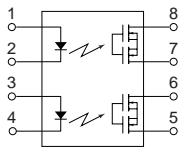
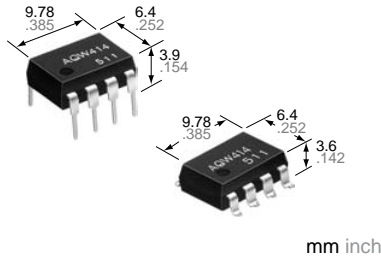


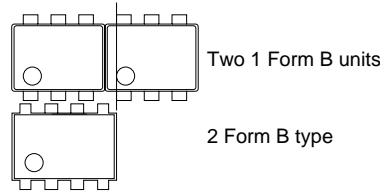
Normally closed  
DIP8-pin type  
of 400V load voltage

PhotoMOS Relays  
GU 2 Form B  
(AQW414)



## FEATURES

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



- Applicable for 2 Form B use as well as two independent 1 Form B use
- Controls load currents up to 0.13 A with an input current of 5 mA
- High speed switching: operate time typ. 0.46 ms
- Extremely low closed-circuit offset voltages to enable control of small analog signals without distortion

## TYPICAL APPLICATIONS

- High-speed inspection machines
- Telephone equipment
- Computers

Compliance with RoHS Directive

## TYPES

	Output rating*		Package	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 dual use	400 V	100 mA	DIP8-pin	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: The surface mount terminal shape indicator "A" and the packing style indicator "X" or "Z" are not marked on the relay.

## RATING

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

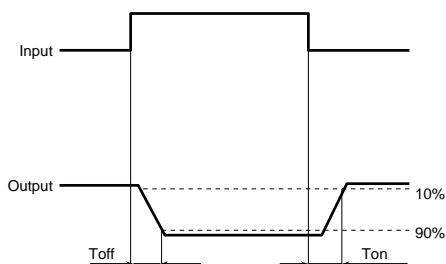
Item	Symbol	AQW414(A)	Remarks	
Input	LED forward current	I <sub>F</sub>	50 mA	
	LED reverse voltage	V <sub>R</sub>	5 V	
	Peak forward current	I <sub>FP</sub>	1 A	f = 100 Hz, Duty factor = 0.1%
	Power dissipation	P <sub>in</sub>	75 mW	
Output	Load voltage (peak AC)	V <sub>L</sub>	400 V	
	Continuous load current	I <sub>L</sub>	0.1 A (0.13 A)	Peak AC, DC ( ): in case of using only 1 channel
	Peak load current	I <sub>peak</sub>	0.3 A	100 ms (1 shot), V <sub>L</sub> = DC
	Power dissipation	P <sub>out</sub>	800 mW	
Total power dissipation	P <sub>T</sub>	850 mW		
I/O isolation voltage	V <sub>iso</sub>	1,500 V AC		
Temperature limits	Operating	T <sub>opr</sub>	-40°C to +85°C -40°F to +185°F	Non-condensing at low temperatures
	Storage	T <sub>stag</sub>	-40°C to +100°C -40°F to +212°F	

# GU 2 Form B (AQW414)

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

Item		Symbol	AQW414(A)	Condition	
Input	LED operate (OFF) current	Typical	0.7 mA	$I_L = \text{Max.}$	
		Maximum	3 mA		
	LED reverse (ON) current	Minimum	0.4 mA		$I_L = \text{Max.}$
		Typical	0.64 mA		
LED dropout voltage	Typical	$V_F$	1.25 V (1.14 V at $I_F = 5 \text{ mA}$ )	$I_F = 50 \text{ mA}$	
	Maximum				1.5 V
Output	On resistance	Typical	26 $\Omega$	$I_F = 0 \text{ mA}$ $I_L = \text{Max.}$ Within 1 s on time	
		Maximum	50 $\Omega$		
	Off state leakage current	Maximum	$I_{\text{Leak}}$		1 $\mu\text{A}$
Transfer characteristics	Operate (OFF) time*	Typical	0.46 ms	$I_F = 0 \text{ mA} \rightarrow 5 \text{ mA}$ $I_L = \text{Max.}$	
		Maximum	1 ms		
	Reverse (ON) time*	Typical	0.40 ms	$I_F = 5 \text{ mA} \rightarrow 0 \text{ mA}$ $I_L = \text{Max.}$	
		Maximum	1 ms		
	I/O capacitance	Typical	$C_{\text{iso}}$	0.8 pF	$f = 1 \text{ MHz}$ $V_B = 0 \text{ V}$
		Maximum		1.5 pF	
Initial I/O isolation resistance	Minimum	$R_{\text{iso}}$	1,000 M $\Omega$	500 V DC	

\*Operate/Reverse time



## RECOMMENDED OPERATING CONDITIONS

Please obey the following conditions to ensure proper relay operation and resetting.

Item	Symbol	Recommended value	Unit
Input LED current	$I_F$	5	mA

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

■ These products are not designed for automotive use.

