6 Ω On-Resistance, +12 V, ± 5 V, +5 V, +3 V, SPST and SPDT Switches

DESCRIPTION

DG417LE, DG418LE, DG419LE analog switches are designed to operate from +3 V to +16 V single supply or ± 3 V to ± 8 V dual supply and are fully specified at +12 V, ± 5 V, +5 V, and +3 V.

The DG417LE, DG418LE, DG419LE are lower voltage pin-for-pin compatible companion devices to the industry standard DG417, DG418, and DG419. Each switch conducts equally well in both directions when on, blocks input voltages up to the supply level when off, and exhibits break before switching action.

Fabricated with advanced CMOS technology, the parts provide low on resistance and fast switching speed with low power dissipation.

The DG417LE, DG418LE, DG419LE operating temperature range is -40 °C to +85 °C and devices are available in 8 lead TSSOP and SOIC packages.

FEATURES

Pb-free Available

RoHS* Available

- +3 V to +16 V single supply, or ± 3 V to ± 8 V dual supply
- On resistance: 6 Ω for DG417LE, DG418LE
  11 Ω for DG419LE
- Fast switching speeds: t_{ON} = 20 ns, t_{OFF} = 15 ns
- Break-before-make switching for DG419LE
- Fully specified at +12 V, ± 5 V, +5 V, and +3 V
- V+ to V- analog signal range
- CMOS / TTL compatible
- Control logic input can be over V+
- 8 pin TSSOP and 8 pin SOIC packages
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

Note

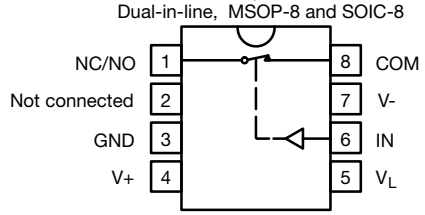
* This datasheet provides information about parts that are RoHS-compliant and / or parts that are non RoHS-compliant. For example, parts with lead (Pb) terminations are not RoHS-compliant. Please see the information / tables in this datasheet for details

APPLICATIONS

- Data acquisition systems
- Medical instruments
- Precision instruments
- Communications systems
- Automated test equipment
- Sample and hold circuit
- Audio and video signal routing

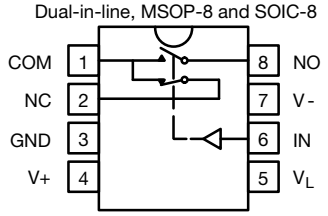
FUNCTIONAL BLOCK DIAGRAM AND PIN CONFIGURATION

DG417LE, DG418LE
Dual-in-line, MSOP-8 and SOIC-8



Top view

DG419LE
Dual-in-line, MSOP-8 and SOIC-8



Top view

TRUTH TABLE (DG417LE, DG418LE)		
LOGIC	**DG417LE**	**DG418LE**
0	On	Off
1	Off	On

TRUTH TABLE (DG419LE)		
LOGIC	**NC**	**NO**
0	On	Off
1	Off	On

ORDERING INFORMATION (DG417LE, DG418LE)		
TEMP. RANGE	**PACKAGE**	**PART NUMBER**
-40 °C to +85 °C	8-pin narrow SOIC	DG417LEDY-T1-GE4
		DG418LEDY-T1-GE4
	8-pin MSOP	DG417LEDQ-T1-GE3
		DG418LEDQ-T1-GE3

ORDERING INFORMATION (DG419LE)		
TEMP. RANGE	**PACKAGE**	**PART NUMBER**
-40 °C to +85 °C	8-pin narrow SOIC	DG419LEDY-T1-GE4
	8-pin MSOP	DG419LEDQ-T1-GE3

ABSOLUTE MAXIMUM RATINGS			
PARAMETER		**LIMIT**	**UNIT**
V+, V_L, IN reference to V-		-0.3 to 18	V
V+ reference to GND		-0.3 to 18	
GND reference to V-		-0.3 to 18	
COM, NC, NO reference to V- [a]		-0.3 to (V+ + 0.3) or 30 mA, whichever occurs first	
Continuous current (any terminal)		30	mA
Peak current, S or D (pulsed 1 ms, 10 % duty cycle)		100	
Storage temperature	(DQ, DY suffix)	-65 to +150	°C
Power dissipation (packages) [b]	8-pin MSOP [c]	320	mW
	8-pin SOIC [c]	400	
ESD / HBM	JS-001	2000	V
ESD / CDM	JS-002	2000	
Latch up	JESD78	300	mA

Notes

a. Signals on NC, NO, or COM exceeding V+ or 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 6.5 mW/°C above 25 °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 (Single supply 12 V)							
PARAMETER	**SYMBOL**	**TEST CONDITIONS UNLESS OTHERWISE SPECIFIED** V+ = 12 V, V- = 0 V V_L = 5 V, V_{IN} = 2.4 V, 0.8 V [f]	**TEMP.** [b]	**TYP.** [c]	**D SUFFIX LIMITS** -40 °C to +85 °C **MIN.** [d]	**MAX.** [d]	**UNIT**
Analog Switch							
Analog signal range [e]	V_{ANALOG}		Full	-	0	12	V
Drain-source on-resistance	$R_{DS(on)}$	V+ = 10.8 V, V- = 0 V I_{NO}, I_{NC} = 5 mA, V_{COM} = 2 V / 9 V, DG417LE, DG418LE only	Room	6	-	7	Ω
			Full	-	-	9	
		V+ = 10.8 V, V- = 0 V I_{NO}, I_{NC} = 5 mA, V_{COM} = 2 V / 9 V, DG419LE only	Room	11	-	14	
			Full	-	-	18	
Switch off leakage current	$I_{NO(off)}$ $I_{NC(off)}$	V_{COM} = 1 V / 11 V V_{NO}, V_{NC} = 11 V / 1 V	Room	± 0.002	-2	2	nA
			Full	-	-10	10	
	$I_{COM(off)}$		Room	± 0.003	-2	2	
			Full	-	-10	10	
Switch on leakage current	$I_{COM(on)}$	V_{NO}, V_{NC} = V_{COM} = 11 V / 1 V	Room	± 0.006	-2	2	
			Full	-	-10	10	
Digital Control							
Input current	I_{INL} or I_{INH}		Full	0.02	-1	1	µA
Dynamic Characteristics							
Turn-on time	t_{ON}	R_L = 300 Ω, C_L = 35 pF V_{NO}, V_{NC} = 5 V	Room	20	-	38	ns
			Full	-	-	40	
Turn-off time	t_{OFF}		Room	15	-	32	
			Full	-	-	35	
Break-before-make time	t_{BBM}	DG419LE only, V_{NC}, V_{NO} = 5 V R_L = 300 Ω, C_L = 35 pF	Room	7	-	-	
Charge injection [e]	Q_{INJ}	V_{GEN} = 0 V, R_{GEN} = 0 Ω, C_L = 1 nF	Room	26	-	-	pC
Off-isolation [e]	OIRR	R_L = 50 Ω, C_L = 5 pF, f = 1 MHz	Room	-68	-	-	dB
Channel-to-channel crosstalk [e]	X_{TALK}		Room	-72	-	-	
Source off capacitance [e]	$C_{NO(off)}$ $C_{NC(off)}$	V_{IN} = 0 V or V+, f = 1 MHz, DG417LE,DG418LE only	Room	11	-	-	pF
Drain-on capacitance [e]	C_{ON}		Room	32	-	-	
Source off capacitance [e]	$C_{NO(off)}$ $C_{NC(off)}$	V_{IN} = 0 V or V+, f = 1 MHz, DG419LE only	Room	6	-	-	
Drain-on capacitance [e]	C_{ON}		Room	20	-	-	
Power Supplies							
Positive supply current	I+	V_{IN} = 0 V or V_L	Room	0.00009	-	1	µA
			Full	-	-	5	
Negative supply current	I-		Room	-0.00009	-1	-	
			Full	-	-5	-	
Logic supply current	I_L		Room	0.00002	-	1	
			Full	-	-	5	
Ground current	I_{GND}		Room	-0.00002	-1	-	
			Full	-	-5	-	

