7.3 Appendix: PAL Listings

```
Name            PAL 1
Designer        Rex N. Fisher;
Assembly        P8 8-Bit CPU;


/* Target Device & Mode */

    /* G16V8 */

        /*
            16V8 Architecture              DIP Pin Count: 20
            Mnemonic: G16V8                 Total Product Terms: 64
        */

    /* Medium Synchronous (Registered) Mode */

        /*
            Input only     Output only    Input/Output
            ----------     -----------    ------------
            2, 3, 4,                      12, 13, 14,
            5, 6, 7,                      15, 16, 17,
            8, 9                          18, 19

            Pin 1 = Common Clock
            Pin 11 = Common Output Enable
        */

    Device  G16V8MS;  /* Designates G16V8 in Registered Mode */


/* Define Logic Operators */

    /* AND = &  */
    /* OR = #   */
    /* NOT = !  */


/* Define Output Pins */

    pin 18 = ar_clk;   /* address register clock input */
    pin 17 = dri_clk;  /* data register (in) clock input */
    pin 16 = dro_clk;  /* data register (out) clock input */
    pin 15 = or_clk;   /* operand register clock input */
    pin 14 = a_clk;    /* a register clock */
    pin 13 = r_clk;    /* r register clock */
    pin 12 = z_clk;    /* z (zero status) register clock */


/* Define Input Pins */

    pin 1 = clk2;         /* phase 2 of clock */
    pin 2 = reset;        /* external reset */
    pin 3 = c5;           /* control store bit 5 */
    pin 4 = c7;           /* control store bit 7 */
    pin 5 = c9;           /* control store bit 9 */
    pin 6 = c11;          /* control store bit 11 */
    pin 7 = c26;          /* control store bit 26 */
    pin 8 = c23;          /* control store bit 23 */
    pin 9 = c25;          /* control store bit 25 */
    pin 11 = !oe;         /* output enable -- ground this pin */
```

```
/* Boolean Equations */

     ar_clk.d = c5 & reset;
     dri_clk.d = c7;
     dro_clk.d = c9;
     or_clk.d = c11;
     a_clk.d = c23;
     r_clk.d = c25;
     z_clk.d = c26;
```

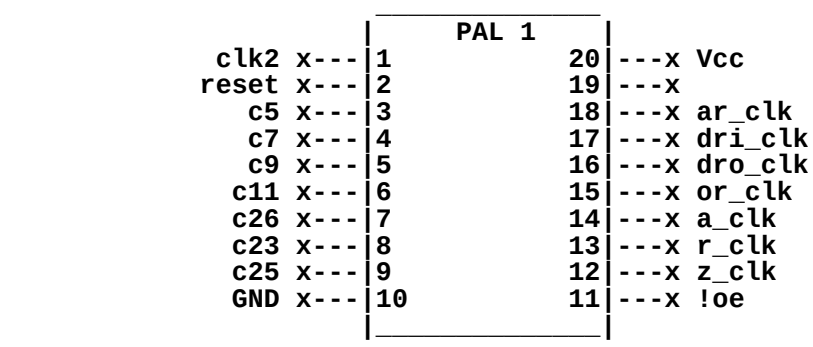
```
********************************************************************************
                                    PAL 1
********************************************************************************

CUPLPLD         4.2a Serial# MD-22410301
Device          g16v8ms  Library DLIB-h-82-11
Created         Fri Mar 28 13:00:50 1997
Name            PAL 1
Designer        Rex N. Fisher

================================================================================
                          Expanded Product Terms
================================================================================

a_clk.d  =>
    c23

ar_clk.d  =>
    c5 & reset

dri_clk.d  =>
    c7

dro_clk.d  =>
    c9

or_clk.d  =>
    c11

r_clk.d  =>
    c25

z_clk.d  =>
    c26
```

```
================================================================================
                                  Symbol Table
================================================================================

Pin Variable                                          Pterms   Max     Min
Pol   Name                 Ext     Pin     Type       Used   Pterms  Level
--- --------               ---     ---     ----      ------  ------  -----

    a_clk                          14       V          -       -       -
    a_clk                  d       14       X          1       8       4
    ar_clk                         18       V          -       -       -
    ar_clk                 d       18       X          1       8       4
    c5                             3        V          -       -       -
    c7                             4        V          -       -       -
    c9                             5        V          -       -       -
    c11                            6        V          -       -       -
    c23                            8        V          -       -       -
    c25                            9        V          -       -       -
    c26                            7        V          -       -       -
    clk2                           1        V          -       -       -
    dri_clk                        17       V          -       -       -
    dri_clk                d       17       X          1       8       4
    dro_clk                        16       V          -       -       -
    dro_clk                d       16       X          1       8       4
 !  oe                             11       V          -       -       -
    or_clk                         15       V          -       -       -
    or_clk                 d       15       X          1       8       4
    r_clk                          13       V          -       -       -
    r_clk                  d       13       X          1       8       4
    reset                          2        V          -       -       -
    z_clk                          12       V          -       -       -
    z_clk                  d       12       X          1       8       4


LEGEND    D : default variable         F : field      G : group
          I : intermediate variable    N : node       M : extended node
          U : undefined                V : variable   X : extended variable
          T : function
```

```
================================================================================
                                    Fuse Plot
================================================================================

Syn   02192 x Ac0   02193 -

Pin #19  02048  Pol x  02120  Ac1 -
