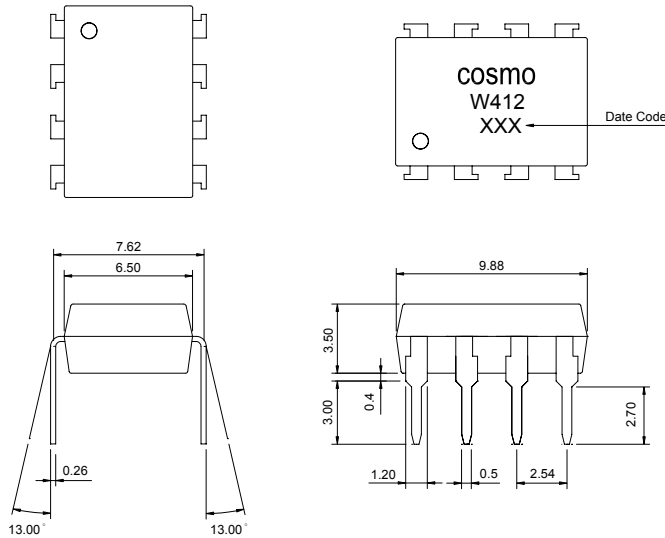


PRODUCT SPECIFICATION

DATE : 09/01/2006

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	KAQW412	SHEET 1 OF 7	

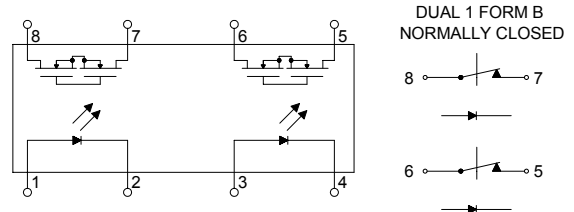
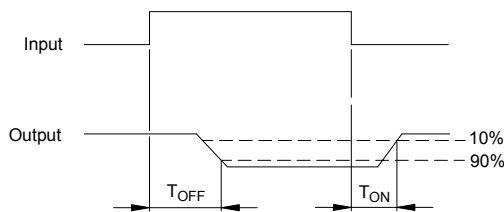
● OUTSIDE DIMENSION :



Unit : mm

Tolerance : ± 0.2 mm

● Operate / Reverse time



● Absolute Maximum Ratings

($T_a=25^\circ\text{C}$)

Emitter (Input)		Detector (Output)	
Reverse Voltage	5.0V	Output Breakdown Voltage	± 60 V
Continuous Forward Current	50mA	Continuous Load Current	± 200 mA
Peak Forward Current	1A	Power Dissipation	500mW
Power Dissipation	100mW		
Derate Linearly from 25°C	$1.3\text{mW}/^\circ\text{C}$		
General Characteristics			
Isolation Test Voltage	5000VACrms	Storage Temperature Range	-40°C to $+125^\circ\text{C}$
Isolation Resistance		Operating Temperature Range ...	-40°C to $+85^\circ\text{C}$
Viso=500V , $T_a=25^\circ\text{C}$	$\geq 10^{10}\Omega$	Junction Temperature	100°C
Total Power Dissipation	550mW	Soldering Temperature ,	
Derate Linearly from 25°C	$2.5\text{mW}/^\circ\text{C}$	2mm from case , 10 sec	260°C

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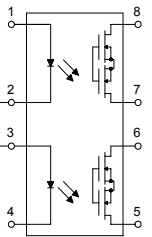
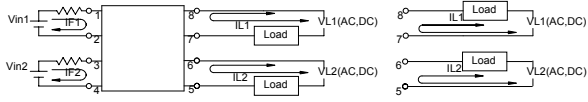
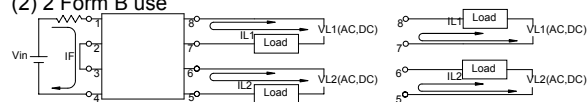
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● Electro-optical Characteristics

