

**ORDERING INFORMATION**

TEMP. RANGE	PACKAGE	PART NUMBER
-40 °C to +85 °C	MSOP10	DG2535EDQ-T1-GE3
		DG2733EDQ-T1-GE3
	DFN-10	DG2535EDN-T1-GE4
		DG2733EDN-T1-GE4

ABSOLUTE MAXIMUM RATINGS ($T_A = 25\text{ °C}$, unless otherwise noted)

PARAMETER		SYMBOL	LIMIT	UNIT
Reference to GND	V+		-0.3 V to +6 V	V
	IN, COM, NC, NO ^a		-0.3 V to (V+ + 0.3)	
Current (any terminal except NO, NC or COM)			30	mA
Continuous current (NO, NC, or COM)			± 300	
Peak current (pulsed at 1 ms, 10 % duty cycle)			± 500	
Storage temperature (D suffix)			-65 to +150	°C
Power dissipation (packages) ^b	miniQFN10 ^c		208	mW
Latch up current		JESD78A	> 400	mA
ESD - HBM		ANSI / ESDA / JEDEC® JS-001	> 5000	V
ESD - CDM		JESD22-C101	> 1000	
ESD - MM		JESD22-A115	> 200	

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 4 mW/°C above 70 °C.

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.



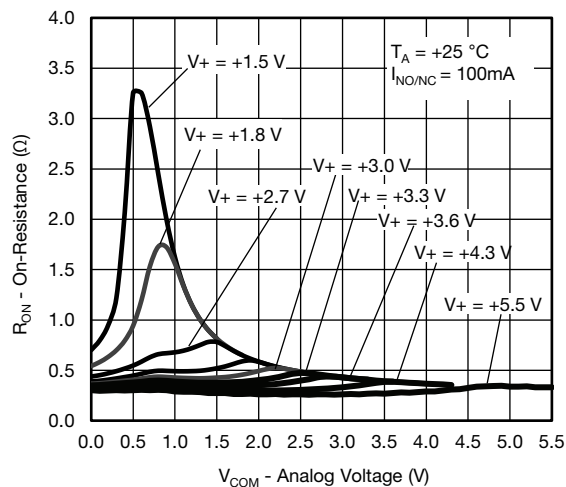
SPECIFICATIONS							
PARAMETER	SYMBOL	TEST CONDITIONS UNLESS OTHERWISE SPECIFIED V+ = 3 V, ± 10 %,V _{IN} = 0.4 V or 1.65 V ^e	TEMP. ^a	LIMITS -40 °C to +85 °C			UNIT
				MIN. ^b	TYP. ^c	MAX. ^b	
Analog Switch							
Analog signal range ^d	V _{analog}	R _{DS(on)}	Full	0	-	V+	V
On-resistance	R _{DS(on)}	V+ = 2.7 V, I _{NO/NC} = 100 mA, V _{COM} = 0.5 V	Room	-	0.5	0.7	Ω
		V+ = 2.7 V, I _{NO/NC} = 100 mA, V _{COM} = 1.5 V	Full	-	0.6	-	
		V+ = 2.7 V, I _{NO/NC} = 100 mA, V _{COM} = 0.5 V					
		V+ = 2.7 V, I _{NO/NC} = 100 mA, V _{COM} = 1.5 V	Room	-	0.3	0.5	
		V+ = 5.5 V, I _{NO/NC} = 100 mA, V _{COM} = 0.9 V					
		V+ = 5.5 V, I _{NO/NC} = 100 mA, V _{COM} = 2.5 V	Full	-	0.4	-	
		V+ = 5.5 V, I _{NO/NC} = 100 mA, V _{COM} = 0.9 V					
