

LPC3250 OEM Board Feature Highlights

The LPC3250 OEM Board provides a quick and easy solution for implementing a high-performance ARM ARM926EJ-S based design around the LPC3250 from NXP.

- Build around NXP's ARM926EJ-S LPC3250 microcontroller with 256Kbyte internal SRAM
- 64MByte external DDR SDRAM, via 16-bit databus
- 128 Mbyte NAND FLASH
- 4 MByte SPI-NOR FLASH
- 100/10Mbps Ethernet interface based on DP83848 ETH-PHY
- On-board ISP1301 USB OTG transceiver
- 13.000 MHz and 32.768 kHz crystals for LPC3250
- 32Kbyte I2C E2PROM for storing non-volatile parameters
- Buffered 16-bit data bus with voltage translation to external bus (VCC_{EXT} can be 1.4-3.6V)
- +3.3V powering
- 200 pos expansion connector (as defined in popular SO-DIMM industry standard), 0.6mm pitch
- Compact design with dimensions: 68 x 50 mm

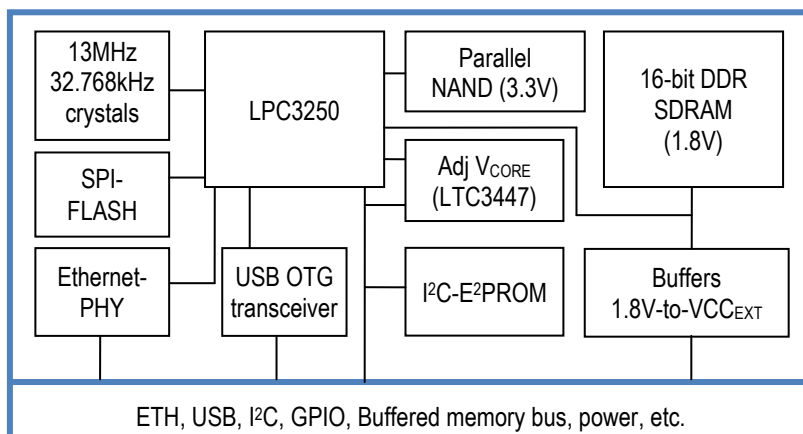


Support Highlights

- Access to Embedded Artists support page containing
 - Schematics
 - User's Manual
 - Sample software applications
 - OEM Board Integration Guide
- Supported by Developer's Kit, see picture to right
- Volume discount available
- Customization service available for optimized high-volume design



Block Diagram of LPC3250 OEM Board



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Absolute Maximum Ratings

| Parameter | Rating |
|-------------------------------------|-------------------|
| VDD to GND (Supply voltage) | -0.2V to +4V |
| Digital/Analog Input/Output Voltage | -0.2V to VDD+0.2V |
| Storage temperature | -40°C to 100°C |

Stress above these limits may cause permanent damage to the board.

Technical Data

| Parameter | Min | Typical | Max |
|--|--------------------|---------|---------------------|
| VCC Supply voltage | 3.10V | 3.30V | 3.50V |
| Ripple with frequency contents < 100kHz | | | 50mV |
| Ripple with frequency contents ≥ 100kHz | | | 10mV |
| VCC _{EXT} Supply voltage | 1.40V | | 3.60V |
| Supply current | | | Max observed |
| - idle, 32kHz RTC active | | TBD | |
| - low-power mode (13 MHz) | | TBD | |
| - executing from internal SRAM (266 MHz) | | TBD | |
| - executing from external SDRAM (266MHz) | | TBD | |
| - Ethernet+usb active | | TBD | |
| VBAT current | | TBD | |
| Operating temperature ^[1] | | | |
| - 208 MHz core frequency | 0°C | | 60°C |
| - 266 MHz core frequency ^[2] | 5°C ^[3] | | 40°C ^[3] |
| Relative Humidity (RH) | | | |
| 0°C < T _A ≤ 50°C, non-condensing | 5% | | 80% |
| 50°C < T _A ≤ 60°C, non-condensing | 5% | | 50% |
| 60°C < T _A ≤ 70°C, non-condensing | 5% | | 35% |

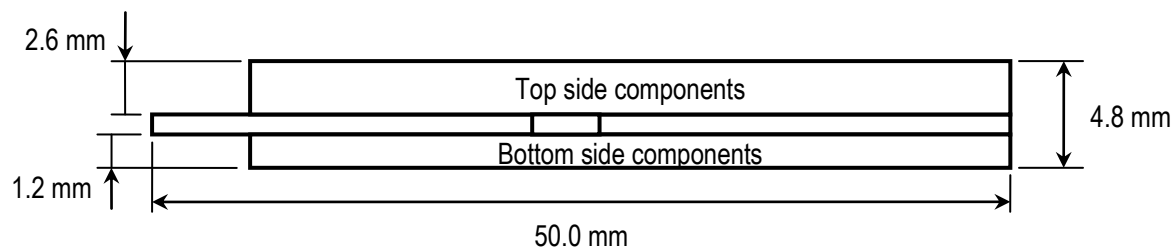
[1] Extended temperature range can be supplied on request. Subject to minimum order volume.