SPECIFICATIONS (Dual supply ± 5 V)							
PARAMETER	**SYMBOL**	**TEST CONDITIONS UNLESS OTHERWISE SPECIFIED** V+ = 5 V, V- = -5 V V_L = 5 V, V_{IN} = 2.4 V, 0.8 V [f]	**TEMP.** [b]	**TYP.** [c]	**D SUFFIX LIMITS** -40 °C to +85 °C		**UNIT**
					MIN. [d]	**MAX.** [d]	
Analog Switch							
Analog signal range [e]	V_{ANALOG}		Full	-	-5	5	V
Drain-source on-resistance	$R_{DS(on)}$	V+ = 5 V, V- = -5 V I_{NO}, I_{NC} = 5 mA, V_{COM} = ± 3.5 V DG417LE / DG418LE only	Room	6	-	8	Ω
			Full	-	-	10	
		V+ = 5 V, V- = -5 V I_{NO}, I_{NC} = 5 mA, V_{COM} = ± 3.5 V DG419LE only	Room	12	-	15	
			Full	-	-	21	
Switch off leakage current [a]	$I_{NO(off)}$ $I_{NC(off)}$	V+ = 5.5 V, V- = -5.5 V V_{COM} = ± 4.5 V V_{NO}, V_{NC} = ± 4.5 V	Room	± 0.001	-2	2	nA
			Full	-	-10	10	
	$I_{COM(off)}$		Room	± 0.002	-2	2	
			Full	-	-10	10	
Channel on leakage current [a]	$I_{COM(on)}$	V+ = 5.5 V, V- = -5.5 V V_{NO}, V_{NC} = V_{COM} = ± 4.5 V	Room	± 0.003	-2	2	
			Full	-	-10	10	
Digital Control							
Input current [a]	I_{INL} or I_{INH}		Full	0.02	-1	1	µA
Dynamic Characteristics							
Turn-on time [e]	t_{ON}	R_L = 300 Ω, C_L = 35 pF V_{NO}, V_{NC} = ± 3.5 V	Room	21	-	38	ns
			Full	-	-	40	
Turn-off time [e]	t_{OFF}		Room	20	-	45	
			Full	-	-	50	
Break-before-make time [e]	t_{BBM}	DG419LE only, V_{NO}, V_{NC} = 3.5 V R_L = 300 Ω, C_L = 35 pF	Room	7	-	-	
Transition time	t_{TRANS}	R_L = 300 Ω, C_L = 35 pF V_{S1} = ± 3.5 V, V_{S2} = ± 3.5 V	Room	21	-	-	
Charge injection [e]	Q_{INJ}	V_{GEN} = 0 V, R_{GEN} = 0 Ω, C_L = 1 nF	Room	-17	-	-	pC
Off-isolation [e]	OIRR	R_L = 50 Ω, C_L = 5 pF, f = 1 MHz	Room	-69	-	-	dB
Channel-to-channel crosstalk [e]	X_{TALK}		Room	-73	-	-	
Source off capacitance [e]	$C_{NO(off)}$ $C_{NC(off)}$	V_{IN} = 0 V or V+, f = 1 MHz DG417LE / DG418LE only	Room	11	-	-	pF
Drain-on capacitance [e]	C_{ON}		Room	33	-	-	
Source off capacitance [e]	$C_{NO(off)}$ $C_{NC(off)}$	V_{IN} = 0 V or V+, f = 1 MHz DG419LE only	Room	6	-	-	
Drain-on capacitance [e]	C_{ON}		Room	20	-	-	
Power Supplies							
Positive supply current [e]	I+	V_{IN} = 0 V or V_L	Room	0.00007	-	1	µA
			Full	-	-	5	
Negative supply current [e]	I-		Room	-0.00009	-1	-	
			Full	-	-5	-	
Logic supply current [e]	I_L		Room	0.00002	-	1	
			Full	-	-	5	
Ground current [e]	I_{GND}		Room	-0.00003	-1	-	
			Full	-	-5	-	

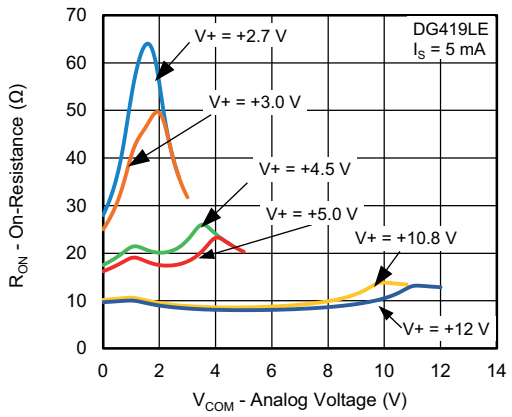
SPECIFICATIONS (Single supply 5 V)							
PARAMETER	**SYMBOL**	**TEST CONDITIONS UNLESS OTHERWISE SPECIFIED** V+ = 5 V, V- = 0 V V_L = 5 V, V_{IN} = 2.4 V, 0.8 V [f]	**TEMP.** [b]	**TYP.** [c]	**D SUFFIX LIMITS** -40 °C to +85 °C		**UNIT**
					MIN. [d]	**MAX.** [d]	
Analog Switch							
Analog signal range [e]	V_{ANALOG}		Full	-	0	5	V
Drain-source on-resistance [e]	$R_{DS(on)}$	V+ = 4.5 V, I_{NO}, I_{NC} = 5 mA V_{COM} = 1 V, 3.5 V DG417LE / DG418LE only	Room	12	-	16	Ω
			Full	-	-	18	
		V+ = 4.5 V, I_{NO}, I_{NC} = 5 mA V_{COM} = 1 V, 3.5 V DG419LE only	Room	24	-	35	
			Full	-	-	37	
Switch off leakage current [a]	$I_{NO(off)}$ $I_{NC(off)}$	V+ = 5.5 V, V- = 0 V V_{COM} = 1 V / 4.5 V V_{NO}, V_{NC} = 4.5 V / 1 V	Room	± 0.002	-1	1	nA
			Full	-	-10	10	
	$I_{COM(off)}$		Room	± 0.001	-1	1	
			Full	-	-10	10	
Switch on leakage current [a]	$I_{COM(on)}$	V+ = 5.5 V, V- = 0 V V_{NO}, V_{NC} = V_{COM} = 1 V / 4.5 V	Room	± 0.003	-1	1	
			Full	-	-10	10	
Digital Control							
Input current [a]	I_{INL} or I_{INH}		Full	0.02	-1	1	µA
Dynamic Characteristics							
Turn-on time [e]	t_{ON}	R_L = 300 Ω, C_L = 35 pF V_{NO}, V_{NC} = 3.5 V	Room	29	-	46	ns
			Full	-	-	49	
Turn-off time [e]	t_{OFF}		Room	16	-	28	
			Full	-	-	32	
Break-before-make time [e]	t_{BBM}	DG419LE only, V_{NO}, V_{NC} = 3.5 V R_L = 300 Ω, C_L = 35 pF	Room	16	-	-	
Charge injection [e]	Q_{INJ}	V_{GEN} = 0 V, R_{GEN} = 0 Ω, C_L = 1 nF	Room	10	-	-	pC
Off-isolation [e]	OIRR	R_L = 50 Ω, C_L = 5 pF, f = 1 MHz	Room	-68	-	-	dB
Channel-to-channel crosstalk [e]	X_{TALK}		Room	-72	-	-	
Source off capacitance [e]	$C_{NO(off)}$ $C_{NC(off)}$	V_{IN} = 0 V or V+, f = 1 MHz DG417LE / DG418LE only	Room	13	-	-	pF
Drain-on capacitance [e]	C_{ON}		Room	34	-	-	
Source off capacitance [e]	$C_{NO(off)}$ $C_{NC(off)}$	V_{IN} = 0 V or V+, f = 1 MHz DG419LE only	Room	7	-	-	
Drain-on capacitance [e]	C_{ON}		Room	22	-	-	
Power Supplies							
Positive supply current [e]	I+	V_{IN} = 0 V or V_L	Room	0.00006	-	1	µA
			Full	-	-	5	
Negative supply current [e]	I-		Room	-0.00006	-1	-	
			Full	-	-5	-	
Logic supply current [e]	I_L		Room	0.00002	-	1	
			Full	-	-	5	
Ground current [e]	I_{GND}		Room	-0.00002	-1	-	
			Full	-	-5	-	

