

OKI electronic components

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

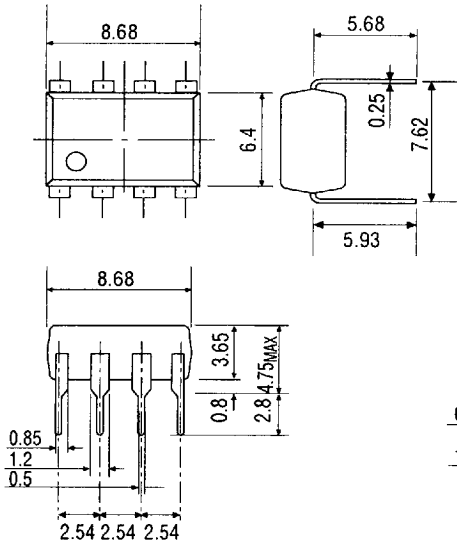
APPLICATIONS

- 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

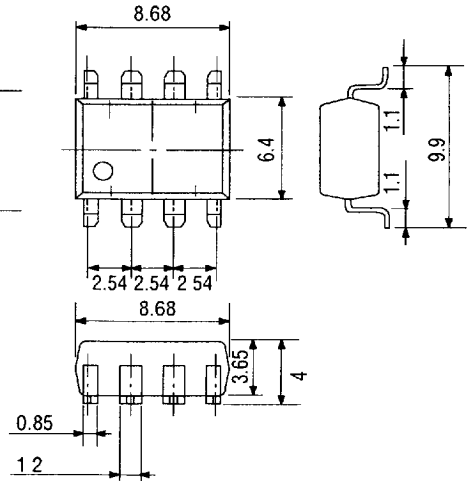
PIN CONFIGURATION

(Unit: mm)

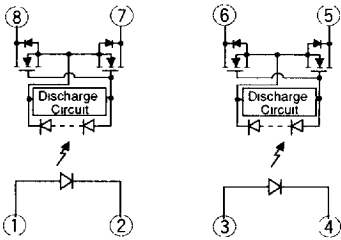
• DIP



• 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 $T_a=25^{\circ}\text{C}$)

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	V_D	OCM408	60	V
			OCM418	100	
			OCM428	200	
			OCM448	400	
	Continuous Load Current	I_D	OCM408	200	mA
			OCM418	150	
			OCM428	100	
			OCM448	50	
	Derating	—	See characteristics curve	mA/°C	
	Surge Load Current *2	I_{SUG}	OCM408	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)

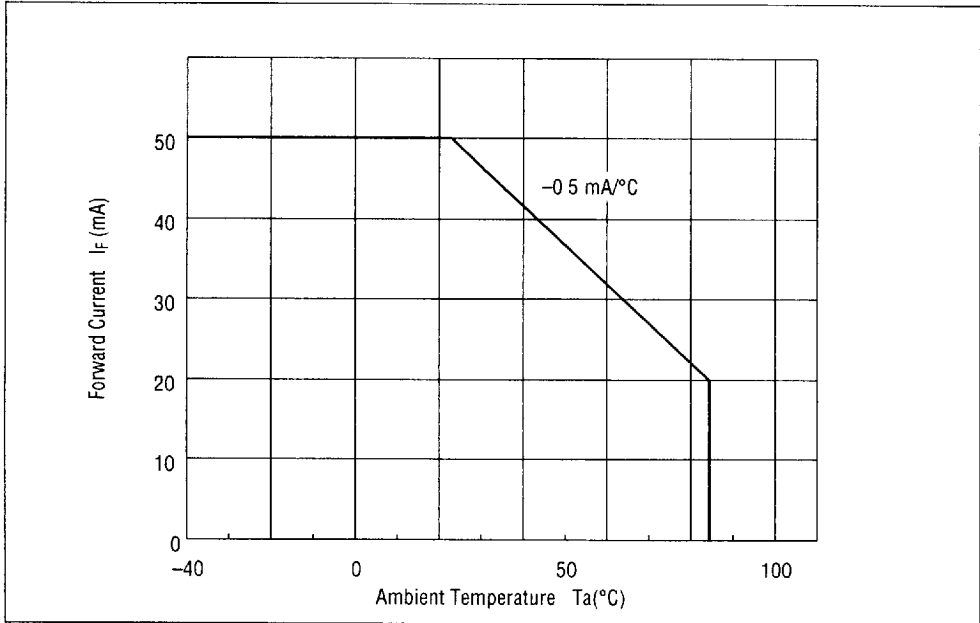
Parameter		Symbol	Test Condition	Min.	Typ.	Max.	Unit	Note	
LED	Forward Voltage	V_F	$I_F=10\text{ mA}$	1.0	—	1.3	V	—	
	Reverse Current	I_R	$V_R=5\text{ V}$	—	—	10	μA	—	
FET	ON Resistance	R_{ON}	$I_F=10\text{ mA}$ $I_D=\text{Rating}$	OCM408	3.0	4.0	5.0	Ω	Time to flow current is within one second
				OCM418	3.0	5.0	7.0		
				OCM428	8.0	12.0	16.0		
				OCM448	30.0	50.0	70.0		
	Leakage Current *1	I_{LEAK}	$V_D=60\text{ V}$ $V_D=100\text{ V}$ $V_D=200\text{ V}$ $V_D=400\text{ V}$	—	—	1.0	μA	—	
									OCM408
									OCM418
									OCM428
Output Capacitance	C_{OUT}	$V_D=50\text{ V}$ $f=1\text{ MHz}$	—	15	—	pF	—		
								OCM408	
								OCM418	
								OCM428	
Coupled	Operating LED Current *2	I_{FON}	$I_D=\text{Rating}$	—	—	5	mA	—	
	Returning LED Current	I_{FOFF}	$V_D=60\text{ V}$ $I_D=100\text{ }\mu\text{A}$ $V_D=100\text{ V}$ $I_D=100\text{ }\mu\text{A}$ $V_D=200\text{ V}$ $I_D=100\text{ }\mu\text{A}$ $V_D=400\text{ V}$ $I_D=100\text{ }\mu\text{A}$	0.2	—	—	mA	—	
									OCM408
									OCM418
									OCM428
	OCM448								
	I/O Capacitance	C_{I-O}	$f=1\text{ MHz}$	—	1.3	—	pF	—	
	Turn ON Time *3	t_{ON}	$I_F=10\text{ mA}$ $I_D=\text{Rating}$	—	0.3	1.0	ms	—	
Turn OFF Time *3	t_{OFF}	$I_D=\text{Rating}$ $R_L=5\text{ k}\Omega$	—	0.2	1.0	ms	—		

