

INDUSTRIAL PROCESS CONTROL SOLUTIONS

Precision Amplifiers, Precision Data Converters, Voltage References, Real Time Clocks, Interface, Digital Potentiometers (DCPs), Switch/Mux, Switching Regulators, Isolated PWM Controllers, LDOs, Integrated FET Switching Regulators, PWM Controllers, Voltage Monitors, Sequencers

intersil[™]



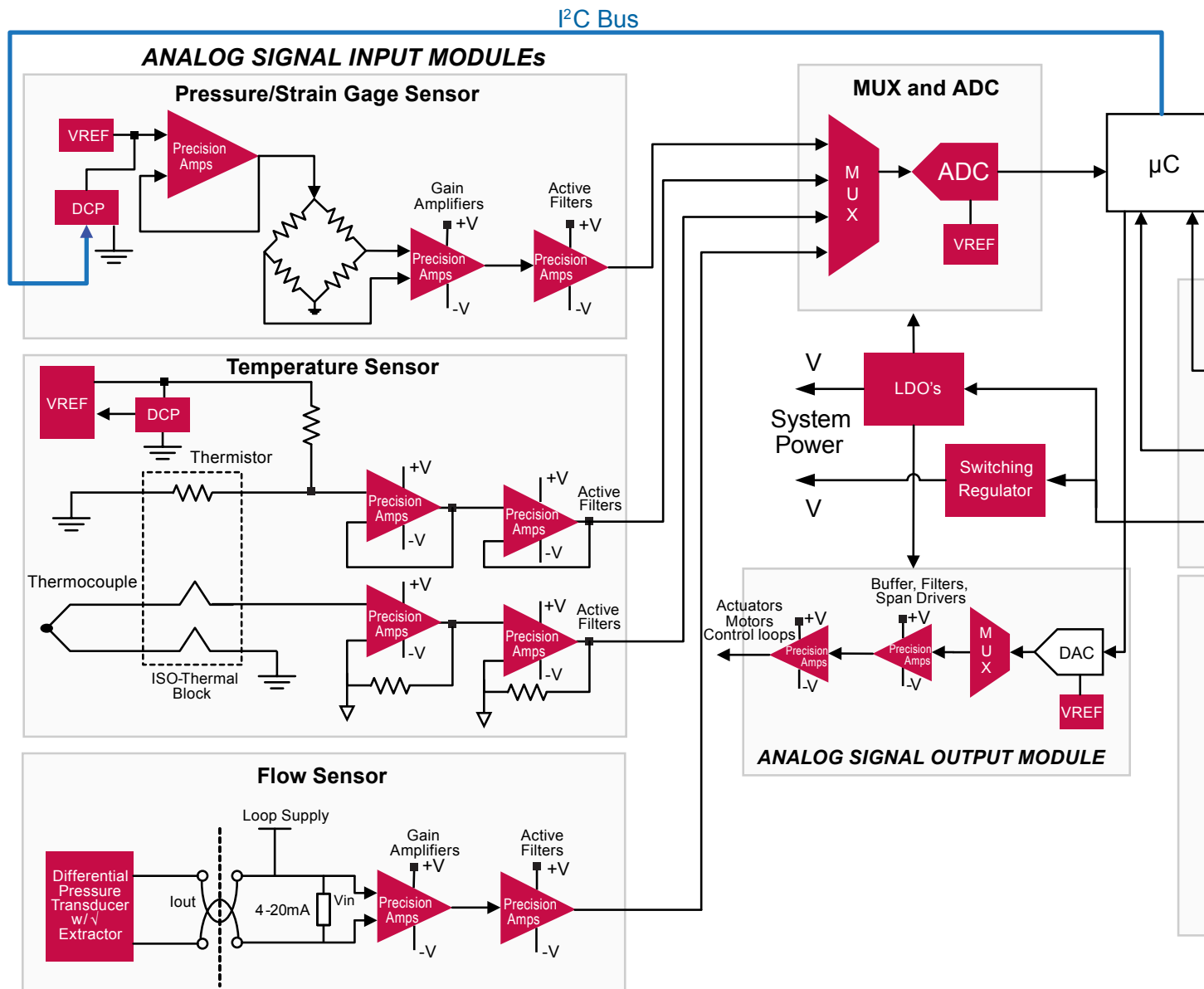
SIMPLY SMARTER

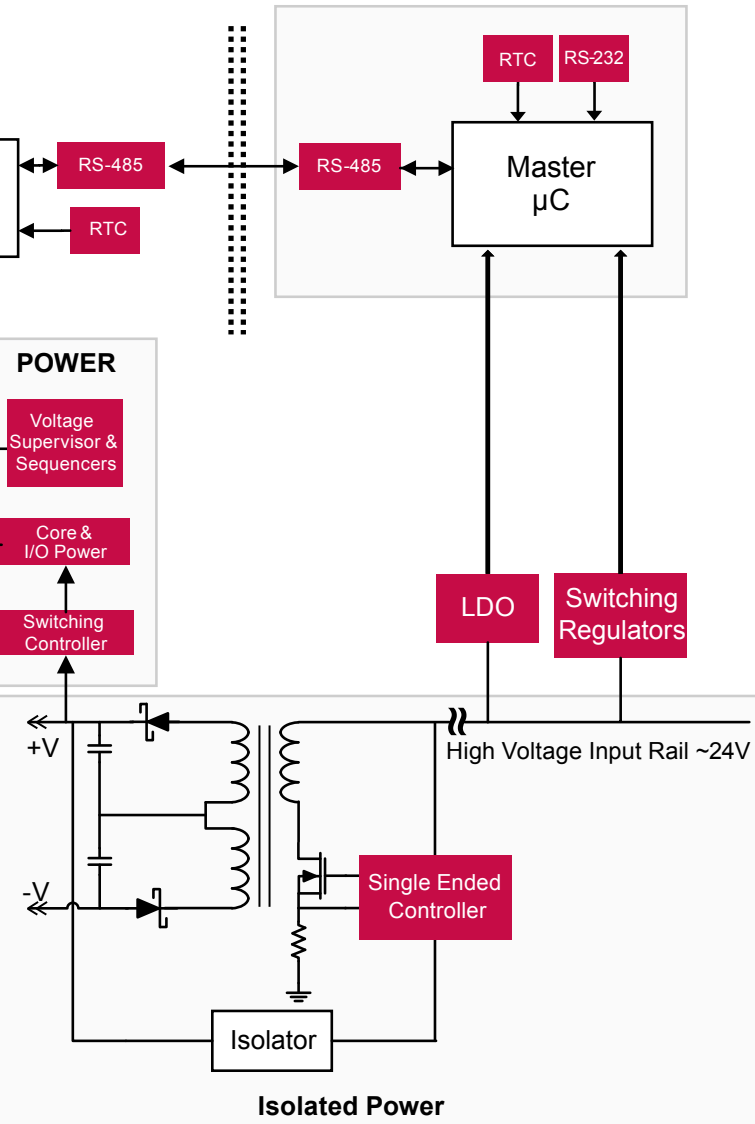
Intersil's Solutions for Industrial Process Control

Intersil Corporation is a global technology leader specializing in the design and manufacture of high performance analog semiconductors. Built on a solid foundation, with many years of analog experience, Intersil is committed to developing leadership solutions for the Industrial market. Over the past several years, Intersil has heavily invested and will continue to invest in robust technology capable of supporting the demanding requirements of the Industrial market. Intersil's proprietary 40V precision silicon-on-insulator (SOI) bipolar process technology, developed, specifically to target the Industrial market and the growing portfolio of leadership precision amplifiers, are excellent examples of this commitment.

Precision data acquisition solutions are required for a broad range of Industrial applications. Programmable logic controllers (PLC), distributed control systems (DCS), smart transmitters, and general-purpose data acquisition are used in the majority of these Industrial systems. These applications utilize various types of sensors and feedback mechanisms to monitor and control machine or system interactions by collecting, storing, and analyzing data. Sensor data acquisition involves precision measurement and processing of analog variables, such as voltages and currents, where there is a need to sense very small changes. Intersil's broad portfolio of analog, power and interface solutions makes it well positioned to deliver world class solutions to Industrial customers. In this solutions brochure, you will find outstanding solutions from Intersil for your current and future Industrial systems.

Typical Industrial Control Loop Block Diagram





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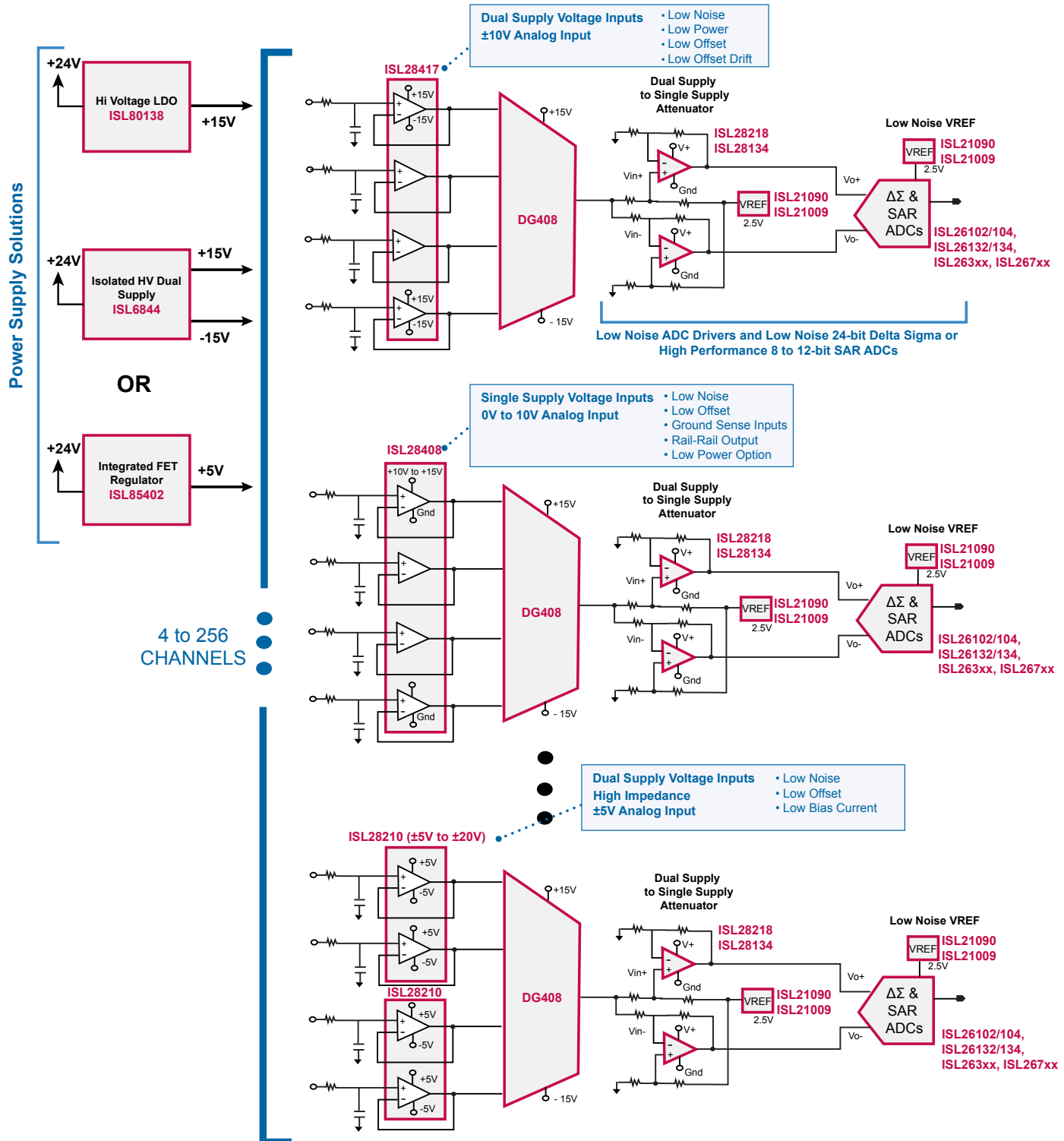
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PLC (Program Logic Controllers) Application

Analog Input	Analog Output	Control	Sensors	Power
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Mixed Signal High Voltage – Quad Op Amps to Delta Sigma & SAR ADCs



Analog Input	Analog Output	Control	Sensors	Power
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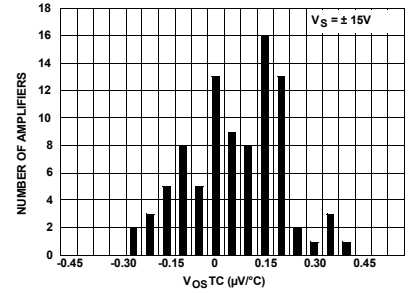
High Voltage Ultra Precision Op Amp: ISL28417

40V Quad, Low Power, Low Noise Precision Bipolar Op Amp

Key Features

- Low Input Offset..... $\pm 50\mu\text{V}$, Max
- Superb Offset TC..... $0.6\mu\text{V}/^\circ\text{C}$, Max
- Input Bias Current $\pm 1\text{nA}$, Max
- Input Bias Current TC..... $\pm 5\text{pA}/^\circ\text{C}$, Max
- Low Current Consumption $440\mu\text{A}$
- Voltage Noise $8\text{nV}/\sqrt{\text{Hz}}$
- Bandwidth 1.5MHz
- Wide Supply Range 4.5V to 40V
- Operating Temperature Range..... -40°C to $+125^\circ\text{C}$

Low Offset Drift of $0.6\mu\text{V}/^\circ\text{C}$ MAX



High Voltage Ultra Precision Op Amp: ISL28210

40V Dual Precision, Low Noise, JFET Op Amp

Key Features

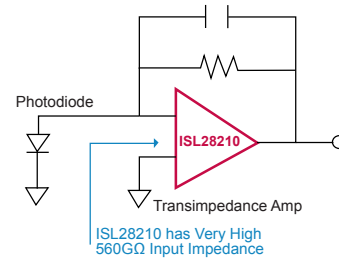
- Wide Supply Range 9V to 40V
- Low Voltage Noise $6\text{nV}/\sqrt{\text{Hz}}$
- Low Input Bias Current..... 2pA
- High Slew Rate $20\text{V}/\mu\text{s}$
- High Bandwidth..... 12.5MHz
- Low Input Offset..... $300\mu\text{V}$, Max
- Low Current Consumption 2.55mA
- Wide Tempe Range -40°C to $+125^\circ\text{C}$

Applications

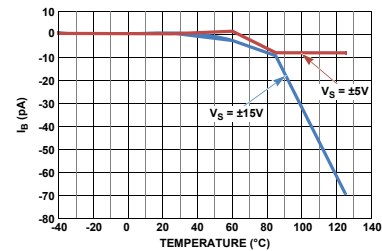
- High Impedance Buffers
- Medical Instrumentation
- Flow Sensor
- ATE/Test
- Data Acquisition

Very High Impedance

- ISL28210 is ideal for Flow Sensors and other high impedance applications.



