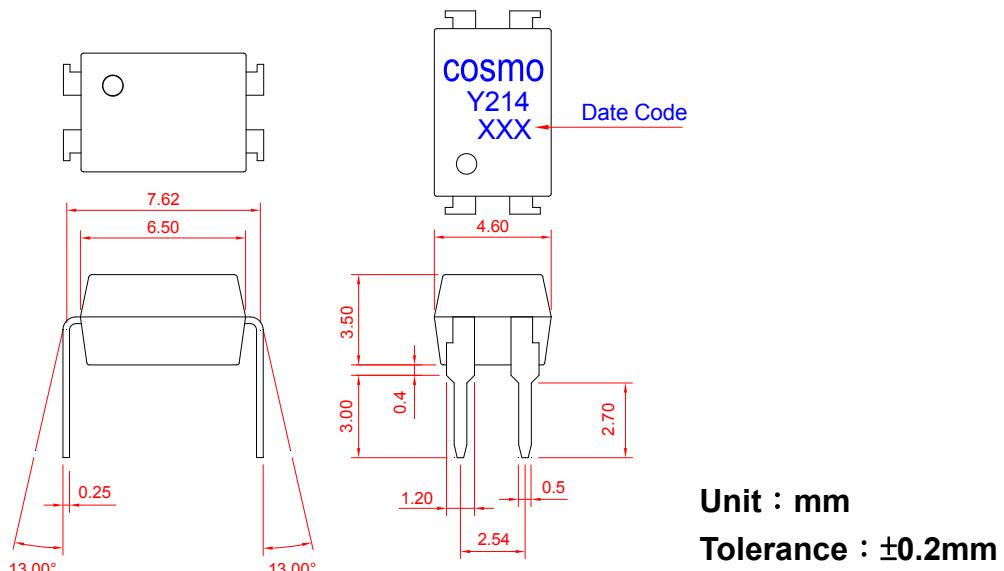


# PRODUCT SPECIFICATION

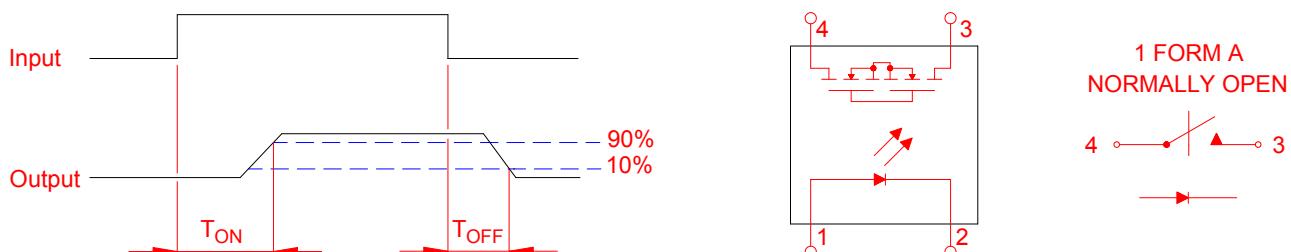
DATE : 04/29/2011

<b>cosmo</b> ELECTRONICS CORPORATION	SOLID STATE RELAY - MOSFET OUTPUT <b>KAQY214</b>	NO.60M00005	REV. 2
		SHEET 1 OF 7	

## ● OUTSIDE DIMENSION :



## ● Turn On / Turn Off 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 ..... 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

DATE : 04/29/2011

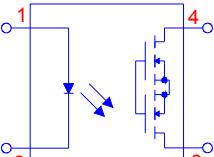
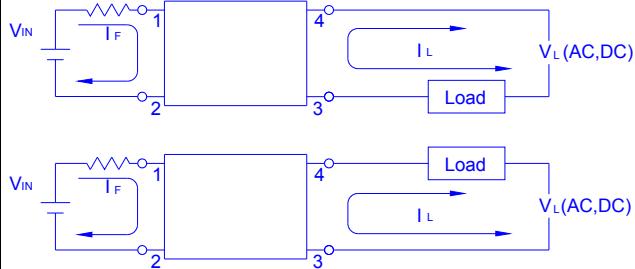
<b>cosmo</b> ELECTRONICS CORPORATION	SOLID STATE RELAY - MOSFET OUTPUT <b>KAQY214</b>	NO.60M00005	REV. 2
		SHEET 2 OF 7	