*1 Can correspond to special specification $I_{LEAK} < 0.1\text{ nA}$
 *2 Can correspond to special specification $I_{FON} < 3.0\text{ mA}$
 *3 Can correspond to special specification $t_{ON-OFF} < 0.5\text{ ms}$

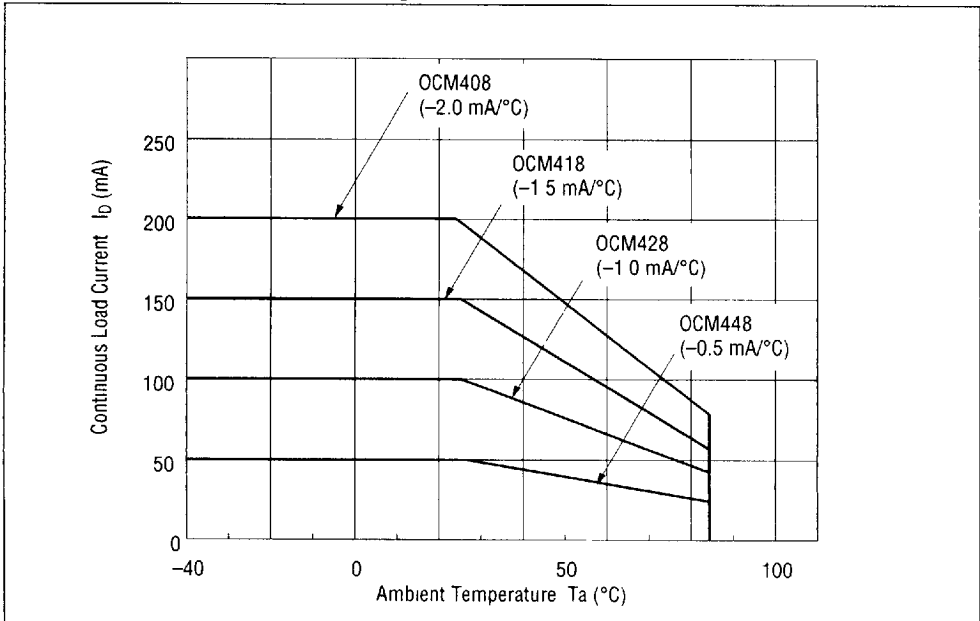
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TYPICAL CHARACTERISTICS

