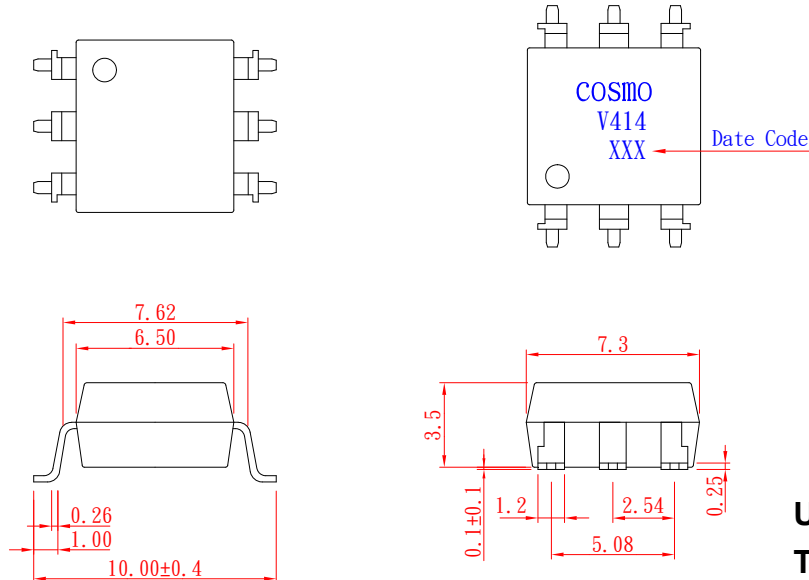


PRODUCT SPECIFICATION

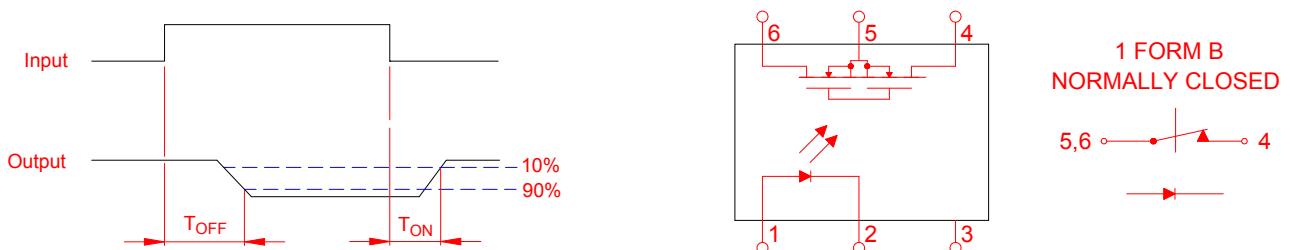
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cosmo ELECTRONICS CORPORATION	SOLID STATE RELAY - MOSFET OUTPUT KAQV414A	NO.61M11006	REV. 2
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● OUTSIDE DIMENSION :



● Operate / Reverse time



● 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	3750VACrms	Storage Temperature Range	-40°C to +125°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

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● 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 _{F OFF}	V _L =±20V , I _L ≤5μA			5.0	mA
Recovery Input Current			I _{F ON}	V _L =±20V , I _L =100mA , t=10ms	0.2			mA
Detector (Output)								
Output Breakdown Voltage			V _B	I _B =50μA , I _F =10mA	400			V
Output Off-State Leakage			I _{T OFF}	V _T =100V , I _F =10mA		0.2	2	μ A
I/O Capacitance			C _{ISO}	I _F =0 , f=1MHz		6		pF
ON Resistance	Connection	A	R _{ON}	I _L =100mA , I _F =0mA		25	50	Ω
		B				13	25	
		C				6	12.5	
Reverse (ON) Time			T _{ON}	I _F =10mA , V _L =±20V t=10ms , I _L =±100mA		0.6	1.5	ms
Operate (OFF) Time			T _{OFF}			0.3	1.0	ms

● Schematic and Wiring Diagrams

Schematic	Output Configuration	Load	Connection	Wiring Diagrams
	1b	AC/DC	A	
		DC	B	
		DC	C	

