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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)

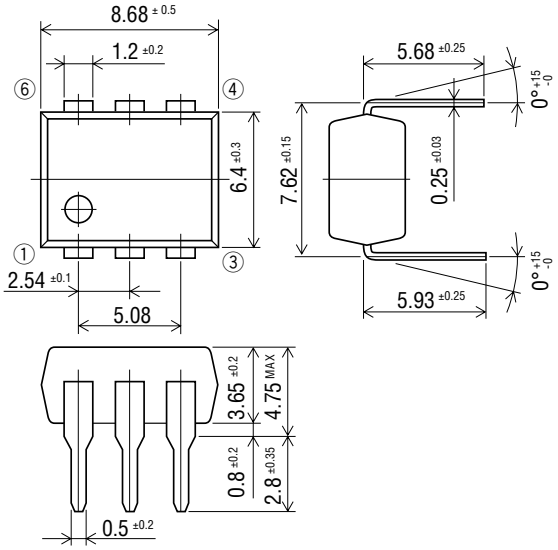
APPLICATIONS

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

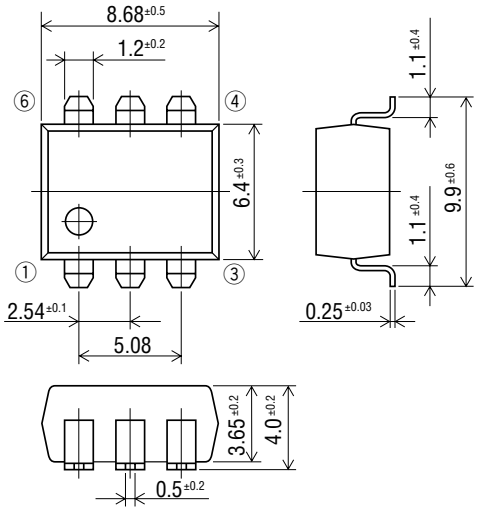
PIN CONFIGURATION

(Unit: mm)

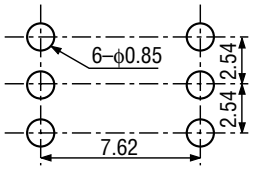
• DIP Type



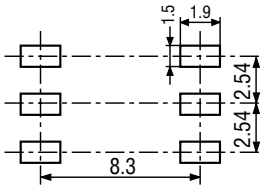
• SMD Type (gull-wing)



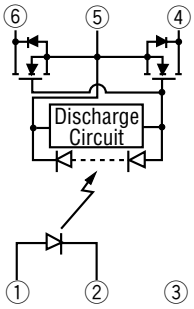
• Through hole (Bottom view)



• 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 / OCM207	OCM216 / OCM217	OCM226 / OCM227	OCM236 / OCM237	OCM246 / OCM247
	Parameter	Symbol	Condition	Unit					
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 µs 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		V_{IO}		V(rms)	1500				
					OCM206	OCM216	OCM226	OCM236	OCM246
					4000				
					OCM207	OCM217	OCM227	OCM237	OCM247
Operating Temperature		T_{opr}		°C	–40 to +85				
Storage Temperature		T_{stg}		°C	–40 to +100				

ELECTRICAL CHARACTERISTICS

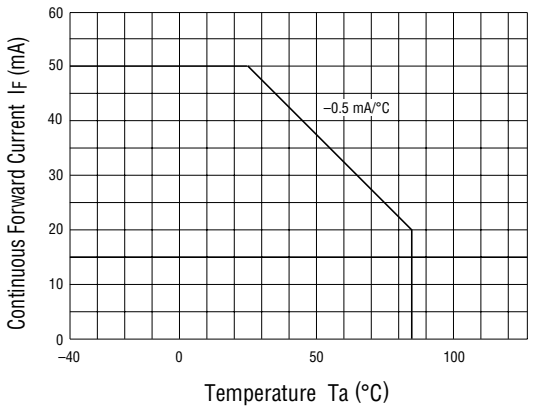
(Ambient temperature Ta=25°C)

	Product Name					OCM206 OCM207	OCM216 OCM217	OCM226 OCM227	OCM236 OCM237	OCM246 OCM247
	Parameter	Symbol	Condition		Unit					
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 I_{ON}=Rating Time to flow current is within one second	Min.	Ω	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}=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 OCM206, 207 OCM216, 217 OCM226, 227 I_{ON}=50 mA OCM236, 237 OCM246, 247	Typ.	ms	0.3				
				Max.		1.0				
	Turn-off Time *3	t_{OFF}		Typ.	ms	0.2				
				Max.		0.5				

