



New Product

DG9262/9263
Vishay Siliconix

Low-Voltage Dual SPST Analog Switch

FEATURES

- Low Voltage Operation (+2.7 to +5 V)
- Low On-Resistance - $r_{DS(on)}$: 40 Ω
- Fast Switching - t_{ON} : 35 ns, t_{OFF} : 20 ns
- Low Leakage - $I_{COM(on)}$: 200-pA max
- Low Charge Injection - Q_{INJ} : 1 pC
- Low Power Consumption
- TTL/CMOS Compatible
- ESD Protection > 2000 V (Method 3015.7)
- Available in TSSOP-8 and SOIC-8

BENEFITS

- Reduced Power Consumption
- Simple Logic Interface
- High Accuracy
- Reduce Board Space

APPLICATIONS

- Battery Operated Systems
- Portable Test Equipment
- Sample and Hold Circuits
- Cellular Phones
- Communication Systems
- Military Radio
- PBX, PABX Guidance and Control Systems

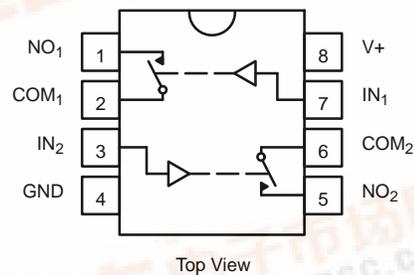
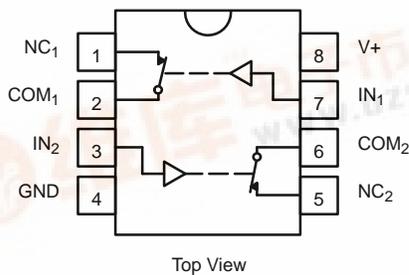
DESCRIPTION

The DG9262/9263 is a single-pole/single-throw monolithic CMOS analog device designed for high performance switching of analog signals. Combining low power, high speed (t_{ON} : 35 ns, t_{OFF} : 20 ns), low on-resistance ($r_{DS(on)}$: 40 Ω) and small physical size, the DG9262/9263 is ideal for portable and battery powered applications requiring high performance and efficient use of board space.

The DG9262/9263 is built on Vishay Siliconix's low voltage BCD-15 process. Minimum ESD protection, per Method 3015.7 is 2000 V. An epitaxial layer prevents latchup. Break-before-make is guaranteed for DG9262/9263.

Each switch conducts equally well in both directions when on, and blocks up to the power supply level when off.

FUNCTIONAL BLOCK DIAGRAM AND PIN CONFIGURATION



TRUTH TABLE - DG9262	
Logic	Switch
0	On
1	Off

Logic "0" ≤ 0.8 V
Logic "1" ≥ 2.4 V

TRUTH TABLE - DG9263	
Logic	Switch
0	Off
1	On

Logic "0" ≤ 0.8 V
Logic "1" ≥ 2.4 V

ORDERING INFORMATION		
Temp Range	Package	Part Number
-40 to 85°C	SOIC-8	DG9262DY
		DG9263DY
	TSSOP-8 (3 x 3 mm)	DG9262DQ
		DG9263DQ





ABSOLUTE MAXIMUM RATINGS

Reference to GND	
V+	-0.3 to +13 V
IN, COM, NC, NO ^a	-0.3 to (V+ + 0.3 V)
Continuous Current (Any terminal)	±20 mA
Peak Current	±40 mA
(Pulsed at 1ms, 10% duty cycle)	
ESD (Method 3015.7)	> 2000 V

Storage Temperature (D Suffix)	-65 to 125°C
Power Dissipation (Packages) ^b	
8-Pin Narrow Body SOIC ^c	400 mW

Notes:

- Signals on S_X, D_X, or IN_X exceeding V+ or V- will be clamped by internal diodes. Limit forward diode current to maximum current ratings.
- All leads welded or soldered to PC Board.
- Derate 6.5 mW/°C above 75°C

