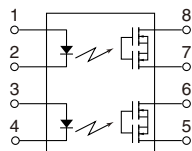
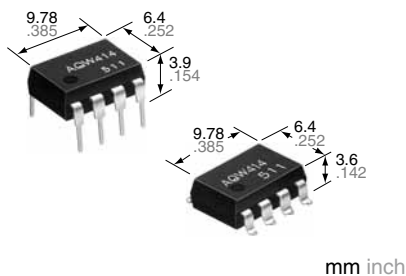




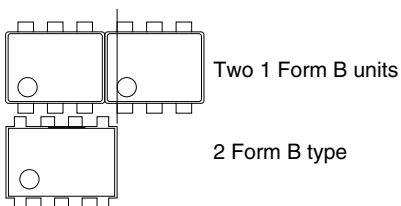
<b>Normally closed DIP8-pin type of 400V load voltage</b>	<b>PhotoMOS® GU 2 Form B (AQW414)</b>
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**RoHS compliant**

### FEATURES

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



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

### TYPICAL APPLICATIONS

- High-speed inspection machines
- Telephone equipment
- Computers

### TYPES

	Output rating*		Package	Part No.				Packing quantity	
	Load voltage	Load current		Through hole terminal	Surface-mount terminal		Tube	Tape and reel	
					Tape and reel packing style				
			Tube 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: 50 pcs. 1 batch contains: 500 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 device.

### RATING

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

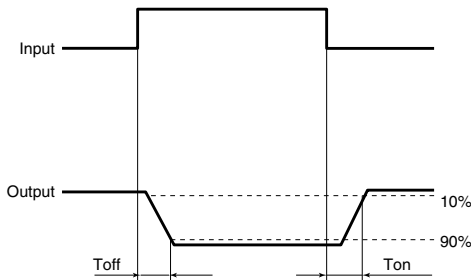
	Item	Symbol	AQW414(A)	Remarks
Input	LED forward current	I <sub>F</sub>	50 mA	
	LED reverse voltage	V <sub>R</sub>	5 V	
	Peak forward current	I <sub>FP</sub>	1 A	f = 100 Hz, Duty factor = 0.1%
	Power dissipation	P <sub>in</sub>	75 mW	
Output	Load voltage (peak AC)	V <sub>L</sub>	400 V	
	Continuous load 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 $\mu\text{A}$	$I_F = 5 \text{ mA}$ $V_L = \text{Max.}$
Transfer characteristics	Operate (OFF) time*	Typical	$T_{\text{off}}$	0.46 ms	$I_F = 0 \text{ mA} \rightarrow 5 \text{ mA}$ $I_L = \text{Max.}$
		Maximum	1 ms		
	Reverse (ON) time*	Typical	$T_{\text{on}}$	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 device operation and resetting.

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

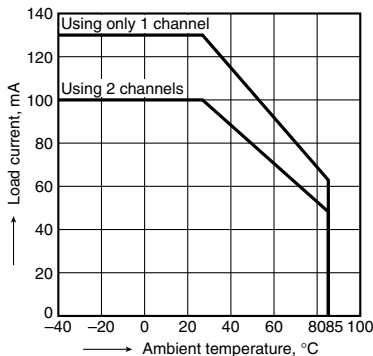
■ These products are not designed for automotive use.

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

## REFERENCE DATA

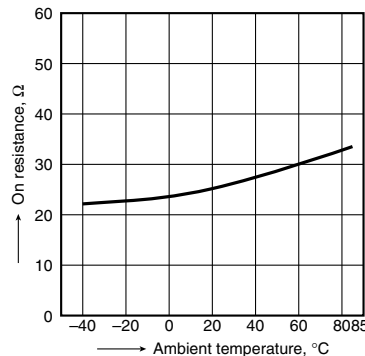
1. Load current vs. ambient temperature characteristics

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



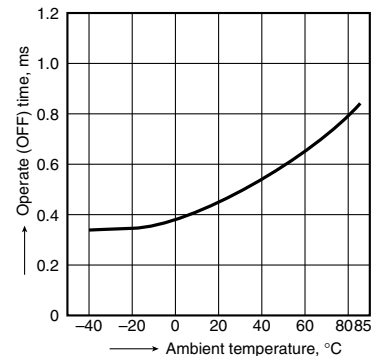
2. On resistance vs. ambient temperature characteristics