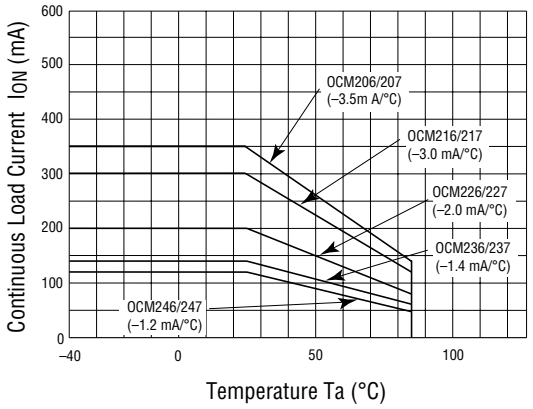
*1: Can correspond to special specification I_{FA}<3.0 mA
*2: Can correspond to special specification I_{OFF}<1.0 nA
*3: Can correspond to special specification t_{ON} / t_{OFF}<0.5 ms

TYPICAL CHARACTERISTICS

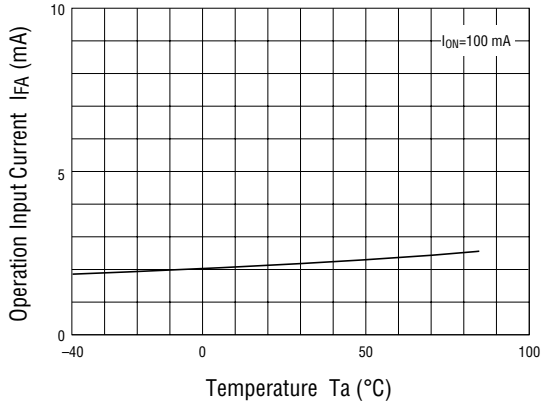
- **Derating Factor of Continuous Forward Current**



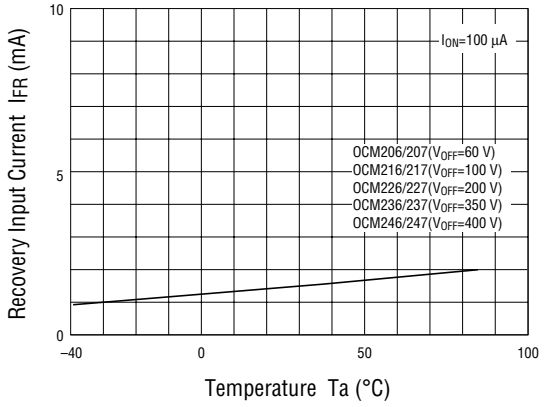
- **Derating Factor of Load Current**



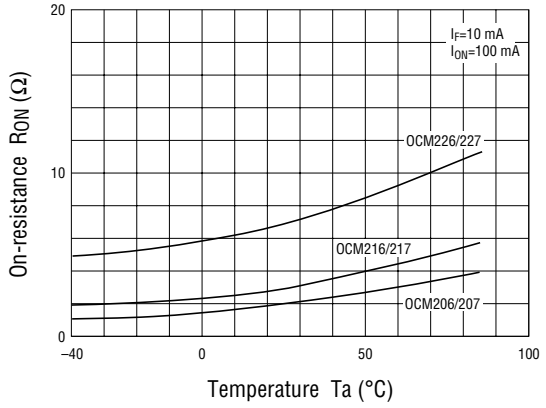
- **Operation Input Current vs. Ambient Temperature**



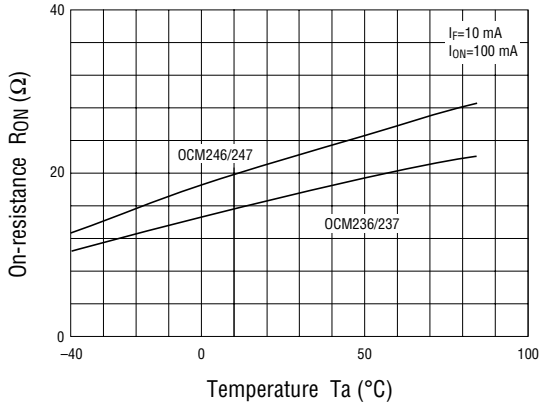
- **Recovery Input Current vs. Ambient Temperature**



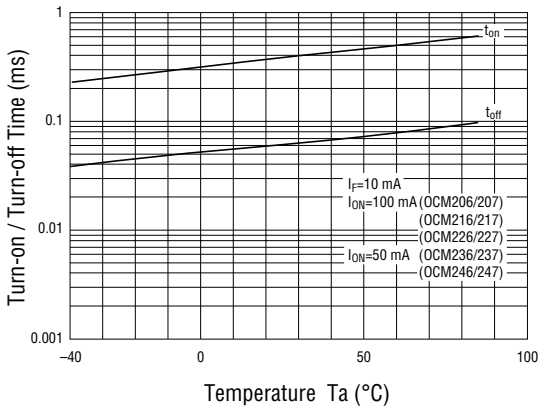
- **On-resistance vs. Ambient Temperature 1**



