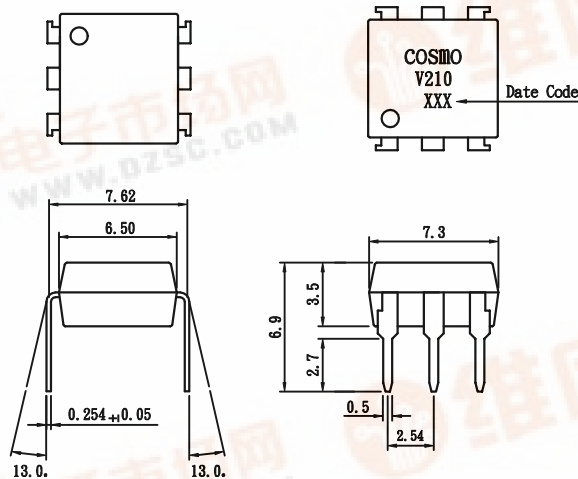


# PRODUCT SPECIFICATION

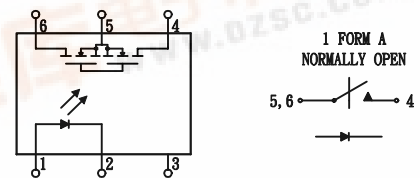
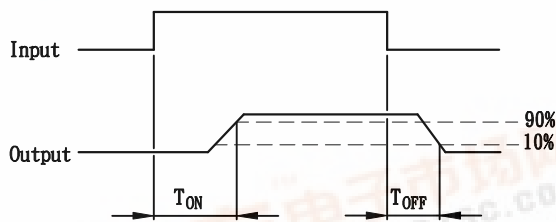
<p><b>COSMO</b> ELECTRONICS CO., LTD.</p>	<p>PHOTO MOS RELAYS: <b>KAQV210</b></p>	<p>SHEET 1 OF 7</p>
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• OUTSIDE DIMENSION :



Unit:mm  
Tolerance: +0.2 mm

• Turn on/Turn off time



Absolute Maximum Ratings ( $T_A=25. C$ )

Emitter (Inpute)

- Reverse Voltage . . . . . 5.0V
- Continuous Forward Current . . . . . 50mA
- Peak Forward Current (1s) . . . . . 1A
- Power Dissipation. . . . . 100mW
- Derate Linearly from 25. C . . . . . 1.3mW/. C

Detector (Output)

- Output Breakdown Voltage . . . . . +350V
- Continous Load Current . . . . . +130mA
- Power Dissipation . . . . . 500mW

General Characteristics

- Isolation Test Voltage. . . . . 3750VAC<sub>RMS</sub>
- Isolation Resistance
- $V_{10}=500V, T_A=25. C . . . . . \geq 10^{10} \Omega$
- Total Power Dissipation . . . . . 550mW

- Derate Linearly form 25. C. . . . . 2.5mW/. C
- Storage Temperature Range . . . . . -40 to +150. C
- Operating Temperature Range. . . . . -40 to +85. C
- Junction Temperature . . . . . 100. C
- Soldering Temperature, 2mm from case, 10 sec. 260. C



# PRODUCT SPECIFICATION

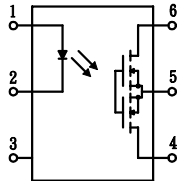
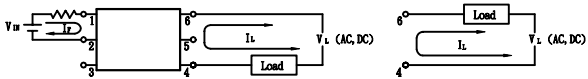
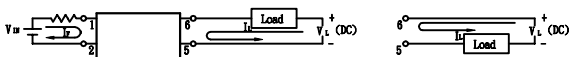

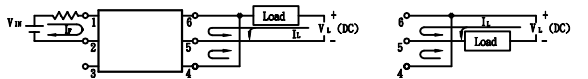
<b>COSMO</b> ELECTRONICS CO., LTD.	PHOTO MOS RELAYS: <b>KAQV210</b>	SHEET 2 OF 7
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### Characteristics

(T<sub>A</sub> = 25° C)