Low Input Bias Current (2pA)



Part Number			Supply Voltage (V)		Rail-To-Rail		Vos Max @ 25°C	TCVos Typ	Ib Max @ 25°C	CMRR Min @ 25°C	PSRR Min @ 25°C	Av Min @ 25°C	Is Max @ 25°C	GBW	Slew Rate	Noise 0.1 to 10Hz	Voltage Noise @ 1kHz	Current Noise @ 1kHz
Single	Dual	Quad	Min	Max	In	Out	μV	$\mu\text{V}/^\circ\text{C}$	nA	dB	dB	dB	mA	MHz	V/ μs	μVpp	nV/ $\sqrt{\text{Hz}}$	fA/ $\sqrt{\text{Hz}}$
ISL28117B	ISL28217B	ISL28417B	4.5	40	No	No	50	0.14	1	120	120	129.5	0.53	1.5	0.5	0.25	8	100
ISL28127	ISL28227		4.5	40	No	No	70	0.1	10	115	115	120	2.8	10	3.6	0.085	2.5	400
ISL28107	ISL28207	ISL28407	4.5	40	No	No	75	0.1	0.3	115	115	129.5	0.29	1	0.32	0.34	13	53
ISL28117C	ISL28217C	ISL28417C	4.5	40	No	No	100	0.14	1	120	120	129.5	0.53	1.5	0.5	0.25	8	100
ISL28118	ISL28218		3	40	Single Supply	Yes	230	0.3	575	103	109	124.7	1.1	4	1.2	0.3	5.6	355
ISL28177			4.5	40	No	No	150	0.5	1	120	115	120	1.4	0.6	0.2	0.38	9.5	87
ISL28108	ISL28208	ISL28408	3	40	Single Supply	Yes	250	0.1	43	105	110	117	0.25	1.2	0.45	0.58	15.8	80
ISL28110	ISL28210		9	40	No	No	300	1	0.002	88	102	104	2.9	12.5	23	0.6	6	9

JFET Input

PLC

Analog Input	Analog Output	Control	Sensors	Power
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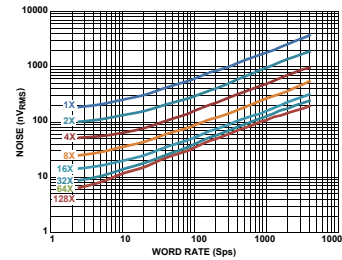
24-bit ADCs: ISL26102, ISL26104

Industry-Leading Noise Performance Up to 4000SPS with Full Firmware Programmability

Key Features

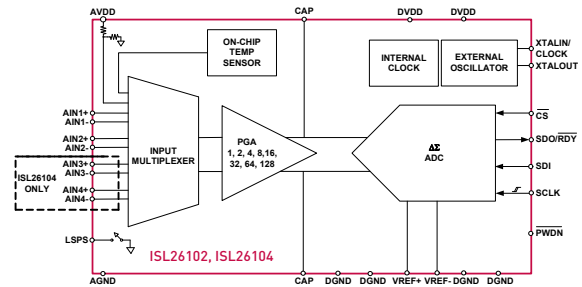
- Ultra-Low Noise: <7nV rms, 128x Gain, 2.5 sps
- Programmable Word Rate from 2.5 to 4000 sps
- Integrated 1-128x Programmable Gain Amplifier
- 2- and 4-channel Differential Input Multiplexer
- Low-side Power Switch Manages Load Cell Power
- Simultaneous 50/60Hz Noise Rejection
- Robust ESD Rating – 7.5kV HBM
- Extended Industrial Temperature Range [-40 to 105 °C]
- 24 / 28 Pin TSSOP Package
- Samples Available, Evaluation Board Coming Soon

Low Noise



Noise vs Gain and Word Rate Settings

Block Diagram



24-bit ADCs: ISL26132, ISL26134

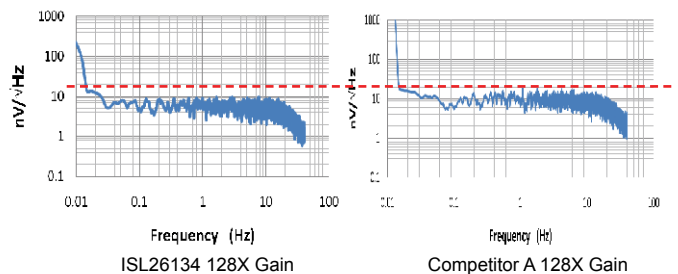
Easy to Use ADC with Superior Noise Performance at Low Cost

Key Features

- Drop-In Compatible with ADS1232/34
 - Improved Performance with no change in circuitry
- 10SPS, 80SPS Operation
- Best in Class Performance – 21.6 Bits noise-free (Gain = 1)
- Low Noise PGA with Buffer
- 2 & 4 Channel, Differential-input Multiplexer
- All Functions Pin-programmed
- Easy-to-Use SPI-compatible Serial Interface
- Robust ESD Rating – 7.5kV HBM
- Samples and Evaluation Board Available

Low Noise

- At 10SPS, 128x Gain ISL26134 noise is 8nV/√Hz
- Competitor A shows 10.2nV/√Hz



Device	Description	Resolution (Bits)	Conversion Rate (SPS)	Channels	INL (%FS)	Power (mW)	Analog Supply Voltage (V)	Digital Supply Voltage (V)	Package
ISL26102	Low-Noise 24-bit ADC	24	2.5 - 4000	2	0.0002%	50	5V	2.7V - 5V	24 Ld TSSOP
ISL26104	Low-Noise 24-bit ADC	24	2.5 - 4000	4	0.0002%	50	5V	2.7V - 5V	28 Ld TSSOP
ISL26132	Low-Noise, Low-cost 24-bit ADC	24	10, 80	2	0.0002%	50	5V	2.7V - 5V	24 Ld TSSOP
ISL26134	Low-Noise, Low-cost 24-bit ADC	24	10, 80	4	0.0002%	50	5V	2.7V - 5V	28 Ld TSSOP

Analog Input

Analog Output

Control

Sensors

Power



Single-Ended PWM Controller: ISL6844

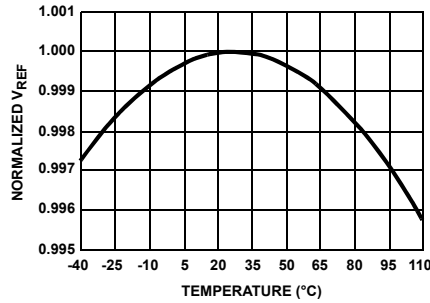
Single Ended Controller for Positive and Negative Isolated Supplies

Key Features

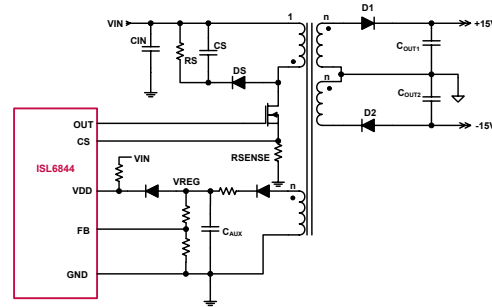
- Industry Improved. Pin Compatible to UCC38C4x and MIC384x Controllers
- 1A MOSFET Gate Driver
- 60µA Start-up Current, 100µA Maximum
- 25ns Propagation Delay Current Sense to Output
- Fast Transient Response with Peak Current Mode Control
- Adjustable Switching Frequency to 2MHz
- 20ns Rise and Fall Times with 1nF Output Load
- Trimmed Timing Capacitor Discharge Current for Accurate Deadtime/Maximum Duty Cycle Control
- Tight Tolerance Voltage Reference Over Line, Load, and Temperature
- Tight Tolerance Current Limit Threshold

Refer to application note AN1612 to generate ±15V positive and negative isolated supplies.

Tight Tolerance Voltage Reference Over Line, Load, and Temperature



Isolated HV Dual Power Supply



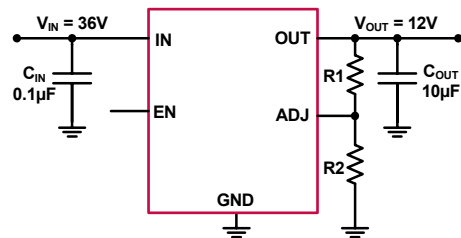
Linear Regulator: ISL80136, ISL80138

40V, Low Quiescent Current, 50mA/150mA Linear Regulator

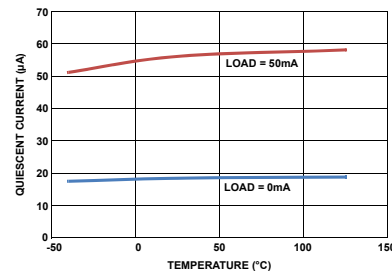
Key Features

- 18µA Typical Quiescent Current
- Guaranteed 50mA (ISL80136)/150mA (ISL80138) Output Current
- 1.8µA of Typical Shutdown Current
- Low Dropout Voltage of 120mV at 50mA
- Thermal Shutdown and Current Limit Protection
- -40°C to +125°C Operating Temperature Range
- Thermally Enhanced 8 Ld Exposed Pad SOIC and 14 Ld HTSOP Package
- 5kV ESD HBM Rated

High Input Voltage



Low Quiescent Current (Iq = 18µA)

