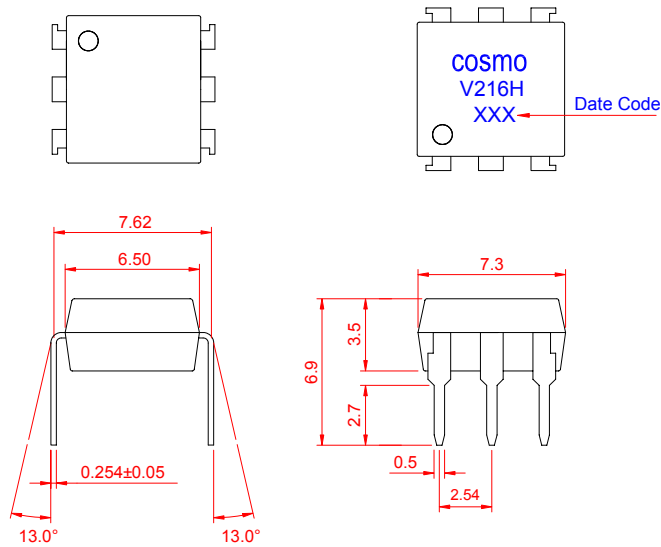


# PRODUCT SPECIFICATION

DATE : 03/01/2005

<b>cosmo</b> ELECTRONICS CORPORATION	SOLID STATE RELAY - MOSFET OUTPUT <b>KAQV216H</b>	Preliminary	REV. 0
		SHEET 1 OF 7	

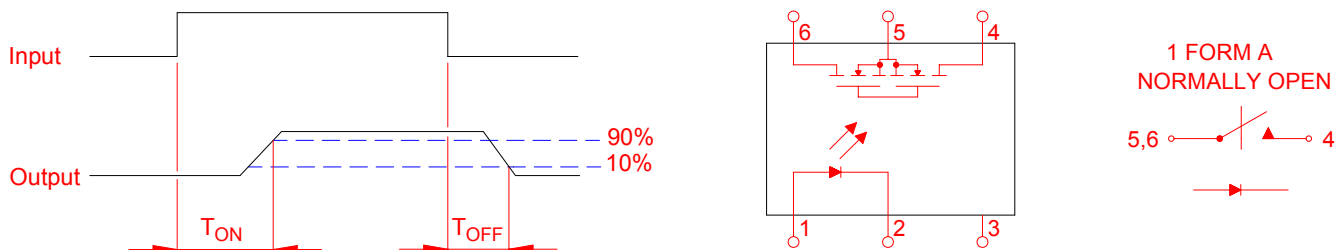
## ● OUTSIDE DIMENSION :



Unit : mm

Tolerance :  $\pm 0.2\text{mm}$

## ● Turn On / Turn Off time



## ● Absolute Maximum Ratings

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

Emitter (Input)		Detector (Output)	
Reverse Voltage .....	5.0V	Output Breakdown Voltage .....	$\pm 600\text{V}$
Continuous Forward Current .....	50mA	Continuous Load Current .....	$\pm 120\text{mA}$
Peak Forward Current .....	1A	Power Dissipation .....	500mW
Power Dissipation .....	100mW		
Derate Linearly from $25^\circ\text{C}$ .....	$1.3\text{mW}/^\circ\text{C}$		
General Characteristics			
Isolation Test Voltage .....	5000VACrms	Storage Temperature Range .....	$-40^\circ\text{C}$ to $+125^\circ\text{C}$
Isolation Resistance		Operating Temperature Range ...	$-40^\circ\text{C}$ to $+85^\circ\text{C}$
$V_{io}=500\text{V}$ , $T_a=25^\circ\text{C}$ .....	$\geq 10^{10}\Omega$	Junction Temperature .....	$100^\circ\text{C}$
Total Power Dissipation .....	550mW	Soldering Temperature ,	
Derate Linearly from $25^\circ\text{C}$ .....	$2.5\text{mW}/^\circ\text{C}$	2mm from case , 10 sec .....	$260^\circ\text{C}$

