CE-158 IO D000H~D00F 16 bytes  
CE-158 UART D200~D203 4 Bytes  
CE-158 Interrupt Port address DE00~DFFF

**Sharp LH5811 Registers (0xD000 – 0xD00F)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Address | Reg Sel  3210 | Reg Name | Function |  |
| 0x0 |  |  |  |  |
| 0x1 |  |  |  |  |
| 0x2 |  |  |  |  |
| 0x3 |  |  |  |  |
| 0x4 | 0100 |  | Reset Internal Divider |  |
| 0x5 | 0101 |  | Reads U Register |  |
| 0x6 |  |  |  |  |
| 0x7 | 0111 | F Register | Clock rate for Serial Port |  |
| 0x8 | 1000 | OPC | Port C | PC4-PC0 = BAUD Rate Bits  PC5 = DA1  PC6 = Strobe  PC7 = Init |
| 0x9 | 1001 | G Register | CLK Selection |  |
| 0xA | 1010 | MSK Register | Interrupt Masks | PB7 Busy |
| 0xB | 1011 | IF Register | Serial Data Ctl | B0 = IRQ Input |
| 0xC | 1100 | DDA | Data Dir Port A | PA7,PA6 = Part of Baud Rate |
| 0xD | 1101 | DDB | Data Dir Port B | PB7 = Busy |
| 0xE | 1110 | OPA | I/O Port A | PA0 = DTR - OUT  PA1 = RTS - OUT  PA2 = CTS - IN  PA3 = CD - IN  PA4 = DSR - IN  PA6 = BAUD - OUT  PA7 = BAUD - OUT |
| 0xF | 1111 | OPB | I/O Port B | PB7 = Busy  PB6 –PB0 = DA7-DA2 |

**Intersil CDP1854A UART – 0xD200-0xD203**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Address | RD/WR- | Reg Name | Function |  |
| 0 | WR- | THR | Transmitter Holding Register |  |
| 0 | RD | RHR | Receive Holding Register |  |
| 1 | WR- |  | Write Ctl Register | B0 = Parity Inhibit  B1 = Even/Odd Parity Enable  B2 = Stop Bits  B3 = Word Length 1  B4 = Word Length 2  B5 = Interrupt Enable  B6 = Tx Break  B7 = TX Request |
| 1 | RD |  | Read Status Register | Parity Error  Framing Error  Overrun Error |

CE-158 UART D200~D203 4 Bytes

D200 Data Write UART\_DATA\_W

D201 Ctrl Reg Write UART\_CTRLREG\_W

D202 Data Read UART\_DATA\_R

D203 Status Reg Read UART\_STATREG\_R

# Baud rates for TI DUART

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 3,686,400MHz | | | 7,372,800MHz | | |
| Baud | DEC | HEX | Baud | DEC | HEX |
| 50 | 4608 | 1200 | 50 | 9216 | 2400 |
| 100 | 2304 | 0900 | 100 | 4608 | 1200 |
| 110 | 2094.54545 | 082E | 110 | 4189.09091 | 105D |
| 200 | 1152 | 0480 | 200 | 2304 | 0900 |
| 300 | 768 | 0300 | 300 | 1536 | 0600 |
| 600 | 384 | 0180 | 600 | 768 | 0300 |
| 1200 | 192 | 00C0 | 1200 | 384 | 0180 |
| 2400 | 96 | 0060 | 2400 | 192 | 00C0 |
| 9600 | 24 | 0018 | 9600 | 48 | 0030 |
| 19200 | 12 | 000C | 19200 | 24 | 0018 |
| 38400 | 6 | 0006 | 38400 | 12 | 000C |

