

FEATURES

44 V supply maximum ratings

V_{SS} to V_{DD} analog signal range

Low on resistance (<70 Ω)

Low ΔR_{ON} (9 Ω max)

Low R_{ON} match (3 Ω max)

Low power dissipation

Fast switching times

t_{ON} < 110 ns

t_{OFF} < 60 ns

Low leakage currents (3 nA max)

Low charge injection (6 pC max)

Break-before-make switching action

Latch-up proof A grade

**Plug-in upgrade for DG201A/ADG201A, DG202A/ADG202A,
DG211/ADG211A**

Plug-in replacement for DG441/DG442/DG444

APPLICATIONS

Audio and video switching

Automatic test equipment

Precision data acquisition

Battery-powered systems

Sample-and-hold systems

Communication systems

GENERAL DESCRIPTION

The ADG441, ADG442, and ADG444 are monolithic CMOS devices that comprise of four independently selectable switches. They are designed on an enhanced LC²MOS process that provides low power dissipation yet gives high switching speed and low on resistance.

The on resistance profile is very flat over the full analog input range, which ensures good linearity and low distortion when switching audio signals. High switching speed also makes the parts suitable for video signal switching. CMOS construction ensures ultralow power dissipation, making the parts ideally suited for portable and battery-powered instruments. The ADG441, ADG442, and ADG444 contain four independent SPST switches. Each switch of the ADG441 and ADG444 turns on when a logic low is applied to the appropriate control input. The ADG442 switches are turned on with logic high on the appropriate control input. The ADG441 and ADG444 switches

Rev. A

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FUNCTIONAL BLOCK DIAGRAM

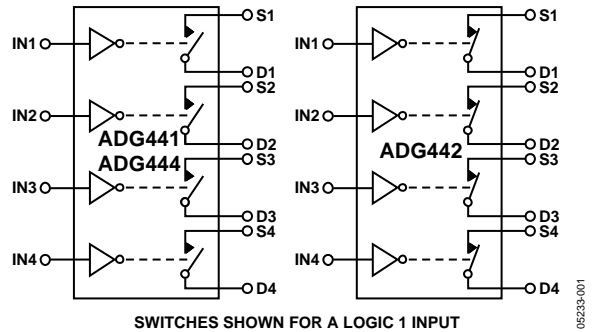


Figure 1.

differ in that the ADG444 requires a 5 V logic power supply that is applied to the V_L pin. The ADG441 and ADG442 do not have a V_L pin, the logic power supply is generated internally by an on-chip voltage generator.

Each switch conducts equally well in both directions when ON and has an input signal range that extends to the power supplies. In the OFF condition, signal levels up to the supplies are blocked. All switches exhibit break-before-make switching action for use in multiplexer applications. Inherent in the design is the low charge injection for minimum transients when switching the digital inputs.

PRODUCT HIGHLIGHTS

1. Extended signal range. The ADG441A/ADG442A/ADG444A are fabricated on an enhanced LC²MOS, trench-isolated process, giving an increased signal range that extends to the supply rails.
2. Low power dissipation.
3. Low R_{ON}.
4. Trench isolation guards against latch-up for A grade parts. A dielectric trench separates the P and N channel transistors thereby preventing latch-up even under severe overvoltage conditions.
5. Break-before-make switching. This prevents channel shorting when the switches are configured as a multiplexer.
6. Single-supply operation. For applications where the analog signal is unipolar, the ADG441/ADG442/ADG444 can be operated from a single-rail power supply. The parts are fully specified with a single 12 V power supply.

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REVISION HISTORY

5/05—Data Sheet Changed from Rev. 0 to Rev. A

| | |
|--------------------------------------------------|-----------|
| Changes to Format | Universal |
| Deleted CERDIP Package and T Grade | Universal |
| Changes to Features and Product Highlights | 1 |
| Changes to Test Conditions in Table 2 | 4 |
| Changes to Figure 11 | 8 |
| Changes to Trench Isolation Section | 12 |
| Updated Outline Dimensions | 13 |
| Changes to Ordering Guide | 14 |

4/94—Revision 0: Initial Version

SPECIFICATIONS

DUAL SUPPLY¹

$V_{DD} = +15\text{ V} \pm 10\%$, $V_{SS} = -15\text{ V} \pm 10\%$, $V_L = +5\text{ V} \pm 10\%$ (ADG444), GND = 0 V, unless otherwise noted.

