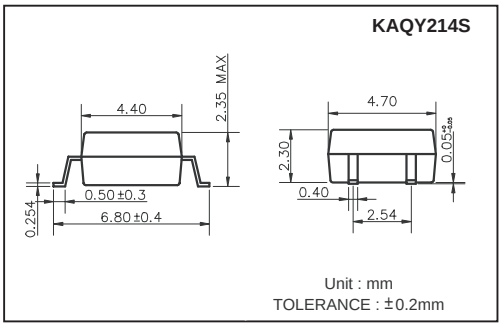
High Voltage, Solid State Relay-MOSFET Output KAQY214S

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

Features

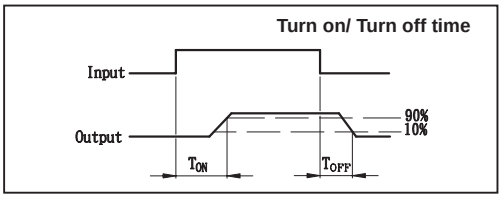
1. Normally Open, Single Pole Single Throw
2. Control 400VAC or DC Voltage
3. Switch 130mA Loads
4. LED control Current, 5mA
5. Low ON-Resistance
6. dv/dt, >500V/ms
7. Isolation Test Voltage, 1500VACrms



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	$\geq 10^{10}\Omega$	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

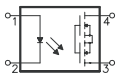
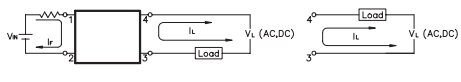


Electro-optical Characteristics

(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	IFON	VL =±20V, IL =100mA, t =10mS			5	mA
Recovery Input Current	IFOFF	VL =±20V, IL≤5uA	0.2			mA
Detector (Output)						
Output Breakdown Voltage	VB	IB=50uA	400			V
Output Off-State Leakage	ITOFF	VT =100V, IF =0mA		0.2	1	uA
I/O Capacitance	CISO	IF =0, f =1MHz		6		p F
ON Resistance	RON	IL =100mA, IF =10mA		20	30	Ω
Turn-On Time	TON	IF =10mA, VL =±20V		0.3	1.0	ms
Turn-Off Time	TOFF	t =10ms, IL =±100mA		0.7	1.5	ms

Mos Relay Schematic and Wiring Diagrams

Type	Schematic	Output configuration	Load	Connection	Wiring Diagrams
KAQY214S		1a	AC/DC	A	

Data Curve

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

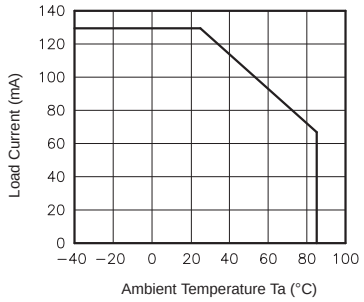


Fig.2 On resistance vs. ambient temperature
Across terminals 3 and 4 pin
LED current: 5mA
Continuous load current: 130mA(DC)

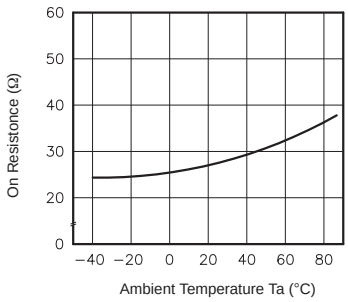


Fig.3 Turn on time vs. ambient temperature
Load voltage: 400V(DC)
LED current: 5mA
Continuous load current: 130mA(DC)

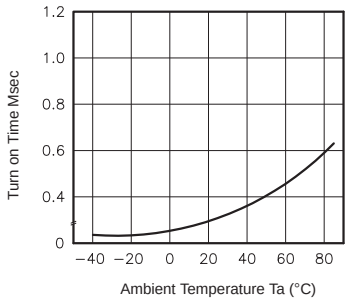


Fig.4 Turn off time vs. ambient temperature
LED current: 5mA; Load voltage: 400V(DC)
Continuous load current: 130mA(DC)

