

Contents of MSP430F20xx Code Examples (slac080.zip) - asm (CCS), .s43 (IAR), and .c (CCS & IAR)

Link to zip file: <http://www.ti.com/lit/zip/slac080>

Applicable Devices: MSP430F2001, MSP430F2011, MSP430F2002, MSP430F2012, MSP430F2003, MSP430F2013

Consult readme.txt included in the zip file for disclaimer and coding style guidelines

Contents:

- [Assembly Code Examples \(.asm, CCS compatible\)](#)
- [Assembly Code Examples \(.s43, IAR compatible\)](#)
- [C Code Examples \(.c, IAR & CCS compatible\)](#)

.asm code examples – CCS	
File name	Description
msp430x20x2_adc10_01.asm	ADC10, Sample A0, Set P1.0 if A0 > 0.5*AVcc
msp430x20x2_adc10_02.asm	ADC10, Sample A1, 1.5V Ref, Set P1.0 if A1 > 0.2V
msp430x20x2_adc10_03.asm	ADC10, ADC10, Sample A10 Temp, Set P1.0 if Temp ++ ~2C
msp430x20x2_adc10_04.asm	ADC10, ADC10, Sample A1, Signed, Set P1.0 if A1 > 0.5*AVcc
msp430x20x2_adc10_05.asm	ADC10, ADC10, Sample A11, Lo_Batt, Set P1.0 if AVcc < 2.3V
msp430x20x2_adc10_06.asm	ADC10, ADC10, Output Internal Vref on P1.4 & ADCCLK on P1.3
msp430x20x2_adc10_07.asm	ADC10, DTC Sample A1 32x, AVcc, Repeat Single, DCO
msp430x20x2_adc10_08.asm	ADC10, ADC10, DTC Sample A1 32x, 1.5V, Repeat Single, DCO
msp430x20x2_adc10_09.asm	ADC10, ADC10, DTC Sample A10 32x, 1.5V, Repeat Single, DCO
msp430x20x2_adc10_10.asm	ADC10, ADC10, DTC Sample A3-01, AVcc, Single Sequence, DCO
msp430x20x2_adc10_11.asm	ADC10, ADC10, Sample A1, 1.5V, TA1 Trig, Set P1.0 if > 0.5V
msp430x20x2_adc10_12.asm	ADC10, Sample A7, 1.5V, TA1 Trig, Ultra-Low Pwr
msp430x20x2_adc10_13.asm	ADC10, DTC Sample A1 32x, AVcc, TA0 Trig, DCO
msp430x20x2_adc10_14.asm	ADC10, DTC Sample A1-0 16x, AVcc, Repeat Seq, DCO
msp430x20x2_adc10_16.asm	ADC10, ADC10, DTC Sample A0 -> TA1, AVcc, DCO
msp430x20x2_adc10_temp.asm	ADC10, Sample A10 Temp and Convert to oC and oF
msp430x20x1_ca_01.asm	Comp_A, Output Reference Voltages on P1.1
msp430x20x1_ca_02.asm	Comp_A, Detect Threshold, Set P1.0 if P1.1 > 0.25*Vcc
msp430x20x1_ca_03.asm	Comp_A, Simple 2.2V Low Battery Detect
msp430x20x3_1.asm	Software Toggle P1.0
msp430x20x3_1_vlo.asm	Software Toggle P1.0, MCLK = VLO/8
msp430x20x3_clks.asm	Basic Clock, Output Buffered SMCLK, ACLK and MCLK/10
msp430x20xx_dco_flashcal.asm	DCO Calibration Constants Programmer
msp430x20x3_flashwrite_01.asm	Flash In-System Programming, Copy SegC to SegD
msp430x20x3_LFxtal_nmi.asm	LFXT1 Oscillator Fault Detection
msp430x20x3_lpm3..asm	Basic Clock, LPM3 Using WDT ISR, 32kHz ACLK
msp430x20x3_lpm3_vlo.asm	Basic Clock, LPM3 Using WDT ISR, VLO ACLK
msp430x20x3_nmi.asm	Basic Clock, Configure RST/NMI as NMI
msp430x20x3_P1_01.asm	Software Poll P1.4, Set P1.0 if P1.4 = 1
msp430x20x3_P1_02.asm	Software Port Interrupt on P1.4 from LPM4
msp430x20x3_P1_03.asm	Poll P1 With Software with Internal Pull-up
msp430x20x3_P1_04.asm	P1 Interrupt from LPM4 with Internal Pull-up

