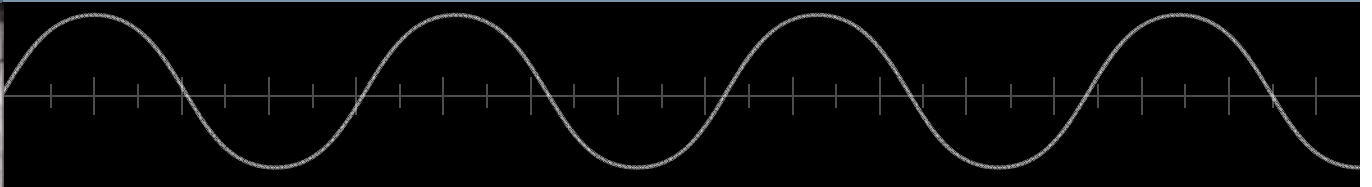


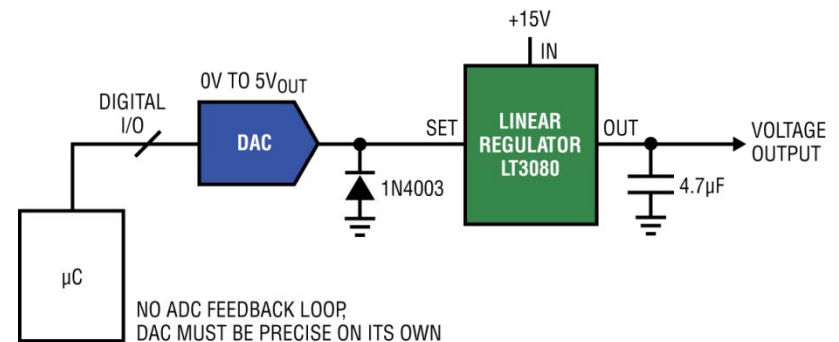
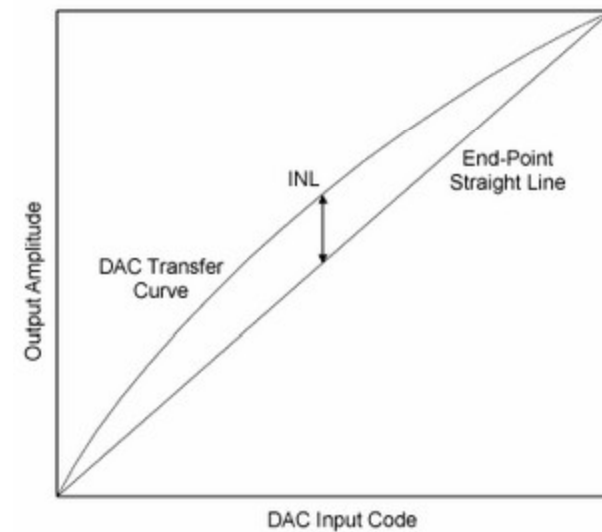
LTC2757: 18-Bit Precision DAC



LTC2757: Highest Guaranteed INL of 1LSB MAX!

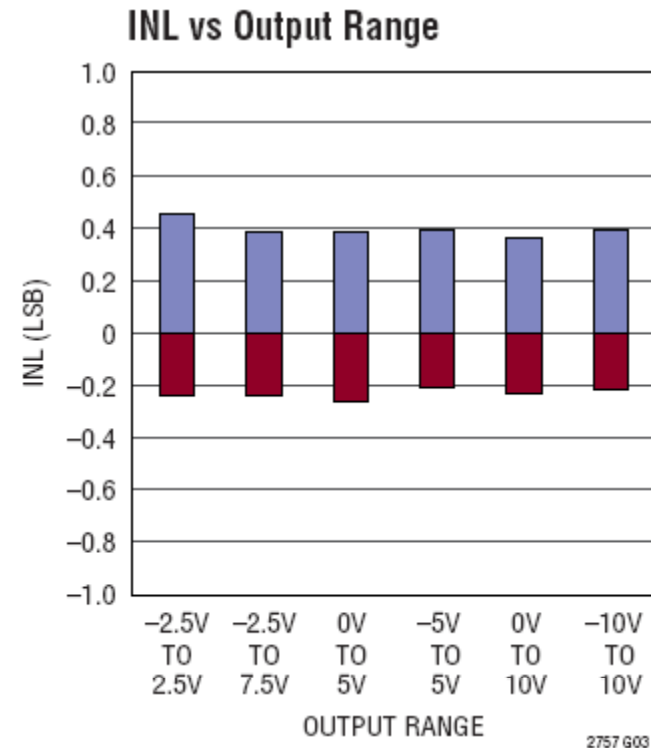
Why is **Integral Nonlinearity (INL)** important to a designer?

- INL is considered an important parameter because it is a measure of an ADC or DAC non-linearity error.
- Shows how the output differs from the Ideal Transfer Function (straight line).
- In an application in which a widely varying parameter (like speed) must be continuously controlled, INL is usually more important.
- Very Important for Open Loop Systems.
- Differential Nonlinearity (DNL) must be less than $\pm 1\text{LSB}$ to guarantee DAC's monotonic behavior.



