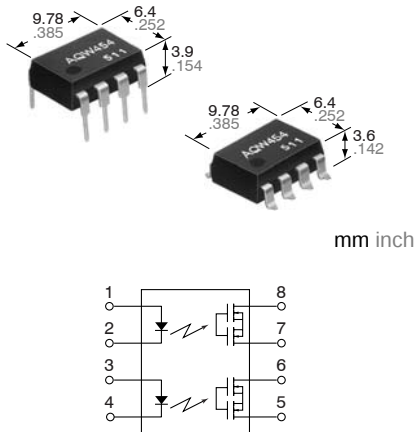




FEATURES

1. Compact 8-pin DIP size

The device comes in a compact (W) 6.4×(L) 9.78×(H) 3.9 mm (W) .252×(L) .385×(H) .154 inch, 8-pin DIP size (through hole terminal type).

2. Applicable for 2 Form B use as well as two independent 1 Form B use.

3. Controls low-level analog signals

PhotoMOS relays feature extremely low closed-circuit offset voltage to enable control of low-level analog signals without distortion.

4. High sensitivity, low ON resistance

Can control a maximum 0.16 A (AQW454) load current with a 5 mA input current. Low ON resistance of 16 Ω (AQW454). Stable operation because there are no metallic contact parts.

5. Low-level off state leakage current

The SSR has an off state leakage current of several milliamperes, whereas the PhotoMOS relay has typ. 100 pA even with the rated load voltage of 400 V (AQW454).

6. Low thermal electromotive force (Approx. 1 μ V)

TYPICAL APPLICATIONS

- Security equipment
- High-speed inspection machine
- Measuring equipment
- Telecommunication equipment
- Sensors

TYPES

Type	Output rating*		Part No.				Packing quantity	
			Through hole terminal	Surface-mount terminal				
	Load voltage	Load current	Tube packing style		Tape and reel packing style		Tube	Tape and reel
					Picked from the 1/2/3/4-pin side	Picked from the 5/6/7/8-pin side		
AC/DC	400 V	120 mA	AQW454	AQW454A	AQW454AX	AQW454AZ	1 tube contains 40 pcs. 1 batch contains 400 pcs.	1,000 pcs

*Indicate the peak AC and DC values.

Note: For space reasons, the SMD terminal shape indicator "A" and the package style indicator "X" or "Z" are not marked on the relay.

RATING

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

	Item	Symbol	AQW454(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	400 V	
	Continuous load current	I_L	0.12 A (0.16 A)	A connection: Peak AC, DC (): for one 1b-circuit
	Peak load current	I_{peak}	0.36 A	A connection: 100 ms (1 shot), $V_L = DC$
	Power dissipation	P_{out}	800 mW	
Total power dissipation		P_T	850 mW	
I/O isolation voltage		V_{iso}	1,500 V AC	Between input and output/between contact sets
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	

HE PhotoMOS (AQW454)

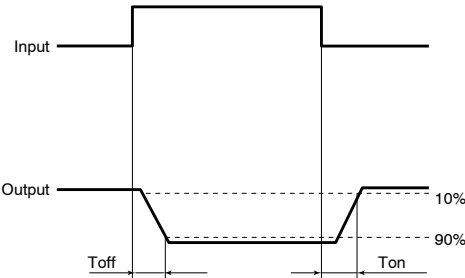
2. Electrical characteristics (Ambient temperature: 25°C 77°F)

