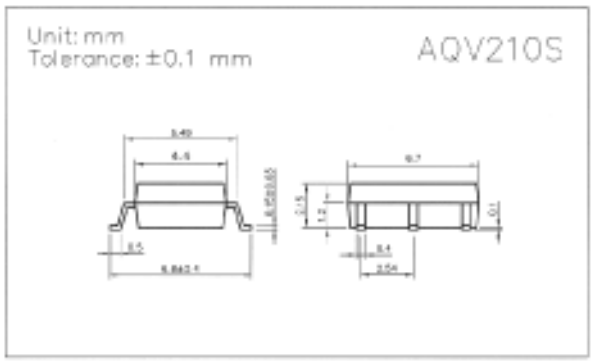
AQV210S

HIGH VOLTAGE, PHOTO MOS RELAY

FEATURES

- **Normally Open, Single Pole Single Throw**
- **Control 350 VAC or DC Voltage**
- **Switch 130 mA Loads**
- **LED Control Current, 2mA**
- **Low ON-Resistance**
- **dv/dt, >500 V/ms**
- **Isolation Test Voltage, 1500 VAC_{RMS}**
- **UL, CSA, FCC compatible**
- **Applications**
  - **▪ Telecommunications**
  - **- Telecom Switching**
  - **- Tip/Ring Circuits**
  - **- Modem Switching (Laptop, Notebook, Pocket Size)**
  - **- Hookswitch**
  - **- Dial Pulsing**
  - **- Ground Start**
  - **- Ringer Injection**
  - **▪ Insturmentation**
  - **- Multiplexers**
  - **- Data Acquisition**
  - **- Electronic Switching**
  - **- I/O Subsystems**
  - **- Meters (Watt-Hour, Water, Gas)**
  - **- Medical Equipment**
  - **▪ High Voltage Test Equipment**
  - **▪ TRIAC Driver**
  - **▪ Motor Control**
  - **▪ Security**
  - **▪ Aerospace**
  - **▪ Industrial Controls**



DESCRIPTION

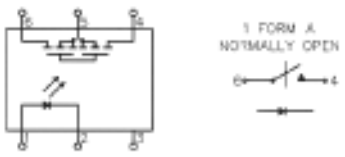
The AQV210S is a single pole single throw (SPST), normally open (NO), Mos Relay. The relay can control AC or DC loads currents up to 130 mA, with a supply voltage up to 350 V. The device is packaged in a six pin SO package. This package offers an insulation dielectric withstand of 1500 VAC_{RMS}.

The coupler consists of a AlGaAs LED that is optically coupled to a dielectrically isolated photodiode array which drives two series connected high voltage MOS transistors. The typical ON-Resistance is 20Ω at 25 mA and is linear up to 50mA. The incremental resistance drops to less than 20Ω beyond 50 mA while reducing internal power dissipation at high load currents.

Absolute Maximum Ratings (T_A = 25℃)

Emitter (Input)	
Reverse Voltage	5.0V
Continuous Forward Current	50mA
Peak Forward Current (1s)	1A
Power Dissipation	100mW
Derate Linearly from 25℃	1.3mW/℃
Detector (Output)	
Output Breakdown Voltage	±350V
Continous Load Current	±130mA
Power Dissipation	500mW
General Characteristics	
Isolation Test Voltage	$1500VAC_{RMS}$
Isolation Resistance	
V_{IO} = 500V, T_A = 25℃	$\geq 10^{10}\Omega$
Total Power Dissipation	550mW
Derate Linearly from 25℃	2.5mW/℃
Storage Temperature Range	-40 to + 150℃
Operating Temperature Range	-40 to + 85℃
Junction Temperature	100℃
Soldering Temperature, 2mm from case, 10 sec.	260℃

