

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 _F	50 mA				
	LED reverse voltage	V _R	5 V				
	Peak forward current	I _{FP}	1 A				f = 100 Hz, Duty factor = 0.1%
	Power dissipation	P _{in}	75 mW				
Output	Load voltage (peak AC)	V _L	60 V	100 V	200 V	400 V	
	Continuous load current	I _L	2.0 A	1.3 A	0.65 A	0.35 A	Peak AC, DC
	Peak load current	I _{peak}	6.0 A	4.0 A	2.0 A	1.0 A	100ms (1 shot), V _L = DC
	Power dissipation	P _{out}	700 mW				
Total power dissipation		P _T	750 mW				
I/O isolation voltage		V _{iso}	2,500 V AC				
Temperature limits	Operating	T _{opr}	-40°C to +85°C -40°F to +185°F				Non-condensing at low temperatures
	Storage	T _{stg}	-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 Ω	0.23 Ω	0.7 Ω	2.1 Ω	$I_F = 10 \text{ mA}$, $I_L = \text{Max.}$ Within 1 s on time
	Maximum	0.18 Ω	0.34 Ω	1.1 Ω	3.2 Ω		
Transfer characteristics	Off state leakage current	Maximum	10 μA				$I_F = 0 \text{ mA}$, $V_L = \text{Max.}$
	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 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 Ω				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°C to $+85^\circ\text{C}$
 -40°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)



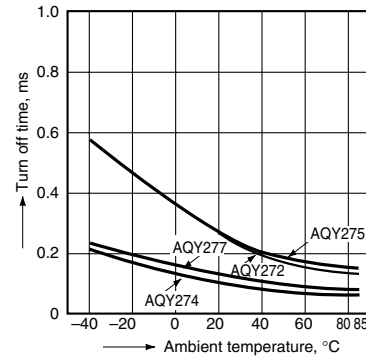
3. Turn on time vs. ambient temperature characteristics

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)



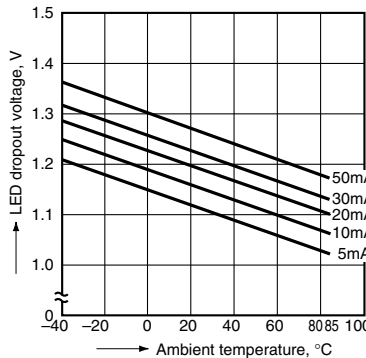
6. LED turn off current vs. ambient temperature characteristics

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



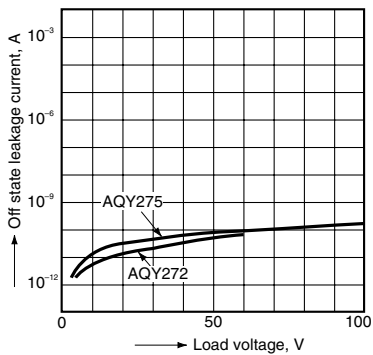
8. Current vs. voltage characteristics of output at MOS portion

Ambient temperature: 25°C 77°F



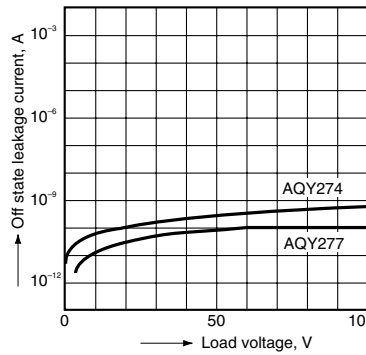
9.-(1) Off state leakage current vs. load voltage characteristics

Ambient temperature: 25°C 77°F



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

Ambient temperature: 25°C 77°F



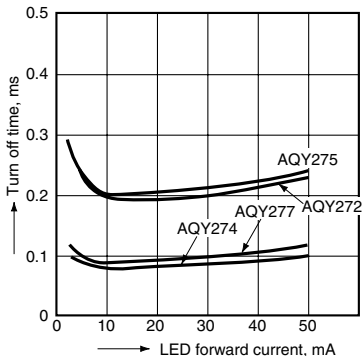
10. Turn on time vs. LED forward current characteristics

