FAST 40, 80, 100, 150 LVD SCSI TEST RESULTS WITH ASYMMETRICAL DRIVERS, BIAS TERMINATORS, AND COMPLEX LOADS

T10/97-179r0

A NUMBER OF EXPERIMENTS WERE CONDUCTED ON THE PERFORMANCE OF MULTIDROP PARALLEL SCSI AT HIGHER SPEEDS

THE RESULTS INDICATE SEVERE ISSUES WITH FAST 80 USING THE SAME CONFIGURATION RULES AS FAST 40 -- THIS HAS NOTHING TO DO WITH SYMMETRICAL OR ASYMMETRICAL DRIVERS

EFFECTS OF PSEUDO RANDOM DATA PATTERNS WERE NOTED TO BE SIGNIFICANT AT FAST 80 AND ABOVE

GOOD RESULTS FOR 3 METER POINT TO POINT SEGMENTS AT FAST 125 WERE FOUND

BILL HAM DIGITAL EQUIPMENT SPI-2 WORKING GROUP MAY 05, 1997

FAST 40, 80, 100, 150 LVD SCSI TEST RESULTS WITH ASYMMETRICAL DRIVERS, BIAS TERMINATORS, AND COMPLEX LOADS

T10/97-179r0

EVEN POINT TO POINT AT 13 METERS AND FAST 80 (WITH MIXED CABLE TYPES 10+3) HAD SEVERE DIFFICULTY

OPERATION AT FAST 80 AND ABOVE GREATLY BENEFITS FROM SHORTER CABLES

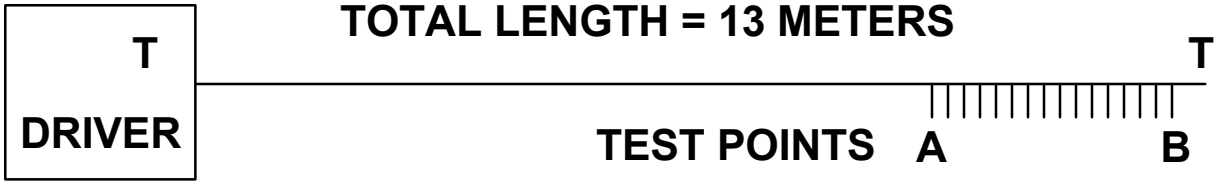
FULL OPERATION APPEARS POSSIBLE AT FAST 80 FOR 3 METER SEGMENTS (LOADED OR UNLOADED)

THE BEHAVIOR OBSERVED SUGGESTS THAT MULTIDROP SEGMENTS AT ELEVATED DATA RATES WILL NEED MORE COMPLEX MODELS AND CONTROLS THAN PREVIOUSLY THOUGHT

THE EFFECT OF LOADS ARE NOT ALWAYS THE DOMINANT FACTOR AT HIGH SPEEDS

A COMBINATION OF SHORTER SEGMENTS, LIMITING THE IRREGULARITY IN THE CLOCK PULSES, AND OTHER KNOWN EFFECTS IS SUGGESTED TO TAKE SCSI TO THE NEXT SPEED PLATEAUS (PROBABLY FAST 100)

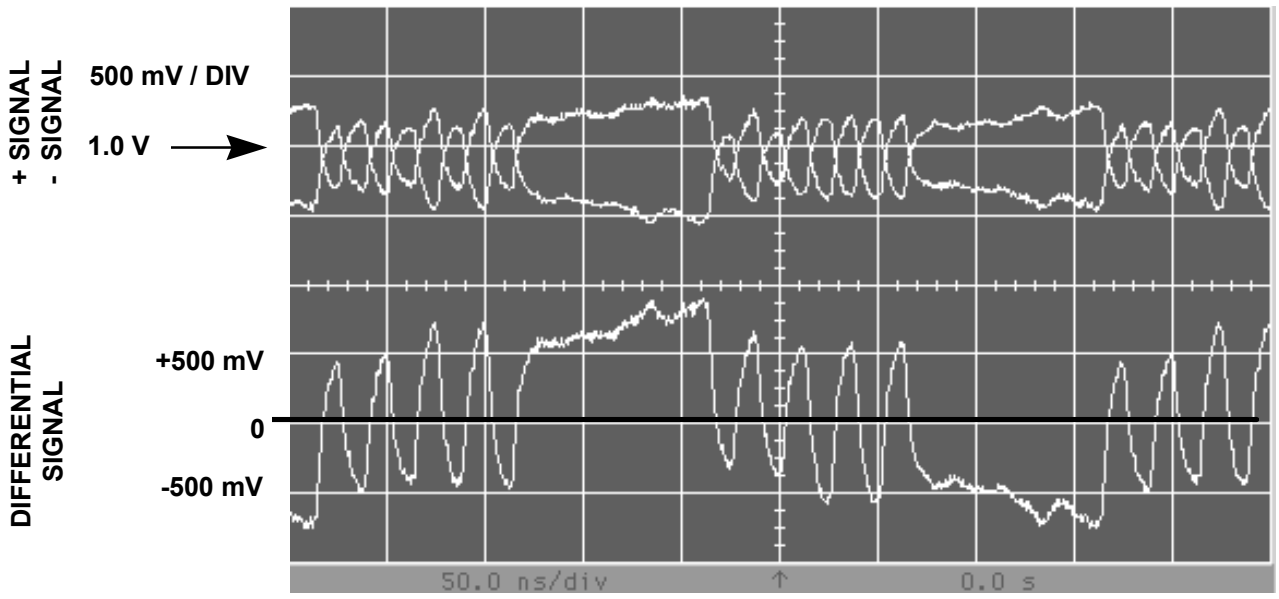
FAST 40, 80, 100, 150 LVD SCSI
TEST RESULTS WITH ASYMMETRICAL DRIVERS, BIAS TERMINATORS, AND COMPLEX LOADS



20/20/10 pF LOADS
ON 8 CENTERS
(RIBBON CABLE)

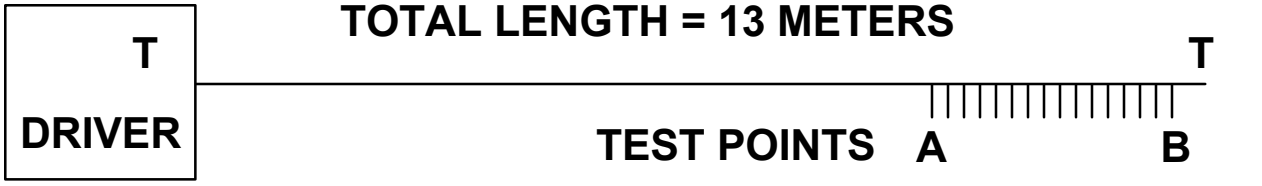
REPEATING DATA PATTERN
10101010111111110101010100000000

TEST POINT A, FAST 40



LVDBT001

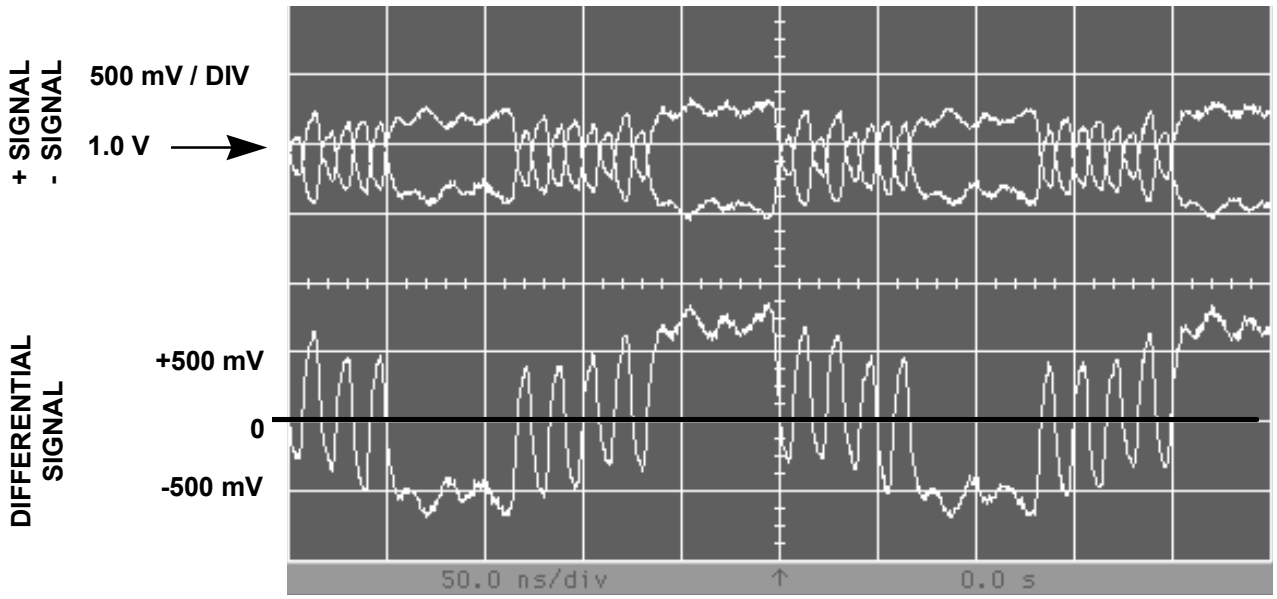
FAST 40, 80, 100, 150 LVD SCSI
TEST RESULTS WITH ASYMMETRICAL DRIVERS, BIAS TERMINATORS, AND COMPLEX LOADS



20/20/10 pF LOADS ON 8 CENTERS (RIBBON CABLE)

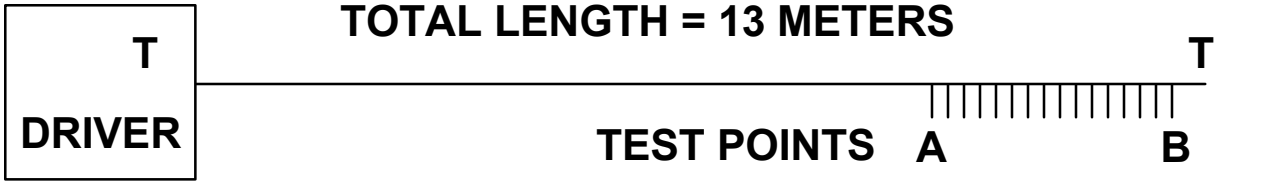
REPEATING DATA PATTERN
1010101011111111010101010000000000