# PRODUCT SPECIFICATION

DATE : 03/01/2005

<b>cosmo</b> ELECTRONICS CORPORATION	SOLID STATE RELAY - MOSFET OUTPUT <b>KAQV216H</b>	Preliminary	REV. 0
		SHEET 2 OF 7	

## ● Electro-optical Characteristics

(Ta=25°C)

Parameter			Symbol	Conditions	Min.	Typ.	Max.	Unit.
Emitter（Input）								
Forward Voltage			V <sub>F</sub>	I <sub>F</sub> =10mA		1.2	1.5	V
Operation Input Current			I <sub>FON</sub>	V <sub>L</sub> =±20V，I <sub>L</sub> =100mA，t=10ms			5.0	mA
Recovery Input Current			I <sub>FOFF</sub>	V <sub>L</sub> =±20V，I <sub>L</sub> ≤5μA	0.2			mA
Detector（Output）								
Output Breakdown Voltage			V <sub>B</sub>	I <sub>B</sub> =50μA	600			V
Output Off-State Leakage			I <sub>TOFF</sub>	V <sub>T</sub> =100V，I <sub>F</sub> =0mA		0.2	1	μA
I/O Capacitance			C <sub>ISO</sub>	I <sub>F</sub> =0，f=1MHz		6		pF
ON Resistance	Connection	A	R <sub>ON</sub>	I <sub>L</sub> =100mA，I <sub>F</sub> =10mA		35	50	Ω
		B				18	25	
		C				9	13	
Turn-On Time			T <sub>ON</sub>	I <sub>F</sub> =10mA，V <sub>L</sub> =±20V t=10ms，I <sub>L</sub> =±100mA		0.3	1.0	ms
Turn-Off Time			T <sub>OFF</sub>			0.7	1.5	ms

## ● Schematic and Wiring Diagrams

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

# PRODUCT SPECIFICATION

DATE : 03/01/2005

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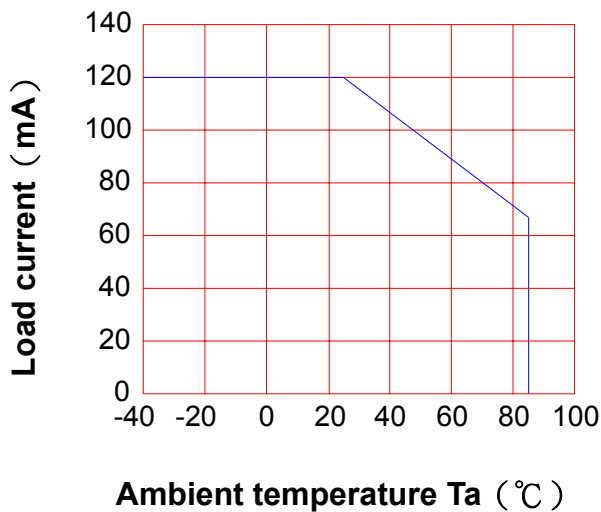
SOLID STATE RELAY - MOSFET OUTPUT  
**KAQV216H**