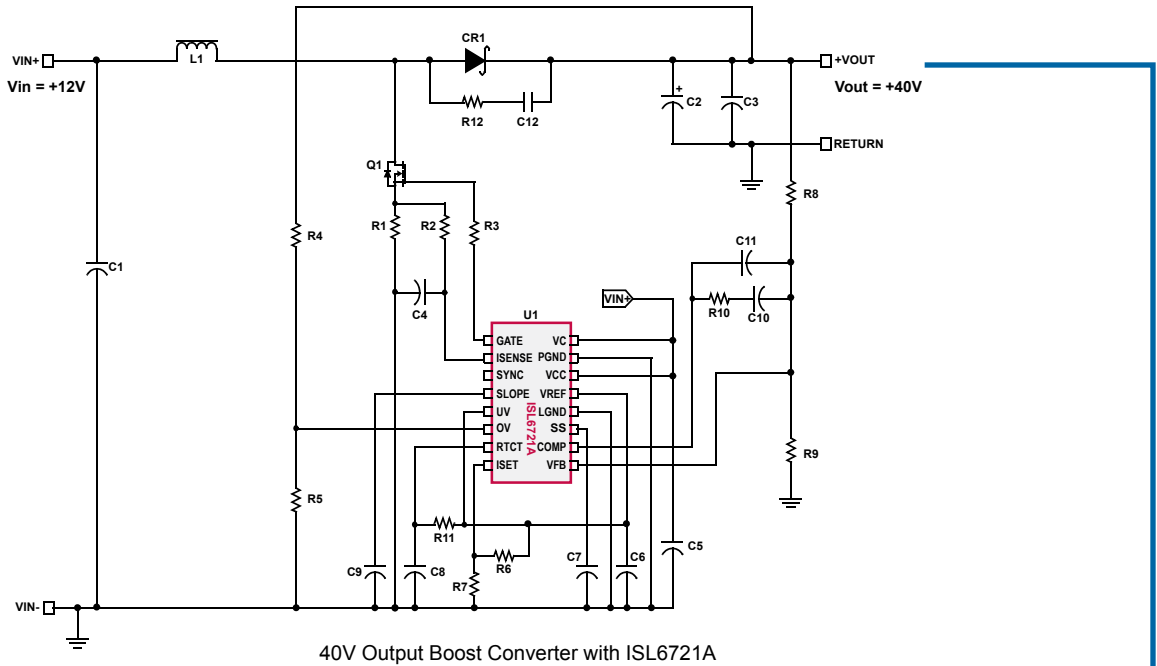


PLC

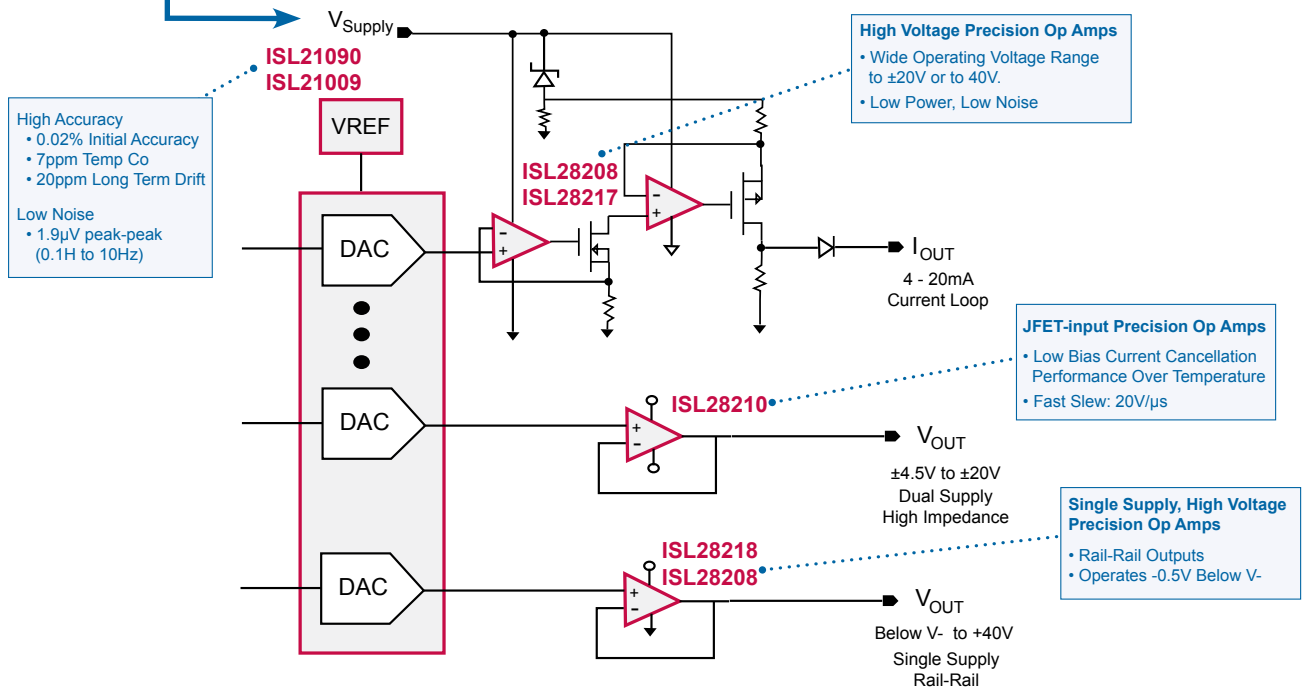
Analog Input	Analog Output	Control	Sensors	Power
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High Output Voltage and 0-20mA Current Loop

Power



Analog



Analog Input

Analog Output

Control

Sensors

Power

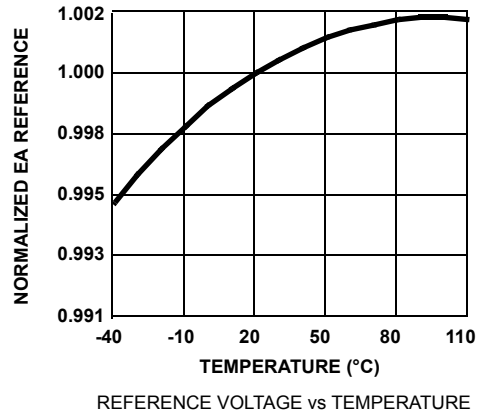
Single-Ended PWM Controller: ISL6721A

Flexible Single Ended Current Mode PWM Controller

Key Features

- 1A MOSFET Gate Driver
- 100µA Startup Current
- Fast Transient Response with Peak Current Mode Control
- Adjustable Switching Frequency up to 1MHz
- Bidirectional Synchronization
- Low Power Disable Mode
- Delayed Restart from OV and OC Shutdown Faults
- Adjustable Slope Compensation
- Adjustable Soft-start
- Adjustable Overcurrent Shutdown Delay
- Adjustable UV and OV Monitors

1 % Tolerance Voltage Reference Over Temperature



40V Precision Op Amp: ISL28208

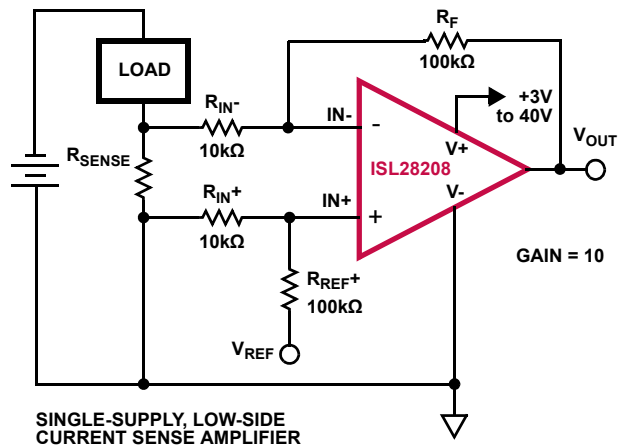
40V Precision, Low Power, Single Supply, RR0 Op Amp

Intersil's ISL28208 is a high voltage precision, low power op amp, featuring single power supply operation and rail-to-rail output to provide full output dynamic range to take full advantage of the ADC performance in precision applications without compromise.

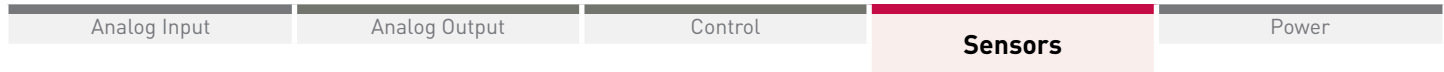
Key Features

- Wide Input Range
- Rail-to-Rail Output
- Single or Dual Supply Operating
- Low Power - 250µA max
- Precision
 - Low Offset Voltage: 230µV max
 - Low Drift: 0.1µV/°C typ
- Low Noise
 - 15.8nV/√Hz @ 1kHz
 - 80fA/√Hz @ 1kHz

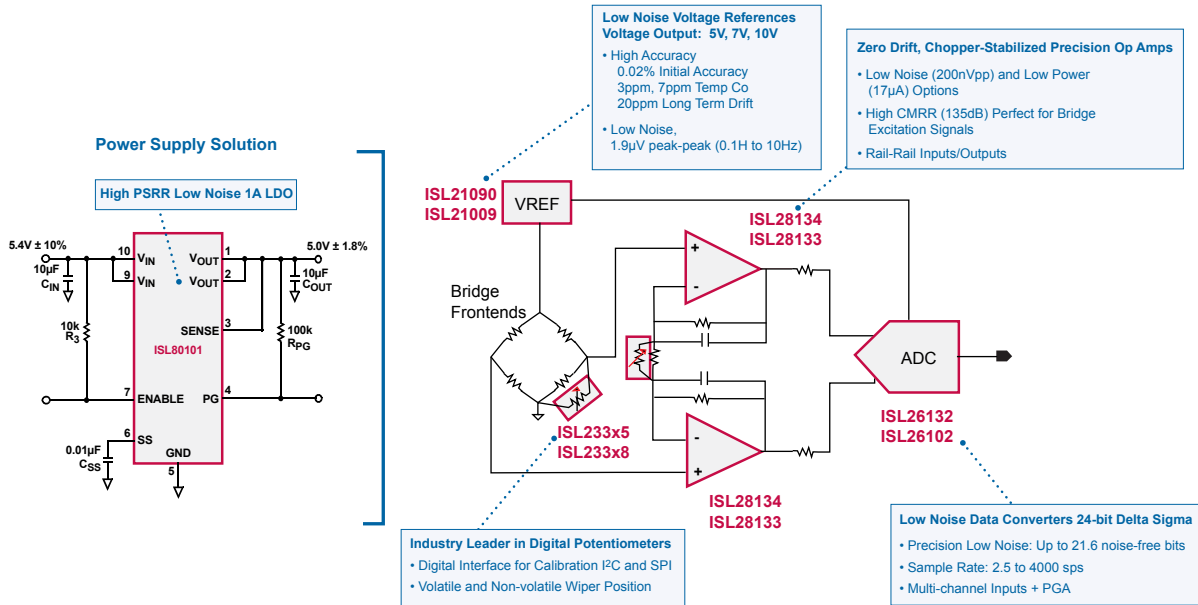
Typical Application Circuit



PLC

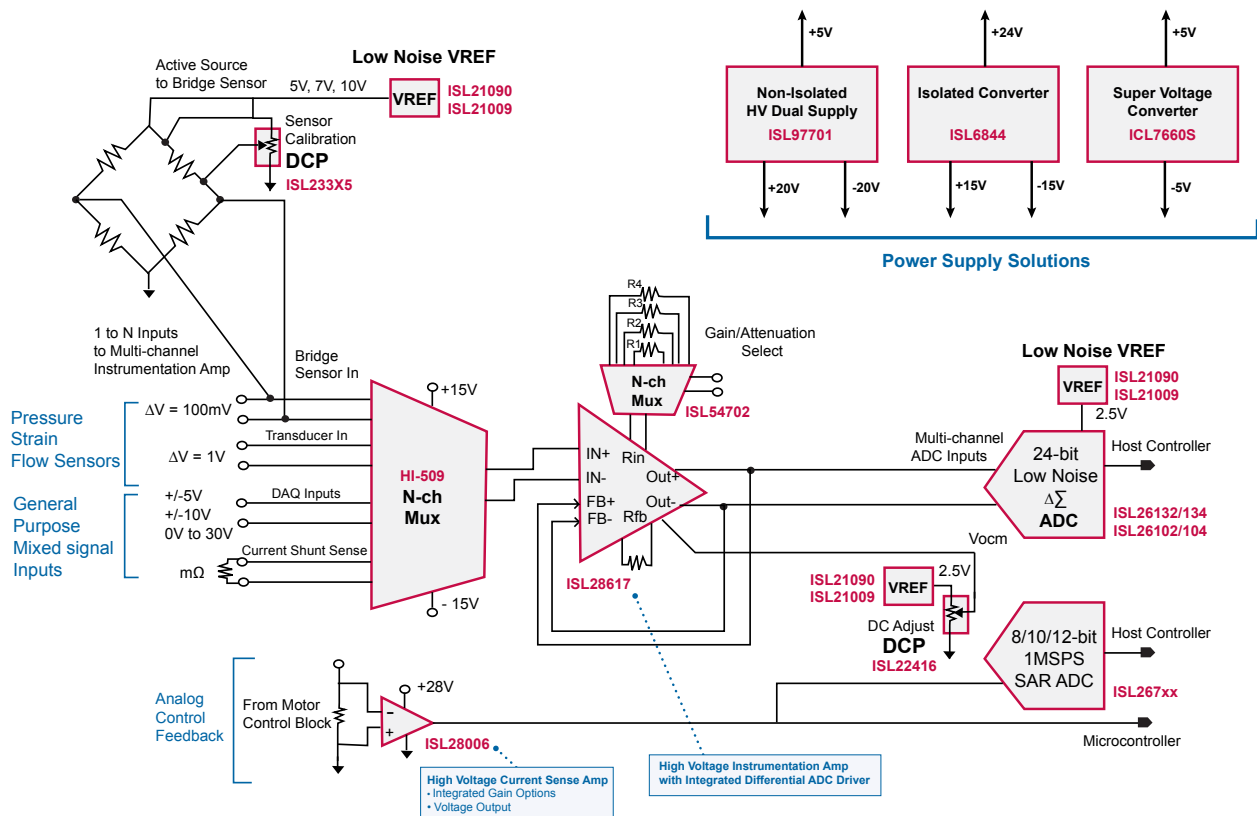


Low Noise Precision Sensor Chipset Solutions



High Voltage Bridge Sensor Signal Conditioning

Precision Sensor & Data Acquisition 24-Bit Low Noise, Analog Inputs To Digital Output



Analog Input

Analog Output

Control

Sensors

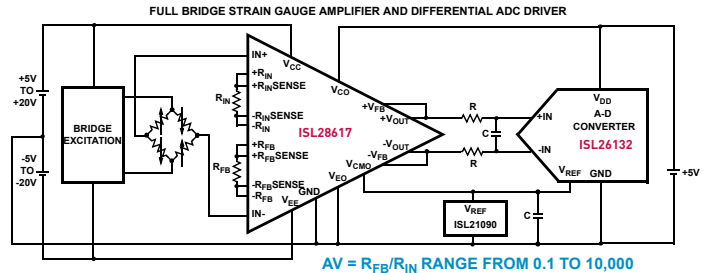
Power



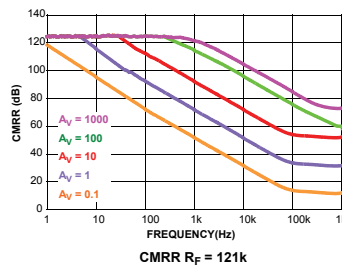
Instrumentation Amplifiers: ISL28617

40V Precision Instrumentation Amplifier with Differential ADC Driver

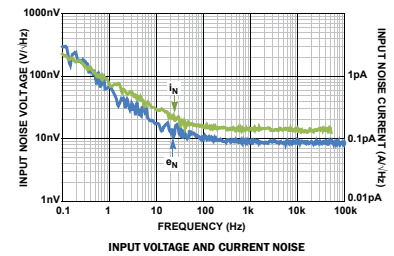
The ISL28617 is a high performance, differential input, differential output instrumentation amplifier designed for precision analog to digital applications. It can operate over a supply range of 8V (±4V) to 40V (±20V) and features a differential input voltage range up to ±34V. The output stage has rail-to-rail output drive capability optimized for differential ADC driver applications.



