ABSOLUTE MAXIMUM RATINGS

Parameter		Limit	Unit
Reference V+ to GND		- 0.3 to + 5.0	V
IN, COM, NC, NO[a]		- 0.3 to (V+ + 0.3)	
Continuous Current (NO, NC and COM Pins)		± 200	mA
Peak Current (Pulsed at 1 ms, 10 % duty cycle)		± 300	
Storage Temperature (D Suffix)		- 65 to 150	°C
Power Dissipation (Packages)[b]	6-Pin SC89	172	mW

Notes:
a. Signals on NC, NO, or COM or IN exceeding V+ will be clamped by internal diodes. Limit forward diode current to maximum current ratings.
b. All leads welded or soldered to PC Board.
c. Derate 2.15 mW/°C above 70 °C.

SPECIFICATIONS (V+ = 1.8 V)

Parameter	Symbol	Test Condition Otherwise Unless Specified V+ = 1.8 V, ± 10 %, V_{IN} = 0.4 or 1.0 V[e]	Temp[a]	Limits - 40 to 85 °C Min[b]	Typ[c]	Max[b]	Unit
Analog Switch							
Analog Signal Range[d]	V_{NO}, V_{NC}, V_{COM}		Full	0		V+	V
On-Resistance	r_{ON}	V+ = 1.8 V, V_{COM} = 0.2 V, $I_{NO/NC}$ = 100 mA	Room Full		1.0	2.0 2.1	Ω
Digital Control							
Input High Voltage	V_{INH}		Full	1.0			V
Input Low Voltage	V_{INL}		Full			0.4	
Input Capacitance[d]	C_{in}		Full		7		pF
Input Current[f]	I_{INL} or I_{INH}	V_{IN} = 0 V or V+	Full	- 1		1	µA
Dynamic Characteristics							
Turn-On Time[d]	t_{ON}	V_{NO} or V_{NC} = 1.5 V, R_L = 50 Ω, C_L = 35 pF Figures 1 and 2	Room Full[d]		54	74 81	ns
Turn-Off Time[d]	t_{OFF}		Room Full[d]		14	34 35	
Break-Before-Make Time[d]	t_d		Room	8			
Charge Injection[d]	Q_{INJ}	C_L = 1 nF, V_{GEN} = 0 V, R_{GEN} = 0 Ω, Figure 3	Room		26		pC
Off-Isolation[d]	O_{IRR}	R_L = 50 Ω, C_L = 5 pF, f = 1 MHz	Room		- 54		dB
Crosstalk[d]	X_{TALK}		Room		- 60		
NO, NC Off Capacitance[d]	$C_{NO(off)}$, $C_{NC(off)}$	V_{IN} = 0 or V+, f = 1 MHz	Room		80		pF
Channel-On Capacitance[d]	C_{ON}		Room		180		

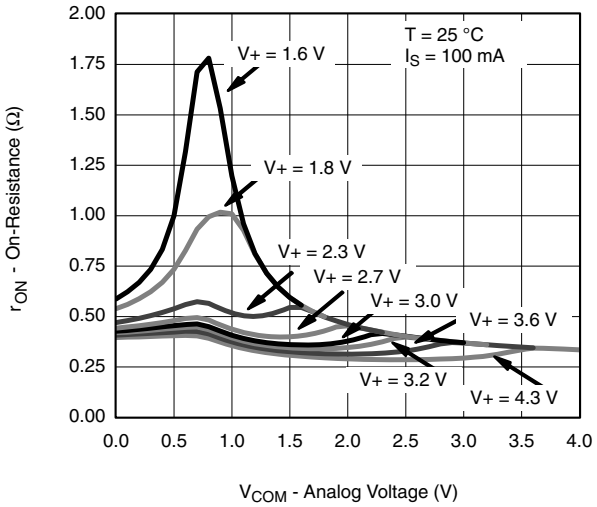
SPECIFICATIONS (V+ = 3.0 V)