## ● 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	$I_{FON}$	$V_L=\pm 20\text{V}$ , $I_L=100\text{mA}$ , $t=10\text{ms}$			5.0	mA
Recovery Input Current	$I_{FOFF}$	$V_L=\pm 20\text{V}$ , $I_L \leq 5\mu\text{A}$	0.2			mA
Detector ( Output )						
Output Breakdown Voltage	$V_B$	$I_B=50\mu\text{A}$	400			V
Output Off-State Leakage	$I_{TOFF}$	$V_T=400\text{V}$ , $I_F=0\text{mA}$		0.2	1	$\mu\text{A}$
I/O Capacitance	$C_{ISO}$	$I_F=0$ , $f=1\text{MHz}$		6		pF
ON Resistance	$R_{ON}$	$I_L=100\text{mA}$ , $I_F=10\text{mA}$		20	30	$\Omega$
Turn-On Time	$T_{ON}$	$I_F=10\text{mA}$ , $V_L=\pm 20\text{V}$ $t=10\text{ms}$ , $I_L=\pm 100\text{mA}$		0.3	1.0	ms
Turn-Off Time	$T_{OFF}$			0.1	1.0	ms

## ● Schematic and Wiring Diagrams

Schematic	Output Configuration	Load	Connection	Wiring Diagrams
	1a	AC/DC	-	

# PRODUCT SPECIFICATION

DATE : 04/29/2011

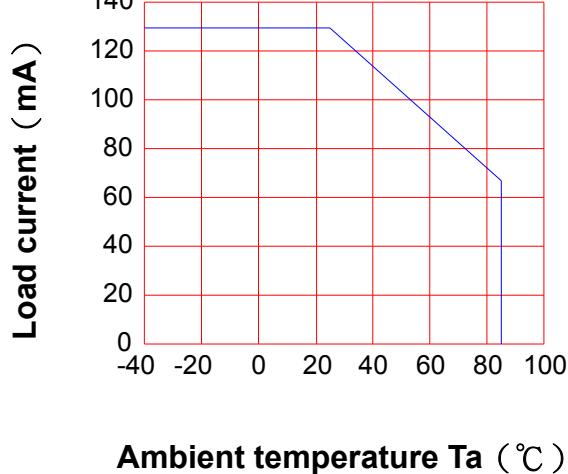
<b>cosmo</b> ELECTRONICS CORPORATION	SOLID STATE RELAY - MOSFET OUTPUT <b>KAQY214</b>	NO.60M00005	REV. 2
		SHEET 3 OF 7	

## ● Data Curve

Load current vs. ambient temperature

Allowable ambient Temperature :

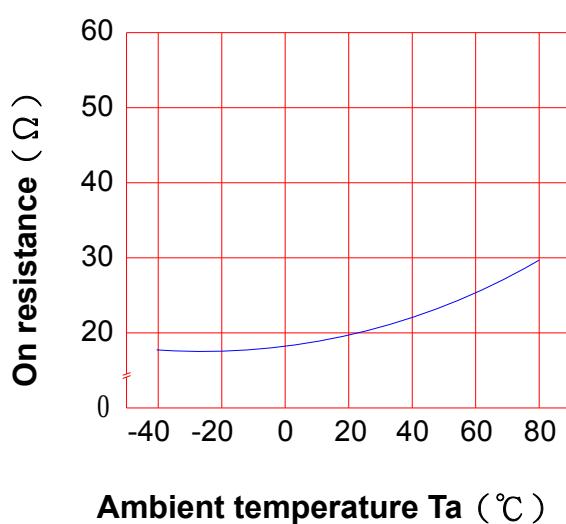
-40°C to +85°C



On resistance vs. ambient temperature across terminals 3 and 4 pin

LED current : 5mA

Continuous load current : 130mA (DC)

