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[AQW272](#)

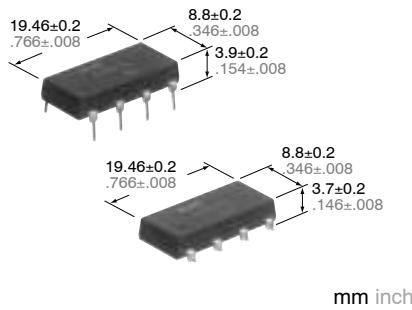
For any questions, you can email us directly:

sales@integrated-circuit.com

NAIS

PD Type
2-channel (Form A) Type

PhotoMOS RELAYS



FEATURES

1. Flat-Packaged Type (W) 8.8x (D) 19.46x (H) 3.9mm (W) .346x (D) .766x (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

TYPES

Type	Output rating*		Part No.				Packing quantity	
	Load voltage	Load current	Through hole terminal	Surface-mount terminal				
			Tube packing style		Tape and reel packing style	Picked from the 1/2/3/4-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 _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 (peak AC)	V _L	60 V	100 V	200 V	400 V	
	Continuous load current (Peak AC)	I _L	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 _{peak}	6.0 A	4.0 A	2.0 A	1.0 A	100ms (1 shot), V _L = DC
	Power dissipation	P _{out}		1,100 mW			
Total power dissipation		P _T		1,100 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				

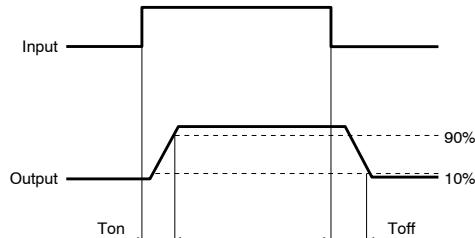
AQW270

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 Maximum	I_{Fon}	1.0 mA			$I_L = 100 \text{ mA}$ $V_L = 10 \text{ V}$		
				3.0 mA					
Input	LED turn off current	Minimum Typical	I_{Foff}	0.4 mA			$I_L = 100 \text{ mA}$ $V_L = 10 \text{ V}$		
				0.9 mA					
Input	LED dropout voltage	Typical Maximum	V_F	1.25 V (1.16 V at $I_F = 10 \text{ mA}$)			$I_F = 50 \text{ mA}$		
				1.5 V					
Output	On resistance	Typical Maximum	R_{on}	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	
				0.18 Ω	0.34 Ω	1.1 Ω	3.2 Ω		
Output	Off state leakage current	Maximum	I_{Leak}	10 μA				$I_F = 0$ $V_L = \text{Max.}$	
	Turn on time*	Typical Maximum	T_{on}	2.46 ms	2.40 ms	1.12 ms	1.65 ms	$I_F = 10 \text{ mA}$ $I_L = 100 \text{ mA}$ $V_L = 10 \text{ V}$	
				5.0 ms					
		Typical Maximum		5.64 ms	5.65 ms	2.57 ms	3.88 ms	$I_F = 5 \text{ mA}$ $I_L = 100 \text{ mA}$ $V_L = 10 \text{ V}$	
				10.0 ms					
Transfer characteristics	Turn off time*	Typical Maximum	T_{off}	0.22 ms	0.21 ms	0.10 ms	0.08 ms	$I_F = 5 \text{ mA or } 10 \text{ mA}$ $I_L = 100 \text{ mA}$ $V_L = 10 \text{ V}$	
				3.0 ms					
Transfer characteristics	I/O capacitance	Typical Maximum	C_{iso}	0.8 pF				$f = 1 \text{ MHz}$ $V_B = 0$	
				1.5 pF					
Transfer characteristics	Initial I/O isolation resistance	Minimum	R_{iso}	1,000 MΩ				500 V DC	
	Maximum operating speed	Maximum	—	0.5 cps				$I_F = 10 \text{ mA}$ Duty factor = 50% $I_L = \text{Max.}$, $V_L = \text{Max.}$	

Note: Recommendable LED forward current $I_F = 5$ to 10 mA.