(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	$I_{F\text{OFF}}$	$V_L=\pm 20\text{V}, I_L \leq 5\mu\text{A}$			5	mA	
Recovery Input Current	$I_{F\text{ON}}$	$V_L=\pm 20\text{V}, I_L=100\text{mA}, t=10\text{ms}$	0.2			mA	
Detector (Output)							
Output Breakdown Voltage	V_B	$I_B=50\mu\text{A}$	60			V	
Output Off-State Leakage	$I_{T\text{OFF}}$	$V_T=100\text{V}, I_F=10\text{mA}$		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	
Operate Time	T_{OFF}	$I_F=10\text{mA}, V_L=\pm 20\text{V}$		0.6	1.5	ms	
Reverse Time	T_{ON}	$t=10\text{ms}, I_L=\pm 100\text{mA}$		0.3	1.5	ms	

● MOS Relay Schematic and Wiring Diagrams

Schematic	Output configuration	Load	Connection	Wiring Diagrams
	2b	AC/DC	-	<p>(1) Two independent 1 Form B use</p>  <p>(2) 2 Form B use</p> 

PRODUCT SPECIFICATION

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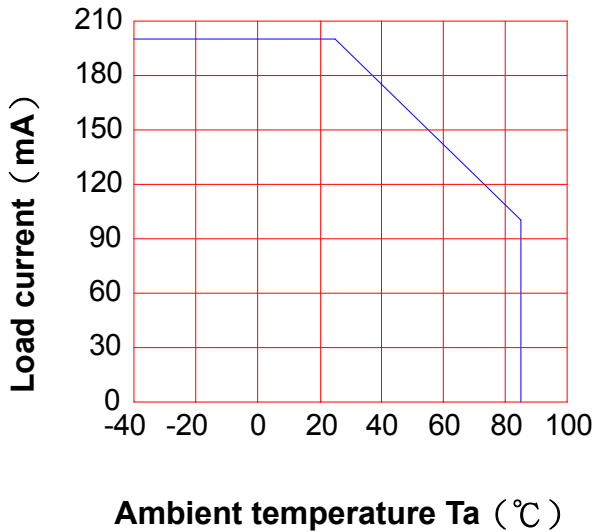
SOLID STATE RELAY - MOSFET OUTPUT
KAQW412

NO.60M21005
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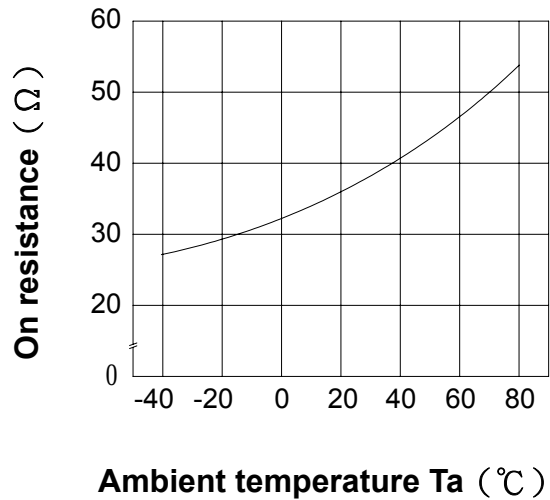
VER.
1

● Data Curve

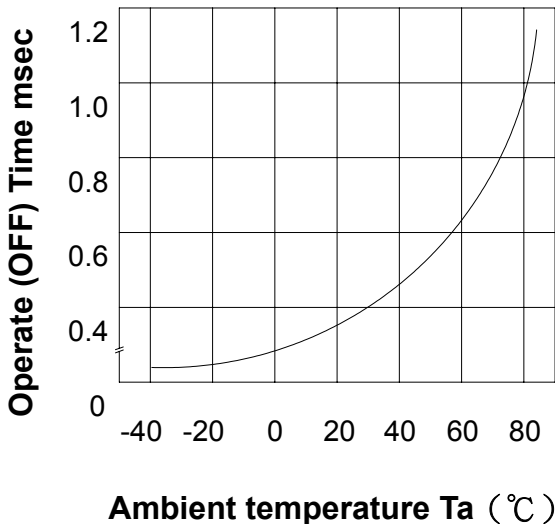
Load current vs. ambient temperature
Allowable ambient temperature :
-40°C to +85°C



