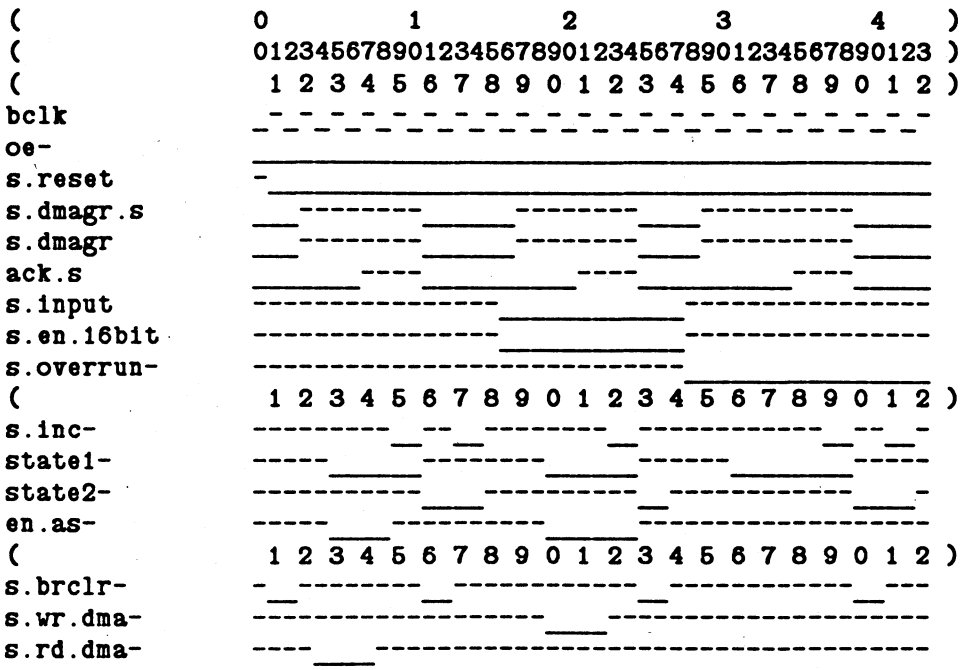
```
% SCSI DMA Master PAL

paltype pal16r6
palname master U406
palid 1.2 84/08/29

PALBEGIN

% Inputs

 1 CLOCK bclk
 2 INPUT s.dmagr.s
 3 INPUT ack.s
 4 INPUT s.input
 5 INPUT s.en.16bit
 6 INPUT s.overrun-
 7 INPUT s.dmagr
 8 NOTUSED
 9 INPUT s.reset
10 GND

11 OUTPUT-ENABLE oe-

% outputs

19 NOTUSED
18 OUTPUT s.inc-
17 OUTPUT en.as-
16 OUTPUT s.brclr-
15 OUTPUT state1-
14 OUTPUT state2-
13 OUTPUT s.wr.dma-
12 OUTPUT s.rd.dma-

20 VCC

EQUATIONS

: Input s.input ;    % Read scsi and write memory
: Output / s.input ; % Write scsi and read memory

% States:

: Idle                    / s.inc  / state1  / state2 ;
: Wait                    / s.inc    state1  / state2 ;
: Inc1                      s.inc    state1  / state2 ;
: Off                     / s.inc  / state1    state2 ;
: Inc2                      s.inc  / state1    state2 ;

ASSERT s.inc-
OR      Wait  ack.s      / s.reset   % first Inc after we get ack
OR      Off   s.en.16bit / s.reset   % second inc 2 states after first

ASSERT state1-
OR      Idle  s.dmagr.s  / s.reset
OR      Wait             / s.reset

ASSERT state2-          % Counter to make incs happen 2 clocks apart
OR      Inc1             / s.reset
OR      Off  s.en.16bit  / s.reset  % persist only if 16-bit mode

ASSERT en.as-           % Enables data strobes too
OR      Idle  s.dmagr.s  / s.overrun  / s.reset
OR      Wait  / ack.s    / s.overrun  / s.reset
OR      Wait    ack.s    / s.overrun  / s.reset  Output
```

```
ASSERT s.brclr-
OR      Inc1              % Clear old bus request after negating strobes
OR      s.reset           % on on a reset

ASSERT s.wr.dma-
OR      Idle  s.dmagr.s  / s.overrun / s.reset  Output
OR      Wait  / ack.s    / s.overrun / s.reset  Output

ASSERT s.rd.dma-            % not registered
ENABLE ALWAYS
% use non-synchronized s.dmagr because the synchronized version can oscillate
% and because s.dmagr happens sooner, giving more data setup time.
OR      s.dmagr  / ack.s / s.overrun  Input

TIMING:
```




```
( 00-15  Read scsi, write memory in 16-bit mode )
( 16-27  Write scsi, read memory in 8-bit mode )
( 28-43  Read scsi, but overrun is true so strobes inhibited )

PALEND
```