

FEATURES

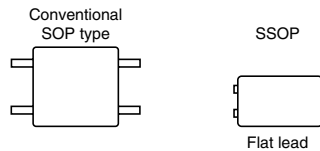
1. Reduced package size

Lower surface has been reduced 60% and mounting space 40% compared to conventional 4-pin SOP type.

2. Lower output capacitance and on-resistance

Output capacitance (C): 1.0pF (typ.)
ON resistance (R): 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

Turn off time: 0.02ms

TYPICAL APPLICATIONS

Measuring and testing equipment

- Test equipment
IC tester, Liquid crystal driver tester, semiconductor performance tester
- Board tester
Bare board tester, In-circuit tester, function tester
- Medical equipment
Ultrasonic wave diagnostic machine
- Multi-point recorder
Warping, thermo couple

RoHS Directive compatibility information
<http://www.nais-e.com/>

TYPES

Circuit arrangement	Type	Output rating*		Tape and reel packing style		Packing quantity in tape and reel
		Load voltage	Load current	Picked from the 1/4-pin side	Picked from the 2/3-pin side	
1 Form A	AC/DC type	25 V	150 mA	AQY221N3VY	AQY221N3VW	3,500 pcs.

* Indicate the peak AC and DC values.

Notes: (1) Tape package is the standard packing style.

(2) For space reasons, the initial letters of the product number "AQY", the package type indicator "Y" and "W" are omitted from the seal.
(Ex. the label for product number AQY221N3V is 221N3)

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 (peak AC)	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	

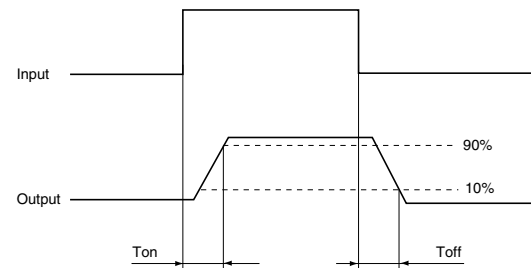
RF PhotoMOS (AQY221N3V)

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

Item			Symbol	AQY221N3V	Condition
Input	LED operate current	Typical	I_{Fon}	1.0 mA	$I_L = 80 \text{ mA}$
		Maximum		3.0 mA	
	LED turn off current	Minimum	I_{Foff}	0.2 mA	$I_L = 80 \text{ mA}$
		Typical		0.9 mA	
	LED dropout voltage	Typical	V_F	1.35 V (1.14 V at $I_F = 5 \text{ mA}$)	$I_F = 50 \text{ mA}$
		Maximum		1.5 V	
Output	On resistance	Typical	R_{on}	5.5Ω	$I_F = 5 \text{ mA}$ $I_L = 80 \text{ mA}$ Within 1 s on time
		Maximum		7.5Ω	
	Output capacitance	Typical	C_{out}	1.0 pF	$I_F = 0 \text{ mA}$ $V_B = 0 \text{ V}$ $f = 1 \text{ MHz}$
		Maximum		1.5 pF	
	Off state leakage current	Typical	I_{Leak}	0.01 nA	$I_F = 0 \text{ mA}$ $V_L = \text{Max.}$
		Maximum		10 nA	
Transfer characteristics	Switching speed	Turn on time*	T_{on}	0.02 ms	$I_F = 5 \text{ mA}$ $V_L = 10 \text{ V}$ $R_L = 125\Omega$
				0.2 ms	
		Turn off time*	T_{off}	0.02 ms	$I_F = 5 \text{ mA}$ $V_L = 10 \text{ V}$ $R_L = 125\Omega$
				0.2 ms	
	I/O capacitance	Typical	C_{iso}	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	500V DC

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

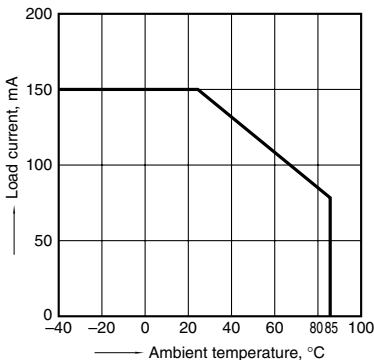
*Turn on/Turn off time



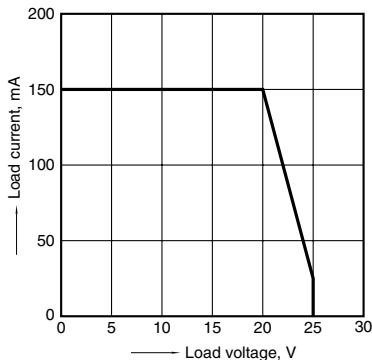
- For Dimensions
- For Schematic and Wiring Diagrams
- For Cautions for Use