SPECIFICATIONS (Single supply 3 V)							
PARAMETER	**SYMBOL**	**TEST CONDITIONS UNLESS OTHERWISE SPECIFIED** V+ = 3 V, V- = 0 V V_L = 3 V, V_{IN} = 2 V, 0.4 V [f]	**TEMP.** [b]	**TYP.** [c]	**D SUFFIX LIMITS** -40 °C to +85 °C		**UNIT**
					MIN. [d]	**MAX.** [d]	
Analog Switch							
Analog signal range [e]	V_{ANALOG}		Full	-	0	3	V
Drain-source on-resistance	$R_{DS(on)}$	V+ = 2.7 V, V- = 0 V I_{NO}, I_{NC} = 5 mA, V_{COM} = 0.5 V, 2.2 V DG417LE / DG418LE only	Room	22	-	34	Ω
			Full	-	-	38	
		V+ = 2.7 V, V- = 0 V I_{NO}, I_{NC} = 5 mA, V_{COM} = 0.5 V, 2.2 V DG419LE only	Room	43	-	68	
			Full	-	-	75	
Switch off leakage current [a]	$I_{NO(off)}$ $I_{NC(off)}$	V+ = 3.3 V, V- = 0 V V_{COM} = 1 V, 2 V, V_{NO}, V_{NC} = 2 V, 1 V	Room	± 0.002	-1	1	nA
			Full	-	-10	10	
	$I_{COM(off)}$		Room	± 0.001	-1	1	
			Full	-	-10	10	
Channel on leakage current [a]	$I_{COM(on)}$	V+ = 3.3 V, V- = 0 V V_{NO}, V_{NC} = V_{COM} = 1 V, 2 V	Room	± 0.002	-1	1	
			Full	-	-10	10	
Digital Control							
Input current [a]	I_{INL} or I_{INH}		Full	0.02	-1	1	µA
Dynamic Characteristics							
Turn-on time	t_{ON}	R_L = 300 Ω, C_L = 35 pF V_{NO}, V_{NC} = 1.5 V	Room	59	-	77	ns
			Full	-	-	81	
Turn-off time	t_{OFF}		Room	33	-	54	
			Full	-	-	69	
Break-before-make time [e]	t_{BBM}	DG419LE only, V_{NO}, V_{NC} = 1.5 V R_L = 300 Ω, C_L = 35 pF	Room	31	-	-	
Charge injection [e]	Q_{INJ}	V_{GEN} = 0 V, R_{GEN} = 0 Ω, C_L = 10 nF	Room	6	-	-	pC
Off-isolation [e]	OIRR	R_L = 50 Ω, C_L = 5 pF, f = 1 MHz	Room	-68	-	-	dB
Channel-to-channel crosstalk [e]	X_{TALK}		Room	-71	-	-	
Source off capacitance [e]	$C_{NO(off)}$ $C_{NC(off)}$	V_{IN} = 0 V or V+, f = 1 MHz DG417LE / DG418LE only	Room	14	-	-	pF
Channel on capacitance [e]	$C_{D(on)}$		Room	35	-	-	
Source off capacitance [e]	$C_{NO(off)}$ $C_{NC(off)}$	V_{IN} = 0 V or V+, f = 1 MHz DG419LE only	Room	8	-	-	
Channel on capacitance [e]	$C_{D(on)}$		Room	23	-	-	
Power Supplies							
Positive supply current [e]	I+	V_{IN} = 0 V or V_L	Room	0.00005	-	1	µA
			Full	-	-	5	
Negative supply current [e]	I-		Room	-0.00007	-1	-	
			Full	-	-5	-	
Logic supply current [e]	I_L		Room	0.00002	-	1	
			Full	-	-	5	
Ground current [e]	I_{GND}		Room	-0.00002	-1	-	
			Full	-	-5	-	

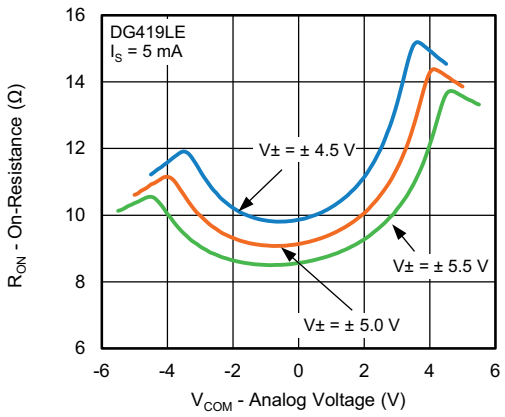
Notes

a. Leakage parameters are guaranteed by worst case test condition and not subject to production test
b. Room = 25 °C, full = as determined by the operating temperature suffix
c. Typical values are for DESIGN AID ONLY, not guaranteed nor subject to production testing
d. The algebraic convention whereby the most negative value is a minimum and the most positive a maximum, is used in this datasheet
e. Guaranteed by design, not subject to production test
f. V_{IN} = input voltage to perform proper function

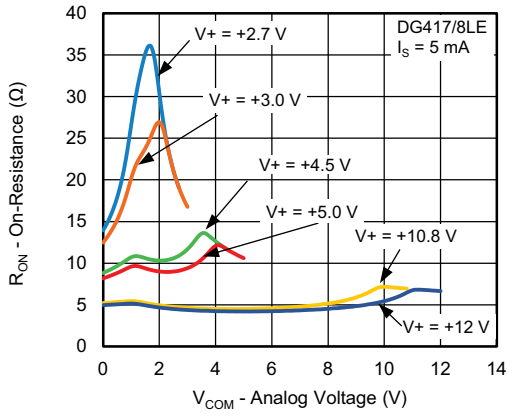
TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



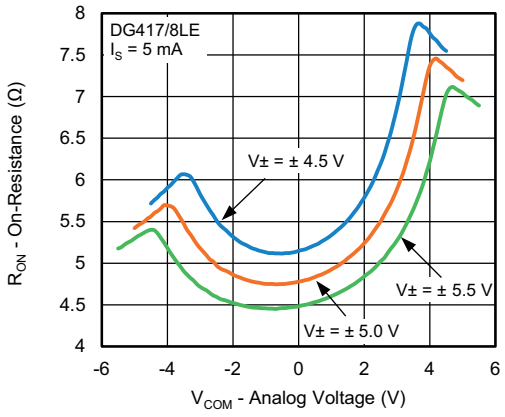
$R_{DS(on)}$ vs. V_{COM} and Supply Voltage



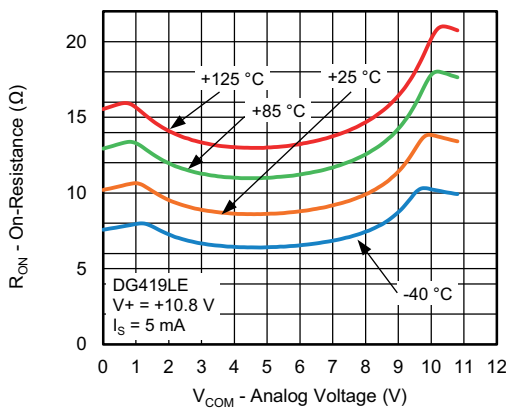
$R_{DS(on)}$ vs. V_{COM} and Supply Voltage



