

OKI electronic components

OCM2□6, 2□7 SERIES

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

GENERAL DESCRIPTION

The OCM2□6 and OCM2□7 Series are optical MOS relays for AC/DC load that are lower in cost than the OCM2□0/2□1 Series. The input portion is an infrared light emitting diode. The output portion uses a combination of VD-MOS (Vertical Diffusion MOS) FETs and photodiode arrays. The device is encased in an extremely small 6-pin plastic DIP or SMD-type (gull-wing) package. The optical MOS relay switch may be used in applications that currently use mechanical relay switches, but offers smaller size, noise-free switching, and electronic circuit compatibility because of its non-mechanical operation. Optical MOS relay switches also dissipate less power than equivalent bipolar devices at lower switching frequencies.

FEATURES

- Extremely low voltage control
- High reliability due to non-contact and 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)

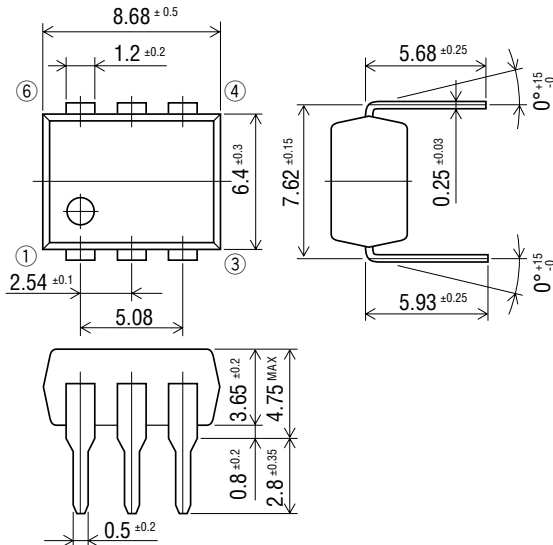
APPLICATIONS

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

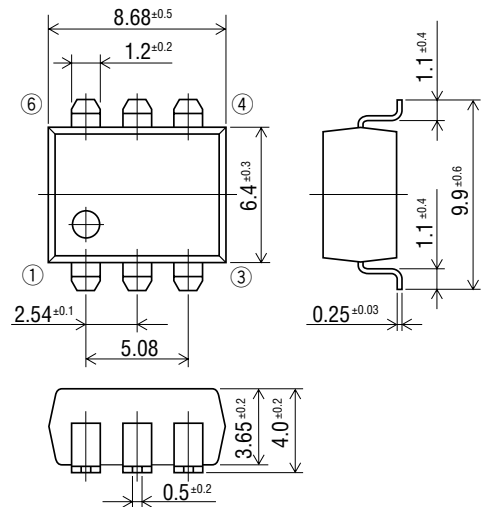
PIN CONFIGURATION

(Unit: mm)

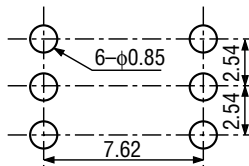
• DIP Type



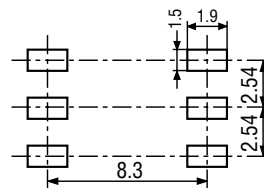
• SMD Type (gull-wing)



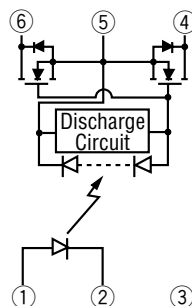
• Through hole (Bottom view)



• Mounting pad (Top view)



• Pin Connection Diagram



- 1: Anode (LED)
- 2: Cathode (LED)
- 3: NC
- 4: Drain (MOS FET)
- 5: Source (MOS FET)
- 6: Drain (MOS FET)

ABSOLUTE MAXIMUM RATINGS

(Ambient temperature Ta=25°C)

Product Name					OCM206	OCM216	OCM226	OCM236	OCM246
Parameter	Symbol	Condition	Unit		OCM207	OCM217	OCM227	OCM237	OCM247
Input Characteristics	Continuous Forward Current	I_F		mA	50				
	Derating Factor of Continuous Forward Current	ΔI_F		mA/°C	Refer to [Derating Factor of Continuous Forward Current] of characteristics data				
	Peak Forward Current	I_{FM}	Pulse width 100 μ 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	350	300	200	140	120
	Derating Factor of Load Current	ΔI_{ON}		mA/°C	Refer to [Derating Factor of Load Current] of characteristics data				
	Surge Load Current	I_{SUG}	Pulse width 1 ms 1shot	A	1.0			0.8	0.7
	Power Dissipation	P_D		mW	300				
	Total Power Dissipation	P_{tot}		mW	325				
Isolation Voltage					1500				
					OCM206	OCM216	OCM226	OCM236	OCM246
					4000				
					OCM207	OCM217	OCM227	OCM237	OCM247
Operating Temperature					T_{opr}				
Storage Temperature					T_{stg}				
					-40 to +85				
					-40 to +100				

