

Instruction Set

Data Transfer Operations

	bytes	DSP periods
MOV A,Rn	1	1
MOV A,@Ri	1	2
MOV A,direct	2	2
MOV A,#data	2	2
MOV Rn,A	1	1
MOV Rn,direct	2	2
MOV Rn,#data	2	2
MOV direct,A	2	2
MOV direct,Rn	2	2
MOV direct,@Ri	2	2
MOV direct,direct	3	3
MOV direct,#data	3	3
MOV @Ri,A	1	2
MOV @Ri,direct	2	2
MOV @Ri,#data	2	2
MOV DPTR,#data16	3	3
MOVC A,@A+DPTR	1	4
MOVC A,@A+PC	1	4
MOVX A,@Ri	1	4
MOVX A,DPTR	1	4
MOVX @Ri,A	1	4
MOVX @DPTR,A	1	4
PUSH direct	2	2
POP direct	2	2
XCH A,Rn	1	1
XCH A,@Ri	1	2
XCH A,direct	2	2
XCHD A,@Ri	1	2

Arithmetic Operations

	bytes	DSP periods
ADD A,Rn	1	1
ADD A,@Ri	1	2
ADD A,direct	2	2
ADD A,#data	2	2
ADDC A,Rn	1	1
ADDC A,@Ri	1	2
ADDC A,direct	2	2
ADDC A,#data	2	2
SUBB A,Rn	1	1
SUBB A,@Ri	1	2
SUBB A,direct	2	2
SUBB A,#data	2	2
INC A	1	1
INC Rn	1	1
INC @Ri	1	2
INC direct	2	2
INC DPTR	1	3
DEC A	1	1
DEC Rn	1	1
DEC @Ri	1	2
DEC direct	2	2
MUL AB	1	9
DIV AB	1	9
DA A	1	2

* INC DPTR increments the 24bit value DPP/DPH/DPL

Logical Operations

	bytes	DSP periods
ANL A,Rn	1	1
ANL A,@Ri	1	2
ANL A,direct	2	2
ANL A,#data	2	2
ANL direct,A	2	2
ANL direct,#data	3	3
ORL A,Rn	1	1
ORL A,@Ri	1	2
ORL A,direct	2	2
ORL A,#data	2	2
ORL direct,A	2	2
ORL direct,#data	3	3
XRL A,Rn	1	1
XRL A,@Ri	1	2
XRL A,direct	2	2
XRL A,#data	2	2
XRL direct,A	2	2
XRL direct,#data	3	3
CLR A	1	1
CPL A	1	1
RL A	1	1
RLC A	1	1
RR A	1	1
RRC A	1	1
SWAP A	1	1

Legend

Rn	register addressing using R0-R7
@Ri	indirect addressing using R0 or R1
direct	8bit internal address (00h-FFh)
#data	8bit constant included in instruction
#data16	16bit constant included in instruction
bit	8bit direct address of bit
rel	signed 8bit offset
addr11	11bit address in current 2K page
addr16	16bit address
x	any of Rn, @Ri, direct, #data

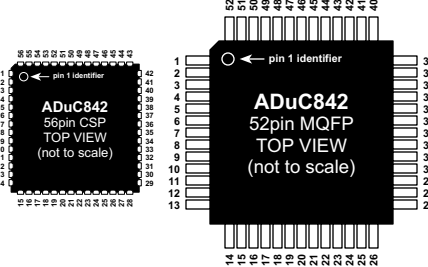
Instructions That Affect Flags

ADD A,x	C = carry out of bit 7 AC = carry out of bit 3 OV = carry out of bit 6, but not 7	DA A C = C or (x>100) RRC A C = ACC.7 RLC A C = ACC.0 SETB C C = 1 CLR C C = 0
ADDC A,x	C = carry out of bit 7 AC = carry out of bit 3 OV = carry out of bit 6, but not 7	
SUBB A,x	C = borrow into bit 7 AC = borrow into bit 3 OV = borrow into bit 6, but not 7	ANL C,bit C = C and bit ANL C,bit C = C and NOTbit ORL C,bit C = C or bit ORL C,bit C = C or NOTbit
MUL AB	C = 0 OV = (result>255)	MOV C,bit C = bit CJNE x,y,rel C = (x<y)
DIV AB	C = 0 OV = divide by zero	

