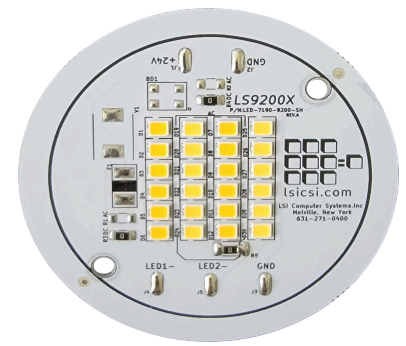


LS7190-9200-SH

LS7190 and LS9200 development kit for Arduino



LS7190-9200-SH is a circuit board designed to facilitate the evaluation and application of LS9200, a CMOS LED engine in conjunction with LS7190, a CMOS digital potentiometer with SPI interface. The circuit can be operated in stand alone mode with an on-board mechanical quadrature encoder or remotely with an Arduino board. The combination of LS7190 and LS9200 in a single design highlights each device's application potential although each device can be designed into applications without the other.

LS7190-LS9200-SH contains two LS9200 devices to drive two separate banks of LEDs, available separately in part number LS9200X, a rectangular array of two independent banks of LEDs. The LED banks can be dimmed together synchronously in the same direction wherein both LED banks brightens or dims in lockstep. The two LED banks can also change brightness in reverse directions with respect to each other wherein the brightness' are complements of each other. The reverse dimming facilitates changing of color of total light output when different color LEDs are used in the two LED banks such as in LS9200X.

Arduino mode.

Jumper JP1: 3-2 closed, 1-2 open
Switch S1: closed.

Software is provided for Arduino Uno for the following functions:

1. Set LED brightness levels to any of 64 discrete levels.

2. Synchronous dim. Sweep the brightness of two banks of LEDs up and down in lock step between a minimum and maximum.
3. Reverse dim. Sweep the brightness of two banks of LEDs as complements of each other with constant total lumen output but with varying color.

Standalone mode.

Jumper JP1: 1-2 closed, 3-2 open

In standalone mode the encoder ENC1 controls the brightness of the two banks of LEDs in the following configurations.

1. Switch S1 open: Synchronous dim. Turning ENC1 in CW or CCW causes the brightness of the two banks of LEDs step up or step down synchronously.
2. Switch S1 closed: Reverse dim. Turning ENC1 in CW or CCW causes the brightness of the two banks of LEDs step up or step down as complements of each other.

In both modes switch S2 selects between 70mA and 150mA of load current. When designing a LED string the dissipation, PI per LED driver must be limited to a maximum of 1.5W.

Example. (See fig 2 for reference)