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



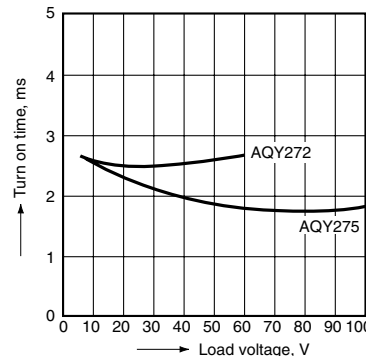
11. Turn off time vs. LED forward current characteristics

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○)

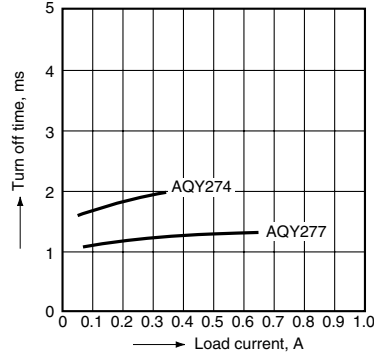
13.-(1) Turn on time vs. load current characteristics

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



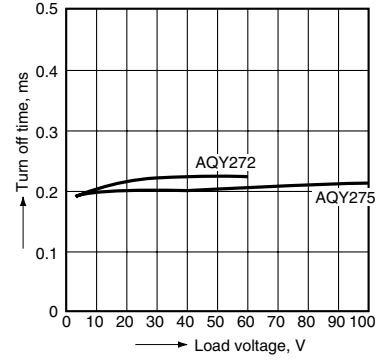
13.-(2) Turn on time vs. load current characteristics

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



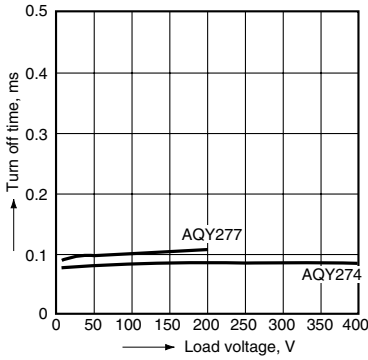
14.-(1) Turn off time vs. load voltage characteristics

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



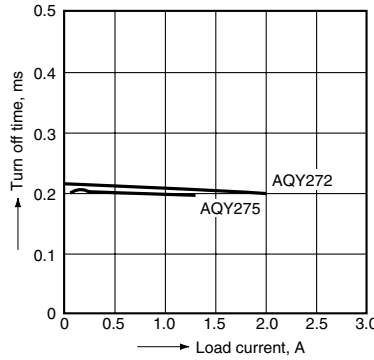
14.-(2) Turn off time vs. load voltage characteristics

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



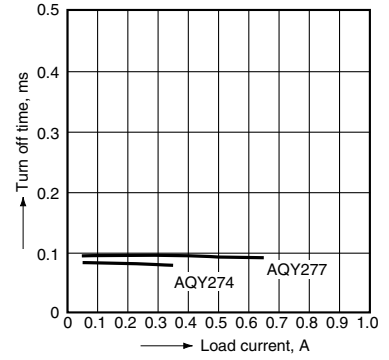
15.-(1) Turn off time vs. load current characteristics

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



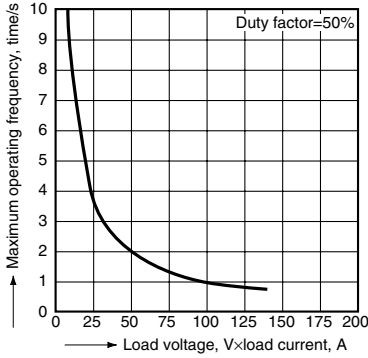
15.-(2) Turn off time vs. load current characteristics

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