msp430x20x3_sd16A_01.asm	SD16A, Sample A1+ Continuously, Set P1.0 if > 0.3V
msp430x20x3_sd16A_02.asm	SD16, Using the Integrated Temperature Sensor
msp430x20x3_sd16A_03.asm	SD16A takes a sample of a single sequence of channels
msp430x20x3_ta_01.asm	Timer_A, Toggle P1.0, CCR0 Cont. Mode ISR, DCO SMCLK
msp430x20x3_ta_02.asm	Timer_A, Toggle P1.0, CCR0 Up Mode ISR, DCO SMCLK
msp430x20x3_ta_03.asm	Timer_A, Toggle P1.0, Overflow ISR, DCO SMCLK
msp430x20x3_ta_04.asm	Timer_A, Toggle P1.0, Overflow ISR, 32kHz ACLK
msp430x20x3_ta_05.asm	Timer_A, Toggle P1.0, CCR0 Up Mode ISR, 32kHz ACLK
msp430x20x3_ta_06.asm	Timer_A, Toggle P1.0, CCR1 Cont. Mode ISR, DCO SMCLK
msp430x20x3_ta_07.asm	Timer_A, Toggle P1.0-3, Cont. Mode ISR, DCO SMCLK
msp430x20x3_ta_08.asm	Timer_A, Toggle P1.0-2, Cont. Mode ISR, 32kHz ACLK
msp430x20x3_ta_10.asm	Timer_A, Toggle P1.1/TA0, Up Mode, DCO SMCLK
msp430x20x3_ta_11.asm	Timer_A, Toggle P1.1/TA0, Up Mode, 32kHz ACLK
msp430x20x3_ta_13.asm	Timer_A, Toggle P1.1/TA0, Up/Down Mode, DCO SMCLK
msp430x20x3_ta_14.asm	Timer_A, Toggle P1.1/TA0, Up/Down Mode, 32kHz ACLK
msp430x20x3_ta_16.asm	Timer_A, PWM TA1, Up Mode, DCO SMCLK
msp430x20x3_ta_17.asm	Timer_A, PWM TA1, Up Mode, 32kHz ACLK
msp430x20x3_ta_19.asm	Timer_A, PWM TA1, Up/Down Mode, DCO SMCLK
msp430x20x3_ta_20.asm	Timer_A, PWM TA1-2, Up/Down Mode, 32kHz ACLK
msp430x20x3_ta_uart2400.asm	Timer_A, Ultra-Low Pwr UART 2400 Echo, 32kHz ACLK
msp430x20x3_usi_01.asm	USICNT Used as a One-Shot Timer Function, DCO SMCLK
msp430x20x3_usi_02.asm	SPI full-Duplex 3-wire Master
msp430x20x3_usi_03.asm	SPI full-Duplex 3-wire Slave
msp430x20x3_usi_04.asm	USI SPI Interface to HC165/164 Shift Registers
msp430x20x3_usi_05.asm	USI SPI Interface to TLC549 8-bit ADC
msp430x20x3_usi_06.asm	USI I2C Master Receiver, single byte
msp430x20x3_usi_07.asm	USI I2C Master Transmitter, single byte
msp430x20x3_usi_08.asm	USI I2C Slave Receiver, single byte
msp430x20x3_usi_09.asm	USI I2C Slave Transmitter, single byte
msp430x20x3_wdt_01.asm	WDT, Toggle P1.0, Interval Overflow ISR, DCO SMCLK
msp430x20x3_wdt_02.asm	WDT, Toggle P1.0, Interval Overflow ISR, 32kHz ACLK
msp430x20x3_wdt_04.asm	WDT+ Failsafe Clock, DCO SMCLK
msp430x20x3_wdt_05.asm	Reset on Invalid Address fetch, Toggle P1.0
msp430x20x3_wdt_06.asm	WDT+ Failsafe Clock, 32kHz ACLK