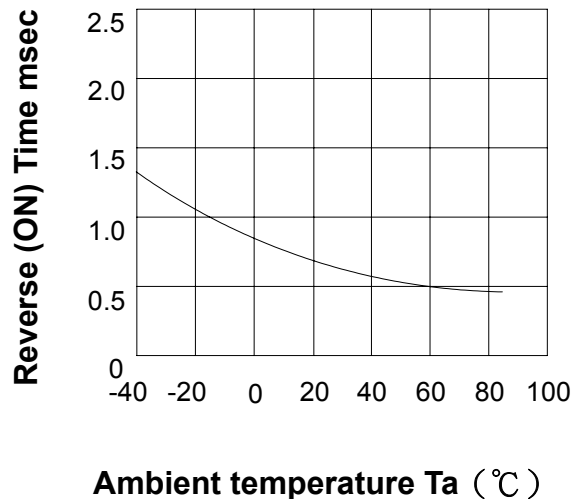
On resistance vs. ambient temperature
across terminals 5 , 7 and 6 , 8 pin
LED current : 5mA
Continuous load current : 200mA (DC)



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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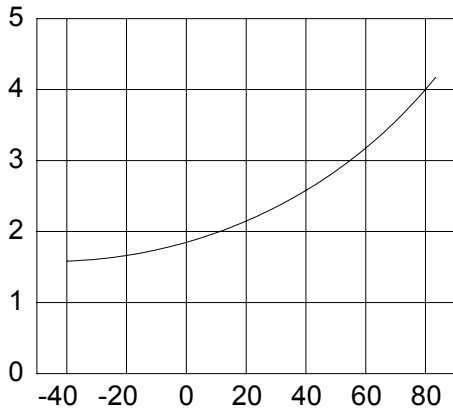
cosmo ELECTRONICS CORPORATION	SOLID STATE RELAY - MOSFET OUTPUT	NO.60M21005	VER.
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LED operate (OFF) current vs. ambient temperature

Load Voltage : 60V (DC)

Continuous load current : 200mA (DC)

LED operate (OFF) current (mA)



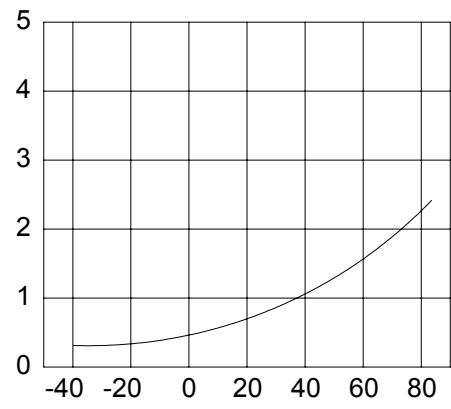
Ambient temperature Ta (°C)

LED Reverse (ON) current vs. ambient temperature

Load Voltage : 60V (DC)

Continuous load current : 200mA (DC)

LED Reverse (ON) current (mA)

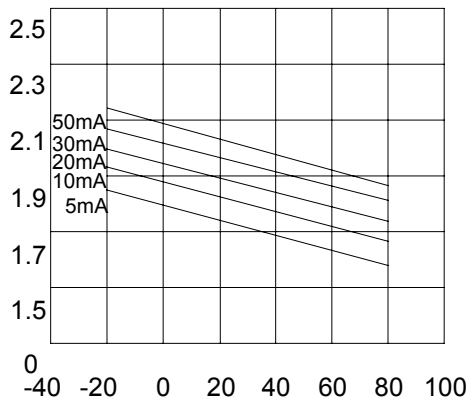


Ambient temperature Ta (°C)

