

## FEATURES

- 2Ω Max On Resistance
- 0.5Ω Max On Resistance Flatness
- 200mA Continuous current
- 33 V supply range
- Fully specified at +12 V, ±15 V, ±5 V
- No  $V_L$  supply required
- 3 V logic-compatible inputs
- Rail-to-rail operation
- 14-lead TSSOP and 16-lead LFCSP

## APPLICATIONS

- Automatic test equipment
- Data acquisition systems
- Battery-powered systems
- Sample-and-hold systems
- Audio signal routing
- Communication systems
- Relay Replacement

## GENERAL DESCRIPTION

The ADG1404 is a complementary metal-oxide semiconductor (CMOS) analog multiplexer, comprising four single channels designed on an iCMOS process. iCMOS (industrial CMOS) is a modular manufacturing process that combines high voltage CMOS and bipolar technologies. It enables the development of a wide range of high performance analog ICs capable of 33 V operation in a footprint that no previous generation of high voltage parts has been able to achieve. Unlike analog ICs using conventional CMOS processes, iCMOS components can tolerate high supply voltages while providing increased performance, dramatically lower power consumption, and reduced package size.

The on resistance profile is very flat over the full analog input range ensuring excellent linearity and low distortion when switching audio signals.

iCMOS construction ensures ultralow power dissipation, making the parts ideally suited for portable and battery-powered instruments.

## FUNCTIONAL BLOCK DIAGRAM

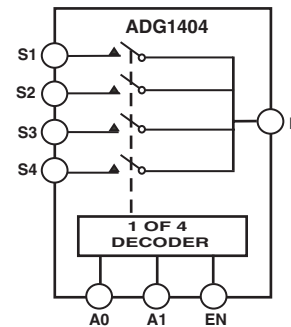


Figure 1.

The ADG1404 switches one of four inputs to a common output, D, as determined by the 3-bit binary address lines, A0, A1, and EN. Logic 0 on the EN pin disables the device. Each switch conducts equally well in both directions when on and has an input signal range that extends to the supplies. In the off condition, signal levels up to the supplies are blocked. All switches exhibit break-before-make switching action. Inherent in the design is low charge injection for minimum transients when switching the digital inputs.

## PRODUCT HIGHLIGHTS

1. 2Ω Max On Resistance over temperature.
2. Minimum distortion
3. 3 V logic-compatible digital inputs:  
 $V_{IH} = 2.0\text{ V}$ ,  $V_{IL} = 0.8\text{ V}$
4. No  $V_L$  logic power supply required.
5. Ultralow power dissipation:  $<0.03\ \mu\text{W}$ .
6. 14-lead TSSOP and 16-lead 4 mm × 4 mm LFCSP package.

### Rev.PrB

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**REVISION HISTORY**

# SPECIFICATIONS

## DUAL SUPPLY

$V_{DD} = 15\text{ V} \pm 10\%$ ,  $V_{SS} = -15\text{ V} \pm 10\%$ ,  $GND = 0\text{ V}$ , unless otherwise noted.

Table 1.

	25°C	-40°C to +85°C	-40°C to +125°C		
<b>ANALOG SWITCH</b>					
Analog Signal Range				$V_{DD}$ to $V_{SS}$	V
On Resistance ( $R_{ON}$ )	1.5				$\Omega$ typ $\Omega$ max
On Resistance Match Between Channels ( $\Delta R_{ON}$ )	0.1	2			$\Omega$ typ
On Resistance Flatness ( $R_{FLAT(ON)}$ )	0.1	0.5			$\Omega$ max
		0.5			$\Omega$ typ $\Omega$ max
<b>LEAKAGE CURRENTS</b>					
Source Off Leakage, $I_S$ (Off)	$\pm 0.01$				nA typ
Drain Off Leakage, $I_D$ (Off)	$\pm 0.5$	$\pm 2.5$	$\pm 5$		nA max
Channel On Leakage, $I_D$ , $I_S$ (On)	$\pm 0.01$	$\pm 2.5$	$\pm 5$		nA typ
	$\pm 0.5$	$\pm 2.5$	$\pm 5$		nA max
	$\pm 0.04$				nA typ
	$\pm 1$	$\pm 2.5$	$\pm 5$		nA max
<b>DIGITAL INPUTS</b>					
Input High Voltage, $V_{INH}$			2.0		V min
Input Low Voltage, $V_{INL}$			0.8		V max
Input Current, $I_{INL}$ or $I_{INH}$	0.005				$\mu\text{A}$ typ
Digital Input Capacitance, $C_{IN}$	2.5		$\pm 0.5$		$\mu\text{A}$ max
					pF typ
<b>DYNAMIC CHARACTERISTICS<sup>1</sup></b>					
Transition Time, $t_{TRANS}$	120				ns typ
	150	200	200		ns max
$t_{ON}$ (EN)	70				ns typ
	85	110	110		ns max
$t_{OFF}$ (EN)	90				ns typ
	110	155	155		ns max
Break-Before-Make Time Delay, $t_D$	25				ns typ
		10	10		ns min
Charge Injection	50				pC typ
Off Isolation	50				dB typ
Channel-to-Channel Crosstalk	60				dB typ
Total Harmonic Distortion + Noise	0.01				% typ
-3 dB Bandwidth	50				MHz typ
Insertion Loss	0.17				dB typ
$C_S$ (Off)	35				pF typ
					pF max
$C_D$ (Off)	100				pF typ
					pF max
$C_D$ , $C_S$ (On)	150				pF typ
					pF max
<b>POWER REQUIREMENTS</b>					
$I_{DD}$	0.001				$\mu\text{A}$ typ

