16-Channel, 16-Bit/12-Bit Voltage Output DACs
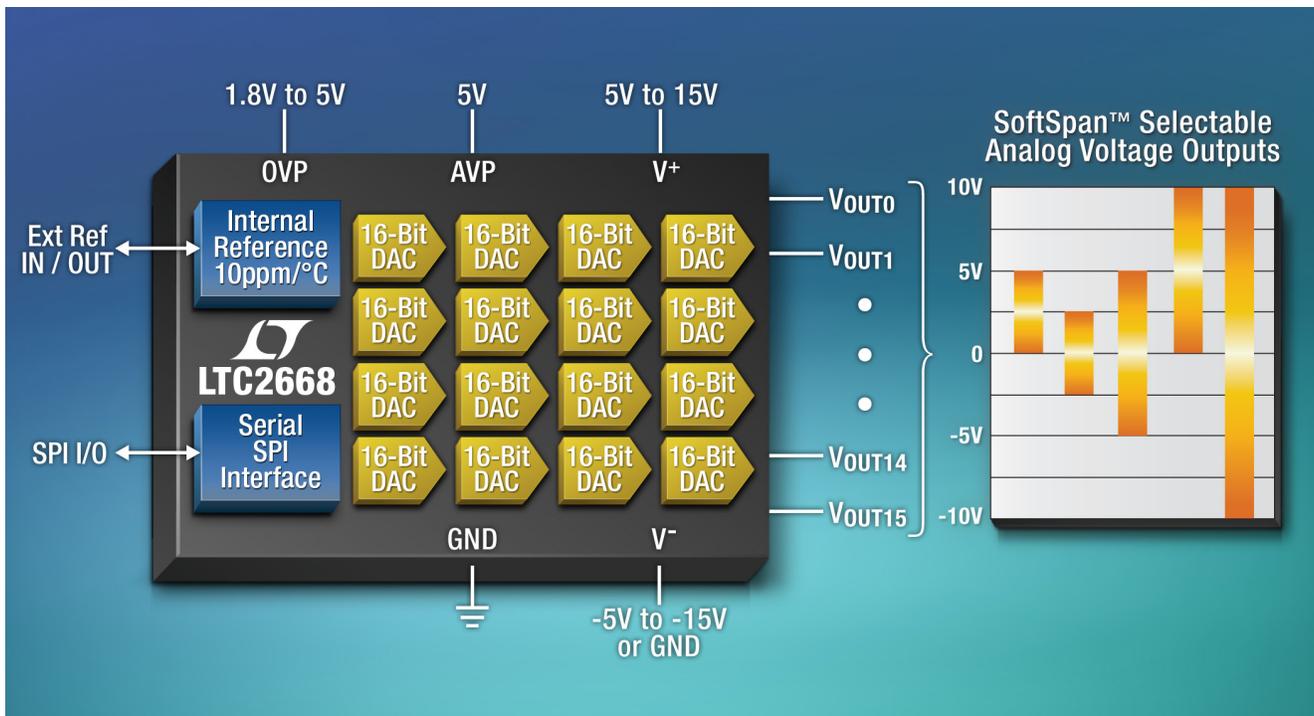
±10V V$_{OUT}$ SoftSpan DACs with 10ppm/°C Maximum Reference

The 16-bit/12-bit LTC®2668 combines 16 voltage output DACs with five software-programmable (SoftSpan™) or pin-configurable output voltage ranges up to ±10V. Each output span is independently selectable per channel, with full 16-bit/12-bit resolution at all spans. Tight DC linearity with low AC and DC crosstalk ensures precision control in multichannel open or closed-loop systems. Additional features include an internal 16:1 analog multiplexer for calibration or monitoring circuit integrity, and a toggle function that allows the DAC to quickly toggle between two DAC codes.

Features

- **16 DACs in Small 6mm × 6mm QFN Package**
- Internal Precision Reference: 10ppm/°C (Max)
- Independently Programmable Output Ranges: 0V to 5V, 0V to 10V, ±2.5V, ±5V, ±10V
- Maximum INL Error: ±4LSB (16 Bits), ±1LSB (12 Bits)
- Flexible Single or Dual Supply Operation
- Guaranteed Monotonic Over Temperature
- Output Buffers Drive ±10mA and 1000pF Loads
- A/B Toggle via Software or Dedicated Pin
- Internal 16:1 Analog MUX
- Asynchronous DAC Update Pin
- 1.8V to 5V SPI Serial Interface
- –40°C to 125°C Operation

