

**High capacity  
(Load current Max. 1.8A).  
Flat-Packaged type DIP  
(2 Form A) 8-pin type.**

## PD PhotoMOS (AQW270)

### FEATURES

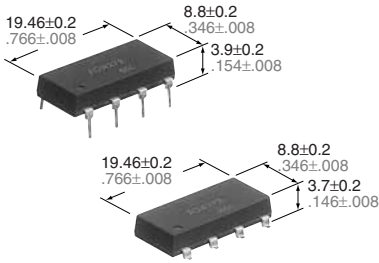
**1. Flat-Packaged Type (W) 8.8× (D) 19.46× (H) 3.9mm (W) .346× (D) .766× (H) .154inch**

**2. High capacity**  
Supports the various types of load control, from very small loads to a maximum 1.8A at the rated load voltage 60V (AQW272)

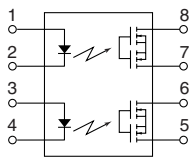
**3. High sensitivity**  
• Low ON resistance  
A maximum 1.8A load can be controlled with a 5mA input current. The ON resistance is low at 0.11Ω (typ.) (AQW272)

### TYPICAL APPLICATIONS

- Measuring and Testing equipment
- IC Testers and Board Testers
- High speed inspection machines
- Railroad, traffic signals



mm inch



**RoHS Directive compatibility information**  
<http://www.nais-e.com/>

### TYPES

Type	Output rating*		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 1/2/3/4-pin side	Picked from the 5/6/7/8-pin side		
AC/DC	60V	1.8A	AQW272	AQW272A	AQW272AX	AQW272AZ	1 tube contains 25 pcs. 1 batch contains 250 pcs.	1,000 pcs.
	100V	1.1A	AQW275	AQW275A	AQW275AX	AQW275AZ		
	200V	0.55A	AQW277	AQW277A	AQW277AX	AQW277AZ		
	400V	0.3A	AQW274	AQW274A	AQW274AX	AQW274AZ		

\* Indicate the peak AC and DC values.

Note: For space reasons, the SMD terminal shape indicator "A" and the package type indicator "X" and "Z" are omitted from the seal.

### RATING

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

Item		Symbol	AQW272(A)	AQW275(A)	AQW277(A)	AQW274(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>	60 V	100 V	200 V	400 V	
	Continuous load current (Peak AC)	I <sub>L</sub>	1.8 A (2.5 A)	1.1 A (1.5 A)	0.55 A (0.7 A)	0.3 A (0.4 A)	Peak AC, DC ( ): in case of using only 1 channel
	Peak load current	I <sub>peak</sub>	6.0 A	4.0 A	2.0 A	1.0 A	100ms (1 shot), V <sub>L</sub> = DC
	Power dissipation	P <sub>out</sub>	1,100 mW				
Total power dissipation		P <sub>T</sub>	1,100 mW				
I/O isolation voltage		V <sub>iso</sub>	2,500 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>stg</sub>	-40°C to +100°C -40°F to +212°F				

# PD PhotoMOS (AQW27○)

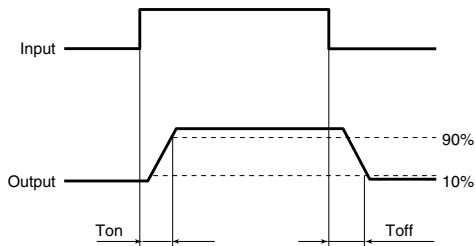
## 2. Electrical characteristics (Ambient temperature: 25°C 77°F)

