OCM 4X8 SERIES

Dual-Channel, Bidirectional Optical MOS Relay with Two Channels

GENERAL DESCRIPTION

The OCM4X8 Series are dual-channel, bidirectional (AC) optical MOS relays. The device is available in the same form factor as single-channel devices, with 8-pin DIP and F-type (gull wing) package.

FEATURES

- Low offset voltage
- Large range of current control
- Non-contact, optical operation
- No chattering or switch bounces
- No mechanical switching noises
- Small size
- Low "on" resistance

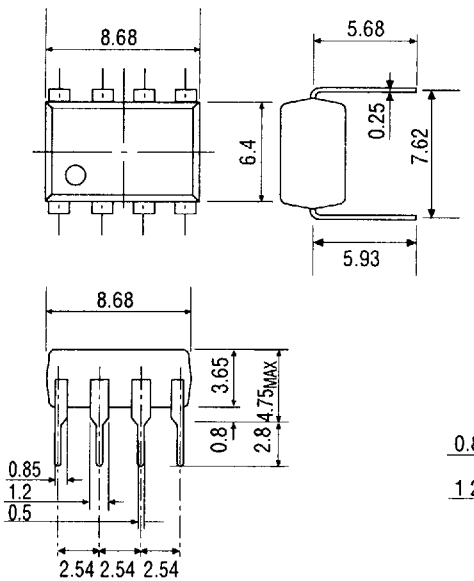
APPLICATIONS

- Computer cards and portable computing applications (such as PCMCIA cards)
- Telecommunications equipment
- Measurement equipment
- Home electronics
- Automatic meter reading equipment
- Telemetry systems
- Other applications requiring small size or high performance
- Other applications requiring non-contact switches

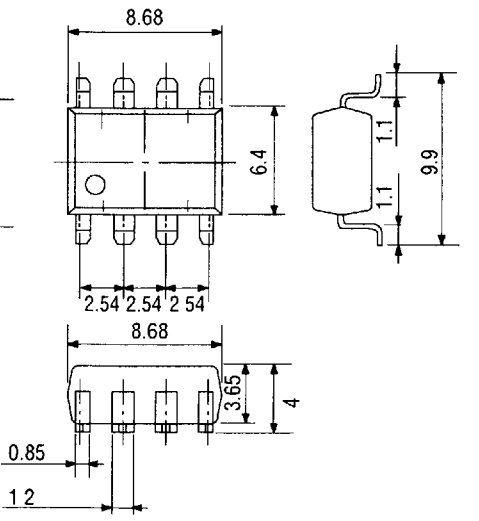
PIN CONFIGURATION

(Unit: mm)

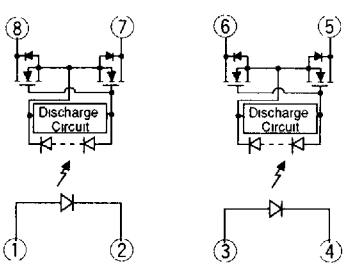
• DIP



• F type (Gull Wing)



• 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 Ta=25°C)

Parameter			Symbol	Rating	Unit
LED	Forward Current		I_F	50	mA
	Derating		—	See characteristics curve	mA/°C
	Peak Forward Current *1		I_{FM}	0.5	A
	Reverse Voltage		V_R	5	V
	Power Dissipation		P_{DL}	75	mW
FET	Load Voltage	OCM408	V_D	60	V
		OCM418		100	
		OCM428		200	
		OCM448		400	
	Continuous Load Current	OCM408	I_D	200	mA
		OCM418		150	
		OCM428		100	
		OCM448		50	
	Derating		—	See characteristics curve	mA/°C
	Surge Load Current *2	OCM408	I_{SUG}	0.5	A
		OCM418			
		OCM428			
		OCM448		0.3	
	Power Dissipation		P_D	400	mW
Total Power Dissipation			P_{TOT}	450	mW
Isolation Voltage			V_{I-O}	1500	V
Operating Temperature			T_{opr}	−40 to +85	°C
Storage Temperature			T_{stg}	−40 to +100	°C

