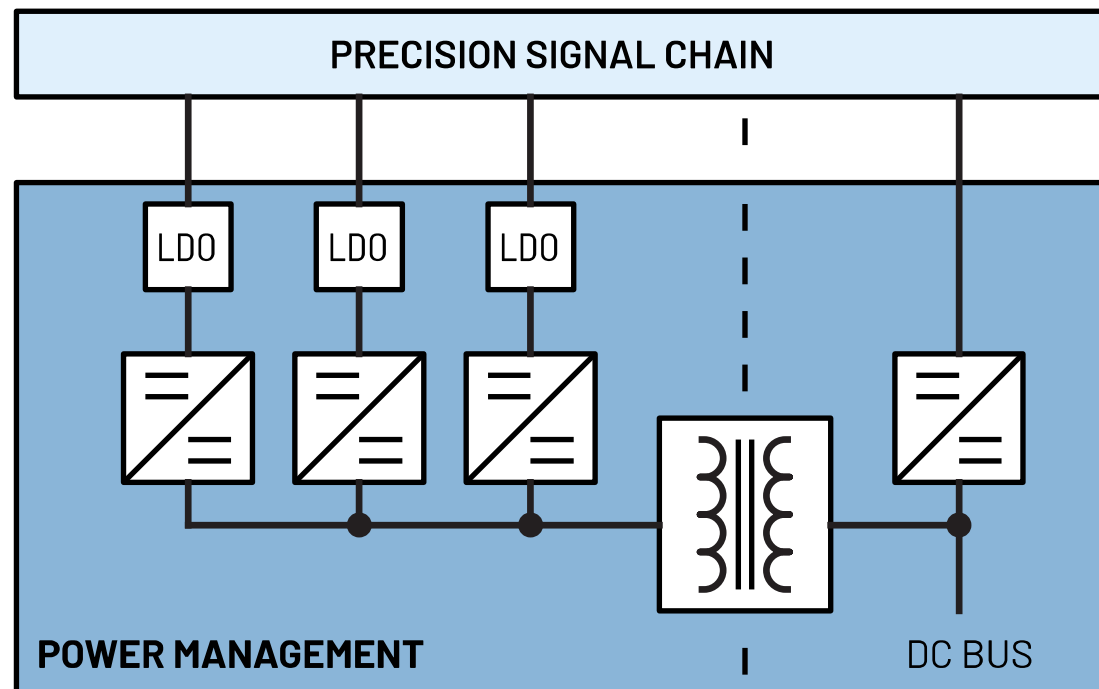


POWER SOLUTIONS FOR PRECISION TECHNOLOGY SIGNAL CHAINS

PRECISION CURRENT SENSING Current Measurement – Motor Control Inverter Shunt: Medium Precision and Performance

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USER GUIDE

SHUNT: MEDIUM PRECISION AND PERFORMANCE		
CURRENT MEASUREMENT - MOTOR CONTROL INVERTER	AD4683 & ADR4533	<u>VIN = 5V</u>
		<u>VIN = 12V</u>
		<u>VIN = 24V</u>
	AD4000 & ADR4550	<u>VIN = 5V</u>
		<u>VIN = 12V</u>
		<u>VIN = 24V</u>

APPENDIX

Parts Guide

Power Requirements

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

For the table of contents and resources:

POWER OPTIMIZED		
CURRENT AND VOLTAGE MEASUREMENT	Non-isolated	<u>1-Channel Signal Chain</u>
		<u>4-Channel Signal Chain</u>
		<u>8-Channel Signal Chain</u>
	Isolated	<u>1-Channel Signal Chain</u>
		<u>4-Channel Signal Chain</u>
		<u>8-Channel Signal Chain</u>

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

APPENDIX	<u>Parts Guide</u>
	<u>Power Requirements</u>

Left-click the appendix to go through the list of power devices and other references.