Item			Symbol	AQW272(A)	AQW275(A)	AQW277(A)	AQW274(A)	Condition
Input	LED operate current	Typical	I <sub>Fon</sub>	1.0 mA				I <sub>L</sub> = 100 mA V <sub>L</sub> = 10 V
		Maximum		3.0 mA				
	LED turn off current	Minimum	I <sub>Foff</sub>	0.4 mA				I <sub>L</sub> = 100 mA V <sub>L</sub> = 10 V
		Typical		0.9 mA				
LED dropout voltage	Typical	V <sub>F</sub>	1.25 V (1.16 V at I <sub>F</sub> = 10 mA)				I <sub>F</sub> = 50 mA	
	Maximum		1.5 V					
Output	On resistance	Typical	R <sub>on</sub>	0.11 Ω	0.23 Ω	0.7 Ω	2.1 Ω	I <sub>F</sub> = 10 mA I <sub>L</sub> = Max. Within 1 s on time
		Maximum		0.18 Ω	0.34 Ω	1.1 Ω	3.2 Ω	
	Off state leakage current	Maximum	I <sub>Leak</sub>	10 μA				I <sub>F</sub> = 0 V <sub>L</sub> = Max.
Transfer characteristics	Turn on time*	Typical	T <sub>on</sub>	2.46 ms	2.40 ms	1.12 ms	1.65 ms	I <sub>F</sub> = 10 mA I <sub>L</sub> = 100 mA V <sub>L</sub> = 10 V
		Maximum		5.0 ms				
		Typical		5.64 ms	5.65 ms	2.57 ms	3.88 ms	I <sub>F</sub> = 5 mA I <sub>L</sub> = 100 mA V <sub>L</sub> = 10 V
		Maximum		10.0 ms				
	Turn off time*	Typical	T <sub>off</sub>	0.22 ms	0.21 ms	0.10 ms	0.08 ms	I <sub>F</sub> = 5 mA or 10 mA I <sub>L</sub> = 100 mA V <sub>L</sub> = 10 V
		Maximum		3.0 ms				
	I/O capacitance	Typical	C <sub>iso</sub>	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	
Maximum operating speed	Maximum	—	0.5 cps				I <sub>F</sub> = 10 mA Duty factor = 50% I <sub>L</sub> = Max., V <sub>L</sub> = Max.	

Note: Recommendable LED forward current I<sub>F</sub> = 5 to 10 mA.

For type of connection

\*Turn on/Turn off time

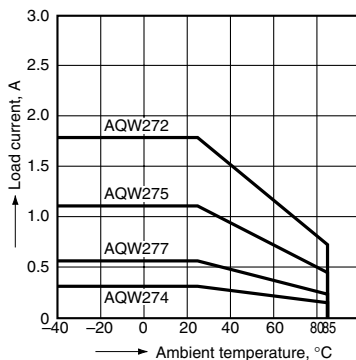


- For Dimensions
- For Schematic and Wiring Diagrams
- For Cautions for Use

## REFERENCE DATA

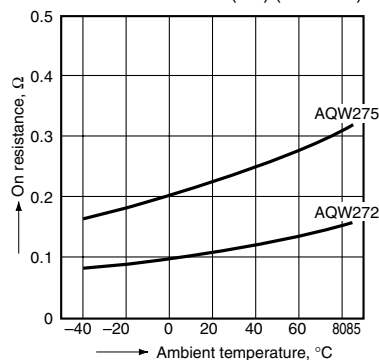
### 1. Load current vs. ambient temperature characteristics

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



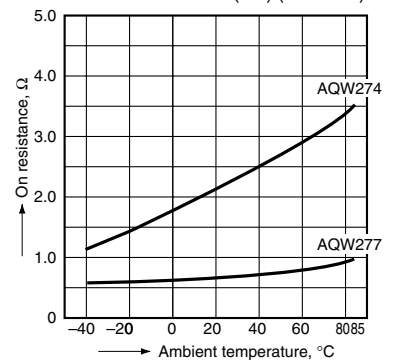
### 2.-(1) On resistance vs. ambient temperature characteristics

LED current: 10 mA;  
Continuous load current: 1.8 A (DC) (AQW272),  
1.1 A (DC) (AQW275)