	25°C	-40°C to +85°C	-40°C to +125°C		
$I_{DD}$	150		1	μA max	Digital inputs = 5 V
			300	μA typ	
$I_{SS}$	0.001		1	μA max	Digital inputs = 0 V, 5V or $V_{DD}$
			±4.5/±16.5	μA typ	
$V_{DD}/V_{SS}$				μA max	Gnd = 0V
				V min/max	

<sup>1</sup> Guaranteed by design, not subject to production test.

**SINGLE SUPPLY**

$V_{DD} = 12\text{ V} \pm 10\%$ ,  $V_{SS} = 0\text{ V}$ ,  $GND = 0\text{ V}$ , unless otherwise noted.

**Table 2.**

	25°C	-40°C to +85°C	-40°C to +125°C		
<b>ANALOG SWITCH</b>					
Analog Signal Range			0 V to $V_{DD}$	V	
On Resistance ( $R_{ON}$ )	2.5			$\Omega$ typ	$V_S = 10\text{ V}$ , $I_S = -10\text{ mA}$ ; Figure 21
	3	4		$\Omega$ max	$V_{DD} = +10.8\text{ V}$ , $V_{SS} = 0\text{ V}$
On Resistance Match Between Channels ( $\Delta R_{ON}$ )	0.1			$\Omega$ typ	$V_S = 10\text{ V}$ , $I_S = -10\text{ mA}$
On Resistance Flatness ( $R_{FLAT(ON)}$ )	0.1			$\Omega$ max	
				$\Omega$ typ	$V_S = 3\text{ V}$ , $6\text{ V}$ , $9\text{ V}$ ; $I_S = -10\text{ mA}$
<b>LEAKAGE CURRENTS</b>					
Source Off Leakage, $I_S$ (Off)	$\pm 0.01$			nA typ	$V_{DD} = 13.2\text{ V}$
	$\pm 0.5$	$\pm 2.5$	$\pm 5$	nA max	$V_S = 1\text{ V}/10\text{ V}$ , $V_D = 10\text{ V}/1\text{ V}$ ; Figure 22
Drain Off Leakage, $I_D$ (Off)	$\pm 0.01$			nA typ	$V_S = 1\text{ V}/10\text{ V}$ , $V_D = 10\text{ V}/1\text{ V}$ ; Figure 22
	$\pm 0.5$	$\pm 2.5$	$\pm 5$	nA max	
Channel On Leakage, $I_D$ , $I_S$ (On)	$\pm 0.04$			nA typ	$V_S = V_D = 1\text{ V}$ or $10\text{ V}$ ; Figure 23
	$\pm 1$	$\pm 2.5$	$\pm 5$	nA max	
<b>DIGITAL INPUTS</b>					
Input High Voltage, $V_{INH}$			2.0	V min	
Input Low Voltage, $V_{INL}$			0.8	V max	
Input Current, $I_{INL}$ or $I_{INH}$	0.001			$\mu\text{A}$ typ	$V_{IN} = V_{INL}$ or $V_{INH}$
			$\pm 0.5$	$\mu\text{A}$ max	
Digital Input Capacitance, $C_{IN}$	2.5			pF typ	
<b>DYNAMIC CHARACTERISTICS<sup>1</sup></b>					
Transition Time, $t_{TRANS}$	150			ns typ	$R_L = 300\ \Omega$ , $C_L = 35\text{ pF}$
	190		265	ns max	$V_S = 8\text{ V}$ ; Figure 24
$t_{ON}$ (EN)	95			ns typ	$R_L = 300\ \Omega$ , $C_L = 35\text{ pF}$
	120		170	ns max	$V_S = 8\text{ V}$ ; Figure 24
$t_{OFF}$ (EN)	100			ns typ	$R_L = 300\ \Omega$ , $C_L = 35\text{ pF}$
	125		170	ns max	$V_S = 8\text{ V}$ ; Figure 24
Break-Before-Make Time Delay, $t_D$	50		10	ns typ	$R_L = 300\ \Omega$ , $C_L = 35\text{ pF}$
				ns min	$V_{S1} = V_{S2} = 8\text{ V}$ ; Figure 25
Charge Injection	50			pC typ	$V_S = 6\text{ V}$ , $R_S = 0\ \Omega$ , $C_L = 1\text{ nF}$ ; Figure 26
Off Isolation	50			dB typ	$R_L = 50\ \Omega$ , $C_L = 5\text{ pF}$ , $f = 1\text{ MHz}$ ; Figure 27
Channel-to-Channel Crosstalk	60			dB typ	$R_L = 50\ \Omega$ , $C_L = 5\text{ pF}$ , $f = 1\text{ MHz}$ ; Figure 28
-3 dB Bandwidth	50			MHz typ	$R_L = 50\ \Omega$ , $C_L = 5\text{ pF}$ ; Figure 29
$C_S$ (Off)	35			pF typ	$f = 1\text{ MHz}$ ; $V_S = 6\text{ V}$
				pF max	$f = 1\text{ MHz}$ ; $V_S = 6\text{ V}$
$C_D$ (Off)	100			pF typ	$f = 1\text{ MHz}$ ; $V_S = 6\text{ V}$
				pF max	$f = 1\text{ MHz}$ ; $V_S = 6\text{ V}$
$C_D$ , $C_S$ (On)	150			pF typ	$f = 1\text{ MHz}$ ; $V_S = 6\text{ V}$
				pF max	$f = 1\text{ MHz}$ ; $V_S = 6\text{ V}$
<b>POWER REQUIREMENTS</b>					
$I_{DD}$	0.001			$\mu\text{A}$ typ	$V_{DD} = 13.2\text{ V}$
			1	$\mu\text{A}$ max	Digital inputs = 0 V or $V_{DD}$
$I_{DD}$	150			$\mu\text{A}$ typ	Digital inputs = 5 V
			300	$\mu\text{A}$ max	
$V_{DD}$			5/16.5	V	$Gnd = 0\text{ V}$ , $V_{SS} = 0\text{ V}$
				min/max	