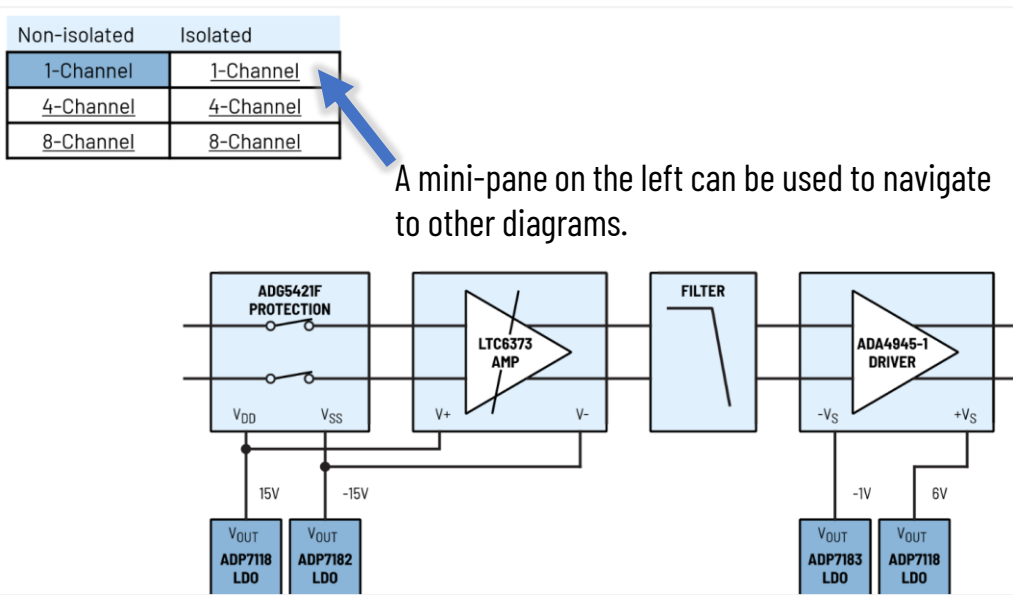
The Power Components are listed on the Appendix, and you may click on the part to go through its product page online.

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

For the individual pages:

Current and Voltage Measurement
Noise and Bandwidth Optimized

Left-click the subcategory (in this case, **Noise and Bandwidth Optimized**) to return to the Table of Contents.



A mini-pane on the left can be used to navigate to other diagrams.