		V+ = 5.5 V, I _{NO/NC} = 100 mA, V _{COM} = 2.5 V					
R _{ON} match ^d	ΔR _{ON}	V+ = 2.7 V, I _{NO/NC} = 100 mA, V _{COM} = 0.5 V, 1.5 V V+ = 5.5 V, I _{NO/NC} = 100 mA, V _{COM} = 0.9 V, 2.5 V	Room	-	0.06	0.08	
R _{ON} resistance flatness ^d	R _{ON} flatness	V+ = 2.7 V, I _{NO/NC} = 100 mA, V _{COM} = 0.5 V, 1.5 V	Room	-	-	0.15	
Switch off leakage current	I _{NO/NC(off)}	V+ = 5 V, V _{NO/NC} = 0.5 V / 4.5 V, V _{COM} = 4.5 V / 0.5 V	Room	-8	-	8	
	I _{COM(off)}		Full	-50	-	50	
			Room	-8	-	8	
			Full	-50	-	50	
Channel-on leakage current	I _{COM(on)}	V+ = 5 V, V _{NO/NC} = V _{COM} = 4.5 V / 0.5 V	Room	-10	-	10	
			Full	-50	-	50	
Digital Control							
Input high voltage	V _{INH}	V+ = 3 V	Full	1.65	-	-	V
Input low voltage	V _{INL}		Full	-	-	0.4	
Input high voltage	V _{INH}	V+ = 5 V	Full	1.8	-	-	
Input low voltage	V _{INL}		Full	-	-	0.6	
Input capacitance	C _{IN}		Full	-	6	-	pF
Input current	I _{INL} or I _{INH}	V _{IN} = 0 or V+	Full	-1	-	1	μA
Dynamic Characteristics							
Break-Before-Make time ^e	t _{BBM}	V+ = 3.6 V, V _{NO} , V _{NC} = 1.5 V, R _L = 50 Ω, C _L = 35 pF	Room	1	15	-	ns
Turn-on time ^e	t _{ON}		Room	-	28	78	
			Full	-	-	80	
			Room	-	13	58	
Turn-off time ^e	t _{OFF}		Full	-	-	60	
		Room	-	-70	-	dB	
Off-isolation ^d	OIRR	R _L = 50 Ω, C _L = 5 pF, f = 100 kHz	Room	-	-90		-
Crosstalk ^d	X _{TALK}			-	-	-	
3 dB bandwidth ^d		R _L = 50 Ω, C _L = 5 pF	Room	-	120	-	MHz
NO, NC off capacitance ^d	C _{NO(off)}	V _{IN} = 0 V, or V+, f = 1 MHz	Room	-	40	-	pF
	C _{NC(off)}			-	40	-	
Channel on capacitance ^d	C _{NO(on)}			-	120	-	
	C _{NC(on)}			-	120	-	
Power Supply							
Power supply range	V+		-	1.65	-	5.5	V
Power supply current	I+	V _{IN} = 0 or V+	Full	-	-	1	μA

