**General Description**

The MG3500 is a highly integrated, multichannel, low-power, HD H.264 SoC ideal for today’s consumer and security markets.

It offers a fully compliant baseline, main, and high-profile HD H.264 codec, MJPEG codec, HD MPEG2 decoder, Video preprocessors and postprocessors, 240MHz ARM9™ CPU, and a host of peripherals including Gigabit Ethernet MAC, USB 2.0, SD™ card, compact Flash, IDE, CE-ATA, SDIO, and MMC.

At the heart of the audio and video subsystems are two real-time programmable multimedia engines (MME). One controls the video codecs and input/output processors, while the other implements the soft audio codecs and low-level analytics, leaving the ARM9 processor completely available for application programs.

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**System Block Diagram**

- **Encoder Subsystem**: SDRAM Controller, Video Input Processor 0, Video Input Processor 1, Audio Subsystem, RISC Processors, Slave Host/Bridge, AES/SHA Security
- **Video Output**: Bitstream Interface, Video Output Processor
- **Video Input**: DDR2 SDRAM Memory, High-speed Bitstream
- **Audio Input**: i²S
- **Slave Host/Bridge**: Master/Slave Host Interface
- **Master Host**: SD/MMC Controller, ARM926 Processor, Ethernet MAC, USB with PHY, PWM, Serial I/O, TWI/SPI

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GEO Semiconductor Inc.

Features

Video Inputs
- Two advanced Video Input Processors (VIPs)
- Two 8-bit video ports: one input port, one bidirectional port

Video Processing
- Spatial and Temporal noise filtering
- Vertical and Horizontal Scalars using 8-tap polyphase filters
- Four field motion adaptive deinterlacer
- Impulse noise filter
- Statistic extraction for better compression

Video Outputs
- One Video Output Processor (VOP) with graphics plane support
- 16-bit parallel output

Video Codecs
- High Definition (HD) or Standard Definition (SD) H.264 codecs (encoder + decoder)
- High, Main, and Baseline profiles support for resolutions up to 1920 x 1080 at 30fps
- Single HD or multi-stream encoding support
- H.264 codec up to level 4.1
- Programmable resolutions and frame rates
- Video bit rates: 64Kbps to 62.5Mbps
- Interlaced and Frame capturing and encoding support
- MPEG-2 decoder
- Real time HD MPEG-2 to H.264 transcoding
- JPEG codec (encoder + decoder)
- HD or SD MJPEG support

Audio I/O
- Two I²S audio input ports and three I²S audio output ports
- One Sony/Philips Digital Interface (S/PDIF) output port

Audio Codecs
- High-fidelity, 2-channel Audio Coding-Low Complexity (AAC-LC) codec
- MPEG-1/2 Audio Layer II codec (MP2)
- MPEG-1/2 Audio Layer I and III decoder (MP1 and MP3)
- Pulse Code Modulation (PCM) format
- G.711, G.722, G.726 codec
- Flexible bit rates and sample rates

Integrated ARM9 Processor
- 240MHz general purpose processor
- 16kByte Data cache
- 16kByte Instruction cache
- 16kByte Scratch pad memory

Memory Interface
- DDR2 SDRAM memory
- 32-bit data at 264MHz

Peripheral Interfaces
- One Two-wire interface port
- Three UART ports
- Three Pulse Width Modulators (PWM)
- High-speed Bit stream I/O or one SPI
- USB 2.0 port including physical layer
- AES and SHA hardware acceleration
- Up to 72 GPIO with eight dedicated GPIO pins
Power and Voltage

- Core voltage: 1.05V ±5%
- SDRAM voltage: 1.8V ±0.1V
- I/O voltages: 1.8V ±5%, 2.5V ±5%, 3.3V ±5%
- On-chip audio, video Phase Lock Loops (PLLs) driven from a single crystal

Packaging

- 376-pin FPBGA, 18x18mm, 0.8mm pitch, RoHS compliant

Applications

- Compression Camera for consumer video conferencing
- Security IP Camera and DVR
- Video Decoding and Transcoding

Ordering Information

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<thead>
<tr>
<th>Part Number</th>
<th>Package: Type, Pins, Foot Print, Code</th>
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