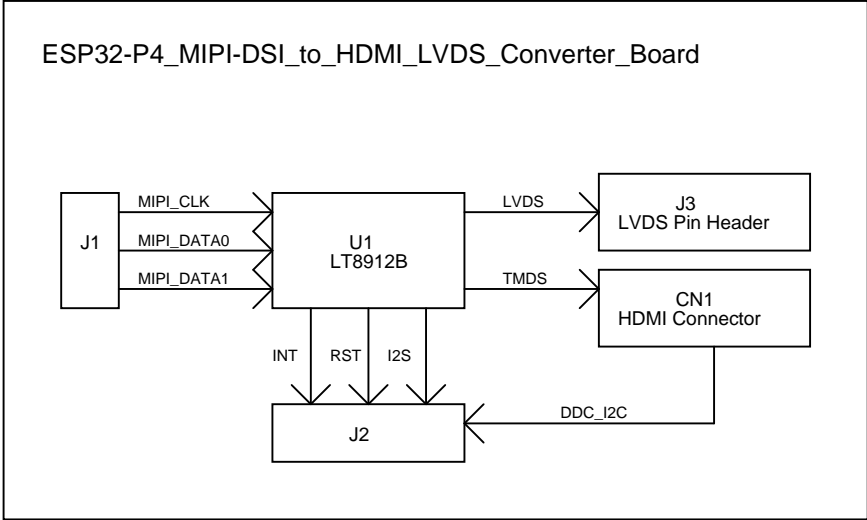
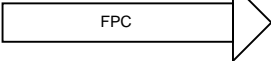


ESP32-P4\_Function\_EV\_Board



Title			
ESP32-P4_MIPI-DSI_to_HDMI_LVDS_Converter_Board			
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[illegible]

# 1.8V LDO

# LVDS OUTPUT

# Support Board Holes

[illegible]

# HDMI OUTPUT

The schematic diagram illustrates the HDMI output circuit, showing the connection of three transmitters (T1, T2, T3) to a 19-pin connector (CN1).

**Transmitters:**

- T1 (Rclamp0524p):** Drives TX0\_DP, TX0\_DN, TX1\_DP, and TX1\_DN.
- T2 (Rclamp0524p):** Drives TX0\_CKP and TX0\_CKN.
- T3 (Rclamp0524p):** Drives TX\_DSCL, TX\_DSDA, HPD\_DET, and TX\_CKN.

**Connector (CN1):**

- 1: TX0\_DP
- 2: TX0\_DN
- 3: TX1\_DP
- 4: TX1\_DN
- 5: TX0\_CKP
- 6: TX0\_CKN
- 7: TX\_DSCL
- 8: TX\_DSDA
- 9: HPD\_DET
- 10: TX\_CKN

**Power and Control Signals:**

- VCC\_5V:** Connected to TX0\_DP and TX0\_DN through a 5.1K resistor (R27) and a red LED (D4).
- VCC\_1V8:** Connected to TX1\_DP and TX1\_DN through a 100K resistor (R30) and a 1N5819HW-7-F diode (D5).
- HPD\_DET:** Connected to TX0\_CKP and TX0\_CKN through a 100K resistor (R31) and a 1N5819HW-7-F diode (D5).
- TX\_DSCL and TX\_DSDA:** Connected to TX0\_CKP and TX0\_CKN through a 100K resistor (R33) and a 1N5819HW-7-F diode (D5).
- TX\_CKN:** Connected to TX0\_CKP and TX0\_CKN through a 100K resistor (R34) and a 1N5819HW-7-F diode (D5).

**Other Components:**

- R30, R32, R33, R34:** 100K(1%) resistors.
- R27:** 5.1K(1%) resistor.
- D4:** RED LED.
- D5:** 1N5819HW-7-F diode.
- Q7:** LBSS138LT1G MOSFET, VGS(max)=1.5V.
- Q8:** MMBT3904 transistor.
- R15:** 0(1%) resistor.

# LEVEL SHIFT

Level shift(LT8912's IO is 1.8V)

The schematic diagram illustrates the level shifting circuitry for various signals between the ESP32 and the LT8912. The LT8912's IO is 1.8V, while the ESP32's IO is 3.3V. The level shifters are implemented using MOSFETs (Q1-Q10) and resistors (R3, R4, R7, R8, R18, R20, R23, R24, R35, R37, R38, R39, R40, R25, R26, R28, R29). The gate of each MOSFET is connected to P4\_3V3 through a resistor (R3, R7, R18, R23, R35, R36, R39, R25, R28). The drain of each MOSFET is connected to LT8912\_VDD through a resistor (R4, R8, R20, R24, R37, R38, R40, R26, R29). The source of each MOSFET is connected to the ESP32 signal line. The signals are: ESP32 I2C\_SCL, ESP32 I2C\_SDA, INT, RSTN, ESP32 I2S\_SCLK, ESP32 I2S\_WS, ESP32 I2S\_SD0, TX\_DSCL, and TX\_DSCLA. The level shifters are labeled LBSS138LT1G with VGS(max)=1.5V.

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