Table 1.

| Parameter | B Version | | Unit | Test Conditions/Comments |
|--------------------------------------------|------------|----------------------|-------------------|----------------------------------------------------------------------------------------------------------------|
| | +25°C | -40°C to +85°C | | |
| ANALOG SWITCH | | | | |
| Analog Signal Range | | V_{SS} to V_{DD} | V | |
| R_{ON} | 40 | | Ω typ | $V_D = \pm 8.5\text{ V}$, $I_S = -10\text{ mA}$ |
| | 70 | 85 | Ω max | $V_{DD} = +13.5\text{ V}$, $V_{SS} = -13.5\text{ V}$ |
| ΔR_{ON} | | 4 | Ω typ | $-8.5\text{ V} \leq V_D \leq +8.5\text{ V}$ |
| | | 9 | Ω max | |
| R_{ON} Match | | 1 | Ω typ | $V_D = 0\text{ V}$, $I_S = -10\text{ mA}$ |
| | | 3 | Ω max | |
| LEAKAGE CURRENTS | | | | |
| Source OFF Leakage I_S (OFF) | ± 0.01 | | nA typ | $V_{DD} = +16.5\text{ V}$, $V_{SS} = -16.5\text{ V}$ $V_D = \pm 15.5\text{ V}$, $V_S = \mp 15.5\text{ V}$ |
| | ± 0.5 | ± 3 | nA max | See Figure 15 |
| Drain OFF Leakage I_D (OFF) | ± 0.01 | | nA typ | $V_D = \pm 15.5\text{ V}$, $V_S = \mp 15.5\text{ V}$ |
| | ± 0.5 | ± 3 | nA max | See Figure 15 |
| Channel ON Leakage I_D , I_S (ON) | ± 0.08 | | nA typ | $V_S = V_D = \pm 15.5\text{ V}$ |
| | ± 0.5 | ± 3 | nA max | See Figure 16 |
| DIGITAL INPUTS | | | | |
| Input High Voltage, V_{INH} | | 2.4 | V min | |
| Input Low Voltage, V_{INL} | | 0.8 | V max | |
| Input Current | | | | |
| I_{INL} or I_{INH} | | ± 0.00001 | μA typ | $V_{IN} = V_{INL}$ or V_{INH} |
| | | ± 0.5 | μA max | |
| DYNAMIC CHARACTERISTICS² | | | | |
| t_{ON} | 85 | | ns typ | $R_L = 1\text{ k}\Omega$, $C_L = 35\text{ pF}$; |
| | 110 | 170 | ns max | $V_S = \pm 10\text{ V}$; see Figure 17 |
| t_{OFF} | 45 | | ns typ | $R_L = 1\text{ k}\Omega$, $C_L = 35\text{ pF}$; |
| | 60 | 80 | ns max | $V_S = \pm 10\text{ V}$; see Figure 17 |
| t_{OPEN} | 30 | | ns typ | $R_L = 1\text{ k}\Omega$, $C_L = 35\text{ pF}$; |
| Charge Injection | 1 | | pC typ | $V_S = 0\text{ V}$, $R_S = 0\ \Omega$, $C_L = 1\text{ nF}$; |
| | 6 | | pC max | $V_{DD} = +15\text{ V}$, $V_{SS} = -15\text{ V}$; see Figure 18 |
| OFF Isolation | 60 | | dB typ | $R_L = 50\ \Omega$, $C_L = 5\text{ pF}$; $f = 1\text{ MHz}$; see Figure 19 |
| Channel-to-Channel Crosstalk | 100 | | dB typ | $R_L = 50\ \Omega$, $C_L = 5\text{ pF}$; $f = 1\text{ MHz}$; see Figure 20 |
| C_S (OFF) | 4 | | pF typ | $f = 1\text{ MHz}$ |
| C_D (OFF) | 4 | | pF typ | $f = 1\text{ MHz}$ |
| C_D , C_S (ON) | 16 | | pF typ | $f = 1\text{ MHz}$ |
| POWER REQUIREMENTS | | | | |
| I_{DD} | | | | $V_{DD} = +16.5\text{ V}$, $V_{SS} = -16.5\text{ V}$ Digital Inputs = 0 V or 5 V |
| ADG441/ADG442 | | 80 | μA max | |
| ADG444 | 0.001 | | μA typ | |
| | 1 | 2.5 | μA max | |
| I_{SS} | 0.0001 | | μA typ | |
| | 1 | 2.5 | μA max | |
| I_L (ADG444 Only) | 0.001 | | μA typ | $V_L = 5.5\text{ V}$ |
| | 1 | 2.5 | μA max | |

¹ Temperature range is: B Version: -40°C to +85°C.

² Guaranteed by design, not subject to production test.

ADG441/ADG442/ADG444

SINGLE SUPPLY¹

$V_{DD} = +12\text{ V} \pm 10\%$, $V_{SS} = 0\text{ V}$, $V_L = +5\text{ V} \pm 10\%$ (ADG444), $GND = 0\text{ V}$, unless otherwise noted.

