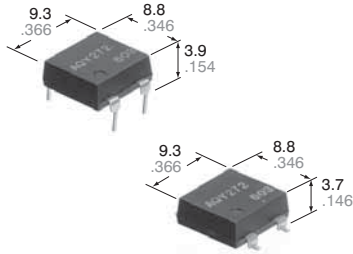


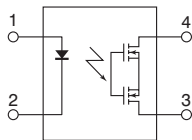
**Flat Power-DIP4-pin type with high capacity up to 2A load current**

**PhotoMOS Relays PD 1 Form A (AQY270)**



[CAD Data](#)

mm inch



## FEATURES

- 1. Flat-Packaged type**  
(W) 8.8 × (D) 9.3 × (H) 3.9 mm  
(W) .346 × (D) .366 × (H) .154 inch
- 2. High capacity of continuous load current 2A (AQY272)**
- 3. High sensitivity and low on-resistance**  
Max. 2A load can be controlled with 5mA input current. The on-resistance is low at typ. 0.11Ω (AQY272).

## TYPICAL APPLICATIONS

- Measuring and Testing equipment
- IC Testers and Board Testers
- High speed inspection machines

## TYPES

Type	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-pin side	Picked from the 3/4-pin side				
AC/DC dual use	60V	2.0A	Power-DIP4-pin	AQY272	AQY272A	AQY272AX	AQY272AZ	1 tube contains: 50 pcs. 1 batch contains: 1,000 pcs.	1,000 pcs.	
	100V	1.3A		AQY275	AQY275A	AQY275AX	AQY275AZ			
	200V	0.65A		AQY277	AQY277A	AQY277AX	AQY277AZ			
	400V	0.35A		AQY274	AQY274A	AQY274AX	AQY274AZ			

\* Indicate the peak AC and DC values.

Note: The surface mount terminal 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)

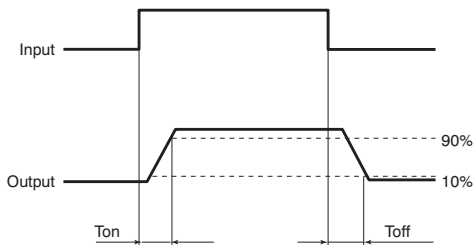
Item		Symbol	AQY272(A)	AQY275(A)	AQY277(A)	AQY274(A)	Remarks
Input	LED forward current	I <sub>F</sub>	50 mA				
	LED reverse voltage	V <sub>R</sub>	5 V				
	Peak forward current	I <sub>FP</sub>	1 A				f = 100 Hz, Duty factor = 0.1%
	Power dissipation	P <sub>in</sub>	75 mW				
Output	Load voltage (peak AC)	V <sub>L</sub>	60 V	100 V	200 V	400 V	
	Continuous load current	I <sub>L</sub>	2.0 A	1.3 A	0.65 A	0.35 A	Peak AC, DC
	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>	700 mW				
Total power dissipation		P <sub>T</sub>	750 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 1 Form A (AQY27○)

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

Item		Symbol	AQY272(A)	AQY275(A)	AQY277(A)	AQY274(A)	Condition
Input	LED operate current	Typical	1.0 mA				I <sub>L</sub> = 100 mA V <sub>L</sub> = 10 V
		Maximum	3.0 mA				
	LED turn off current	Minimum	0.4 mA				I <sub>L</sub> = 100 mA V <sub>L</sub> = 10 V
		Typical	0.9 mA				
LED dropout voltage	Typical	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	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	10 μA				I <sub>F</sub> = 0 mA, V <sub>L</sub> = Max.
Transfer characteristics	Turn on time*	Typical	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	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	0.8 pF				f = 1 MHz V <sub>B</sub> = 0 V
		Maximum	1.5 pF				
Initial I/O isolation resistance	Minimum	1,000 MΩ				500 V DC	
Maximum operating speed	Maximum	—				I <sub>F</sub> = 10 mA, Duty factor = 50% I <sub>L</sub> = Max., V <sub>L</sub> = Max.	