ELECTRICAL CHARACTERISTICS

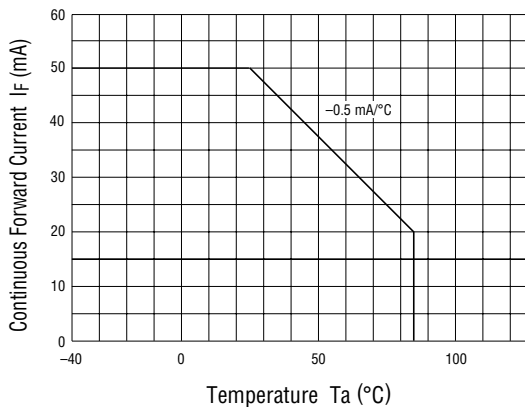
(Ambient temperature Ta=25°C)

Product Name					OCM206	OCM216	OCM226	OCM236	OCM246	
Parameter		Symbol	Condition	Unit	OCM207	OCM217	OCM227	OCM237	OCM247	
Input Characteristics	Forward Voltage	V _F	I _F =10 mA	Min.	V	1.0				
				Max.		1.3				
	Reverse Current	I _R	V _R =5 V	Max.	μA	10				
	Operation Input Current*1	I _{FA}	I _{ON} =100 mA	Max.	mA	5				
	Recovery Input Current	I _{FR}	V _{OFF} =Rating I _{ON} =100 μA	Min.	mA	0.2				
Output Characteristics	On-resistance	R _{ON}	I _F =10 mA	Min.	Ω	1.0	2.0	4.0	7.0	10
			I _{ON} =Rating	Typ.		2.0	3.0	7.0	17	22
			Time to flow current is within one second	Max.		3.0	4.0	10	24	33
	Off-state Leakage Current*2	I _{OFF}	V _{OFF} =Rating	Max.	μA	1.0				
	Output Terminal Capacitance	C _{OUT}	V _{OFF} =50 V f=1 MHz	Typ.	pF	35	25	15	12	10
Coupling Characteristics	Input-to-output Capacitance	C _{IO}	f=1 MHz	Typ.	pF	1.3				
	Turn-on Time*3	t _{ON}	I _F =10 mA I _{ON} =100 mA	Typ.	ms	0.3				
						1.0				
	Turn-off Time*3	t _{OFF}	I _{ON} =50 mA	Typ.	ms	0.2				
0.5										

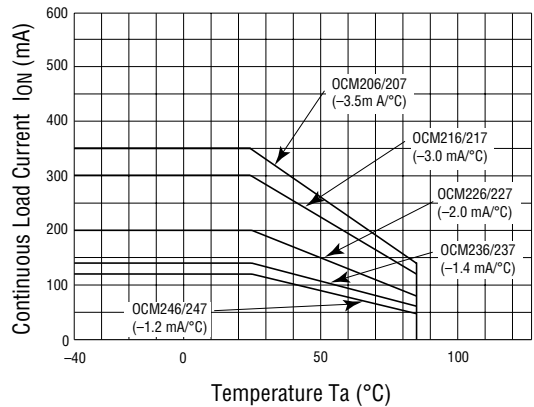
*1: Can correspond to special specification $I_{FA}<3.0\text{ mA}$ *2: Can correspond to special specification $I_{OFF}<1.0\text{ nA}$ *3: Can correspond to special specification $t_{ON} / t_{OFF}<0.5\text{ ms}$

