ORDERING INFORMATION

Temp. Range	Package	Part Number
- 55 °C to 125 °C	16-pin CerDIP	DG201BAK
		DG202BAK
- 40 °C to 85 °C	16-pin Plastic DIP	DG201BDJ DG201BDJ-E3
		DG202BDJ DG202BDJ-E3
	16-pin narrow SOIC	DG201BDY DG201BDY-E3 DG201BDY-T1 DG201BDY-T1-E3
		DG202BDY DG202BDY-E3 DG202BDY-T1 DG202BDY-T1-E3
	16-pin TSSOP	DG201BDQ DG201BDQ-E3 DG201BDQ-T1 DG201BDQ-T1-E3
		DG202BDQ DG202BDQ-E3 DG202BDQ-T1 DG202BDQ-T1-E3

ABSOLUTE MAXIMUM RATINGS

Parameter		Limit	Unit
Voltages Referenced, V+ to V-		44	V
GND		25	
Digital Inputs[a], V_S, V_D		(V-) - 2 to (V+) + 2 or 30 mA, whichever occurs first	
Current (Any terminal)		30	mA
Peak Current S or D (Pulsed at 1 ms, 10 % duty cycle max.)		100	
Storage Temperature	(AK, DK suffix)	- 65 to 150	°C
	(DJ, DY, DQ suffix)	- 65 to 125	
Power Dissipation (Package)[b]	16-pin plastic DIP[c]	470	mW
	16-pin narrow SOIC and TSSOP[d]	640	
	16-pin CerDIP[e]	900	
	LCC-20[f]	750	

Notes:
a. 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.
b. All leads welded or soldered to PC board.
c. Derate 6.5 mW/°C above 75 °C.
d. Derate 7.6 mW/°C above 75 °C.
e. Derate 12 mW/°C above 75 °C.
f. Derate 10 mW/°C above 75 °C.

SCHEMATIC DIAGRAM (typical channel)

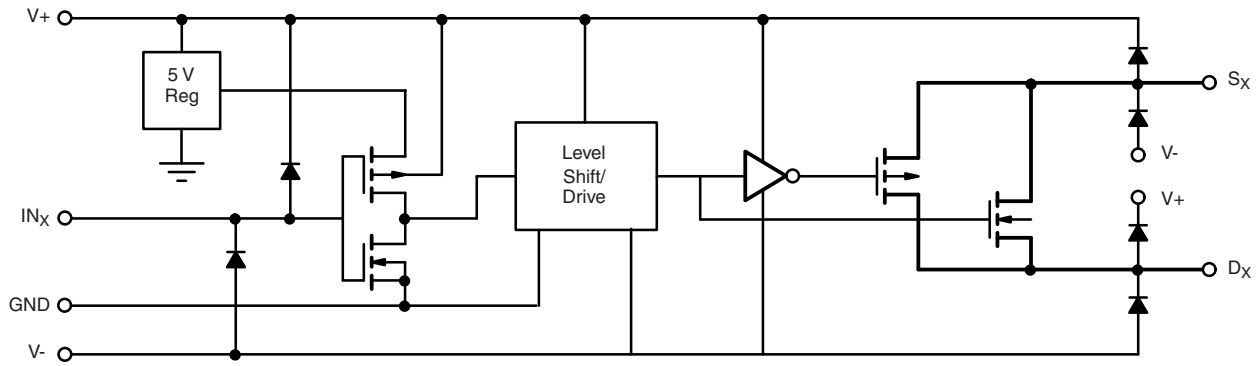


Figure 1.

SPECIFICATIONS[a]

Parameter	Symbol	Test Conditions Unless Specified V+ = 15 V, V- = - 15 V V_{IN} = 2.4 V, 0.8 V[f]	Temp.[b]	Typ.[c]	A Suffix - 55 °C to 125 °C Min.[d]	A Suffix - 55 °C to 125 °C Max.[d]	D Suffix - 40 °C to 85 °C Min.[d]	D Suffix - 40 °C to 85 °C Max.[d]	Unit
Analog Switch									
Analog Signal Range[e]	V_{ANALOG}		Full		- 15	15	- 15	15	V
Drain-Source On-Resistance	$R_{DS(on)}$	V_D = ± 10 V, I_S = 1 mA	Room Full	45		85 100		85 100	Ω
$R_{DS(on)}$ Match	$\Delta R_{DS(on}$		Room	2					
Source Off Leakage Current	$I_{S(off)}$	V_S = ± 14 V, V_D = ± 14 V	Room Full	± 0.01	- 0.5 - 20	0.5 20	- 0.5 - 5	0.5 5	nA
Drain Off Leakage Current	$I_{D(off)}$	V_D = ± 14 V, V_S = ± 14 V	Room Full	± 0.01	- 0.5 - 20	0.5 20	- 0.5 - 5	0.5 5	
Drain On Leakage Current	$I_{D(on)}$	V_S = V_D = ± 14 V	Room Full	± 0.02	- 0.5 - 40	0.5 40	- 0.5 - 10	0.5 10	
Digital Control									
Input Voltage High	V_{INH}		Full		2.4		2.4		V
Input Voltage Low	V_{INL}		Full			0.8		0.8	
Input Current	I_{INH} or I_{INL}	V_{INH} or V_{INL}	Full		- 1	1	- 1	1	µA
Input Capacitance	C_{IN}		Room	5					pF
Dynamic Characteristics									
Turn-On Time	t_{ON}	V_S = 2 V see switching time test circuit	Room Full	120		300		300	ns
Turn-Off Time	t_{OFF}		Room Full	65		200		200	
Charge Injection	Q	C_L = 1000 pF, V_g = 0 V R_g = 0 Ω	Room	1					pC
Source-Off Capacitance	$C_{S(off)}$	V_S = 0 V, f = 1 MHz	Room	5					pF
Drain-Off Capacitance	$C_{D(off)}$		Room	5					
Channel On Capacitance	$C_{D(on)}$	V_D = V_S = 0 V, f = 1 MHz	Room	16					
Off Isolation	OIRR	C_L = 15 pF, R_L = 50 Ω V_S = 1 V_{RMS}, f = 100 kHz	Room	90					dB
Channel-to-Channel Crosstalk	X_{TALK}		Room	95					
Power Supply									
Positive Supply Current	I+	V_{IN} = 0 or 5 V	Room Full			50 100		50 100	µA
Negative Supply Current	I-		Room Full		- 1 - 5		- 1 - 5		
Power Supply Range for Continuous Operation	V_{OP}		Full		± 4.5	± 22	± 4.5	± 22	V

