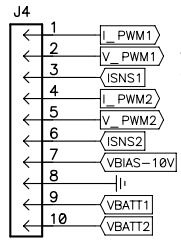
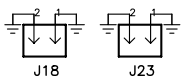
Test Steps:
To power MSP430 from FET Tool Connector: Populate J19 and J20
To power MSP430 from Power Stage Board:
1. Connect boards together using via right−angle header.
2. Apply VIN to power stage board (TPS40057 or TPS40170) and this will create Vbias voltage (approx 9.3V).
3. Confirm approximately 9.3V on J7−pin1.
4. Populate J7 and confirm 3.3Vout on linear regulator (J6−pin1 & J12−pin1).
5. Next populate J6 & J12 header to provide MSP430 3.3V power. D2 LED should be on.

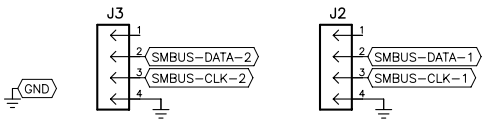
Operation:
Program MSP430 via J17 FET Tool Interface with provided C−code download.
Discharge Resistors allows ôcalibration modeö which discharges a battery to empty before charging.
MSP430 will communicate via SMBus to Battery Gas Gauge for desired charging voltage and charging current. After a valid read, the MSP430 sets a PWM for voltage and current regulation. A battery needs to be communicated with before PWMs will start. See Application Note for more detailed information.

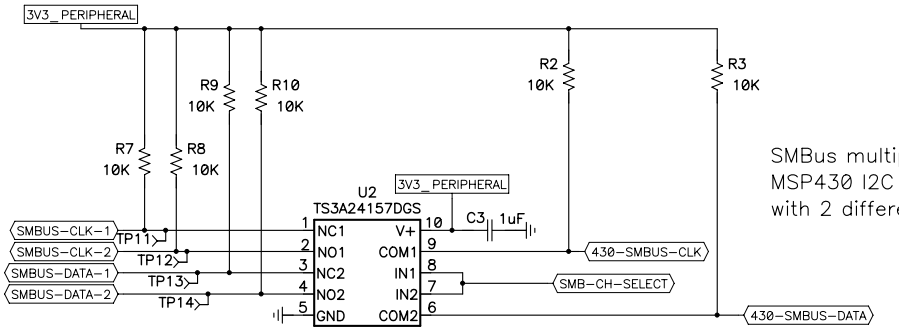
Changes from Rev D to E:
1. added TPS71533 LDO to separate 3.3V analog and digital
2. changed J10/J11 and J19/J20 for peripheral and micro 3.3V
3. added connection from VUSB (pin 54) to 3.3V Micro
4. connected J9−pin4 reset to 3V3_MICRO



J4 Right−Angle Male Header
to connect Wide−Vin Batt Charger
PMP5306 TPS40057
PMP5313 TPS40170

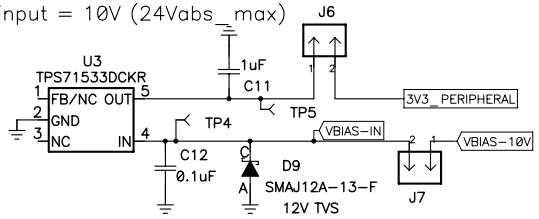


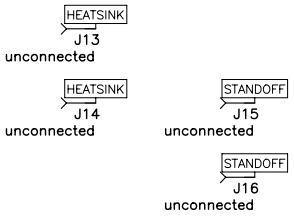


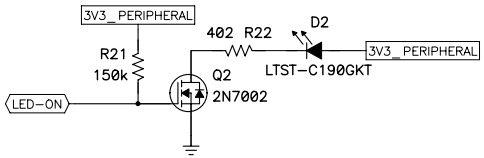


SMBus multiplexer to expand
MSP430 I2C port to communicate
with 2 different batteries.