Description	Symbol	Min.	Typ.	Max.	Unit	Test Condition	
<b>Emitter (Input)</b>							
Forward Voltage	V <sub>F</sub>		1.8	2.0	V	I <sub>F</sub> = 10mA	
Operation Input Current	I <sub>FON</sub>			5	mA	V <sub>L</sub> = ± 20V, I <sub>L</sub> = 100mA, t = 10 ms	
Recovery Input Current	I <sub>FOFF</sub>	0.2			mA	V <sub>L</sub> = ± 20V, I <sub>L</sub> < 5uA	
<b>Detector (Output)</b>							
Output Breakdown Voltage	V <sub>B</sub>	350			V	I <sub>B</sub> = 50uA	
Output Off-State Leakage	I <sub>T(OFF)</sub>		0.2	1	uA	V <sub>T</sub> = 100V, I <sub>F</sub> = 0mA	
I/O Capacitance	C <sub>ISO</sub>		6		pF	I <sub>F</sub> = 0, f = 1MHz	
ON Resistance	Connection	A		20	30	Ω	I <sub>L</sub> = 100mA, I <sub>F</sub> = 10mA
		B		10	15		
		C		5	7.5		
Turn-on Time	T <sub>ON</sub>		0.3	1.0	ms	I <sub>F</sub> = 10mA, V <sub>L</sub> = ± 20V	
Turn-off Time	T <sub>OFF</sub>		0.7	1.5	ms	t = 10ms, I <sub>L</sub> = ± 100mA	

### Mos Relay Schematic and Wiring Diagrams

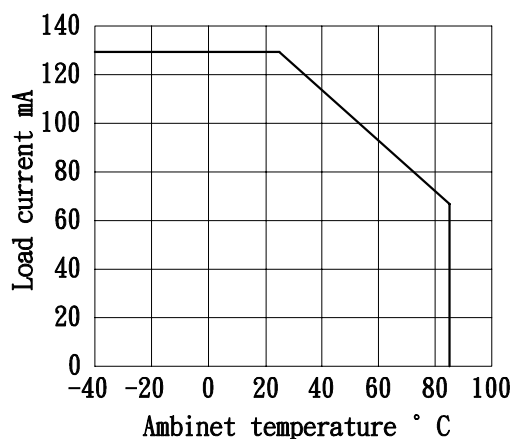
Type	Schematic	Output configuration	Load	Con-nection	Wiring diagram
KAQV210		1a	AC/DC	A	
			DC	B	
					
DC	C				

# PRODUCT SPECIFICATION

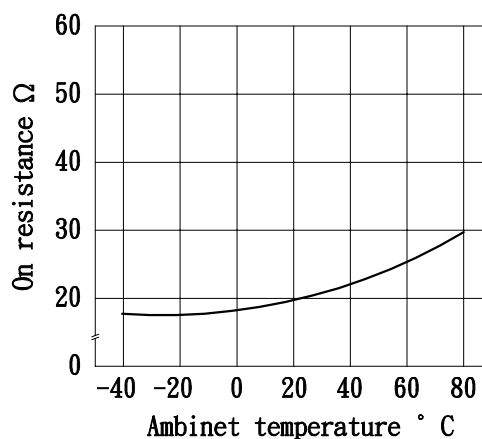
<p><b>COSMO</b> ELECTRONICS CO., LTD.</p>	<p>PHOTO MOS RELAYS: <b>KAQV210</b></p>	<p>SHEET 3 OF 7</p>
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## DATA CURVE

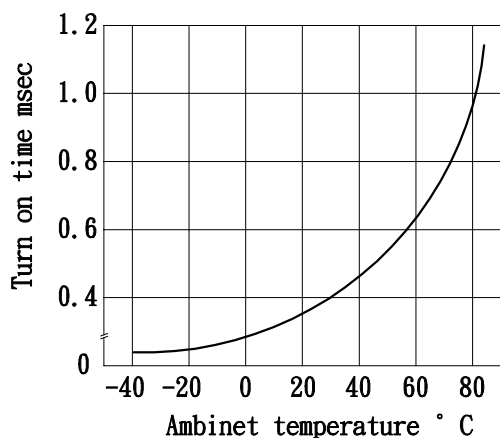
Load current vs. ambient temperature  
Allowable ambient temperature:  
-40° C+85° C



