



NAIS

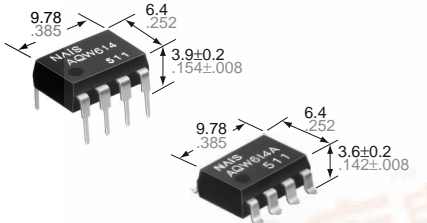
GU (General Use) Type [2-Channel (Form A Form B) Type]

PhotoMOS RELAYS

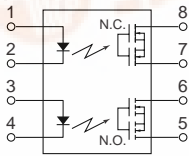
FEATURES

1. Approx. 1/2 the space compared with the mounting of a set of 1 Form A and 1 Form B photoMOS relays
2. Applicable for 1 Form A 1 Form B use as well as two independent 1 Form A and 1 Form B use
3. Low thermal electromotive force (Approx. 1 μ V)
4. Eliminates the need for a counter electromotive force protection diode in the drive circuits on the input side
5. Controls load currents up to 0.13 A with an input current of 5 mA with load voltage of 400 V
6. High speed switching: operate time of 300 μ s typical.

7. Eliminates the need for a power supply to drive the power MOSFET
8. Extremely low closed-circuit offset voltages to enable control of small analog signals without distortion (Typical 100 pA at 400 V)
9. Stable on resistance



mm inch



TYPICAL APPLICATIONS

- High-speed inspection machines
- Telephone equipment
- Computer

TYPES

Type	Output rating*		Part No.				Packing quantity	
	Load voltage	Load current	Through hole terminal	Surface-mount terminal			Tube	Tape and reel
				Tube packing style	Tape and reel packing style			
			Picked from the 1/2/3-pin side		Picked from the 4/5/6-pin side			
AC/DC type	400 V	100 mA	AQW614	AQW614A	AQW614AX	AQW614AZ	1 tube contains 40 pcs. 1 batch contains 400 pcs.	1,000 pcs.

*Indicate the peak AC and DC values.

Note: For space reasons, the package type indicator "X" and "Z" are omitted from the seal.

RATINGS

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

Item	Symbol	AQW614(A)	Remarks	
Input	LED forward current	I_F	50 mA	
	LED reverse voltage	V_R	3 V	
	Peak forward current	I_{FP}	1 A	$f = 100$ Hz, Duty factor = 0.1%
	Power dissipation	P_{in}	75 mW	
Output	Load voltage	V_L	400 V	
	Continuous load current	I_L	0.1 A (0.13 A)	Peak AC, DC (): in case of using only 1a or 1b, 1 channel
	Peak load current	I_{peak}	0.3 A	100 ms (1 shot), $V_L = DC$
	Power dissipation	P_{out}	800 mW	
Total power dissipation	P_T	850 mW		
I/O isolation voltage	V_{iso}	1,500 V AC	Between input and output/between contact sets	
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	



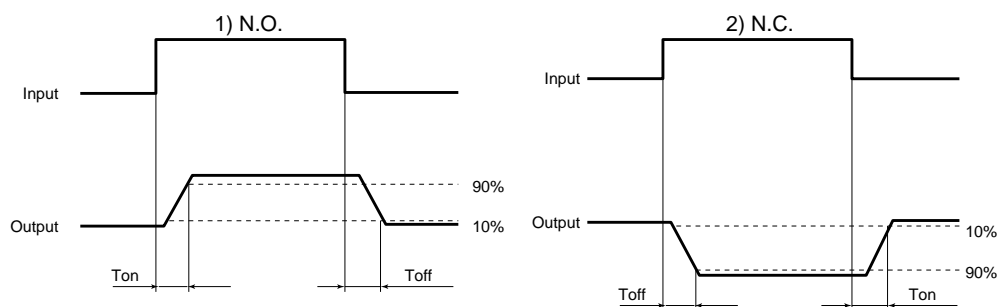
2. Electrical characteristics (Ambient temperature: 25°C 77°F)

