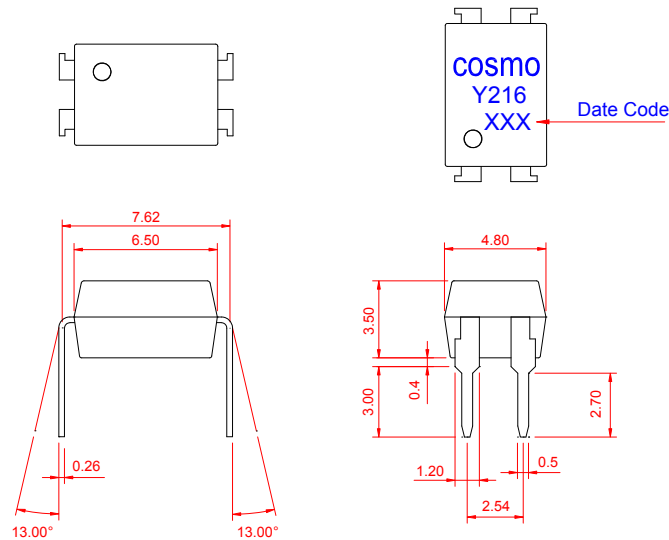


# PRODUCT SPECIFICATION

DATE : 09/05/2007

<b>cosmo</b> ELECTRONICS CORPORATION	SOLID STATE RELAY - MOSFET OUTPUT <b>KAQY216</b>	NO.60M00020	REV. 2
		SHEET 1 OF 7	

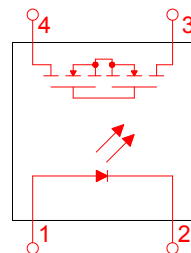
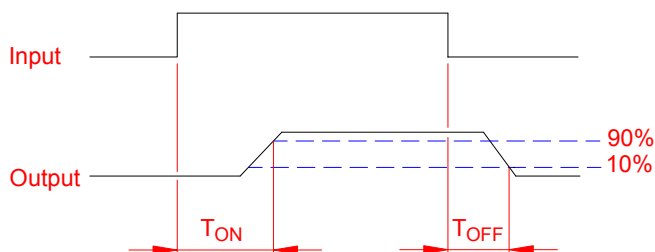
## ● OUTSIDE DIMENSION :



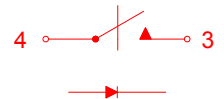
Unit : mm

Tolerance :  $\pm 0.2$ mm

## ● Turn On / Turn Off time



1 FORM A  
NORMALLY OPEN



## ● 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 : 09/05/2007

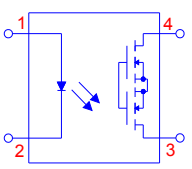
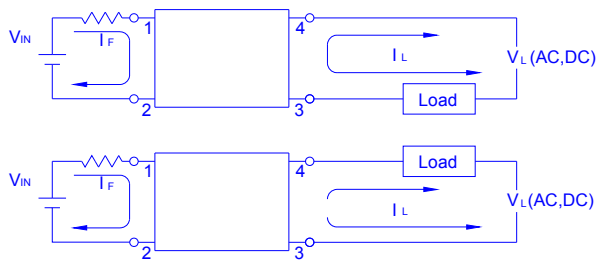
<b>cosmo</b> ELECTRONICS CORPORATION	SOLID STATE RELAY - MOSFET OUTPUT <b>KAQY216</b>	NO.60M00020	REV.
		SHEET 2 OF 7	2

## ● 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	$I_{F\text{ON}}$	$V_L=\pm 20\text{V}$ , $I_L=100\text{mA}$ , $t=10\text{ms}$			5.0	mA
Recovery Input Current	$I_{F\text{OFF}}$	$V_L=\pm 20\text{V}$ , $I_L \leq 5\mu\text{A}$	0.2			mA
Detector ( Output )						
Output Breakdown Voltage	$V_B$	$I_B=50\mu\text{A}$	600			V
Output Off-State Leakage	$I_{T\text{OFF}}$	$V_T=100\text{V}$ , $I_F=0\text{mA}$		0.2	1	$\mu\text{A}$
I/O Capacitance	$C_{\text{ISO}}$	$I_F=0$ , $f=1\text{MHz}$		6		pF
ON Resistance	$R_{\text{ON}}$	$I_L=100\text{mA}$ , $I_F=10\text{mA}$		35	50	$\Omega$
Turn-On Time	$T_{\text{ON}}$	$I_F=10\text{mA}$ , $V_L=\pm 20\text{V}$ $t=10\text{ms}$ , $I_L=\pm 100\text{mA}$		0.3	1.0	ms
Turn-Off Time	$T_{\text{OFF}}$			0.5	1.5	ms

