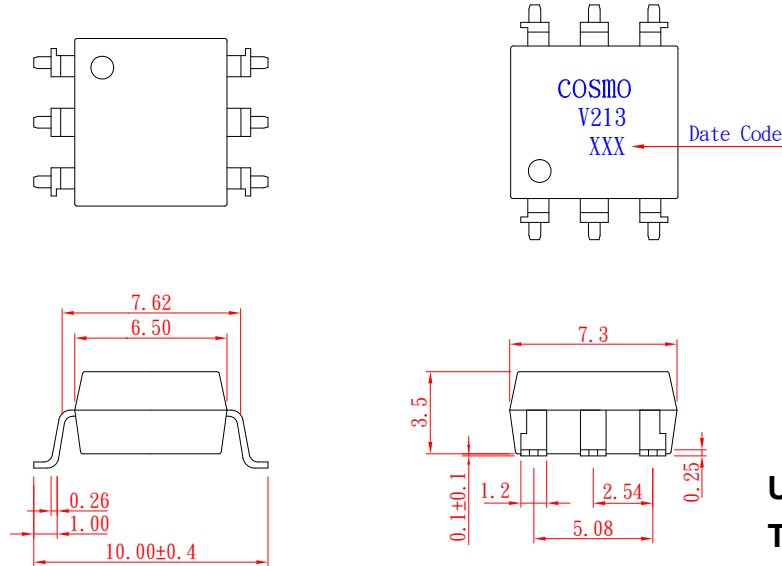


# PRODUCT SPECIFICATION

DATE : 02/22/2011

<b>cosmo</b> ELECTRONICS CORPORATION	SOLID STATE RELAY - MOSFET OUTPUT <b>KAQV213A</b>	NO.61M10024	REV.
		SHEET 1 OF 7	2

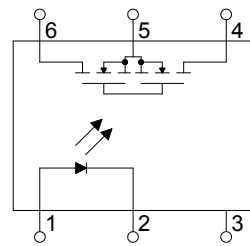
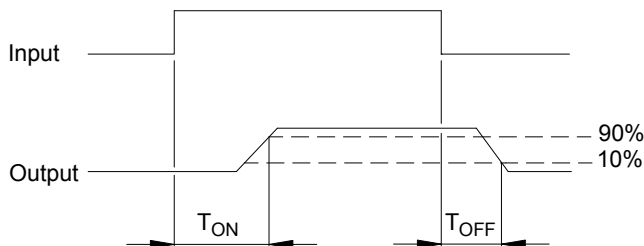
## ● OUTSIDE DIMENSION :



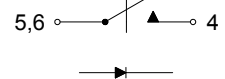
Unit : mm

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

## ● Turn On / Turn Off time



1 FORM A  
NORMALLY OPEN



## ● Absolute Maximum Ratings

( Ta=25°C )

Emitter ( Input )	Detector ( Output )
Reverse Voltage ..... 5.0V	Output Breakdown Voltage ..... $\pm 250\text{V}$
Continuous Forward Current ..... 50mA	Continuous Load Current ..... $\pm 200\text{mA}$
Peak Forward Current ..... 1A	Power Dissipation ..... 500mW
Power Dissipation ..... 100mW	
Derate Linearly from 25°C ..... 1.3mW/°C	
<b>General Characteristics</b>	
Isolation Test Voltage ..... 5000VACrms	Storage Temperature Range ..... -40°C to +125°C
Isolation Resistance	Operating Temperature Range ... -40°C to +85°C
Vio=500V , Ta=25°C ..... $\geq 10^{10}\Omega$	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

# PRODUCT SPECIFICATION

DATE : 02/22/2011

<b>cosmo</b> ELECTRONICS CORPORATION	SOLID STATE RELAY - MOSFET OUTPUT <b>KAQV213A</b>	NO.61M10024	REV. 2
		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	250			V
Output Off-State Leakage			I <sub>TOFF</sub>	V <sub>T</sub> =250V，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		8	16	Ω
		B				4	8	
		C				2	4	
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>			0.5	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 : 02/22/2011