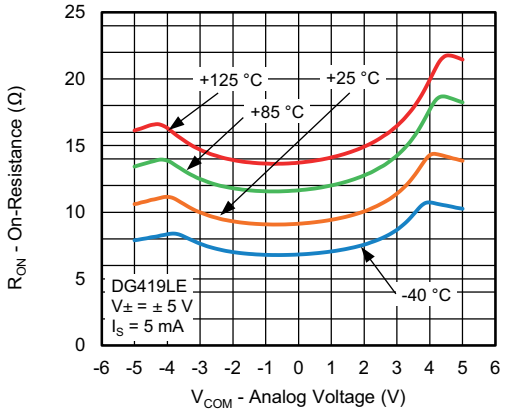
$R_{DS(on)}$ vs. V_{COM} and Supply Voltage



$R_{DS(on)}$ vs. V_{COM} and Supply Voltage

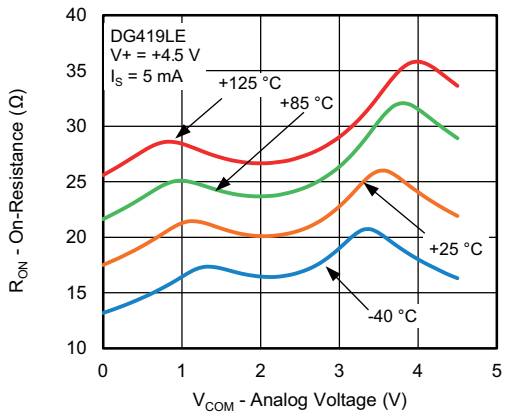


$R_{DS(on)}$ vs. Analog Voltage and Temperature

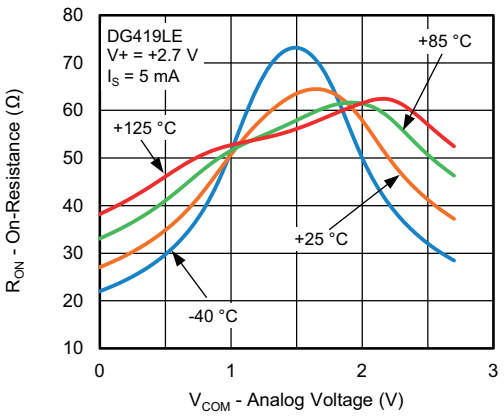


$R_{DS(on)}$ vs. Analog Voltage and Temperature

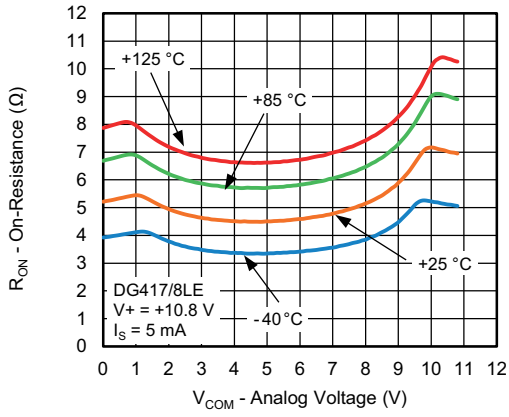
TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



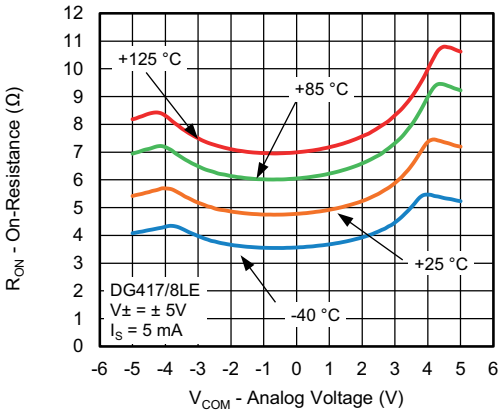
$R_{DS(on)}$ vs. Analog Voltage and Temperature



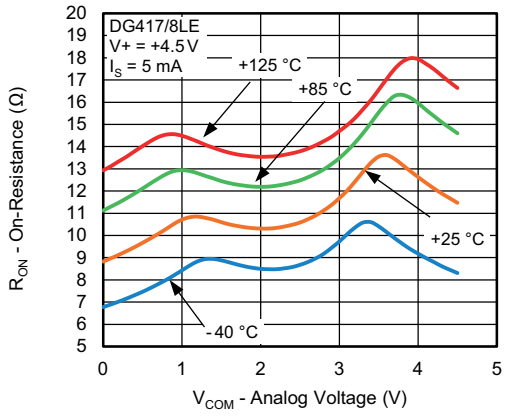
$R_{DS(on)}$ vs. Analog Voltage and Temperature



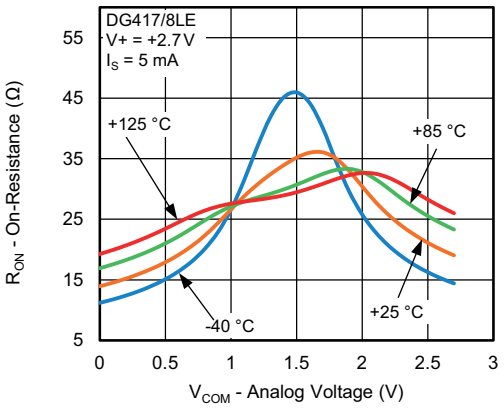
$R_{DS(on)}$ vs. Analog Voltage and Temperature



$R_{DS(on)}$ vs. Analog Voltage and Temperature

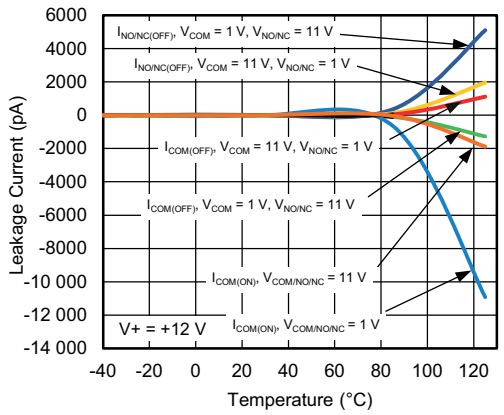


$R_{DS(on)}$ vs. Analog Voltage and Temperature

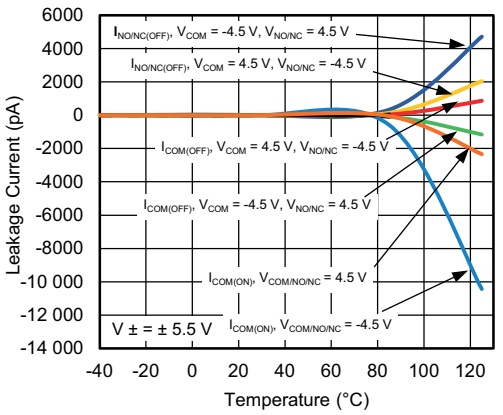


$R_{DS(on)}$ vs. Analog Voltage and Temperature

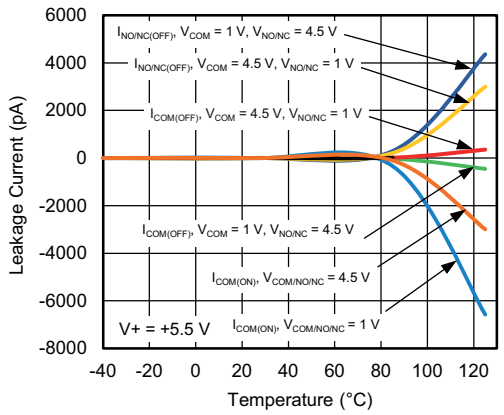
TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



