# **ADG1404\* Product Page Quick Links**

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### **Application Notes**

• AN-1024: How to Calculate the Settling Time and Sampling Rate of a Multiplexer

### **Data Sheet**

• ADG1404: 1.5  $\Omega$  On Resistance, ±15 V/12 V/±5 V, 4:1, iCMOS Multiplexer Data Sheet

### Reference Materials

### Informational

• iCMOS Technology Enabling the +/-10V World

### **Product Selection Guide**

Switches and Multiplexers Product Selection Guide

### Design Resources 🖵

- ADG1404 Material Declaration
- PCN-PDN Information
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### **REVISION HISTORY**

### 9/2016—Rev. A to Rev. B

Changes to Figure 3	8
Updated Outline Dimensions	16
Changes to Ordering Guide	16

#### 3/2009—Rev. 0 to Rev. A

Changes to Power Requirements, IDD, Digital Inputs = 5 V
Parameter, Table 1
Changes to Power Requirements, $I_{DD}$ , Digital Inputs = 5 V
Parameter, Table 2
Updated Outline Dimensions

7/2008—Revision 0: Initial Version

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### SPECIFICATIONS 15 V DUAL SUPPLY

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

Table 1.						
Parameter	25°C	-40°C to +85°C	-40°C to +125°C	Unit	Test Conditions/Comments	
ANALOG SWITCH						
Analog Signal Range			V <sub>DD</sub> to V <sub>SS</sub>	V		
On Resistance (Ron)	1.5			Ωtyp	$V_{s} = \pm 10 V$ , $I_{s} = -10 mA$ ; see Figure 22	
	1.8	2.3	2.6	Ωmax	$V_{DD} = +13.5 \text{ V}, V_{SS} = -13.5 \text{ V}$	
On-Resistance Match	0.1			Ωtyp	$V_{s} = \pm 10 V$ , $I_{s} = -10 mA$	
Between Channels (ΔR <sub>ON</sub> )						
	0.18	0.19	0.21	Ωmax		
On-Resistance Flatness (R <sub>FLAT(ON)</sub> )	0.3			Ωtyp	$V_{s} = \pm 10 V$ , $I_{s} = -10 mA$	
	0.36	0.4	0.45	Ωmax		
LEAKAGE CURRENTS					$V_{DD} = +16.5 \text{ V}, V_{SS} = -16.5 \text{ V}$	
Source Off Leakage, Is (Off)	±0.03			nA typ	$V_s = \pm 10 V$ , $V_s = \mp 10 V$ ; see Figure 23	
	±0.55	±2	±12.5	nA max		
Drain Off Leakage, I <sub>D</sub> (Off)	±0.04	±2	±12.5	nA typ		
Drain on Leakage, ib (on)					$V_{\text{S}}$ = ±10 V, $V_{\text{s}}$ = $\mp10$ V; see Figure 23	
	±0.55	±4	±30	nA max		