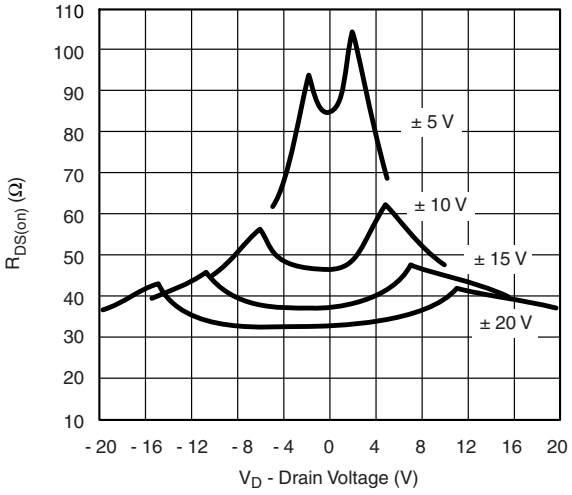
SPECIFICATIONS (for Single Supply)[a]

Parameter	Symbol	Test Conditions Unless Specified V+ = 12 V, V- = 0 V V_{IN} = 2.4 V, 0.8 V[f]	Temp.[b]	Typ.[c]	A Suffix - 55 °C to 125 °C Min.[d]	A Suffix - 55 °C to 125 °C Max.[d]	D Suffix - 40 °C to 85 °C Min.[d]	D Suffix - 40 °C to 85 °C Max.[d]	Unit
Analog Switch									
Analog Signal Range[e]	V_{ANALOG}		Full		0	12	0	12	V
Drain-Source On-Resistance	$R_{DS(on)}$	V_D = 3 V, 8 V, I_S = 1 mA	Room Full	90		160 200		160 200	Ω
Dynamic Characteristics									
Turn-On Time	t_{ON}	V_S = 8 V see switching time test circuit	Room	120		300		300	ns
Turn-Off Time	t_{OFF}		Room	60		200		200	
Charge Injection	Q	C_L = 1 nF, V_{gen} = 6 V R_{gen} = 0 Ω	Room	4					pC
Power Supply									
Positive Supply Current	I+	V_{IN} = 0 or 5 V	Room Full			50 100		50 100	µA
Negative Supply Current	I-		Room Full		- 1 - 5		- 1 - 5		
Power Supply Range for Continuous Operation	V_{OP}		Full		+ 4.5	+ 25	+ 4.5	+ 25	V

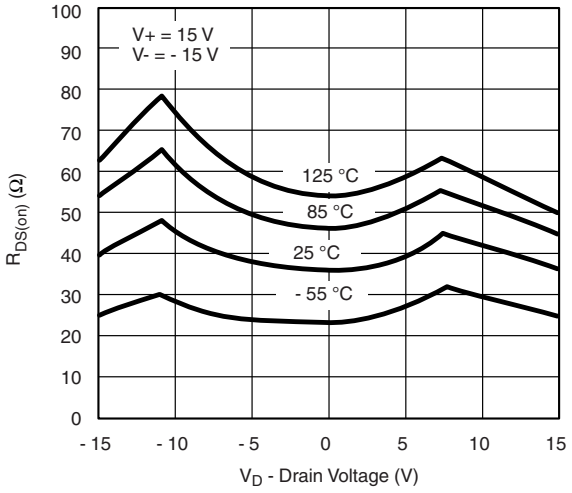
Notes:
a. Refer to PROCESS OPTION FLOWCHART.
b. Room = 25 °C, Full = as determined by the operating temperature suffix.
c. Typical values are for DESIGN AID ONLY, not guaranteed nor subject to production testing.
d. The algebraic convention whereby the most negative value is a minimum and the most positive a maximum, is used in this data sheet.
e. Guaranteed by design, not subject to production test.
f. 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.

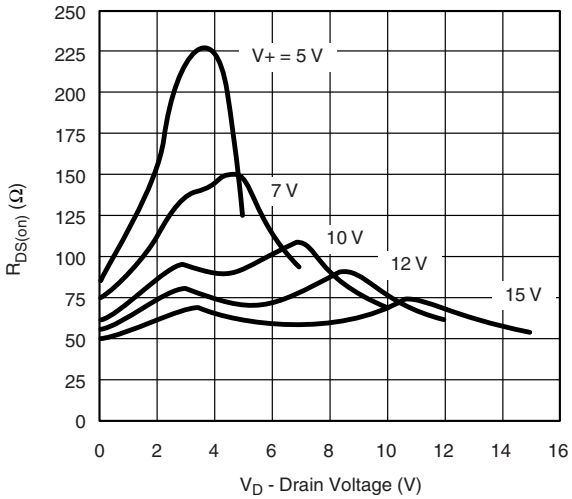
TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



