

## 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  $\mu$ 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  $\mu$ 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

## TYPICAL APPLICATIONS

- High-speed inspection machines
- Telephone equipment
- Computer

**RoHS Directive compatibility information**  
<http://www.mew.co.jp/ac/e/environment/>

## 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 SMD terminal shape indicator "A" and the package style indicator "X" or "Z" are not marked on the relay.

## 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	$V_R$	5 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	

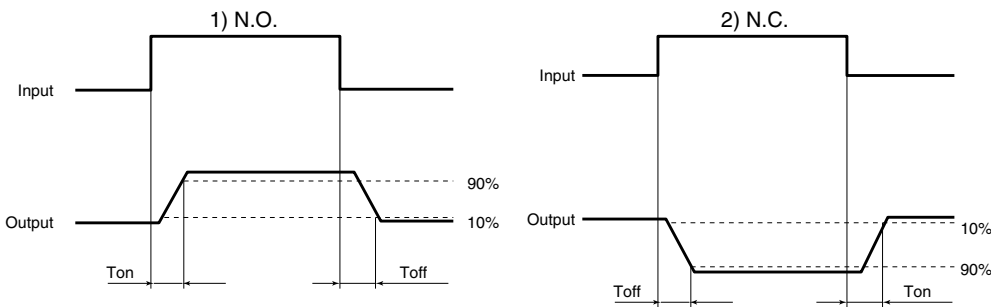
## 2. Electrical characteristics (Ambient temperature: 25°C 77°F)

Item		Symbol	AQW614(A)	Condition
Input	LED operate (OFF) current	Typical	$I_{Fon}$ (N.O.)	0.9 mA
		Maximum	$I_{Foff}$ (N.C.)	3 mA
	LED reverse (ON) current	Minimum	$I_{Foff}$ (N.O.)	0.4 mA
		Typical	$I_{Fon}$ (N.C.)	0.8 mA
LED dropout voltage	Typical	$V_F$	1.25 V (1.14 V at $I_F = 5$ mA)	
	Maximum		1.5 V	
Output	On resistance	Typical	$R_{on}$	27 $\Omega$
		Maximum		50 $\Omega$
	Off state leakage current	Maximum	$I_{Leak}$	1 $\mu$ A
Transfer characteristics	Operate (OFF) time*	Typical	$T_{on}$ (N.O.) $T_{off}$ (N.C.)	0.28 ms (N.O.) 0.43 ms (N.C.)
		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.)
		Maximum		1 ms
	I/O capacitance	Typical	$C_{iso}$	0.8 pF
Maximum		1.5 pF		$V_B = 0$ V
Initial I/O isolation resistance	Minimum	$R_{iso}$	1,000 M $\Omega$	500 V DC

Note: Recommendable LED forward current  $I_F = 5$  mA.

For type of connection.

\*Operate/Reverse time

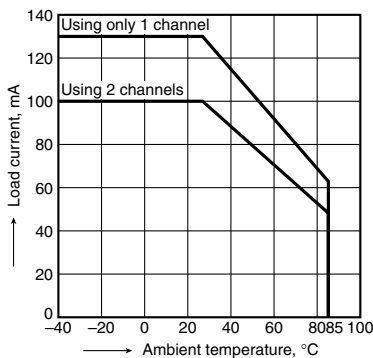


- For Dimensions.
- For Schematic and Wiring Diagrams.
- For Cautions for Use.

## REFERENCE DATA

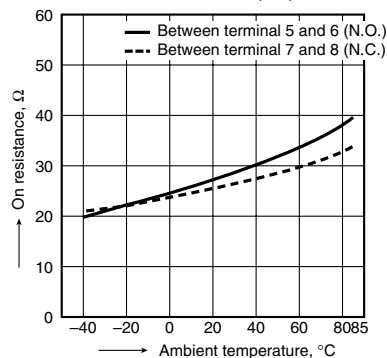
### 1. Load current vs. ambient temperature characteristics

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



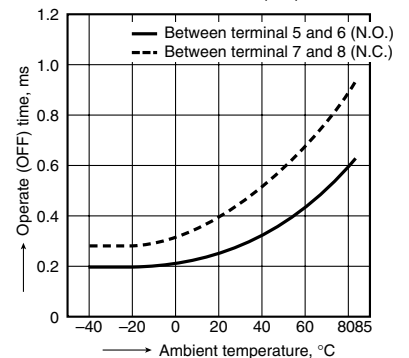
### 2. On resistance vs. ambient temperature characteristics

