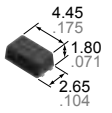
UL pending CSA pending

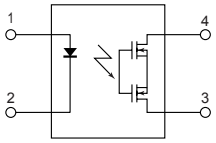
Panasonic
ideas for life

Ultra minimum package size, SSOP (1 Form A) 4-pin type. Lower output capacitance and on resistance. (C×R5)

RF PhotoMOS (AQY221N3V)



mm inch

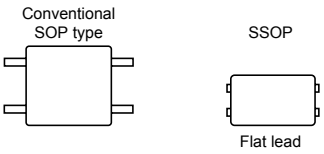


FEATURES

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

1. Test equipment
   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

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	

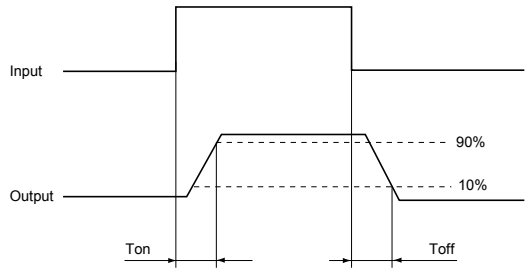
RF PhotoMOS (AQY221N3V)

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 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	Switching speed	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: Recommendable LED forward current I_F = 5 mA.

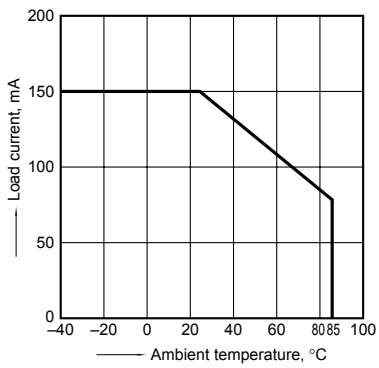
*Turn on/Turn off time



REFERENCE DATA

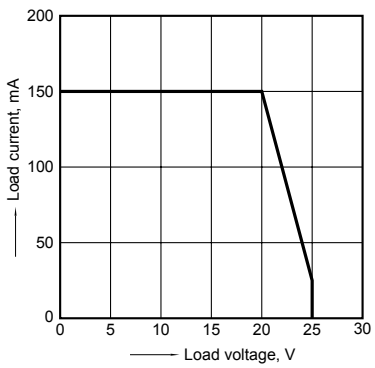
1. Load current vs. ambient temperature characteristics

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



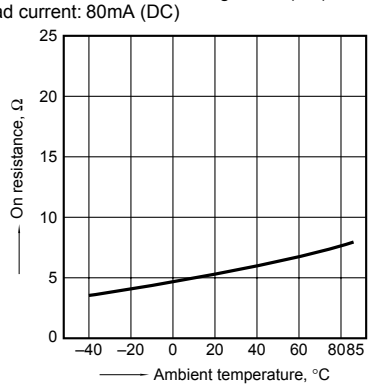
2. Load current vs. Load voltage characteristics

Ambient temperature: 25°C 77°F

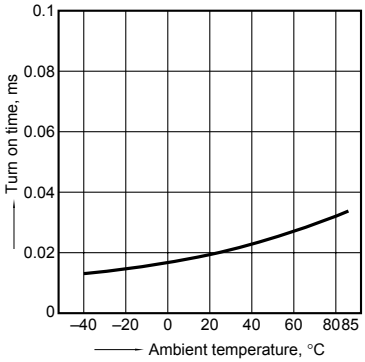


3. On resistance vs. ambient temperature characteristics

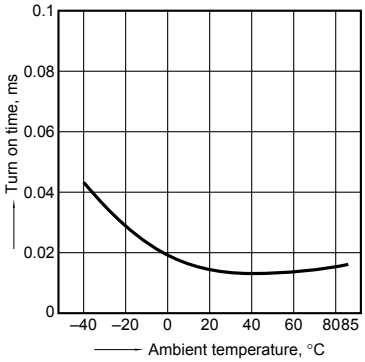
Measured portion: between terminals 3 and 4
LED current: 5 mA; Load voltage: 10V (DC);
Load current: 80mA (DC)



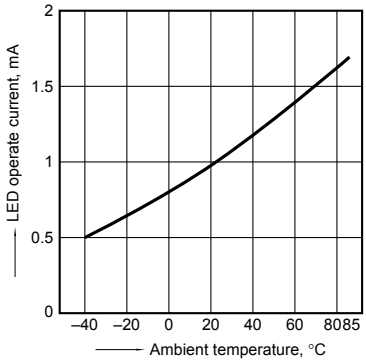
4. Turn on time vs. ambient temperature characteristics
Measured portion: between terminals 3 and 4
LED current: 5 mA; Load voltage: 10V (DC);
Continuous load current: 80mA (DC)



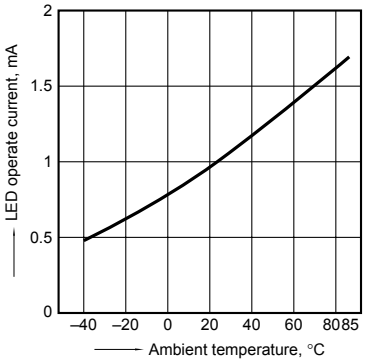
5. Turn off time vs. ambient temperature characteristics
Measured portion: between terminals 3 and 4
LED current: 5 mA; Load voltage: 10V (DC);
Continuous load current: 80mA (DC)



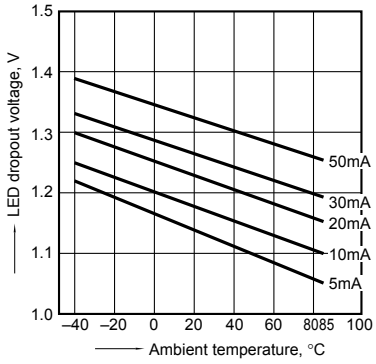
6. LED operate current vs. ambient temperature characteristics
Measured portion: between terminals 3 and 4
Load voltage: 10V (DC);
Continuous load current: 80mA (DC)



