

% SCSI Bus Decoder Pal

paltype pal1618
palname scsi U108 520-1052
palid 2.4 84/03/02

PALBEGIN

% Inputs

1 INPUT ENPAR
2 INPUT ENDMA
3 INPUT ENWORDMODE
4 INPUT REQ
5 INPUT MSG
6 INPUT CD
7 INPUT IO
8 INPUT PAR
9 INPUT BUSERR
10 GND
11 INPUT REGACC
12 NOTUSED
13 INPUT SECONDBYTE
18 INPUT EVEN

% outputs

19 OUTPUT NEWREQ
17 OUTPUT ACKOUT
16 OUTPUT INTOUT
15 OUTPUT XREQ
14 OUTPUT PARERR

20 VCC

EQUATIONS

% DeMorganized version of REQ / ACKOUT

ASSERT NEWREQ

ENABLE ALWAYS

OR / REQ

OR REGACC

OR ENWORDMODE / CD IO / SECONDBYTE

OR ENWORDMODE / CD / IO SECONDBYTE

OR ENDMA / CD

% off when no request

% or after req is acked

% or on auto cycles

% or on dma cycles

ASSERT ACKOUT

ENABLE ALWAYS

OR / REQ

OR / REGACC / ENWORDMODE

OR / REGACC CD

OR / REGACC / IO / SECONDBYTE

OR / REGACC IO SECONDBYTE

% implicit ack when the byte packing can handle the request

% first byte is automatic on input, second on output

```

ASSERT INTOUT
ENABLE ALWAYS
OR      / BUSERR / REQ
OR      / BUSERR  REGACC
OR      / BUSERR / MSG  CD / IO      % status
OR      / BUSERR / MSG / CD  ENDMA   % data

```

% status or message is always an interrupt
 % data only interrupts if dma is disabled

```

ASSERT XREQ
ENABLE ALWAYS
OR      / REQ              % only at start of a request
OR      / ENDMA            % and only if enabled
OR      CD                 % and only for data
OR      ENWORDMODE / IO    SECONDBYTE % and not on automatic bytes
OR      ENWORDMODE  IO / SECONDBYTE

```

% when byte packing is off, do dma every byte
 % otherwise, dma after we've collected two bytes (input).
 % or on 0th, 2nd, 4th, etc. (output)

```

ASSERT PARERR
ENABLE ALWAYS
OR      / ENPAR
OR      / PARERR / REQ
OR      / PARERR / IO
OR      / PARERR / EVEN / PAR
OR      / PARERR  EVEN  PAR

```

% parity error latches until cleared by clearing parity enable

TIMING: NO-CLOCK

```

ENDMA      -----
ENWORDMODE -----
MSG         -----
CD          -----
IO          -----
REQ         -----
BUSERR      -----
REGACC      -----
SECONDBYTE  -----
NEWREQ      -----
ACKOUT      -----
INTOUT      -----
XREQ        -----
ENPAR       -----
PAR         -----
EVEN        -----
PARERR      -----

```

(test parity)

```

IO          -----

```

ENPAR	-----
REQ	- - - - -
PAR	-----
EVEN	- - - - -
PARERR	-----
NEWREQ	????????????
ACKOUT	????????????
INTOUT	????????????
XREQ	????????????
ENDMA	-----
ENWORDMODE	-----
MSG	-----
CD	-----
BUSERR	-----
REGACC	-----
SECONDBYTE	-----
PALEND	