Item				Symbol	AQW454(A)	Condition
Input	LED operate (OFF) current		Typical	I_{Foff}	0.9 mA	$I_L = \text{Max.}$
			Maximum		3 mA	
	LED reverse (ON) current		Minimum	I_{Fon}	0.4 mA	$I_L = \text{Max.}$
			Typical		0.8 mA	
	LED dropout voltage		Typical	V_F	1.25 V (1.14 V at $I_F = 5 \text{ mA}$)	$I_F = 50 \text{ mA}$
Maximum			1.5 V			
Output	On resistance		Typical	R_{on}	11 Ω	$I_F = 0 \text{ mA}$ $I_L = \text{Max.}$ Within 1 s on time
			Maximum		16 Ω	
	Off state leakage current		Maximum	I_{Leak}	1 μA	$I_F = 5 \text{ mA}$ $V_L = \text{Max.}$
Transfer characteristics	Switching speed	Operate (OFF) time*	Typical	T_{off}	1.2 ms	$I_F = 0 \text{ mA} \text{ , } 5 \text{ mA}$ $I_L = \text{Max.}$
			Maximum		2 ms	
		Reverse (ON) time*	Typical	T_{on}	0.36 ms	$I_F = 5 \text{ mA} \text{ , } 0 \text{ mA}$ $I_L = \text{Max.}$
			Maximum		1 ms	
	I/O capacitance		Typical	C_{iso}	0.8 pF	$f = 1 \text{ MHz}$ $V_B = 0 \text{ V}$
			Maximum		1.5 pF	
	Initial I/O isolation resistance		Minimum	R_{iso}	1,000 M Ω	500 V DC

Note: Recommendable LED forward current $I_F = 5 \text{ mA}$.

Type of connection

*Operate/Reverse time

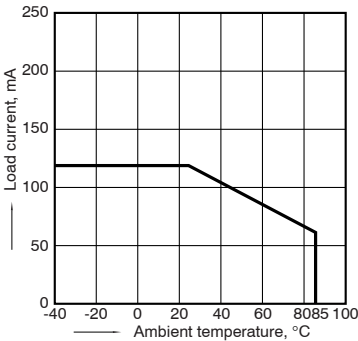


- Dimensions
- Schematic and Wiring Diagrams
- Cautions for Use

REFERENCE DATA

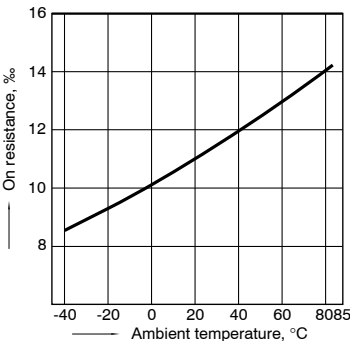
1. Load current vs. ambient temperature characteristics

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



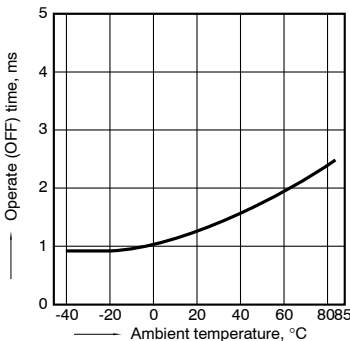
2. On resistance vs. ambient temperature characteristics

Measured portion: between terminals 5 and 6,
7 and 8; LED current: 0 mA; Load voltage: 400 V (DC);
Continuous load current: 120 mA (DC)



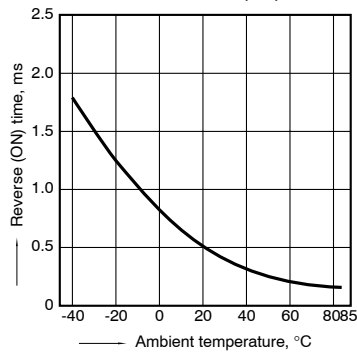
3. Operate (OFF) time vs. ambient temperature characteristics

LED current: 5 mA; Load voltage: 400 V (DC);
Continuous load current: 120 mA (DC)



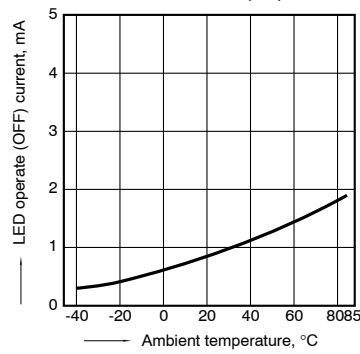
4. Reverse (ON) time vs. ambient temperature characteristics

LED current: 5 mA; Load voltage: 400 V (DC);
Continuous load current: 120 mA (DC)