Table 2.

| Parameter | B Version | | Unit | Test Conditions/Comments |
|--------------------------------------------|------------|----------------|-------------------|-------------------------------------------------------------------------------------------------|
| | +25°C | -40°C to +85°C | | |
| ANALOG SWITCH | | | | |
| Analogue Signal Range | | 0 to V_{DD} | V | |
| R_{ON} | 70 | | Ω typ | $V_D = +3\text{ V}$, $+8\text{ V}$, $I_S = -5\text{ mA}$ |
| | 110 | 130 | Ω max | $V_{DD} = 10.8\text{ V}$ |
| ΔR_{ON} | | 4 | Ω typ | $3\text{ V} \leq V_D \leq 8\text{ V}$ |
| | | 9 | Ω max | |
| R_{ON} Match | | 1 | Ω typ | $V_D = +6\text{ V}$, $I_S = -5\text{ mA}$ |
| | | 3 | Ω max | |
| LEAKAGE CURRENT | | | | |
| Source OFF Leakage I_S (OFF) | ± 0.01 | | nA typ | $V_{DD} = 13.2\text{ V}$ $V_D = 12.2\text{ V}/1\text{ V}$, $V_S = 1\text{ V}/12.2\text{ V}$ |
| | ± 0.5 | ± 3 | nA max | See Figure 15 |
| Drain OFF Leakage I_D (OFF) | ± 0.01 | | nA typ | $V_D = 12.2\text{ V}/1\text{ V}$, $V_S = 1\text{ V}/12.2\text{ V}$ |
| | ± 0.5 | ± 3 | nA max | See Figure 15 |
| Channel ON Leakage I_D , I_S (ON) | ± 0.08 | | nA typ | $V_S = V_D = 12.2\text{ V}/1\text{ V}$ |
| | ± 0.5 | ± 3 | nA max | Figure 16 |
| DIGITAL INPUTS | | | | |
| Input High Voltage, V_{INH} | | 2.4 | V min | |
| Input Low Voltage, V_{INL} | | 0.8 | V max | |
| Input Current | | | | |
| I_{INL} or I_{INH} | | ± 0.00001 | μA typ | $V_{IN} = V_{INL}$ or V_{INH} |
| | | ± 0.5 | μA max | |
| DYNAMIC CHARACTERISTICS² | | | | |
| t_{ON} | 105 | | ns typ | $R_L = 1\text{ k}\Omega$, $C_L = 35\text{ pF}$ |
| | 150 | 220 | ns max | $V_S = 8\text{ V}$; Figure 17 |
| t_{OFF} | 40 | | ns typ | $R_L = 1\text{ k}\Omega$, $C_L = 35\text{ pF}$ |
| | 60 | 100 | ns max | $V_S = 8\text{ V}$; Figure 17 |
| t_{OPEN} | 50 | | ns typ | $R_L = 1\text{ k}\Omega$, $C_L = 35\text{ pF}$ |
| Charge Injection | 2 | | pC typ | $V_S = 6\text{ V}$, $R_S = 0\text{ }\Omega$, $C_L = 1\text{ nF}$ |
| | 6 | | pC max | $V_{DD} = 12\text{ V}$, $V_{SS} = 0\text{ V}$; see Figure 18 |
| OFF Isolation | 60 | | dB typ | $R_L = 50\text{ }\Omega$, $C_L = 5\text{ pF}$, $f = 1\text{ MHz}$; see Figure 19 |
| Channel-to-Channel Crosstalk | 100 | | dB typ | $R_L = 50\text{ }\Omega$, $C_L = 5\text{ pF}$, $f = 1\text{ MHz}$; see Figure 20 |
| C_S (OFF) | 7 | | pF typ | $f = 1\text{ MHz}$ |
| C_D (OFF) | 10 | | pF typ | $f = 1\text{ MHz}$ |
| C_D , C_S (ON) | 16 | | pF typ | $f = 1\text{ MHz}$ |
| POWER REQUIREMENTS | | | | |
| I_{DD} | | | | $V_{DD} = 13.2\text{ V}$ Digital Inputs = 0 V or 5 V |
| ADG441/ADG442 | | 80 | μA max | |
| ADG444 | 0.001 | | μA typ | |
| | 1 | 2.5 | μA max | |
| I_L (ADG444 Only) | 0.001 | | μA typ | $V_L = 5.5\text{ V}$ |
| | 1 | 2.5 | μA max | |

¹ Temperature range is: B Version: -40°C to +85°C.

² Guaranteed by design, not subject to production test.

ABSOLUTE MAXIMUM RATINGS

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

Table 3.

| Parameter | Rating |
|-----------------------------------------------------------|-------------------------------------------------------------------|
| V_{DD} to V_{SS} | 44 V |
| V_{DD} to GND | -0.3 V to +25 V |
| V_{SS} to GND | +0.3 V to -25 V |
| V_L to GND | -0.3 V to $V_{DD} + 0.3$ V |
| Analog, Digital Inputs | $V_{SS} - 2$ V to $V_{DD} + 2$ V or 30 mA, Whichever Occurs First |
| Continuous Current, S or D | 30 mA |
| Peak Current, S or D (Pulsed at 1 ms, 10% Duty Cycle Max) | 100 mA |
| Operating Temperature Range | |
| Industrial (B Version) | -40°C to +85°C |
| Storage Temperature Range | -65°C to +150°C |
| Junction Temperature | 150°C |
| Lead Temperature, Soldering (10 sec) | 300°C |
| Plastic Package, Power Dissipation | 470 mW |
| θ_{JA} , Thermal Impedance | 177°C/W |
| Lead Temperature, Soldering (10 sec) | 260°C |
| SOIC Package, Power Dissipation | 600 mW |
| θ_{JA} , Thermal Impedance | 77°C/W |
| Lead Temperature, Soldering | |
| Vapor Phase (60 sec) | 215°C |
| Infrared (15 sec) | 220°C |

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.

