ADCPIN PAGE 1

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

2 ;

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

4 ;

5 ; Date : 31 Jan 2002

6 ;

7 ; File : ADCpin.asm

8 ;

9 ; Hardware : ADuC831

10 ;

11 ; Description : Performs hardware pin driven ADC conversions and

12 ; outputs results on P0 & P2. Continuously flashes

13 ; LED (independently of ADC routine) at approximately

14 ; 5Hz (assuming an 11.0592MHz Mclk).

15 ;

16 ;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

17

18 $MOD831 ; Use 8052&ADuC831 predefined symbols

19

00B4 20 LED EQU P3.4 ; P3.4 drives red LED on eval board

0000 21 CHAN EQU 0 ; convert this ADC input channel..

22 ; ..chan values can be 0 thru 8

23 ;\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

24 ; BEGINNING OF CODE

---- 25 CSEG

26

0000 27 ORG 0000h

28

0000 02004B 29 JMP MAIN ; jump to main program

30 ;\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

31 ; INTERRUPT VECTOR SPACE

0033 32 ORG 0033H ; (ADC ISR)

33

0033 85D980 34 MOV P0,ADCDATAL ; ADC result low byte to Port0

0036 85DAA0 35 MOV P2,ADCDATAH ; high nibble and channel ID to Port2

0039 32 36 RETI

37

38 ;====================================================================

39 ; MAIN PROGRAM

004B 40 ORG 004Bh

41

004B 42 MAIN:

43

44 ; PRECONFIGURE...

45

004B 75EFB0 46 MOV ADCCON1,#0B0h ; power up ADC, 12.3us conv+acq time

004E 75D800 47 MOV ADCCON2,#CHAN ; select channel to convert

48

49 ; LAUNCH CONTINUOUS CONVERSIONS...

50

0051 D2AF 51 SETB EA ; enable interrupts

0053 D2AE 52 SETB EADC ; enable ADC interrupt

0055 43EF01 53 ORL ADCCON1,#001h ; enable hardware CONVST pin

54

55 ; CONTINUE WITH OTHER CODE...

56

0058 B2B4 57 AGAIN: CPL LED ; blink (complement) the LED

005A 12005F 58 CALL DELAY ; delay 100ms

ADCPIN PAGE 2

005D 80F9 59 JMP AGAIN ; repeat

60

61 ; the micro is free to continue with other tasks (flashing the LED in

62 ; this case) while the ADC is converting, synchronously to the

63 ; external CONVST pin. results are being handled by the ADC

64 ; interrupt service routine.

65

66 ;\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

67 ; SUBROUTINE

68

005F 69 DELAY: ; delay 100ms

70

005F 7FC8 71 MOV R7,#200 ; 200 \* 500us = 100ms

0061 7EE5 72 DLY1: MOV R6,#229 ; 229 \* 2.17us = 500us

0063 DEFE 73 DJNZ R6,$ ; sit here for 500us

0065 DFFA 74 DJNZ R7,DLY1 ; repeat 200 times (100ms total)

0067 22 75 RET

76

77 ;\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

78

79 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 0058H

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

DELAY. . . . . . . . . . . . . . C ADDR 005FH

DLY1 . . . . . . . . . . . . . . C ADDR 0061H

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