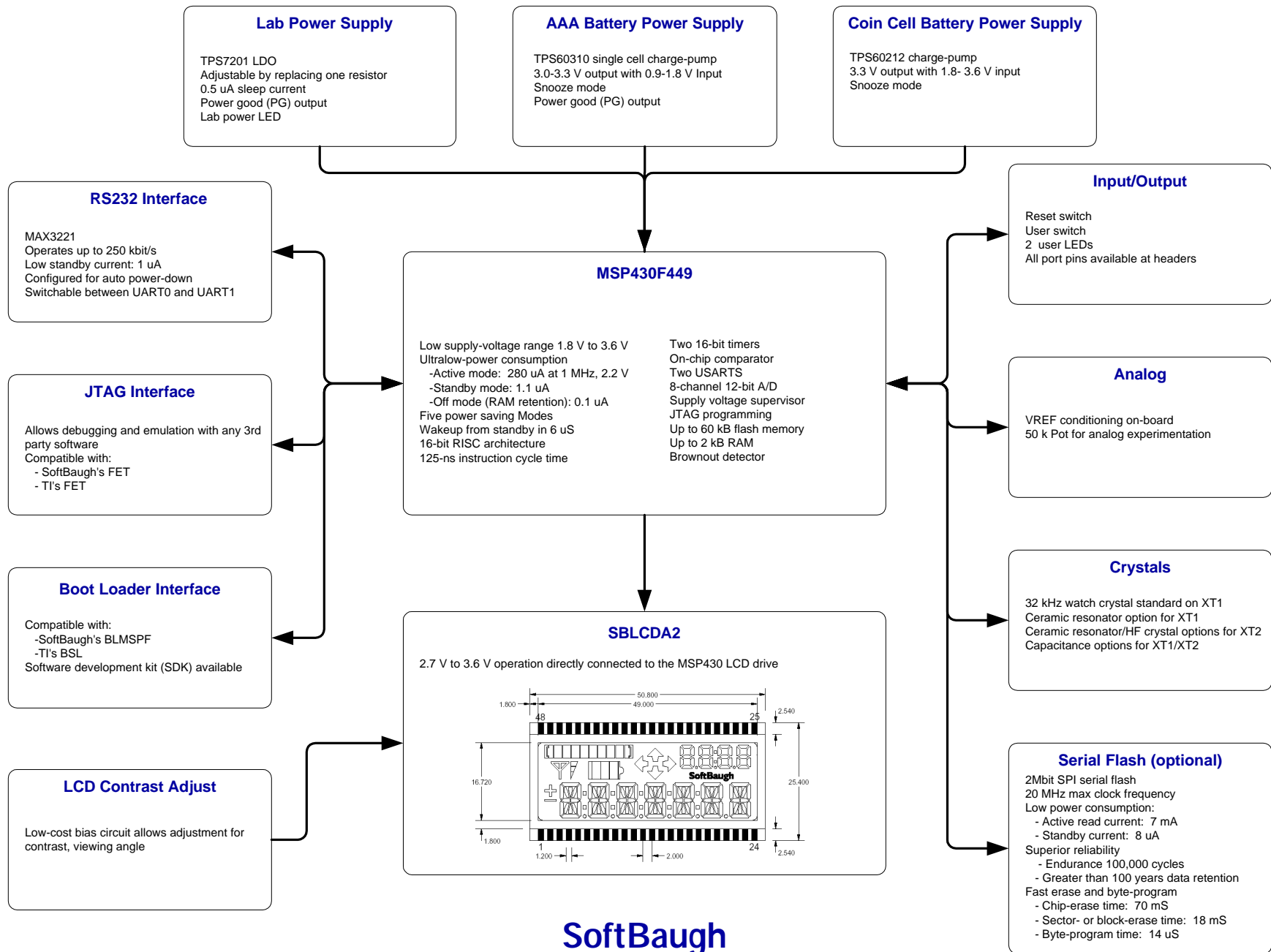


ES449 Evaluation System



Lab Power Supply

TPS7201 LDO
Adjustable by replacing one resistor
0.5 uA sleep current
Power good (PG) output
Lab power LED

AAA Battery Power Supply

TPS60310 single cell charge-pump
3.0-3.3 V output with 0.9-1.8 V Input
Snooze mode
Power good (PG) output

Coin Cell Battery Power Supply

TPS60212 charge-pump
3.3 V output with 1.8- 3.6 V input
Snooze mode

RS232 Interface

MAX3221
Operates up to 250 kbit/s
Low standby current: 1 uA
Configured for auto power-down
Switchable between UART0 and UART1

JTAG Interface

Allows debugging and emulation with any 3rd party software
Compatible with:
- SoftBaugh's FET
- TI's FET

Boot Loader Interface

Compatible with:
- SoftBaugh's BLMSPF
- TI's BSL
Software development kit (SDK) available

LCD Contrast Adjust

Low-cost bias circuit allows adjustment for contrast, viewing angle

MSP430F449

Low supply-voltage range 1.8 V to 3.6 V
Ultralow-power consumption
-Active mode: 280 uA at 1 MHz, 2.2 V
-Standby mode: 1.1 uA
-Off mode (RAM retention): 0.1 uA
Five power saving Modes
Wakeup from standby in 6 uS
16-bit RISC architecture
125-ns instruction cycle time

Two 16-bit timers
On-chip comparator
Two USARTS
8-channel 12-bit A/D
Supply voltage supervisor
JTAG programming
Up to 60 kB flash memory
Up to 2 kB RAM
Brownout detector

SBLCDA2

2.7 V to 3.6 V operation directly connected to the MSP430 LCD drive

Input/Output

Reset switch
User switch
2 user LEDs
All port pins available at headers

Analog

VREF conditioning on-board
50 k Pot for analog experimentation

Crystals

32 kHz watch crystal standard on XT1
Ceramic resonator option for XT1
Ceramic resonator/HF crystal options for XT2
Capacitance options for XT1/XT2

Serial Flash (optional)

2Mbit SPI serial flash
20 MHz max clock frequency
Low power consumption:
- Active read current: 7 mA
- Standby current: 8 uA
Superior reliability
- Endurance 100,000 cycles
- Greater than 100 years data retention
Fast erase and byte-program
- Chip-erase time: 70 mS
- Sector- or block-erase time: 18 mS
- Byte-program time: 14 uS

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