XC74UL4066

TOREX

CMOS Logic

◆CMOS Logic Analog Switch
◆Operating Voltage Range : 2V ~ 5.5V
◆High Speed Operations : tpd =2ns TYP
◆Low Power Consumption : 1μA (max)
◆Low ON Resistance : Ron=22Ω TYP

■Applications

●Palmtops
●Digital Equipment

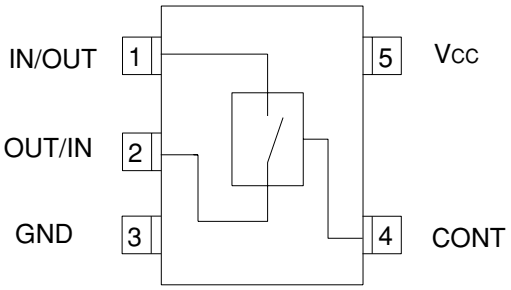
■Description

XC74UL4066M is CMOS Analog Switch manufactured using silicon gate CMOS processes. The small quiescent current, which is one of the features of the CMOS logic, gives way to high speed analog or digital signal switching.
As the series is integrated into a mini molded, SSOT-25 and SOT-25 packages, high density mounting is possible.

■Features

High Speed Operations : tpd = 2ns TYP
Operating Voltage Range: 2V ~ 5.5V
Low Power Consumption: 1μA (max)
Low ON Resistance : 22Ω TYP
Ultra Small Package : SSOT-25 and SOT-25

■Pin Configuration



SSOT-25/SOT-25
(TOP VIEW)

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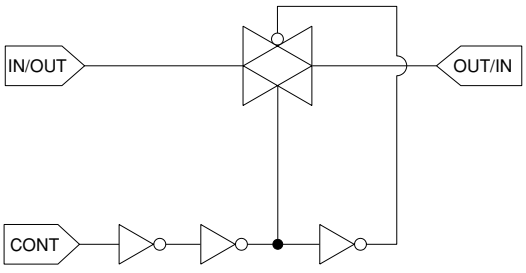
■Logic Diagram



■Functions

CONTROL	STATE
L	O F F
H	O N

H = High Level
L = Low Level

■Absolute Maximum Ratings

Ta=-40℃～85℃

PARAMETER		SYMBOL	RATINGS	UNITS
Power Supply Voltage		V_{CC}	-0.5 ～ +6.0	V
Control Input Voltage		V_{CONT}	-0.5 ～ +6.0	V
Switch Output Voltage		V_{OUT}	-0.5 ～ V_{CC}+0.5	V
Control Input Diode Current		I_{IK}	−20	mA
Switch Output Diode Current		I_{OK}	±20	mA
Switch Output Current		I_{OUT}	±25	mA
V_{CC}, GND Current		I_{CC},I_{GND}	±50	mA
Power Dissipation (Ta=25℃)	SSOT-25	Pd	150	mW
	SOT-25		200	
Storage Temperature		Tstg	-65 ～ +150	℃

Note : Voltage is all Ground standardized.

■Recommended Operating Conditions

PARAMETER	SYMBOL	V_{CC} (V)	CONDITIONS	UNITS
Supply Voltage	V_{CC}	—	2 ～ 5.5	V
Input Voltage	V_{IN}	—	0 ～ 5.5	V
Output Voltage	V_{OUT}	—	0 ～ V_{CC}	V
Operating Temperature	Topr	—	-40 ～ +85	℃
Input Rise and Fall Time	tr , tf	3.3	0 ～ 100	ns/V
		5.0	0 ～ 20	