 00000 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 00032 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 00064 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 00096 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 00128 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 00160 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 00192 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 00224 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
Pin #18  02049  Pol -  02121  Ac1 x
 00256 x---x--------------------------
 00288 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 00320 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 00352 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 00384 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 00416 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 00448 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 00480 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
Pin #17  02050  Pol -  02122  Ac1 x
 00512 --------x-------------------------
 00544 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 00576 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 00608 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 00640 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 00672 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 00704 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 00736 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
Pin #16  02051  Pol -  02123  Ac1 x
 00768 ------------x-----------------------
 00800 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 00832 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 00864 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 00896 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 00928 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 00960 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 00992 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
Pin #15  02052  Pol -  02124  Ac1 x
 01024 ----------------x---------------
 01056 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 01088 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 01120 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 01152 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 01184 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 01216 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 01248 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx

Pin #14  02053  Pol -  02125  Ac1 x
 01280 ------------------------x-------
 01312 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 01344 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 01376 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 01408 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 01440 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 01472 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 01504 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
Pin #13  02054  Pol -  02126  Ac1 x
```

```
 01536 ----------------------------x---
 01568 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 01600 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 01632 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 01664 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 01696 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 01728 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 01760 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
Pin #12  02055  Pol -  02127  Ac1 x
 01792 --------------------x-----------
 01824 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 01856 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 01888 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 01920 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 01952 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 01984 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 02016 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx


LEGEND    X : fuse not blown
          - : fuse blown
```

Chip Diagram



```
Name            PAL 2
Designer        Rex N. Fisher;
Assembly        P8 8-Bit CPU;


/* Target Device & Mode */

    /* G16V8 */

         /*
             16V8 Architecture              DIP Pin Count: 20
             Mnemonic: G16V8                 Total Product Terms: 64
         */

    /* Simple (Small) Mode */

         /*
             Input only     Output only    Input/Output
             ----------     -----------    ------------
             1, 2, 3,         15, 16       12, 13, 14,
             4, 5, 6,                      17, 18, 19
             7, 8, 9,
             11
         */

    Device  G16V8S;  /* Designates G16V8 in Simple Mode */


/* Define Logic Operators */

    /* AND = &  */
    /* OR = #   */
    /* NOT = !  */


/* Define Output Pins */

    pin 19 = mode;       /* alu "mode" input */
    pin 18 = sel_0;      /* alu "s0" input */
    pin 17 = sel_1;      /* alu "s1" input */
    pin 16 = sel_2;      /* alu "s2" input */
    pin 15 = sel_3;      /* alu "s3" input */
    pin 14 = cry_in;     /* alu "cn" input */
    pin 13 = ir_clr;     /* clear input for instruction register */


/* Define Input Pins */

    pin 1 = c15;         /* control store bit 15 (pass_thru) */
    pin 2 = c16;         /* control store bit 16 (add) */
    pin 3 = c17;         /* control store bit 17 (sub) */
    pin 4 = c18;         /* control store bit 18 (dec) */
    pin 5 = c19;         /* control store bit 19 (or) */
    pin 6 = c20;         /* control store bit 20 (inv) */
    pin 7 = c21;         /* control store bit 21 (shl) */
    pin 8 = c28;         /* control store bit 28 (compare) */
    pin 9 = ir_reset;    /* latched inv cs bit 0, input from PAL 3 */
    pin 11 = sys_reset_bar;   /* external system reset */