Channel On Leakage, I <sub>D</sub> , I <sub>S</sub> (On)	±0.1			nA typ	$V_S = V_D = \pm 10 \text{ V}$ ; see Figure 24	
	±2	±4	±30	nA max		
DIGITAL INPUTS						
Input High Voltage, VINH			2.0	V min		
Input Low Voltage, VINL			0.8	V max		
Input Current, I <sub>INL</sub> or I <sub>NH</sub>	0.005			μA typ	$V_{IN} = V_{GND} \text{ or } V_{DD}$	
			±0.1	μA max		
Digital Input Capacitance, C <sub>IN</sub>	3.5			pF typ		
DYNAMIC CHARACTERISTICS <sup>1</sup>						
Transition Time, transition	150			ns typ	$R_L = 300 \Omega$ , $C_L = 35 pF$	
	180	220	250	ns max	$V_s = +10 V$ ; see Figure 29	
t <sub>on</sub> (EN)	100			ns typ	$R_L = 300 \Omega$ , $C_L = 35 pF$	
	120	145	165	ns max	$V_s = +10 V$ ; see Figure 31	
t <sub>off</sub> (EN)	110			ns typ	$R_L = 300 \Omega$ , $C_L = 35 pF$	
	135	165	185	ns max	$V_s = +10 V$ ; see Figure 31	
Break-Before-Make Time Delay, tBBM	35			ns typ	$R_L = 300 \Omega$ , $C_L = 35 pF$	
			10	ns min	$V_{S1} = V_{S2} = 10 V$ ; see Figure 30	
Charge Injection	-20			pC typ	$V_s = 0 V$ , $R_s = 0 \Omega$ , $C_L = 1 nF$ ; see Figure 32	
Off Isolation	70			dB typ	$R_L = 50 \Omega$ , $C_L = 5 pF$ , $f = 100 kHz$ ; see Figure 25	
Channel-to-Channel Crosstalk	82			dB typ	$R_L = 50 \Omega$ , $C_L = 5 pF$ , $f = 100 kHz$ ; see Figure 27	
Total Harmonic Distortion + Noise	0.011			% typ	$R_L = 110 \Omega$ , 10 V p-p, f = 20 Hz to 20 kHz; see Figure 28	
–3 dB Bandwidth	55			MHz typ	$R_L = 50 \Omega$ , $C_L = 5 pF$ ; see Figure 26	
Insertion Loss	-0.17			dB typ	$R_L = 50 \Omega$ , $C_L = 5 pF$ , $f = 1 MHz$ ; see Figure 26	
C <sub>s</sub> (Off)	23			pF typ	$f = 1 MHz$ , $V_s = 0 V$	
$C_{D}$ (Off)	90			pF typ	$f = 1 MHz$ , $V_s = 0 V$	
$C_D, C_S$ (On)	170			pF typ	$f = 1 MHz$ , $V_s = 0 V$	
POWER REQUIREMENTS					$V_{DD} = +16.5 \text{ V}, \text{ V}_{SS} = -16.5 \text{ V}$	
I <sub>DD</sub>	0.001			μA typ	Digital inputs = $0 \text{ V or } V_{DD}$	
			1	μA max		
IDD	170			μA typ	Digital inputs = 5 V	
עטי			285	μA typ μA max		
les	0.001		205	μA max μA typ	Digital inputs = $0 \text{ V or } V_{DD}$	
lss	0.001		1	μΑ typ μΑ max		
				V min/max	GND = 0 V	
V <sub>DD</sub> /V <sub>SS</sub>			±4.5/±16.5	v min/max		