Parameter	Symbol	Test Condition Otherwise Unless Specified V+ = 2.7 V to 3.6 V, V_{IN} = 0.5 or 1.4 V[e]	Temp[a]	Limits - 40 to 85 °C Min[b]	Typ[c]	Max[b]	Unit
Analog Switch							
Analog Signal Range[d]	V_{NO}, V_{NC}, V_{COM}		Full	0		V+	V
On-Resistance	r_{ON}	V+ = 2.7 V, V_{COM} = 1.5 V, I_{NO}, I_{NC} = 100 mA	Room Full		0.5	0.7 0.8	Ω
		V+ = 3.6 V, V_{COM} = 0.5 V, 2.0 V, I_{NO}, I_{NC} = 100 mA	Room Full		0.45	0.65 0.75	
r_{ON} Flatness[d]	r_{ON} Flatness	V+ = 2.7 V, V_{COM} = 0.6 V, 2.1 V, I_{NO}, I_{NC} = 100 mA	Room			0.2	
r_{ON} Match[d]	Δr_{ON}	V+ = 2.7 V, V_{COM} = 1.5 V, I_{NO}, I_{NC} = 100 mA	Room			0.6	
Switch Off Leakage Current	$I_{NO(off)}$, $I_{NC(off)}$	V+ = 4.3 V, V_{NO}, V_{NC} = 0.3 V / 4 V, V_{COM} = 4 V / 0.3 V	Room Full	- 10 - 100		10 100	nA
	$I_{COM(off)}$		Room Full	- 10 - 100		10 100	
Channel-On Leakage Current	$I_{COM(on)}$	V+ = 4.3 V, V_{NO}, V_{NC} = V_{COM} = 0.3 V / 4 V	Room Full	- 10 - 100		10 100	
Digital Control							
Input High Voltage	V_{INH}		Full	1.4			V
Input Low Voltage	V_{INL}		Full			0.5	
Input Capacitance[d]	C_{in}		Full		7		pF
Input Current[f]	I_{INL} or I_{INH}	V_{IN} = 0 V or V+	Full	- 1		1	µA
Dynamic Characteristics							
Turn-On Time	t_{ON}	V+ = 3.0 V, V_{NO} or V_{NC} = 1.5 V, R_L = 300 Ω, C_L = 35 pF, Figure 1 and 2	Room Full		22	44 48	ns
Turn-Off Time	t_{OFF}		Room Full		8	29 30	
Break-Before-Make Time	t_d		Room	1			
Charge Injection[d]	Q_{INJ}	C_L = 1 nF, V_{GEN} = 0 V, R_{GEN} = 0 Ω, Figure 3	Room		28		pC
Off-Isolation[d]	O_{IRR}	R_L = 50 Ω, C_L = 5 pF, f = 1 MHz	Room		- 54		dB
Crosstalk[d]	X_{TALK}		Room		- 57		
NO, NC Off Capacitance[d]	$C_{NO(off)}$, $C_{NC(off)}$	V_{IN} = 0 or V+, f = 1 MHz	Room		76		pF
Channel-On Capacitance[d]	C_{ON}		Room		178		
Power Supply							
Power Supply Range	V+			1.6		4.3	V
Power Supply Current	I+	V+ = 3.6 V, V_{IN} = 0 or V+			0.01	1.0	µA

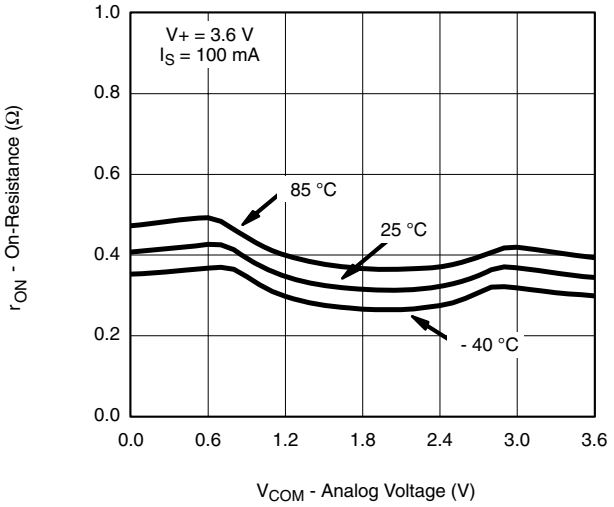
Notes:
a. Room = 25 °C, Full = as determined by the operating suffix.
b. The algebraic convention whereby the most negative value is a minimum and the most positive a maximum, is used in this data sheet.
c. Typical values are for design aid only, not guaranteed nor subject to production testing.
d. Guarantee by design, nor subjected to production test.
e. V_{IN} = input voltage to perform proper function.

Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

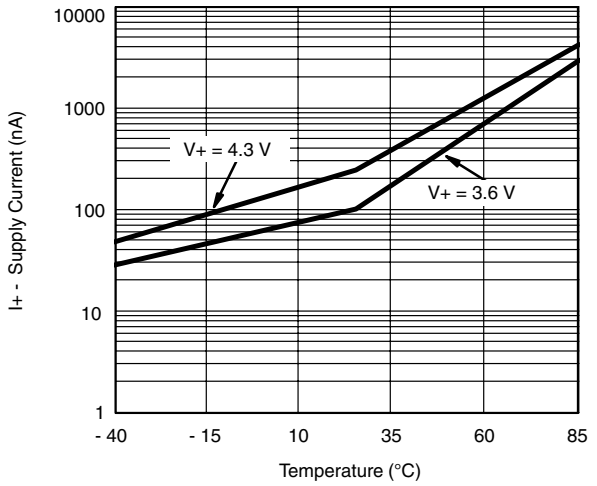
TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted



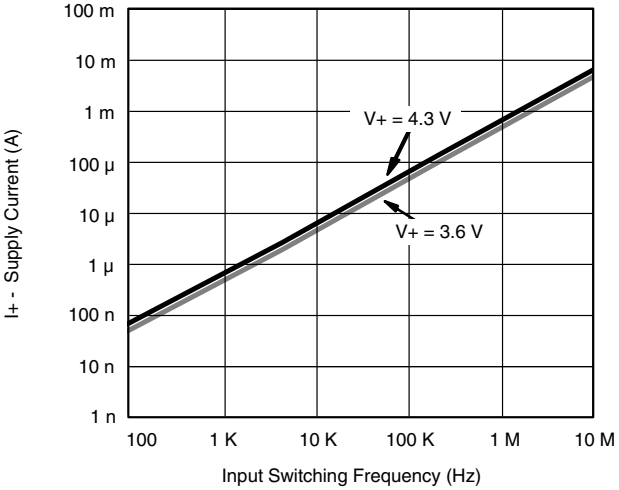
r_{ON} vs. V_{COM} and Single Supply Voltage



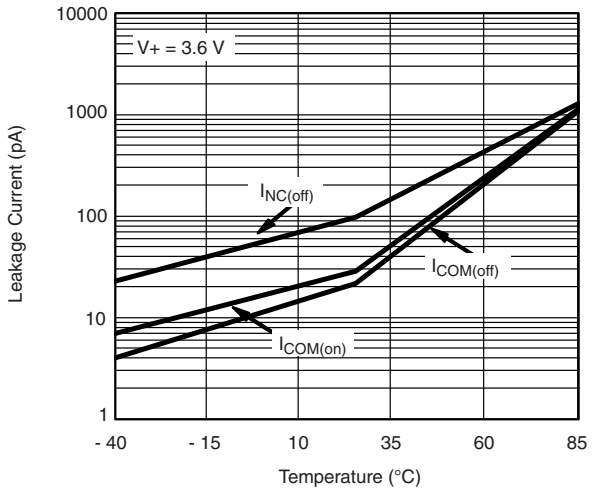
r_{ON} vs. Analog Voltage and Temperature