Table 4. Truth Table

| ADG441/ADG444 IN | ADG442 IN | Switch Condition |
|------------------|-----------|------------------|
| 0 | 1 | ON |
| 1 | 0 | OFF |

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.



ADG441/ADG442/ADG444

PIN CONFIGURATIONS AND FUNCTION DESCRIPTIONS



Figure 2. ADG441/ADG442 (DIP/SOIC)

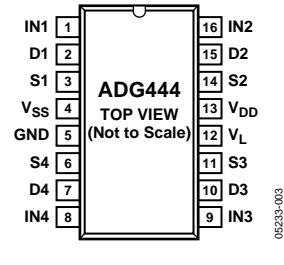


Figure 3. ADG444 (DIP/SOIC)

Table 5. ADG441/ADG442 Pin Function Descriptions

| Pin No. | Mnemonic | Description |
|--------------|-----------------|----------------------------------------------------------------------------------------------------------------------|
| 1, 8, 9, 16 | IN1 to IN4 | Logic Control Input. |
| 2, 7, 10, 15 | D1 to D4 | Drain Terminal. May be an input or output. |
| 3, 6, 11, 14 | S1 to S4 | Source Terminal. May be an input or output. |
| 4 | V _{SS} | Most Negative Power Supply Potential in Dual Supplies. In single-supply applications, it may be connected to ground. |
| 5 | GND | Ground (0 V) Reference. |
| 12 | NC | No Connect. |
| 13 | V _{DD} | Most Positive Power Supply Potential. |

Table 6. ADG444 Pin Function Descriptions

| Pin No. | Mnemonic | Description |
|--------------|-----------------|----------------------------------------------------------------------------------------------------------------------|
| 1, 8, 9, 16 | IN1 to IN4 | Logic Control Input. |
| 2, 7, 10, 15 | D1 to D4 | Drain Terminal. May be an input or output. |
| 3, 6, 11, 14 | S1 to S4 | Source Terminal. May be an input or output. |
| 4 | V _{SS} | Most Negative Power Supply Potential in Dual Supplies. In single-supply applications, it may be connected to ground. |
| 5 | GND | Ground (0 V) Reference. |
| 12 | V _L | Logic Power Supply (5 V). |
| 13 | V _{DD} | Most Positive Power Supply Potential. |

TYPICAL PERFORMANCE CHARACTERISTICS



Figure 4. R_{ON} as a Function of V_D (V_S): Dual Supply

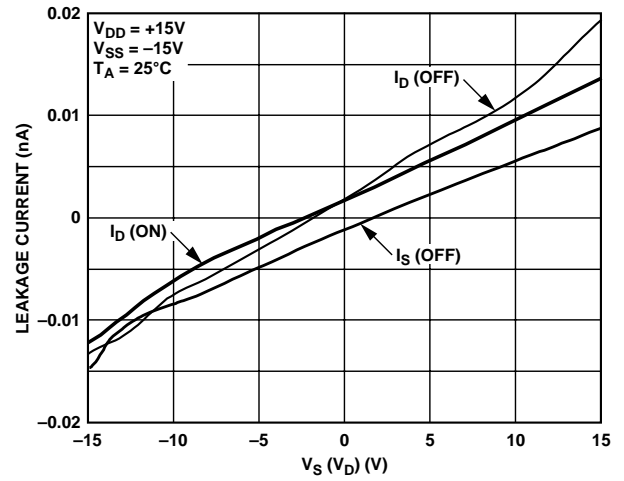


Figure 7. Leakage Currents as a Function of V_S (V_D)