### **12 V SINGLE SUPPLY**

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

### Table 2.

Parameter	25°C	-40°C to +85°C	-40°C to +125°C	Unit	<b>Test Conditions/Comments</b>
ANALOG SWITCH					
Analog Signal Range			0 V to V <sub>DD</sub>	V	
On Resistance (Ron)	2.8			Ωtyp	$V_{s} = 0 V$ to 10 V, $I_{s} = -10 mA$ ; see Figure 22
	3.5	4.3	4.8	Ωmax	$V_{DD} = 10.8 \text{ V}, V_{SS} = 0 \text{ V}$
On-Resistance Match	0.13			Ωtyp	$V_{s} = 0 V$ to 10 V, $I_{s} = -10 \text{ mA}$
Between Channels ( $\Delta R_{ON}$ )					
	0.21	0.23	0.25	Ωmax	
On-Resistance Flatness (R <sub>FLAT(ON)</sub> )	0.6			Ωtyp	$V_{s} = 0V$ to 10 V, $I_{s} = -10$ mA
	1.1	1.2	1.3	Ωmax	
LEAKAGE CURRENTS					$V_{DD} = 13.2 \text{ V}, V_{SS} = 0 \text{ V}$
Source Off Leakage, Is (Off)	±0.02			nA typ	$V_{s} = 1 \text{ V}/10 \text{ V}, V_{D} = 10 \text{ V}/1 \text{ V}; \text{ see Figure 23}$
	±0.55	±2	±12.5	nA max	
Drain Off Leakage, I <sub>D</sub> (Off)	±0.03			nA typ	$V_{s} = 1 \text{ V}/10 \text{ V}, V_{D} = 10 \text{ V}/1 \text{ V}; \text{ see Figure 23}$
	±0.55	±4	±30	nA max	
Channel On Leakage, I <sub>D</sub> , Is (On)	±0.1			nA typ	$V_s = V_D = 1 V$ or 10 V; see Figure 24
	±1.5	±4	±30	nA max	_
DIGITAL INPUTS					
Input High Voltage, V <sub>INH</sub>			2.0	V min	
Input Low Voltage, VINL			0.8	V max	
Input Current, I <sub>INL</sub> or I <sub>INH</sub>	0.001			μA typ	$V_{IN} = V_{GND} \text{ or } V_{DD}$
			±0.1	µA max	
Digital Input Capacitance, C <sub>№</sub>	3.5			pF typ	
DYNAMIC CHARACTERISTICS <sup>1</sup>					
Transition Time, transition	230			ns typ	$R_L = 300 \Omega, C_L = 35 pF$
	300	375	430	ns max	$V_s = 8 V$ ; see Figure 29
t <sub>on</sub> (EN)	180			ns typ	$R_L = 300 \Omega, C_L = 35 pF$
	240	295	335	ns max	$V_s = 8 V$ ; see Figure 31
t <sub>off</sub> (EN)	115			ns typ	$R_L = 300 \Omega, C_L = 35 pF$
	160	190	220	ns max	$V_s = 8 V$ ; see Figure 31
Break-Before-Make Time Delay, t	100			ns typ	$R_L = 300 \Omega, C_L = 35 pF$
			10	ns min	$V_{s1} = V_{s2} = 8 V$ ; see Figure 30
Charge Injection	30			pC typ	$V_s = 6 V$ , $R_s = 0 \Omega$ , $C_L = 1 nF$ ; see Figure 32
Off Isolation	80			dB typ	$R_{L} = 50 \Omega$ , $C_{L} = 5 pF$ , $f = 100 kHz$ ; see Figure 25
Channel-to-Channel Crosstalk	82			dB typ	$R_{L} = 50 \Omega$ , $C_{L} = 5 pF$ , $f = 100 kHz$ ; see Figure 27
–3 dB Bandwidth	35			MHz typ	$R_L = 50 \Omega$ , $C_L = 5 pF$ ; see Figure 26
Insertion Loss	-0.3			dB typ	$R_L = 50 \Omega$ , $C_L = 5 pF$ , $f = 1 MHz$ ; see Figure 26
Cs (Off)	39			pF typ	$f = 1 \text{ MHz}, V_s = 6 \text{ V}$
$C_{\rm D}$ (Off)	150			pF typ	$f = 1 MHz, V_s = 6 V$
$C_D, C_S$ (On)	217			pF typ	$f = 1 MHz, V_s = 6 V$
POWER REQUIREMENTS					$V_{DD} = 13.2 V$
I <sub>DD</sub>	0.001			μA typ	Digital inputs = $0 \text{ V}$ or $V_{DD}$
			1	µA max	
IDD	170			μA typ	Digital inputs = 5 V
			285	µA max	
V <sub>DD</sub>			5/16.5	V min/max	$GND = 0 V, V_{ss} = 0 V$

