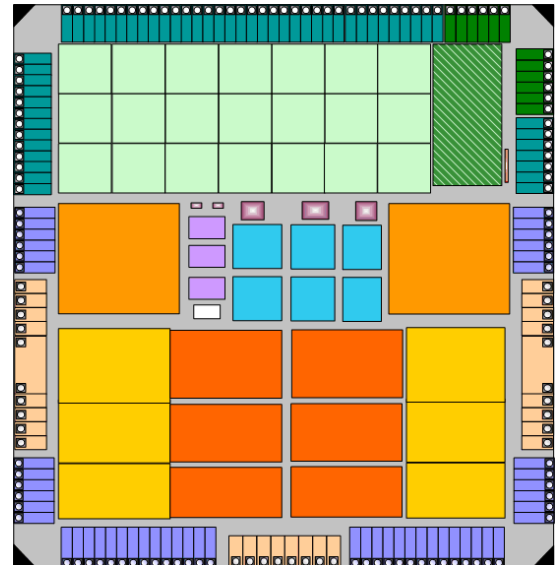


VCA-2 – High Voltage Platform

The VCA-2 combines digital, EEPROM, analog, and high-voltage analog resources on a single ASIC platform to address a wide range of mixed voltage applications. The VCA-2 contains 15,750 ASIC gates, 1Kbyte of non-volatile EEPROM memory, 21Kbits of embedded SRAM and 40+ analog resources. Many systems require 3.3V, 5V, 12V, and higher voltage planes and power management. The VCA-2 contains isolated power islands that can support digital running at 3.3V, low-voltage analog and high voltage analog up to 20V. The combination of these capabilities makes the A-2 ideal for power management and power sequencing applications. The resources within the ASIC can be used to create LDO, linear and switching regulators, digitally controlled and sequenced power regulators, LED drivers, motor controllers, industrial PID controllers – mixed signal circuits where a wide operating voltage range is required.

The VCA-2 utilizes a single mask layer to change analog, digital, and memory circuits resulting in:

- Reduced NRE Charges
- Rapid Time to Prototypes
- Fabrication Time in Weeks not Months
- Reduced Risk



Resources

Digital

- **15,750 Logic Gates**
- 21 Kbits of 1-Port SRAM
- 1Kx8 EEPROM, 20-Year Retention
- 44 Configurable Digital I/O
- 3.3V Digital Power

Analog

- 20V Analog
- 12 20V Op-Amps
- 12 3.3V Op-Amps
- 6 Power Management Tiles
- 2 Regulator Tiles
- 2 10-bit, 1MSPS DACs
- 42 Analog I/O
- 3.3V Isolated Analog Power
- 20V Isolated Analog Power

Applications

- PMBus™ Controller
- Power Management
- Motor Control
- LED Lighting
- Voltage Level Translation
- Industrial Environment ASICs
- High Voltage Sensors & Actuators
- Extended Voltage Data Converters
- 8051 with mixed signal resources operating at up to 20V

Table 1 - VCA-2 Resources

Digital Resources

- **15,750 Logic Gates**
 - 21 Logic Tiles – LT1K-1P-750
 - 21 Distributed SRAM
 - 64 x16 1-Port RAM (1024-bits)
 - 21,504 bits total distributed RAM
 - **Non-Volatile Memory**
 - 1K x 8 High-Voltage Process EEPROM
 - 20 Year Data Retention
 - 100K Cycle Write Endurance
 - Byte & Page Mode Write Operations
 - Integrated Charge Pump & Control
- **44 Digital I/O**
 - Via Configurable Options
 - Input, Output, Bidirectional
 - Slew Rate Control
 - Pull-Up, Pull Down
 - Drive Strength
 - 4 Digital VDD Pads
 - 2 Digital VSS Pads

Analog Resources

- **36 Op-Amps plus Resources**
- **3 Digital to Analog Converters**
- **Op-Amp Gain Bandwidths up to 18MHz**
- **12 Single-Ended Analog Tiles**

SE-A-TILE Resources

- 2 Single-Ended OTA/Op-Amps
- 18MHz Gain Bandwidth
- Capacitor Array
- Resistor Array
- Transistor Array
- Switch Array
- Logic Array
- Configurable Bias Generator

- **6 Wideband Op-Amps (OA02)**

- Gain bandwidth =
- Bias Current =

- **4 Low Noise Op-Amps (OA03)**

- Gain bandwidth =
- Bias Current =
- Input Referred Noise =

- **Digital to Analog Converters**

- 2 D2A0801 – 8-bit, 1MSPS R2R Ladder DAC

Analog to Digital Converters can be created as soft-IP using the OTA/Op-Amps, switches, and capacitors within the array. Sigma-Delta and Successive Approximation converters with resolutions up to 14-bits and sample rates up to 1MSPS are realizable.

- **2 Power Regulator Tiles**

- **6 High Voltage Analog Tiles**

- **6 High Voltage Resource Tiles**

- **Miscellaneous Analog**

- Band Gap
- Voltage Reference Network

- **42 Analog I/O**

- Via Configurable Options
 - 1500 50, 0 Ohm pad resistance
 - 4 Analog VDD Pads
 - 2 Analog VSS Pads