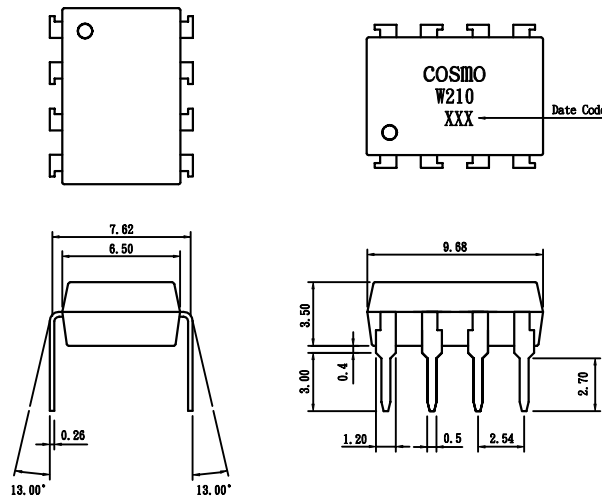


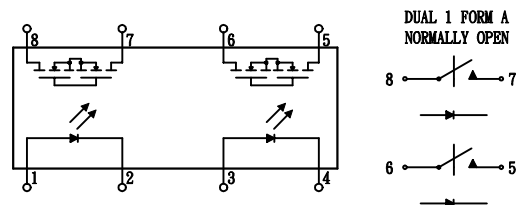
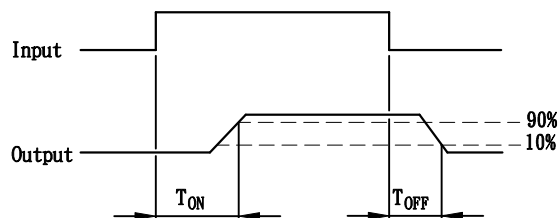
PRODUCT SPECIFICATION

COSMO ELECTRONICS CO., LTD.	PHOTO MOS RELAYS: KAQW210	SHEET 1 OF 7
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• OUTSIDE DIMENSION :



• Turn on/Turn off time



Absolute Maximum Ratings ($T_A=25^\circ\text{C}$)

Emitter (Input)

Reverse Voltage	5.0V
Continuous Forward Current	50mA
Peak Forward Current (1s)	1A
Power Dissipation	100mW
Derate Linearly from 25°C	1.3mW/ $^\circ\text{C}$

Detector (Output)

Output Breakdown Voltage	$\pm 350\text{V}$
Continuous Load Current	$\pm 130\text{mA}$
Power Dissipation	500mW

General Characteristics

Isolation Test Voltage	3750VAC _{RMS}
Isolation Resistance	
$V_{10}=500\text{V}, T_A=25^\circ\text{C}$	$\geq 10^{10}\Omega$
Total Power Dissipation	550mW

Derate Linearly from 25°C	2.5mW/ $^\circ\text{C}$
Storage Temperature Range	-40 to $+150^\circ\text{C}$
Operating Temperature Range	-40 to $+85^\circ\text{C}$
Junction Temperature	100°C
Soldering Temperature, 2mm from case, 10 sec.	260°C

PRODUCT SPECIFICATION

COSMO ELECTRONICS CO., LTD.	PHOTO MOS RELAYS: KAQW210	SHEET 2 OF 7
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Characteristics

(T_A=25° C)

Description	Symbol	Min.	Typ.	Max.	Unit	Test Condition
Emitter (Input)						
Forward Voltage	V _F		1.8	2.0	V	I _F =10mA
Operation Input Current	I _{FON}			5	mA	V _L =± 20V, I _L =100mA t=10 ms
Recovery Input Current	I _{FOFF}	0.2			mA	V _L =± 20V, I _L < 5uA
Detector (Output)						
Output Breakdown Voltage	V _B	350			V	I _B =50uA
Output Off-State Leakage	I _{T(OFF)}		0.2	1	uA	V _T =100V, I _F =0mA
I/O Capacitance	C _{ISO}		6		pF	I _F =0, f=1MHz
ON Resistance	R _{ON}		20	30	Ω	I _L =100mA, I _F =10mA
Turn-on Time	T _{ON}		0.3	1.0	ms	I _F =10mA, V _L =± 20V
Turn-off Time	T _{OFF}		0.7	1.5	ms	t=10ms, I _L =± 100mA

Mos Relay Schematic and Wiring Diagrams

Type	Schematic	Output configuration	Load	Connection	Wiring diagram
KAQW210		2a	AC/DC	-	<p>(1) Two independent 1 Form A use</p> <p>(2) 2 Form A use</p>

PRODUCT SPECIFICATION

COSMO

ELECTRONICS CO., LTD.

