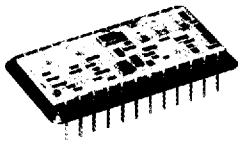
DDC
ILC DATA DEVICE CORPORATION

F-75-45-09

BUS-8559

VARIABLE OUTPUT MIL-STD-1553 TRANSCEIVER



DESCRIPTION AND APPLICATIONS

Designed specifically for use in automatic test equipment when a variable transmitter output level is required, the DDC Model BUS-8559 Transceiver is a complete transmitter and receiver conforming to MIL standards 1553A and 1553B. The receiver section accepts phase-modulated bipolar data at the input and produces a bi-phase TTL signal at the output (Figure 1). The outputs, DATA and $\overline{\text{DATA}}$, represent positive and negative excursions of the input beyond an internally fixed threshold. These positive and negative thresholds are internally set at the factory for a nominal 1V p-p signal, measured at point "A", Figure 2. An external strobe input is provided to allow the removal of the receiver from the line. A logic "0" applied to "STROBE" will disable the receiver output.

The BUS-8559 transmitter section accepts bi-phase TTL data at the input and produces a 0 to 27 volt nominal p-p differential signal across the 145Ω load, when measured at point "B", Figure 2. When coupled to the data bus with the specified transformer*, isolated (on the data side) with two 55.0Ω fault isolation resistors, and loaded by two 70Ω terminations (plus additional receivers), the data bus signal produced is 0 to 7.5 volts nominal p-p measured at point "A" (Figure 2).

When both DATA and $\overline{\text{DATA}}$ inputs are held low or high, the transmitter presents a high impedance to the line. An external inhibit input is provided to allow the removal of the transmitter output from the line (Figure 3). A logic "1" applied to the "INHIBIT" takes priority over the condition of the data inputs and disables the transmitter.

The transceiver is available in a 24 pin hybrid package measuring 1.4 x 0.8 x 0.2 inch, and can be used in any MIL-STD-1553 application which requires the use of a transceiver.

*Transformer P/N BUS-25679. See Mechanicals.

FEATURES

- *VARIABLE TRANSMITTER OUTPUT*
- *TRANSMITTER/RECEIVER IN A SINGLE 24 PIN DDIP HYBRID*
- *VERY LOW POWER DISSIPATION*
- *MEETS MIL-STD-1553A AND 1553B*
- *IMPROVED FILTERING ON RECEIVER TO ENHANCE BIT ERROR RATE OF SYSTEM*
- *±15V OR +15 AND −12V OPERATION*

