Precision Analog Microcontroller, 12-Bit Analog Input and Output with PMIC and TECC, Arm Cortex-M3

FEATURES

- Analog input and output
  - Multichannel, 12-bit, 2 MSPS ADC
    - Up to 16 external channels
    - Power, VDAC, IDAC, and temperature monitor internal channels
    - Single-ended and differential mode
    - 0 V to V_{REF} analog input range
    - Input buffer included
    - Digital comparators
- Up to nine, 12-bit voltage output VDACs
  - 4-channel, selectable output range
    - 0 V to 2.5 V or AVDDx − 0.1 V
    - AVDDNEG + 0.2 V to 0 V or −2.5 V to 0 V
  - 4-channel, 0 V to 2.5 V or AVDDx − 0.2 V
  - 1-channel, 0 V to 2.5 V
- Up to 4 low noise, 12-bit IDACs
  - Configurable output range: 50 mA, 100 mA, or 150 mA
- 4 voltage comparators with adjustable hysteresis voltage
- TEC controller
  - Optional LDO regulator modes if not using TEC
  - Maximum heating and cooling current: 1.3 A
  - Current and voltage monitoring and protection
  - Soft start function
- Microcontroller
  - 32-bit Arm Cortex-M3 core, RISC architecture
  - Serial wire port supports code download and debug
- Clocking options
  - 16 MHz on-chip oscillator
  - 80 MHz PLL output
  - External clock source
- Memory
  - 2× 512 kB independent Flash/EE memories
  - 48 kB SRAM
- Software triggered, in circuit reprogrammability via I^2C
- On-chip peripherals
  - 1× UART, 2× SPI, 2× I^2C serial input and output
  - GPIO with multilevel voltage (3.3 V, 1.8 V, and 1.2 V) digital inputs
  - MDIO target up to 4 MHz (open drain)
  - 3× 16-bit and 1× 32-bit general-purpose timers
  - Wake-up timer (WUT)
  - Watchdog timers (WDT)
  - 32 element PLA
  - 16-bit PWM
  - Manchester encoder and decoder
  - All GPIOs support external interrupt
- Power
  - Multiple supplies
    - AVDDx, IOVDD, DVDD, and PVDDTECx: 2.85 V to 3.63 V
    - AVDDNEG: −1.8 V to −3.63 V
    - PVDDIDACx: 1.60 V to AVDDx
  - Flexible operating modes for low power applications
- Packages and temperature range
  - 5 mm x 5 mm, 0.4 mm pitch, 121-ball CSP_BGA
  - Fully specified for T_J = –40°C to +125°C
- Tools
  - Low cost QuickStart development system, which is available upon request from InfoOpticalNetwork@analog.com
  - Full third-party support

APPLICATIONS

- Optical networking—100G/200G/400G and higher frequency modules

For more information on the ADuCM430, contact InfoOpticalNetwork@analog.com.

NOTES