# 0.5 Ω CMOS, 1.65 V TO 3.6 V, Dual SPDT/2:1 MUX

Data Sheet **ADG836**

## FEATURES

**0.5 Ω typical on resistance**
**0.8 Ω maximum on resistance at 125°C**
**1.65 V to 3.6 V operation**
**Automotive temperature range: −40°C to +125°C**
**High current carrying capability: 300 mA continuous**
**Rail-to-rail switching operation**
**Fast-switching times <20 ns**
**Typical power consumption (<0.1 µW)**

## APPLICATIONS

**Cellular phones**
**PDAs**
**MP3 players**
**Power routing**
**Battery-powered systems**
**PCMCIA cards**
**Modems**
**Audio and video signal routing**
**Communication systems**

## FUNCTIONAL BLOCK DIAGRAM

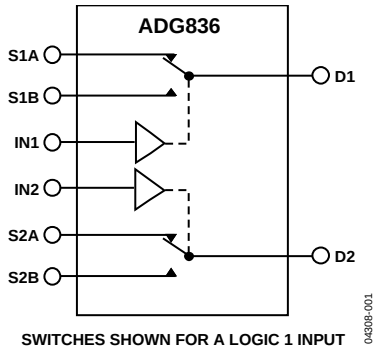


*Figure 1.*

## GENERAL DESCRIPTION

The ADG836 is a low voltage complementary metal-oxide semiconductor (CMOS) device containing two independently selectable single-pole, double-throw (SPDT) switches. This device offers an ultralow on resistance of less than 0.8 Ω over the full temperature range. The ADG836 is fully specified for 3.3 V, 2.5 V, and 1.8 V supply operation.

Each switch conducts equally well in both directions when on, and has an input signal range that extends to the supplies. The ADG836 exhibits break-before-make switching action.

The ADG836 is available in a 10-lead MSOP and in a 3 mm × 3 mm 12-lead LFCSP.

## PRODUCT HIGHLIGHTS

1. <0.8 Ω over full temperature range of −40°C to +125°C.
2. Single 1.65 V to 3.6 V operation.
3. Compatible with 1.8 V CMOS logic.
4. High current handling capability (300 mA continuous current at 3.3 V).
5. Low total harmonic distortion plus noise (THD + N) (0.02% typical).
6. 3 mm × 3 mm LFCSP and 10-lead MSOP.

**Rev. B** **Document Feedback**


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## REVISION HISTORY

**6/2016—Rev. A to Rev. B**

Changed CP-12-1 to CP-12-4 ..... Throughout
Changes to Figure 3 and Table 6 ..... 7
Added Terminology Section ..... 13
Updated Outline Dimensions ..... 14
Changes to Ordering Guide ..... 14

**4/2005—Rev. 0 to Rev. A**

Updated Format ..... Universal
Changes to Table 1 ..... 3
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Changes to Table 3 ..... 5
Changes to Ordering Guide ..... 13

**8/2003—Revision 0: Initial Version**

# SPECIFICATIONS

$V_{DD}$ = 2.7 V to 3.6 V, GND = 0 V, unless otherwise noted. The temperature range for the Y version is −40°C to +125°C.

**Table 1.**

| Parameter | +25°C | −40°C to +85°C | −40°C to +125°C | Unit | Test Conditions/Comments |
|---|---|---|---|---|---|
| ANALOG SWITCH | | | | | |
| Analog Signal Range | | | 0 V to $V_{DD}$ | V | |
| On Resistance ($R_{ON}$) | 0.5 | | | Ω typ | $V_{DD}$ = 2.7 V, $V_S$ = 0 V to $V_{DD}$, $I_S$ = 100 mA; Figure 19 |
| | 0.65 | 0.75 | 0.8 | Ω max | |
| On-Resistance Match Between | 0.04 | | | Ω typ | $V_{DD}$ = 2.7 V, $V_S$ = 0.65 V, $I_S$ = 100 mA |
| Channels ($\Delta R_{ON}$) | | 0.075 | 0.08 | Ω max | |
| On-Resistance Flatness ($R_{FLAT (ON)}$) | 0.1 | | | Ω typ | $V_{DD}$ = 2.7 V, $V_S$ = 0 V to $V_{DD}$ |
| | | 0.15 | 0.16 | Ω max | $I_S$ = 100 mA |
| LEAKAGE CURRENTS | | | | | $V_{DD}$ = 3.6 V |
| Source Off Leakage $I_S$ (OFF) | ±0.2 | | | nA typ | $V_S$ = 0.6 V/3.3 V, $V_D$ = 3.3 V/0.6 V; Figure 20 |
| Channel On Leakage $I_D$, $I_S$ (ON) | ±0.2 | | | nA typ | $V_S$ = $V_D$ = 0.6 V or 3.3 V; Figure 21 |
| DIGITAL INPUTS | | | | | |
| Input High Voltage, $V_{INH}$ | | | 2 | V min | |
| Input Low Voltage, $V_{INL}$ | | | 0.8 | V max | |
| Input Current | | | | | |
| $I_{INL}$ or $I_{INH}$ | 0.005 | | | μA typ | $V_{IN}$ = $V_{INL}$ or $V_{INH}$ |
| | | | ±0.1 | μA max | |
| $C_{IN}$, Digital Input Capacitance | 4 | | | pF typ | |
| DYNAMIC CHARACTERISTICS[1] | | | | | |
| $t_{ON}$ | 21 | | | ns typ | $R_L$ = 50 Ω, $C_L$ = 35 pF |
| | 26 | 28 | 29 | ns max | $V_S$ = 1.5 V/0 V; Figure 22 |
| $t_{OFF}$ | 4 | | | ns typ | $R_L$ = 50 Ω, $C_L$ = 35 pF |
| | 7 | 8 | 9 | ns max | $V_S$ = 1.5 V; Figure 22 |
| Break-Before-Make Time Delay ($t_{BBM}$) | 17 | | | ns typ | $R_L$ = 50 Ω, $C_L$ = 35 pF |
| | | | 5 | ns min | $V_{S1}$ = $V_{S2}$ = 1.5 V; Figure 23 |
| Charge Injection | 40 | | | pC typ | $V_S$ = 1.5 V, $R_S$ = 0 Ω, $C_L$ = 1 nF; Figure 24 |
| Off Isolation | −67 | | | dB typ | $R_L$ = 50 Ω, $C_L$ = 5 pF, f = 100 kHz; Figure 25 |
| Channel-to-Channel Crosstalk | −90 | | | dB typ | S1A to S2A/S1B to S2B, $R_L$ = 50 Ω, $C_L$ = 5 pF, f = 100 kHz; Figure 28 |
| | −67 | | | dB typ | S1A to S1B/S2A to S2B, $R_L$ = 50 Ω, $C_L$ = 5 pF, f = 100 kHz; Figure 27 |
| Total Harmonic Distortion Plus Noise (THD + N) | 0.02 | | | % | $R_L$ = 32 Ω, f = 20 Hz to 20 kHz, $V_S$ = 2 V p-p |
| Insertion Loss | −0.05 | | | dB typ | $R_L$ = 50 Ω, $C_L$ = 5 pF; Figure 26 |
| −3 dB Bandwidth | 57 | | | MHz typ | $R_L$ = 50 Ω, $C_L$ = 5 pF; Figure 26 |
| $C_S$ (OFF) | 25 | | | pF typ | |
| $C_D$, $C_S$ (ON) | 75 | | | pF typ | |
| POWER REQUIREMENTS | | | | | $V_{DD}$ = 3.6 V |
| $I_{DD}$ | 0.003 | | | μA typ | Digital inputs = 0 V or 3.6 V |
| | | 1 | 4 | μA max | |