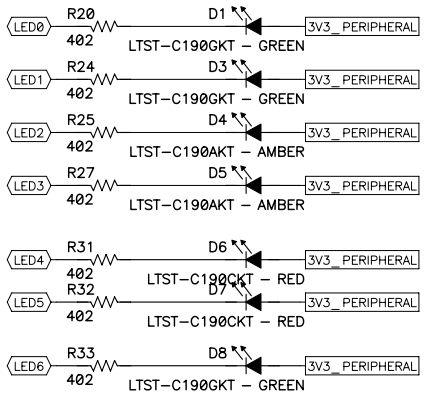
VBIAS input = 10V (24Vabs_max)





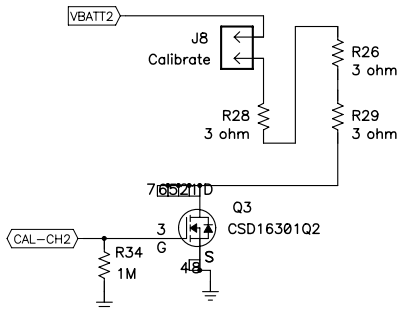


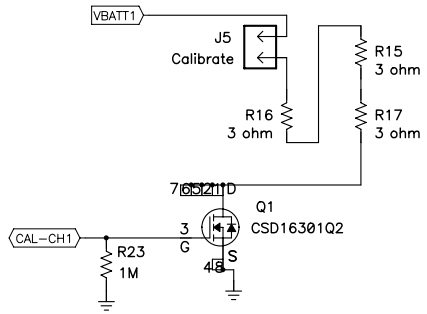
Status LEDs



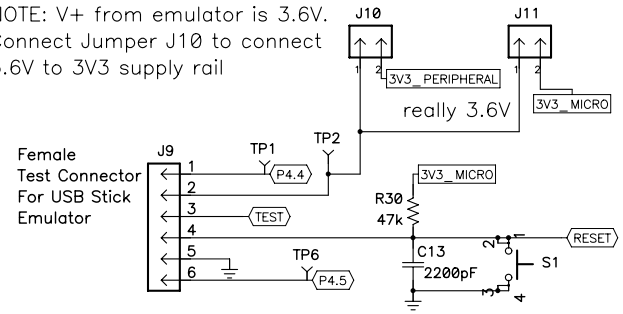
approx 2.2mA per LED

Discharge Resistors
for Battery Packs





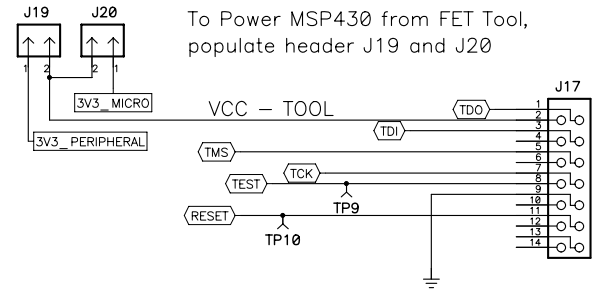
NOTE: V+ from emulator is 3.6V.
Connect Jumper J10 to connect
3.6V to 3V3 supply rail



Designed to control Wide Input Voltage Battery Charger
For use with PMP5306 − dual 40Vin TPS40057 dc/dc controller
or for use with PMP5313 − dual 60Vin TPS40170 dc/dc controller

Title: MSP430 Battery Charger Daughter Card		
Size: C	Number: PMP5385−E TEXAS INSTRUMENTS	Rev: E5
Date: 1/25/2011	Drawn by: K KELLER	
Filename: PMP5385−E5.SCH	Sheet: 1 of 2	