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

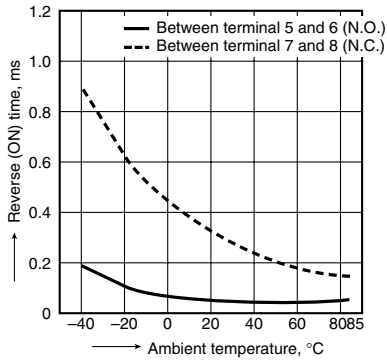
LED current: 5 mA;  
Load voltage: 400 V (DC);  
Continuous load current: 100 mA (DC)



# GU PhotoMOS (AQW614)

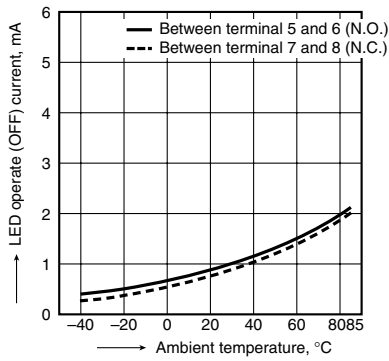
## 4. Reverse (ON) time vs. ambient temperature characteristics

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



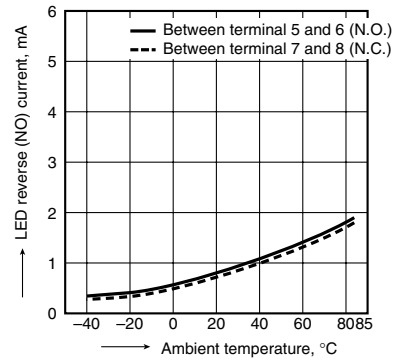
## 5. LED operate (OFF) current vs. ambient temperature characteristics

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



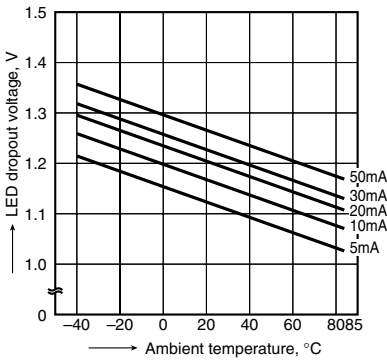
## 6. LED reverse (ON) current vs. ambient temperature characteristics

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



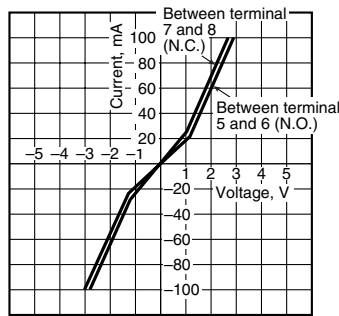
## 7. LED dropout voltage vs. ambient temperature characteristics

LED current: 5 to 50 mA



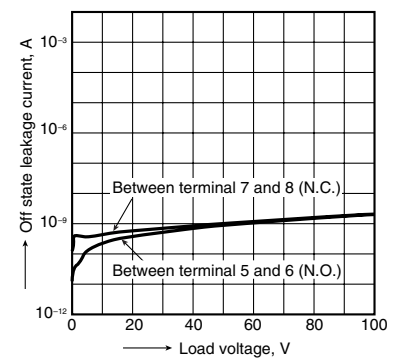
## 8. Current vs. voltage characteristics of output at MOS portion

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



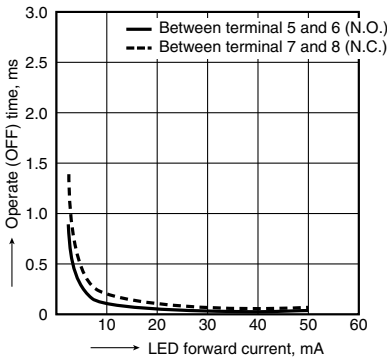
## 9. Off state leakage current vs. load voltage characteristics

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



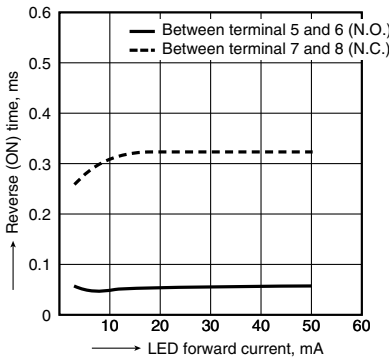
## 10. Operate (OFF) time vs. LED forward current characteristics

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. Reverse (ON) time vs. LED forward current 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. Output capacitance vs. applied voltage characteristics

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