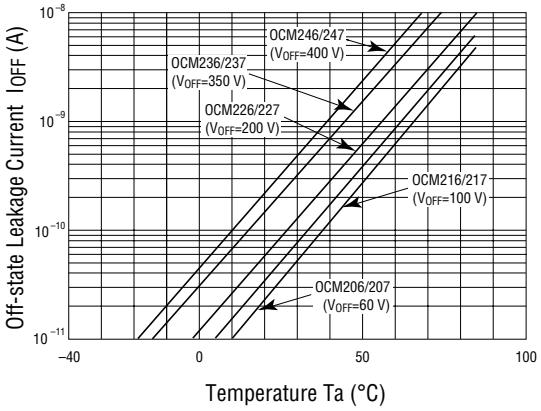
- **On-resistance vs. Ambient Temperature 2**



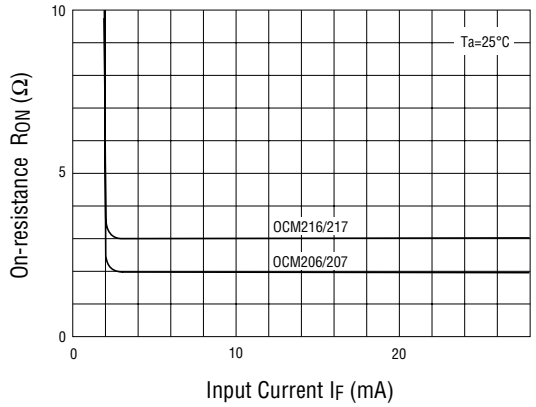
- **Turn-on/Turn-off Time vs. Ambient Temperature**



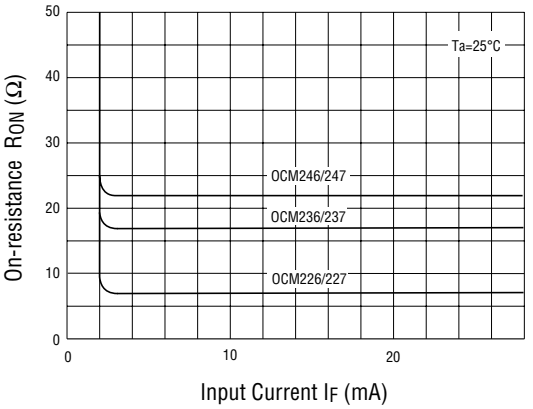
- **Off-state Leakage Current vs. Ambient Temperature**



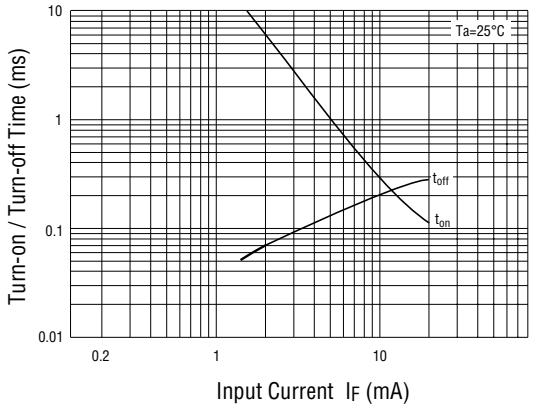
- **Continuous Forward Current vs. On-resistance 1**



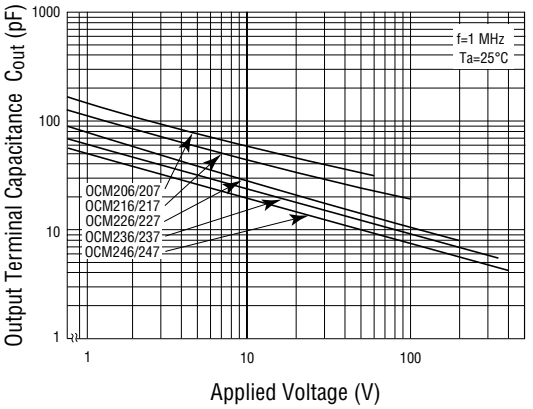
- **Continuous Forward Current vs. On-resistance 2**



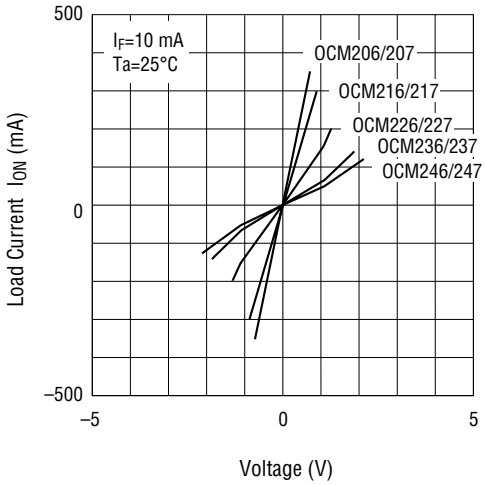
- **Continuous Forward Current vs. Turn-on/Turn-off Time**



- **Output Terminal Capacitance vs. Applied Voltage**



- **Load Current vs. Voltage**



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