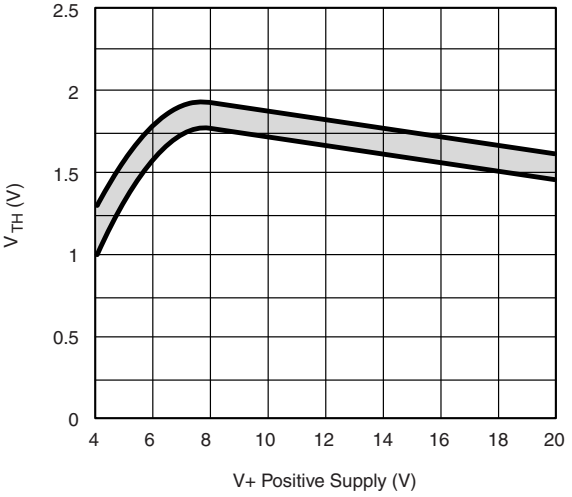
$R_{DS(on)}$ vs. V_D and Power Supply Voltages



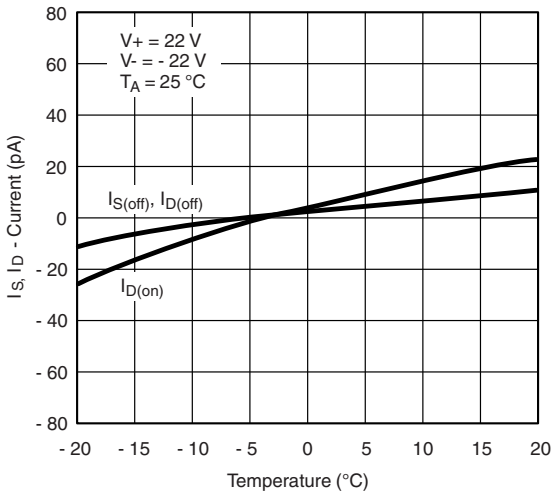
$R_{DS(on)}$ vs. V_D and Temperature



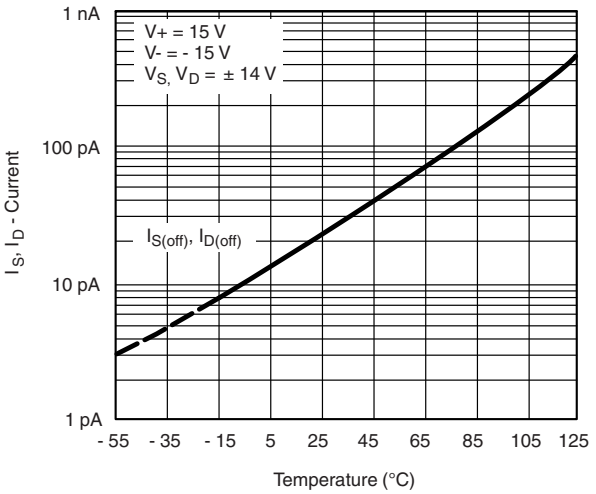
$R_{DS(on)}$ vs. V_D and Single Power Supply Voltages



Input Switching Threshold vs. Supply Voltage

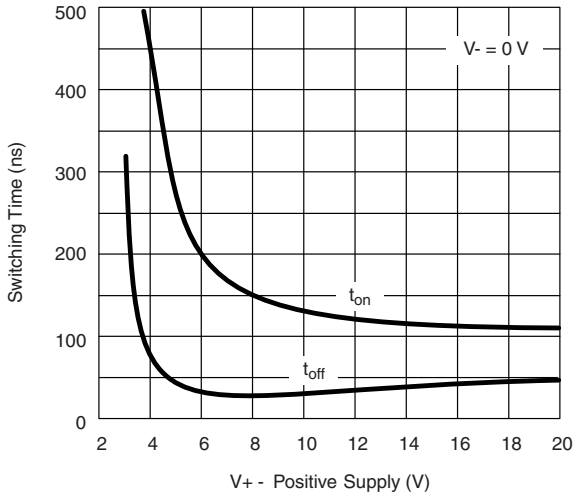


Leakage Currents vs. Analog Voltage

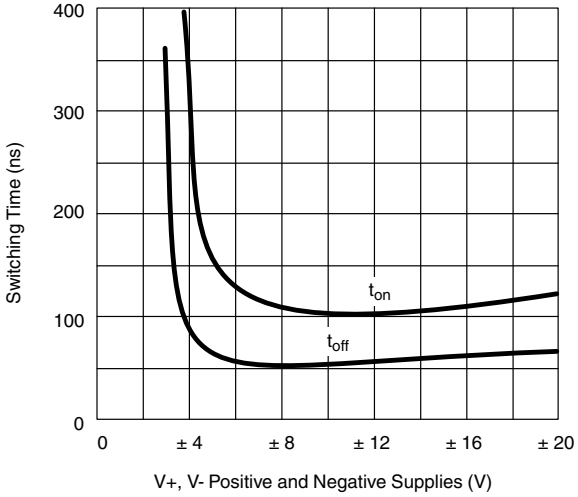


Leakage Currents vs. Temperature

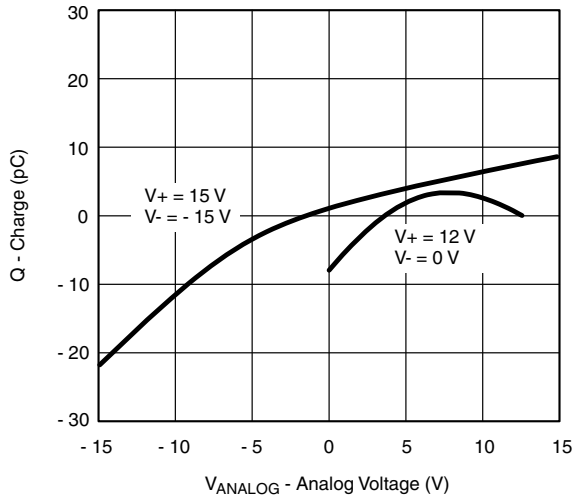
TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



