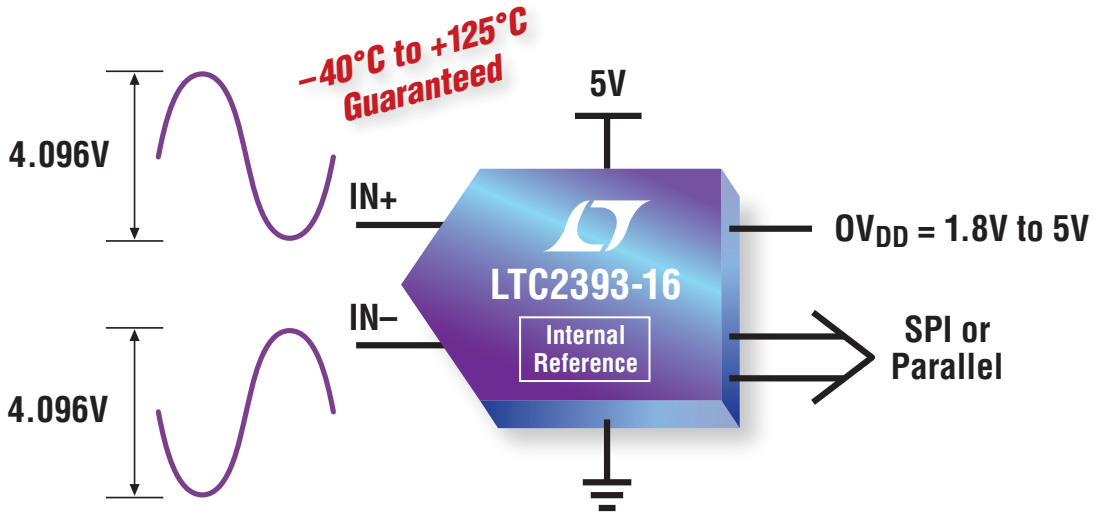
LTC2393-16 16-Bit 1Msps SAR ADC



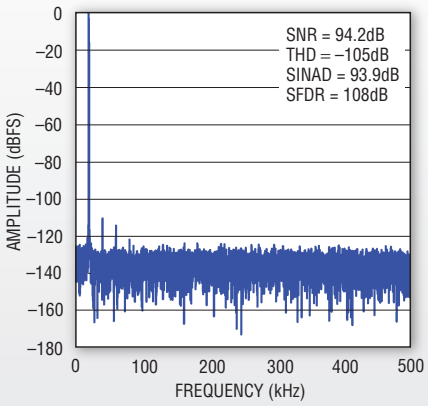
Wide Fully Differential Input Range Achieves 94.2dB SNR

High SNR is achieved with a ±4.096V maximum signal swing that helps overcome background noise levels in demanding industrial environments. The LTC2393 features a temperature-compensated internal reference with 0.5% initial accuracy and 20ppm/°C (max) temperature coefficient over the automotive temperature range. The LTC2393-16 dissipates 140mW at 1Msps and features a shutdown mode that reduces power dissipation to 175µW when not converting. True no latency operation enables accurate one shot measurements even after idle periods with no minimum sample rate required. To achieve uncompromised AC performance, we recommend the fast settling LT6350 ADC Driver with rail-to-rail single-ended input and differential outputs.

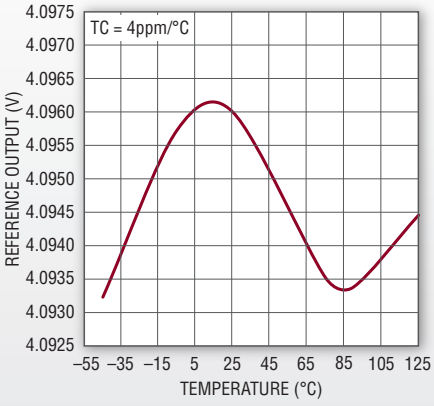
Features

- 1Msps Throughput Rate
- ±2LSB INL (Max)
- Guaranteed 16-Bit No Missing Codes
- 94.2dB SNR (Typ) at f_{IN} = 20kHz
- Single 5V Supply
- 1.8V to 5V I/O Voltages
- 140mW Power Dissipation
- ±4.096V Differential Input Range
- Internal Reference (10ppm/°C)
- No Cycle Latency, One-Shot Operation
- Parallel and Serial Interface
- Internal Conversion Clock
- Pin- and Software-Compatible Versions
  500ksps: LTC2392-16
  250ksps: LTC2391-16
- –40°C to 125°C Operation (LQFP)
- 48-Pin 7mm × 7mm LQFP and QFN Packages