### 2.-(2) On resistance vs. ambient temperature characteristics

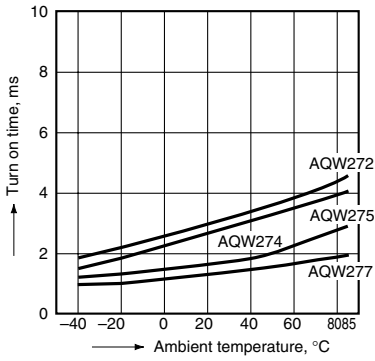
LED current: 10 mA;  
Continuous load current: 0.55 A (DC) (AQW277),  
0.3 A (DC) (AQW274)



# PD PhotoMOS (AQW27○)

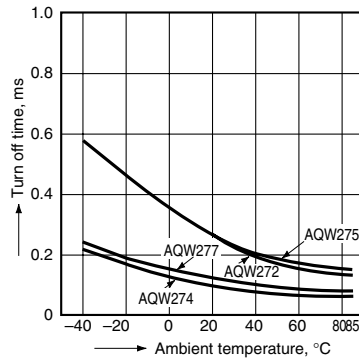
## 3. Turn on time vs. ambient temperature characteristics

LED current: 10 mA; Load voltage: 10 V (DC);  
Continuous load current: 100 mA (DC)



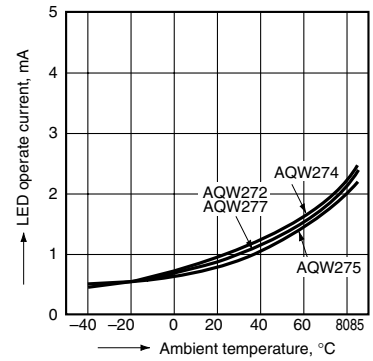
## 4. Turn off time vs. ambient temperature characteristics

LED current: 10 mA; Load voltage: 10 V (DC);  
Continuous load current: 100 mA (DC)



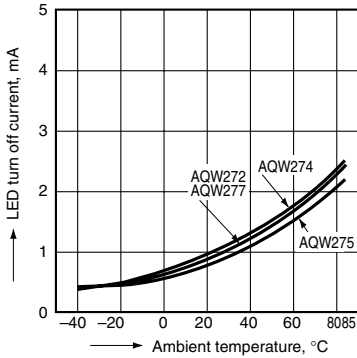
## 5. LED operate current vs. ambient temperature characteristics

Load voltage: 10 V (DC);  
Continuous load current: 100 mA (DC)



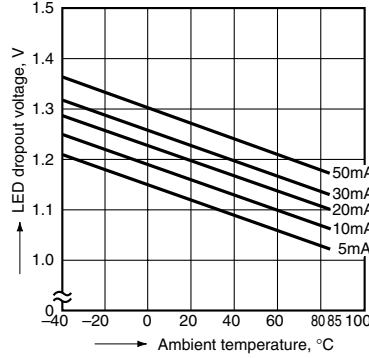
## 6. LED turn off current vs. ambient temperature characteristics

Load voltage: 10 V (DC);  
Continuous load current: 100 mA (DC)



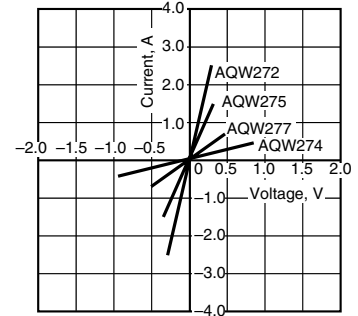
## 7. LED dropout voltage vs. ambient temperature characteristics

Sample: all types;  
LED current: 5 to 50 mA



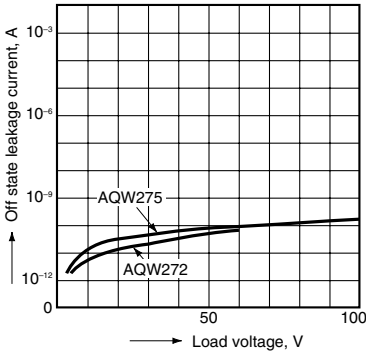
## 8. Voltage vs. current characteristics of output at MOS portion

