

Winbond's W681512 Single-Channel CODEC

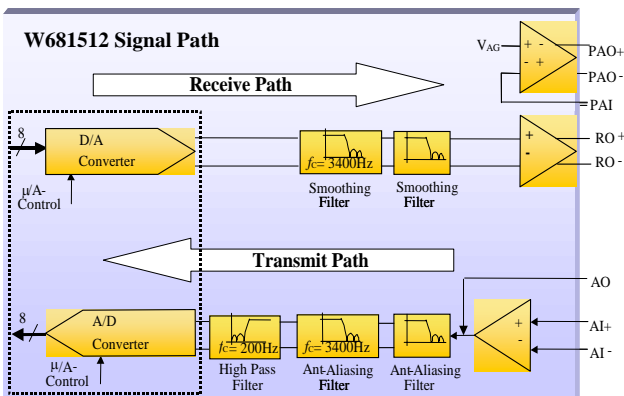
The W681512 single channel voice CODEC is an analog-to-digital and digital-to-analog converter that complies with ITU-T G.712 specifications. The CODEC features complete μ -Law and A-Law companders (pin selectable) that are designed to comply with ITU-T G.711 specifications. The chip also offers a fully differential analog output.

In order to provide the cleanest possible signal, the W681512 CODEC complies with the ITU-T G.712 recommendation for analog-to-digital pre-filters (also known as anti-aliasing filters) and Digital-to-Analog post filter (signal smoothing filter).

The W681512 CODEC contains an additional analog power amplifier that drives higher current output. The power amplifier gain levels can be adjusted via a set of external resistors to drive an output level of up to 6.3V, peak-to-peak, across a 300- Ω load.

The PCM interface for the W681512 produces 8-bit digital data (μ -Law or A-Law) at a sampling rate of 8kHz. It can communicate in four different clock formats; short frame sync, long frame sync, IDL and CGI. The W681512 is available in 20-pin SOP and SSOP packaging.

For evaluation and prototyping purposes, a development kit, the W681512DK, is available to provide the system designer with a flexible method for developing and testing an application on a single, standalone platform.



Preliminary Product Bulletin

Features

- Single supply voltage: 4.5 - 5.5V
- Typical power dissipation: 30mW, power-down of 0.5 μ W
- Fully-differential analog circuit design
- Differential outputs
- On-chip precision reference voltage of 1.575V for a 0dBm TLP @ 600 Ω
- Push-pull 300 Ω power drivers with external gain adjust
- 8 kHz sample rate
- Master clock rates: 256 kHz, 512 kHz, 1536 kHz, 1544 kHz, 2048 kHz, 2560 kHz and 4096 kHz
- Pin-selectable μ -Law and A-Law companding (full compliance with ITU-T G.711)
- CODEC A/D and D/A filter compliance with ITU-T G.712 specifications
- PCM interface: Short Frame Sync, Long Frame Sync, IDL and GCI timing environments
- Temperature range: Industrial grade (-40 $^{\circ}$ C to 85 $^{\circ}$ C)
- Packaging: 20-pin SOP

