

DIP8-pin type
featuring low on-resistance
with 400V load voltage

PhotoMOS[®]
HE 2 Form A
(AQW254)

FEATURES

1. High sensitivity and low on-resistance

Can control max. 0.16 A load current with 5 mA input current. Low on-resistance of typ. 10.2Ω.

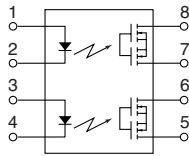
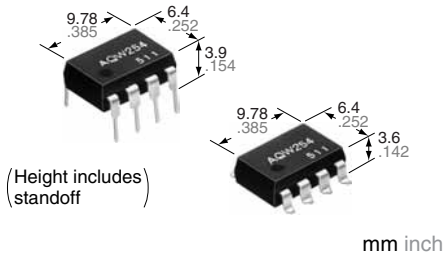
2. Applicable for 2 Form A use as well as two independent 1 Form A use

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

4. Low-level off state leakage current of max. 1 μA

TYPICAL APPLICATIONS

- High-speed inspection machines
- Data communication equipment
- Telephone equipment



RoHS compliant

TYPES

	Output rating*		Package	Part No.				Packing quantity	
				Through hole terminal	Surface-mount terminal			Tube	Tape and reel
	Load voltage	Load current		Tube packing style	Tape and reel packing style				
				Picked from the 1/2/3/4-pin side	Picked from the 5/6/7/8-pin side				
AC/DC dual use	400 V	120 mA	DIP8-pin	AQW254	AQW254A	AQW254AX	AQW254AZ	1 tube contains: 50 pcs. 1 batch contains: 500 pcs.	1,000 pcs

*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

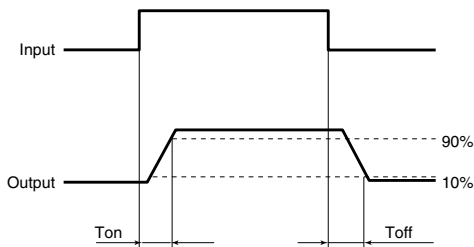
1. Absolute maximum ratings (Ambient temperature: 25°C 77°F)

Item	Symbol	AQW254(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 () in case of using only 1 channel
	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	

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

Item		Symbol	AQW254(A)	Condition
Input	LED operate current	Typical	0.9 mA	$I_L = \text{Max.}$
		Maximum	3 mA	
	LED turn off current	Minimum	0.4 mA	$I_L = \text{Max.}$
		Typical	0.8 mA	
LED dropout voltage	Typical	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	10.2 Ω	$I_F = 5 \text{ mA}$ $I_L = \text{Max.}$ Within 1 s on time
		Maximum	16 Ω	
	Off state leakage current	Maximum	1 μA	
Transfer characteristics	Turn on time*	Typical	0.8 ms	$I_F = 5 \text{ mA}$ $I_L = \text{Max.}$
		Maximum	2 ms	
	Turn off time*	Typical	0.04 ms	$I_F = 5 \text{ mA}$ $I_L = \text{Max.}$
		Maximum	0.2 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	R_{iso}	1,000 M Ω	500 V DC

*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	mA

- For Dimensions.
- For Schematic and Wiring Diagrams.
- For Cautions for Use.

■ These products are not designed for automotive use.

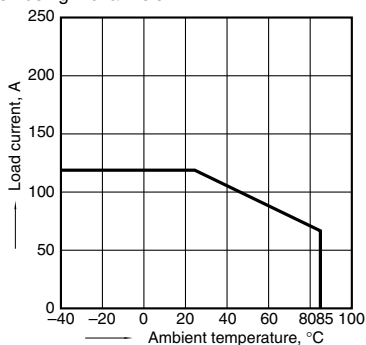
If you are considering to use these products for automotive applications, please contact your local Panasonic Corporation technical representative.
For more information.

REFERENCE DATA

1. Load current vs. ambient temperature characteristics

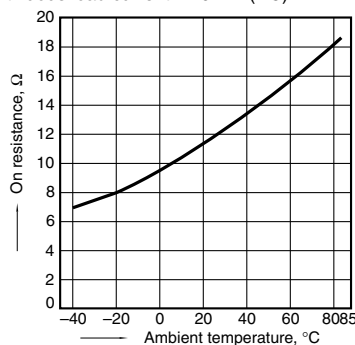
Allowable ambient temperature: -40°C to $+85^\circ\text{C}$
 -40°F to $+185^\circ\text{F}$

When using 2 channels



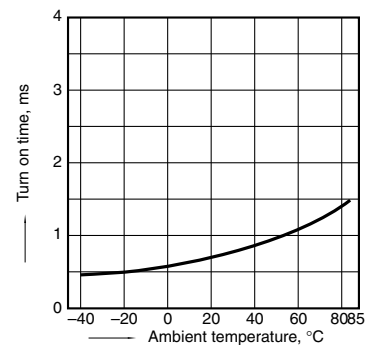
2. On resistance vs. ambient temperature characteristics