Pin Functions

Pin	Function
1	56 P1.0 / ADC0 / T2
2	1 P1.1 / ADC1 / T2EX
3	2 P1.2 / ADC2
4	3 P1.3 / ADC3
5	4,5 AVDD
6	6,7,8 AGND
7	9 CREF
8	10 VREF
9	11 DAC0
10	12 DAC1
11	13 P1.4 / ADC4
12	14 P1.5 / ADC5 / SS
13	15 P1.6 / ADC6

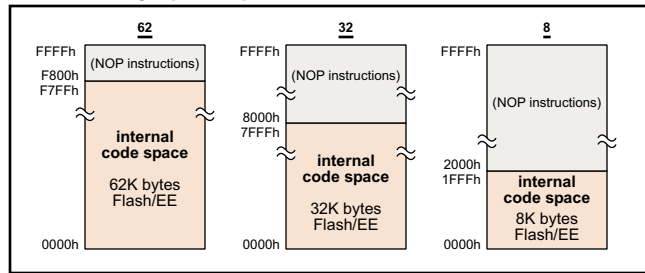
Pin	Function
14	16 P1.7 / ADC7
15	17 RESET
16	18 P3.0 / RxD
17	19 P3.1 / TxD
18	20 P3.2 / INT0
19	21 P3.3/INT1/MISO/PWM1
20	22 DVDD
21	23 DGND
22	24 P3.4 / T0 / PWM0 / PWM0 / EXTCLK
23	25 P3.5 / T1 / CONVST
24	26 P3.6 / WR
25	27 P3.7 / RD
26	28 SCLOCK



Pin	Function
27	29 SDATA / MOSI
28	30 P2.0 / A8 / A16
29	31 P2.1 / A9 / A17
30	32 P2.2 / A10 / A18
31	33 P2.3 / A11 / A19
32	34 XTAL1 (in)
33	35 XTAL2 (out)
34	36 DVDD
35	37,38 DGND
36	39 P2.4 / A12 / A20
37	40 P2.5 / A13 / A21
38	41 P2.6/A14/A22/PWM0
39	42 P2.7/A15/A23/PWM1

Pin	Function
40	43 EA
41	44 PSEN
42	45 ALE
43	46 P0.0 / AD0
44	47 P0.1 / AD1
45	48 P0.2 / AD2
46	49 P0.3 / AD3
47	50 DGND
48	51 DVDD
49	52 P0.4 / AD4
50	53 P0.5 / AD5
51	54 P0.6 / AD6
52	55 P0.7 / AD7