Excellent CMRR



Very Low Input Noise



Part Number	Supply Voltage (V)		Rail-To-Rail		Min Gain (V/V)	Vos Max @ 25°C	TCVos Typ	Ib Max @ 25°C	CMRR Min @ 25°C	PSRR Min @ 25°C	Gain Error Typ	Isc Typ	Is Max @ 25°C	-3dB BW	Slew Rate	Noise 0.1 to 10Hz	Voltage Noise @ 1kHz	Current Noise @ 1kHz	Temp Range
	Min	Max	In	Out		mV	µV/°C	nA	dB	dB	%	mA	mA	MHz	V/µs	µVpp	nV/√Hz	fA/√Hz	°C
ISL28617	8	40	No	Yes	0.1	0.1	0.5	1	130	123	0.0005	45	4.8	4	4	0.085	8.6	150	-40 to 125

PRECISION ANALOG COOKBOOK SENSOR SOLUTIONS

Precision Instrumentation Amplifier Solution Evaluation Platform (ISL28617VYXXEV1Z)



Precisely measuring very small signals in noisy environments is very challenging and most application solutions utilize high performance instrumentation amplifiers. Intersil's ISL28617 instrumentation amplifier provides the precision and high performance needed in most applications such as test and measurement, data acquisition, biomedical, and weigh scale applications. In addition, ISL28617 includes an integrated ADC driver for analog front end solutions.

ISL28617 Introduction

The ISL28617 is a high performance, differential input, differential output instrumentation amplifier designed for precision analog to digital applications. It can operate over a supply range of 8V (±4V) to 40V (±20V) and features a differential input voltage range up

to ±34V. The output stage has rail-to-rail output drive capability optimized for differential ADC driver applications.

The gain of the ISL28617 can be programmed from 0.1 to 10,000 via two external resistors, RIN and RFB. The gain accuracy is determined by the matching of RIN and RFB. The ISL28617 provides Kelvin sensing capability for the gain resistors, which removes gain error due to PC trace resistance. The input and output stages have individual power supply pins, which enable input signals riding on a high common mode voltage to be level shifted to a low voltage device, such as an A/D converter. The rail-to-rail output stage can be powered from the same supplies as the ADC, which preserves the ADC maximum input dynamic range and eliminates ADC input overdrive.

Key Components

- ISL28617** 40V Instrumentation Amplifier with Integrated ADC Driver
- ISL28617VYXXEV1Z** ISL28617 Evaluation Board
- FRSM** Vishay Foil Resistors – Surface Mount

For more information, refer to AN1753 "ISL28617VYXXEV1Z User's Guide".

PLC

Analog Input	Analog Output	Control	Sensors	Power
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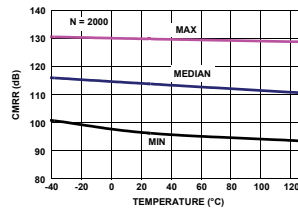
Instrumentation Amplifiers: EL817x, ISL2827x

Micro-power Instrumentation Amps

Key Features

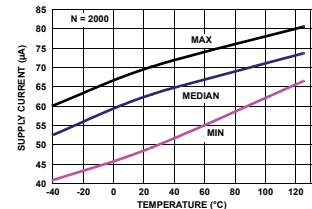
- Extremely Low Supply Currents
 - <156µA Max. Supply Current
- Single Supply 2.4V to 5.0V Operation
- Rail-to-rail Input and Output (RRIO)
 - Operate above and below the rails
 - Ground sensing option

Excellent CMRR



EL8170 CMRR vs TEMPERATURE, $V_{CM} = +2.5V$ TO $-2.5V$, $V_s, V_i = \pm 2.5V$

Low Supply Current



EL8170 SUPPLY CURRENT vs TEMPERATURE, $V_s, V_i = \pm 2.5V$, $V_{IN} = 0V$

Part Number	Supply Voltage (V)		Rail-To-Rail		Min Gain (V/V)	Vos Max @ 25°C (mV)	TCVos Typ (µV/°C)	Ib Max @ 25°C (nA)	CMRR Min @ 25°C (dB)	PSRR Min @ 25°C (dB)	Gain Error Typ (%)	Isc Typ (mA)	Is Max @ 25°C (µA)	-3dB BW @ Lowest Gain (kHz)	Slew Rate (V/µs)	Noise 0.1 to 10Hz (µVpp)	Voltage Noise @ 1kHz (nV/√Hz)	Current Noise @ 1kHz (fA/√Hz)	Temp Range (°C)	Package
	Min	Max	In	Out																
EL8170	2.4	5	Yes	Yes	100	0.2	0.24	3	90	85	0.35	26	95	450	0.55	3.5	58	380	-40 to 125	Single
EL8171	2.4	5	Yes	Yes	10	1.5	1.5	0.05	75	75	0.15	26	95	450	0.55	14	220	900	-40 to 125	Single
EL8172	2.4	5	Yes	Yes	100	0.3	0.14	0.05	75	75	0.2	26	95	170	0.55	10	80	200	-40 to 125	Single
EL8173	2.4	5	Yes	Yes	10	1	2.5	3	85	75	0.1	26	95	170	0.55	3.6	220	800	-40 to 125	Single



Current Sense Amplifiers: ISL28005, ISL28006

28V Micro-power, Precision High Side and Low Side Current Sense Amplifiers

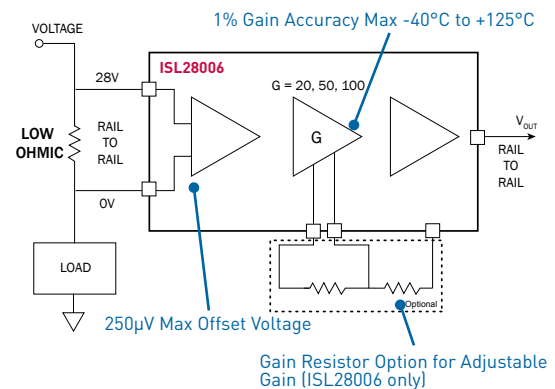
Key Features

- Supply Independent of Input
 - 2.7V to 28V Supply
 - 0V to 28V V_{CM}
- Max. 250µV Input V_{OS}
- Gain Accuracy Max:
 - 0.5% 25°C
- Four Gain Options
 - 20V/V, 50V/V, 100V/V, & ADJ
- -40°C to +125°C Operation

Applications

- Low Ohmic Shunt Sense
- Battery Management
- High-precision Voltage and Current Measurement
- Power Management in Communications, Networking, Industrial
- Computing and Display Power Management
- Alternative Energy (wind, power, solar)

Only 50µA Current Consumption



Part Number	Supply Voltage Range	Input Common Mode Range	Vos Max @ 25°C	Vos Max Temp	CMRR Min Temp	PSRR Min Temp	Gain Range	Gain Accuracy @ 25°C	Gain Accuracy Temp	Is Max @ 25°C	Is Max Temp	GBW	Temp Range	Package
	V	V	µV	µV	dB	dB	V/V	%	%	µA	µA	kHz	°C	
ISL28005	2.7 to 28	0 to 28	500	500	105	90	20, 50, 100	2	3	59	59	180	-40 to 125	SOT23
ISL28006	2.7 to 28	0 to 28	250	300	105	90	20, 50, 100, Adj (20-100)	0.7	1	62	62	180	-40 to 125	SOT23

Analog Input	Analog Output	Control	Sensors	Power
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Digital Potentiometer







Volatile DCP: ISL233x5, ISL234x5, ISL233x8, ISL234x8

World's Lowest Voltage, Volatile, DCP Family

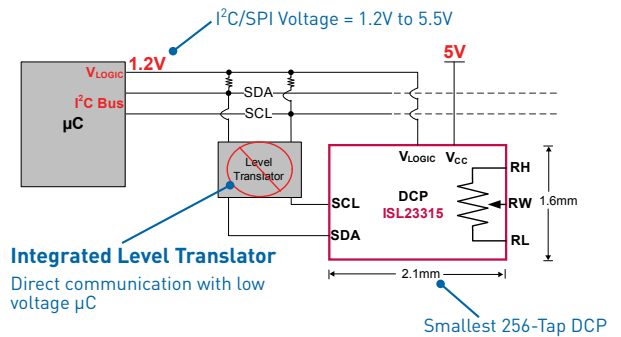
Lowest Voltage

Specification	Intersil	Competition	Benefit
Analog Voltage	1.7V to 5.5V	1.8V to 5.5V 2.7V to 5.5V	Operational when battery starts draining.
Digital Voltage	1.2V to 5.5V	Same as analog voltage, lowest is 1.8V	Eliminate level shifter for I ² C/SPI when μ C has low voltage I/O pins.
Low Current Consumption	2.5 μ A - 1CH 3 μ A - 2CH 5 μ A - 4CH	Up to 2x more power consumption	Drains up to 50% less battery power.

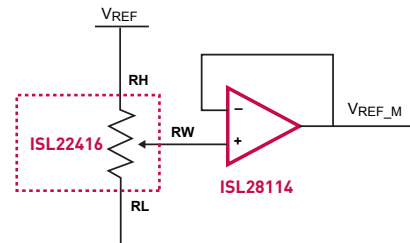
Smaller Package

Type	Part #	Intersil	Competition	Benefit
Single	ISL23315, ISL23415, ISL23318, ISL23418	 μ TQFN (2.1x1.6mm)	 SC-70 (2x2.1mm)	20% Smaller
Dual	ISL23325, ISL23425, ISL23328, ISL23428	 μ TQFN (2.6x1.8mm)	 QFN (4x4mm)	48% Smaller
Quad	ISL23345, ISL23445, ISL23348, ISL23448	 QFN (3x4mm)	 QFN (4x4mm)	25% Smaller

Integrated Level Translator



Vref Adjustment



Ultra Precision Vref: ISL21090

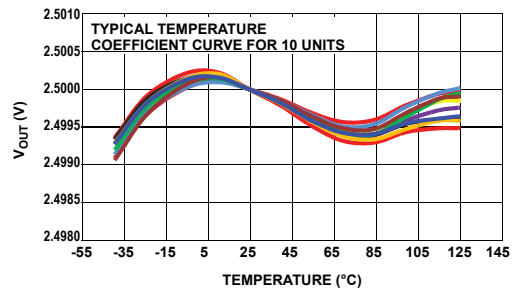
Ultra Low Noise, Precision Voltage Reference

Key Features

- 2.5V Reference Output Voltage Option
- Initial Accuracy: $\pm 0.02\%$
- Output Voltage Noise: 1 μ V_{P-P} Typ (0.1Hz to 10Hz) (1.25V Option)
- Supply Current: 930 μ A (Typ)
- Tempco: 7ppm/ $^{\circ}$ C Max
- Output Current Capability: 20mA
- Line Regulation: 8ppm/V
- Load Regulation: 2.5ppm/mA
- Operating Temperature Range: -40° C to $+125^{\circ}$ C

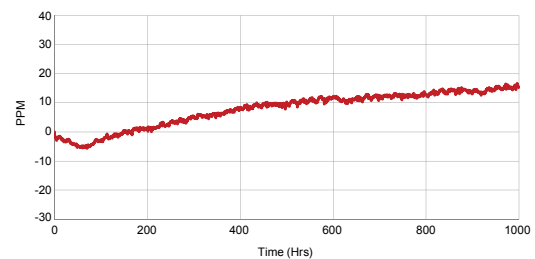
Device Number	Vout				I _{sy} Max (μA)	V _{sy} Max (V)	Noise Low Freq (μVp-p)	Noise High Freq (μVrms)	I _{out} Source (mA)	I _{out} Sink (mA)	Pkg
	1.25V	2.5V	5V	7.5V							
ISL21090B	X	X	X	X	1280	36	1.9	1.6	20	10	SOIC-8

Temperature Drift (Coefficient)



ISL21090 Typical Temperature Coefficient Curve

Long Term Drift




ISL21090 Long Term Drift Data (1000 Hrs)

PLC

Analog Input	Analog Output	Control	Sensors	Power
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Real Time Clock



