Green Energy Applications
Signal Chains

AMR enabled utility meter
(ADE5169, ADF7020/23, ADL5320, ADL5521, ADP121)

Current Monitor
(ADuC842, AD8211, AD8214, ADP3301, ADP1720)

Temperature Monitor
(ADuC7061, AD5420, ADR280, ADT7310, ADP121, ADP3333)
**Converters: DACs**

**AD5420 16-Bit, Serial Input, Current Source DAC**

**Key Features**
- Pin-compatible 12- and 16-bit options
- Software programmable outputs; 4-20 mA, 0-20 mA, 0-2.4 mA
- Integrated diagnostic functions
- High accuracy; 0.1% TUE (total unadjusted error), 5 ppm/°C output drift, 0.01% linearity
- Integrated 5 ppm/°C reference

**Benefits**
- Unprecedented ease-of-use and design efficiencies
- On-chip fault detection and protection
- Wide compliance range ±12 V to ±24 V
- 70% smaller than competing solutions

**Key Applications**
- Process control
- Field instruments
- Actuator control

**Cost**
$4.32 per unit in 1k quantity

**Package Options**
- 24-lead TSSOP
- 40-lead LFCSP

**Related Devices**

<table>
<thead>
<tr>
<th>Product</th>
<th>Resolution</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AD5410</td>
<td>12-bit</td>
<td>Current Source Output DAC</td>
</tr>
<tr>
<td>AD5412</td>
<td>12-bit</td>
<td>Current Source &amp; Voltage Output DAC; Programmable ranges</td>
</tr>
<tr>
<td>AD5422</td>
<td>16-bit</td>
<td>Current Source &amp; Voltage Output DAC; Programmable ranges</td>
</tr>
</tbody>
</table>

**Product Link**

[www.analog.com/AD5420](http://www.analog.com/AD5420)
Energy Measurement

**ADE5169** Single-Phase Energy Measurement IC with 8052 MCU, RTC, and LCD Driver

**Key Features**
- Integrated 8052 MCU core with on-chip LCD driver, RTC, LCD driver and 64 kB of on-chip Flash memory
- Integrated energy measurement core with active, reactive, IRMS, VRMS and apparent energy measurements
- <0.1% error on active energy over a dynamic range of 1000 to 1 @ 25°C
- LCD driver with up to 104 segments
- Ultralow power operations with power saving modes
  - RTC only: 1.7 μA
  - RTC and LCD mode: 38 μA

**Benefits**
- Integrated MCU core and energy measurement engine provide system on a chip solution for electricity meters
- Highly reliable energy measurement core
- Low power consumption in RTC mode allows the RTC to be maintained during battery operation

**Key Applications**
- Utility-grade electricity meters
- Energy measurement in white-goods
- Sub-metering

**Cost**
$3.49 per unit in 1k quantity

**Package Options**
- 64-lead LQFP

**Related Devices**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>Interface</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADE7753</td>
<td>Single Phase Multifunction Energy Metering IC with di/dt Input (Serial-Port Interface)</td>
<td>Serial Port Interface</td>
<td>&lt;0.1% over 1000:1 dynamic range</td>
</tr>
<tr>
<td>ADE7755</td>
<td>Single Phase Energy Metering IC with Synchronized Pulse Output</td>
<td>Pulse Output</td>
<td>&lt;0.1% over 500:1 dynamic range</td>
</tr>
<tr>
<td>ADE7758</td>
<td>Poly Phase Multifunction Energy Metering IC with Per Phase Information</td>
<td>Serial Port Interface</td>
<td>&lt;0.1% over 500:1 dynamic range</td>
</tr>
</tbody>
</table>

**Product Link**
[www.analog.com/ADE5169](http://www.analog.com/ADE5169)
Digital Temperature Sensor

**ADT7310 ± 0.5°C Accurate, 16-Bit Digital SPI Temperature Sensor**

**Key Features**
- ±0.5°C accuracy from −40°C to 105°C range
- −55°C to 150°C operating temperature
- 16-bit temperature-to-digital converter
- Power consumption: 700 μW typical at 3.3 V
- Shutdown mode for low power consumption
- SPI interface

**Benefits**
- Industry-leading temperature accuracy over a −40°C to 105°C temperature range
- Wide temperature operating range
- Available in SPI or I2C interface

**Key Applications**
- Medical equipment
- Environmental control systems
- Computer thermal monitoring
- Industrial process control