### **5 V DUAL SUPPLY**

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

#### Table 3.

Parameter	25°C	-40°C to +85°C	-40°C to +125°C	Unit	Test Conditions/Comments
ANALOG SWITCH					
Analog Signal Range			V <sub>DD</sub> to V <sub>SS</sub>	V	
On Resistance (R <sub>on</sub> )	3.3			Ωtyp	$V_{s} = \pm 4.5 V$ , $I_{s} = -10 mA$ ; see Figure 22
	4	4.9	5.4	Ωmax	$V_{DD} = +4.5 \text{ V}, V_{SS} = -4.5 \text{ V}$
On-Resistance Match	0.13			Ωtyp	$V_s = \pm 4.5 V$ , $I_s = -10 mA$
Between Channels (ΔR <sub>oN</sub> )					
	0.22	0.23	0.25	Ωmax	
On-Resistance Flatness (R <sub>FLAT(ON)</sub> )	0.9			Ωtyp	$V_s = \pm 4.5 V$ , $I_s = -10 mA$
	1.1	1.24	1.31	Ωmax	
LEAKAGE CURRENTS					$V_{DD} = +5.5 \text{ V}, V_{SS} = -5.5 \text{ V}$
Source Off Leakage, Is (Off)	±0.02			nA typ	$V_s = \pm 4.5 V$ , $V_D = \mp 4.5 V$ ; see Figure 23
-	±0.2	±1	±12.5	nA max	$v_5 = \pm 4.5 v, v_0 = \pm 4.5 v, see Figure 25$
Drain Off Lookage L (Off)		±1	12.5	-	
Drain Off Leakage, $I_D$ (Off)	±0.02			nA typ	$V_s = \pm 4.5 \text{ V}, V_D = \mp 4.5 \text{ V}; \text{ see Figure 23}$
	±0.25	±1.2	±15	nA max	
Channel On Leakage, I <sub>D</sub> , I <sub>s</sub> (On)	±0.05			nA typ	$V_s = V_D = \pm 4.5 V$ ; see Figure 24
	±0.25	±1.5	±20	nA max	
DIGITAL INPUTS					
Input High Voltage, V <sub>№H</sub>			2.0	V min	
Input Low Voltage, V <sub>INL</sub>			0.8	V max	
Input Current, IINL or IINH	0.001			μA typ	$V_{IN} = V_{GND} \text{ or } V_{DD}$
			±0.1	μA max	
Digital Input Capacitance, C <sub>№</sub>	35			pF typ	
DYNAMIC CHARACTERISTICS <sup>1</sup>					
Transition Time, transition	340			ns typ	$R_L = 300 \Omega$ , $C_L = 35 pF$
	470	560	615	ns max	$V_s = 3 V$ ; Figure 29
t <sub>on</sub> (EN)	260			ns typ	$R_L = 300 \Omega, C_L = 35 pF$
	355	430	480	ns max	$V_s = 3 V$ ; Figure 31
t <sub>off</sub> (EN)	220			ns typ	$R_L = 300 \Omega, C_L = 35 pF$
	315	365	400	ns max	$V_s = 3 V$ ; Figure 31
Break-Before-Make Time Delay, t	100			ns typ	$R_L = 300 \Omega, C_L = 35 pF$
break before make time belay, the	100		50	ns min	$V_{s1} = V_{s2} = 3 V$ ; see Figure 30
Charge Injection	30		50	pC typ	$V_s = 0 V$ , $R_s = 0 \Omega$ , $C_L = 1 nF$ ; see Figure 32
Off Isolation	80			dB typ	$R_L = 50 \Omega$ , $C_L = 5 pF$ , $f = 100 kHz$ ;
On isolation	00			abtyp	see Figure 25
Channel-to-Channel Crosstalk	82			dB typ	$R_L = 50 \Omega$ , $C_L = 5 pF$ , $f = 100 kHz$ ; see Figure 27
–3 dB Bandwidth	40			MHz typ	$R_L = 50 \Omega$ , $C_L = 5 pF$ ; see Figure 26
Insertion Loss	0.27			dB typ	$R_L = 50 \Omega$ , $C_L = 5 pF$ , $f = 1 MHz$ ; see Figure 26
Total Harmonic Distortion + Noise	0.03			% typ	$R_L = 110 \Omega$ , 2.5 V p-p, f = 20 Hz to 20 kHz; see Figure 28
Cs (Off)	33			pF typ	$V_s = 0 V, f = 1 MHz$
$C_{\rm D}$ (Off)	128			pF typ	$V_{s} = 0 V, f = 1 MHz$
$C_D, C_S$ (On)	210			pF typ	$V_{s} = 0 V, f = 1 MHz$
POWER REQUIREMENTS	210			pi typ	$V_{S} = 0.0, 1 = 1.0012$ $V_{DD} = 5.5 V, V_{SS} = -5.5 V$
	0.001			uA two	$V_{DD} = 5.5 \text{ V}, V_{SS} = -5.5 \text{ V}$ Digital inputs = 0 V, 5 V, or $V_{DD}$
I <sub>DD</sub>	0.001		1	μA typ	Digital inputs = $0 v$ , $5 v$ , or $v_{DD}$
	0.001		1	µA max	
I <sub>SS</sub>	0.001		1	μA typ	Digital inputs = $0 V \text{ or } V_{DD}$
N/ 0/			1	µA max	
V <sub>DD</sub> /V <sub>SS</sub>			±4.5/±16.5	V min/max	GND = 0 V