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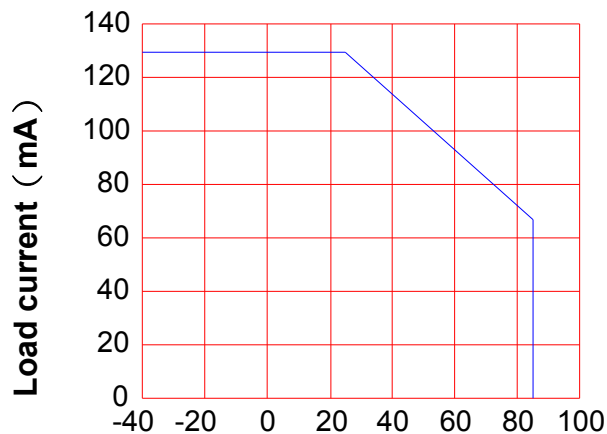
SOLID STATE RELAY - MOSFET OUTPUT
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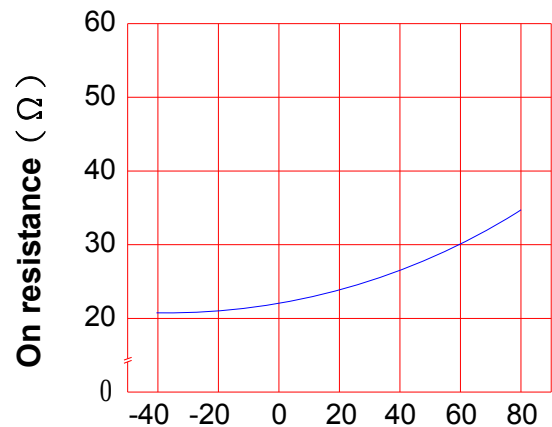
● Data Curve

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



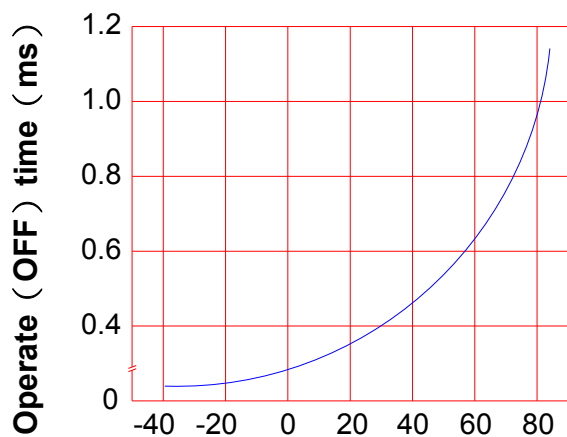
Ambient temperature Ta (°C)

On resistance vs. ambient temperature
across terminals 4 and 6 pin
LED current : 5mA
Continuous load current : 130mA (DC)



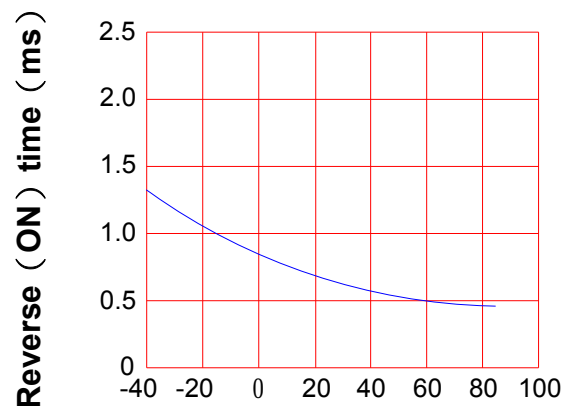
Ambient temperature Ta (°C)

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



Ambient temperature Ta (°C)

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



Ambient temperature Ta (°C)

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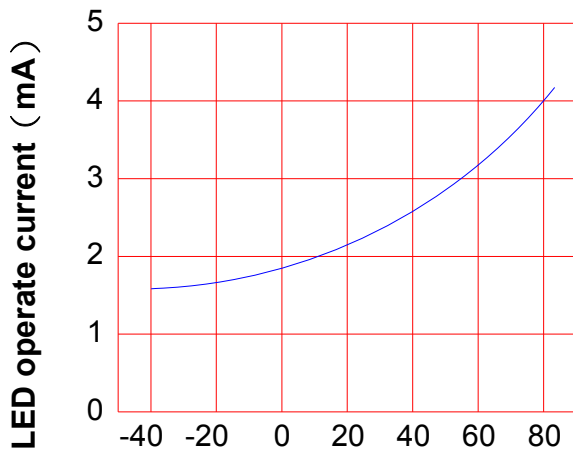
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LED operate current vs.
ambient temperature