Notes

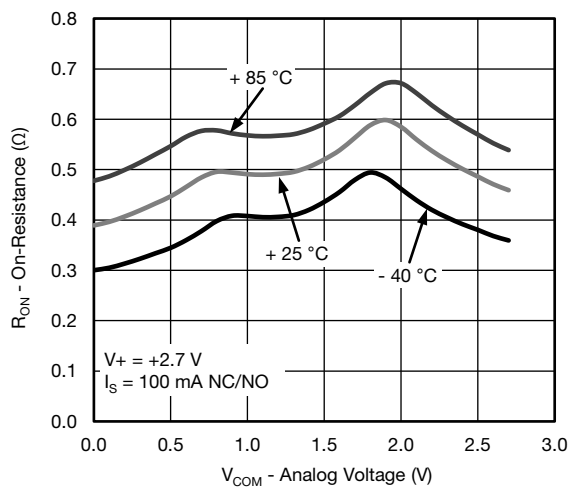
- a. Room = 25 °C, Full = as determined by the operating suffix.
b. The algebraic convention whereby the most negative value is a minimum and the most positive a maximum, is used in this datasheet.
c. Typical values are for design aid only, not guaranteed nor subject to production testing.
d. Guarantee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



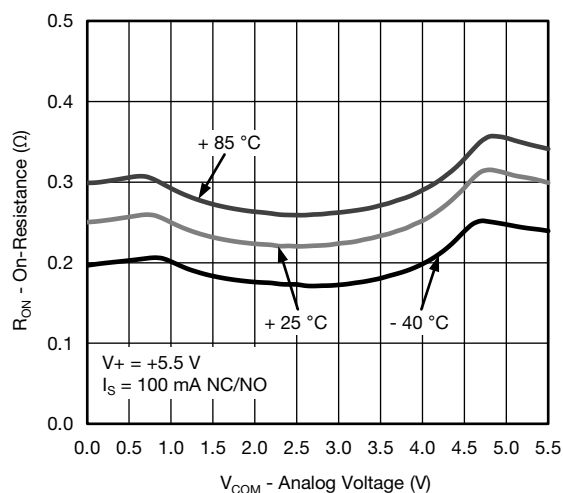
TYPICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$, unless otherwise noted)



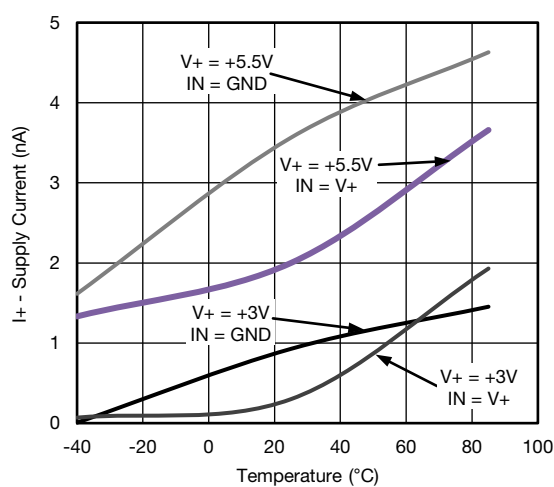
R_{ON} vs. V_{COM} and Supply Voltage



R_{ON} vs. Analog Voltage and Temperature



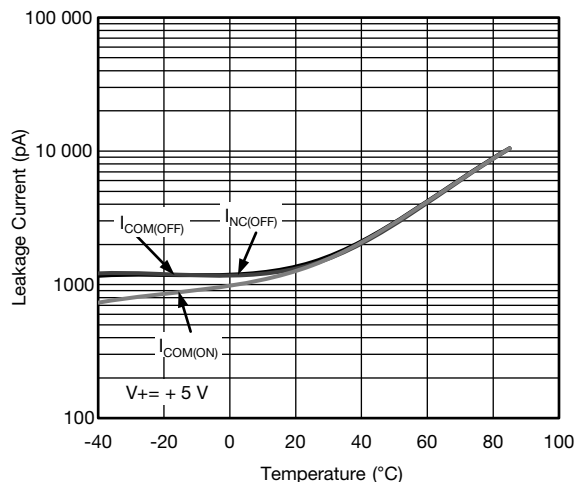
R_{ON} vs. Analog Voltage and Temperature