Code Memory Space Options



Interrupt Vector Addresses

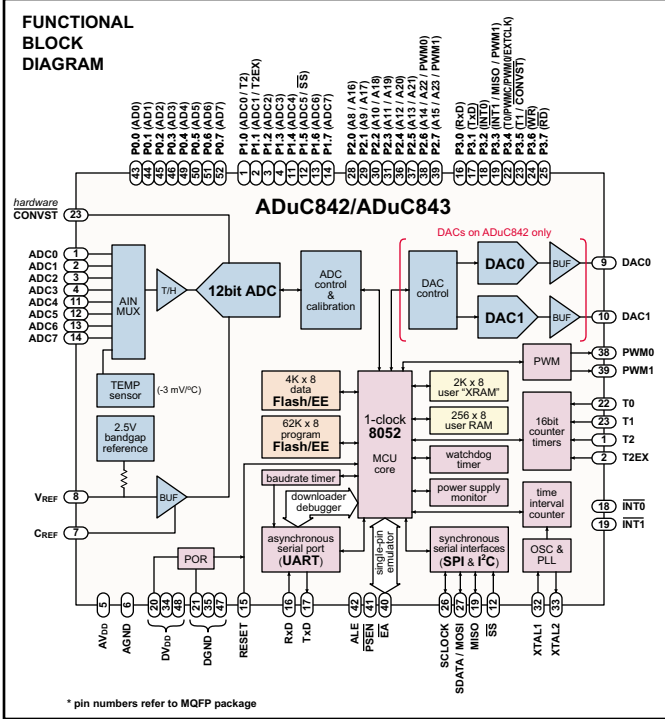
Interrupt Bit	Interrupt Name	Vector Address	Relative Priority
PSMCON.5	Power Supply Monitor Interrupt	43h	1
WDS	WatchDog Timer Interrupt	5Bh	2
IE0	External Interrupt 0	03h	3
ADCI	End of ADC Conversion Interrupt	33h	4
TF0	Timer0 Overflow Interrupt	0Bh	5
IE1	External Interrupt 1	13h	6
TF1	Timer1 Overflow Interrupt	1Bh	7
ISPI/I2CI	SPI/I ² C Interrupt	3Bh	8
RI/TI	UART Interrupt	23h	9
TF2/EXF2	Timer2 Interrupt	2Bh	10
TIMECON.2	Time Interval Counter Interrupt	53h	11

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ADuC842/843 MicroConverter® Quick Reference Guide



A Precision Analog Flash MCU

The ADuC842/ADuC843 is:

ADC: 12bit, 5µs, 8channel, self calibrating 0.5LSB INL & 70dB SNR

DAC (ADuC842 only): dual, 12bit, 15µs, voltage output <1LSB DNL

Flash/EEPROM: 62K bytes Flash/EE program memory 4K bytes Flash/EE data memory

Microcontroller: "single-cycle" 8052, up to 16.8MIPS 32 I/O lines, programmable PLL clock (131KHz to 16.8MHz to 32KHz crystal)

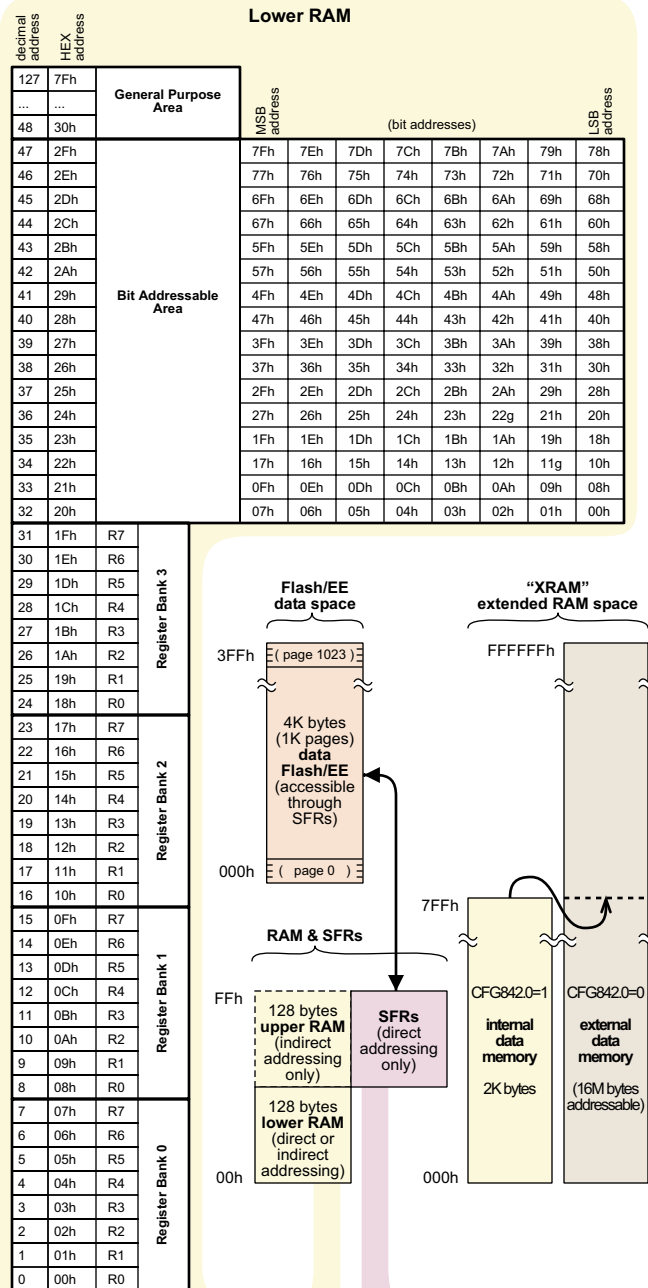
Embedded Tools Support: on-chip download/debug & single-pin emulation functions