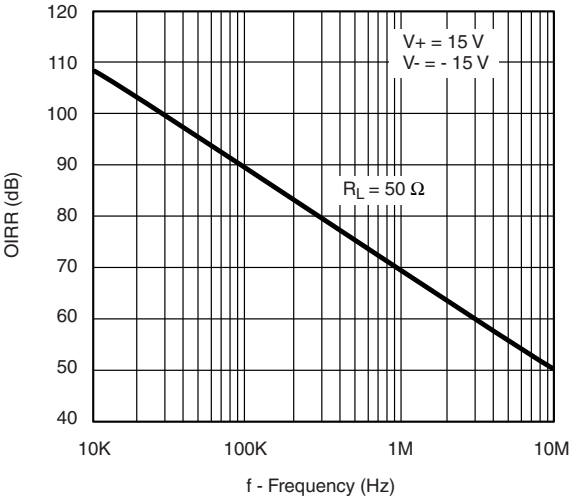
Switching Time vs. Single Supply Voltage



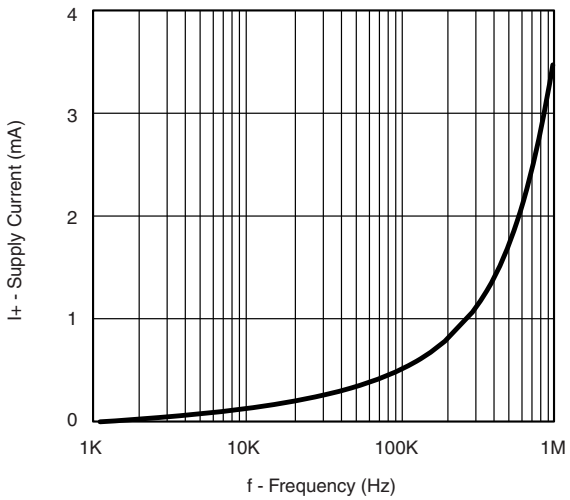
Switching Time vs. Power Supply Voltage



Q_S, Q_D - Charge Injection vs. Analog Voltage



Off Isolation vs. Frequency



Supply Current vs. Switching Frequency

TEST CIRCUITS

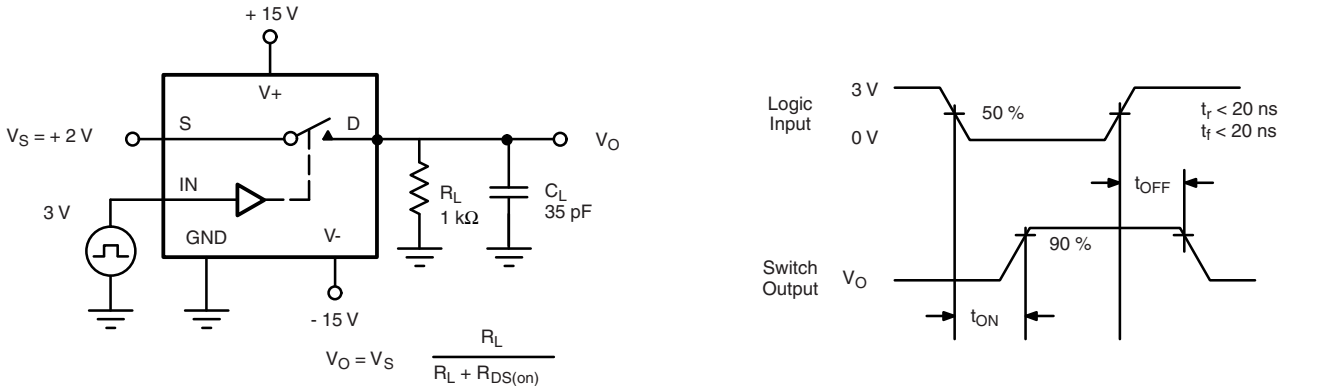


Figure 2. Switching Time

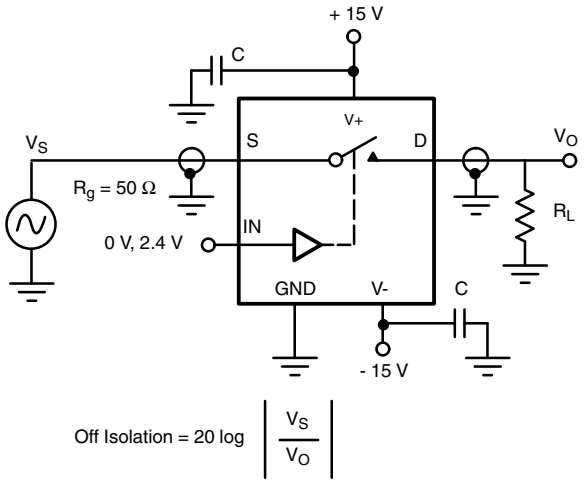


Figure 3. Off Isolation

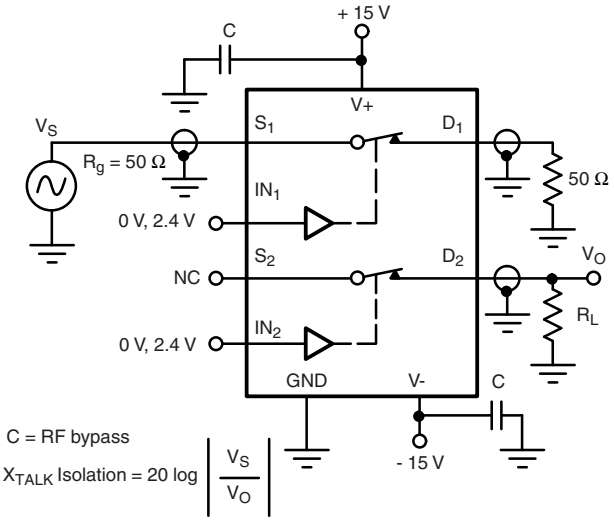
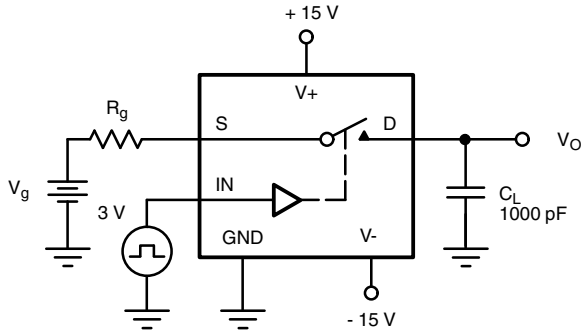
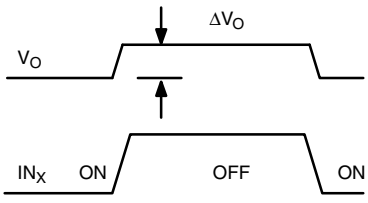


Figure 4. Channel-to-Channel Crosstalk





ΔV_O = measured voltage error due to charge injection
The charge injection in coulombs is $Q = C_L \times \Delta V_O$

