

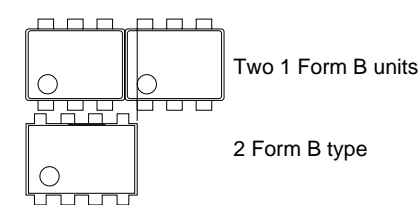
NAIS

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

PhotoMOS RELAYS

FEATURES

1. Approx. 1/2 the space compared with the mounting of Two 1 Form B photo MOS units



2. Applicable for 2 Form B use as well as two independent 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

6. High speed switching: operate time typical of 300 μ s

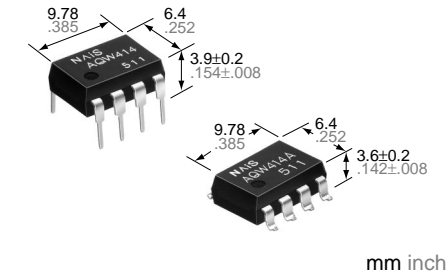
7. Eliminates the need for a power supply to drive the power MOSFET

8. Extremely low closed-circuit offset voltages to enable control of small analog signals without distortion

9. Surface-mount model available

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	AQW414	AQW414A	AQW414AX	AQW414AZ	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)

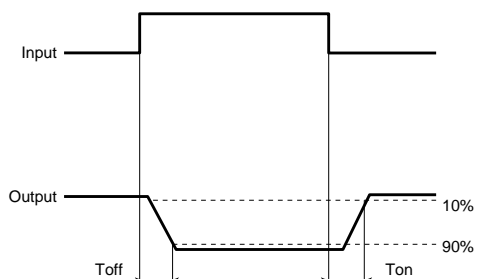
	Item	Symbol	AQW414(A)	Remarks
Input	LED forward current	I_F	50 mA	
	LED reverse voltage	V_R	3 V	
	Peak forward current	I_{FP}	1 A	$f = 100$ Hz, Duty factor = 0.1%
	Power dissipation	P_{in}	75 mW	
Output	Load voltage	V_L	400 V	
	Continuous load current	I_L	0.1 A (0.13 A)	Peak AC, DC (): in case of using only 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	
Temperature limits	Operating	T_{opr}	-40°C to +85°C -40°F to +185°F	Non-condensing at low temperatures
	Storage	T_{stag}	-40°C to +100°C -40°F to +212°F	

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

Item		Symbol	AQW414(A)	Condition	
Input	LED operate (OFF) current	Typical	0.7 mA	I _L = 100 mA	
		Maximum	3 mA		
	LED reverse (ON) current	Minimum	0.4 mA	I _L = 100 mA	
		Typical	0.64 mA		
LED dropout voltage	Typical	1.14 V (1.25 V at I _F = 50 mA)		I _F = 5 mA	
	Maximum	1.5 V			
Output	On resistance	Typical	26 Ω	I _F = 0 mA I _L = 100 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 _{off}	0.46 ms	I _F = 0 mA → 5 mA I _L = 100 mA
		Maximum		1 ms	
	Reverse (ON) time*	Typical	T _{on}	0.40 ms	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

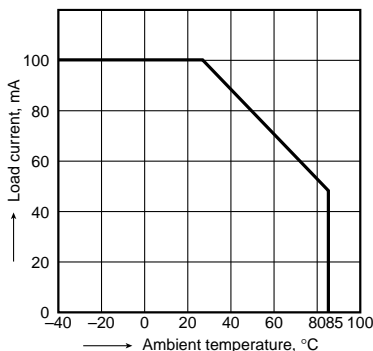


- For Dimensions, see Page 440.
- For Schematic and Wiring Diagrams, see Page 445.
- For Cautions for Use, see Page 449.

REFERENCE DATA

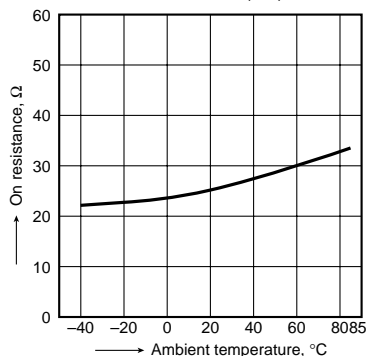
1. Load current vs. ambient temperature characteristics

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



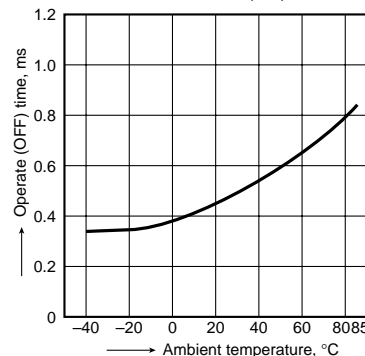
2. On resistance vs. ambient temperature characteristics

