

## OCM-22 One-Chip Modem for Embedded Applications

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### Features

- Controller and data pump in a single 48-pin TQFP with two integrated peripheral interfaces:
  - Partial ISA (8-bit parallel).
  - RS232.
- Data mode capabilities range:
  - V.22bis: 2400 bits/s.
  - V.22: 1200 bits/s.
  - V.23: 1200/600 bits/s.
  - V.21: 300 bits/s.
  - Bell 212A: 1200 bits/s.
  - Bell 103: 300 bits/s.
- Serial DTE interface:
  - Hardware and software flow control.
  - Asynchronous data format: 19,200 bits/s, 8-bit data, no parity, 1 stop bit.
- Parallel DTE interface for connection to system I/O or memory bus.
- DAA support:
  - CSP1035A silicon DAA.
  - CSP1034C with transformer DAA.
- Supports low-cost, call-progress speaker.
- Support for country-specific settings (homologation) under host control.
- Supports extension phone detection for set-top box applications when used with CSP1035A DAA.
- Customized feature set using code downloads into on-chip RAM.
- Internal PLL to generate high-speed clocks from external low-cost crystal.
- Single 3.3 V supply.
- Type 1 caller ID support (US, UK, France, Germany, and Spain).

### Introduction

OCM-22 is a low-cost modem solution for low-speed embedded applications. OCM22 includes a simplified AT command set and supports data rates from 300 bits/s (V.21) to 2400 bits/s (V.22bis) and only requires a CSP1034 or CSP1035A to make a complete modem.

OCM-22 provides a choice of two system interfaces, a serial interface or an 8-bit parallel interface. The serial interface can be used in systems that have an available serial port. In other systems, the parallel interface can be I/O or memory mapped onto typical processor buses.

In typical applications, OCM-22 is paired with Agere's CSP1035A silicon DAA to implement a low-cost worldwide modem. OCM-22 can also be used with Agere's CSP1034 line codec for traditional transformer-based DAA designs.

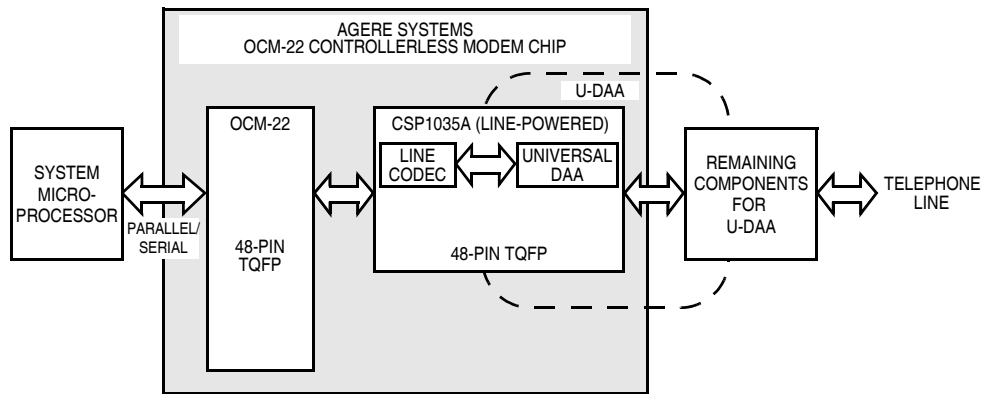
### Applications

- Set-top-box
- Verification machines
- Point of sale
- Franking machines
- Other low-speed data

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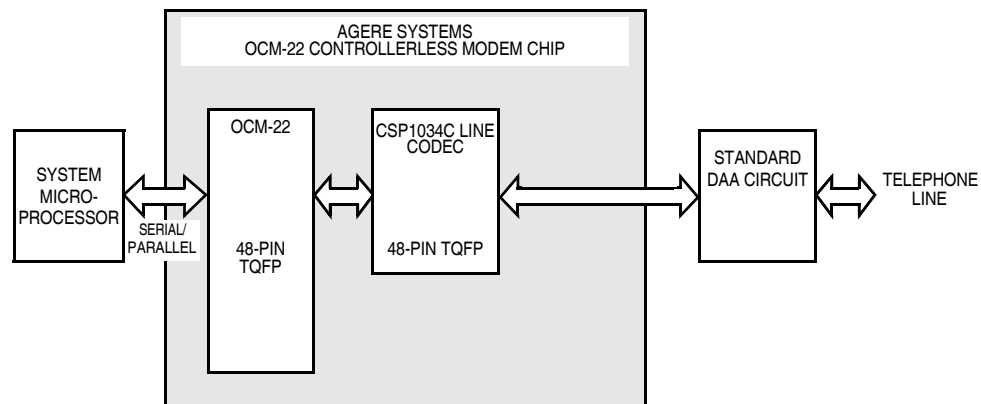
## Functional Description

The Agere Systems OCM-22 chip set is a two-chip solution consisting of an Agere Systems OCM-22 and a CSP1034C or CSP1035A. A block diagram of the OCM-22 chip sets are illustrated in Figure 1 and Figure 2.