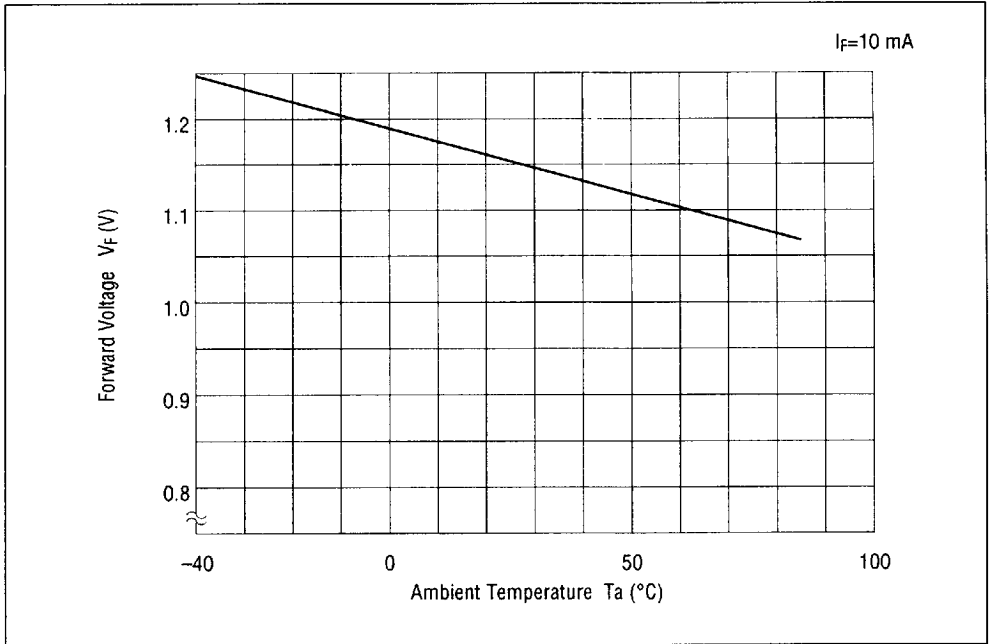
• Forward Current Derating Curve



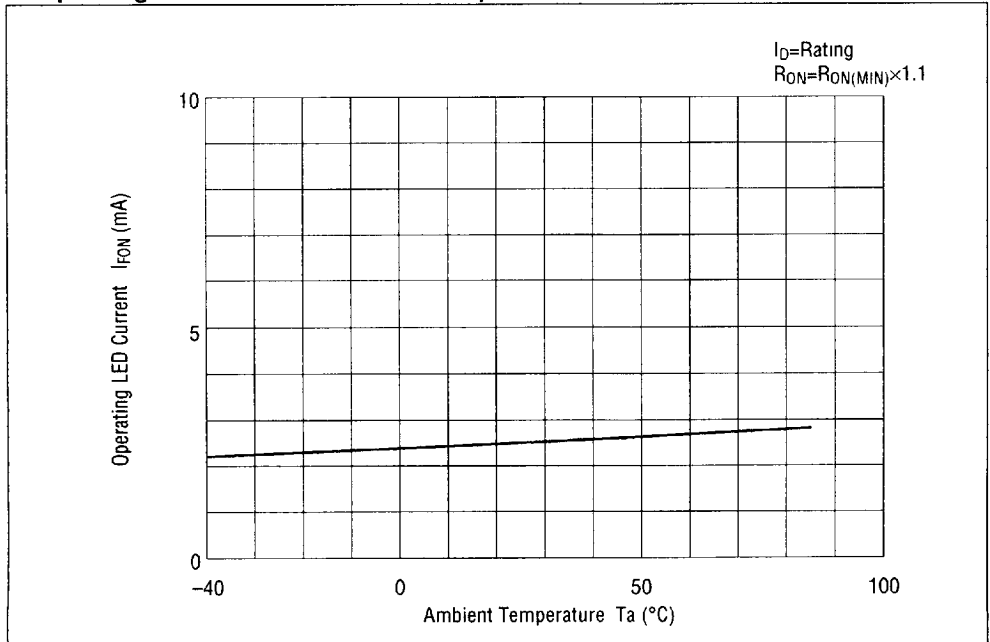
• Continuous Load Current Derating Curve