Precision Current Sensing

Power Requirements

Current Measurement – Motor Control
Inverter

Shunt: Medium Precision and Performance

AD4683 & ADR4533

AD4000 & ADR4550

$V_{IN} = 5V$

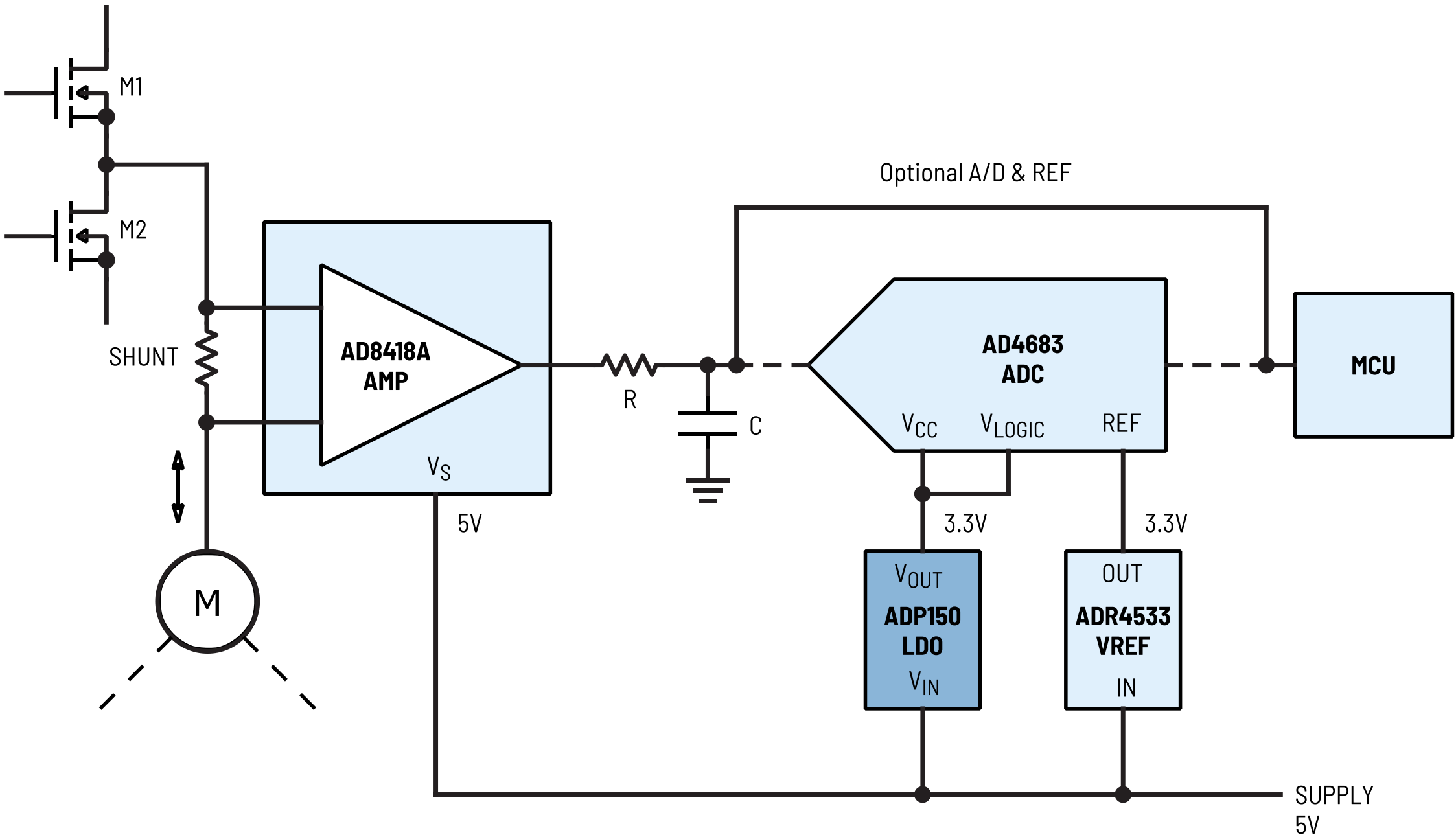
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$V_{IN} = 12V$