TEST POINT A, FAST 60



LVDBT003

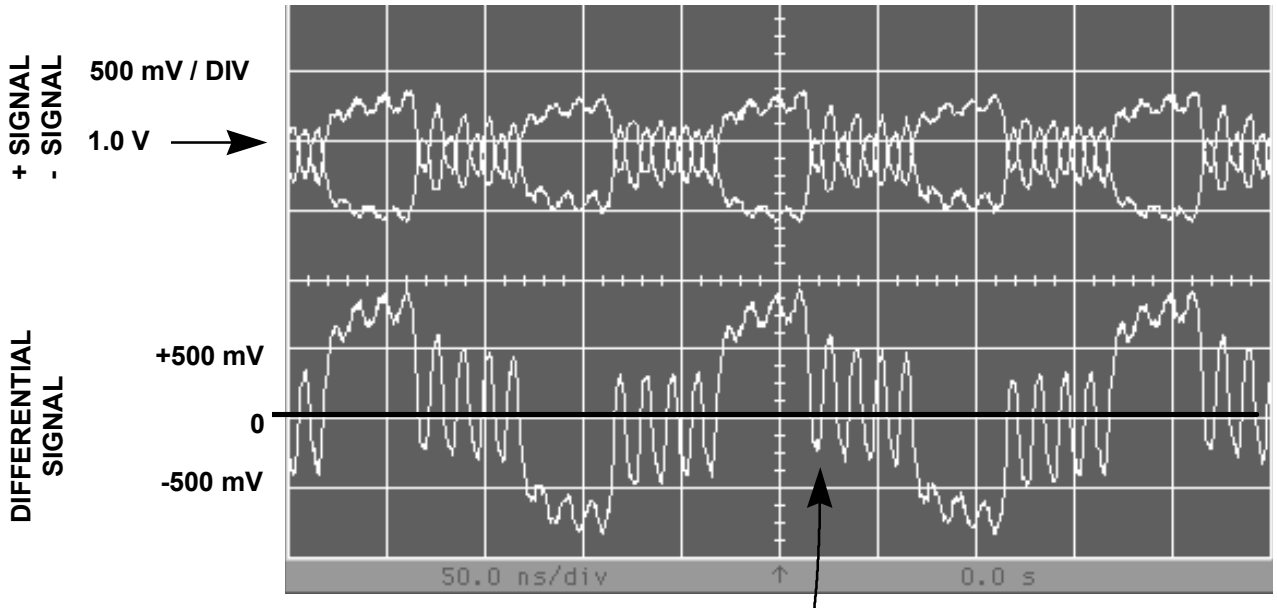
FAST 40, 80, 100, 150 LVD SCSI
TEST RESULTS WITH ASYMMETRICAL DRIVERS, BIAS TERMINATORS, AND COMPLEX LOADS



20/20/10 pF LOADS ON 8 CENTERS (RIBBON CABLE)

REPEATING DATA PATTERN
10101010111111110101010100000000

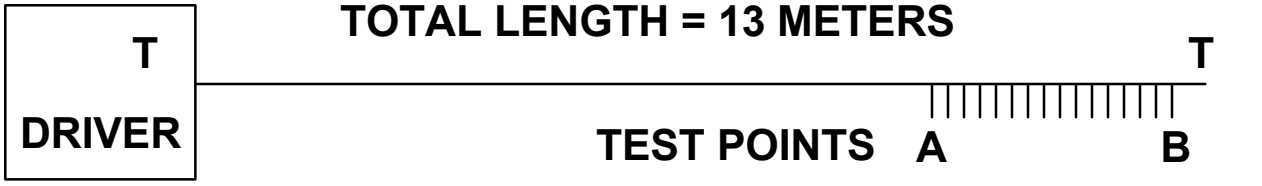
TEST POINT A, FAST 80



DOES NOT MAKE 0.25 OVERSHOOT

LVDBT005

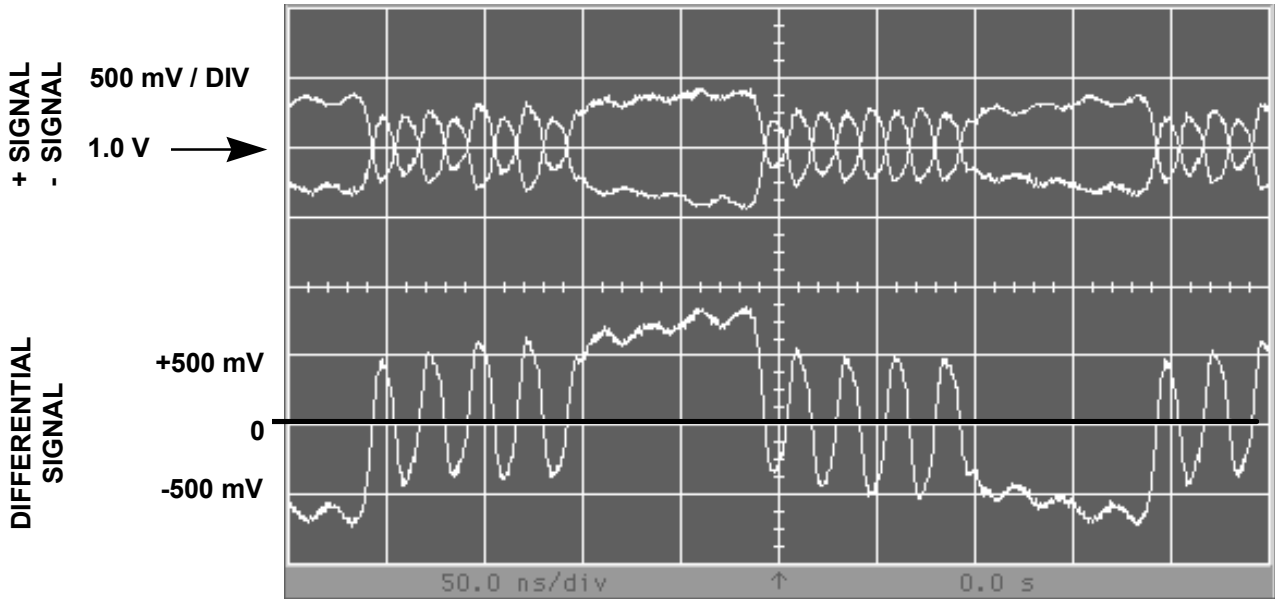
FAST 40, 80, 100, 150 LVD SCSI
TEST RESULTS WITH ASYMMETRICAL DRIVERS, BIAS TERMINATORS, AND COMPLEX LOADS



20/20/10 pF LOADS ON 8 CENTERS (RIBBON CABLE)

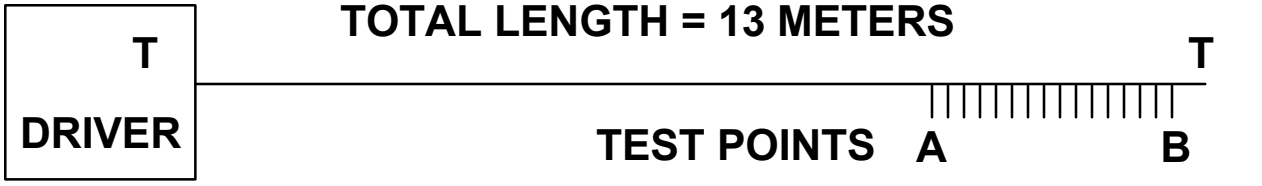
REPEATING DATA PATTERN
10101010111111110101010100000000

TEST POINT B, FAST 40



LVDBT006

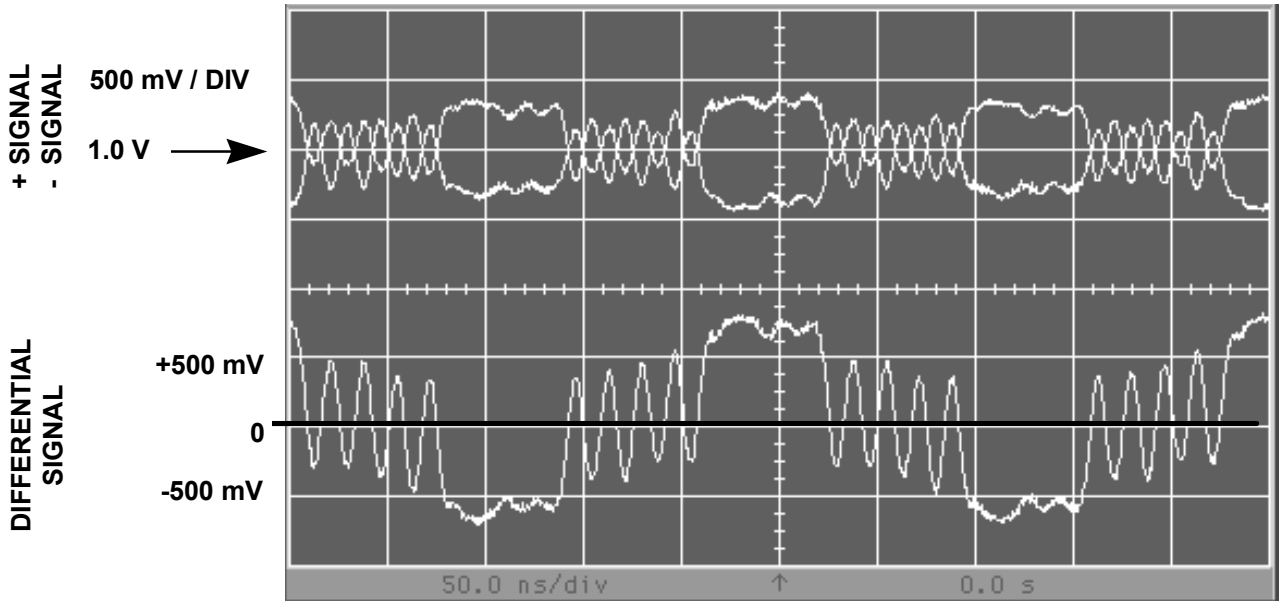
FAST 40, 80, 100, 150 LVD SCSI
TEST RESULTS WITH ASYMMETRICAL DRIVERS, BIAS TERMINATORS, AND COMPLEX LOADS