\*Turn on/Turn off 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 <sub>F</sub>	5 to 10	mA

### ■ Dimensions

### ■ Schematic and Wiring Diagrams

### ■ Cautions for Use

■ These products are not designed for automotive use.

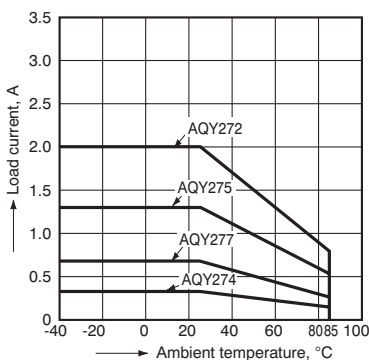
If you are considering to use these products for automotive applications, please contact your local Panasonic Electric Works technical representative.

Please refer to our information on [PhotoMOS Relays for Automotive Applications](#).

## REFERENCE DATA

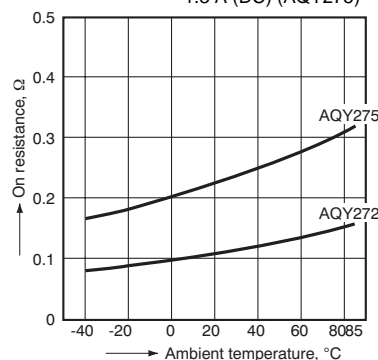
### 1. Load current vs. ambient temperature characteristics

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



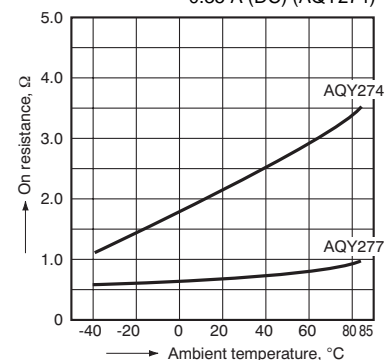
### 2-(1) On resistance vs. ambient temperature characteristics

LED current: 10 mA;  
Continuous load current: 2.0 A (DC) (AQY272),  
1.3 A (DC) (AQY275)



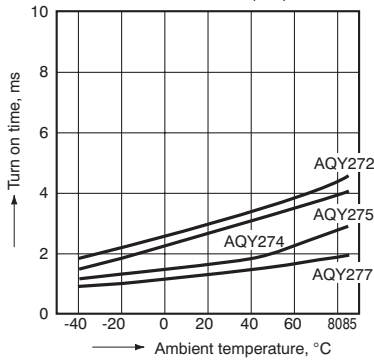
### 2-(2) On resistance vs. ambient temperature characteristics

LED current: 10 mA;  
Continuous load current: 0.65 A (DC) (AQY277),  
0.35 A (DC) (AQY274)



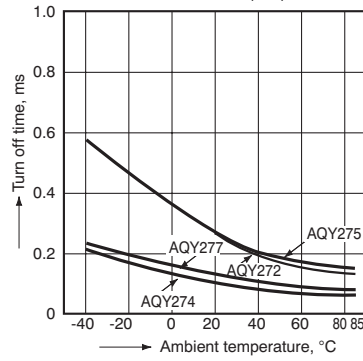
3. Turn on time vs. ambient temperature characteristics

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



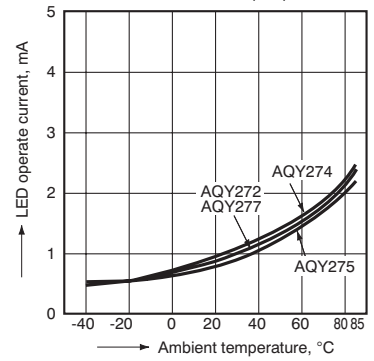
4. Turn off time vs. ambient temperature characteristics

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



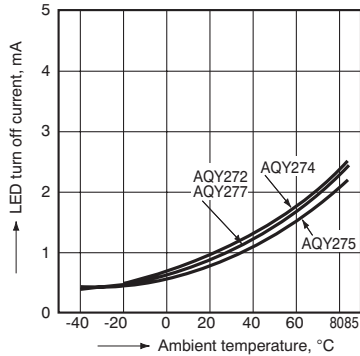
5. LED operate vs. ambient temperature characteristics