$V_{IN} = 12V$

$V_{IN} = 24V$

$V_{IN} = 24V$



Precision Current Sensing

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AD4000 & ADR4550

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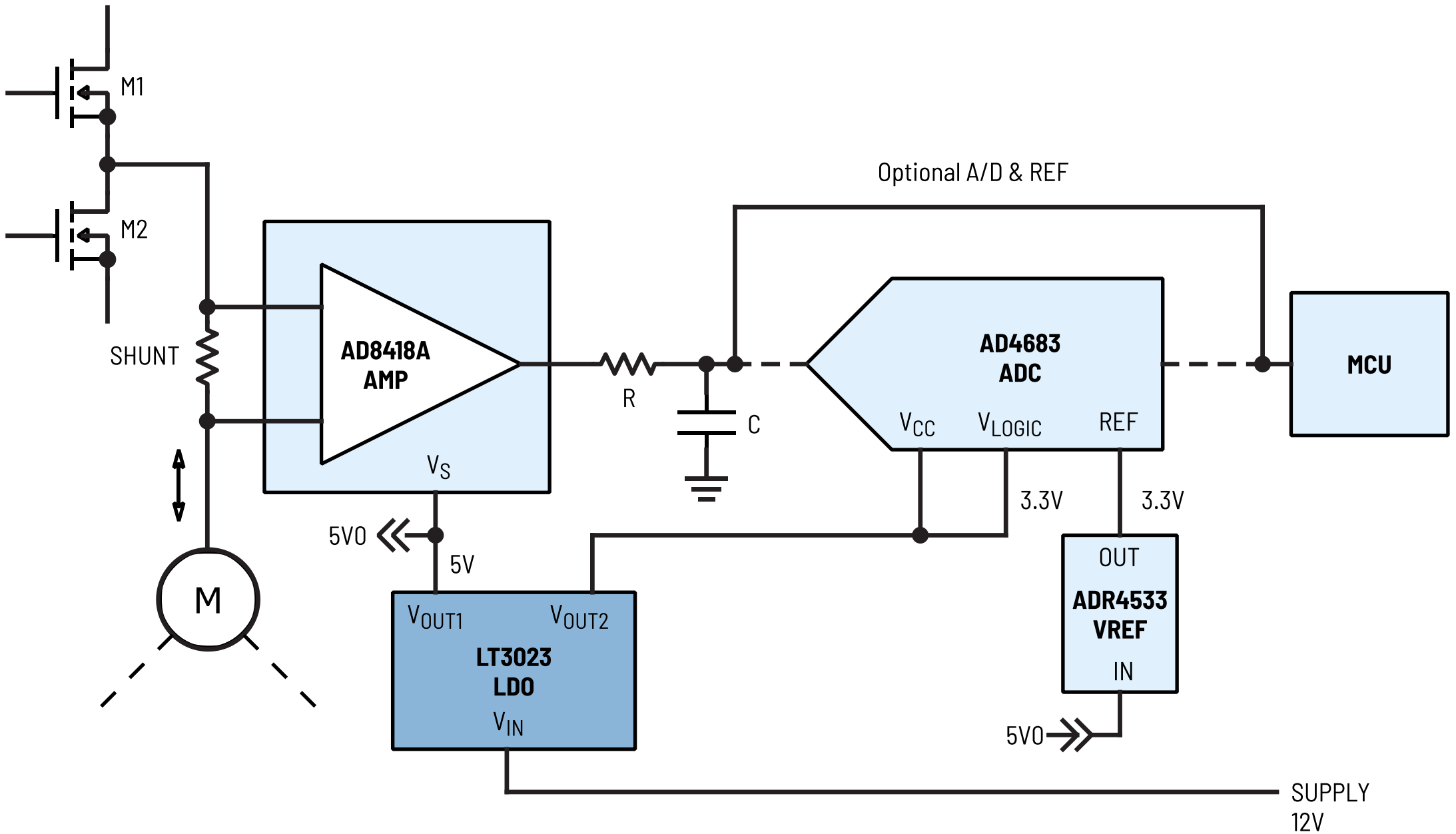
$V_{IN} = 5V$

