

# OKI electronic components

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## OCM4□6, 4□7 SERIES

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Dual-Channel/Package General-purpose Type Optical MOS Relay For AC/DC Load

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### GENERAL DESCRIPTION

The OCM4□6 and OCM4□7 Series are dual-channel, optical MOS relays for AC/DC load. The device is available in the same form factor as single-channel devices, with an 8-pin DIP and SMD-type (gull-wing) package.

### FEATURES

- Extremely low voltage control
- High reliability due to non-contact, optical operation
- No chattering or switch bounces
- No mechanical switching noises
- Small size and easy mounting (6-pin plastic DIP or SMD-type [gull-wing] package)

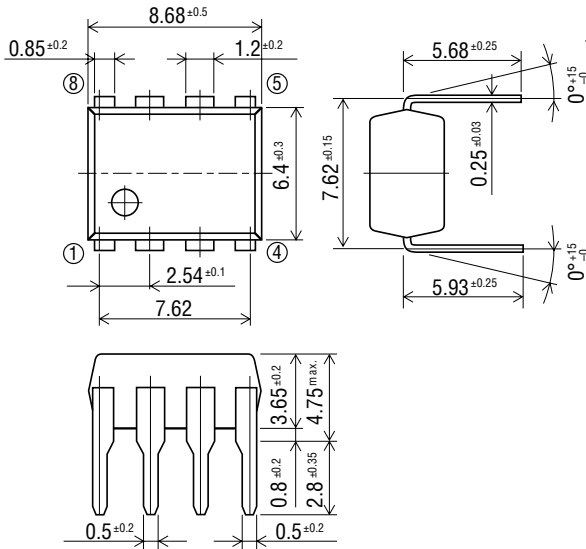
### APPLICATIONS

- Telecommunications equipment
- Measurement equipment
- Home electronics
- Automatic meter reading equipment
- Other applications requiring small size or high performance
- Other applications requiring non-contact switches

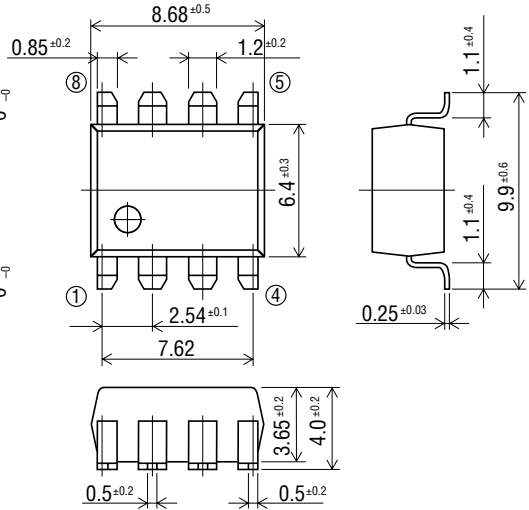
PIN CONFIGURATION

(Unit: mm)

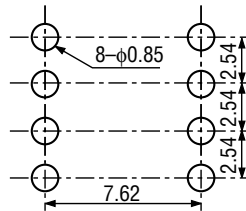
• DIP Type



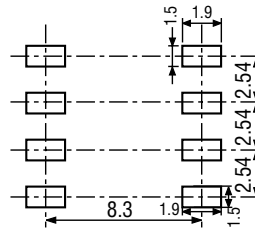
• SMD Type (gull-wing)



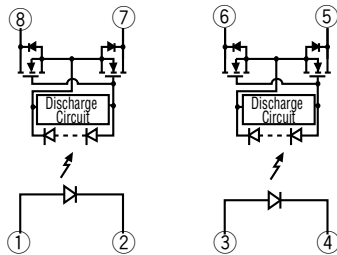
• Through hole (Bottom view)



• Mounting pad (Top view)



• Pin Connection Diagram



- 1: Anode (LED1)
- 2: Cathode (LED1)
- 3: Anode (LED2)
- 4: Cathode (LED2)
- 5: Drain (MOS FET2)
- 6: Drain (MOS FET2)
- 7: Drain (MOS FET1)
- 8: Drain (MOS FET1)

## ABSOLUTE MAXIMUM RATINGS

(Ambient temperature  $T_a=25^{\circ}\text{C}$ )