Load Voltage : 400V (DC)

Continuous load current : 130mA (DC)

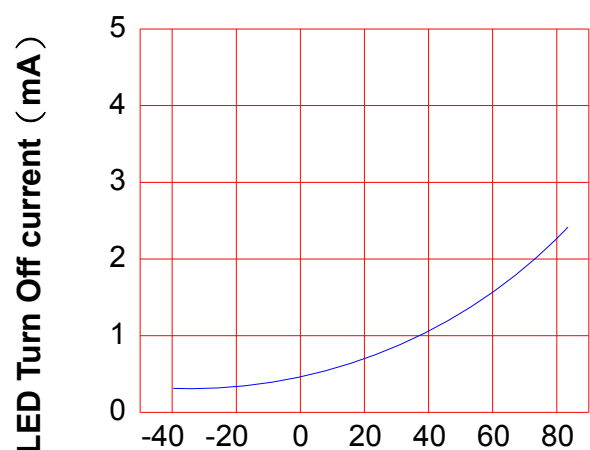


Ambient temperature Ta (°C)

LED Turn Off current vs.
ambient temperature

Load Voltage : 400V (DC)

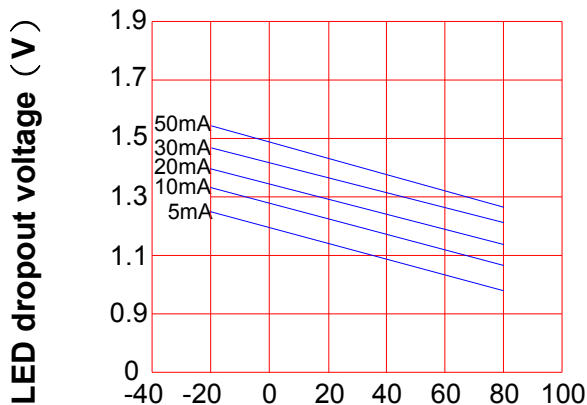
Continuous load current : 130mA (DC)



Ambient temperature Ta (°C)

LED dropout voltage vs.
ambient temperature

LED current : 5 to 50mA

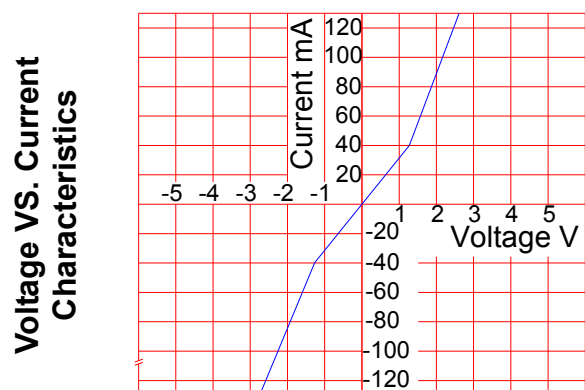


Ambient temperature Ta (°C)

Voltage vs. current characteristics
of output at MOSFET portion

Measured portion : across terminals
4 and 6 pin

Ambient temperature : 25°C



Ambient temperature : 25°C

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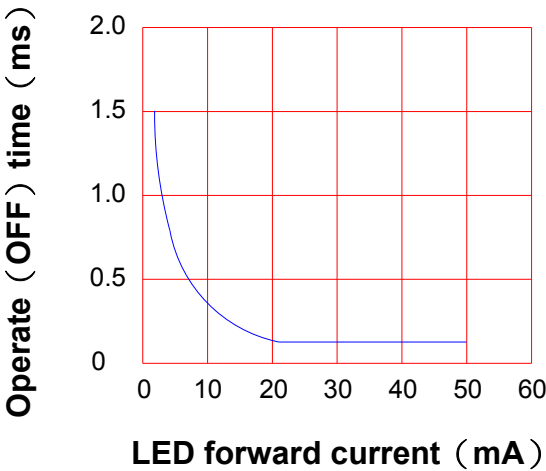
LED forward current vs. Operate (OFF) time

