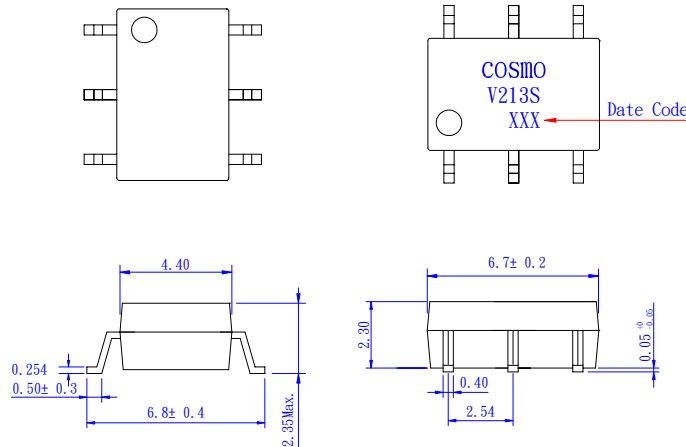


PRODUCT SPECIFICATION

DATE : 09/01/2006

cosmo ELECTRONICS CORPORATION	SOLID STATE RELAY - MOSFET OUTPUT KAQV213S	NO.62M10008	REV. 1
		SHEET 1 OF 7	

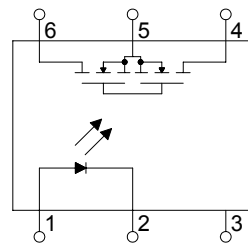
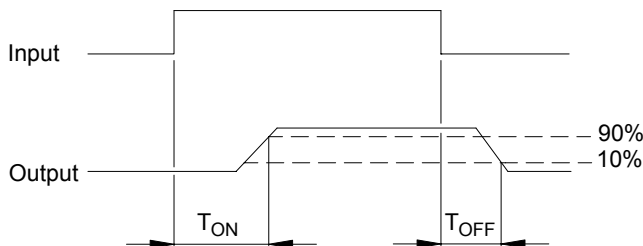
● OUTSIDE DIMENSION :



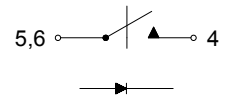
Unit : mm

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	
General Characteristics	
Isolation Test Voltage 1500VACrms	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 : 09/01/2006

cosmo ELECTRONICS CORPORATION	SOLID STATE RELAY - MOSFET OUTPUT KAQV213S	NO.62M10008	REV. 1
		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 =10mA		1.2	1.5	V
Operation Input Current			I _{FON}	V _L =±20V，I _L =100mA，t=10ms			5.0	mA
Recovery Input Current			I _{FOFF}	V _L =±20V，I _L ≤5μA	0.2			mA
Detector（Output）								
Output Breakdown Voltage			V _B	I _B =50μA	250			V
Output Off-State Leakage			I _{TOFF}	V _T =100V，I _F =0mA		0.2	1	μA
I/O Capacitance			C _{ISO}	I _F =0，f=1MHz		6		pF
ON Resistance	Connection	A	R _{ON}	I _L =100mA，I _F =10mA		8	16	Ω
		B				4	8	
		C				2	4	
Turn-On Time			T _{ON}	I _F =10mA，V _L =±20V t=10ms，I _L =±100mA		0.3	1.0	ms
Turn-Off Time			T _{OFF}			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 : 09/01/2006

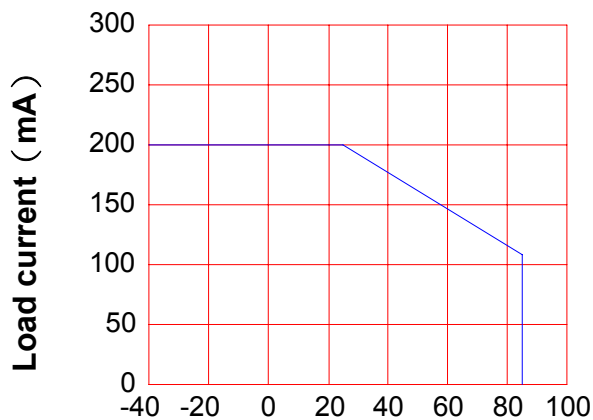
cosmo ELECTRONICS CORPORATION	SOLID STATE RELAY - MOSFET OUTPUT KAQV213S	NO.62M10008	REV. 1
		SHEET 3 OF 7	

● Data Curve

Load current vs. ambient temperature

Allowable ambient Temperature :