LED dropout voltage vs. ambient temperature

LED current : 5 to 50mA

LED dropout voltage (V)



Ambient temperature Ta (°C)

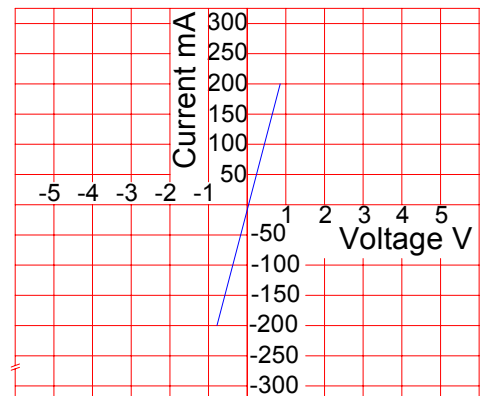
Voltage vs. current characteristics of output at MOSFET portion

Measured portion : across terminals

5 , 7 and 6 , 8 pin

Ambient temperature : 25°C

Voltage VS. Current Characteristics



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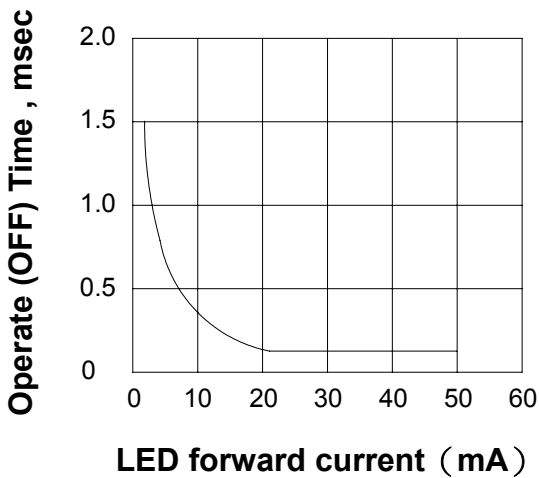
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SOLID STATE RELAY - MOSFET OUTPUT
KAQW412

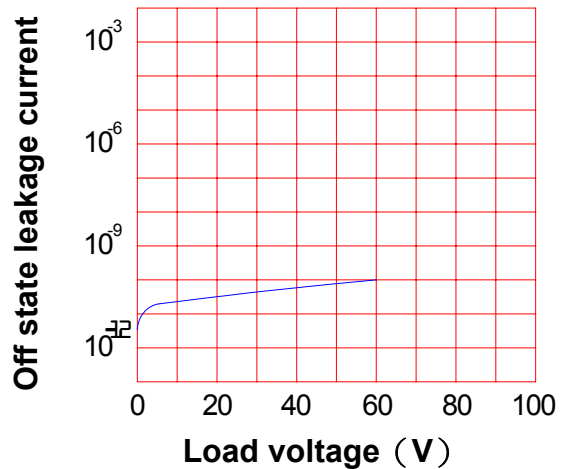
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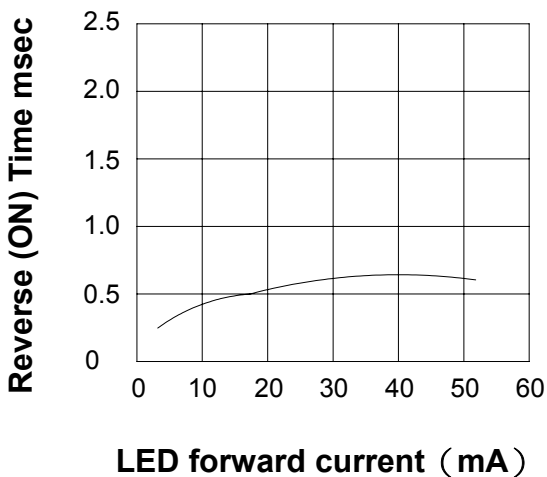
LED forward current vs. Operate (OFF) time across terminals 5 , 7 and 6 , 8 pin
Load voltage : 60V (DC)
Continuous load current : 200mA (DC)
Ambient temperature : 25°C