20/20/10 pF LOADS
ON 8 CENTERS
(RIBBON CABLE)

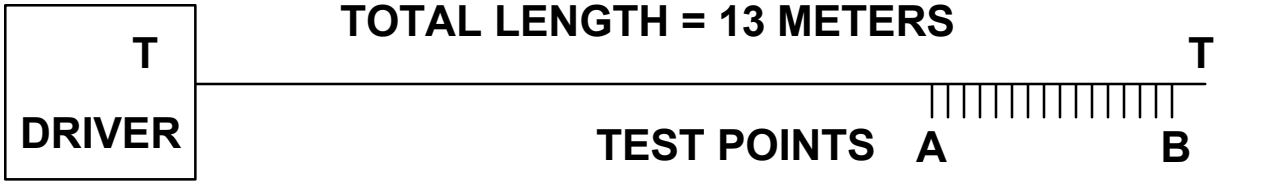
REPEATING DATA PATTERN
10101010111111110101010100000000

TEST POINT B, FAST 60



LVDBT008

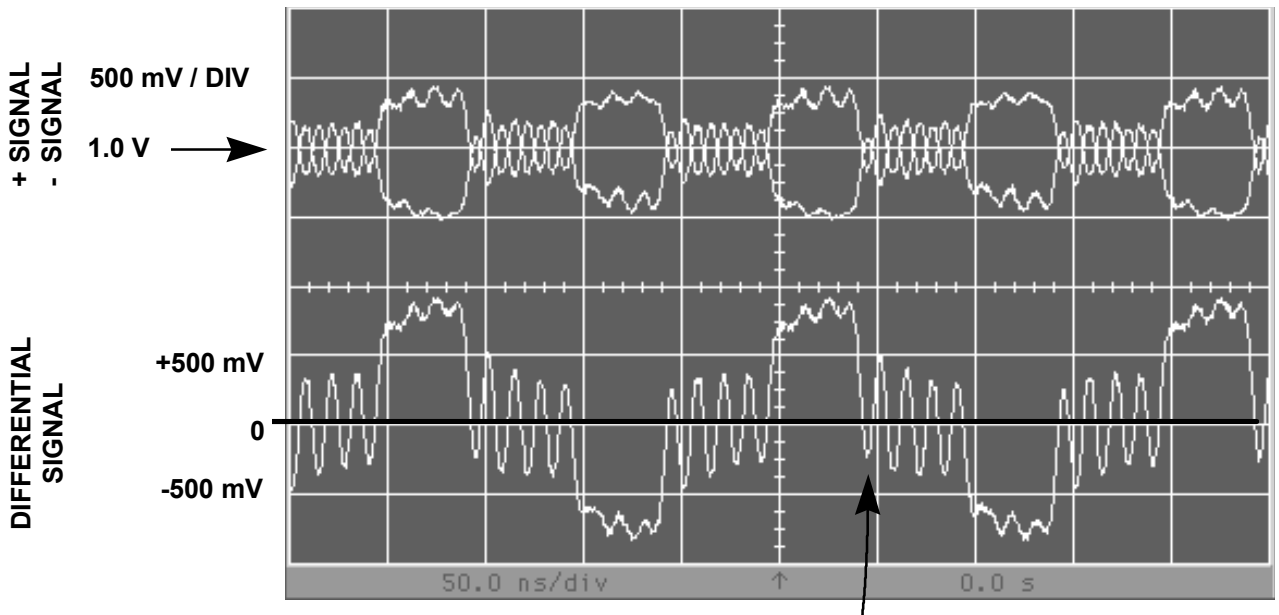
FAST 40, 80, 100, 150 LVD SCSI
TEST RESULTS WITH ASYMMETRICAL DRIVERS, BIAS TERMINATORS, AND COMPLEX LOADS



20/20/10 pF LOADS ON 8 CENTERS (RIBBON CABLE)

REPEATING DATA PATTERN
10101010111111110101010100000000

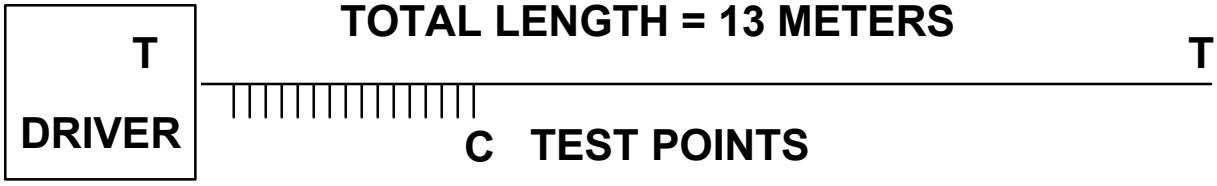
TEST POINT B, FAST 80



DOES NOT MAKE 0.25 OVERSHOOT

LVDBT010

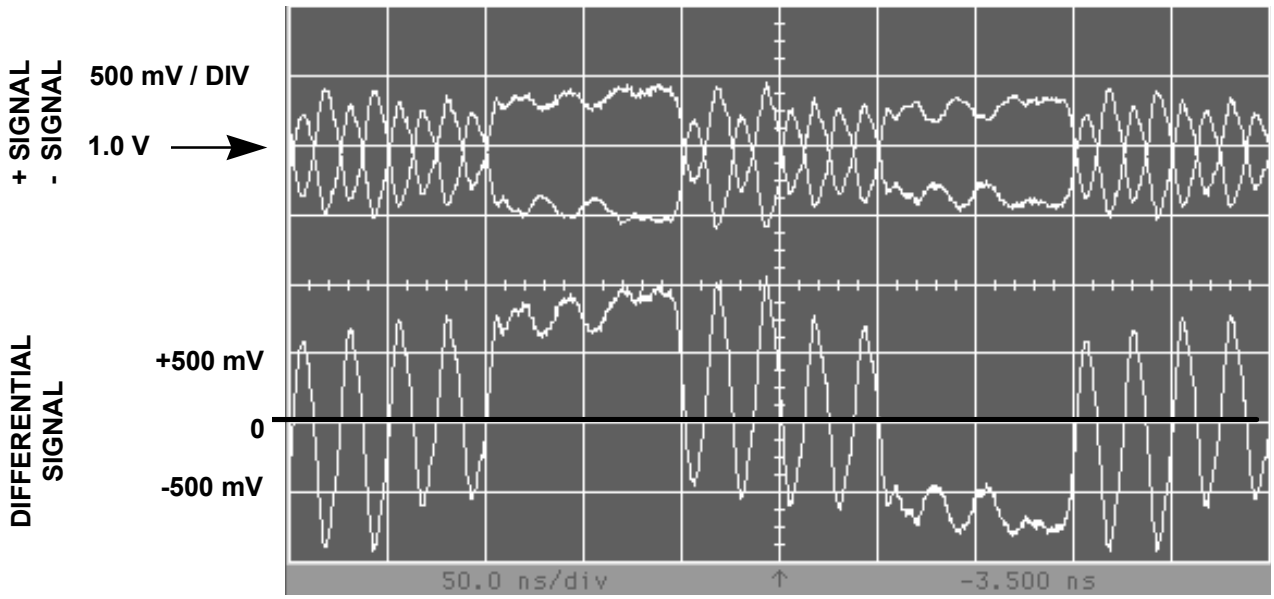
FAST 40, 80, 100, 150 LVD SCSI
TEST RESULTS WITH ASYMMETRICAL DRIVERS, BIAS TERMINATORS, AND COMPLEX LOADS



20/20/10 pF LOADS
ON 8 CENTERS
(RIBBON CABLE)

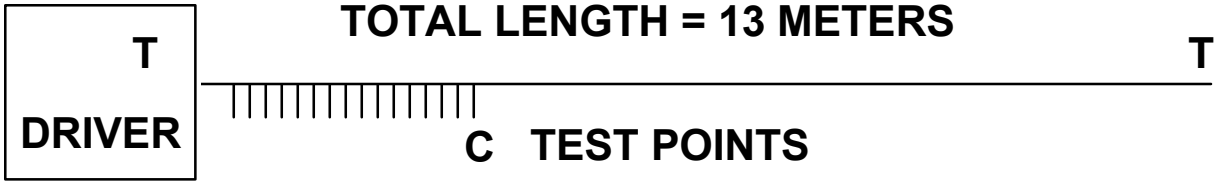
REPEATING DATA PATTERN
1010101011111111010101010000000

TEST POINT C, FAST 40



LVDBT011

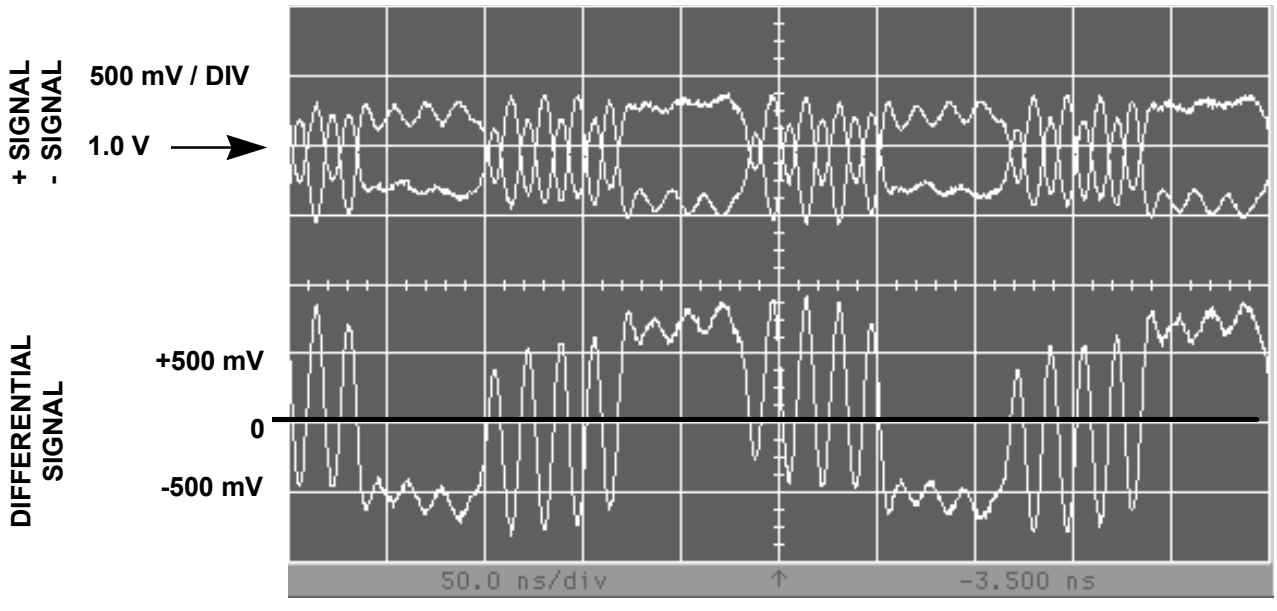
FAST 40, 80, 100, 150 LVD SCSI
TEST RESULTS WITH ASYMMETRICAL DRIVERS, BIAS TERMINATORS, AND COMPLEX LOADS