Item		Symbol	AQW614	Condition	
Input	LED operate (OFF) current	Typical	0.7 mA (N.O.) 0.9 mA (N.C.)	$I_L = 100 \text{ mA}$	
		Maximum			3 mA
	LED reverse (ON) current	Minimum	0.4 mA		$I_L = 100 \text{ mA}$
		Typical			
LED dropout voltage	Typical	V_F	1.14 V (1.25 V at $I_F = 50 \text{ mA}$)	$I_F = 5 \text{ mA}$	
	Maximum				1.5 V
Output	On resistance	Typical	R_{on}	$I_F = 5 \text{ mA (N.O.)}$ $I_F = 0 \text{ mA (N.C.)}$ $I_L = 100 \text{ mA}$ within 1 s on time	
		Maximum			50 Ω
	Off state leakage current	Maximum	I_{Leak}		1 μA
Transfer characteristics	Operate (OFF) time*	Typical	T_{on} (N.O.) T_{off} (N.C.)	0.28 ms (N.O.) 0.43 ms (N.C.)	$I_F = 0 \text{ mA} \rightarrow 5 \text{ mA}$ $I_L = 100 \text{ mA}$
		Maximum			
	Reverse (ON) time*	Typical	T_{off} (N.O.) T_{on} (N.C.)	0.04 ms (N.O.) 0.3 ms (N.C.)	$I_F = 5 \text{ mA} \rightarrow 0 \text{ mA}$ $I_L = 100 \text{ mA}$
		Maximum			
	I/O capacitance	Typical	C_{iso}	0.8 pF	$f = 1 \text{ MHz}$ $V_B = 0$
		Maximum			
Initial I/O isolation resistance	Minimum	R_{iso}	1,000 M Ω	500 V DC	

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

For type of connection, see page 32.

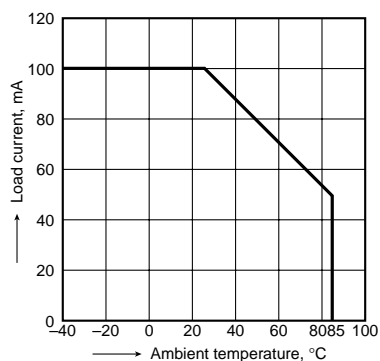
*Operate/Reverse time



REFERENCE DATA

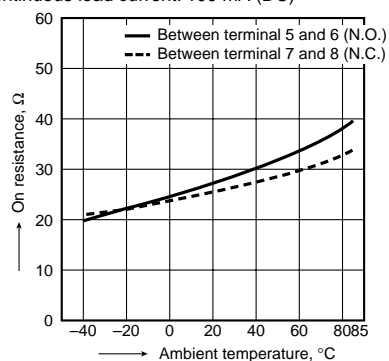
1. Load current vs. ambient temperature characteristics

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



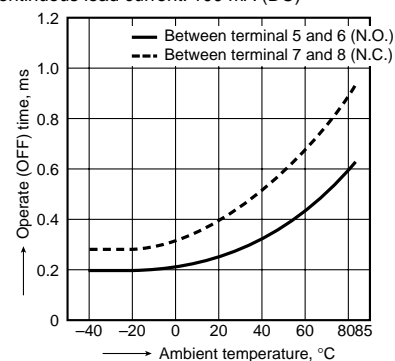
2. On resistance vs. ambient temperature characteristics

Measured portion: between terminals 5 and 6, 7 and 8;
LED current: 5 mA; Load voltage: 400 V (DC);
Continuous load current: 100 mA (DC)



3. Operate (OFF) time vs. ambient temperature characteristics

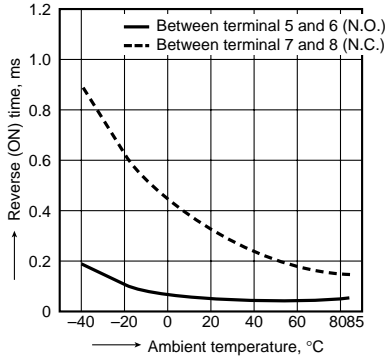
LED current: 5 mA;
Load voltage: 400 V (DC);
Continuous load current: 100 mA (DC)



AQW614

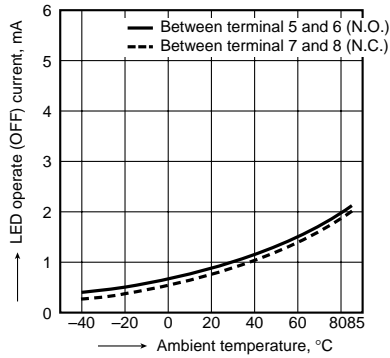
4. Reverse (ON) time vs. ambient temperature characteristics

