DUALDPTR PAGE 1

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

2 ;

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

4 ;

5 ; Date : October 2003

6 ;

7 ; File : DualDPTR.asm

8 ;

9 ; Hardware : ADuC841

10 ;

11 ; Description : Sample Program to show the new ADuC841 features

12 ; of dual DPTRs.

13 ;

14 ;\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

15

16 $MOD841 ; Use 8052&ADuC841 predefined symbols

00B4 17 LED EQU P3.4 ; P3.4 drives red LED on eval board

18

19 ;\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

20 ; BEGINNING OF CODE

---- 21 CSEG

22

0000 23 ORG 0000h

24

25 ; CONFIGURE UART....9600 buad

26

0000 759E86 27 MOV T3CON,#86h

0003 759D08 28 MOV T3FD,#08h

0006 759852 29 MOV SCON,#52h

30

31 ; enable the intenal On-Chip XRAM, keep Flash Timing correct

32

0009 43AF01 33 ORL CFG841, #01h

34

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

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

37 ; configure the datapointer

000C 900000 38 MOV DPTR, #0

000F 75A755 39 MOV DPCON, #55h ; auto toggle between DPTRs

40 ; auto increment shadow DPTR

41 ; auto increment main DPTR

42 ; select shadow DPTR

0012 901000 43 MOV DPTR, #1000h

44

0015 45 COPYDATALOOP:

46 ; read Code Memory using Shadow DPTR

0015 E4 47 CLR A

0016 93 48 MOVC A, @A+DPTR ; read code memory

49 ; auto increment shadow DPTR

50 ; swap to main DPTR

51 ; write to XRAM using main DPTR

0017 F0 52 MOVX @DPTR, A ; write to XRAM

53 ; auto increment main DPTR

54 ; swap to shadow DPTR

55 ; check if at end of loop

56 ; NOTE: shadow DPTR selected (not main)

0018 E583 57 MOV A, DPH

001A B412F8 58 CJNE A, #12h, COPYDATALOOP

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59

60

001D 00 61 NOP ; <----NOTE: Set a breakpoint in the debugger here

62 ; This will show that the values in code memory

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

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

65 ; The debugger will not run the nextpiece of

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

67

68

69

70

71 ; transmit XRAM up UART

001E 75A704 72 MOV DPCON, #4 ; select main DPTR

73 ; auto increment DPTR

74 ; do not toggle DPTR

0021 900000 75 MOV DPTR, #0

0024 7810 76 MOV R0, #16

0026 77 SENDXRAM:

0026 E0 78 MOVX A, @DPTR

0027 12003F 79 CALL SENDVAL

002A D8FA 80 DJNZ R0, SENDXRAM

81 ; send a newline

002C 740A 82 MOV A, #10

002E 120055 83 CALL SENDCHAR

0031 740D 84 MOV A, #13

0033 120055 85 CALL SENDCHAR

0036 7810 86 MOV R0, #16

0038 E583 87 MOV A, DPH

003A B402E9 88 CJNE A, #2, SENDXRAM

89

003D 80FE 90 JMP $

91

92

93 ;\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

94 ; SENDVAL

95

003F 96 SENDVAL: ; converts the hex value of A into two ASCII chars,

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

98 ; does not change the value of A.

99

003F C0E0 100 PUSH ACC

0041 C4 101 SWAP A

0042 12005D 102 CALL HEX2ASCII

0045 120055 103 CALL SENDCHAR ; send high nibble

0048 D0E0 104 POP ACC

004A C0E0 105 PUSH ACC

004C 12005D 106 CALL HEX2ASCII

004F 120055 107 CALL SENDCHAR ; send low nibble

0052 D0E0 108 POP ACC

109

0054 22 110 RET

111 ;\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

112 ; SENDCHAR

113

0055 114 SENDCHAR: ; sends ASCII value contained in A to UART

115

0055 3099FD 116 JNB TI,$ ; wait til present char gone

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0058 C299 117 CLR TI ; must clear TI

005A F599 118 MOV SBUF,A

119

005C 22 120 RET

121 ;\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

122 ; HEX2ASCII

123

005D 124 HEX2ASCII: ; converts A into the hex character representing the

125 ; value of A's least significant nibble

126

005D 540F 127 ANL A,#00Fh

005F B40A00 128 CJNE A,#00Ah,$+3

0062 4002 129 JC IO0030

0064 2407 130 ADD A,#007h

0066 2430 131 IO0030: ADD A,#'0'

132

0068 22 133 RET

134 ;\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1000 135 ORG 1000h

136

1000 00010203 137 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 138 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 139 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 140 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 141 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 142 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 143 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 144 DB 30h,31h,32h,33h,34h,35h,36h,37h,38h,39h,3Ah,3Bh,3Ch,3Dh,3Eh,3Fh

1074 34353637

1078 38393A3B

107C 3C3D3E3F

1080 00010203 145 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 146 DB 10h,11h,12h,13h,14h,15h,16h,17h,18h,19h,1Ah,1Bh,1Ch,1Dh,1Eh,1Fh

1094 14151617

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1098 18191A1B

109C 1C1D1E1F

10A0 20212223 147 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 148 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 149 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 150 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 151 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 152 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 153 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 154 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 155 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 156 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 157 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 158 DB 10h,11h,12h,13h,14h,15h,16h,17h,18h,19h,1Ah,1Bh,1Ch,1Dh,1Eh,1Fh

1154 14151617

1158 18191A1B

115C 1C1D1E1F

1160 20212223 159 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 160 DB 30h,31h,32h,33h,34h,35h,36h,37h,38h,39h,3Ah,3Bh,3Ch,3Dh,3Eh,3Fh

1174 34353637

1178 38393A3B

117C 3C3D3E3F

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1180 00010203 161 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 162 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 163 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 164 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 165 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 166 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 167 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 168 DB 30h,31h,32h,33h,34h,35h,36h,37h,38h,39h,3Ah,3Bh,3Ch,3Dh,3Eh,3Fh

11F4 34353637

11F8 38393A3B

11FC 3C3D3E3F

169

170

171 ;\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

172

173 END

VERSION 1.2h ASSEMBLY COMPLETE, 0 ERRORS FOUND

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

CFG841 . . . . . . . . . . . . . D ADDR 00AFH PREDEFINED

COPYDATALOOP . . . . . . . . . . C ADDR 0015H

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

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

HEX2ASCII. . . . . . . . . . . . C ADDR 005DH

IO0030 . . . . . . . . . . . . . C ADDR 0066H

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

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

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

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

SENDCHAR . . . . . . . . . . . . C ADDR 0055H

SENDVAL. . . . . . . . . . . . . C ADDR 003FH

SENDXRAM . . . . . . . . . . . . C ADDR 0026H

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

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

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