SPECIFICATIONS (V+ = 3 V)							
Parameter	Symbol	Test Conditions Otherwise Unless Specified V+ = 3 V, ±10%, V _{IN} = 0.8 or 2.4 V ^e	Temp ^a	D Suffix -40 to 85°C			Unit
				Min ^b	Typ ^c	max ^b	
Analog Switch							
Analog Signal Range ^d	V _{ANALOG}		Full	0		3	V
Drain-Source On-Resistance	r _{DS(on)}	V _{NO} or V _{NC} = 1.5 V, V+ = 2.7 V I _{COM} = 5 mA	Room Full		50	80 140	Ω
r _{DS(on)} Match ^d	Δr _{DS(on)}	V _{NO} or V _{NC} = 1.5 V	Room		0.4	2	
r _{DS(on)} Flatness ^d	r _{DS(on)} Flatness	V _{NO} or V _{NC} = 1 and 2 V	Room		4	8	
NO or NC Off Leakage Current ^g	I _{NO/NC(off)}	V _{NO} or V _{NC} = 1 V / 2 V, V _{COM} = 2 V / 1 V	Room Full	-100 -5000	5	100 5000	pA
COM Off Leakage Current ^g	I _{COM(off)}	V _{COM} = 1 V / 2 V, V _{NO} or V _{NC} = 2 V / 1 V	Room Full	-100 -5000	5	100 5000	
Channel-On Leakage Current ^g	I _{COM(on)}	V _{COM} = V _{NO} or V _{NC} = 1 V / 2 V	Room Full	-200 -10000	10	200 10000	
Digital Control							
Input Current	I _{INL} or I _{INH}		Full		1		μA
Dynamic Characteristics							
Turn-On Time	t _{ON}	V _{NO} or V _{NC} = 1.5 V	Room Full		50	120 200	ns
Turn-Off Time	t _{OFF}		Room Full		20	50 120	
Charge Injection ^d	Q _{INJ}	C _L = 1 nF, V _{GEN} = 0 V, R _{GEN} = 0 Ω	Room		1	5	pC
Off-Isolation	OIRR	R _L = 50 Ω, C _L = 5 pF, f = 1 MHz	Room		-74		dB
Crosstalk	X _{TALK}		Room		-90		
NC and NO Capacitance	C _(off)	f = 1 MHz	Room		7		pF
Channel-On Capacitance	C _{COM(on)}		Room		20		
Com-Off Capacitance	C _{COM(off)}		Room		13		
Power Supply							
Power Supply Range	V+			2.7		12	V
Power Supply Current	I+	V+ = 3.3 V, V _{IN} = 0 or 3.3 V				1	μA

Notes:

- Room = 25°C, Full = as determined by the operating suffix.
- The algebraic convention whereby the most negative value is a minimum and the most positive a maximum, is used in this data sheet.
- Typical values are for design aid only, not guaranteed nor subject to production testing.
- Guarantee by design, nor subjected to production test.
- V_{IN} = input voltage to perform proper function.
- Difference of min and max values.
- Guaranteed by 5-V leakage test, not production tested.