[2] Requires VDD_{core} to be 1.35V.

[3] Temperature range planned to be extended after passing Embedded Artists internal qualification process.

Mechanical Dimensions

Board width according to SO-DIMM standard: 67.6 mm. Board height (top and bottom) according to picture below:



ESD CAUTION

ESD (electrostatic discharge) sensitive device. Charged devices and circuit boards can discharge without detection. Although this product features ESD protection damages may occur on devices subjected to high energy ESD. Therefore, proper ESD precaution should be taken to avoid performance degradation or loss of functionality.



Pin Information

Note that each LPC3250 pin can have more functions than indicated in table below. See datasheet for details.

| SO-DIMM pins | I/O, Application Details | Connected to |
|--------------|--------------------------|---------------------------|
| 1 | A, Ethernet TXP | Ethernet-PHY |
| 2 | A, Ethernet RXP | Ethernet-PHY |
| 3 | A, Ethernet TXN | Ethernet-PHY |
| 4 | A, Ethernet RXN | Ethernet-PHY |
| 5 | P, VDD3_3A | |
| 6 | P, GND | |
| 7 | OD, ETH-LED1 | Ethernet-PHY |
| 8 | OD, ETH-LED2 | Ethernet-PHY |
| 9 | P, VBAT-IN | LPC3250, RTC powering |
| 10 | O, ONSW | LPC3250, ONSW |
| 11 | I, RESET-IN | LPC3250, RESET via buffer |
| 12 | O, RESET-OUT | LPC3250, RESOUT |
| 13 | I, ETH-PHY-PD | Ethernet-PHY, power down |
| 14 | I, DBGEN | LPC3250, dbggen |
| 15 | I, TCK | LPC3250, jtag-tck |
| 16 | O, RTCK | LPC3250, jtag-rtck |
| 17 | I, TRST | LPC3250, jtag-trst |
| 18 | I, TMS | LPC3250, jtag-tms |
| 19 | I, TDI | LPC3250, jtag-tdi |
| 20 | O, TDO | LPC3250, jtag-tdo |
| 21 | P, V3A | LPC3250, vdda |
| 22 | NC | |
| 23 | P, VSSA | LPC3250, vssa |
| 24 | P, GND | |
| 25 | O, GPO | LPC3250, GPO_10 |
| 26 | O, GPO | LPC3250, GPO_12 |
| 27 | O, GPO | LPC3250, GPO_13 |
| 28 | O, GPO | LPC3250, GPO_15 |
| 29 | O, GPO | LPC3250, GPO_16 |
| 30 | O, GPO | LPC3250, GPO_18 |
| 31 | B, GPIO | LPC3250, P0.2 |
| 32 | B, GPIO | LPC3250, P0.3 |
| 33 | B, GPIO | LPC3250, P0.4 |
| 34 | B, GPIO | LPC3250, P0.5 |
| 35 | I, GPI | LPC3250, GPI_01 |
| 36 | I, GPI | LPC3250, U7_HCTS |
| 37 | P, VCC | |
| 38 | P, GND | |
| 39 | P, VCC | |
| 40 | P, GND | |
| 41 | NC | |
| 42 | A, USB2-DP | LPC3250, USB-D+ |
| 43 | NC | |
| 44 | A, USB2-DM | LPC3250, USB-D- |
| 45 | O | LPC3250, GPO_06 |
| 46 | O | LPC3250, PWMOUT2 |
| 47 | O | LPC3250, U6_IRTX |
| 48 | I, GPI | LPC3250, U6_IRRX |
| 49 | O | LPC3250, U5_TX |
| 50 | I, GPI | LPC3250, U5_RX |
| 51 | O, GPO | LPC3250, GPO_02 |

