Group: 5

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AR7Wi Wireless ADSL Router

Internal Architecture:

The AR7Wi chipset is designed to integrate all essential components for a wireless local area network directly onto the motherboard of a residential gateway. This integration spans a compact area of less than 2.1 square inches, requiring only a power input of 12-18 VDC through an RJ11 connector. Such extensive silicon integration contributes to significant cost efficiencies in the bill of materials, enabling manufacturers to offer highly competitive residential gateway solutions in the market. Moreover, the AR7Wi's streamlined design with a limited number of components simplifies assembly and enhances overall reliability during manufacturing.

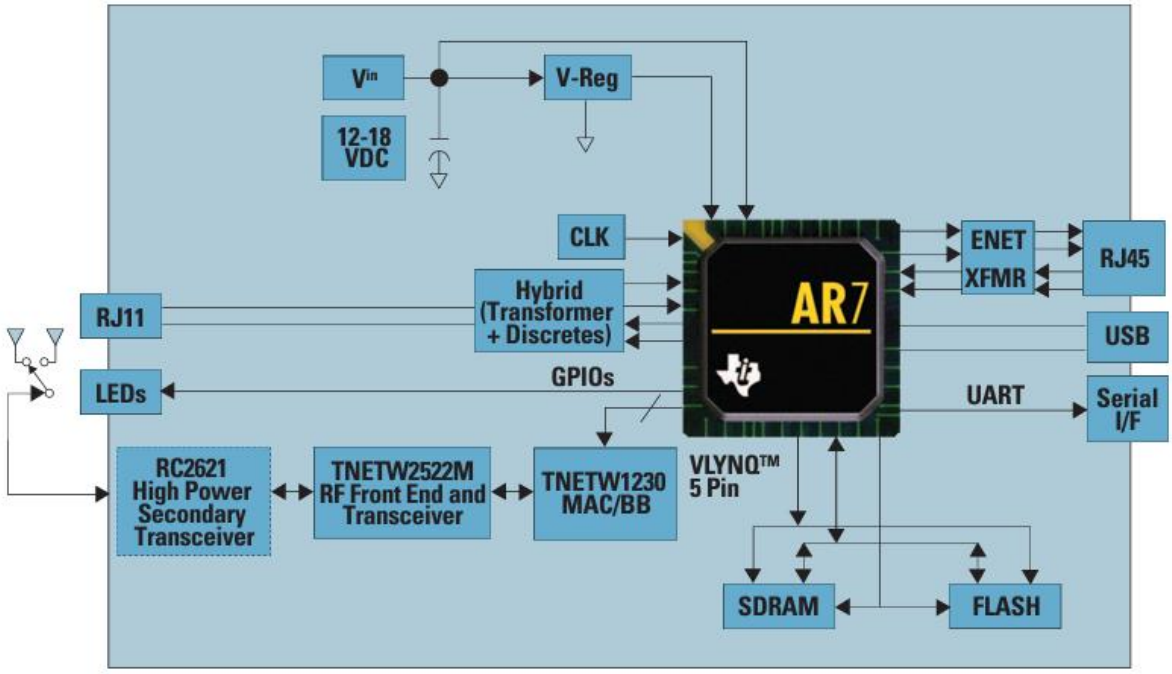

Figure: Internal architecture of AR7Wi Wireless ADSL Router

IC' s used in AR7Wi Wireless ADSL Router:

1. TNETD7300

2. TNETW1230
3. TNETW2522M
4. RC2621 (optional)

TNETW2522M

The IC TNETW2522M is a highly integrated network processor designed for high-speed networking applications. It features a powerful architecture capable of handling multiple tasks simultaneously, making it suitable for use in routers, switches, and other networking equipment. The chip is equipped with multiple high-speed interfaces, including Ethernet ports, to facilitate fast data transfer rates. It also supports advanced networking features such as Quality of Service, Virtual LANs, and security protocols to ensure efficient and secure data communication. The TNETW2522M is built to meet the demands of modern networking environments, providing a robust solution for network infrastructure.

Key Features

a. Highly integrated 802.11b/g radio.
b. Fully integrated VCOs and synthesizers, up/down converters, LNA, PA, and T/R switches.
c. Internal PLL reference oscillator requires only single crystal (no crystal oscillator).
d. Integrated transmit temperature compensated coupler-detector.
e. Generates a 40-MHz clock reference for baseband modem.
f. Internal AGC, power control and PA bias control functions.
g. IQ DC offset calibration function and baseband filters integrated.
h. Excellent jammer immunity.
i. 6-mm x 10-mm SMT package.

Key Specifications

a. Receiver sensitivity: -88 dBm.
b. Output P1dB = +23.5 dBm.
c. Phase noise 0.5 deg.
d. Single reference frequency: 40 MHz.
e. Single 3.3 V power supply.

Functionalities

Functionalities of TNETW2522M IC in the AR7Wi Wireless ADSL Router are:

1. ADSL2+ Support: The TNETW2522M supports the latest ADSL2+ standards, allowing for faster data rates and improved performance over traditional ADSL connections.
2. Wireless Connectivity: It integrates Wi-Fi capabilities, enabling the AR7Wi to create a wireless network that allows multiple devices to connect to the internet without the need for Ethernet cables.
3. Network Processing: The IC handles network traffic efficiently, routing data packets between the WAN and LAN interfaces, ensuring smooth data flow.
4. Security Features: It includes support for WPA/WPA2 encryption, firewall protection, and other security measures to safeguard the network from unauthorized access and potential threats.
5. Quality of Service: The TNETW2522M allows for the prioritization of network traffic, ensuring that critical applications and services receive the necessary bandwidth for optimal performance.
6. Management and Configuration: The IC facilitates easy setup and management of the router through a web-based interface, allowing users to customize settings according to their preferences and requirements.