DUALDPTR PAGE 1

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

2 ;

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

4 ;

5 ; Date : July 2003

6 ;

7 ; File : DualDPTR.asm

8 ;

9 ; Hardware : ADuC845

10 ;

11 ; Description : Sample Program to show the new ADuC845 features

12 ; of dual DPTRs. In Aspire debugger select Program

13 ; Memory and External Memory from the Debug View Bar.

14 ; Under Run -> Select Uploadable Areas and under

15 ; External Memory type 0-200 and click OK. This enables

16 ; real time uploading of these locations from this memory

17 ; area into the debugger.

18 ; NOTE: Several lines of this program will have to be

19 ; disabled, most notably the UART configuration section

20 ; due to the use of the UART debugger.

21 ;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

22

23 $MOD845 ; Use ADuC845 predefined symbols

00B4 24 LED EQU P3.4 ; P3.4 drives red LED on eval board

25

26 ;\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

27 ; BEGINNING OF CODE

---- 28 CSEG

29

0000 30 ORG 0000h

31 ; highest speed

0000 75D700 32 MOV PLLCON, #0 ;Disable PLLCON write when using debugger

33

34 ; CONFIGURE UART....

35

0003 759E86 36 MOV T3CON,#86h ;Will need to disable UART configuration

0006 759D12 37 MOV T3FD,#12h ;when using debugger as any writes to UART

0009 759852 38 MOV SCON,#52h ;timing or config registers could affect

39 ;the debugger interface

40 ; enable the intenal On-Chip XRAM

41

000C 75AF01 42 MOV CFG845, #01h

43

44 ; move 512 bytes from code memory (adress 1000h -> 1200h) into

45 ; data XRAM (address 0000h -> 0200h)

46 ; configure the datapointer

000F 900000 47 MOV DPTR, #0

0012 75A755 48 MOV DPCON, #55h ; auto toggle between DPTRs

49 ; auto increment shadow DPTR

50 ; auto increment main DPTR

51 ; select shadow DPTR

0015 901000 52 MOV DPTR, #1000h

53

0018 54 COPYDATALOOP:

55 ; read Code Memory using Shadow DPTR

0018 E4 56 CLR A

0019 93 57 MOVC A, @A+DPTR ; read code memory

58 ; auto increment shadow DPTR

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59 ; swap to main DPTR

60 ; write to XRAM using main DPTR

001A F0 61 MOVX @DPTR, A ; write to XRAM

62 ; auto increment main DPTR

63 ; swap to shadow DPTR

64 ; check if at end of loop

65 ; NOTE: shadow DPTR selected (not main)

001B E583 66 MOV A, DPH

001D B412F8 67 CJNE A, #12h, COPYDATALOOP

68

69

0020 00 70 NOP ; <----NOTE: Set a breakpoint in the debugger here

71 ; This will show that the values in code memory

72 ; at addresses 1000h thru 1200h has been mapped

73 ; into XRAM at address 0000h thru 0200h.

74 ; The debugger will not run the nextpiece of

75 ; code as this requires the use of the serial port

76

77

78

79

80 ; transmit XRAM up UART

0021 75A704 81 MOV DPCON, #4 ; select main DPTR

82 ; auto increment DPTR

83 ; do not toggle DPTR

0024 900000 84 MOV DPTR, #0

0027 7810 85 MOV R0, #16

0029 86 SENDXRAM:

0029 E0 87 MOVX A, @DPTR

002A 120042 88 CALL SENDVAL

002D D8FA 89 DJNZ R0, SENDXRAM

90 ; send a newline

002F 740A 91 MOV A, #10

0031 120058 92 CALL SENDCHAR

0034 740D 93 MOV A, #13

0036 120058 94 CALL SENDCHAR

0039 7810 95 MOV R0, #16

003B E583 96 MOV A, DPH

003D B402E9 97 CJNE A, #2, SENDXRAM

98

0040 80FE 99 JMP $

100

101

102 ;\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

103 ; SENDVAL

104

0042 105 SENDVAL: ; converts the hex value of A into two ASCII chars,

106 ; and then spits these two characters up the UART.

107 ; does not change the value of A.

108

0042 C0E0 109 PUSH ACC

0044 C4 110 SWAP A

0045 120060 111 CALL HEX2ASCII

0048 120058 112 CALL SENDCHAR ; send high nibble

004B D0E0 113 POP ACC

004D C0E0 114 PUSH ACC

004F 120060 115 CALL HEX2ASCII

0052 120058 116 CALL SENDCHAR ; send low nibble

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0055 D0E0 117 POP ACC

118

0057 22 119 RET

120 ;\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

121 ; SENDCHAR

122

0058 123 SENDCHAR: ; sends ASCII value contained in A to UART

124

0058 3099FD 125 JNB TI,$ ; wait til present char gone

005B C299 126 CLR TI ; must clear TI

005D F599 127 MOV SBUF,A

128

005F 22 129 RET

130 ;\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

131 ; HEX2ASCII

132

0060 133 HEX2ASCII: ; converts A into the hex character representing the

134 ; value of A's least significant nibble

135

0060 540F 136 ANL A,#00Fh

0062 B40A00 137 CJNE A,#00Ah,$+3

0065 4002 138 JC IO0030

0067 2407 139 ADD A,#007h

0069 2430 140 IO0030: ADD A,#'0'