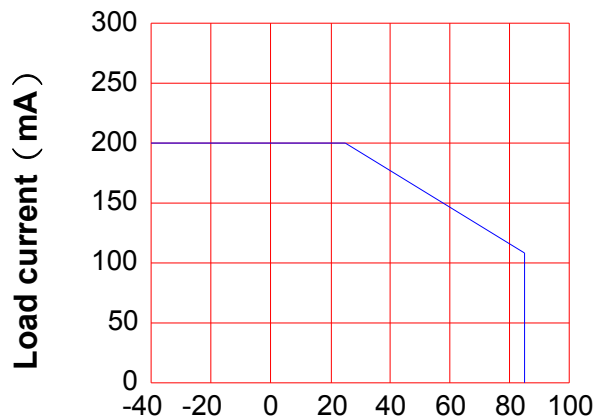
<b>cosmo</b> ELECTRONICS CORPORATION	SOLID STATE RELAY - MOSFET OUTPUT <b>KAQV213A</b>	NO.61M10024	REV. 2
		SHEET 3 OF 7	

## ● Data Curve

Load current vs. ambient temperature

Allowable ambient Temperature :

-40°C to +85°C



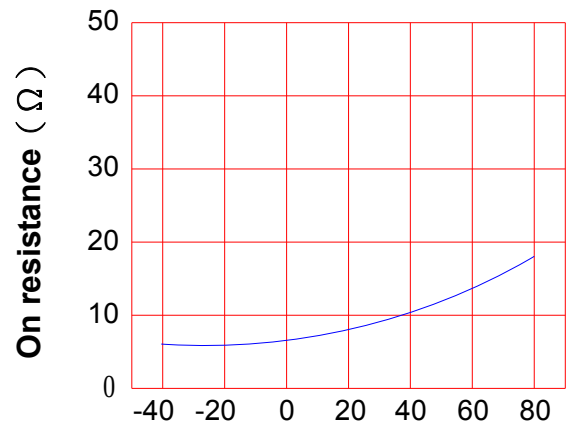
Ambient temperature Ta (°C)

On resistance vs. ambient temperature

across terminals 4 and 6 pin

LED current : 5mA

Continuous load current : 200mA (DC)



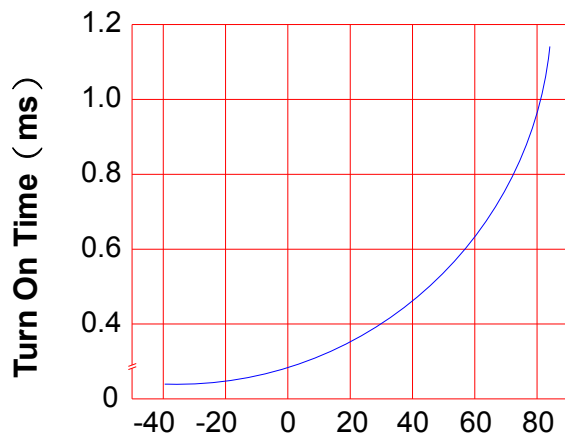
Ambient temperature Ta (°C)

Turn On Time vs. ambient temperature

Load voltage 250V (DC)

LED current : 5mA

Continuous load current : 200mA (DC)



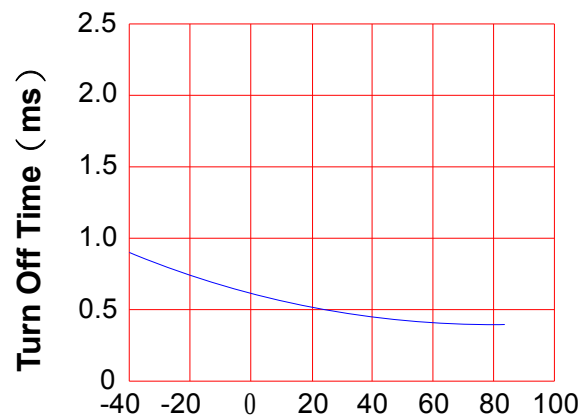
Ambient temperature Ta (°C)