Other on-chip features: temperature monitor, power supply monitor, watchdog timer, flexible serial interface ports, voltage reference, time interval counter, dual 8/16bit PWM, power-on-reset



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Data Memory: RAM, SFRs, user Flash/EE (all read/write)



SFR Map																
ISPI		WCOL		SPE		SPIM		CPOL		CPHA		SPR1		SPR0		
F7h	0	F6h	0	F5h	0	F4h	0	F3h	0	F2h	0	F1h	0	F0h	0	
I2CSI		I2CGC		I2CDB1		I2CDB0		I2CMS		I2CRS		I2CTX		I2CI		
EFh	MOD0	EEh	MODE	EDh	MODE0	ECd	MOD0	0	EBh	0	EAh	0	E9h	0	E8h	0
E7h		E6h		E5h		E4h		E3h		E2h		E1h		E0h		
ADCI		DMA		CONVY		SCONVY		CS3		CS2		CS1		CS0		
DFh	0	DEh	0	DDh	0	DCd	0	DBh	0	DAh	0	D9h	0	D8h	0	
CY		AC		F0		RS1		RS0		OV		F1		P		
D7h	0	D6h	0	D5h	0	D4h	0	D3h	0	D2h	0	D1h	0	D0h	0	
TF2		EXF2		RCLK		TCLK		EXEN2		TR2		CNT2		CAP2		
CFh	0	CEh	0	CDh	0	CCd	0	CBh	0	CAh	0	C9h	0	C8h	0	
PRE3		PRE2		PRE1		PRE0		WDIR		WDS		WIDE		WDWR		
C7h	0	C6h	0	C5h	0	C4h	1	C3h	0	C2h	0	C1h	0	C0h	0	
RD		WR		T1		T0		INT1		INT0		TXD		RXD		
B7h	1	B6h	1	B5h	1	B4h	1	B3h	1	B2h	1	B1h	1	B0h	1	
EA		EADC		ET2		ES		ET1		EX1		ET0		EX0		
AFh	0	AEh	0	ADh	0	ACd	0	ABh	0	AAh	0	A9h	0	A8h	0	
SM0		SM1		SM2		REN		TB8		R88		T1		R1		
9Fh	0	9Eh	0	9Dh	0	9Ch	0	9Bh	0	9Ah	0	99h	0	98h	0	
97h		96h		95h		94h		93h		92h		91h		90h		
TF1		TR1		TF0		TR0		IE1		IT1		IE0		IT0		
8Fh	0	8Eh	0	8Dh	0	8Ch	0	8Bh	0	8Ah	0	89h	0	88h	0	
87h		86h		85h		84h		83h		82h		81h		80h		
these bits are contained in this byte																
mnemonic		address		reset value		SPR1		SPR0		SPICON		mnemonic		reset value		
						F9h		0		F8h				04h		