Figure 5. Charge Injection

APPLICATIONS

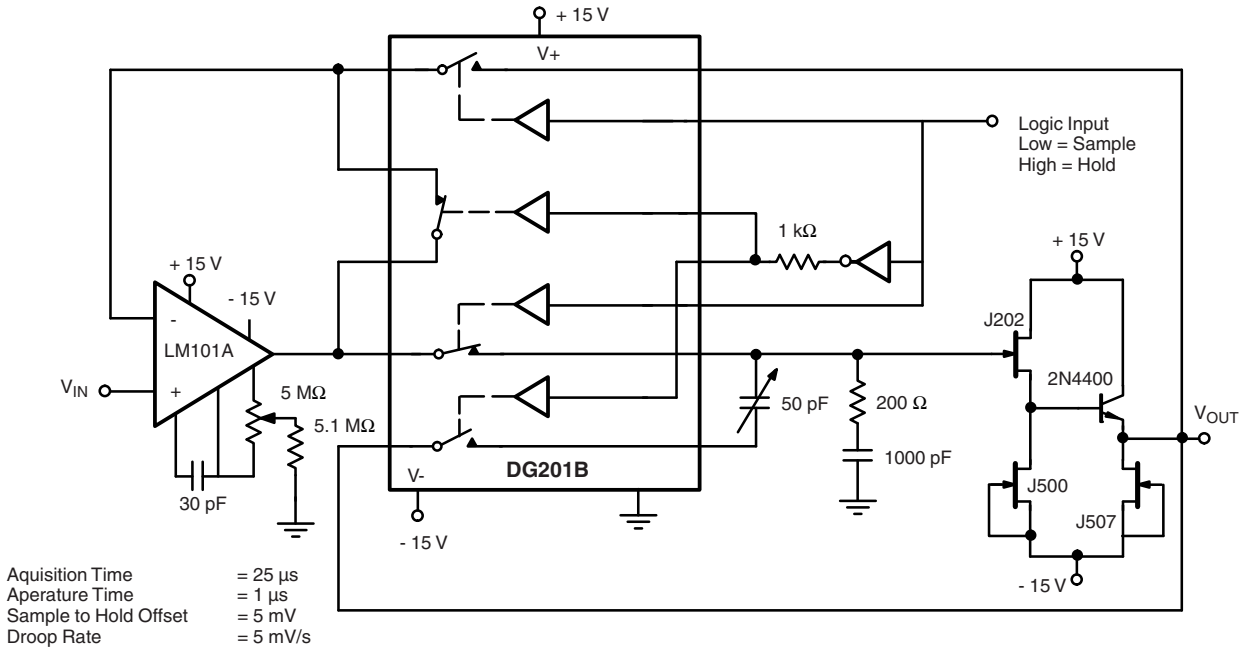


Figure 6. Sample-and-Hold

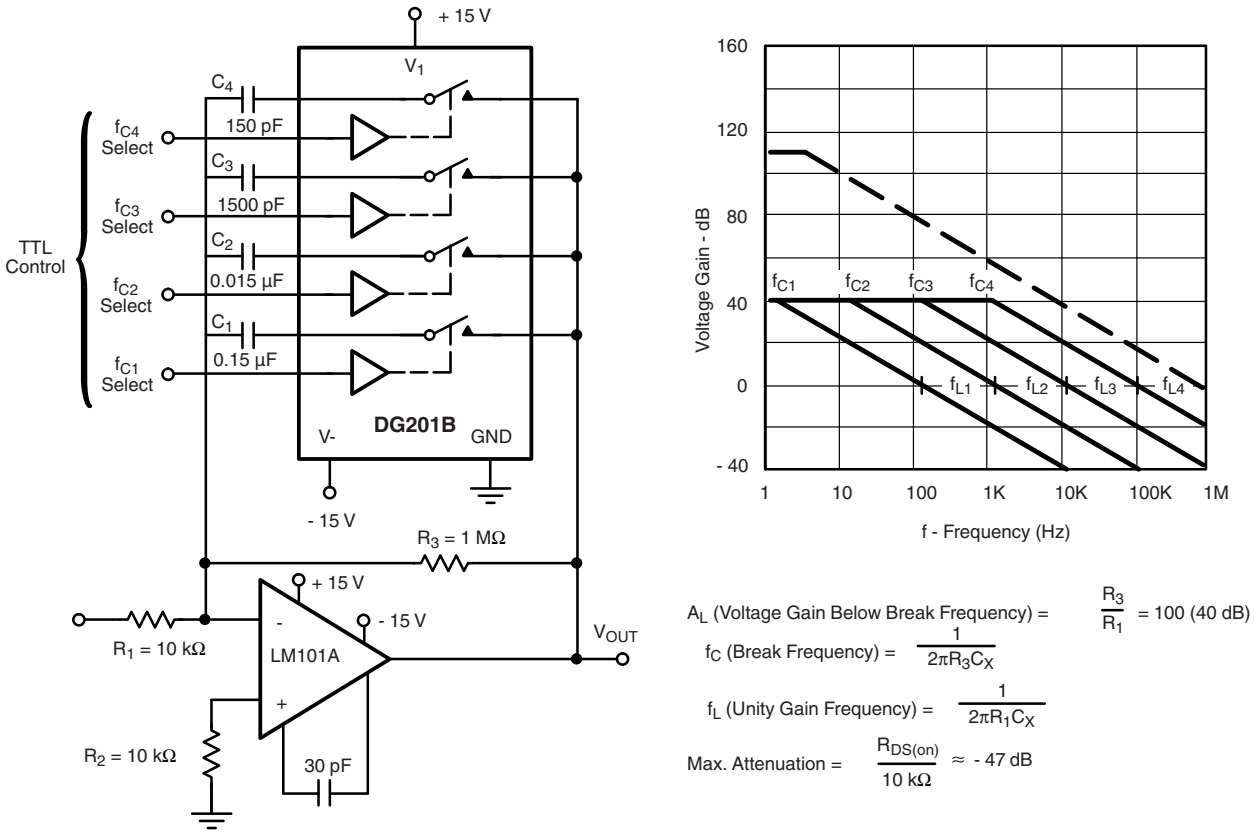


Figure 7. Active Low Pass Filter with Digitally Selected Break Frequency

APPLICATIONS