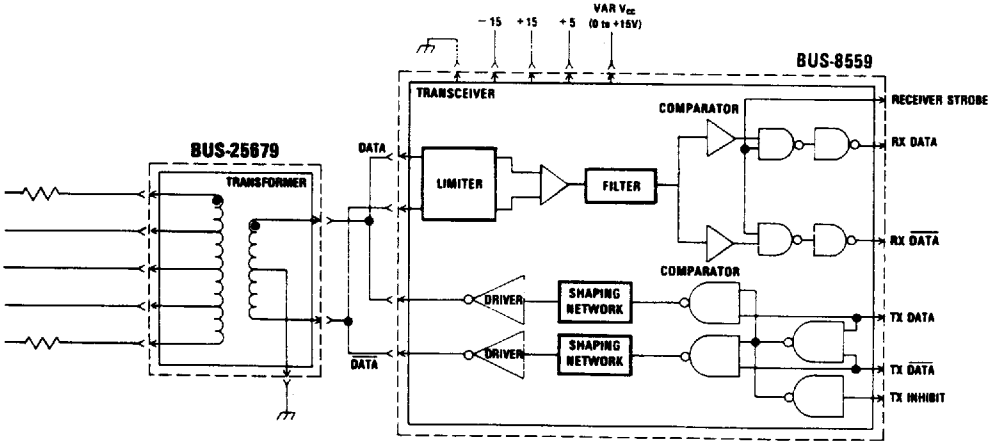


FIGURE 1. BLOCK DIAGRAM

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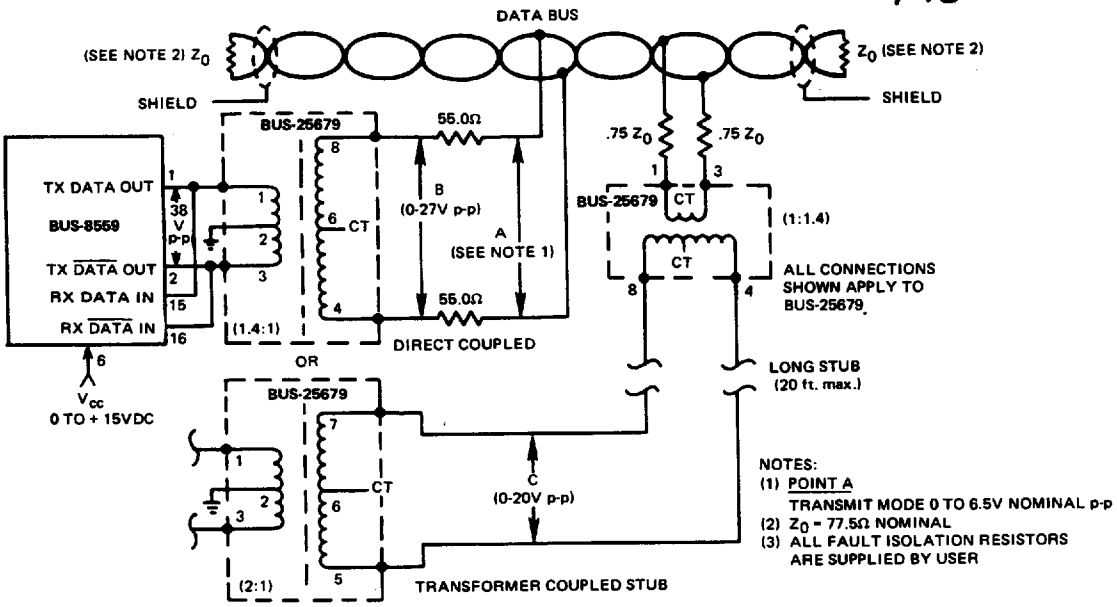
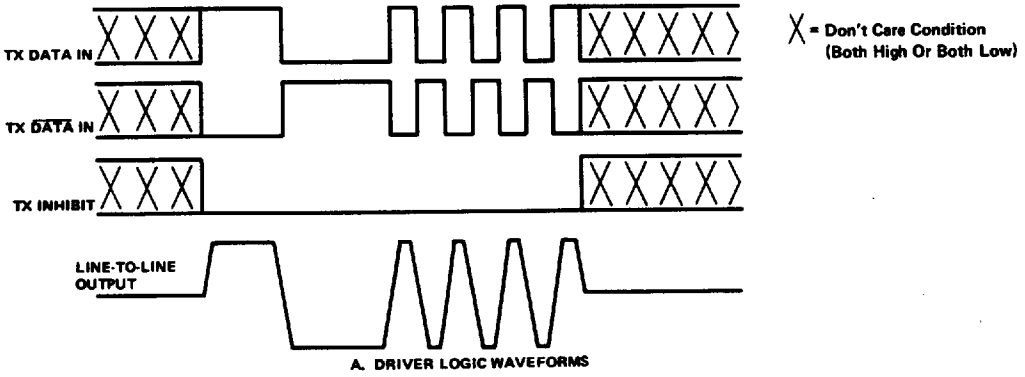
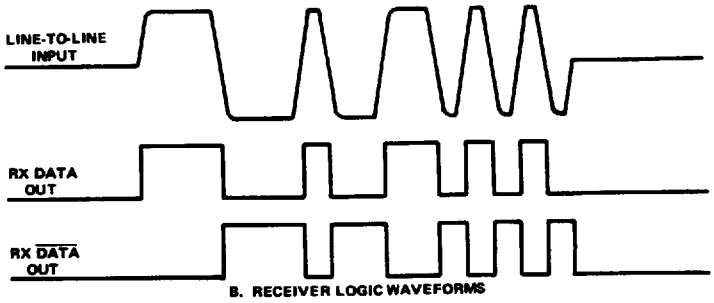


FIGURE 2. TYPICAL TRANSFORMER CONNECTIONS

CAUTION: Complementary inputs on TX and $\overline{TX}$ for more than 10 seconds may cause permanent damage at high temperatures due to high power dissipation by output drivers.



A. DRIVER LOGIC WAVEFORMS



B. RECEIVER LOGIC WAVEFORMS

NOTE 1) RX DATA and $\overline{RX\ DATA}$ lines are low when BUS-8553 is not receiving.
2) When BUS-8559 is used with Harris HD-15530, CMOS Manchester Encoder-Decoder no external logic is required.