| SO-DIMM pins | I/O, Application Details | Connected to |
|--------------|----------------------------|--------------------------|
| 101 | P, GND | |
| 102 | P, GND | |
| 103 | B | LPC3250, I2S1TX_CLK |
| 104 | B | LPC3250, I2S1TX_SDA |
| 105 | B | LPC3250, I2S1TX_WS |
| 106 | B, GPIO | LPC3250, P0.0 |
| 107 | B, GPIO | LPC3250, P0.1 |
| 108 | I, GPI | LPC3250, GPI_00 |
| 109 | B, I2C-SDA | LPC3250, I2C2_SDA |
| 110 | O, I2C-SCL | LPC3250, I2C2_SCL |
| 111 | I, GPI | LPC3250, GPI_04 |
| 112 | I, GPI | LPC3250, GPI_06 |
| 113 | A | ISP1301, USB_ID |
| 114 | I | LPC3250, POWER_ON Vcore |
| 115 | O | LPC3250, TST_CLK2 |
| 116 | B, GPIO | LPC3250, P2.7 |
| 117 | B, GPIO | LPC3250, GPIO_00 |
| 118 | B, GPIO | LPC3250, GPIO_01 |
| 119 | I, GPI | LPC3250, GPI_07 |
| 120 | B, GPIO | LPC3250, P2.0 |
| 121 | B, GPIO | LPC3250, P2.1 |
| 122 | B, GPIO | LPC3250, P2.2 |
| 123 | B, GPIO | LPC3250, P2.3 |
| 124 | B, GPIO | LPC3250, P2.4 |
| 125 | B, GPIO | LPC3250, P2.5 |
| 126 | B, GPIO | LPC3250, P2.6 |
| 127 | O, GPO | LPC3250, GPO_07 |
| 128 | O, GPO | LPC3250, GPO_21 |
| 129 | P, GND | |
| 130 | P, GND | |
| 131 | O, Buffered Address bus 15 | LPC3250, A15 via buffer |
| 132 | O, Buffered CS3 | LPC3250, CS3 via buffer |
| 133 | O, Buffered Address bus 14 | LPC3250, A14 via buffer |
| 134 | O, Buffered CS2 | LPC3250, CS2 via buffer |
| 135 | O, Buffered Address bus 13 | LPC3250, A13 via buffer |
| 136 | O, Buffered CS1 | LPC3250, CS1 via buffer |
| 137 | O, Buffered Address bus 12 | LPC3250, A12 via buffer |
| 138 | O, Buffered CS0 | LPC3250, CS0 via buffer |
| 139 | O, Buffered Address bus 11 | LPC3250, A11 via buffer |
| 140 | O, Buffered BLS1 | LPC3250, BLS1 via buffer |
| 141 | O, Buffered Address bus 10 | LPC3250, A10 via buffer |
| 142 | O, Buffered BLS0 | LPC3250, BLS0 via buffer |
| 143 | O, Buffered Address bus 9 | LPC3250, A9 via buffer |
| 144 | O, Buffered WE | LPC3250, WE via buffer |
| 145 | O, Buffered Address bus 8 | LPC3250, A8 via buffer |
| 146 | O, Buffered OE | LPC3250, OE via buffer |
| 147 | O, Buffer Address bus 7 | LPC3250, A7 via buffer |
| 148 | O, Buffer Address bus 23 | LPC3250, A23 via buffer |
| 149 | O, Buffer Address bus 6 | LPC3250, A6 via buffer |
| 150 | O, Buffer Address bus 22 | LPC3250, A22 via buffer |
| 151 | O, Buffer Address bus 5 | LPC3250, A5 via buffer |

| | | |
|-----|------------|--|
| 52 | O, GPO | LPC3250, GPO_03 |
| 53 | O, GPO | LPC3250, GPO_08 |
| 54 | O, GPO | LPC3250, GPO_09 |
| 55 | O | LPC3250, PWMOUT1 |
| 56 | O | LPC3250, HICORE |
| 57 | O | LPC3250, U1_TX |
| 58 | I, GPI | LPC3250, U1_RX |
| 59 | I | ISP1301, USB_VBUS_CTRL |
| 60 | O, GPO | LPC3250, GPO_17 |
| 61 | O, GPO | LPC3250, GPO_20 |
| 62 | O | LPC3250, SPI1_CLK |
| 63 | O, GPO | LPC3250, GPO_04 |
| 64 | B | LPC3250, SPI1_DATIN |
| 65 | B | LPC3250, SPI1_DATIO |
| 66 | O, GPO | LPC3250, GPO_05 |
| 67 | O, GPO | LPC3250, GPO_11 |
| 68 | A | LPC3250, TS_XP |
| 69 | A | LPC3250, TS_YP |
| 70 | A | LPC3250, AIN1 |
| 71 | A | LPC3250, AIN2 |
| 72 | A | LPC3250, AIN3 |
| 73 | O, GPO | LPC3250, GPO_00 |
| 74 | B, I2C-SDA | LPC3250, I2C1_SDA |
| 75 | B, I2C-SCL | LPC3250, I2C1_SCL |
| 76 | P, GND | |
| 77 | P, GND | |
| 78 | B | LPC3250, MCICLK |
| 79 | B | LPC3250, MCICMD |
| 80 | O, GPO | LPC3250, GPO_01 |
| 81 | B | LPC3250, MCIDAT0 |
| 82 | B | LPC3250, MCIDAT1 |
| 83 | B | LPC3250, MCIDAT2 |
| 84 | B | LPC3250, MCIDAT3 |
| 85 | B, GPIO | LPC3250, GPIO_05 |
| 86 | O, GPO | LPC3250, GPO_14 |
| 87 | I, GPI | LPC3250, GPI_03 |
| 88 | B, GPI | LPC3250, U7_RX |
| 89 | O | LPC3250, U7_TX |
| 90 | B, GPIO | LPC3250, P0.6 |
| 91 | B, GPIO | LPC3250, P0.7 |
| 92 | O, GPO | LPC3250, GPO_22 |
| 93 | B | LPC3250, SYSCLKEN |
| 94 | B | LPC3250, SPI2_DATIO |
| 95 | B, GPI | LPC3250, SPI2_DATIN |
| 96 | B, GPIO | LPC3250, GPIO_04 |
| 97 | B | LPC3250, SPI2_CLK |
| 98 | A | ISP1301, USB_VBUS |
| 99 | I, GPI | LPC3250, GPI_02 |
| 100 | O, GPO | LPC3250, GPO_19 connected to NAND flash WP |

