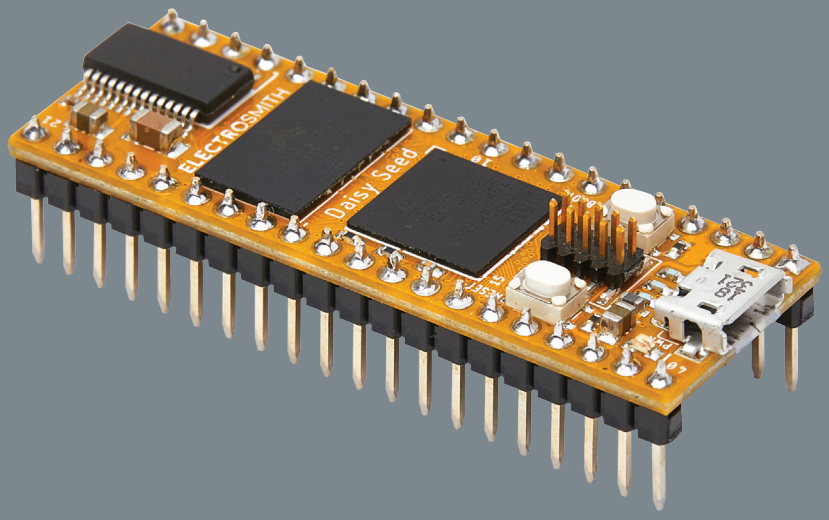
Daisy Seed

High-Fidelity Audio Platform



Features:

- Embedded platform for audio applications
- 96kHz / 24-bit audio hardware
- 64MB of SDRAM for up to 10 minute long audio buffers
- ARM Cortex-M7 MCU, running at 480MHz
- 31 total GPIO pins with configurable functionality
- 12-bit Digital to Analog Converters (x2)
- SD card interfaces
- PWM outputs
- Serial Protocols for connecting external sensors and devices (SPI, UART, I2s, I2C)
- Dedicated VIN pin for power
- Micro USB port, and additional USB pins for full OTG-support as host and device

Applications:

- Electronic Instruments (Eurorack modules, synthesizers, samplers, drum machines)
- Effects Units (Desktop Effects, Effects Pedals)
- Audio Playback (Sound Installations, Audio Feedback Devices)

Description:

Daisy is an embedded platform for music. It features everything you need for creating high fidelity audio hardware devices. Just plug in a USB cable and start making sound! No soldering required.

Programming the Daisy is a breeze with support for a number of languages including Arduino, and Max/MSP Gen~. To get started, simply upload an example program over USB, and start tweaking!

Documentation, and examples are hosted on our Github repository for easy download. All firmware that we develop is released for free under a permissive open source license(MIT).

