

Great FET:

Making Good FET
Great Again

Michael Ossmann
Great Scott Gadgets

Travis
Goodspeed
travis@hbel.com



RXLED

TXLED

R10

C3 CALED1









IM-me™

GIRL



Bye

1 q 2 w 3 e 4 a 5 s 6 d 7 z 8 x 9 c 0 4
@ r # t y u i o p
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^ f g h i j k l
{ } ~ ? , Enter
Caps Space www's Online BACK
ALT

THE NEXT HOPE



NHB12
TMG

JULY 2010

SU3 1 8
GPIO

16MHz

JTAG

BSL

SU4

ICE

SU1

SU2

85ANH91G4
X430F26181
REV F

LED3
LED2
LED1

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+49.152.23.90.76.92

Facedancer10
<http://goodfet.sf.net/>





MSP430F2618TPM

TEXAS INSTRUMENTS



Microcontrollers

+ Add To My Lists

View Datasheet

Description:

16-Bit Ultra-Low-Power MCU, 116kB Flash, 8KB RAM, 12-Bit ADC, Dual DAC, 2 USCI, HW Mult, DMA 64-LQFP -40 to 105

RoHS Code



PbFree Code



COMPOSITE PRICE

\$9.2247

(28.82% less than high price)

Est. Price At 1000 Units: \$8.1672

Est. Price At 1 Unit: \$12.9589

[View All Prices](#) (13 Distributors)

TOTAL STOCK

3396

Risk Rank



[Read more about Risk Rank](#)

Related Parts



MSP430F26...
Microcontroller



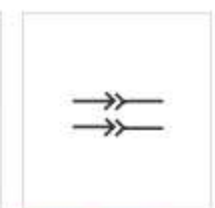
TPS62243D...
Switching Regulator or Controller



TPS79930D...
Linear Regulator IC



LMC6482IM...
Operational Amplifier



0527450896
Headers and Edge Type Connector

Part Details

Export to CSV

Price and Stock

FT232RL

FUTURE TECHNOLOGY DEVICES
INTERNATIONAL (FTDI CHIP)



Bus Controllers

+ Add To My Lists

View Datasheet

Description:

PDSO28, 5.30 X 10.20 MM, 0.65 MM PITCH,
GREEN, SSOP-28

RoHS Code

RoHS
Compliant

PbFree Code

PbFree

COMPOSITE PRICE

\$3.1638

(30.66% less than high price)

Est. Price At 1000 Units: **\$2.7676**

Est. Price At 1 Unit: **\$4.5629**

[View All Prices](#) (2 Distributors)

TOTAL STOCK

14971

Risk Rank

1.5

LOW

DESIGN		1
PRODUCTION		1
LONG TERM		1

Read more about [Risk Rank](#).

Part Details

Export to CSV

Related Parts



FT232RL-R...

Bus Controller



ATMEGA32...

Microcontroller



LM2596S-A...

Switching
Regulator or
Controller



492250821

Headers and Edge
Type Connector



TPS73618DBVT

Linear Regulator IC

Price and Stock

PIC

HARDWARE

GoodFET

GoodFET42

GoodFET32

Radio

Api-Mote

Zolertia Z1

TelosB/TMote

Next Hope Badge

Zigduino

USB

Facedancer21

Facedancer11

CAN Bus

GoodThopter12

Conference Badges

No Such Con 2013

The Next Hope

Retired

Facedancer20

GoodThopter11

GoodThopter10

Facedancer10

GoodFET41

GoodFET40

GoodFET31

GoodFET31L

GoodFET22

GoodFET21

GoodFET30

BadFET20

GoodFET20

GoodFET11

GoodFET10

git clone https://github.com/travisgoodspeed/goodfet goodfet

For development, use your Github account. We no longer use Sourceforge for our repository.

```
git clone git@github.com:travisgoodspeed/goodfet.git goodfet
```

```
#define SETSDA SPIOUTI=SDA
#define CLRSCL SPIOUT&=~SCL
#define SETSCL SPIOUTI=SCL

#define READSDA (SPIIN&SDA?1:0)
#define SETBOTH SPIOUTI=(SDA|SCL)

#define I2C_DATA_HI() SETSDA
#define I2C_DATA_LO() CLRSCL

#define I2C_CLOCK_HI() SETSCL
#define I2C_CLOCK_LO() CLRSCL

//Warning "Using internal resistors. Won't work on 161x devices."

// Take control of the bus
void I2C_Take()
{
    I2C_CLOCK_HI();
    I2C_DATA_HI();
    SCLOUTPUT;
    SDAOUTPUT;
}

void I2C_Release()
{
    SDAINPUT;
    SCLINPUT;
}

//) Inits bitbanging port, must be called before using the functions below
void I2C_Init()
{
    I2C_Take();
    //PULLON;
    I2CDELAY(1);
}
```

12 Mbps
↓

1 Mbps
↓

12 Mbps
↓



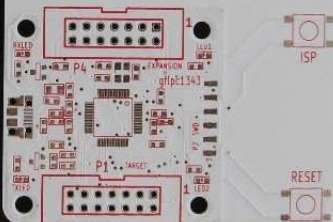


<http://greatscottgadgets.com/h2hc2013badge/>



H2HC

2013







BONUS ROW!

