

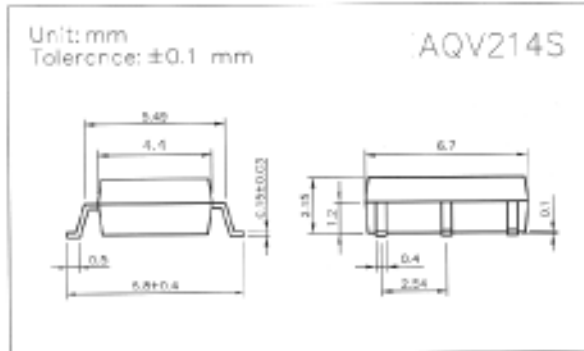
### FEATURES

- Normally Open, Single Pole Single Throw
- Control 400 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<sub>RMS</sub>
- UL, CSA, FCC compatible
- Applications
  - Telecommunications
    - Telecom Switching
    - Tip/Ring Circuits
    - Modem Switching (Laptop, Notebook, Pocket Size)
    - Hookswitch
    - Dial Pulsing
    - Ground Start
    - Ringer Injection
  - Instrumentation
    - 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 AQV214S 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 400 V. The device is packaged in a six pin SO package. This package offers an insulation dielectric withstand of 1500 VAC<sub>RMS</sub>.

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 20 $\Omega$  at 25 mA and is linear up to 50mA. The incremental resistance drops to less than 20 $\Omega$  beyond 50 mA while reducing internal power dissipation at high load currents.



### Absolute Maximum Ratings (T<sub>A</sub> = 25°C)

#### Emitter (Input)

Reverse Voltage.....	5.0V
Continuous Forward Current.....	50mA
Peak Forward Current (1s).....	1A
Power Dissipation.....	100mW
Derate Linearly from 25°C.....	1.3mW/°C

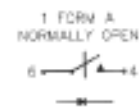
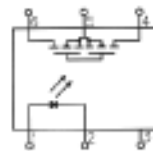
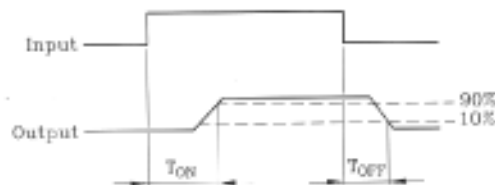
#### Detector (Output)

Output Breakdown Voltage.....	±400V
Continuous Load Current.....	±130mA
Power Dissipation.....	500mW

#### General Characteristics

Isolation Test Voltage.....	1500VAC <sub>RMS</sub>
Isolation Resistance	
V <sub>IO</sub> = 500V, T <sub>A</sub> = 25°C.....	≥10 <sup>10</sup> $\Omega$
Total Power Dissipation.....	550mW
Derate Linearly from 25°C.....	2.5mW/°C
Storage Temperature Range.....	-40 to +150°C
Operating Temperature Range.....	-40 to +85°C
Junction Temperature.....	100°C
Soldering Temperature, 2mm from case, 10 sec... ..	260°C

### ● Turn on/Turn off time



Characteristics

( $T_A = 25^\circ\text{C}$ )

Description	Symbol	Min.	Typ.	Max.	Unit	Test Condition	
<b>Emitter (Input)</b>							
Forward Voltage	$V_F$		1.8	2.0	V	$I_F = 10\text{ mA}$	
Operation Input Current	$I_{FON}$			5	mA	$V_L = \pm 20\text{ V}$ , $I_L = 100\text{ mA}$ , $t = 10\text{ ms}$	
Recovery Input Current	$I_{FOFF}$	0.2			mA	$V_L = \pm 20\text{ V}$ , $I_L = < 5\ \mu\text{A}$	
<b>Detector (output)</b>							
Output Breakdown Voltage	$V_B$	400			V	$I_B = 50\ \mu\text{A}$	
Output Off-State Leakage	$I_{T(OFF)}$		0.2	1	$\mu\text{A}$	$V_T = 100\text{ V}$ , $I_F = 0\text{ mA}$	
I/O Capacitance	$C_{ISO}$		6		pF	$I_F = 0$ , $f = 1\text{ MHz}$	
ON Resistance	Con- nection	A	$R_{ON}$	20	30	$\Omega$	$I_L = 100\text{ mA}$ , $I_F = 10\text{ mA}$
		B		10	15		
		C		5	7.5		
Turn-on Time	$T_{ON}$		0.3	1.0	ms	$I_F = 10\text{ mA}$ , $V_L = \pm 20\text{ V}$	
Turn-off Time	$T_{OFF}$		0.7	1.5	ms	$t = 10\text{ ms}$ , $I_L = \pm 100\text{ mA}$	

Mos Relay Schematic and Wiring Diagrams					
Type	Schematic	Output configuration	Load	Con- nection	Wiring diagram
AQV214S		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 400 V(DC)  
LED current : 5 mA  
Continuous load current: 130 mA(DC)