$V_{IN} = 12V$

$V_{IN} = 12V$

$V_{IN} = 24V$

$V_{IN} = 24V$



Precision Current Sensing

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AD4683 & ADR4533

AD4000 & ADR4550

$V_{IN} = 5V$

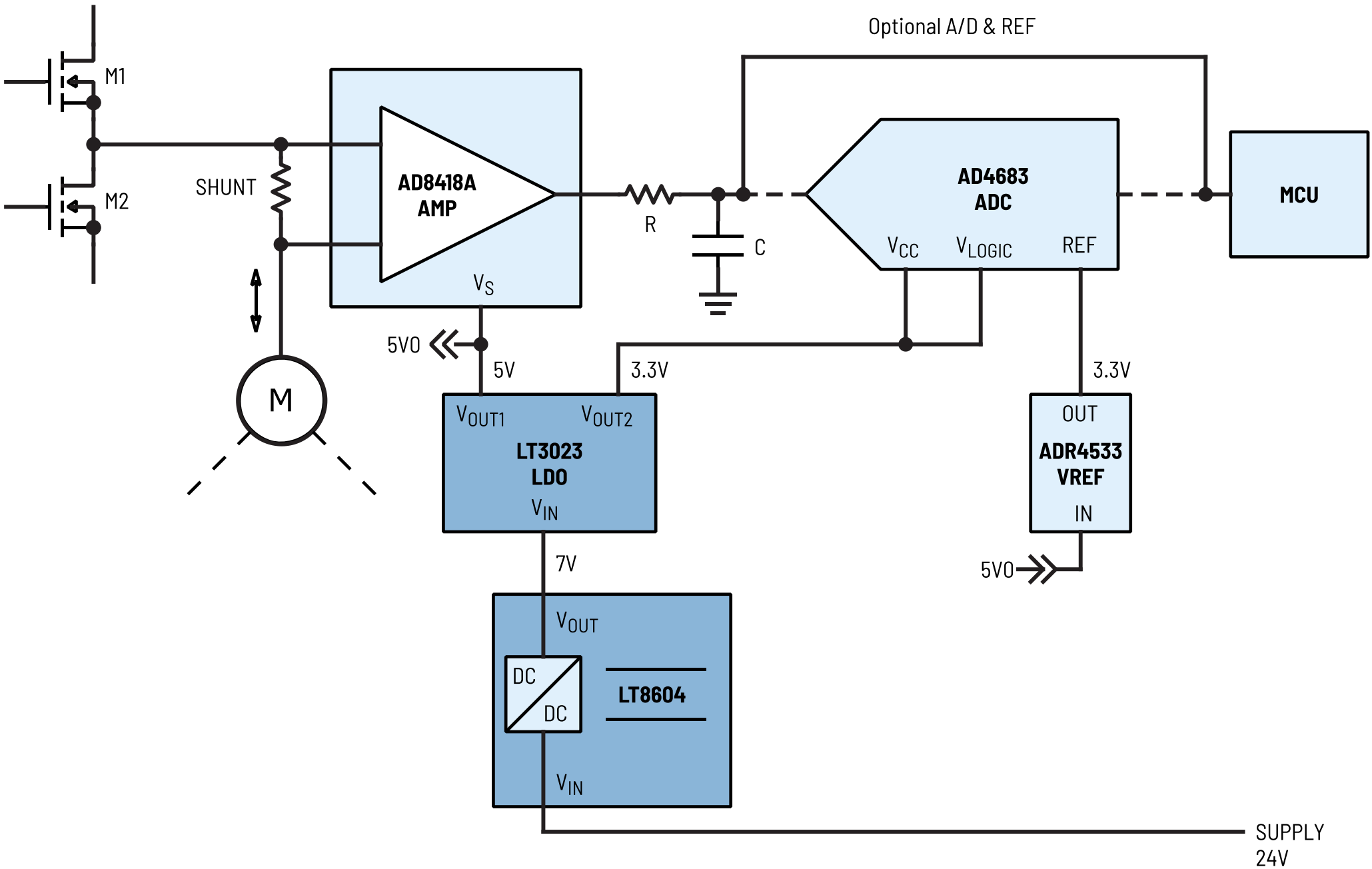
$V_{IN} = 5V$