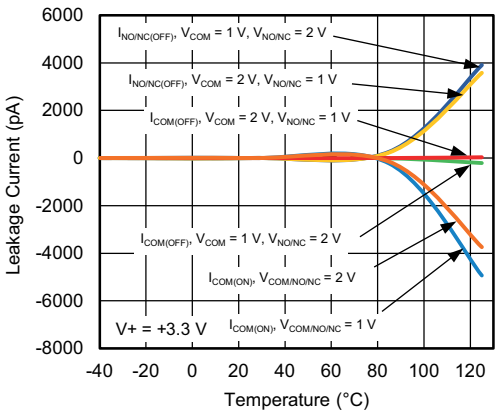
Leakage Current vs. Temperature



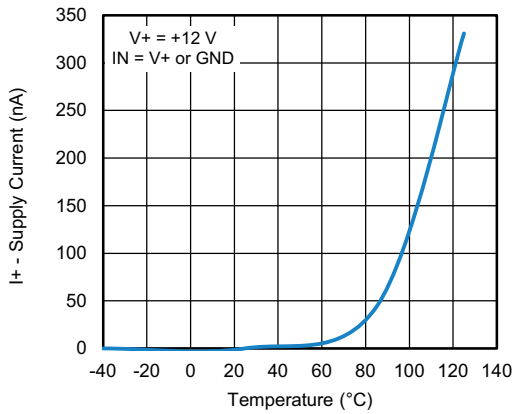
Leakage Current vs. Temperature



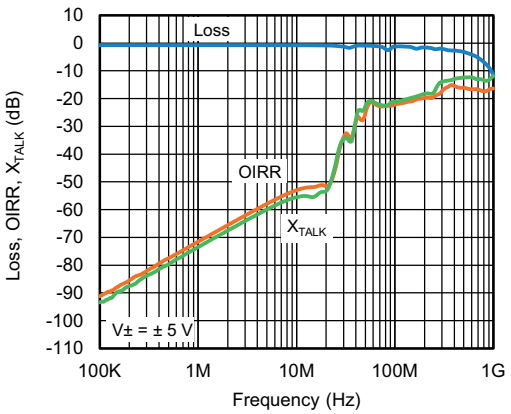
Leakage Current vs. Temperature



Leakage Current vs. Temperature

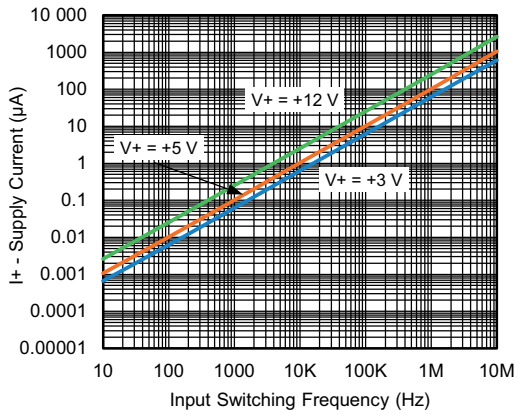


Supply Current vs. Temperature

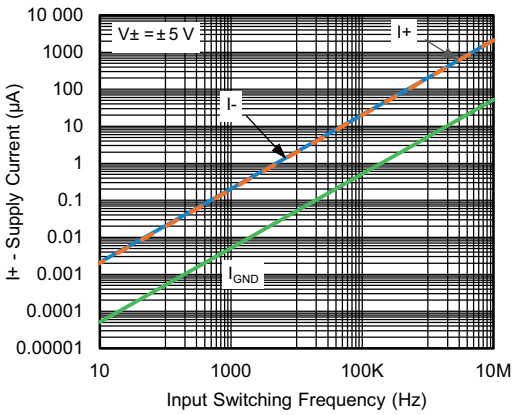


Insertion Loss, Off-Isolation Crosstalk vs. Frequency

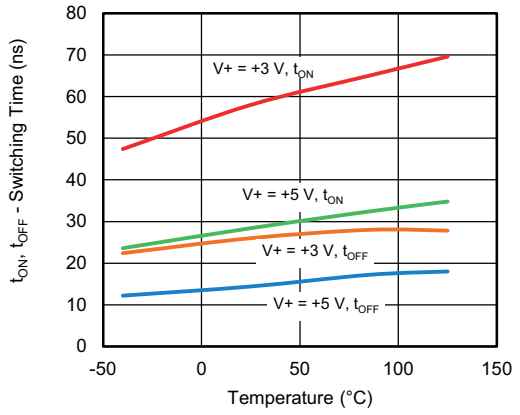
TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



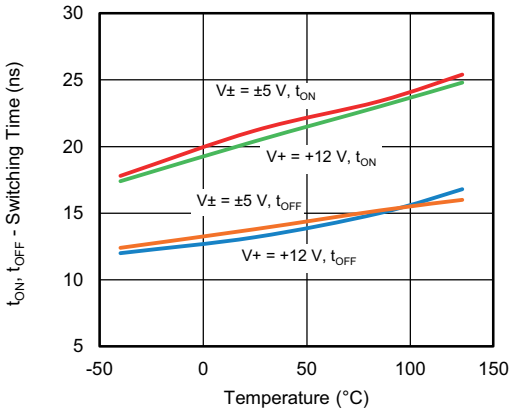
Supply Current vs. Input Switching Frequency



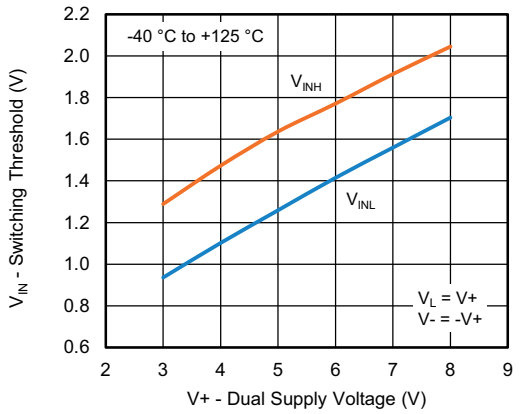
Supply Current vs. Input Switching Frequency



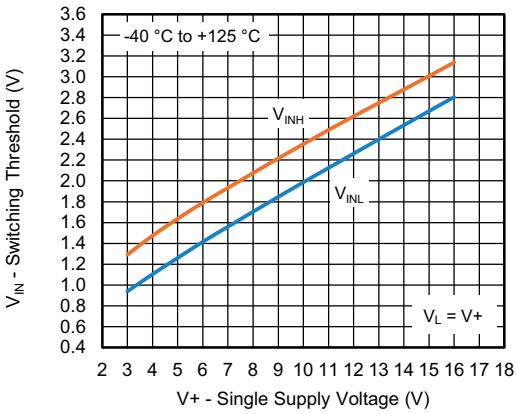
Switching Time vs. Temperature



Switching Time vs. Temperature

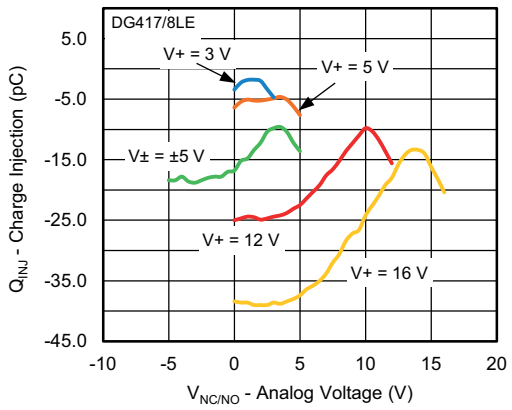


Switching Threshold vs. Dual Supply Voltage

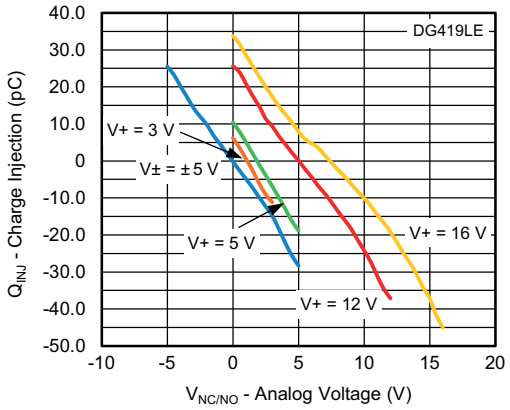


Switching Threshold vs. Single Supply Voltage

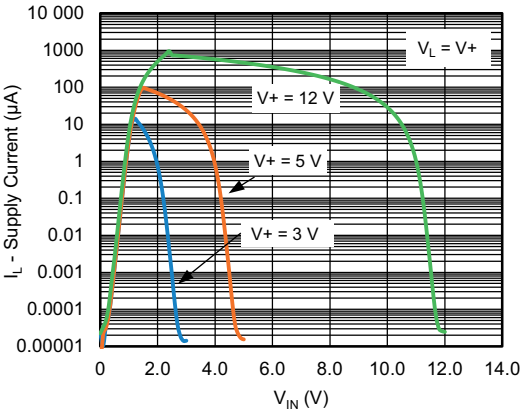
TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