LED current: 5 mA; Load voltage: 400 V (DC);
Continuous load current: 100 mA (DC)



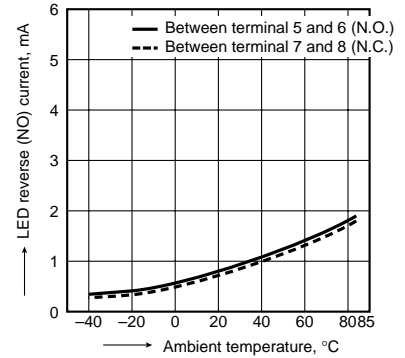
5. LED operate (OFF) current vs. ambient temperature characteristics

Load voltage: 400 V (DC);
Continuous load current: 100 mA (DC)



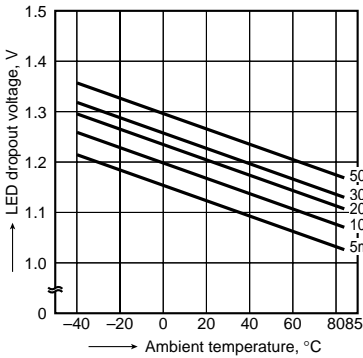
6. LED reverse (ON) current vs. ambient temperature characteristics

Load voltage: 400 V (DC);
Continuous load current: 100 mA (DC)



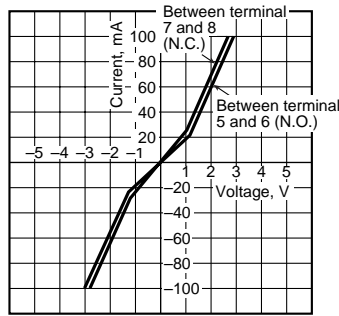
7. LED dropout voltage vs. ambient temperature characteristics

LED current: 5 to 50 mA



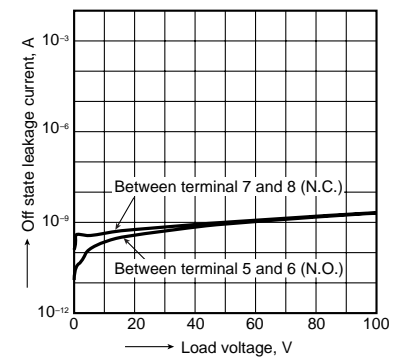
8. Voltage vs. current characteristics of output at MOS portion

Measured portion: between terminals 5 and 6, 7 and 8;
Ambient temperature: 25°C 77°F



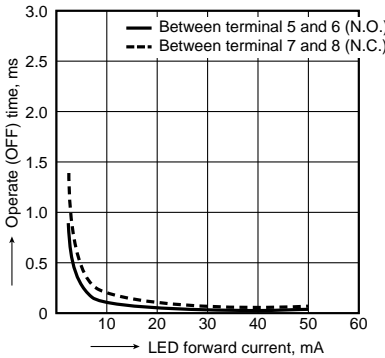
9. Off state leakage current

Measured portion: between terminals 5 and 6, 7 and 8;
Ambient temperature: 25°C 77°F



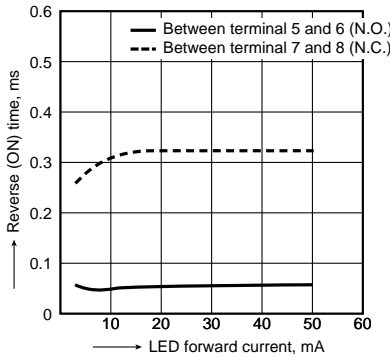
10. LED forward current vs. operate (OFF) time characteristics

Measured portion: between terminals 5 and 6, 7 and 8;
Load voltage: 400 V (DC); Continuous load current:
100 mA (DC); Ambient temperature: 25°C 77°F



11. LED forward current vs. reverse (ON) time characteristics

Measured portion: between terminals 5 and 6, 7 and 8;
Load voltage: 400 V (DC); Continuous load current:
100 mA (DC); Ambient temperature: 25°C 77°F



12. Applied voltage vs. output capacitance characteristics

Measured portion: between terminals 5 and 6, 7 and 8;
Frequency: 1 MHz;
Ambient temperature: 25°C 77°F