.s43 code examples – IAR	
File name	Description
msp430x20x2_adc10_01.s43	ADC10, Sample A0, Set P1.0 if $A0 > 0.5 \cdot AV_{cc}$
msp430x20x2_adc10_02.s43	ADC10, Sample A1, 1.5V Ref, Set P1.0 if $A1 > 0.2V$
msp430x20x2_adc10_03.s43	ADC10, ADC10, Sample A10 Temp, Set P1.0 if Temp ++ ~2C
msp430x20x2_adc10_04.s43	ADC10, ADC10, Sample A1, Signed, Set P1.0 if $A1 > 0.5 \cdot AV_{cc}$
msp430x20x2_adc10_05.s43	ADC10, ADC10, Sample A11, Lo_Batt, Set P1.0 if $AV_{cc} < 2.3V$
msp430x20x2_adc10_06.s43	ADC10, ADC10, Output Internal Vref on P1.4 & ADCCLK on P1.3
msp430x20x2_adc10_07.s43	ADC10, DTC Sample A1 32x, AV_{cc} , Repeat Single, DCO

msp430x20x2_adc10_08.s43	ADC10, ADC10, DTC Sample A1 32x, 1.5V, Repeat Single, DCO
msp430x20x2_adc10_09.s43	ADC10, ADC10, DTC Sample A10 32x, 1.5V, Repeat Single, DCO
msp430x20x2_adc10_10.s43	ADC10, ADC10, DTC Sample A3-01, AVcc, Single Sequence, DCO
msp430x20x2_adc10_11.s43	ADC10, ADC10, Sample A1, 1.5V, TA1 Trig, Set P1.0 if > 0.5V
msp430x20x2_adc10_12.s43	ADC10, Sample A7, 1.5V, TA1 Trig, Ultra-Low Pwr
msp430x20x2_adc10_13.s43	ADC10, DTC Sample A1 32x, AVcc, TA0 Trig, DCO
msp430x20x2_adc10_14.s43	ADC10, DTC Sample A1-0 16x, AVcc, Repeat Seq, DCO
msp430x20x2_adc10_16.s43	ADC10, ADC10, DTC Sample A0 -> TA1, AVcc, DCO
msp430x20x2_adc10_temp.s43	ADC10, Sample A10 Temp and Convert to oC and oF
msp430x20x1_ca_01.s43	Comp_A, Output Reference Voltages on P1.1
msp430x20x1_ca_02.s43	Comp_A, Detect Threshold, Set P1.0 if P1.1 > 0.25*Vcc
msp430x20x1_ca_03.s43	Comp_A, Simple 2.2V Low Battery Detect
msp430x20x3_1.s43	Software Toggle P1.0
msp430x20x3_1_vlo.s43	Software Toggle P1.0, MCLK = VLO/8
msp430x20x3_clks.s43	Basic Clock, Output Buffered SMCLK, ACLK and MCLK/10
msp430x20xx_dco_flashcal.s43	DCO Calibration Constants Programmer
msp430x20x3_flashwrite_01.s43	Flash In-System Programming, Copy SegC to SegD
msp430x20x3_LFxtal_nmi.s43	LFXT1 Oscillator Fault Detection
msp430x20x3_lpm3.s43	Basic Clock, LPM3 Using WDT ISR, 32kHz ACLK
msp430x20x3_lpm3_vlo.s43	Basic Clock, LPM3 Using WDT ISR, VLO ACLK
msp430x20x3_nmi.s43	Basic Clock, Configure RST/NMI as NMI
msp430x20x3_P1_01.s43	Software Poll P1.4, Set P1.0 if P1.4 = 1
msp430x20x3_P1_02.s43	Software Port Interrupt on P1.4 from LPM4
msp430x20x3_P1_03.s43	Poll P1 With Software with Internal Pull-up
msp430x20x3_P1_04.s43	P1 Interrupt from LPM4 with Internal Pull-up