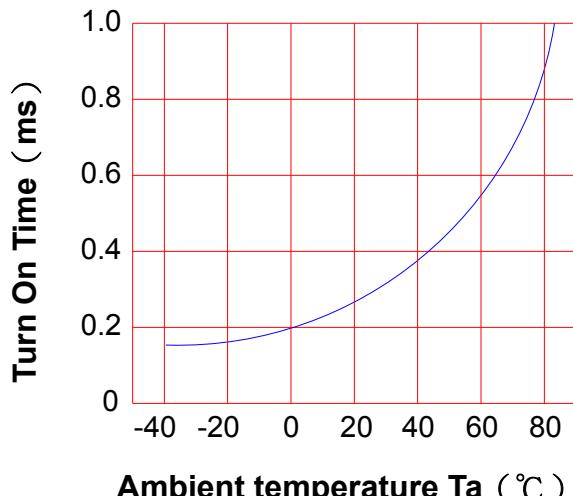


Turn On Time vs. ambient temperature

Load voltage 400V (DC)

LED current : 5mA

Continuous load current : 130mA (DC)

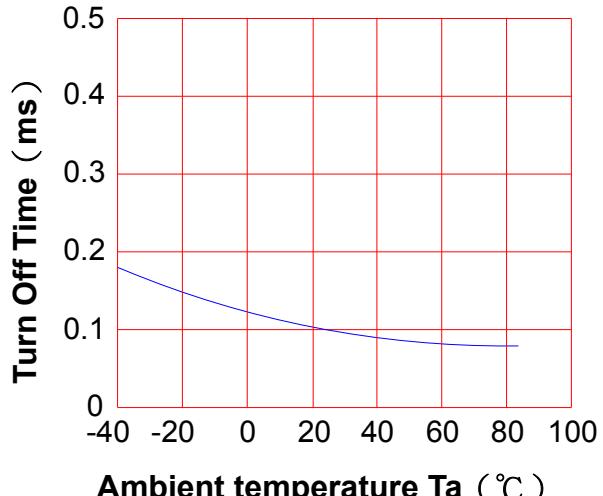


Turn Off Time vs. ambient temperature

Load voltage 400V (DC)

LED current : 5mA

Continuous load current : 130mA (DC)

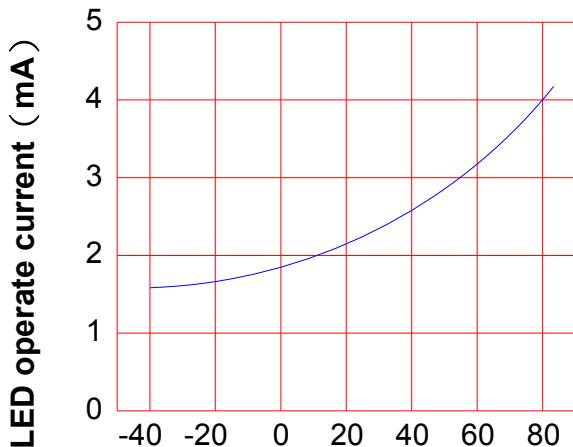


# PRODUCT SPECIFICATION

DATE : 04/29/2011

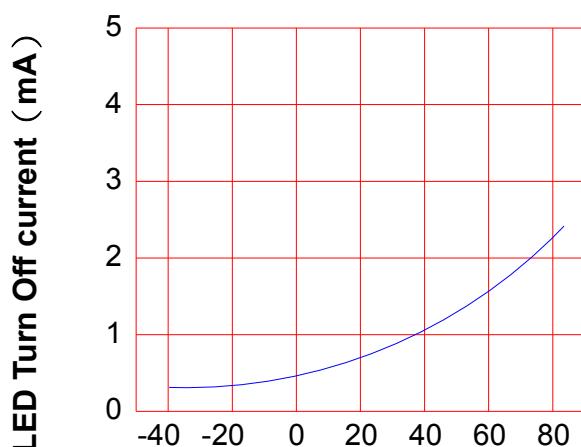
<b>COSMO</b> ELECTRONICS CORPORATION	SOLID STATE RELAY - MOSFET OUTPUT <b>KAQY214</b>	NO.60M00005	REV. 2
		SHEET 4 OF 7	