■DC Electrical Characteristics

PARAMETER	SYMBOL	CONDITIONS		Ta=25℃			Ta=-40～85℃		UNITS
		V_{CC}(V)		MIN	TYP	MAX	MIN	MAX	
"High" Level Control Input Voltage"	V_{IH}	2.0		1.5	—	—	1.5	—	V
		3.0		2.1	—	—	2.1	—	
		5.5		3.85	—	—	3.85	—	
"Low" Level Control Input Voltage"	V_{IL}	2.0		—	—	0.5	—	0.5	V
		3.0		—	—	0.9	—	0.9	
		5.5		—	—	1.65	—	1.65	
Peak ON Resistance	R_{ONmax}	2.0	V_{CONT}=V_{IH}	—	130	350	—	550	Ω
		3.0	V_{IN}=0～V_{CC}	—	22	50	—	65	
		4.5	$I_{IN/OUT}$=1mA	—	12	25	—	35	
ON Resistance	$R_{ON(1)}$	2.0	V_{CONT}=V_{IH}		23	50		65	
		3.0	V_{IN}=GND or V_{CC}		14	30		40	
		4.5	$I_{IN/OUT}$=1mA		10	20		25	
Power Off Leakage Current	$I_{S(OFF)}$	5.5	V_{CONT}=V_{IL},V_{IN}=V_{CC},V_{OUT}=GND	—	—	±0.1	—	±1.0	μA
Power On Leakage Current	$I_{S(ON)}$	5.5	V_{CONT}=V_{IH}, V_{IN}=V_{CC} or GND	—	—	±0.1	—	±1.0	μA
Control Input Current	I_{CONT}	5.5	V_{IN} = V_{CC} or GND	—	—	±0.1	—	±1.0	μA
Quiscent Supply Current	I_{CC}	5.5	V_{IN} = V_{CC} or GND	—	—	1.0	—	5.0	μA

■Switching Electrical Characteristics

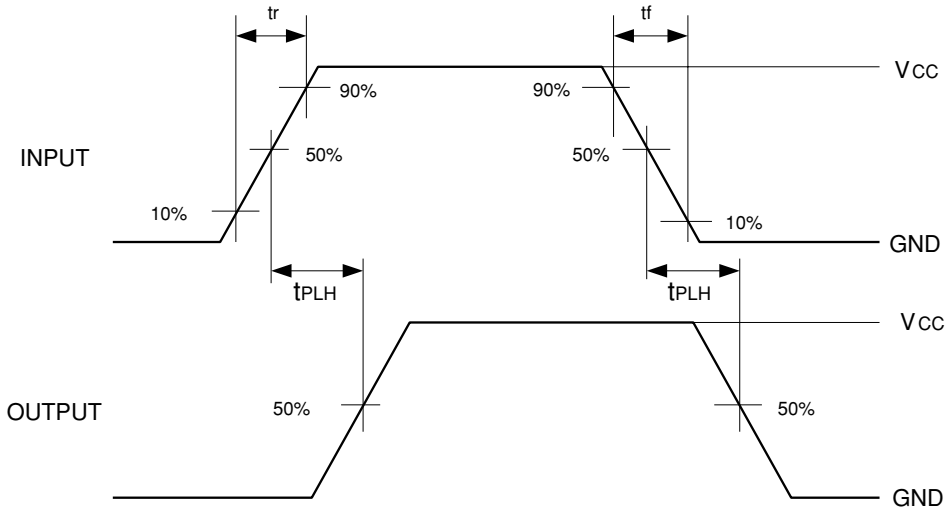
(tr = tf = 3ns)

PARAMETER	SYMBOL	CONDITIONS		Ta=25℃			Ta=-40～85℃		UNITS
		VCC(V)		MIN	TYP	MAX	MIN	MAX	
Propagation Delay Time	tPLH tPHL	2.0 3.3 5.0	RL=10kΩ CL=50pF	— — —	4 3 2	20 6 5	— — —	23 8 6	ns
Output Enable Time	tZL tZH	2.0 3.3 5.0	RL=1kΩ CL=50pF	— — —	9 5 3	50 10 8	— — —	65 12 10	ns
Output Disable Time	tLZ tHZ	2.0 3.3 5.0	RL=1kΩ CL=50pF	— — —	12 10 8	60 23 20	— — —	75 27 25	ns
Sine Wave Distortion Rate		3.0	RL=10kΩ CL=50pF fIN=1kHz	—	0.05	—	—	—	%
-3dB Band Width		3.0	RL=600Ω, CL=50pF $20\log\ 10\ \frac{V_{OUT}}{V_{IN}} = -3dB$	—	200	—	—	—	MHz
Feed Through (Switch-off)		3.0	RL=600Ω CL=50pF fIN=1MHz	—	-60	—	—	—	dB
Cross Talk (Control Switch)		2.0 3.0 4.5	RL=600Ω CL=50pF fIN=1MHz	— — —	60 100 150	— — —	— — —	— — —	mV
Maximum Control Input Frequency		2.0 3.0 4.5	RL=1kΩ CL=15pF VOUT=VCC/2	— — —	30 30 30	— — —	— — —	— — —	MHz
Control Input Capacitance	Cin	—		—	5	10	—	10	pF
Switch Input/Output Capacitance	CIN/OUT	—		—	6	—	—	—	pF
Feed Through Capacitance	CIN-OUT	—		—	0.5	—	—	—	pF
Power Dissipation Capacitance	CPD	—		—	13	—	—	—	pF