RTC Modules with Embedded Crystal and Temp Comp: ISL12020M

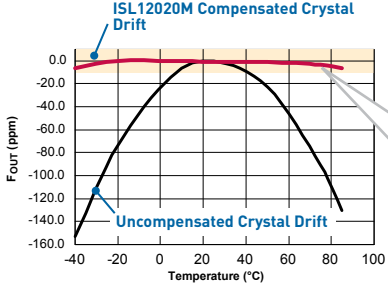
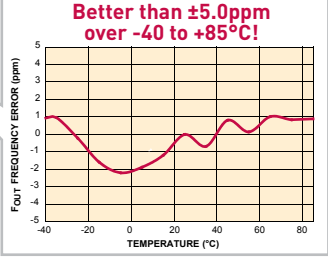
Extremely Small, 5ppm Accuracy RTC Module


With Integrated Crystal and Temperature Sensor for High Accuracy Applications

Key Features

- ±5ppm accuracy (-40° to +85°C)
 - Factory programmed for optimal accuracy
 - Onboard temperature sensor
 - Integrated crystal
- 5mm x 4.5mm DFN package: the smallest RTC of its type available (SOIC versions also available)
- Battery backup and power management
- Battery Interseal™ extends battery shelf life

High Accuracy Even in Extreme Temperature Conditions

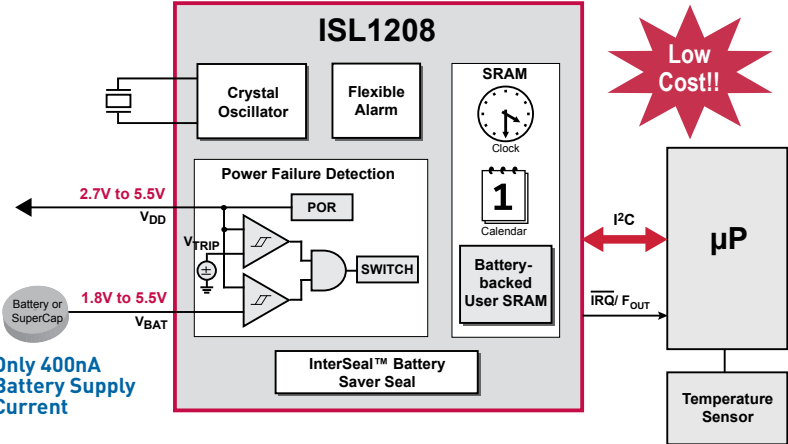


Low-Cost, Low-Power RTC: ISL1208

Full Featured RTC with Battery Backup and User SRAM

Key Features

- Fully featured RTC with time, day, and date registers
- Battery backup – only 400nA typical current draw
- Battery backed SRAM
- Available in 3mm x 3mm TDFN (or SOIC/MSOP)
- Battery Interseal™ extends battery shelf life

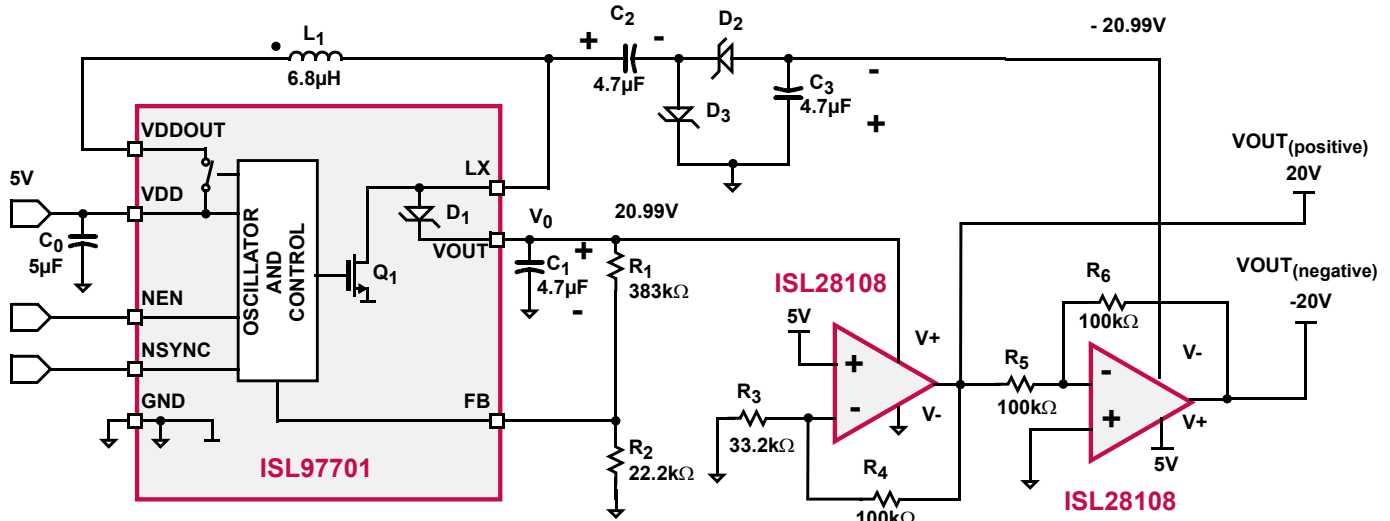


★ Low Cost!!

Device	I _{BAT} (nA)	Alarms	Selectable Frequency Output	CPU Supervisory Function		Battery		IRQ	F _{OUT}	SRAM	Other Functions	Package
				POR	Watchdog Timer	Seal	Backup					
With Battery Backed SRAM												
ISL1208	400	1	15	N	N	Y	Y	Shared Pin		2 Bytes		8 Ld MSOP, 8 Ld SOIC, 8 Ld TDFN
ISL1218	400	1	15	N	N	Y	Y	Shared Pin		8 Bytes		8 Ld MSOP, 8 Ld SOIC
ISL1220	400	1	15	N	N	Y	Y	Dedicated Pin	Dedicated Pin	8 Bytes		10 Ld MSOP
With IRQs, Alarm and Timer (Low cost alternative without VBAT)												
ISL12057	400	2	4	N	N	N	N	Shared Pin		N	• 3V operation	8 Ld SOIC, 8 Ld MSOP, 8 Ld TDFN
ISL12058	400	2	4	N	N	N	N	Shared Pin		N	• 3V operation	8 Ld SOIC, 8 Ld MSOP, 8 Ld TDFN, 8 Ld µTDFN

Analog Input	Analog Output	Control	Sensors	Power
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HV Dual Supply Power Solution



For more information, refer to AN1673 “Application Circuit to generate Positive and Negative Supplies Using ISL97701 Boost Regulator”.

Integrated FET Regulator: ISL97701

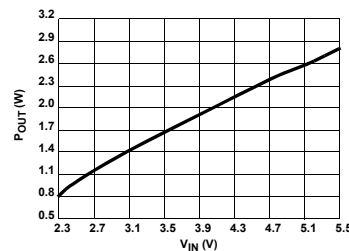
Boost Regulator for Positive and Negative Supplies

Key Features

- Up to 87% Efficiency
- 2.3V to 5.5V Input
- Up to 28V Output
- Integrated Boost Schottky Diode
- Input Voltage Disconnect Switch for Micro Power Shutdown
- Synchronization Input
- 10 Ld 3x3 DFN Package
- Pb-free (RoHS Compliant)
- Up to 2.5W Output Power

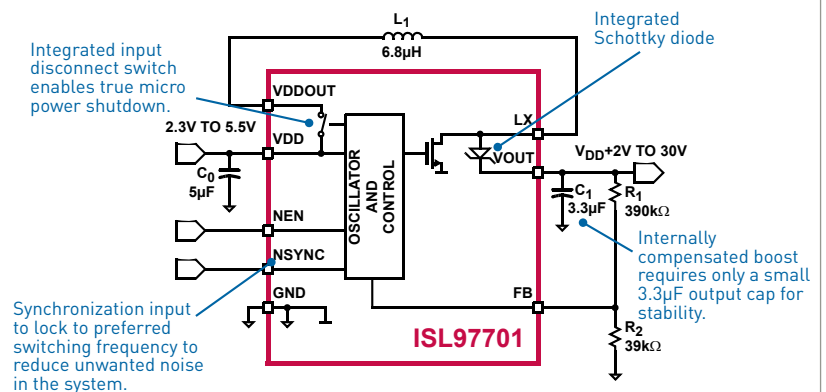
Refer to application note AN1673 “Application Circuit to Generate Plus and Minus Supplies Using the ISL97701 Boost Regulator”.

Up to 2.5W Output Power Delivered in a 3x3mm TDFN Package



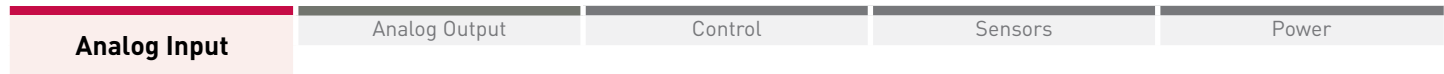
RECOMMENDED MAXIMUM OUTPUT POWER vs INPUT VOLTAGE

Highly Integrated Design Reduces External Components

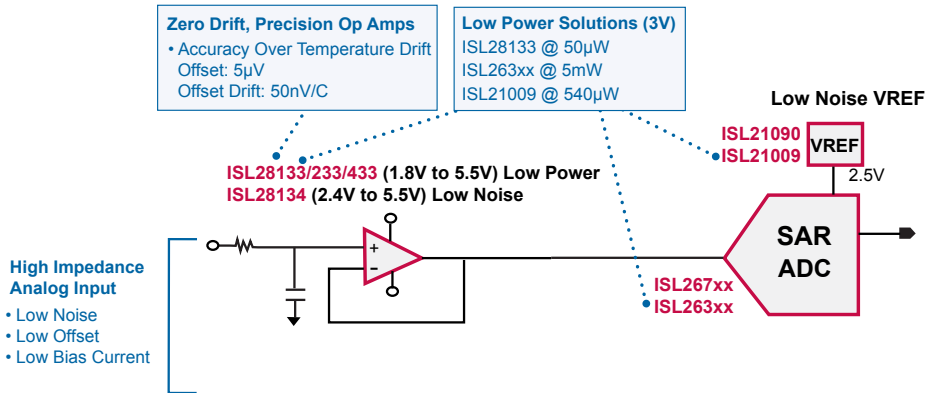
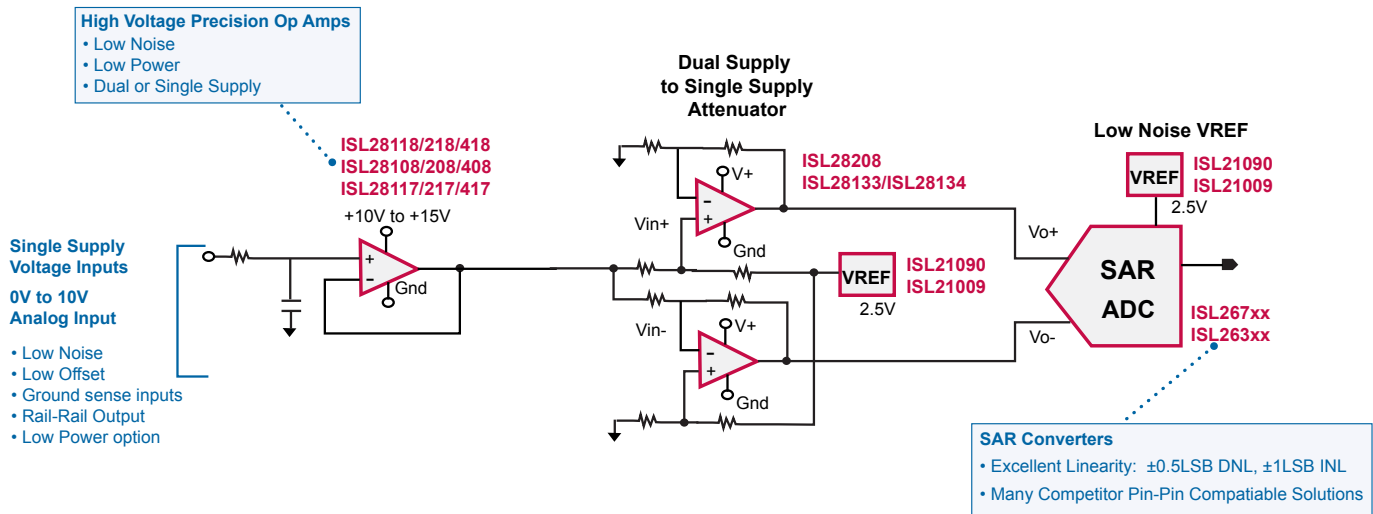
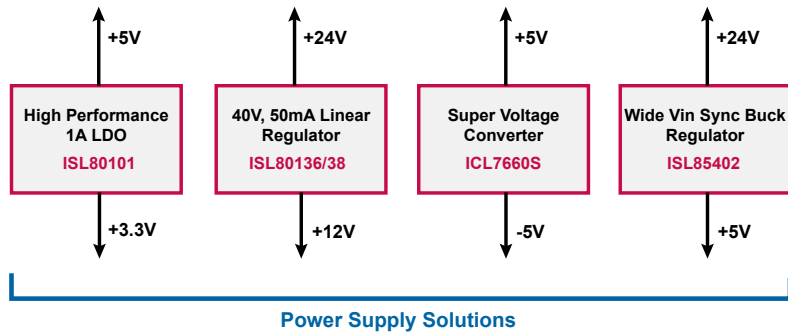


NOTE: $V_{OUT} = (390k + 39k)/39k * 1.15V = 12.65V$

DCS (Distributed Control Systems) Application



High Voltage and Low Voltage, Low Power Solutions For Distributed Control Systems



Analog Input

Analog Output

Control

Sensors

Power

8, 10, 12 bit, 20kSPS – 1MSP SAR A/D Converter Family: ISL267xx

A Perfect SAR A/D Converter for Low-Cost Industrial Applications

The new ISL267xx family of 1MSPS SAR ADCs offer users of popular single-channel 10 and 12-bit ADCs from ADI and TI a 100% compatibility drop-in alternative, featuring improved performance with a rugged 8kV ESD rating and a competitive price, in all popular 8-lead packages. This family also includes proprietary 8, 10, and 12-bit devices in industry-leading microTDFN packages, resulting in a unique combination of performance and compact size.