FIGURE 3. LOGIC WAVEFORMS

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ILC DATA DEVICE CORPORATION

BUS-8559

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SPECIFICATIONS-TRANSFORMER AND BUS-8559 HYBRID

PARAMETER	VALUE
RECEIVER	
Input Level	40V p-p differential max
Input Impedance	4 KΩ differential min
Threshold Level	1V p-p nominal, internally set (direct coupled mode)
Output Level	TTL, 10 LS Loads
Outputs:	
V_{OL}	0.6V max
V_{OH}	2.5V min
I_{OL}	4mA max
I_{OH}	−400 μA max
TRANSMITTER	
Input Level	TTL, 2 LS Loads
Inputs:	
V_{ih}	2V min
V_{il}	0.8V max
I_{ih}	80 μA max
I_{il}	−3.2mA max
Output Level	0 to 27V p-p nominal across 145Ω load 0 to 20V p-p nominal (measured at point C, Figure 2)
Rise/Fall Time	130 nsec typical
Output Noise	10mV p-p differential max
Variable Vcc	0 to +15V DC

GENERAL

Power Supply Requirements

P.S.	STDBY	25%	100%
V	mA	mA	mA
+5	25 max	22 max	21 max
+15	30 max	30 max	30 max
-15	30 max	30 max	30 max
V_{cc}	0	70	180

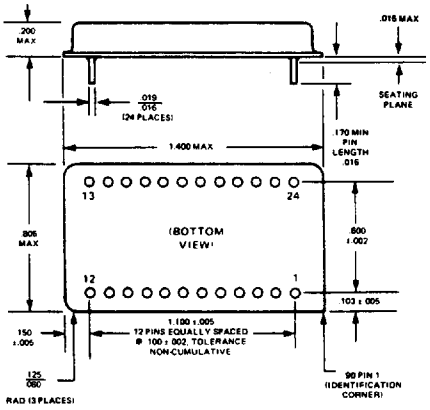
Operating Temperature Range	−55°C to +125°C (case temp.)
Storage Temperature Range	−55°C to +135°C
Size (24pin DDIP hybrid)	1.4 x 0.8 x 0.2 inch (36 x 20 x 5mm)
Weight	0.4 oz typ (11g)

NOTES: (1) Will operate with ±12V P.S.

BUS-8559 PIN CONNECTION TABLE

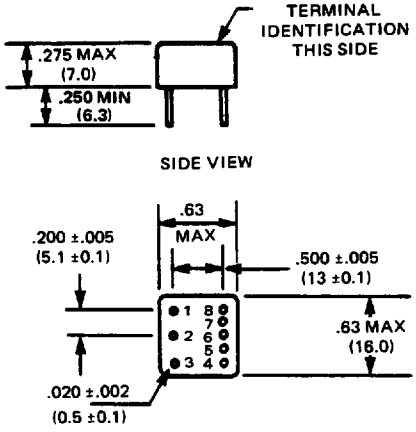
PIN	FUNCTION
1	TX Data Out
2	TX $\overline{\text{Data}}$ Out
3	GND
4	N.C.
5	N.C.
6	Variable Vcc
7	RX Data Out
8	Strobe
9	GND
10	RX $\overline{\text{Data}}$ Out
11	N.C.
12	N.C.
13	+15V DC
14	N.C.
15	RX Data In
16	RX $\overline{\text{Data}}$ In
17	N.C.
18	GND
19	−15VDC
20	+5VDC
21	TX Inhibit
22	TX Data In
23	TX $\overline{\text{Data}}$ In
24	N.C.

MECHANICAL OUTLINE
24 Pin Double DIP



NOTES
1. Dimensions shown are in inches
2. Lead identification numbers are for reference only
3. Lead cluster shall be centered within ±0.10 of outline dimensions. Lead spacing dimensions apply only at seating plane
4. Pin material meets solderability requirements of MIL-STD-202E, Method 208C

MECHANICAL OUTLINE
TRANSFORMER (P/N BUS-25679)



NOTES:
1. All dimensions are in inches(millimeters)
2. Pin callouts on bottom view are for reference only

ORDERING INFORMATION

BUS − 8559 − B

Reliability Grade:

B = Screened to MIL-STD-883 but without QCI testing.
Blank = Standard DDC procedures.

TRANSFORMER: BUS-25679

NOTE: The transceiver and transformer must be ordered as separate parts.

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