**Cost**
$1.95 per unit in 1k quantity

**Package Options**
- 8-lead narrow SOIC

**Related Devices**
ADT7410 I2C interface option

**Product Link**
www.analog.com/ADT7310
Amplifier: High Common Mode Current Sense Amplifier

AD8211 High Voltage Current Shunt Monitor

Key Features

- ±4000 V HBM ESD
- High common-mode voltage range
  - –2 V to +65 V operating
  - –3 V to +68 V survival
- Wide operating temperature range: –40°C to +125°C
- Buffered output voltage
- Excellent AC and DC performance
  - 5 μV/°C typical offset drift
  - 13 ppm/°C typical gain drift
  - 120 dB typical CMRR at DC
  - 500 kHz small signal –3 dB bandwidth

Benefits

- Inexpensive
- Extremely linear, even at small input differential: enables ease of use
- Small SOT23-5 foot print (2.8 mm × 2.9 mm)

Key Applications

- High side current sensing
- Solenoid control
- Power supply current monitoring
- Base station power amplifier current control

Cost

$0.80 per unit in 1k quantity

Package Options

- 5-lead SOT23

Related Devices

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Common Mode Range (V)</th>
<th>Gain (V/V)</th>
<th>Input Polarity</th>
</tr>
</thead>
<tbody>
<tr>
<td>AD8205</td>
<td>–2 to 65</td>
<td>50</td>
<td>Bidirectional</td>
</tr>
<tr>
<td>AD8210</td>
<td>–2 to 65</td>
<td>20</td>
<td>Bidirectional</td>
</tr>
<tr>
<td>AD8212</td>
<td>7 to 500*</td>
<td>adjustable</td>
<td>Unidirectional</td>
</tr>
<tr>
<td>AD8216</td>
<td>–4 to 65</td>
<td>3</td>
<td>Bidirectional</td>
</tr>
</tbody>
</table>

*500V achieved with $0.03 external transistor / 65V max without

Product Link

www.analog.com/AD8211
Amplifier: High Voltage Current Monitor/Threshold Detector

AD8214 High Voltage Threshold Detector

Key Features
- Less than 100 nS input to output response
- 5 V to 65 V input common mode and supply voltage range
  - 0 V to 68 V input survival range
- 10 mV hysteresis
- Integrated 2.4 V regulator for setting the threshold voltage
- –40 °C to 125 °C operating temperature range

Benefits
- Overcurrent protection on the high side of the load
  - Detect shorts to GND within 100 nS
- Inexpensive and easy-to-use due to integrated regulator
- High voltage capability
- Small 8-lead MSOP footprint

Key Applications
- Motor control diagnostics
- Power management overcurrent protection
- FET protection

Cost
$0.76 per unit in 1k quantity

Package Options
- 8-lead MSOP

Related Devices

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Common Mode Range (V)</th>
<th>Gain (V/V)</th>
<th>Input Polarity</th>
</tr>
</thead>
<tbody>
<tr>
<td>AD8210</td>
<td>–2 to 65</td>
<td>20</td>
<td>Bidirectional</td>
</tr>
<tr>
<td>AD8211</td>
<td>–2 to 65</td>
<td>20</td>
<td>Unidirectional</td>
</tr>
<tr>
<td>AD8212</td>
<td>7 to 500*</td>
<td>Adjustable</td>
<td>Unidirectional</td>
</tr>
<tr>
<td>AD8215</td>
<td>–2 to 65</td>
<td>20</td>
<td>Unidirectional</td>
</tr>
</tbody>
</table>

*500V achieved with $0.03 external transistor / 65V without

Product Link
www.analog.com/AD8214
Precision Analog Microcontroller

ADuC7061  Low-Power, Precision Analog Microcontroller, Dual \( \Sigma-\Delta \) ADCs, Flash/EE, ARM7TDMI

Key Features

- ARM7TDMI MCU core with Flash
- Low power consumption – 2.6 mA with all peripherals activated
- Low noise Analog-Front-End of just 60 nV
- \( 2 \times 24\text{-bit} \Sigma-\Delta \) ADC, 14-bit DAC

Benefits

- Integrated solution (ADCs, peripherals, ARM7 core) offering full in-circuit programmability
- Single-chip solution for 4-20 mA loop powered applications
- Small 5 mm \( \times \) 5 mm 32-lead LFCSP footprint

Key Applications

- Smart sensing applications
- Factory automation supporting 4-20 mA applications
- High performance instrumentation