I/O legend

O: output
I: input
B: Bidirectional
P: Power
A: Analog

| | | |
|-----|--------------------------|---------------------------|
| 152 | O, Buffer Address bus 21 | LPC3250, A21 via buffer |
| 153 | O, Buffer Address bus 4 | LPC3250, A4 via buffer |
| 154 | O, Buffer Address bus 20 | LPC3250, A20 via buffer |
| 155 | O, Buffer Address bus 3 | LPC3250, A3 via buffer |
| 156 | O, Buffer Address bus 19 | LPC3250, A19 via buffer |
| 157 | O, Buffer Address bus 2 | LPC3250, A2 via buffer |
| 158 | O, Buffer Address bus 18 | LPC3250, A18 via buffer |
| 159 | O, Buffer Address bus 1 | LPC3250, A1 via buffer |
| 160 | O, Buffer Address bus 17 | LPC3250, A17 via buffer |
| 161 | O, Buffer Address bus 0 | LPC3250, A0 via buffer |
| 162 | O, Buffer Address bus 16 | LPC3250, A16 via buffer |
| 163 | NC | |
| 164 | I, ABUF_EN | Connected to GND on board |
| 165 | P, Buffer-VCC | |
| 166 | P, GND | |
| 167 | B, Buffer Data bus 15 | LPC3250, D15 via buffer |
| 168 | I, GPI | LPC3250, GPI_08 |
| 169 | B, Buffer Data bus 14 | LPC3250, D14 via buffer |
| 170 | O, GPO | LPC3250, GPO_23 |
| 171 | B, Buffer Data bus 13 | LPC3250, D13 via buffer |
| 172 | I, GPI | LPC3250, GPI_09 |
| 173 | B, Buffer Data bus 12 | LPC3250, D12 via buffer |
| 174 | I, GPI | LPC3250, GPI_19 |
| 175 | B, Buffer Data bus 11 | LPC3250, D11 via buffer |
| 176 | B, GPIO | LPC3250, P2.8 |
| 177 | B, Buffer Data bus 10 | LPC3250, D10 via buffer |
| 178 | B, GPIO | LPC3250, P2.9 |
| 179 | B, Buffer Data bus 9 | LPC3250, D9 via buffer |
| 180 | B, GPIO | LPC3250, P2.10 |
| 181 | B, Buffer Data bus 8 | LPC3250, D8 via buffer |
| 182 | B, GPIO | LPC3250, P2.11 |
| 183 | B, Buffer Data bus 7 | LPC3250, D7 via buffer |
| 184 | B, GPIO | LPC3250, P2.12 |
| 185 | B, Buffer Data bus 6 | LPC3250, D6 via buffer |
| 186 | I, GPI | LPC3250, GPI_28 |
| 187 | B, Buffer Data bus 5 | LPC3250, D5 via buffer |
| 188 | O | LPC3250, U2_TX |
| 189 | B, Buffer Data bus 4 | LPC3250, D4 via buffer |
| 190 | I, GPI | LPC3250, GPI_17 |
| 191 | B, Buffer Data bus 3 | LPC3250, D3 via buffer |
| 192 | I, GPI | LPC3250, GPI_05 |
| 193 | B, Buffer Data bus 2 | LPC3250, D2 via buffer |
| 194 | I, GPI | LPC3250, GPI_16 |
| 195 | B, Buffer Data bus 1 | LPC3250, D1 via buffer |
| 196 | I, GPI | LPC3250, GPI_18 |
| 197 | B, Buffer Data bus 0 | LPC3250, D0 via buffer |
| 198 | O | LPC3250, U3_TX |
| 199 | P, Buffer-VCC | |
| 200 | P, GND | |

OD: Open-drain output
GPIO: General purpose I/O
GPI: General purpose input
GPO: General purpose output

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