Benefits

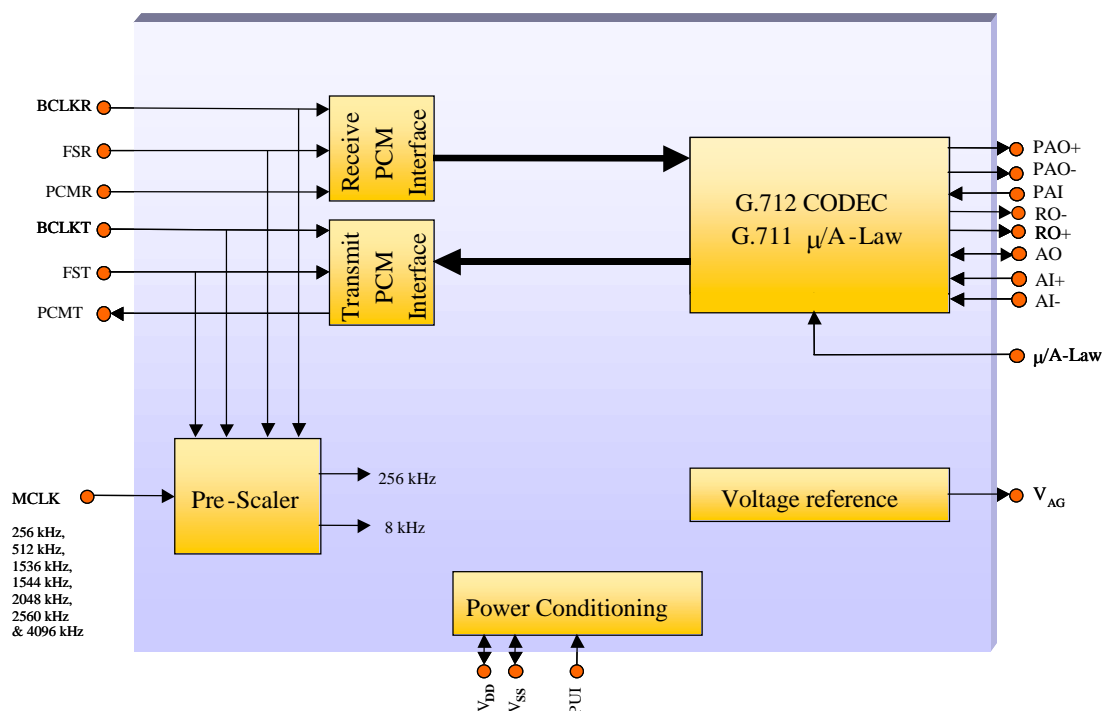
- Low power competitive solution
- System level customization
- Cross references with the Motorola[®] MC145480 & MC14LC5480

CODEC Applications

- VoIP, Voice over Networks
- PBX systems (gateways, switches)
- PABX/SOHO systems
- Local loop card
- SOHO routers
- Fiber-to-curb equipment
- Enterprise phones
- Digital telephone systems
- ISDN equipment
- Modems/PC cards

Development System

- The W681512DK is a development kit that can be configured in one of the following two modes:
 - **Stand alone** - capable of demo a loop back and prototype a design on a dedicated board space
 - **Back-to-Back** - enables full system test between two platforms



W681512 Block Diagram

| Pin # | Pin Name | Functionality |
|-------|-----------------|---|
| 1 | RO+ | Non-Inverting Receive output |
| 2 | RO- | Inverting Receive output |
| 3 | PAI | Power amplifier inverted input |
| 4 | PAO- | Inverting Power Amplifier output |
| 5 | PAO+ | Non-Inverting Power Amplifier output |
| 6 | V _{DD} | Positive power supply |
| 7 | FSR | Receive Frame Sync input |
| 8 | PCMR | PCM input data receive |
| 9 | BCLKR | Receive bit clock input |
| 10 | PUI | Power up indicator |
| 11 | MCLK | System master clock input |
| 12 | BCLKT | Transmit bit clock input |
| 13 | PCMT | PCM output data transmit pin |
| 14 | FST | Transmit Frame Sync input |
| 15 | V _{SS} | Ground power supply |
| 16 | μ /A-Law | μ -Law /A-Law companding select pin |
| 17 | AO | Transmit gain output |
| 18 | AI- | Inverting Transmit input |
| 19 | AI+ | Non-Inverting Transmit input |
| 20 | V _{AG} | Analog signal reference ground output |

| | | | | |
|-----------------|----|---|----|-----------------|
| RO+ | 1 | <p>SINGLE CHANNEL CODEC</p> <p>SOP/SSOP</p> | 20 | V _{AG} |
| RO- | 2 | | 19 | AI+ |
| PAI | 3 | | 18 | AI- |
| PAO- | 4 | | 17 | AO |
| PAO+ | 5 | | 16 | μ /A-Law |
| V _{DD} | 6 | | 15 | V _{SS} |
| FSR | 7 | | 14 | FST |
| PCMR | 8 | | 13 | PCMT |
| BCLKR | 9 | | 12 | BCLKT |
| PUI | 10 | | 11 | MCLK |

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Note: For more details on Winbond's W681512 please refer to the product datasheet.

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 Winbond CIDPB1-0901