• Forward Voltage vs. Ambient Temperature

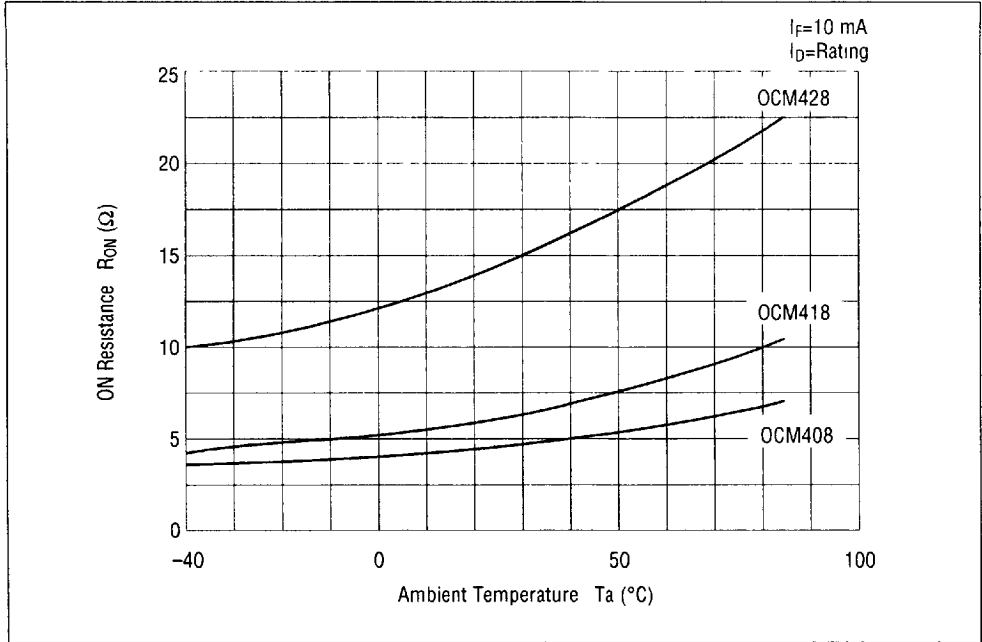


• Operating LED Current vs. Ambient Temperature

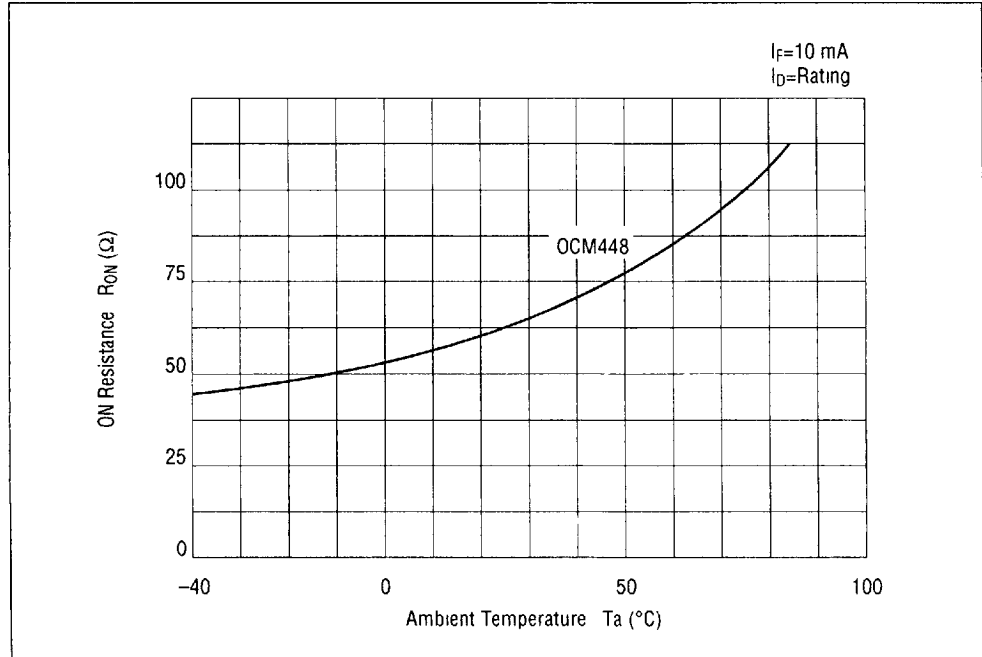


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• ON Resistance vs. Ambient Temperature-1

