Revision History			
Date	Sch Revision	PCB Revision	Notes
	A	A	Initial Version
	B	A	Updated Altium Library Component J10
	C	B	Change C1,C2 from 12pF to 22pF Moved J1 and P2 about 0.050" to align with center of PCB
4/29/2015			
6/17/2015	D	C	I2C/IRQ Pull-up resistors moved from VCC_MSP to VCC_LDO Added BoosterPack Connector (CapTIvate Library)

SCHEMATIC NOTES

1. FR2633 CVREG = low ESR 20%, X5R, 1uF

2. J2 20pin (FEMALE) connector is SAMTEC SSW-110-22-F-D-RA (low insertion force) (PREFERRED PART)
   Alternate parts are SAMTEC SSW-110-02-F-D-RA (standard insertion force)
   Alternate parts are SAMTEC SSW-110-x2-L-D-RA (optional gold finish)
   Alternate parts are SAMTEC SSW-110-x2-G-D-RA
   Alternate parts are SAMTEC SSW-108-x2-G-D-RA (16pin version)

3. J10 48pin (FEMALE) connector is a DIN 41512 Type 2C/2R; Manufacturer is Harting 09 28 248 6921 (Digikey 1195-1890-ND)
   Alternate parts are AMP/TE 5650868-4 (Digikey A32306-ND)
   Alternate parts are AMP/TE 5650868-5 (Digikey A32858-ND)
   Alternate parts are AMP/TE 5650893-5 (Digikey A101945-ND)
   Alternate parts are FCI 86093488613755E1LF (Digikey A6092114-ND)

4. Mating 48pin (MALE) connector is a DIN 41512 Type 2C/2R; Below are compatible part numbers
   FCI 86093487313H55ELF (Digikey 609-4951-ND)
   Harting 09 23 148 6921 (Digikey 1195-1856-ND)
   Harting 09 23 148 2921 (Digikey 1195-1854-ND)

5. Suggested (MALE) BoosterPack header is SAMTEC DW-10-15-F-D-210
6. Suggested (FEMALE) BoosterPack connector is SAMTEC SSQ-110-23-G-D

CAPTIVATE-FR2633

Orderable: MSP-CAPT-FR2633MCU	Designed for: Public Release	Mod. Date: 8/31/2015
TID #: N/A	Project Title: TICAPEVM-FR2633MCU	
Number: CAPTIVATE-FR2633	Rev: D Sheet Title:	
SVN Rev: Version control disabled	Assembly Variant: Production Variant 1	Sheet: 1 of 3
Drawn By:	File: coverSheet.SchDoc	Size: B
Engineer: a0272918	Contact: http://www.ti.com/support	

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http://www.ti.com

EXTERNAL/BATTERY POWER INPUT
Apply +1.8V to +3.6V

TP2 TP1 GND

Caution: Remove J7 when connected to programmer and external/battery power at same time

J7 ISOLATION

J3(2-3) for ENERGY-TRACE(tm) metered
J3(1-2) for +3.3V LDO

J3 VCC_METERED VCC_MSP VCC_LDO

MSP430 MCU VCC SELECTION

VCC_LDO
R22 10k R1 2.2k R2 2.2k

I2C/UART/IRQ JUMPERS

J6
MSP_TXD 1 — 2 UCA0_TXD
MSP_RXD 3 — 4 UCA0_RXD
MSP_SDA 5 — 6 UCB0_SDA
MSP_SCL 7 — 8 UCB0_SCL
MSP_IRQ 9 — 10 P1.1/IRQ
MSP_SYNC 11 — 12 P2.2/SYNC

Communication jumpers (install/remove as needed)

