Crumb644 Infosheet

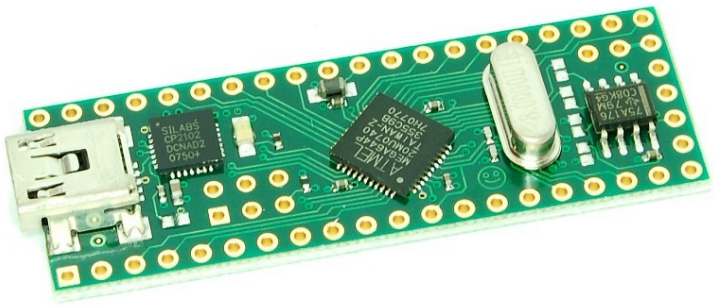
Crumb644 V1.1

Powerfull OEM module for rapid application development based on Atmel's AVR ATmega644P processor.

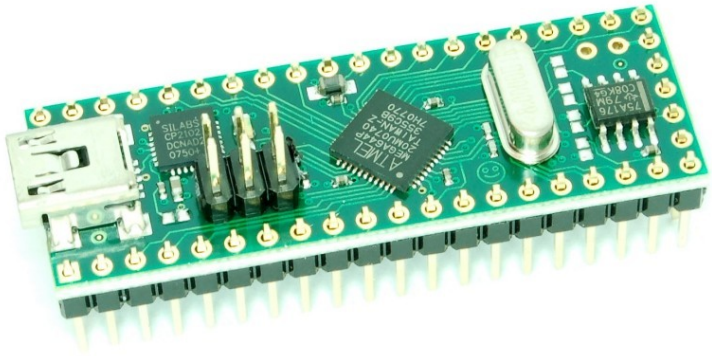
BASIC SPECIFICATIONS

Module	Processor	RAM	EEPROM	Flash	Peripherals
Crumb644 V1.1	ATmega644P	4kB SRAM	2kB EEPROM	64kB Flash	- CP2102 USB-UART converter - SN75ALS176 RS485 transceiver

High Performance
- up to 20MHz operating frequency
- single 1.8-5.5V power supply



Familiar Integrated AVR Peripherals
- up to 32 IO pins available
- two 8 bit, one 16 bit timer/counter
- six PWM channels
- input capture and output compare functions
- two programmable UARTs
- master/slave SPI interface
- two wire interface (I²C comp.)
- analog comparator
- 8 channel 10 bit ADC
- watchdog timer
- six sleep modes
- ISP and JTAG interface



Enhanced Onboard Peripherals
- CP2102 USB to UART converter
- SN75ALS176 RS485 transceiver
- HC49 type crystal (frequency selectable)
- standard 6 pin Atmel AVR ISP connector
- status LED (connected to PB7)
- tiny reset switch

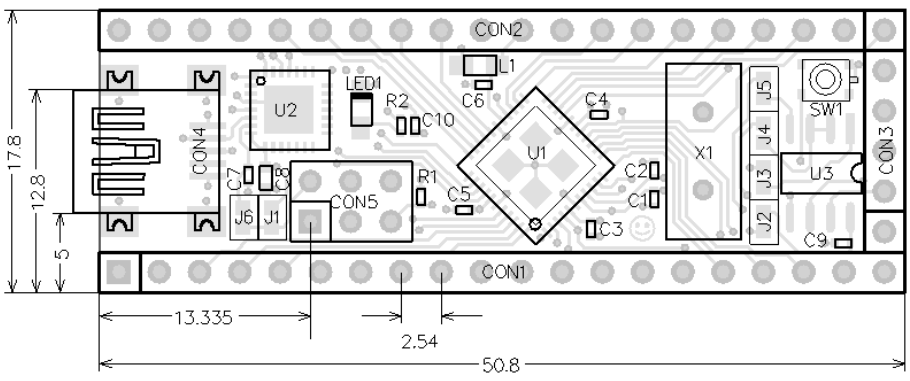
Expansion Headers
- standard 2.54mm headers with all controller signals and signals from onboard peripherals
- matches the standard ATmega644P DIP40 pinout plus RS484 and USB signals on right side

SCOPE OF DELIVERY

This module is being shipped without pin headers (THT components) and crystal preinstalled. A Connector Kit with high quality pin headers and receptacles is available separately or any suitable 2.54mm (1/10inch) grid pins can be used.

DIMENSIONS

Values are [mm] unless otherwise noted.