## ● MOS Relay Schematic and Wiring Diagrams

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

# PRODUCT SPECIFICATION

DATE : 09/05/2007

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ELECTRONICS CORPORATION

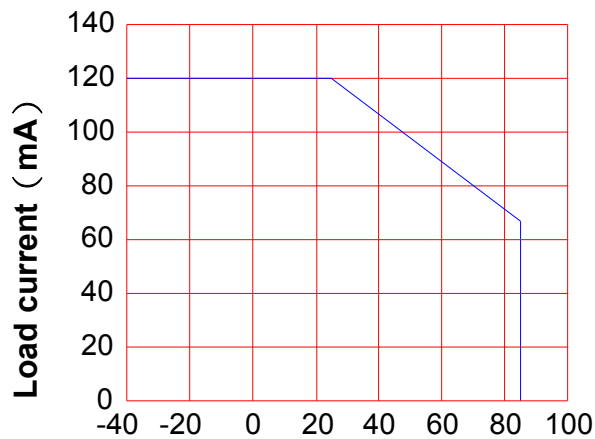
SOLID STATE RELAY - MOSFET OUTPUT  
**KAQY216**

NO.60M00020  
SHEET 3 OF 7

REV.  
2

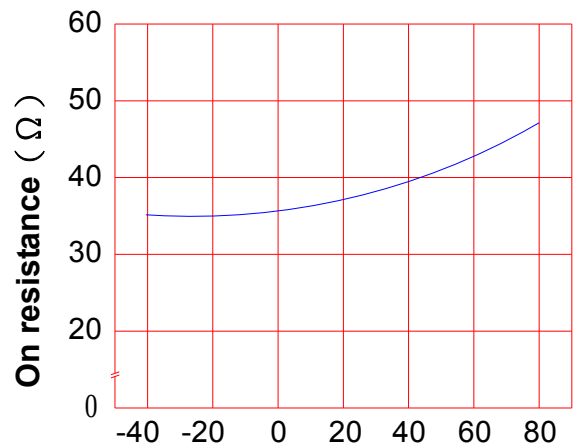
## ● Data Curve

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



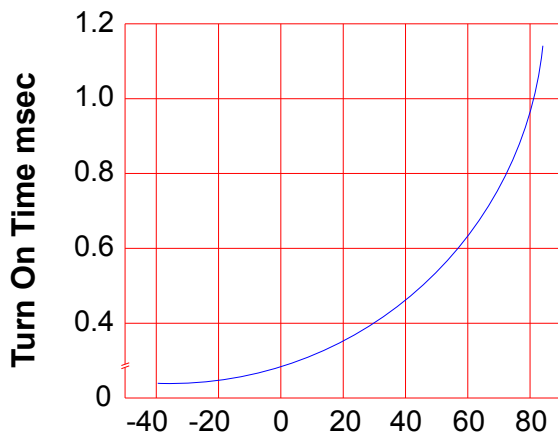
Ambient temperature Ta (°C)

On resistance vs. ambient temperature  
across terminals 3 and 4 pin  
LED current : 5mA  
Continuous load current : 120mA (DC)



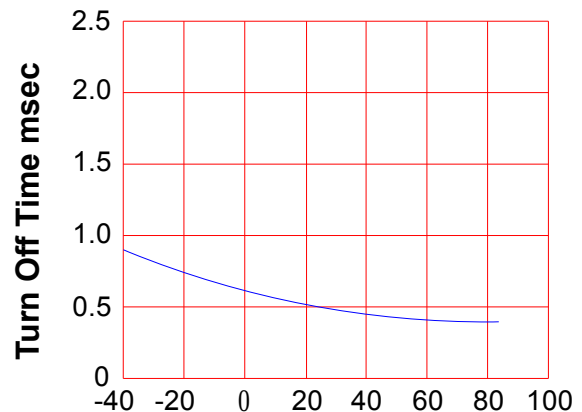
Ambient temperature Ta (°C)

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



Ambient temperature Ta (°C)

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



Ambient temperature Ta (°C)