### **CONTINUOUS CURRENT, S OR D**

### Table 4.

Parameter	25°C	85°C	125°C	Unit	<b>Test Conditions/Comments</b>
CONTINUOUS CURRENT, S or D <sup>1</sup>					
15 V Dual Supply					$V_{DD} = +13.5 \text{ V}, \text{ V}_{SS} = -13.5 \text{ V}$
ADG1404 TSSOP	350	220	100	mA max	
ADG1404 LFCSP	450	300	140	mA max	
12 V Single Supply					$V_{DD} = 10.8 V, V_{SS} = 0 V$
ADG1404 TSSOP	300	220	100	mA max	
ADG1404 LFCSP	400	300	140	mA max	
5 V Dual Supply					$V_{DD} = +4.5 \text{ V}, \text{ V}_{SS} = -4.5 \text{ V}$
ADG1404 TSSOP	300	220	100	mA max	
ADG1404 LFCSP	400	300	140	mA max	

## **ABSOLUTE MAXIMUM RATINGS**

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

#### Table 5.

Parameter	Rating
V <sub>DD</sub> to V <sub>SS</sub>	35 V
V <sub>DD</sub> to GND	–0.3 V to +25 V
V <sub>ss</sub> to GND	+0.3 V to -25 V
Analog Inputs <sup>1</sup>	$V_{SS} - 0.3 V$ to $V_{DD} + 0.3 V$ or 30 mA, whichever occurs first
Digital Inputs	GND – 0.3 V to $V_{DD}$ + 0.3 V or 30 mA, whichever occurs first
Peak Current, S or D	600 mA (pulsed at 1 ms, 10% duty cycle maximum)
Continuous Current, S or D <sup>2</sup>	Data + 15%
Operating Temperature Range	
Automotive (Y Version)	-40°C to +125°C
Storage Temperature Range	–65°C to +150°C
Junction Temperature	150°C
14-Lead TSSOP, θJA Thermal Impedance (4-layer board)	112°C/W
16-Lead LFCSP, θ <sub>JA</sub> Thermal Impedance	30.4°C/W
Reflow Soldering Peak Temperature, Pb free	260(+0/-5)°C

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

<sup>2</sup> See data given in Table 4.

Stresses at or above those listed under Absolute Maximum Ratings may cause permanent damage to the product. This is a stress rating only; functional operation of the product at these or any other conditions above those indicated in the operational section of this specification is not implied. Operation beyond the maximum operating conditions for extended periods may affect product reliability.

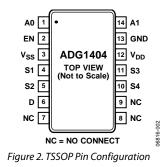
Only one absolute maximum rating can be applied at any one time.

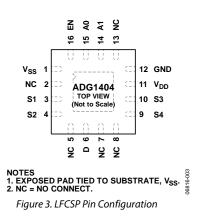
#### **ESD CAUTION**



**ESD** (electrostatic discharge) sensitive device. Charged devices and circuit boards can discharge without detection. Although this product features patented or proprietary protection circuitry, damage may occur on devices subjected to high energy ESD. Therefore, proper ESD precautions should be taken to avoid performance degradation or loss of functionality.

# PIN CONFIGURATIONS AND FUNCTION DESCRIPTIONS





#### **Table 6. Pin Function Descriptions**

Pin No.						
TSSOP LFCSP Mnemonic		Mnemonic	Description			
1	15	A0	Logic Control Input.			
2	16	EN	Active High Digital Input. When this pin is low, the device is disabled and all switches are off When this pin is high, the Ax logic inputs determine the on switches.			
3	1	Vss	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 7. ΕN A1 A0 **S1 S2 S**3 **S4** 0 Х Х Off Off Off Off 1 0 0 Off Off Off On 1 0 1 Off On Off Off 0 1 1 Off Off On Off 1 1 Off Off Off On 1