[1] Guaranteed by design, not subject to production test.

$V_{DD}$ = 2.5 V ± 0.2 V, GND = 0 V, unless otherwise noted. The temperature range for the Y version is −40°C to +125°C.

**Table 2.**

| Parameter | +25°C | −40°C to +85°C | −40°C to +125°C | Unit | Test Conditions/Comments |
|---|---|---|---|---|---|
| ANALOG SWITCH | | | | | |
| Analog Signal Range | | | 0 V to $V_{DD}$ | V | |
| On Resistance ($R_{ON}$) | 0.65 | | | Ω typ | $V_{DD}$ = 2.3 V, $V_S$ = 0 V to $V_{DD}$, $I_S$ = 100 mA; Figure 19 |
| | 0.72 | 0.8 | 0.88 | Ω max | |
| On-Resistance Match Between | 0.04 | | | Ω typ | $V_{DD}$ = 2.3 V, $V_S$ = 0.7 V, $I_S$ = 100 mA |
| Channels ($\Delta R_{ON}$) | | 0.08 | 0.085 | Ω max | |
| On-Resistance Flatness ($R_{FLAT (ON)}$) | 0.16 | | | Ω typ | $V_{DD}$ = 2.3 V, $V_S$ = 0 V to $V_{DD}$, $I_S$ = 100 mA |
| | | 0.23 | 0.24 | Ω max | |
| LEAKAGE CURRENTS | | | | | $V_{DD}$ = 2.7 V |
| Source Off Leakage $I_S$ (OFF) | ±0.2 | | | nA typ | $V_S$ = 0.6 V/2.4 V, $V_D$ = 2.4 V/0.6 V; Figure 20 |
| Channel On Leakage $I_D$, $I_S$ (ON) | ±0.2 | | | nA typ | $V_S$ = $V_D$ = 0.6 V or 2.4 V; Figure 21 |
| DIGITAL INPUTS | | | | | |
| Input High Voltage, $V_{INH}$ | | | 1.7 | V min | |
| Input Low Voltage, $V_{INL}$ | | | 0.7 | V max | |
| Input Current | | | | | |
| $I_{INL}$ or $I_{INH}$ | 0.005 | | | μA typ | $V_{IN}$ = $V_{INL}$ or $V_{INH}$ |
| | | | ±0.1 | μA max | |
| $C_{IN}$, Digital Input Capacitance | 4 | | | pF typ | |
| DYNAMIC CHARACTERISTICS[1] | | | | | |
| $t_{ON}$ | 23 | | | ns typ | $R_L$ = 50 Ω, $C_L$ = 35 pF |
| | 29 | 30 | 31 | ns max | $V_S$ = 1.5 V/0 V; Figure 22 |
| $t_{OFF}$ | 5 | | | ns typ | $R_L$ = 50 Ω, $C_L$ = 35 pF |
| | 7 | 8 | 9 | ns max | $V_S$ = 1.5 V; Figure 22 |
| Break-before-Make Time Delay ($t_{BBM}$) | 17 | | | ns typ | $R_L$ = 50 Ω, $C_L$ = 35 pF |
| | | | 5 | ns min | $V_{S1}$ = $V_{S2}$ = 1.5 V; Figure 23 |
| Charge Injection | 30 | | | pC typ | $V_S$ = 1.25 V, $R_S$ = 0 Ω, $C_L$ = 1 nF; Figure 24 |
| Off Isolation | −67 | | | dB typ | $R_L$ = 50 Ω, $C_L$ = 5 pF, f = 100 kHz; Figure 25 |
| Channel-to-Channel Crosstalk | −90 | | | dB typ | S1A to S2A/S1B to S2B, $R_L$ = 50 Ω, $C_L$ = 5 pF, f = 100 kHz; Figure 28 |
| | −67 | | | dB typ | S1A to S1B/S2A to S2B, $R_L$ = 50 Ω, $C_L$ = 5 pF, f = 100 kHz; Figure 27 |
| Total Harmonic Distortion Plus Noise (THD + N) | 0.022 | | | % | $R_L$ = 32 Ω, f = 20 Hz to 20 kHz, $V_S$ = 1.5 V p-p |
| Insertion Loss | −0.06 | | | dB typ | $R_L$ = 50 Ω, $C_L$ = 5 pF; Figure 26 |
| −3 dB Bandwidth | 57 | | | MHz typ | $R_L$ = 50 Ω, $C_L$ = 5 pF; Figure 26 |
| $C_S$ (OFF) | 25 | | | pF typ | |
| $C_D$, $C_S$ (ON) | 75 | | | pF typ | |
| POWER REQUIREMENTS | | | | | $V_{DD}$ = 2.7 V |
| $I_{DD}$ | 0.003 | | | μA typ | Digital inputs = 0 V or 2.7 V |
| | | 1 | 4 | μA max | |

[1] Guaranteed by design, not subject to production test.