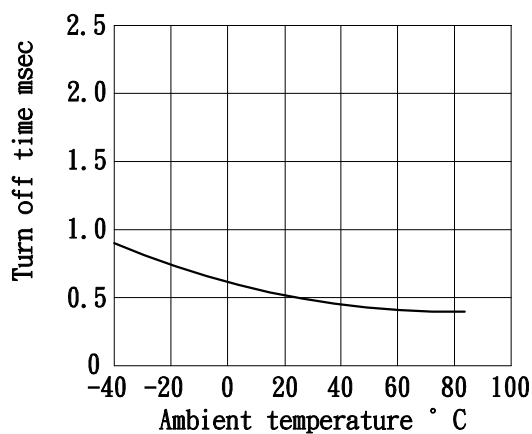
On resistance vs. ambient temperature  
Across terminals 4 and 6 pin  
LED current: 5mA  
Continuous load current: 130 mA(DC)



Turn on time vs. ambient temperature  
Load voltage 350 V(DC)  
LED current :5mA  
Continuous load current: 130mA(DC)



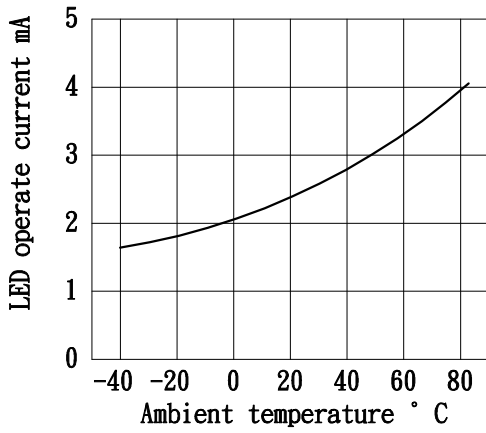
Turn off time vs. ambient temperature  
LED current: 5mA; Load voltage: 350V(DC)  
Continuous load current: 130mA(DC)



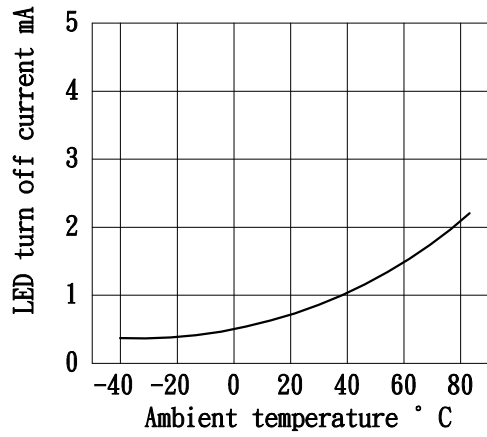
# PRODUCT SPECIFICATION

<b>COSMO</b> ELECTRONICS CO., LTD.	PHOTO MOS RELAYS: <b>KAQV210</b>	SHEET 4 OF 7
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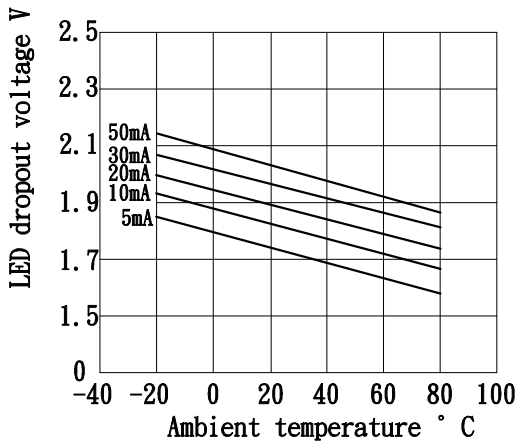
LED operate vs. ambient temperature  
 Load voltage: 350V(DC)  
 Continuous load current: 130mA(DC)



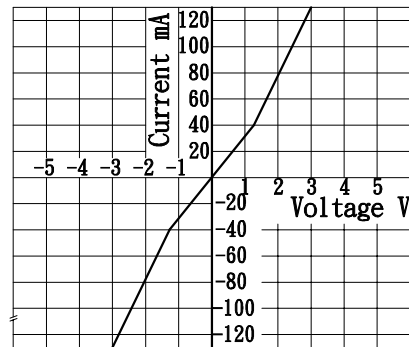
LED turn off current vs. ambient temperature  
 Load voltage: 350V(DC)  
 Continuous load current: 130mA(DC)