```

```
/* Boolean Equations */

     mode = c15 # c19 # c20;
     sel_0 = c16 # c18 # c20;
     sel_1 = c15 # c17 # c18 # c19 # c28;
     sel_2 = c17 # c18 # c19 # c20 # c21 # c28;
     sel_3 = c15 # c16 # c18 # c19 # c21;
     cry_in = !c17;
     ir_clr = ir_reset & sys_reset_bar;
```

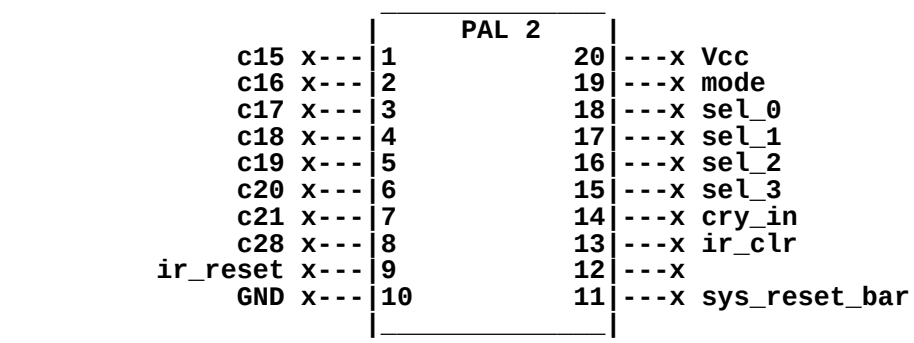
```
********************************************************************************
                                      PAL 2
********************************************************************************

CUPLPLD         4.2a Serial# MD-22410301
Device          g16v8s  Library DLIB-h-82-9
Created         Thu Mar 27 17:27:27 1997
Name            PAL 2
Designer        Rex N. Fisher

================================================================================
                            Expanded Product Terms
================================================================================

cry_in =>
    !c17

ir_clr =>
    ir_reset & sys_reset_bar

mode =>
    c20
  # c19
  # c15

sel_0 =>
    c20
  # c18
  # c16

sel_1 =>
    c28
  # c19
  # c18
  # c17
  # c15

sel_2 =>
    c28
  # c21
  # c20
  # c19
  # c18
  # c17

sel_3 =>
    c21
  # c19
  # c18
  # c16
  # c15
```

```
================================================================================
                                Symbol Table
================================================================================

Pin Variable                                          Pterms   Max     Min
Pol   Name              Ext     Pin     Type         Used   Pterms  Level
--- --------            ---     ---     ----        ------  ------  -----

    c15                         1        V           -       -       -
    c16                         2        V           -       -       -
    c17                         3        V           -       -       -
    c18                         4        V           -       -       -
    c19                         5        V           -       -       -
    c20                         6        V           -       -       -
    c21                         7        V           -       -       -
    c28                         8        V           -       -       -
    cry_in                      14       V           1       8       4
    ir_clr                      13       V           1       8       4
    ir_reset                    9        V           -       -       -
    mode                        19       V           3       8       4
    sel_0                       18       V           3       8       4
    sel_1                       17       V           5       8       4
    sel_2                       16       V           6       8       4
    sel_3                       15       V           5       8       4
    sys_reset_bar               11       V           -       -       -

LEGEND    D : default variable          F : field      G : group
          I : intermediate variable     N : node       M : extended node
          U : undefined                 V : variable   X : extended variable
          T : function
```

```
================================================================================
                                    Fuse Plot
================================================================================

Syn   02192 - Ac0   02193 x

Pin #19  02048  Pol -  02120  Ac1 x
 00000 ----------------x--------------
 00032 ------------x------------------
 00064 --x----------------------------
 00096 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 00128 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 00160 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 00192 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 00224 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
Pin #18  02049  Pol -  02121  Ac1 x
 00256 ----------------x--------------
 00288 --------x----------------------
 00320 x----------------------------
 00352 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 00384 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 00416 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 00448 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 00480 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
Pin #17  02050  Pol -  02122  Ac1 x
 00512 ------------------------x-------
 00544 ------------x------------------
 00576 --------x----------------------
 00608 ----x--------------------------
 00640 --x----------------------------
 00672 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 00704 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 00736 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
Pin #16  02051  Pol -  02123  Ac1 x
 00768 ------------------------x-------
 00800 --------------------x-----------
 00832 ----------------x--------------
 00864 ------------x------------------
 00896 --------x----------------------
 00928 ----x--------------------------
 00960 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 00992 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
Pin #15  02052  Pol -  02124  Ac1 x
 01024 --------------------x-----------
 01056 ------------x------------------
 01088 --------x----------------------
 01120 x----------------------------
 01152 --x----------------------------
 01184 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 01216 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 01248 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx

Pin #14  02053  Pol -  02125  Ac1 x
 01280 -----x-------------------------
