

# V414/V414A

## HIGH VOLTAGE, PHOTO MOS RELAY

### COSMO

#### FEATURES

- Normally Close, Single Pole Single Throw
- Control 400VAC or DC Voltage
- Switch 130mA Loads
- LED control Current, 5mA
- Low ON-Resistance
- $dv/dt, >500V/ms$
- Isolation Test Voltage, 3750VACrms

#### Absolute Maximum Ratings(Ta=25°C)

##### Emitter(Input)

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

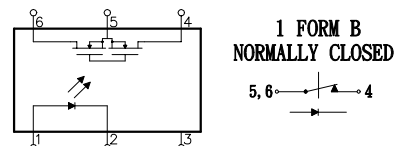
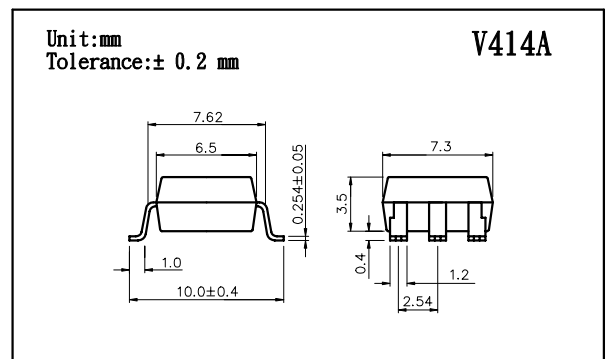
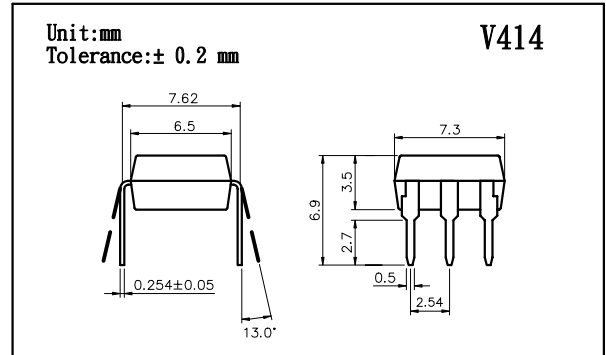
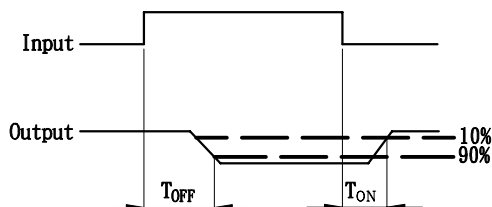
##### Detector(Output)

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

##### General Characteristics

Isolation Test Voltage .....	3750VACrms
Isolation Resistance $V_{io}=500V, T_a=25°C$ .....	$\geq 10^{10} \Omega$
Total Power Dissipation .....	550mW
Derate Linearly from 25°C .....	2.5mW/°C
Storage Temperature Range .....	-40°C to +125°C
Operating Temperature Range .....	-30°C to +85°C
Junction Temperature .....	100°C
Soldering Temperature, 2mm from case, 10 sec .....	260°C

- Operate/Reverse time



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### Characterisitcs

(Ta=25°C)

