IRLABS
IC Design from vision to reality

32-bit RISC-V multifunction microcontroller IRL1206FI

General description

Multifunction microcontroller with 32-bit RISC-V core @48 MHz clock, CLIC interrupt controller, 512Kbyte FLASH program memory and 112Kbyte RAM. The peripherals include standard 4xUART, 3xSSP, 1xI2C, 1xISO7816 interfaces, 4x32-bit timers, independent watchdog and windowed watchdog timers, true random number generator, CRC calculation block, 4-channel 10-bit SAR ADC (512 KSPS), 7x24-bit Sigma Delta ADC, Temperature sensor

Features

- Clock rate* up to 48 MHz
- 4-channel 10-bit ADC 512KSPS
- 7x24-bit Sigma Delta ADC
- Electric energy calculation unit
- Battery domain
- Supply voltage range 1.8÷3.6V
- Operating temperature range -50...85^{0}C
- ESD protection class 2A

General description

Core:
- 32-bit RISC-V core with RV32IMCNZX commands set

Memory:
- Embedded FLASH program memory of 512Kbyte
- Embedded 112Kbyte RAM

Clock and power supply:
- External power supply 1.8 to 3.6V
- 1.2V embedded voltage regulator for core power supply
- HSI RC oscillator 8MHz
- LSI RC oscillator 32 kHz
- HSE oscillator 8 to16 MHz
- LSE oscillator 32 kHz
- Embedded PLL clock multiplier for core

Low-power mode:
- Battery domain with RTC, calendar and 512 byte backup memory

Analog modules:
- 10-bit SAR ADC (up to four channels, 512 KSPS) with amplitude of measured signals 0 to 3.6V
- 7x24-bit Sigma Delta ADC
- Temperature sensor

Peripherals:
- DMA controller (Peripheral-Memory, Memory-Memory)
- 4 x 32-bit timer/counters with PWM and event logging functions
- 4xUART, 3xSSP, 1xI2C master, 1xISO7816
- True random number generator
- CRC calculation block
- Independent watchdog and windowed watchdog timers
- Electric energy calculation unit

Debug mode:
- JTAG