J4 1 2 P1.6/LED2

Remove jumpers to isolate LEDs

J5 1 2 P1.7/LED1

R3 390 R4 390

Green D1 Green D2

GND

GPIO/LED SELECT JUMPERS

J2
GND 1 — 2 GND
VCC_5V 3 — 4 VCC_LDO
VCC_LDO 5 — 6 VCC_METERED
GND 7 — 8 GND
EZFET_RXD 9 — 10 EZFET_TXD
EZFET_SBWTDIO_RST 11 — 12 EZFET_SBWTCK_TST
MSP_RXD 13 — 14 MSP_TXD
MSP_SCL 15 — 16 MSP_SDA
MSP_SYNC 17 — 18 MSP_IRQ
19 — 20
GND

Connector 10X2RA

GND GND

PROGRAMMER EDGE CONNECTOR

VCC_MSP
R5 47k
EZFET_SBWTDIO_RST
S1
C5 1000pF
GND

MSP430FR2633 RESET

FC-135 32.7680KA-A3
XIN 1 Y1 2 XOUT
32.768 KHz
C1 22pF C2 22pF
GND GND

32kHZ XTAL

J10
CapTIvate Connector
Processor Side
Use with the MSP-EXP430FR2633 Processor Module
CAPTIVATE_CONN

VCC_LDO A2	VCC 3.3V	CAP3.3	C1	R6 470 CAP3.3
VCC_5V A3	VCC 5V	CAP3.2	C2	R7 470 CAP3.2
		CAP3.1	C3	R8 470 CAP3.1
UCB0_SDA A4	SDA	CAP3.0	C4	R9 470 CAP3.0
UCB0_SCL A5	SCL			
P1.1/IRQ A6	IRQ	CAP2.3	C5	R10 470 CAP2.3
		CAP2.2	C6	R11 470 CAP2.2
P2.2/SYNC A12	P2.2/SYNC	CAP2.1	C7	R12 470 CAP2.1
		CAP2.0	C8	R13 470 CAP2.0
P1.0 A13	P1.0			
P1.7/LED1 A14	P1.7/LED1	CAP1.3	C9	R14 470 CAP1.3
P1.6/LED2 A15	P1.6/LED2	CAP1.2	C10	R15 470 CAP1.2
		CAP1.1	C11	R16 470 CAP1.1
		CAP1.0	C12	R17 470 CAP1.0
H1	L HOLE			
H2	R HOLE	CAP0.3	C13	R18 470 CAP0.3
		CAP0.2	C14	R19 470 CAP0.2
A1	GND	CAP0.1	C15	R20 470 CAP0.1
A16	GND	CAP0.0	C16	R21 470 CAP0.0

B9 B10 B11 B12 B13 B14 B15 B16
A7 A8 A9 A10 A11
Unused Pins Terminate to Ground
B1 B2 B3 B4 B5 B6 B7 B8