Product Name				OCM406	OCM416	OCM426	OCM436	OCM446		
Parameter	Symbol	Condition	Unit	OCM407	OCM417	OCM427	OCM437	OCM447		
Input Characteristics	Continuous Forward Current	$I_F$		mA					50	
	Derating Factor of Continuous Forward Current	$\Delta I_F$		mA/ $^{\circ}\text{C}$					Refer to [Derating Factor of Continuous Forward Current] of characteristics data	
	Peak Forward Current	$I_{FM}$	Pulse width 100 $\mu\text{s}$ Cycle 10 ms	A					0.5	
	Reverse Voltage	$V_R$		V					5	
	Power Dissipation	$P_{DL}$		mW					75	
Output Characteristics	Load Voltage	$V_{OFF}$		V					60    100    200    350    400	
	Load Current	$I_{ON}$		mA					250    200    150    100    75	
	Derating Factor of Load Current	$\Delta I_{ON}$		mA/ $^{\circ}\text{C}$					Refer to [Derating Factor of Load Current] of characteristics data	
	Surge Load Current	$I_{SUG}$	Pulse width 1 ms 1shot	A					0.5                      0.3	
	Power Dissipation	$P_D$		mW					300	
Total Power Dissipation				$P_{tot}$					mW	325
Isolation Voltage	$V_{IO}$		V(rms)	1500					OCM406    OCM416    OCM426    OCM436    OCM446	
				4000						
									OCM407    OCM417    OCM427    OCM437    OCM447	
Operating Temperature	$T_{opr}$		$^{\circ}\text{C}$					-40 to +85		
Storage Temperature	$T_{stg}$		$^{\circ}\text{C}$					-40 to +100		

## ELECTRICAL CHARACTERISTICS

(Ambient temperature Ta=25°C)

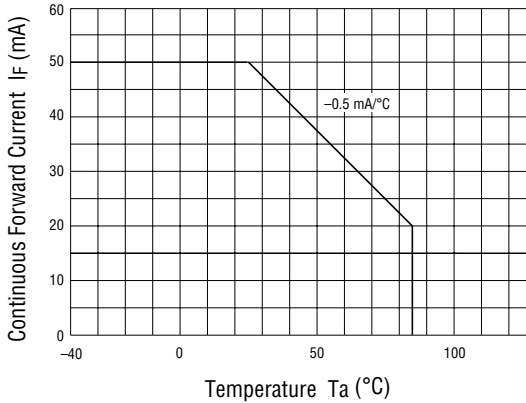
Product Name				OCM406	OCM416	OCM426	OCM436	OCM446	
Parameter	Symbol	Condition	Unit	OCM407	OCM417	OCM427	OCM437	OCM447	
Input Characteristics	Forward Voltage	$I_F=10\text{ mA}$	Min.	V	1.0				
			Max.		1.3				
	Reverse Voltage	$V_R=5\text{ V}$	Max.	$\mu\text{A}$	10				
	Operation Input Current*1	$I_{FA}$	$I_{ON}=100\text{ mA}$ or Rating	Max.	mA				
Recovery Input Current	$I_{FR}$	$V_{OFF}=\text{Rating}$ $I_{ON}=100\ \mu\text{A}$	Min.	mA					
Output Characteristics	On-resistance	$I_F=10\text{ mA}$ $I_{ON}=100\text{ mA}$ OCM406, 407, 416, 417 OCM426, 427 $I_{ON}=\text{Rating}$ *4 Time to flow current is within one second	Min.	$\Omega$	1.0	2.0	4.0	7.0	10
			Typ.		2.0	3.0	7.0	17	22
			Max.		3.0	4.0	10	24	33
	Off-state Leakage Current*2	$I_{OFF}$	$V_{OFF}=\text{Rating}$	Max.	$\mu\text{A}$				
Output Terminal Capacitance	$C_{OUT}$	$V_{OFF}=50\text{ V}$ $f=1\text{ MHz}$	Typ.	pF	35	25	15	12	10
Input-to-output Capacitance	$C_{IO}$	$f=1\text{ MHz}$	Typ.	pF					
Coupling Characteristics	Turn-on Time*3	$I_F=10\text{ mA}$ $I_{ON}=100\text{ mA}$ OCM406, 407 OCM416, 417 OCM426, 427	Typ.	ms	0.3				
			Max.		1.0				
	Turn-off Time*3	$t_{OFF}$	$I_{off}=50\text{ mA}$ OCM436, 437 OCM446, 447	Typ.	ms	0.2			
Max.	1.0								

\*1 : Can correspond to special specification  $I_{FA}<3.0\text{ mA}$ \*2 : Can correspond to special specification  $I_{OFF}<1.0\text{ nA}$ \*3 : Can correspond to special specification  $t_{ON} / t_{OFF}<0.5\text{ ms}$ 

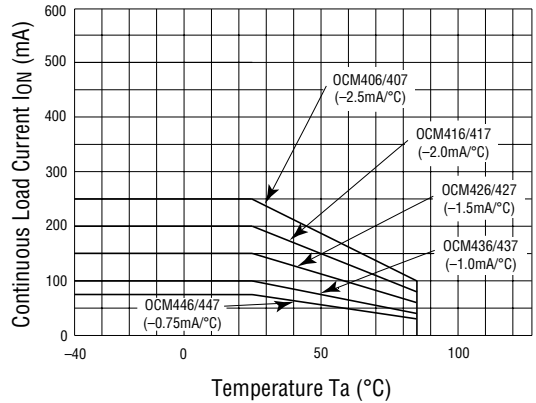
\*4 : Except (OCM406, 407, 416, 417, 426, 427)

