SF19A28 - Highly-Integrated and Feature-Rich Smart Wireless Router Application Processor

1. Device Overview

1.1. Features

- **Applications Processor Subsystem**
  - Quad-processing MIPS32® interAptiv
    - Two Physical Cores
    - Four Virtual Processing Elements (VPEs)
    - Four Thread Contexts (TCs)
    - 8KB L1 I-Cache and 8KB L1 D-Cache at each Physical Core
    - 64 KB Unified L2-Cache
    - Typical 1GHz, maximum 1.2GHz
  - 8-Channel Direct Memory Access (DMA)
  - 3x Universal Asynchronous Receivers/Transmitters (UARTs)
  - 1x Serial Peripheral Interfaces (SPIs)
  - 1x Inter-integrated Circuits (I2Cs)
  - 2x General-Purpose Timers (GPTs)
  - 1x Watchdog Timer Module
  - 2x 16-Bit Pulse-Width Modulation (PWM) Interfaces
  - 1x USB2.0 OTG
  - Programmable GPIO Pins
- **Wired Ethernet Network Processor Subsystem**
  - 1x Reduced Gigabit Media-Independent Interface (RGMII), 10/100/1000Mbps, or Reduced Media-Independent Interface (RMII) 10/100Mbps, with support for jumbo frame, VLAN tagging and flow control
  - Support hardware network address translation(HW-NAT) to offload the CPU loading
    - Support Basic NAT Mode
    - Support Network address port translation(NAPT) Mode, including full cone NAT, restricted cone NAT, port restricted cone NAT and symmetric NAT
    - Support both source NAT (SNAT) and destination NAT (DNAT)
    - Support up to 1024 NAPT entries
    - Support full wire speed
- **Wi-Fi Network Processor Subsystem**
  - 2.4GHz 802.11b/g/n Radio, Baseband and Medium Access Control, 20/40M Bandwidth, with MAX 300Mbps data rate
  - 5GHz 802.11a/n/ac Radio, Baseband and Medium Access Control, 20/40/80M Bandwidth, with MAX 866Mbps data rate
  - 2x2 MIMO 2.4GHz/5GHz Dual-Band RF Transceiver, with PAs, LNAs, TX/RX Switchs and Baluns
  - Internal Auxiliary ADC for calibration, RF power and temperature measurement
- **Clock Resource**
  - Crystal : 40MHz
- **Package and Operating Conditions**
  - 0.65-mm Pitch, 0.3mm Ball
  - BGA Package
  - Operating Temperature Range: -40℃ to 125℃

1.2. Applications

- **Smart Router**
- **Repeater**