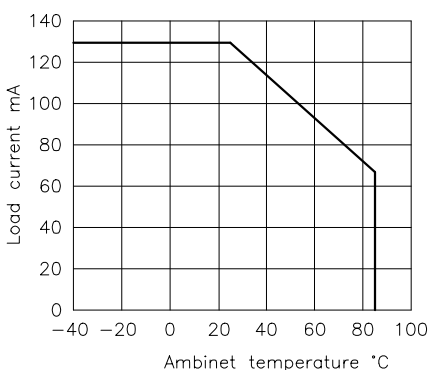
Description	Symbol	Min.	Typ.	Max.	Unit	Test Condition	
<b>Emitter(Input)</b>							
Forward Voltage	VF		1.8	2.0	V	IF=10mA	
Operation Input Current	I <sub>OFF</sub>			5	mA	V <sub>L</sub> =± 20V, I <sub>L</sub> ≤5μA	
Recovery Input Current	I <sub>ON</sub>	0.2			mA	V <sub>L</sub> =± 20V, I <sub>L</sub> =100mA t=10mS	
<b>Detector (output)</b>							
Output Breakdown Voltage	V <sub>B</sub>	400			V	I <sub>B</sub> =50μA	
Output Off-State Leakage	I <sub>T(OFF)</sub>		0.2	2	μA	V <sub>T</sub> =100V, I <sub>F</sub> =10mA	
I/O Capacitance	C <sub>ISO</sub>		6		pF	I <sub>F</sub> =0, f=1MHz	
ON Resistance	Con- nection	A		40	50	Ω	I <sub>L</sub> =100mA, I <sub>F</sub> =0mA
		B	R <sub>ON</sub>	20	25		
		C		10	12.5		
Reverse(ON) Time	T <sub>ON</sub>		0.6	1.5	ms	I <sub>F</sub> =10mA, V <sub>L</sub> =± 20V	
Operate(OFF) Time	T <sub>OFF</sub>		0.3	1.0	ms	t=10ms, I <sub>L</sub> =± 100mA	

### Mos Relay Schematic and Wiring Diagrams

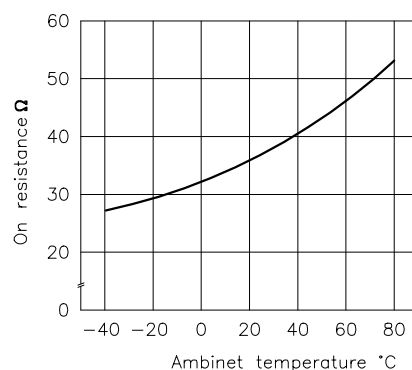
Type	Schematic	Output configuration	Load	Con- nection	Wiring Diagrams
V414 & V414A		1a	AC/DC	A	
			DC	B	
			DC	C	

### DATA CURVE

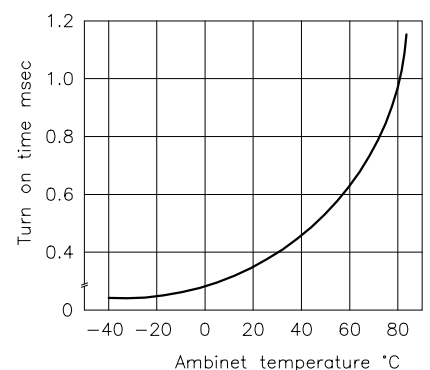
Load current vs. ambient temperature  
Allowable ambient temperature:  
-40°C to +85°C



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



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

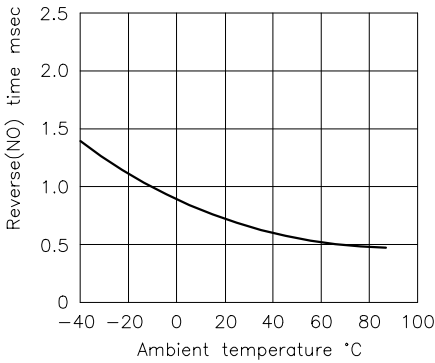


# V414/V414A

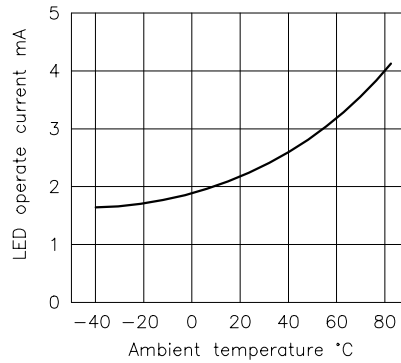
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### V414/V414A