*1 Pulse width 100 μs, cycle 10 ms
*2 Pulse width 1 ms, 1 shot

ELECTRICAL CHARACTERISTICS

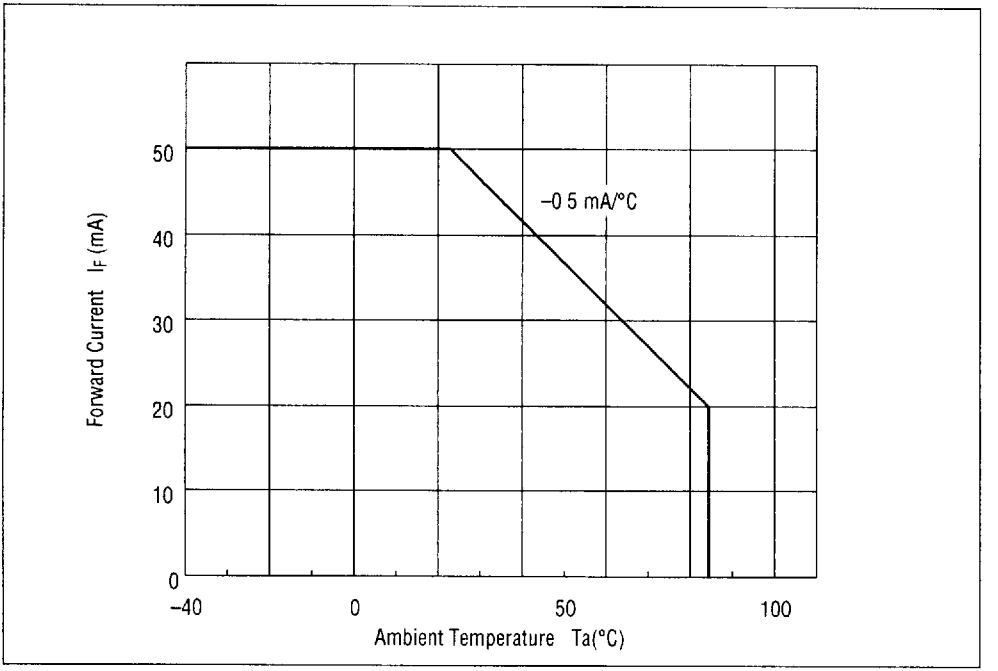
(Ambient Temperature Ta=25°C)

Parameter			Symbol	Test Condition	Min.	Typ.	Max.	Unit	Note
LED	Forward Voltage		V_F	I_F=10 mA	1.0	—	1.3	V	—
	Reverse Current		I_R	V_R=5 V	—	—	10	μA	—
FET	ON Resistance	OCM408	R_{ON}	I_F=10 mA I_D=Rating	3 0	4 0	5.0	Ω	Time to flow current is within one second
		OCM418			3 0	5 0	7 0		
		OCM428			8.0	12.0	16.0		
		OCM448			30.0	50.0	70.0		
	Leakage Current *1	OCM408	I_{LEAK}	V_D=60 V	—	—	1.0	μA	—
		OCM418		V_D=100 V					
		OCM428		V_D=200 V					
		OCM448		V_D=400 V					
	Output Capacitance	OCM408	C_{OUT}	V_D=50 V f=1 MHz	—	15	—	pF	—
		OCM418			—	10	—		
		OCM428			—	8	—		
		OCM448			—	5	—		
Coupled	Operating LED Current *2		$I_{F\,ON}$	I_D=Rating	—	—	5	mA	—
	Returning LED Current	OCM408	$I_{F\,OFF}$	V_D=60 V I_D=100 μA	0 2	—	—	mA	—
		OCM418		V_D=100 V I_D=100 μA					
		OCM428		V_D=200 V I_D=100 μA					
		OCM448		V_D=400 V I_D=100 μA					
	I/O Capacitance		C_{I-O}	f=1 MHz	—	1.3	—	pF	—
	Turn ON Time *3		t_{ON}	I_F=10 mA I_D=Rating R_L=5 kΩ	—	0.3	1.0	ms	—
	Turn OFF Time *3		t_{OFF}		—	0.2	1.0	ms	—

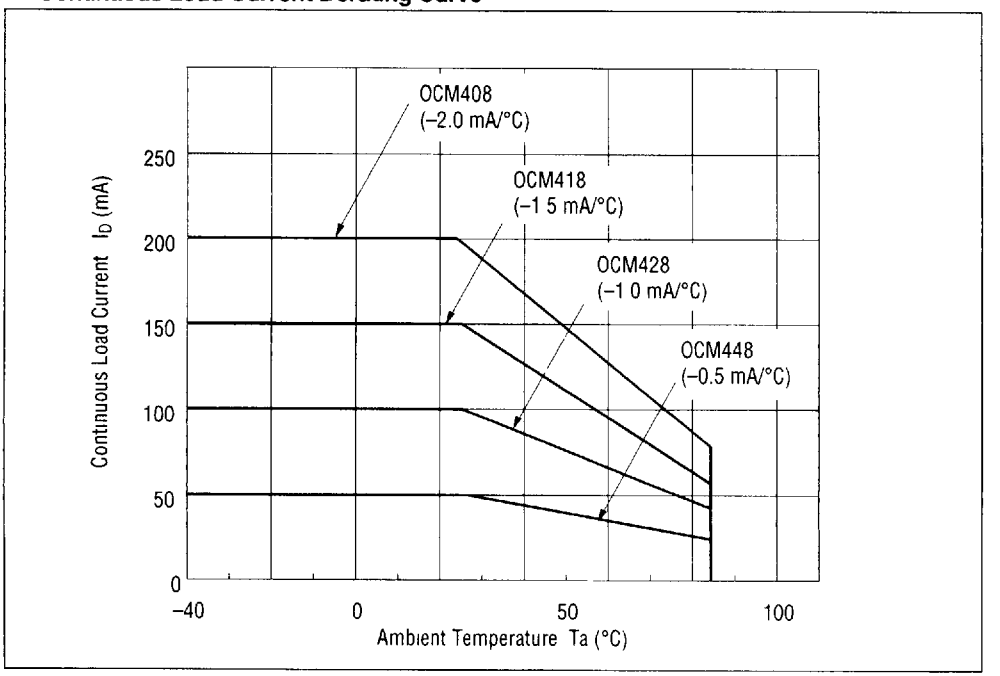
*1 Can correspond to special specification I_{LEAK} < 0.1 nA
*2 Can correspond to special specification I_{FON} < 3.0 mA
*3 Can correspond to special specification t_{ON-OFF} < 0 5 ms