$V_{DD}$ = 1.65 V ± 1.95 V, GND = 0 V, unless otherwise noted. The temperature range for the Y version is −40°C to +125°C.

**Table 3.**

| Parameter | +25°C | −40°C to +85°C | −40°C to +125°C | Unit | Test Conditions/Comments |
|---|---|---|---|---|---|
| ANALOG SWITCH | | | | | |
| Analog Signal Range | | | 0 V to $V_{DD}$ | V | |
| On Resistance ($R_{ON}$) | 1 | | | Ω typ | $V_{DD}$ = 1.8 V, $V_S$ = 0 V to $V_{DD}$, $I_S$ = 100 mA; Figure 19 |
| | 1.4 | 2.2 | 2.2 | Ω max | |
| | 2 | 4 | 4 | Ω max | $V_{DD}$ = 1.65 V, $V_S$ = 0 V to $V_{DD}$, $I_S$ = 100 mA; Figure 19 |
| On-Resistance Match Between Channels ($\Delta R_{ON}$) | 0.1 | | | Ω typ | $V_{DD}$ = 1.65 V, $V_S$ = 0.7 V, $I_S$ = 100 mA |
| LEAKAGE CURRENTS | | | | | $V_{DD}$ = 1.95 V |
| Source Off Leakage $I_S$ (OFF) | ±0.2 | | | nA typ | $V_S$ = 0.6 V/1.65 V, $V_D$ = 1.65 V/0.6 V; Figure 20 |
| Channel On Leakage $I_D$, $I_S$ (ON) | ±0.2 | | | nA typ | $V_S$ = $V_D$ = 0.6 V or 1.65 V; Figure 21 |
| DIGITAL INPUTS | | | | | |
| Input High Voltage, $V_{INH}$ | | | 0.65 $V_{DD}$ | V min | |
| Input Low Voltage, $V_{INL}$ | | | 0.35 $V_{DD}$ | V max | |
| Input Current | | | | | |
| $I_{INL}$ or $I_{INH}$ | 0.005 | | | μA typ | $V_{IN}$ = $V_{INL}$ or $V_{INH}$ |
| | | | ±0.1 | μA max | |
| $C_{IN}$, Digital Input Capacitance | 4 | | | pF typ | |
| DYNAMIC CHARACTERISTICS[1] | | | | | |
| $t_{ON}$ | 28 | | | ns typ | $R_L$ = 50 Ω, $C_L$ = 35 pF |
| | 37 | 38 | 39 | ns max | $V_S$ = 1.5 V/0 V; Figure 22 |
| $t_{OFF}$ | 7 | | | ns typ | $R_L$ = 50 Ω, $C_L$ = 35 pF |
| | 9 | 10 | 11 | ns max | $V_S$ = 1.5 V; Figure 22 |
| Break-Before-Make Time Delay ($t_{BBM}$) | 21 | | | ns typ | $R_L$ = 50 Ω, $C_L$ = 35 pF |
| | | | 5 | ns min | $V_{S1}$ = $V_{S2}$ = 1 V; Figure 23 |
| Charge Injection | 20 | | | pC typ | $V_S$ = 1 V, $R_S$ = 0 V, $C_L$ = 1 nF; Figure 24 |
| Off Isolation | −67 | | | dB typ | $R_L$ = 50 Ω, $C_L$ = 5 pF, f = 100 kHz; Figure 25 |
| Channel-to-Channel Crosstalk | −90 | | | dB typ | S1A to S2A/S1B to S2B; $R_L$ = 50 Ω, $C_L$ = 5 pF, f = 100 kHz; Figure 28 |
| | −67 | | | dB typ | S1A to S1B/S2A to S2B; $R_L$ = 50 Ω, $C_L$ = 5 pF, f = 100 kHz; Figure 27 |
| Total Harmonic Distortion (THD) | 0.14 | | | % | $R_L$ = 32 Ω, f = 20 Hz to 20 kHz, $V_S$ = 1.2 V p-p |
| Insertion Loss | −0.08 | | | dB typ | $R_L$ = 50 Ω, $C_L$ = 5 pF; Figure 26 |
| −3 dB Bandwidth | 57 | | | MHz typ | $R_L$ = 50 Ω, $C_L$ = 5 pF; Figure 26 |
| $C_S$ (OFF) | 25 | | | pF typ | |
| $C_D$, $C_S$ (ON) | 75 | | | pF typ | |
| POWER REQUIREMENTS | | | | | $V_{DD}$ = 1.95 V |
| $I_{DD}$ | 0.003 | | | μA typ | Digital inputs = 0 V or 1.95 V |
| | | 1.0 | 4 | μA max | |

[1] Guaranteed by design, not subject to production test.

# ABSOLUTE MAXIMUM RATINGS

$T_A$ = 25°C, unless otherwise noted.

**Table 4.**

| Parameter | Rating |
|---|---|
| $V_{DD}$ to GND | −0.3 V to +4.6 V |
| Analog Inputs[1] | −0.3 V to $V_{DD}$ + 0.3 V |
| Digital Inputs[1] | −0.3 V to 4.6 V or 10 mA, whichever occurs first |
| Peak Current, S or D | |
| 3.3 V Operation | 500 mA |
| 2.5 V Operation | 460 mA |
| 1.8 V Operation | 420 mA (pulsed at 1ms, 10% duty cycle max) |
| Continuous Current, S or D | |
| 3.3 V Operation | 300 mA |
| 2.5 V Operation | 275 mA |
| 1.8 V Operation | 250 mA |
| Operating Temperature Range | |
| Automotive (Y Version) | −40°C to +125°C |
| Storage Temperature Range | −65°C to +150°C |
| Junction Temperature | 150°C |
| Thermal Impedance | |
| MSOP | |
| $\theta_{JA}$ | 206°C/W |
| $\theta_{JC}$ | 44°C/W |
| LFCSP | |
| $\theta_{JA}$ (3-Layer Board) | 61.1°C/W |
| IR Reflow, Peak Temperature <20 sec | 235°C |

[1] Overvoltages at IN, S, or D are clamped by internal diodes. Current should be limited to the maximum ratings given.