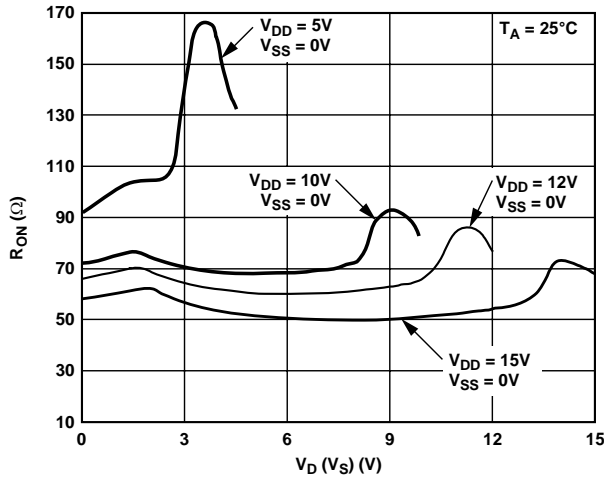


Figure 5. R_{ON} as a Function of V_D (V_S): Single Supply

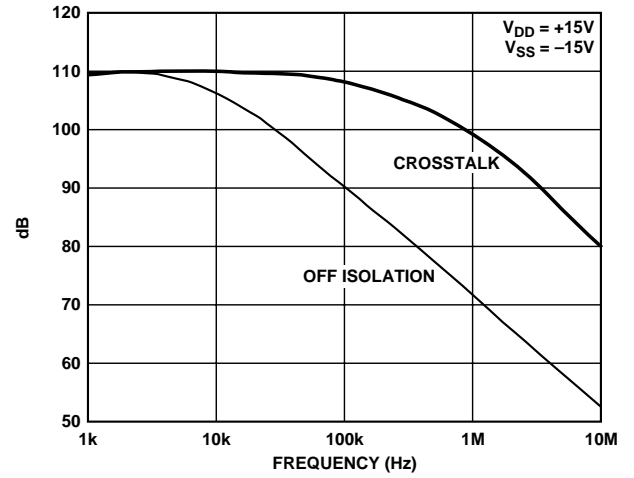


Figure 8. Crosstalk and Off Isolation vs. Frequency

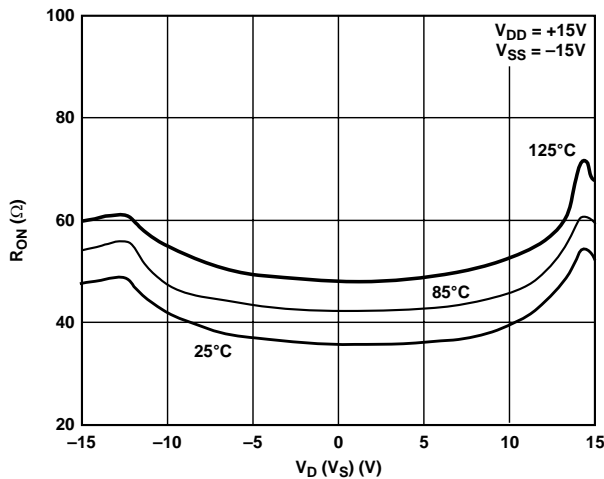


Figure 6. R_{ON} as a Function of V_D (V_S) for Different Temperatures

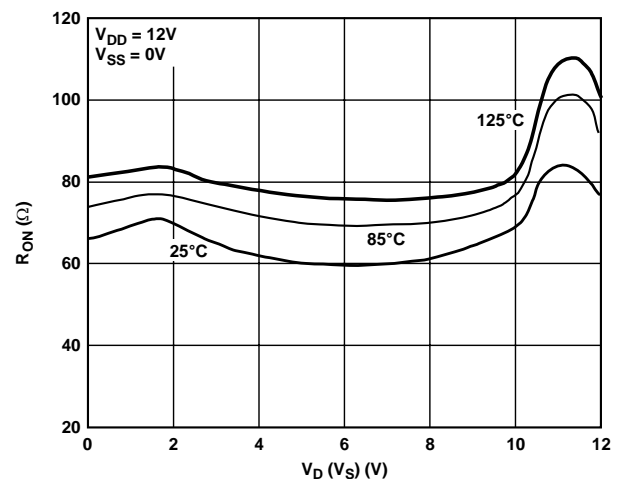


Figure 9. R_{ON} as a Function of V_D (V_S) for Different Temperatures

ADG441/ADG442/ADG444



Figure 10. Leakage Currents as a Function of V_S (V_D)

