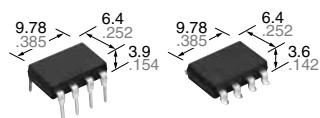


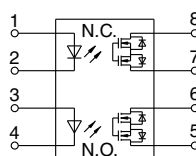
Both 1 Form A and 1 Form B contacts incorporated in a compact DIP8-pin with low on-resistance

**PhotoMOS®
HE 1 Form A & 1 Form B
(AQW654)**



(Height includes standoff)

mm inch



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 μ A

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)

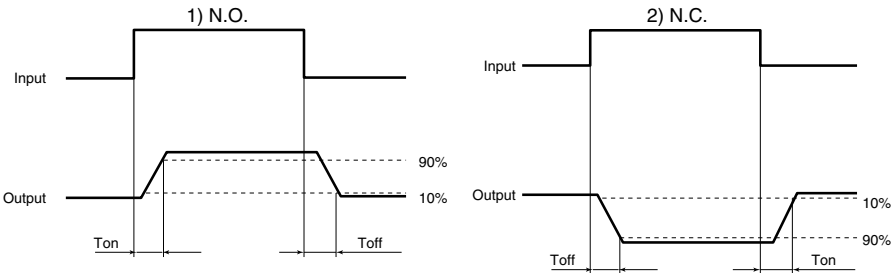
Item		Symbol	AQW654(A)	Remarks
Input	LED forward current	I_F	50 mA	
	LED reverse voltage	V_R	5 V	
	Peak forward current	I_{FP}	1 A	$f = 100$ Hz, Duty factor = 0.1%
	Power dissipation	P_{in}	75 mW	
Output	Load voltage (peak AC)	V_L	400 V	
	Continuous load current	I_L	0.12A (0.16 A)	Peak AC, DC (): in 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	1ch 2ch	—	0.16 0.12	A

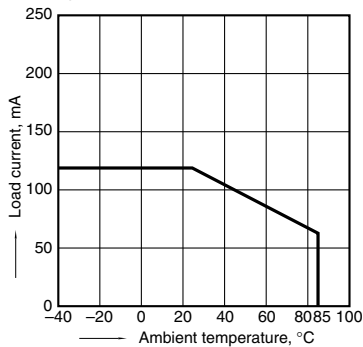
■ These products are not designed for automotive use.
If you are considering to use these products for automotive applications, please contact your local Panasonic Corporation technical representative.

REFERENCE DATA

1. Load current vs. ambient temperature characteristics

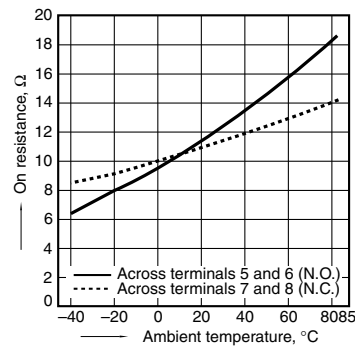
Allowable ambient temperature: -40 to $+85^{\circ}\text{C}$
 -40 to $+185^{\circ}\text{F}$

When using 2 channels



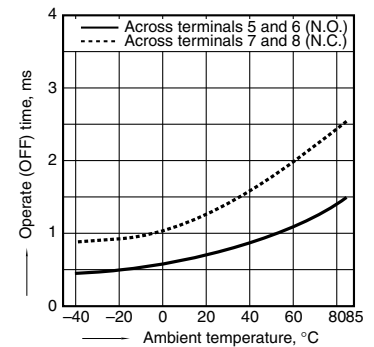
2. On resistance vs. ambient temperature characteristics

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)



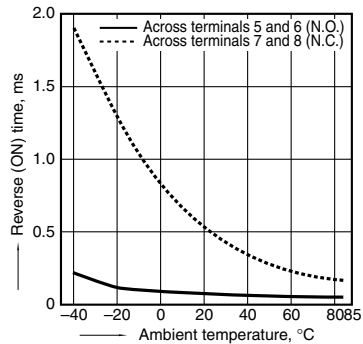
3. Operate time vs. ambient temperature characteristics

