Locus Engineering Inc. E2072

Silicon Labs™ C8051F300 Microcontroller Breakout Board

FEATURES

- 24.5MIPs C8051F300 microcontroller
- +3.3V 150mA regulator with output pin
- 3 pin C2 program interface
- 8 I/O port, 5V tolerant, 100mA sink
- 0.100" header pin grid
- +3.7V to +16V input
- 256 bytes RAM
- 8KB Flash program memory, in-system programmable
- internal 24.5MHz oscillator
- (3) 16 bit timer/counters
- PCA, watchdog timer
- UART up to 230.4 bps
- 8 bit ADC @500Ksamples/s
- 8 channel analog multiplexer
- analog comparator
- temperature sensor
- test LED
- 1.00"L 0.70"W

DESCRIPTION

The E2072 Silicon Labs™ C8051F300 Microcontroller Breakout Board uses a low cost, high performance mixed signal 8051 architecture microcontroller on a simple to use board with pins on 0.1" grid. A low dropout voltage regulator, test LED, and C2 program interface are included. Memory includes 256 bytes RAM and 8KB of Flash program memory. Onboard peripherals include 24.5MHz oscillator, three 16 bit timers, PCA, UART, and 8 bit ADC with analog mux. All 8 port I/O pins are available. This development board is ideal for small mixed signal projects.

Table 1. Absolute Maximum Ratings

Parameter	Rating
V_{in} to GND	-0.3 to +16.0V
Port pin input voltage to GND	-0.3 to +5.8V
Port pin output current	100mA
Regulator output current	150mA

Table 2. Electrical Characteristics

Test Conditions: Supply Voltage V_{in} = +6.0V, $T_{ambient}$ = 25° C, unless otherwise specified

Symbol	Parameter	Min.	Typ.	Max.	Unit
V_{in}	Regulator input voltage @150mA	3.6	5-6	9.3	V
V_{do}	Regulator dropout voltage @150mA		0.18	0.375	V
I_{dd}	Supply current, see 'F300 datasheet for specifics		6.6		mA
V_{IH}	Digital high input voltage	2.00V			V
V_{IL}	Digital low input voltage			0.80	V
V_{OH}	Digital high output voltage	2.6V @Iout -3mA			V
V_{OL}	Digital low output voltage			1.0V @Iout 25mA	V
I_{sink}	Digital output sink current			25	mA
I_{source}	Digital output source current			-10.0	mA
$T_{operate}$	Operating temperature	-40		+85	°C

General Precautions

Charged devices and circuit boards can discharge without warning. Proper ESD precautions should be followed to avoid failure.

This device is not authorized for use in any product where the failure or malfunction of the product can reasonably be expected to cause failure in a life support system or to significantly affect its operation. Locus Engineering Inc. reserves the right to make changes at any time without notice to improve product features or reliability.

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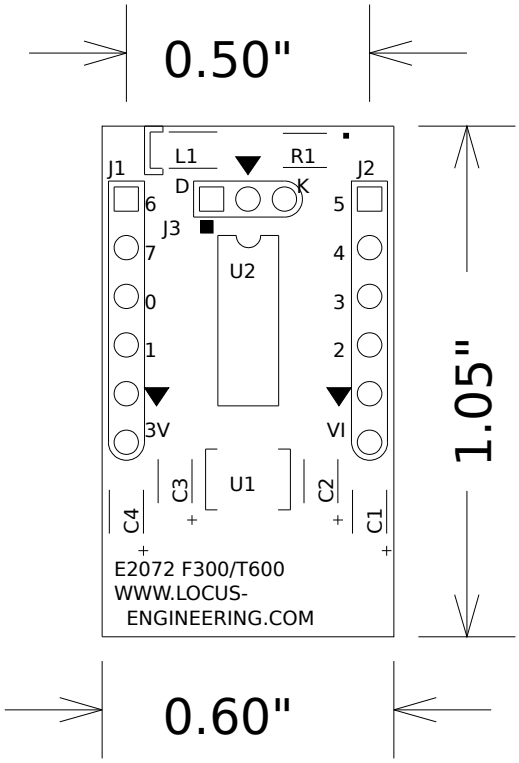

