BACKLIGHT DRIVING SCHEMATIC

FOR RIVERDI HB IPS 10.1" TFT SERIES

Rev.1.0
2022-09-05

An example of the backlight driving circuit for the below product:

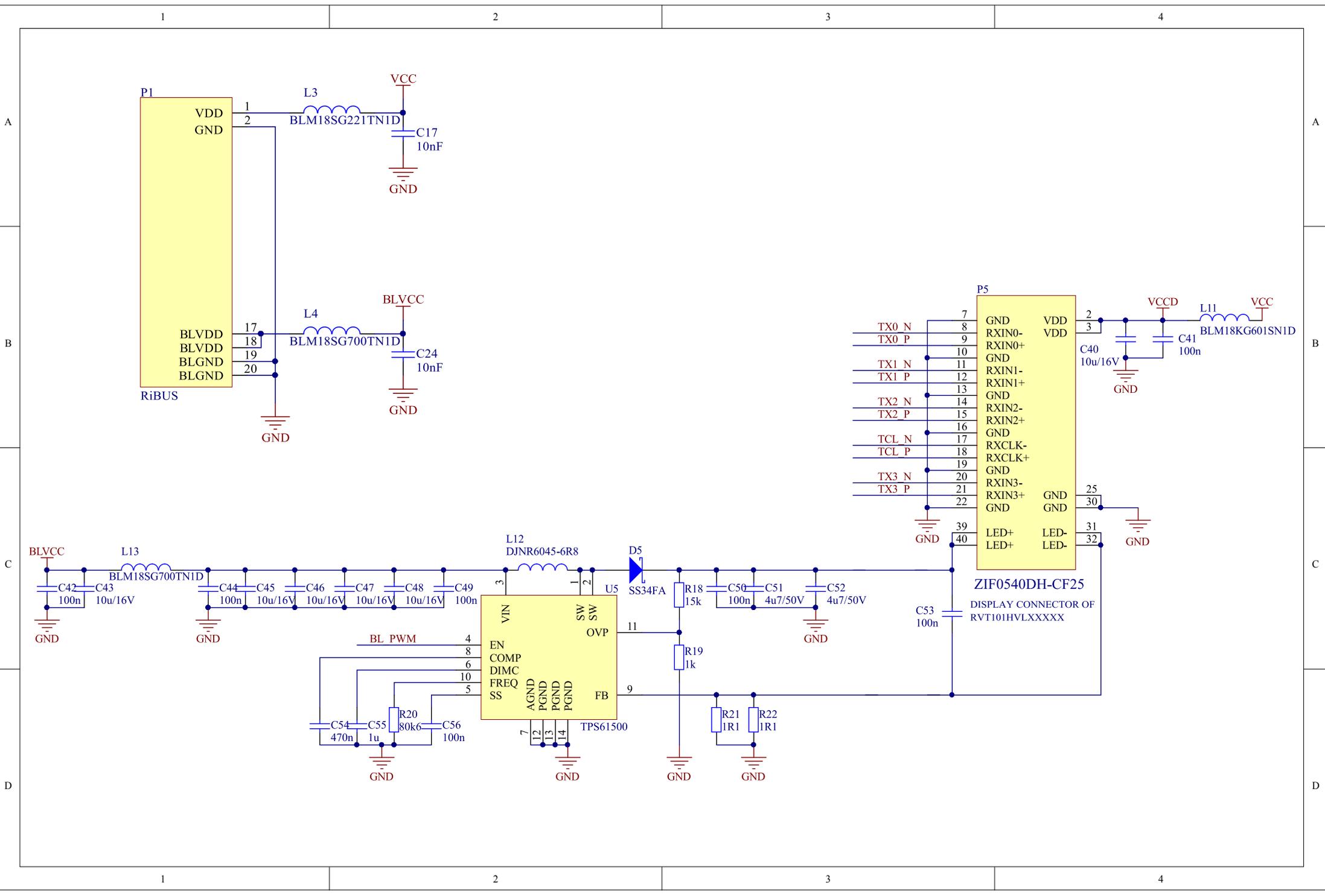| PRODUCT NAME	DESCRIPTION
RVT101HVLNWN00	HB, IPS, 10.1", 1280x800, 1000cd/m^2, LVDS, No touch panel,
RVT101HVLFWN00	HB, IPS, 10.1", 1280x800, 1000cd/m^2, LVDS, No touch panel, Metal frame
RVT101HVLNWC00-B	HB, IPS, 10.1", 1280x800, 850cd/m^2, LVDS, uxTouch, Optical bonding
RVT101HVLNWC00	HB, IPS, 10.1", 1280x800, 800cd/m^2, LVDS, uxTouch, Air bonding
RVT101HVLNWCA0	HB, IPS, 10.1", 1280x800, 800cd/m^2, LVDS, aTouch, Air bonding
RVT101HVLFWCA0	HB, IPS, 10.1", 1280x800, 800cd/m^2, LVDS, aTouch, Air bonding, Metal frame