TYPICAL CHARACTERISTICS

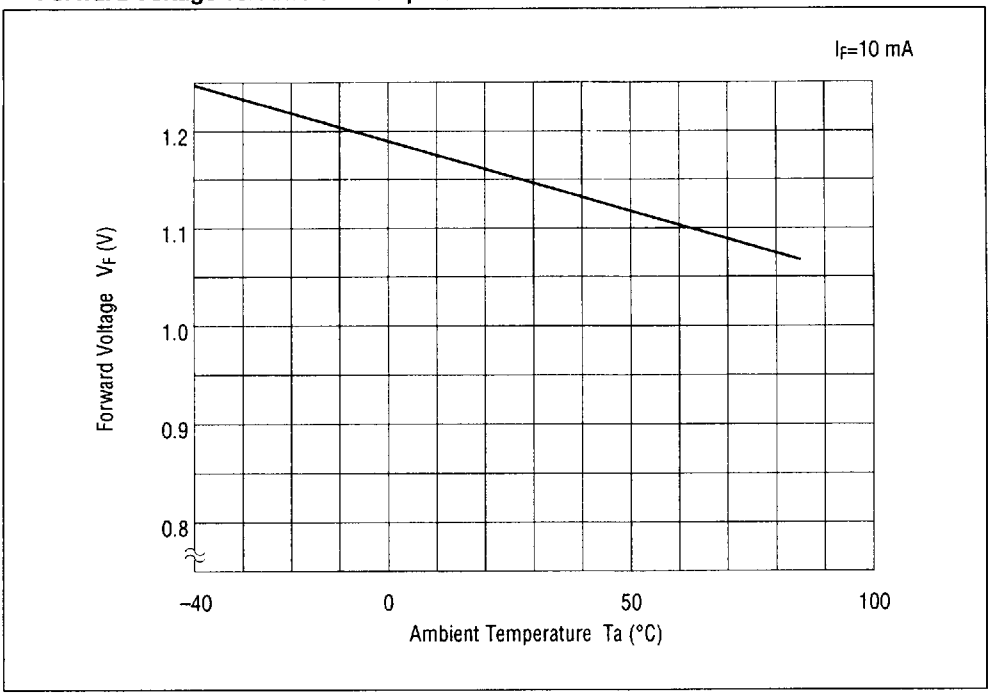
- **Forward Current Derating Curve**



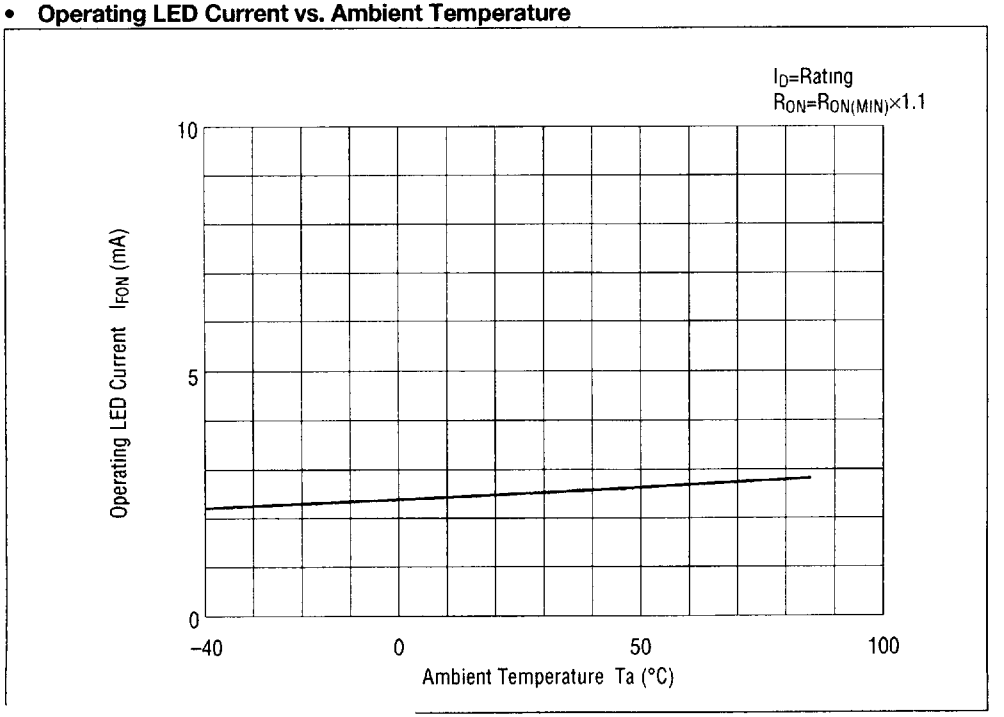
- **Continuous Load Current Derating Curve**