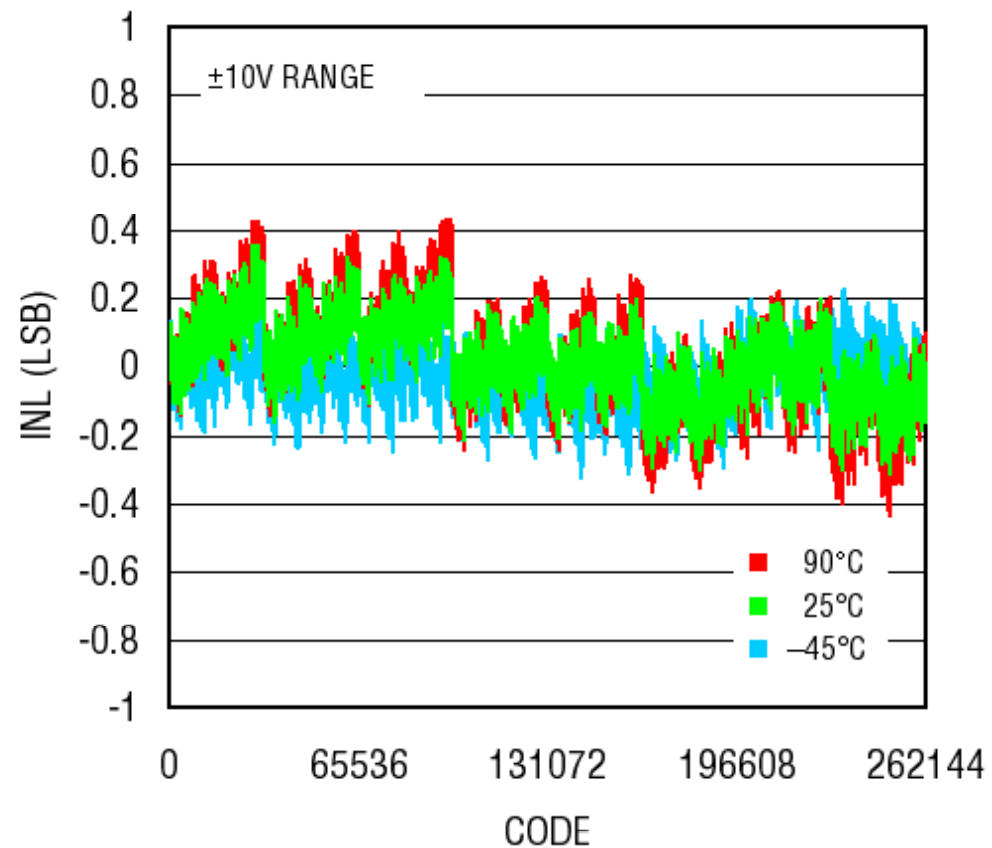
LTC2757: 18-Bit DAC with ± 1 LSB MAX INL, DNL

- Maximum 18-Bit INL Error: ± 1 LSB Over Temperature
- Program or Pin-Strap Six Output Ranges:
- 0V to 5V, 0V to 10V, -2.5 V to 7.5 V, ± 2.5 V, ± 5 V, ± 10 V
- Guaranteed Monotonic Over Temperature
- Low Glitch Impulse 1.4 nV•s (3V), 3 nV•s (5V)
- Low 1 μ A Maximum Supply Current
- 2.7 V to 5.5 V Single Supply Operation
- 18-Bit Settling Time: 2.1 μ s
- Voltage-Controlled Offset and Gain Trims
- Parallel Interface with Readback of All Registers
- Clear and Power-On-Reset to 0V Regardless of Output Range
- 48-Pin 7mm x 7mm LQFP Package

