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Arduino nano datasheet v3

March 12, 2018 - 0 Comments [Click image to enlarge] Pin Category Pin Detail Power Vin Name, 3.3V, 5V, GND Vin: Input voltage to Arduino when using external resources (6-12V). 5V: The set power supply is used to move the microcontroller and other components on the board. 3.3V: 3.3V supply produced by on-board voltage regulator. The current maximum draw is 50mA. GND: Pin the ground. Reset Reset Reset microcontroller. Analog Pin A0 – A7 Used to measure analog voltage in The Digital Input/Output Pin range 0-5V D0 - D13 Can be used as an input or output pin. 0V (low) and 5V (high) Serial Rx, Tx Used to receive and transmit TTL serial data. External Interruption 2,3 To trigger interference. PWM 3, 5, 6, 9, 11 Provides 8-bit PWM output. SPI 10 (SS), 11 (MOSI), 12 (MISO) and 13 (SCK) Used for SPI communication. Build 13 LEDs To turn on the built-in LEDs. IIC A4 (SDA), A5 (SCA) Used for TWI Communication. AREF To provide AREF reference voltage for input voltage. Arduino Nano Technical Specifications Microcontroller ATmega328P – 8 bit AVR family microcontroller Operating Voltage 5V Recommended Input Voltage for Vin pin 7-12V Analog Input Pins 6 (A0 – A5) Digital I/O Pins 14 (Out of which 6 provide PWM output) DC Current on I/O Pins 40 mA DC Current on 3.3V Pin 50 mA Flash Memory 32 KB (2 KB is used for Bootloader) SRAM 2 KB EEPROM 1 KB Frequency (Clock Speed) 16 MHz Communication IIC, SPI, USART Other Arduino Boards Arduino UNO, Arduino Pro Mini, Arduino Mega, Arduino Due, Arduino Leonardo Other Development Boards Raspberry Pi, PIC Development Board, AVR Development Board, MSP430 Launchpad, Intel Edison, ESP32 Difference between Arduino UNO and Arduino Nano The Arduino Nano is very much similar to the Arduino UNO. They use the same Processor (Atmega328p) and therefore they can both share the same program. One big difference between the two is that UNO is twice the size of the Nano and therefore occupies more space on your project. Also Nano friendly breadboard while Uno is not. To program Uno, you need a Regular USB cable where for Nano you will need a mini USB cable. Technical differences between Uno and Nano are shown below. Operating Processor Name/ Analog CPU Speed Input Voltage In / Out Digital IO / PWM EEPROM / SRAM[kB] Flash USB USART Uno ATmega328P 5V / 7-12V 16 MHz 6 / 0 14 / 6 1 / 2 32 Regular 1 Nano ATmega328P 5V / 7-12V 16 MHz 8 / 0 14 / 6 1 / 2 32 Mini 1 Differences between arduino nano and mega arduino as a self-used processor is different. The Arduino Mega is stronger than the Arduino Nano in terms of speed and number of I/O pins. Arduino Mega is usually used for projects that require many I/O pins and Communication protocols Different. Technical differences between Nano and Mega are shown below. Name of Operating Processor/Voltage Input Analog CPU Speed In/Out of Digital IO/PWM Digital/PWM / SRAM[kB] USB Flash USART Mega ATmega2560 5V / 7-12V 16 MHz 16 / 0 54 / 15 4 / 8 256 Regular 4 Nano ATmega32 8P 5V / 7-12V 16 MHz 8 / 0 14 / 6 1 / 2 32 Mini 1 Understand Arduino Nano Arduino Board is designed in such a way that it is very easy for beginners to get started with microcontrollers. This especially breadboard friendly board is very easy to handle connections. Let's start by turning on the Board. Powering your Arduino Nano: There are really three ways in which you can power your Nano. USB Jack: Connect the mini USB jack to the phone or computer charger via cable and it will draw the power necessary for the board to function Vin Pin: Vin Pins can be provided with 6-12V which is not set to turn on the board. The on-board voltage regulator sets it to +5V +5V Pin: If you have a supply of +5V set then you can directly provide arduino's +5V pin. Input/output: There are a total of 14 digital pins and 8 Analog pins on your Nano board. Digital pins can be used for sensor interfaces by using them as input pins or drive loads by using them as output pins. Simple functions such as pinMode() and digitalWrite() can be used to control their operations. The operating voltage is 0V and 5V for digital pins. Analog pins can measure analog voltage from 0V to 5V using any of the 8 Analog pins using simple functions such as analogRead() These Pins in addition to serving their purposes can also be used for the specific purposes discussed below: Serial Pins 0 (Rx) and 1 (Tx): Rx Pins and Tx are used to receive and transmit serial TTL data. They are connected with the appropriate USB ATmega328P to the TTL serial chip. Pin 2 and 3 External Interrupts: These pins can be configured to trigger interruptions at low values, up or down edges, or changes in values. PWM PIN 3, 5, 6, 9 and 11: This pin provides an 8-bit PWM output using the analogWrite() function. SPI PIN 10 (SS), 11 (MOSI), 12 (MISO) and 13 (SCK): This pin is used for SPI communication. Built-in LED PIN 13: This pin is connected with the built-in LED, when pin 13 is high - the LED is on and when pin 13 is LOW, it turns off. I2C A4 (SDA) and A5 (SCA): Used for IIC communication using Wire libraries. AREF: Used to provide reference voltage for analog inputs with analogReference() functions. Reset