20/20/10 pF LOADS
ON 8 CENTERS
(RIBBON CABLE)

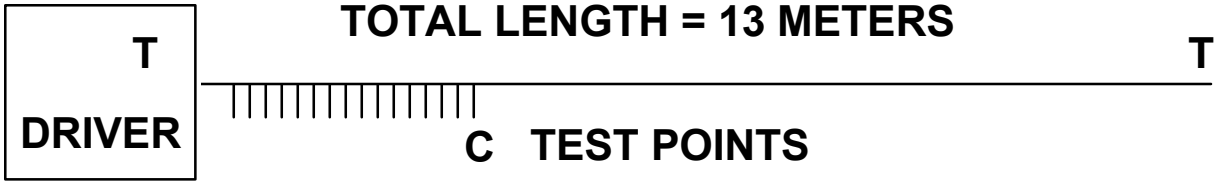
REPEATING DATA PATTERN
10101010111111110101010100000000

TEST POINT C, FAST 60



LVDBT013

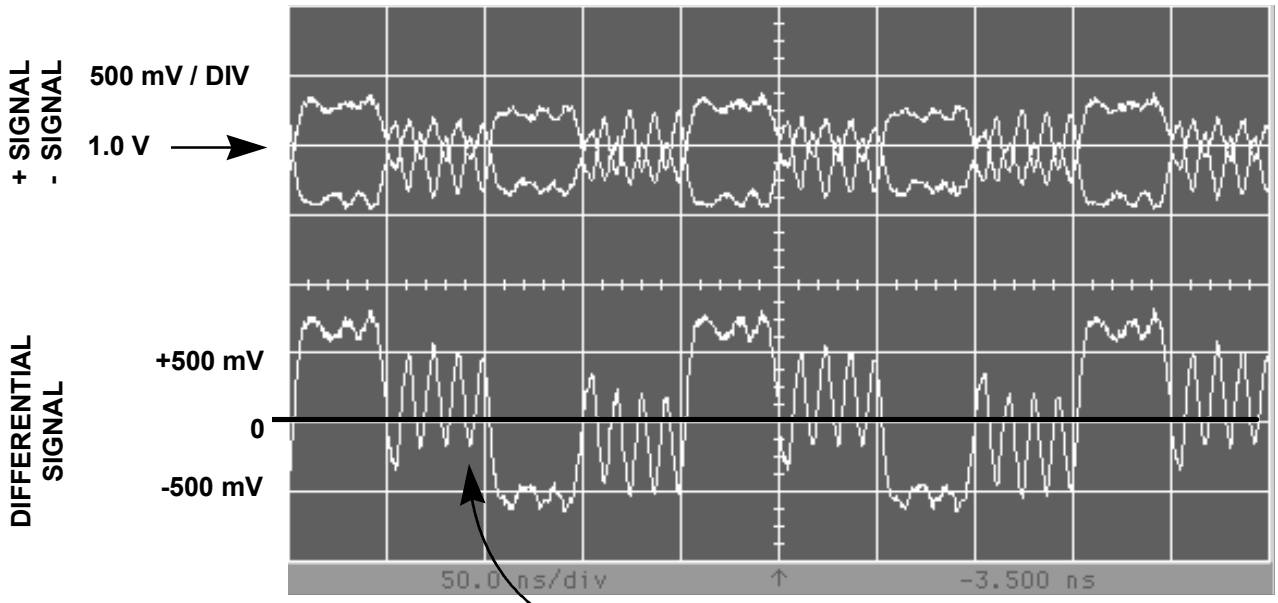
FAST 40, 80, 100, 150 LVD SCSI
TEST RESULTS WITH ASYMMETRICAL DRIVERS, BIAS TERMINATORS, AND COMPLEX LOADS



20/20/10 pF LOADS
ON 8 CENTERS
(RIBBON CABLE)

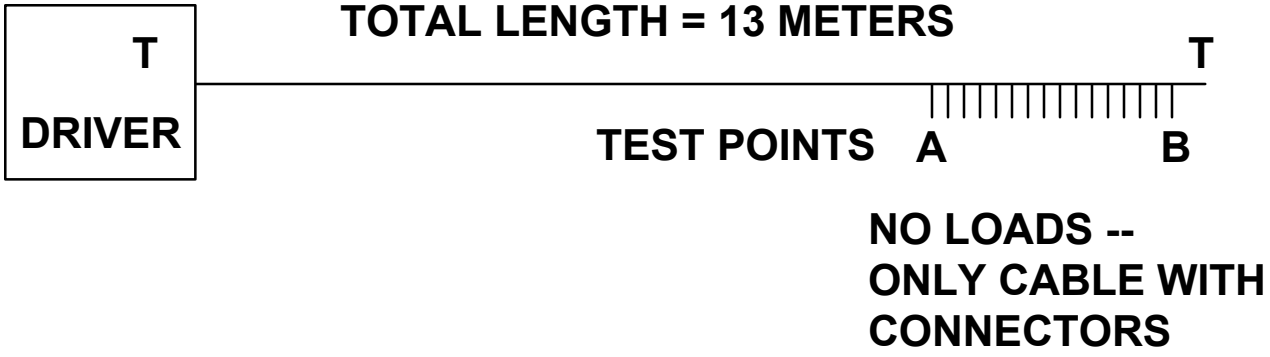
REPEATING DATA PATTERN
10101010111111110101010100000000

TEST POINT C, FAST 80



LVDBT015

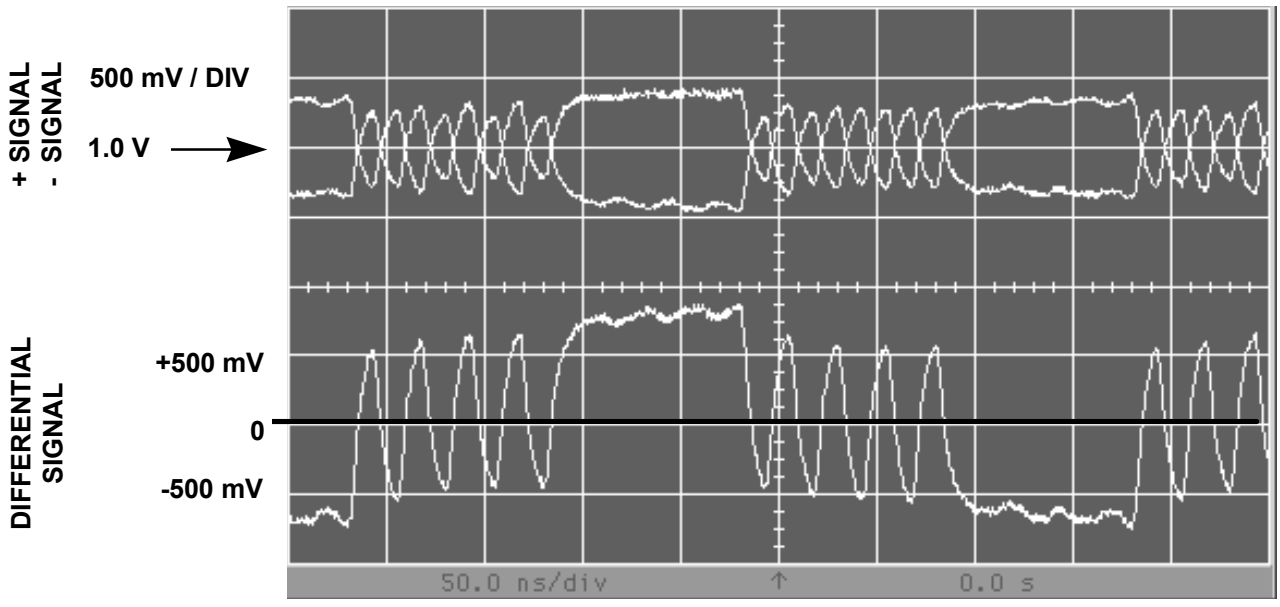
FAST 40, 80, 100, 150 LVD SCSI
TEST RESULTS WITH ASYMMETRICAL DRIVERS, BIAS TERMINATORS, AND COMPLEX LOADS



NO LOADS -- ONLY CABLE WITH CONNECTORS

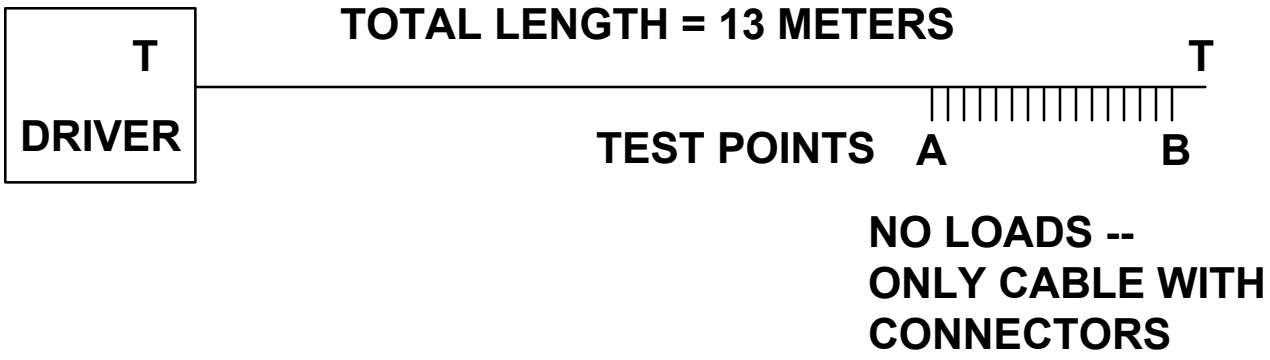
REPEATING DATA PATTERN
1010101011111111010101010000000000

