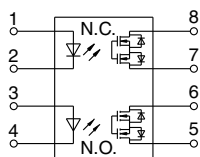
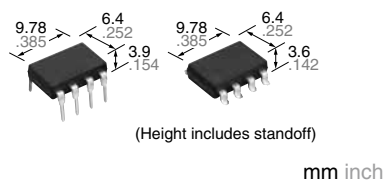




Both 1 Form A and 1 Form B contacts incorporated in a compact DIP8-pin with low on-resistance

PhotoMOS[®]
HE 1 Form A & 1 Form B
(AQW654)



RoHS compliant

FEATURES

- 1. Applicable for 1 Form A and 1 Form B use as well as two independent 1 Form A and 1 Form B use
- 2. Controls low-level analog signals
PhotoMOS feature extremely low closed-circuit offset voltage to enable control of low-level analog signals without distortion.
- 3. High sensitivity and low on-resistance
Can control max. 0.16 A load current with 5 mA input current. Low on-resistance of max. 11 Ω. (in case of using only 1 channel)
- 4. Low-level off state leakage current of max. 1 μA

TYPICAL APPLICATIONS

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

TYPES

	Output rating*		Package	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 dual use	400 V	120 mA	DIP8-pin	AQW654	AQW654A	AQW654AX	AQW654AZ	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)

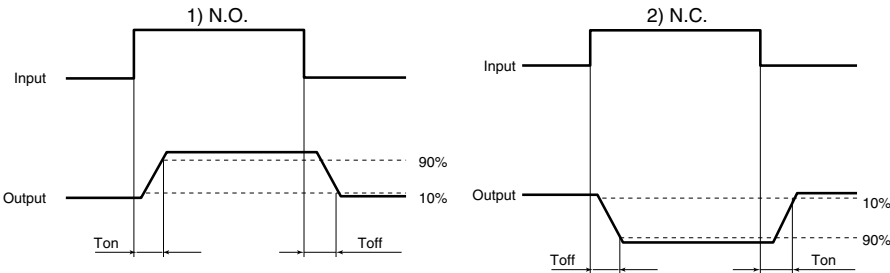
Item		Symbol	AQW654(A)	Remarks
Input	LED forward current	I _F	50 mA	
	LED reverse voltage	V _R	5 V	
	Peak forward current	I _{FP}	1 A	f = 100 Hz, Duty factor = 0.1%
	Power dissipation	P _{in}	75 mW	
Output	Load voltage (peak AC)	V _L	400 V	
	Continuous load current	I _L	0.12A (0.16 A)	Peak AC, DC (): in case of using only 1 channel)
	Peak load current	I _{peak}	0.36 A	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 Vrms	
Ambient temperature	Operating	T _{opr}	−40 to +85°C −40 to +185°F	(Non-icing at low temperatures)
	Storage	T _{stg}	−40 to +100°C −40 to +212°F	

HE 1 Form A & 1 Form B (AQW654)

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

Item			Symbol	AQW654(A)	Condition
Input	LED operate current	Typical	I _{Fon} (N.O.)	0.9 mA	I _L = Max.
		Maximum	I _{Foff} (N.C.)	3 mA	
	LED reverse current	Minimum	I _{Foff} (N.O.)	0.4 mA	I _L = Max.
		Typical	I _{Fon} (N.C.)	0.8 mA	
	LED dropout voltage	Typical	V _F	1.25 V (1.14 V at I _F = 5 mA)	I _F = 50 mA
		Maximum		1.5 V	
Output	On resistance	Typical	R _{on}	11 Ω	I _F = 5 mA (N.O.) I _F = 0 mA (N.C.) I _L = Max. Within 1 s
		Maximum		16 Ω	
	Off state leakage current	Maximum	I _{Leak}	1 μA	I _F = 0 mA (N.O.) I _F = 5 mA (N.C.) V _L = Max.
	Transfer characteristics	Operate time*	Typical	T _{on} (N.O.)	0.8 ms (N.O.) 1.2 ms (N.C.)
Maximum			T _{off} (N.C.)	2 ms	
Reverse time*		Typical	T _{off} (N.O.)	0.04 ms (N.O.) 0.36 ms (N.C.)	I _F = 5 mA → 0 mA I _L = Max.
		Maximum	T _{on} (N.C.)	1 ms	
I/O capacitance		Typical	C _{iso}	0.8 pF	f = 1 MHz
		Maximum		1.5 pF	V _B = 0 V
Initial I/O isolation resistance	Minimum	R _{iso}	1,000 MΩ	500 V DC	

*Operate/Reverse time



3. Recommended operating conditions (Ambient temperature: 25°C 77°F)

Please use under recommended operating conditions to obtain expected characteristics.

Item		Symbol	Number of used channels	Min.	Max.	Unit
AQW654(A)	LED current	I _F		5	30	mA
	Load voltage (Peak AC)	V _L		—	320	V
	Continuous load current	I _L		—	0.16 0.12	A

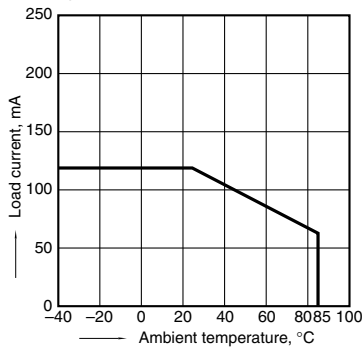
■ These products are not designed for automotive use.
If you are considering to use these products for automotive applications, please contact your local Panasonic Corporation technical representative.

