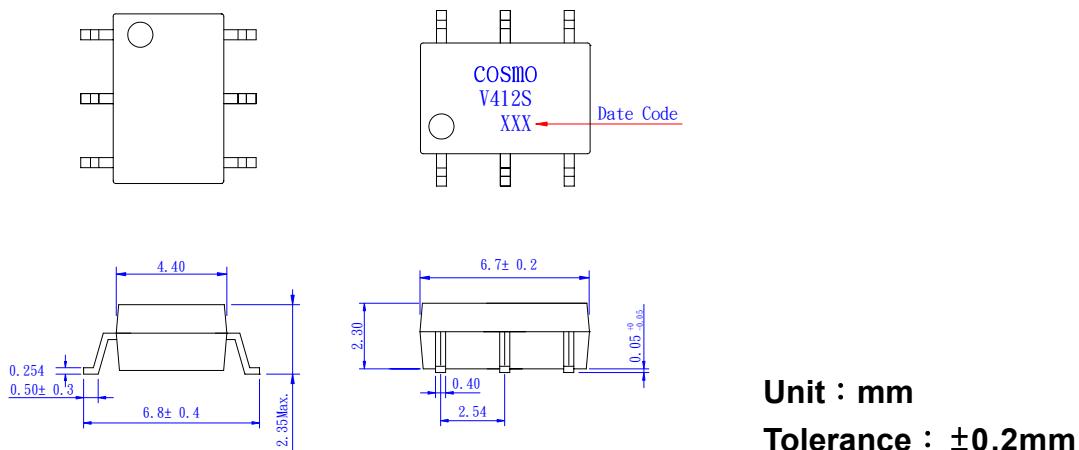


PRODUCT SPECIFICATION

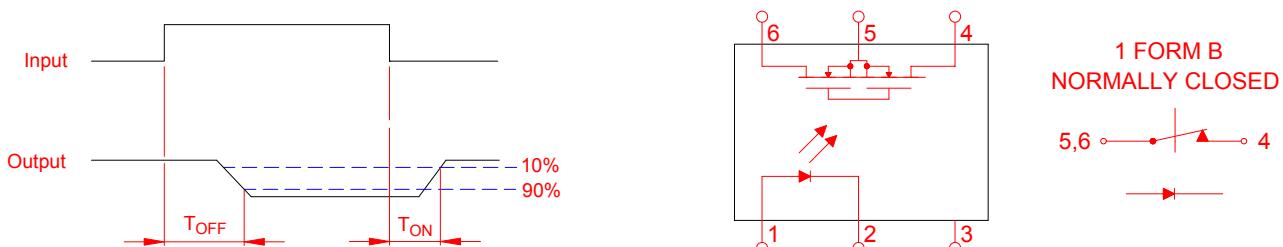
DATE : 09/01/2006

COSMO ELECTRONICS CORPORATION	SOLID STATE RELAY - MOSFET OUTPUT KAQV412S	NO.62M11003	REV. 1
		SHEET 1 OF 7	

● OUTSIDE DIMENSION :



● Operate/Reverse 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 ± 200mA
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 Vio=500V, Ta=25°C $\geq 10^{10}\Omega$	Operating Temperature Range ... -40°C to +85°C
Total Power Dissipation 550mW	Junction Temperature 100°C
Derate Linearly from 25°C 2.5mW/°C	Soldering Temperature , 2mm from case , 10 sec 260°C

PRODUCT SPECIFICATION

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● Electro-optical Characteristics

(Ta=25°C)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit.
Emitter (Input)						
Forward Voltage	V_F	$I_F=10\text{mA}$		1.2	1.5	V
Operation Input Current	IF_{OFF}	$V_L=\pm 20\text{V}$, $I_L \leq 5\mu\text{A}$		5.0		mA
Recovery Input Current	IF_{on}	$V_L=\pm 20\text{V}$, $I_L \leq 5\mu\text{A}$	0.2			mA
Detector (Output)						
Output Breakdown Voltage	V_B	$I_B=50\mu\text{A}$, $I_F=10\text{mA}$	60			V
Output Off-State Leakage	IT_{OFF}	$V_T=100\text{V}$, $I_F=0\text{mA}$		0.2	2	μA
I/O Capacitance	C_{ISO}	$I_F=0$, $f=1\text{MHz}$		6		pF
ON Resistance	Connection	A	$I_L=100\text{mA}$, $I_F=0\text{mA}$	2.5	5	Ω
		B		1.25	2.5	
		C		0.63	1.25	
Turn-On Time	T_{ON}	$I_F=10\text{mA}$, $V_L=\pm 20\text{V}$ $t=10\text{ms}$, $I_L=\pm 100\text{mA}$		0.6	1.5	ms
Turn-Off Time	T_{OFF}			0.3	1.5	ms