New Product

DG9262/9263
Vishay Siliconix

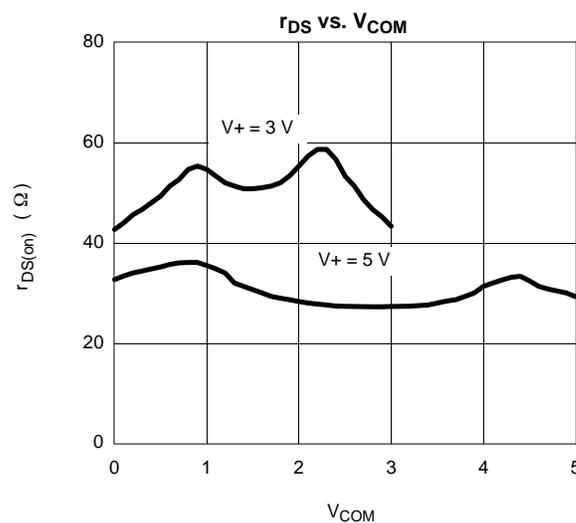
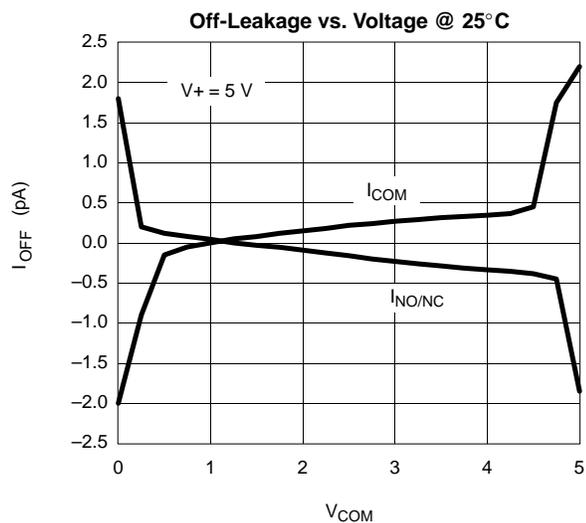
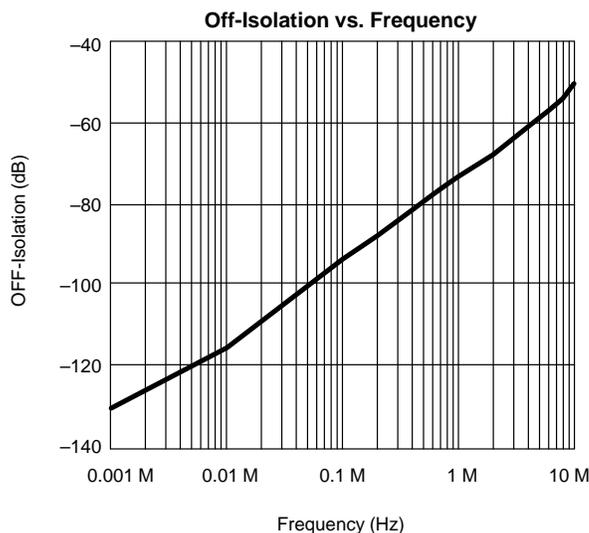
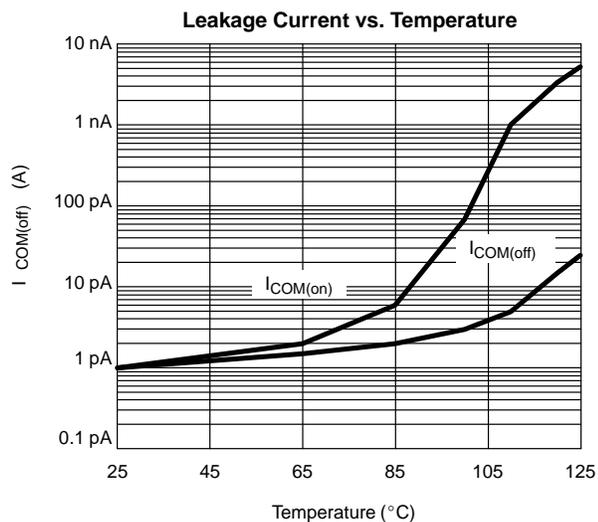
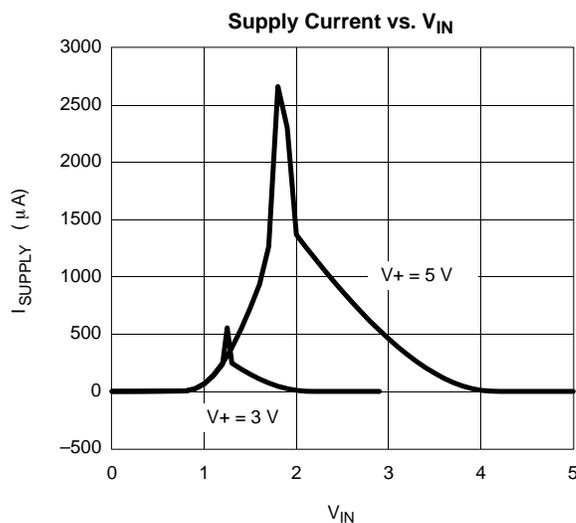
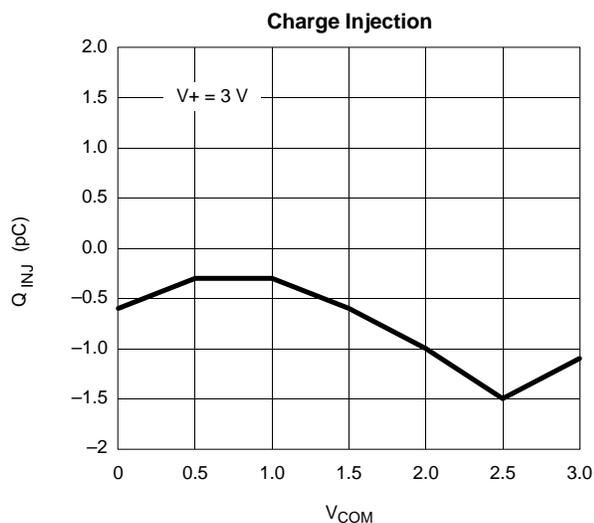
SPECIFICATIONS (V+ = 5 V)							
Parameter	Symbol	Test Conditions Otherwise Unless Specified V+ = 5 V, ± 10%, VIN = 0.8 or 2.4 V ^e	Temp ^a	D Suffix -40 to 85°C			Unit
				Min ^b	Typ ^c	max ^b	
Analog Switch							
Analog Signal Range ^d	V _{ANALOG}		Full	0		5	V
Drain-Source On-Resistance	r _{DS(on)}	V _{NO} or V _{NC} = 3.5 V, V+ = 4.5 V I _{COM} = 5 mA	Room Full		30	60 75	Ω
r _{DS(on)} Match ^d	Δr _{DS(on)}	V _{NO} or V _{NC} = 3.5 V	Room		0.4	2	
r _{DS(on)} Flatness ^f	r _{DS(on)} Flatness	V _{NO} or V _{NC} = 1, 2, and 3 V	Room		2	6	
NO or NC Off Leakage Current	I _{NO/NC(off)}	V _{NO} or V _{NC} = 1 V / 4 V, V _{COM} = 4 V / 1 V	Room Full	-100 -5000	10	100 5000	pA
COM Off Leakage Current	I _{COM(off)}	V _{COM} = 1 V / 4 V, V _{NO} or V _{NC} = 4 V / 1 V	Room Full	-100 -5000	10	100 5000	
Channel-On Leakage Current	I _{COM(on)}	V _{COM} = V _{NO} or V _{NC} = 1 V / 4 V	Room Full	-200 -10000		200 10000	
Digital Control							
Input Current	I _{INL} or I _{INH}		Full		1		μA
Dynamic Characteristics							
Turn-On Time	t _{ON}	V _{NO} or V _{NC} = 3.0 V	Room Full		35	75 150	ns
Turn-Off Time	t _{OFF}		Room Full		20	50 100	
Charge Injection ^d	Q _{INJ}	C _L = 1 nF, V _{GEN} = 0 V, R _{GEN} = 0 Ω	Room		2	5	pC
Off-Isolation	OIRR	R _L = 50 Ω, C _L = 5 pF, f = 1 MHz	Room		-74		dB
Crosstalk	X _{TALK}		Room		-90		
NC and NO Capacitance	C _(off)	f = 1 MHz	Room		7		pF
Channel-On Capacitance	C _{D(on)}		Room		20		
Com-Off Capacitance	C _{D(off)}		Room		13		
Power Supply							
Power Supply Range	V+			2.7		12	V
Power Supply Current	I+	V+ = 5.5 V, V _{IN} = 0 or 5.5 V				1	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.
- f. Difference of min and max values.