 01312 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 01344 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 01376 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 01408 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 01440 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 01472 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 01504 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
Pin #13  02054  Pol -  02126  Ac1 x
```

```
 01536 ----------------------------x-x-
 01568 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 01600 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 01632 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 01664 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 01696 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 01728 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 01760 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
Pin #12  02055  Pol x  02127  Ac1 -
 01792 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 01824 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 01856 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 01888 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 01920 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 01952 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 01984 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 02016 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx


LEGEND    X : fuse not blown
          - : fuse blown
```

Chip Diagram



```
Name            PAL 3
Designer        Rex N. Fisher;
Assembly        P8 8-Bit CPU;


/* Target Device & Mode */

    /* G16V8 */

         /*
             16V8 Architecture              DIP Pin Count: 20
             Mnemonic: G16V8                 Total Product Terms: 64
         */

    /* Medium Synchronous (Registered) Mode */

         /*
             Input only     Output only    Input/Output
             ----------     -----------    ------------
             2, 3, 4,                      12, 13, 14,
             5, 6, 7,                      15, 16, 17,
             8, 9                          18, 19

             Pin 1 = Common Clock
             Pin 11 = Common Output Enable
         */

    Device  G16V8MS;  /* Designates G16V8 in Registered Mode */


/* Define Logic Operators */

    /* AND = &  */
    /* OR = #   */
    /* NOT = !  */


/* Define Output Pins */

    pin 19 = ir_clk;         /* load instruction register (ir) */
    pin 18 = ir_reset;       /* latched cs bit 0, input for PAL 2 */
    pin 17 = zero_branch;    /* branch address bit (a4) for jnz & jz */
    pin 16 = addr_out;       /* ar register output enable */
    pin 15 = mip_load_en;    /* enable (sync) parallel load of mip */
    pin 14 = memw;           /* memory write bit */
    pin 13 = iow;            /* i/o write bit */
    pin 12 = data_out;       /* dr (out) register output enable */


/* Define Input Pins */

    pin 1 = clk2;            /* phase 2 of clock */
    pin 2 = c0;              /* control store bit 0 (ir_reset) */
    pin 3 = c1;              /* control store bit 1 (ir_load) */
    pin 4 = c4;              /* control store bit 4 (!ar_out) */
    pin 5 = c27;             /* control store bit 27 (cond_jmp_en) */
    pin 6 = latched_zero;    /* output from z register */
    pin 7 = c8;              /* control store bit 8 (!drout_out) */
    pin 8 = c3;              /* control store bit 3 (memw_en) */
    pin 9 = c31;             /* control store bit 31 (iow_en) */
    pin 11 = !oe;            /* output enable -- ground this pin */
```

```
/* Boolean Equations */

     ir_clk.d = c1;
     ir_reset.d = !c0;
     zero_branch = latched_zero & c27;
     addr_out.d = c4;
     mip_load_en.d = !c0 & !c1 # c0 & c1;
     memw.d = c3;
     iow.d = c31;
     data_out.d = c8;
```

```
********************************************************************************
                                      PAL 3
********************************************************************************

CUPLPLD         4.2a Serial# MD-22410301
Device          g16v8ms  Library DLIB-h-82-11
Created         Thu Mar 27 17:28:41 1997
Name            PAL 3
Designer        Rex N. Fisher

================================================================================
                            Expanded Product Terms
================================================================================

addr_out.d  =>
    c4

data_out.d  =>
    c8

iow.d  =>
    c31

ir_clk.d  =>
    c1

ir_reset.d  =>
    !c0

memw.d  =>
    c3

mip_load_en.d  =>
    !c0 & !c1
  # c0 & c1

zero_branch =>
    c27 & latched_zero

zero_branch.oe  =>
    1
```

```
================================================================================
                                Symbol Table
================================================================================

Pin Variable                                          Pterms   Max     Min
Pol   Name              Ext     Pin     Type          Used   Pterms  Level
--- --------            ---     ---     ----          ------ ------  -----

    addr_out                    16       V             -      -       -
    addr_out            d       16       X             1      8       4
    c0                          2        V             -      -       -
    c1                          3        V             -      -       -
    c3                          8        V             -      -       -
    c4                          4        V             -      -       -
    c8                          7        V             -      -       -
    c27                         5        V             -      -       -
    c31                         9        V             -      -       -
    clk2                        1        V             -      -       -