Turn Off Time vs. ambient temperature

Load voltage 250V (DC)

LED current : 5mA

Continuous load current : 200mA (DC)



Ambient temperature Ta (°C)

# PRODUCT SPECIFICATION

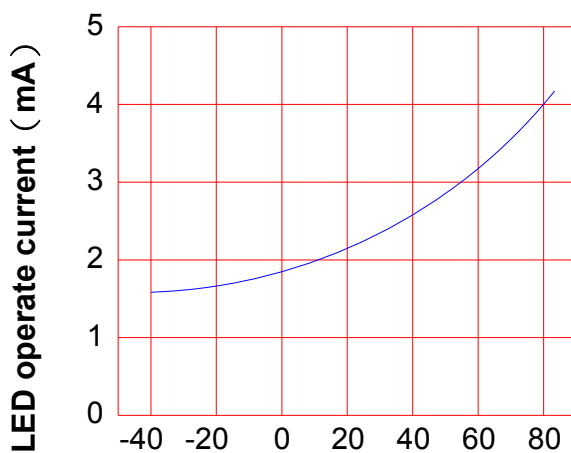
DATE : 02/22/2011

<b>cosmo</b> ELECTRONICS CORPORATION	SOLID STATE RELAY - MOSFET OUTPUT <b>KAQV213A</b>	NO.61M10024	REV. 2
		SHEET 4 OF 7	

LED operate current vs.  
ambient temperature

Load Voltage : 250V (DC)

Continuous load current : 200mA (DC)

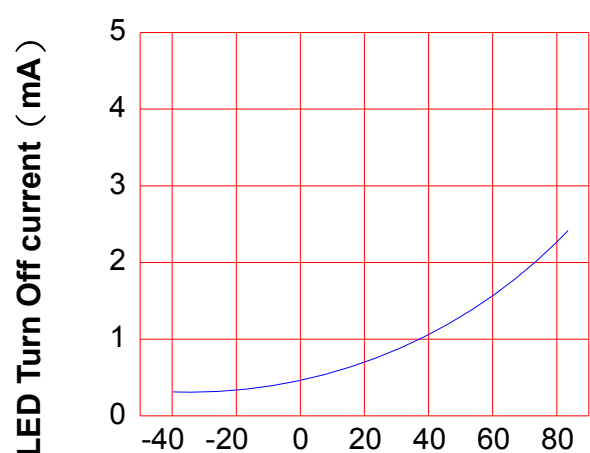


Ambient temperature Ta (°C)

LED Turn Off current vs.  
ambient temperature

Load Voltage : 250V (DC)

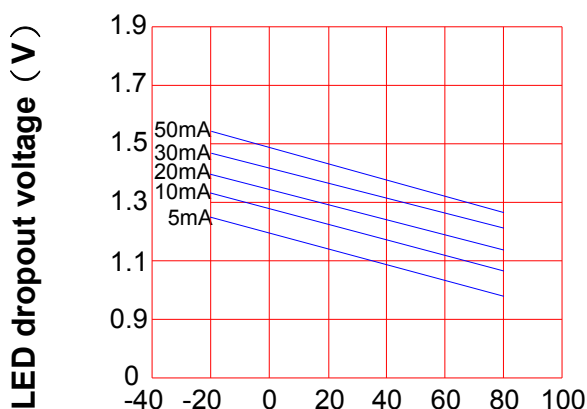
Continuous load current : 200mA (DC)



Ambient temperature Ta (°C)

LED dropout voltage vs.  
ambient temperature

LED current : 5 to 50mA

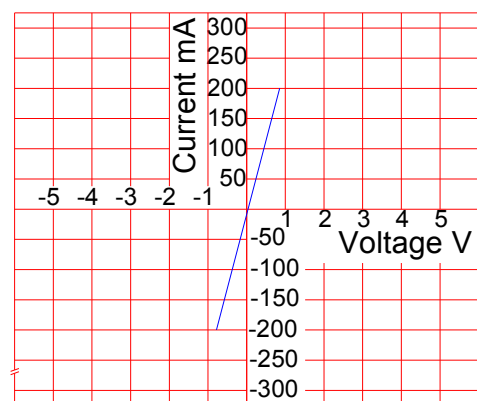


Ambient temperature Ta (°C)

