TDK SEMICONDUCTOR CORP.

TSC 73K224BL
V.22bis/V.22/V.21/Bell 212A/103 Single-Chip Modem w/Integrated Hybrid

Advance Information

October 1996

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DESCRIPTION

The TSC 73K224BL is a highly integrated single-chip modem IC which provides the functions needed to construct a V.22bis compatible modem, capable of 2400 bit/s full-duplex operation over dial-up lines. The TSC 73K224BL is an enhancement of the TSC 73K224L single-chip modem which adds the hybrid hook switch control, and driver to the TSC 73K224L. The TSC 73K224BL integrates analog, digital, and switched-capacitor array functions on a single chip, offering excellent performance and a high level of functional integration in a 32-Lead PLCC package.

The TSC 73K224BL operates from a single +5 V supply for low power consumption.

The TSC 73K224BL is designed to appear to the systems designer as a microprocessor peripheral, and will easily interface with popular single-chip microprocessors (80C51 typical) for control of modem functions through its 8-bit multiplexed address/data bus or via an optional serial control bus. An ALE control simplifies address demultiplexing. Data

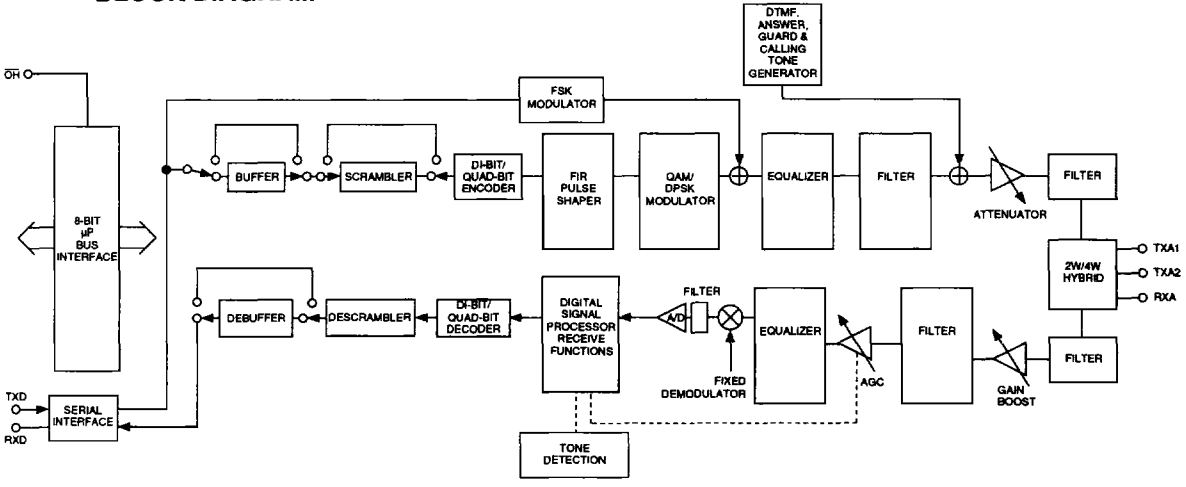
(continued)

FEATURES

- **Includes features of TSC 73K224L single-chip modem**
- **On chip 2-wire/4-wire hybrid driver and off hook relay buffer**
- **One-chip multi-mode V.22bis/V.22/V.21 and Bell 212A/103 compatible modem data pump**
- **FSK (300 bit/s), DPSK (600, 1200 bit/s), or QAM (2400 bit/s) encoding**
- **Software compatible with other TSC Semiconductor K-Series one-chip modems**
- **Interfaces directly with standard microprocessors (80C51 typical)**
- **Parallel or serial microprocessor bus for control**
- **Selectable asynch/synch with internal buffer/debuffer and scrambler/descrambler functions**
- **All synchronous and asynchronous operating modes (internal, external, slave)**

(continued)

BLOCK DIAGRAM



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DESCRIPTION (continued)

communications normally occur through a separate serial port. The TSC 73K224BL is pin and software compatible with the TSC 73K222BL, allowing system upgrades with a single component change.

The TSC 73K224BL is designed to be a complete V.22bis compatible modem on a chip. The complete modem requires only the addition of the phone line interface, a control microprocessor, and RS-232 level converter for a typical system. Many functions were included to simplify implementation of typical modem designs. In addtion to the basic 2400 bit/s QAM, 600/1200 bit/s DPSK and 300 bit/s FSK modulator/demodulator sections, the device also includes synch/asynch converters, scrambler/descrambler, call progress tone detect, DTMF tone generator capabilities and handshake pattern detectors. Test features such as analog loop, digital loop, and remote digital loopback are supported. Internal pattern generators are also included for self-testing.

FEATURES (continued)

- Adaptive equalization for optimum performance over all lines
- Programmable transmit attenuation (16 dB, 1 dB steps), selectable receive boost (+18 dB)
- Call progress, carrier, answer tone, unscrambled mark, S1, and signal quality monitors
- DTMF, answer and guard tone generators
- Test modes available: ALB, DL, RDL, mark, space, alternating bit, S1 pattern
- CMOS technology for low power consumption (typically 100 mW @ 5 V) with power-down mode (15 mW @ 5 V)
- TTL and CMOS compatible inputs and outputs

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