Charge Injection vs. Analog Voltage

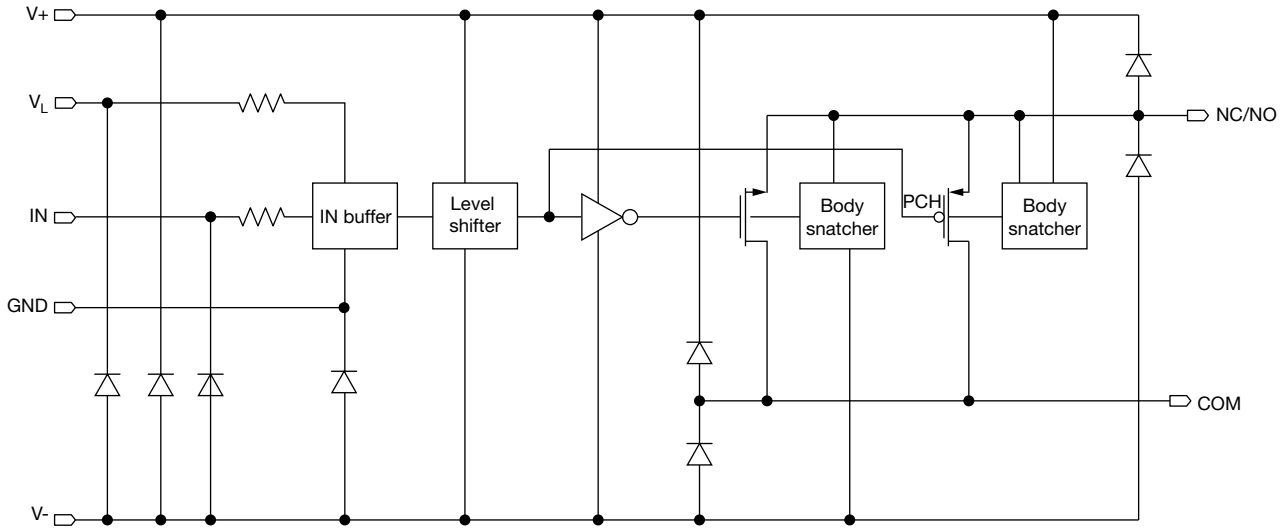


Charge Injection vs. Analog Voltage

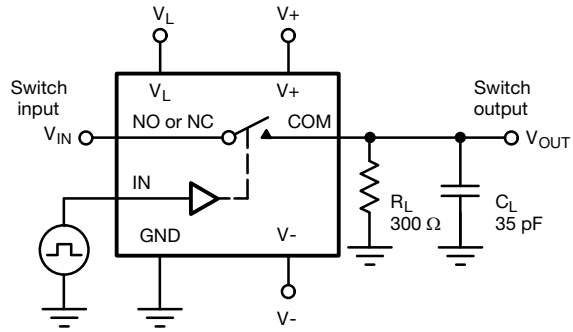


Supply Current vs. Enable Input Voltage

SCHEMATIC DIAGRAM (Typical channel)

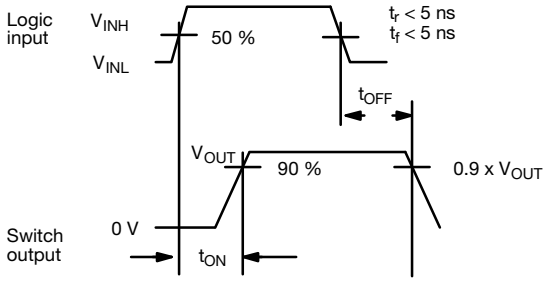


TEST CIRCUITS



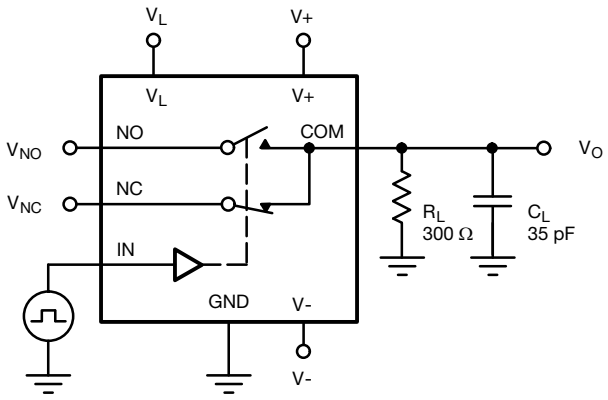
C_L (includes fixture and stray capacitance)

$$V_{OUT} = V_{IN} \frac{R_L}{R_L + R_{ON}}$$



Note
- Logic input waveform is inverted for switches that have the opposite logic sense control

Fig. 1 - Switching Time



C_L (includes fixture and stray capacitance)

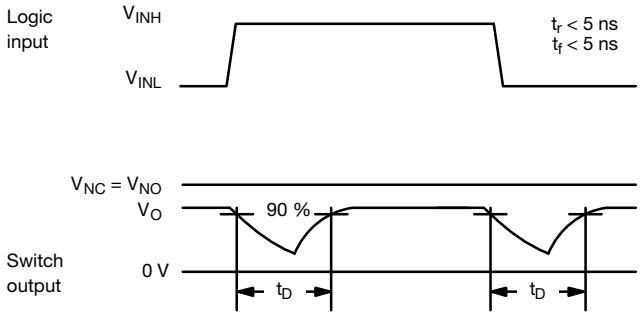
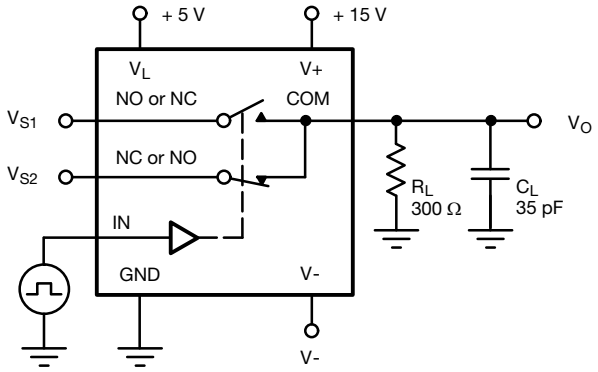
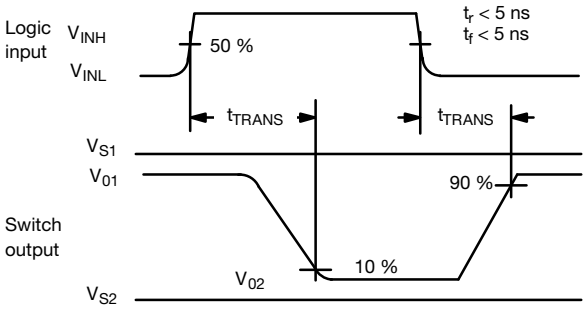