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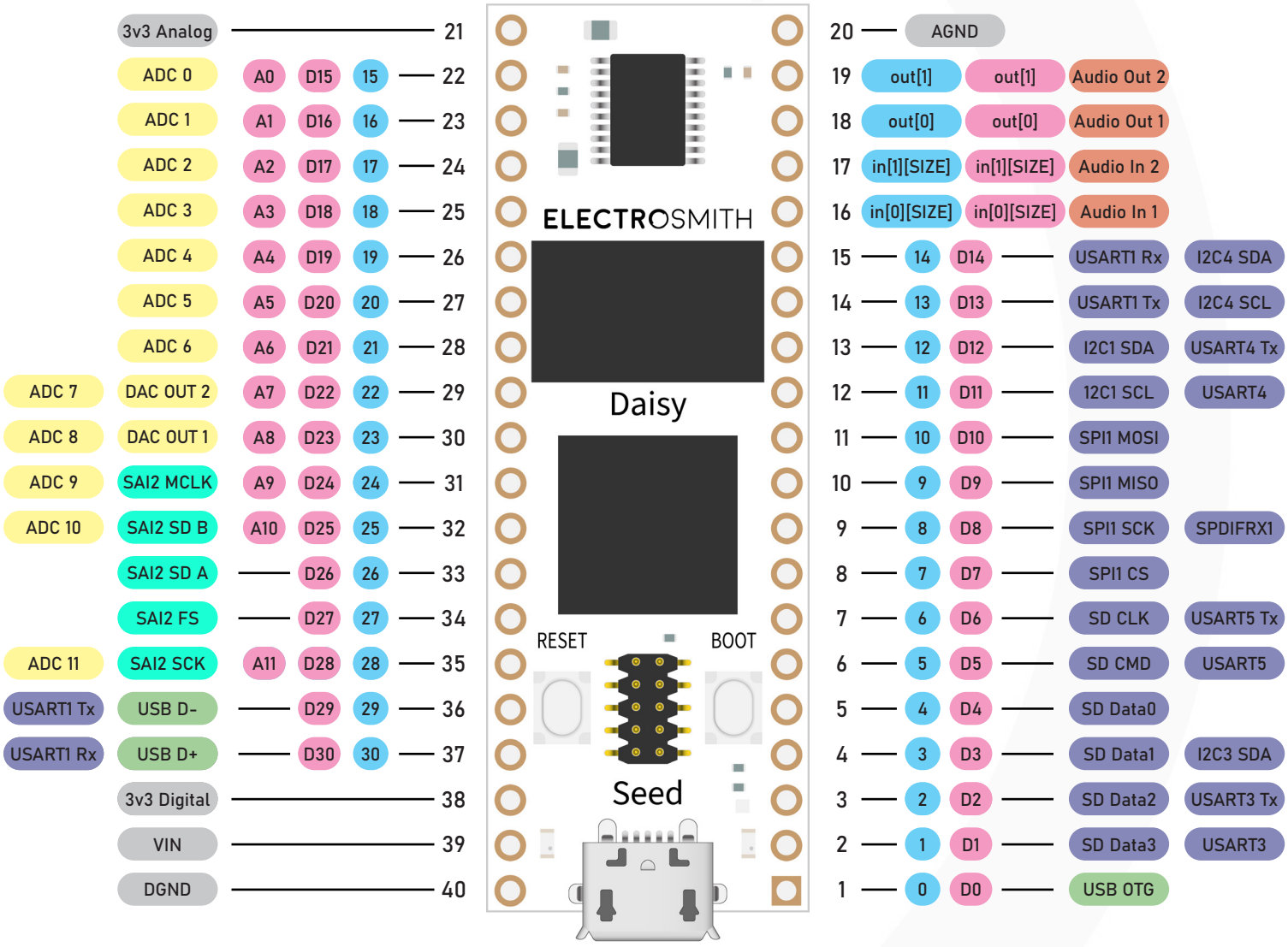
Pinout

ANALOG AUDIO | ANALOG GPIO | DIGITAL AUDIO GPIO | PERIPHERAL GPIO

USB GPIO | POWER I/O | LIBDAISY PIN NAMES | ARDUINO PIN NAMES*



*Arduino pin names are the same indices preceded by: “D” for GPIO or “A” for Analog I/O

Absolute Maximum Ratings - Table 1

PIN TYPE	Min	Max	Unit
Positive Power Input	6	17	V
Negative Power Input	-6	-17	V
Ground	0	0	V
5V Output		800	mA
3V3 Output		500*	mA
GPIO	-0.3	6**	V
Audio IO	Negative Power In	Positive Power In	V
Gate Input	Negative Power In	Positive Power In	V
Gate Output	0	5	V
CV Input	Negative Power In	Positive Power In	V
CV Output	0	5	V

* Maximum output current is firmware dependent.
** To sustain a voltage higher than 4V the internal pull-up/pull-down resistors must be disabled.