<sup>1</sup> Guaranteed by design, not subject to production test.

**DUAL SUPPLY**

$V_{DD} = 5\text{ V} \pm 10\%$ ,  $V_{SS} = -5\text{ V} \pm 10\%$ ,  $GND = 0\text{ V}$ , unless otherwise noted.

**Table 3.**

	25°C	-40°C to +85°C	-40°C to +125°C	Unit	Test Conditions/Comments
<b>ANALOG SWITCH</b>					
Analog Signal Range			0 V to $V_{DD}$	V	
On Resistance ( $R_{ON}$ )	4			$\Omega$ typ	$V_S = \pm 3.3\text{ V}$ , $I_S = -10\text{ mA}$ ; See figure x
	5			$\Omega$ max	$V_{DD} = +4.5\text{ V}$ , $V_{SS} = -4.5\text{ V}$
On Resistance Match Between Channels ( $\Delta R_{ON}$ )	0.1			$\Omega$ typ	$V_S = \pm 3.3\text{ V}$ , $I_S = -10\text{ mA}$
				$\Omega$ max	
On Resistance Flatness ( $R_{FLAT(ON)}$ )	0.1			$\Omega$ typ	$V_S = -3\text{ V}/0\text{ V}/+3\text{ V}$ ; $I_S = -10\text{ mA}$
<b>LEAKAGE CURRENTS</b>					
Source Off Leakage, $I_S$ (Off)	$\pm 0.01$			nA typ	$V_{DD} = +5.5\text{ V}$ , $V_{SS} = -5.5\text{ V}$
	$\pm 0.5$	$\pm 2.5$	$\pm 5$	nA max	$V_S = \pm 4.5\text{ V}$ , $V_D = \mp 4.5\text{ V}$ ; See figure x
Drain Off Leakage, $I_D$ (Off)	$\pm 0.01$			nA typ	$V_S = \pm 4.5\text{ V}$ , $V_D = \mp 4.5\text{ V}$ ; See figure x
	$\pm 0.5$	$\pm 2.5$	$\pm 5$	nA max	
Channel On Leakage, $I_D$ , $I_S$ (On)	$\pm 0.04$			nA typ	$V_S = V_D = \pm 4.5\text{ V}$ ; See figure x
	$\pm 1$	$\pm 5$	$\pm 5$	nA max	
<b>DIGITAL INPUTS</b>					
Input High Voltage, $V_{INH}$			2.0	V min	
Input Low Voltage, $V_{INL}$			0.8	V max	
Input Current, $I_{INL}$ or $I_{INH}$	0.001			$\mu\text{A}$ typ	$V_{IN} = V_{INL}$ or $V_{INH}$
			$\pm 0.5$	$\mu\text{A}$ max	
Digital Input Capacitance, $C_{IN}$	3			pF typ	
<b>DYNAMIC CHARACTERISTICS<sup>1</sup></b>					
Transition Time, $t_{TRANS}$	150			ns typ	$R_L = 300\ \Omega$ , $C_L = 35\text{ pF}$
	190		265	ns max	$V_S = 3\text{ V}$ ; Figure 24
$t_{ON}$ (EN)	95			ns typ	$R_L = 300\ \Omega$ , $C_L = 35\text{ pF}$
	120		170	ns max	$V_S = 3\text{ V}$ ; Figure 24
$t_{OFF}$ (EN)	100			ns typ	$R_L = 300\ \Omega$ , $C_L = 35\text{ pF}$
	125		170	ns max	$V_S = 3\text{ V}$ ; Figure 24