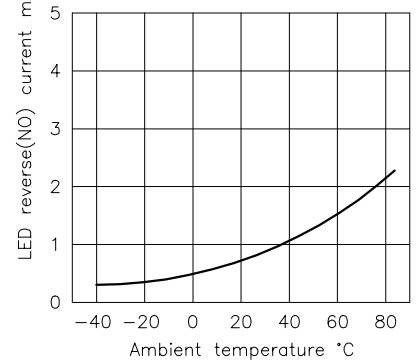
Reverse(NO) time vs. ambient temperature  
LED current: 5mA; Load voltage: 400V(DC)  
Continuous load current: 130mA(DC)



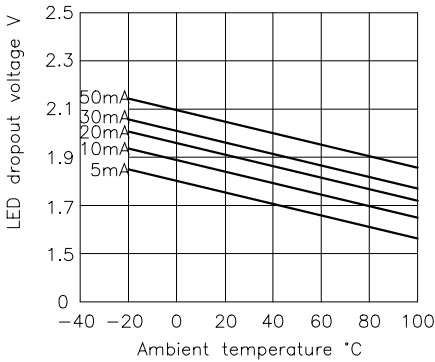
LED operate(OFF) vs. ambient temperature  
Load voltage: 400V(DC)  
Continuous load current: 130mA(DC)



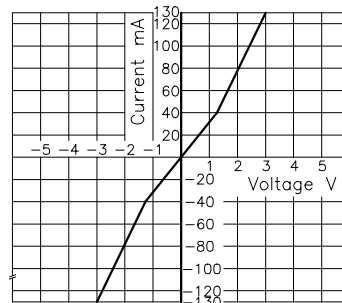
LED reverse(NO) current vs. ambient temperature  
Load voltage: 400V(DC)  
Continuous load current: 130mA(DC)



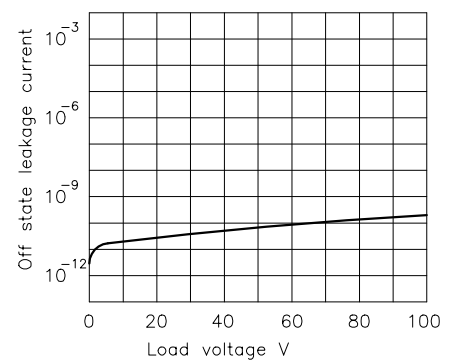
LED dropout voltage vs. ambient temperature  
LED current: 5 to 50mA



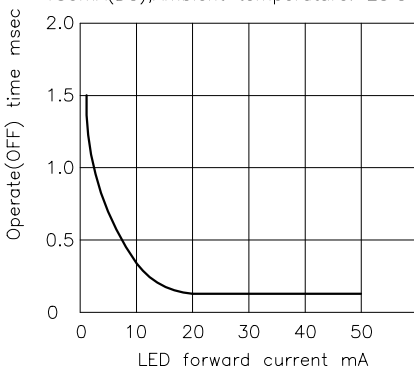
Voltage vs. current characteristics of output at MOS FET portion  
Measured portion: across terminals 4 and 6 pin  
Ambient temperature: 25°C



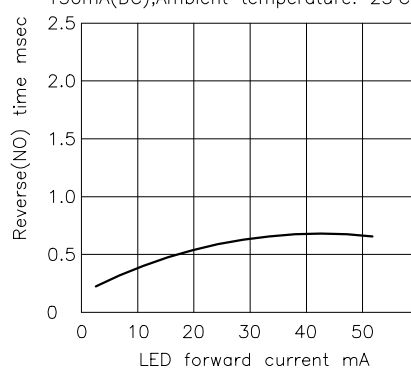
Off state leakage current  
Across terminals 4 and 6 pin  
Ambient temperature: 25°C



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



LED forward current vs. reverse(NO) time  
Across terminals 4 and 6 pin; Load voltage: 400V(DC); Continuous load current: 130mA(DC); Ambient temperature: 25°C



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

