TEXAS INSTRUMENTS

STORAGE
Products Group

TLS2247
Servo-Combination Driver

February 1999

DESCRIPTION

The TLS2247 provides the capability to drive a voice-coil motor (VCM) and spindle motor of a hard disk drive system. The spindle section is a complete speed control servo system including power and predrivers requiring only a few additional discrete components for full functionality. The VCM section is a complete feedback controlled transconductance amplifier with power and pre-drivers. Only a few external compensation components is necessary to reshape the VCM closed-loop response. Serial interface is provided to program the internal registers for all user-selectable functions. Other supporting functions are also provided to facilitate the control of VCM during tracking. A functional block diagram of the TLS2247 chip is shown on page 2.

FEATURES

GENERAL

- **5 V operation, 3.3 V/5 V digital inputs**
- **Serial port interface (20 Mbit/s data transfer rate)**

VOICE COIL MOTOR (VCM) DRIVER

- **High efficiency drivers, 1.5 Ω Rds(on) total (worst case)**
- **0.6 A capability**
- **Sense resistor current control**
- **5-bit programmable gain for CPES signal**
- **2-mode window comparator with 4-bit programmable threshold**

SPINDLE MOTOR DRIVER

- **High efficiency drivers, 1.0 Ω Rds(on) total (worst case)**
- **1.0 A capability**
- **Digital commutation delay and blanking**
- **Bipolar drive**
- **3 bit DAC for start up current**
- **Driver slew rate control by setting an external capacitor**
- **FLL rotation speed control**

VOLTAGE MONITOR/VOLTAGE REFERENCE

- **Supply voltage fault/reset detector provides ±2% tolerance**
- **3.3 V voltage regulator with 125 mA load capability**

BLOCK DIAGRAM