Break-Before-Make Time Delay, $t_D$	50			ns typ	$R_L = 300\ \Omega$ , $C_L = 35\text{ pF}$
			10	ns min	$V_{S1} = V_{S2} = 8\text{ V}$ ; See figure x
Charge Injection	50			pC typ	$V_S = 0\text{ V}$ , $R_S = 0\ \Omega$ , $C_L = 1\text{ nF}$ ; See figure x
Off Isolation	50			dB typ	$R_L = 50\ \Omega$ , $C_L = 5\text{ pF}$ , $f = 1\text{ MHz}$ ; See figure x
Channel-to-Channel Crosstalk	60			dB typ	$R_L = 50\ \Omega$ , $C_L = 5\text{ pF}$ , $f = 1\text{ MHz}$ ; See figure x
-3 dB Bandwidth	50			MHz typ	$R_L = 50\ \Omega$ , $C_L = 5\text{ pF}$ ; See figure x
$C_S$ (Off)	35			pF typ	$V_S = 0\text{ V}$ , $f = 1\text{ MHz}$
				pF max	$V_S = 0\text{ V}$ , $f = 1\text{ MHz}$
$C_D$ (Off)	35			pF typ	$V_S = 0\text{ V}$ , $f = 1\text{ MHz}$
				pF max	$V_S = 0\text{ V}$ , $f = 1\text{ MHz}$
$C_D$ , $C_S$ (On)	150			pF typ	$V_S = 0\text{ V}$ , $f = 1\text{ MHz}$
				pF max	$V_S = 0\text{ V}$ , $f = 1\text{ MHz}$
<b>POWER REQUIREMENTS</b>					
$I_{DD}$	0.001			$\mu\text{A}$ typ	$V_{DD} = 5.5\text{ V}$ , $V_{SS} = -5.5\text{ V}$
				$\mu\text{A}$ max	Digital inputs = 0 V, 5V or $V_{DD}$
$V_{DD}/V_{SS}$			1	V min/max	Gnd = 0V
			$\pm 4.5/\pm 16.5$		

## ABSOLUTE MAXIMUM RATINGS

<sup>1</sup> Guaranteed by design, not subject to production test.

$T_A = 25^\circ\text{C}$ , unless otherwise noted.

**Table 4.**

Parameter	Rating
$V_{DD}$ to $V_{SS}$	35 V
$V_{DD}$ to GND	-0.3 V to +25 V
$V_{SS}$ to GND	+0.3 V to -25 V
Analog Inputs <sup>1</sup>	$V_{SS} - 0.3\text{ V}$ to $V_{DD} + 0.3\text{ V}$
Digital Inputs	GND - 0.3 V to $V_{DD} + 0.3\text{ V}$ or 30 mA, whichever occurs first
Peak Current, S or D	300 mA (pulsed at 1 ms, 10% duty cycle max)
Continuous Current, S or D	200 mA
Operating Temperature Range Automotive (Y Version)	-40°C to +125°C
Storage Temperature Range	-65°C to +150°C
Junction Temperature	150°C
16-Lead TSSOP, $\theta_{JA}$ Thermal Impedance	150.4°C/W
16-Lead LFCSP, $\theta_{JA}$ Thermal Impedance	72.7°C/W
Reflow Soldering Peak Temperature, Pb free	260°C

<sup>1</sup> Overvoltages at IN, S, or D are clamped by internal diodes. Current should be limited to the maximum ratings given.

