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With the principle of "Quality Parts, Customers Priority, Honest Operation, and Considerate Service", our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip, ALPS, ROHM, Xilinx, Pulse, ON, Everlight and Freescale. Main products comprise IC, Modules, Potentiometer, IC Socket, Relay, Connector. Our parts cover such applications as commercial, industrial, and automotives areas.

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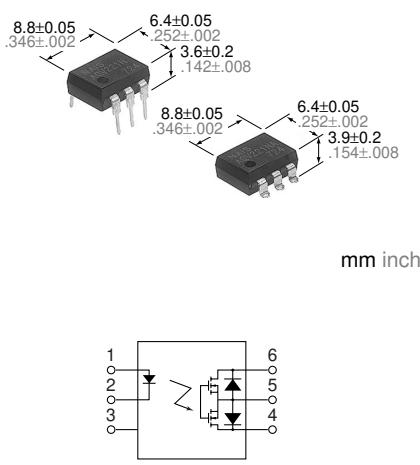
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NAiS

**GU (General Use) Type
1-Channel (Form A)
Current Limit Function
6-Pin Type**

PhotoMOS RELAYS



FEATURES

1. Current Limit Function

To control an over current from flowing, the current limit function has been realized. It keeps an output current at a constant value when the current reaches a specified current limit value.

2. Enhancing the capability of surge resistance between output terminals

The current limit function controls the ON time surge current to enhance the capability of surge resistance between output terminals.

3. Reinforced insulation 5,000 V type

More than 0.4 mm internal insulation distance between inputs and outputs. Conforms to EN41003, EN60950 (reinforced insulation).

4. Compact 6-pin DIP size

The device comes in a compact (W)6.4 × (L)8.8 × (H) 3.9mm (W).252 × (L).346 × (H).154inch, 6-pin DIP size

5. Controls low-level analog signals

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

6. High sensitivity, low ON resistance

7. Low-level off state leakage current

TYPICAL APPLICATIONS

- Telephone equipment
- Modem

TYPES

Type	I/O isolation voltage	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
AC/DC type	Reinforced 5,000 V	350 V	130 mA	AQV210HL	AQV210HLA	AQV210HLAX	AQV210HLAZ	1 tube contains 50 pcs. 1 batch contains 500 pcs.

*Indicate the peak AC and DC values.

Note: For space reasons, 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	AQV210HL(A)	Remarks
Input	LED forward current	I _F	50 mA	f = 100 Hz, Duty factor = 0.1%
	LED reverse voltage	V _R	3 V	
	Peak forward current	I _{FP}	1 A	
	Power dissipation	P _{in}	75 mW	
Output	Load voltage (peak AC)	V _L	350 V	
	Continuous load current	I _L	0.13 A	
	Power dissipation	P _{out}	500 mW	
Total power dissipation		P _T	550 mW	
I/O isolation voltage		V _{iso}	5,000 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	

AQV210HL

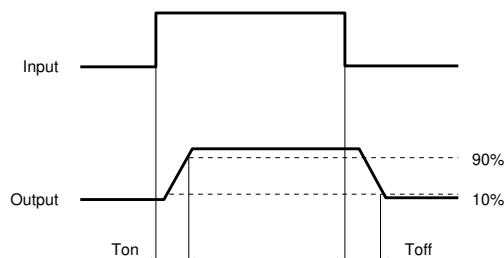
2. Electrical characteristics (Ambient temperature: 25°C 77°F)

Item			Symbol	AQV210HL(A)	Condition
Input	LED operate current	Typical	I_{Fon}	1.6 mA	$I_L = \text{Max.}$
	Maximum			3.0 mA	
	LED turn off current	Minimum	I_{Foff}	0.4 mA	$I_L = \text{Max.}$
	Typical			1.5 mA	
Output	LED dropout voltage	Minimum	V_F	1.14 (1.25 V at $I_F = 50\text{mA}$)	$I_F = 5 \text{ mA}$
	Typical			1.5 V	
	On resistance	Typical	R_{on}	20Ω	$I_F = 5 \text{ mA}$ $I_L = \text{Max.}$ Within 1 s on time
	Maximum			25Ω	
Transfer characteristics	Off state leakage current	Maximum	I_{Leak}	1μA	$I_F = 0$ $V_L = \text{Max.}$
	Current limit	Typical	—	180 mA	$I_F = 5 \text{ mA}$
	Turn on time*	Typical	T_{on}	0.8 ms	$I_F = 5 \text{ mA}$ $I_L = \text{Max.}$
	Maximum			2.0 ms	
Transfer characteristics	Turn off time*	Typical	T_{off}	0.05 ms	$I_F = 5 \text{ mA}$ $I_L = \text{Max.}$
	Maximum			1.0 ms	
	I/O capacitance	Typical	C_{iso}	0.8 pF	$f = 1 \text{ MHz}$ $V_B = 0$
	Maximum			1.5 pF	
Transfer characteristics	Initial I/O isolation resistance	Minimum	R_{iso}	1,000 MΩ	500 V DC