# PRODUCT SPECIFICATION

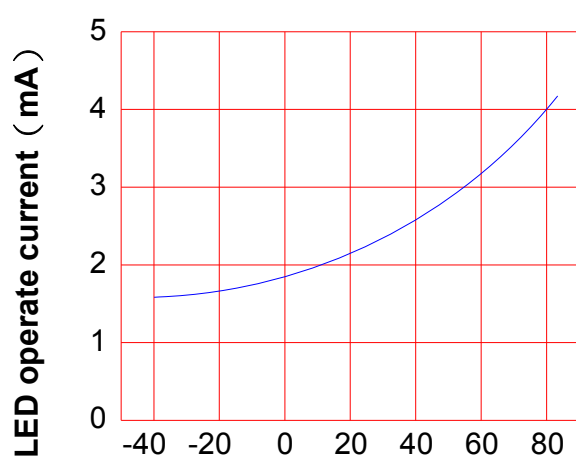
DATE : 09/05/2007

<b>cosmo</b> ELECTRONICS CORPORATION	SOLID STATE RELAY - MOSFET OUTPUT <b>KAQY216</b>	NO.60M00020	REV.
		SHEET 4 OF 7	2

LED operate current vs.  
ambient temperature

Load Voltage : 600V (DC)

Continuous load current : 120mA (DC)

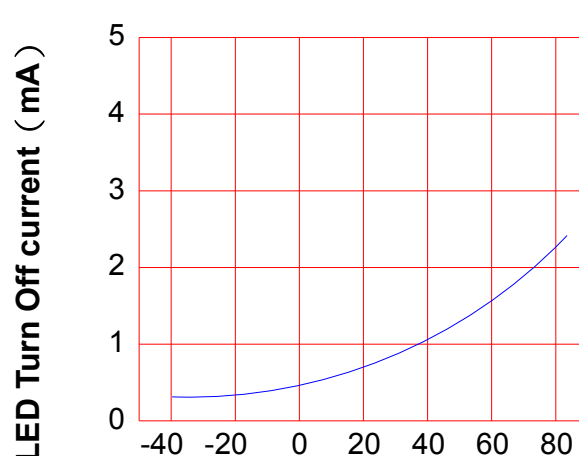


Ambient temperature Ta (°C)

LED Turn Off current vs.  
ambient temperature

Load Voltage : 600V (DC)

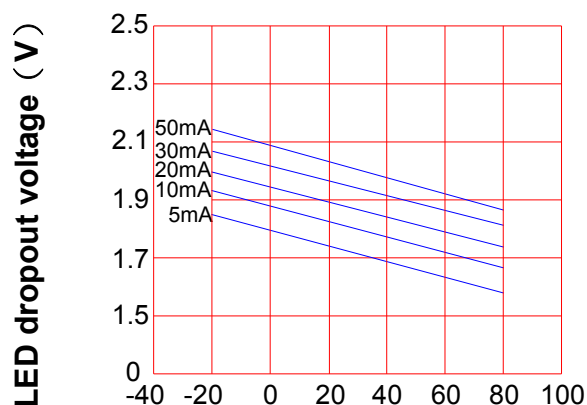
Continuous load current : 120mA (DC)



Ambient temperature Ta (°C)

LED dropout voltage vs.  
ambient temperature

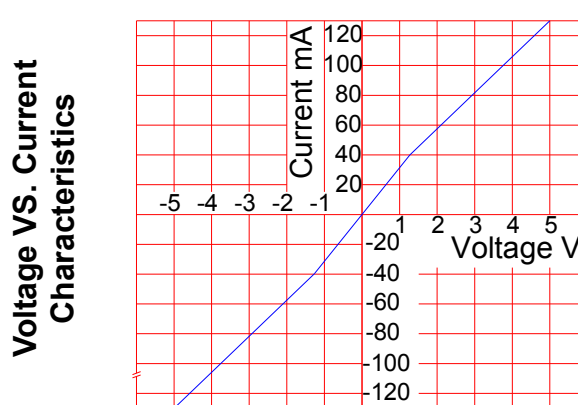
LED current : 5 to 50mA



Ambient temperature Ta (°C)

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

Ambient temperature : 25°C



Ambient temperature : 25°C

# PRODUCT SPECIFICATION

DATE : 09/05/2007

<b>cosmo</b> ELECTRONICS CORPORATION	SOLID STATE RELAY - MOSFET OUTPUT <b>KAQY216</b>	NO.60M00020	REV. 2
		SHEET 5 OF 7	

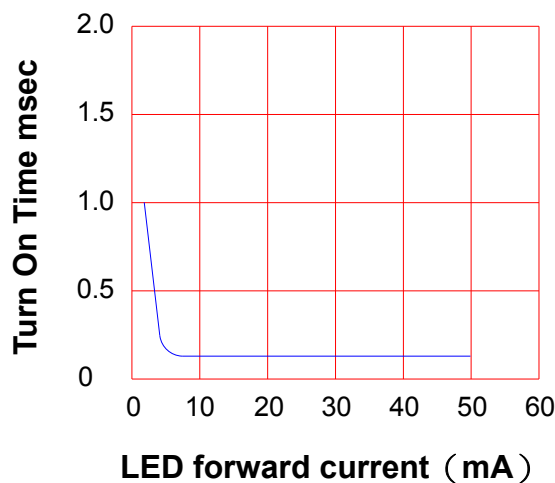
## LED forward current vs. Turn On Time

Across terminals 3 and 4 pin

Load voltage : 600V (DC)