Ambient temperature: 25°C 77°F



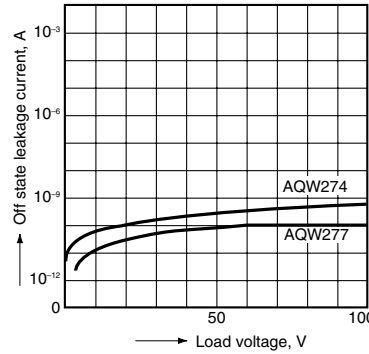
## 9.-(1) Off state leakage current

Ambient temperature: 25°C 77°F



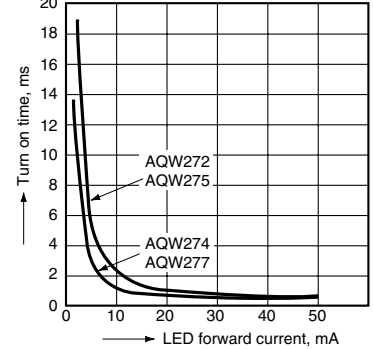
## 9.-(2) Off state leakage current

Ambient temperature: 25°C 77°F



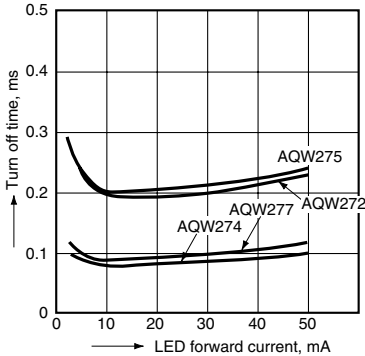
## 10. LED forward current vs. turn on time characteristics

Load voltage: 10 V (DC); Continuous load current: 100 mA (DC); Ambient temperature: 25°C 77°F



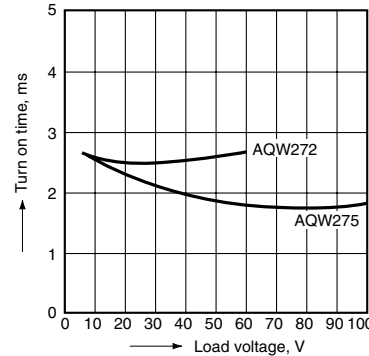
## 11. LED forward current vs. turn off time characteristics

Load voltage: 10 V (DC); Continuous load current: 100 mA (DC); Ambient temperature: 25°C 77°F



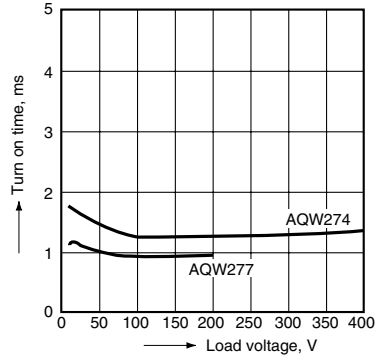
## 12.-(1) Load voltage vs. turn on time characteristics

LED current: 10 mA; Continuous load current: 100 mA; Ambient temperature: 25°C 77°F



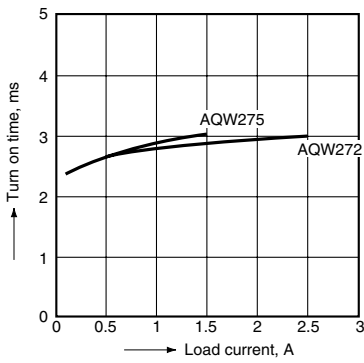
## 12.-(2) Load voltage vs. turn on time characteristics

LED current: 10 mA; Continuous load current: 100 mA; Ambient temperature: 25°C 77°F