Stresses above those listed under Absolute Maximum Ratings may cause permanent damage to the device. This is a stress rating only; functional operation of the device at these or any other conditions above those listed in the operational sections of this specification is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability. Only one absolute maximum rating may be applied at any one time.

### ESD CAUTION

ESD (electrostatic discharge) sensitive device. Electrostatic charges as high as 4000 V readily accumulate on the human body and test equipment and can discharge without detection. Although this product features proprietary ESD protection circuitry, permanent damage may occur on devices subjected to high energy electrostatic discharges. Therefore, proper ESD precautions are recommended to avoid performance degradation or loss of functionality.



## PIN CONFIGURATIONS AND FUNCTION DESCRIPTIONS

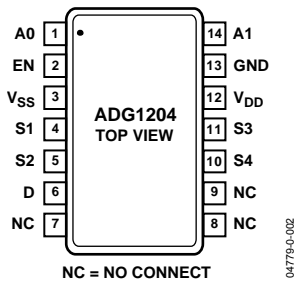


Figure 2. TSSOP Pin Configuration

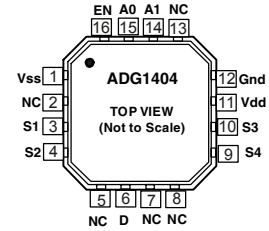


Figure 3. LFCSP Pin Configuration

Table 5. Pin Function Descriptions

Pin No.		Mnemonic	Description
TSSOP	LFCSP		
1	15	A0	Logic Control Input.
2	16	EN	Active High Digital Input. When low, the device is disabled and all switches are off. When high, Ax logic inputs determine on switches.
3	1	V <sub>SS</sub>	Most Negative Power Supply Potential.
4	3	S1	Source Terminal. Can be an input or an output.
5	4	S2	Source Terminal. Can be an input or an output.
6	6	D	Drain Terminal. Can be an input or an output.
7 to 9	2,5,7,8,13	NC	No Connection.
10	9	S4	Source Terminal. Can be an input or an output.
11	10	S3	Source Terminal. Can be an input or an output.
12	11	V <sub>DD</sub>	Most Positive Power Supply Potential.
13	12	GND	Ground (0 V) Reference.
14	14	A1	Logic Control Input.

## TRUTH TABLE

Table 6.

EN	A1	A0	S1	S2	S3	S4
0	X	X	Off	Off	Off	Off
1	0	0	On	Off	Off	Off
1	0	1	Off	On	Off	Off
1	1	0	Off	Off	On	Off
1	1	1	Off	Off	Off	On



## TERMINOLOGY

**I<sub>DD</sub>**

The positive supply current.

**I<sub>SS</sub>**

The negative supply current.

**V<sub>D</sub> (V<sub>S</sub>)**

The analog voltage on Terminals D and S.

**R<sub>ON</sub>**

The ohmic resistance between D and S.

**R<sub>FLAT(ON)</sub>**

Flatness is defined as the difference between the maximum and minimum value of on resistance, as measured over the specified analog signal range.

**I<sub>S</sub> (Off)**

The source leakage current with the switch off.

**I<sub>D</sub> (Off)**

The drain leakage current with the switch off.

**I<sub>D</sub>, I<sub>S</sub> (On)**

The channel leakage current with the switch on.

**V<sub>INL</sub>**

The maximum input voltage for Logic 0.

**V<sub>INH</sub>**

The minimum input voltage for Logic 1.

**I<sub>INL</sub> (I<sub>INH</sub>)**

The input current of the digital input.

**C<sub>S</sub> (Off)**

The off switch source capacitance, which is measured with reference to ground.

**C<sub>D</sub> (Off)**

The off switch drain capacitance, which is measured with reference to ground.

**C<sub>D</sub>, C<sub>S</sub> (On)**

The on switch capacitance, which is measured with reference to ground.

**C<sub>IN</sub>**

The digital input capacitance.

**t<sub>ON</sub> (EN)**

The delay between applying the digital control input and the output switching on. See Figure 24, Test Circuit 4.

**t<sub>OFF</sub> (EN)**

The delay between applying the digital control input and the output switching off.

**Charge Injection**

A measure of the glitch impulse transferred from the digital input to the analog output during switching.

**Off Isolation**

A measure of unwanted signal coupling through an off switch.