	Quad	Octal	16-Channel
16-Bit	LTC2664-16	LTC2666-16	LTC2668-16
12-Bit	LTC2664-12	LTC2666-12	LTC2668-12
Package	5mm × 5mm QFN	5mm × 5mm QFN	6mm × 6mm QFN

LINEAR TECHNOLOGY

Internal Analog MUX

- Connect Any DAC Output to the MUX Pin
- Eliminates High Pin Count External MUX
- Saves Board Space
- Use this Function for:
  - Calibration
  - Closed-Loop Control
  - Monitor Circuit Integrity
- Output Range: V^- to $(V^+ -1.4V)$
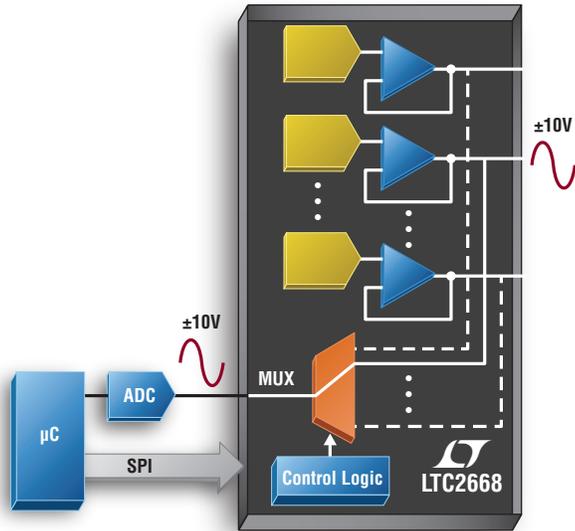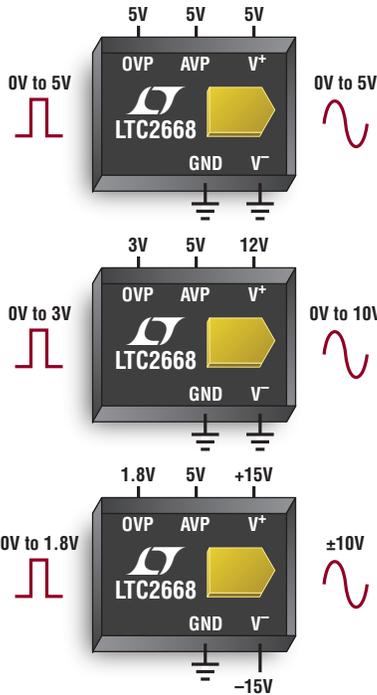
Flexible Supply Voltages

- V^+ Positive Rail
  - 4.5V to 15.75V
  - 4.6mA Operating, 35µA Shutdown
- V^- Negative Rail
  - Single Supply: Connect to GND
  - Dual Supply: −4.5V to −15.75V
  - 4.6mA Operating, 27µA Shutdown
- AVP DAC Core Supply
  - 4.5V to 5.5V
  - 5.4mA Operating, 1µA Shutdown
- OVP Digital I/O Supply
  - 1.71V to 5.5V
  - <1µA

Buffered Voltage Outputs

- Rail-to-Rail Outputs
  - ±10mA Load, Swings within 1.4V of Rails
  - Unloaded, Swings within 10mV of Rails
- Fast Settling
  - 5V/µs Slew Rate
  - 10V Step Settles to 1LSB in 9µs
- Stable with Up to 1000pF of Load
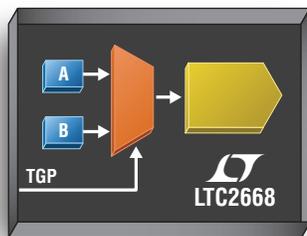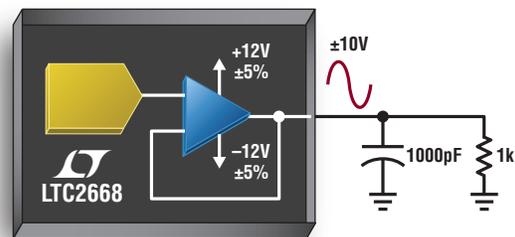
A/B Toggle Function

- Quickly Toggle Between Two DAC Codes
  - Hardware Mode Using TGP Pin
  - Software Mode Using SPI
- Use this Function to:
  - Alternate Between Two Output Levels (On/Off, High/Low)
  - Dither or Modulate a DC Bias Level
  - Generate an AC Bias

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