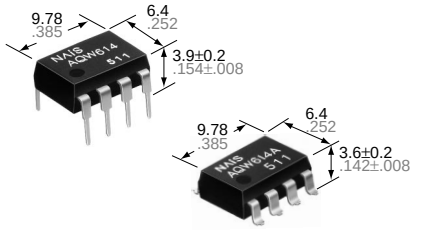
NAiS

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

PhotoMOS RELAYS



mm inch

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 μV)

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 μs 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

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 packing style		Tape and reel packing style		Tube	Tape and reel
					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

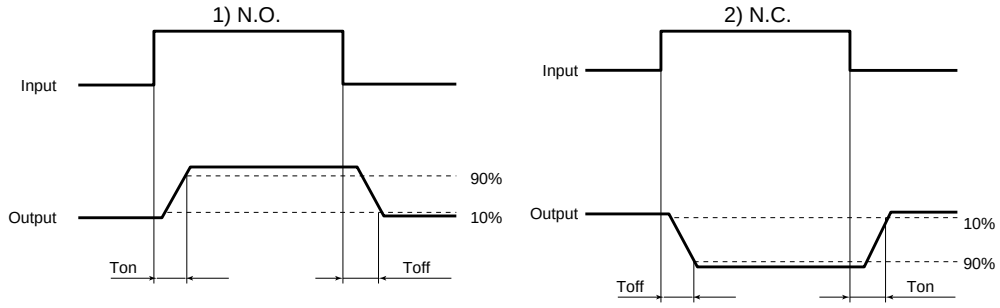
1. Absolute maximum ratings (Ambient temperature: 25°C 77°F)

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	Peak AC, DC I_L = Max. 0.13 A (when used for 1 Form A or 1 Form B)
	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	I_{Fon} (N.O.) I_{Foff} (N.C.)	0.7 mA (N.O.) 0.9 mA (N.C.)	I_L = 100 mA
		Maximum		3 mA	
	LED reverse (ON) current	Minimum	I_{Foff} (N.O.) I_{Fon} (N.C.)	0.4 mA	I_L = 100 mA
		Typical		0.7 mA (N.O.) 0.8 mA (N.C.)	
	LED dropout voltage	Typical	V_F	1.14 V (1.25 V at I_F = 50 mA)	I_F = 5 mA
		Maximum		1.5 V	
Output	On resistance	Typical	R_{on}	27 Ω	I_F = 5 mA (N.O.) I_F = 0 mA (N.C.) I_L = 100 mA within 1 s on time
		Maximum		50 Ω	
	Off state leakage current	Maximum	I_{Leak}	1 μA	I_F = 0 mA (N.O.) I_F = 5 mA (N.C.) V_L = 400 V
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 mA → 5 mA I_L = 100 mA
		Maximum		1 ms	
	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 mA → 0 mA I_L = 100 mA
		Maximum		1 ms	
	I/O capacitance	Typical	C_{iso}	0.8 pF	f = 1 MHz V_B = 0
		Maximum		1.5 pF	
	Initial I/O isolation resistance	Minimum	R_{iso}	1,000 MΩ	500 V DC

Note: Recommendable LED forward current I_F = 5 mA.
*Operate/Reverse time

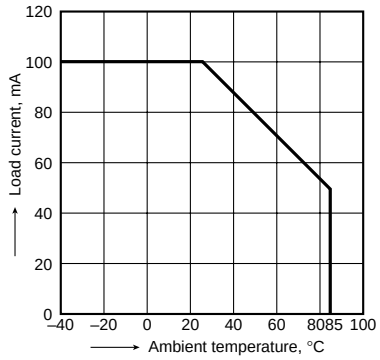


■ **For Dimensions, see Page 440.**
■ **For Schematic and Wiring Diagrams, see Page 445.**
■ **For Cautions for Use, see Page 449.**

REFERENCE DATA

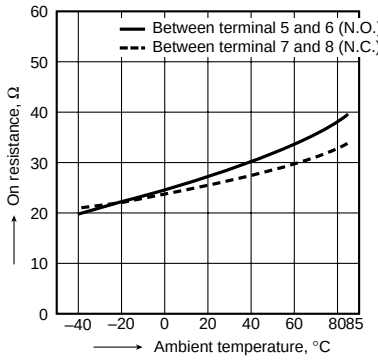
1. Load current vs. ambient temperature characteristics

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



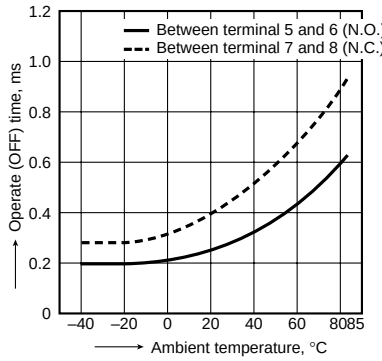
2. On resistance vs. ambient temperature characteristics