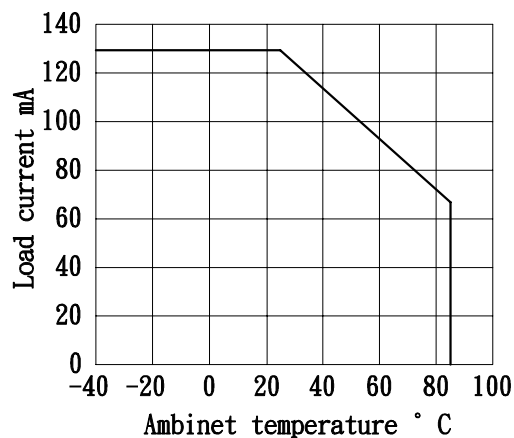
PHOTO MOS RELAYS:

KAQW210

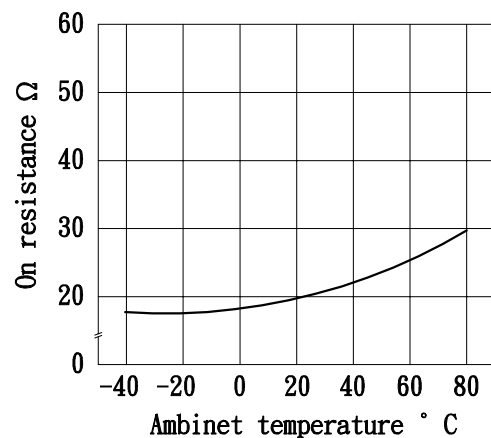
SHEET 3 OF 7

DATA CURVE

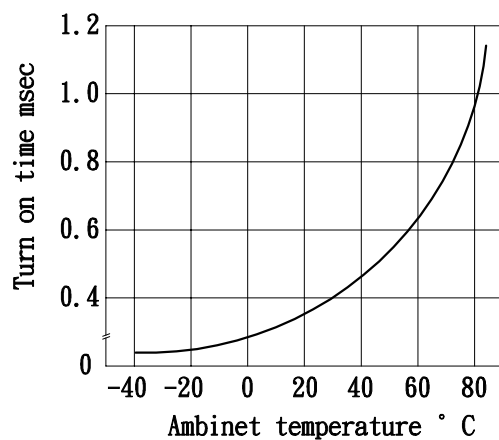
Load current vs. ambient temperature
Allowable ambient temperature:
-40° C+85° C



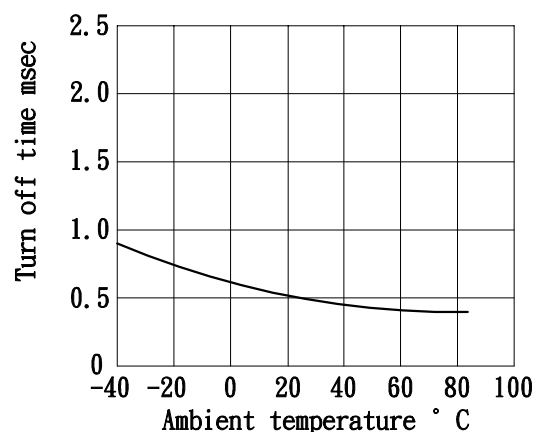
On resistance vs. ambient temperature
Across terminals 5,7 and 6,8 pin
LED current: 5mA
Continuous load current: 130 mA(DC)



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

COSMO

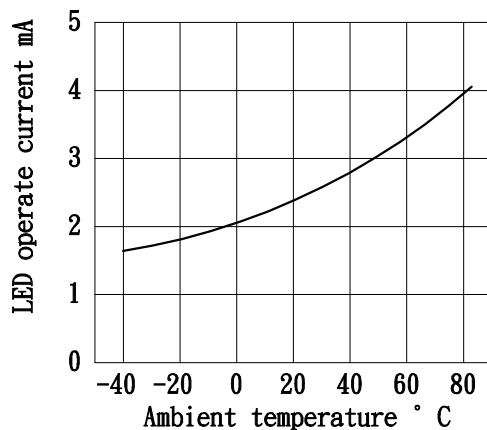
ELECTRONICS CO., LTD.