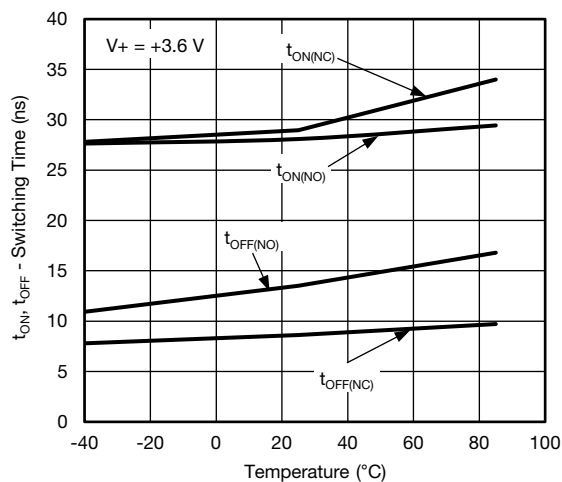
Supply Current vs. Temperature



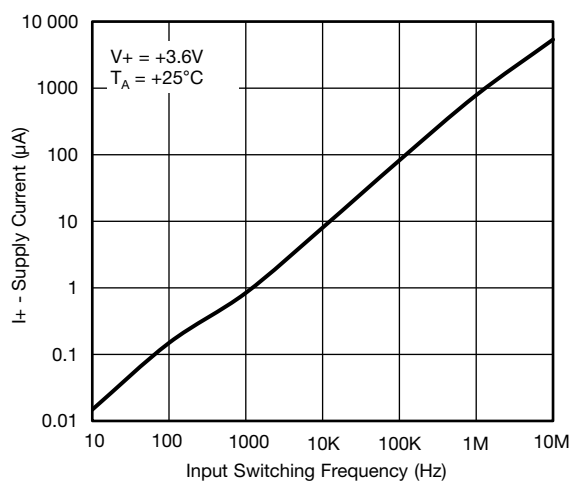
TYPICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$, unless otherwise noted)



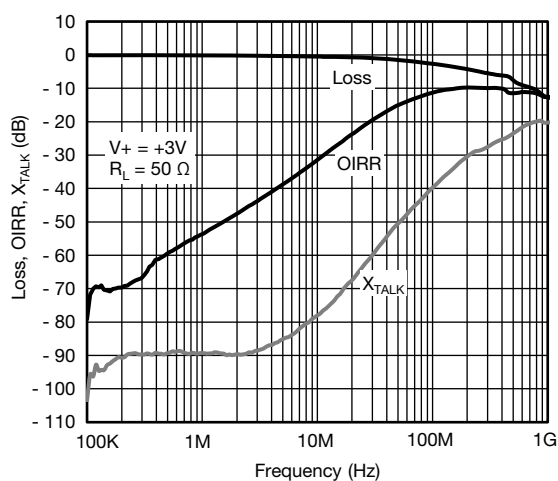
Leakage Current vs. Temperature



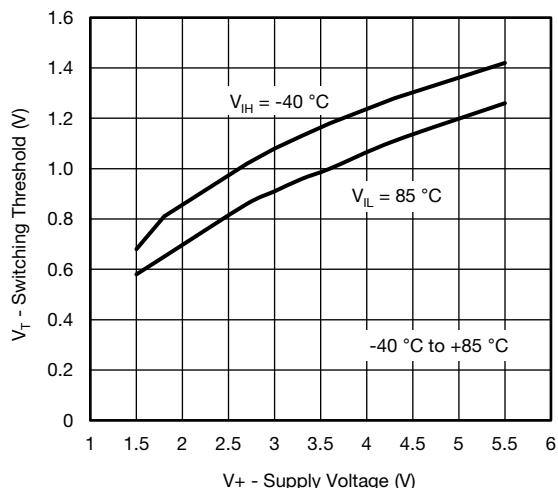
Switching Time vs. Temperature



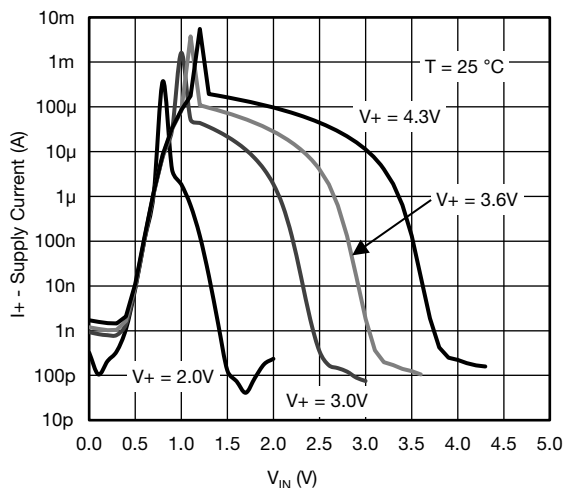
Supply Current vs. Switching Frequency



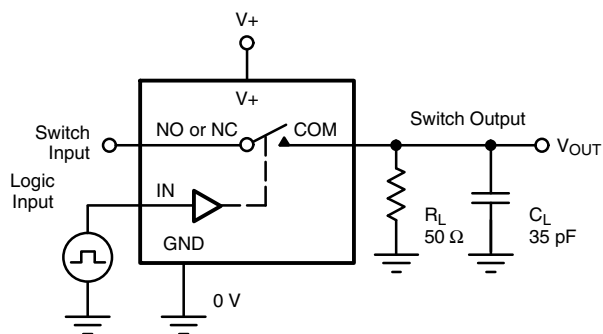
Insertion Loss, Off-Isolation Crosstalk vs. Frequency