16k Point FFT f_S = 1Msps f_{IN} = 20kHz



Internal Reference Output vs Temperature



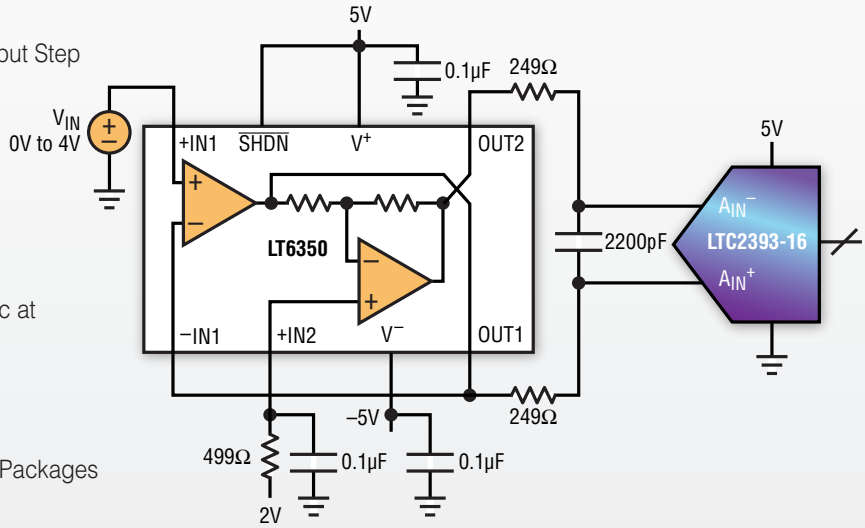
LINEAR TECHNOLOGY

www.linear.com/2393 ▪ 1-800-4-LINEAR

LT6350 Low Noise Single-Ended to Differential ADC Driver

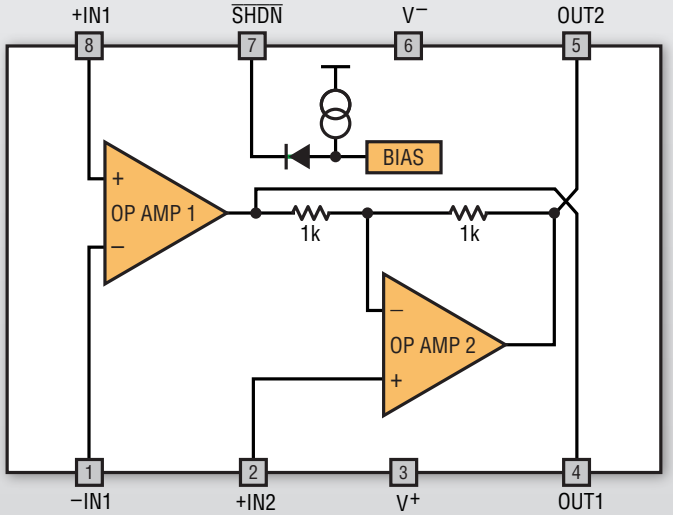
Features

- Rail-to-Rail Input and Outputs
- Fast Settling Time: 240ns, 0.01%, 8V_{P-P} Output Step
- 1.9nV/√Hz Input-Referred Op Amp Noise
- High Impedance Input
- –3dB Bandwidth: 33MHz
- 2.7V to 12V Supply Operation
- No External Gain Resistors Required
- 4.8mA Supply Current
- Low Power Shutdown
- Low Distortion (HD2/HD3): –102dBc/–97dBc at 100kHz, $V_{OUTDIFF}$ = 4V_{P-P}
- Low Offset Voltage: ±400µV Max
- High DC Linearity: <±1LSB, 16-Bit, 8V_{P-P}
- Low Input Current Noise: 1.1pA/√Hz
- 3mm x 3mm 8-Pin DFN and 8-Lead MSOP Packages



Drives High Speed 16- to 18-Bit SAR ADCs

The LT6350 is a 33MHz, low noise, rail-to-rail input and output ADC driver that settles to 16 bits in just 350ns. It is suitable for driving the latest high performance SAR ADCs like the LTC2393-16. The LT6350 incorporates two op amps and matched resistors to create a differential output from a single-ended high impedance input. As a result, a differential gain of 2 is achieved with no external feedback resistors, and higher gain can be obtained by using feedback resistors. Each of the two internal op amps achieve a low 1.9nV/√Hz input-referred noise density, resulting in a total output referred noise of just 8.2nV/√Hz. The LT6350 enables high performance ADCs to achieve better than 110dB SNR over a 1MHz bandwidth. Operating from a 2.7V to 12V total supply, the LT6350 consumes 4.8mA supply current and has a shutdown mode that allows the system to reduce power consumption during periods of inactivity.



LINEAR TECHNOLOGY