PHOTO MOS RELAYS:

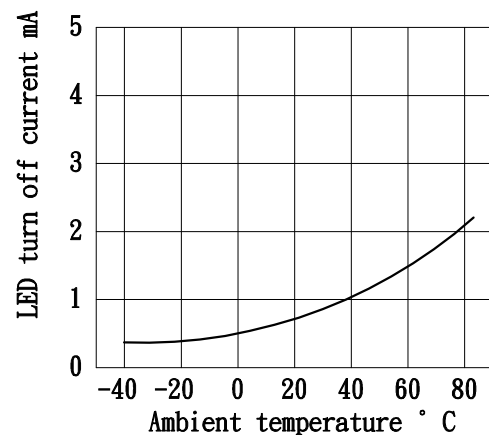
KAQW210

SHEET 4 OF 7

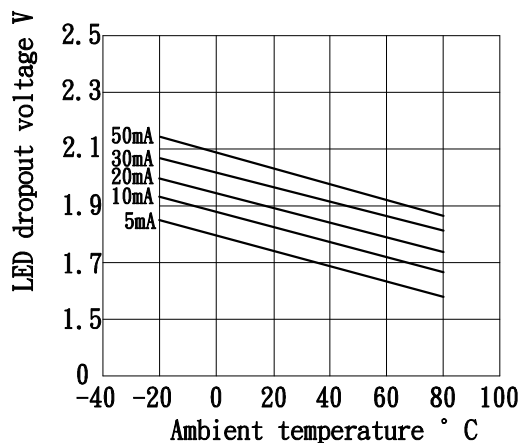
LED operate vs. ambient temperature
Load voltage: 350V(DC)
Continuous load current: 130mA(DC)



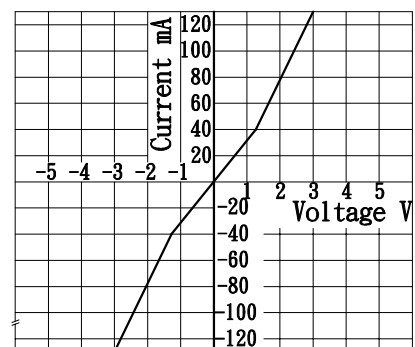
LED turn off current vs. ambient temperature
Load voltage: 350V(DC)
Continuous load current: 130mA(DC)



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 5, 7 and 6, 8 pin
Ambient temperature: 25° C



PRODUCT SPECIFICATION

COSMO

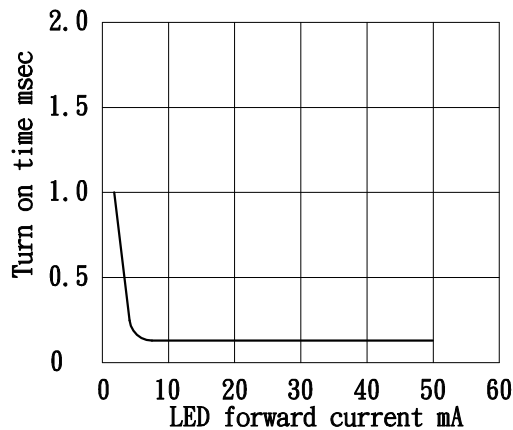
ELECTRONICS CO., LTD.

PHOTO MOS RELAYS:

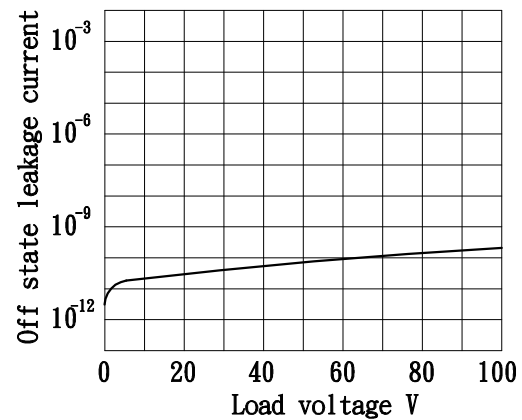
KAQW210

SHEET 5 OF 7

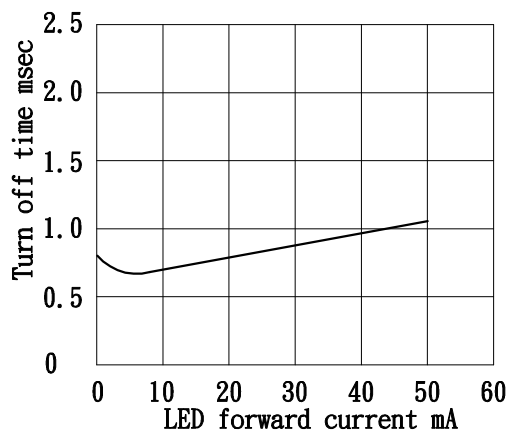
LED forward current vs. turn on time
Across terminals 5, 7 and 6, 8pin; Load voltage: 350V(DC); Continuous load current: 130mA(DC); Ambient temperature: 25° C



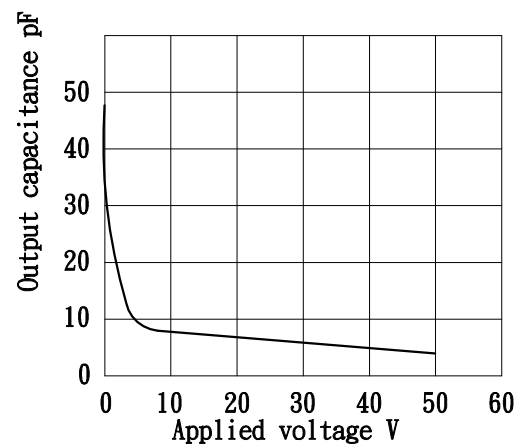
Off state leakage current
Across terminals 5, 7 and 6, 8pin
Ambient temperature: 25° C



LED forward current vs. turn off time
Across terminals 5, 7 and 6, 8pin; Load voltage: 350V(DC); Continuous load current: 130 mA(DC); Ambient temperature: 25° C



Applied voltage vs. output capacitance
Across terminals 5, 7 and 6, 8pin
Frequency: 1MHz; Ambient temperature: 25° C



PRODUCT SPECIFICATION

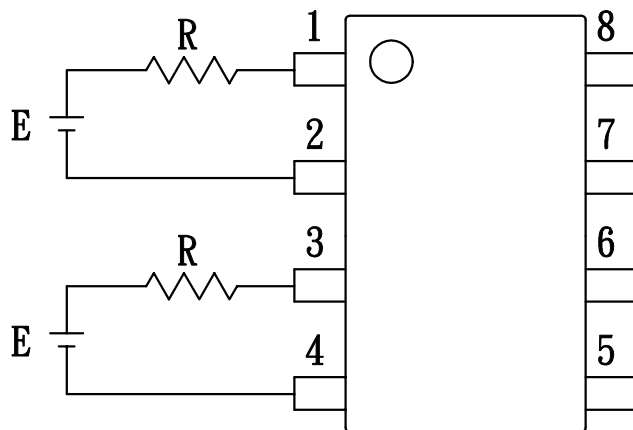
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USING METHODS

Examples of resistance value to
control LED forward current I_F

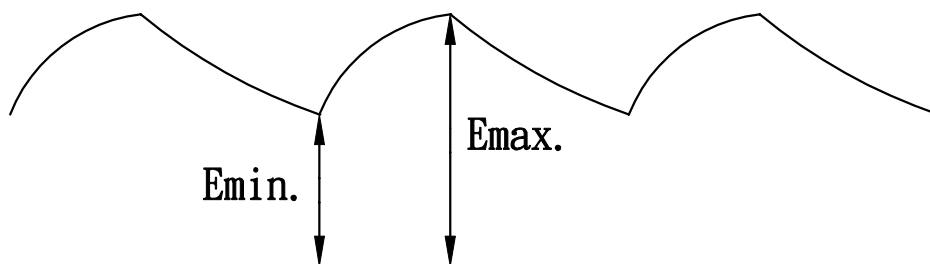
Photo MOSRELAY

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



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

COSMO ELECTRONICS CO., LTD.	PHOTO MOS RELAYS: KAQW210	SHEET 7 OF 7
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USING METHODS

Regulate the spike voltage generated on the inductive load as follows