System I/O Registers

|  |  |  |  |
| --- | --- | --- | --- |
| PC-1500 | CE-150 | CE-158 | Description |
| F000 | B000 | D000 | Do not use |
| F001 | B001 | D001 | Do not use |
| F002 | B002 | D002 | Do not use |
| F003 | B003 | D003 | Do not use |
| F004 | B004 | D004 | Divider Reset. Clock divider? |
| F005 | B005 | D005 | U register output. |
| F006 | B006 | D006 | Serial transfer |
| F007 | B007 | D007 | Loader Divider to F Register |
| F008 | B008 | D008 | Port C Input/ Output |
| F009 | B009 | D009 | G Register Input / Output |
| F00A | B00A | D00A | MSK Register Input / Output |
| F00B | B00B | D00B | IF Register Input / Output |
| F00C | B00C | D00C | Specify Port A I/O direction |
| F00D | B00D | D00D | Specify Port B I/O direction |
| F00E | B00E | D00E | Port A Input/ Output |
| F00F | B00F | D00F | Port B Input/ Output |

|  |  |  |
| --- | --- | --- |
| $7850 | OUTSTAT\_REG (Instat the same?) | |
| Bit | Function | Direction |
| 7 | N/A | N/A |
| 6 | N/A | N/A |
| 5 | N/A | N/A |
| 4 | DSR | IN |
| 3 | (D)CD | IN |
| 2 | CTS | IN |
| 1 | RTS | OUT |
| 0 | DTR | OUT |

|  |  |  |
| --- | --- | --- |
| $7855 | CR/LF\_REG | |
| Example: ZONE 5 | | |
| Bit | Function | Direction |
| 7 | N/A | N/A |
| 6 | N/A | N/A |
| 5 | N/A | N/A |
| 4 | N/A | N/A |
| 3 | BANK | 1=ROM high bank, 0=ROM low bank |
| 2 | N/A | N/A |
| 1 | N/A | N/A |
| 0 | N/A | N/A |

|  |  |  |
| --- | --- | --- |
| $7856 | ZONE (Range 1-31d, $01-$1F) | |
| Example: ZONE 5 | | |
| Bit | Function | Direction |
| 7 | N/A | N/A |
| 6 | CE-150 | Set if $6D Read from $A297, normal ROM |
| 5 | CE-150 | Set if $00 Read from $A297, mystery ROM |
| 4 | ZONE4 |  |
| 3 | ZONE3 |  |
| 2 | ZONE2 |  |
| 1 | ZONE1 |  |
| 0 | ZONE0 |  |

|  |  |  |
| --- | --- | --- |
| $7857 | SETDEV\_VAL | |
| KI = Input, DO = Print, PO = LPRINT/LLIST, CI = CLOAD, CO = CSAVE | | |
| Bit | Value | Description |
| 7 | $?? | 1 on Reset. Bits 6-7 have some other purpose |
| 6 | $?? | 1 on Reset. |
| 5 | $?? | 0 on Rest |
| 4 | $10 | CO |
| 3 | $08 | CI |
| 2 | $04 | PO |
| 1 | $02 | DO |
| 0 | $01 | KI |

|  |  |  |
| --- | --- | --- |
| $7858 | SETCOM | |
| Command Example: SETCOM 300,8,N,1  BAUD: 50, 100, 110, 200, 300, 600, 1200, 2400  WORD\_LENGTH: 5, 6, 7, 8  PARITY: E, O, N  STOP\_BITS: 1, 2 | | |
| Bit | Value | Description |
| 7 | BAUD | 50=(000), 100=(001), 110=(010), 200=(011) |
| 6 | BAUD | 300=(100), 600=(101), 1200=(110), 2400=(111) |
| 5 | BAUD |  |
| 4 | WLEN | 5=(00), 6=(01), 7=(10), 8=(11) |
| 3 | WLEN |  |
| 2 | STOP | ONE=(0), TWO=(1) |
| 1 | PARITY | Odd=(00), None=(01), Even=(11) |
| 0 | PARITY |  |

(STK\_PTR\_GSB/FOR) $7882 used for flags

$7895 – USING editing character -> Bit 7: Scientific, Bit 6: asterisk fill, Bit 5: Forced sign, Bit 4: Comma separation, 01: used in checking syntax