● Schematic and Wiring Diagrams

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

PRODUCT SPECIFICATION

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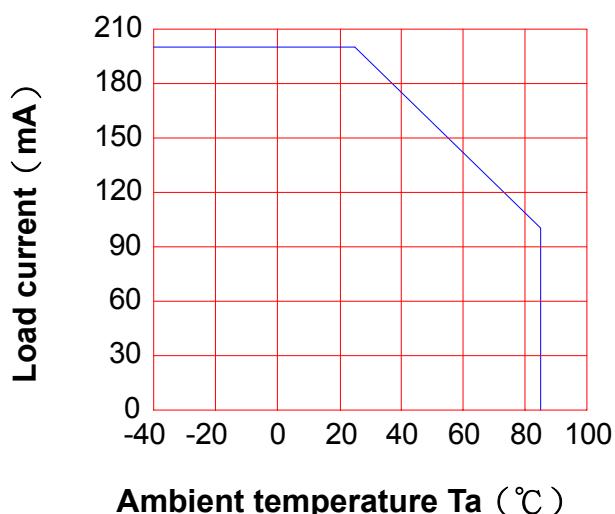
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● Data Curve

Load current vs. ambient temperature

Allowable ambient Temperature :

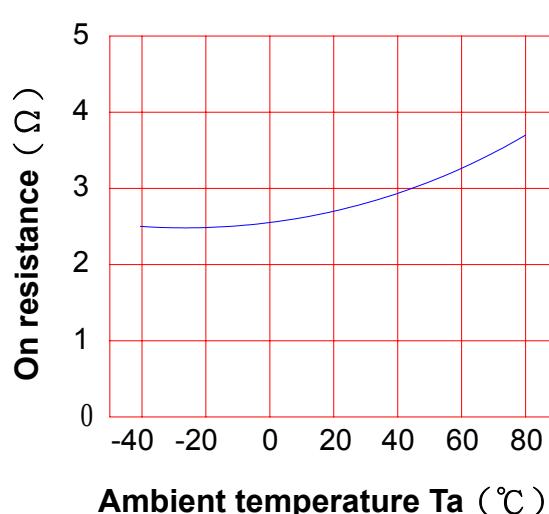
-40°C to +85°C



On resistance vs. ambient temperature across terminals 4 and 6 pin

LED current : 0mA

Continuous load current : 200mA (DC)



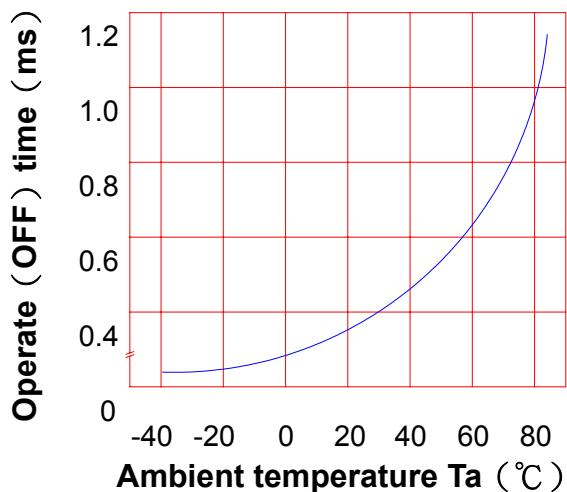
Operate (OFF) time vs.

ambient temperature

Load voltage 60V (DC)

LED current : 5mA

Continuous load current : 200mA (DC)



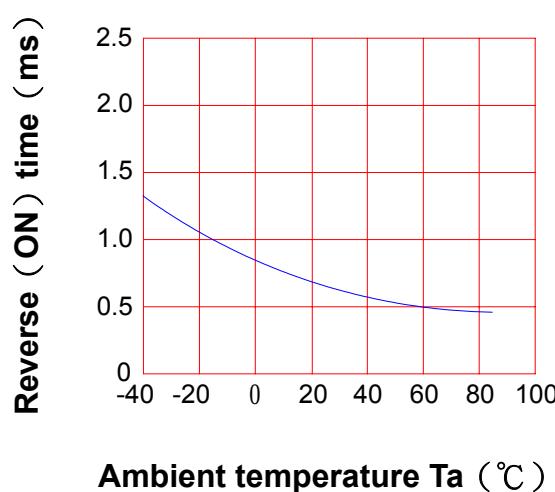
Reverse (ON) time vs.