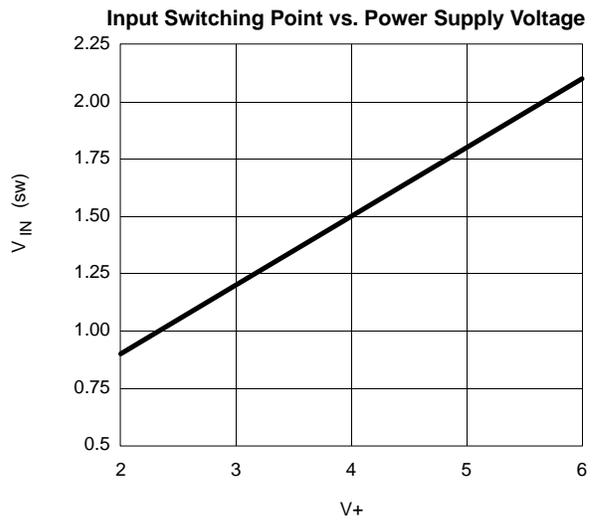
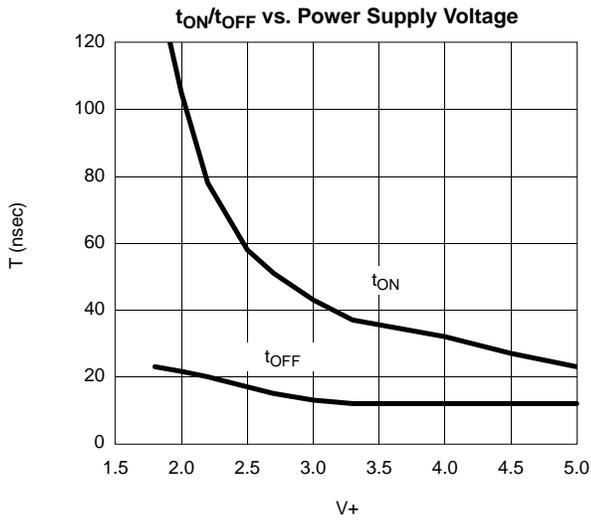
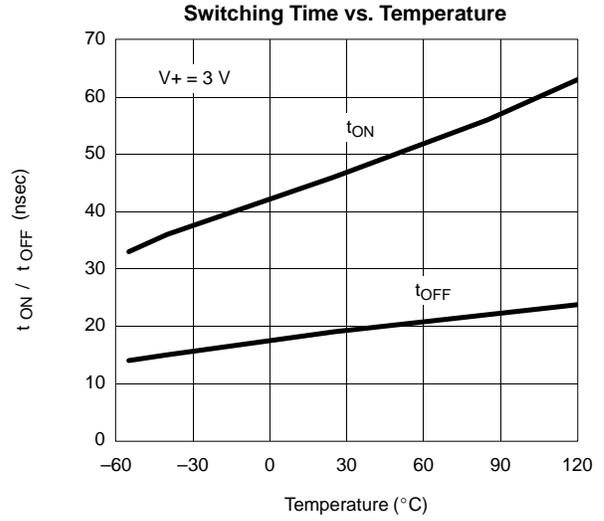
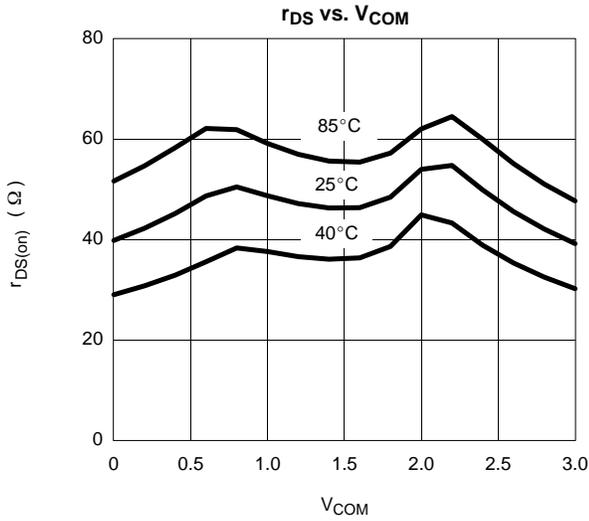


TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

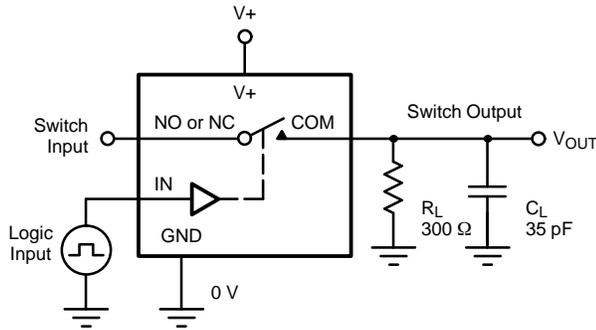




TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

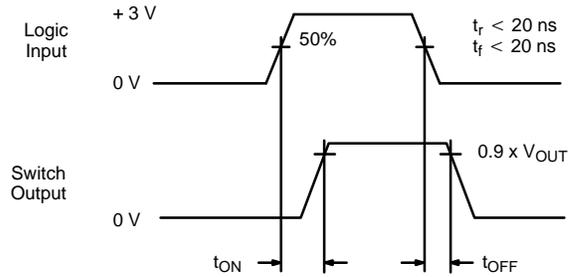


TEST CIRCUITS



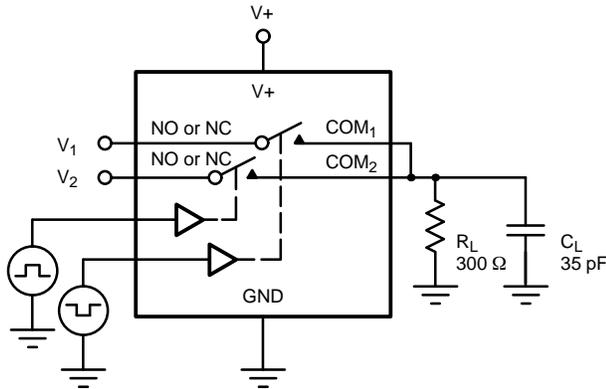
C_L (includes fixture and stray capacitance)