Fig. 2 - Break-Before-Make (DG419LE)

TEST CIRCUITS

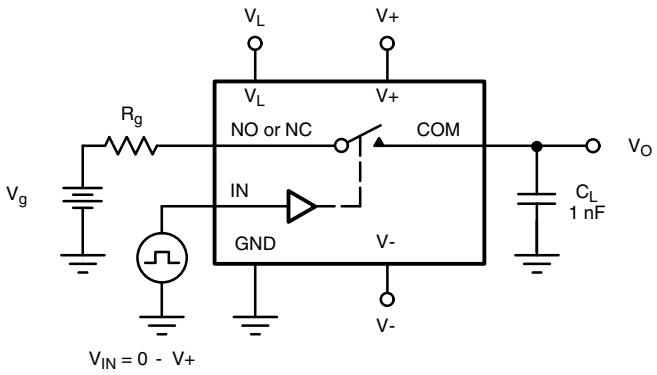


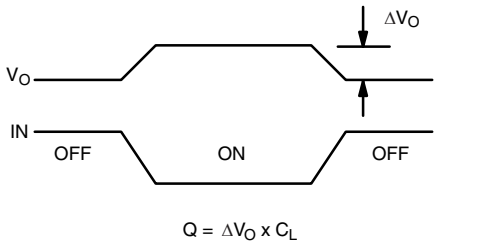


C_L (includes fixture and stray capacitance)

$$V_O = V_S \frac{R_L}{R_L + R_{ON}}$$

Fig. 3 - Transition Time (DG419LE)

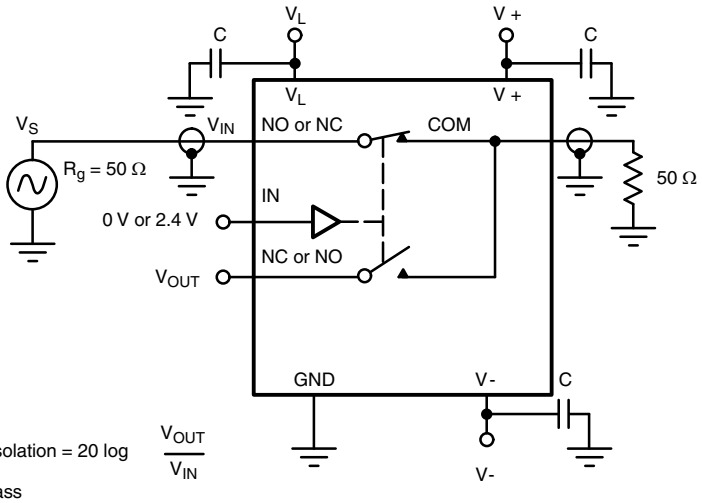




$Q = \Delta V_O \times C_L$

IN dependent on switch configuration input polarity determined by sense of switch.

Fig. 4 - Charge Injection



X_{TALK} isolation = 20 log $\frac{V_{OUT}}{V_{IN}}$

C = RF bypass

Fig. 5 - Crosstalk (DG419LE)

TEST CIRCUITS

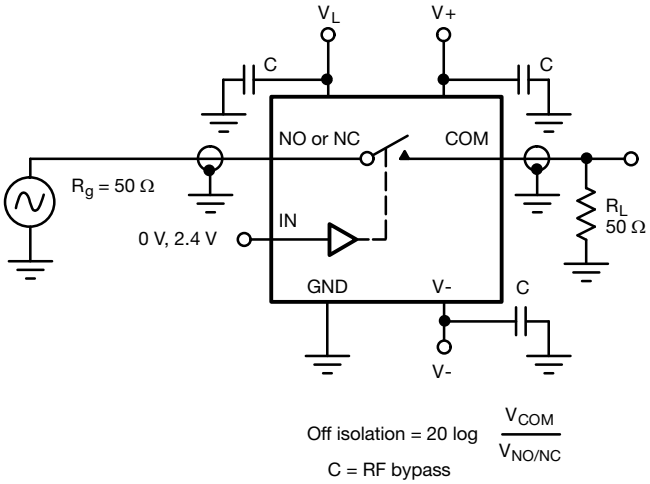


Fig. 6 - Off Isolation

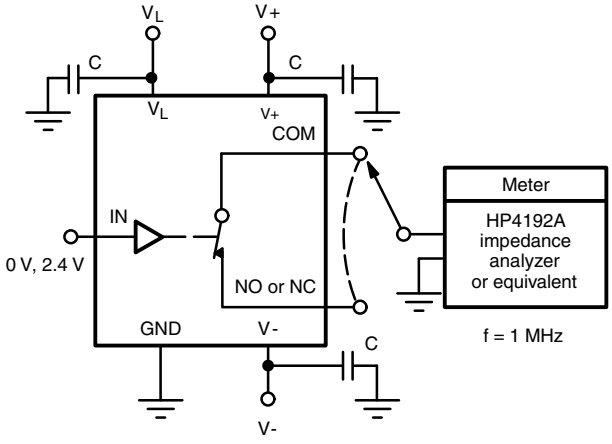


Fig. 7 - Channel Capacitances

PRODUCT SUMMARY						
Part number	DG417LE	DG417LE	DG418LE	DG418LE	DG419LE	DG419LE
Status code	2	2	2	2	2	2
Configuration	SPST x 1, NC	SPST x 1, NC	SPST x 1, NO	SPST x 1, NO	SPDT x 1	SPDT x 1
Single supply min. (V)	3	3	3	3	3	3
Single supply max. (V)	16	16	16	16	16	16
Dual supply min. (V)	3	3	3	3	3	3
Dual supply max. (V)	8	8	8	8	8	8
On-resistance (Ω)	6	6	6	6	12	12
Charge injection (pC)	-17	-17	-17	-17	-17	-17
Source on capacitance (pF)	33	33	33	33	29	29
Source off capacitance (pF)	11	11	11	11	6	6
Leakage switch on typ. (nA)	0.003	0.003	0.003	0.003	0.003	0.003
Leakage switch off max. (nA)	2	2	2	2	2	2
-3 dB bandwidth (MHz)	-	-	-	-	-	-
Package	SO-8 (narrow) AS	MSOP-8	SO-8 (narrow) AS	MSOP-8	SO-8 (narrow) AS	MSOP-8
Functional circuit / applications	Multi purpose, instrumentation, medical and healthcare, portable	Multi purpose, instrumentation, medical and healthcare, portable	Multi purpose, instrumentation, medical and healthcare, portable	Multi purpose, instrumentation, medical and healthcare, portable	Multi purpose, instrumentation, medical and healthcare, portable	Multi purpose, instrumentation, medical and healthcare, portable
Interface	Parallel	Parallel	Parallel	Parallel	Parallel	Parallel
Single supply operation	Yes	Yes	Yes	Yes	Yes	Yes
Dual supply operation	Yes	Yes	Yes	Yes	Yes	Yes
Turn on time max. (ns)	38	38	38	38	38	38
Crosstalk and off isolation	-68	-68	-68	-68	-68	-68