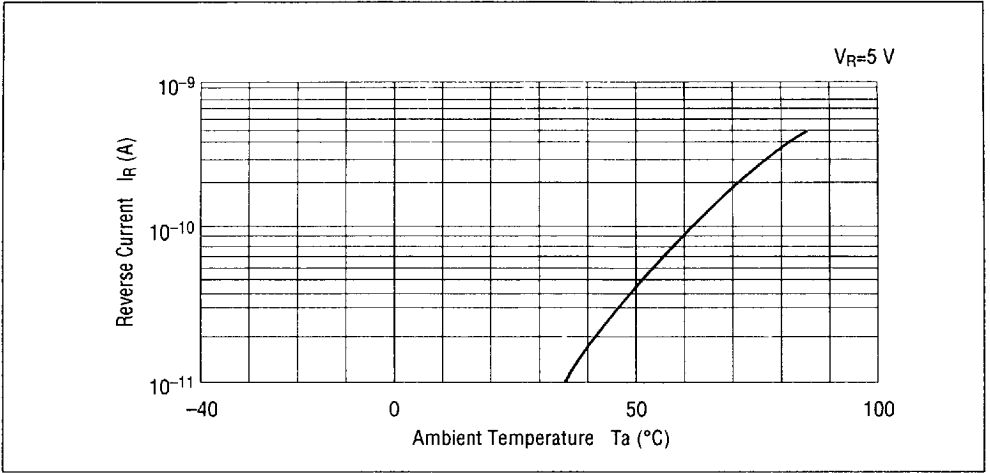


• ON Resistance vs. Ambient Temperature-2

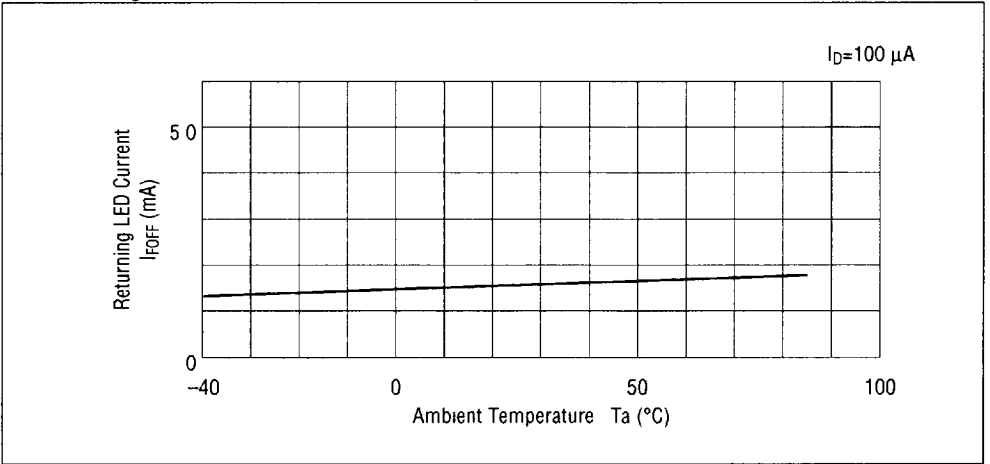


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• Reverse Current vs. Ambient Temperature