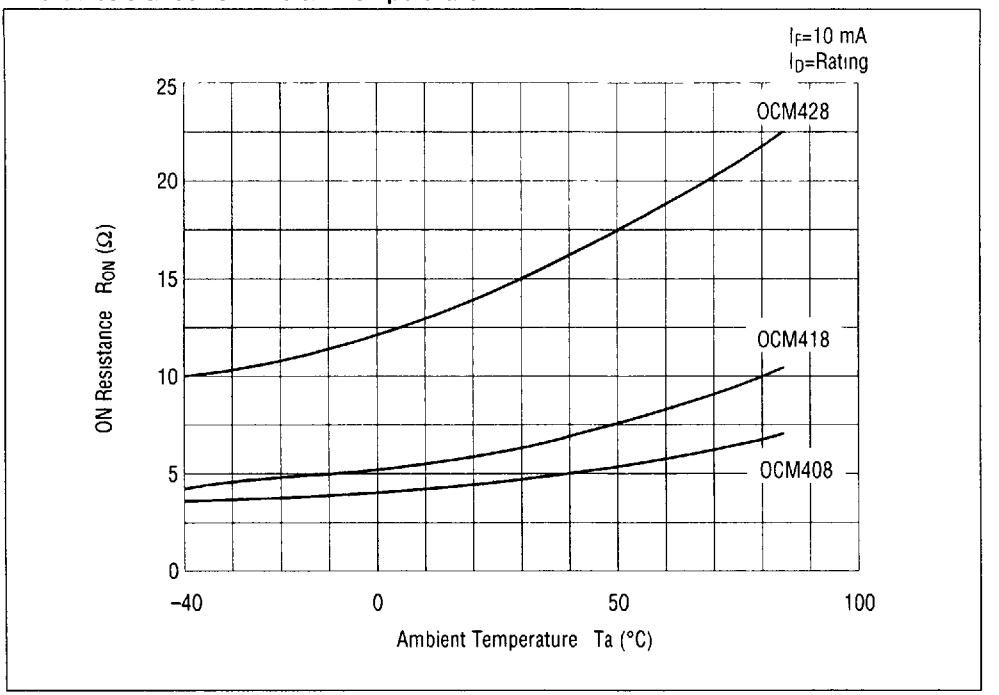
- **Forward Voltage vs. Ambient Temperature**



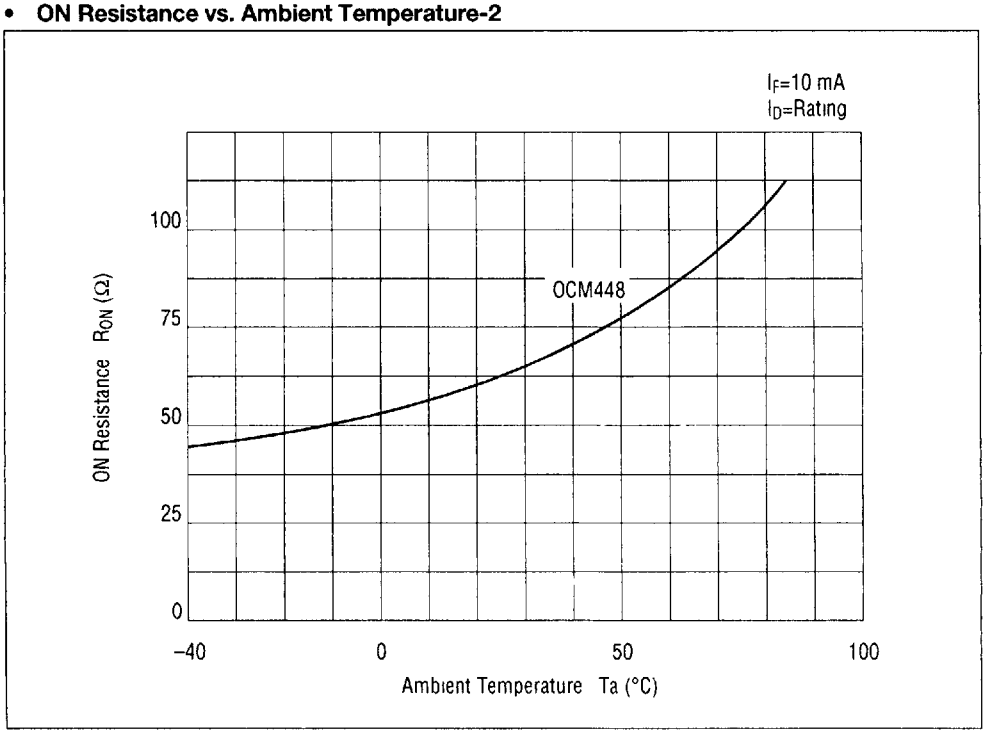
- **Operating LED Current vs. Ambient Temperature**