J2

J7



RESET

LED2

LED1

J3

USB0
HOST

LED3

LED4

LED5

LED6



J5



USB1
TARGET

J4

<http://greatscottgadgets.com/>

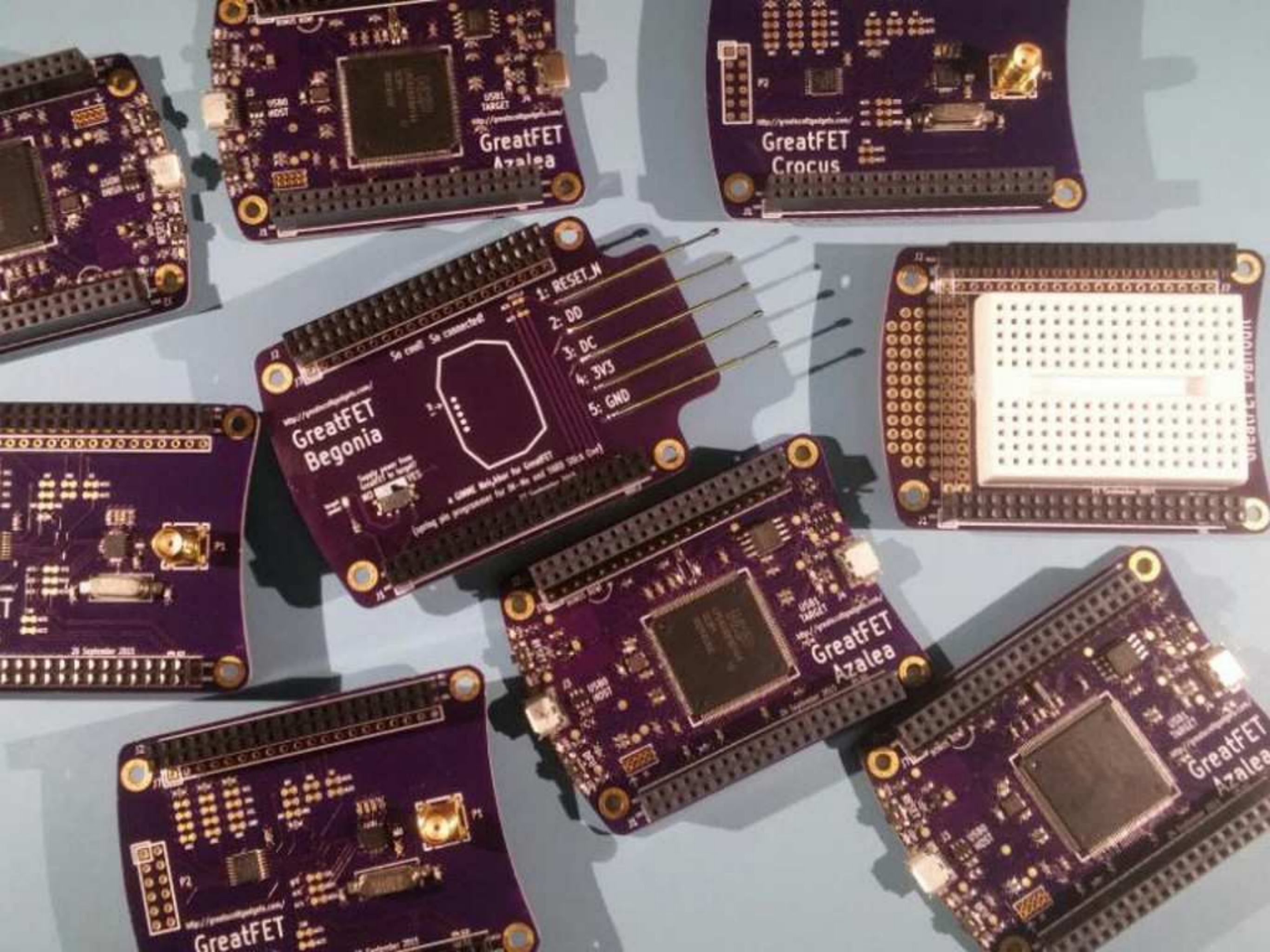
GreatFET
Azalea

29 October 2015

J1



SS1



GreatFET
Azalea

GreatFET
Crocus

GreatFET
Begonia

1: RESET_N
2: DD
3: DC
4: 3V3
5: GND

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GreatFET



How to Design a Neighbor

Edit New Page

Michael Ossmann edited this page on Oct 18, 2015 · 7 revisions

This guide will help you design a neighbor, an add-on board for GreatFET.

Use the Template

The easiest way to get started is to copy neighbor-template from the repository and use KiCad to edit the design. The template is a four layer PCB, so you may want to delete the inner two layers under Layer Setup to make a two layer neighbor.

Required Elements

Every neighbor should connect to both of the two 2x20 pin headers (J1 and J2) on GreatFET. You can use female stackable headers mounted on the top of your neighbor, or you can use male headers mounted on the bottom if you do not want your neighbor to be stackable. For mechanical stability, use 2x20 headers (not headers with fewer pins) even if you don't need to use very many pins. (TODO: stackable header component recommendations)

You may power your neighbor from the 3.3 V supply (VCC) provided by the GreatFET, but you may only draw 150 mA from this supply. If you need more current or a different voltage, use VBUS (the 5 V power supply from the USB host) and implement your own voltage regulation.

Bonus Row

The bonus row of pins (.17) is not required. Design your neighbor without the bonus row if you can

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- [Crocus](#)
- [Daffodil](#)
- [Getting Started with Firmware Development](#)
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- [I2C Registry](#)
- [Neighbors](#)

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https://github.com/greatsco



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@skytee



Following

Delivered my lightning talk. It was fun. Also, @travisgoodspeed sold the rights to GoodFET to @michaelossmann on stage :D #GreatFET #sellout

RETWEETS

4

LIKES

5



10:21 PM - 6 Aug 2015





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RETWEETS

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