LED dropout voltage vs. ambient temperature  
 LED current: 5 to 50mA



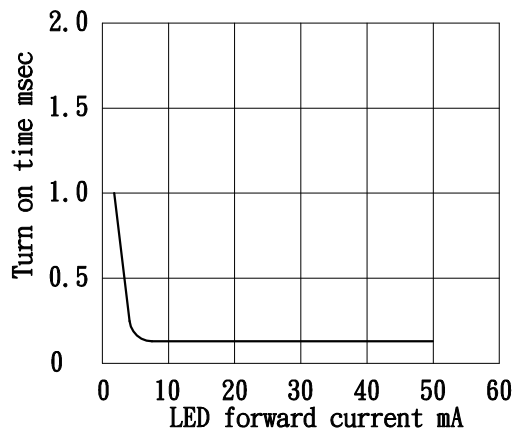
Voltage vs. current characteristics of output at MOS FET portion  
 Measured portion: across terminals 4 and 6 pin  
 Ambient temperature: 25° C



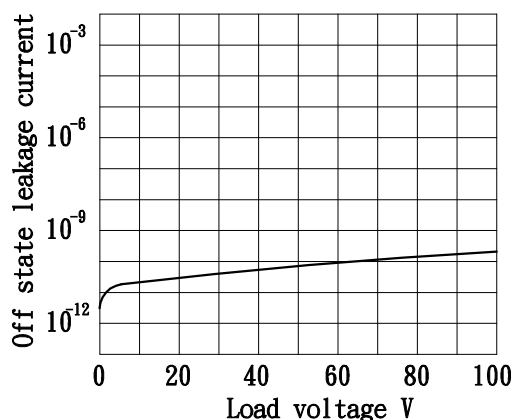
# PRODUCT SPECIFICATION

<b>COSMO</b> ELECTRONICS CO., LTD.	PHOTO MOS RELAYS: <b>KAQV210</b>	SHEET 5 OF 7
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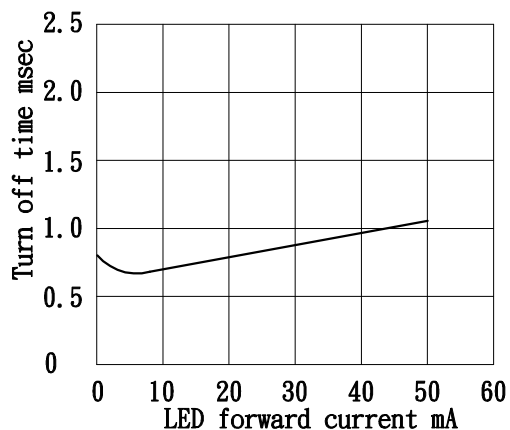
LED forward current vs. turn on time  
 Across terminals 4 and 6pin; Load voltage: 350V(DC); Continuous load current: 130mA(DC); Ambient temperature: 25° C



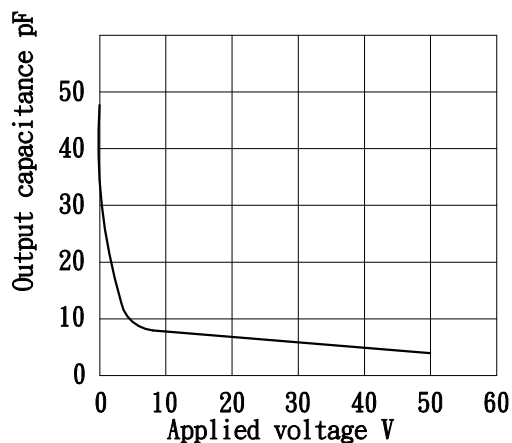
Off state leakage current  
 Across terminals 4 and 6pin  
 Ambient temperature: 25° C



LED forward current vs. turn off time  
 Across terminals 4 and 6pin; Load voltage: 350V(DC); Continuous load current: 130 mA(DC); Ambient temperature: 25° C