Continuous load current : 120mA (DC)

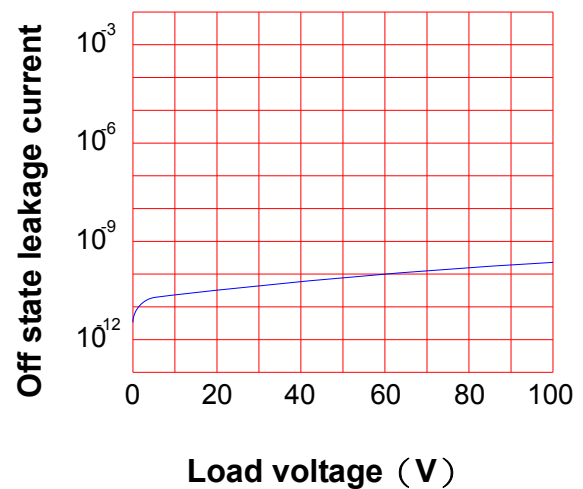
Ambient temperature : 25°C



## Off state leakage current

Across terminals 3 and 4 pin

Ambient temperature : 25°C



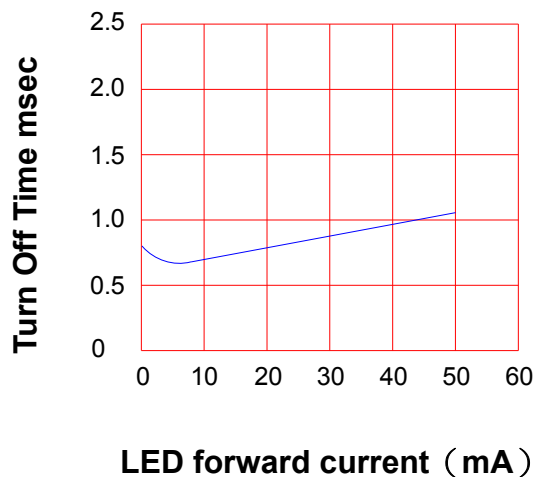
## LED forward current vs. Turn Off Time

Across terminals 3 and 4 pin

Load voltage : 600V (DC)

Continuous load current : 120mA (DC)

Ambient temperature : 25°C

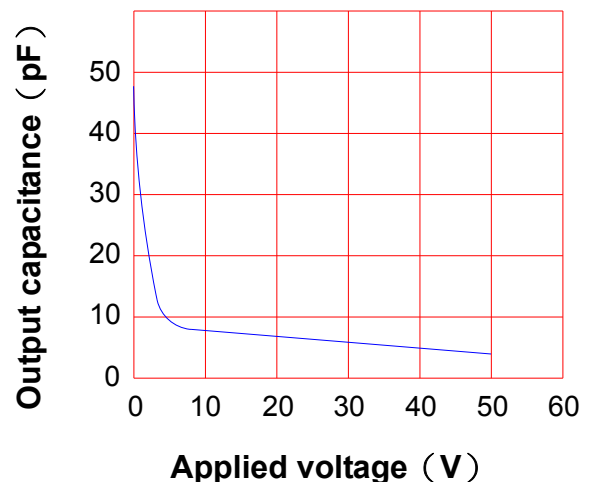


## Applied voltage vs. output capacitance

Across terminals 3 and 4 pin

Frequency : 1MHz

Ambient temperature : 25°C



# PRODUCT SPECIFICATION

DATE : 09/05/2007

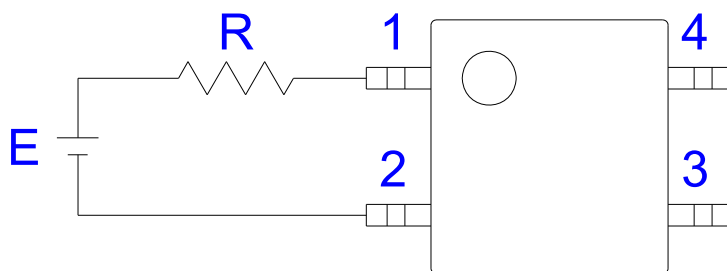
<b>cosmo</b> ELECTRONICS CORPORATION	SOLID STATE RELAY - MOSFET OUTPUT <b>KAQY216</b>	NO.60M00020	REV. 2
		SHEET 6 OF 7	