Cost

$3.95 per unit in 1k quantity

Package Options

- 32-lead LFCSP

Related Devices

<table>
<thead>
<tr>
<th>Part Number</th>
<th>24-Bit ADCs</th>
<th>AINs/GPIOs</th>
<th>Package</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADuC7060</td>
<td>2</td>
<td>13, 16</td>
<td>48-lead LFCSP, 48-lead LQFP</td>
</tr>
<tr>
<td>ADuC7061</td>
<td>2</td>
<td>13, 8</td>
<td>5 mm ( \times ) 5 mm, 32-lead LFCSP</td>
</tr>
</tbody>
</table>

Product Link

www.analog.com/ADuC7061
Precision Analog Microcontroller

ADuC842 Precision Analog Microcontroller 16 MIPS 8052 Flash MCU + 8-Ch 12-Bit ADC + Dual 12-Bit DAC

Key Features
• Integration of precision analog with Flash MCU – 8051
• 12-Bit 400 kSPS ADC, 2 × 12-bit DACs
• Easy-to-use complete development tools

Benefits
• Ease of design
• PCB real estate reduction
• Facilitates field update of user code

Key Applications
• Instrumentation, including medical
• Communications infrastructure
• Automotive

Cost
$6.64 per unit in 1k quantity

Package Options
• 56-lead LFCSP

Related Devices
ADuC7027: 80-pin LQFP; same as ADuC7026 without the 4 DACs
ADuC7024: 64-pin LFCSP; same as ADuC7026 but with 2 DACs and no external memory
ADuC7025: 64-pin LFCSP; same as ADuC7024 but without the DACs

Product Link
www.analog.com/ADuC842
RF/IF Components: Short Range Transceivers

ADF7023  High Performance, Low Power ISM Band, FSK/GFSK/OOK Transceiver IC

Key Features
- 2nd generation ADF7020, very low power, high performance
- Frequency bands
  - 860 MHz to 928 MHz
  - 430 MHz to 464 MHz
- Data rates supported: 1 kbps to 250 kbps
- 1.8 V to 3.6 V power supply
- Programmable channel filter bandwidth: 100 kHz, 150 kHz, 200 kHz, 300 kHz
- Receiver sensitivity
  - –111 dBm at 9.6 kbps, 2 FSK, GFSK
  - –100 dBm at 150 kbps, 2 FSK, GFSK
  - –103 dBm at 19.2 kbps, OOK
- Very low power consumption
  - 13.5 mA in PHY_RX mode (high Sensitivity mode)
  - 23 mA in PHY_TX mode (10 dBm output)
  - 0.6 μA in PHY_SLEEP mode (RC oscillator active)
  - 0.25 μA in PHY_SLEEP mode (deep sleep mode 1)
- Patented, fast settling automatic frequency control (AFC)
- Single-ended and differential PA
- Digital received signal strength indication (RSSI)
- Fully integrated image rejection calibration (patent pending)
- Integrated PLL loop filter and Tx/Rx switch

Benefits
- Excellent RF performance, low power consumption and best-in-class blocking resistance leading to improved efficiency and better battery life.
- High sensitivity, link robustness, and transmit power.
- Suitable for circuit applications that operate under the European ETSI EN300-220, the North American FCC (Part 15), the Chinese short range wireless regulatory standards or other similar regional standards.
- Integrated RISC processor leads to fewer external discrete components, rendering it suitable for price-sensitive and area-sensitive applications.

Key Applications
- Wireless metering
- Process and building control
- Home automation
- Wireless data transfer
- Remote control/security systems

Cost
$2.88 unit in 1k quantity

Package Options
- 32-lead LFCSP

Related Devices
ADF7022 is available to io-homecontrol® members and includes layers 1 and 2 support for the io-homecontrol protocol stack

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Frequency (MHz)</th>
<th>Supply Voltage (V)</th>
<th>Rx Current (mA)</th>
<th>Tx Current 0 dBm Output (mA)</th>
<th>Output Power (dBm)</th>
<th>Maximum Data Range (kbps)</th>
<th>Phase Noise Floor (dBc/Hz)</th>
<th>Price ($U.S.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADF7022</td>
<td>868.25 to 869.95</td>
<td>1.8 to 3.6</td>
<td>13</td>
<td>13</td>
<td>–16 to +13</td>
<td>38.4</td>
<td>–196</td>
<td>2.88</td>
</tr>
</tbody>
</table>

Product Link
www.analog.com/ADF7023
RF/IF Components: RF Amplifiers

ADL5320 400 MHz to 2700 MHz RF Driver Amplifier

**Key Features**
- Operation: 400 MHz to 2700 MHz
- Gain of 17 dB at 880 MHz
- OIP3 of 45 dBm at 880 MHz
- P1dB of 25.4 dBm at 880 MHz
- Noise figure: 4 dB at 880 MHz
- Power supply: 5 V
- Power supply current: 104 mA typical
- ESD rating of ±4 kV (Class 3A)

