

FEATURES

1. Reduced package size

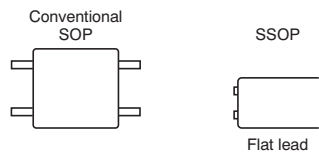
Lower surface has been reduced 60% and mounting space 40% compared to conventional SOP4-pin type.

2. Lower output capacitance and on-resistance

Output capacitance (Cout): 1.0pF (typ.)

ON resistance (Ron): 5.5Ω (typ.)

3. Mounting space has been reduced and output signals have been improved by using new flat lead terminals.



4. High speed switching

Turn on time: 0.02ms (typ.)

Turn off time: 0.02ms (typ.)

TYPICAL APPLICATIONS

1. Measuring and testing equipment

IC tester, Liquid crystal driver tester, Semiconductor performance tester, Board tester, etc.

2. Medical equipment

Ultrasonic wave diagnostic machine

3. Multi-point recorder

Warping, Thermo couple, etc.

4. Telecommunication and broadcasting equipment

TYPES

	Output rating*1		Package	Tape and reel packing style		Packing quantity in tape and reel*2
	Load voltage	Load current		Picked from the 1/4-pin side	Picked from the 2/3-pin side	
AC/DC dual use	25 V	150 mA	SSOP	AQY221N3VY	AQY221N3VW	3,500 pcs.

Notes: *1 Indicate the peak AC and DC values.

*2 Tape and reel is the standard packing style for SSOP.

For space reasons, only "N3V" is marked on the product as the part number. The three initial letters of the part number "AQY", and the package (SSOP) indicator "V" and the packing style indicator "Y" or "W" are not marked on the relay.

RATING

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

Item		Symbol	AQY221N3V	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	25V	
	Continuous load current	I _L	0.15A	Peak AC, DC
	Peak load current	I _{peak}	0.4A	100 ms (1 shot), V _L = DC
	Power dissipation	P _{out}	250mW	
Total power dissipation		P _T	300mW	
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	

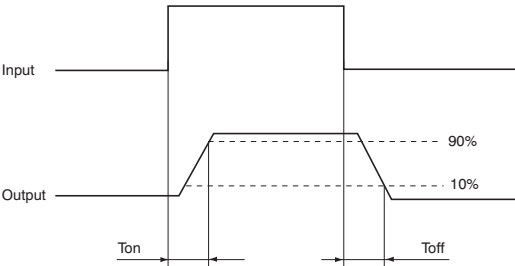
RF SSOP 1 Form A C×R5 (AQY221N3V)

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

Item			Symbol	AQY221N3V	Condition
Input	LED operate current	Typical	I _{Fon}	1.0 mA	I _L = 80 mA
		Maximum		3.0 mA	
	LED turn off current	Minimum	I _{Foff}	0.2 mA	I _L = 80 mA
		Typical		0.9 mA	
	LED dropout voltage	Typical	V _F	1.35 V (1.14 V at I _F = 5 mA)	I _F = 50 mA
		Maximum		1.5 V	
Output	On resistance	Typical	R _{on}	5.5Ω	I _F = 5 mA, I _L = 80 mA Within 1 s on time
		Maximum		7.5Ω	
	Output capacitance	Typical	C _{out}	1.0 pF	I _F = 0 mA, V _B = 0 V f = 1 MHz
		Maximum		1.5 pF	
	Off state leakage current	Typical	I _{Leak}	0.01 nA	I _F = 0 mA V _L = Max.
		Maximum		10 nA	
Transfer characteristics	Turn on time*	Typical	T _{on}	0.02 ms	I _F = 5 mA, V _L = 10 V R _L = 125Ω
		Maximum		0.2 ms	
	Turn off time*	Typical	T _{off}	0.02 ms	I _F = 5 mA, V _L = 10 V R _L = 125Ω
		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	500V DC

Note: Variation possible through combinations of output capacitance and on resistance. For more information, please contact our sales office in your area.

*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

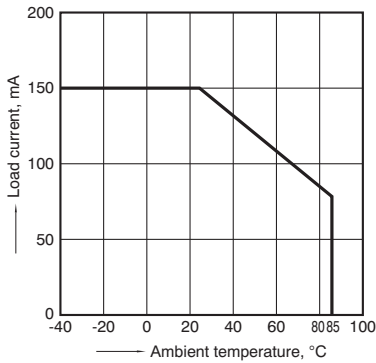
■ These products are not designed for automotive use.

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

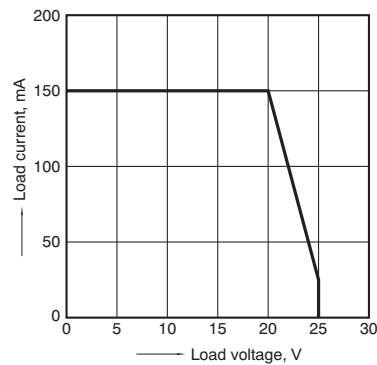
Please refer to our information on [PhotoMOS Relays for Automotive Applications](#).