Key Features

- Upgrade to Popular ADI, TI Products
- 100% Drop-In Compatible with Performance Equal or Better Than Highest Grades
- 10 and 12-bit Resolution
- All Single-Channel Inputs
- 20kSPS to 1MSPS Conversion Rates
- Robust Design for Industrial Applications with 8kV ESD Rating
- Popular 8-lead MSOP, SOIC, and SOT-23 Packages
- Specified for Operation Over Industrial Temperature Range (-40°C-85°C)
- Competitively Priced
 - 1K resale \$3.99, 16% lower than competitors*
- Also Proprietary 8, 10, 12-bit 1MSPS Devices in 3x3mm μ TDFN

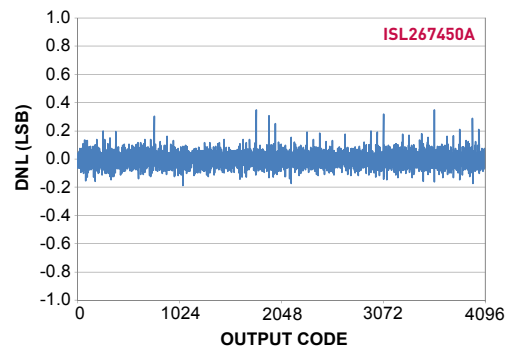
* at time of publication

Ultra Small Package

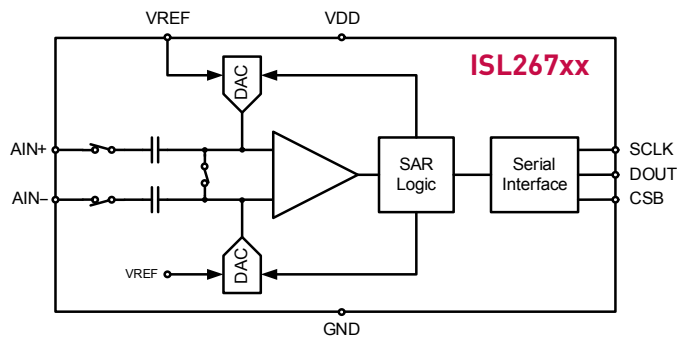
- 3x3mm 8 Ld μ TDFN



Superior ± 0.3 LSB (typ) Differential Non-Linearity



Block Diagram



Intersil P/N	Competitor's P/N	Resolution (bits)	Conversion Rate (kSPS)	Packages (all 8 lead)
ISL267440	AD7440 (ADI)	10	1000	SOT-23, MSOP
ISL267450	AD7450 (ADI)	12	1000	SOIC, MSOP
ISL267450A	AD7450A (ADI)	12	1000	SOT-23, MSOP
ISL267452	AD7452 (ADI)	12	555	SOT-23
ISL2671286	ADS1286 (TI)	12	20	SOIC
ISL267817	ADS7817 (TI)	12	200	SOIC, MSOP
ISL26708	Upgrade	8	1000	3x3 μ TDFN, SOT-23
ISL26710	Upgrade	10	1000	3x3 μ TDFN, SOT-23
ISL26712	Upgrade	12	1000	3x3 μ TDFN, SOT-23

DCS

Analog Input	Analog Output	Control	Sensors	Power
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12-bit, 125kSPS – 250kSPS SAR: ISL2631x, ISL2632x

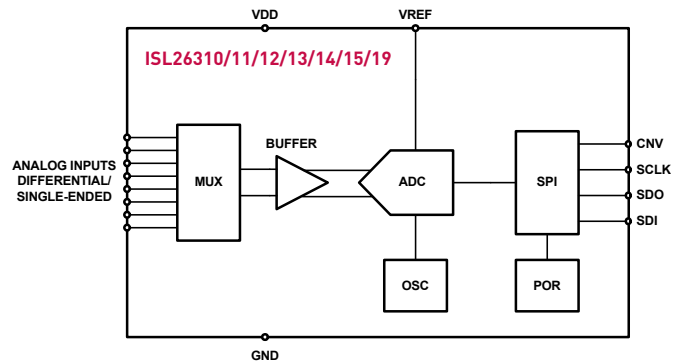
Easy to Use, Cost Effective SAR ADCs with 1, 2, 4, and 8-channel Inputs

The new ISL263xx family of multichannel-input SAR ADCs from Intersil offer a new level of cost-effectiveness and ease of use for all types of Industrial Process Control, Instrumentation, and related measurement applications. Input buffers that simplify input drive requirements and pin-compatibility across the entire product family make the family easy to design, and re-use across multiple platforms and product families.

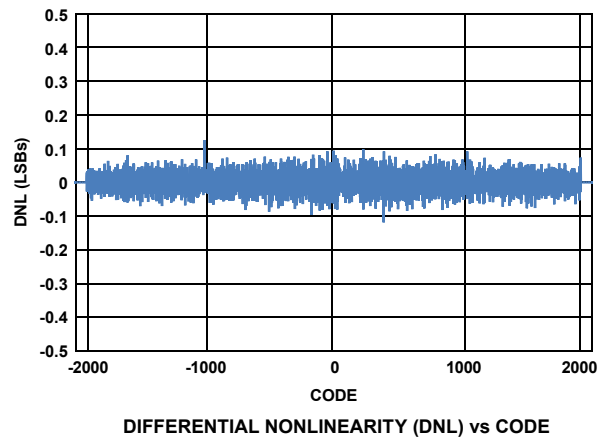
Key Features

- Single, 2, 4, and 8-channel Multiplexed Inputs
- Single-Ended and Differential Input Versions
- Excellent Linearity: +/- 0.7LSB DNL, +/-0.7LSB INL at 12 bits (max)
- Buffered Inputs Ease Input Drive Requirements, Reduce Solution Cost
- Pin-compatible Family Simplifies Re-use of Proven Designs
- Robust 5kV ESD Rating Perfect for Industrial Environments
- SPI Interface Connects to Popular Micros and FPGAs
- Specified for 2.7V to 5.5V Operation - Only 8mW at 3V
- Popular TSSOP and SOIC Packages
- Competitively Priced

Highly Integrated



Superior Linearity Specifications



	Single channel		2-channel		4-channel		8-channel
	Differential	Single-Ended	Differential	Single-ended	Differential	Single-ended	Single-ended
	8L SOIC	8L SOIC	16L TSSOP	8L SOIC	16L TSSOP	16L TSSOP	16L TSSOP
125ksps	ISL26310FBZ	ISL26311FBZ	ISL26312FVZ	ISL26313FBZ	ISL26314FVZ	ISL26315FVZ	ISL26319FVZ
250ksps	ISL26320FBZ	ISL26321FBZ	ISL26322FVZ	ISL26323FBZ	ISL26324FVZ	ISL26325FVZ	ISL26329FVZ

Analog Input	Analog Output	Control	Sensors	Power
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Integrated FET Regulator: ISL85402

Wide V_{IN} Range (3V-36V) 2.5A Regulator

Features integrated High Side MOSFET for Sync-Buck or Boost-Buck Converter Design

The ISL85402 is a sync buck controller with a 125mΩ high-side MOSFET and low-side driver integrated. The ISL85402 supports a wide input voltage range from 3V to 36V with an output current capability of 2.5A for 5V V_{OUT} , V_{IN} range of 8V to 30V, 500kHz, +85°C ambient.

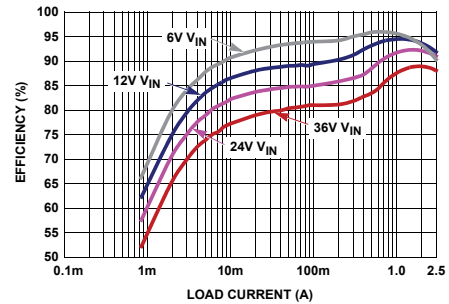
The low-side driver can also be used to drive a boost converter as a pre-regulator followed by a buck controlled by the same IC.

Key Features

- Ultra Wide Input Voltage Range 3V to 36V
- Forced PWM / Selectable PFM with Programmable Boundary
- Less than 3µA Standby Input Current
- Operational Topologies: Synchronous Buck / Non-Synchronous Buck / Two-Stage Boost Buck
- Programmable Frequency from 200kHz to 2.2MHz with Sync Capability

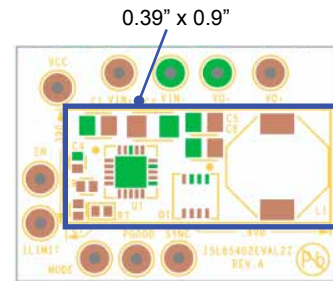
High Efficiency

Flat efficiency curve over a wide load range in PWM mode.



Efficiency, Synchronous Buck, PFM Mode, -Vout 5V, Ta = +25°C

Small Solution Size 0.39" x 0.9"



Top Components

Integrated FET Switching Regulators

Device	V_{IN} (Min) (V)	V_{IN} (Max) (V)	V_{OUT} (Min) (V)	V_{OUT} (Max) (V)	I_{OUT} (Max) (A)	I_Q (µA)	Switching Frequency (MHz)	Peak Efficiency (%)	POR/PGOOD	Package
Single Output										
ISL9104A	2.7	6	0.8	V_{IN}	0.5	32	4.3	93	N	6 Ld µTDFN
ISL8009A	2.7	5.5	0.8	V_{IN}	1.5	17	1.6	95	Y	8 Ld DFN
ISL8012	2.7	5.5	0.8	V_{IN}	2	40	1	95	Y	10 Ld DFN
ISL8023	2.7	6	0.6	V_{IN}	3	50	0.5 to 4	95	Y	16 LD TQFN
ISL8024	2.7	6	0.6	V_{IN}	4	50	0.5 to 4	95	Y	16 LD TQFN
ISL8016	2.7	5.5	0.6	V_{IN}	6	50	0.5 to 4	97	Y	20 Ld QFN
Multiple Output										
ISL8022	2.8	5.5	0.6	V_{IN}	2.0/1.7	40	2.25	97	Y	12 Ld DFN
ISL8033	2.85	6	0.6	V_{IN}	3/3	15000	2.25	97	Y	24 Ld QFN
ISL8088	2.75	5.5	0.6	V_{IN}	0.8/0.8	30	2.25	96	Y	10 Ld DFN
ISL85033	4.5	28	0.8	V_{IN}	3/3	1200	0.3 to 2	92	Y	28 Ld TQFN
ISL85402	3	36	0.8	$V_{IN} * D_{max} - V_{drop}$	2.5	300	0.2 to 2.2	96	Y	20 Ld QFN

DCS

Analog Input	Analog Output	Control	Sensors	Power
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RS-485/422

RS-485/RS-422 Transceivers: ISL315xE, ISL317xE

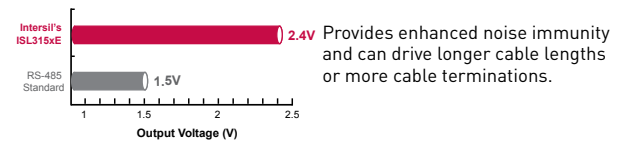
RS-485/RS-422 Family of Transceivers with the Highest Noise Immunity and ESD Protection in Small Packages

Key Features

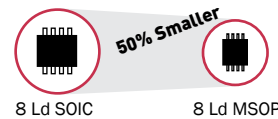
- 60% Higher Output Voltage. 2.4V min vs. typical 1.5V min
- IEC61000 ESD Protected I/O Pins
- True 1/8 Unit Load

