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1 ;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

2 ;

3 ; Author : ADI - Apps www.analog.com/MicroConverter

4 ;

5 ; Date : October 2003

6 ;

7 ; File : ADCsingl.asm

8 ;

9 ; Hardware : ADuC841

10 ;

11 ; Description : Performs repeated single ADC conversions and moves

12 ; results to P0 & P2. Sets the red LED on the eval

13 ; board upon completion of each conversion. A new

14 ; conversion is innitiated every 200ms.

15 ; All rate calculations assume an 11.0592MHz Mclk.

16 ;

17 ;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

18

19 $MOD841 ; Use 8052&ADuC841 predefined symbols

20

00B4 21 LED EQU P3.4 ; P3.4 drives red LED on eval board

0000 22 CHAN EQU 0 ; convert this ADC input channel..

23 ; ..chan values can be 0 thru 8

24 ;\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

25 ; BEGINNING OF CODE

---- 26 CSEG

27

0000 28 ORG 0000h

29

0000 02004B 30 JMP MAIN ; jump to main program

31 ;\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

32 ; INTERRUPT VECTOR SPACE

0033 33 ORG 0033h ; (ADC ISR)

34

0033 85D980 35 MOV P0,ADCDATAL ; ADC result low byte to Port0

0036 85DAA0 36 MOV P2,ADCDATAH ; high nibble and channel ID to Port2

0039 C2B4 37 CLR LED ; turn LED on

003B 32 38 RETI

39

40 ;====================================================================

41 ; MAIN PROGRAM

004B 42 ORG 004Bh

43

004B 44 MAIN:

45

46 ; PRECONFIGURE...

47

004B 75EF9C 48 MOV ADCCON1,#09Ch ; power up ADC ADCLK = MCLK/4

004E 75D800 49 MOV ADCCON2,#CHAN ; select channel to convert

0051 D2AF 50 SETB EA ; enable interrupts

0053 D2AE 51 SETB EADC ; enable ADC interrupt

52

53 ; PERFORM REPEATED SINGLE CONVERSIONS...

54

0055 740A 55 MOV A,#010 ; set delay length

0057 D2B4 56 AGAIN: SETB LED ; turn the LED off

0059 120063 57 CALL DELAY ; delay 100mS

005C D2DC 58 SETB SCONV ; innitiate single ADC conversion

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59 ; ADC ISR is called upon completion

005E 120063 60 CALL DELAY ; delay 100ms

0061 80F4 61 JMP AGAIN ; repeat

62

63 ;\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

64 ; SUBROUTINE

65

0063 66 DELAY: ; delay 10ms X A

0063 FD 67 MOV R5,A

0064 7F90 68 DLY2: MOV R7,#090h

0066 7EFF 69 DLY1: MOV R6,#0FFh

0068 DEFE 70 DJNZ R6,$

006A DFFA 71 DJNZ R7,DLY1

006C DDF6 72 DJNZ R5,DLY2

006E 22 73 RET

74

75 ;\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

76

77 END

VERSION 1.2h ASSEMBLY COMPLETE, 0 ERRORS FOUND

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ADCCON1. . . . . . . . . . . . . D ADDR 00EFH PREDEFINED

ADCCON2. . . . . . . . . . . . . D ADDR 00D8H PREDEFINED

ADCDATAH . . . . . . . . . . . . D ADDR 00DAH PREDEFINED

ADCDATAL . . . . . . . . . . . . D ADDR 00D9H PREDEFINED

AGAIN. . . . . . . . . . . . . . C ADDR 0057H

CHAN . . . . . . . . . . . . . . NUMB 0000H

DELAY. . . . . . . . . . . . . . C ADDR 0063H

DLY1 . . . . . . . . . . . . . . C ADDR 0066H

DLY2 . . . . . . . . . . . . . . C ADDR 0064H

EA . . . . . . . . . . . . . . . B ADDR 00AFH PREDEFINED

EADC . . . . . . . . . . . . . . B ADDR 00AEH PREDEFINED

LED. . . . . . . . . . . . . . . NUMB 00B4H

MAIN . . . . . . . . . . . . . . C ADDR 004BH

P0 . . . . . . . . . . . . . . . D ADDR 0080H PREDEFINED

P2 . . . . . . . . . . . . . . . D ADDR 00A0H PREDEFINED

P3 . . . . . . . . . . . . . . . D ADDR 00B0H PREDEFINED

SCONV. . . . . . . . . . . . . . B ADDR 00DCH PREDEFINED