**Crosstalk**

A measure of unwanted signal that is coupled through from one channel to another as a result of parasitic capacitance.

**Bandwidth**

The frequency at which the output is attenuated by 3 dB.

**On Response**

The frequency response of the on switch.

**Insertion Loss**

The loss due to the on resistance of the switch.

**THD + N**

The ratio of the harmonic amplitude plus noise of the signal to the fundamental.

**t<sub>TRANS</sub>**

The delay time between the 50% and 90% points of the digital input and switch on condition when switching from one address state to another.

**TYPICAL PERFORMANCE CHARACTERISTICS**



Figure 4. On Resistance as a Function of  $V_D$  ( $V_S$ ) for Single Supply



Figure 7. On Resistance as a Function of  $V_D$  ( $V_S$ ) for Different Temperatures, Single Supply



Figure 5. On Resistance as a Function of  $V_D$  ( $V_S$ ) for Dual Supply



Figure 8. Leakage Currents as a Function of Temperature for Dual Supply



Figure 6. On Resistance as a Function of  $V_D$  ( $V_S$ ) for Different Temperatures, Dual Supply



Figure 9. Leakage Currents as a Function of Temperature for Single Supply



Figure 10. Logic Threshold Voltage vs Supply Voltage



Figure 13. Transition Times vs. Temperature



Figure 11.  $I_{DD}$  vs. Logic Level



Figure 14. Off Isolation vs. Frequency



Figure 12. Charge Injection vs. Source Voltage



Figure 15. Crosstalk vs. Frequency



Figure 16. On Response vs. Frequency



Figure 19. On Capacitance vs. Source Voltage



Figure 17. THD + N vs. Frequency



Figure 20. Capacitance vs. Source Voltage for Single Supply



Figure 18. Off Capacitance vs. Source Voltage

TEST CIRCUITS

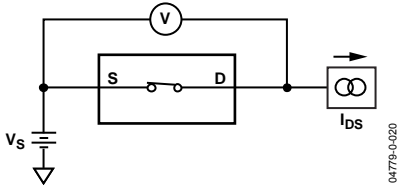


Figure 21. Test Circuit 1—On Resistance

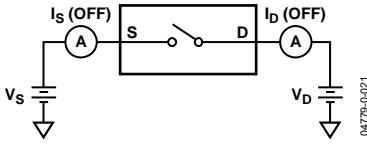


Figure 22. Test Circuit 2—Off Leakage

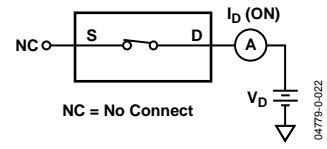


Figure 23. Test Circuit 3—On Leakage

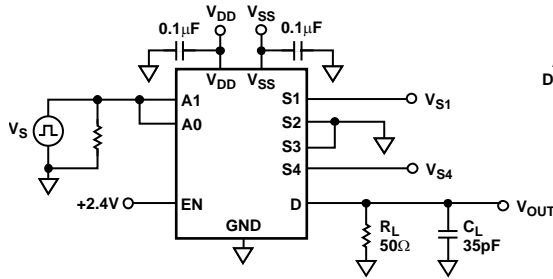


Figure 24. Test Circuit 4—Address to Output Switching Times

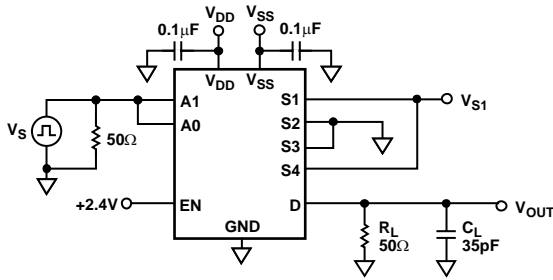
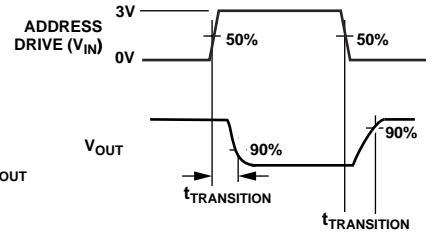