REFERENCE DATA

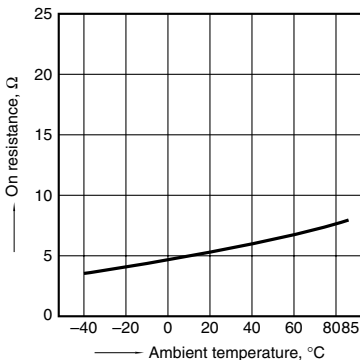
1. Load current vs. ambient temperature characteristics
Allowable ambient temperature: -40°C to +85°C
-40°F to +185°F



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



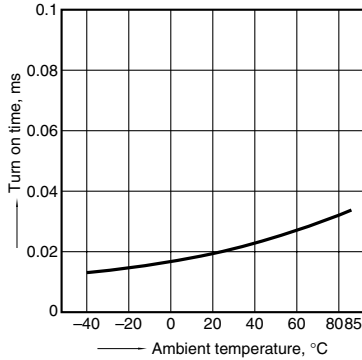
3. On resistance vs. ambient temperature characteristics
Measured portion: between terminals 3 and 4
LED current: 5 mA; Load voltage: 10V (DC);
Load current: 80mA (DC)



RF PhotoMOS (AQY221N3V)

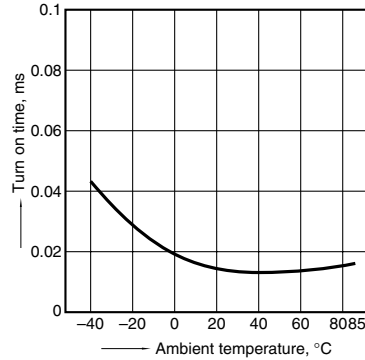
4. Turn on time vs. ambient temperature characteristics

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



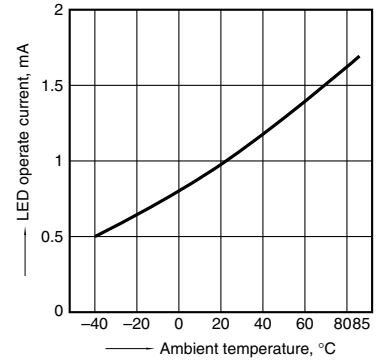
5. Turn off time vs. ambient temperature characteristics

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



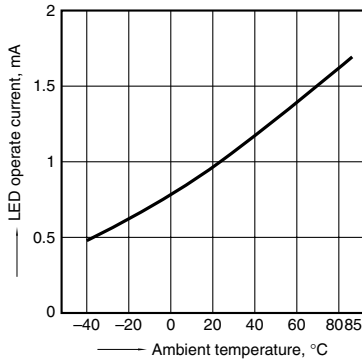
6. LED operate current vs. ambient temperature characteristics

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



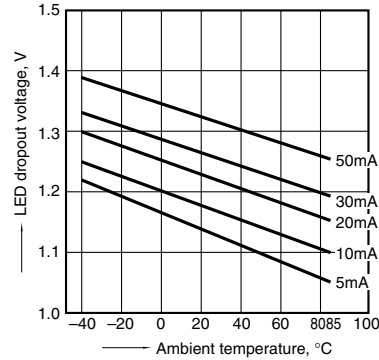
7. LED turn off current vs. ambient temperature characteristics

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



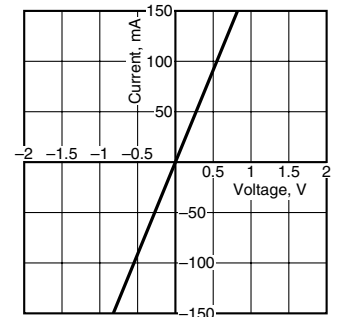
8. LED dropout voltage vs. ambient temperature characteristics

LED current: 5 to 50 mA



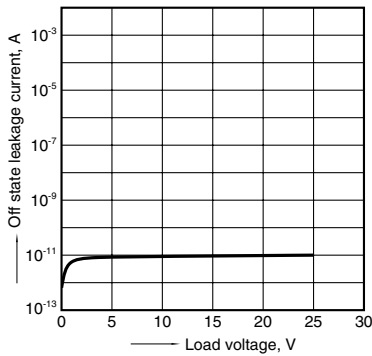
9. Current vs. voltage characteristics of output at MOS portion