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

For type of connection, see Page 31.

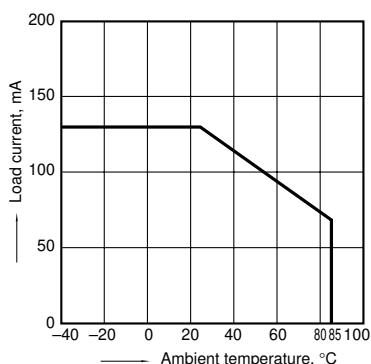
*Turn on/turn off time



REFERENCE DATA

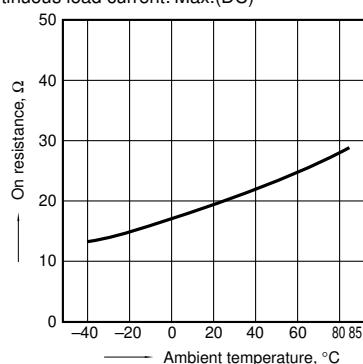
1. Load current vs. ambient temperature characteristics

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



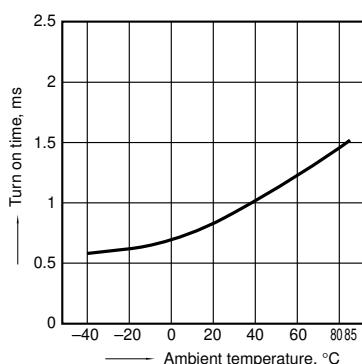
2. On resistance vs. ambient temperature characteristics

Measured portion: between terminals 4 and 6;
LED current: 5 mA; Load voltage: Max. (DC)
Continuous load current: Max. (DC)

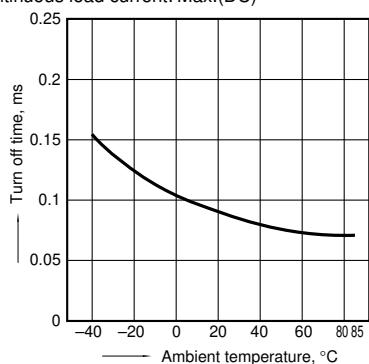


3. Turn on time vs. ambient temperature characteristics

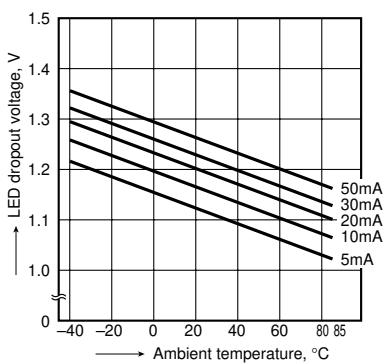
LED current: 5 mA; Load voltage: Max. (DC);
Continuous load current: Max. (DC)



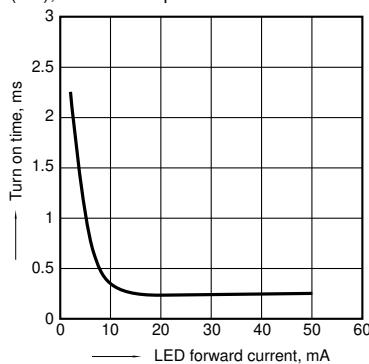
4. Turn off time vs. ambient temperature characteristics
LED current: 5 mA; Load voltage: Max.(DC);
Continuous load current: Max.(DC)