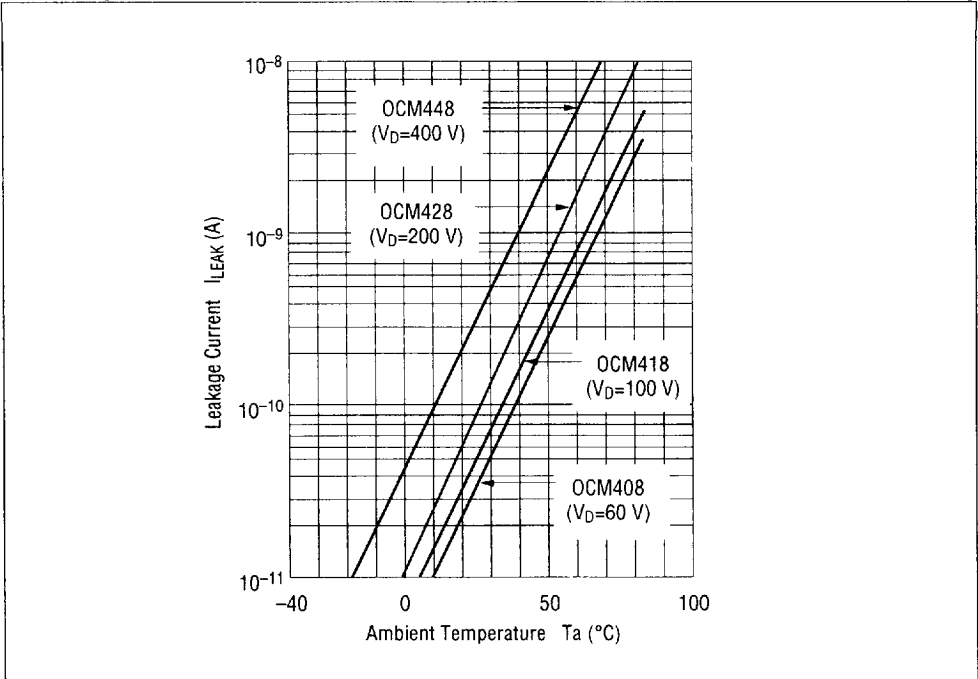


• Returning LED Current vs. Ambient Temperature

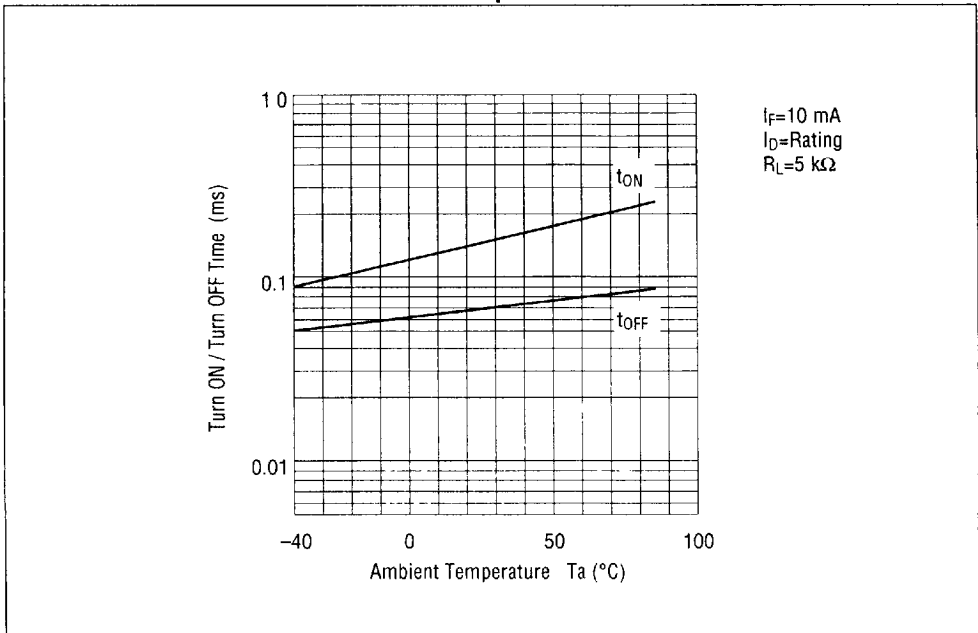


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• Leakage Current vs. Ambient Temperature