Figure 25. Test Circuit 5—Break-Before-Make Time

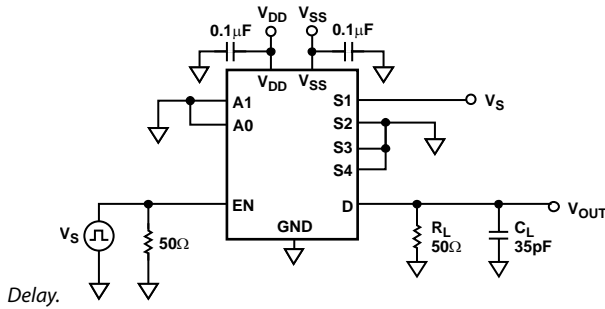
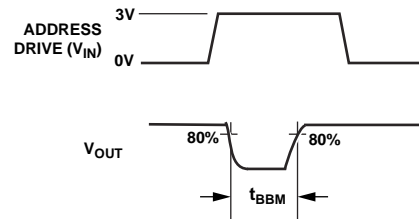
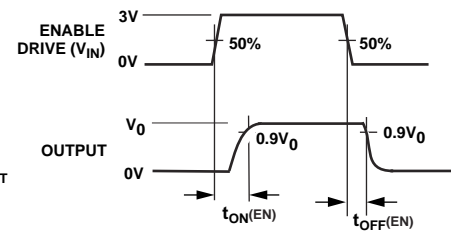


Figure 26. Test Circuit 6—Enable-to-Output Switching Delay



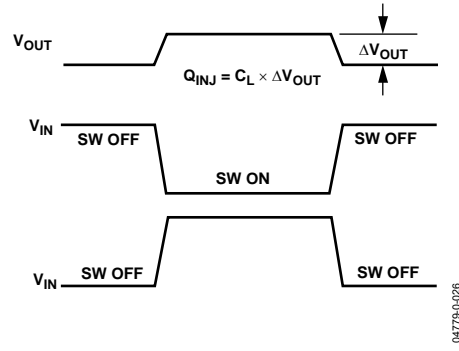
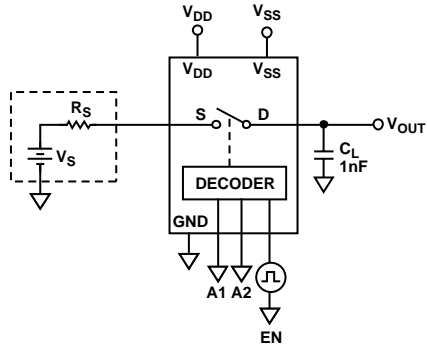
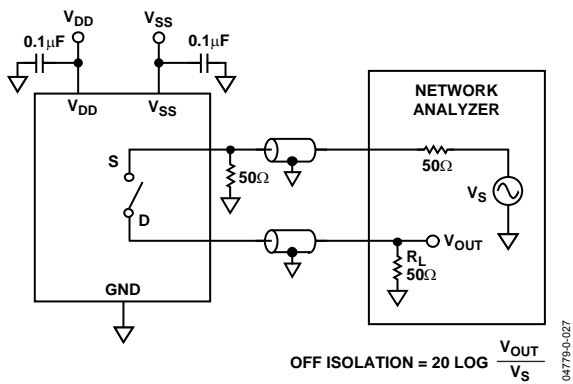
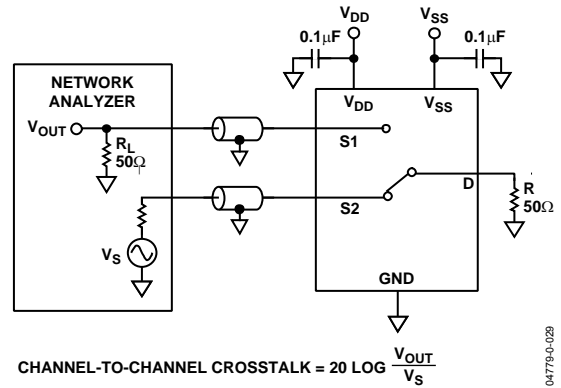


Figure 27. Test Circuit 7— Charge Injection



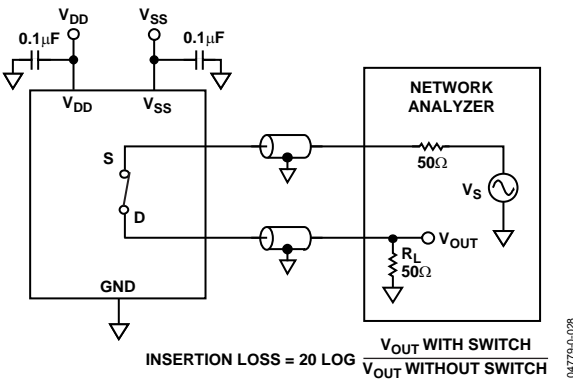
OFF ISOLATION =  $20 \text{ LOG } \frac{V_{OUT}}{V_S}$

