



mm inch



RoHS compliant

## 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 device.

## RATING

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

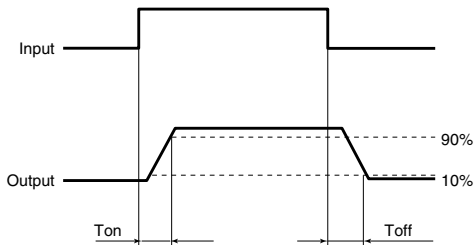
Item		Symbol	AQY272(A)	AQY275(A)	AQY277(A)	AQY274(A)	Remarks
Input	LED forward current	I <sub>F</sub>	50 mA				
	LED reverse voltage	V <sub>R</sub>	5 V				
	Peak forward current	I <sub>FP</sub>	1 A				f = 100 Hz, Duty factor = 0.1%
	Power dissipation	P <sub>in</sub>	75 mW				
Output	Load voltage (peak 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 (AQY270)

## 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				$I_L = 100 \text{ mA}$ $V_L = 10 \text{ V}$
		Maximum	3.0 mA				
	LED turn off current	Minimum	0.4 mA				$I_L = 100 \text{ mA}$ $V_L = 10 \text{ V}$
		Typical	0.9 mA				
LED dropout voltage	Typical	1.25 V (1.16 V at $I_F = 10 \text{ mA}$ )				$I_F = 50 \text{ mA}$	
	Maximum	1.5 V					
Output	On resistance	Typical	0.11 $\Omega$	0.23 $\Omega$	0.7 $\Omega$	2.1 $\Omega$	$I_F = 10 \text{ mA}$ , $I_L = \text{Max.}$ Within 1 s on time
		Maximum	0.18 $\Omega$	0.34 $\Omega$	1.1 $\Omega$	3.2 $\Omega$	
	Off state leakage current	Maximum	10 $\mu\text{A}$				$I_F = 0 \text{ mA}$ , $V_L = \text{Max.}$
Transfer characteristics	Turn on time*	Typical	2.46 ms	2.40 ms	1.12 ms	1.65 ms	$I_F = 10 \text{ mA}$ , $I_L = 100 \text{ mA}$ $V_L = 10 \text{ V}$
		Maximum	5.0 ms				
		Typical	5.64 ms	5.65 ms	2.57 ms	3.88 ms	$I_F = 5 \text{ mA}$ , $I_L = 100 \text{ mA}$ $V_L = 10 \text{ V}$
		Maximum	10.0 ms				
	Turn off time*	Typical	0.22 ms	0.21 ms	0.10 ms	0.08 ms	$I_F = 5 \text{ mA}$ or $10 \text{ mA}$ , $I_L = 100 \text{ mA}$ $V_L = 10 \text{ V}$
		Maximum	3.0 ms				
	I/O capacitance	Typical	0.8 pF				$f = 1 \text{ MHz}$ $V_B = 0 \text{ V}$
		Maximum	1.5 pF				
Initial I/O isolation resistance	Minimum	1,000 M $\Omega$				500 V DC	
Maximum operating speed	Maximum	—				$I_F = 10 \text{ mA}$ , Duty factor = 50% $I_L = \text{Max.}$ , $V_L = \text{Max.}$	

\*Turn on/Turn off 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 to 10	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 Corporation technical representative.

For more information.

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

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



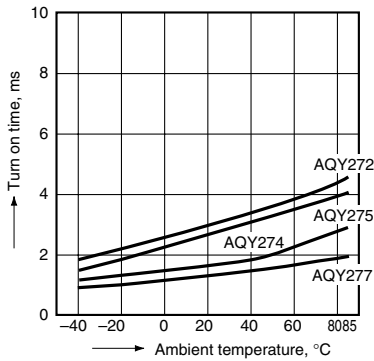
### 2.-(2) On resistance vs. ambient temperature characteristics

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



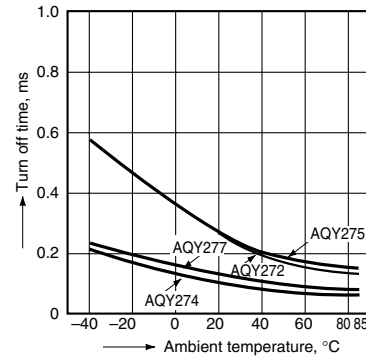
### 3. Turn on time vs. ambient temperature characteristics

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)



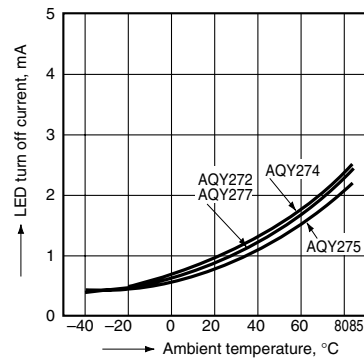
### 5. LED operate vs. ambient temperature characteristics

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



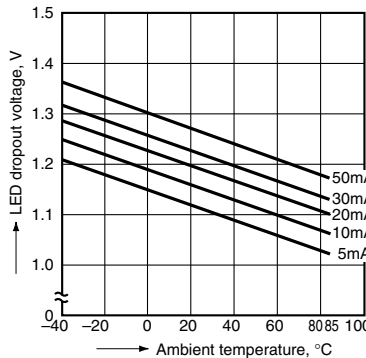
### 6. LED turn off current vs. ambient temperature characteristics