Voltage vs. current characteristics  
of output at MOSFET portion  
Measured portion : across terminals  
4 and 6 pin

Ambient temperature : 25°C

Voltage VS. Current  
Characteristics



Ambient temperature : 25°C

# PRODUCT SPECIFICATION

DATE : 02/22/2011

**cosmo**  
ELECTRONICS CORPORATION

SOLID STATE RELAY - MOSFET OUTPUT  
**KAQV213A**

NO.61M10024  
SHEET 5 OF 7

REV.  
2

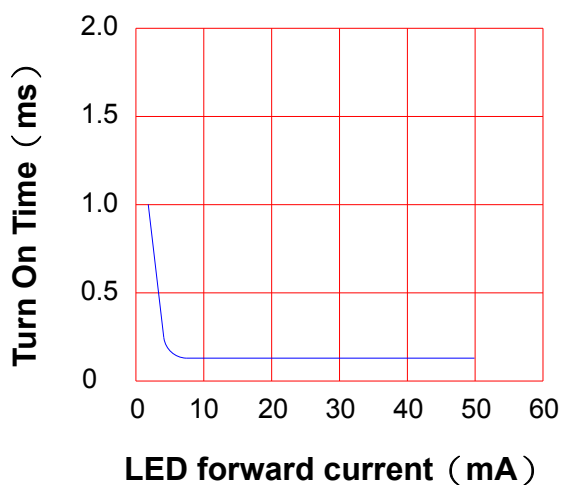
## LED forward current vs. Turn On Time

Across terminals 4 and 6 pin

Load voltage : 250V (DC)

Continuous load current : 200mA (DC)

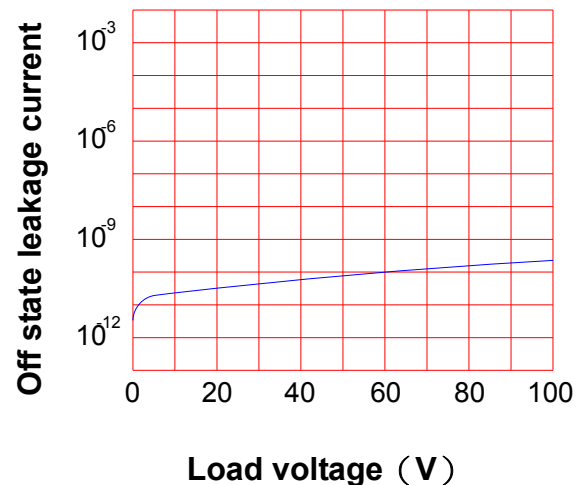
Ambient temperature : 25°C



## Off state leakage current

Across terminals 4 and 6 pin

Ambient temperature : 25°C



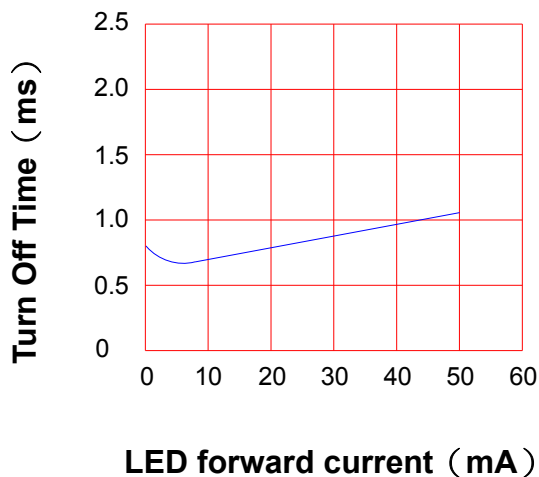
## LED forward current vs. reverse(ON) time

Across terminals 4 and 6 pin

Load voltage : 250V (DC)

Continuous load current : 200mA (DC)