## ● USING METHODS

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

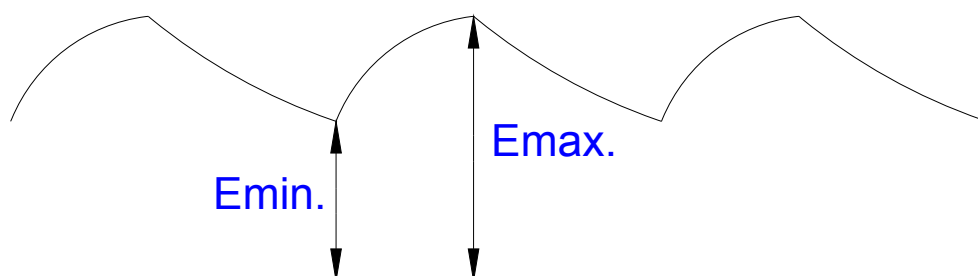
SSR-MOSFET OUTPUT

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



E	R
3.3V	Approx. 330 $\Omega$
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 : 09/05/2007

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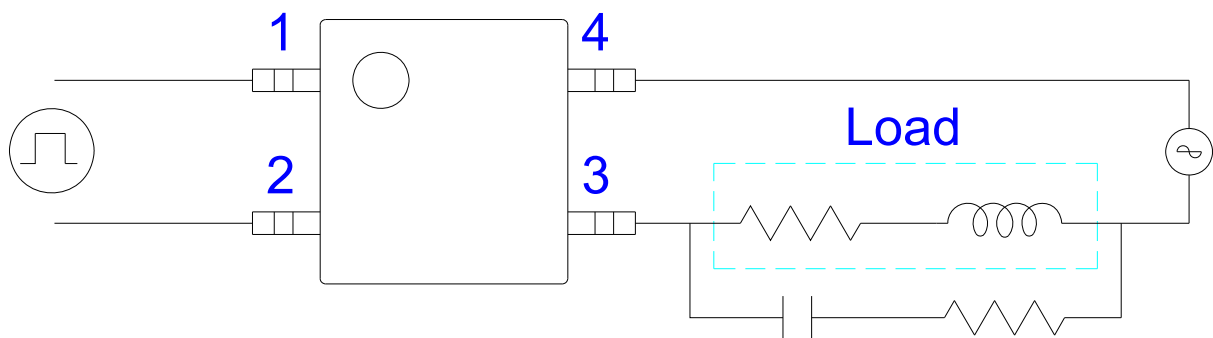
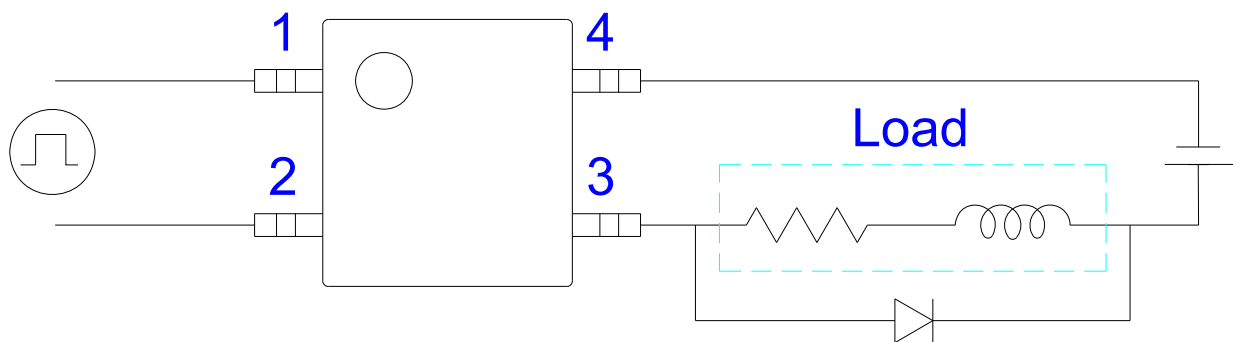
SOLID STATE RELAY - MOSFET OUTPUT  
**KAQY216**

NO.60M00020  
SHEET 7 OF 7

REV.  
2

## ● USING METHODS

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



R-C Snubber