D5-9559 (F)a R.02

Figure 1. OCM-22 + CSP1035A Universal DAA Chip Set Block Diagram



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Figure 2. OCM-22 + CSP1034C Chip Set Block Diagram

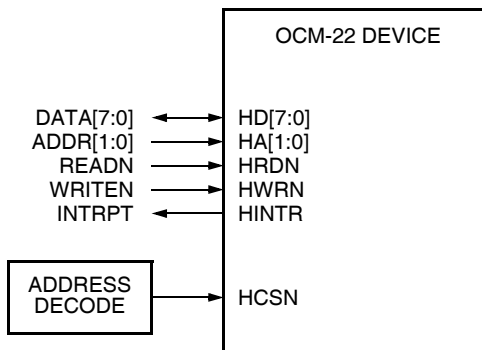
## DIA Port

OCM-22 provides a system interface for use in embedded applications that requires only two address lines, a read/write strobe, and a single chip select. The interface feeds directly into the DIAs four registers.

The following diagram shows how the host system and the OCM-22 interface. In this configuration, external logic decodes the address that selects the DIA port, and the embedded application accesses the four control registers associated with the DIA port to communicate with OCM-22. This configuration also allows a clean interface to external plug-and-play and PCMCIA interface devices.

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## Functional Description (continued)



5-8104 (F) a

Figure 3. Parallel Interface to DIA Port

### Internal PLL for Low-Speed Crystal Support

OCM-22 supports low-speed, external crystals by incorporating a PLL to support lower-cost crystals and to ease the effort of minimizing EMI. If future code needs higher clock rates, an internal multiplier can provide this without recertification or redesign of the external hardware. OCM-22 requires an external 29.4912 MHz crystal or oscillator.

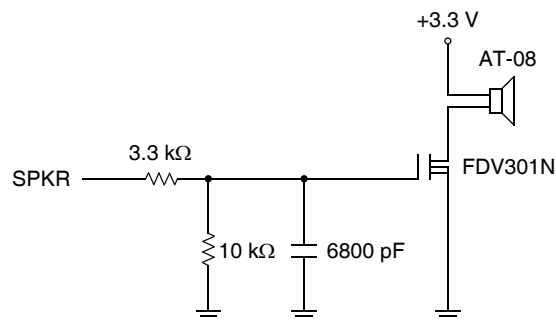
### PWM Speaker Interface

The speaker driver employs a pulse-width modulated algorithm, where 8-bit two's complement data is modulated by a triangle wave. The following diagram shows the recommended speaker configuration. This inexpensive configuration drives a low-impedance speaker while obtaining a suitable volume. The SPKR signal is fed to a transistor through a low-pass filter to remove the carrier signal (cut-off frequency = 4 kHz).

### Power Requirements

Both the OCM-22 device and the CSP1034C are manufactured in low-power CMOS technology and are designed to operate using only a single 3.3 V supply. During operation, OCM-22's on-chip PLL can be set to provide only the minimum internal clock rate required.

The CSP1035A is also manufactured in low-power CMOS technology. However, the CSP1035A is fully line powered. A shunt regulator maintains a monitored 2.7 V supply, during off-hook conditions. If the voltage falls below 2.2 V, the chip saves its registers and goes into reset. This allows the CSP1035A to retain the register settings during a call bridge where the tip/ring voltage can collapse to 0 V for up to 400 ms and start up again at the completion of the call break.



5-8105 (F)

Figure 4. Lower-Impedance Speaker Configuration

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## Package Information

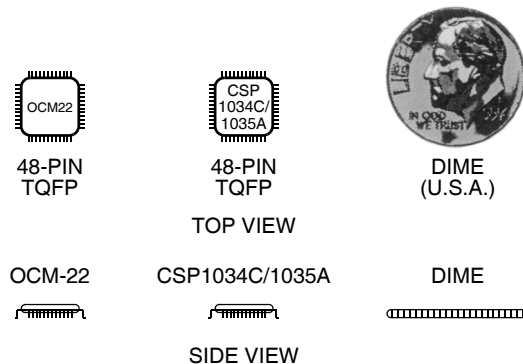


Figure 5. OCM-22 Data Pump Chip Set

## Ordering Information

Table 1. Chip Set Names and Part Numbers

| Device      | Description | Package     | Part Number    | Comcode   |
|-------------|-------------|-------------|----------------|-----------|
| OCM-22      | Modem       | 48-pin TQFP | OCM22-JTDKV-DB | 700054307 |
| 3.3 V Codec | CSP1034C    | 48-pin TQFP | CSP1034C-T11   | 108159542 |
| Silicon DAA | CSP1035A    | 48-pin TQFP | CSP1035A-T11   | 108877077 |

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