Across terminals 4 and 6 pin

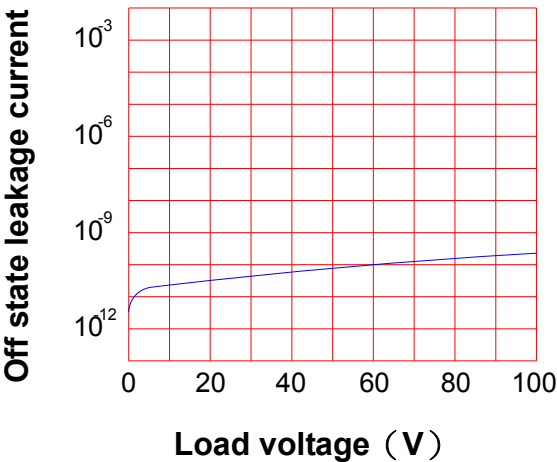
Load voltage : 400V (DC)

Continuous load current : 130mA (DC)

Ambient temperature : 25°C



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



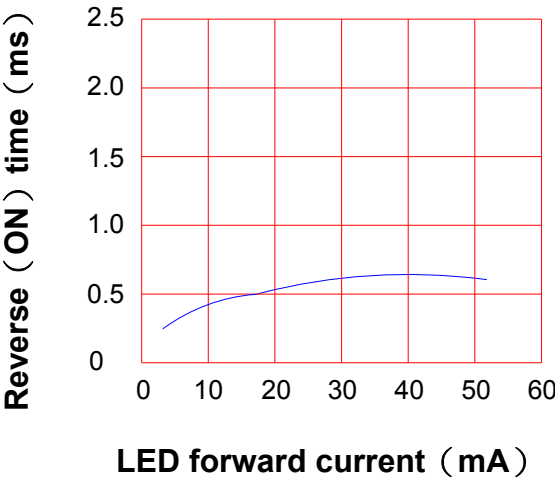
LED forward current vs. reverse (ON) time

Across terminals 4 and 6 pin

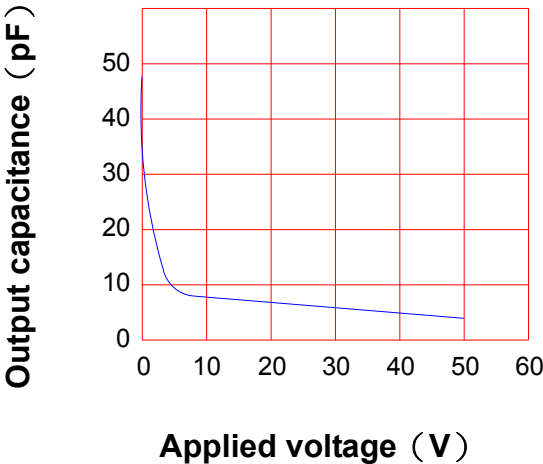
Load voltage : 400V (DC)

Continuous load current : 130mA (DC)

Ambient temperature : 25°C



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



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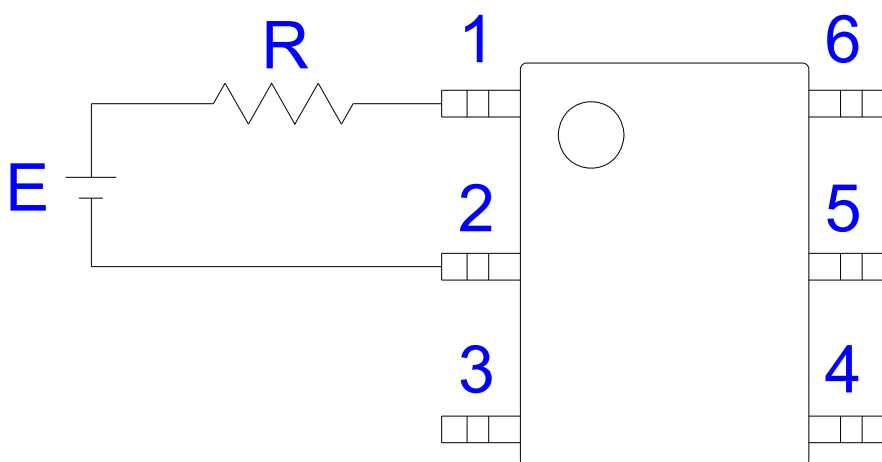
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● USING METHODS

