POWER SOLUTIONS FOR PRECISION TECHNOLOGY SIGNAL CHAINS

PRECISION CURRENT SENSING
Generic Signal Chains for Current Measurement
Shunt: Common-Mode Voltage Level Up to ±600V

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

For the resources:

| APPENDIX | Parts Guide | Power Requirements |

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

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<tr>
<th>PART #</th>
<th>DESCRIPTION</th>
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</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.
APPENDIX

Power Requirements

USER GUIDE

Precision Signal Chain for Current Measurement

Shunt: Common-Mode Voltage up to ±600V

Isolated

Multichannel

FILTER

AD8479 AMP

- V_S

+ V_S

-15V

16V

16V

5V

3.3V

V_{OUT^-} V_{OUT^+}

LT3032-15 LDO

V_{IN^-} V_{IN^+}

V_{OUT^-} V_{OUT^+}

LT3472-DUAL

V_{IN}

V_{OUT}

AD7172-4 ADC

REF IOV_{DD} AV_{DD1} AV_{DD2}

ADR4550 VREF

IN

V_{OUT}

ADP7118 LDO

VIN

V_{IN}

S1

S2

5V SHORT OPEN SHORT

12V OPEN OPEN SHORT

24V

5V

V_{IN}

LT8604

5V V_{OUT}

DC DC

VIN

S1

S2

S2

SUPPLY

5V

12V

24V

ADuM3471

Controller
### Precision Current Sensing

#### Generic Signal Chain for Current Measurement

| Shunt: Common-Mode Voltage up to ±600V |

#### Isolated

<table>
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<tr>
<th>PART #</th>
<th>DESCRIPTION</th>
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<tr>
<td>ADP718</td>
<td>20 V, 200 mA, Low Noise, CMOS LDO Linear Regulator</td>
</tr>
<tr>
<td>LT3032-15</td>
<td>Dual 150mA Positive/Negative Low Noise Low Dropout Linear Regulator</td>
</tr>
<tr>
<td>LT3472</td>
<td>Boost and Inverting DC/DC Converter for CCD Bias</td>
</tr>
<tr>
<td>LT8604</td>
<td>High Efficiency 42V/120mA Synchronous Bucks</td>
</tr>
<tr>
<td>ADuM3471</td>
<td>Isolated Switching Regulators (3/1 Channel Directionality)</td>
</tr>
</tbody>
</table>
## POWER REQUIREMENTS

<table>
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<tr>
<th>PARAMETER</th>
<th>STAGES</th>
<th>Difference Amp</th>
<th>Filter</th>
<th>ADC</th>
<th>Isolation</th>
<th>Reference</th>
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</thead>
<tbody>
<tr>
<td>Part #</td>
<td>AD8479</td>
<td>-</td>
<td>AD7172-4</td>
<td>ADuM3471</td>
<td>ADR4550</td>
<td></td>
</tr>
<tr>
<td>Pin</td>
<td>+V_S</td>
<td>-V_S</td>
<td>AV_DD1</td>
<td>AV_DD2</td>
<td>IOV_DD</td>
<td>V_DD1</td>
</tr>
<tr>
<td>Supply Voltage</td>
<td>V</td>
<td>15</td>
<td>-</td>
<td>3.3</td>
<td>3.3</td>
<td>5</td>
</tr>
<tr>
<td>Supply Current</td>
<td>mA</td>
<td>0.85</td>
<td>-</td>
<td>1.9</td>
<td>1.1</td>
<td>0.98</td>
</tr>
<tr>
<td>PSRR</td>
<td>dB</td>
<td>20 (500kHz)</td>
<td>0 (300kHz)</td>
<td>132 (1MHz)</td>
<td>-</td>
<td>60 (1MHz)</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: (1) power supply rejection ratio (PSRR) and (2) power dissipation.

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