Pin Functions - Table 2

DAISY PIN	LIBDAISY PIN	ARDUINO PIN*	MCU PIN	PRIMARY FUNCTION	ALT. FUNCTION 1 I2C	ALT. FUNCTION 2 UART	ALT. FUNCTION 3 SPI
1	0	D0	PB12	USB_HS_ID		UART5_RX	SPI2_NSS/I2S2_WS
2	1	D1	PC11	SDMMC1_D3		USART3_RX/UART4_RX	SPI3_MISO/ I2S3_SDI
3	2	D2	PC10	SDMMC1_D2		USART3_TX/UART4_TX	SPI3_SCK/I2S3_CK
4	3	D3	PC9	SDMMC1_D1	I2C3_SDA		
5	4	D4	PC8	SDMMC1_D0			
6	5	D5	PD2	SDMMC1_CMD		UART5_RX	
7	6	D6	PC12	SDMMC1_CK		UART5_TX	SPI3_MOSI/I2S3_SDO
8	7	D7	PG10	SPI1_NSS			SPI1_NSS/I2S1_WS
9	8	D8	PG11	SPI1_SCK			SPI1_SCK/I2S1_CK
10	9	D9	PB4	SPI1_MISO		UART7_TX	SPI1_MISO/I2S1_SDI/SPI3_MISO/ I2S3_SDI/SPI2_NSS/I2S2_WS/ SPI6_MISO
11	10	D10	PB5	SPI1_MOSI		UART5_RX	SPI1_MOSI/I2S1_SDO/SPI3_MOSI/ I2S3_SDO/SPI6_MOSI
12	11	D11	PB8	I2C1_SCL	I2C1_SCL/I2C4_SCL	UART4_RX	
13	12	D12	PB9	I2C1_SDA	I2C1_SDA/I2C4_SDA	UART4_TX	SPI2_NSS/I2S2_WS
14	13	D13	PB6	USART1_TX	I2C1_SCL/I2C4_SCL	USART1_TX/LPUART1_ TX/UART5_TX	
15	14	D14	PB7	USART1_RX	I2C1_SDA/I2C4_SDA	USART1_RX/LPUART1_RX	
16	in[0][SIZE]	NC	x	AUDIO IN L			
17	in[1][SIZE]	NC	x	AUDIO INR			
18	out[0]	NC	x	AUDIO OUT L			
19	out[1]	NC	x	AUDIO OUT R			
20	AGND	NC	x	AGND			
21	3v3A	NC	x	3v3A			
22	15	A0, D15	PC0	ADC_INP10			
23	16	A1, D16	PA3	ADC_INP15		USART2_RX	
24	17	A2, D17	PB1	ADC_INP5			
25	18	A3, D18	PA7	ADC_INP7			SPI1_MOSI/I2S1_SDO/SPI6_MOSI
26	19	A4, D19	PA6	ADC_INP3			SPI1_MISO/I2S1_SDI/SPI6_MISO
27	20	A5, D20	PC1	ADC_INP11			SPI2_MOSI/I2S2_SDO
28	21	A6, D21	PC4	ADC1_INP4			
29	22	A7, D22	PA5	DAC1_OUT2			SPI1_SCK/I2S1_CK/SPI6_SCK
30	23	A8, D23	PA4	DAC1_OUT1			SPI1_NSS/I2S1_WS/SPI3_NSS/ I2S3_WS/SPI6_NSS
31	24	A9, D24	PA1	SAI2_MCLK_B		UART4_RX	
32	25	A10, D25	PA0	SAI2_SD_B		UART4_TX	
33	26	D26	PD11	SAI2_SD_A			
34	27	D27	PG9	SAI2_FS_B		USART6_RX	SPI1_MISO/I2S1_SDI
35	28	A11, D28	PA2	SAI2_SCK_B		USART2_TX	
36	29	D29	PB14	USB_HS_D_-		USART1_TX	SPI2_MISO/I2S2_SDI
37	30	D30	PB15	USB_HS_D_+		USART1_RX	SPI2_MOSI/I2S2_SDO
38	3v3D		x	3v3D			
39	VIN		x	VIN			
40	DGND	PG3	x	GND			

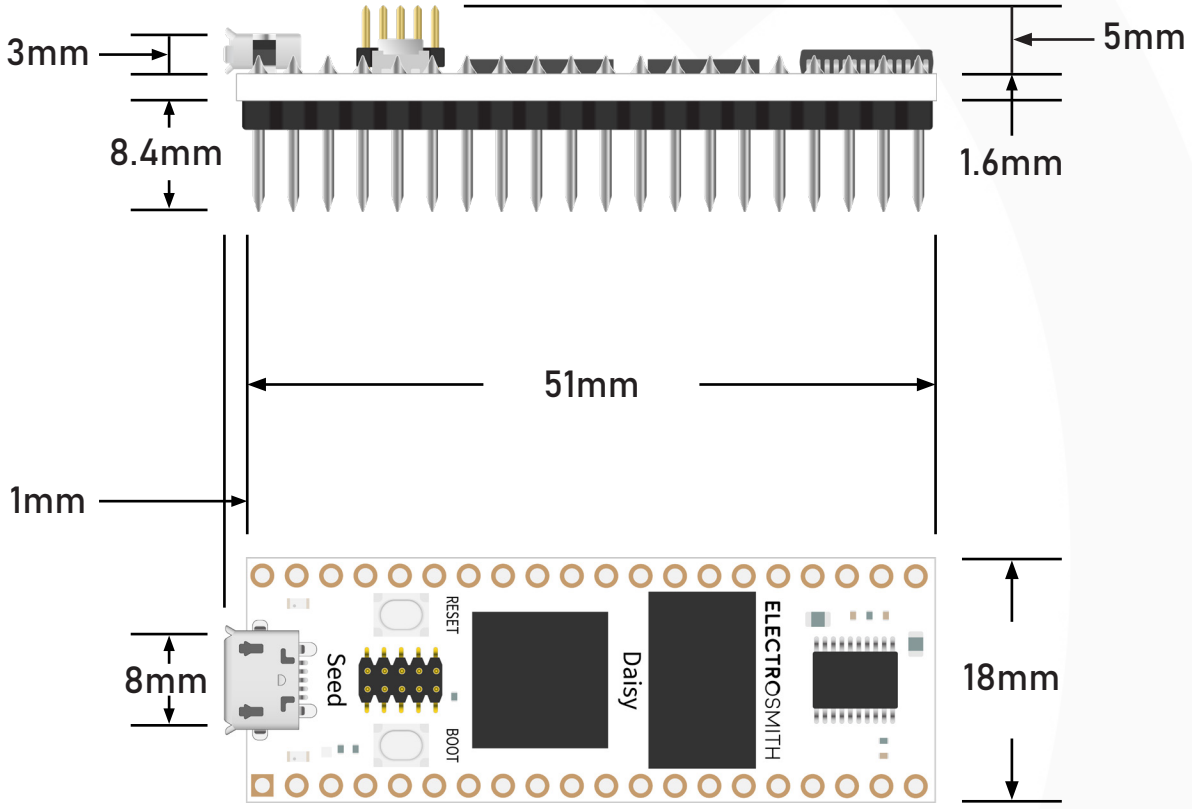
*Arduino pin names are the same indices preceded by: “D” for GPIO or “A” for Analog I/O