Enhanced Noise Immunity

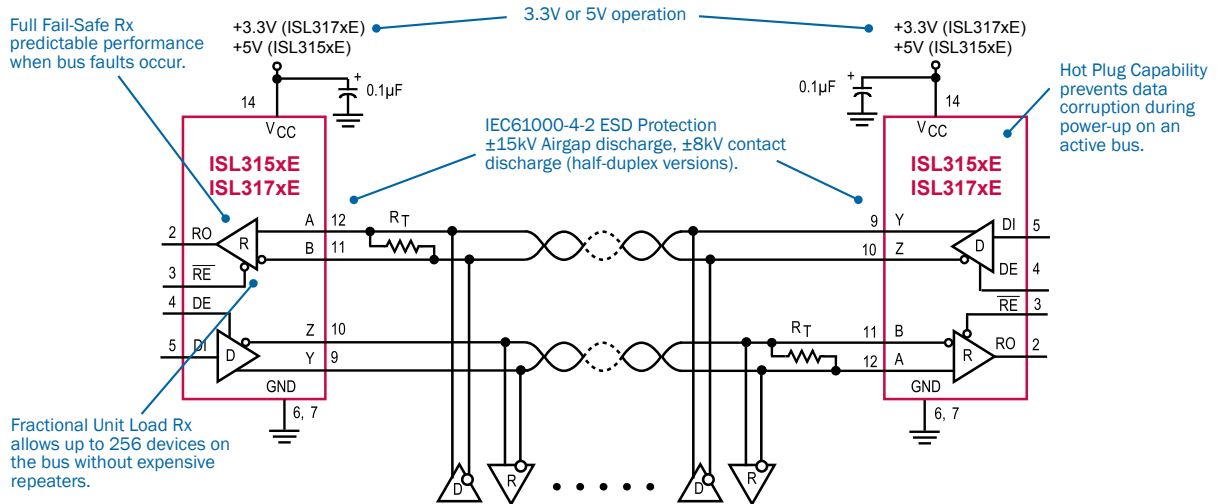
60% Higher Output Voltage (ISL315xE)



Space-saving Small Package



Typical Operating Circuit



3V-5.5V RS-485/RS-422 Transceivers with Fractional UL, 15kV ESD, Full Failsafe

Device	Devices Allowed on Bus	Half/Full Duplex	Data Rate (Mbps)	I _s EN/DIS (μA)	SHDN I _{cc} (μA)	V _{cc} Range (+V)	Package
5V							
ISL3150E	256	Full	0.115	800/700	0.07	4.5 to 5.5	10 Ld MSOP, 14 Ld SOIC
ISL3152E	256	Half	0.115	800/700	0.07	4.5 to 5.5	8 Ld MSOP, 8 Ld PDIP, 8 Ld SOIC
ISL3153E	256	Full	1	800/700	0.07	4.5 to 5.5	10 Ld MSOP, 14 Ld SOIC
ISL3155E	256	Half	1	800/700	0.07	4.5 to 5.5	8 Ld MSOP, 8 Ld SOIC
ISL3156E	256	Full	20	800/700	0.07	4.5 to 5.5	10 Ld MSOP, 14 Ld SOIC
ISL3158E	256	Half	20	800/700	0.07	4.5 to 5.5	8 Ld MSOP, 8 Ld SOIC
3.3V							
ISL3170E	256	Full	0.25	510/480	0.01	3.0 to 3.6	10 Ld MSOP, 14 Ld SOIC
ISL3172E	256	Half	0.25	510/480	0.01	3.0 to 3.6	8 Ld MSOP, 8 Ld SOIC
ISL3173E	256	Full	0.5	510/480	0.01	3.0 to 3.6	10 Ld MSOP, 14 Ld SOIC
ISL3175E	256	Half	0.5	510/480	0.01	3.0 to 3.6	8 Ld MSOP, 8 Ld SOIC
ISL3176E	256	Full	20	510/480	0.01	3.0 to 3.6	10 Ld MSOP, 14 Ld SOIC
ISL3178E	256	Half	20	510/480	0.01	3.0 to 3.6	8 Ld MSOP, 8 Ld SOIC

The ISL3260x/1x RS-485/422 operate at the industry's lowest supply voltage, 1.8V, while drawing very little power. Designers can easily meet strict power budgets for battery and remote sensing applications.

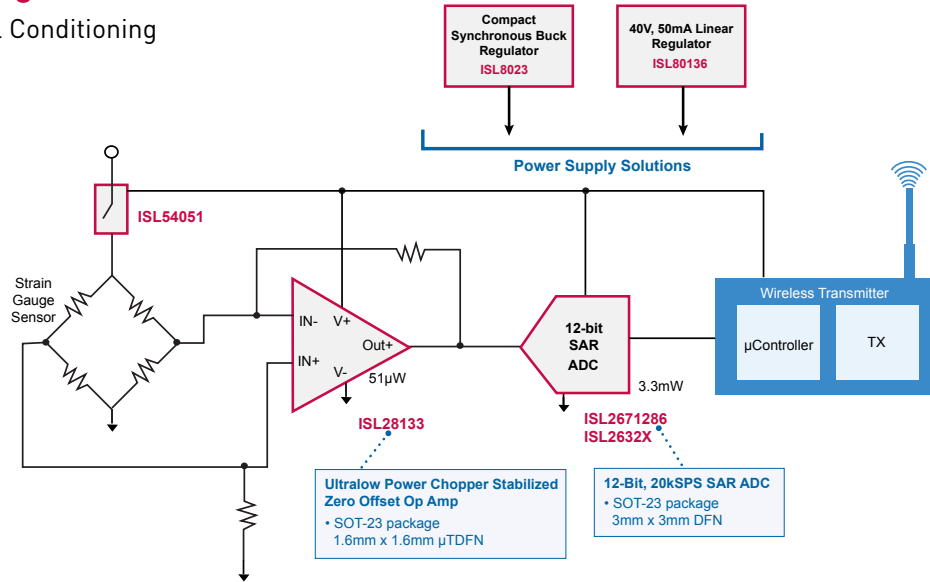
1.8V RS-485/422 Tx, Rx, and Transceivers with Ultra Low Supply Current for Remote or Solar Powered Sensor Communication

Part Number	Tx	Rx	Supply Range	Data Rate kbps	I _{cc} (μA) max	Shut-down Current (μA) max	ESD rating	Pkg
ISL32610E	0	1	1.8-3.6V	256/500	110	N/A	IEC61000	SOT23
ISL32611E	0	1	1.8-3.6V	256/500	110	7	IEC61000	SOT23
ISL32612E	0	1	1.8-3.6V	256/500	110	7	IEC61000	SOT23
ISL32613E	1	0	1.8-3.6V	256/500	80	2	IEC61000	SOT23
ISL32614E	1	0	1.8-3.6V	256/500	80	2	IEC61000	SOT23
ISL3260xE	1	1	1.8-3.6V	128/460	85	1	IEC61000	SOIC/MSOP

Analog Input | Analog Output | Control | **Sensors** | Power

Wireless Strain Gauge Sensor

Low Power Analog Signal Conditioning



5V Op Amps: ISL28233, ISL28433

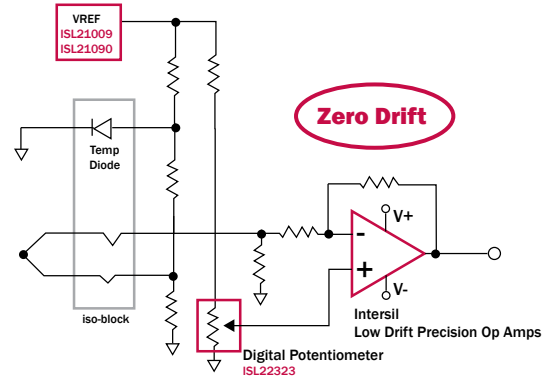
Micropower, Chopper Stabilized, RRIO Operational Amplifiers

The ISL28233 and ISL28433 are dual and quad micropower, chopper stabilized operational amplifiers that are optimized for single and dual supply operation from 1.8V to 6.0V. Their low supply current of 18µA and wide input range enable the ISL28233, ISL28433 to be excellent general purpose op amps for a wide range of applications.

Key Features

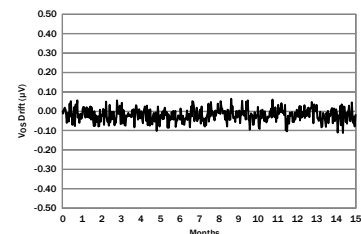
- Low Input Offset Voltage: 6µV, Max.
- Low Offset Drift: 0.05µV/°C, Max.
- Input Bias Current: 180pA, Max.
- Noise (0.01Hz to 10Hz): 1.0µV_{P-P}, Typ.
- Quiescent Current (per amp): 8µA, Typ.
- Single Supply Range: 65V to +6.0V
- Temperature Range: -40°C to +125°C
- Rail-to-Rail Inputs and Output

Zero Drift



Typical Application Circuit - Temperature Measurement

Best in Class Performance for Precision and Drift



Long Term V_{OS} Drift

Part Number			Supply Voltage (V)		Rail-To-Rail		V_{OS} Max @ 25°C	TC V_{OS} Max	I_b Max @ 25°C	CMRR Min @ 25°C	PSRR Min @ 25°C	I_s Max @ 25°C	GBW	Slew Rate	Noise 0.1 to 10Hz	Voltage Noise @ 1kHz	Package		
Single	Dual	Quad	Min	Max	In	Out	µV	µV/°C	nA	dB	dB	mA	MHz	V/µs	µVpp	nV/√Hz	Single	Dual	Quad
ISL28133*	ISL28233	ISL28433	1.8	5.5	Yes	Yes	6	0.05	0.18	118	110	0.025	0.4	0.2	1	65	SC70, SOT23, TDFN	MSOP, SOIC, TDFN	SOIC, TSSOP, TDFN

*Some specifications will differ, please check data sheet for actual parameters and/or conditions

DCS

Analog Input	Analog Output	Control	Sensors	Power
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PRECISION ANALOG COOKBOOK SENSOR SOLUTIONS

Intersil's Precision Temperature and Strain Gauge Analog Front End with Renesas Microcontroller

Precisely measuring signals from sensors in noisy environments is very challenging. A solution is to utilize a high performance analog front end (AFE) to signal condition the sensor signal before being processed by a microcontroller. The "Intersil & Renesas Thermocouple and Strain Gauge Reference Design" illustrates two sensor applications using Intersil's precision and power products coupled with the Renesas RL78/G13 microprocessor. The demo platform consists of two separate boards attached by a PMOD connector. Figure 1 shows the evaluation platform. The red PC-board is the Intersil precision and power products application board. The blue PC-board is the Renesas RL78/G13 Demonstration Kit (RDKit). Please refer to App Note AN1791 for details.



The entire demo is powered from a debugger mini USB connection (or an optional 5V power supply) located on the Renesas RL78/G13 Demonstration

Kit. The +12V, +10V, and ±5V supplies on the Intersil board are generated from the 3.3V supply on the Renesas board. The power supply design uses Intersil's ICL7660 voltage converter, ISL80138 linear regulator and ISL97516 step-up regulator.

The thermocouple temperature or applied strain is monitored on the LCD screen located on the Renesas board. The display will show real time data in either numerical or a graphical representation of the temperature or strain measurement.

Key Components

Pressure/Strain	
ISL28617	40V Instrumentation Amplifier with Integrated ADC Driver
ISL21090	Low Noise Precision Voltage Reference
ISL26102	Two-Channel, Low Noise, 24-bit ΔΣ ADC
Thermocouple	
ISL28134	5V, Low Noise, Zero-Drift Op Amp
ISL26102	Two-Channel, Low Noise, 24-bit ΔΣ ADC
ISL21090	Low Noise Precision Voltage Reference
ISL22137	Digital Controlled Potentiometer
Power	
ICL7660	CMOS Voltage Converters
ISL97516	600kHz/1.2MHz PWM Step-Up Regulator
ISL80138	40V, Low Quiescent Current, 150mA Linear Regulator
Microcontroller	
RL78/G13	Low Power Microcontroller



► For more information, visit www.intersil.com **Renesas RL78**

Thermocouple DAQ on a USB Stick Reference Design with Atmel MCU

The "DAQ on a Stick, Atmel Thermocouple" is the first of a series of reference designs highlighting Intersil's precision products with different microcontrollers. This reference design is a self contained demo showing a complete signal chain solution using Intersil parts and an Atmel microprocessor. The complete reference design is conveniently housed in a USB stick form factor. This compact design enables the user to power the application through the USB port and monitor the temperature through the GUI interface on a computer. Figure 1 shows the Data Acquisition on a Stick reference design with the thermocouple attached.



Figure 1. DAQ on a stick with thermal couple

Figure 2 shows a simplified schematic of the thermocouple design. The design uses Intersil's ISL28134 chopper amplifier, ISL21010 4.096V voltage reference, our ISL26132 24-bit delta sigma converter and Atmel's AT90USB162 microcontroller.

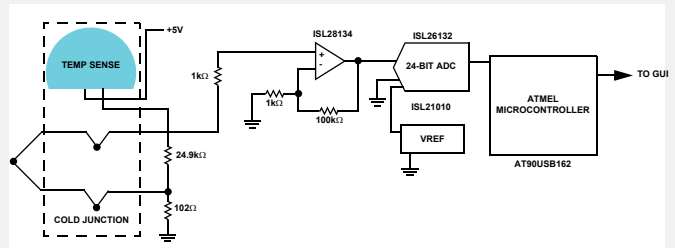


Figure 2. ISL THERMO-STKEV2Z Simplified Evaluation Board Schematic

Key Components

ISL28134	5V, Low Noise, Zero-Drift Op Amp
ISL26132	24-bit Low Noise Delta Sigma
ISL21010	Micropower Precision Bandgap Voltage Reference
AT90USB162	8-bit AVR Microcontroller with USB



► For more information, visit www.intersil.com **DAQ on a stick**

Analog Input

Analog Output

Control

Sensors

Power



Chopper-stabilized Amplifiers : ISL28x33, ISL28x34

Zero Drift Amplifiers (Low Voltage Precision Op Amps)

Chopper-stabilized amplifiers (Zero Drift Amplifiers) offer one of the best solutions, for the lowest offset voltage and drift. These amplifiers achieve high DC precision through a continuously running calibration mechanism that is implemented on-chip.