141

006B 22 142 RET

143 ;\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1000 144 ORG 1000h

145

1000 00010203 146 DB 00h,01h,02h,03h,04h,05h,06h,07h,08h,09h,0Ah,0Bh,0Ch,0Dh,0Eh,0Fh

1004 04050607

1008 08090A0B

100C 0C0D0E0F

1010 10111213 147 DB 10h,11h,12h,13h,14h,15h,16h,17h,18h,19h,1Ah,1Bh,1Ch,1Dh,1Eh,1Fh

1014 14151617

1018 18191A1B

101C 1C1D1E1F

1020 20212223 148 DB 20h,21h,22h,23h,24h,25h,26h,27h,28h,29h,2Ah,2Bh,2Ch,2Dh,2Eh,2Fh

1024 24252627

1028 28292A2B

102C 2C2D2E2F

1030 30313233 149 DB 30h,31h,32h,33h,34h,35h,36h,37h,38h,39h,3Ah,3Bh,3Ch,3Dh,3Eh,3Fh

1034 34353637

1038 38393A3B

103C 3C3D3E3F

1040 00010203 150 DB 00h,01h,02h,03h,04h,05h,06h,07h,08h,09h,0Ah,0Bh,0Ch,0Dh,0Eh,0Fh

1044 04050607

1048 08090A0B

104C 0C0D0E0F

1050 10111213 151 DB 10h,11h,12h,13h,14h,15h,16h,17h,18h,19h,1Ah,1Bh,1Ch,1Dh,1Eh,1Fh

1054 14151617

1058 18191A1B

105C 1C1D1E1F

1060 20212223 152 DB 20h,21h,22h,23h,24h,25h,26h,27h,28h,29h,2Ah,2Bh,2Ch,2Dh,2Eh,2Fh

1064 24252627

1068 28292A2B

106C 2C2D2E2F

1070 30313233 153 DB 30h,31h,32h,33h,34h,35h,36h,37h,38h,39h,3Ah,3Bh,3Ch,3Dh,3Eh,3Fh

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1074 34353637

1078 38393A3B

107C 3C3D3E3F

1080 00010203 154 DB 00h,01h,02h,03h,04h,05h,06h,07h,08h,09h,0Ah,0Bh,0Ch,0Dh,0Eh,0Fh

1084 04050607

1088 08090A0B

108C 0C0D0E0F

1090 10111213 155 DB 10h,11h,12h,13h,14h,15h,16h,17h,18h,19h,1Ah,1Bh,1Ch,1Dh,1Eh,1Fh

1094 14151617

1098 18191A1B

109C 1C1D1E1F

10A0 20212223 156 DB 20h,21h,22h,23h,24h,25h,26h,27h,28h,29h,2Ah,2Bh,2Ch,2Dh,2Eh,2Fh

10A4 24252627

10A8 28292A2B

10AC 2C2D2E2F

10B0 30313233 157 DB 30h,31h,32h,33h,34h,35h,36h,37h,38h,39h,3Ah,3Bh,3Ch,3Dh,3Eh,3Fh

10B4 34353637

10B8 38393A3B

10BC 3C3D3E3F

10C0 00010203 158 DB 00h,01h,02h,03h,04h,05h,06h,07h,08h,09h,0Ah,0Bh,0Ch,0Dh,0Eh,0Fh

10C4 04050607

10C8 08090A0B

10CC 0C0D0E0F

10D0 10111213 159 DB 10h,11h,12h,13h,14h,15h,16h,17h,18h,19h,1Ah,1Bh,1Ch,1Dh,1Eh,1Fh

10D4 14151617

10D8 18191A1B

10DC 1C1D1E1F

10E0 20212223 160 DB 20h,21h,22h,23h,24h,25h,26h,27h,28h,29h,2Ah,2Bh,2Ch,2Dh,2Eh,2Fh

10E4 24252627

10E8 28292A2B

10EC 2C2D2E2F

10F0 30313233 161 DB 30h,31h,32h,33h,34h,35h,36h,37h,38h,39h,3Ah,3Bh,3Ch,3Dh,3Eh,3Fh

10F4 34353637

10F8 38393A3B

10FC 3C3D3E3F

1100 00010203 162 DB 00h,01h,02h,03h,04h,05h,06h,07h,08h,09h,0Ah,0Bh,0Ch,0Dh,0Eh,0Fh

1104 04050607

1108 08090A0B

110C 0C0D0E0F

1110 10111213 163 DB 10h,11h,12h,13h,14h,15h,16h,17h,18h,19h,1Ah,1Bh,1Ch,1Dh,1Eh,1Fh

1114 14151617

1118 18191A1B

111C 1C1D1E1F

1120 20212223 164 DB 20h,21h,22h,23h,24h,25h,26h,27h,28h,29h,2Ah,2Bh,2Ch,2Dh,2Eh,2Fh