Default:
To Power MSP430 from FET Tool,
populate header J19 and J20



MSP–FET430UIF
USB Debug Interface
Connection

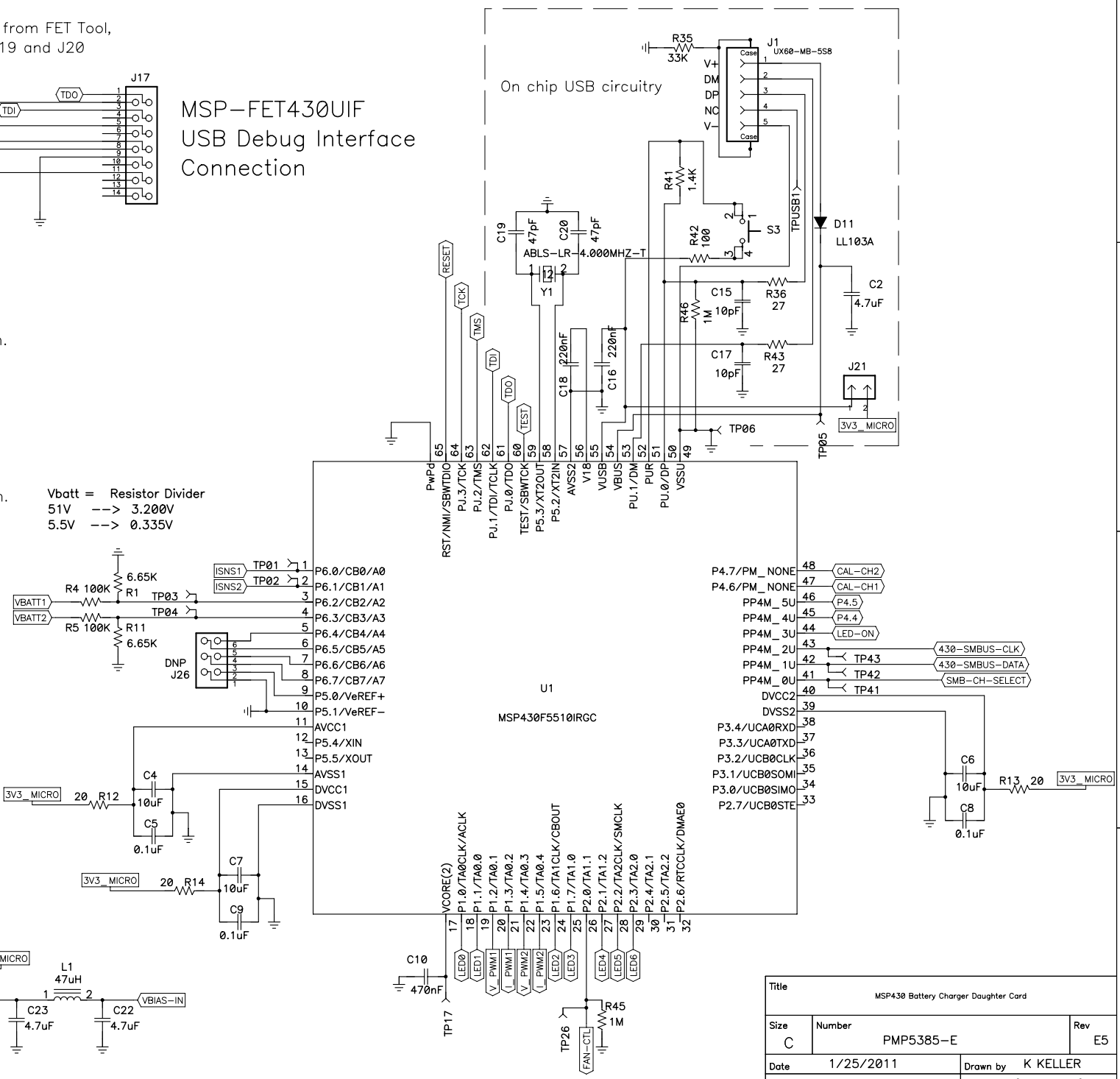
4kHz PWM output for Charger Voltage regulation.

Vout	Duty Cycle	Average Voltage
0V	0%	0.0
5.5V	10.78	0.335V
12.6V	24.71	0.791V
16.8V	32.94	1.054V
51V	100.0%	3.2V

4kHz PWM output for Charger Current regulation.

Iout	Duty Cycle	Average Voltage
0 A	0 %	0 V
0.1A	1.0%	0.032V
1.0A	10.0	0.32V
2.0A	20.0	0.64V
5.0A	50.0	1.60V
10.0A	100.0	3.20V

Vbatt = Resistor Divider
51V --> 3.200V
5.5V --> 0.335V



Title	MSP430 Battery Charger Daughter Card	
Size C	Number PMP5385–E	Rev E5
Date 1/25/2011	Drawn by K KELLER	
Filename	Sheet 2 of 2	