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



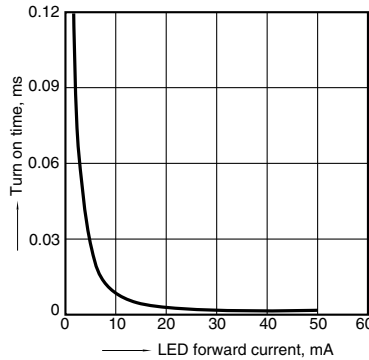
10. Off state leakage current vs. load voltage characteristics

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



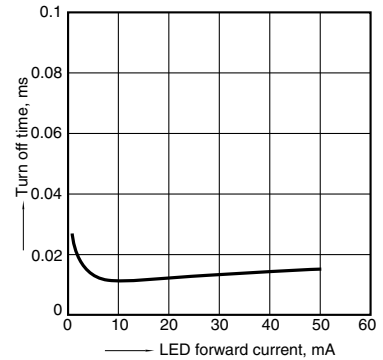
11. Turn on time vs. LED forward current characteristics

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



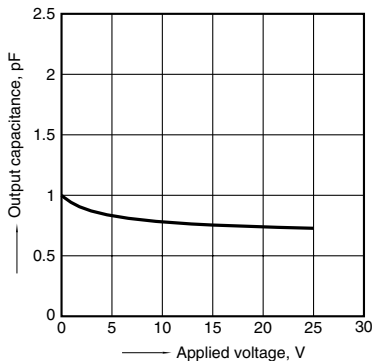
12. Turn off time vs. LED forward current characteristics

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



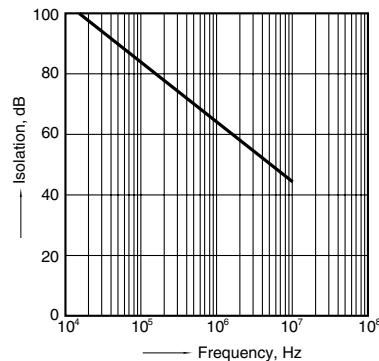
13. Output capacitance vs. applied voltage characteristics

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



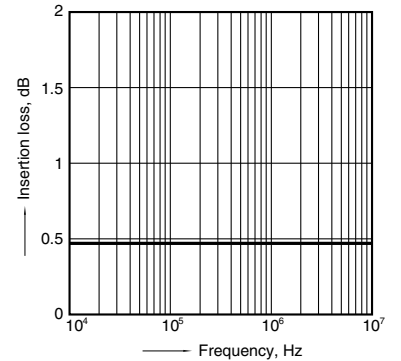
14. Isolation vs. frequency characteristics (50Ω impedance)

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



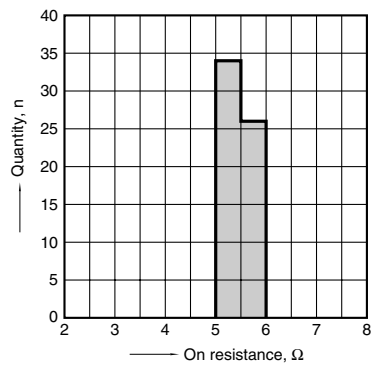
15. Insertion loss vs. frequency characteristics (50Ω impedance)

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

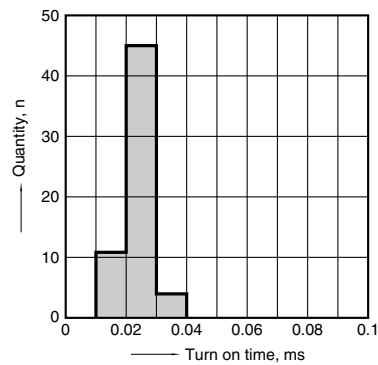


RF PhotoMOS (AQY221N3V)

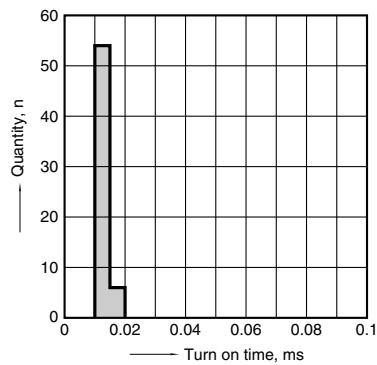
16. On resistance distribution
Measured portion: between terminals 3 and 4
Continuous load current: 80mA (DC)
Ambient temperature: 25°C 77°F



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