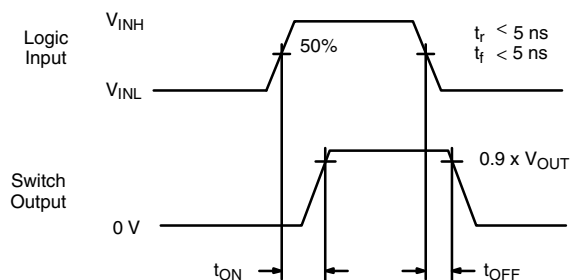
Switching Threshold vs. Supply Voltage



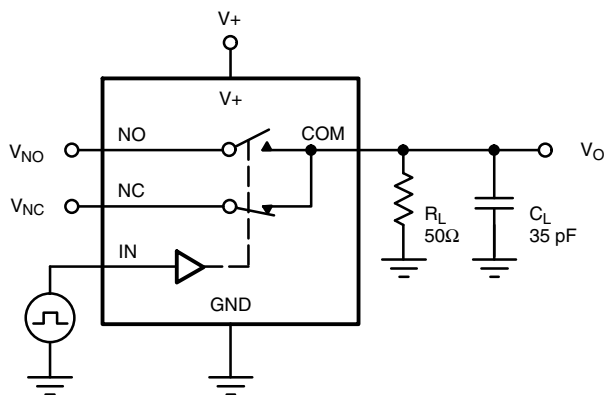
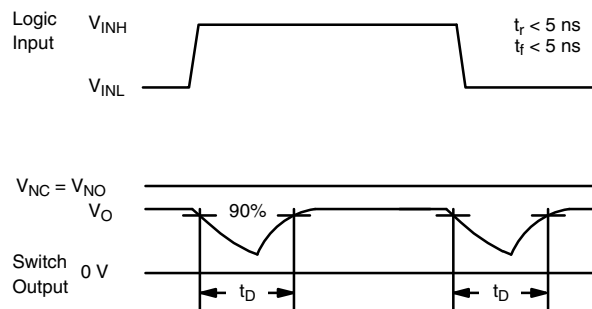
Supply Current vs. V_{IN}

TEST CIRCUITS

 C_L (includes fixture and stray capacitance)

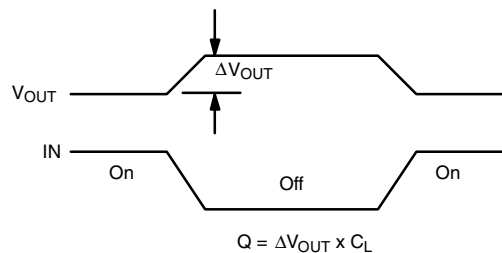
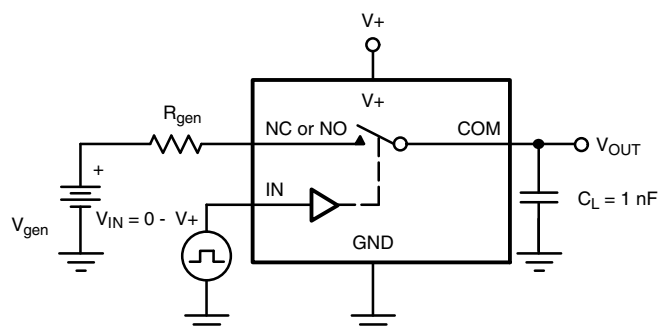
$$V_{OUT} = V_{COM} \left(\frac{R_L}{R_L + R_{ON}} \right)$$



