

### DESCRIPTION

The TLS2245 is a driver designed for use in hard-disk-drive (HDD) applications. The TLS2245 can drive a voice-coil motor (VCM) and spindle motor (SPM). Both the VCM and spindle sections are complete servo systems including power and predrivers requiring only a few additional discrete components for full functionality.

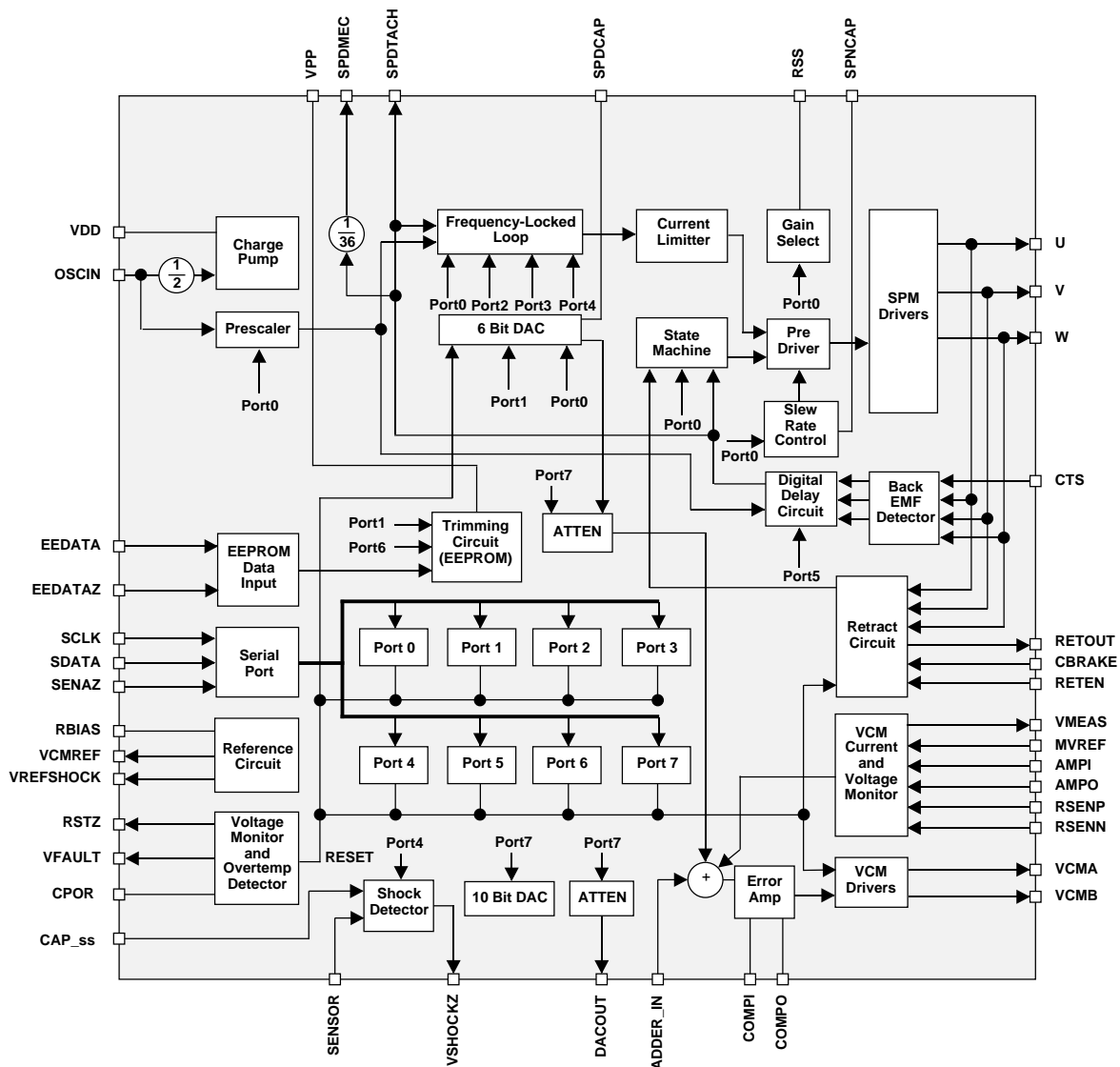
### FEATURES

- **GENERAL**
  - 5 V operation
  - Serial Port Interface (20 Mbit/s data transfer rate)
- **VOICE-COIL MOTOR (VCM) DRIVER**
  - High efficiency drivers, 1.5  $\Omega$  on-state drain-source resistance ( $R_{DS}$ ) total (worst case)
  - 0.4 A capacity
  - 3 gain ranges (1:2:8)
  - 2 modes selectable for power-off  
Retract operation:
    - For CSS operation on-chip circuitry provides VCM voltage from spindle back electromotive force (EMF)
    - For ramp loading/unloading off-chip circuitry provides VCM voltage from spindle back EMF
  - 10-bit DAC current control and 6-bit DAC for offset adjust control
  - Current and voltage monitor circuit for ramp loading
  - Sense resistor current control
- **SPINDLE MOTOR DRIVER**
  - High efficiency drivers, 1  $\Omega$  on-state  $R_{DS}$  total (worst case)
  - 1 A capability
  - Digital commutation delay and blanking
  - Bipolar drive
  - Dynamic braking/power-off braking after retract
  - 6-bit DAC for startup current control (also used as offset adjust for the VCM)
  - Driver slew rate control by setting an external capacitor
  - Frequency-locked loop (FLL) rotation speed control
- **SHOCK DETECTION CIRCUIT**
  - Shock sensor amplifier
  - On-chip low-pass filter (LPF) and shock detection voltage that is adjustable using serial port
- **VOLTAGE MONITOR/VOLTAGE REFERENCE**
  - Fault detector provides  $\pm 2\%$  supply voltage tolerance
  - Reset circuit provides  $\pm 2\%$  tolerance

# TLS2245

## Servo-Combination Driver

### BLOCK DIAGRAM



Port 0	SPM control, power save
Port 1	6-bit DAC, SPM/VCM control, EEPROM
Port 2	Rotation speed setting 1
Port 3	FLL current control, slew rate control
Port 4	Rotation speed setting 2, rotation error setting, shock level setting
Port 5	Phase delay control, SPDTACH I/O control
Port 6	TEST circuit setting
Port 7	10-bit DAC data setting, DAC gain select