Electrical Characteristics - Table 3

* The min/max rating in this table represents the expected operating range for the device. Signals outside of this range will not necessarily damage the Daisy Patch Submodule. See Table 1 for Absolute min/max ratings.

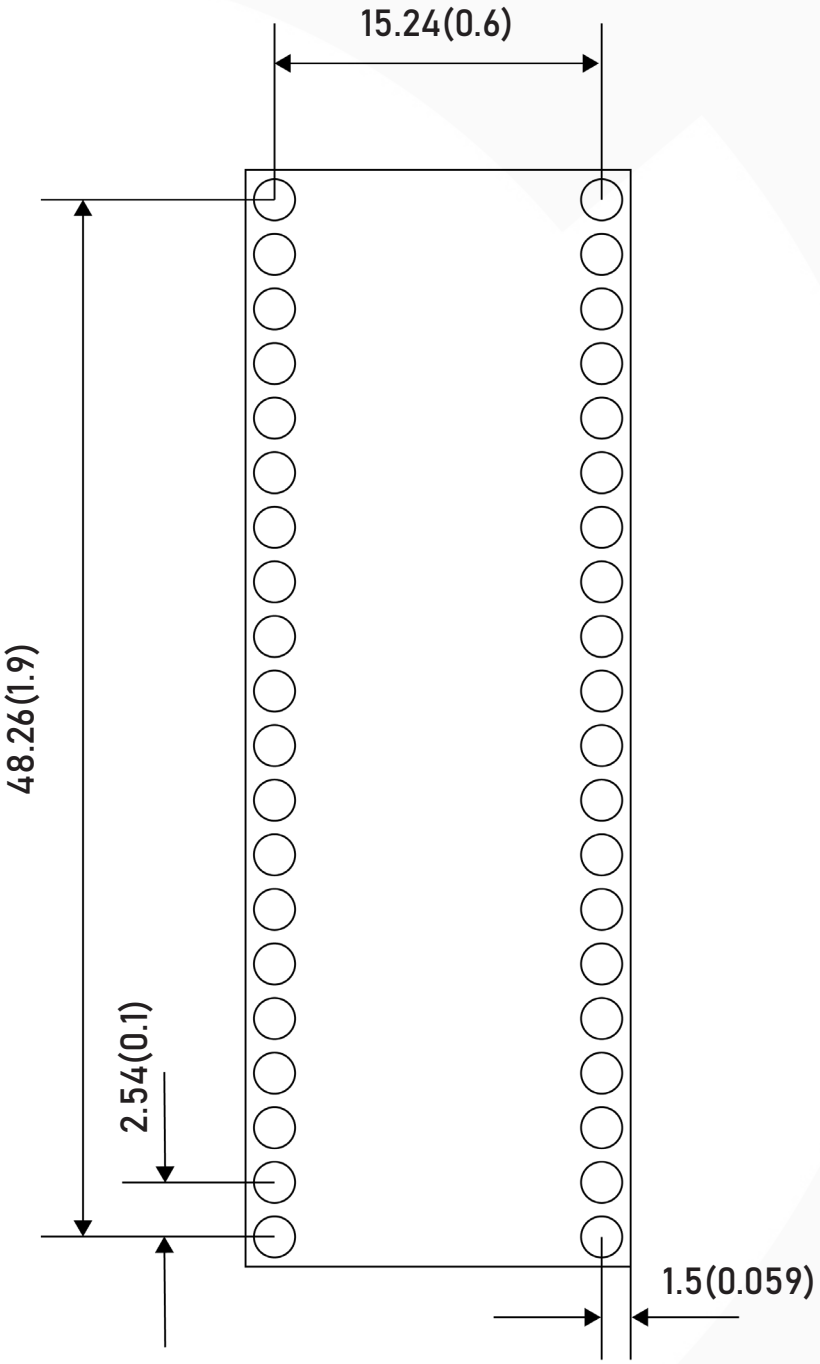
PIN NAME	PRIMARY NAME	Min	Max	Typical
A1	-12V			-12V (input only)
A2	ADC_9	0V	3V3	0 to 3V3
A3	ADC_10	0V	3V3	0 to 3V3
A4	GND			GND
A5	12V			12V (input only)
A6	5V			5V (output only)
A7	GND			GND
A8	USB_DM	0V	3V3	0 to 3V3
A9	USB_DP	0V	3V3	0 to 3V3
A10	3V3			3V3 (output only)
B1	AUDIO_OUT_RIGHT	-12V	12V	-5V to 5V
B2	AUDIO_OUT_LEFT	-12V	12V	-5V to 5V
B3	AUDIO_IN_RIGHT	-12V	12V	-5V to 5V
B4	AUDIO_IN_LEFT	-12V	12V	-5V to 5V
B5	GATE_OUT_1	0V	5V	0 to 5V
B6	GATE_OUT_2	0V	5V	0 to 5V
B7	I2C_SCL	0V	3V3	0 to 3V3
B8	I2C_SDA	0V	3V3	0 to 3V3
B9	GATE_IN_2	Negative Power In	Positive Power In	0 to 5V
B10	GATE_IN_1	Negative Power In	Positive Power In	0 to 5V
C1	CV_OUT_2	0V	5V	0 to 5V
C2	CV_4	-5V	5V	-5V to 5V
C3	CV_3	-5V	5V	-5V to 5V
C4	CV_2	-5V	5V	-5V to 5V
C5	CV_1	-5V	5V	-5V to 5V
C6	CV_5	-5V	5V	-5V to 5V
C7	CV_6	-5V	5V	-5V to 5V
C8	CV_7	-5V	5V	-5V to 5V
C9	CV_8	-5V	5V	-5V to 5V
C10	CV_OUT_1	0V	5V	0 to 5V
D1	SPI_CS	0	3V3	0 to 3V3
D2	SDMMC_D3	0	3V3	0 to 3V3
D3	SDMMC_D2	0	3V3	0 to 3V3
D4	SDMMC_D1	0	3V3	0 to 3V3
D5	SDMMC_D0	0	3V3	0 to 3V3