TEST POINT B, FAST 40



LVDBT016

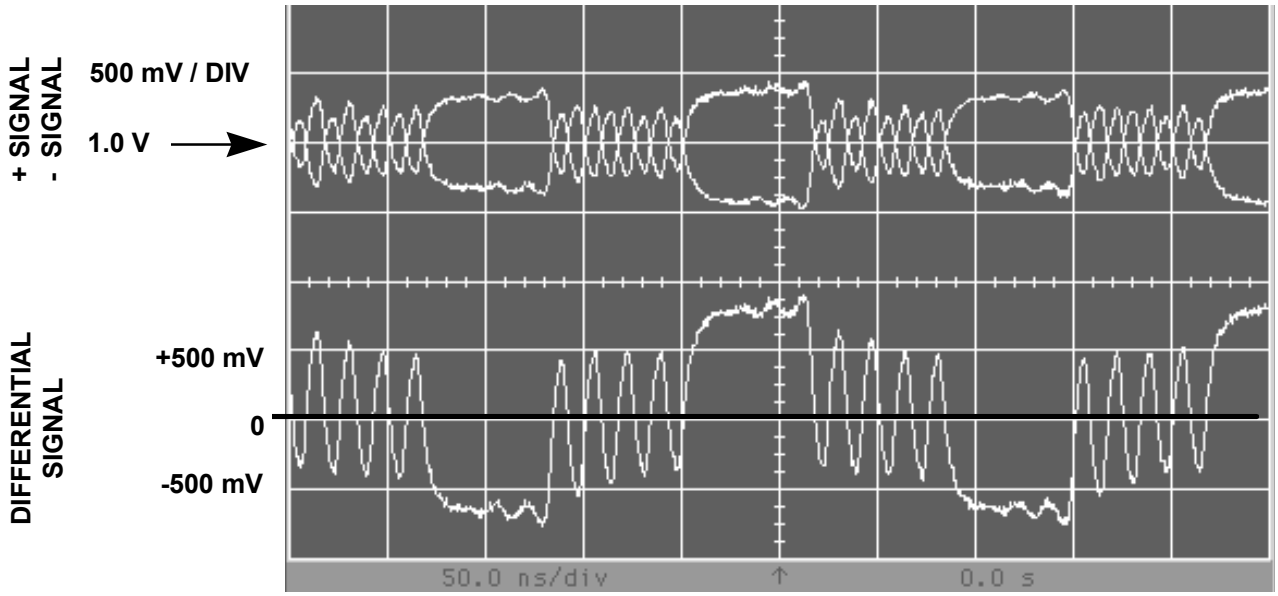
FAST 40, 80, 100, 150 LVD SCSI
TEST RESULTS WITH ASYMMETRICAL DRIVERS, BIAS TERMINATORS, AND COMPLEX LOADS



NO LOADS --
ONLY CABLE WITH CONNECTORS

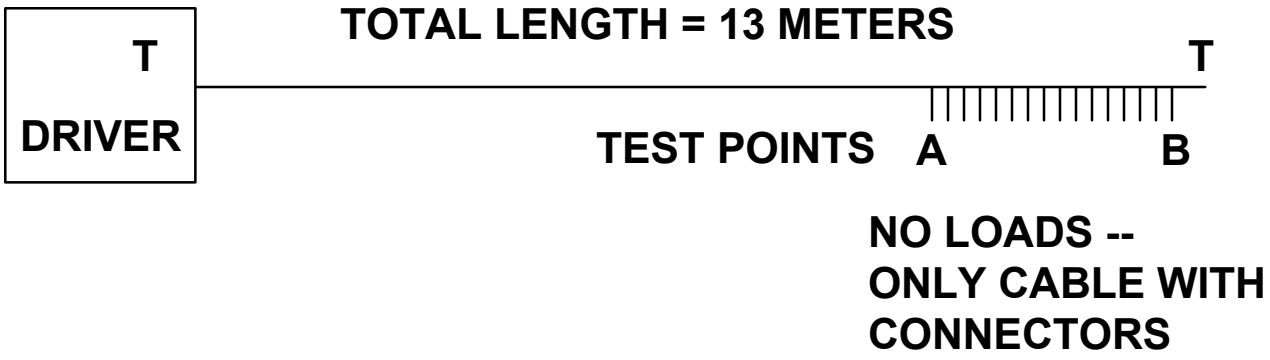
REPEATING DATA PATTERN
10101010111111110101010100000000

TEST POINT B, FAST 60



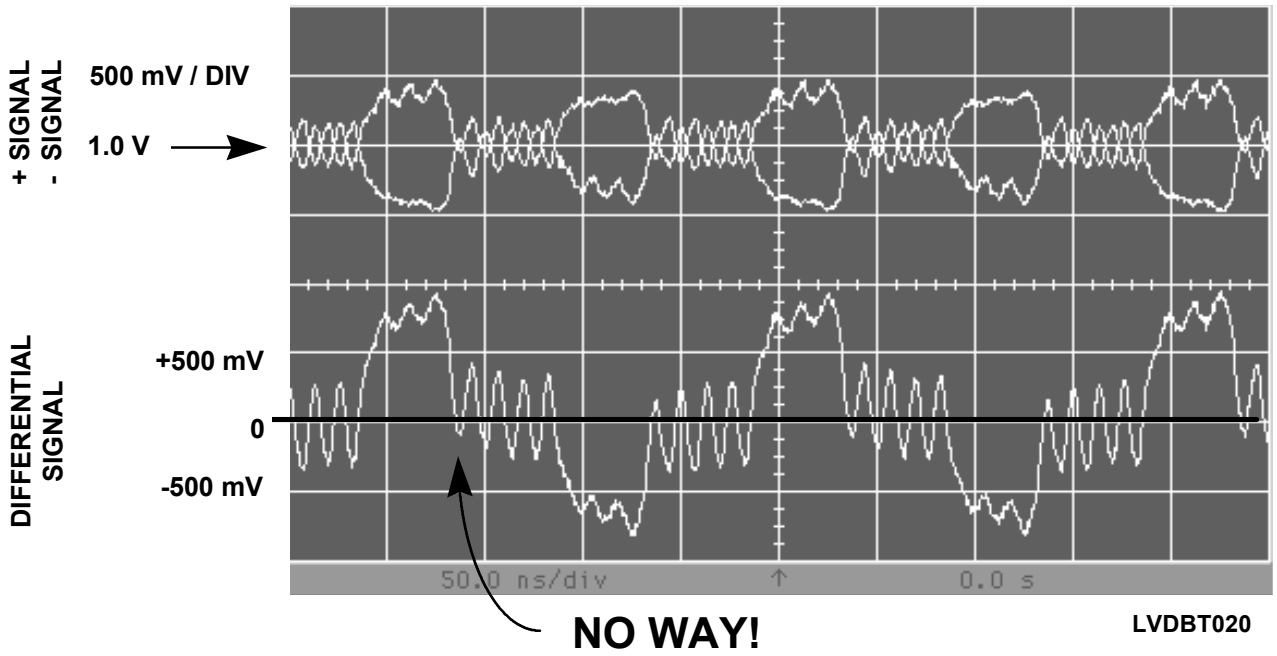
LVDBT018

FAST 40, 80, 100, 150 LVD SCSI
TEST RESULTS WITH ASYMMETRICAL DRIVERS, BIAS TERMINATORS, AND COMPLEX LOADS

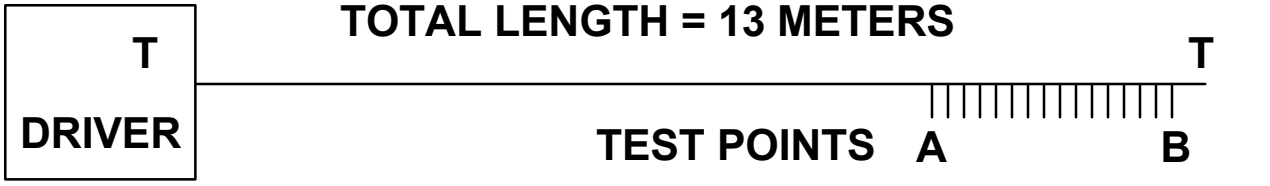


REPEATING DATA PATTERN
10101010111111110101010100000000

TEST POINT B, FAST 80



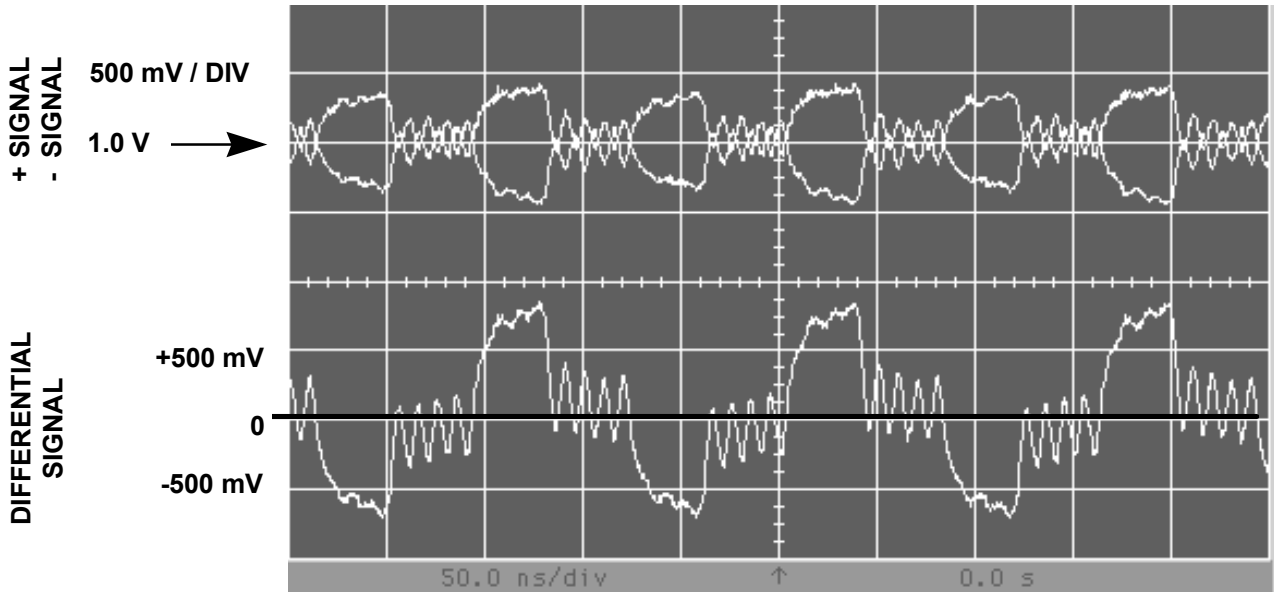
FAST 40, 80, 100, 150 LVD SCSI
TEST RESULTS WITH ASYMMETRICAL DRIVERS, BIAS TERMINATORS, AND COMPLEX LOADS