$7896 – USING number of characters, including sign, before decimal point

$7897 – USING number of characters in string; $00 = unspecified

$7898 – USING number of characters including and following decimal point

X = PI Y = 1234 A$ = “ABCDEF”

Default PEEK (&7895) = 0

BASIC Line [display ]

Print USING “###”;X [ 3] PEEK (&7895) = 1 $01

Print USING “+###. ###”;X [ +3.141] PEEK (&7895) = 33 $21

Print USING “###. ##^”;X [ +3.14E 00] PEEK (&7895) = 129 $81

Print USING “###. ^”;X [ +3.E 00] PEEK (&7895) = 129 $81

Print USING “\*######”;Y [ \*\*1234] PEEK (&7895) = 65 $41

Print USING “\*\*\*####”;Y [ 1234] PEEK (&7895) = 65 $41

Print USING “###,###,###”;246813 [ 246,813] PEEK (&7895) = 17 $11

CE-158 LH5811 Pin Map

Signal Pin Description

|  |  |  |
| --- | --- | --- |
| PA1 | 1 | RS232C I/F send request RTS |
| PA2 | 2 | RS232C I/F ready to receive CTS |
| PA3 | 3 | RS232C I/F carrier detect (D)CD |
| PA4 | 4 | RS232C I/F data set ready DSR |
| PA5 | 5 | Low battery |
| PA6 | 6 | Baud rate select |
| PA7 | 7 | Baud rate select |
| GND | 8 | Ground |
| PB0 | 9 | Centronics parallel I/F DATA 2 |
| PB1 | 10 | Centronics parallel I/F DATA 3 |
| PB2 | 11 | Centronics parallel I/F DATA 4 |
| PB3 | 12 | Centronics parallel I/F DATA 5 |
| PB4 | 13 | Centronics parallel I/F DATA 6 |
| PB5 | 14 | Centronics parallel I/F DATA 7 |
| PB6 | 15 | Centronics parallel I/F DATA 8 |
| PB7 | 16 | Centronics parallel I/F BUSY input |
| GND | 17 | Ground |
| PC0 | 18 | Baud rate select |
| PC1 | 19 | Baud rate select |
| PC2 | 20 | Baud rate select |
| PC3 | 21 | Baud rate select |
| PC4 | 22 | Baud rate select |
| PC5 | 23 | Centronics parallel I/F DATA 1 |
| PC6 | 24 | Centronics parallel I/F STROBE |
| PC7 | 25 | Centronics parallel I/F INIT |
| CS0 | 26 | VCC |
| CS1 | 27 | VCC |
| /CS2 | 28 | GND |
| RS0 | 29 | AD0 |
| RS1 | 30 | AD1 |
| RS2 | 31 | AD2 |
| RS3 | 32 | AD3 |
| R/W | 33 | Memory Read/Write |
| ME0 | 34 | ME0 Memory Designation |
| ME1 | 35 | Ground |
| W0 | 36 | Ground |
| W1 | 37 | Ground |
| GND | 38 | Ground |
| VCC | 39 | VCC |
| DME0 | 40 | Not used |
| DME1 | 41 | Not used |
| WAIT | 42 | Not used |
| INT | 43 | Interrupt request |
| RESET | 44 | Reset input |
| IRQ | 45 | Interrupt request |
| ΘOS | 46 | Internal clock in phase with LSI |
| CLI | 47 | Ground |
| SDI | 48 | Ground |
| LC | 49 | Not used |
| CL0 | 50 | Not used |
| SD0 | 51 | Not used |
| D0 | 52 | Data bus |
| D1 | 53 | Data bus |
| D2 | 54 | Data bus |
| D3 | 55 | Data bus |
| D4 | 56 | Data bus |
| D5 | 57 | Data bus |
| D6 | 58 | Data bus |
| D7 | 59 | Data bus |
| PA0 | 60 | RS232C I/F terminal ready |