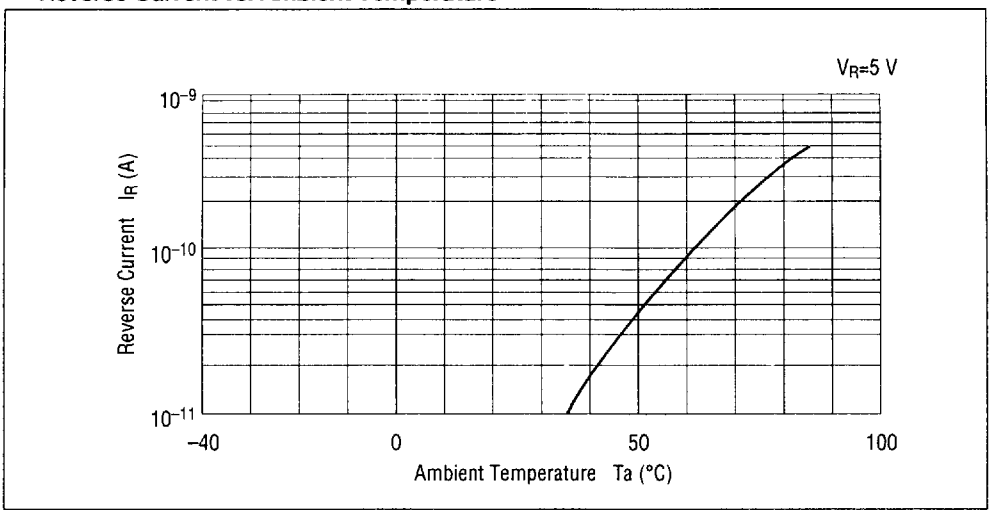
- **ON Resistance vs. Ambient Temperature-1**



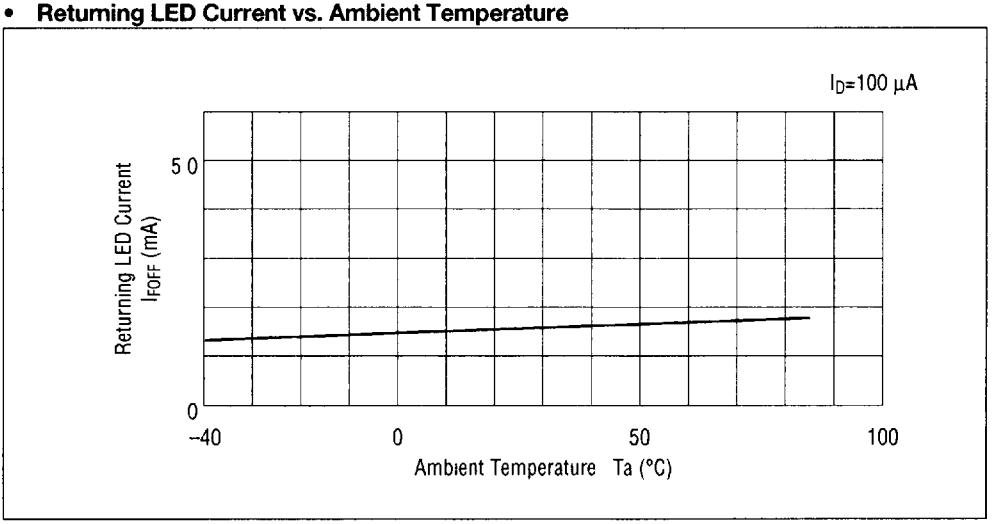
- **ON Resistance vs. Ambient Temperature-2**