**Benefits**
- Internal active biasing – does not require an external bias resistor
- Requires few external components to tune the device to a specific frequency band.
- Thermally-efficient SOT-89 package

**Key Applications**
- RF instrumentation
- Wireless infrastructure
- Military radios and communications equipment
- Satellite communications

**Cost**
$2.58 per unit in 1k quantity

**Package Options**
- SOT-89

---

**Related Devices**

<table>
<thead>
<tr>
<th>Product</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADL5321</td>
<td>2.3 GHz to 4.0 GHz RF Driver Amplifier</td>
</tr>
<tr>
<td>ADL5322</td>
<td>Driver amplifier internally matched to 50 Ω for operation in the 700 MHz to 1000 MHz frequency range.</td>
</tr>
<tr>
<td>ADL5323</td>
<td>Driver amplifier internally matched to 50 Ω for operation in the 1700 MHz to 2400 MHz frequency range.</td>
</tr>
</tbody>
</table>

**Product Link**
www.analog.com/ADL5320
RF/IF Components: RF Amplifiers

ADL5521 400 MHz – 4000 MHz Low Noise Amplifier

Key Features
- Operation from 400 MHz to 4000 MHz
- Noise figure of 0.8 dB at 900 MHz (Including external input match)
- Gain of 20.0 dB at 900 MHz
- OIP3 of 37.0 dBm at 900 MHz
- P1dB of 21.8 dBm at 900 MHz
- Single supply operation from 3 V to 5 V
- Operating current of 30 mA at 3 V
- Pin-compatible with 21.5 dB gain ADL5523

Benefits
- Broadband operation allows designers to reduce component selection for multiple bands
- Integrated bias control circuit eases design and reduces the external component count
- Low noise figure includes external input match

Key Applications
- RF instrumentation
- Wireless infrastructure
- Military radios
- Satellite communications

Cost
$2.18 per unit in 1k quantity

Package Options
- 8-lead LFCSP

Related Devices

<table>
<thead>
<tr>
<th>Product</th>
<th>Description</th>
</tr>
</thead>
</table>
| ADL5523 | 21.5 dB Gain 400 MHz to 4000 MHz Low Noise Amplifier pin-compatible with the ADL5521

Product Link
www.analog.com/ADL5521
**Power Management: Linear Regulators**

**ADP121 150 mA, Low Quiescent Current, CMOS Linear Regulator**

**Key Features Benefits**
- Input voltage range: 2.3 V to 5.5 V
- 16 fixed output voltage options from 1.2 V to 3.3 V (±1% initial accuracy)
- Stable with small 1 μF ceramic output capacitor
- Low quiescent current of 11 μA with IL = 0 mA, 30 μA with IL = 150 mA
- Low shutdown current: 1.5 μA Max over temperature
- Low dropout voltage: 90 mV @ IL = 100 mA
- Excellent PSSR of 70 dB @ 10 kHz with 1.2 V output
- Low noise: 40 μV RMS @ 1.2 V, 10 Hz to 100 kHz
- Current limit and thermal overload protection
- Logic controlled enable

**Benefits**
- Low shutdown and quiescent currents minimize system power loss
- Tiny wafer-level chip scale package (WLCSP) is ideal for space restrained designs
- Excellent PSR and low-noise make the ADP121 family ideal for high-quality power rail generation

**Key Applications**
- High-quality power rail generation with ON/OFF control
- Post regulation for AC-to-DC and DC-to-DC power supplies
- Power rail control for high-efficiency designs

**Package Options**
- 4-ball WLCSP
- 5-lead TSOT

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Output Voltage Options</th>
<th>Output Current</th>
<th>Quiescent Current (no load)</th>
<th>Shutdown Current</th>
<th>Package Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADP121</td>
<td>1.2, 1.5, 1.8, 2.0, 2.5, 2.8, 3.0, 3.3</td>
<td>150 mA</td>
<td>11 μA</td>
<td>&lt;1 μA</td>
<td>4-ball WLCSP</td>
</tr>
<tr>
<td>ADP130</td>
<td>0.8, 1.2, 1.5, 1.8, 2.5, 2.8</td>
<td>350 mA</td>
<td>25 μA</td>
<td>&lt;1 μA</td>
<td>5-lead TSOT</td>
</tr>
<tr>
<td>ADP170</td>
<td>1.2, 1.5, 1.8, 2.5, 2.8</td>
<td>300 mA</td>
<td>23 μA</td>
<td>&lt;1 μA</td>
<td>5-lead TSOT</td>
</tr>
<tr>
<td>ADP171</td>
<td>0.8 to 3.0 (Adjustable)</td>
<td>300 mA</td>
<td>23 μA</td>
<td>&lt;1 μA</td>
<td>5-lead TSOT</td>
</tr>
</tbody>
</table>