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



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)

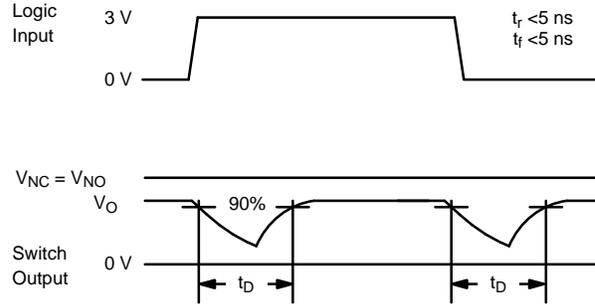
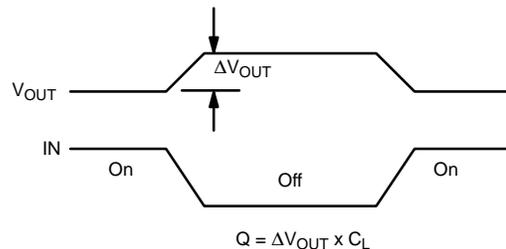
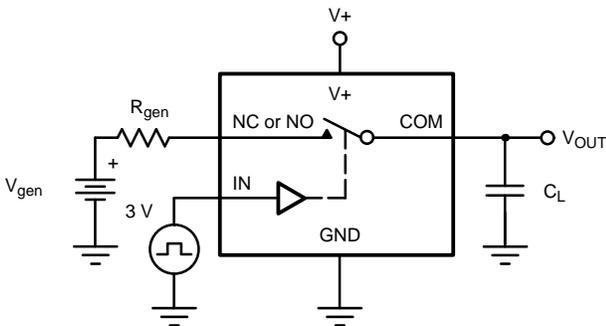


FIGURE 2. Break-Before-Make Interval



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

FIGURE 3. Charge Injection

TEST CIRCUITS

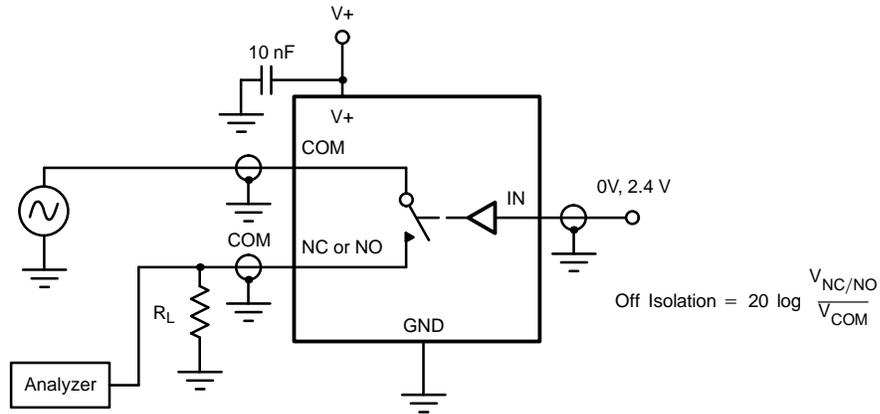


FIGURE 4. Off-Isolation

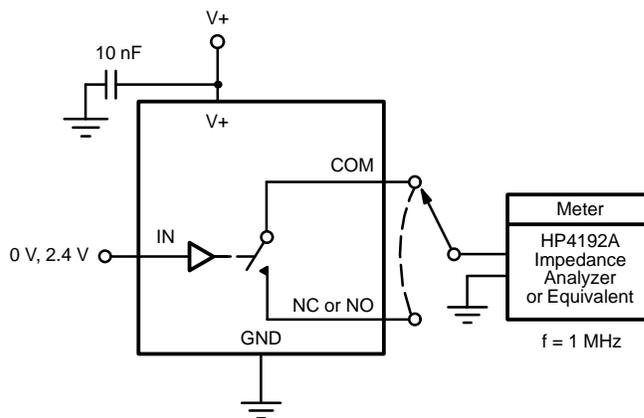


FIGURE 5. Channel Off/On Capacitance