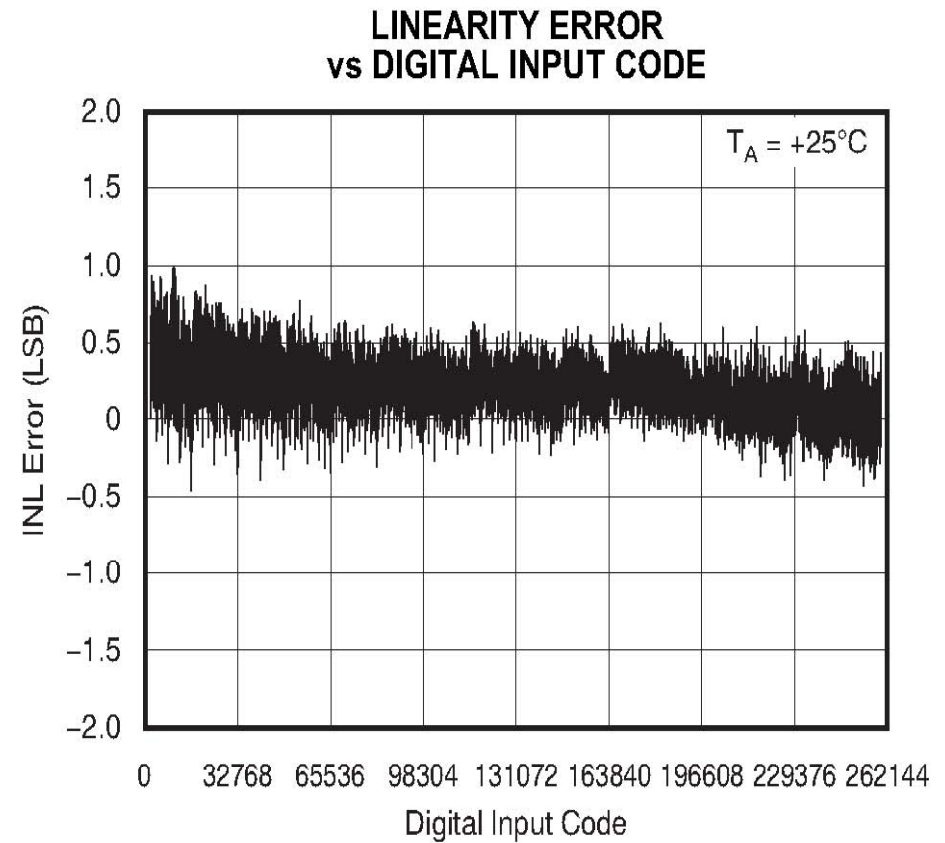
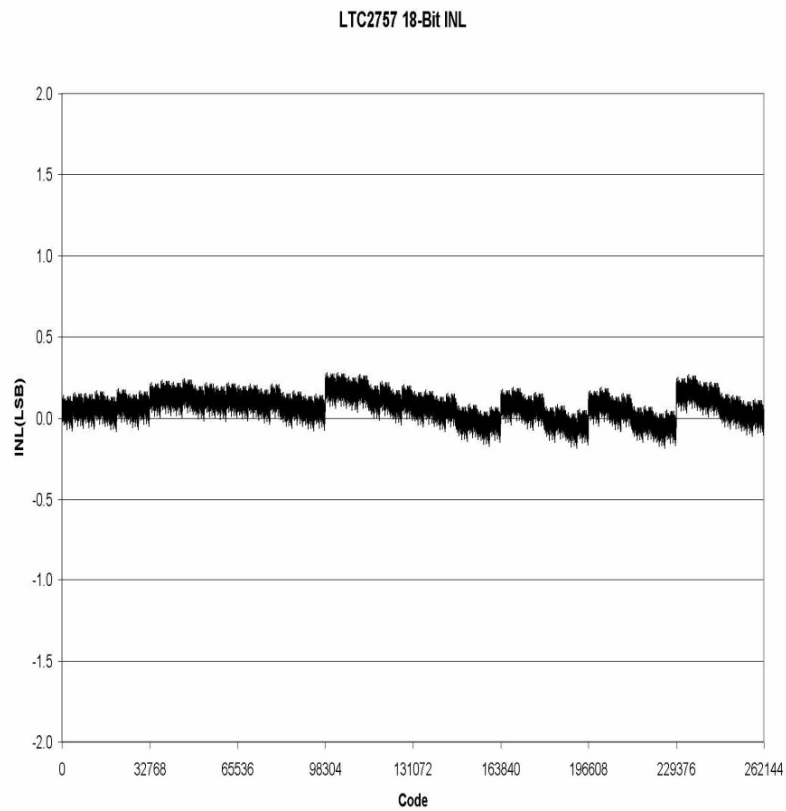


LTC2757 INL Over Temperature

LTC2757 Integral Nonlinearity



LTC2757 INL versus 18-Bit Competition



LTC2757 Comparison: 18-Bit DACs

	LTC2757	Comp A	Comp B
Monotonicity	18-bit	18-bit (5V) 17-bit (3V)	17-bit
INL (max)	±1 LSB	±2 LSB	±3 LSB
Gain Error	±32 LSB	±32 LSB	±262 LSB
Settling Time	2.1 μs to 1 LSB	5.0 μs to 8 LSB	6.0 μs to 2 LSB
Glitch Impulse	3 nV·s	37 nV·s	15 nV·s
Noise Density	13nV/√Hz	30nV/√Hz	120nV/√Hz
PSRR	0.8 LSB/V	32 LSB/V	1.7 LSB/V
Interface	Parallel	SPI	SPI / Parallel (16-bit)
Output	Current	Voltage	Voltage
Package	7x7 LQFP-48	4x4 QFN-24	Cerdip-28

18-Bit DAC Applications

- Calibration Equipment
- Galvanometer Scanners (Laser positioning)
- Data Acquisition (DAQ) Modules
- PC/104 Card
- ATE
- Precision Instrumentation
- Open Loop Systems
- Test and Measurement Equipment