Preliminary  
SHEET 3 OF 7

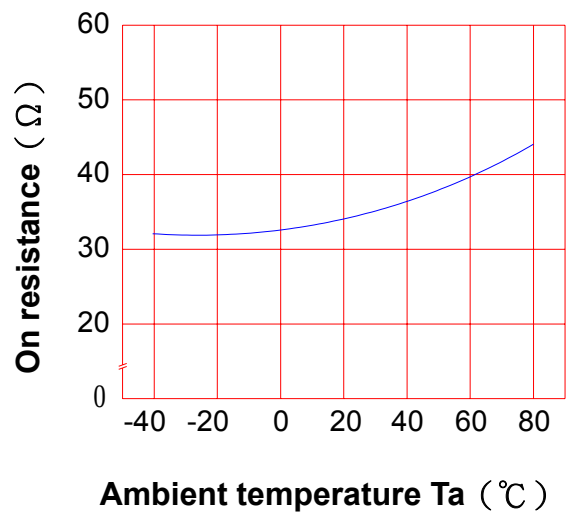
REV.  
0

## ● Data Curve

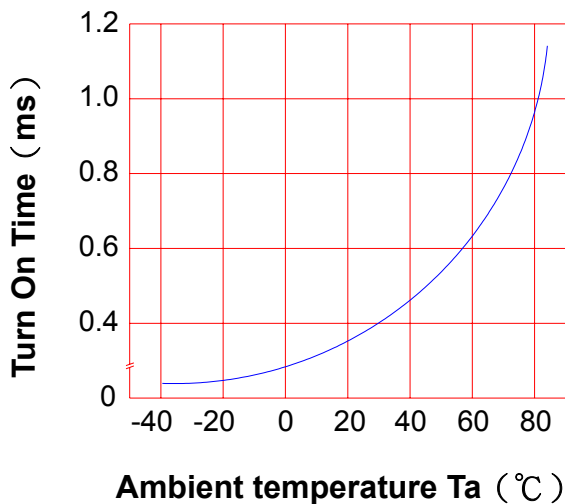
Load current vs. ambient temperature  
Allowable ambient Temperature :  
-40°C to +85°C



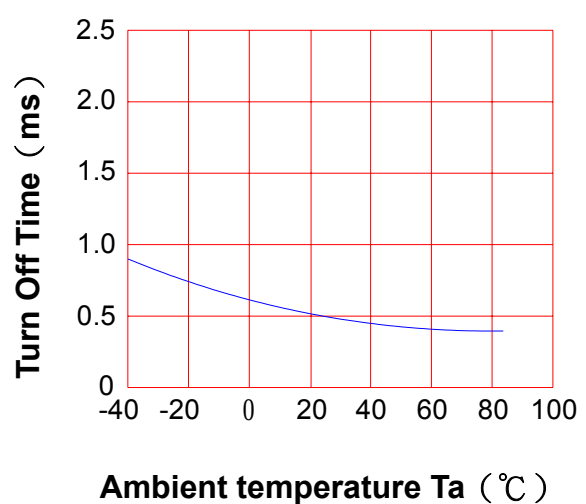
On resistance vs. ambient temperature  
across terminals 4 and 6 pin  
LED current : 5mA  
Continuous load current : 120mA (DC)



Turn On Time vs. ambient temperature  
Load voltage 600V (DC)  
LED current : 5mA  
Continuous load current : 120mA (DC)



Turn Off Time vs. ambient temperature  
Load voltage 600V (DC)  
LED current : 5mA  
Continuous load current : 120mA (DC)



# PRODUCT SPECIFICATION

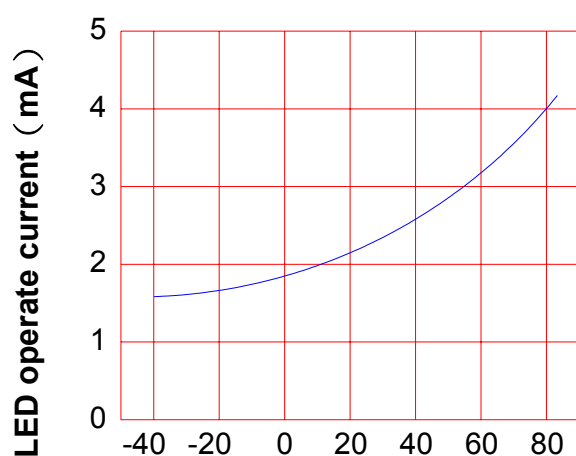
DATE : 03/01/2005

<b>cosmo</b> ELECTRONICS CORPORATION	SOLID STATE RELAY - MOSFET OUTPUT <b>KAQV216H</b>	Preliminary	REV. 0
		SHEET 4 OF 7	

LED operate current vs.  
ambient temperature

Load Voltage : 600V (DC)

Continuous load current : 120mA (DC)

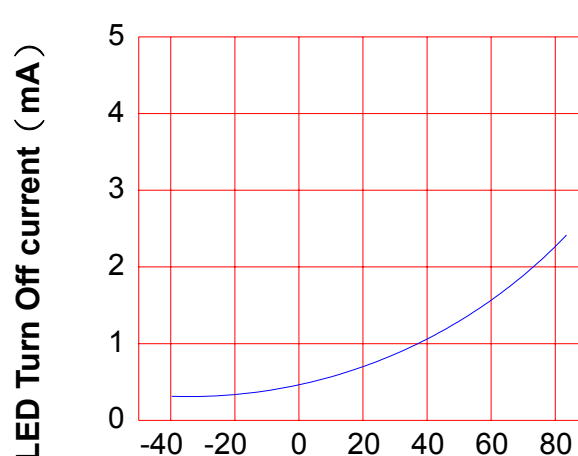


Ambient temperature Ta (°C)

