

Modem AFE with Integrated Hybrid Circuitry

The 73M1903 is a single-chip analog front end (AFE) that's ideal for DSP or RISC-based soft modem applications such as fax and multi-function peripherals (MFPs), game consoles, Internet appliances, and set-top boxes. It offers a complete array of features designed to reduce the external component count.

Reduced Component Count

The device eliminates the need for a dedicated crystal oscillator with a flexible PLL, a 16-bit CODEC, differential hybrid circuitry, GPIO pins, and integrated DAA control.

Programmable Sample Rates

The 73M1903 can be programmed for various sample rates support modem standards operating at speeds from 600bps to 56Kbps.

Pin Compatible with 73M2901CL

A distinctive feature of this device is its pin compatibility with TDK's flagship V.22bis hard modem, the 73M2901CL. It also has the ability to support third party high speed data pumps on the same PCB. This offers customers a cost effective method to configure low and high-speed modem solutions in the same system as well as a risk-free migration path from hard to soft modems.

Fully Differential Hybrid Circuitry

Having fully differential hybrid circuitry improves signal-to-noise ratio performance under low receive level conditions, and ensures compatibility with any standard transformer-based DAA. On-chip registers facilitate management of DAA functions including parallel pick-up, ring detection, caller ID, and hook control through the same serial port used for data.

Flexible DAA Configuration

The device can be configured for FCC, CTR-21 and other worldwide telecommunications standards, and operates at speeds of 600bps to 56Kbps. It also supports two power conservation operating modes and seven test modes.

TDK Semiconductor's expertise in analog and mixed-signal technology has made it possible to develop a very flexible and yet cost-effective AFE companion to RISC processors or DSPs in embedded communications applications.



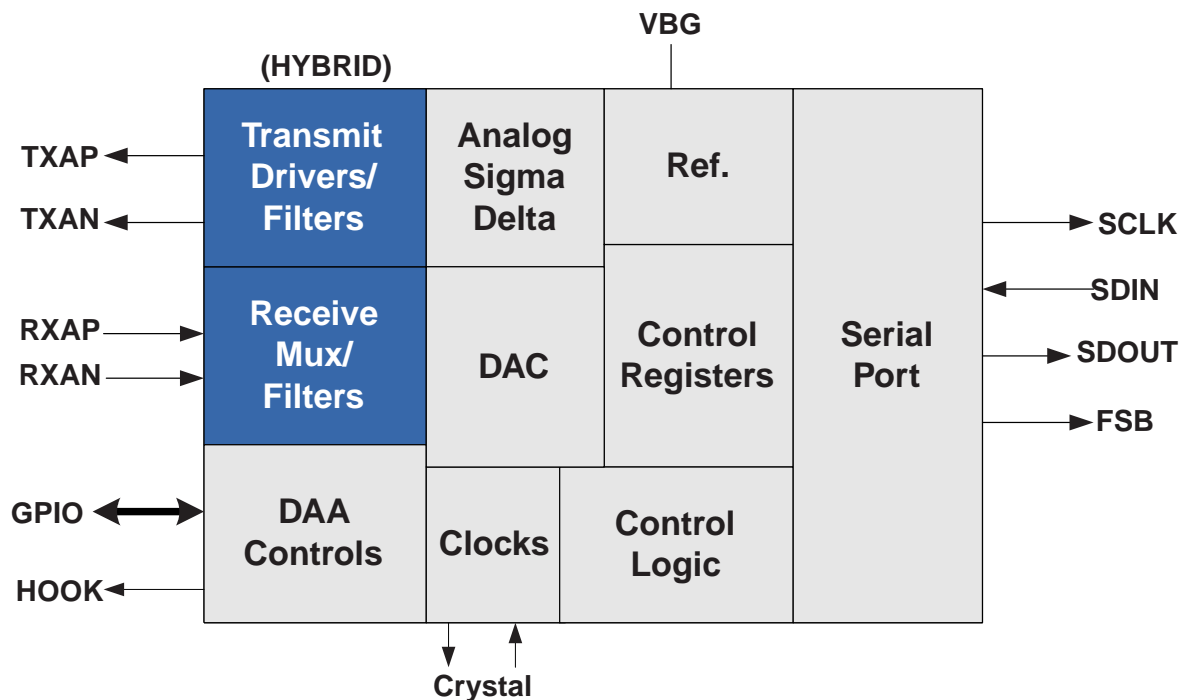
Features

- Single-chip Analog Front End
- Supports 56kbps (V.92) operation
- Pin-compatible to TDK 73M2901CL embedded modem
- 16 bit codec with integrated hybrid
- Programmable sample rate
- Supports multiple crystal frequencies
- 8 user programmable I/O pins
- Full differential receiver/transmitter
- Direct interface to transformer
- Compatible with popular DSPs and processors

Applications

- Set-top Boxes (STB)
- Personal Video Recorders (PVR)
- Fax and Multi-function Peripherals (MFP)
- Game consoles
- POS Terminals
- ATM Machines
- Personal Computers
- PDA and Internet Appliances

73M1903 Block Diagram



Multi-mode Modem Analog Front End (MAFE)

- Supports modem data rates from 50bps to 56Kbps (V.92)
- Includes drivers and modem hybrid circuit to simplify modem designs

DSP synchronous serial interface master operation

- Uses a standard DSP serial interface for communication
- Supports optional timing modes
- Supplies frame sync and serial timing clock to host

Programmable sample rates

- Various rates supported by programming prescaler NCO and PLL NCO

Fully differential transmitter with high-current transformer drivers

- Class AB drivers for low quiescent current
- Directly interface to transformer through impedance matching resistors
- Driver current proportional to load requirements

Fully differential receiver for low-noise, low-level reception

- Cancels common mode noise from environmental sources such as power lines
- Wide receive dynamic range

Flexible input reference frequency

- Accepts a range of crystal or external reference clock values between 9-40MHz.
- Eliminates the need for a dedicated crystal oscillator in most applications

5V tolerant I/O on selected pins

- All digital interface pins can be interfaced to 5v w/o level shifting

Power supply

- 3.0v to 3.6v

Industrial temperature range

- -40°C to 85°C operating

Packages

- 32-pin TQFP pin-compatible with 73M2901CL
- 20-pin SOIC for cost sensitive applications

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