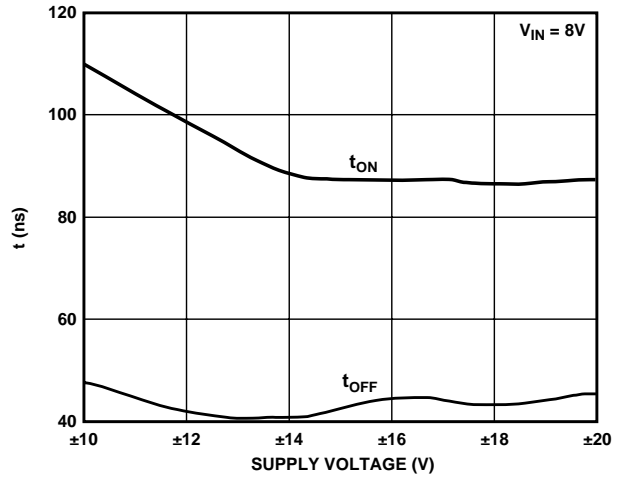


Figure 12. Switching Time vs. Bipolar Supply

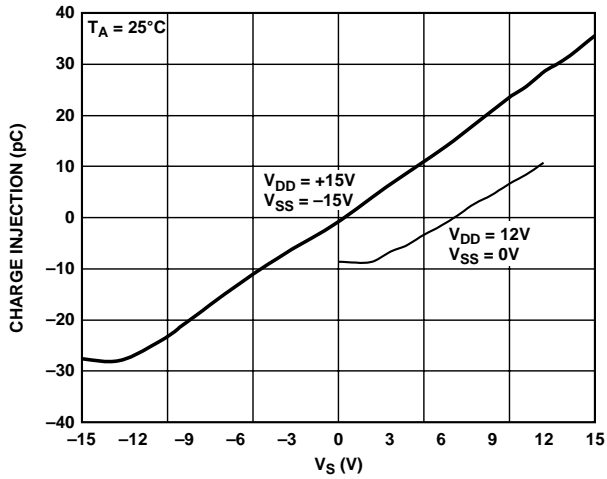


Figure 11. Charge Injection vs. Source Voltage

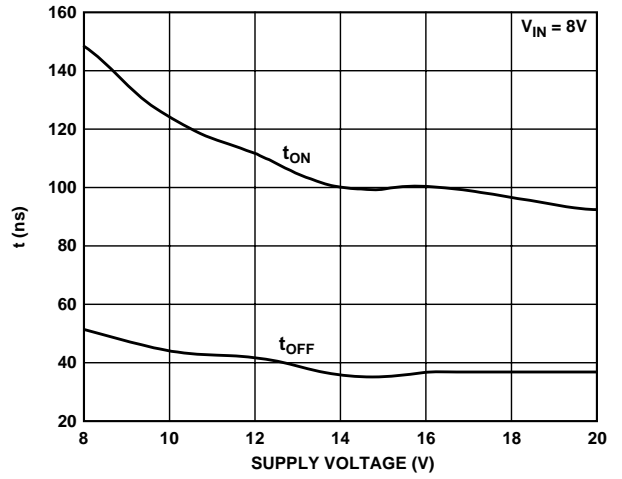


Figure 13. Switching Time vs. Single Supply

TEST CIRCUITS



Figure 14. On Resistance



Figure 15. Off Leakage

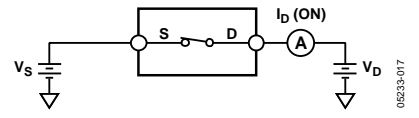


Figure 16. On Leakage



Figure 17. Switching Times

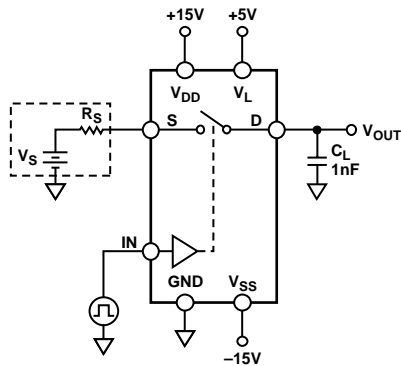
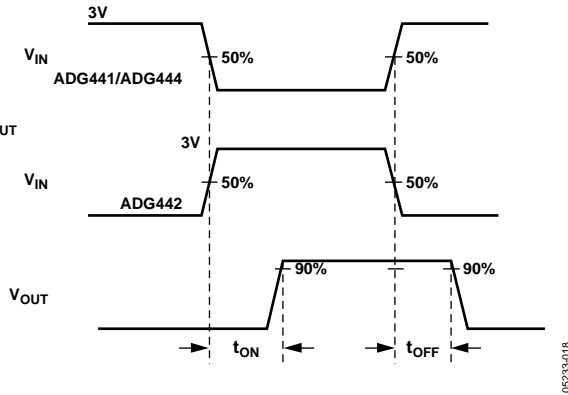
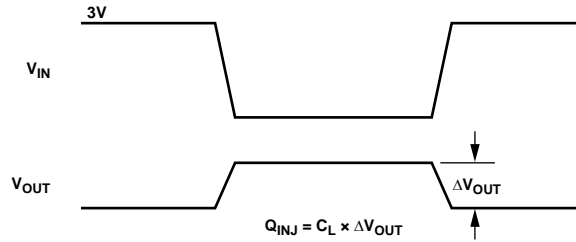


Figure 18. Charge Injection



ADG441/ADG442/ADG444



06233-021

Figure 19. Off Isolation



06233-022

$$\text{CHANNEL-TO-CHANNEL CROSSTALK} = 20 \times \text{LOG} |V_S/V_{OUT}|$$

Figure 20. Channel-to-Channel Crosstalk

TERMINOLOGY

R_{ON}

Ohmic resistance between D and S.

R_{ON Match}

Difference between the R_{ON} of any two channels.

I_S (OFF)

Source leakage current with the switch OFF.

I_D (OFF)

Drain leakage current with the switch OFF.

I_D, I_S (ON)

Channel leakage current with the switch ON.