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



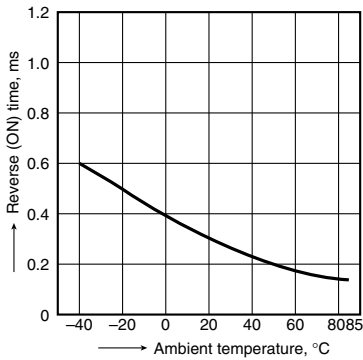
3. Operate (OFF) time vs. ambient temperature characteristics

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



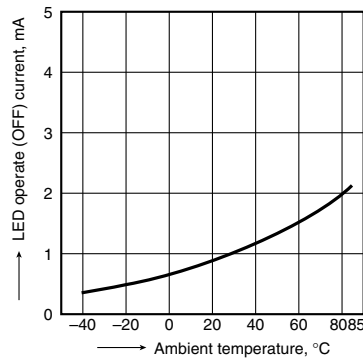
4. Reverse (ON) time vs. ambient temperature characteristics

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



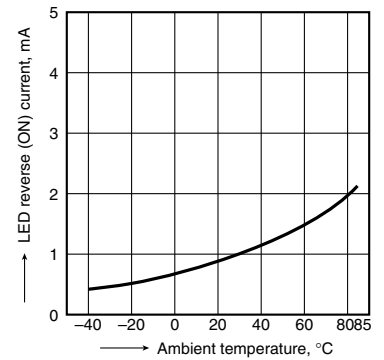
5. LED operate (OFF) current vs. ambient temperature characteristics

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



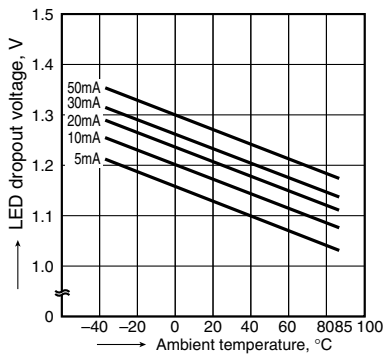
6. LED reverse (ON) current vs. ambient temperature characteristics

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



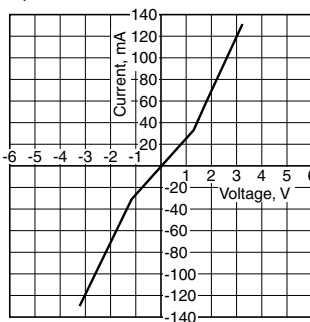
7. LED dropout voltage vs. ambient temperature characteristics

LED current: 5 to 50 mA



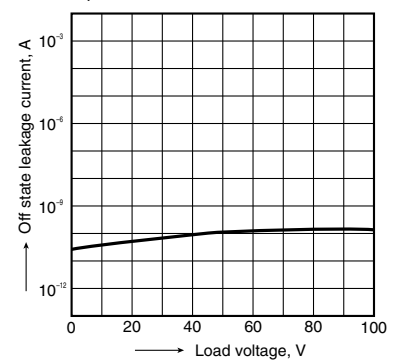
8. Current vs. voltage characteristics of output at MOS portion

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



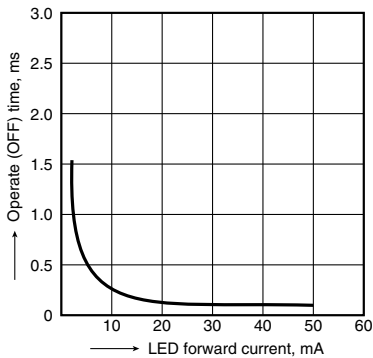
9. Off state leakage current vs. load voltage characteristics

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



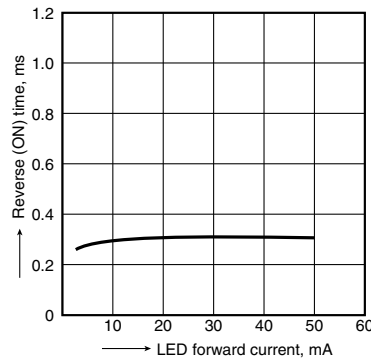
10. Operate (OFF) time vs. LED forward current characteristics

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;  
LED current: 5 mA; Frequency: 1 MHz;  
Ambient temperature: 25°C 77°F