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



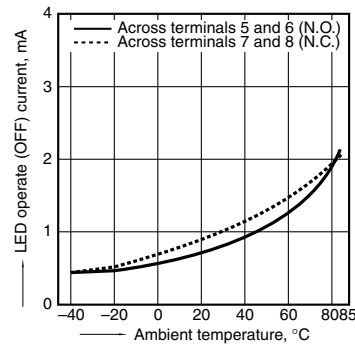
4. Reverse time vs. ambient temperature characteristics

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



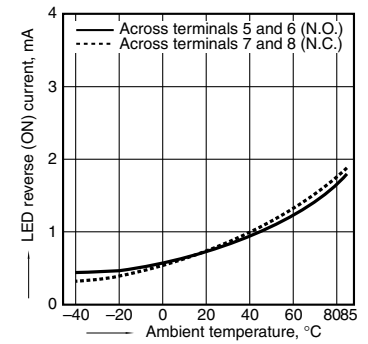
5. LED operate current vs. ambient temperature characteristics

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



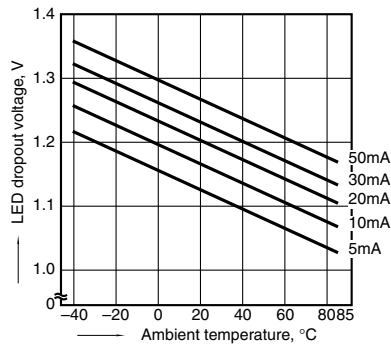
6. LED reverse current vs. ambient temperature characteristics

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



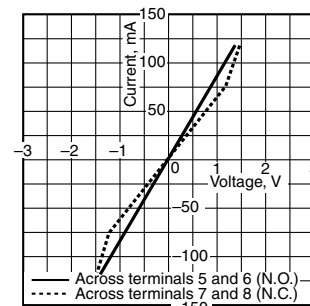
7. LED dropout voltage vs. ambient temperature characteristics

LED current: 5 to 50 mA



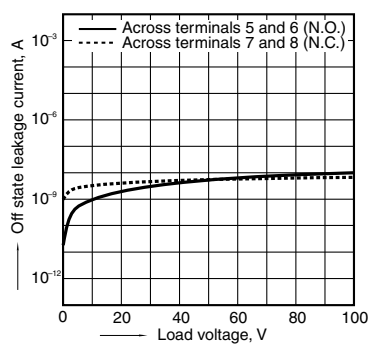
8. Current vs. voltage characteristics of output at MOS portion

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



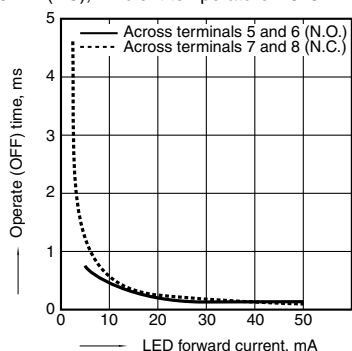
9. Off state leakage current vs. load voltage characteristics

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



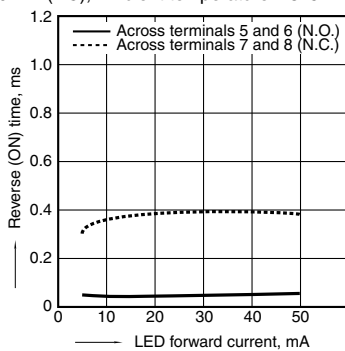
10. Operate time vs. LED forward current characteristics

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



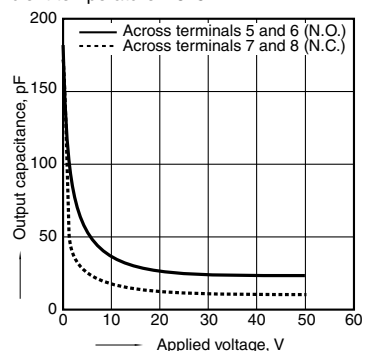
11. Reverse time vs. LED forward current characteristics

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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