V_D (V_S)

Analog voltage on Terminals D, S.

C_S (OFF)

OFF switch source capacitance.

C_D (OFF)

OFF switch drain capacitance.

C_D, C_S (ON)

ON switch capacitance.

t_{ON}

Delay between applying the digital control input and the output switching on.

t_{OFF}

Delay between applying the digital control input and the output switching off.

t_{OPEN}

Break-before-make delay when switches are configured as a multiplexer.

Crosstalk

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

Off Isolation

A measure of unwanted signal coupling through an OFF switch.

Charge Injection

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

TRENCH ISOLATION

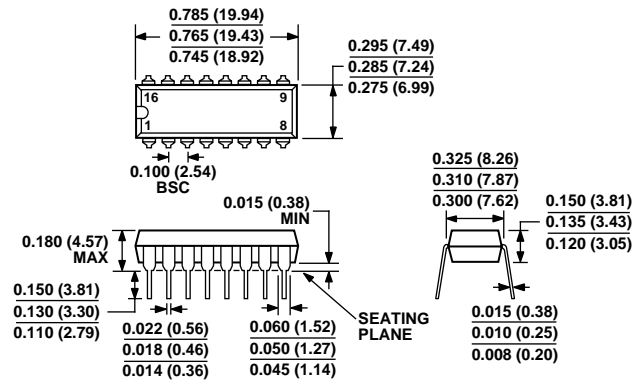
In the ADG441A, ADG442A, and ADG444A, an insulating oxide layer (trench) is placed between the NMOS and the PMOS transistors of each CMOS switch. Parasitic junctions, which occur between the transistors in junction isolated switches, are eliminated, and the result is a completely latch-up proof switch.

In junction isolation, the N and P wells of the PMOS and NMOS transistors form a diode that is reverse-biased under normal operation. However, during overvoltage conditions, this diode becomes forward-biased. A silicon-controlled rectifier (SCR) type circuit is formed by the two transistors causing a significant amplification of the current which, in turn, leads to latch-up. With trench isolation, this diode is removed, and the result is a latch-up proof switch.



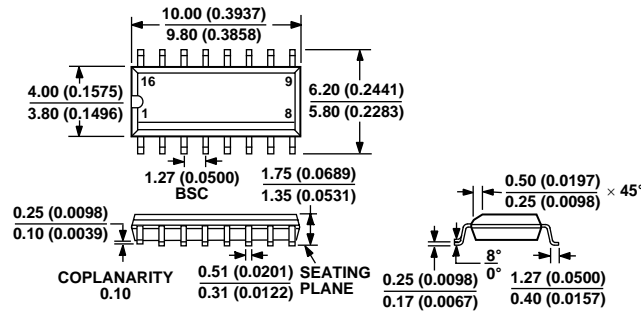
Figure 21. Trench Isolation

OUTLINE DIMENSIONS



COMPLIANT TO JEDEC STANDARDS MO-095AC
 CONTROLLING DIMENSIONS ARE IN INCHES; MILLIMETER DIMENSIONS
 (IN PARENTHESES) ARE ROUNDED-OFF INCH EQUIVALENTS FOR
 REFERENCE ONLY AND ARE NOT APPROPRIATE FOR USE IN DESIGN

Figure 22. 16-Lead Plastic Dual In-Line Package [PDIP]
 (N-16)
 Dimensions shown in inches and (millimeters)



COMPLIANT TO JEDEC STANDARDS MS-012AC
 CONTROLLING DIMENSIONS ARE IN MILLIMETERS; INCH DIMENSIONS
 (IN PARENTHESES) ARE ROUNDED-OFF MILLIMETER EQUIVALENTS FOR
 REFERENCE ONLY AND ARE NOT APPROPRIATE FOR USE IN DESIGN

Figure 23. 16-Lead Standard Small Outline Package [SOIC]
 (R-16)
 Dimensions shown in millimeters and (inches)