$V_{IN} = 12V$

$V_{IN} = 12V$

$V_{IN} = 24V$

$V_{IN} = 24V$



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AD4000 & ADR4550

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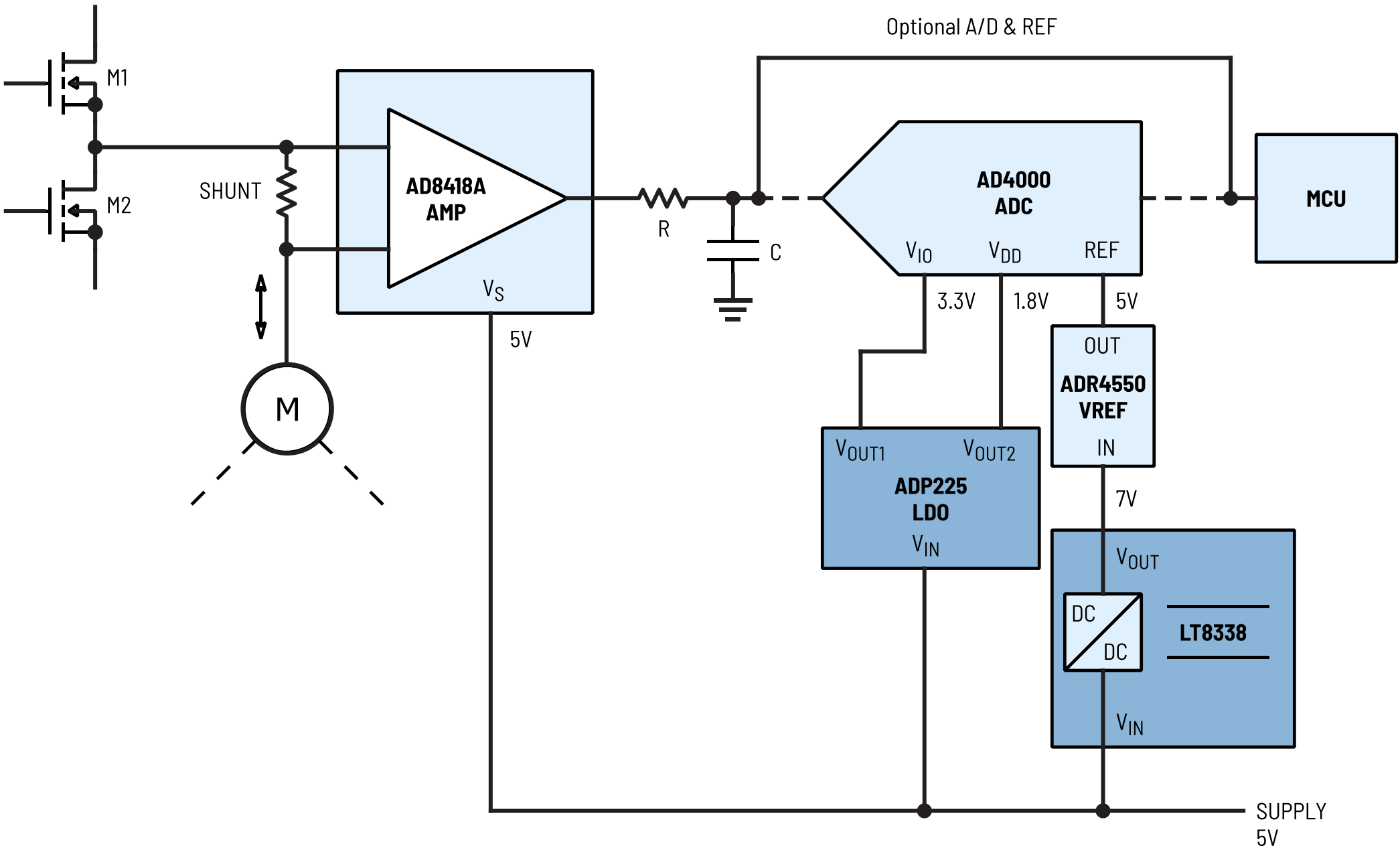
$V_{IN} = 5V$