**TYPICAL CHARACTERISTICS**

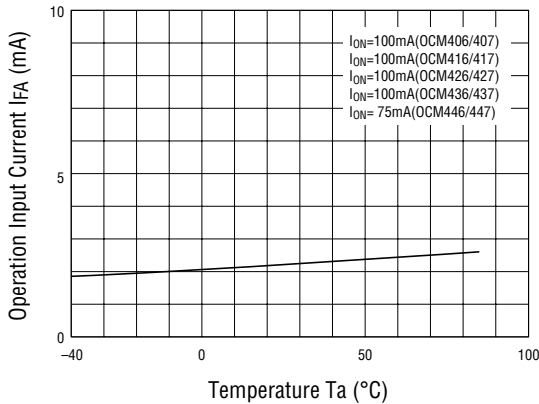
- Derating Factor of Continuous Forward Current



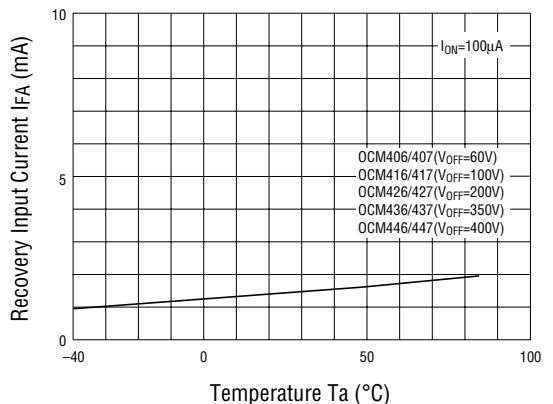
- Derating Factor of Load Current



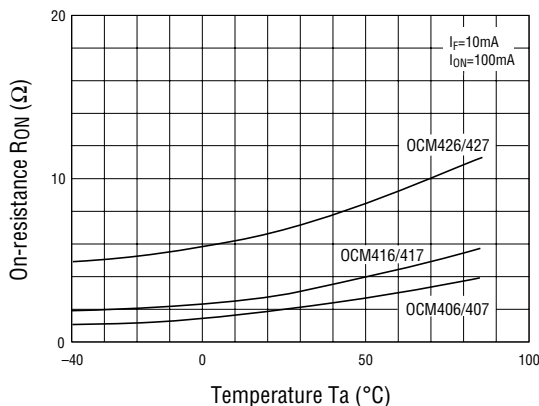
- Operation Input Current vs. Ambient Temperature



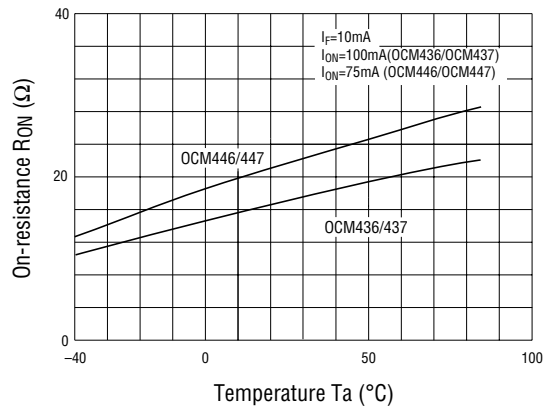
- Recovery Input Current vs. Ambient Temperature



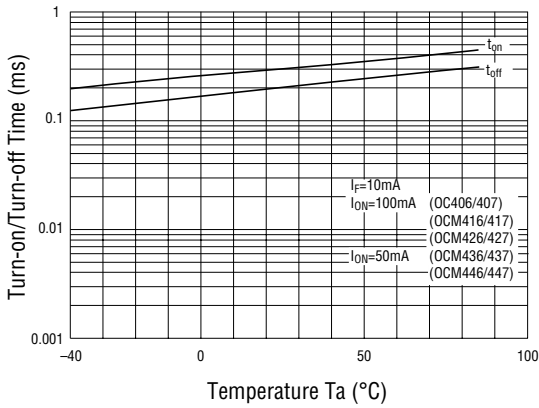
- On-resistance vs. Ambient Temperature 1