msp430x20x3_sd16A_01.s43	SD16A, Sample A1+ Continuously, Set P1.0 if > 0.3V
msp430x20x3_sd16A_03.s43	SD16A takes a sample of a single sequence of channels
msp430x20x3_sd16A_02.s43	SD16, Using the Integrated Temperature Sensor
msp430x20x3_ta_01.s43	Timer_A, Toggle P1.0, CCR0 Cont. Mode ISR, DCO SMCLK
msp430x20x3_ta_02.s43	Timer_A, Toggle P1.0, CCR0 Up Mode ISR, DCO SMCLK
msp430x20x3_ta_03.s43	Timer_A, Toggle P1.0, Overflow ISR, DCO SMCLK
msp430x20x3_ta_04.s43	Timer_A, Toggle P1.0, Overflow ISR, 32kHz ACLK
msp430x20x3_ta_05.s43	Timer_A, Toggle P1.0, CCR0 Up Mode ISR, 32kHz ACLK
msp430x20x3_ta_06.s43	Timer_A, Toggle P1.0, CCR1 Cont. Mode ISR, DCO SMCLK
msp430x20x3_ta_07.s43	Timer_A, Toggle P1.0-3, Cont. Mode ISR, DCO SMCLK
msp430x20x3_ta_08.s43	Timer_A, Toggle P1.0-2, Cont. Mode ISR, 32kHz ACLK
msp430x20x3_ta_10.s43	Timer_A, Toggle P1.1/TA0, Up Mode, DCO SMCLK
msp430x20x3_ta_11.s43	Timer_A, Toggle P1.1/TA0, Up Mode, 32kHz ACLK
msp430x20x3_ta_13.s43	Timer_A, Toggle P1.1/TA0, Up/Down Mode, DCO SMCLK
msp430x20x3_ta_14.s43	Timer_A, Toggle P1.1/TA0, Up/Down Mode, 32kHz ACLK
msp430x20x3_ta_16.s43	Timer_A, PWM TA1, Up Mode, DCO SMCLK
msp430x20x3_ta_17.s43	Timer_A, PWM TA1, Up Mode, 32kHz ACLK
msp430x20x3_ta_19.s43	Timer_A, PWM TA1, Up/Down Mode, DCO SMCLK
msp430x20x3_ta_20.s43	Timer_A, PWM TA1-2, Up/Down Mode, 32kHz ACLK
msp430x20x3_ta_uart2400.s43	Timer_A, Ultra-Low Pwr UART 2400 Echo, 32kHz ACLK

mmsp430x20x3_usi_01.s43	USICNT Used as a One-Shot Timer Function, DCO SMCLK
mmsp430x20x3_usi_02.s43	SPI full-Duplex 3-wire Master
mmsp430x20x3_usi_03.s43	SPI full-Duplex 3-wire Slave
mmsp430x20x3_usi_04.s43	USI SPI Interface to HC165/164 Shift Registers
mmsp430x20x3_usi_05.s43	USI SPI Interface to TLC549 8-bit ADC
mmsp430x20x3_usi_06.s43	USI I2C Master Receiver, single byte
mmsp430x20x3_usi_07.s43	USI I2C Master Transmitter, single byte
mmsp430x20x3_usi_08.s43	USI I2C Slave Receiver, single byte
mmsp430x20x3_usi_09.s43	USI I2C Slave Transmitter, single byte
mmsp430x20x3_wdt_01.s43	WDT, Toggle P1.0, Interval Overflow ISR, DCO SMCLK
mmsp430x20x3_wdt_02.s43	WDT, Toggle P1.0, Interval Overflow ISR, 32kHz ACLK
mmsp430x20x3_wdt_04.s43	WDT+ Failsafe Clock, DCO SMCLK
mmsp430x20x3_wdt_05.s43	Reset on Invalid Address fetch, Toggle P1.0
mmsp430x20x3_wdt_06.s43	WDT+ Failsafe Clock, 32kHz ACLK