ADG441/ADG442/ADG444

ORDERING GUIDE

| Model | Temperature Range | Package Description | Package Option |
|--------------------------------|-------------------|-----------------------------------------------|----------------|
| ADG441BN | -40°C to +85°C | 16-Lead Plastic Dual In-Line Package (PDIP) | N-16 |
| ADG441BR | -40°C to +85°C | 16-Lead Standard Small Outline Package (SOIC) | R-16 |
| ADG441BR-REEL | -40°C to +85°C | 16-Lead Standard Small Outline Package (SOIC) | R-16 |
| ADG441BRZ ¹ | -40°C to +85°C | 16-Lead Standard Small Outline Package (SOIC) | R-16 |
| ADG441BRZ-REEL ¹ | -40°C to +85°C | 16-Lead Standard Small Outline Package (SOIC) | R-16 |
| ADG441BCHIPS | | DIE | |
| ADG441ABCHIPS ² | | DIE | |
| ADG441ABN ² | -40°C to +85°C | 16-Lead Plastic Dual In-Line Package (PDIP) | N-16 |
| ADG441ABR ² | -40°C to +85°C | 16-Lead Standard Small Outline Package (SOIC) | R-16 |
| ADG441ABR-REEL ² | -40°C to +85°C | 16-Lead Standard Small Outline Package (SOIC) | R-16 |
| ADG441ABRZ-REEL ^{1,2} | -40°C to +85°C | 16-Lead Standard Small Outline Package (SOIC) | R-16 |
| ADG442BN | -40°C to +85°C | 16-Lead Plastic Dual In-Line Package (PDIP) | N-16 |
| ADG442BR | -40°C to +85°C | 16-Lead Standard Small Outline Package (SOIC) | R-16 |
| ADG442BR-REEL | -40°C to +85°C | 16-Lead Standard Small Outline Package (SOIC) | R-16 |
| ADG442BRZ ¹ | -40°C to +85°C | 16-Lead Standard Small Outline Package (SOIC) | R-16 |
| ADG442BRZ-REEL ¹ | -40°C to +85°C | 16-Lead Standard Small Outline Package (SOIC) | R-16 |
| ADG442ABN ² | -40°C to +85°C | 16-Lead Plastic Dual In-Line Package (PDIP) | N-16 |
| ADG442ABR ² | -40°C to +85°C | 16-Lead Standard Small Outline Package (SOIC) | R-16 |
| ADG442ABR-REEL ² | -40°C to +85°C | 16-Lead Standard Small Outline Package (SOIC) | R-16 |
| ADG442ABRZ ^{1,2} | -40°C to +85°C | 16-Lead Standard Small Outline Package (SOIC) | R-16 |
| ADG442ABRZ-REEL ^{1,2} | -40°C to +85°C | 16-Lead Standard Small Outline Package (SOIC) | R-16 |
| ADG444BN | -40°C to +85°C | 16-Lead Plastic Dual In-Line Package (PDIP) | N-16 |
| ADG444BR | -40°C to +85°C | 16-Lead Standard Small Outline Package (SOIC) | R-16 |
| ADG444BR-REEL | -40°C to +85°C | 16-Lead Standard Small Outline Package (SOIC) | R-16 |
| ADG444BRZ ¹ | -40°C to +85°C | 16-Lead Standard Small Outline Package (SOIC) | R-16 |
| ADG444BRZ-REEL ¹ | -40°C to +85°C | 16-Lead Standard Small Outline Package (SOIC) | R-16 |
| ADG444ABN ² | -40°C to +85°C | 16-Lead Plastic Dual In-Line Package (PDIP) | N-16 |
| ADG444ABR ² | -40°C to +85°C | 16-Lead Standard Small Outline Package (SOIC) | R-16 |
| ADG444ABR-REEL ² | -40°C to +85°C | 16-Lead Standard Small Outline Package (SOIC) | R-16 |
| ADG444ABRZ ^{1,2} | -40°C to +85°C | 16-Lead Standard Small Outline Package (SOIC) | R-16 |
| ADG444ABRZ-REEL ^{1,2} | -40°C to +85°C | 16-Lead Standard Small Outline Package (SOIC) | R-16 |

¹ Z = Pb-free part.

² A = Trench isolated.

NOTES

ADG441/ADG442/ADG444

NOTES

Компания «Океан Электроники» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Поставка оригинальных импортных электронных компонентов напрямую с производств Америки, Европы и Азии, а так же с крупнейших складов мира;
- Широкая линейка поставок активных и пассивных импортных электронных компонентов (более 30 млн. наименований);
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Помощь Конструкторского Отдела и консультации квалифицированных инженеров;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Поставка электронных компонентов под контролем ВП;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- При необходимости вся продукция военного и аэрокосмического назначения проходит испытания и сертификацию в лаборатории (по согласованию с заказчиком);
- Поставка специализированных компонентов военного и аэрокосмического уровня качества (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Actel, Aeroflex, Peregrine, VPT, Syfer, Eurofarad, Texas Instruments, MS Kennedy, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Компания «Океан Электроники» является официальным дистрибьютором и эксклюзивным представителем в России одного из крупнейших производителей разъемов военного и аэрокосмического назначения «**JONHON**», а так же официальным дистрибьютором и эксклюзивным представителем в России производителя высокотехнологичных и надежных решений для передачи СВЧ сигналов «**FORSTAR**».



JONHON

«**JONHON**» (основан в 1970 г.)

Разъемы специального, военного и аэрокосмического назначения:

(Применяются в военной, авиационной, аэрокосмической, морской, железнодорожной, горно- и нефтедобывающей отраслях промышленности)

«**FORSTAR**» (основан в 1998 г.)

ВЧ соединители, коаксиальные кабели,
кабельные сборки и микроволновые компоненты:

(Применяются в телекоммуникациях гражданского и специального назначения, в средствах связи, РЛС, а так же военной, авиационной и аэрокосмической отраслях промышленности).



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