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



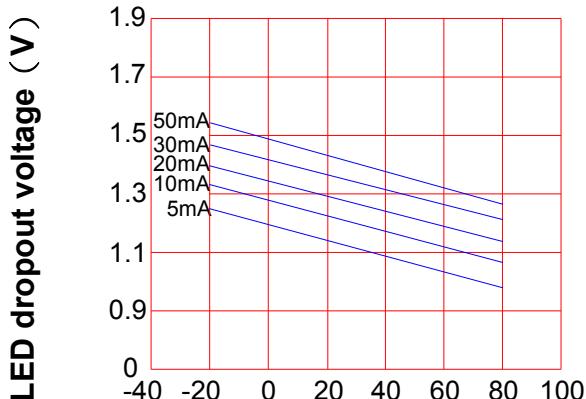
Ambient temperature Ta (°C)

LED Turn Off current vs.  
ambient temperature  
Load Voltage : 400V (DC)  
Continuous load current : 130mA (DC)



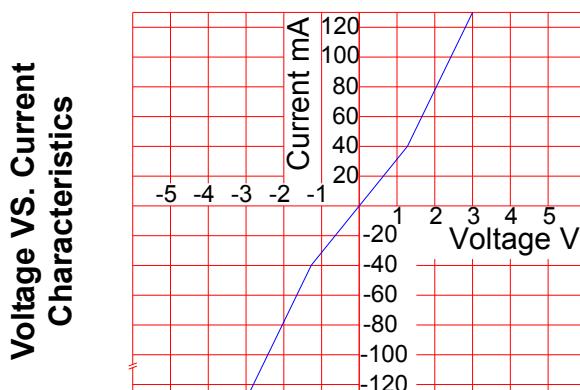
Ambient temperature Ta (°C)

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  
3 and 4 pin  
Ambient temperature : 25°C



Ambient temperature : 25°C

# PRODUCT SPECIFICATION

DATE : 04/29/2011

<b>cosmo</b> ELECTRONICS CORPORATION	SOLID STATE RELAY - MOSFET OUTPUT <b>KAQY214</b>	NO.60M00005	REV. 2
SHEET 5 OF 7			

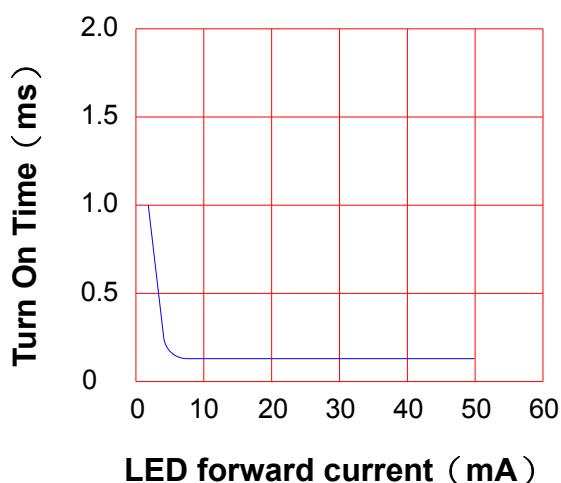
## LED forward current vs. Turn On Time

Across terminals 3 and 4pin

Load voltage : 400V (DC)

Continuous load current : 130mA (DC)