TYPICAL CHARACTERISTICS

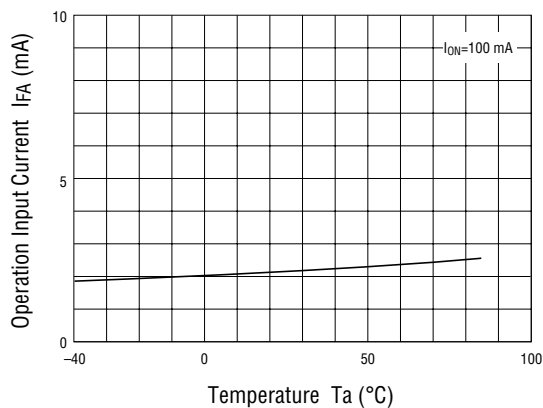
- Derating Factor of Continuous Forward Current



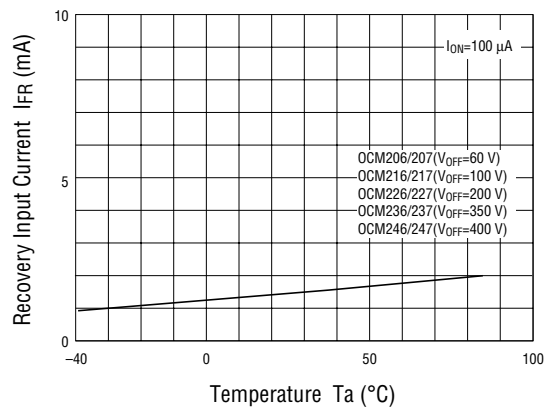
- Derating Factor of Load Current



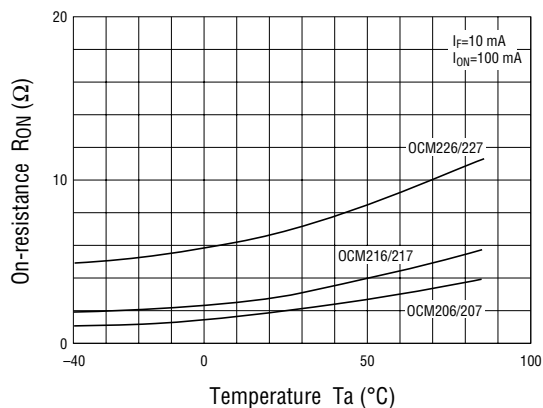
- Operation Input Current vs. Ambient Temperature



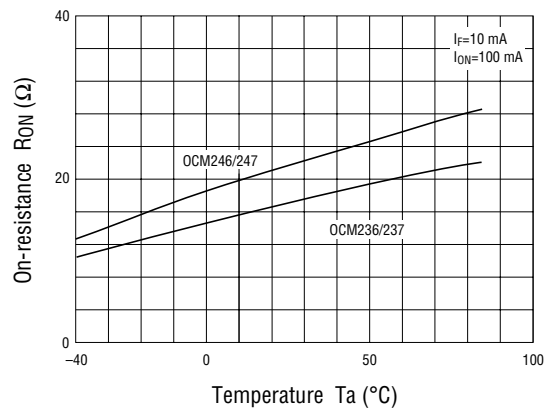
- Recovery Input Current vs. Ambient Temperature



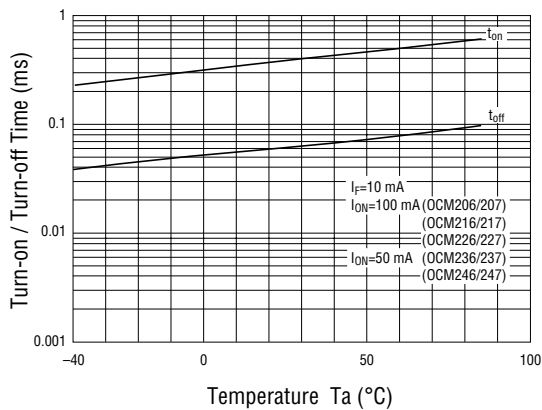
- On-resistance vs. Ambient Temperature 1



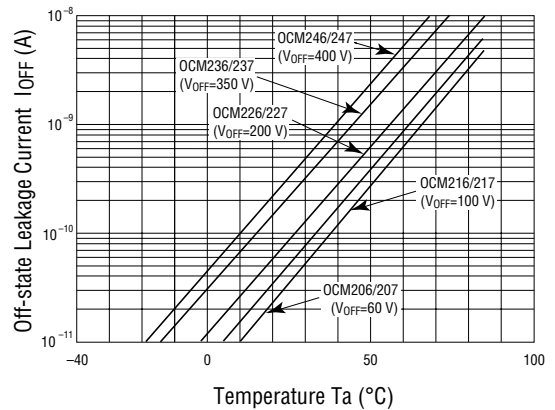
- On-resistance vs. Ambient Temperature 2