● Turn on/Turn off time



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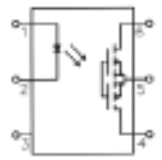
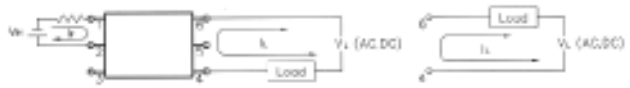
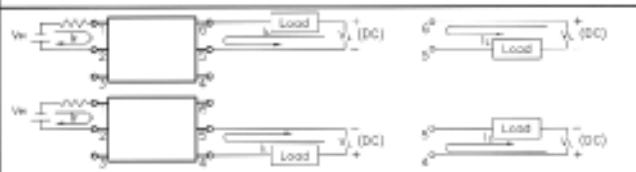
Characteristics (T_A = 25°C)

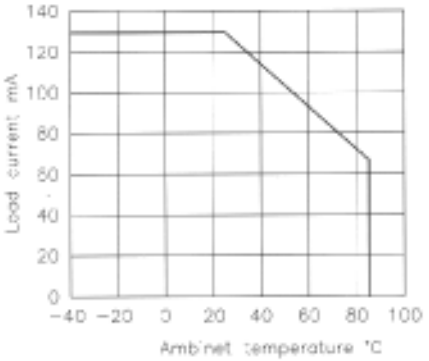
Description			Symbol	Min.	Typ.	Max.	Unit	Test Condition
Emitter (Input)								
Forward Voltage			V_F		1.8	2.0	V	I_F = 10 mA
Operation Input Current			I_{FON}			5	mA	V_L = ± 20 V, I_L = 100 mA, t = 10 ms
Recovery Input Current			I_{FOFF}	0.2			mA	V_L = ± 20 V, I_L = < 5 µA
Detector (output)								
Output Breakdown Voltage			V_B	350			V	I_B = 50 µA
Output Off-State Leakage			$I_{T(OFF)}$		0.2	1	µA	V_T = 100 V, I_F = 0 mA
I/O Capacitance			C_{ISO}		6		pF	I_F = 0, f = 1 MHz
ON Resistance	Con-nection	A	R_{ON}		20	30	Ω	I_L = 100 mA, I_F = 10 mA
		B			10	15		
		C			5	7.5		
Turn-on Time			T_{ON}		0.3	1.0	ms	I_F = 10 mA, V_L = ± 20 V
Turn-off Time			T_{OFF}		0.7	1.5	ms	t = 10 ms, I_L = ± 100 mA

Mos Relay Schematic and Wiring Diagrams

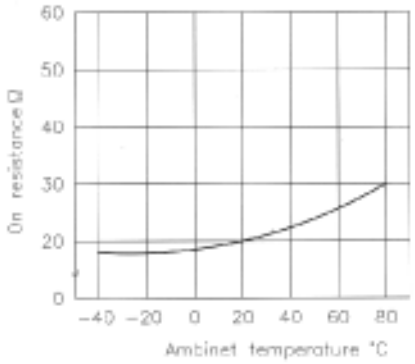
Type	Schematic	Output configur-ation	Load	Con-nection	Wiring diagram
AQV210S		1a	AC/DC	A	
			DC	B	
			DC	C	

DATA CURVE

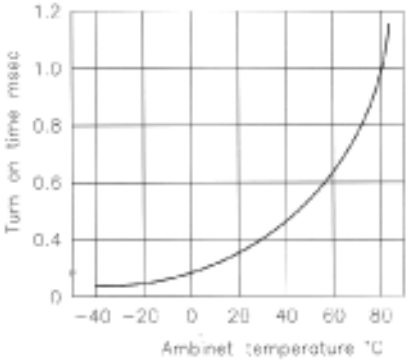
Load current vs. ambient temperature
Allowable ambient temperature:
-40°C to + 85°C



On resistance vs. ambient temperature
Across terminals 4 and 6 pin
LED current: 5 mA
Continuous load current: 130 mA(DC)



Turn on time vs. ambient temperature
Load voltage 350 V(DC)
LED current : 5 mA
Continuous load current: 130 mA(DC)



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