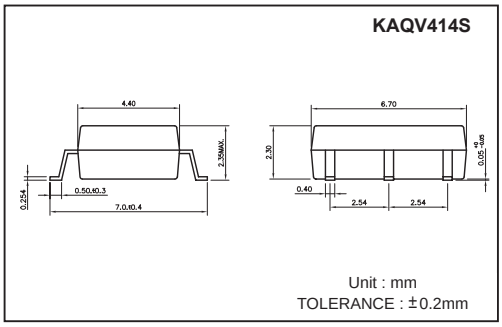
High Voltage, Photo MOS Relay KAQV414S

UL 1577/ **UL** 508 (File No.E108430), **FI** EN60950 (File No.FI13698)

Features

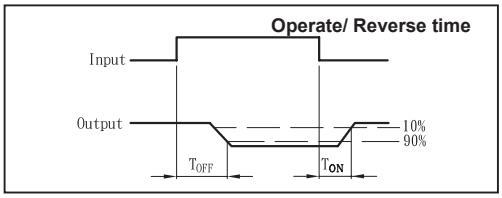
1. Normally Close, Single Pole Single Throw
2. Control 400VAC or DC Voltage
3. Switch 130mA Loads
4. LED control Current, 5mA
5. Low ON-Resistance
6. dv/dt, >500V/ms
7. Isolation Test Voltage, 1500VACrms



Absolute Maximum Ratings

(Ta=25°C)

Emitter (Input)	Detector (Output)
Reverse Voltage……5.0V	Output Breakdown Voltage ……±400V
Continuous Forward Current……50mA	Continuous Load Current ……±130mA
Peak Forward Current ……1A	Power Dissipation ……500mW
Power Dissipation ……100mW	
Derate Linearly from 25°C ……1.3mW/°C	
General Characteristics	
Isolation Test Voltage……1500VACrms	Storage Temperature Range …-40°C to +125°C
Isolation Resistance	Operating Temperature Range…-30°C to +85°C
Vio=500V, Ta=25°C ……≥10^{10}Ω	Junction Temperature……100°C
Total Power Dissipation ……550mW	Soldering Temperature,
Derate Linearly from 25°C ……2.5mW/°C	2mm from case, 10 sec ……260°C

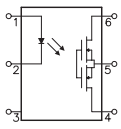
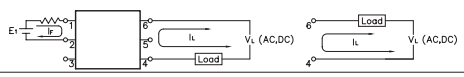
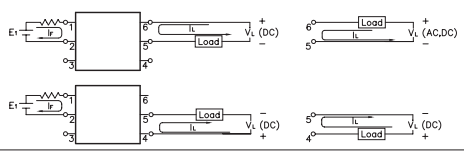
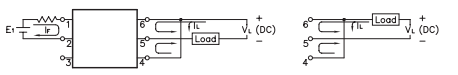


Electro-optical Characteristics

(Ta=25°C)

Parameter			Symbol	Conditions	Min.	Typ.	Max.	Unit
Emitter (Input)								
Forward Voltage			VF	IF =10mA		1.2	1.5	V
Operation Input Current			IFOFF	VL =±20V, IL ≤5uA			5	mA
Recovery Input Current			IFON	VL =±20V, IL =100mA, t =10mS	0.2			mA
Detector (Output)								
Output Breakdown Voltage			VB	IB=50uA	400			V
Output Off-State Leakage			ITOFF	VT =100V, IF =0mA		0.2	2	uA
I/O Capacitance			CISO	IF =0, f =1MHz		6		pF
ON Resistance	Connection	A	RON	IL =100mA, IF =10mA		40	50	Ω
		B				20	25	
		C				10	12.5	
Reverse (NO) Time			TON	IF =10mA, VL =±20V		0.6	1.5	ms
Operate (OFF) Time			TOFF	t =10ms, IL =±100mA		0.3	1.0	ms

Mos Relay Schematic and Wiring Diagrams

Type	Schematic	Output configuration	Load	Connection	Wiring Diagrams
KAQV414S		1a	AC/DC	A	
			DC	B	
			DC	C	

Data Curve

Fig.1 Load current vs. ambient temperature
Allowable ambient temperature:
-40°C to +85°C

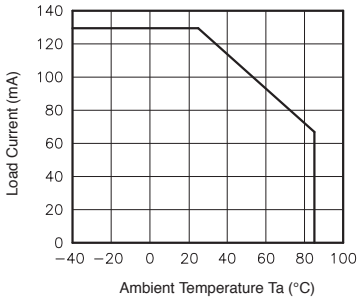


Fig.2 On resistance vs. ambient temperature
Across terminals 4 and 6 pin
LED current: 0mA
Continuous load current: 130mA(DC)

