# Chipkit 3D

# Overview

The purpose of the Chipkit 3D is to provide a high performance Chipkit motion control system targeting applications such as:

1. 3d Printers
2. Laser Cutters
3. CNC Mills
4. CNC foam cutters
5. 2 axis pen plotters (drawbot)
6. Pick & Place

Keys to success include: high performance (200MHz MZ), Low Cost (<$99), complete feature set, port of key Arduino FW motion control projects to this board, engagement with key project leaders.

# Motor Drivers

1. 5 Stepper Drives (A4982)
2. A4982 current limits set by digipots
3. 1 stepper channel with 2 output connectors for dual Z motor configurations
4. microstep selections attached to MCU to eliminate jumpers
5. All driver signals with testpoints
6. Optimized step/direction port placement to support CCP or DMA signal generation. (MZ new feature)
7. Pololu compatible sockets for 3 additional stepper drivers
8. 9 connectors for stepper motors.
   1. Connector options for “typical” steppers.

# PWM Power Drive

The power control section has 6 PWM Low side drives. Each low side drive is suitable for general resistive loads like hot ends, bed heater, fans, etc.

1. 12V 30A low side drive
2. Pluggable Screw Terminals
3. LED’s to indicate load is active

# Fan Control

There are 3 PWMs devoted to cooling fan control. Some of these have multiple fans in parallel. Each fan has an independent speed sensor.

1. 3 PWM Drives with 5 Fan Connectors
   1. 1 Print Fan
   2. 2 Motherboard Fan
   3. 2 Hot End Fans
2. 5 fan Sensor inputs
3. All fan are wired to 3 pin PC fan connectors.
4. Red/Green LED’s for Fan Good/Bad

# Communications

Multiple communications options are to be available.

1. USB -> Serial converter for G-Code and traditional PC to printer interaction
2. 100MB Ethernet
   1. Web page control panel
   2. TCP Port 22 connection to the G-Code console.
3. USB Host to support USB Mass Storage Devices
4. LIN for on printer subsystem expansion

# User Interface

The following displays should be supported.chr