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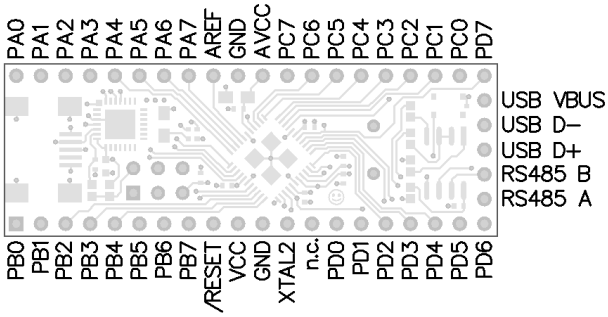
PIN CONFIGURATION



JUMPER SETTINGS

Jumper	Description	open	close
J1	USB Bus 5V Power (USB bus voltage can vary from 4.4V to 5.5V)	Module is not USB bus powered.	Module is powered with 5V from USB bus.
J6	CP2102 3.3V Power (Maximum current from CP2102 is 100mA! Review CP2102 datasheet for maximum power dissipation!!!)	Module is not powered from CP2102.	Module is powered from CP2102 internal 3.3V regulator.
J7	Auto Reset MCU on DTR, i.e. when a PC application opens the virtual COM port. This is recommended when using the chip45boot2 bootloader with the chip45boot2 GUI PC application	no automatic reset on DTR	MCU is reset when DTR goes low
J2, J3, J4, J5	RS485 transceiver connection and supply	RS485 transceiver is disabled.	RS485 transceiver is connected to ATmega644P UART1 signals, direction signal and to VCC.

OPERATING CHARACTERISTICS

Symbol	Parameter	Condition	Min	Typ	Max	Units
Vcc	Supply Voltage	0-4 MHz	1.8		5.5	V
		0-10 MHz	2.7		5.5	V
		0-20 MHz	4.5		5.5	V
		RS485	4.5		5.5	V
Icc	Power Supply Current (Icc strongly depends on CPU activity, like frequency, power saving modes, etc. as well as external circuitry, io pin input and output current, etc. The values denoted here are for reference only and can differ from final application vallues.)	Active 10MHz Vcc = 3V		5		mA
		Active 20MHz Vcc = 5V		17		mA
		USB bus active		+26		mA
T	Operating Temperature (industrial temperature range on request)		-20		+70	°C

DESIGN AND HANDLING GUIDELINES

This module – just like any other semiconductor devices – is susceptible to damage by ESD. Suitable precautions should be taken when handling and transporting devices. The possible damage to devices depends on the circumstances of the handling and transporting, and the nature of the device. The extent of damage can vary from immediate functional or parametric malfunction to degradation of function or performance in use over time. Devices suspected of being affected should be replaced.

DEVELOPMENT TOOLS

The free WinAVR C/C++ compiler toolset provides a powerful and stable development environment, which is nicely integrated into Atmel's AVR-Studio development suite. Please visit the following pages for more details:

- Atmel AVR Studio: http://www.atmel.com/dyn/products/tools_card.asp?tool_id=2725
- WinAVR compiler toolset: http://winavr.sourceforge.net/

WHAT ELSE DO YOU NEED?

- An ISP adapter for in-system programming of the ATmega168, see http://www.chip45.com/Programmer for suitable devices.
- The USB driver for the CP2102 USB UART converter (see http://www.chip45.com/Crumb644 download page)
- A development environment and compiler/assembler (see above DEVELOPMENT TOOLS)

Declaration of Electro Magnetic Conformity of the CHIP45 „Crumb644 V1.1“

CHIP45 embedded microcontroller modules (henceforce products) are designed for installation in electrical appliances or as dedicated evaluation boards (i.e.: for use as a test and prototype platform for hardware/software development) in laboratory environments.

Caution:

CHIP45 products lacking protective enclosures are subject to damage by ESD and, hence, may only be unpacked, handled or operated in environments in which sufficient precautionary measures have been taken in respect to ESD-dangers. It is also necessary that only appropriately trained personnel (such as electricians, technicians and engineers) handle and/or operate these products. Moreover, CHIP45 products should not be operated without protection circuitry if connections to the product's pin header rows are longer than 3m.

CHIP45 products fulfill the norms of European Union's Directive for Electro Magnetic Conformity only in accordance to the descriptions and rules of usage indicated in this document (particularly in respect to the pin header row connectors, power connector and serial interface to a host-PC).

Implementation of CHIP45 products into target devices, as well as user modifications and extensions of CHIP45 products, is subject to renewed establishment of conformity to, and certification of, Electro Magnetic Directives. Users should ensure conformance following any modifications to the products as well as implementation of the products into target systems

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