$V_{IN} = 12V$

$V_{IN} = 12V$

$V_{IN} = 24V$

$V_{IN} = 24V$



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AD4000 & ADR4550

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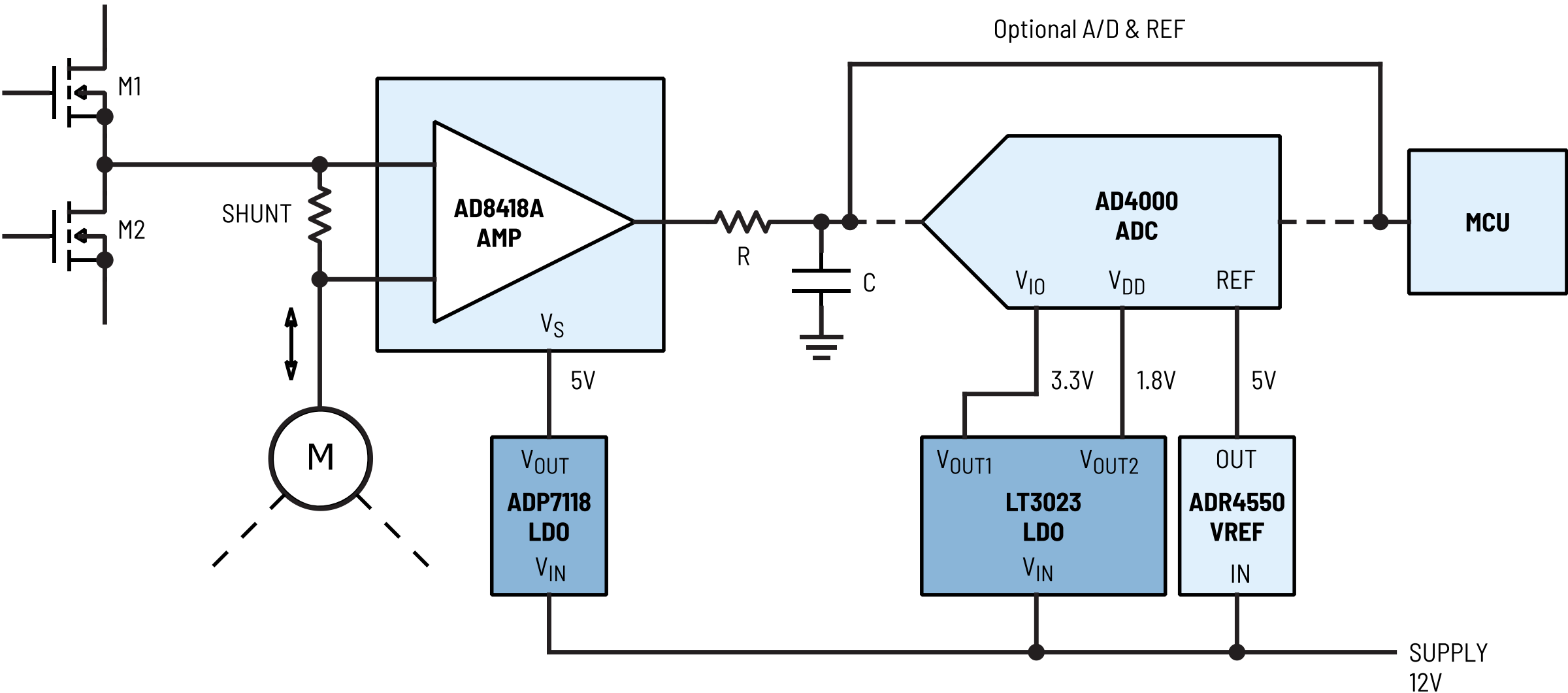
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$V_{IN} = 12V$

