Maximum LED strip is 5m@14.4W/m
Input is 12Vdc±10%, maximum 8A.

Ensure 2.5mm² hole sizes for CONN1 and CONN2.

Keep high current traces to minimal lengths on PCB - route off-board with discrete wires, direct to connectors.

Ensure 2.5mm² hole sizes for CONN1a and CONN2a.

Pin 2 of CONN2 provides flexibility in routing ground return currents.

Pins 3 and 4 allow chassis-to-signal-ground connection at a single point inside the connector, if necessary.

Connect pin 2 direct to pin 2 on CONN1 to prevent high DC return currents flowing on PCB signal ground.

Pins 2 and 3 provide flexibility in routing ground return currents for the fast LEDDx edges whilst avoiding potentially large DC return.

Ensure 1.5mm² hole sizes.

High-Voltage Programming not supported.
Transient protection limits bandwidth so keep ICSP clock at 1MHz or less.

If cable length requires it then place a further 4.7kΩ (externally) in parallel with R22 and R23 to increase the I2C drive strength to about its maximum. A compromise between meeting I2C VIL and circuit simplicity has been made for ESD protection of these pins. Violation of the PIC's IK clamping current (20mA) may occur.

ZCABLE ~40Ω
ZPIC termination has been simulated using IBIS models.
Each output will need damping with discrete components at the LED strip.

Current source for roughly 87mA; 75mA-96mA over temperature

PCB Stackup:
L1 - Signal / Power
L2 - Ground
L3 - Ground
L4 - Signal / Power

JLC Stackup JLC04081H-7628:
Z0=40Ω, w=20.46mil, L1-L2
Z0=76.5Ω, w=5mil, L1-L2
Z0=85.25Ω, w=3.50mil, L1-L2

2) JLC04161H-7628 Stackup

Layer	Material Type	Thickness	
Layer	Copper	0.035mm	
Prepreg	7628*1	0.2104mm	
inner Layer	Copper	0.0152mm	1.1mm (with copper core)
Core>	Core	1.065mm	
inner Layer	Copper	0.0152mm	
Prepreg	7628*1	0.2104mm	
Layer	Copper	0.035mm	

Unless otherwise specified:
All resistors are thick-film ±1% ±100ppm
All 0402 resistors are 0.0625W, 0603 are 0.1W and 0805 are 0.25W
All unpolarised capacitors are MLCC ±10% with X7R tempco

Drives two strips of 60 LEDs/m at 14.4W/m; max 5m (8A) total

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Title: Kitchen WS2812B RGB LED Strip Controller

Size: A3	Date: Aug 2023	**Rev: 1.0**
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