D6	SDMMC_CLK	0	3V3	0 to 3V3
D7	SDMMC_CMD	0	3V3	0 to 3V3
D8	ADC_12	0	3V3	0 to 3V3
D9	ADC_11	0	3V3	0 to 3V3
D10	SPI_SCK	0	3V3	0 to 3V3

Technical Drawing



Landing Pattern

Dimensions in mm (inches)



The Fine Print

Made In The USA

The Daisy Seed is built by the Electrosmith team in San Clemente, CA. We take pride in knowing that each stage of our manufacturing process is handled in house so that we can provide the best quality, lead time, and pricing.

RoHS Compliant

Electrosmith manufacturing is 100% RoHS compliant. All Electrosmith products are free from RoHS defined hazardous materials.

FCC Certification

The Daisy Seed is currently undergoing testing for FCC certification. The associated paperwork will be available for download on our website once the certification is obtained.

CE/REACH Compliant

The Daisy Seed is assembled with parts and materials that are compliant with CE/REACH standards. Design with the Patch SM knowing that it upholds the highest environmental standards for electronic products.

Disclaimer: Electrosmith products should not be used in medical or life saving devices, or any uses requiring fail-safe performance. Electrosmith reserves the right to change, add, or remove any information and assets included in the Daisy Patch SM datasheet at any time without prior notice.