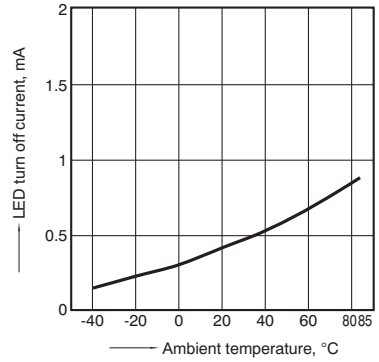
5. LED operate current vs. ambient temperature characteristics

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



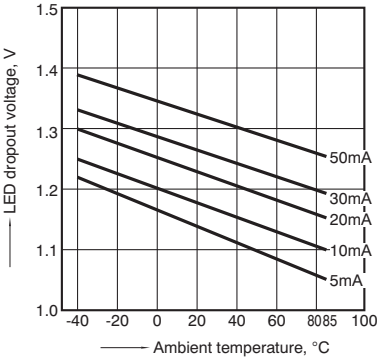
6. LED turn off current vs. ambient temperature characteristics

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



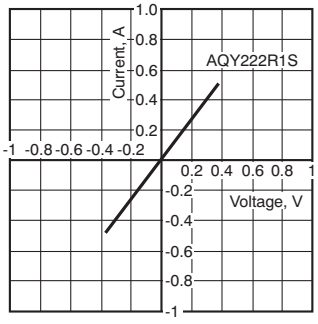
7. LED dropout voltage vs. ambient temperature characteristics

LED current: 5 to 50 mA



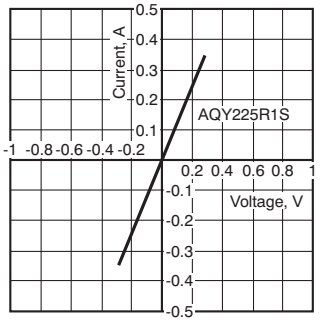
8-(1) Current vs. voltage characteristics of output at MOS portion

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



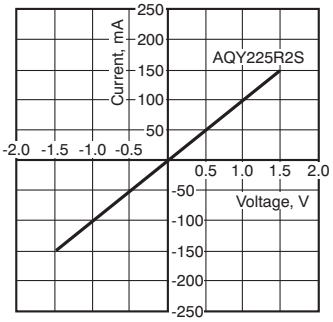
8.-(2) Current vs. voltage characteristics of output at MOS portion

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



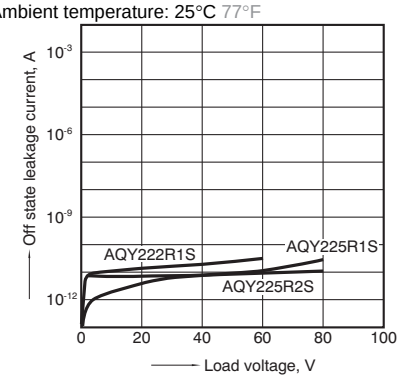
8.-(3) Current vs. voltage characteristics of output at MOS portion

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



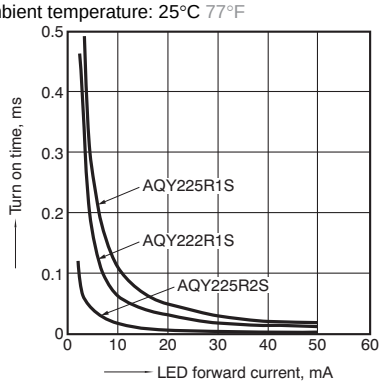
9. Off state leakage current vs. load voltage characteristics

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



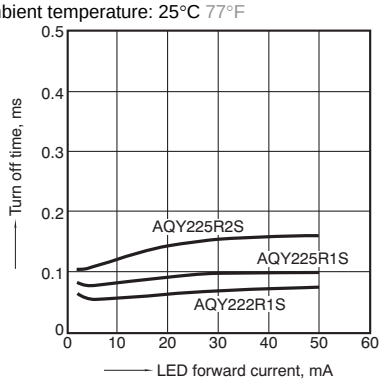
10.Turn on time vs. LED forward current characteristics

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



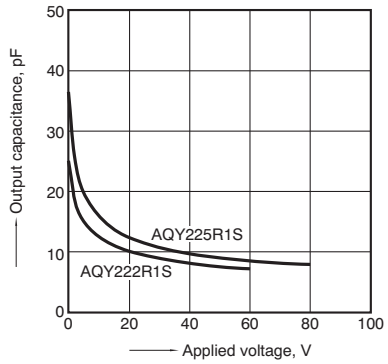
11.Turn off time vs. LED forward current characteristics

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