# **TYPICAL PERFORMANCE CHARACTERISTICS**

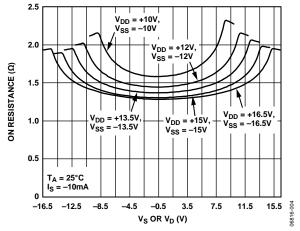


Figure 4. On Resistance as a Function of  $V_D$  ( $V_S$ ), Dual Supply

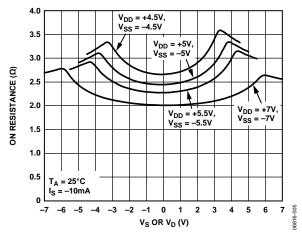


Figure 5. On Resistance as a Function of  $V_D$  ( $V_S$ ), Dual Supply

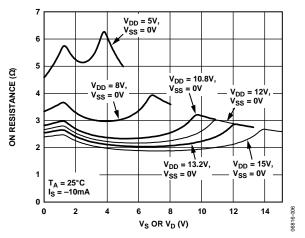


Figure 6. On Resistance as a Function of  $V_D$  ( $V_S$ ), Single Supply

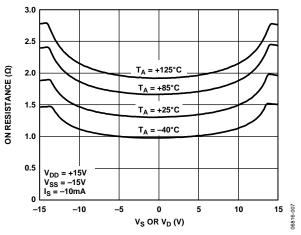


Figure 7. On Resistance as a Function of  $V_D$  ( $V_S$ ) for Different Temperatures, 15 V Dual Supply

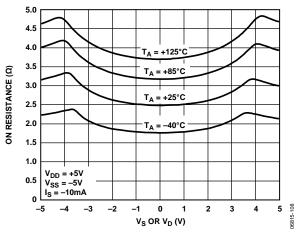


Figure 8. On Resistance as a Function of  $V_D$  ( $V_S$ ) for Different Temperatures, 5 V Dual Supply

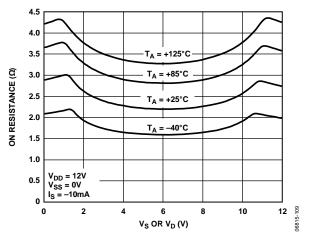


Figure 9. On Resistance as a Function of  $V_D(V_S)$  for Different Temperatures, Single Supply

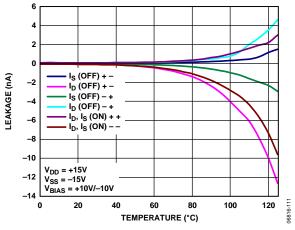


Figure 10. Leakage Currents as a Function of Temperature, 15 V Dual Supply

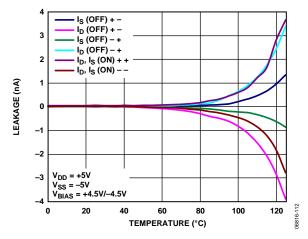


Figure 11. Leakage Currents as a Function of Temperature, 5 V Dual Supply

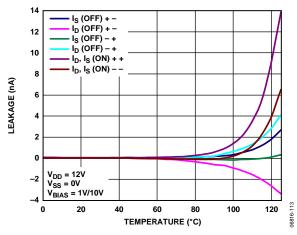
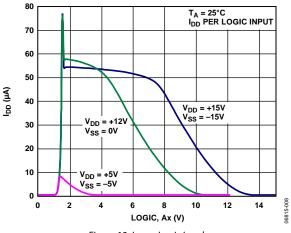
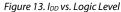
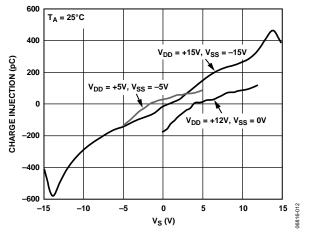


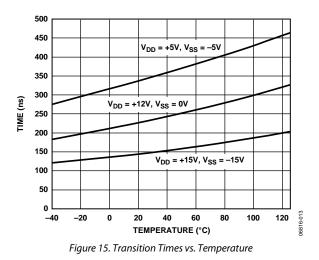
Figure 12. Leakage Currents as a Function of Temperature, 12 V Single Supply