C code examples – IAR & CCS

File name	Description
mmsp430x20x2_adc10_01.s43	ADC10, Sample A0, Set P1.0 if $A0 > 0.5 \cdot AV_{cc}$
mmsp430x20x2_adc10_02.s43	ADC10, Sample A1, 1.5V Ref, Set P1.0 if $A1 > 0.2V$
mmsp430x20x2_adc10_03.s43	ADC10, ADC10, Sample A10 Temp, Set P1.0 if Temp ++ ~2C
mmsp430x20x2_adc10_04.s43	ADC10, ADC10, Sample A1, Signed, Set P1.0 if $A1 > 0.5 \cdot AV_{cc}$
mmsp430x20x2_adc10_05.s43	ADC10, ADC10, Sample A11, Lo_Batt, Set P1.0 if $AV_{cc} < 2.3V$
mmsp430x20x2_adc10_06.s43	ADC10, ADC10, Output Internal Vref on P1.4 & ADCCLK on P1.3
mmsp430x20x2_adc10_07.s43	ADC10, DTC Sample A1 32x, AV_{cc} , Repeat Single, DCO
mmsp430x20x2_adc10_08.s43	ADC10, ADC10, DTC Sample A1 32x, 1.5V, Repeat Single, DCO
mmsp430x20x2_adc10_09.s43	ADC10, ADC10, DTC Sample A10 32x, 1.5V, Repeat Single, DCO
mmsp430x20x2_adc10_10.s43	ADC10, ADC10, DTC Sample A3-01, AV_{cc} , Single Sequence, DCO
mmsp430x20x2_adc10_11.s43	ADC10, ADC10, Sample A1, 1.5V, TA1 Trig, Set P1.0 if $> 0.5V$
mmsp430x20x2_adc10_12.s43	ADC10, Sample A7, 1.5V, TA1 Trig, Ultra-Low Pwr
mmsp430x20x2_adc10_13.s43	ADC10, DTC Sample A1 32x, AV_{cc} , TA0 Trig, DCO
mmsp430x20x2_adc10_14.s43	ADC10, DTC Sample A1-0 16x, AV_{cc} , Repeat Seq, DCO
mmsp430x20x2_adc10_16.s43	ADC10, ADC10, DTC Sample A0 -> TA1, AV_{cc} , DCO
mmsp430x20x2_adc10_temp.s43	ADC10, Sample A10 Temp and Convert to oC and oF
mmsp430x20x1_ca_01.s43	Comp_A, Output Reference Voltages on P1.1
mmsp430x20x1_ca_02.s43	Comp_A, Detect Threshold, Set P1.0 if $P1.1 > 0.25 \cdot V_{cc}$
mmsp430x20x1_ca_03.s43	Comp_A, Simple 2.2V Low Battery Detect
mmsp430x20x3_1.s43	Software Toggle P1.0
mmsp430x20x3_1_vlo.s43	Software Toggle P1.0, MCLK = VLO/8
mmsp430x20x3_clks.s43	Basic Clock, Output Buffered SMCLK, ACLK and MCLK/10
mmsp430x20xx_dco_flashcal.s43	DCO Calibration Constants Programmer
mmsp430x20x3_flashwrite_01.s43	Flash In-System Programming, Copy SegC to SegD
mmsp430x20x3_LFxtal_nmi.s43	LFXT1 Oscillator Fault Detection
mmsp430x20x3_lpm3.s43	Basic Clock, LPM3 Using WDT ISR, 32kHz ACLK