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



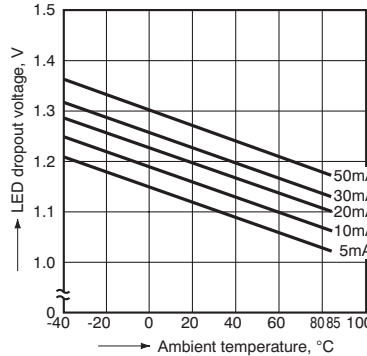
6. LED turn off current vs. ambient temperature characteristics

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



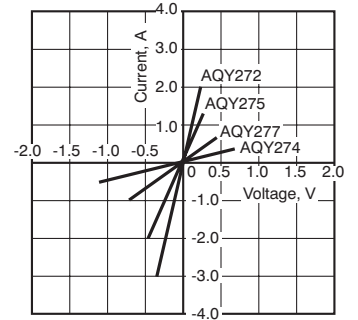
7. LED dropout voltage vs. ambient temperature characteristics

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



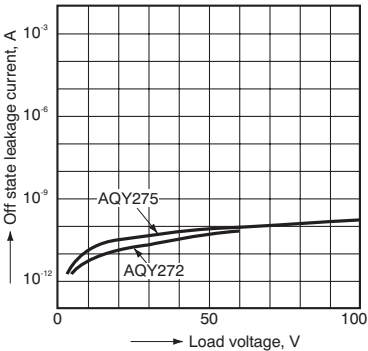
8. Current vs. voltage characteristics of output at MOS portion

Ambient temperature: 25°C 77°F



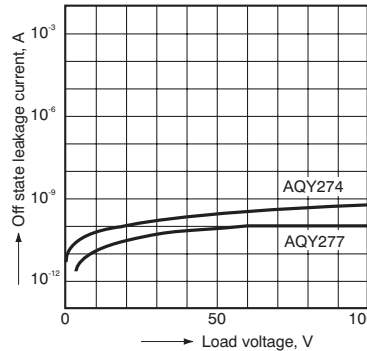
9-(1) Off state leakage current vs. load voltage characteristics

Ambient temperature: 25°C 77°F



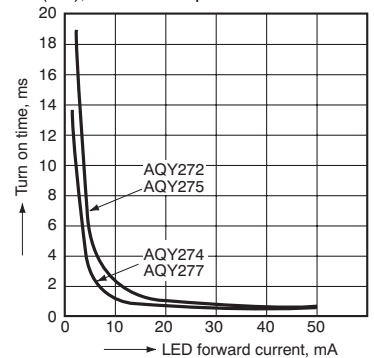
9-(2) Off state leakage current vs. load voltage characteristics

Ambient temperature: 25°C 77°F



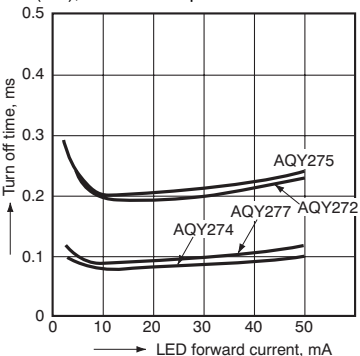
10. Turn on time vs. LED forward current characteristics

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



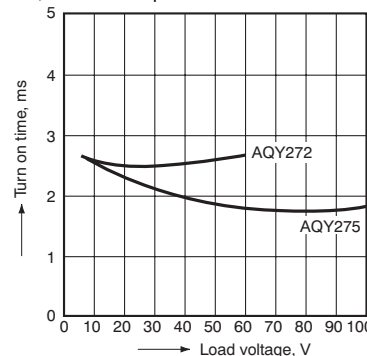
11. Turn off time vs. LED forward current characteristics

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



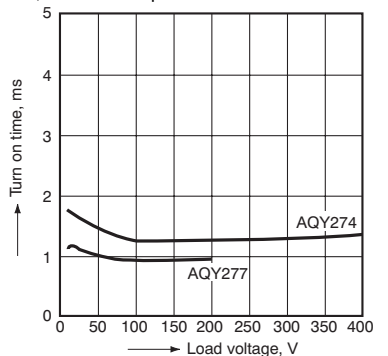
12-(1) Turn on time vs. load voltage characteristics