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)



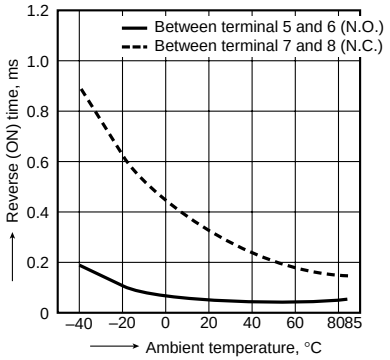
3. Operate (OFF) time vs. ambient temperature characteristics

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



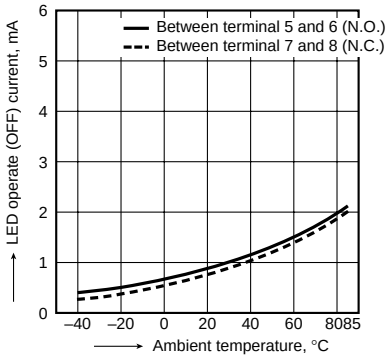
4. Reverse (ON) time vs. ambient temperature characteristics

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



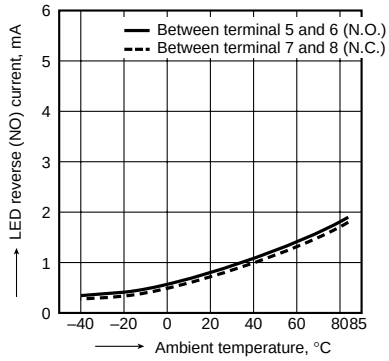
5. LED operate (OFF) current vs. ambient temperature characteristics

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



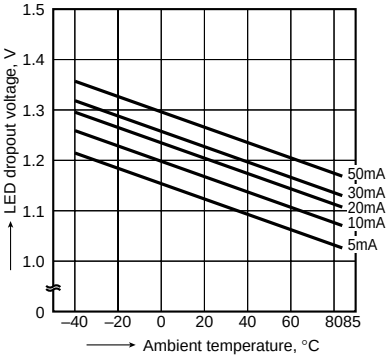
6. LED reverse (ON) current vs. ambient temperature characteristics

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



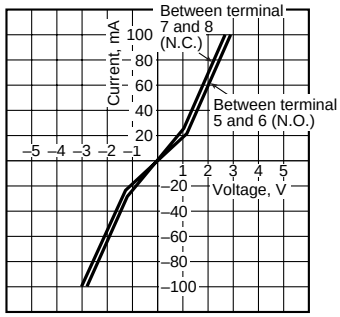
7. LED dropout voltage vs. ambient temperature characteristics

LED current: 5 to 50 mA



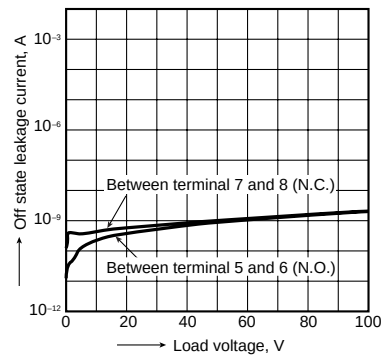
8. Voltage vs. current characteristics of output at MOS portion

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



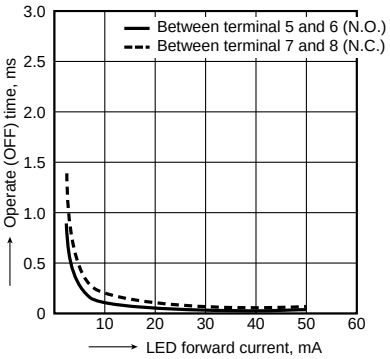
9. Off state leakage current

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



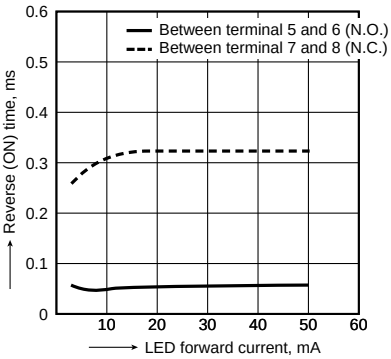
10. LED forward current vs. operate (OFF) time characteristics

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



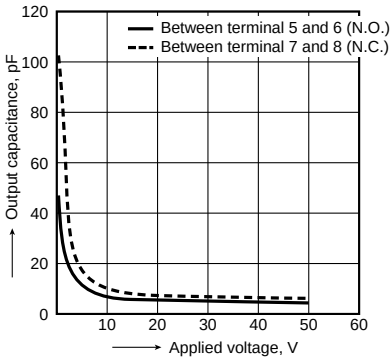
11. LED forward current vs. reverse (ON) time characteristics

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



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