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



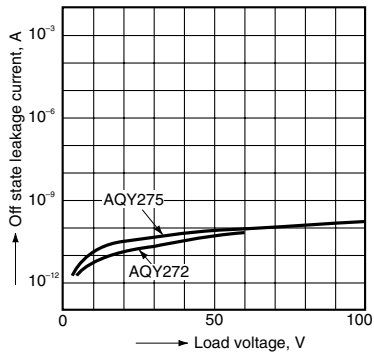
### 8. Current vs. voltage characteristics of output at MOS portion

Ambient temperature: 25°C 77°F



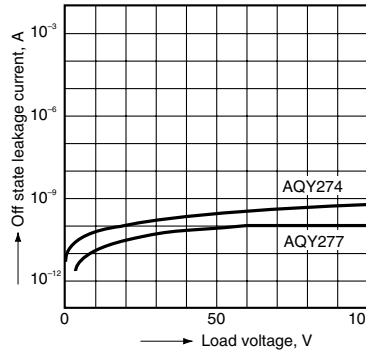
### 9.-(1) Off state leakage current vs. load voltage characteristics

Ambient temperature: 25°C 77°F



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

Ambient temperature: 25°C 77°F



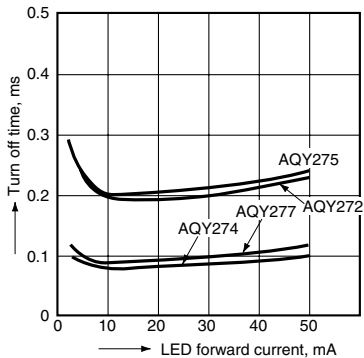
### 10. Turn on time vs. LED forward current characteristics

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



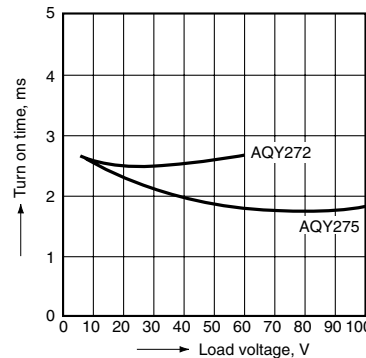
### 11. Turn off time vs. LED forward current characteristics

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



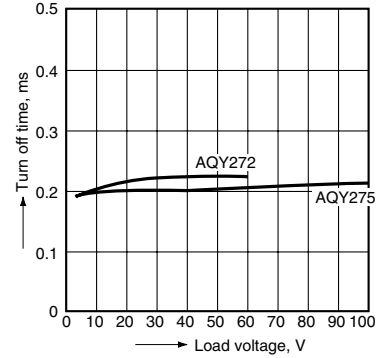
## 13.-(2) Turn on time vs. load current characteristics

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



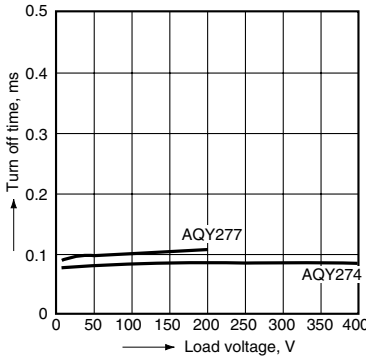
## 14.-(1) Turn off time vs. load voltage characteristics

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



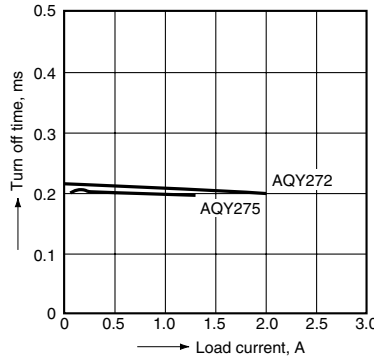
## 14.-(2) Turn off time vs. load voltage characteristics

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



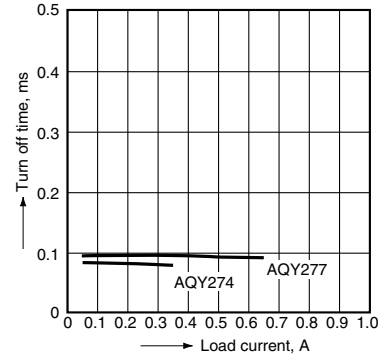
## 15.-(1) Turn off time vs. load current characteristics

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



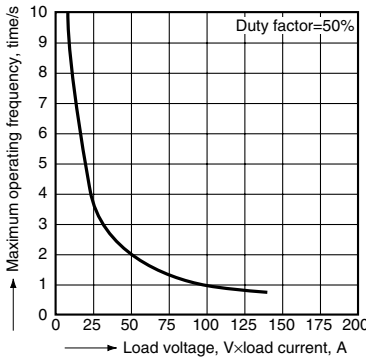
## 15.-(2) Turn off time vs. load current characteristics

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



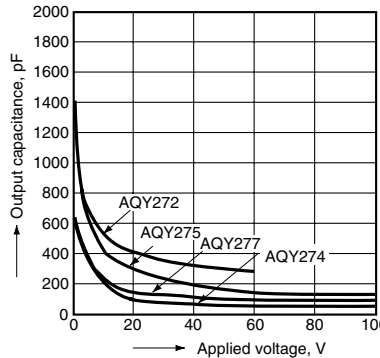
## 16. Maximum operating frequency vs. load voltage/current characteristics

Sample: All types; 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



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