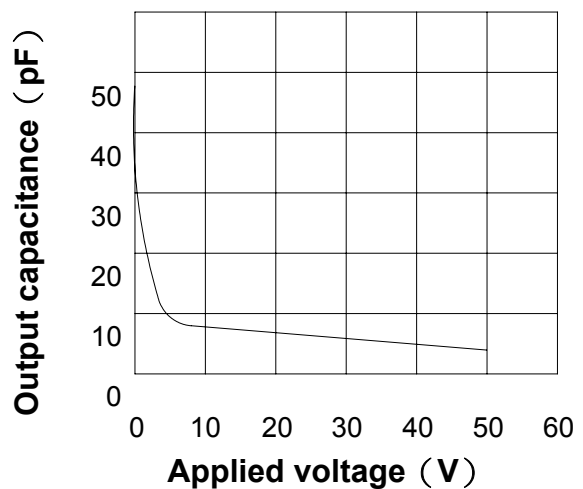
Off state leakage current
Across terminals 5 , 7 and 6 , 8 pin
Ambient temperature : 25°C



LED forward current vs. Reverse (ON) time
Across terminals 5 , 7 and 6 , 8 pin
Load voltage : 60V (DC)
Continuous load current : 130mA (DC)
Ambient temperature : 25°C



Applied voltage vs. output capacitance
Across terminals 5 , 7 and 6 , 8 pin
Frequency : 1MHz
Ambient temperature : 25°C



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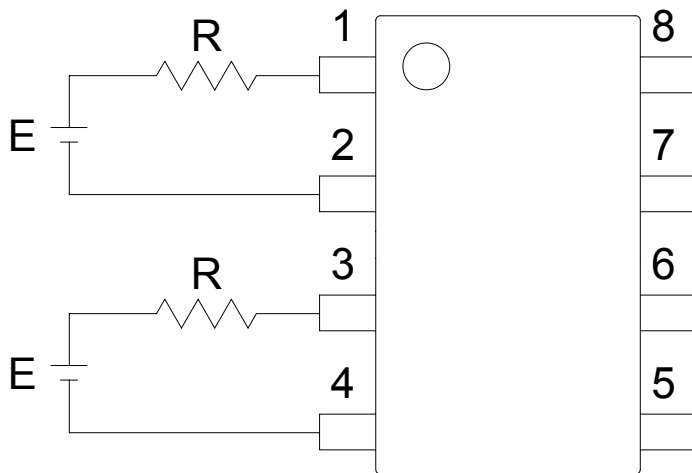
cosmo ELECTRONICS CORPORATION	SOLID STATE RELAY - MOSFET OUTPUT KAQW412	NO.60M21005	VER. 1
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● USING METHODS

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

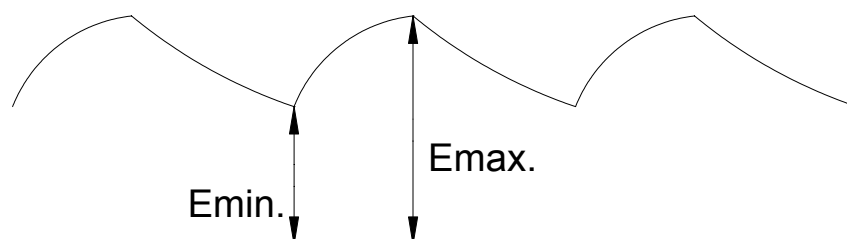
SSR-MOSFET OUTPUT

($I_F=5\text{mA}$)



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.