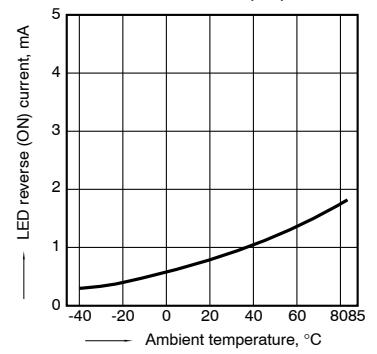
5. LED operate (OFF) current vs. ambient temperature characteristics

Load voltage: 400 V (DC);
Continuous load current: 120 mA (DC)



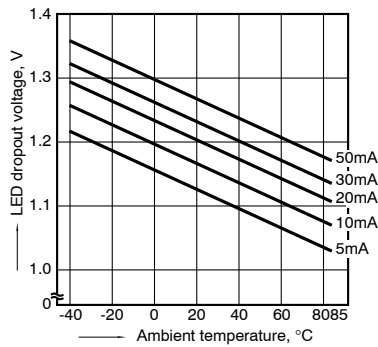
6. LED reverse (ON) current vs. ambient temperature characteristics

Load voltage: 400 V (DC);
Continuous load current: 120 mA (DC)



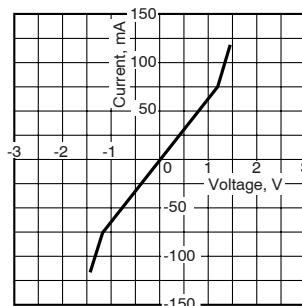
7. LED dropout voltage vs. ambient temperature characteristics

LED current: 5 to 50 mA



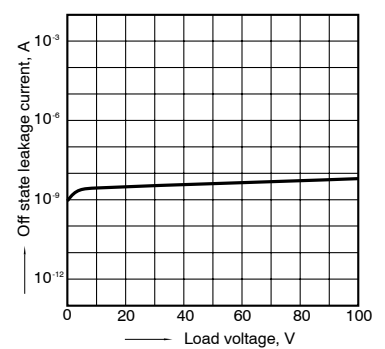
8. Current vs. voltage characteristics of output at MOS portion

Measured portion: between terminals 5 and 6,
7 and 8; Ambient temperature: 25°C 77°F



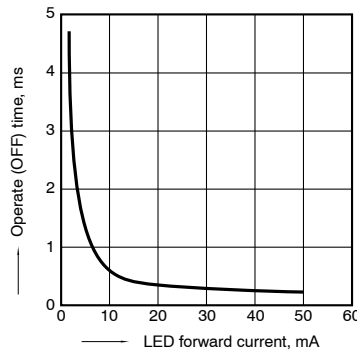
9. Off state leakage current vs. load voltage characteristics

Measured portion: between terminals 5 and 6,
7 and 8; Ambient temperature: 25°C 77°F



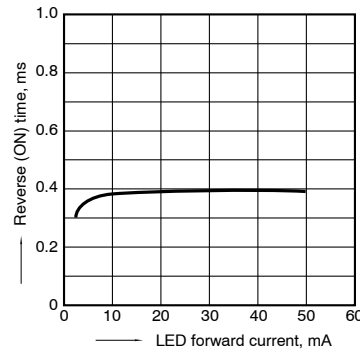
10. Operate (OFF) time vs. LED forward current characteristics

Measured portion: between terminals 5 and 6, 7 and 8; Load voltage: 400 V (DC); Continuous load current: 120 mA (DC); Ambient temperature: 25°C 77°F



11. Reverse (ON) time vs. LED forward current characteristics

Measured portion: between terminals 5 and 6, 7 and 8; Load voltage: 400 V (DC); Continuous load current: 120 mA (DC); Ambient temperature: 25°C 77°F



12. Output capacitance vs. applied voltage characteristics

Measured portion: between terminals 5 and 6, 7 and 8; Frequency: 1 MHz; Ambient temperature: 25°C 77°F