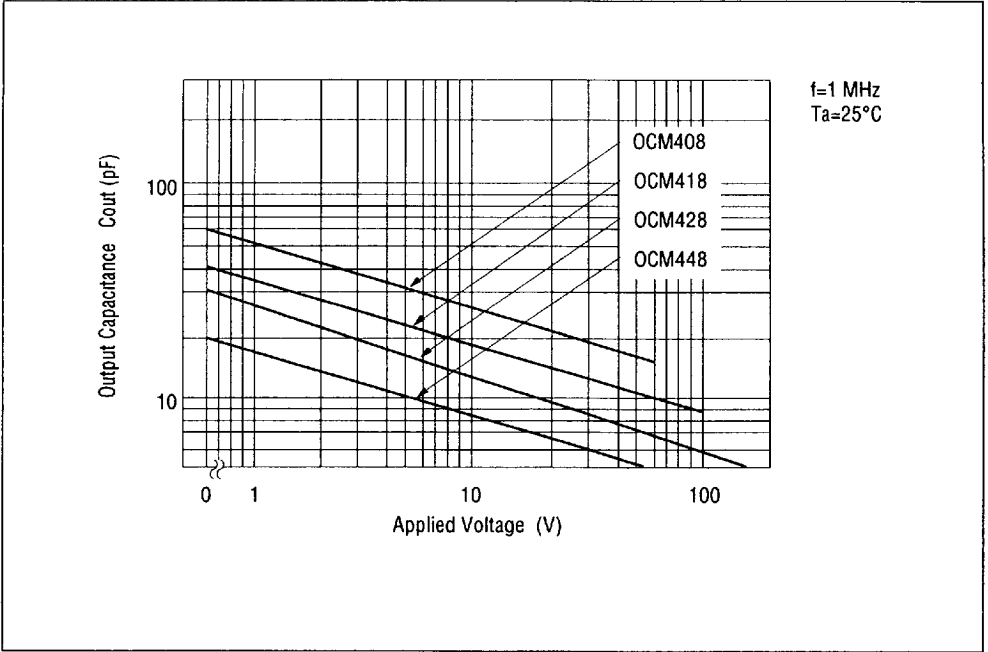


• Turn ON / Turn OFF Time vs. Ambient Temperature

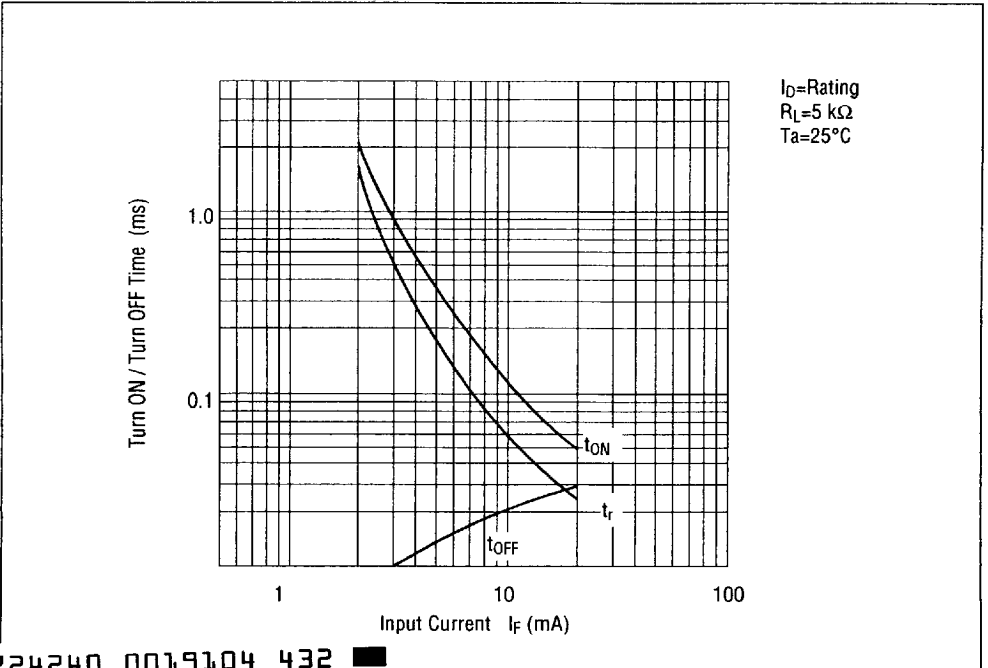


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• Output Capacitance vs. Applied Voltage