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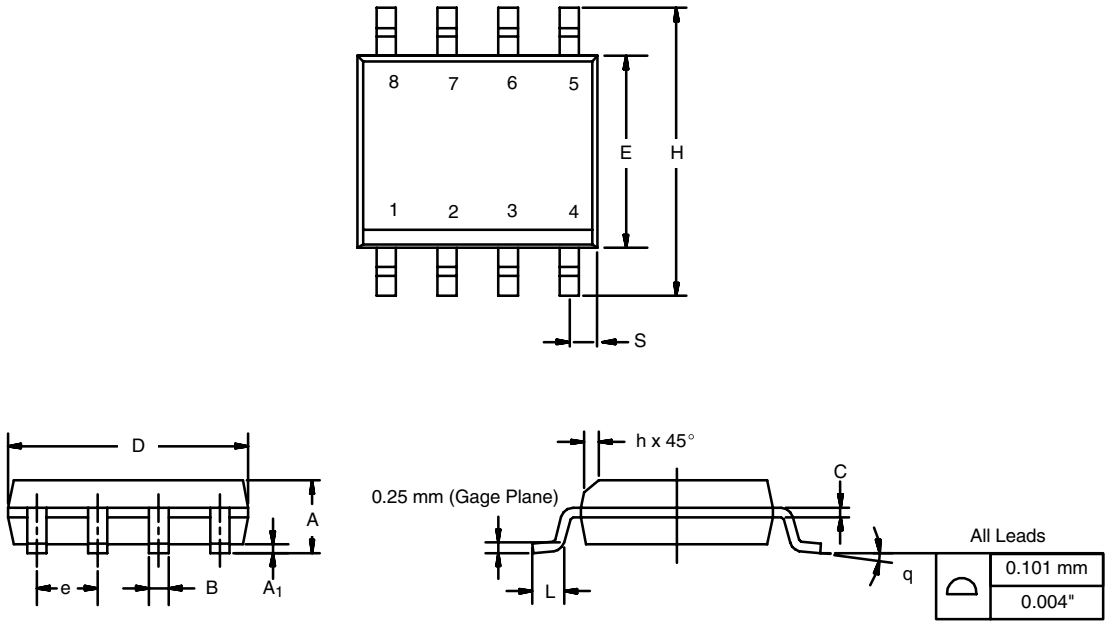
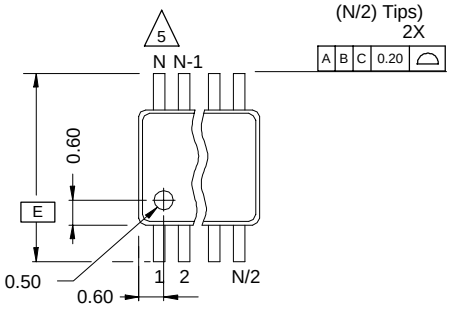
SOIC (NARROW): 8-LEAD
JEDEC Part Number: MS-012



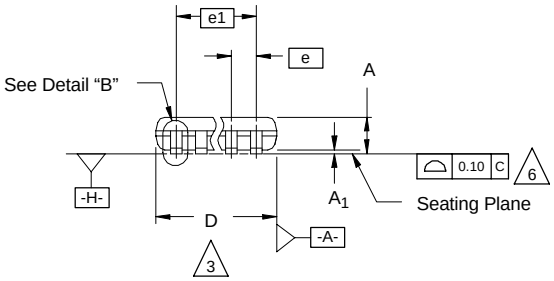
DIM	MILLIMETERS		INCHES	
	Min	Max	Min	Max
A	1.35	1.75	0.053	0.069
A_1	0.10	0.20	0.004	0.008
B	0.35	0.51	0.014	0.020
C	0.19	0.25	0.0075	0.010
D	4.80	5.00	0.189	0.196
E	3.80	4.00	0.150	0.157
e	1.27 BSC		0.050 BSC	
H	5.80	6.20	0.228	0.244
h	0.25	0.50	0.010	0.020
L	0.50	0.93	0.020	0.037
q	0°	8°	0°	8°
S	0.44	0.64	0.018	0.026
ECN: C-06527-Rev. I, 11-Sep-06 DWG: 5498				

MSOP: 8-LEADS

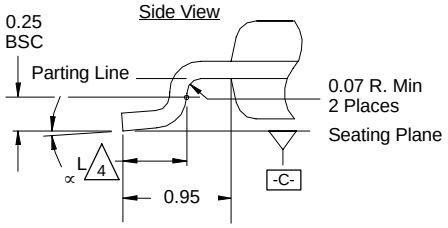
JEDEC Part Number: MO-187, (Variation AA and BA)



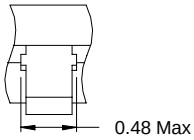
Top View



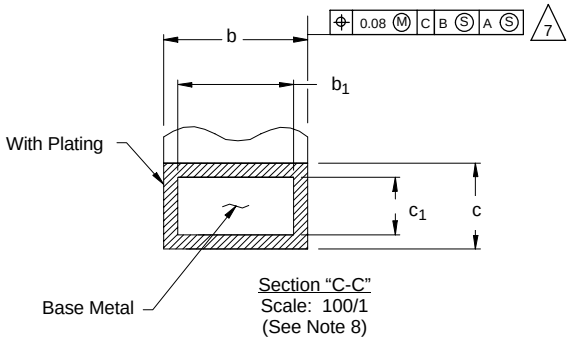
Side View



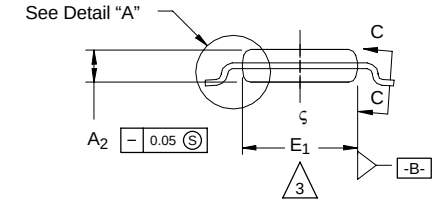
Detail "A"
(Scale: 30/1)



Detail "B"
(Scale: 30/1)
Dambar Protrusion



Section "C-C"
Scale: 100/1
(See Note 8)



End View

NOTES:

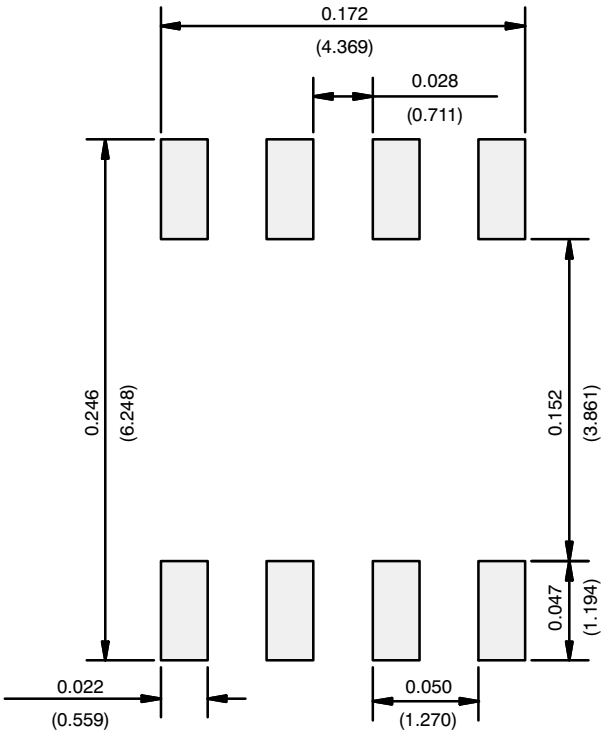
1. Die thickness allowable is 0.203 ± 0.0127.
2. Dimensioning and tolerances per ANSI.Y14.5M-1994.
3. Dimensions "D" and "E_1" do not include mold flash or protrusions, and are measured at Datum plane -H- , mold flash or protrusions shall not exceed 0.15 mm per side.
4. Dimension is the length of terminal for soldering to a substrate.
5. Terminal positions are shown for reference only.
6. Formed leads shall be planar with respect to one another within 0.10 mm at seating plane.
7. 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".
8. Section "C-C" to be determined at 0.10 mm to 0.25 mm from the lead tip.
9. Controlling dimension: millimeters.
10. This part is compliant with JEDEC registration MO-187, variation AA and BA.
11. Datums -A- and -B- to be determined Datum plane -H- .
12. Exposed pad area in bottom side is the same as teh leadframe pad size.

N = 8L

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	0.25	-	0.38	8
b_1	0.25	0.30	0.33	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	0.65 BSC			
e_1	1.95 BSC			
L	0.40	0.55	0.70	4
N	8			5
∝	0°	4°	6°	

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

RECOMMENDED MINIMUM PADS FOR SO-8



Recommended Minimum Pads
Dimensions in Inches/(mm)

Return to Index

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