-40°C to +85°C



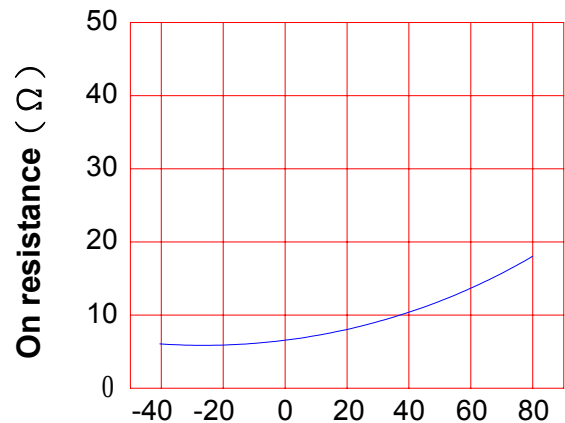
Ambient temperature Ta (°C)

On resistance vs. ambient temperature

across terminals 4 and 6 pin

LED current : 5mA

Continuous load current : 200mA (DC)



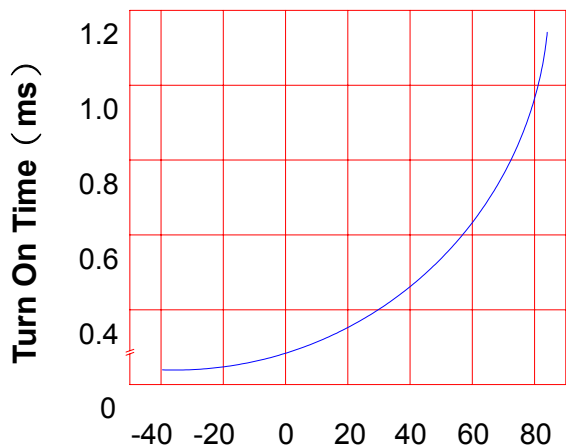
Ambient temperature Ta (°C)

Turn On Time vs. ambient temperature

Load voltage 250V (DC)

LED current : 5mA

Continuous load current : 200mA (DC)



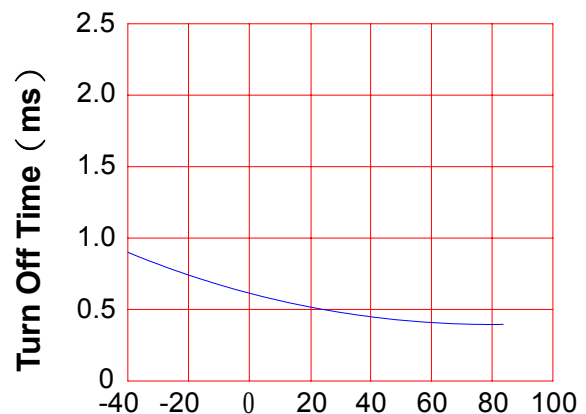
Ambient temperature Ta (°C)

Turn Off Time vs. ambient temperature

Load voltage 250V (DC)

LED current : 5mA

Continuous load current : 200mA (DC)



Ambient temperature Ta (°C)

PRODUCT SPECIFICATION

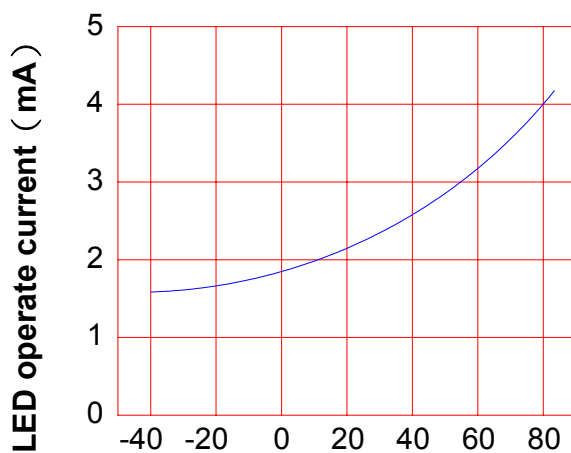
DATE : 09/01/2006

cosmo ELECTRONICS CORPORATION	SOLID STATE RELAY - MOSFET OUTPUT KAQV213S	NO.62M10008	REV. 1
		SHEET 4 OF 7	

LED operate current vs.
ambient temperature

Load Voltage : 250V (DC)

Continuous load current : 200mA (DC)

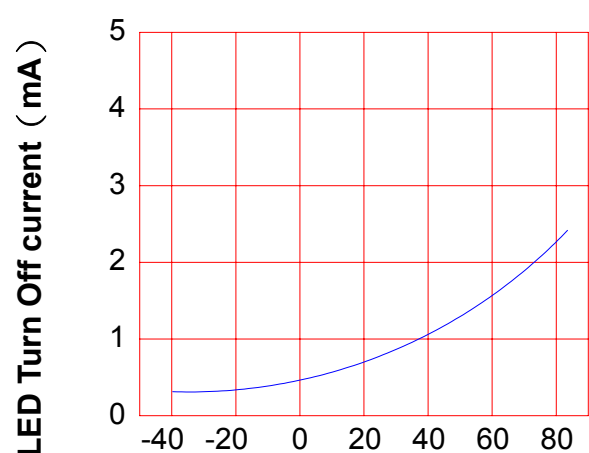


Ambient temperature Ta (°C)