Measured portion: between terminals 5 and 6, 7 and 8;
LED current: 0 mA;
Continuous load current: 100 mA (DC)



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

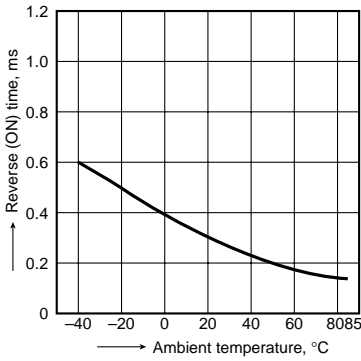
LED current: 5 mA;
Load voltage: 400 V (DC);
Continuous load current: 100 mA (DC)



AQW414

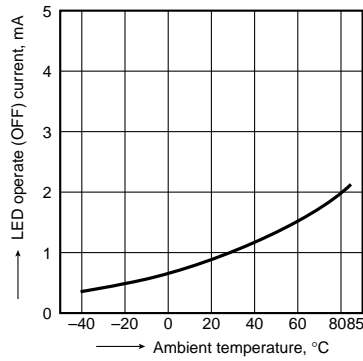
4. Reverse (ON) time vs. ambient temperature characteristics

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



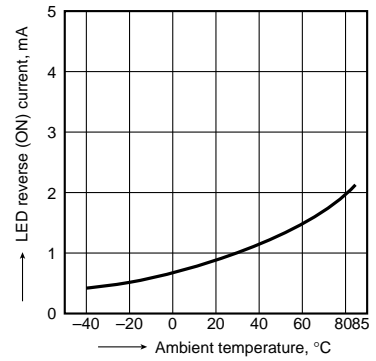
5. LED operate (OFF) current vs. ambient temperature characteristics

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



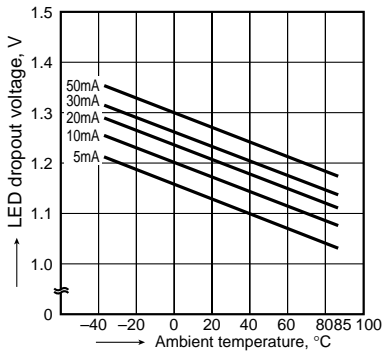
6. LED reverse (ON) current vs. ambient temperature characteristics

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



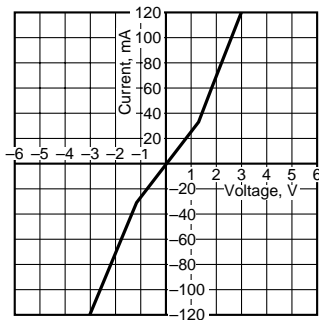
7. LED dropout voltage vs. ambient temperature characteristics

LED current: 5 to 50 mA



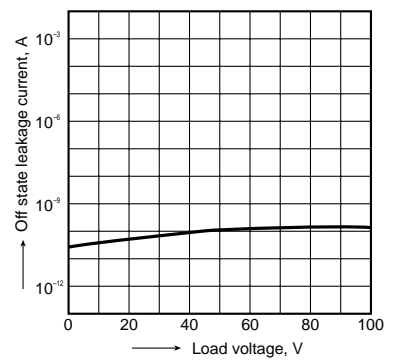
8. Voltage vs. current characteristics of output at MOS portion

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



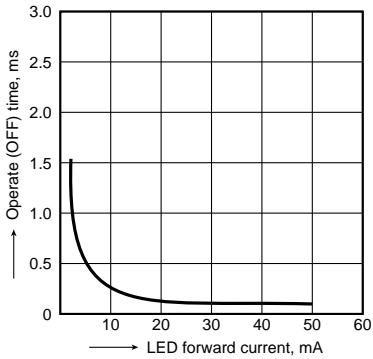
9. Off state leakage current

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



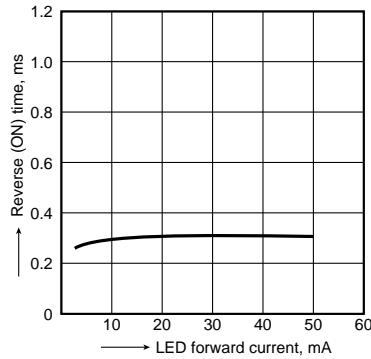
10. LED forward current vs. operate (OFF) time characteristics

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