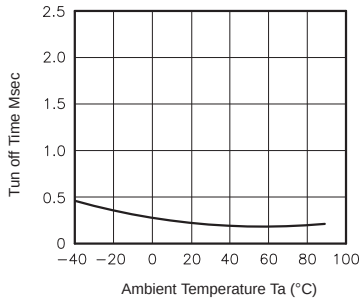


Fig.5 LED operate vs. ambient temperature
Load voltage 400V(DC)
Continuous load current: 130mA(DC)

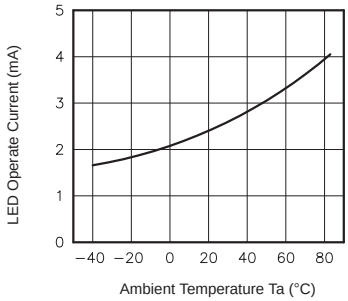


Fig.6 LED turn off current vs. ambient temperature
Load voltage 400V(DC)
Continuous load current: 130mA(DC)

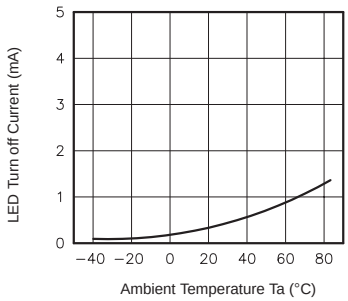


Fig.7 LED dropout voltage vs. ambient temperature
LED current: 5 to 50mA

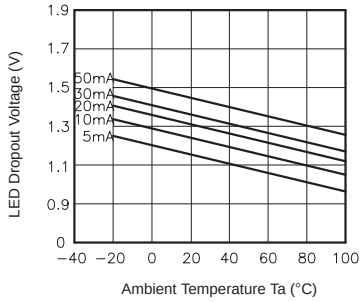


Fig.8 Voltage vs. current characteristics of output at MOS FET portion
Measured portion: across terminals 3 and 4 pin
Ambient temperature: 25°C

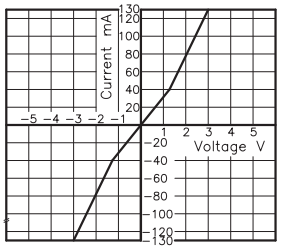


Fig.9 Off state leakage current
Across terminals 3 and 4 pin
Ambient temperature: 25°C

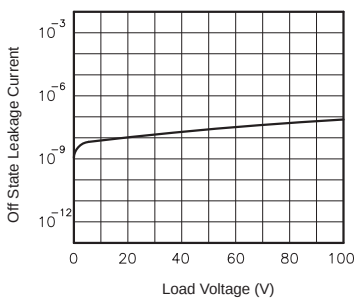


Fig.10 LED forward current vs. turn on time
Across terminals 3 and 4 pin;
Load voltage: 400V (DC);
Continuous load current: 130mA (DC);
Ambient temperature: 25°C

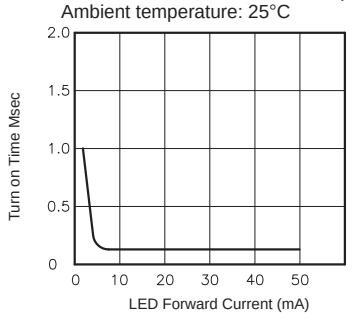


Fig.11 LED forward current vs. turn off time
Across terminals 3 and 4 pin;
Load voltage: 400V (DC);
Continuous load current: 130mA (DC);
Ambient temperature: 25°C

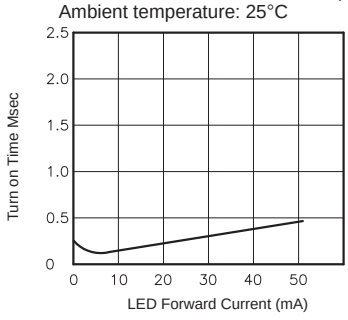


Fig.12 Applied voltage vs. output capacitance
Across terminals 3 and 4 pin
Frequency: 1MHz
Ambient temperature: 25°C