*Turn on/Turn off time

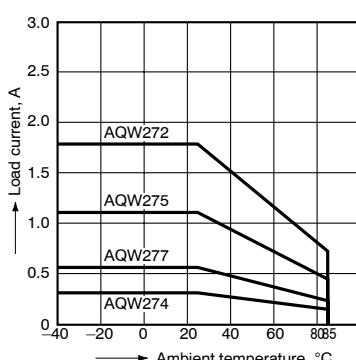


- For Dimensions, see Page 442.
- For Schematic and Wiring Diagrams, see Page 445.
- For Cautions for Use, see Page 449.

REFERENCE DATA

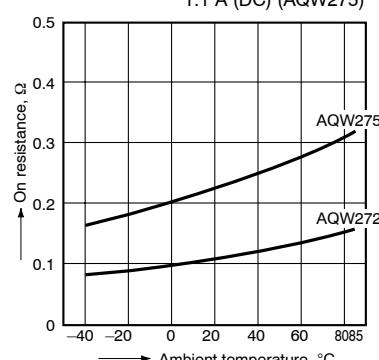
1. Load current vs. ambient temperature characteristics

Allowable ambient temperature: -40°C to $+85^\circ\text{C}$
 -40°F to $+185^\circ\text{F}$



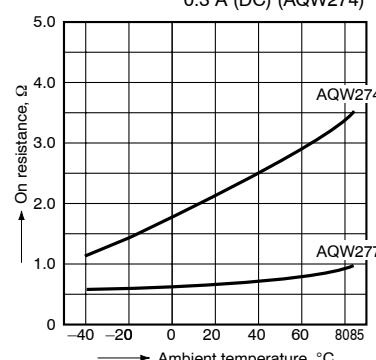
2.-1) On resistance vs. ambient temperature characteristics

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



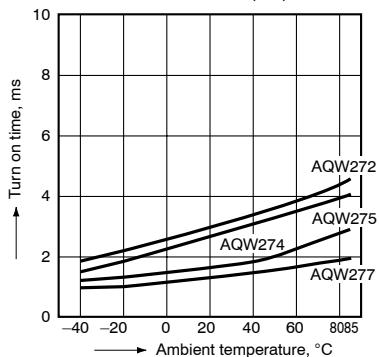
2.-2) On resistance vs. ambient temperature characteristics

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



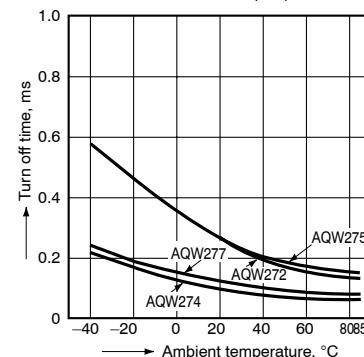
3. Turn on time vs. ambient temperature characteristics

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



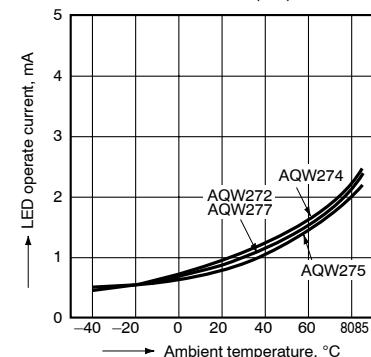
4. Turn off time vs. ambient temperature characteristics

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



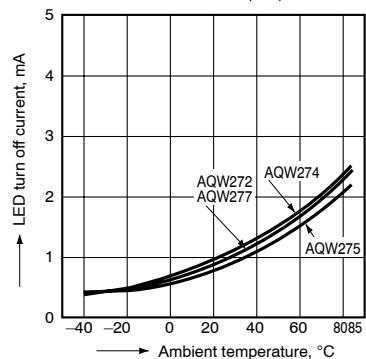
5. LED operate current vs. ambient temperature characteristics