ambient temperature

Load voltage 60V (DC)

LED current : 5mA

Continuous load current : 200mA (DC)

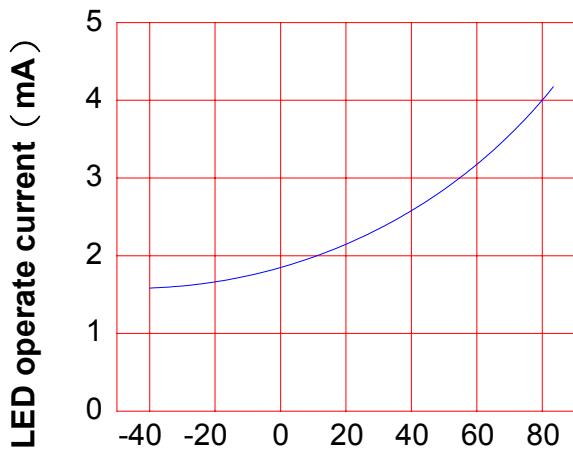


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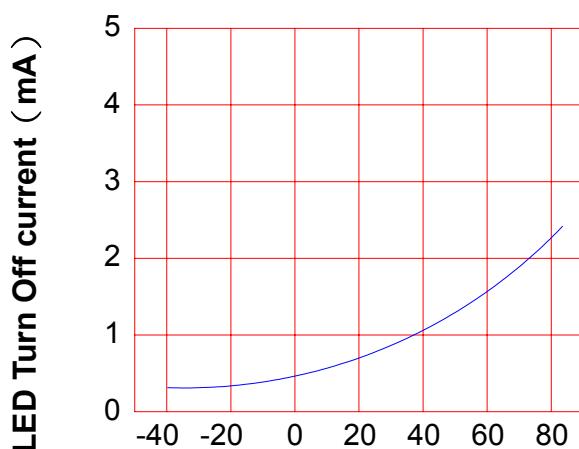
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LED operate current vs.
ambient temperature
Load Voltage : 60V (DC)
Continuous load current : 200mA (DC)



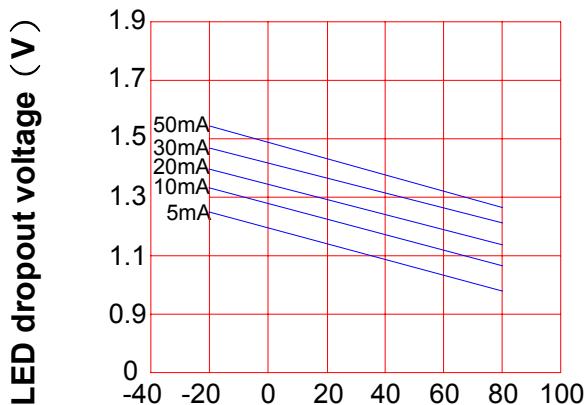
Ambient temperature Ta (°C)

LED Turn Off current vs.
ambient temperature
Load Voltage : 60V (DC)
Continuous load current : 200mA (DC)



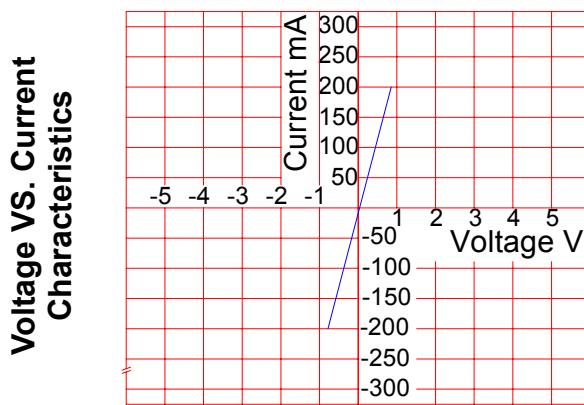
Ambient temperature Ta (°C)

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

PRODUCT SPECIFICATION

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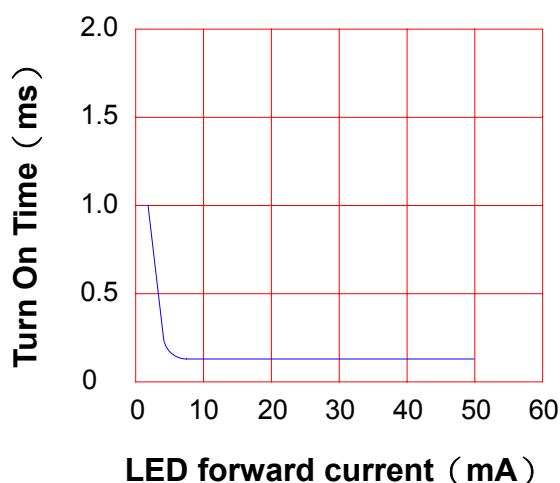
LED forward current vs. Turn On Time