    data_out                    12       V             -      -       -
    data_out            d       12       X             1      8       4
    iow                         13       V             -      -       -
    iow                 d       13       X             1      8       4
    ir_clk                      19       V             -      -       -
    ir_clk              d       19       X             1      8       4
    ir_reset                    18       V             -      -       -
    ir_reset            d       18       X             1      8       4
    latched_zero                6        V             -      -       -
    memw                        14       V             -      -       -
    memw                d       14       X             1      8       4
    mip_load_en                 15       V             -      -       -
    mip_load_en         d       15       X             2      8       4
 !  oe                          11       V             -      -       -
    zero_branch                 17       V             1      7       4
    zero_branch         oe      17       D             1      1       0


LEGEND    D : default variable         F : field      G : group
          I : intermediate variable    N : node       M : extended node
          U : undefined                V : variable   X : extended variable
          T : function
```

```
================================================================================
                                    Fuse Plot
================================================================================

Syn   02192 x Ac0   02193 -

Pin #19  02048  Pol -  02120  Ac1 x
 00000 ----x--------------------------
 00032 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 00064 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 00096 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 00128 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 00160 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 00192 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 00224 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
Pin #18  02049  Pol -  02121  Ac1 x
 00256 -x-----------------------------
 00288 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 00320 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 00352 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 00384 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 00416 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 00448 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 00480 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
Pin #17  02050  Pol -  02122  Ac1 -
 00512 -------------------------------
 00544 ------------x---x--------------
 00576 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 00608 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 00640 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 00672 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 00704 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 00736 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
Pin #16  02051  Pol -  02123  Ac1 x
 00768 --------x-----------------------
 00800 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 00832 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 00864 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 00896 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 00928 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 00960 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 00992 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
Pin #15  02052  Pol -  02124  Ac1 x
 01024 -x---x--------------------------
 01056 x---x--------------------------
 01088 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 01120 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 01152 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 01184 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 01216 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 01248 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx

Pin #14  02053  Pol -  02125  Ac1 x
 01280 ----------------------x-------
 01312 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 01344 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 01376 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 01408 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 01440 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 01472 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 01504 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
Pin #13  02054  Pol -  02126  Ac1 x
```

```
 01536 ----------------------------x---
 01568 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 01600 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 01632 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 01664 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 01696 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 01728 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 01760 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
Pin #12  02055  Pol -  02127  Ac1 x
 01792 --------------------x-----------
 01824 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 01856 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 01888 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 01920 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 01952 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 01984 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 02016 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx


LEGEND    X : fuse not blown
          - : fuse blown
```

Chip Diagram