Examples of resistance value to control LED forward current (IF)

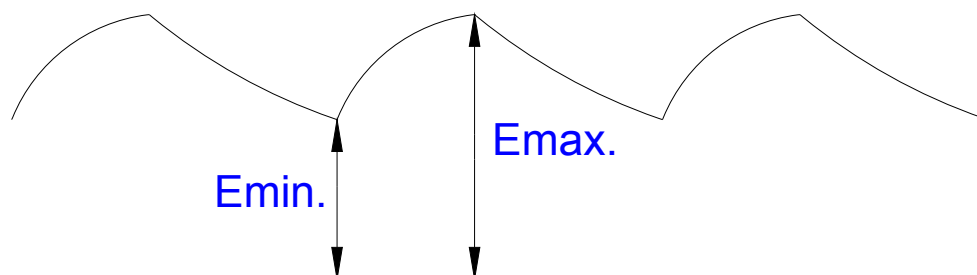
SSR-MOSFET OUTPUT

(IF=5mA)



E	R
3.3V	Approx. 330 Ω
5V	Approx. 640 Ω
12V	Approx. 1.9K Ω
15V	Approx. 2.5K Ω
24V	Approx. 4.1K Ω

- (1) LED forward current must be more than 5mA , at E min.
- (2) LED forward current must be less than 50mA , at E max.



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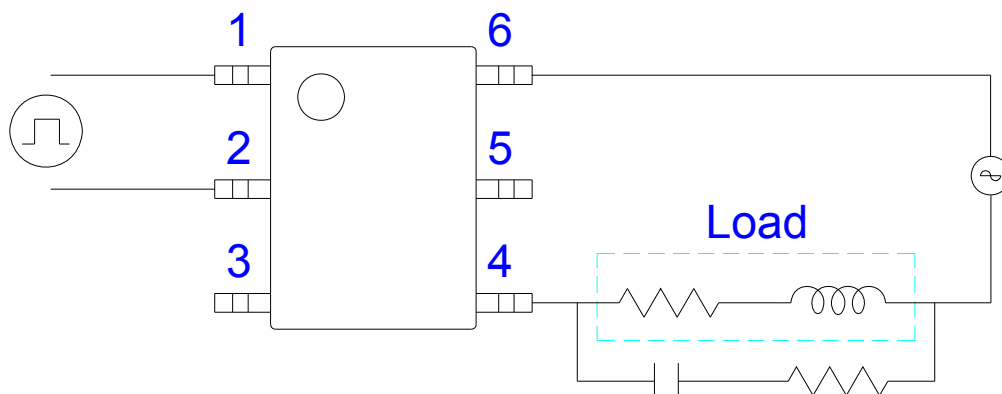
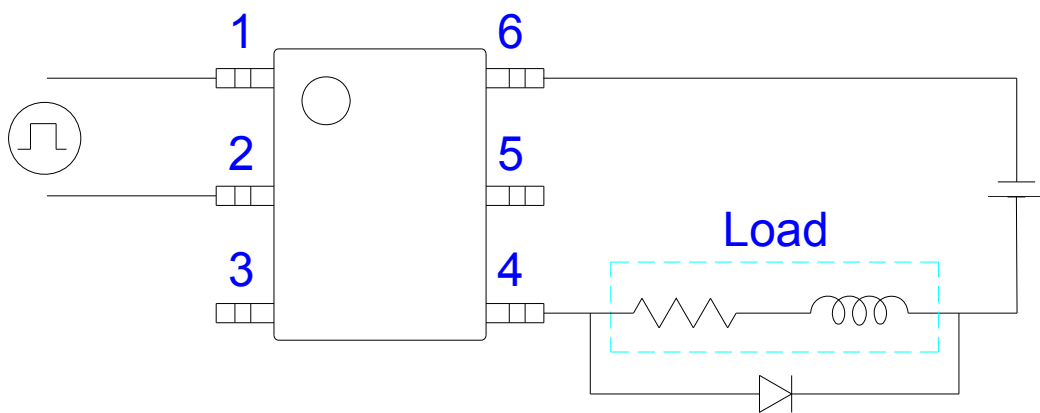
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● USING METHODS

Regulate the spike voltage generated on the inductive load as follows :



R-C Snubber