Across terminals 4 and 6pin

Load voltage : 60V (DC)

Continuous load current : 200mA (DC)

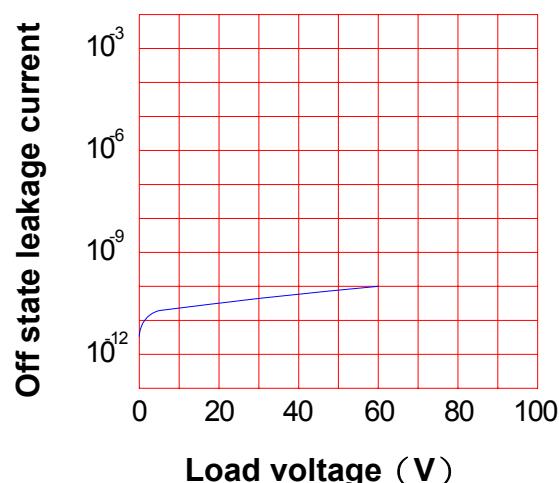
Ambient temperature : 25°C



Off state leakage current

Across terminals 4and 6 pin

Ambient temperature : 25°C



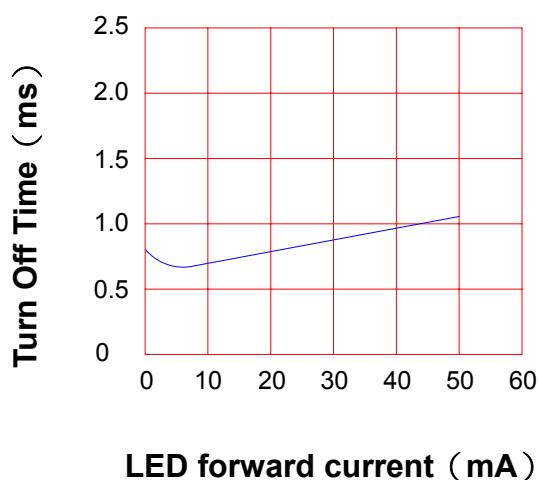
LED forward current vs. reverse(ON) time

Across terminals 4 and 6 pin

Load voltage : 60V (DC)

Continuous load current : 200mA (DC)

Ambient temperature : 25°C

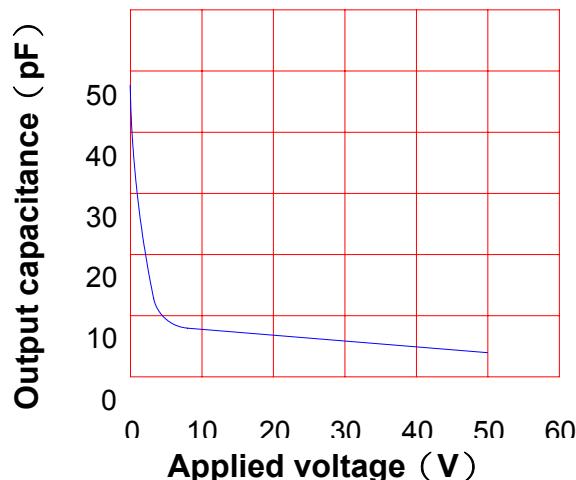


Applied voltage vs. output capacitance

Across terminals 4 and 6 pin

Frequency : 1MHz

Ambient temperature : 25°C



PRODUCT SPECIFICATION

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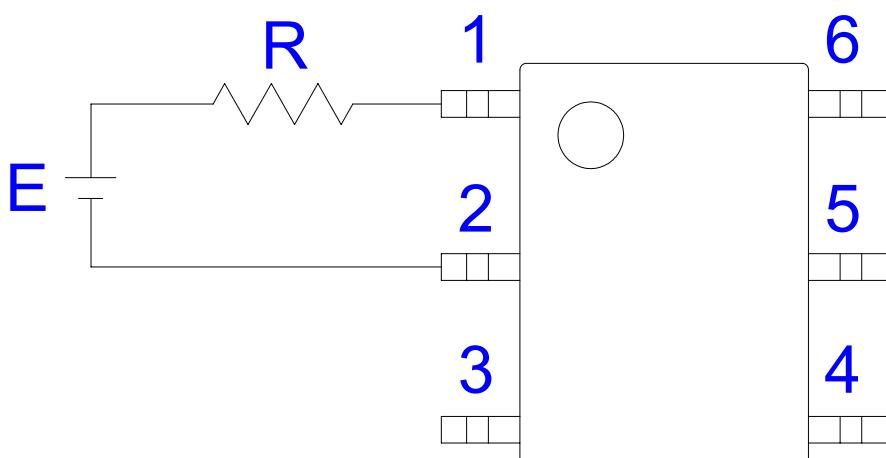
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● USING METHODS

