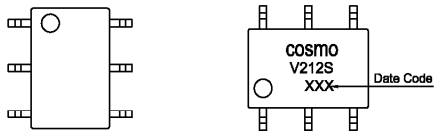
High Voltage, Solid State Relay-MOSFET Output KAQV212S

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

Features

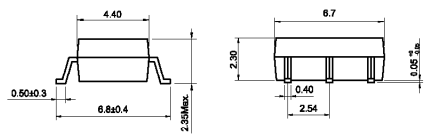
1. Normally Open, Single Pole Single Throw
2. Control 60VAC or DC Voltage
3. Switch 400mA Loads
4. LED control Current, 5mA
5. Low ON-Resistance
6. dv/dt, >500V/ms
7. Isolation Test Voltage, 1500VACrms

KAQV212S



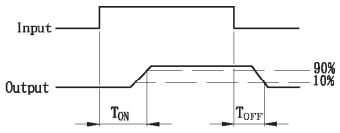
Unit : mm
TOLERANCE : ±0.2mm

KAQV212S



Unit : mm
TOLERANCE : ±0.2mm

Turn on/ Turn off time



Absolute Maximum Ratings

(Ta=25°C)

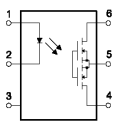
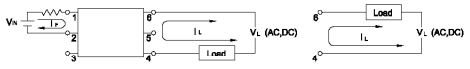
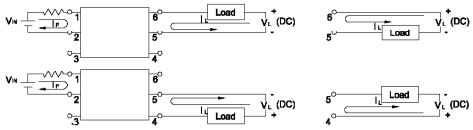
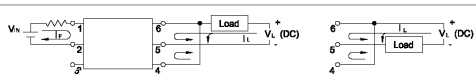
Emitter (Input)	Detector (Output)
Reverse Voltage.....5.0V	Output Breakdown Voltage .....±60V
Continuous Forward Current 50mA	Continuous Load Current .....±400mA
Peak Forward Current 1A	Power Dissipation 500mW
Power Dissipation 100mW	
Derate Linearly from 25°C .....1.3mW/°C	
General Characteristics	
Isolation Test Voltage.....1500VACrms	Storage Temperature Range ...-40°C to +150°C
Isolation Resistance	Operating Temperature Range...-40°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			V_F	I_F =10mA		1.2	1.5	V
Operation Input Current			I_{FON}	V_L =±20V, I_L =100mA, t =10mS			5	mA
Recovery Input Current			I_{FOFF}	V_L =±20V, I_L≤5uA	0.2			mA
Detector (Output)								
Output Breakdown Voltage			V_B	I_B=50uA	60			V
Output Off-State Leakage			I_{TOFF}	V_T =60V, I_F =0mA		0.2	1	uA
I/O Capacitance			C_{ISO}	I_F =0, f =1MHz		0.8		pF
ON Resistance	Connection	A	R_{ON}	I_L =100mA, I_F =10mA		0.83	2.50	Ω
		B				0.44	1.25	
		C				0.25	0.63	
Turn-On Time			T_{ON}	I_F =10mA, V_L =±20V		0.2	1.5	ms
Turn-Off Time			T_{OFF}	t =10ms, I_L =±100mA		0.3	1.5	ms

Schematic and Wiring Diagrams

Type	Schematic	Output configuration	Load	Connection	Wiring Diagrams
KAQV212S		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

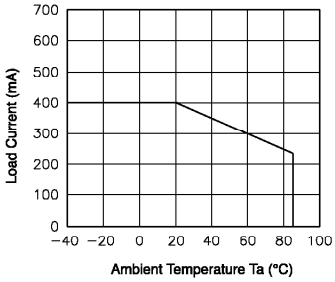


Fig.2 On resistance vs. ambient temperature
Across terminals 4 and 6 pin
LED current: 5mA
Continuous load current:400mA(DC)

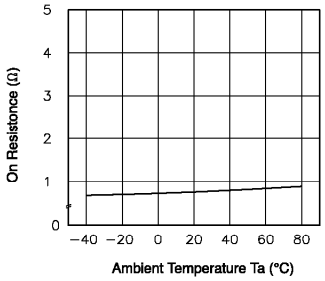


Fig.3 Turn on time vs. ambient temperature
Load voltage 60V(DC)
LED current: 5mA
Continuous load current:400mA(DC)