LED Turn Off current vs.
ambient temperature

Load Voltage : 250V (DC)

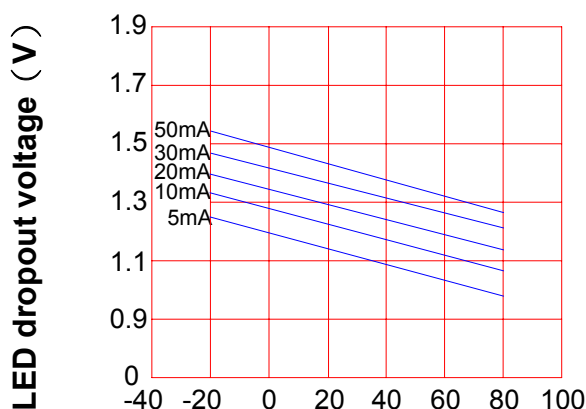
Continuous load current : 200mA (DC)



Ambient temperature Ta (°C)

LED dropout voltage vs.
ambient temperature

LED current : 5 to 50mA

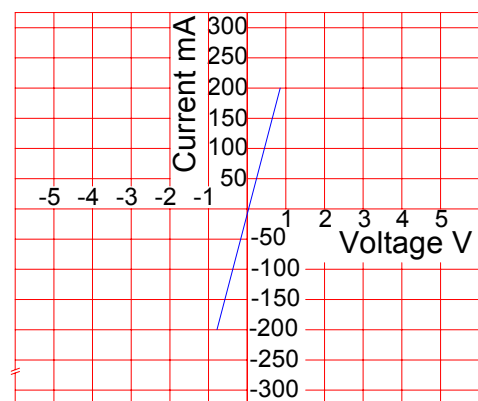


Ambient temperature Ta (°C)

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 : 09/01/2006

cosmo
ELECTRONICS CORPORATION

SOLID STATE RELAY - MOSFET OUTPUT
KAQV213S

NO.62M10008
SHEET 5 OF 7

REV.
1

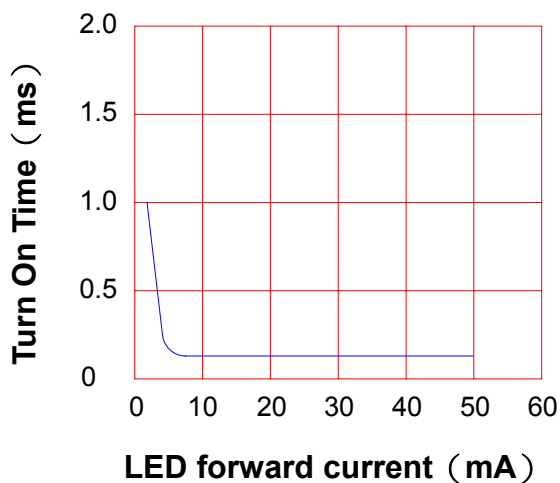
LED forward current vs. Turn On Time

Across terminals 4 and 6 pin

Load voltage : 250V (DC)

Continuous load current : 200mA (DC)

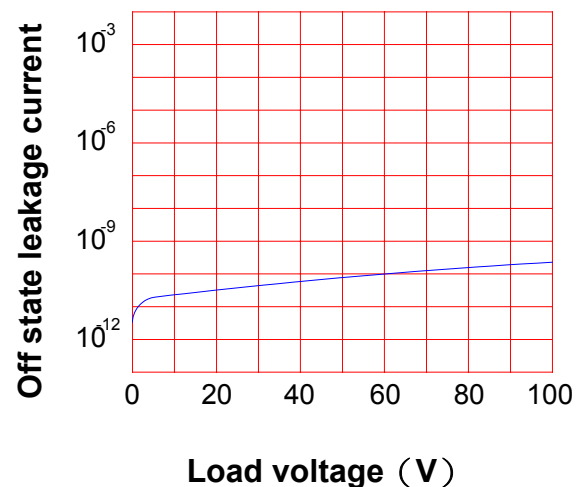
Ambient temperature : 25°C



Off state leakage current

Across terminals 4 and 6 pin

Ambient temperature : 25°C



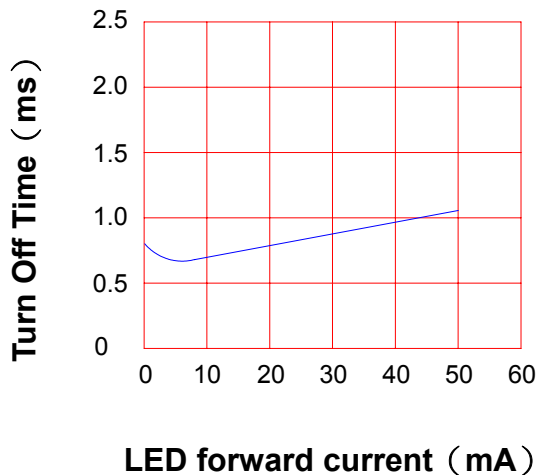
LED forward current vs. reverse(ON) time