REFERENCE DATA**1. Load current vs. ambient temperature characteristics**

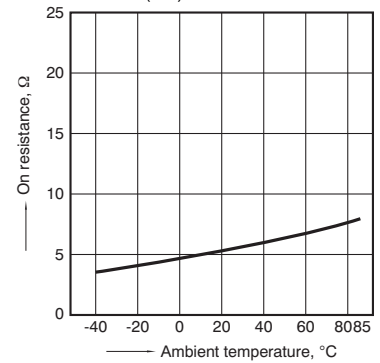
Allowable ambient temperature: -40°C to $+85^{\circ}\text{C}$
 -40°F to $+185^{\circ}\text{F}$

**2. Load current vs. Load voltage characteristics**

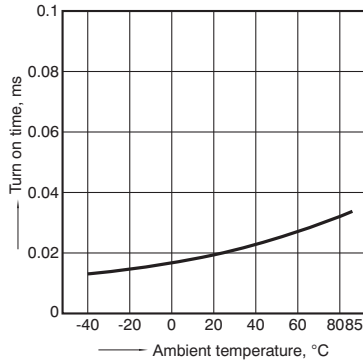
Ambient temperature: 25°C 77°F

**3. On resistance vs. ambient temperature characteristics**

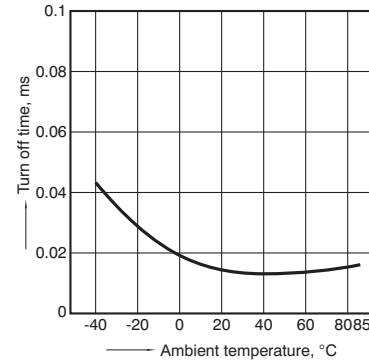
Measured portion: between terminals 3 and 4
 LED current: 5 mA; Load voltage: 10V (DC);
 Load current: 80mA (DC)

**4. Turn on time vs. ambient temperature characteristics**

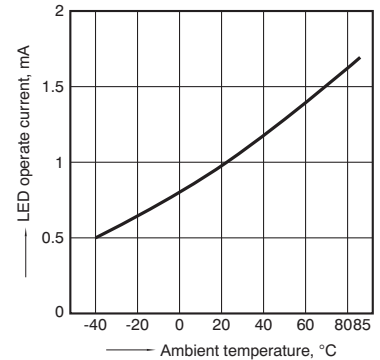
Measured portion: between terminals 3 and 4
 LED current: 5 mA; Load voltage: 10V (DC);
 Continuous load current: 80mA (DC)

**5. Turn off time vs. ambient temperature characteristics**

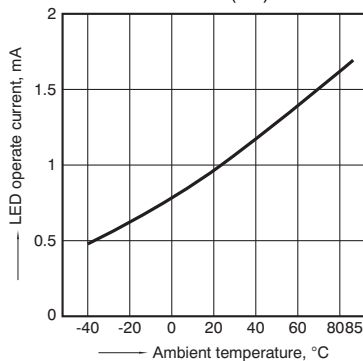
Measured portion: between terminals 3 and 4
 LED current: 5 mA; Load voltage: 10V (DC);
 Continuous load current: 80mA (DC)

**6. LED operate current vs. ambient temperature characteristics**

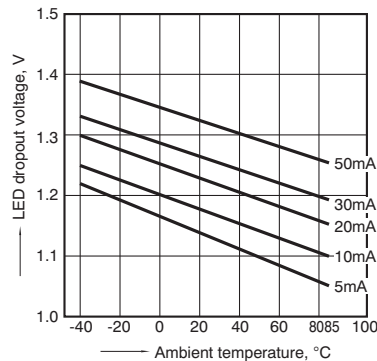
Measured portion: between terminals 3 and 4
 Load voltage: 10V (DC);
 Continuous load current: 80mA (DC)

**7. LED turn off current vs. ambient temperature characteristics**

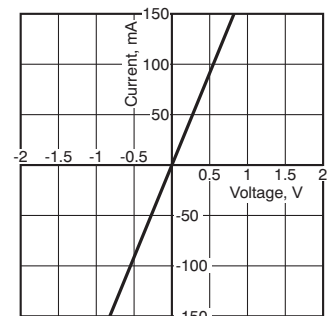
Measured portion: between terminals 3 and 4
 Load voltage: 10V (DC);
 Continuous load current: 80mA (DC)

**8. LED dropout voltage vs. ambient temperature characteristics**

LED current: 5 to 50 mA

**9. Current vs. voltage characteristics of output at MOS portion**

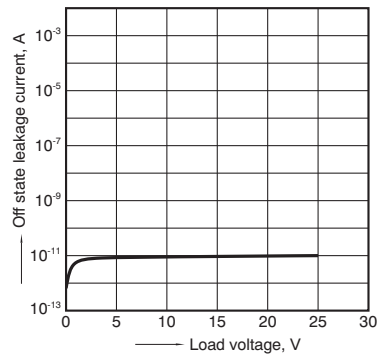
Measured portion: between terminals 3 and 4
 Ambient temperature: 25°C 77°F