Pin: Makes this pin LOW, resets the microcontroller. This particular function and each pin are illustrated in the arduino nano pin diagram shown above. How to use arduino nano will not take 5-10 minutes to upload your first program to Arduino Nano. All you need is an Arduino IDE USB cable and your own Nano board. Download and Install Arduino: The first step is to install the Arduino IDE which is available for download for free from the link below. After installing Arduino you may also want to install the driver (link given below) for you Arduino to with Your Computer Arduino IDE Download Driver Download Upload your first program Once IDE installed on the computer, connect the board with the computer using a USB cable. Now open the ARDUINO IDE and select the correct board by selecting Tools>>Boards>>Arduino/Nano, and selecting the correct port by selecting Tools>>Port. Arduino Uno is programmed using the Arduino programming language based on Wiring. To start with the Arduino Uno board and flash the built-in LED, load the sample code by selecting Files>>Examples>>Basics>>Blink. Once the sample code (also shown below) is loaded into your IDE, click the given 'upload' button in the top bar. Once the upload is complete, you'll see arduino's built-in LEDs flashing. Below is an example code for flashing: // the settings function runs once when you hit reset or power the blank setting board() { // initializes the digital pin LED_BUILTIN as output. pinMode(LED_BUILTIN, OUTPUT); } // loop function runs repeatedly forever void loop() { digitalWrite(LED_BUILTIN, HIGH); // turn on THE LED (HIGH is voltage level) delay(1000); // wait for the second digitalWrite(LED_BUILTIN, LOW); // turn off the LED by creating a LOW delay voltage (1000); // wait second } Application Prototyping Electronic Products and Multiple Project Diy Projects. Easy to use for diyers and entry level makers. Projects that require multiple interfaces and communication I/O. Arduino Nano 2D Models IN STOCK! Ready for ship. The new version of Arduino Nano 3.0 is here! What's New? ATMEGA328 (more flash and ram memory) Blue power LEDs are on top A0-A7 pins compatible with Arduino Stamp and Pro Mini Two layer PCB Lower cost to hack Eagle files What is Arduino? Arduino is an open-source electronic prototyping platform based on flexible and easy-to-use hardware and software. It is intended for artists, designers, hobbyists, and anyone interested in creating interactive objects or environments. Arduino can feel the environment by receiving input from various sensors and can affect its environment by controlling lights, motors, and other actuators. Microcontrollers on the whiteboard are programmed using the Arduino programming language (based on Cable) and arduino development environment (based on Processing). Arduino projects can stand alone or they can communicate with software about running on a computer (e.g. Flash, Processing, MaxMSP). Arduino received an Honory Mention in the Digital Community section of the 2006 Ars Electronica Prix. Overview credits Arduino Nano. Arduino Nano is a surface mount breadboard version embedded with integrated USB. It is the smallest, complete, and breadboard friendly. It has everything that Diecimila/Duemilanove has (electrically) with more analog input pins and AREF jumpers onboard +5V. Physically, it's missing the power jack. Nano automatically senses and switches to potential resources that height, no need for a power select jumper. Nano has breadboard boarduino and Mini+USB capabilities with footprints smaller than so that the user has more breadboard space. It has a pin layout that works well with Mini or Base Stamps (TX, RX, ATN, GND on one top, power and ground on the other). This new version 3.0 comes with ATMEGA328 which offers more programming space and data memory. It's two layers. It makes it easier to hack and more affordable. You end up paying less with Nano than Mini and USB combined! Specifications: Atmel ATmega328 Microcontroller Operating Voltage (logical level) 5 V Input Voltage (recommended) Input Voltage 7-12 V (limit) 6-20 V Digital I/O Pins 14 (where 6 output provides PWM) Analog Input Pin 8 DC Current per I/O Pin 40 mA Flash Memory 32 KB (where 2KB is used by bootloader) SRAM 2 KB EPRAM 1 KB Clock Speed 16 MHz Dimensions 0,70 x 1,70 Features: Automatic reset during download program Power OK blue LED Green (TX), red (RX) and orange (L) LED Auto sensing / switch power input SMALL mini-B USB for programming and monitor serial ICSP header for direct download program Standard 0.1 spacing DIP (breadboard friendly) - Arduino Nano can be powered through a mini-B USB connection, unregulated 6-20V external power supply (pin 30), or an external power supply set to 5V (pin 27). The power source is automatically selected to the highest voltage source. Document: Arduino Nano 3.0 Schema Arduino Nano 3.0 User Manual (pinout and dimensions) Eagle design file ATmega328 Arduino Home Page Programming Reference Arduino Forum View your Arduino Nano build! Arduino Nano 3.0 Assembly from Gravitech on Vimeo. NOTE: The image below shows ATMEGA168. Arduino Nano 3.0 is now shipped with ATMEGA328. ATMEGA328.