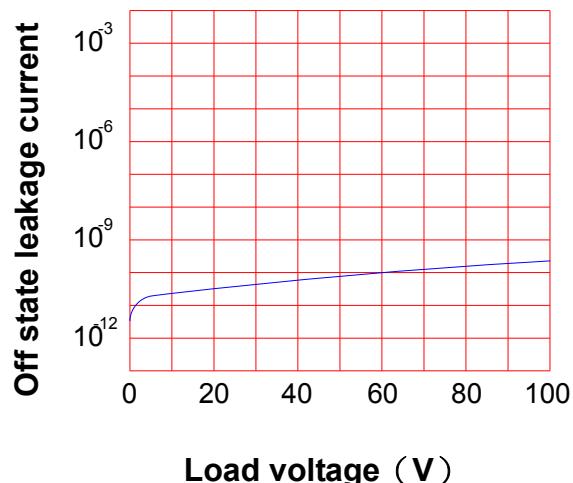
Ambient temperature : 25°C



## Off state leakage current

Across terminals 3 and 4 pin

Ambient temperature : 25°C



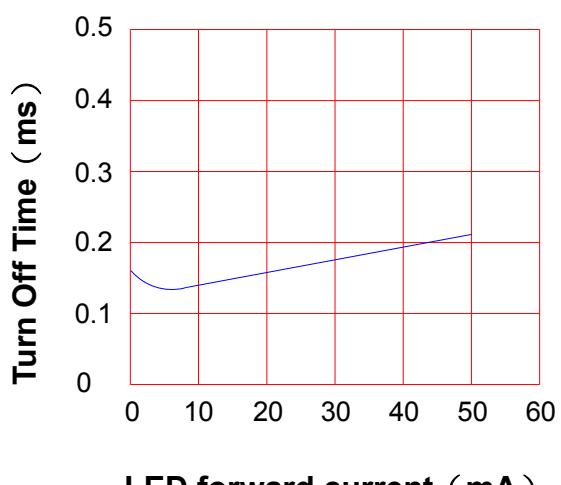
## LED forward current vs. Turn Off Time

Across terminals 3 and 4 pin

Load voltage : 400V (DC)

Continuous load current : 130mA (DC)

Ambient temperature : 25°C

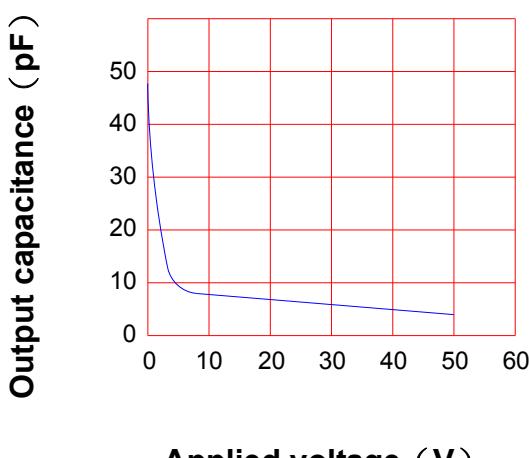


## Applied voltage vs. output capacitance

Across terminals 3 and 4 pin

Frequency : 1MHz

Ambient temperature : 25°C



# PRODUCT SPECIFICATION

DATE : 04/29/2011

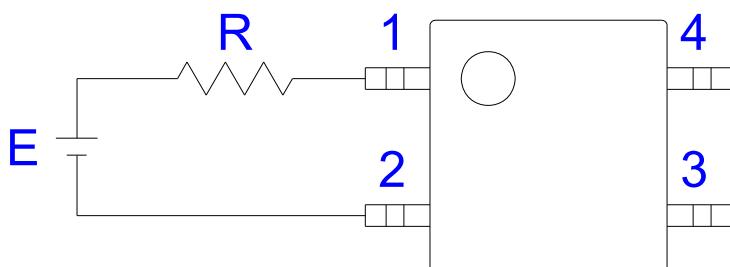
<b>cosmo</b> ELECTRONICS CORPORATION	SOLID STATE RELAY - MOSFET OUTPUT <b>KAQY214</b>	NO.60M00005	REV. 2
		SHEET 6 OF 7	