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 may be applied at any one time.

**Table 5. Truth Table**

| Logic | Switch A | Switch B |
|---|---|---|
| 0 | Off | On |
| 1 | On | Off |

## 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

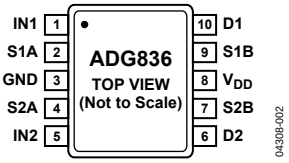
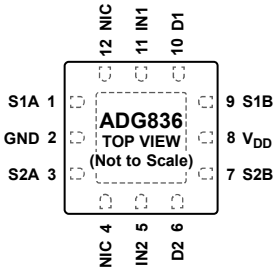



Figure 2. 10-Lead MSOP Pin Configuration (RM-10)




NOTES
1. NIC = NO INTERNAL CONNECTION.
2. IT IS RECOMMENDED THAT THE EXPOSED PAD BE THERMALLY CONNECTED TO A COPPER PLANE FOR ENHANCED THERMAL PERFORMANCE. THE EXPOSED PAD SHOULD BE GROUNDED AS WELL.

04308-003

Figure 3. 12-Lead LFCSP Pin Configuration (CP-12-4)

**Table 6. Pin Function Descriptions**

| Pin No. | | | |
|---|---|---|---|
| **MSOP** | **LFCSP** | **Mnemonic** | **Description** |
| 1, 5 | 11, 5 | IN1, IN2 | Logic Control Inputs. |
| 2, 4, 7, 9 | 1, 3, 7, 9 | S1A, S2A, S2B, S1B | Source Terminals. Can be inputs or outputs. |
| 3 | 2 | GND | Ground (0 V) Reference. |
| 6, 10 | 6, 10 | D2, D1 | Drain Terminals. Can be inputs or outputs. |
| 8 | 8 | $V_{DD}$ | Most Positive Power Supply Potential. |
| Not applicable | 4, 12 | NIC | No Internal Connection. |
| Not applicable | 0 | EPAD | Exposed Pad. It is recommended that the exposed pad be thermally connected to a copper plane for enhanced thermal performance. The exposed pad should be grounded as well. |