Across terminals 4 and 6 pin

Load voltage : 250V (DC)

Continuous load current : 200mA (DC)

Ambient temperature : 25°C

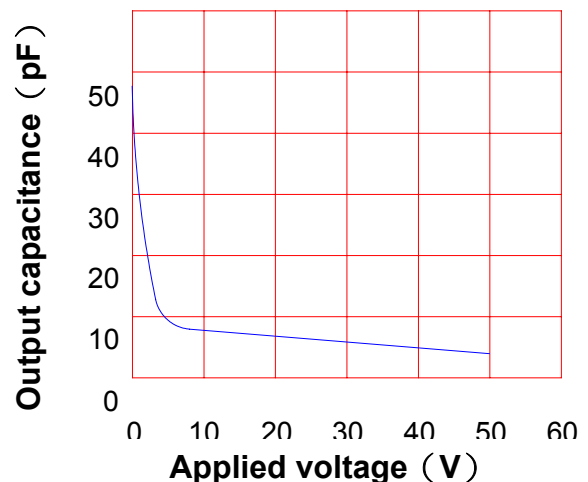


Applied voltage vs. output capacitance

Across terminals 4 and 6 pin

Frequency : 1MHz

Ambient temperature : 25°C



PRODUCT SPECIFICATION

DATE : 09/01/2006

cosmo
ELECTRONICS CORPORATION

SOLID STATE RELAY - MOSFET OUTPUT
KAQV213S

NO.62M10008
SHEET 6 OF 7

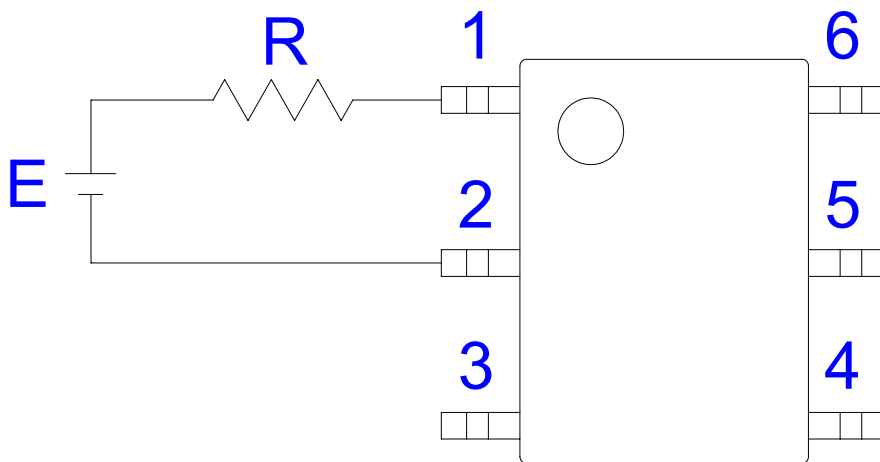
REV.
1

● USING METHODS

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

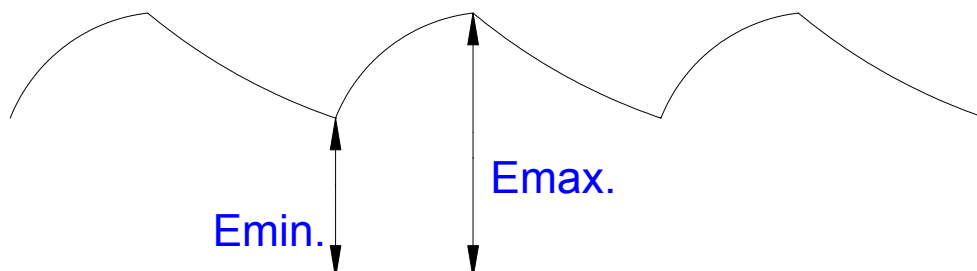
SSR-MOSFET OUTPUT

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



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.



PRODUCT SPECIFICATION

DATE : 09/01/2006

cosmo ELECTRONICS CORPORATION	SOLID STATE RELAY - MOSFET OUTPUT KAQV213S	NO.62M10008	REV. 1
		SHEET 7 OF 7	

● USING METHODS

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