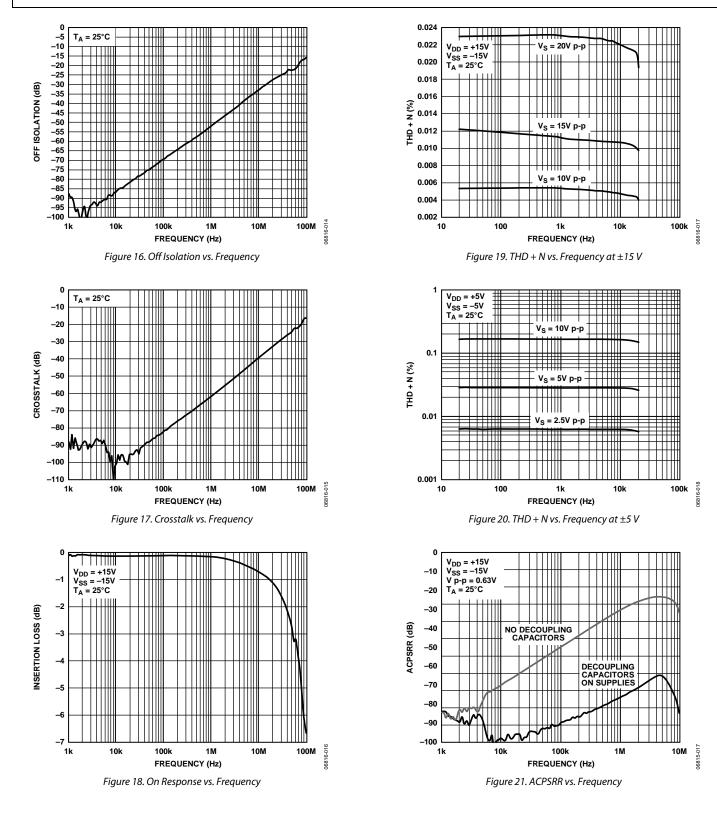






### **Data Sheet**

# ADG1404



### **TERMINOLOGY**

#### IDD

The positive supply current.

### Iss

The negative supply current.

**V**<sub>D</sub> (**V**<sub>S</sub>) The analog voltage on Terminal D and Terminal S.

### Ron

The ohmic resistance between Terminal D and Terminal S.

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

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

### Is (Off)

The source leakage current with the switch off.

 $\mathbf{I}_{\mathrm{D}}$  (Off) The drain leakage current with the switch off.

 $I_{\rm D}, I_{\rm S}\left(On\right)$  The channel leakage current with the switch on.

V<sub>INL</sub> The maximum input voltage for Logic 0.

 $V_{\mbox{\scriptsize INH}}$  The minimum input voltage for Logic 1.

 $I_{\rm INL} \left( I_{\rm INH} \right)$  The input current of the digital input.

### Cs (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.

 $C_D, C_S(On)$ 

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

### CIN

The digital input capacitance.

### **t**TRANSITION

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.

### ton (EN)

The delay between applying the digital control input and the output switching on. See Figure 29, Test Circuit 4.

 $t_{\text{OFF}}$  (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.

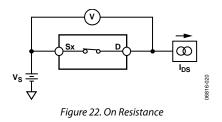
### THD + N

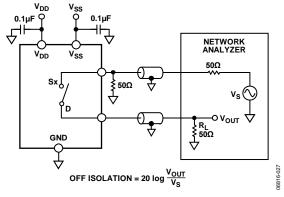
The ratio of the harmonic amplitude plus noise of the signal to the fundamental.

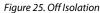
### ACPSRR (AC Power Supply Rejection Ratio)

The ratio of the amplitude of signal on the output to the amplitude of the modulation. This is a measure of the ability of the device to avoid coupling noise and spurious signals that appear on the supply voltage pin to the output of the switch. The dc voltage on the device is modulated by a sine wave of 0.62 V p-p.