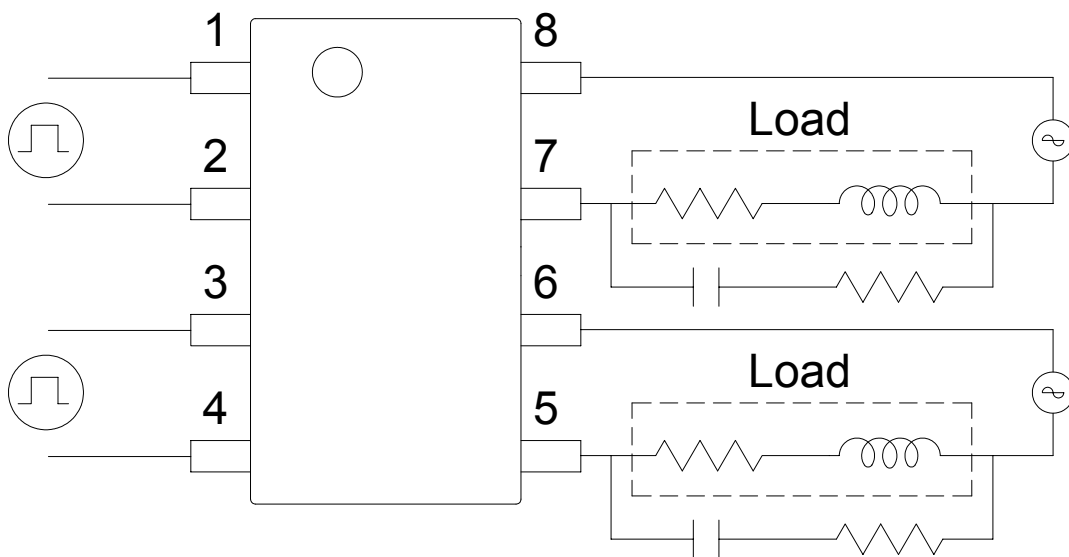
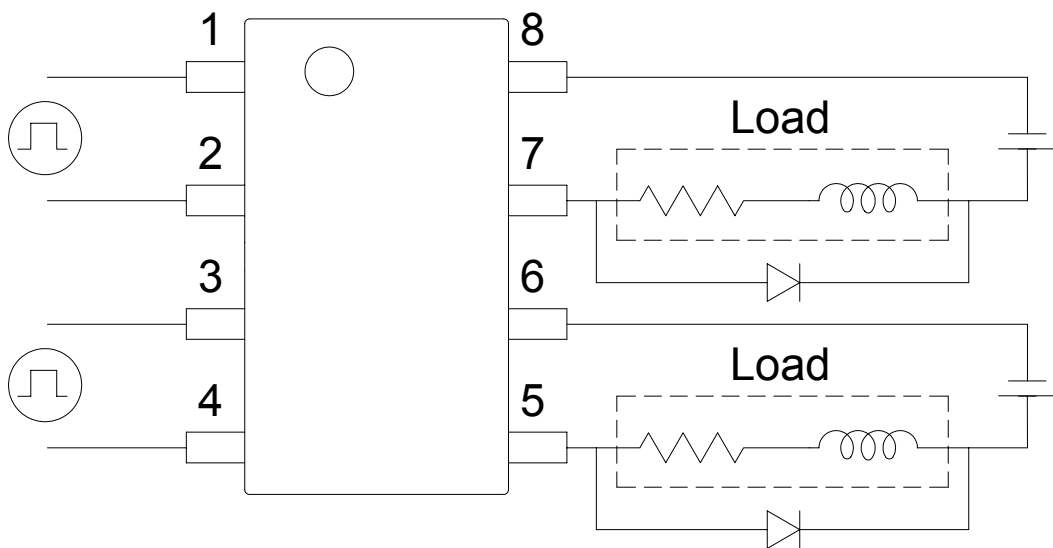
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● USING METHODS

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



R-C Snubber