# TYPICAL PERFORMANCE CHARACTERISTICS

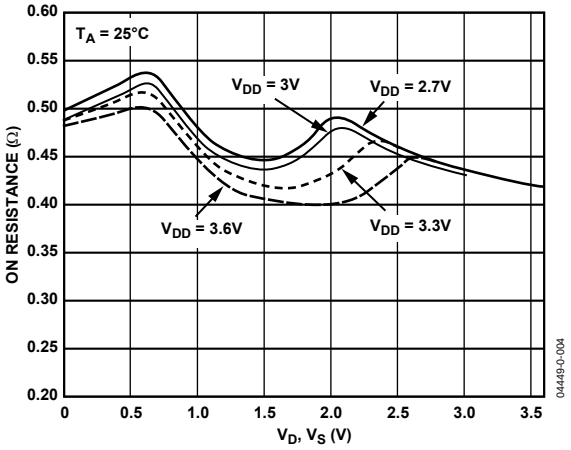



Figure 4. On Resistance vs. $V_D$ ($V_S$), $V_{DD}$ = 2.7 V to 3.6 V

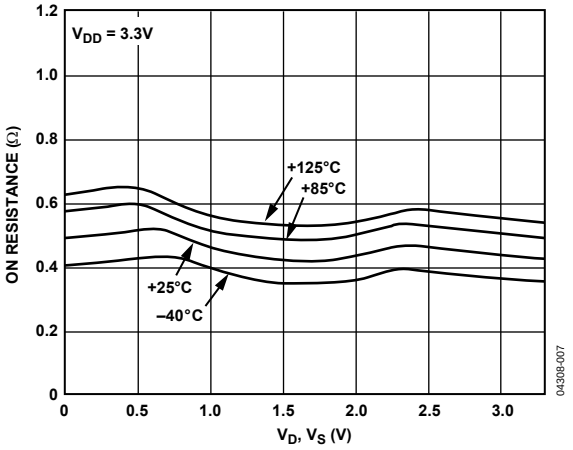



Figure 7. On Resistance vs. $V_D$ ($V_S$) for Different Temperatures, 3.3 V

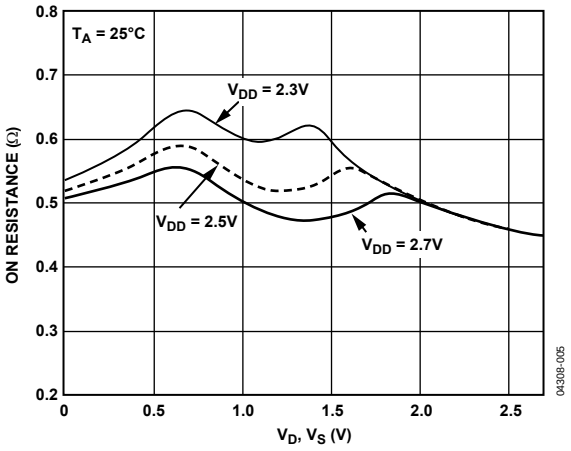



Figure 5. On Resistance vs. $V_D$ ($V_S$), $V_{DD}$ = 2.5 V to 0.2 V

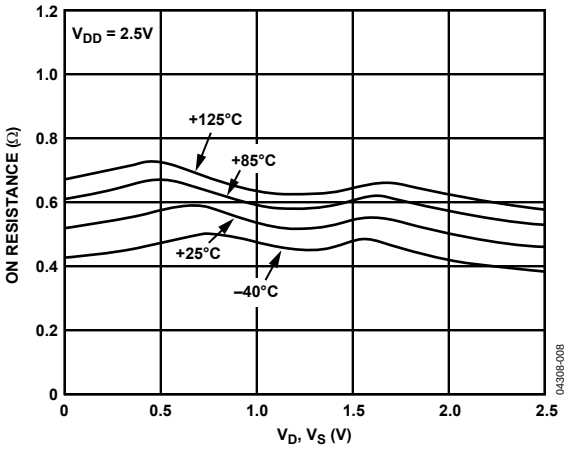



Figure 8. On Resistance vs. $V_D$ ($V_S$) for Different Temperatures, 2.5 V

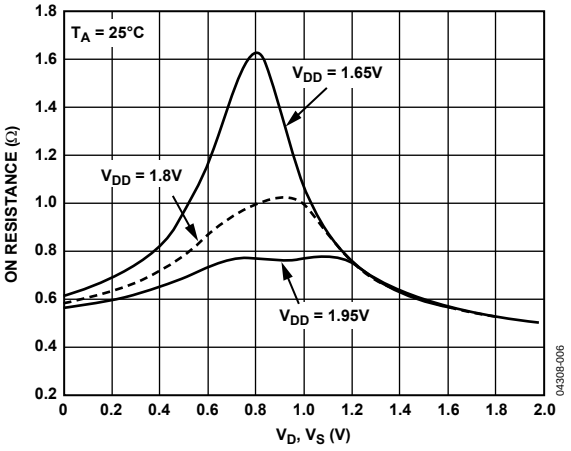



Figure 6. On Resistance vs. $V_D$ ($V_S$), $V_{DD}$ = 1.8 ± 3.6

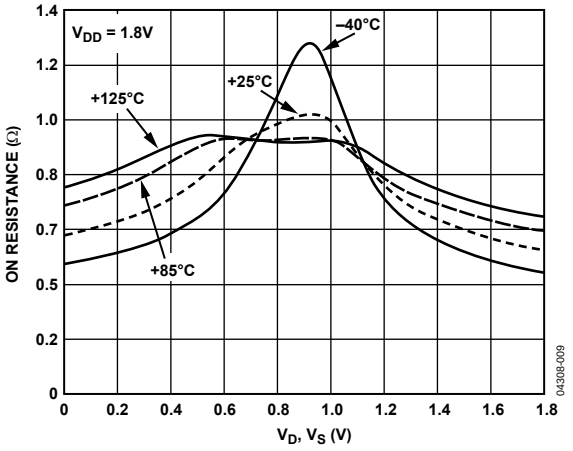



Figure 9. On Resistance vs. $V_D$ ($V_S$) for Different Temperatures, 1.8 V

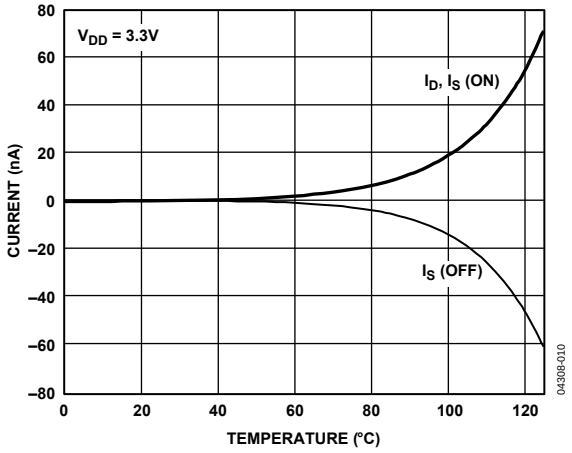