Iled = 70mA, LED string supply voltage = 120V, Each LED forward drop = 6V

Voltage at U4-6 = Vr = 20Ω x 70mA = 1.4V

Maximum voltage at U4-7 = VI = Vr + 1.5W/70mA = 1.4V + 21.4V = 22.8V

Number of LEDs in string = (120V – 22.8V)/6V = 16

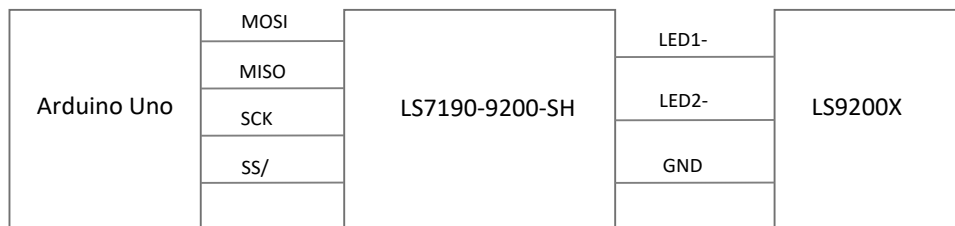
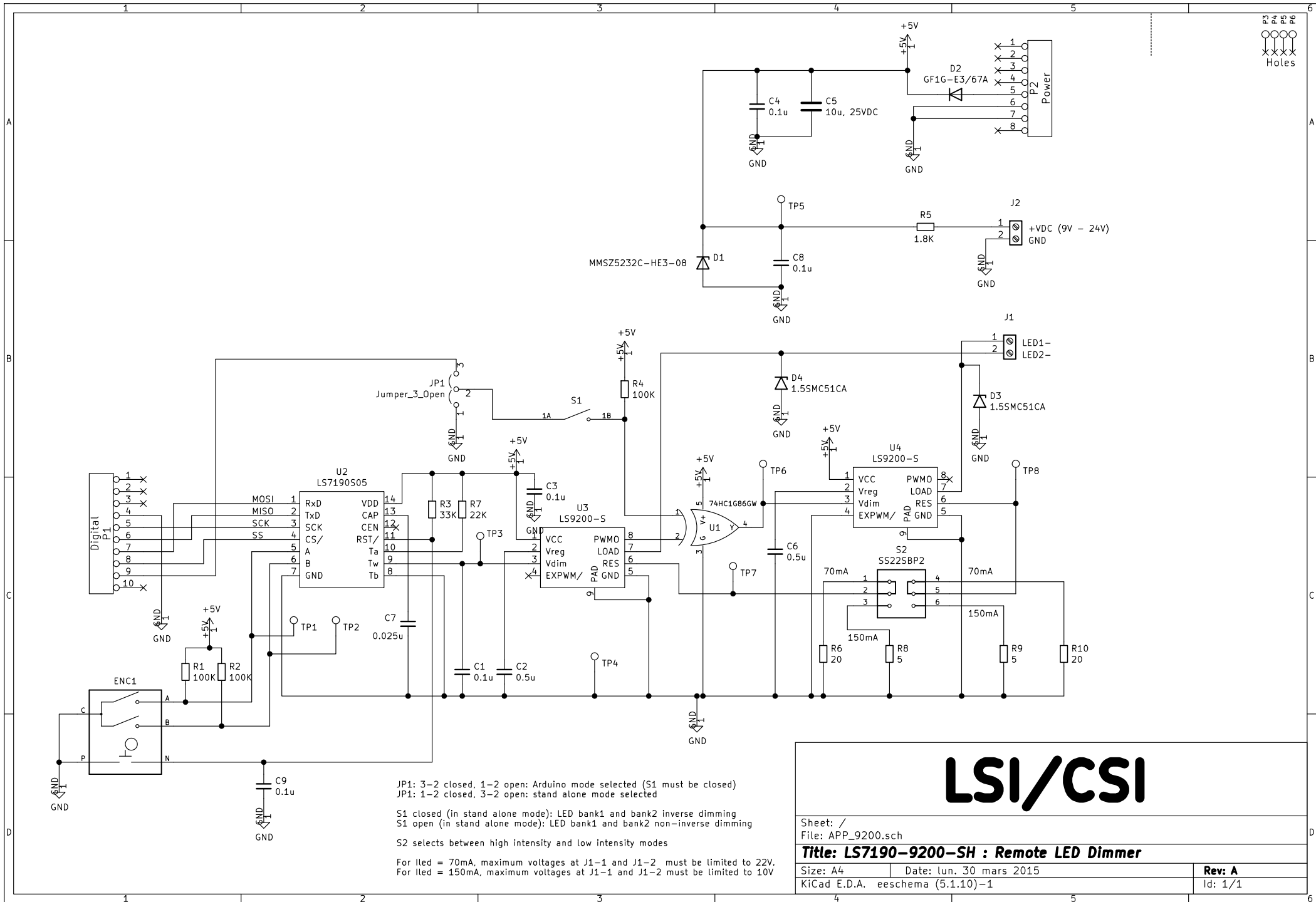


Fig 1. PCB connections

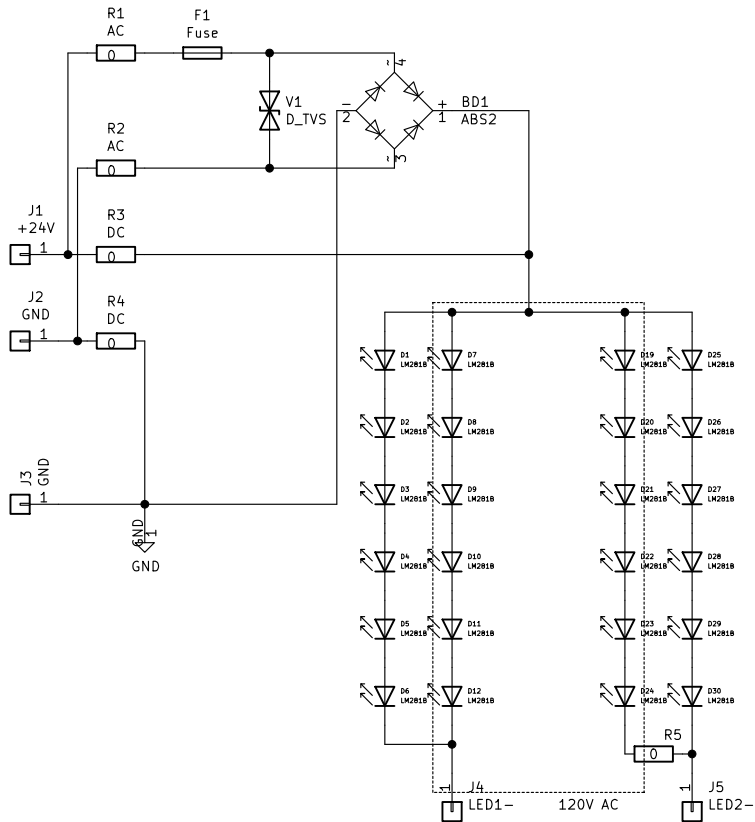


JP1: 3-2 closed, 1-2 open: Arduino mode selected (S1 must be closed)
 JP1: 1-2 closed, 3-2 open: stand alone mode selected

S1 closed (in stand alone mode): LED bank1 and bank2 inverse dimming
 S1 open (in stand alone mode): LED bank1 and bank2 non-inverse dimming

S2 selects between high intensity and low intensity modes

For Iled = 70mA, maximum voltages at J1-1 and J1-2 must be limited to 22V.
 For Iled = 150mA, maximum voltages at J1-1 and J1-2 must be limited to 10V



LS9200X



Sheet: /
File: 24V/120V LED

Title: 24V-120V LED

Size: A4 | Date: 2022-2-2
LSI/CSI a Semiconductor Company

Rev: A
Id: 1/1