

Motor Control Starter Kit Information Sheet

The Motor Control Starter Kit is designed to facilitate the development of low-cost motor control applications using PIC24 microcontrollers and dsPIC33F digital signal controllers. The kit includes a BLDC motor, a three-phase inverter, an on-board Debugger/Programmer, a user-configurable switch, a two-channel mTouch™ slider with LED indicators for motor speed display, and a 9V power supply.

Installing MPLAB® IDE and C Compilers

The MPLAB Integrated Development Environment (IDE) should be installed prior to using the Motor Control Starter Kit. While MPLAB IDE provides the assembler tools for development, most of the demos and code examples are written in the C language and require a C compiler to be installed. Microchip's MPLAB C Compiler seamlessly integrates into MPLAB IDE. Both the MPLAB IDE and MPLAB C compiler are free (see the note below) and are available for download at www.microchip.com/MPLAB and www.microchip.com/compilers, respectively.

Note: Standard Evaluation (Free) – All optimization levels are enabled for 60 days, but then revert to optimization level 1 only.

Code Examples and More Information

For code examples and more information, please visit <http://www.microchip.com/motor>. From the Development Tools menu, click Development and Evaluation Boards and from the list select dsPIC Motor Control Starter Kit DM330015. Then, from the Download section, select code for the starter kit. You can also visit <http://www.microchip.com/16bit>: from the left navigation menu select Find Development Tools and then choose Motor Control Starter Kit from the list. From the Download section, select the code for the starter kit.

Running and Debugging Applications

After downloading the code example and installing the development tools, please use the following procedure to build and run your software:

1. Ensure the BLDC motor is properly connected to the Motor Control Starter Kit board and that the rotor is able to move freely.
2. Connect the 9V power supply to the Motor Control Starter Kit.
3. Connect the USB port on the board to a USB port on the development computer using a USB cable. This will power up the on-board Debugger/Programmer and connect it to the development computer.
4. Extract the Motor Control Starter Kit software from the archive file and load the software project into the development environment.
5. If using MPLAB 8.xx IDE, do the following; otherwise, skip to step 6:
 - a) Select **Programmer > Select Tool** and then choose the appropriate tool.
 - b) Build the project by selecting **Project > Build All**.
 - c) Download your code to the DSC or MCU by selecting **Programmer > Program**.
6. If using the MPLAB X IDE, do the following:
 - a) Select **Run > Set Project Configuration > Customize**.
 - b) Select the required tool under Hardware Tools, and then click **Apply** followed by **OK**.
 - c) Select **Run > Run Project** to download the code to the target device, and then click the **Reset Release** icon.
7. After the code is downloaded to the device, the USB connection can be removed. In Release mode, only the 9V power supply is needed. In Debug mode, both the 9V power supply and the USB connection must be used.
8. By pressing the S1 button, the motor will toggle between Run and Stop modes. If the rotor stops without pressing the button (due to external mechanical factors), it will try to restart on its own without requiring another button press.
9. Use the Capacitive Touch Slider to change the motor speed. The speed magnitude will be indicated by the three user LEDs on the board.

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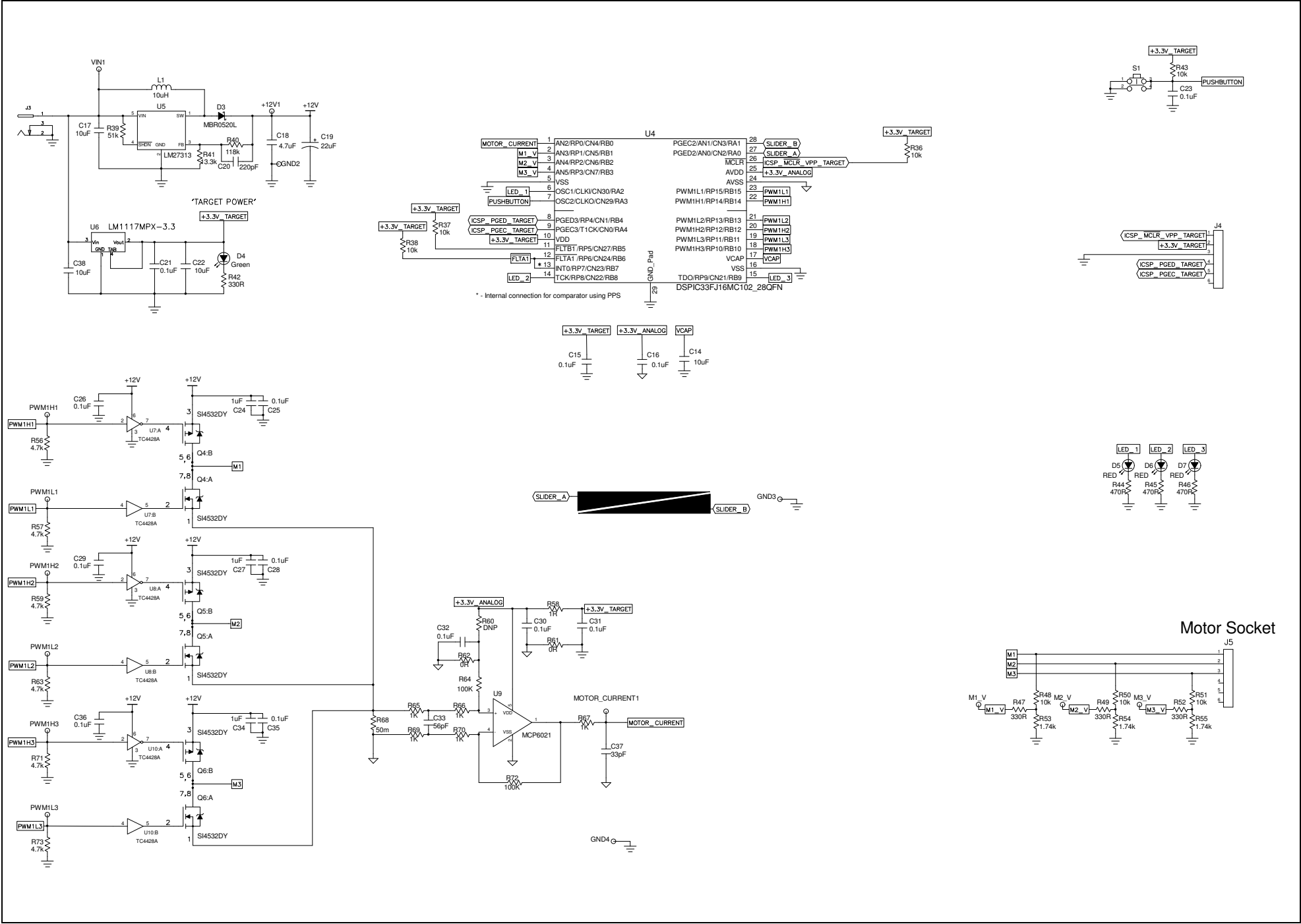
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Application Hardware Schematics



Debugger Schematics

Diagram illustrating the Debugger Circuit connections:

- USB_D- and USB_D+ are connected to the Debugger Circuit.
- The Debugger Circuit is connected to the following targets:
 - POWER_GOOD_PICKIT3
 - ICSP_MCLR_VPP_TARGET
 - ICSP_PGEC_TARGET
 - ICSP_PGED_TARGET