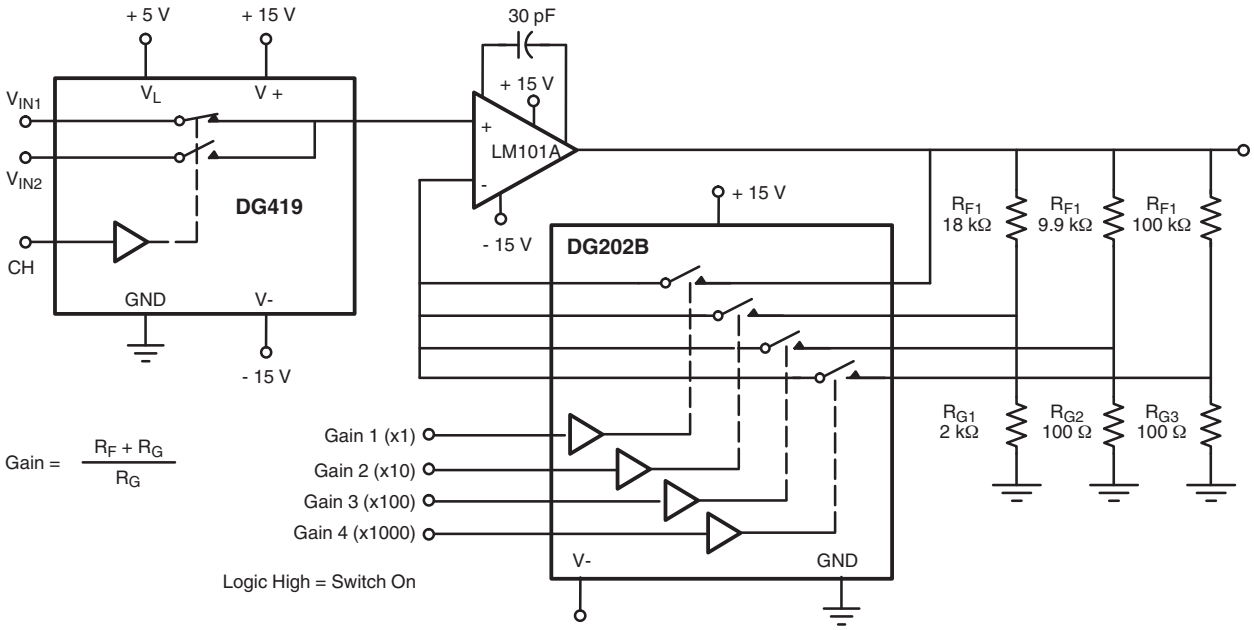


Figure 8. A Precision Amplifier with Digitally Programable Input and Gains

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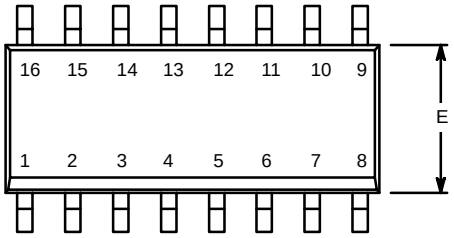
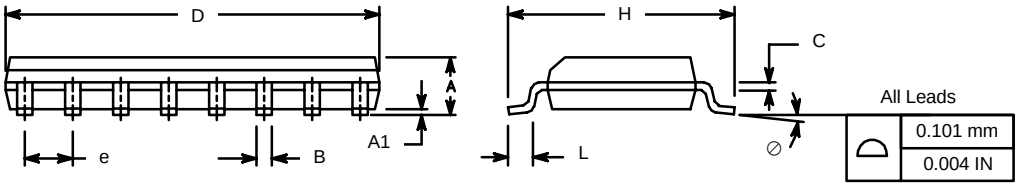
SOIC (NARROW): 16-LEAD