NO LOADS --
ONLY CABLE WITH CONNECTORS

REPEATING DATA PATTERN
10101010111111110101010100000000

TEST POINT B, FAST 100



LVDBT021

FAST 40, 80, 100, 150 LVD SCSI
TEST RESULTS WITH ASYMMETRICAL DRIVERS, BIAS TERMINATORS, AND COMPLEX LOADS

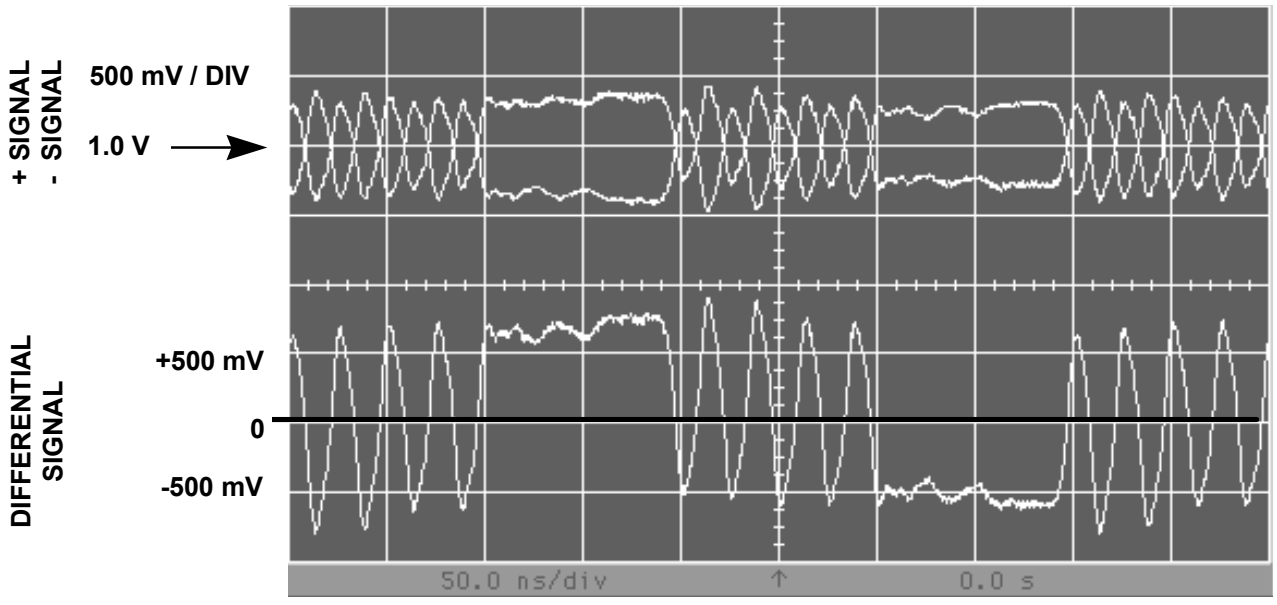
TOTAL LENGTH = 3 METERS

TEST POINTS

20/20/10 pF LOADS
ON 8 CENTERS
(RIBBON CABLE)

REPEATING DATA PATTERN
10101010111111110101010100000000

TEST POINT D, FAST 40



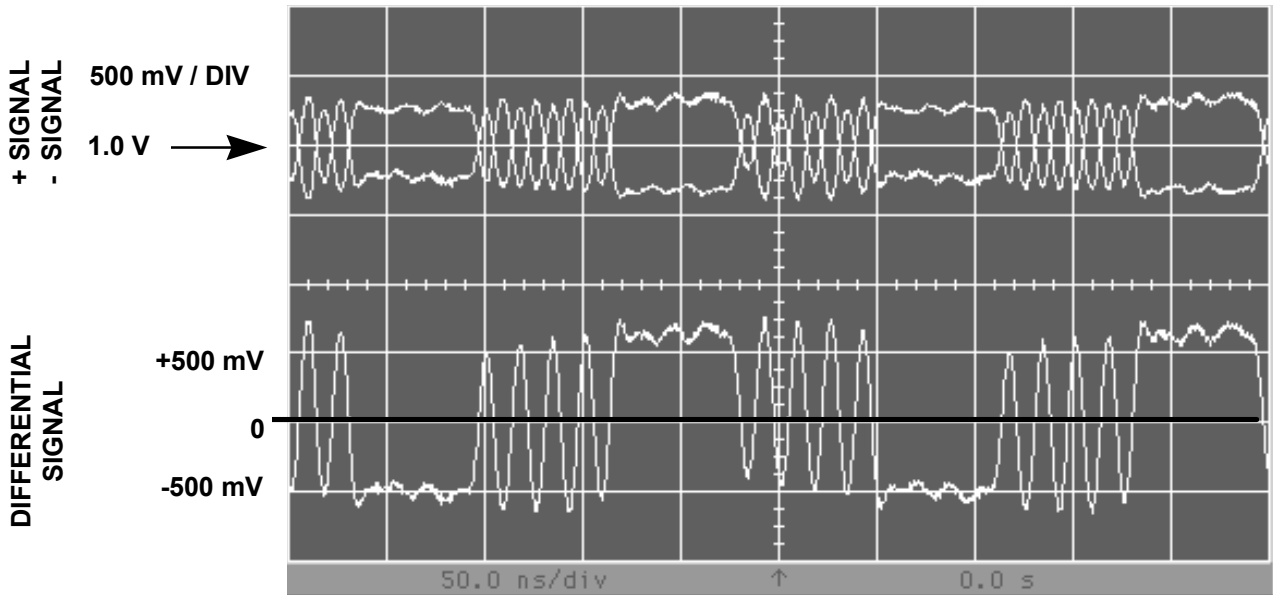
LVDBT031

FAST 40, 80, 100, 150 LVD SCSI
TEST RESULTS WITH ASYMMETRICAL DRIVERS, BIAS TERMINATORS, AND COMPLEX LOADS

20/20/10 pF LOADS
ON 8 CENTERS
(RIBBON CABLE)

REPEATING DATA PATTERN
10101010111111110101010100000000

TEST POINT D, FAST 60



LVDBT033

FAST 40, 80, 100, 150 LVD SCSI
TEST RESULTS WITH ASYMMETRICAL DRIVERS, BIAS TERMINATORS, AND COMPLEX LOADS

TOTAL LENGTH = 3 METERS

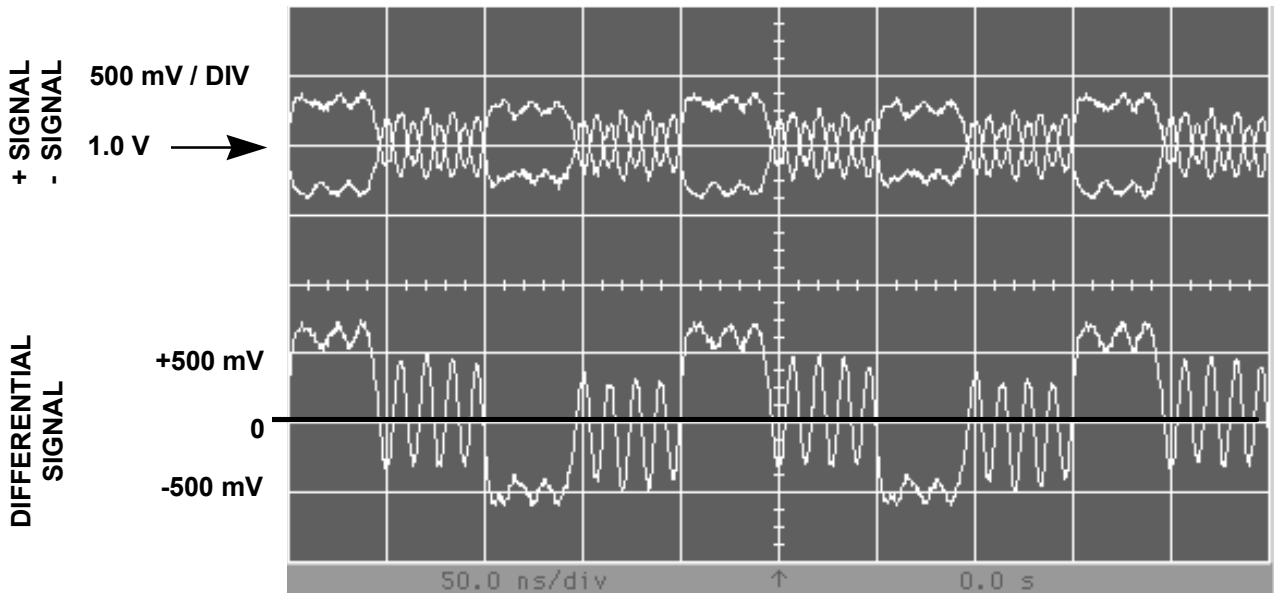
TEST POINTS

20/20/10 pF LOADS
ON 8 CENTERS
(RIBBON CABLE)