LED Turn Off current vs.  
ambient temperature

Load Voltage : 600V (DC)

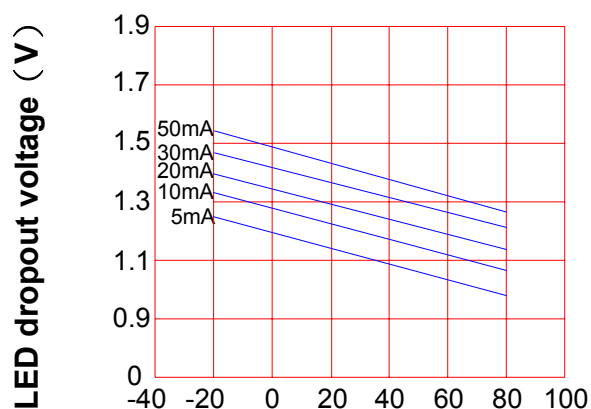
Continuous load current : 120mA (DC)



Ambient temperature Ta (°C)

LED dropout voltage vs.  
ambient temperature

LED current : 5 to 50mA



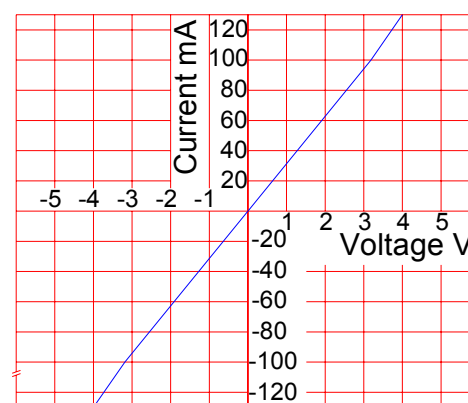
Ambient temperature Ta (°C)

Voltage vs. current characteristics  
of output at MOSFET portion

Measured portion : across terminals  
4 and 6 pin

Ambient temperature : 25°C

Voltage VS. Current  
Characteristics



Ambient temperature : 25°C

# PRODUCT SPECIFICATION

DATE : 03/01/2005

<b>cosmo</b> ELECTRONICS CORPORATION	SOLID STATE RELAY - MOSFET OUTPUT <b>KAQV216H</b>	Preliminary	REV. 0
		SHEET 5 OF 7	

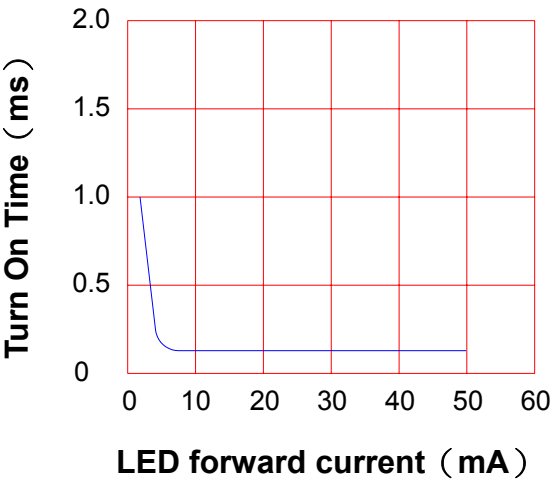
**LED forward current vs. Turn On Time**

