FAST 40 / 80 LVDS PERFORMANCE USING SCSI INTERCONNECT

• THE FOLLOWING SLIDES SHOW SOME PRELIMINARY DATA USING THE LVDS DISCRETE DRIVERS SUPPLIED BY TI WITH STANDARD SCSI INTERCONNECT AND PASSIVE TERMINATION

• IN THE INTEREST OF OBTAINING EARLY BOUNDING OF THE LIKELY CONFIGURATION RULES, LABORATORY EXPEDIENCY WAS USED -- SOME OF THE FEATURES ARE NOT IDEAL BUT A REASONABLE APPROXIMATION TO AN ACTUAL IMPLEMENTATION DOES EXIST

• THE POINT TO POINT APPLICATIONS APPEAR CABABLE OF OPERATING WELL PAST FAST 100 AT 25 TO 30 METERS

• THE MULTIDROP APPLICATIONS ARE SEVERELY AFFECTED BY INTERSYMBOL INTERFERENCE AND WILL REQUIRE SOME MODEST LENGTH REDUCTIONS (GUESS TO AROUND 15 TO 20 METERS)
FAST 40 / 80 LVDS PERFORMANCE USING SCSI INTERCONNECT

TEST SETUPS

POINT TO POINT

LVDS DRIVER

D

TEST POINT “INPUT”

1 FOOT UTP

25 METER 34 PAIR SCSI CABLE ROUND SHIELDED 30 GA

1 METER UTP

TERMINATOR

MULTIDROP

LVDS DRIVER

D

1 FOOT UTP

25 METER 34 PAIR SCSI CABLE ROUND SHIELDED 30 GA

1 METER UTP

13 HPDF LOADS ON 4" CENTERS 1.9" STUBS

1.5 METER 30 GA 68 COND FRC FEP INSULATION

TEST POINT “MID”

TEST POINT “TERMINATOR”
FAST 40 / 80 LVDS PERFORMANCE USING SCSI INTERCONNECT

POINT TO POINT

OFFSET BOTH CHANNELS 1.2V

1 METER UTP AT 25 MHZ
FAST 40 / 80 LVDS PERFORMANCE USING SCSI INTERCONNECT

POINT TO POINT

OFFSET BOTH CHANNELS 1.2V

27 METER AT 25 MHZ

LVD_27M40
FAST 40 / 80 LVDS PERFORMANCE
USING SCSI INTERCONNECT

POINT TO POINT

SINGLE ENDED SIGNALS 100 MV/DIV

OFFSET BOTH CHANNELS 1.2V

27 METER AT 50 MHZ
FAST 40 / 80 LVDS PERFORMANCE USING SCSI INTERCONNECT

POINT TO POINT

OFFSET BOTH CHANNELS 1.2V

27 METER AT 100 MHZ
FAST 40 / 80 LVDS PERFORMANCE USING SCSI INTERCONNECT

MULTIDROP

DIFFERENTIAL SIGNAL AT FAR TERMINATOR (NEAR LUMPED LOADS)

FAST 40 LVDS AT 27 METERS WITH 13 LOADS LUMPED NEAR ONE END

ALL BITS ACCURATELY DETECTED BUT SIGNIFICANT MARGIN REDUCTION IS EVIDENT FOR ISOLATED BITS
FAST 40 / 80 LVDS PERFORMANCE USING SCSI INTERCONNECT

MULTIDROP

DIFFERENTIAL SIGNAL AT FAR TERMINATOR (NEAR LUMPED LOADS)

FAST 80 LVDS AT 27 METERS WITH 13 LOADS LUMPED NEAR ONE END

ISOLATED BITS HAVE LOST SO MUCH AMPLITUDE THAT DETECTION IS UNLIKELY
FAST 40 / 80 LVDS PERFORMANCE USING SCSI INTERCONNECT

MULTIDROP

DIFFERENTIAL SIGNAL AT BEGINNING OF LUMPED LOADS)

Acquisition is stopped
4.00 GSa/s

Acquisition
Sampling mode
real time

equivalent time

Digital BW lim
off
on

Interpolate
off
on

Sampling rate automatic...
(4.00 GSa/s)

32BITMID

Record length automatic...
(2007 points)

DF VOLTAGE
200 mV/DIV

TRANSMITED
DATA PATTERN 1111011110000000100000011111111111111101111

FAST 80 LVDS AT 27 METERS WITH 13 LOADS LUMPED NEAR ONE END

ISOLATED BITS HAVE LOST SO MUCH AMPLITUDE THAT DETECTION IS UNLIKELY
NOTE ALSO PROBLEM WITH 1’S AFTER SEVERAL 0’S AND 0’S AFTER SEVERAL 1’S