**Cost**
$0.27 per unit in 1k quantity

**Product Link**
www.analog.com/ADP121
**Power Management: Linear Regulators**

**ADP3333 High Accuracy, Ultralow IQ, 300 mA, anyCAP® Low Dropout Regulator**

**Key Features**

- 2.6 V to 12 V supply voltage range
- Output voltage options: 1.5, 1.8, 2.5, 2.77, 3.0, 3.15, 3.3, and 5.0 V
- High accuracy over line and load: ±0.8% @ 25°C, ±1.8% over temperature
- Ultra-low dropout voltage: 230 mV max. @ 300 mA
- Low ground current: 2 mA @ 300 mA load
- Low shutdown current: < 1 μA
- Requires only COUT = 1.0 μF for stability
- anyCAP is stable with any type of capacitor (including MLCC)
- Current and thermal limiting
- Low noise
- −40°C to +85°C ambient temperature range
- Ultra-small 8-lead MSOP package

**Benefits**

- High output accuracy eliminates the need to trim power supply voltages
- Low shutdown & quiescent currents minimize system power loss
- anyCAP design improves system performance by allowing the use of ultra-low ESR capacitors
- Ultra-small 8-lead MSOP package is good for space restrained designs

**Key Applications**

- High-quality power rail generation with ON/OFF control
- Post regulation for AC-to-DC and DC-to-DC power supplies
- Distributed power systems
- Power rail control for high-efficiency designs

**Cost**

$0.83 per unit in 1k quantity

**Package Options**

- 8-lead MSOP

**Product Link**

[www.analog.com/ADP3333](http://www.analog.com/ADP3333)
Power Management: Linear Regulators

ADP1720 50 mA, High Voltage, Micropower Linear Regulator

**Key Features**
- Wide input voltage range: 4 V to 28 V
- Maximum output current: 50 mA
- Low ground current:
  - 28 μA at 0 μA load
  - 35 μA at 100 μA load
- Low shutdown current: 0.7 μA
- Low dropout voltage: 275 mV @ 50 mA load
- Initial output voltage accuracy: ±0.5%
- Accuracy over line, load, and temperature: ±2%
- Stable with small 1 μF ceramic output capacitor
- Fixed 3.3 V and 5.0 V output voltage options
- Adjustable output voltage option: 1.225 V to 5.0 V
- Current limit and thermal overload protection
- Logic controlled enable
- Space-saving thermally enhanced MSOP package

**Benefits**
- Low shutdown and quiescent currents minimize system power loss
- High output accuracy eliminates the need to trim power supply voltage
- Stability with small 1 μF ceramic output capacitor helps minimize point-of-load (POL) supply footprint
- Small 8-lead MSOP package is excellent for space restrained designs

**Key Applications**
- Excellent low-current, POL supply for distributed power systems
- Keep-alive power in portable equipment
- Post regulation for AC-to-DC and DC-to-DC power supplies
- High-quality power rail generation with ON/OFF control

**Cost**
$0.50 per unit in 1k quantity

**Package Options**
- 8-lead MSOP

**Product Link**
www.analog.com/ADP1720
Precision References

ADR280 1.2 V Ultralow Power High PSRR Voltage Reference

Key Features

- 1.2 V precision output
- Temperature coefficient: 40 ppm/°C max.
- Ultralow power supply current: 16 μA max.
- Excellent line regulation: 2 ppm/V typical
- Low noise, 12.5 nV/√Hz typical
- Compact 3-lead SOT-23 and SC70 packages

Benefits

- Precision performance
- Well-suited for variety of general-purpose applications where low noise and low power are critical
- Compact SC70 package makes it ideal for handheld devices application

Key Applications

- List GSM, GPRS, 3G mobile stations
- Portable battery-operated electronics
- Low voltage converter references
- Wireless devices

Cost

$0.76 per unit in 1k quantity

Package Options

- 3-lead SOT-23
- 3-lead SC70

Related Devices

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Vout</th>
<th>Tempco (ppm/C)</th>
<th>Supply Current (µA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AD1580</td>
<td>1.2</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>REF191</td>
<td>2.048</td>
<td>5, 25</td>
<td>45</td>
</tr>
<tr>
<td>ADR291</td>
<td>2.5</td>
<td>10, 20, 30</td>
<td>15</td>
</tr>
</tbody>
</table>