1124 24252627

1128 28292A2B

112C 2C2D2E2F

1130 30313233 165 DB 30h,31h,32h,33h,34h,35h,36h,37h,38h,39h,3Ah,3Bh,3Ch,3Dh,3Eh,3Fh

1134 34353637

1138 38393A3B

113C 3C3D3E3F

1140 00010203 166 DB 00h,01h,02h,03h,04h,05h,06h,07h,08h,09h,0Ah,0Bh,0Ch,0Dh,0Eh,0Fh

1144 04050607

1148 08090A0B

114C 0C0D0E0F

1150 10111213 167 DB 10h,11h,12h,13h,14h,15h,16h,17h,18h,19h,1Ah,1Bh,1Ch,1Dh,1Eh,1Fh

1154 14151617

1158 18191A1B

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115C 1C1D1E1F

1160 20212223 168 DB 20h,21h,22h,23h,24h,25h,26h,27h,28h,29h,2Ah,2Bh,2Ch,2Dh,2Eh,2Fh

1164 24252627

1168 28292A2B

116C 2C2D2E2F

1170 30313233 169 DB 30h,31h,32h,33h,34h,35h,36h,37h,38h,39h,3Ah,3Bh,3Ch,3Dh,3Eh,3Fh

1174 34353637

1178 38393A3B

117C 3C3D3E3F

1180 00010203 170 DB 00h,01h,02h,03h,04h,05h,06h,07h,08h,09h,0Ah,0Bh,0Ch,0Dh,0Eh,0Fh

1184 04050607

1188 08090A0B

118C 0C0D0E0F

1190 10111213 171 DB 10h,11h,12h,13h,14h,15h,16h,17h,18h,19h,1Ah,1Bh,1Ch,1Dh,1Eh,1Fh

1194 14151617

1198 18191A1B

119C 1C1D1E1F

11A0 20212223 172 DB 20h,21h,22h,23h,24h,25h,26h,27h,28h,29h,2Ah,2Bh,2Ch,2Dh,2Eh,2Fh

11A4 24252627

11A8 28292A2B

11AC 2C2D2E2F

11B0 30313233 173 DB 30h,31h,32h,33h,34h,35h,36h,37h,38h,39h,3Ah,3Bh,3Ch,3Dh,3Eh,3Fh

11B4 34353637

11B8 38393A3B

11BC 3C3D3E3F

11C0 00010203 174 DB 00h,01h,02h,03h,04h,05h,06h,07h,08h,09h,0Ah,0Bh,0Ch,0Dh,0Eh,0Fh

11C4 04050607

11C8 08090A0B

11CC 0C0D0E0F

11D0 10111213 175 DB 10h,11h,12h,13h,14h,15h,16h,17h,18h,19h,1Ah,1Bh,1Ch,1Dh,1Eh,1Fh

11D4 14151617

11D8 18191A1B

11DC 1C1D1E1F

11E0 20212223 176 DB 20h,21h,22h,23h,24h,25h,26h,27h,28h,29h,2Ah,2Bh,2Ch,2Dh,2Eh,2Fh

11E4 24252627

11E8 28292A2B

11EC 2C2D2E2F

11F0 30313233 177 DB 30h,31h,32h,33h,34h,35h,36h,37h,38h,39h,3Ah,3Bh,3Ch,3Dh,3Eh,3Fh

11F4 34353637

11F8 38393A3B

11FC 3C3D3E3F

178

179

180 ;\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

181

182 END

VERSION 1.2h ASSEMBLY COMPLETE, 0 ERRORS FOUND

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ACC. . . . . . . . . . . . . . . D ADDR 00E0H PREDEFINED

CFG845 . . . . . . . . . . . . . D ADDR 00AFH PREDEFINED

COPYDATALOOP . . . . . . . . . . C ADDR 0018H

DPCON. . . . . . . . . . . . . . D ADDR 00A7H PREDEFINED

DPH. . . . . . . . . . . . . . . D ADDR 0083H PREDEFINED

HEX2ASCII. . . . . . . . . . . . C ADDR 0060H

IO0030 . . . . . . . . . . . . . C ADDR 0069H

LED. . . . . . . . . . . . . . . NUMB 00B4H NOT USED

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

PLLCON . . . . . . . . . . . . . D ADDR 00D7H PREDEFINED

SBUF . . . . . . . . . . . . . . D ADDR 0099H PREDEFINED

SCON . . . . . . . . . . . . . . D ADDR 0098H PREDEFINED

SENDCHAR . . . . . . . . . . . . C ADDR 0058H

SENDVAL. . . . . . . . . . . . . C ADDR 0042H

SENDXRAM . . . . . . . . . . . . C ADDR 0029H

T3CON. . . . . . . . . . . . . . D ADDR 009EH PREDEFINED

T3FD . . . . . . . . . . . . . . D ADDR 009DH PREDEFINED

TI . . . . . . . . . . . . . . . B ADDR 0099H PREDEFINED