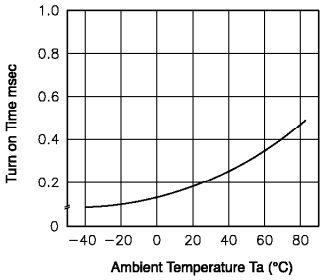


Fig.4 Turn off time vs. ambient temperature
LED current: 5mA; Load voltage:
60V(DC)
Continuous load current:400mA(DC)

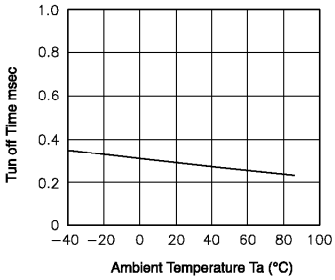


Fig.5 LED operate vs. ambient temperature
Load voltage 60V(DC)
Continuous load current:400mA(DC)

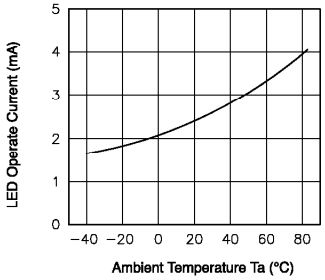


Fig.6 LED turn off current vs. ambient temperature
Load voltage 60V(DC)
Continuous load current:400mA(DC)

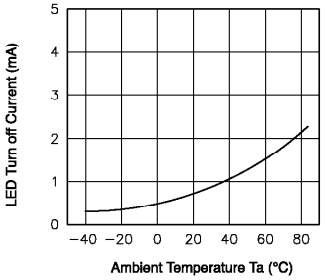


Fig.7 LED dropout voltage vs. ambient temperature
LED current: 5 to 50mA

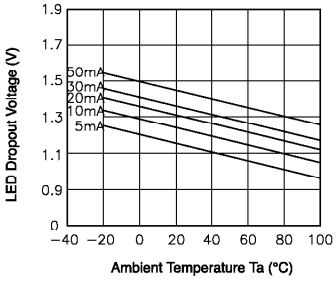


Fig.8 Voltage vs. current characteristics of output at MOS FET portion
Measured portion: across terminals 4 and 6 pin
Ambient temperature: 25°C

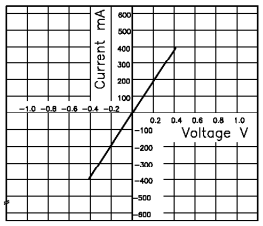


Fig.9 Off state leakage current
Across terminals 4 and 6 pinAmbient temperature: 25°C

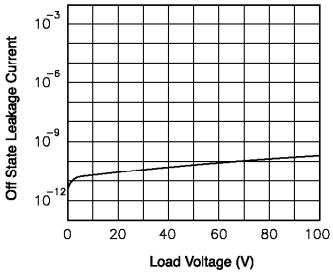


Fig.10 LED forward current vs. turn on time
Across terminals 4 and 6 pin;
Load voltage: 60V (DC);
Continuous load current:400mA (DC);
Ambient temperature: 25°C

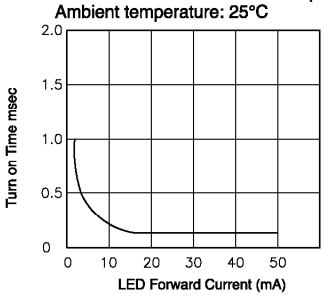


Fig.11 LED forward current vs. turn off time
Across terminals 4 and 6 pin;
Load voltage: 60V (DC);
Continuous load current:400mA (DC);
Ambient temperature: 25°C

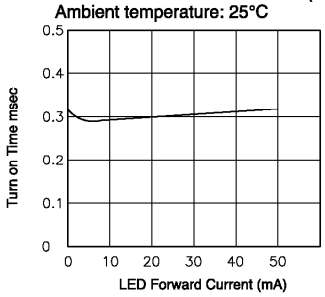


Fig.12 Applied voltage vs. output capacitance
Across terminals 4 and 6 pin
Frequency: 1MHz
Ambient temperature: 25°C