Note: CPD is defined as the value of the internal equivalent capacitance which is derived from the operating supply current at times of "No Load".
Ensure that the average operating supply current at times of "No Load" meets the following conditions:
ICC (opr)=CPD, VCC, FIN+ICC

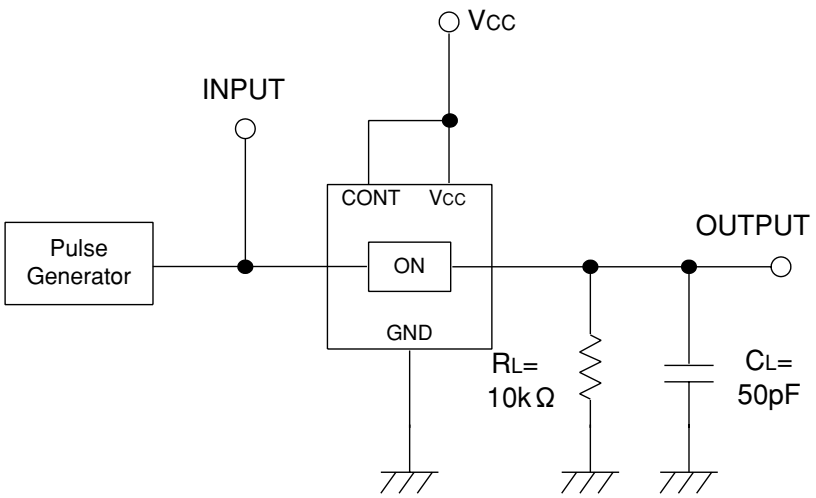
■Propagation Delay Time

■Waveforms



PRR=1MHz
duty cycle 50%
tr=tf=3ns

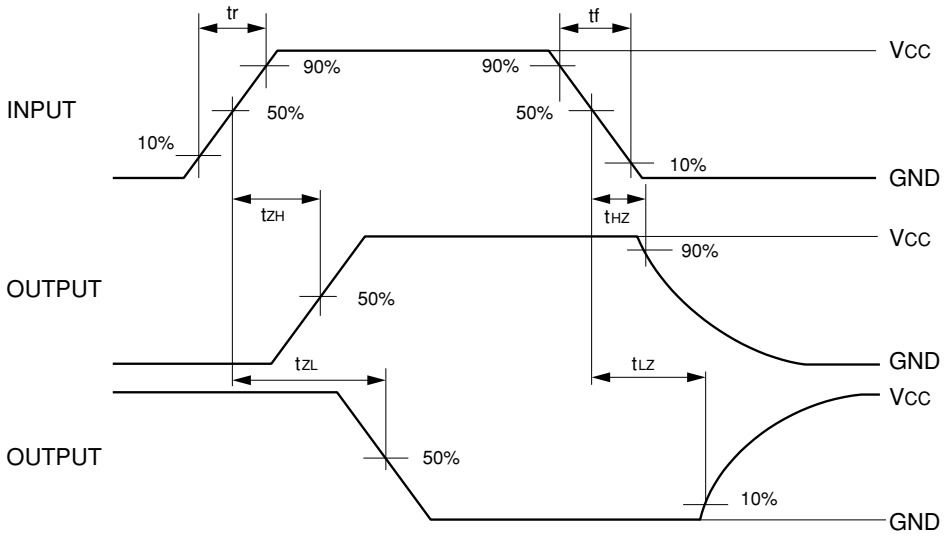
■Typical Application Circuit



Note: Open output when measuring supply current

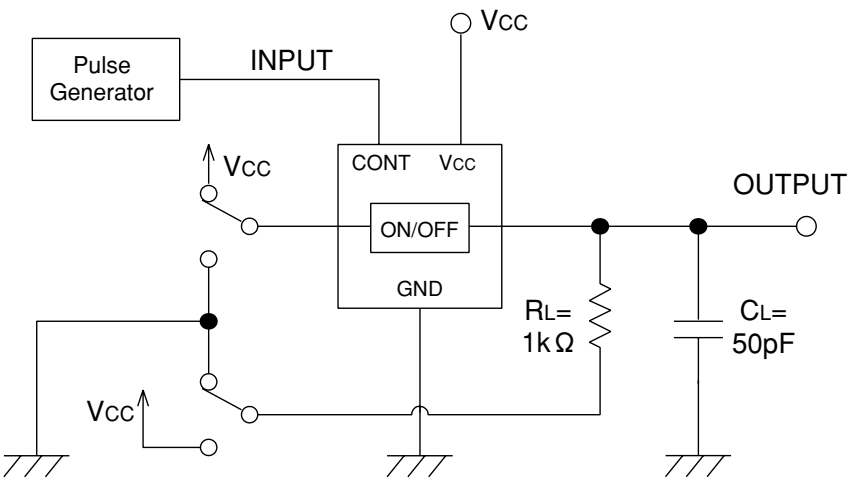
■Output Enable Time, Output Disable Time