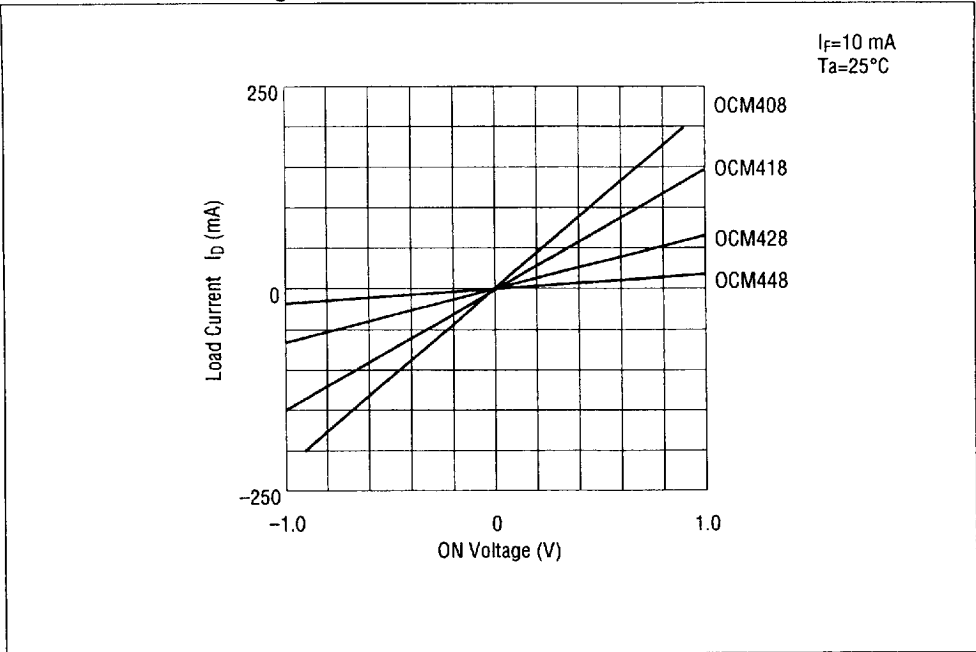


• Turn ON / Turn OFF Time vs. Input Current

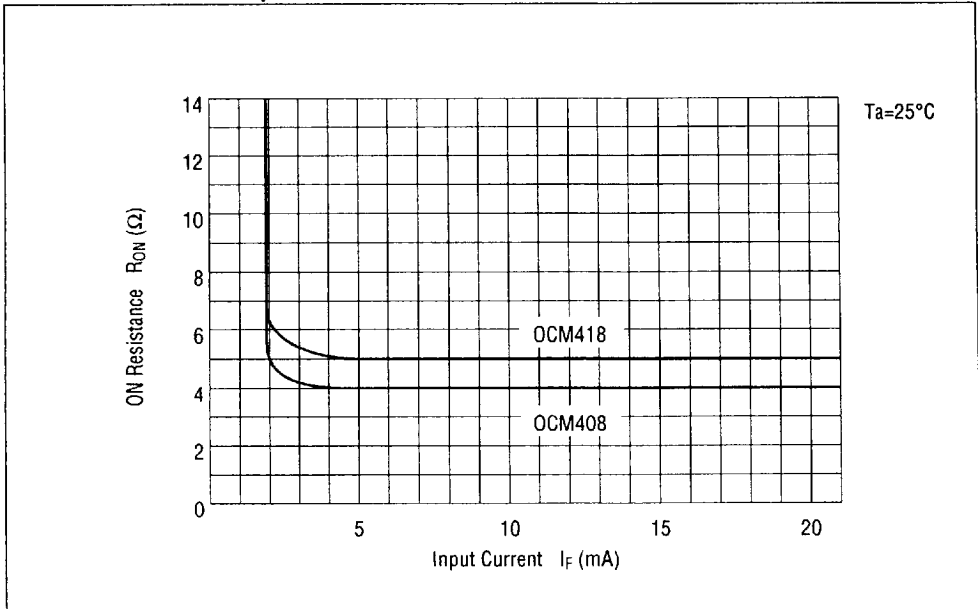


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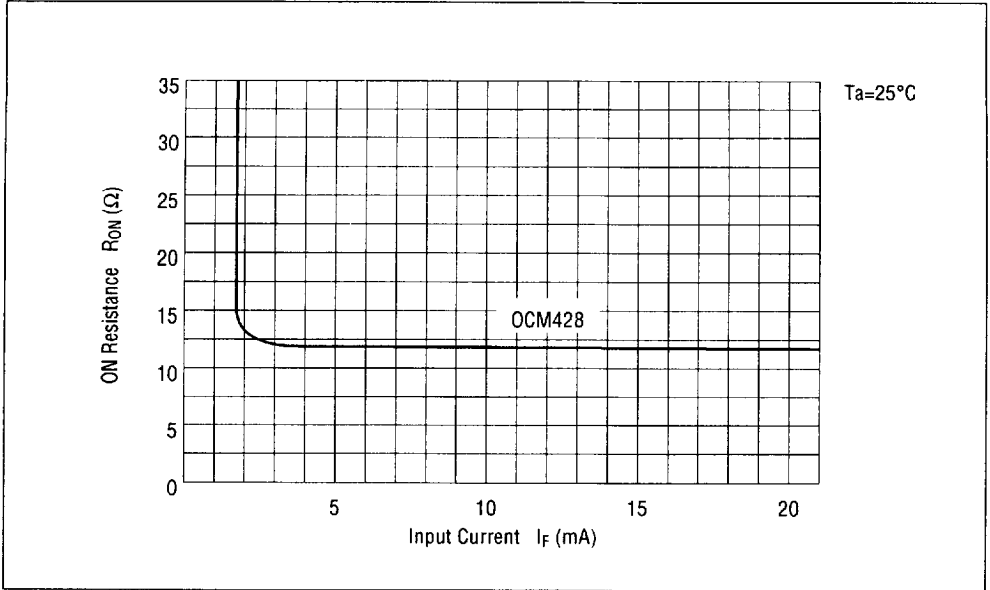
• Load Current vs. Voltage



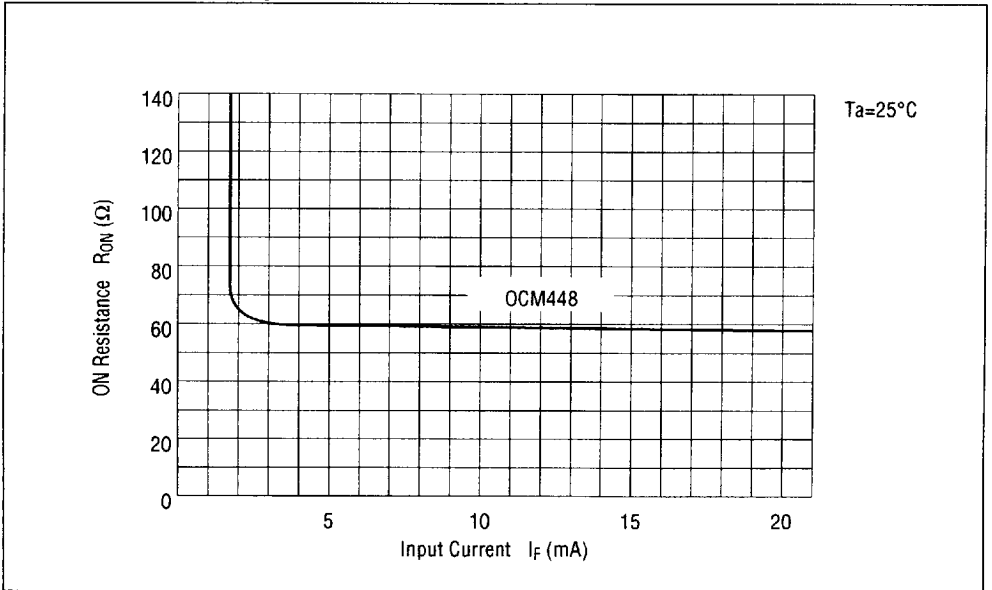
• ON Resistance vs. Input Current-1



• ON Resistance vs. Input Current-2



• ON Resistance vs. Input Current-3



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• Circuit for Measuring Response Characteristics