GND

J10 Manufacturer and supplier Part numbers: Refer to cover sheet

SENSOR PCB CONNECTOR

MSP430FR2633 CAPTIVATE MCU

VCC_MSP VREG

C3 0.1µF X5R C6 4.7µF X5R C4 1µF X5R

GND

U1
MSP430FR2633IRHB
32VQFN
CAPTIVATE MCU

32	DVCC	P3.0/CAP0.0	12 CAP0.0
20	VREG	CAP0.1	13 CAP0.1
EZFET_SBWTDIO_RST 1	RST/NMI/SBWTDIO	P2.3/CAP0.2	14 CAP0.2
EZFET_SBWTCK_TST 2	TEST/SBWTCK	CAP0.3	15 CAP0.3
P1.0 7	P1.0/UCB0STE/TA0CLK/A0	P3.1/UCA1STE/CAP1.0	16 CAP1.0
P1.1/IRQ 8	P1.1/UCB0CLK/TA0.1/A1	P2.4/UCA1CLK/CAP1.1	17 CAP1.1
UCB0_SDA 9	P1.2/UCB0SIMO/UCB0SDA/TA0.2/A2	P2.5/UCA1RXD/UCA1SOMI/CAP1.2	18 CAP1.2
UCB0_SCL 10	P1.3/UCB0SOMI/UCB0SCL/MCLK/A3	P2.6/UCA1TXD/UCA1SIMO/CAP1.3	19 CAP1.3
UCA0_TXD 3	P1.4/UCA0TXD/UCA0SIMO/TA1.2/A4	CAP2.0	21 CAP2.0
UCA0_RXD 4	P1.5/UCA0RXD/UCA0SOMI/TA1.1/A5	CAP2.1	22 CAP2.1
P1.6/LED2 5	P1.6/UCA0CLK/TA1CLK/A6	CAP2.2	23 CAP2.2
P1.7/LED1 6	P1.7/UCA0STE/SMCLK/A7	CAP2.3	24 CAP2.3
XOUT 29	P2.0/XOUT		
XIN 30	P2.1/XIN	P2.7/CAP3.0	25 CAP3.0
P2.2/SYNC 11	P2.2/SYNC/ACLK	CAP3.1	26 CAP3.1
		P3.2/CAP3.2	27 CAP3.2
31	DVSS	CAP3.3	28 CAP3.3
33	PAD		

MSP430FR2633IRHB

GND

VCC_LDO 1 — 21 VCC_5V
2 — 22 GND
UCA0_TXD 3
UCA0_RXD 4
P2.2/SYNC 5
6 DNP — 26
7 — 27
P1.1/IRQ 8 — 28
UCB0_SCL 9 — 29
UCB0_SDA 10 — 30

J1A J1C

40 — 20 GND
39 — 19
38 — 18
37 — 17
36 — 16
35 DNP — 15
34 — 14
33 — 13 P1.0
32 — 12 P1.7/LED1
31 — 11 P1.6/LED2

J1D J1B

LAUNCH PAD CONNECTORS

CAPTIVATE-FR2633

Orderable: MSP-CAPT-FR2633MCU	Designed for: Public Release	Mod. Date: 7/19/2015	
TID #: N/A	Project Title: TICAPEVM-FR2633MCU		
Number: CAPTIVATE-FR2633	D	Sheet Title: MSP430FR2633 EVM Processor Module	
SVN Rev: Version control disabled	Assembly Variant: Production Variant 1	Sheet: 2 of 3	
Drawn By:	File: processor.SchDoc	Size: B	
Engineer: a0272918	Contact: http://www.ti.com/support		

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H1
SJ61A1

H2
SJ61A1

H3
SJ61A1

H4
SJ61A1

FID1

FID3

PCB Number: CAPTIVATE-FR2633
PCB Rev: C

Label Table	
Variant	Label Text
001	Production version
002	ChangeMe!

PCB
LOGO
Pb-Free Symbol

PCB
LOGO
Texas Instruments

PCB
LOGO
Texas Instruments

SH-J1
SH-J2
SH-J3
SH-J4
SH-J5
SH-J6
SH-J7
SH-J8
SH-J9
SH-J10

ZZ1
Assembly Note
All Jumpers to be installed (Note: J3 jumper installed between 3.3V LDO and MCU VCC pins)

ZZ2
Assembly Note
These assemblies are ESD sensitive, ESD precautions shall be observed.

ZZ3
Assembly Note
These assemblies must be clean and free from flux and all contaminants. Use of no clean flux is not acceptable.

ZZ4
Assembly Note
These assemblies must comply with workmanship standards IPC-A-610 Class 2, unless otherwise specified.

CAPTIVATE-FR2633

Orderable: MSP-CAPT-FR2633MCU	Designed for: Public Release	Mod. Date: 7/19/2015
TID #: N/A	Project Title: TICAPEVM-FR2633MCU	
Number: CAPTIVATE-FR2633 D	Sheet Title:	
SVN Rev: Version control disabled	Assembly Variant: Production Variant 1	Sheet: 3 of 3
Drawn By:	File: hardware.SchDoc	Size: B
Engineer: a0272918	Contact: http://www.ti.com/support	

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