RF SSOP 1 Form A C×R5 (AQY221N3V)

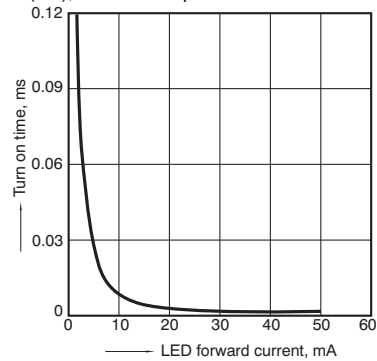
10.Off state leakage current vs. load voltage characteristics

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



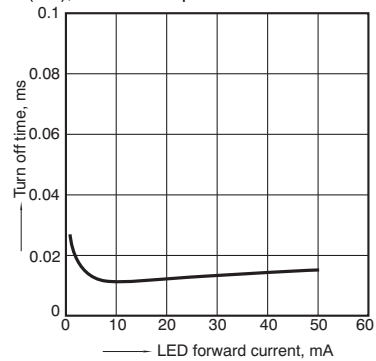
11.Turn on time vs. LED forward current characteristics

Measured portion: between terminals 3 and 4
Load voltage: 10V (DC); Continuous load current: 80mA (DC); Ambient temperature: 25°C 77°F



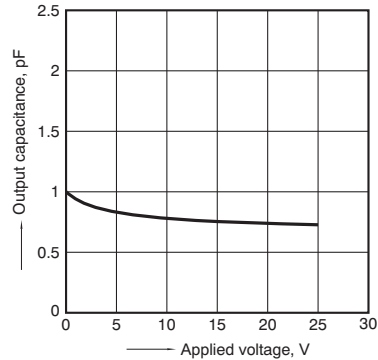
12.Turn off time vs. LED forward current characteristics

Measured portion: between terminals 3 and 4
Load voltage: 10V (DC); Continuous load current: 80mA (DC); Ambient temperature: 25°C 77°F



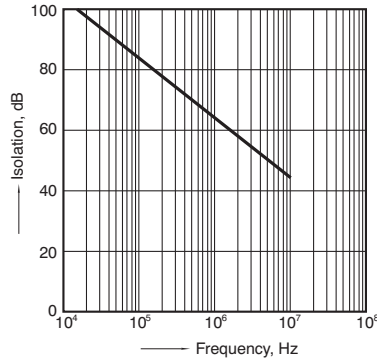
13.Output capacitance vs. applied voltage characteristics

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



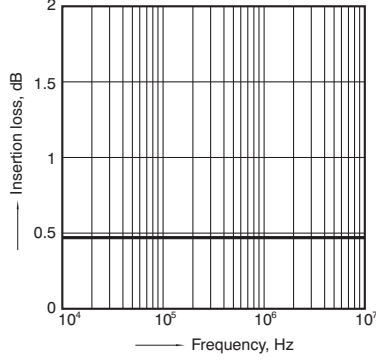
14.Isolation vs. frequency characteristics (50Ω impedance)

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



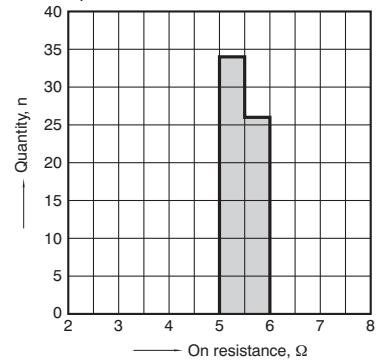
15.Insertion loss vs. frequency characteristics (50Ω impedance)

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



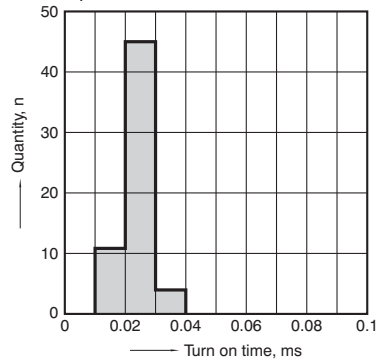
16.On resistance distribution

Measured portion: between terminals 3 and 4
Continuous load current: 80mA (DC)
Ambient temperature: 25°C 77°F



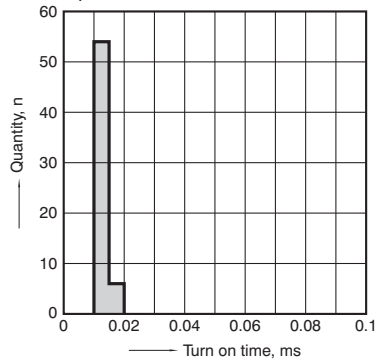
17.Turn on time distribution

Load voltage: 10V (DC)
Continuous load current: 80mA (DC)
Ambient temperature: 25°C 77°F



18.Turn off time distribution

Load voltage: 10V (DC)
Continuous load current: 80mA (DC)
Ambient temperature: 25°C 77°F



19.LED operate current distribution

Load voltage: 10V (DC)
Continuous load current: 80mA (DC)
Ambient temperature: 25°C 77°F

