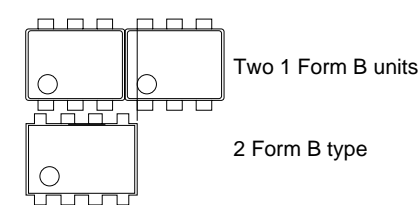


### FEATURES

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  $\mu$ 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

6. High speed switching: operate time typical of 300  $\mu$ s

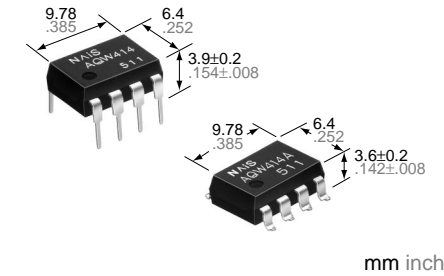
7. Eliminates the need for a power supply to drive the power MOSFET

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)

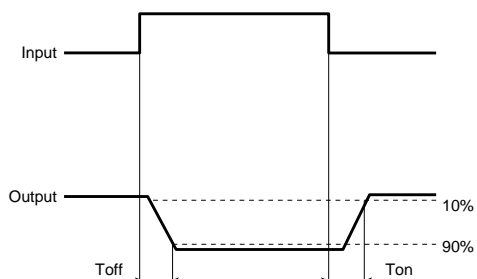
Item	Symbol	AQW414(A)	Remarks	
Input	LED forward current	$I_F$	50 mA	
	LED reverse voltage	$V_R$	3 V	
	Peak forward current	$I_{FP}$	1 A	f = 100 Hz, Duty factor = 0.1%
	Power dissipation	$P_{in}$	75 mW	
Output	Load voltage	$V_L$	400 V	
	Continuous load current	$I_L$	0.1 A (0.13 A)	Peak AC, DC ( ): in 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 <sub>L</sub> = 100 mA
		Maximum	3 mA	
	LED reverse (ON) current	Minimum	0.4 mA	I <sub>L</sub> = 100 mA
		Typical	0.64 mA	
LED dropout voltage	Typical	1.14 V (1.25 V at I <sub>F</sub> = 50 mA)		I <sub>F</sub> = 5 mA
	Maximum	1.5 V		
Output	On resistance	Typical	26 Ω	I <sub>F</sub> = 0 mA I <sub>L</sub> = 100 mA Within 1 s on time
		Maximum	50 Ω	
	Off state leakage current	Maximum	1 μA	I <sub>F</sub> = 5 mA V <sub>L</sub> = 400 V
Transfer characteristics	Operate (OFF) time*	Typical	0.46 ms	I <sub>F</sub> = 0 mA → 5 mA I <sub>L</sub> = 100 mA
		Maximum	1 ms	
	Reverse (ON) time*	Typical	0.40 ms	I <sub>F</sub> = 5 mA → 0 mA I <sub>L</sub> = 100 mA
		Maximum	1 ms	
	I/O capacitance	Typical	0.8 pF	f = 1 MHz V <sub>B</sub> = 0
Maximum		1.5 pF		
Initial I/O isolation resistance	Minimum	R <sub>iso</sub>	1,000 MΩ	500 V DC

Note: Recommendable LED forward current I<sub>F</sub> = 5 mA.

\*Operate/Reverse time

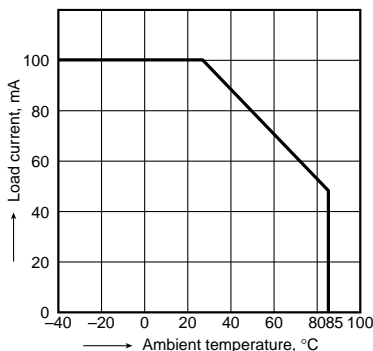


- For Dimensions, see Page 440.
- For Schematic and Wiring Diagrams, see Page 445.
- For Cautions for Use, see Page 449.

REFERENCE DATA

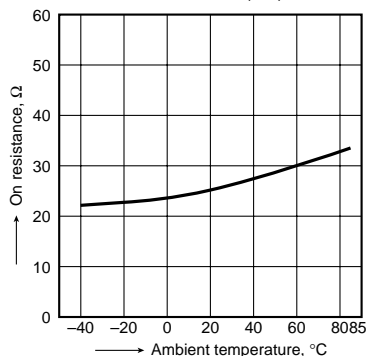
1. Load current vs. ambient temperature characteristics