■Waveforms

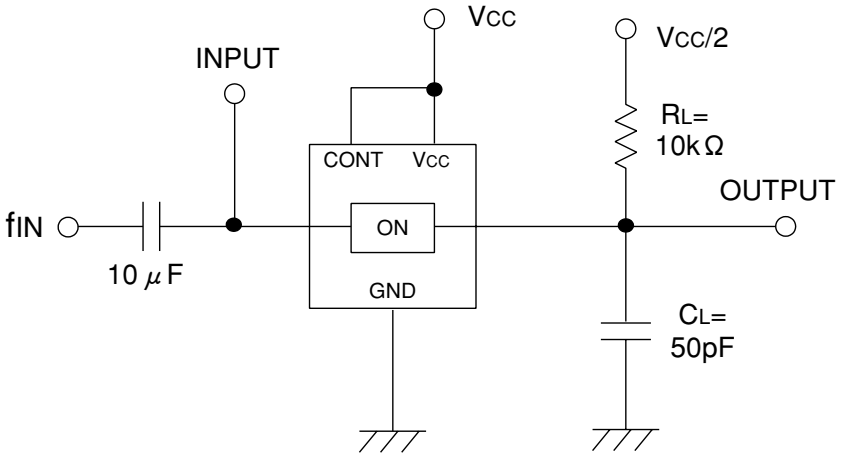


PRR =1 MHz
duty cycle 50%
tr =tf =3ns

■Typical Application Circuit

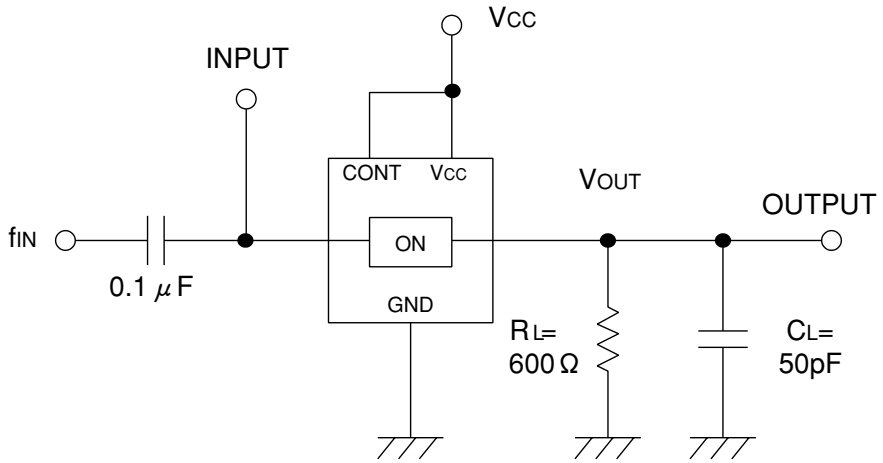


■Sine Wave Distortion Rate



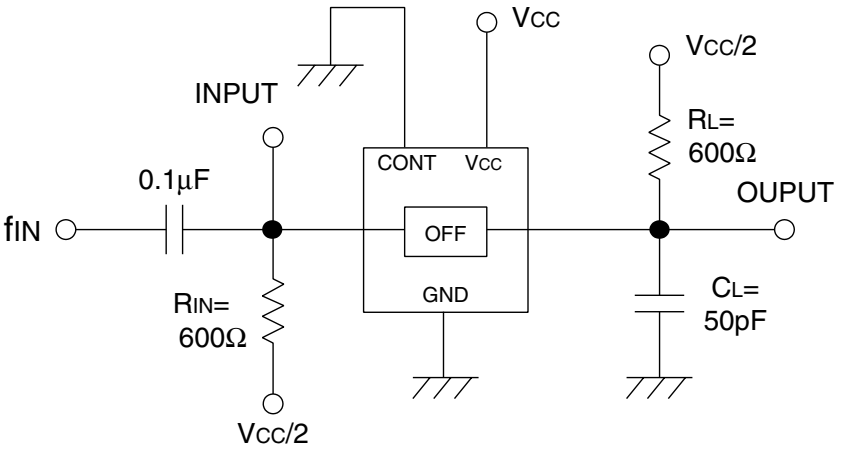
* Input by sine wave

■-3dB Band Width



* Input by sine wave