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

Fig. 1 - Switching Time

 C_L (includes fixture and stray capacitance)

Fig. 2 - Break-Before-Make Interval

TEST CIRCUITS



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

Fig. 3 - Charge Injection

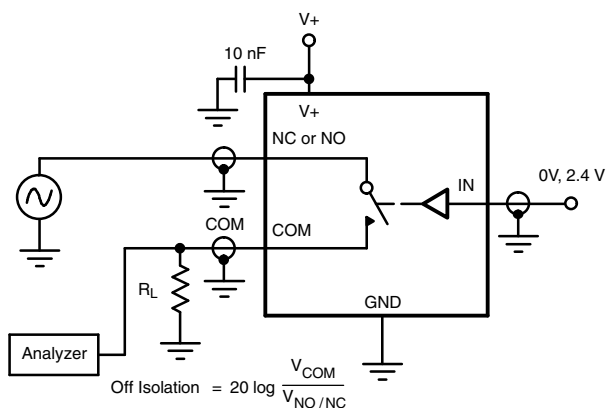


Fig. 4 - Off-Isolation

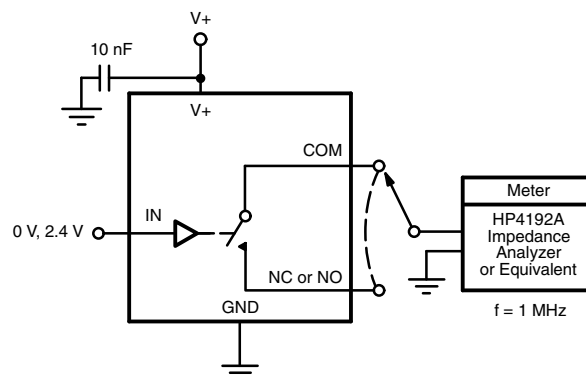


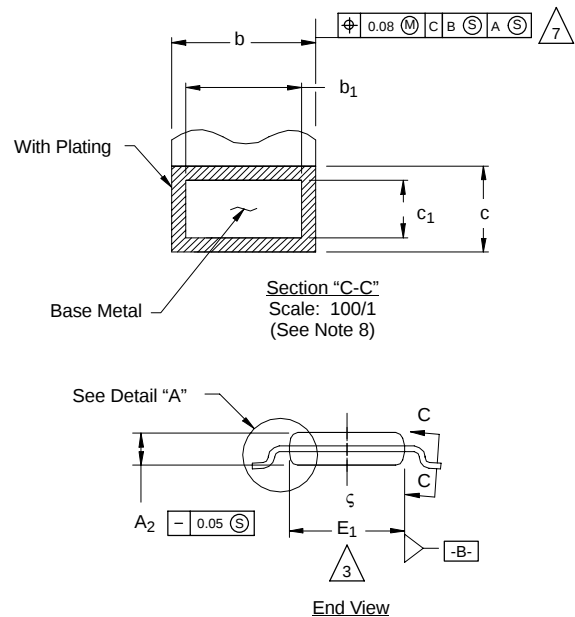
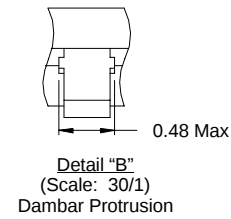
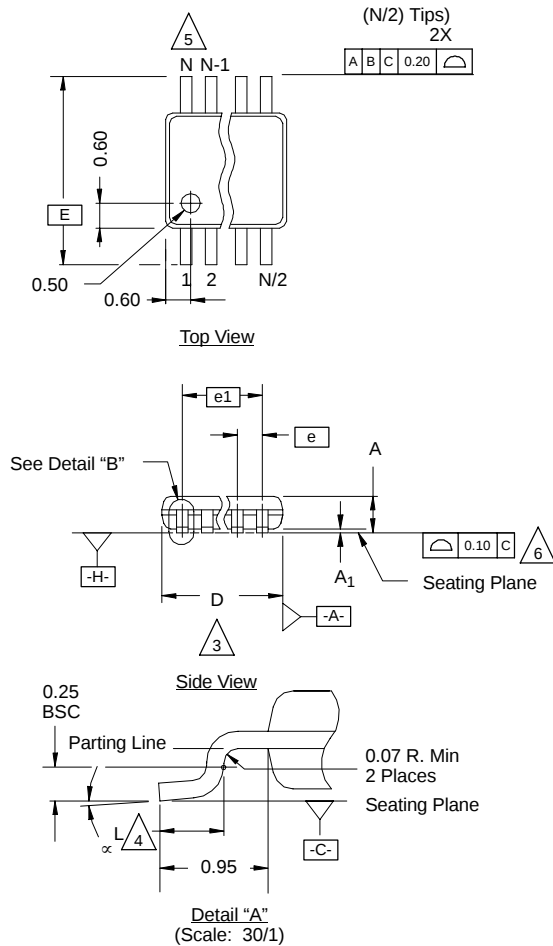
Fig. 5 - Channel Off/On Capacitance