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



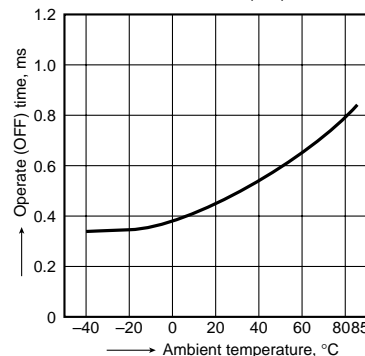
2. On resistance vs. ambient temperature characteristics

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

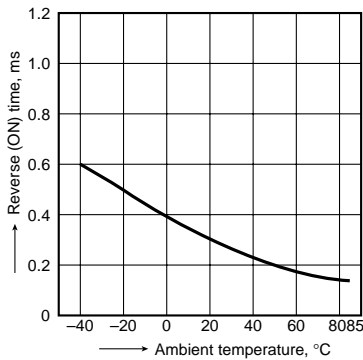
LED current: 5 mA;  
Load voltage: 400 V (DC);  
Continuous load current: 100 mA (DC)



# AQW414

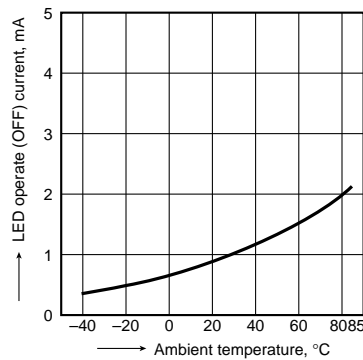
## 4. Reverse (ON) time vs. ambient temperature characteristics

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



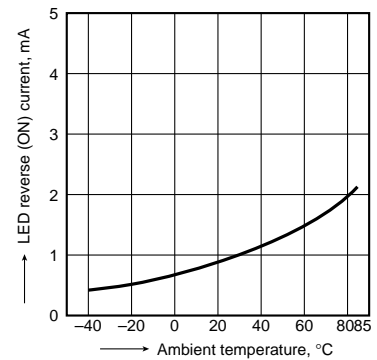
## 5. LED operate (OFF) current vs. ambient temperature characteristics

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



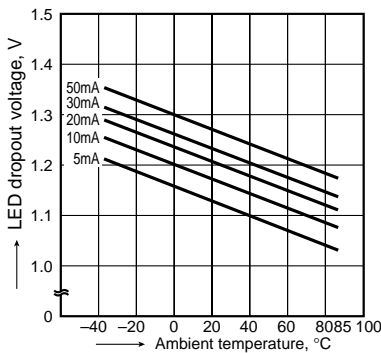
## 6. LED reverse (ON) current vs. ambient temperature characteristics

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



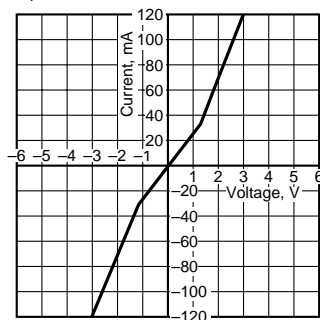
## 7. LED dropout voltage vs. ambient temperature characteristics

LED current: 5 to 50 mA



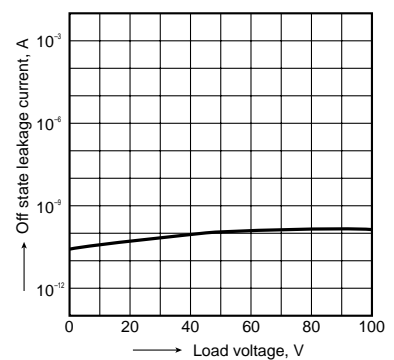
## 8. Voltage vs. current characteristics of output at MOS portion

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



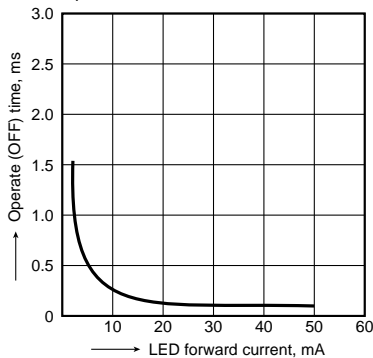
## 9. Off state leakage current

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



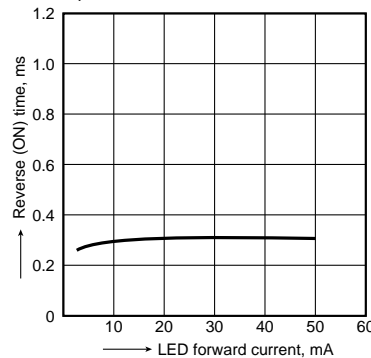
## 10. LED forward current vs. operate (OFF) time characteristics

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