Across terminals 4 and 6pin

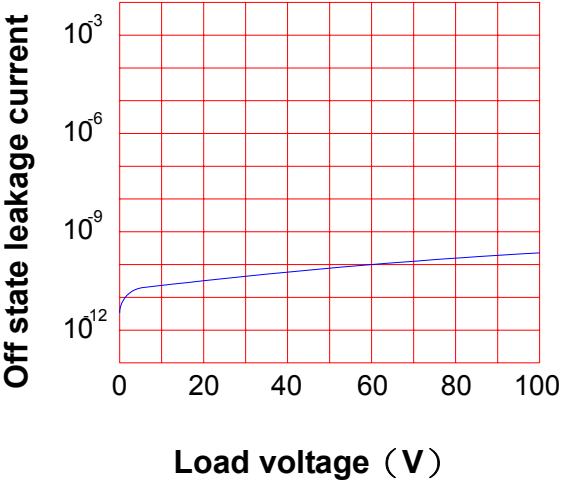
Load voltage : 600V ( DC )

Continuous load current : 120mA ( DC )

Ambient temperature : 25°C



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



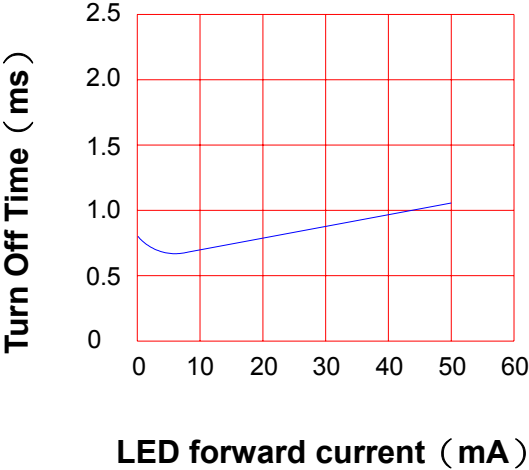
**LED forward current vs. reverse(ON) time**

Across terminals 4 and 6 pin

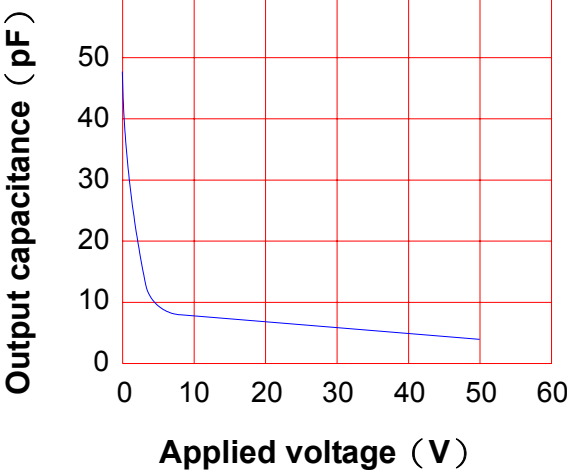
Load voltage : 600V ( DC )

Continuous load current : 120mA ( DC )