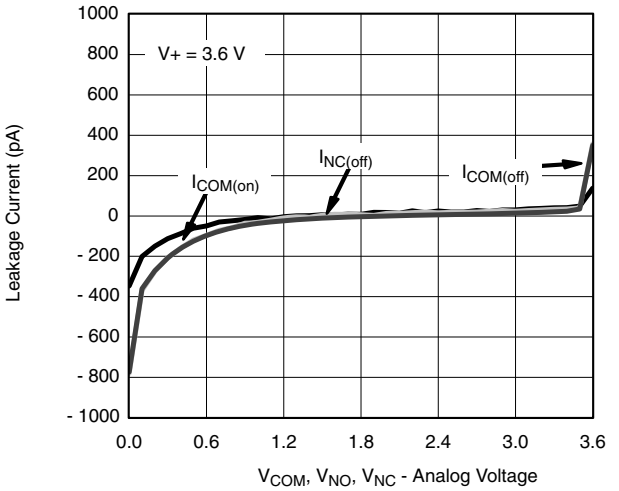
Supply Current vs. Temperature



Supply Current vs. Input Switching Frequency

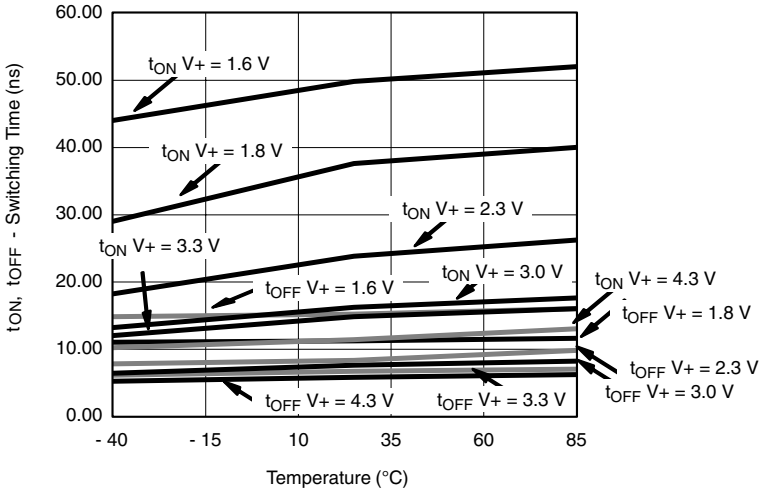


Leakage Current vs. Temperature

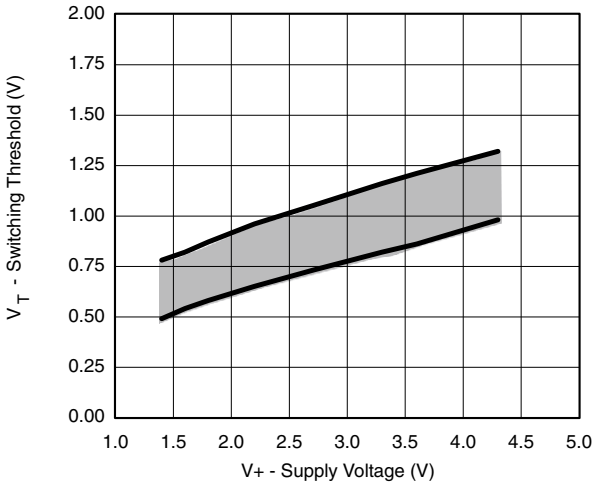


Leakage vs. Analog Voltage

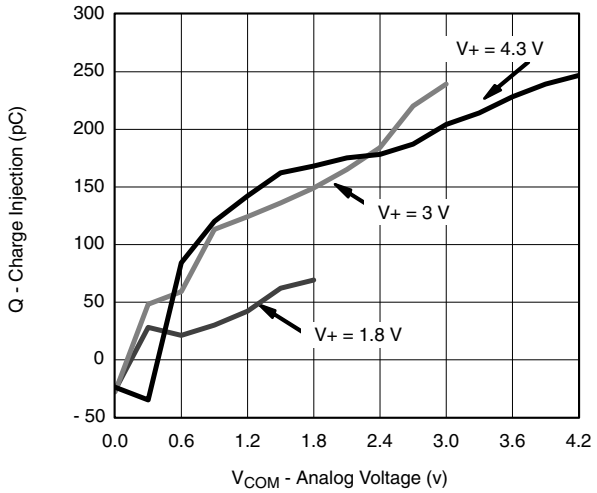
TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted