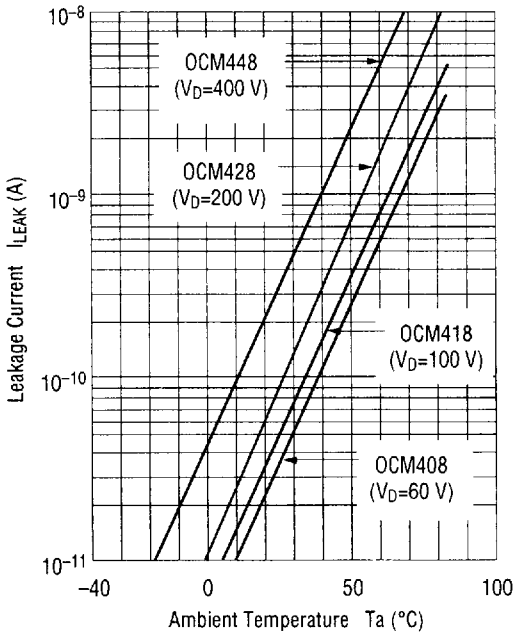
- **Reverse Current vs. Ambient Temperature**



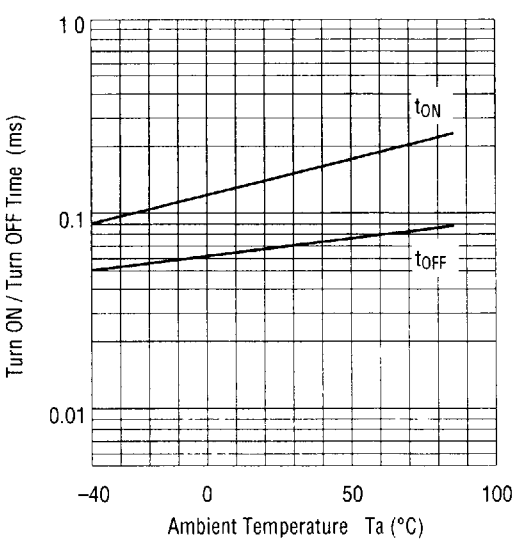
- **Returning LED Current vs. Ambient Temperature**



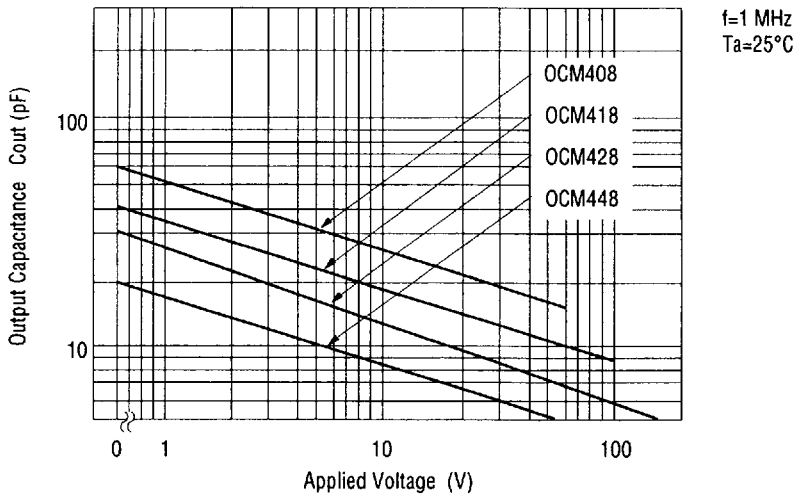
- **Leakage Current vs. Ambient Temperature**



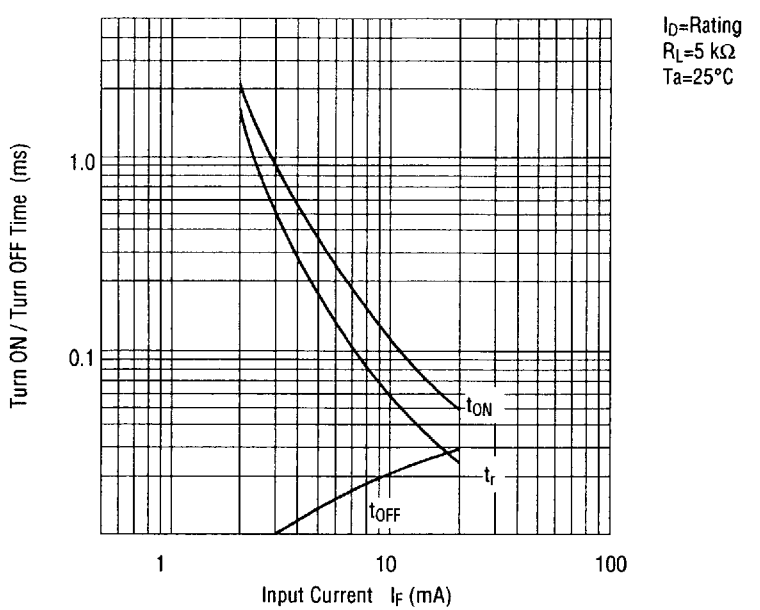
- **Turn ON / Turn OFF Time vs. Ambient Temperature**