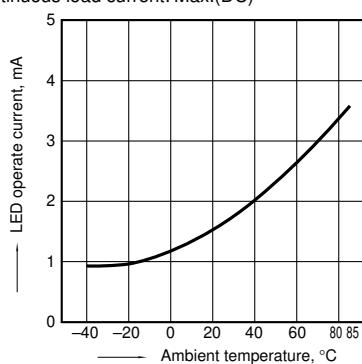
7. LED dropout voltage vs. ambient temperature characteristics
LED current: 5 to 50 mA



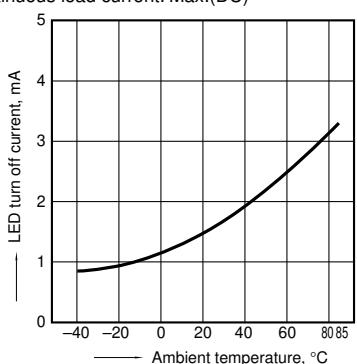
10. LED forward current vs. turn on time characteristics
Measured portion: between terminals 4 and 6;
Load voltage: Max.(DC); Continuous load current:
Max.(DC); Ambient temperature: 25°C 77°F



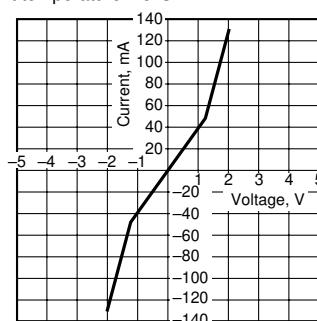
5. LED operate current vs. ambient temperature characteristics
Load voltage: Max.(DC);
Continuous load current: Max.(DC)



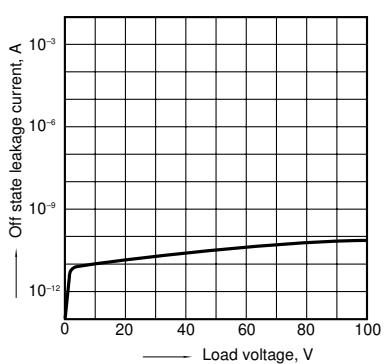
6. LED turn off current vs. ambient temperature characteristics
Load voltage: Max.(DC);
Continuous load current: Max.(DC)



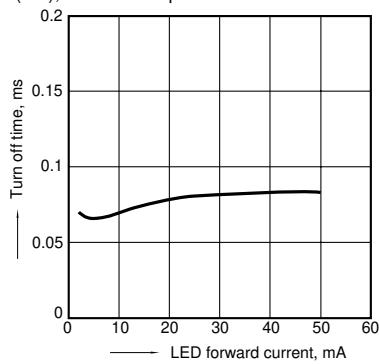
8. Voltage vs. current characteristics of output at MOS portion
Measured portion: between terminals 4 and 6;
Ambient temperature: 25°C 77°F



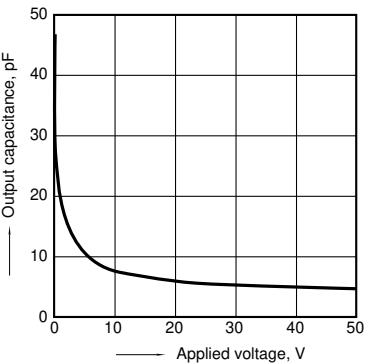
9. Off state leakage current
Measured portion: between terminals 4 and 6;
Ambient temperature: 25°C 77°F



11. LED forward current vs. turn off time characteristics
Measured portion: between terminals 4 and 6;
Load voltage: Max.(DC); Continuous load current:
Max.(DC); Ambient temperature: 25°C 77°F



12. Applied voltage vs. output capacitance characteristics
Measured portion: between terminals 4 and 6;
Frequency: 1 MHz; Ambient temperature: 25°C 77°F



What is current limit

When a load current reaches the specified output control current, a current limit function works against the load current to keep the current a constant value. The current limit circuit built into the PhotoMOS relay thus controls the instantaneous load current to effectively ensure circuit safety.

This safety feature protects circuits down-

stream of the PhotoMOS relay against over-current.

But, if the current-limiting feature is used longer than the specified time, the PhotoMOS relay can be destroyed. Therefore, set the output loss to the max. rate or less.

- Comparison of output voltage and output current characteristics

V-I Characteristics