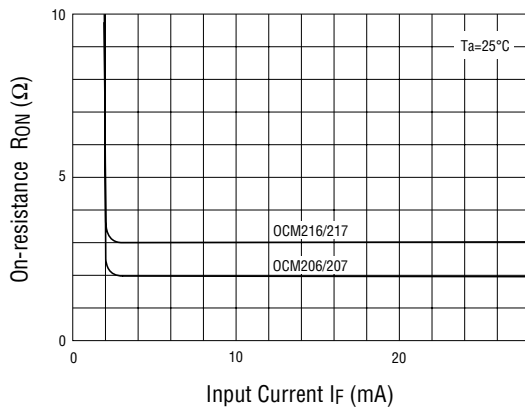
- Turn-on/Turn-off Time vs. Ambient Temperature



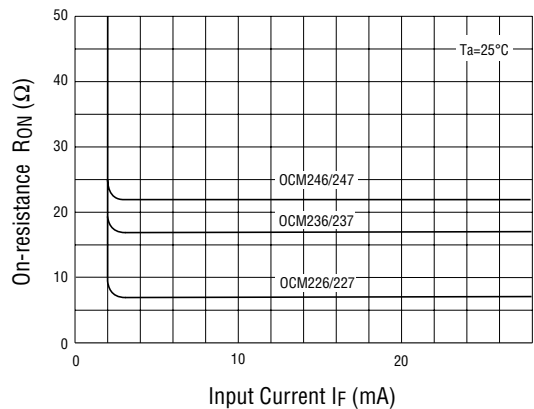
- Off-state Leakage Current vs. Ambient Temperature



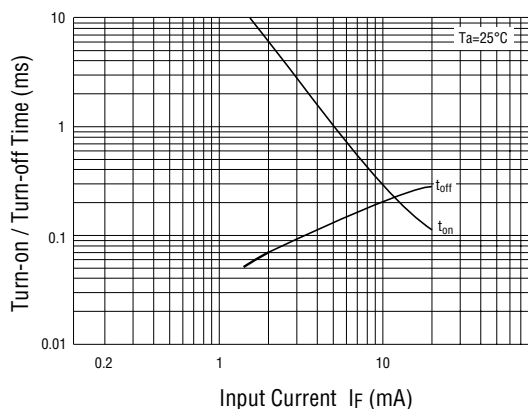
- Continuous Forward Current vs. On-resistance 1



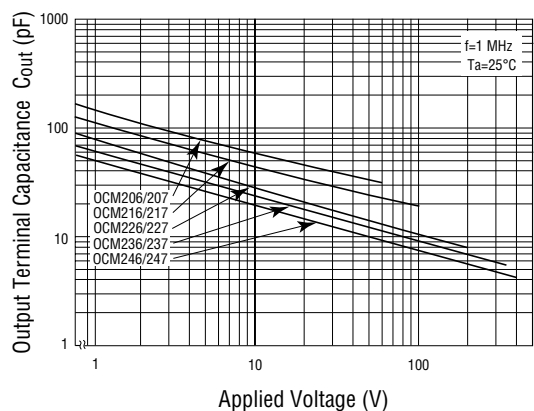
- Continuous Forward Current vs. On-resistance 2



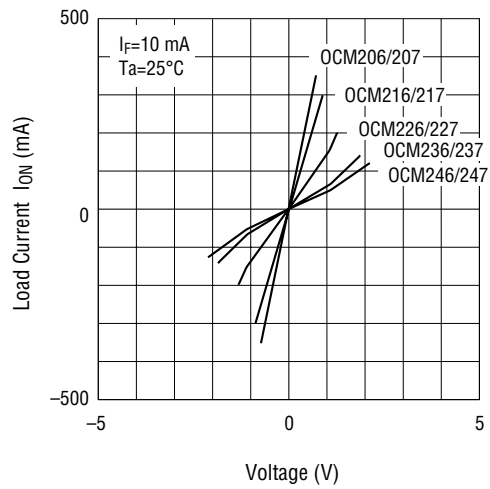
- Continuous Forward Current vs. Turn-on/Turn-off Time



- Output Terminal Capacitance vs. Applied Voltage



- Load Current vs. Voltage



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