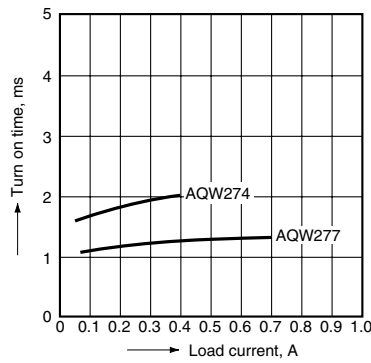
13.-(1) Load current vs. turn on time characteristics

LED current: 10 mA; Continuous load current: 10 V (DC); Ambient temperature: 25°C 77°F



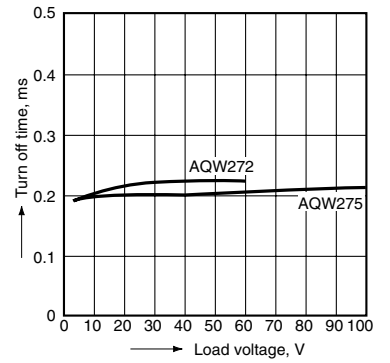
13.-(2) Load current vs. turn on time characteristics

LED current: 10 mA; Load voltage 10 V (DC); Ambient temperature: 25°C 77°F



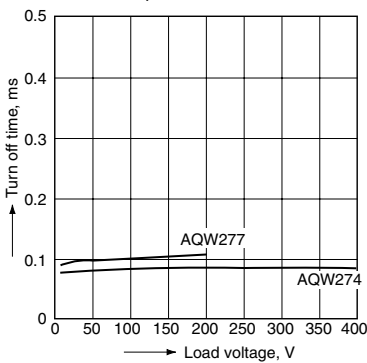
14.-(1) Load voltage vs. turn off time characteristics

LED current: 10 mA; Continuous load current: 100 mA; Ambient temperature: 25°C 77°F



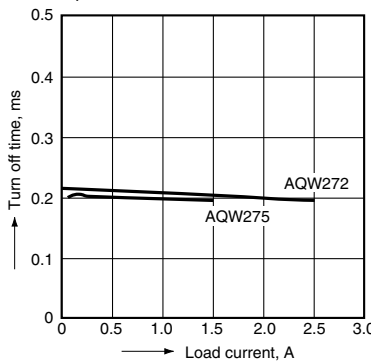
14.-(2) Load voltage vs. turn off time characteristics

LED current: 10 mA; Continuous load current: 100 mA; Ambient temperature: 25°C 77°F



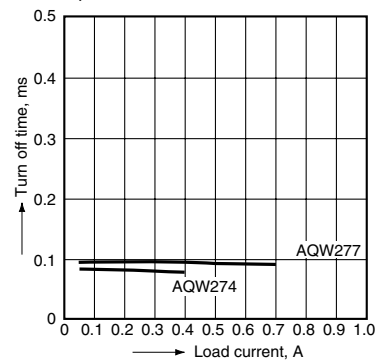
15.-(1) Load current vs. turn off time characteristics

LED current: 10 mA; Load voltage 10 V (DC); Ambient temperature: 25°C 77°F



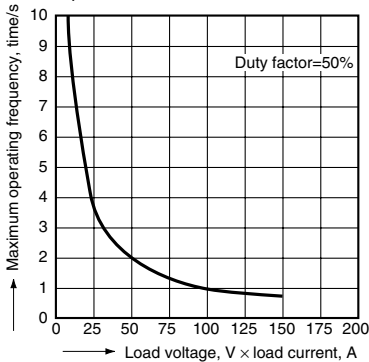
15.-(2) Load current vs. turn off time characteristics

LED current: 10 mA; Load voltage 10 V (DC); Ambient temperature: 25°C 77°F



16. Maximum operating frequency vs. load voltage/current characteristics

LED current: 10 mA; Ambient temperature: 25°C 77°F



17. Applied voltage vs. output capacitance characteristics

Frequency: 1 MHz; Ambient temperature: 25°C 77°F