Product Link

www.analog.com/ADR280
# Green Energy Product Selection Table

## Digital to Analog Converter

<table>
<thead>
<tr>
<th>Product</th>
<th>Description</th>
<th>Supply</th>
<th>maximum INL / DNL, TUE</th>
<th>Digital Interface</th>
<th>Output Loop Compliance</th>
<th>Package</th>
</tr>
</thead>
<tbody>
<tr>
<td>AD5420</td>
<td>16 bit, serial input, current out DAC with readback</td>
<td>10.8-40 V</td>
<td>0.032 % FSR / ± 1 LSB, or ±0.3 % FSR total unadjusted error</td>
<td>SPI, SPI, microWire - up to 30 MHz clock</td>
<td>0 V to V_{OUT} - 2.5 V</td>
<td>TSSOP</td>
</tr>
</tbody>
</table>

## Temperature Sensor

<table>
<thead>
<tr>
<th>Product</th>
<th>Function</th>
<th>Supply</th>
<th>Operating and measurement range</th>
<th>Other features</th>
<th>Control interface</th>
<th>Package</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADT7310</td>
<td>±0.5 °C accurate digital output temperature sensor</td>
<td>2.7-5.5 volts, 300 μA max, 25 μA in shutdown</td>
<td>-55°C to +150°C</td>
<td>13 bits resolution with over-temp flag, 16 bits without flag</td>
<td>4 wire SPI</td>
<td>SOIC</td>
</tr>
</tbody>
</table>

## Microconverter

<table>
<thead>
<tr>
<th>Product</th>
<th>Description</th>
<th>Supply</th>
<th>Clocking method</th>
<th>Internal flash memory</th>
<th>Other features</th>
<th>Package</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADuC842</td>
<td>16 MIPS MCU with 8 channel 12 bit ADC and dual 12 bit DAC</td>
<td>2.7 to 3.6 V or 4.75 to 5.25 volts</td>
<td>via 32 kHz crystal, PLL core programmable up to 16.78 MHz</td>
<td>62 kBytes program, 4 kBytes data (+ 2 kBytes SRAM)</td>
<td>Temperature monitor, PWM outputs</td>
<td>LFCS, MQFP</td>
</tr>
<tr>
<td>ADuC7061</td>
<td>Low power ARM7 based MCU with dual Σ-Δ ADCs</td>
<td>2.5 V (with 3.3 V compliant I/O)</td>
<td>Internal or 32 kHz crystal, core programmable 0.16-10.24 MHz</td>
<td>32 kB (16 kB × 16) + 4 kB (1 kB × 32) SRAM</td>
<td>−40°C to +125°C operation, PWM</td>
<td>LFCS</td>
</tr>
</tbody>
</table>

## Energy measurement IC

<table>
<thead>
<tr>
<th>Product</th>
<th>Function</th>
<th>Supply</th>
<th>Other features</th>
<th>Internal user memory</th>
<th>LCD driver</th>
<th>Package</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADE5169</td>
<td>Single phase energy measurement IC with MCU, RTC, LCD driver</td>
<td>2.4 to 3.7 V, 4.4 mA-standby modes to 1.7 μA</td>
<td>0.1% 10 ppm/°C reference, CT, shunt or di/dt sensor interface</td>
<td>62 kBytes with code protection facility</td>
<td>104 segment with 2X, 3X or 4X muxing</td>
<td>LOFP</td>
</tr>
</tbody>
</table>

## Current Sensing IC

<table>
<thead>
<tr>
<th>Product</th>
<th>Function</th>
<th>Supply</th>
<th>Common mode range</th>
<th>Supply current</th>
<th>CMRR</th>
<th>Package</th>
</tr>
</thead>
<tbody>
<tr>
<td>AD8211</td>
<td>High voltage current shunt monitor</td>
<td>4.5-5.5 V</td>
<td>−2 to 65 V</td>
<td>2 mA</td>
<td>120 dB, 100 dB min at &gt;5 volts</td>
<td>SOT</td>
</tr>
<tr>
<td>AD8214</td>
<td>High voltage threshold detector with high side comparator</td>
<td>5 - 65 V</td>
<td>5 to 65 V</td>
<td>1.2 mA</td>
<td>80 dB</td>
<td>MSOP</td>
</tr>
</tbody>
</table>

