Silicon Systems®
A Texas Instruments Company

SSI 33P3720A

DVD Analog Front-End with DPD, DPP and 3 Beam Error Detection

Preproduction

August 1997

DESCRIPTION

The SSI 33P3720A device is a high performance BiCMOS single chip analog front-end IC that contains the servo functions, RF attenuator, AGC and programmable equalizer/filter for a DVD drive system, and an auto laser power control circuit. Programmable functions of the SSI 33P3720A are controlled through a bi-directional serial port and banks of internal registers.

FEATURES

GENERAL

- **Supports AGC and equalizer/filter up to DVD 3x speed and down to CD 1x speed**
- **Low power operation (350 mW typical @ 5 V)**
- **Bi-directional serial port register access**
- **Register programmed power management (sleep mode < 5 mW)**
- **Power supply range (4.5 to 5.5 V)**
- **Small footprint 64-Lead TQFP package**

SERVO

- **20 MHz bandwidth for the differential phase tracking error detection circuit (DPD)**
- **130 kHz bandwidth for the focus, 80 kHz bandwidth for the DPP, 3 beam tracking error detection circuits**
- **Input programmable gain control amplifier (max: +20 dB, 3-bit resolution)**
- **Servo algebra signals used for optical alignment, seeking, focusing, and track following**
- **Pull-in signal output**
- **Mirror signal output**
- **Tracking error signal output**
- **3 beam tracking error detection for CD**
- **1 beam differential phase tracking error detection for DVD**
- **3 beam differential push-pull tracking error detection for DVD-RAM**
- **Focusing error signal output**
- **Tilt servo control circuit**

CHANNEL

- **30 MHz bandwidth**
- **Programmable attenuator (min: -24 dB, 4-bit resolution)**
- **Fast attack/decay mode for rapid AGC recovery**
- **Low drift AGC hold circuitry**
- **Temperature compensated, exponential control AGC**
- **External AGC HOLD control pin**
- **Supports two ranges of programmable cutoff frequency: 4 to 16 MHz, 1 to 8 MHz**
- **Programmable boost/equalization of 0 to 12 dB**
- **Single-ended normal outputs for pulse qualification**
- **Differential normal signal outputs**
- **(20% Fc accuracy (Fc = 1 to 8 MHz)**
- **(15% Fc accuracy (Fc = 4 to 16 MHz)**
- **Less than 2% total harmonic distortion**
- **No external filter components required**

AUTO LASER POWER CONTROL

- **Supports power mode selection**

FIGURE 1A: Block Diagram

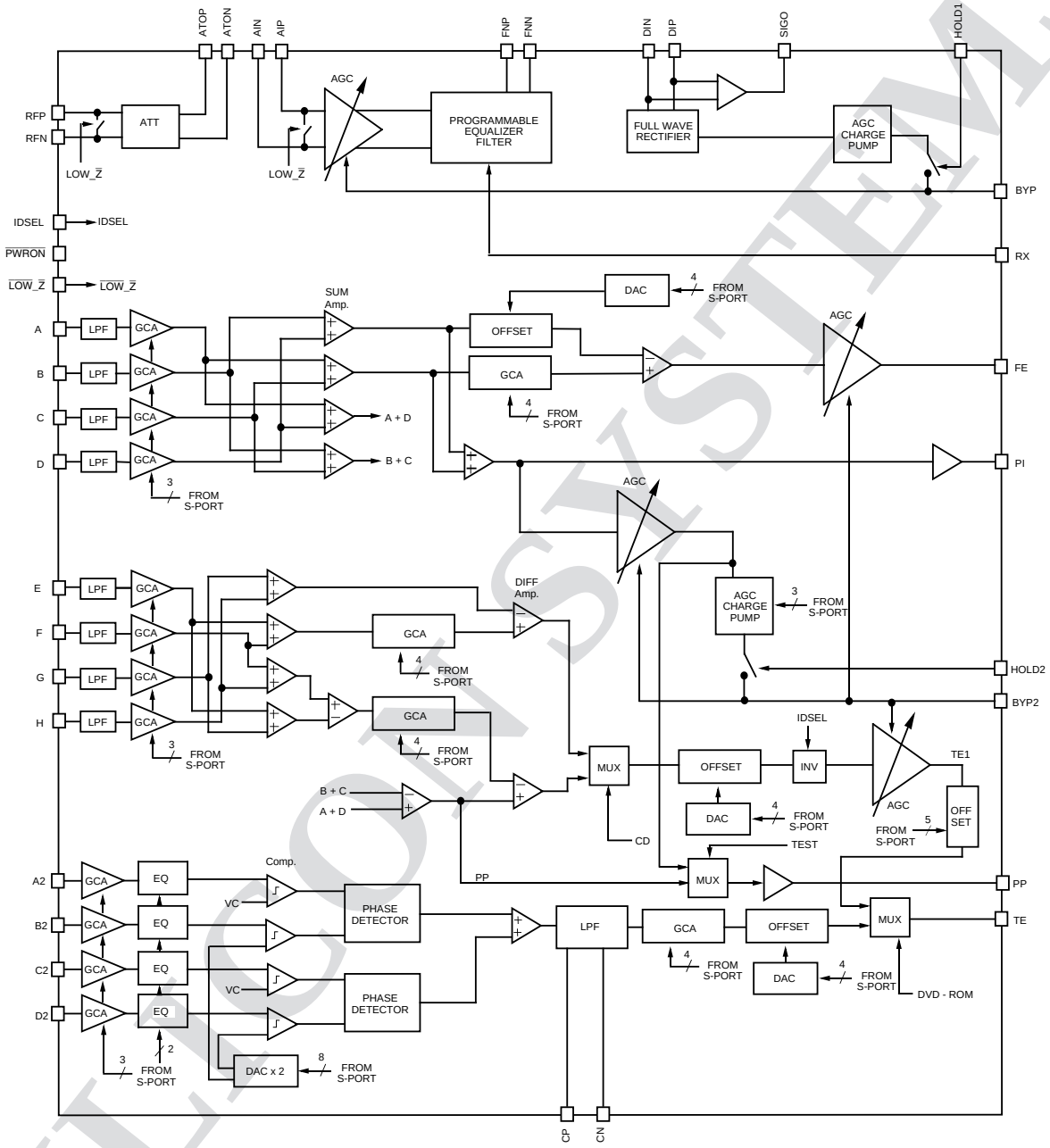

FIGURE 1B: Block Diagram