Vishay Silconix maintains worldwide manufacturing capability. Products may be manufactured at one of several qualified locations. Reliability data for Silcon Technology and Package Reliability represent a composite of all qualified locations. For related documents such as package/tape drawings, part marking, and reliability data, see www.vishay.com/ppg?75646.



MSOP: 10-LEADS

JEDEC Part Number: MO-187, (Variation AA and BA)



NOTES:

- Die thickness allowable is 0.203 ± 0.0127 .
- Dimensioning and tolerances per ANSI.Y14.5M-1994.
- Dimensions "D" and "E₁" do not include mold flash or protrusions, and are measured at Datum plane $\square H$, mold flash or protrusions shall not exceed 0.15 mm per side.
- Dimension is the length of terminal for soldering to a substrate.
- Terminal positions are shown for reference only.
- Formed leads shall be planar with respect to one another within 0.10 mm at seating plane.
- The lead width dimension does not include Dambar protrusion. Allowable Dambar protrusion shall be 0.08 mm total in excess of the lead width dimension at maximum material condition. Dambar cannot be located on the lower radius or the lead foot. Minimum space between protrusions and an adjacent lead to be 0.14 mm. See detail "B" and Section "C-C".
- Section "C-C" to be determined at 0.10 mm to 0.25 mm from the lead tip.
- Controlling dimension: millimeters.
- This part is compliant with JEDEC registration MO-187, variation AA and BA.
- Datums $\square A$ and $\square B$ to be determined Datum plane $\square H$.
- Exposed pad area in bottom side is the same as the leadframe pad size.