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

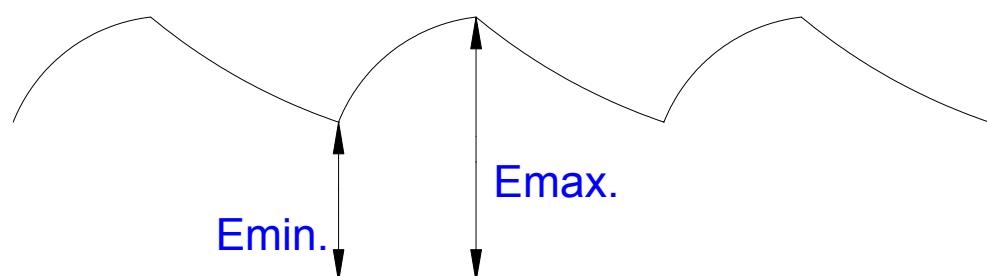
SSR-MOSFET OUTPUT

(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.



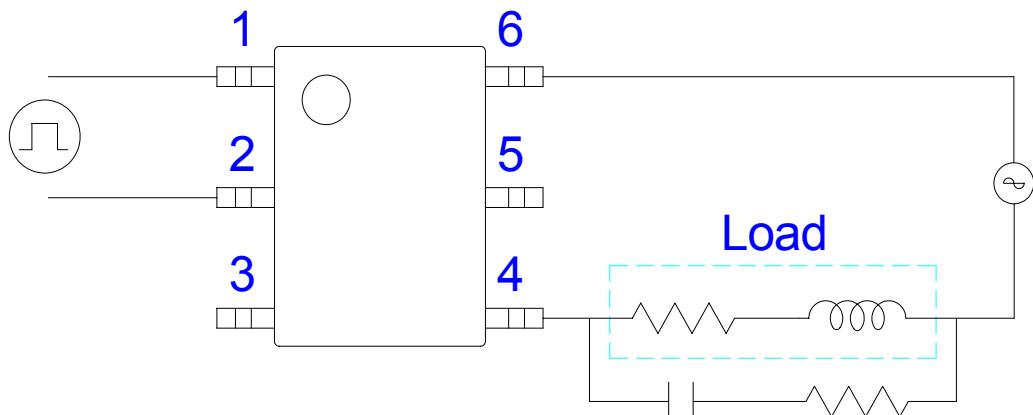
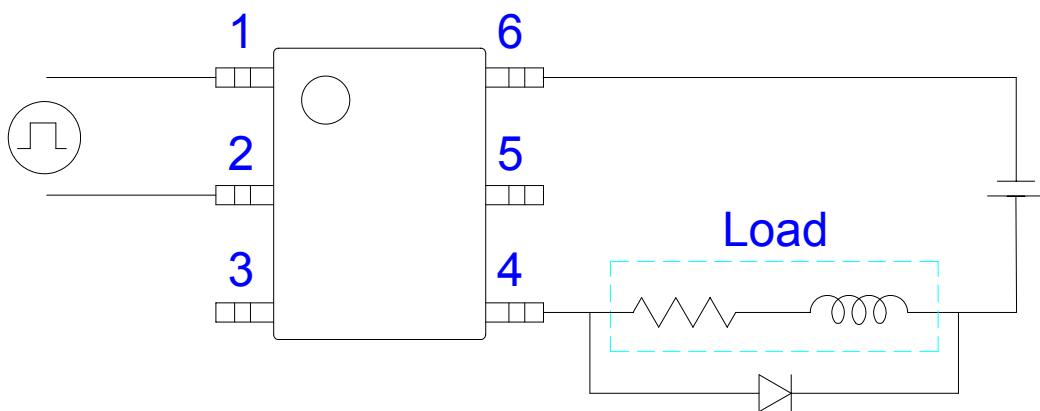
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● USING METHODS

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



R-C Snubber