Features and Benefits

- Low Drift / Reduced Offset Voltage Over Temperature (typically $0.5\text{nV}/^\circ\text{C}$) [Figure 1]
- Low Drift / Reduced Offset Voltage Over Time [Figure 2]
- Low Offset Voltage / Reduced Offset Voltage (typically <math><1\mu\text{V}</math>) [Figure 3]
- Low Offset Voltage Over the Common Mode Range and Power Supply (CMRR & PSRR typically > 125dB) [Figure 4]
- Eliminates or No 1/f Noise [Figure 5]
- Very High Open Loop Gain
- Precision Signal Amplifications

Low Drift Over Temperature

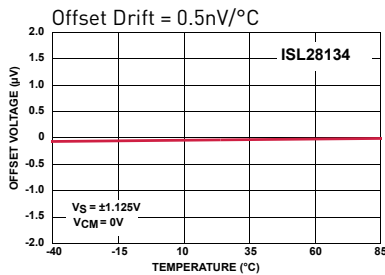


Figure 1. V_{OS} vs Temperature

Low Noise

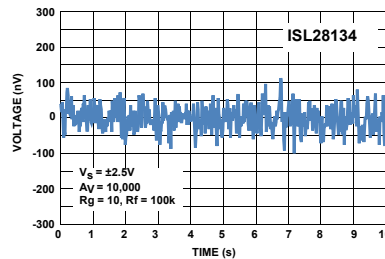


Figure 2. Input Noise Voltage 0.1Hz to 10Hz

Low Offset Voltage

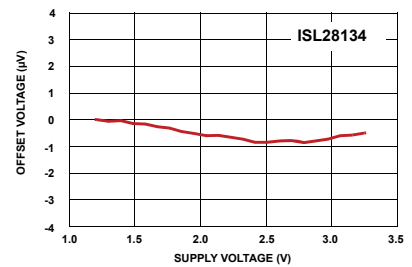


Figure 3. V_{OS} vs Supply Voltage

High CMRR/PSRR

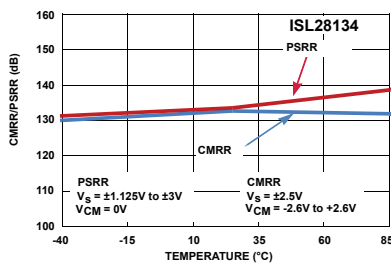


Figure 4. CMRR vs Temperature

No 1/f Noise

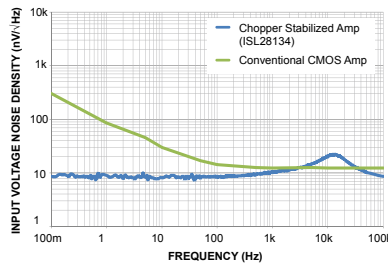


Figure 5. 5V CMOS ISL28134 vs CMOS Amp Noise Voltage Density Comparison

Part Number			Supply Voltage (V)		Rail-To-Rail		Vos Max @ 25°C	TCVos Max	Ib Max @ 25°C	CMRR Min @ 25°C	PSRR Min @ 25°C	Is Max @ 25°C	GBW	Slew Rate	Noise 0.1 to 10Hz	Voltage Noise @ 1kHz	Package		
Single	Dual	Quad	Min	Max	In	Out	µV	µV/°C	nA	dB	dB	mA	MHz	V/µs	µVpp	nV/√Hz	Single	Dual	Quad
ISL28133*	ISL28233	ISL28433	1.65	5.5	Yes	Yes	6	0.05	0.18	118	110	0.025	0.4	0.2	1	65	SC70, SOT23, TDFN	MSOP, SOIC, TDFN	SOIC, TSSOP
ISL28134			2.25	6	Yes	Yes	2.5	0.015	0.3	120	120	0.900	3.5	1.5	0.25	10	SOIC, SOT23		

*Some specifications will differ, please check data sheet for actual parameters and/or conditions

Additional Recommended Industrial Products

	Where Used	Part Numbers	Key Features / Advantages
Op Amps	Analog Input Modules Sensor Signal Conditioning Gain Blocks, Filtering Output Drivers	ISL28127, ISL28127	40V, Ultra Low Noise, Low V _{OS} & Drift
		ISL28117, ISL28217, ISL28417	40V, Low Noise, Low V _{OS} , Low I _{BIAS} , Low Power, Low TC V _{OS} Drift
		ISL28107, ISL28207, ISL28407	40V, Ultra Low I _{BIAS} Drift, Low V _{OS} &, Low Power
		ISL28108/208/408	40V, Low Power, Single Supply, RRO OPA
		ISL28118/218	40V, Low Noise, Single Supply, RRO OPA
		ISL28110/210	40V, Low Noise, JFET Input OPA
		ISL28176, ISL28276, ISL28476	5V, Low Power, Low Noise, No V _{CM} Distortion
		ISL28113, ISL28213, ISL28413	5V Low Cost 2MHz CMOS OPA
		ISL28130/ISL28230/ISL28430	5V Low Cost, MicroPower OPA
		ISL28133/ISL28233/ISL28433	5V MicroPower, Chopper Stabilized OPA
		ISL28134	5V, Low Noise, Chopper Stabilized OPA
ISL28114, ISL28124, ISL28414	5V Low Cost 5MHz CMOS OPA		
Instrumentation Amps	Analog Input Modules Sensor Signal Conditioning	EL8170, ISL28617, EL8173	Low Power, Low Offset, High CMRR, Enable Pin Wide Input Common Mode Range, Rail to Rail Input and Output
	Voltage Reference	Sensor Calibration & Bias ADC Reference CPU Reference	ISL21090
ISL21009			16V Low Power and Low Noise, High Accuracy
ISL21060			5V Micro Power, V _{OUT} Force & Sense
ISL60002			5V Ultra Low Power, High Accuracy
Interface	Non Isolated Interface to Micro Controller	ISL317xE	3.3V IEC6000 ESD RS485 w/ Hot Plug & Fail Safe
		ISL315xE	5V IEC6000 ESD RS485 w/ Hot Plug & Fail Safe
		ISL3260x/1x	Low Power, 1.8V, RS-485/422
		ISL32x7xE	Quad Tx/Rx RS-485/422
		ISL3232E	3.3V IEC61000 ESD protected RS-232 Transceiver
		ISL3330/1/2/3	Single/Dual Channel ±15kV ESD 3V, Dual Protocol (RS-232/RS-485)
Switch/Mux	Direct Sensor Input to AFE Between Input Amp and ADC Between Output Module DAC and Actuator Driver	DG409 DG408	40V Supply, Low R _{ON} , Low Charge Injection, Wide Input Voltage Range 16:1 SE or 8:1 Diff Options
		HI-506, HI-507 HI-508, HI509	40V Supply, 70V Over Voltage Protection, Wide Input Voltage Range 16:1 SE, 8:1 Diff or 8:1 SE, 4:1 Diff, Options
Digital Potentiometers (DCPs)	Sensor Calibration & Bias Input Module Amp Gain Adjustment Output Module Amp Gain Adjustment	ISL22316, ISL22326, ISL22346	128 Tap, 125°C Non Volatile, Low Noise, Low Power, I ² C Interface, Shutdown
		ISL96017	128 Tap, Non Volatile, I ² C, DCP with 16k bits User Memory, Small Package
		ISL22317	128 Tap, 1% Accurate Non Volatile, I ² C Interface DCP
		ISL95811	256 Tap, Non Volatile, Low Power, I ² C Interface DCP with 5 Bytes of User Memory
		ISL22313, ISL22323, ISL22343	256 Tap, Dual Supply, Non Volatile, Low Power, I ² C Interface
		ISL22414, ISL22424, ISL22444	256 Tap, Dual Supply, Non Volatile, Low Power, SPI Interface
RTC	External Micro Controller Clock	ISL12022, ISL12023	2:1 RTC + Temp Sensor, Many Control Functions
		ISL12020M, ISL12022M	3:1 RTC + Temp Sensor + Crystal, 5ppm Temp Accuracy
		ISL12057, ISL12058, ISL12059	1.8V - 3.6V, Low Power, Low Cost Basic RTC

	Where Used	Part Numbers	Key Features / Advantages
Switching Controllers	High Current Distributed Rail Processor/FPGA Power	ISL8107, ISL8105A, ISL8118, ISL6525	Easy to Use Controllers, Input Voltage Range up to 75V
		ISL8120, ISL9444	Multi Output Regulators, Interleaved Output Voltages
Isolated Controllers	Isolated Power Conversion	ISL6840-ISL6845	1.5% Precision Error Amp, Fast Peak Current Sensing
		ISL6721-23	Fast Transient Response, Integrated Soft-start, OV, OI, UV Protection
Switching Regulators	Point of Load Regulation	ISL85402, ISL85033, ISL8540, ISL8500	Wide V_{IN} Regulators
		ISL8023/24, ISL8022	Single and Dual High Current Highly Configurable Regulators
		ISL9103/4	Low I_O High Frequency Regulator
	Single Output Boost Regulators	ISL97701	Boost Regulator with Integrated Schottky and Input Disconnect Switch
		ISL98012	Wide Input Voltage, Adjustable Frequency Boost Regulator
		ISL97516	600kHz/1.2MHz PWM Step-Up Regulator
		ISL97519	1% Output Accuracy PWM Step-Up Regulator with 1.294V Reference
ISL97519A	1% Output Accuracy PWM Step-Up Regulator with 1.24V Reference		
ISL97656	High Current PWM Step-Up Regulator with 1.24V Reference		
LDO	Low Noise Point of Load Regulation	ISL80101/2/3	High Performance 1A/2A/3A LDO
		ISL6719, ISL6720A	High Input Voltage Up to 100V
		ISL80136, ISL80138	40V 50mA and 150mA Low Quiescent Current Linear Regulators
		ISL78302, ISL78307	Low Power Linear Regulator for Automotive Applications
		ICL7660, ICL7660A, ICL7660S	Charge Pumps (can be used as +ve to -ve voltage converter)
Power Monitors	Monitoring Voltage Rails	ISL88002, ISL88031	Ultra Low Power Voltage Supervisor, Single to Quad Monitors
		ISL6132	Dual Output Control, 2 UV, 2 OV Monitors
Power Sequencers	Sequencing Voltage Rails On/Off	ISL6123-28	Quad Supply Sequencing

Design Resources

iSIM

Advanced design tool for creating complex solutions in 4 easy steps.

www.intersil.com/isim

1 Design Requirements Interview

Simply enter your design requirements, such as input and output voltage and current etc.

Filter Designer

The active filter designer was updated "11/14/2010" to include some additional Intersil op amps and to slightly adjust the automatic gain allocation algorithm to reduce noise peaking in the filter stages under certain conditions.

Design Requirements

Select Filter Type:

Select Filter Order:

Enter Poles Manually? Yes No

Filter Cutoff Frequency: kHz

Pass Band Gain: V/V

Select Filter Shape:

Filter Shape: Butterworth

This filter shape offers the flattest passband gain response at the expense of relatively slow roll-off in the transition region. There are no gain ripples in either the passband or stopband region. The stop response does show some overshoot that increases with filter order.

$F_{cutoff} = F_{cutoff}$

2 Design Configuration

iSim automatically calculates optimum loop compensation and calculates appropriate values for resistors and capacitors.

Filter Designer

Would you like to be contacted by Intersil sales? Yes

Design Constraints

Total Supply Voltage: V

Max. Vopp at Last Stage Output: V

Intended Linearity Specifications:

Target SFDR Range: dBc

Maximum Expected Signal Frequency: kHz

Required Vopp: 1.414V

Required Max Peak Vopp: 2V

Estimated minimum required slew rate: 2.134V/us

Apply

Select Resistor Precision:

Estimated Minimum Closed Loop Amplifier Bandwidth required: 307.416 kHz

3 Design Verification by Remote Simulation

Your design is displayed in an Online Schematic, which allows you to test your application in a virtual test bed. iSim allows AC, transient analysis.

Filter Analysis - Schematic

Current Design not saved

Configure Noise AC Transient

WesSIM

V= 2.0V V= 2.0V

4 Summary, Download, Design & More

Once the design has been verified, iSim generates a Bill of Materials and a comprehensive design report including simulation results, schematic and design data.

Design Summary

Current Design not saved PDF Download Download Schematic

Design Requirements

Select Filter Type:

Select Filter Order:

Enter Poles Manually? Yes No

Filter Cutoff Frequency: kHz

Pass Band Gain: V/V

Select Filter Shape:

Total Supply Voltage: V

Max. Vopp at Last Stage Output: V

Intended Linearity Specifications:

Target SFDR Range: dBc

Maximum Expected Signal Frequency: kHz

Select Resistor Precision:

Stage1

F0: 30 kHz Q: 1.306 Gain: 1.414

Topology: Sallen Key

Selected OPAMP: ISL20136

Stage2

F0: 30 kHz Q: 0.541 Gain: 1.414

Topology: Sallen Key

Selected OPAMP: ISL20114

Schematic

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