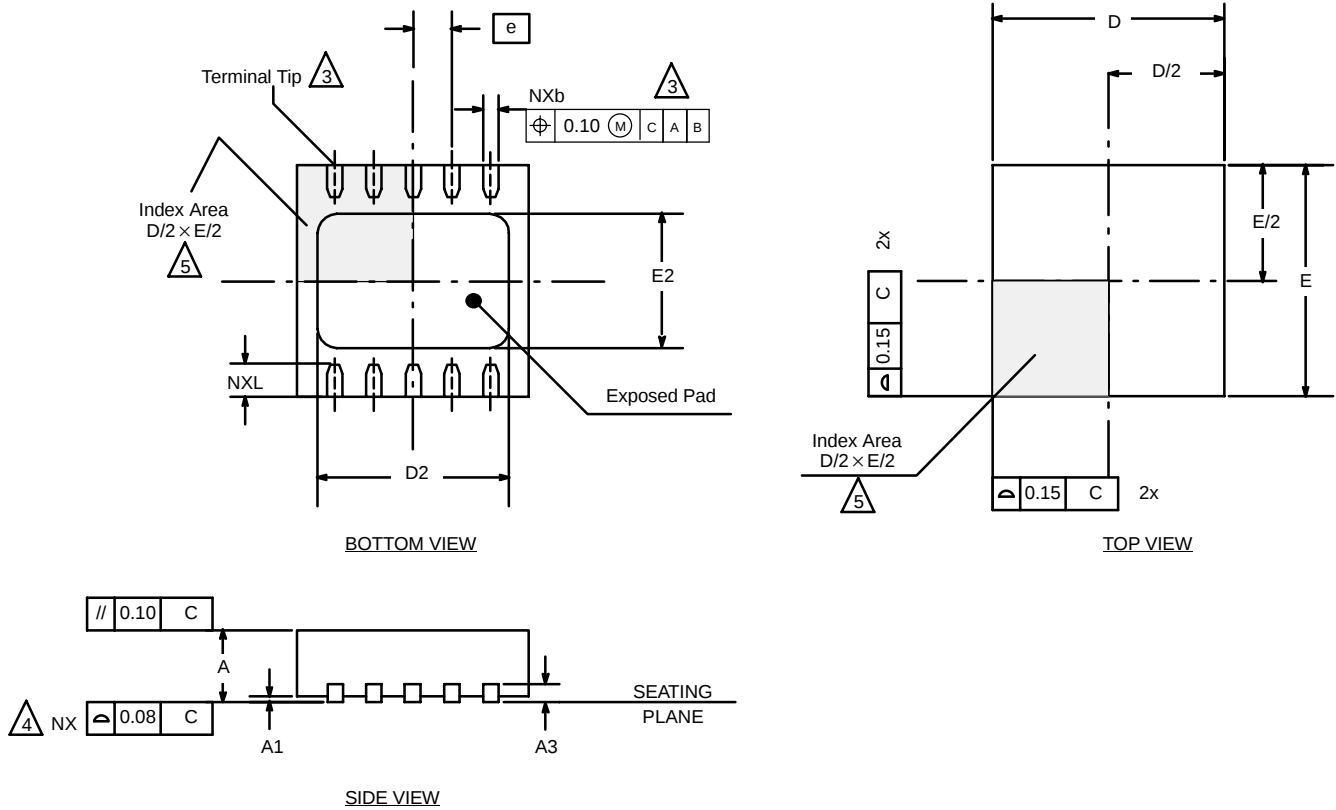
N = 10L

Dim	MILLIMETERS			Note
	Min	Nom	Max	
A	-	-	1.10	
A ₁	0.05	0.10	0.15	
A ₂	0.75	0.85	0.95	
b	0.17	-	0.27	8
b ₁	0.17	0.20	0.23	8
c	0.13	-	0.23	
c ₁	0.13	0.15	0.18	
D	3.00 BSC			3
E	4.90 BSC			
E ₁	2.90	3.00	3.10	3
e	0.50 BSC			
e ₁	2.00 BSC			
L	0.40	0.55	0.70	4
N	10			5
α	0°	4°	6°	

ECN: T-02080—Rev. C, 15-Jul-02
DWG: 5867



DFN-10 LEAD (3 X 3)



NOTES:

1. All dimensions are in millimeters and inches.

2. N is the total number of terminals.

3. Dimension b applies to metallized terminal and is measured between 0.15 and 0.30 mm from terminal tip.

4. Coplanarity applies to the exposed heat sink slug as well as the terminal.

5. The pin #1 identifier may be either a mold or marked feature, it must be located within the zone indicated.

Dim	MILLIMETERS			INCHES		
	Min	Nom	Max	Min	Nom	Max
A	0.80	0.90	1.00	0.031	0.035	0.039
A1	0.00	0.02	0.05	0.000	0.001	0.002
A3	0.20 BSC			0.008 BSC		
b	0.18	0.23	0.30	0.007	0.009	0.012
D	3.00 BSC			0.118 BSC		
D2	2.20	2.38	2.48	0.087	0.094	0.098
E	3.00 BSC			0.118 BSC		
E2	1.49	1.64	1.74	0.059	0.065	0.069
e	0.50 BSC			0.020 BSC		
L	0.30	0.40	0.50	0.012	0.016	0.020
*Use millimeters as the primary measurement.						
ECN: S-42134—Rev. A, 29-Nov-04						
DWG: 5943						



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