Ambient temperature : 25°C



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



# PRODUCT SPECIFICATION

DATE : 03/01/2005

**cosmo**  
ELECTRONICS CORPORATION

SOLID STATE RELAY - MOSFET OUTPUT  
**KAQV216H**

Preliminary  
SHEET 6 OF 7

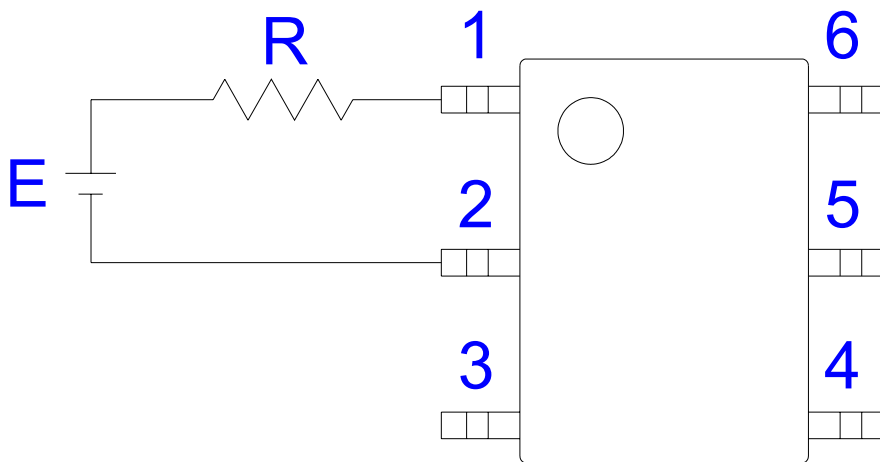
REV.  
0

## ● USING METHODS

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

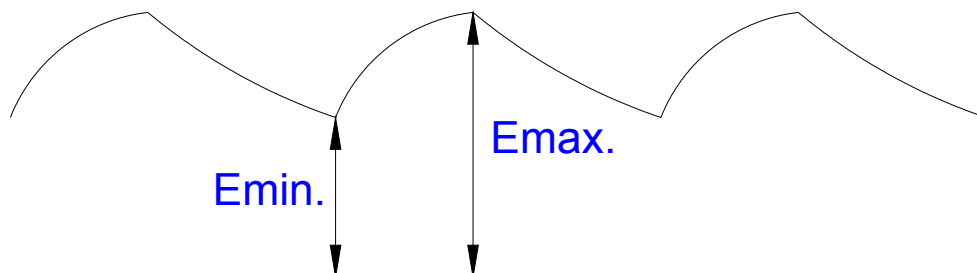
SSR-MOSFET OUTPUT

(IF=5mA)



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

- (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 : 03/01/2005

**cosmo**  
ELECTRONICS CORPORATION

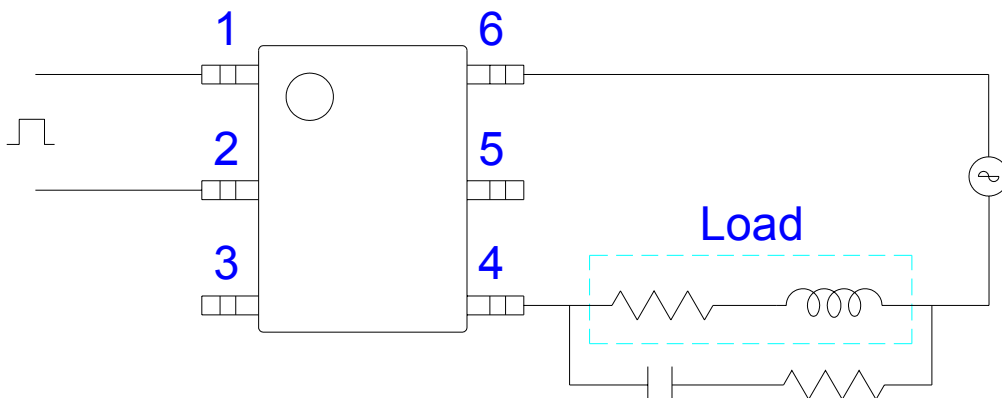
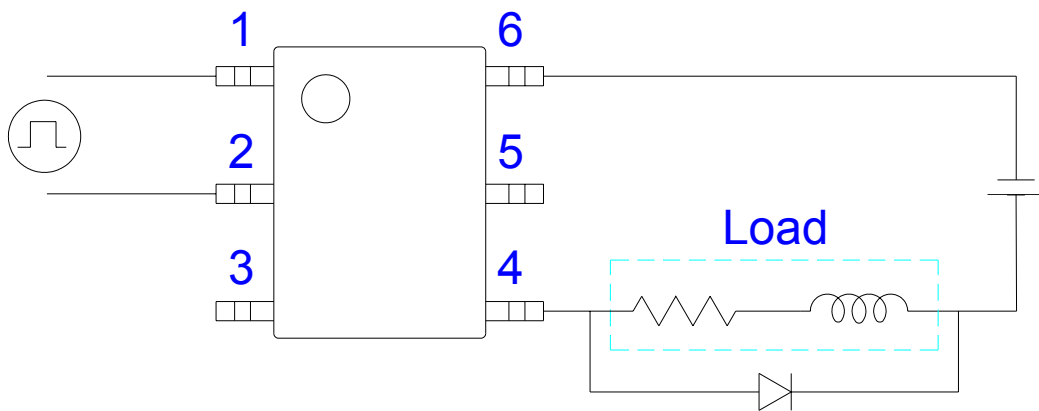
SOLID STATE RELAY - MOSFET OUTPUT  
**KAQV216H**

Preliminary  
SHEET 7 OF 7

REV.  
0

## ● USING METHODS

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



R-C Snubber