## RF Transceiver (SRD)

<table>
<thead>
<tr>
<th>Product</th>
<th>Description</th>
<th>Supply</th>
<th>Output Power</th>
<th>Data Rates</th>
<th>Sensitivity (FSK mode)</th>
<th>Package</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADF7020</td>
<td>ISM band transceiver, 433-478 and 862-956 MHz</td>
<td>2.3 to 3.6 volts, 26 mA at +10 dBm output</td>
<td>−16 dBm to +13 dBm in 0.3 dBm steps</td>
<td>150 bps to 200 kbps FSK, 150 bps to 64 kbps, ASK</td>
<td>−119 dBm at 1 kbps, −112 dBm at 9.6 kbps</td>
<td>LFCS</td>
</tr>
</tbody>
</table>

## RF Amplifier

<table>
<thead>
<tr>
<th>Product</th>
<th>Description</th>
<th>Supply</th>
<th>Output IP3</th>
<th>Output P1dB</th>
<th>Other features</th>
<th>Package</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADL5320</td>
<td>400-2700 MHz RF amplifier, 17 dB nominal gain</td>
<td>4.5 to 5.5 volts, 120 mA max</td>
<td>45 dBm</td>
<td>25 dBm</td>
<td>Internal active biasing, 4 kV ESD rating</td>
<td>SOT-89</td>
</tr>
<tr>
<td>ADL5521</td>
<td>400 MHz - 4 GHz low noise amplifier, 0.8 dB NF LNA</td>
<td>3 to 5.25 volts, 30-60 mA</td>
<td>35 dBm at 1950 MHz</td>
<td>22.5 dBm at 1950 MHz</td>
<td>Integrated bias control and blocking capacitors</td>
<td>LFCS</td>
</tr>
</tbody>
</table>

## Voltage Reference

<table>
<thead>
<tr>
<th>Product</th>
<th>Output voltage</th>
<th>Supply</th>
<th>Temperature coefficient</th>
<th>Line Regulation</th>
<th>Other features</th>
<th>Package</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADR280</td>
<td>1.2 V nominal: 1.95-1.205 volts over full supply range</td>
<td>2.4 to 5.5 volts.</td>
<td>5 ppm/°C typ, 20 ppm/°C max over 0-50°C</td>
<td>2ppm/V typ, 12 max over full supply range</td>
<td>high (~80dB) PSRR. Low noise, 12.5 nV/√Hz</td>
<td>SC70, SOT23</td>
</tr>
</tbody>
</table>

## Linear Voltage Regulator

<table>
<thead>
<tr>
<th>Product</th>
<th>Function</th>
<th>Supply voltage</th>
<th>Output voltage accuracy</th>
<th>Output noise</th>
<th>Quiescent current</th>
<th>Package</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADP121</td>
<td>150 mA low quiescent current CMOS linear voltage regulator</td>
<td>V_{OUT} = 90 mV</td>
<td>1% at 10 mA, 3% over temperature at 150mA output</td>
<td>40 μV rms at V_{OUT} = 1.2 V, 65 μV at 3.3 V</td>
<td>11 μA no load, 40 μA max at full load</td>
<td>TSOT, WLCS</td>
</tr>
<tr>
<td>ADP3333</td>
<td>300 mA high accuracy, low quiescent current LDO</td>
<td>V_{OUT} = 300 mV</td>
<td>0.8% at 0.1-300 mA load, 1.8% max over temperature</td>
<td>45 μV rms</td>
<td>70 μA at 0.1mA Ic, 200 μA at 10 mA Ic</td>
<td>MSOP</td>
</tr>
<tr>
<td>ADP1720</td>
<td>50 mA high input voltage, linear voltage regulator</td>
<td>4-28 V, V_{OUT} = 480 mV</td>
<td>±2% over line, load and temperature</td>
<td>150 μV rms (C_{L}=1 μF)</td>
<td>2.1 mA max over full temp/ I_{L}, &lt; 80 μA at low I_{L}</td>
<td>MSOP</td>
</tr>
</tbody>
</table>
Analog Devices Line Card

Amplifiers and Comparators
- Audio Amplifiers
- Comparators
- Current Sense Amplifiers
- Differential Amplifiers
- Instrumentation Amplifiers
- Isolation Amplifiers
- Log Amplifiers/Detectors
- Operational Amplifiers (Op Amps)
- RF/IF Amplifiers
- Variable Gain Amplifiers
- Video Amplifiers/Buffers/Filters

Analog Microcontrollers

Analog-to-Digital Converters
- Analog-to-Digital Converters
- Audio Analog-to-Digital Converters
- Capacitance-to-Digital Converters
- Energy Measurement
- Isolated Analog-to-Digital Converters
- Synchro-/Resolver-to-Digital Converters
- Temperature-to-Digital Converters
- Touch Screen Controllers
- Video Decoders
- Voltage-to-Frequency Converters