Figure 10. Leakage Current vs. Temperature, 3.3 V

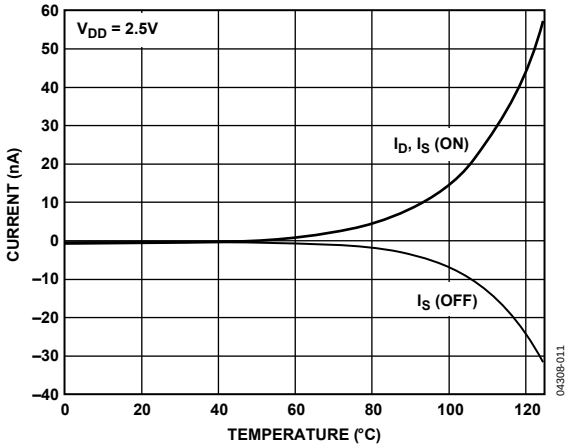



Figure 11. Leakage Current vs. Temperature, 2.5 V

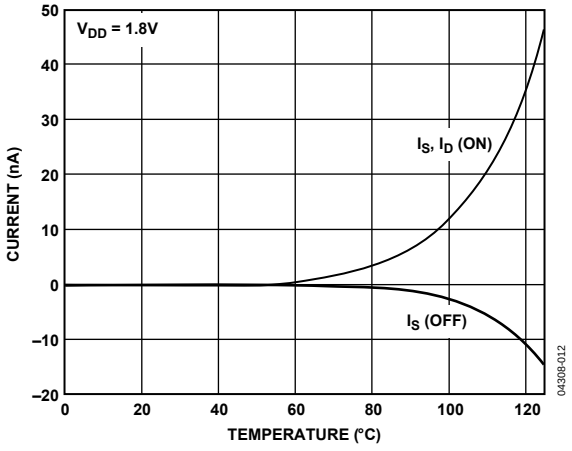



Figure 12. Leakage Current vs. Temperature, 1.8 V

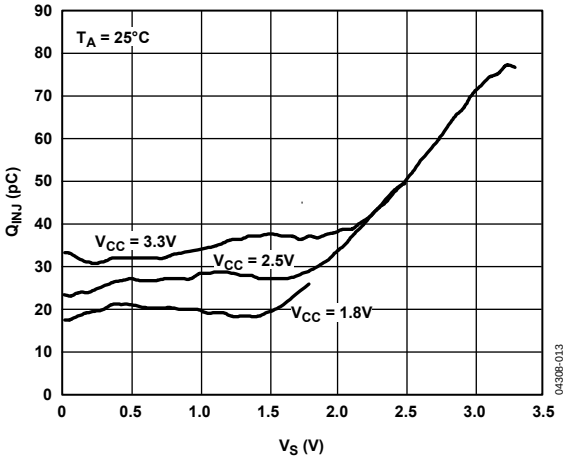



Figure 13. Charge Injection vs. Source Voltage

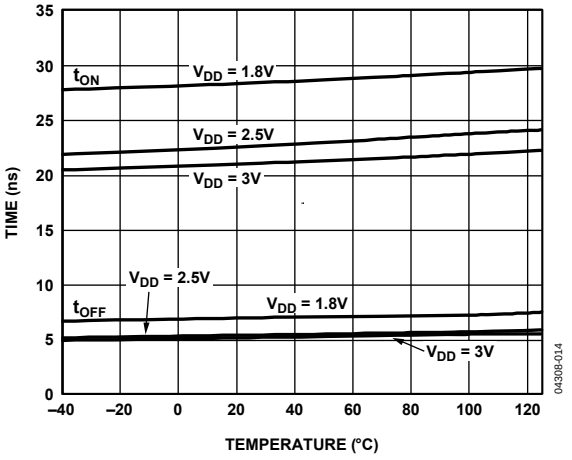



Figure 14. $t_{on}/t_{off}$ Times vs. Temperature

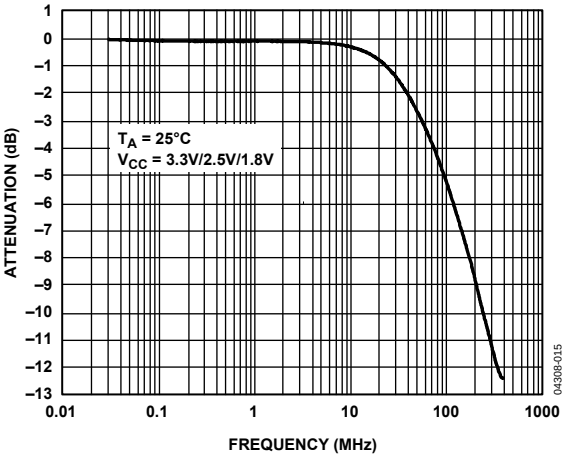



Figure 15. Bandwidth

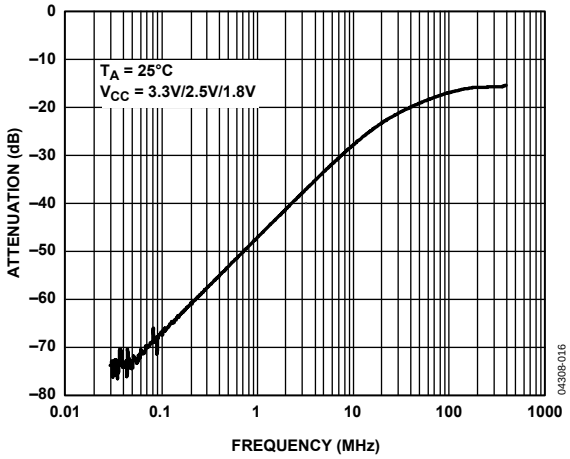



Figure 16. Off Isolation vs. Frequency

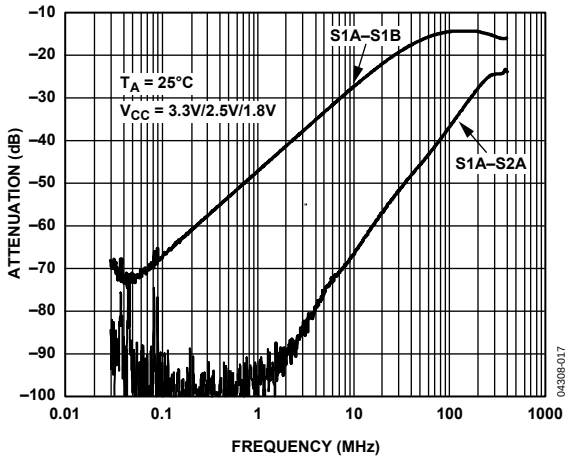



Figure 17. Crosstalk vs. Frequency

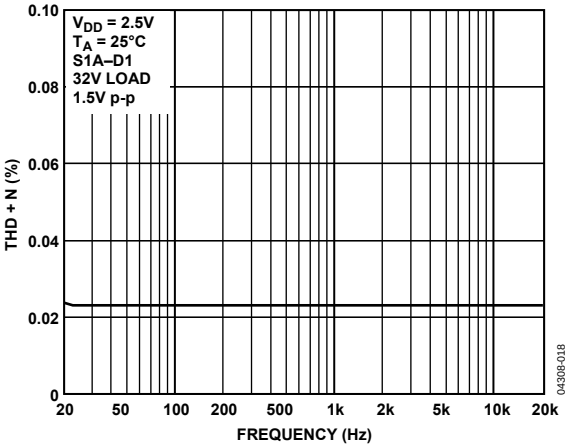



Figure 18. THD + N

# TEST CIRCUITS

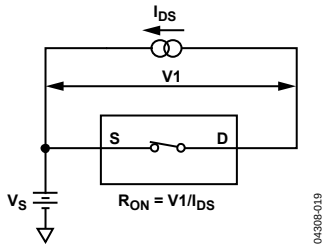



