POWER SOLUTIONS FOR PRECISION TECHNOLOGY SIGNAL CHAINS

PRECISION LOW POWER
Single Channel Voltage, Current and Biosignal Measurement
Noise Optimized

©2022 Analog Devices, Inc. All rights reserved. Trademarks and registered trademarks are the property of their respective owners.
This document is interactive. You can click on any underlined text to navigate through the document.

For the resources:

<table>
<thead>
<tr>
<th>APPENDIX</th>
<th>Parts Guide</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Power Requirements</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>PART #</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>LT3471</td>
<td>Dual 1.3A, 1.2MHz Boost/Inverter in 3mm x 3mm DFN</td>
</tr>
<tr>
<td>LT8604</td>
<td>High Efficiency 42V/120mA Synchronous Buck</td>
</tr>
<tr>
<td>LT8570-1</td>
<td>Boost/SEPIC/Inverting DC/DC Converter with 65V Switch, Soft-Start and Sync.</td>
</tr>
</tbody>
</table>

For the individual pages:

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

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

<table>
<thead>
<tr>
<th>PARAMETER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply Voltage</td>
</tr>
<tr>
<td>Supply Current</td>
</tr>
<tr>
<td>PSRR</td>
</tr>
</tbody>
</table>

Non-isolated 1-Channel
APPENDIX

Parts Guide

Power Requirements

### 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>
</tr>
<tr>
<td>3.7V Supply</td>
<td></td>
</tr>
<tr>
<td>&gt; 5.5V Supply</td>
<td></td>
</tr>
</tbody>
</table>

**Diagram:**

- **AD8237 AMP**
- **FILTER**
- **AD4001 ADC**
- **APPL**
- **MAX77642 SIMO BUCK-BOOST**
- **MAX17220 BOOST**

**Voltage Sources:**

- +V_s
- 3.3V
- 1.8V
- 3.6V
- 2.0V

**Components:**

- **IN**
- **OUT**
- **V_{IN}**
- **V_{OUT}**
APPENDIX | Parts Guide | USER GUIDE
---|---|---
| Power Requirements |

Non-isolated | Isolated |
--- | --- |
1.5V Supply | 5V Supply |
3.7V Supply | |
> 5.5V Supply | |

REFERENCE

IN | ADR3425 | OUT

AD8237 AMP

FILTER

AD4001 ADC

REFERENCE

V_{OUT}

ADP150

LDO

V_{IN}

3.3V

1.8V

3.6V

2.0V

SBB1 SBB0 IN LDO LDO SBB2

MAX77642

SIMO BUCK-BOOST

V_{IN}

SUPPLY

3.7V BATTERY

Voltage, Current & Biosignal Measurement

Noise Optimized – Single Channel
APPENDIX

<table>
<thead>
<tr>
<th></th>
<th>Parts Guide</th>
<th>USER GUIDE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-isolated</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.5V Supply</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.7V Supply</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt; 5.5V Supply</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Isolated</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5V Supply</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Power Requirements

**Voltage, Current & Biosignal Measurement**

**Noise Optimized – Single Channel**

- AD8237 AMP
- FILTER
- AD4001 ADC
- REF
- ADR3425

- MAX77642 SIMO BUCK-BOOST
- MAX17530 BUCK

- VOUT
- IN
- LDO
- SBB1
- SBB2
- 3.3V
- 1.8V
- 3.6V
- 2.0V
- V_IN
- >5.5V to 42V

**Power Solutions for Precision Technology Signal Chains**

**Precision Low Power**
APPENDIX

<table>
<thead>
<tr>
<th>Non-isolated</th>
<th>Isolated</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>

Power Requirements

- Isolated
- 5V Supply

REFERENCE

IN ADR3425 OUT

AD4001 ADC

VDD VDD

ADUM1441 ISOLATOR

VDD1 VDD2

AD8237 AMP

=VDD

FILTER

REFERENCE

VDD VDD

ADUM5028

VDD 5V

SUPPLY 5V

ADP150 LDO

VDD VDD

MAX77642 SIMO BUCK-BOOST

VDD VDD

SBB1 SBB0 IN LDO LDO SBB2

DC 0V DC

Power Solutions for Precision Technology Signal Chains

Precision Low Power

Voltage, Current & Biosignal Measurement

Noise Optimized – Single Channel

APPENDIX

Parts Guide

Power Requirements

USER GUIDE

6
## Power Solutions for Precision Technology Signal Chains

### Precision Low Power

#### Voltage, Current & Biosignal Measurement

#### Noise Optimized – Single Channel

<table>
<thead>
<tr>
<th>Non-isolated</th>
<th>Isolated</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 REQUIREMENTS

<table>
<thead>
<tr>
<th>STAGES</th>
<th>Amplifier</th>
<th>ADC</th>
<th>Reference</th>
<th>Isolation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Part # Pin</td>
<td>AD8237 +V&lt;sub&gt;S&lt;/sub&gt;</td>
<td>AD4001 -V&lt;sub&gt;S&lt;/sub&gt;</td>
<td>ADR3425 V&lt;sub&gt;DD&lt;/sub&gt;</td>
<td>ADuM1441 IN</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>Supply Voltage</th>
<th>Supply Current mA</th>
<th>PSRR</th>
<th>Noise Optimized – Single Channel</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>V</td>
<td>-</td>
<td>dB</td>
<td>Non-isolated Isolated</td>
</tr>
<tr>
<td></td>
<td>1.5V Supply</td>
<td>0.15</td>
<td>73(100Hz)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3.7V Supply</td>
<td>0.15</td>
<td>73(100Hz)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5V Supply</td>
<td>0.15</td>
<td>73(100Hz)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>&gt; 5.5V Supply</td>
<td>0.15</td>
<td>73(100Hz)</td>
<td></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.