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



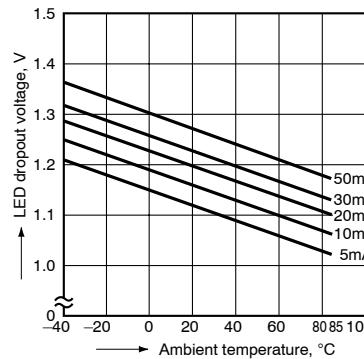
6. LED turn off current vs. ambient temperature characteristics

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



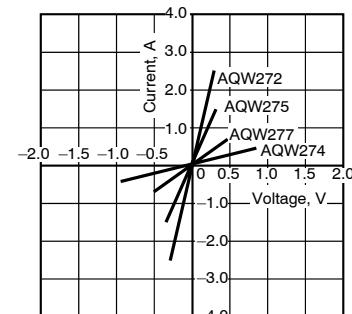
7. LED dropout voltage vs. ambient temperature characteristics

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



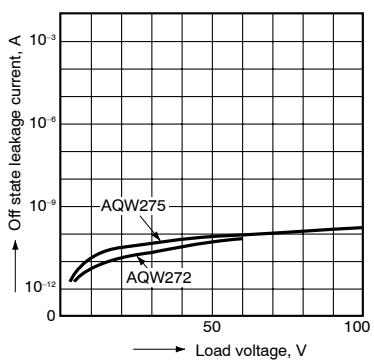
8. Voltage vs. current characteristics of output at MOS portion

Ambient temperature: 25°C 77°F



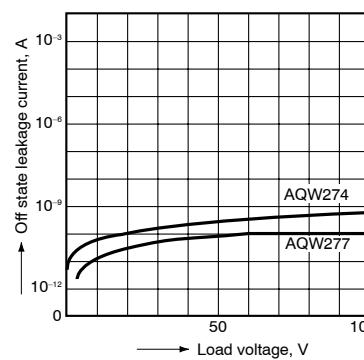
9.-(1) Off state leakage current

Ambient temperature: 25°C 77°F



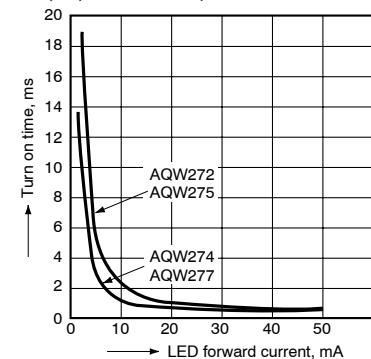
9.-(2) Off state leakage current

Ambient temperature: 25°C 77°F



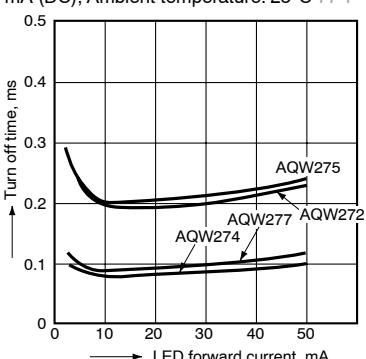
10. LED forward current vs. turn on time characteristics

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



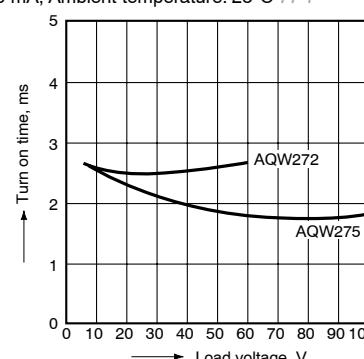
11. LED forward current vs. turn off time characteristics

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



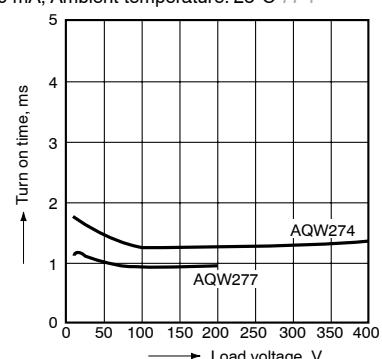
12.- (1) Load voltage vs. turn on time characteristics

