Silicon Systems®
A Texas Instruments Company

TLS24308/10/18/20

8 and 10-Channel Magneto Resistive/ Thin-Film Read/Write Preamplifiers

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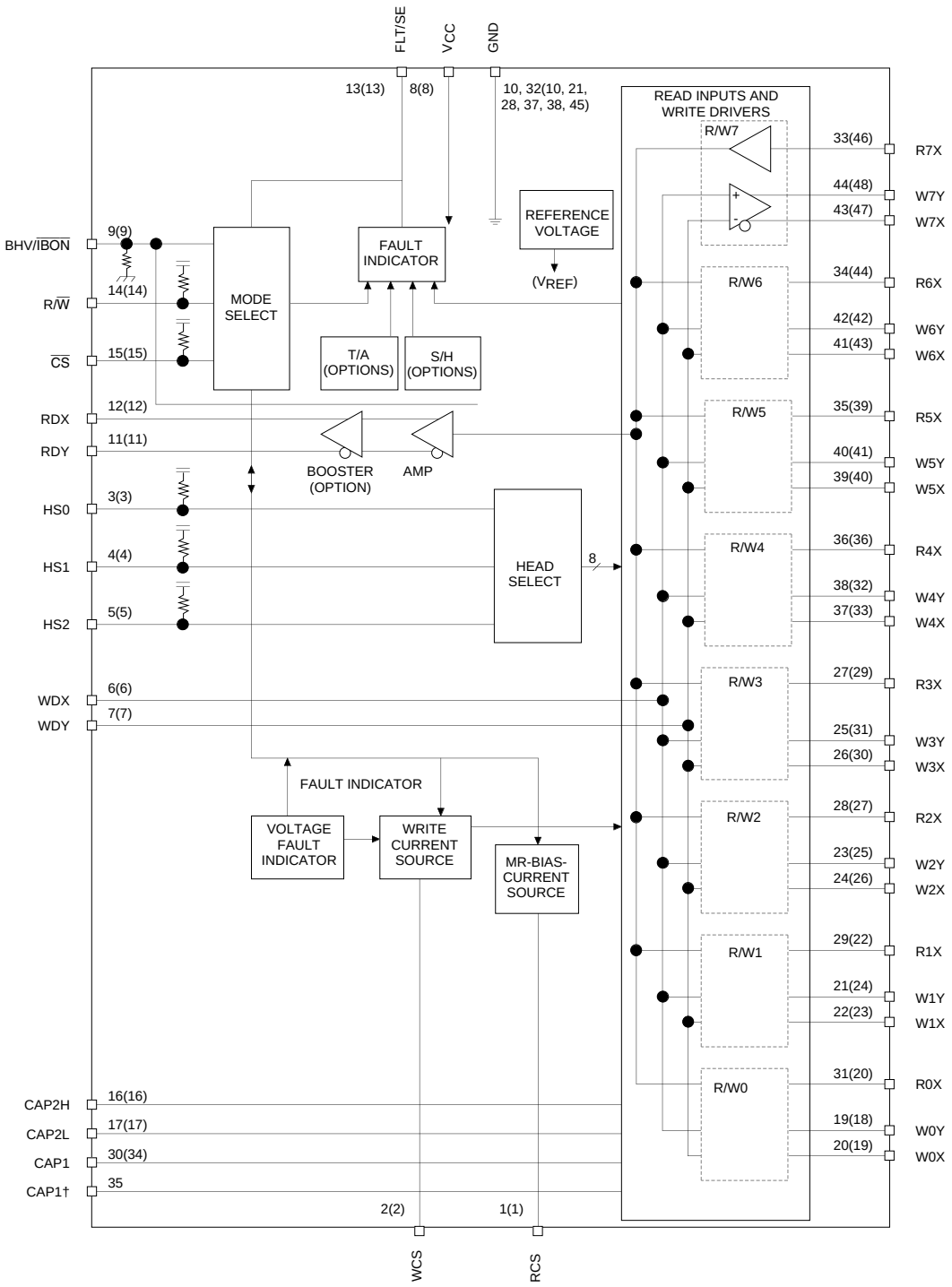
FEATURES

- Current-bias/current-sense architecture
- Fabricated using LinIMPACT-C™ BiCMOS technology
- Operates from a single 5 V supply (±10%)
- Low-power idle mode
- Single-ended input to reader with one side grounded
- True differential read output
- Wide magnetoresistive (MR) resistopr [$R_{(MR)}$] range from 10 Ω to 40 Ω
- MR-head bias current [$I_{I(BIAS)}$] programmable from 7 mA to 17 mA
- Buffered-head-voltage [$V_{(BH)}$] monitor
- Gain: 230 V/V at $R_{(MR)}$ = 20 Ω
- Bandwidth:
  - 65 MHz at -1 dB [$R_{(MR)}$ = 20 Ω]
  - 140 MHz at -3 dB [$R_{(MR)}$ = 20 Ω]
- Equivalent input noise = 0.55 nV/√Hz at R(MR) = 20 Ω
- Write-head current programmable from 10 mA to 35 mA (Base to peak)
- Write-current rise/fall time = 3.7 ns
  - $L_{I(TF)}$ (Head only) = 180 nH
  - $R_{I(TF)}$ = 15 Ω, $L_{(lead)}$ = 50 nH
  - $II_{(W)}$ = 25 mA
- Fast recovery times:
  - Write to read = 0.8 µs typical (BHV/$\overline{IBON}$ = L)
  - Read to write = 50 ns typical
- Output capacitance = 8.5 pF for write
- Multichannel servo write to all channels
- Read-fault (RUS), write-fault (WUS), and idle-fault (IUS) detection
- MR-head open protection and MR-head short detection available (metal option, disabled)
- Thermal-asperity detection available (metal option, disabled)
- Pseudo-ECL (PECL) differential-write-data (WDX and WDY) inputs
- Write data divided-by-2 (FF) circuit available (metal option, disabled)
- Channel separation 70 dBa at f = 25 MHz
- Power-supply rejection ratio (PSRR) 50 dB at 25 MHz (input referred)
- MR bias on during write mode; otherwise, programmable on/off
- Input control lines:
  - Head select HS0-HS2 (8 channel) or HS0-HS3 (10-channel) with internal pullup resistors
  - R/$\overline{W}$ with internal pullup resistor
  - $\overline{CS}$ with internal pullup resistor
  - BHV/$\overline{IBON}$ with internal pulldown resistor
- Packaged in 44/48-Pin (8-channel) TSSOP and 50/56-Pin (10-channel) TSSOP packages
- Optimized for package-on-arm applications

24308 AND 24318 BLOCK DIAGRAM



† Dual CAP1 inputs occur only on the TLS24318.
Pin Numbers shown are for the TLS24308 and those shown in parenthesis are for the TLSW24318.