## ● USING METHODS

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

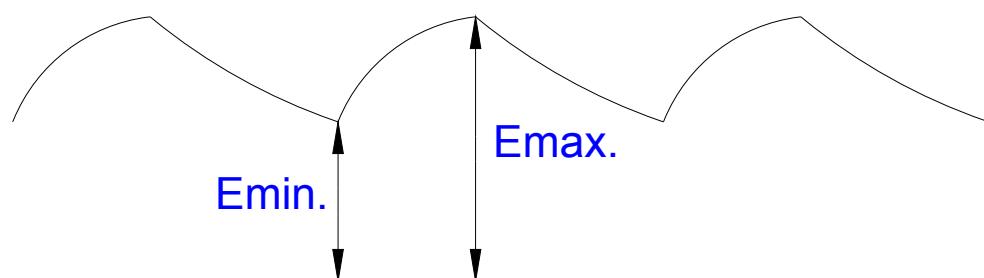
SSR-MOSFET OUTPUT

( 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.



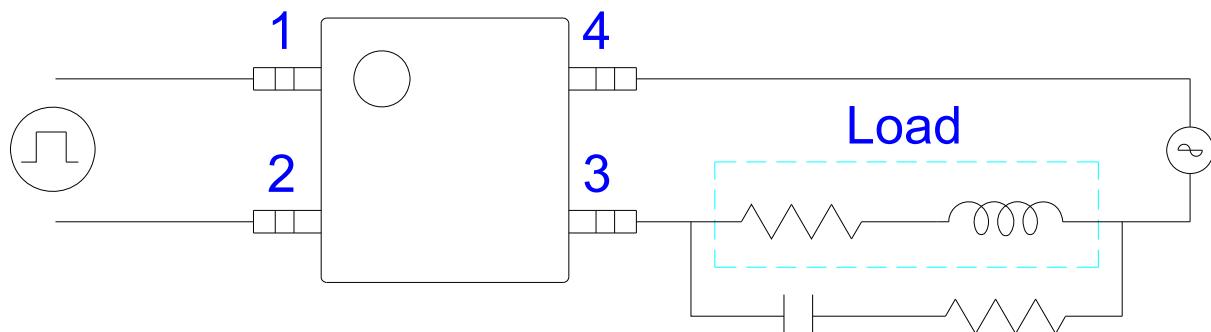
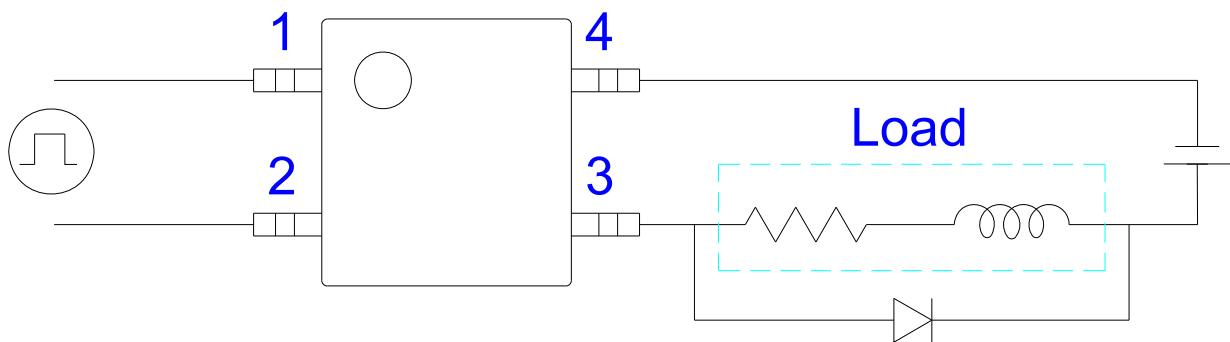
# PRODUCT SPECIFICATION

DATE : 04/29/2011

<b>cosmo</b> ELECTRONICS CORPORATION	SOLID STATE RELAY - MOSFET OUTPUT <b>KAQY214</b>	NO.60M00005 SHEET 7 OF 7	REV. 2
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## ● USING METHODS

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



R-C Snubber