Virtual Extension

Brief Product Sheet

VE209 Mesh Controller Family

Overview

VE209 is a Mesh Controller that enables high performance networking - high range, low power consumption and high throughput. VE209 mesh controllers are used in 2-chip chipsets with leading transceivers on the market, to serve as the main building blocks of VEmesh units – Gateway or Nodes. A typical VEmesh wireless mesh network contains one gateway and a number of nodes – all built around the VE209.

In addition to their own activity as end-nodes, all VEmesh nodes act as relays – retransmitting other units' data to create a modular solution with an unlimited number of nodes and hops, thus covering a practically unlimited coverage area.

Built using the VE209, VEmesh units form a wireless network, designed and optimized for the most advanced topology available today – mesh topology, by using the innovative *synchronized-flooding*, as opposed to ordinary routing of mesh networks. Synchronized-flooding enables VEmesh to achieve highly reliable bi-directional communication and the best-in-class range and coverage for distributed control and monitoring of smart lighting, smart metering, sensor systems and a large range of remote control applications. This performance is attained by synchronized-flooding's combination of space diversity, time diversity and frequency diversity, which in turn translates into an extended envelope of range, throughput and power consumption. Furthermore, it also offers the highest possible robustness, eliminations of dead spots and resistance to multipath.

Adding to this robustness is the VE209 based networks operation in the ISM and SRD sub-1Giga frequency bands – as opposed to the over-abused 2.4GHz for the ordinary mesh networks. Using frequency hopping (FHSS), VE209 based VEmesh are amongst the very few wireless mesh networks to take advantage of Adaptive Frequency Agility (AFA) and Listen Before Talk (LBT) benefits.

Various members of VE209 family of high performance Mesh Controllers connect to different transceivers on the market for achieving various sets of range-speed-consumption performance. An additional adaptation to the user's network characteristics is by tuning VE209 extensive and easy-to-use programmability. The programming is of network, interface, RF and management parameters.

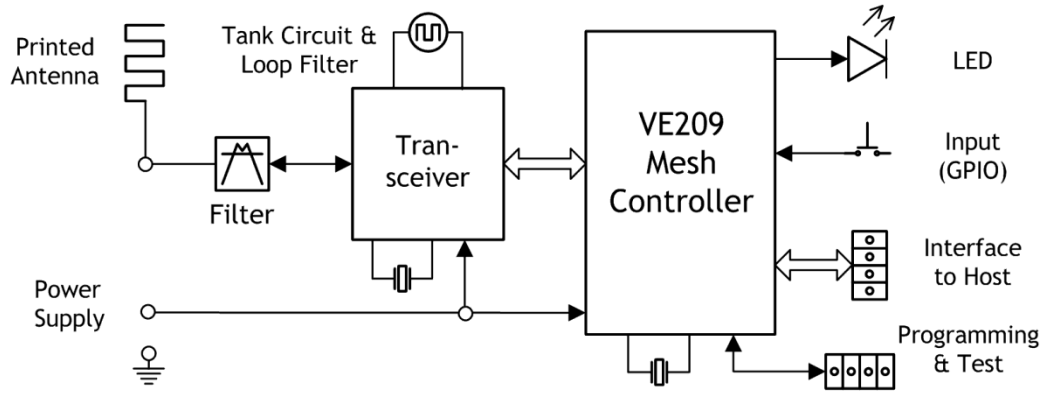

Figure 1 – Block Diagram of a typical VEmesh Node using VE209

The standard interface to the user's host is UART. In addition, VE209 offers a large variety of optional I/O interfaces, ranging from dry contact through I2C, RS232 and MODBUS to USB and TCP/IP. The interface of Wireless DALI Mesh controllers is DALI.

Operating on a regulated 2.2 to 3.6 VDC, the VE209 typical average battery-operation power consumption is 20 µA, dropping to 2 µA in idle mode. The VE209 devices are offered in several packages.

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VE209S Mesh Controller Family - Brief Product Sheet

Features

- Management of high-performance wireless mesh network units
- Use of *synchronized-flooding*
- Highest range at network level
- Extremely high robustness
- Eliminates multipath and dead spots
- Low and deterministic latency
- Low power consumption
- Space, time and frequency diversity
- Frequency Hopping with AFA and LBT
- Large range of possible I/O interfaces and protocols
- Drives built-in single LED indicator for simple unit deployment
- General Purpose and DALI versions
- Support for leading transceivers on the market
- Programmable to different network modes of operation
- TCP/IP connectivity
- Versions available to comply with regulations in US, Europe and Israel[1]

Brief Specifications

- Support of FHSS: 47/51 or custom number of frequencies
- Serial Data Rate:
  - up to 115.2 Kbps
- Standard supported interfaces & protocols
  - UART – transparent & buffered
  - DALI (Digital Addressable Lighting Interface)
  - TCP/IP and USB (in Gateways)
- Optional interfaces & protocols
  - I2C
  - RS485
  - MODBUS
  - Custom
- Output for Sync LED indicator
- Voltage/Ripple & Noise/Peak current: 2.2 to 3.6 VDC/±15 mV/10 mA
- Power consumption typical/idle: 20 µA / 2 µA

Applications

VEmesh networks based on VE209 are ideal when high performance, robustness, and easy deployment are required. With their low receiving, stand-by, and transmitting power consumption, VEmesh networks are also an excellent choice when battery life is critical. These networks are best fit for applications that include:

- Smart Lighting – outdoor and indoor
- Emergency Lighting
- Utilities Smart Metering and Sub Metering
- Building Automation, Plant Monitoring and Maintenance
- Agriculture
- Energy and Environment
- Medical applications
- Vending Machines
- Security & Surveillance
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- Automotive applications

VE209 Support

The support for VE209 customers includes appropriate documentation, reference designs, BOM and Gerber files. An example of reference design is for wireless mesh connectivity used for the remote testing of emergency lighting.

A Sampler Kit (for the general purpose VE209) and Evaluation Kit (for wireless DALI model) are available for testing and evaluation.

[1] for current and roadmap availability, please contact Virtual Extension

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