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Z3X Z-WAVE MODULE CIRCUIT DESCRIPTION

The Z3X Z-Wave module is built around the ZenSys ZM3102N RF transceiver module. This ZenSys ZM3102N contains a standard SPI serial data interface to an external data source. The data source will typically be a microcontroller which may also support the application for the product that uses the Z3X Z-Wave module.

The Z3X Z-Wave module includes a voltage regulator which provides regulated power for the ZenSys ZM3102N RF transceiver module. This also extends the usable voltage range for the Z3X Z-Wave module.

The ZenSys ZM3102N RF transceiver module also includes a voltage regulator which provides regulated power to all of the internal circuits on the ZenSys ZM3102N RF transceiver module. Bypass capacitors are provided around the ZenSys ZM3102N RF transceiver module as needed. An external crystal at 20.000 MHz generates the clock for all of the digital circuitry on the ZenSys ZM3102N RF transceiver module. It also serves as a reference for the frequency synthesizer used to generate the RF carrier. This is the only clock source for the ZenSys ZM3102N .

The transmitter function of the ZenSys ZM3102N takes the data from the external data source over the SPI interface, and creates packets per the Z-Wave protocol standard in the baseband processor. It has an RF signal source and modulator to create the 908.4MHz (or 868.4MHz) RF output signal.

The receiver function of the ZenSys ZM3102N takes a signal into the ZenSys ZM3102N and performs a down conversion to base band where the data is taken out of the incoming packets and passed to the external data unit over the SPI interface.

At the RF interface to the ZenSys ZM3102N , an external ceramic filter is provided to reduce harmonics and to match the impedance to the antenna. The antenna is a combination of ceramic filter and printed pattern on the module printed circuit board.

An integrated shield is built into the four-layer PCB. The second layer is a contiguous ground plane to ensure that it does not have to rely upon the shielding provided by the device into which it is installed in order for all modular transmitter emissions to comply with Part 15 limits. It is also intended to prevent coupling between the RF circuitry of the module and any wires or circuits in the device into which the module is installed.