REFERENCE DATA

1. Load current vs. ambient temperature characteristics

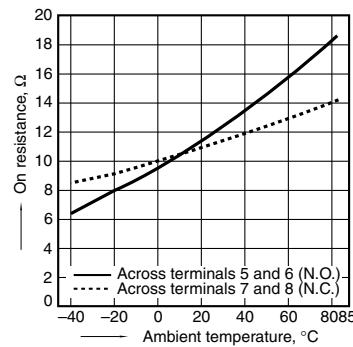
Allowable ambient temperature: -40 to $+85^{\circ}\text{C}$
 -40 to $+185^{\circ}\text{F}$

When using 2 channels



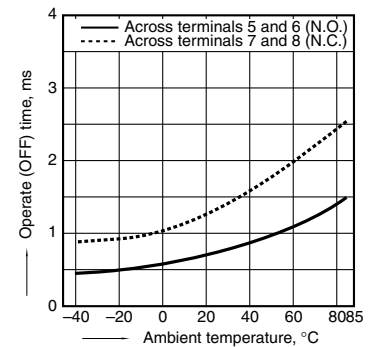
2. On resistance vs. ambient temperature characteristics

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)



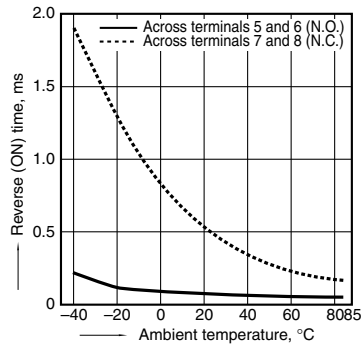
3. Operate time vs. ambient temperature characteristics

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



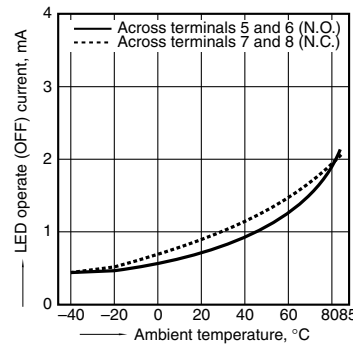
4. Reverse time vs. ambient temperature characteristics

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



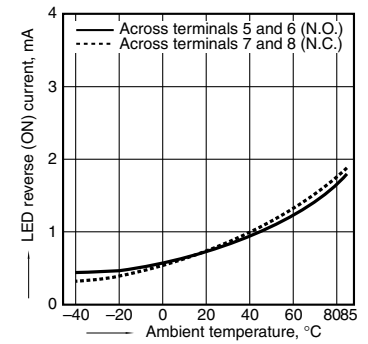
5. LED operate current vs. ambient temperature characteristics

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



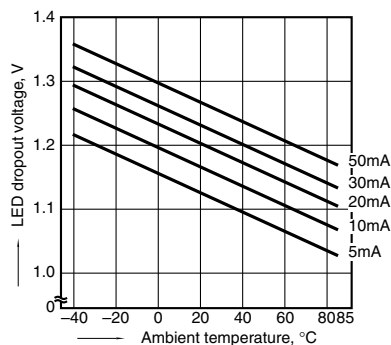
6. LED reverse current vs. ambient temperature characteristics

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



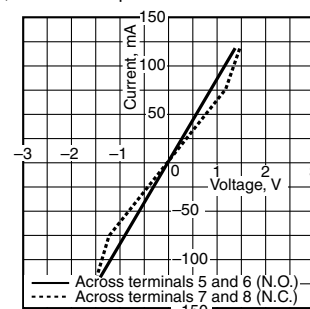
7. LED dropout voltage vs. ambient temperature characteristics

LED current: 5 to 50 mA



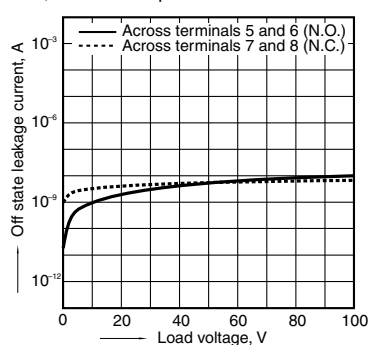
8. Current vs. voltage characteristics of output at MOS portion

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



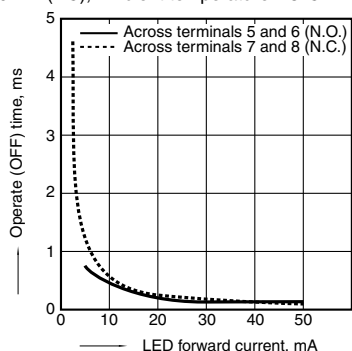
9. Off state leakage current vs. load voltage characteristics

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



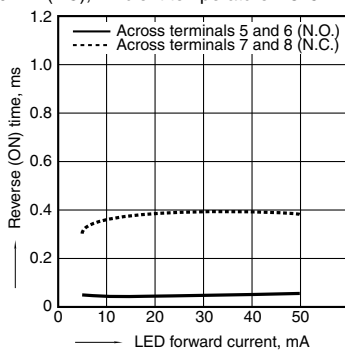
10. Operate time vs. LED forward current characteristics

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



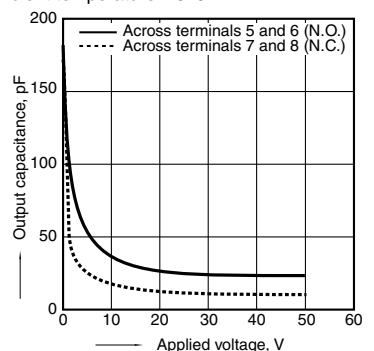
11. Reverse time vs. LED forward current characteristics

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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