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



12-(2) Turn on time vs. load voltage characteristics

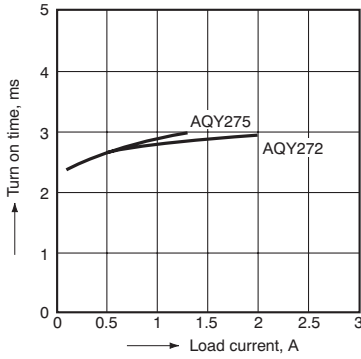
LED current: 10 mA; Continuous load current: 100 mA; Ambient temperature: 25°C 77°F



# PD 1 Form A (AQY27○)

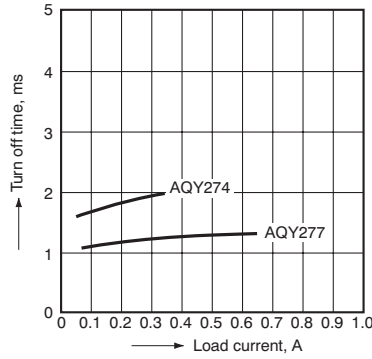
13-(1) Turn on time vs. load current characteristics

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



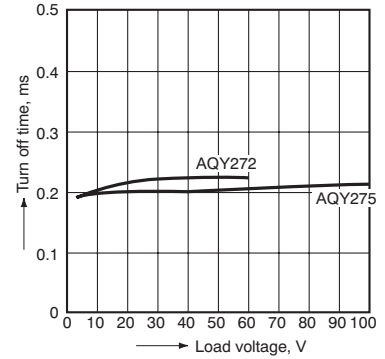
13-(2) Turn on time vs. load current characteristics

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



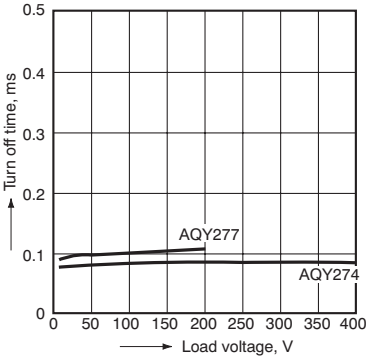
14-(1) Turn off time vs. load voltage characteristics

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



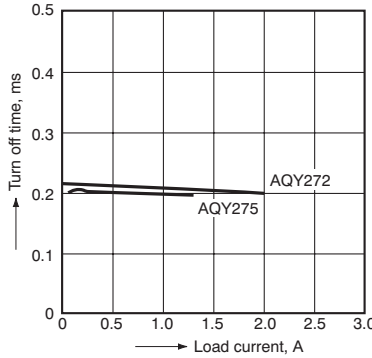
14-(2) Turn off time vs. load voltage characteristics

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



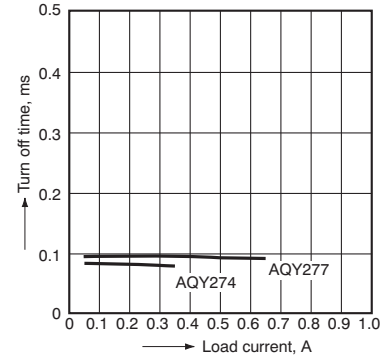
15-(1) Turn off time vs. load current characteristics

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



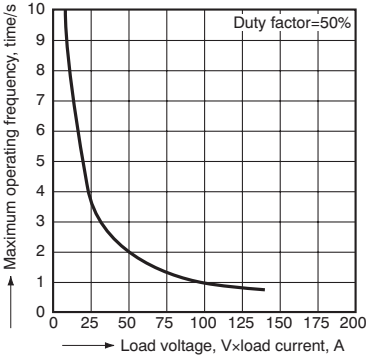
15-(2) Turn off time vs. load current characteristics

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. Output capacitance vs. applied voltage characteristics

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