Ambient temperature : 25°C

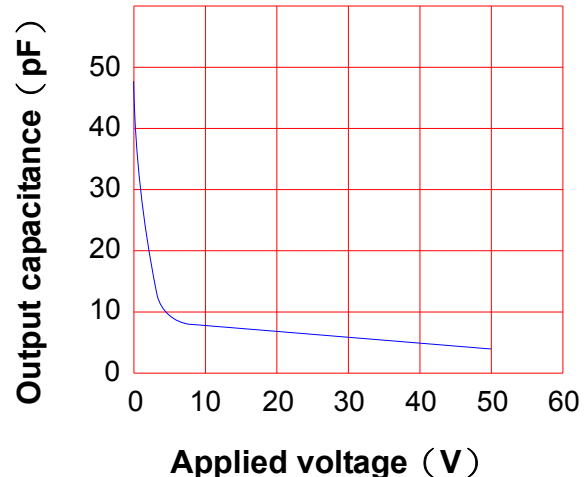


## Applied voltage vs. output capacitance

Across terminals 4 and 6 pin

Frequency : 1MHz

Ambient temperature : 25°C



# PRODUCT SPECIFICATION

DATE : 02/22/2011

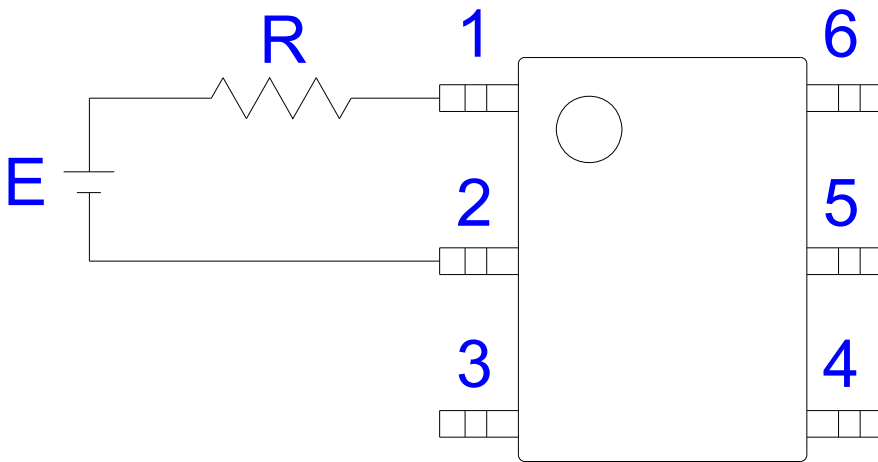
<b>cosmo</b> ELECTRONICS CORPORATION	SOLID STATE RELAY - MOSFET OUTPUT <b>KAQV213A</b>	NO.61M10024	REV. 2
		SHEET 6 OF 7	

## ● USING METHODS

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

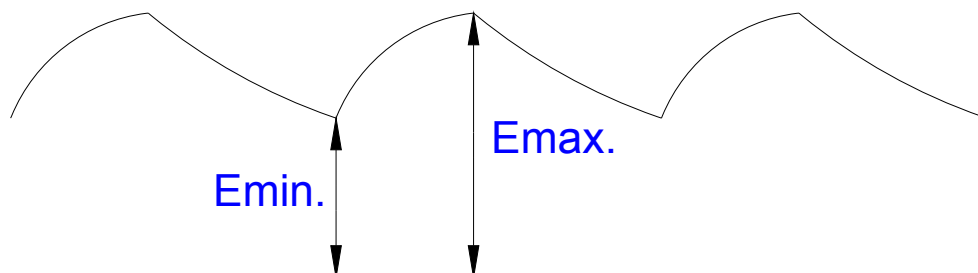
SSR-MOSFET OUTPUT

(IF=5mA)



E	R
3.3V	Approx. 330 $\Omega$
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 : 02/22/2011

**cosmo**  
ELECTRONICS CORPORATION

SOLID STATE RELAY - MOSFET OUTPUT  
**KAQV213A**

NO.61M10024  
SHEET 7 OF 7

REV.  
2

## ● USING METHODS

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