$V_{IN} = 24V$

$V_{IN} = 24V$



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AD4000 & ADR4550

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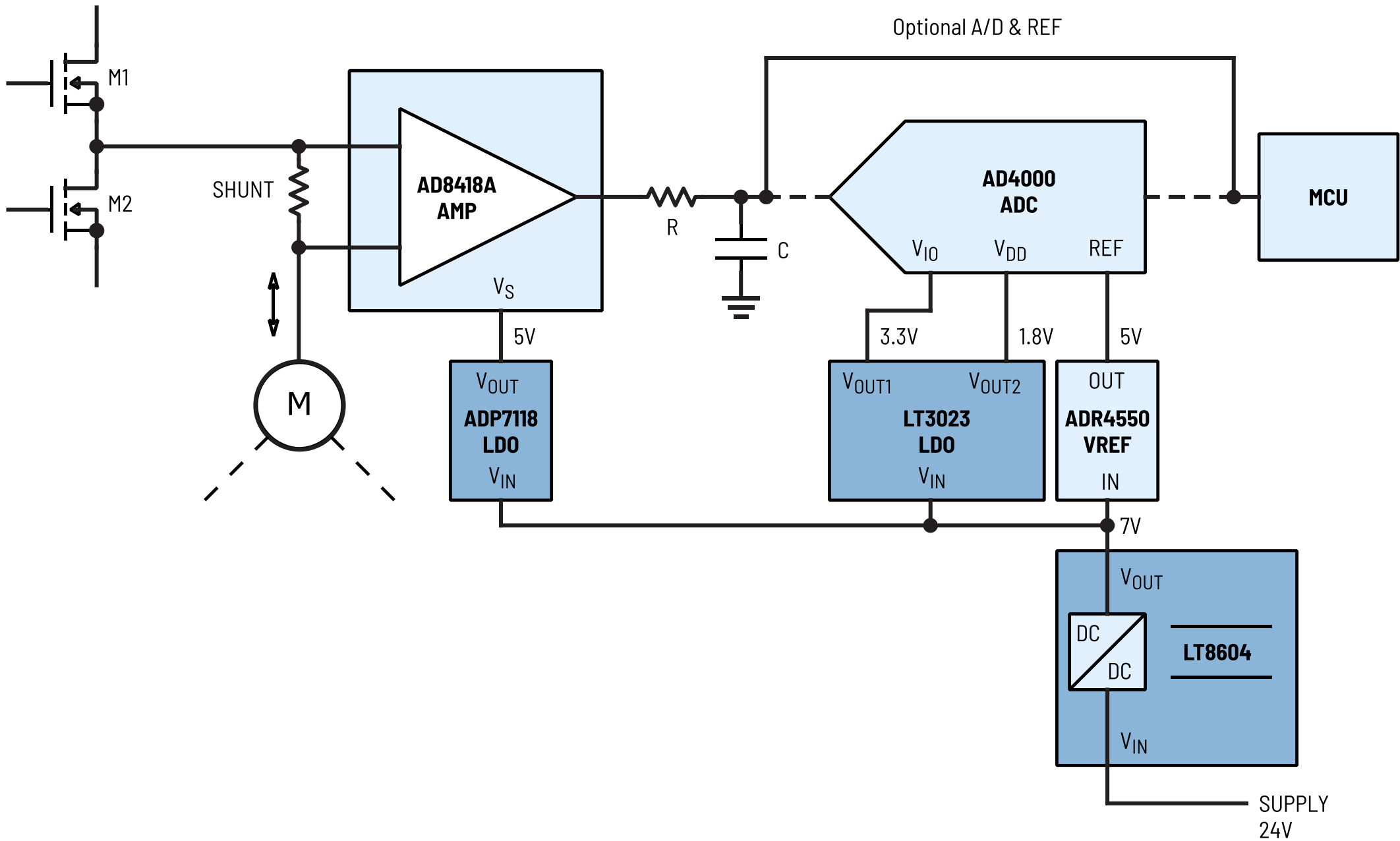
$V_{IN} = 5V$

$V_{IN} = 12V$

$V_{IN} = 12V$

$V_{IN} = 24V$

$V_{IN} = 24V$



Precision Current Sensing

Current Measurement – Motor Control
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AD4683 & ADR4533	AD4000 & ADR4550
<u>VIN = 5V</u>	<u>VIN = 5V</u>
<u>VIN = 12V</u>	<u>VIN = 12V</u>
<u>VIN = 24V</u>	<u>VIN = 24V</u>

PART #	DESCRIPTION
<u>ADP7118</u>	20 V, 200 mA, Low Noise, CMOS LDO Linear Regulator
<u>ADP225</u>	Dual, 300 mA Adjustable Output, QOD, Low Noise, High PSRR Voltage Regulator
<u>ADP150</u>	Ultralow Noise, 150 mA CMOS Linear Regulator
<u>LT3023</u>	Dual 100mA, Low Dropout, Low Noise, Micropower Regulator
<u>LT8604</u>	High Efficiency 42V/120mA Synchronous Buck
<u>LT8338</u>	40V, 1.2A Micropower Synchronous Boost Converter with PassThru

AD4683 & ADR4533	AD4000 & ADR4550
<u>VIN = 5V</u>	<u>VIN = 5V</u>
<u>VIN = 12V</u>	<u>VIN = 12V</u>
<u>VIN = 24V</u>	<u>VIN = 24V</u>

POWER REQUIREMENTS

PARAMETER	STAGES	Amplifier	Filter	ADC			Reference
	Part #	AD8418A	-	[1]	AD4683		ADR4533
	Pin	V _S		[2]	AD4000		ADR4550
Supply Voltage	V	5	-	[1]	V _{CC}	V _{LOGIC}	3.4 to 15
				[2]	V _{DD}	V _{IO}	5.1 to 15
Supply Current	mA	4.2	-	[1]	5.6	0.47	0.95
				[2]	5.4	0.15	0.95
PSRR	dB	80	-	[1]	74 (700kHz)		65 (700kHz)
				[2]	65 (700kHz)		60 (1MHz)

- 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.