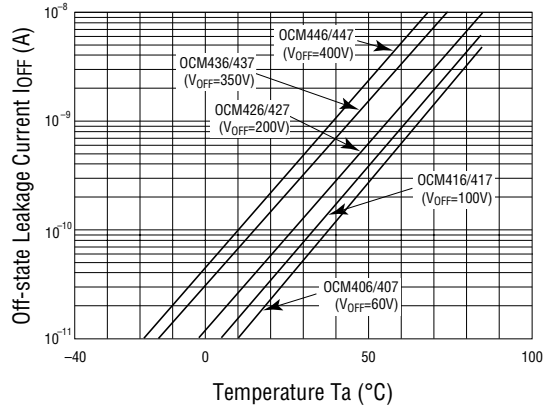
- On-resistance vs. Ambient Temperature 2



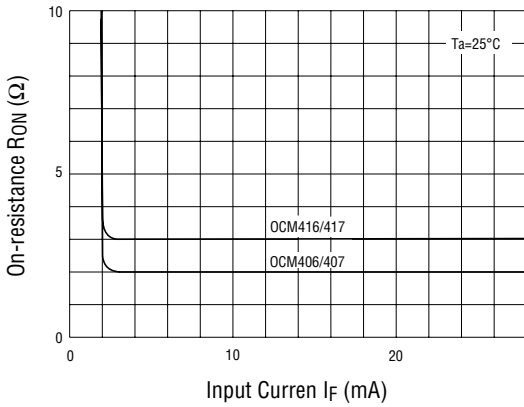
• Turn-on/Turn-off Time vs. Ambient Temperature



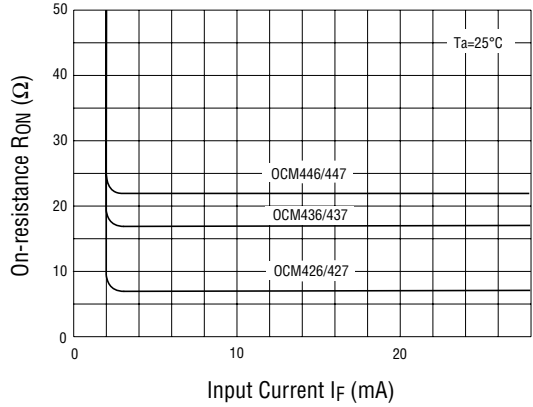
• Off-state Leakage Current vs. Ambient Temperature



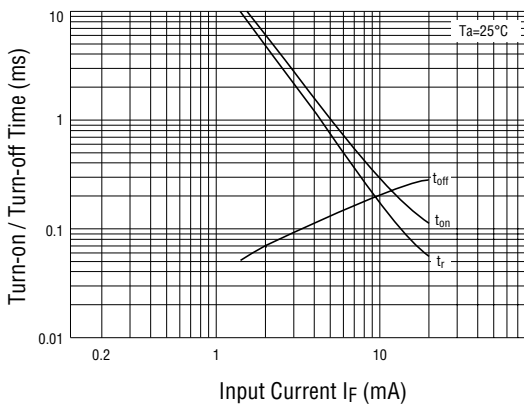
• Continuous Forward Current vs. On-resistance 1



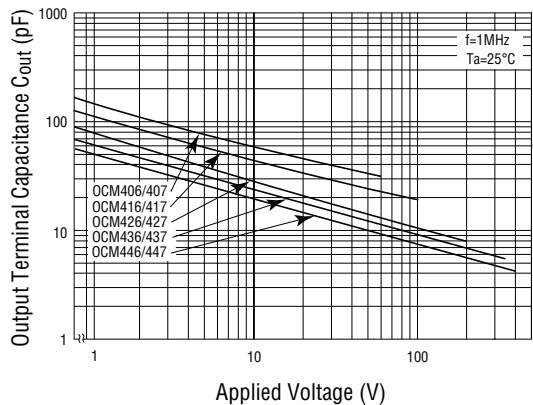
• Continuous Forward Current vs. On-resistance 2



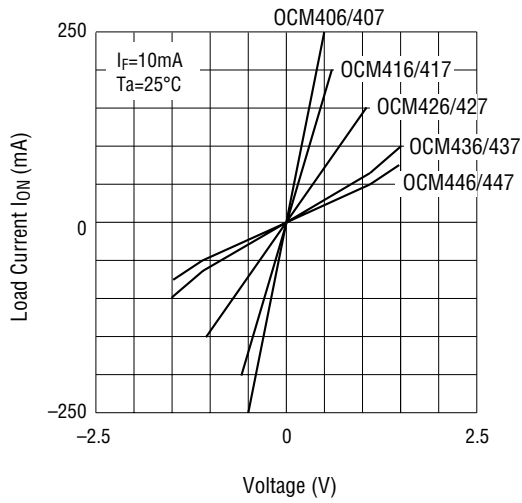
• Continuous Forward Current vs. Turn-on/Turn-off Time



• Output Terminal Capacitance vs. Applied Voltage



• **Load Current vs. Voltage**



• **Example Circuit for Measuring Turn-on/Turn-off Time**