Figure 19. On Resistance

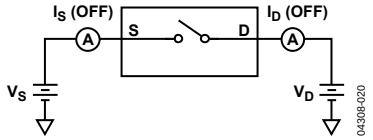



Figure 20. Off Leakage

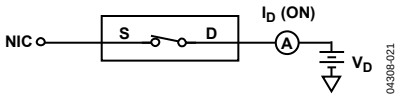



Figure 21. On Leakage

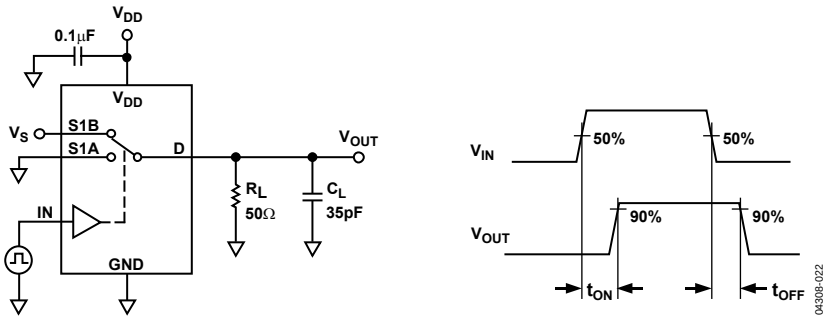



Figure 22. Switching Times, $t_{ON}$, $t_{OFF}$

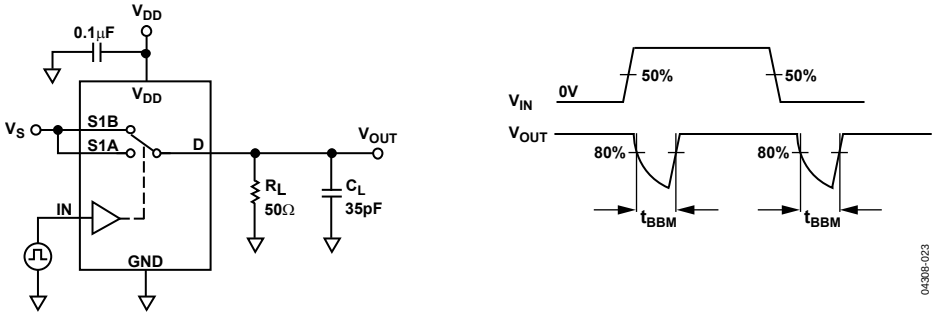



Figure 23. Break-Before-Make Time Delay, $t_{BBM}$

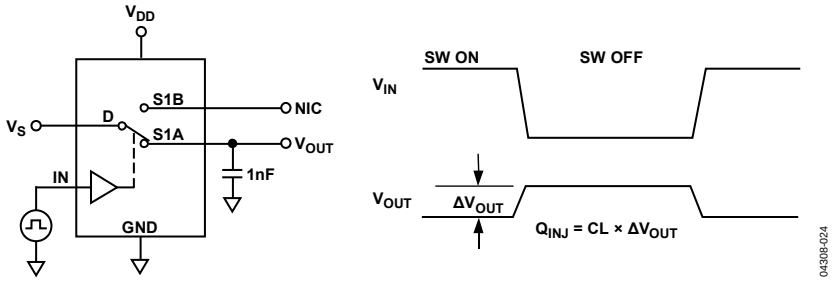
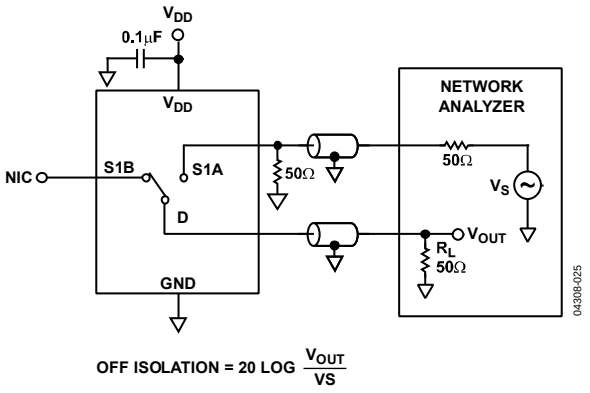
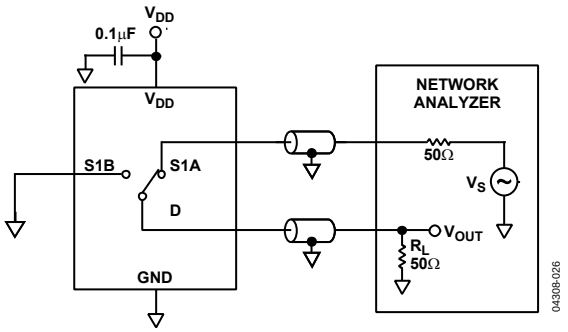



Figure 24. Charge Injection



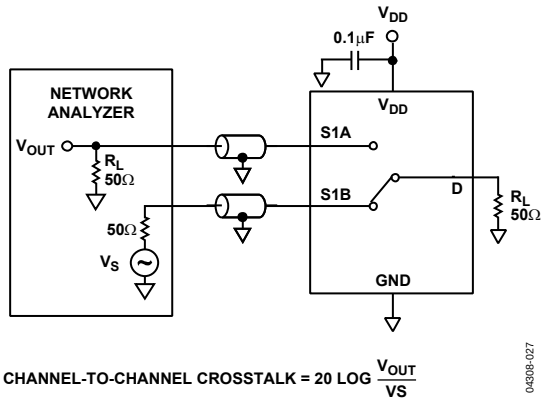

$$\text{OFF ISOLATION} = 20 \log \frac{V_{OUT}}{VS}$$

*Figure 25. Off Isolation*



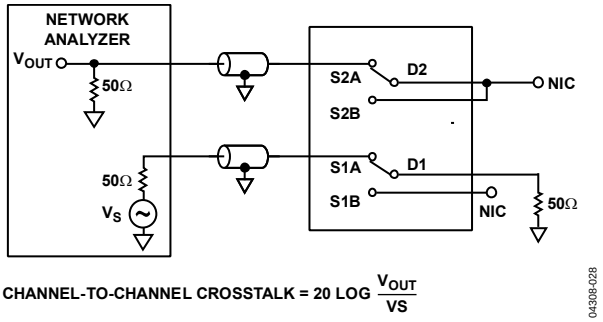

$$\text{INSERTION LOSS} = 20 \log \frac{V_{OUT} \text{ WITH SWITCH}}{V_{OUT} \text{ WITHOUT SWITCH}}$$