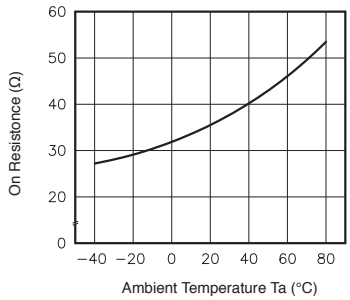


Fig.3 Operate (OFF) time vs. ambient temperature Load voltage 400V(DC)
LED current: 5mA
Continuous load current: 130mA(DC)

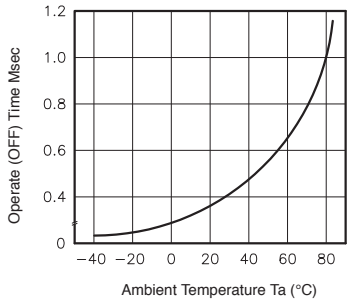


Fig.4 Reverse (ON) time vs. ambient temperature LED current: 5mA; Load voltage: 400V(DC)
Continuous load current: 130mA(DC)

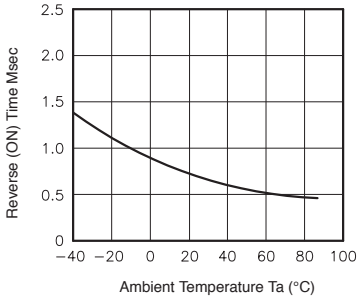


Fig.5 LED operate (OFF) vs. ambient temperature
Load voltage: 400V(DC)
Continuous load current: 130mA(DC)

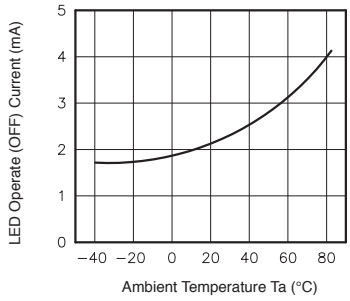


Fig.6 LED reverse (ON) current vs. ambient temperature
Load voltage: 400V(DC)
Continuous load current: 130mA(DC)

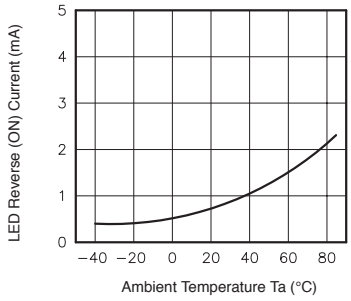


Fig.7 LED dropout voltage vs. ambient temperature
LED current: 5 to 50mA

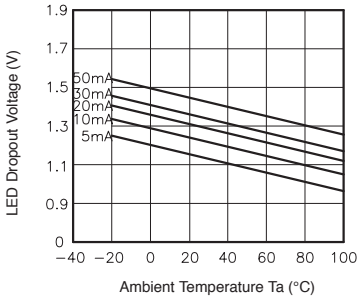


Fig.8 Voltage vs. current characteristics of output at MOS FET portion
Measured portion: across terminals 4 and 6 pin
Ambient temperature: 25°C

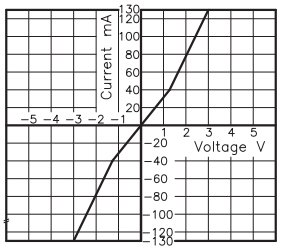


Fig.9 Off state leakage current
Across terminals 4 and 6 pin
Ambient temperature: 25°C

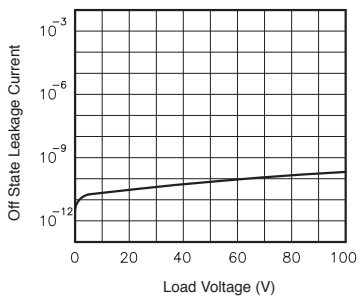


Fig.10 LED forward current vs. operate (OFF) time Across terminals 4 and 6 pin;
Load voltage: 400V (DC);
Continuous load current: 130mA (DC);
Ambient temperature: 25°C

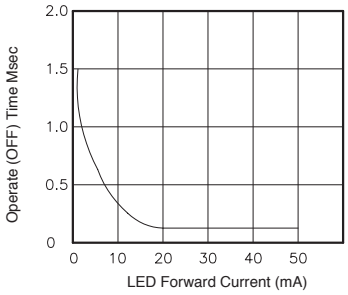


Fig.11 LED forward current vs. reverse (ON) time Across terminals 4 and 6 pin;
Load voltage: 400V (DC);
Continuous load current: 130mA (DC);
Ambient temperature: 25°C

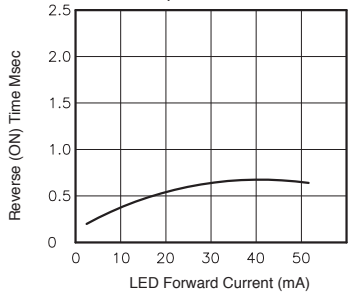


Fig.12 Applied voltage vs. output capacitance
Across terminals 4 and 6 pin
Frequency: 1MHz
Ambient temperature: 25°C