1. REVISION RECORD

REV NO.	REV DATE	CONTENTS	REMARKS
1.0	2022-09-05	Initial Release	

2. CONTENTS

Internal backlight circuit of Riverdi HB, IPS 10.1" Series is built with 9x5 (5 LEDs in a row) LED matrix.

LED Diagram Circuit
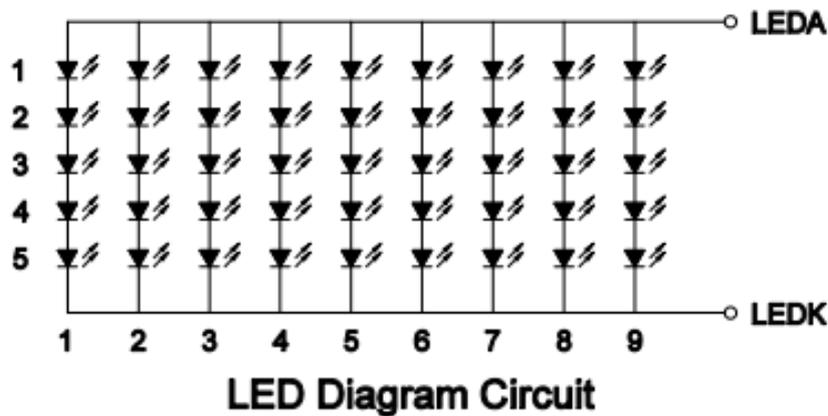
Backlight parameters of Riverdi 10.1" HB, IPS series.

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT
Backlight Driving Voltage	V_F	15.0	16.0	17.0	V
Backlight Driving Current	I_F	315	360	405	mA
Backlight Power Consumption	W_{BL}	-	5760	-	mW
LED Lifetime	-	-	50,000	-	hours

To get the full brightness, the driving current (I_F) needs to reach 360mA.

The recommended LED driver is TPS61500.

For example, the feedback voltage of TPS61500: V_{FB} (max)=200mV

In our design, R21, R22 connected in parallel as a feedback resistor R_{FB}, is set to 0.55R to achieve the full brightness.

I_F (max)=V_{FB} (max)/R_{FB}

I_F (max)=200mV/0.55R=363 mA.

TPS61500 have PWM dimming control input to drive the LED current. TPS61500 have built-in low-pass filter which changes internal feedback voltage. By that, inverter is not switched on-off with PMW signal but change LEDs current effectively in continuous way which cause low EMI emissions.

Please note that all Riverdi displays are designed to have low emission, that's why many LC components like beads and capacitors are on the schematic. They are not necessary but strongly recommended.

Recommended PMW frequency is 200kHz – 2.2MHz for TPS61500.

Hi, I am here to help you! If you have any additional questions, please contact our support via email: contact@riverdi.com