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

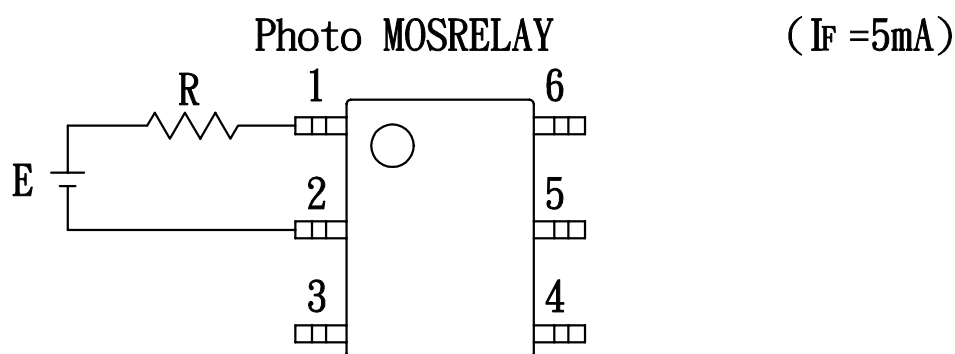


# PRODUCT SPECIFICATION

<b>COSMO</b> ELECTRONICS CO., LTD.	PHOTO MOS RELAYS: <b>KAQV210</b>	SHEET 6 OF 7
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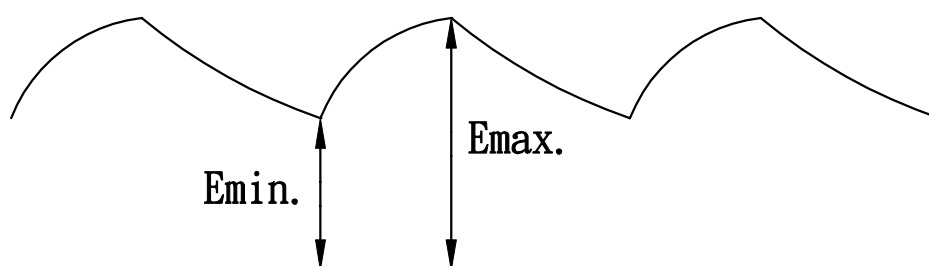
## USING METHODS

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



E	R
3.3V	Approx. 240 ohm
5V	Approx. 540 ohm
12V	Approx. 1.8K ohm
15V	Approx. 2.4K ohm
24V	Approx. 4K ohm

- (1) LED forward current must be more than 5mA, at E min.
- (2) LED forward current must be less than 50mA, at E max.

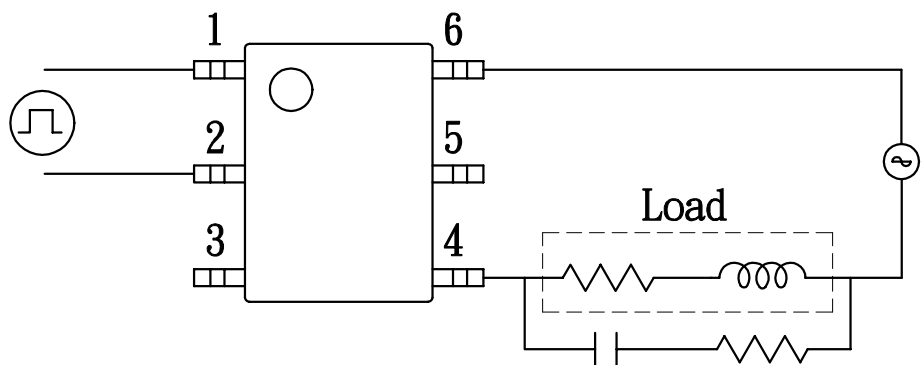
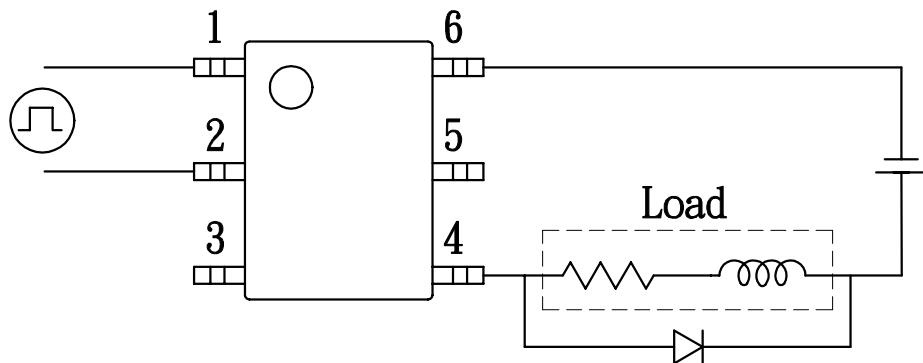


# PRODUCT SPECIFICATION

<b>COSMO</b> ELECTRONICS CO., LTD.	PHOTO MOS RELAYS: <b>KAQV210</b>	SHEET 7 OF 7
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## USING METHODS

Regulate the spike voltage generated on the inductive load as follows



R-C Snubber