*Figure 26. Bandwidth*




$$\text{CHANNEL-TO-CHANNEL CROSSTALK} = 20 \log \frac{V_{OUT}}{VS}$$

*Figure 27. Channel-to-Channel Crosstalk (S1A to S1B)*




$$\text{CHANNEL-TO-CHANNEL CROSSTALK} = 20 \log \frac{V_{OUT}}{VS}$$

*Figure 28. Channel-to-Channel Crosstalk (S1A to S2A)*

# TERMINOLOGY

**$I_{DD}$**
Positive supply current.

**$V_D$ ($V_S$)**
Analog voltage on Terminal D and Terminal S.

**$R_{ON}$**
Ohmic resistance between Terminal D and Terminal S.

**$R_{FLAT (ON)}$**
Flatness is defined as the difference between the maximum and minimum value of on resistance as measured over the specified analog signal range.

**$\Delta R_{ON}$**
On-resistance match between 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.

**$V_{INL}$**
Maximum input voltage for Logic 0.

**$V_{INH}$**
Minimum input voltage for Logic 1.

**$I_{INL}$ ($I_{INH}$)**
Input current of the digital input.

**$C_S$ (OFF)**
Off switch source capacitance. Measured with reference to ground.

**$C_D$ (OFF)**
Off switch drain capacitance. Measured with reference to ground.

**$C_D$, $C_S$ (ON)**
On switch capacitance. Measured with reference to ground.

**$C_{IN}$**
Digital input capacitance.

**$t_{ON}$**
Delay time between the 50% and the 90% points of the digital input and switch on condition.

**$t_{OFF}$**
Delay time between the 50% and the 90% points of the digital input and switch off condition.

**$t_{BBM}$**
On or off time measured between the 80% points of both switches when switching from one to another.

**Charge Injection**
A measure of the glitch impulse transferred from the digital input to the analog output during on-off switching.

**Off Isolation**
A measure of unwanted signal coupling through an off switch.

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

**−3 dB 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.

**Total Harmonic Distortion Plus Noise (THD + N)**
The ratio of the harmonics amplitude plus the noise of a signal to the fundamental.

# OUTLINE DIMENSIONS

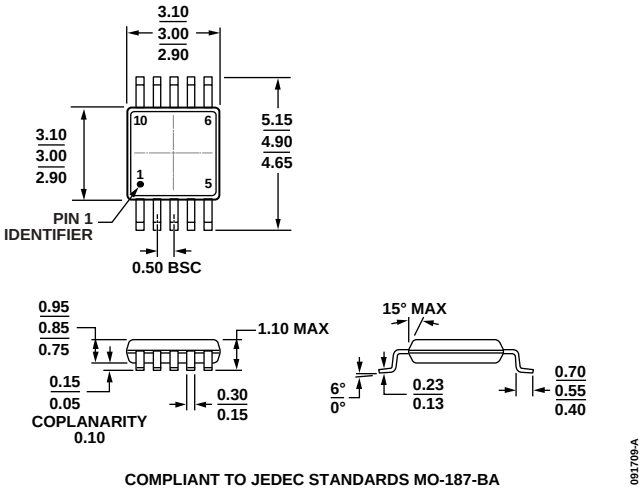



*Figure 29. 10-Lead Mini Small Outline Package [MSOP]*
*(RM-10)*
*Dimensions shown in millimeters*

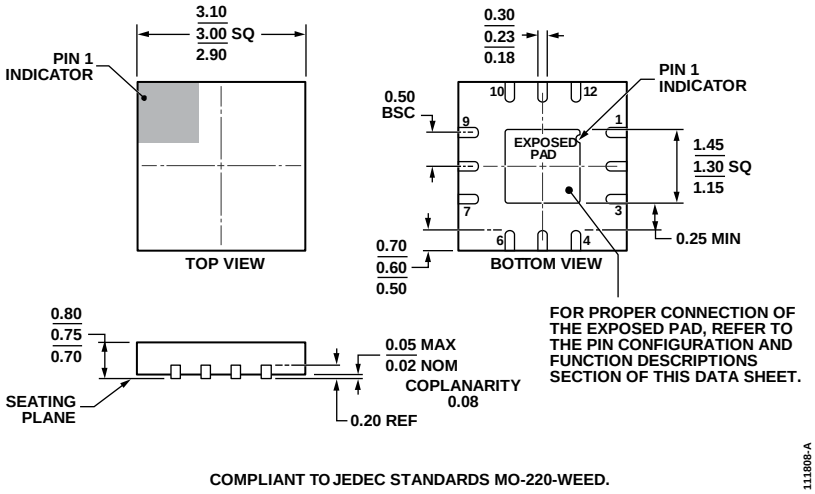



*Figure 30. 12-Lead Lead Frame Chip Scale Package [LFCSP]*
*3 mm x 3 mm Body and 0.75 mm Package Height*
*(CP-12-4)*
*Dimensions shown in millimeters*

## ORDERING GUIDE

| Model[1] | Temperature Range | Package Description | Package Option | Branding[2] |
|---|---|---|---|---|
| ADG836YRM | −40°C to +125°C | 10-Lead Mini Small Outline Package [MSOP] | RM-10 | S9A |
| ADG836YRMZ | −40°C to +125°C | 10-Lead Mini Small Outline Package [MSOP] | RM-10 | S05 |
| ADG836YRMZ-REEL | −40°C to +125°C | 10-Lead Mini Small Outline Package [MSOP] | RM-10 | S05 |
| ADG836YRMZ-REEL7 | −40°C to +125°C | 10-Lead Mini Small Outline Package [MSOP] | RM-10 | S05 |
| ADG836YCPZ-REEL7 | −40°C to +125°C | 12-Lead Lead Frame Chip Scale Package [LFCSP] | CP-12-4 | S05 |

[1] Z = RoHS Compliant Part.
[2] Branding on this package is limited to three characters due to space constraints.

## NOTES

## NOTES


D04308-0-6/16(B)