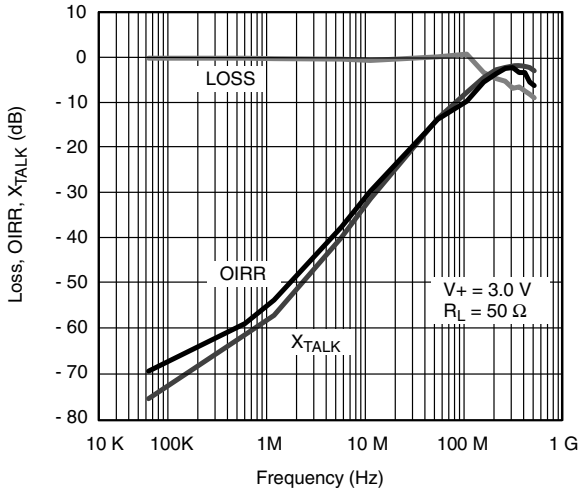
Switching Time vs. Temperature



Switching Threshold vs. Supply Voltage

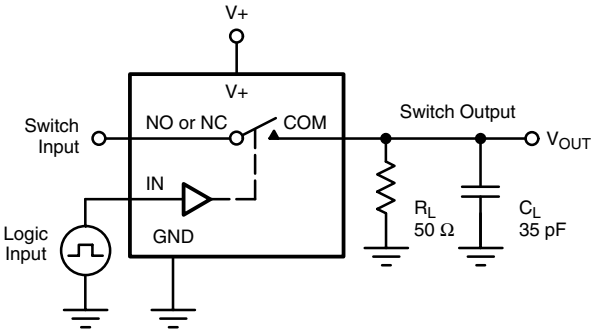


Charge Injection vs. Analog Voltage



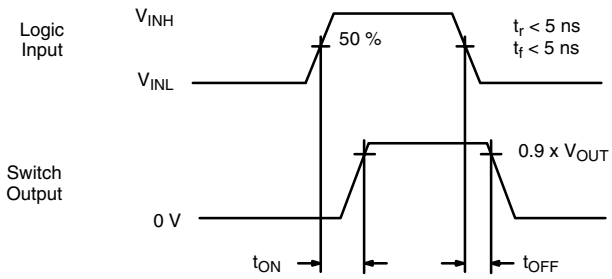
Insertion Loss, Off-Isolation, Crosstalk vs. Frequency

TEST CIRCUITS



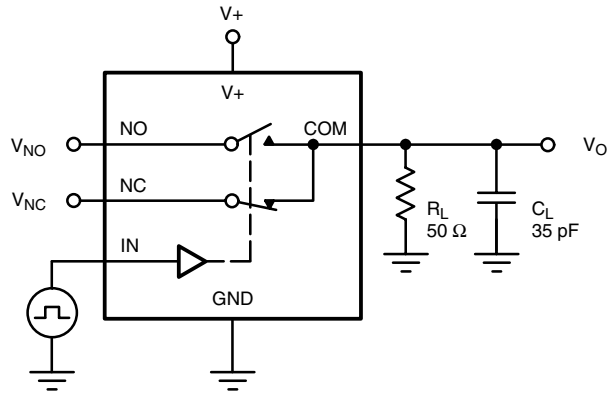
C_L (includes fixture and stray capacitance)

$$V_{OUT} = V_{COM}\left(\frac{R_L}{R_L + R_{ON}}\right)$$



Logic "1" = Switch On
Logic input waveforms inverted for switches that have the opposite logic sense.