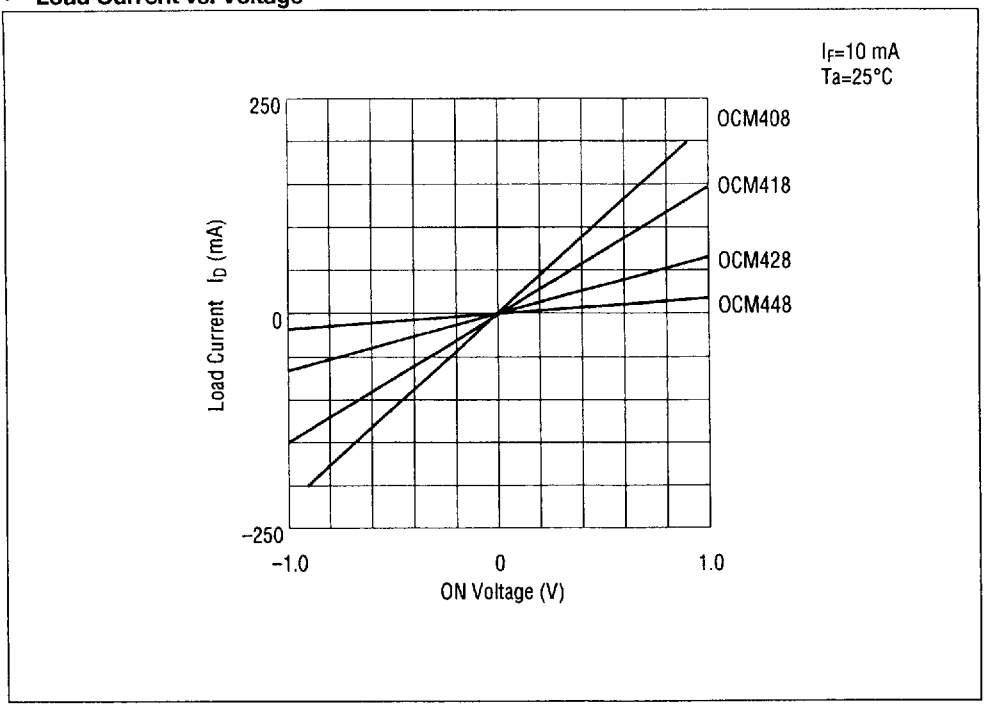
- **Output Capacitance vs. Applied Voltage**



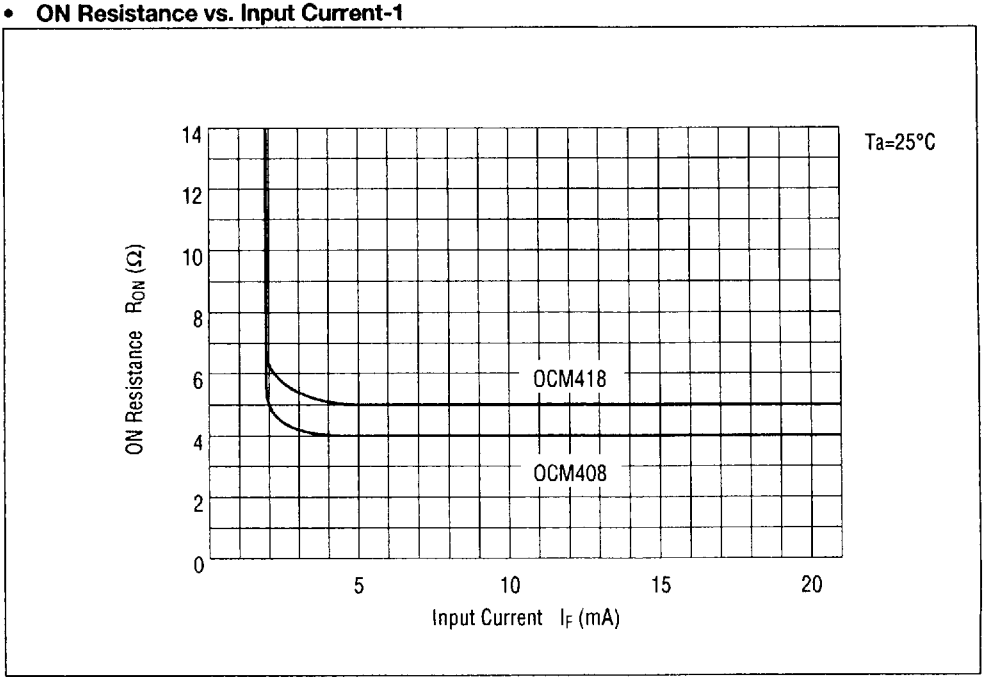
- **Turn ON / Turn OFF Time vs. Input Current**