JEDEC Part Number: MS-012

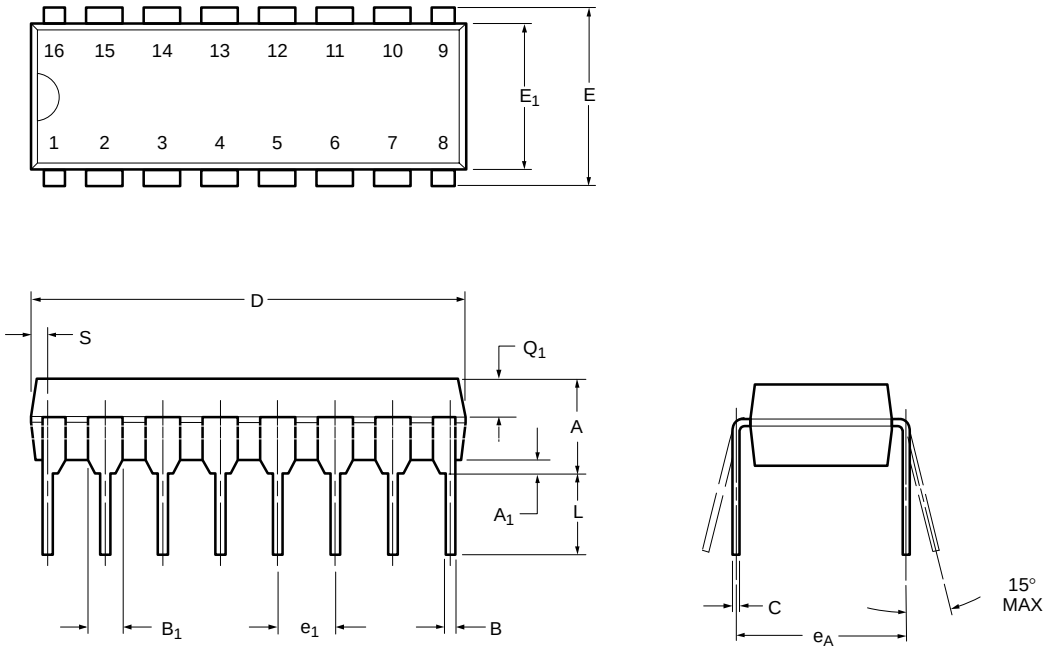




Dim	MILLIMETERS		INCHES	
	Min	Max	Min	Max
A	1.35	1.75	0.053	0.069
A_1	0.10	0.20	0.004	0.008
B	0.38	0.51	0.015	0.020
C	0.18	0.23	0.007	0.009
D	9.80	10.00	0.385	0.393
E	3.80	4.00	0.149	0.157
e	1.27 BSC		0.050 BSC	
H	5.80	6.20	0.228	0.244
L	0.50	0.93	0.020	0.037
⊘	0°	8°	0°	8°

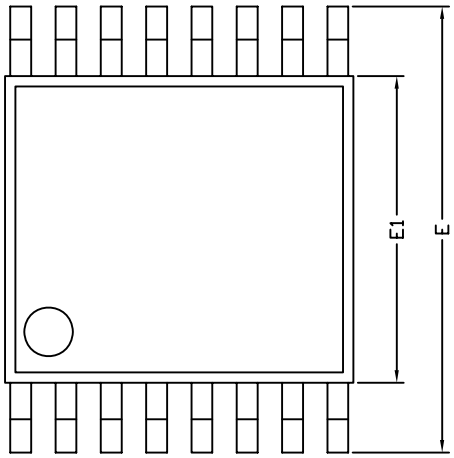
ECN: S-03946—Rev. F, 09-Jul-01
DWG: 5300

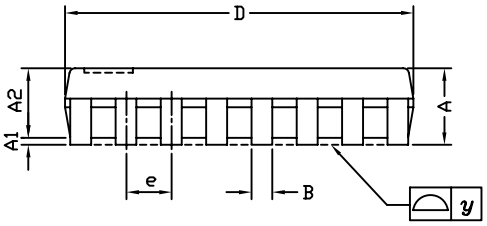
PDIP: 16-LEAD

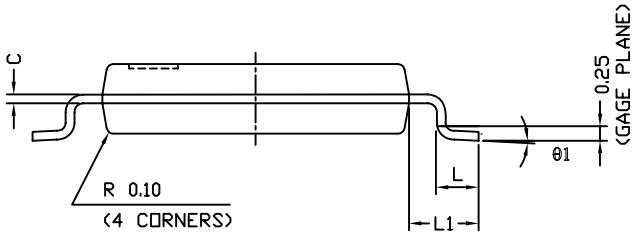


Dim	MILLIMETERS		INCHES	
	Min	Max	Min	Max
A	3.81	5.08	0.150	0.200
A_1	0.38	1.27	0.015	0.050
B	0.38	0.51	0.015	0.020
B_1	0.89	1.65	0.035	0.065
C	0.20	0.30	0.008	0.012
D	18.93	21.33	0.745	0.840
E	7.62	8.26	0.300	0.325
E_1	5.59	7.11	0.220	0.280
e_1	2.29	2.79	0.090	0.110
e_A	7.37	7.87	0.290	0.310
L	2.79	3.81	0.110	0.150
Q_1	1.27	2.03	0.050	0.080
S	0.38	1.52	.015	0.060
ECN: S-03946—Rev. D, 09-Jul-01 DWG: 5482				