Figure 1. Switching Time



C_L (includes fixture and stray capacitance)

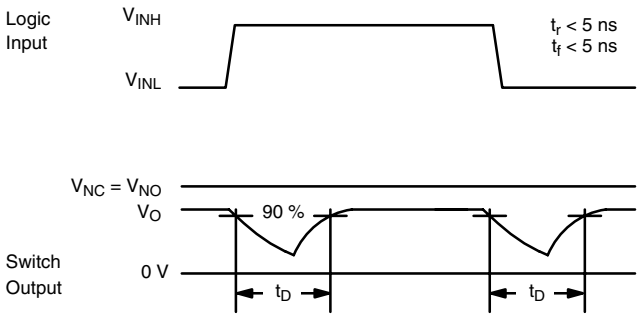
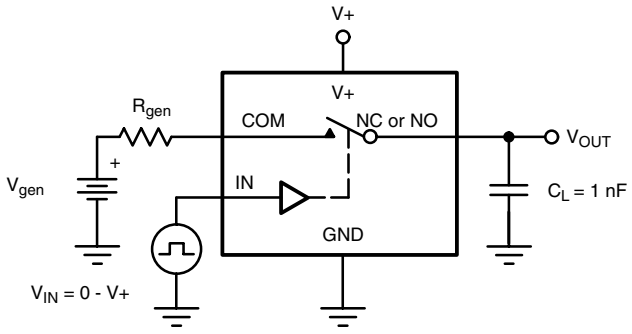
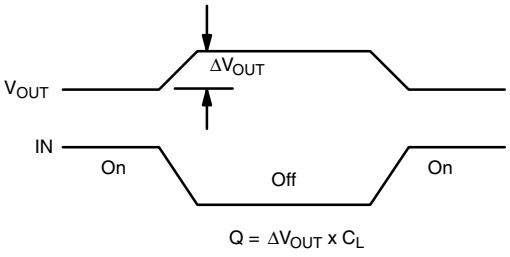


Figure 2. Break-Before-Make Interval





$Q = \Delta V_{OUT} \times C_L$

IN depends on switch configuration: input polarity determined by sense of switch.

Figure 3. Charge Injection

TEST CIRCUITS

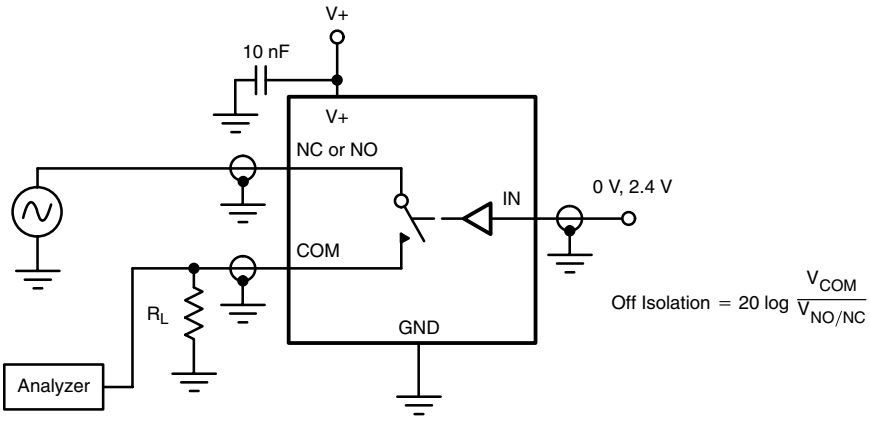


Figure 4. Off-Isolation

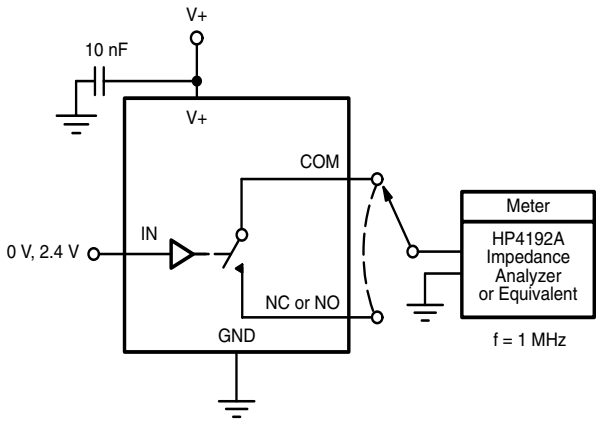


Figure 5. Channel Off/On Capacitance

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