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



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

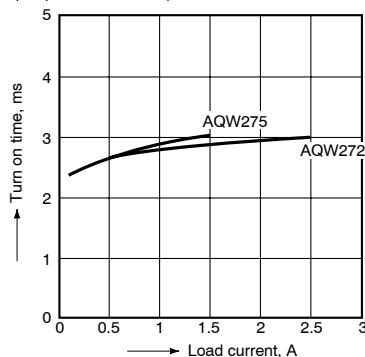
LED current: 10 mA; Continuous load current: 100 mA; Ambient temperature: 25°C 77°F



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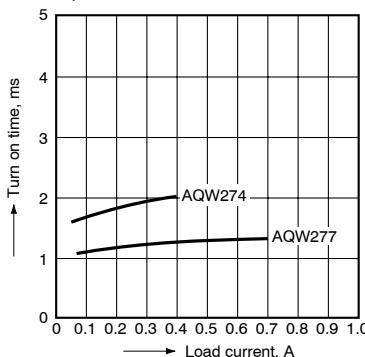
13.-1) Load current vs. turn on time characteristics

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



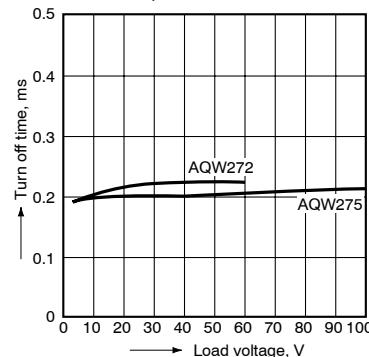
13.-2) Load current vs. turn on time characteristics

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



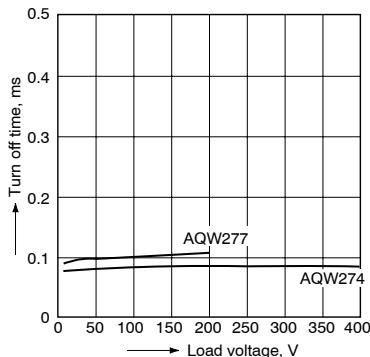
14.-1) Load voltage vs. turn off time characteristics

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



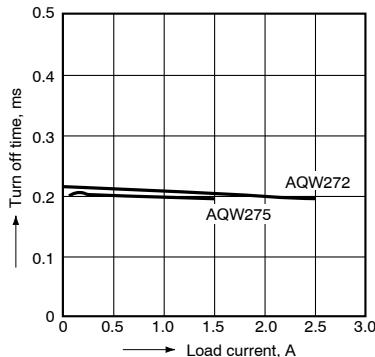
14.-2) Load voltage vs. turn off time characteristics

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



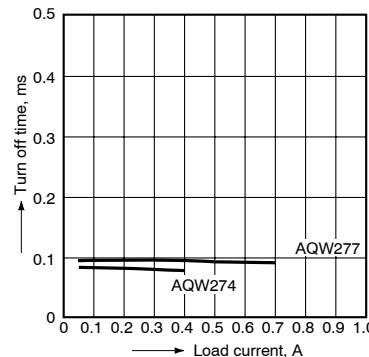
15.-1) Load current vs. turn off time characteristics

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



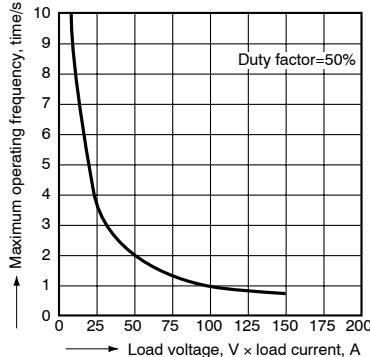
15.-2) Load current vs. turn off time characteristics

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