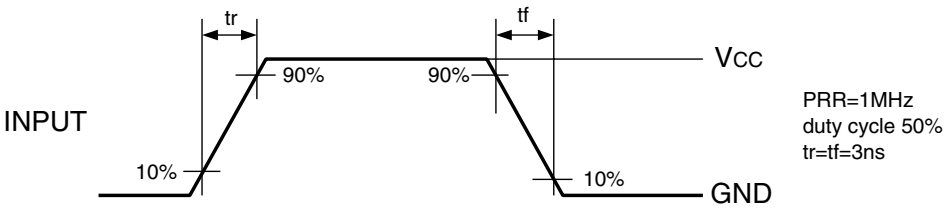
■Feed Through Test Circuit



* Input by sine wave

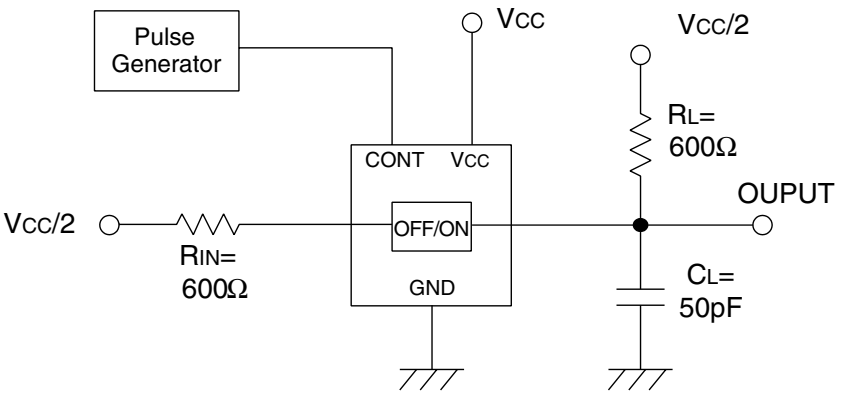
■Cross Talk

■Waveforms



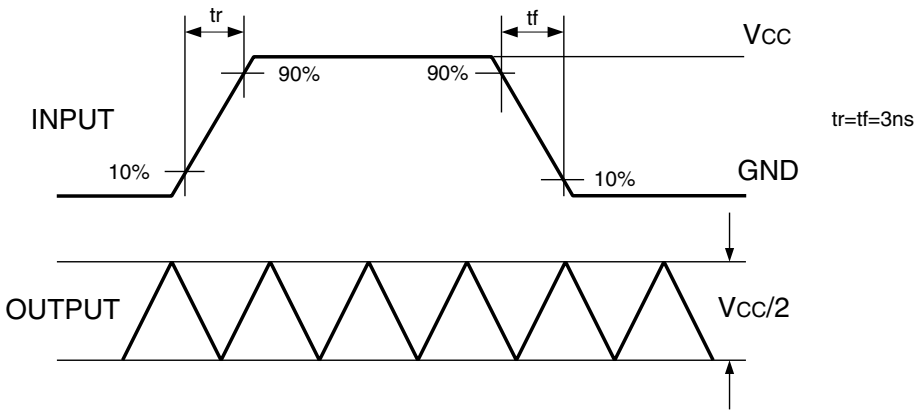
PRR=1MHz
duty cycle 50%
tr=tf=3ns

■Typical Application Circuit

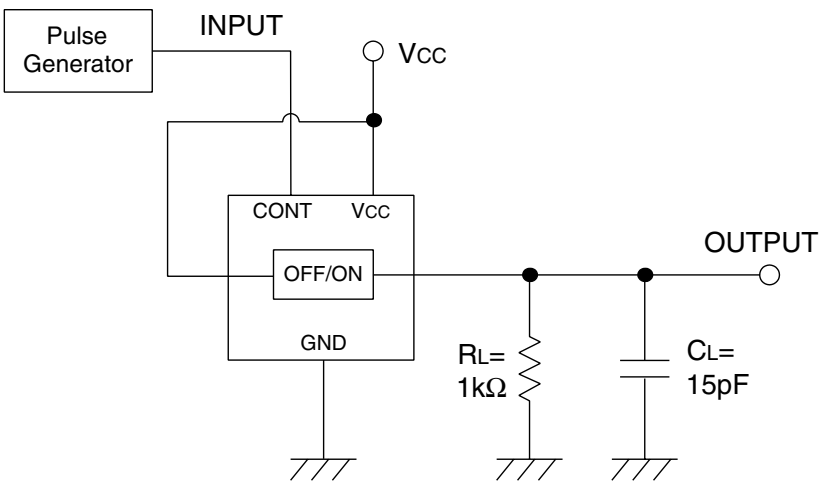