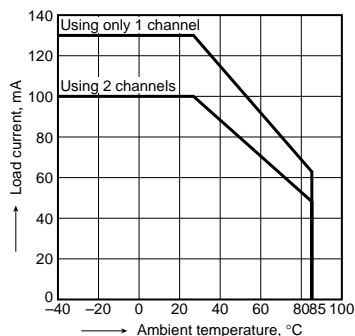
If you are considering to use these products for automotive applications, please contact your local Panasonic Electric Works technical representative.

For more information

## REFERENCE DATA

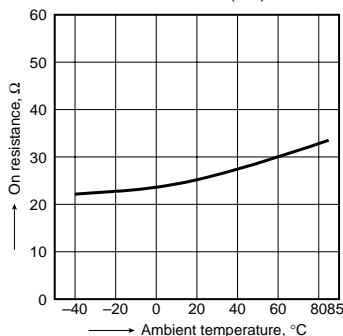
1. Load current vs. ambient temperature characteristics

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



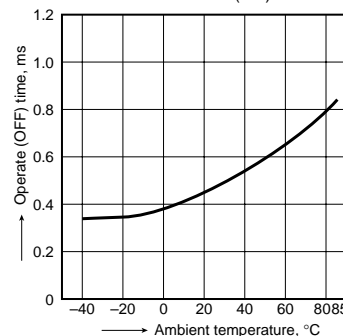
2. On resistance vs. ambient temperature characteristics

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



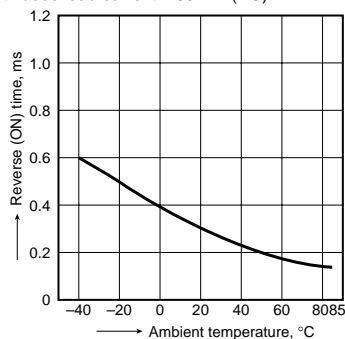
3. Operate (OFF) time vs. ambient temperature characteristics

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



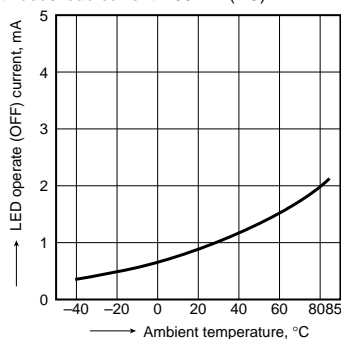
### 4. Reverse (ON) time vs. ambient temperature characteristics

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



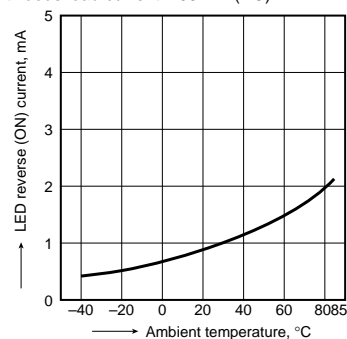
### 5. LED operate (OFF) current vs. ambient temperature characteristics

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



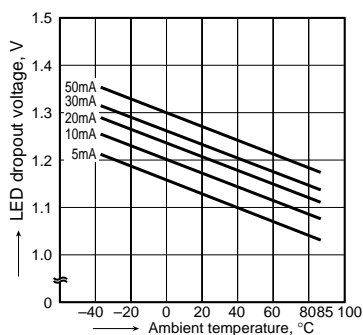
### 6. LED reverse (ON) current vs. ambient temperature characteristics

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



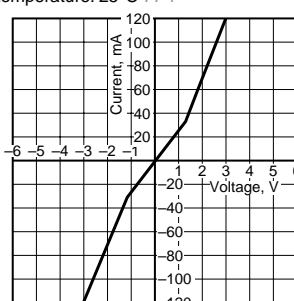
### 7. LED dropout voltage vs. ambient temperature characteristics

LED current: 5 to 50 mA



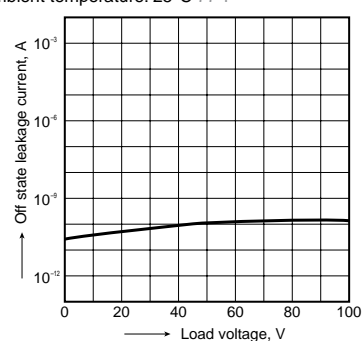
### 8. Current vs. voltage characteristics of output at MOS portion

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



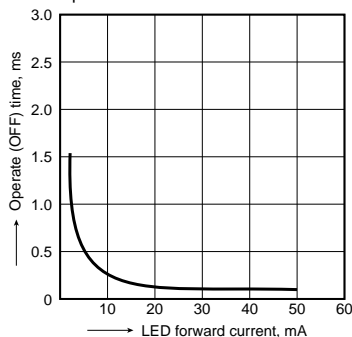
### 9. Off state leakage current vs. load voltage characteristics

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



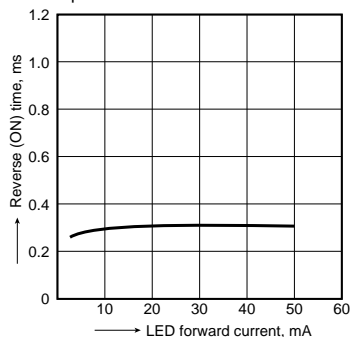
### 10. Operate (OFF) time vs. LED forward current characteristics

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