msp430x20x3_lpm3_vlo.s43	Basic Clock, LPM3 Using WDT ISR, VLO ACLK
msp430x20x3_nmi.s43	Basic Clock, Configure RST/NMI as NMI
msp430x20x3_P1_01.s43	Software Poll P1.4, Set P1.0 if P1.4 = 1
msp430x20x3_P1_02.s43	Software Port Interrupt on P1.4 from LPM4
msp430x20x3_P1_03.s43	Poll P1 With Software with Internal Pull-up
msp430x20x3_P1_04.s43	P1 Interrupt from LPM4 with Internal Pull-up
msp430x20x3_sd16A_01.s43	SD16A, Sample A1+ Continuously, Set P1.0 if > 0.3V
msp430x20x3_sd16A_03.s43	SD16A takes a sample of a single sequence of channels
msp430x20x3_sd16A_02.s43	SD16, Using the Integrated Temperature Sensor
msp430x20x3_ta_01.s43	Timer_A, Toggle P1.0, CCR0 Cont. Mode ISR, DCO SMCLK
msp430x20x3_ta_02.s43	Timer_A, Toggle P1.0, CCR0 Up Mode ISR, DCO SMCLK
msp430x20x3_ta_03.s43	Timer_A, Toggle P1.0, Overflow ISR, DCO SMCLK
msp430x20x3_ta_04.s43	Timer_A, Toggle P1.0, Overflow ISR, 32kHz ACLK
msp430x20x3_ta_05.s43	Timer_A, Toggle P1.0, CCR0 Up Mode ISR, 32kHz ACLK
msp430x20x3_ta_06.s43	Timer_A, Toggle P1.0, CCR1 Cont. Mode ISR, DCO SMCLK
msp430x20x3_ta_07.s43	Timer_A, Toggle P1.0-3, Cont. Mode ISR, DCO SMCLK
msp430x20x3_ta_08.s43	Timer_A, Toggle P1.0-2, Cont. Mode ISR, 32kHz ACLK
msp430x20x3_ta_10.s43	Timer_A, Toggle P1.1/TA0, Up Mode, DCO SMCLK
msp430x20x3_ta_11.s43	Timer_A, Toggle P1.1/TA0, Up Mode, 32kHz ACLK
msp430x20x3_ta_13.s43	Timer_A, Toggle P1.1/TA0, Up/Down Mode, DCO SMCLK
msp430x20x3_ta_14.s43	Timer_A, Toggle P1.1/TA0, Up/Down Mode, 32kHz ACLK
msp430x20x3_ta_16.s43	Timer_A, PWM TA1, Up Mode, DCO SMCLK
msp430x20x3_ta_17.s43	Timer_A, PWM TA1, Up Mode, 32kHz ACLK
msp430x20x3_ta_19.s43	Timer_A, PWM TA1, Up/Down Mode, DCO SMCLK
msp430x20x3_ta_20.s43	Timer_A, PWM TA1-2, Up/Down Mode, 32kHz ACLK
msp430x20x3_ta_uart2400.s43	Timer_A, Ultra-Low Pwr UART 2400 Echo, 32kHz ACLK
msp430x20x3_usi_01.s43	USICNT Used as a One-Shot Timer Function, DCO SMCLK
msp430x20x3_usi_02.s43	SPI full-Duplex 3-wire Master
msp430x20x3_usi_03.s43	SPI full-Duplex 3-wire Slave
msp430x20x3_usi_04.s43	USI SPI Interface to HC165/164 Shift Registers
msp430x20x3_usi_05.s43	USI SPI Interface to TLC549 8-bit ADC
msp430x20x3_usi_06.s43	USI I2C Master Receiver, single byte
msp430x20x3_usi_07.s43	USI I2C Master Transmitter, single byte
msp430x20x3_usi_08.s43	USI I2C Slave Receiver, single byte
msp430x20x3_usi_09.s43	USI I2C Slave Transmitter, single byte
msp430x20x3_wdt_01.s43	WDT, Toggle P1.0, Interval Overflow ISR, DCO SMCLK
msp430x20x3_wdt_02.s43	WDT, Toggle P1.0, Interval Overflow ISR, 32kHz ACLK
msp430x20x3_wdt_04.s43	WDT+ Failsafe Clock, DCO SMCLK
msp430x20x3_wdt_05.s43	Reset on Invalid Address fetch, Toggle P1.0
msp430x20x3_wdt_06.s43	WDT+ Failsafe Clock, 32kHz ACLK

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