TSSOP: 16-LEAD

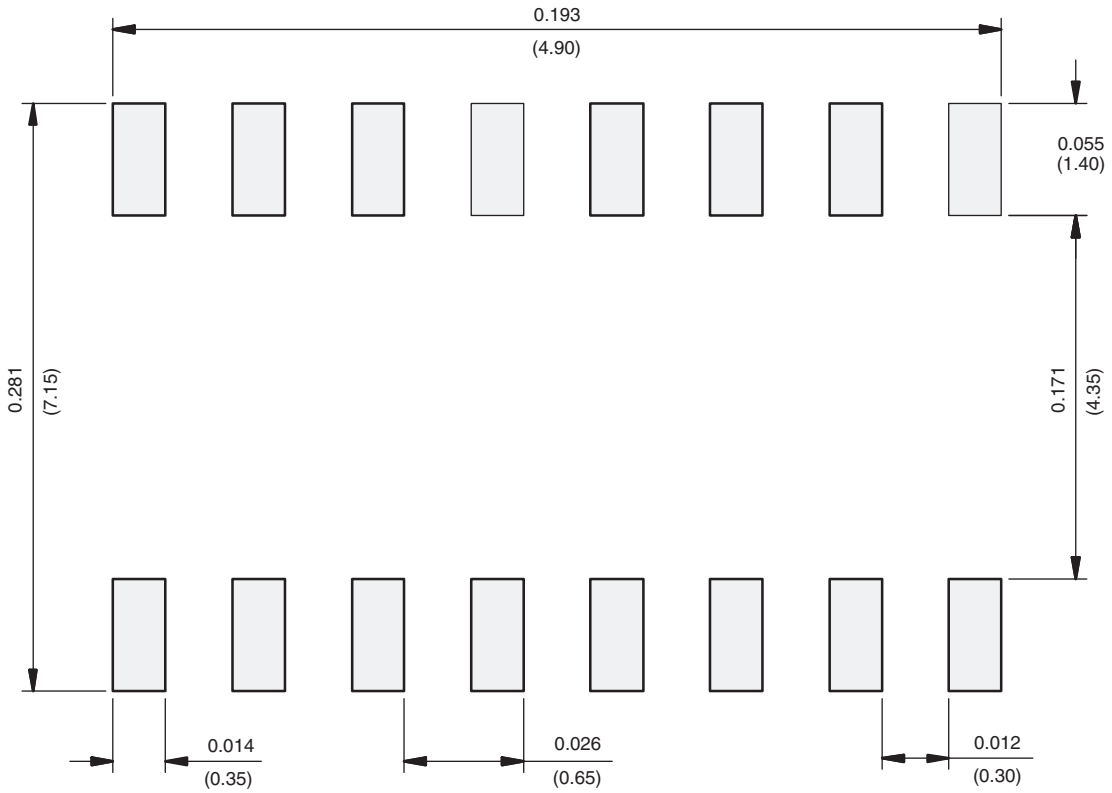






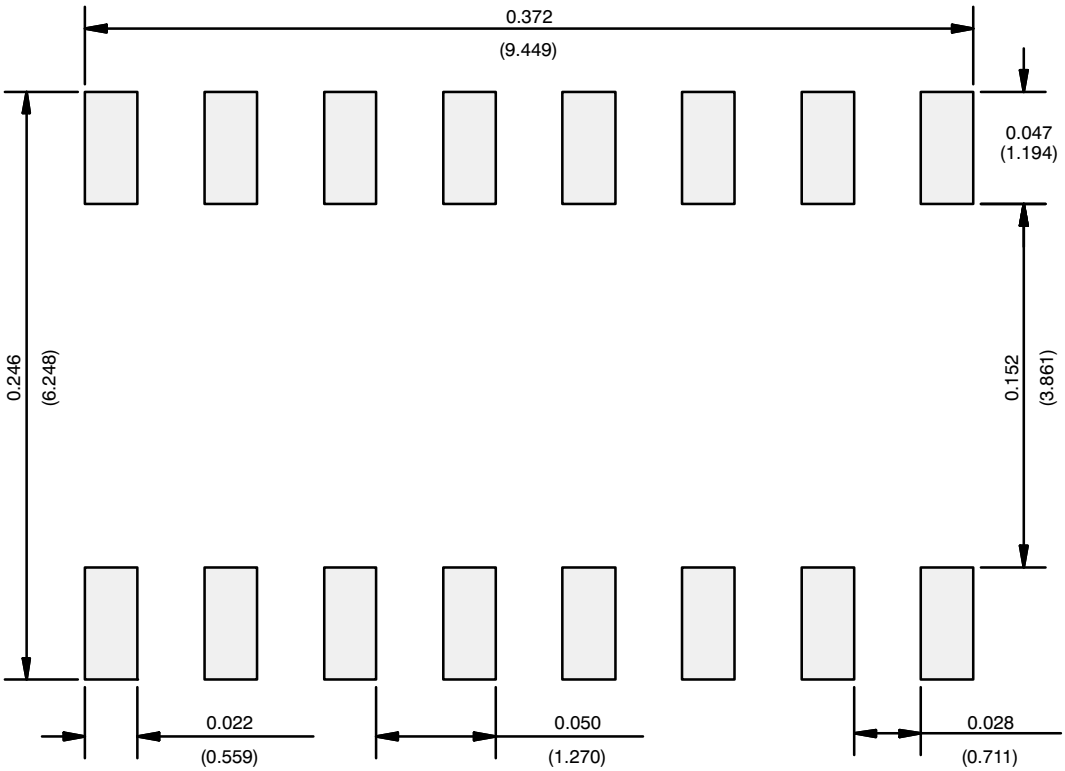
Symbols	DIMENSIONS IN MILLIMETERS		
	Min	Nom	Max
A	-	1.10	1.20
A1	0.05	0.10	0.15
A2	-	1.00	1.05
B	0.22	0.28	0.38
C	-	0.127	-
D	4.90	5.00	5.10
E	6.10	6.40	6.70
E1	4.30	4.40	4.50
e	-	0.65	-
L	0.50	0.60	0.70
L1	0.90	1.00	1.10
y	-	-	0.10
θ1	0°	3°	6°
ECN: S-61920-Rev. D, 23-Oct-06 DWG: 5624			

RECOMMENDED MINIMUM PAD FOR TSSOP-16



Recommended Minimum Pads
Dimensions in inches (mm)

RECOMMENDED MINIMUM PADS FOR SO-16



Recommended Minimum Pads
Dimensions in Inches/(mm)

Return to Index

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