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



3. Turn on time vs. ambient temperature characteristics

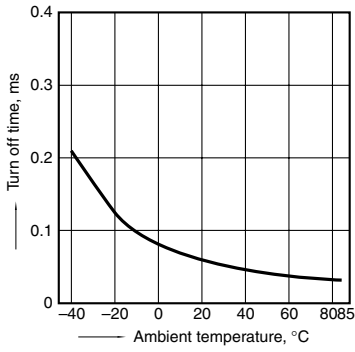
LED current: 5 mA; Load voltage: 400 V (DC); Continuous load current: 120 mA (DC)



HE 2 Form A (AQW254)

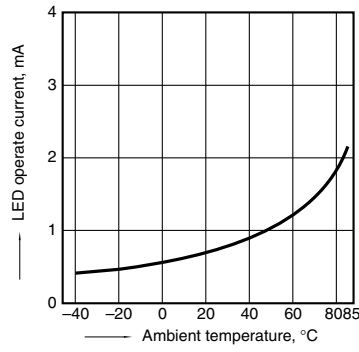
4. Turn off time vs. ambient temperature characteristics

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



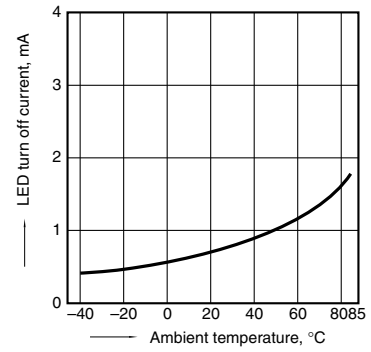
5. LED operate current vs. ambient temperature characteristics

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



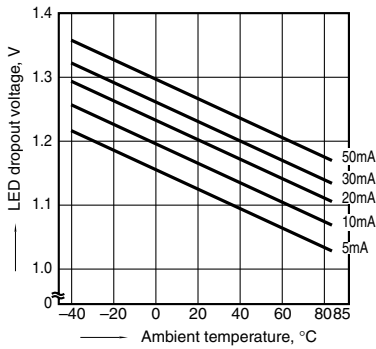
6. LED turn off current vs. ambient temperature characteristics

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



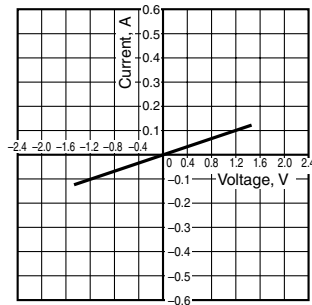
7. LED dropout voltage vs. ambient temperature characteristics

LED current: 5 to 50 mA



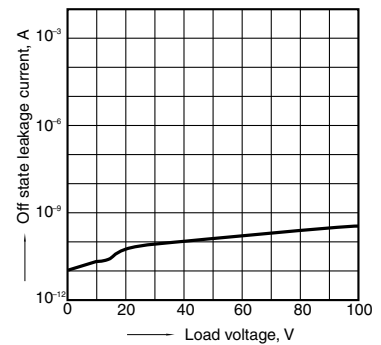
8. Current vs. voltage characteristics of output at MOS portion

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



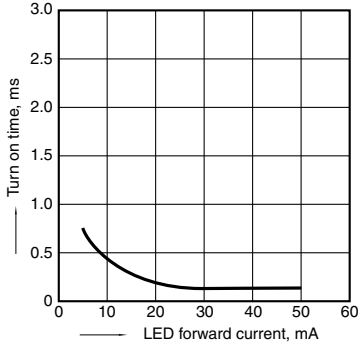
9. Off state leakage current vs. load voltage characteristics

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



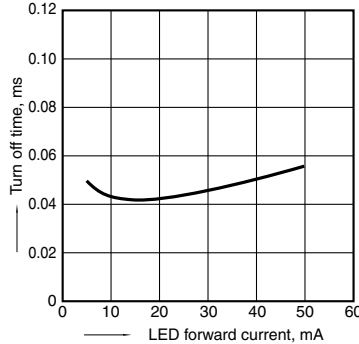
10. Turn on time vs. LED forward current characteristics

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



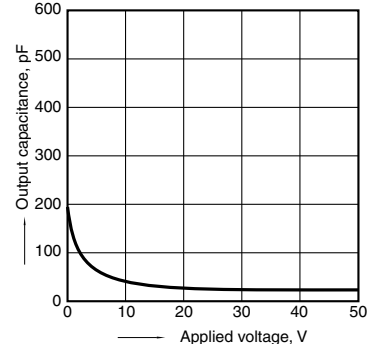
11. Turn off time vs. LED forward current characteristics

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



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



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