REPEATING DATA PATTERN
10101010111111110101010100000000

NOTE: PSEUDO RANDOM PATTERN (NOT SHOWN) WAS NOT QUITE AS GOOD AS THIS

TEST POINT D, FAST 80



LVDBT035

FAST 40, 80, 100, 150 LVD SCSI
TEST RESULTS WITH ASYMMETRICAL DRIVERS, BIAS TERMINATORS, AND COMPLEX LOADS

TOTAL LENGTH = 3 METERS

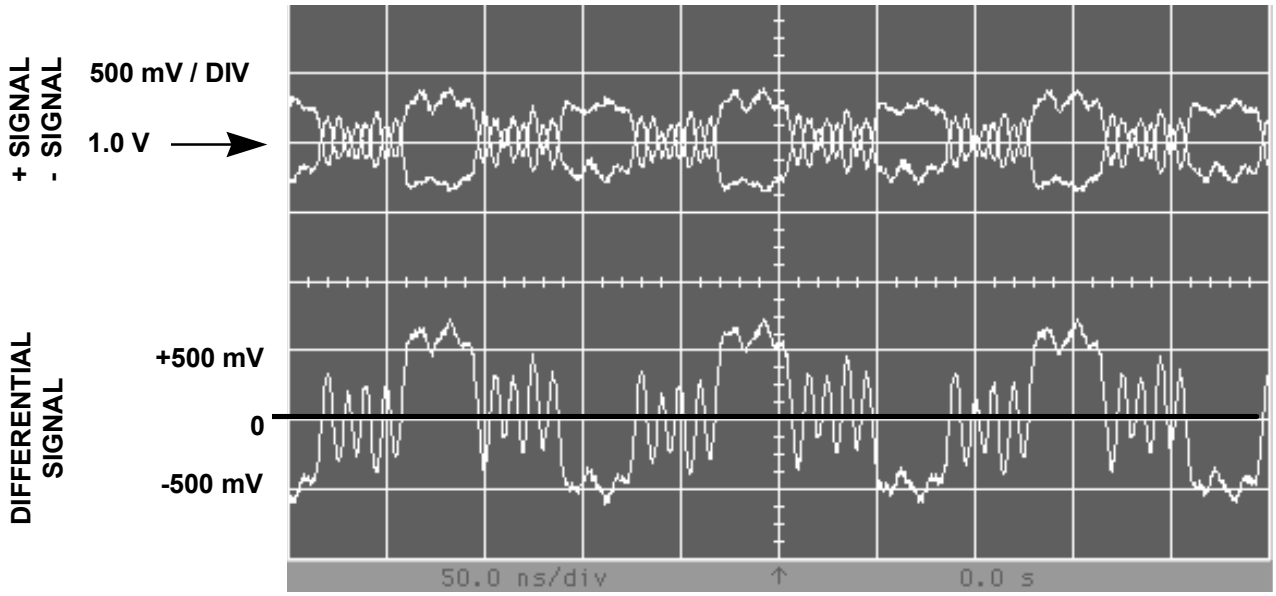
TEST POINTS

20/20/10 pF LOADS
ON 8 CENTERS
(RIBBON CABLE)

REPEATING DATA PATTERN
10101010111111110101010100000000

NOTE: PSEUDO RANDOM PATTERN (SEE NEXT SLIDE) WAS SIGNIFICANTLY WORSE THAN THIS

TEST POINT D, FAST 100



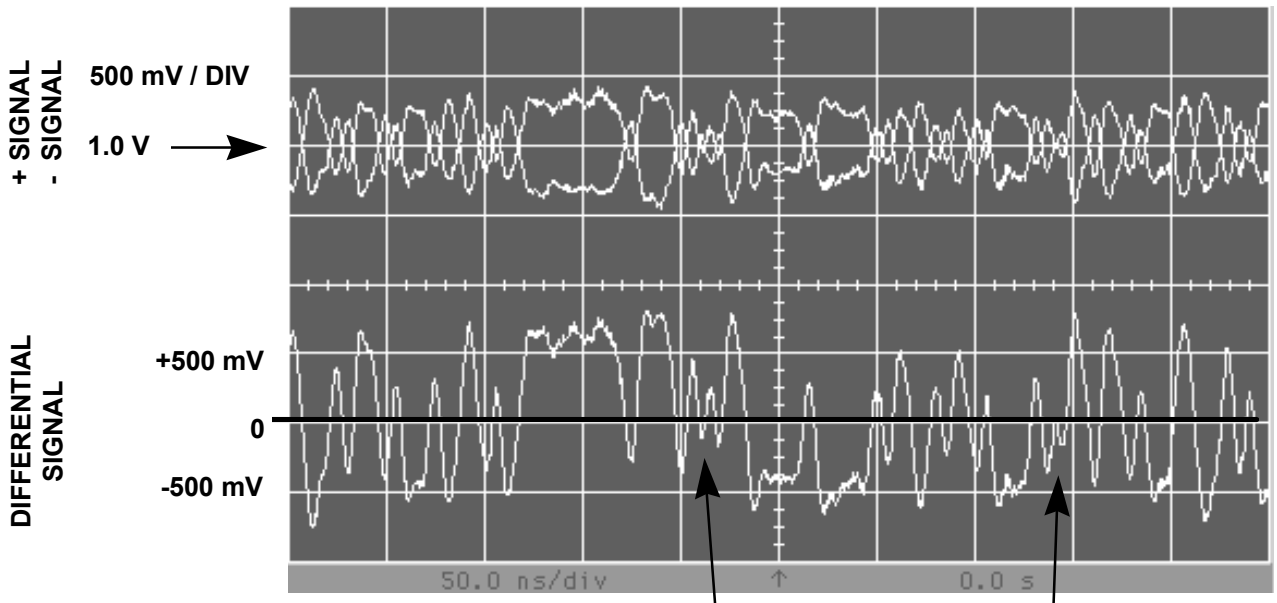
LVDBT037

FAST 40, 80, 100, 150 LVD SCSI
TEST RESULTS WITH ASYMMETRICAL DRIVERS, BIAS TERMINATORS, AND COMPLEX LOADS

20/20/10 pF LOADS
ON 8 CENTERS
(RIBBON CABLE)

PSEUDO RANDOM DATA PATTERN

TEST POINT D, FAST 100



NOTE: SEVERAL VERY POOR SIGNALS

LVDBT040

FAST 40, 80, 100, 150 LVD SCSI
TEST RESULTS WITH ASYMMETRICAL DRIVERS, BIAS TERMINATORS, AND COMPLEX LOADS

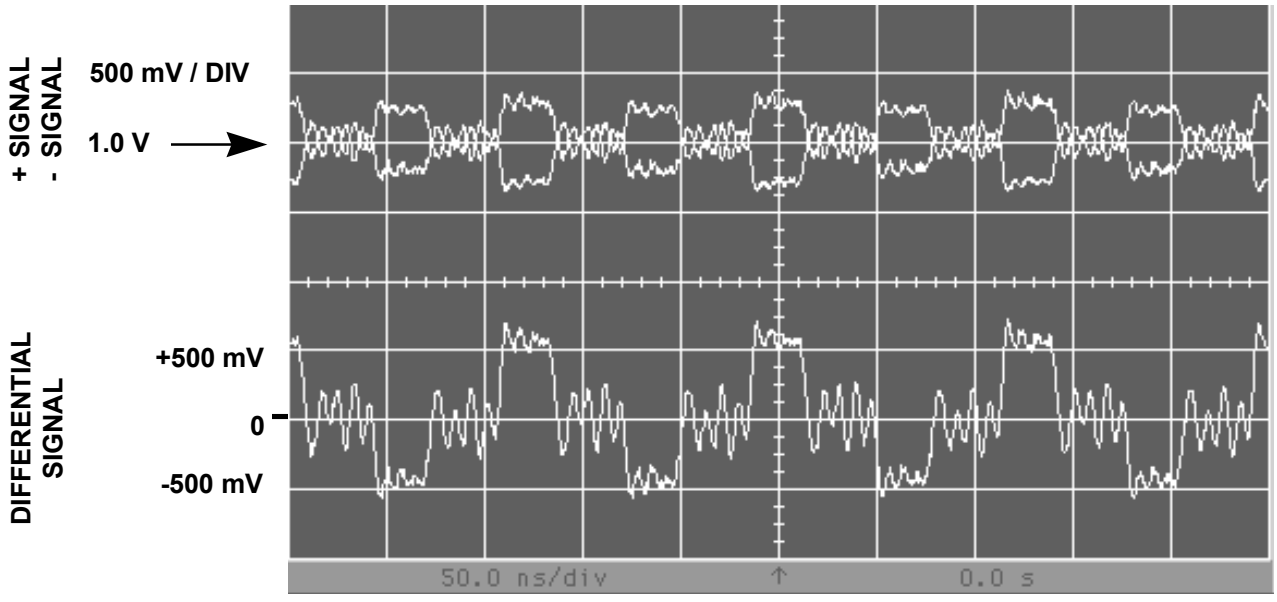
TOTAL LENGTH = 3 METERS

TEST POINTS

20/20/10 pF LOADS
ON 8 CENTERS
(RIBBON CABLE)

REPEATING DATA PATTERN
10101010111111110101010100000000

TEST POINT D, FAST 125



LVDBT038

FAST 40, 80, 100, 150 LVD SCSI
TEST RESULTS WITH ASYMMETRICAL DRIVERS, BIAS TERMINATORS, AND COMPLEX LOADS

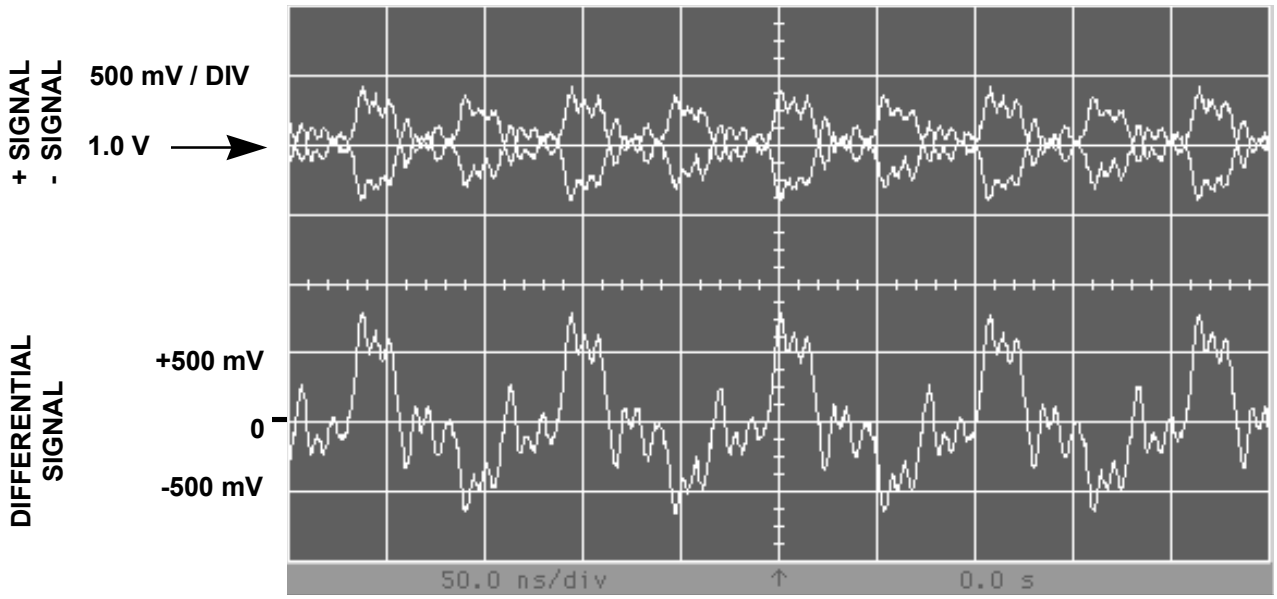
TOTAL LENGTH = 3 METERS

TEST POINTS

20/20/10 pF LOADS
ON 8 CENTERS
(RIBBON CABLE)