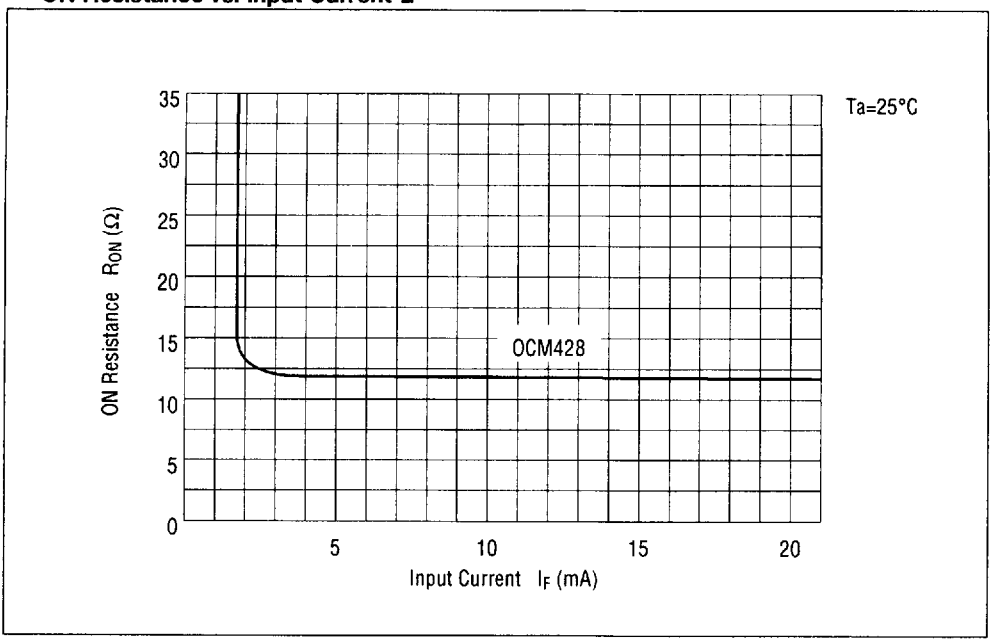
- **Load Current vs. Voltage**



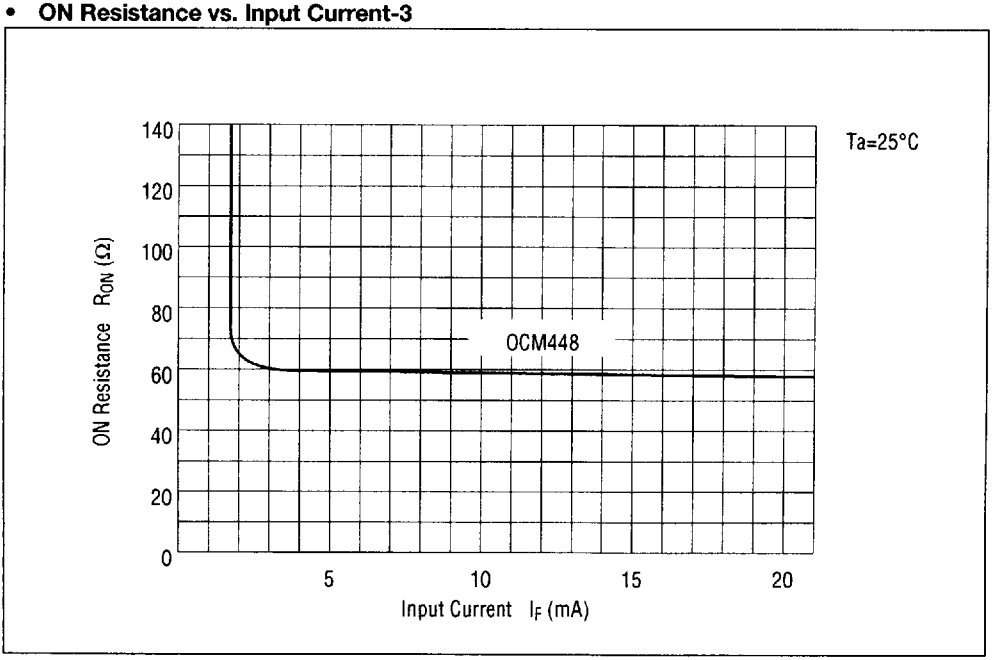
- **ON Resistance vs. Input Current-1**



- **ON Resistance vs. Input Current-2**



- **ON Resistance vs. Input Current-3**



- **Circuit for Measuring Response Characteristics**