

FEATURES

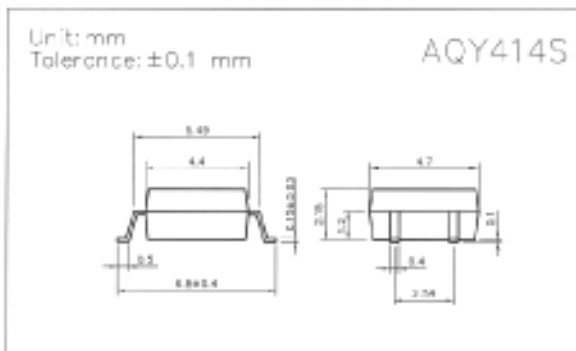
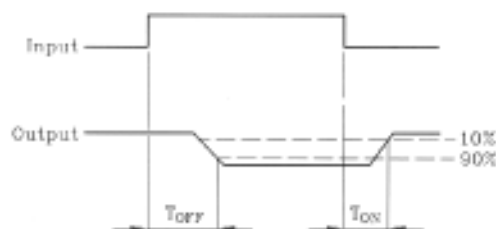
- Normally Close, Single Pole Single Throw
- Control 400 VAC or DC Voltage
- Switch 130 mA Loads
- LED Control Current, 2mA
- Low ON-Resistance
- dv/dt , >500 V/ms
- Isolation Test Voltage, 1500 VAC_{RMS}
- UL, CSA, FCC compatible
- Applications
 - Telecommunications
 - Telecom Switching
 - Tip/Ring Circuits
 - Modem Switching (Laptop, Notebook, Pocket Size)
 - Hookswitch
 - Dial Pulsing
 - Ground Start
 - Ringer Injection
 - 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 AQY414S is a single pole single throw (SPST), normally close (NC), 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 4 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 40 Ω at 25 mA and is linear up to 50mA. The incremental resistance drops to less than 40 Ω beyond 50 mA while reducing internal power dissipation at high load currents.

● Operate/Reverse time



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

Emitter (Input)

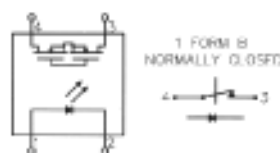
Reverse Voltage.....	5.0V
Continuous Forward Current.....	50mA
Peak Forward Current (1s).....	1A
Power Dissipation.....	100mW
Derate Linearly from 25 $^\circ\text{C}$	1.3mW/ $^\circ\text{C}$

Detector (Output)

Output Breakdown Voltage.....	$\pm 400\text{V}$
Continuous Load Current.....	$\pm 130\text{mA}$
Power Dissipation.....	500mW

General Characteristics

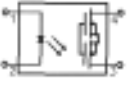
Isolation Test Voltage.....	1500VAC _{RMS}
Isolation Resistance	
$V_{IO} = 500\text{V}, T_A = 25^\circ\text{C}$	$\geq 10^{10}\Omega$
Total Power Dissipation.....	550mW
Derate Linearly from 25 $^\circ\text{C}$	2.5mW/ $^\circ\text{C}$
Storage Temperature Range.....	-40 to + 150 $^\circ\text{C}$
Operating Temperature Range.....	-40 to + 85 $^\circ\text{C}$
Junction Temperature.....	100 $^\circ\text{C}$
Soldering Temperature, 2mm from case, 10 sec....	260 $^\circ\text{C}$



Characteristics

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

Description	Symbol	Min.	Typ.	Max.	Unit	Test Condition
Emitter (Input)						
Forward Voltage	V_F		1.8	2.0	V	$I_F = 10\text{ mA}$
Operation Input Current	$I_{F(ON)}$			5	mA	$V_L = \pm 20\text{ V}$, $I_L = < 5\text{ }\mu\text{A}$
Recovery Input Current	$I_{F(ON)}$	0.2			mA	$V_L = \pm 20\text{ V}$, $I_L = 100\text{ mA}$, $t = 10\text{ ms}$
Detector (output)						
Output Breakdown Voltage	V_B	400			V	$I_B = 50\text{ }\mu\text{A}$
Output Off-State Leakage	$I_{T(OFF)}$		0.2	1	μA	$V_T = 100\text{ V}$, $I_F = 10\text{ mA}$
I/O Capacitance	C_{ISO}		6		pF	$I_F = 0$, $f = 1\text{ MHz}$
ON Resistance	R_{ON}		40	50	Ω	$I_L = 100\text{ mA}$, $I_F = 0\text{ mA}$
Reverse (ON) Time	T_{ON}		0.6	1.5	ms	$I_F = 10\text{ mA}$, $V_L = \pm 20\text{ V}$
Operate (OFF) Time	T_{OFF}		0.3	1.0	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
AQY414S		1b	AC/DC	-	

DATA CURVE

Load current vs. ambient temperature

Allowable ambient temperature:

-40°C to $+85^\circ\text{C}$

On resistance vs. ambient temperature

Across terminals 3 and 4 pin

LED current: 5 mA

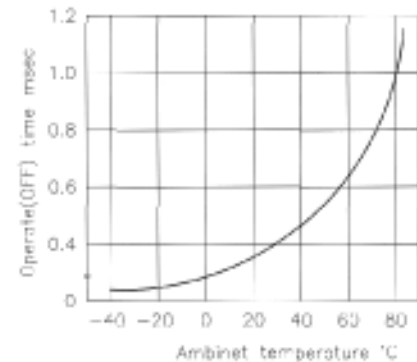
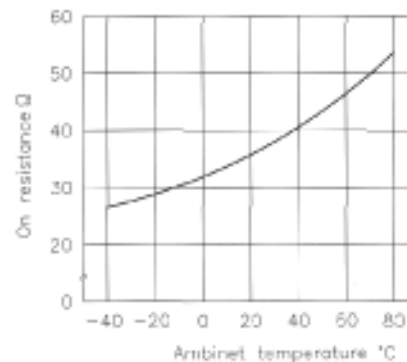
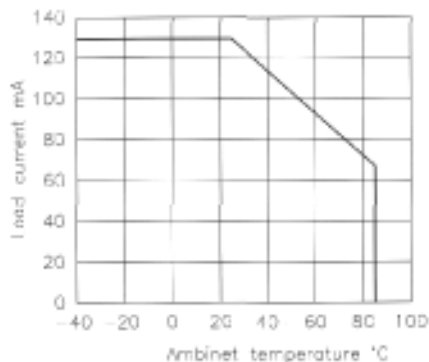
Continuous load current: 130 mA(DC)

Operate (OFF) time vs. ambient temperature;

Load voltage 400 V(DC)

LED current : 5 mA

Continuous load current: 130 mA(DC)



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