Audio/Video Products
- Analog/HDMI/DVI Interfaces
- Audio Analog-to-Digital Converters
- Audio Amplifiers
- Audio Codecs
- Audio Digital-to-Analog Converters
- Audio Signal Processors
- Camera/Camcorder Analog Front Ends
- Display Driver Electronics
- Lens Driver Components
- Mobile TV Tuners
- Sample Rate Converters
- Video Amplifiers/Buffers/Filters

Broadband Products
- Broadband Amplifiers
- Broadband Codecs
- CATV Amplifiers/Splitters
- Clock and Data Recovery/Retiming
- Digital Crosspoint Switches

Clock and Timing Products
- Clock Generation and Distribution
- Clock and Data Recovery/Retiming
- PLL Synthesizers/VCOs

Digital-to-Analog Converters
- Digital-to-Analog Converters
- Audio Digital-to-Analog Converters
- Digital Potentiometers
- Video Encoders

Embedded Processing and DSP Products
- Blackfin® Processors
- SHARC® Processors
- TigerSHARC® Processors
- ADSP-21xx Processors

Fiber Optic Products
- Clock and Data Recovery/Retiming
- Laser Drivers
- Log/Limiting Amplifiers
- Transimpedance Amplifiers

Interface Products
- Digital Isolators
- Level Translators
- RS-232
- RS-485
- Transceivers

MEMS and Sensors
- MEMS® Accelerometers
- MEMS Gyroscopes
- Analog Temperature Sensors
- Digital Temperature Sensors

Power Management Products
- Battery Management
- Display and Lighting
- Hot Swap
- Linear Regulators
- Digital Power Management
- Power Monitors
- Sequencers
- Supervisors
- Switched Capacitor Converters
  (Inductorless DC-to-DC Converters)
- Switching Controllers
  (External Switches)
- Switching Regulators
  (Integrated FET Switches)

RF/IF Components
- DDS Modulators
- Digital Upconverters/Downconverters
- Mobile TV Tuners

References
- Voltage References

Switches/Multiplexers
- Analog Crosspoint Switches
- Analog Switches
- Digital Crosspoint Switches
- Multiplexers (Muxes)
- RF Switches

Temperature Sensing and Thermal Management Products
- Analog Temperature Sensors
- Digital Temperature Sensors
- Remote Temperature Sensors
- Temperature Switches

Wireless Products
- DDS Modulators
- Digital Upconverters/Downconverters
- Mobile TV Tuners

Other Linear Products
- Analog Multipliers/Dividers
- Automatic Test Equipment
- Hall Effect Sensors
- IOS Subsystems
- LVDT Sensor Amplifiers
- Matched Transistors
- Military/Aerospace
- Modems
- Multichip Modules
- RMS-to-DC Converters
- Sample-/Track-and-Hold Amplifiers
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- AD7982 18-Bit, 1 MSPS PuSAR® 7.0 mW ADC
- AD5428 Dual 8-Bit, High Bandwidth Multiplying DACs with Parallel Interface
- AD9520/22 CMOS Output Clock Generator with Integrated 2.8 GHz VCO
- AD8339 DC to 50 MHz, Quad I/Q Demodulator and Phase Shifter
- AD8022 Dual, High Speed, Low Noise Op Amp
- ADA4841-2 Dual Low Power, Low Noise and Distortion, Rail-to-Rail Output Amplifier
- AD8138 Low Distortion Differential ADC Driver
- ADP1706 1 A, Low Dropout, CMOS Linear Regulator
- ADP120/130/170 150/350/300 mA, Low VIN, Low Quiescent Current, CMOS Linear Regulator
- ADM2914 Quad UV/OV Positive/Negative Voltage Supervisor
- ADR434 Ultralow Noise XFET® Voltage References with Current Sink and Source Capability

**Industrial Instrumentation Applications**
- AD7923 4-Channel 200 kSPS, 12-Bit A/D Converter with Sequencer
- AD421 Loop-Powered 4-20 mA DAC
- AD5601 2.7 V to 5.5 V, <100 μA, 8-Bit nanoDAC®, SPI Interface
- AD5228 32-Position Manual Up/Down Control Potentiometer
- ADA4841-1 Low Power, Low Noise and Distortion, Rail-to-Rail Output Amplifier
- ADG884 0.5 Ω CMOS Dual 2:1 MUX/SPDT Audio Switch
- ADP121 150 mA, Low Quiescent Current, CMOS Linear Regulator
- ADM6713 Microprocessor Supervisory Circuit
- ADS-BF534 Blackfin Processor with CAN Connectivity