# **TEST CIRCUITS**







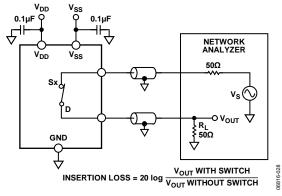
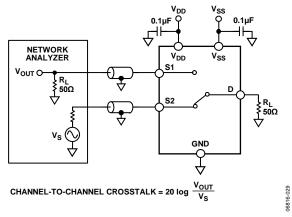
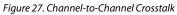
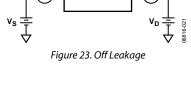


Figure 26. Bandwidth

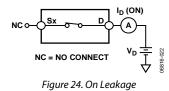






I<sub>D</sub> (OFF)

I<sub>S</sub> (OFF)



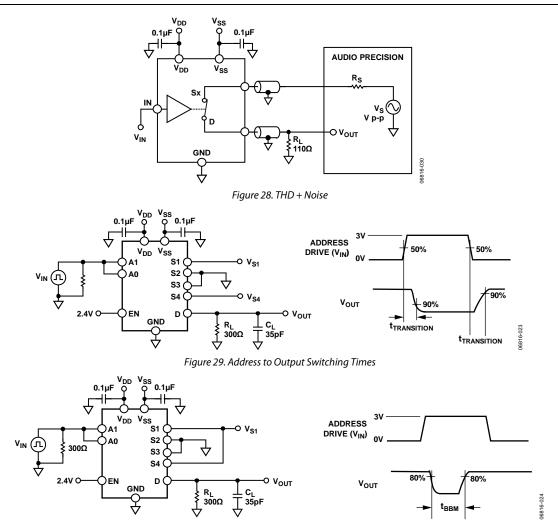
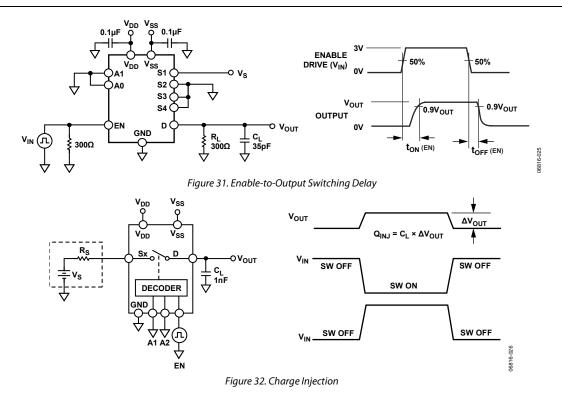
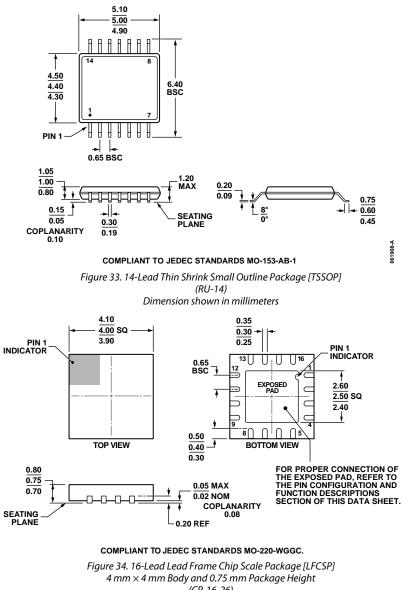


Figure 30. Break-Before-Make Time Delay



### **OUTLINE DIMENSIONS**



4 mm × 4 mm Body and 0.75 mm Package Heigl (CP-16-26) Dimensions shown in millimeters

#### **ORDERING GUIDE**

<b>Model</b> <sup>1</sup>	Temperature Range	Package Description	Package Option
ADG1404YRUZ	-40°C to +125°C	14-Lead Thin Shrink Small Outline Package [TSSOP]	RU-14
ADG1404YRUZ-REEL7	-40°C to +125°C	14-Lead Thin Shrink Small Outline Package [TSSOP]	RU-14
ADG1404YCPZ-REEL	-40°C to +125°C	16-Lead Lead Frame Chip Scale Package [LFCSP]	CP-16-26
ADG1404YCPZ-REEL7	-40°C to +125°C	16-Lead Lead Frame Chip Scale Package [LFCSP]	CP-16-26

 $^{1}$  Z = RoHS Compliant Part.

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