POWER SOLUTIONS FOR PRECISION TECHNOLOGY SIGNAL CHAINS

PRECISION LOW POWER
Multichannel Voltage, Current and Biosignal Measurement
Noise Optimized

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This document is interactive. You can click on any underlined text to navigate through the document.

For the resources:

Left-click the specific signal chain to go through its respective block diagram or power tree.

Left-click the Parts Guide and Power Requirements to go through the list of power devices and other references.

The Power Components are listed on the Appendix, and you may click on the part to go through its product page online.

For the individual pages:

Left-click the specific signal chain to go through its respective block diagram or power tree.
APPENDIX

Non-isolated

<table>
<thead>
<tr>
<th>Supply Voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.5V Supply</td>
</tr>
<tr>
<td>3.7V Supply</td>
</tr>
<tr>
<td>&gt; 5.5V Supply</td>
</tr>
</tbody>
</table>

Isolated

<table>
<thead>
<tr>
<th>Supply Voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td>5V Supply</td>
</tr>
</tbody>
</table>

Parts Guide

Power Requirements

REFERENCE

IN ADR3425 OUT

AD8237

AMP

x16

+V$_S$

FILTER

x16

AD4696

ADC

AV$_DD$ LDO IN V$_IO$

3.3V 1.8V

V$_{OUT}$

ADP150

LDO

V$_{IN}$

3.6V

2.0V

MAX77642

SIMO BUCK-BOOST

SBB1 SBB0 IN LDO LDO SBB2

DC

SUPPLY

3.7V BATTERY

Voltage, Current & Biosignal Measurement

Noise Optimized - Multichannel

USER GUIDE
## Power Requirements

<table>
<thead>
<tr>
<th>Non-isolated</th>
<th>Isolated</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.5V Supply</td>
<td>5V Supply</td>
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<tr>
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<td></td>
</tr>
<tr>
<td>&gt; 5.5V Supply</td>
<td></td>
</tr>
</tbody>
</table>

## APPENDIX

### Parts Guide

**USER GUIDE**

- Voltage, Current & Biosignal Measurement
- Noise Optimized - Multichannel

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**REFERENCE**

- **IN** ADR3425 **OUT**
  - AVDD
  - LDO IN
  - VDD

**AD8237 AMP**

- x16
- +V S

**FILTER**

- x16

**AD4696 ADC**

- AVDD
- LDO IN
- VDD

**ADP150**

- LDD
- V IN

**MAX77642**

- SIMO BUCK-BOOST
- V IN

**MAX17530 BUCK**

- DC
- V IN

-供应 >5.5V to 42V
APPENDIX

<table>
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<td></td>
</tr>
<tr>
<td>&gt; 5.5V Supply</td>
<td></td>
</tr>
</tbody>
</table>

**Power Requirements**

**REFERENCE**
IN \( \rightarrow \) ADR3425 \( \rightarrow \) OUT

**AD8237 AMP**
\( +V_S \)
\( \times 16 \)

**FILTER**
\( \times 16 \)

**AD4698 ADC**
AVDD \( \rightarrow \) LDO IN \( \rightarrow \) VDD

**ADuM1441 ISOLATOR**
VDD1 \( \rightarrow \) VDD2

**ADP150 LDO**
VOUT \( \rightarrow \) 3V3
V IN

**MAX77642**
SBB1 SBB0 IN LDO LDO SBB2
DC \( \rightarrow \) DC

**ADuM5028**
V OUT \( \rightarrow \) V IN
SUPPLY 5V

**APPENDIX**

**Parts Guide**

**USER GUIDE**

**Voltage, Current & Biosignal Measurement**

**Noise Optimized – Multichannel**

**Power Solutions for Precision Technology Signal Chains**

**Precision Low Power**
## Precision Low Power

### Voltage, Current & Biosignal Measurement

#### Noise Optimized – Multichannel

<table>
<thead>
<tr>
<th>Voltage Range</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.5V Supply</td>
<td>5V Supply</td>
</tr>
<tr>
<td>3.7V Supply</td>
<td></td>
</tr>
<tr>
<td>&gt; 5.5V Supply</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PART #</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAX77642</td>
<td>Ultra Configurable PMIC Featuring 93% Peak Efficiency Single-Inductor, 3-Output Buck-Boost, 1-LDO for Long Battery Life</td>
</tr>
<tr>
<td>MAX17220</td>
<td>400mV to 5.5V Input, nanoPower Synchronous Boost Converter with True Shutdown</td>
</tr>
<tr>
<td>MAX17530</td>
<td>4V to 42V, 25mA, Ultra-Small, High-Efficiency, Synchronous Step-Down DC-DC Converter with 22µA No-Load Supply Current</td>
</tr>
<tr>
<td>ADP150</td>
<td>Ultralow Noise, 150 mA CMOS Linear Regulator</td>
</tr>
<tr>
<td>ADuM5028</td>
<td>Low Emission Isolated DC to DC Converter</td>
</tr>
</tbody>
</table>
**POWER REQUIMENTS**

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>STAGES</th>
<th>Amplifier</th>
<th>ADC</th>
<th>Reference</th>
<th>Isolation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pin</td>
<td>V</td>
<td>V</td>
<td>V</td>
<td>V</td>
</tr>
<tr>
<td>+V_s</td>
<td>-V_s</td>
<td>AV_{DD}</td>
<td>LDO_IN</td>
<td>V_{io}</td>
<td>IN</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>V_{DD1}</td>
</tr>
<tr>
<td>Supply Voltage</td>
<td>V</td>
<td>3.3</td>
<td>3.3</td>
<td>1.8</td>
<td>3.3</td>
</tr>
<tr>
<td>Supply Current</td>
<td>mA</td>
<td>0.15</td>
<td>0.052</td>
<td>0.36</td>
<td>0.1</td>
</tr>
<tr>
<td>PSRR</td>
<td>dB</td>
<td>73(100Hz)</td>
<td>79(1MHz)</td>
<td>95(1MHz)</td>
<td>54(100kHz)</td>
</tr>
</tbody>
</table>

**Note 1:** The supply currents indicated are the maximum quiescent current of the supply rails. For overall full load or short circuit current specifications, refer to the datasheets of the signal chain components.

**Note 2:** The supply voltages indicated are the values for typical applications.

**Note 3:** Consult the corresponding datasheets for details on power dissipation if needed.

**Note 4:** The actual supply current requirement shall be multiplied depending on the number of channels on the signal chain.