



60 LED (6 x 10) cost-effective matrix display based on STP16CPC26 with Bluetooth low energy and Android app





Summary table	
STEVAL-LLL005V1 evaluation board	STEVAL- LLL005V1
STP16CPC26 low voltage 16-bit constant current LED sink driver	STP16CPC26
SPBTLE-RF very low power module for Bluetooth Smart v4.1	SPBTLE-RF
STM32F030 mainstream ARM Cortex-M0 Value line MCU	STM32F030

Features

- Cost effective 16-bit LED driving scheme
- Driver for 6x10 LED matrix with individual LED control and row-wise scanning
- USB Type-C and DC jack connector for DC input power
- Bluetooth Smart connectivity and Android application for hassle free demonstration
- · Connector for stacking multiple LED drivers in daisy chain configuration
- Preconfigured demos (selected through on-board switches):
 - with brightness control
 - with speed control
 - with blink rate (flashing) control

Description

The STP16CPC26 low voltage 16-bit constant current LED sink driver on the STEVAL-LLL005V1 evaluation board ensures a cost effective 6x10 LED matrix with individual LED control.

The LED driver evaluation board includes a jumper to select between powering the board through a standard DC jack input or a USB Type-C connector, as well as two control switches.

An Android app is also available for enhanced user experience and control.

The SPBTLE-RF very low power module for Bluetooth Smart v4.1 allows communication with the board via your smartphone.

The STM32F030 mainstream ARM Cortex-M0 Value line MCU with 64 Kbytes of Flash, 48 MHz CPU manages driving and transmission of data over BLE.



1 Schematic diagrams

Figure 2. Input power jack and USB Type-C section

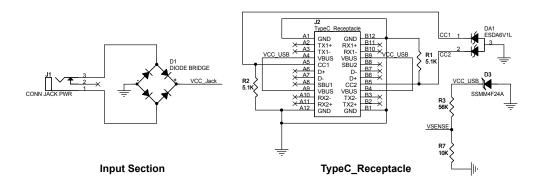
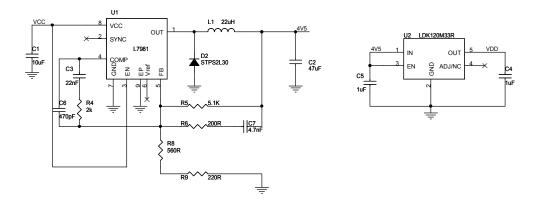


Figure 3. DC-DC step down and LDO regulator section



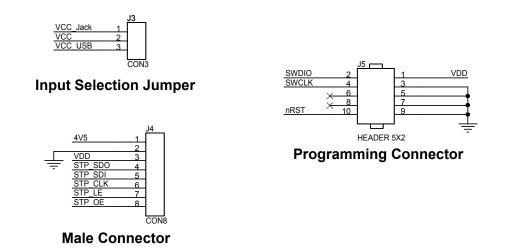
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BLE_SPI_IRQ PB15 PB14 PB13 PA0 STP S PA1 26 PA2 PA3 PB12 PB2 PA4 PB11 BLE SPI CLK
BLE SPI MISC
BLE SPI MOS PB1 PA5 PB10 16 46 PA6 PB9 PA7 PB8 STP OE BLE GPIO 2 STMB2F030C8T6 29 PB7 PA8 30 31 32 42 PB6 PA9 41 PB5 PB4 PB3 PA10 40 PA11 PA12 33 39 STP_LE VSENSE 34 20 PB2 PA13 PA14 PA15 BOOT0 PB1 38 18 PB0 C9 100nF 100nF <u>|c1</u>1 sw2 ||o SW1 C12 100n C21 C13 100nF 100nF 100nF

Figure 4. Microcontroller section

Figure 5. Input power selection, board extension and programming connector section



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Figure 6. SPBTLE-RF section

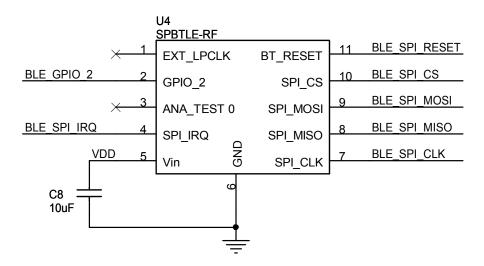
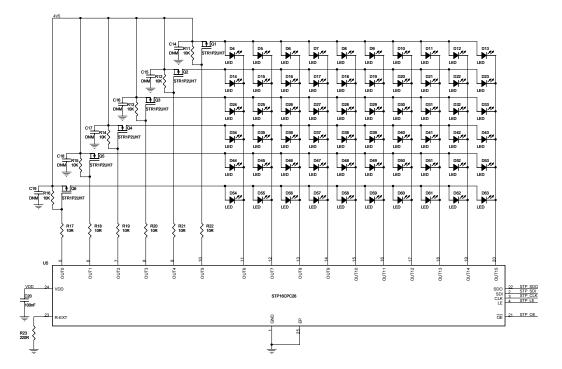


Figure 7. LED driver and LEDs section



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Revision history

Table 1. Document revision history

Date	Version	Changes
09-Jan-2018	1	Initial release.

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