REPEATING DATA PATTERN
10101010111111110101010100000000

TEST POINT D, FAST 150



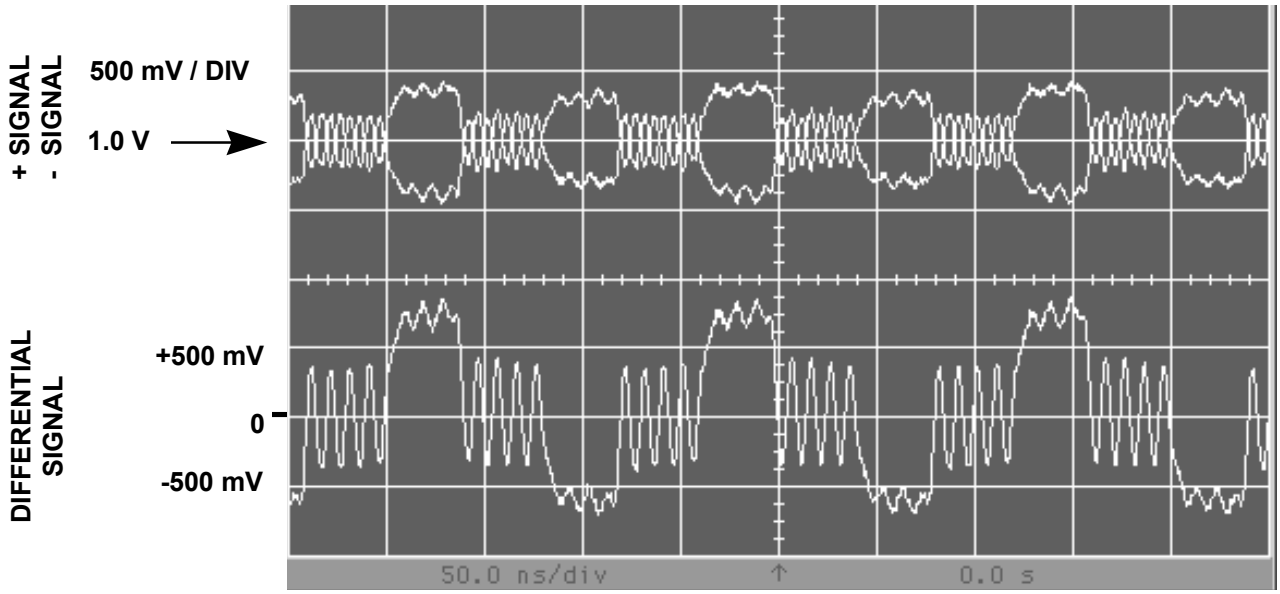
LVDBT039

FAST 40, 80, 100, 150 LVD SCSI
TEST RESULTS WITH ASYMMETRICAL DRIVERS, BIAS TERMINATORS, AND COMPLEX LOADS

NO LOADS --
CONNECTORS ONLY
ON 8 CENTERS
(RIBBON CABLE)

REPEATING DATA PATTERN
10101010111111110101010100000000

TEST POINT D, FAST 100



LVDBT028

FAST 40, 80, 100, 150 LVD SCSI
TEST RESULTS WITH ASYMMETRICAL DRIVERS, BIAS TERMINATORS, AND COMPLEX LOADS

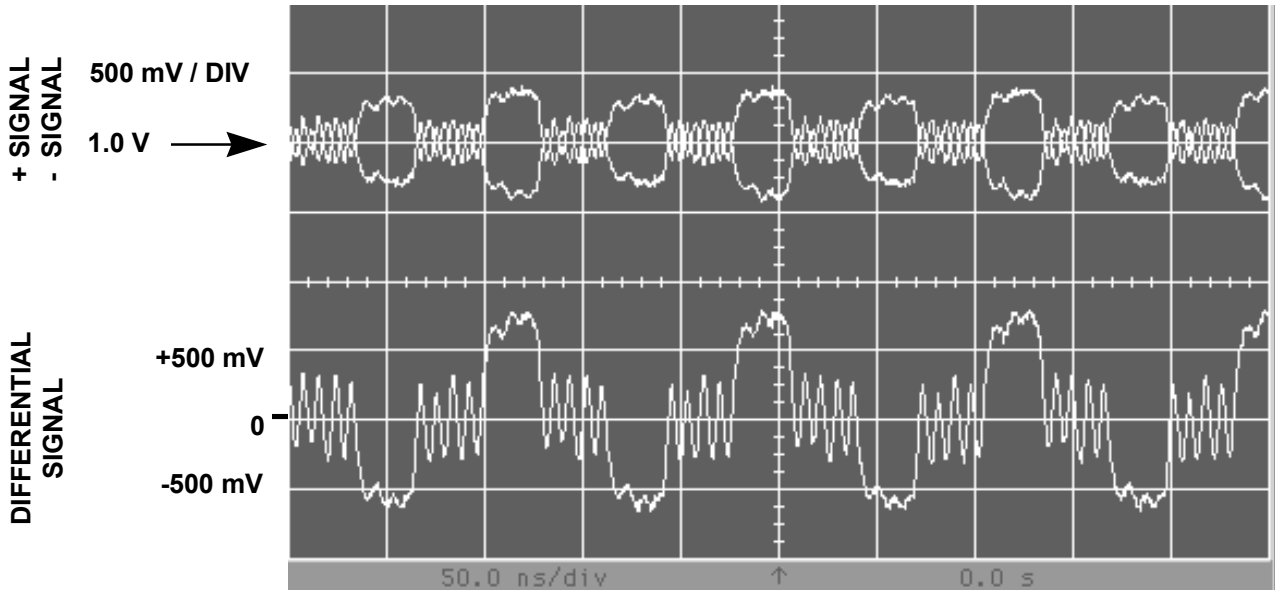
TOTAL LENGTH = 3 METERS

TEST POINTS

NO LOADS --
CONNECTORS ONLY
ON 8 CENTERS
(RIBBON CABLE)

REPEATING DATA PATTERN
10101010111111110101010100000000

TEST POINT D, FAST 125



LVDBT029

FAST 40, 80, 100, 150 LVD SCSI
TEST RESULTS WITH ASYMMETRICAL DRIVERS, BIAS TERMINATORS, AND COMPLEX LOADS

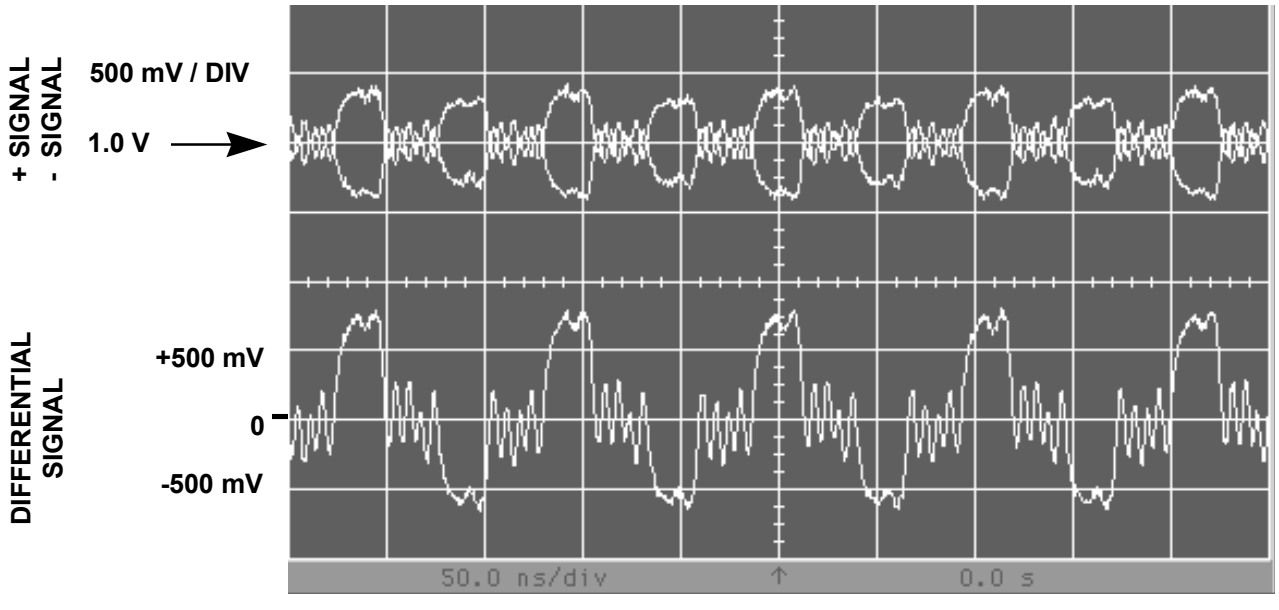
TOTAL LENGTH = 3 METERS

TEST POINTS

NO LOADS --
CONNECTORS ONLY
ON 8 CENTERS
(RIBBON CABLE)

REPEATING DATA PATTERN
10101010111111110101010100000000

TEST POINT D, FAST 150



LVDBT030