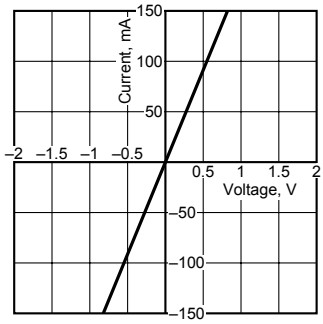
7. LED turn off current vs. ambient temperature characteristics
Measured portion: between terminals 3 and 4
Load voltage: 10V (DC);
Continuous load current: 80mA (DC)



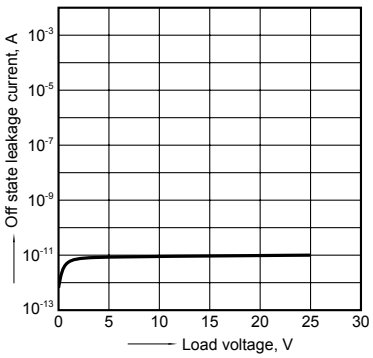
8. LED dropout voltage vs. ambient temperature characteristics
LED current: 5 to 50 mA



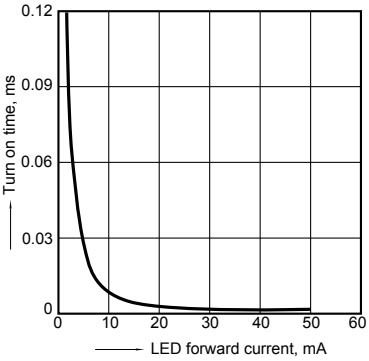
9. Current vs. voltage characteristics of output at MOS portion
Measured portion: between terminals 3 and 4
Ambient temperature: 25°C 77°F



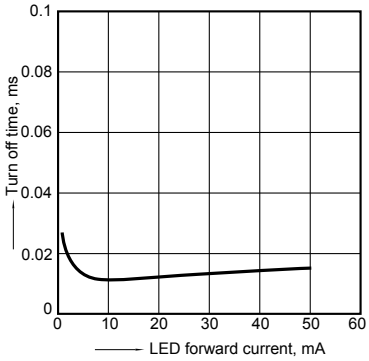
10. Off state leakage current vs. load voltage characteristics
Measured portion: between terminals 3 and 4
Ambient temperature: 25°C 77°F



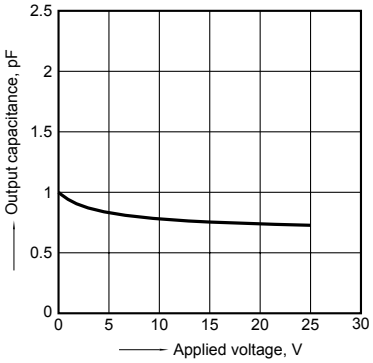
11. Turn on time vs. LED forward current characteristics
Measured portion: between terminals 3 and 4
Load voltage: 10V (DC); Continuous load current: 80mA (DC); Ambient temperature: 25°C 77°F



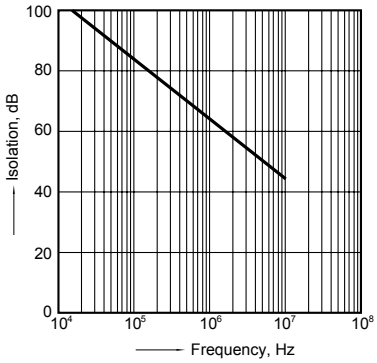
12. Turn off time vs. LED forward current characteristics
Measured portion: between terminals 3 and 4
Load voltage: 10V (DC); Continuous load current: 80mA (DC); Ambient temperature: 25°C 77°F



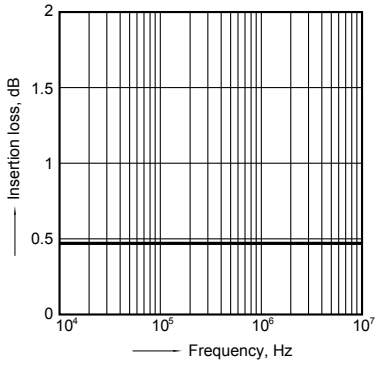
13. Output capacitance vs. applied voltage characteristics
Measured portion: between terminals 3 and 4
Frequency: 1 MHz, 30m Vrms; Ambient temperature: 25°C 77°F



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



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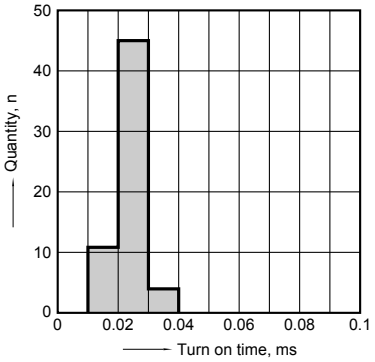
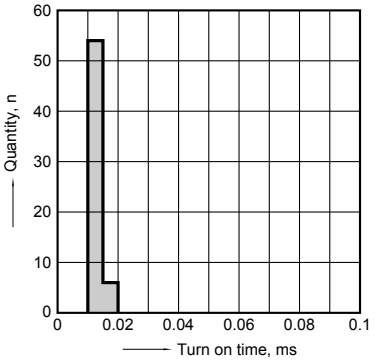
16. On resistance distribution
Measured portion: between terminals 3 and 4
Continuous load current: 80mA (DC)
Ambient temperature: 25°C 77°F

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