Figure 1. Module Dimensions

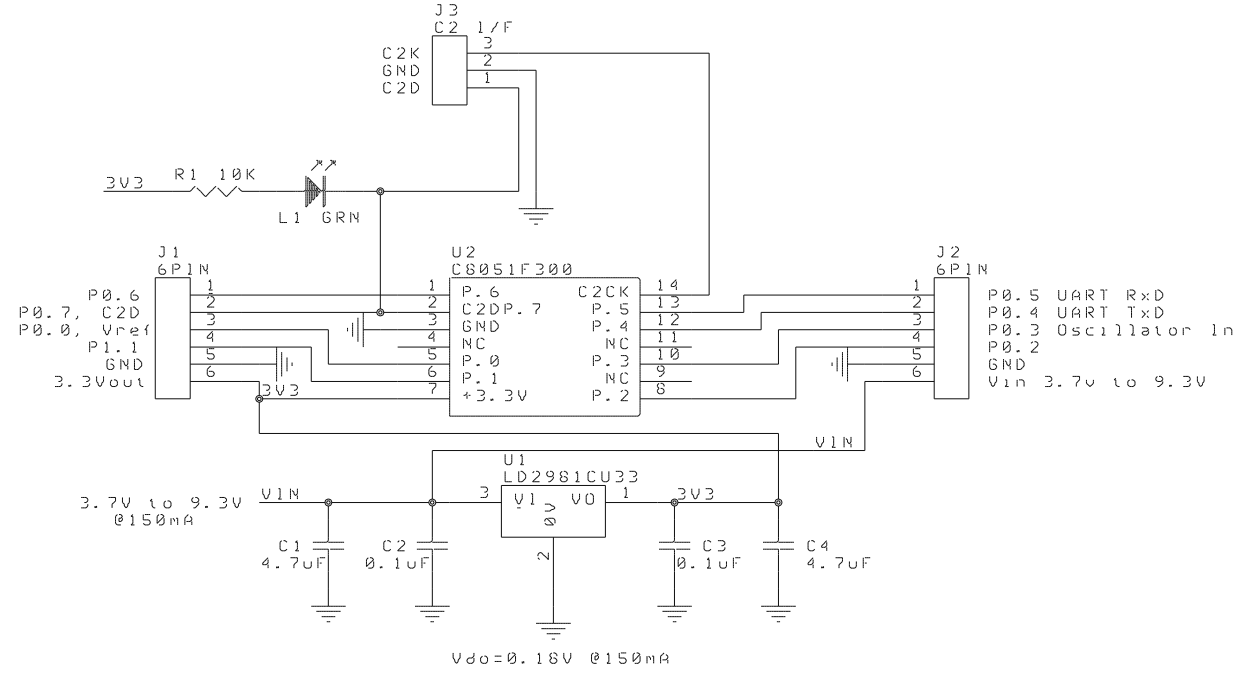

Figure 2. Schematic

Installation

The module is easiest installed on a breadboard with a 0.100" grid. Connect a power supply providing 3.7V to 12V with a minimum of 150mA to Vin and 0V. Check the regulator output on the module for 3.3V.

Port I/O

The port pins can sink 100mA or source 5mA, the total of which should not exceed the 150mA regulator current limit. Input voltages should be limited to 5.8V for the I/O port pins. Note that port pins are not protected against higher voltages and will be damaged if precautions are not taken. Input voltages are typically CMOS with <0.99V for a guaranteed low and >2.31V for a guaranteed high. Port pins used as outputs should be configured appropriately with pullup resistors for open drain, or set as push-pull.

The following table summarizes the module pinouts and some of the special functions optionally associated with some port pins:

Left Module Connector J2		Right Module Connector J3	
J1.1	P0.6	J2.1	P0.5 UART RxD
J1.2	P0.7	J2.2	P0.4 UART TxD
J1.3	P0.0 External voltage reference	J2.3	P0.3 External oscillator input
J1.4	P0.1	J2.4	P0.2
J1.5	Gnd	J2.5	Gnd
J1.6	3.3Vout	J2.6	Vin 3.7V to 16V

C2 Program Interface

The C2 Program Interface requires the Silicon Labs™ USB Debug Adapter and the Locus Engineering E1947 3 Pin C2 Program Interface Adapter, the latter converting between the 10 pin IDC connector to a 3 pin 2mm connector. The latest Silicon Labs™IDE can be downloaded from their website. The LED is connected to P0.7 which is also the C2 serial data during programming and debug. If P0.7 is to be used, keep any additional load to less than a few mA otherwise the device will not program.

Voltage Regulator

The 3.3V voltage regulator is a low dropout type with typical Vdo=0.18V @ 150mA. The SOT-89 package allows up to 9.3V input at 150mA without shutdown due to overheating, and up to 12V at lower currents.