Figure 28. Test Circuit 8—Off Isolation



CHANNEL-TO-CHANNEL CROSSTALK =  $20 \text{ LOG } \frac{V_{OUT}}{V_S}$

Figure 30. Test Circuit 10—Channel-to-Channel Crosstalk



INSERTION LOSS =  $20 \text{ LOG } \frac{V_{OUT \text{ WITH SWITCH}}}{V_{OUT \text{ WITHOUT SWITCH}}}$

Figure 29. Test Circuit 9—Bandwidth

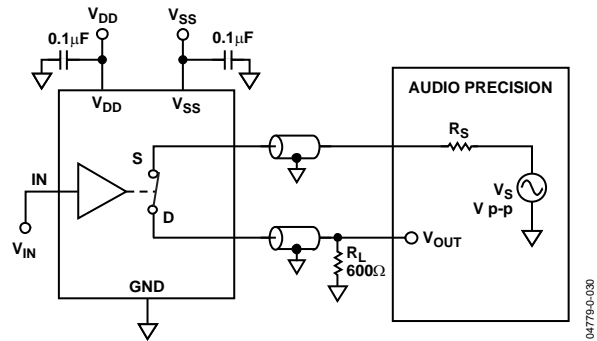


Figure 31. Test Circuit 11—THD + Noise

# OUTLINE DIMENSIONS

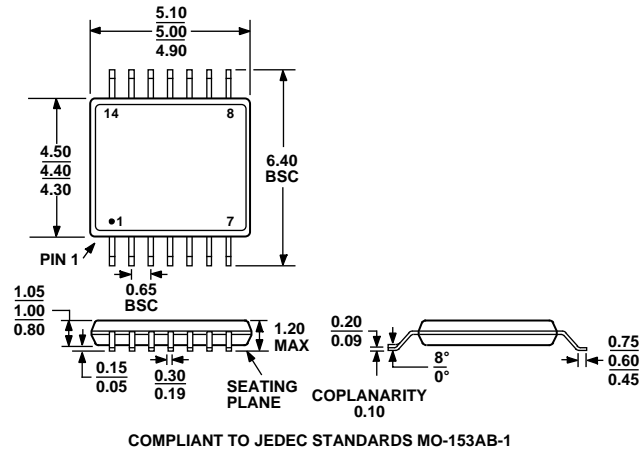


Figure 32. 14-Lead Thin Shrink Small Outline Package [TSSOP]  
(RU-14)  
Dimension shown in millimeters

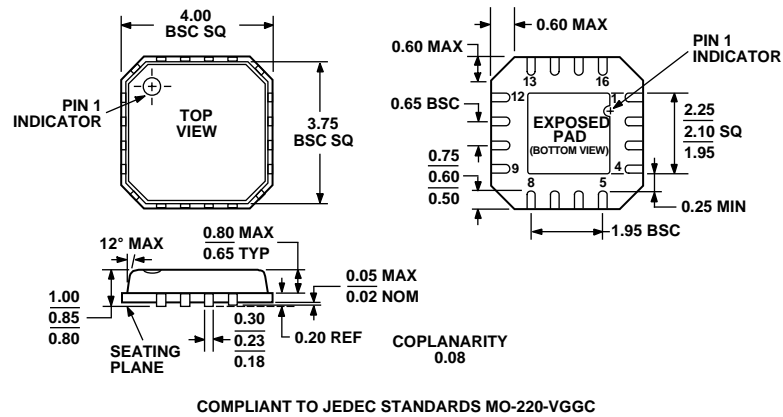


Figure 33. 16-Lead Lead Frame Chip Scale Package [VQ\_LFCSP]  
4 mm × 4 mm Body, Very Thin Quad  
(CP-16-4)  
Dimensions shown in millimeters

## ORDERING GUIDE

Model	Temperature Range	Package Description	Package Option
ADG1404YRUZ <sup>1</sup>	-40°C to +125°C	Thin Shrink Small Outline Package (TSSOP)	RU-14
ADG1404YRUZ-REEL <sup>1</sup>	-40°C to +125°C	Thin Shrink Small Outline Package (TSSOP)	RU-14
ADG1404YRUZ-REEL7 <sup>1</sup>	-40°C to +125°C	Thin Shrink Small Outline Package (TSSOP)	RU-14
ADG1404YCPZ-500RL7 <sup>1</sup>	-40°C to +125°C	Lead Frame Chip Scale Package (VQ_LFCSP)	CP-16-4
ADG1404YCPZ-REEL7 <sup>1</sup>	-40°C to +125°C	Lead Frame Chip Scale Package (VQ_LFCSP)	CP-16-4

<sup>1</sup> Z = Pb-free part.

**NOTES**



**NOTES**