■Maximum Control Input Frequency

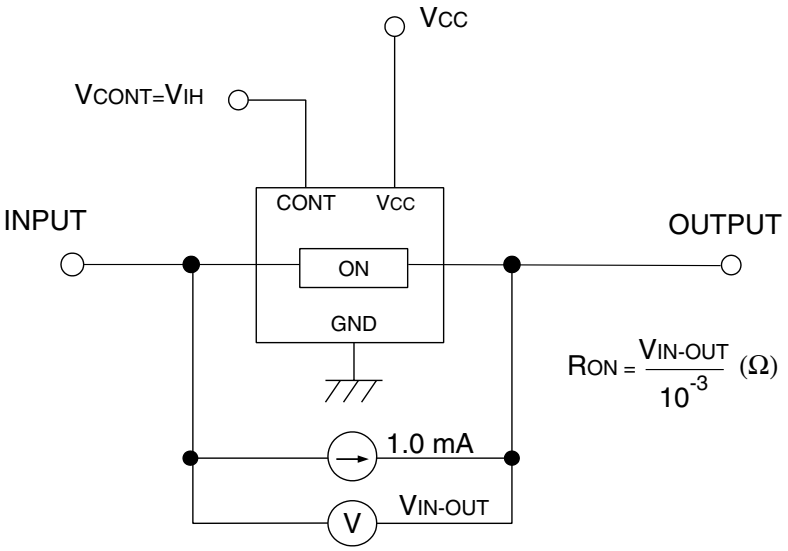
■Waveforms



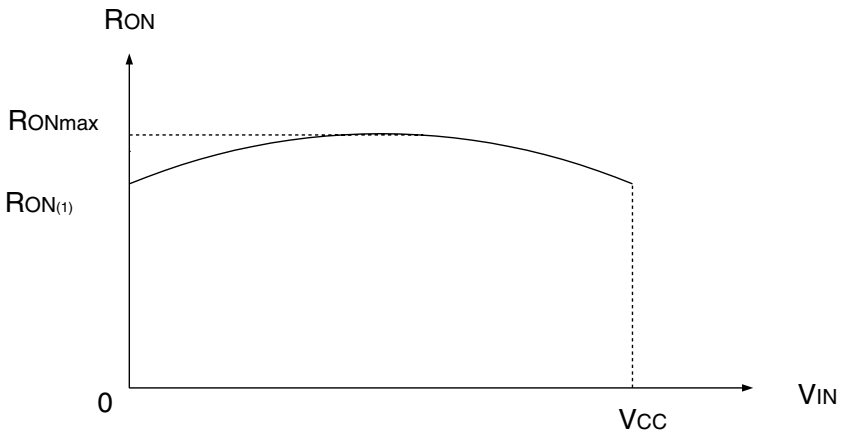
■Typical Application Circuit



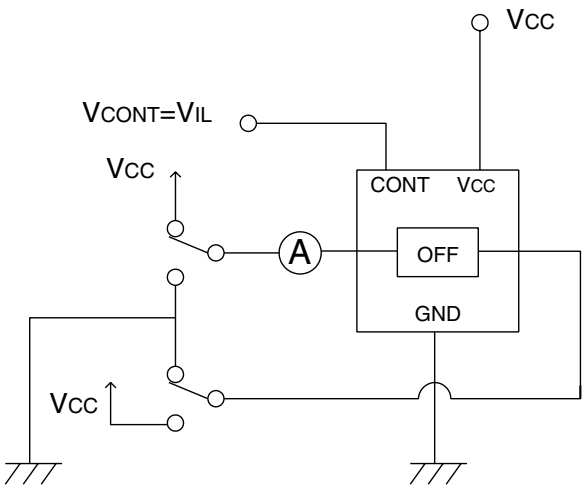
■On Resistance



■Voltage Dependancies of ON Resistance



■Power Off Leakage Current



■Power On Leakage Current