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Mil-Std-1553 Products
NHI-1523 Series
+12V Dual Transceivers

Features/Applications:

- Very Low Standby Power
- Low Thermal Resistance
- Totally Isolated Channels
- Short Circuit Proof
- Superior Noise Performance

Description:

The NHI +12V dual transceivers are available in 1.900" x .780", 36 pin plug-in and flatpack packages.

Each receiver converts the 1553 bus bi-phase data to complementary RX and RX_L TTL digital outputs for use by the manchester decoder. The device provides independent receiver enables for each channel. Devices are available with receiver outputs normally HIGH or LOW during standby mode for compatibility with industry standard decoders.

The transmitters will output bi-phase manchester to the coupling transformer when the TX and TX_L inputs are driven by complementary TTL digital data. The device provides an independent transmitter inhibit TXINH for each channel.

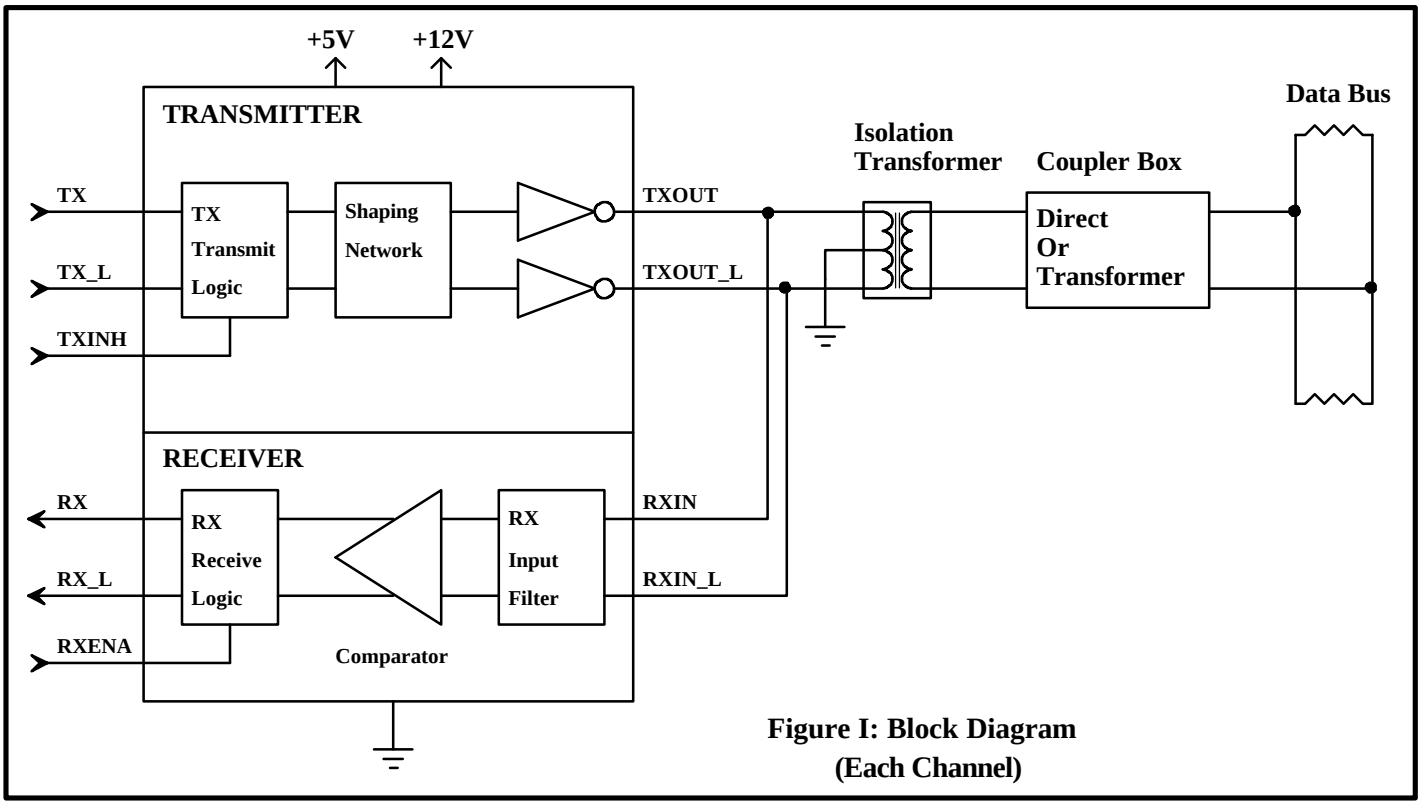

Figure I: Block Diagram
(Each Channel)

NHI-1523

TABLE I: Electrical Specifications

Parameter	Condition	Symbol	Min	Typ	Max	Units
POWER SUPPLY		Vcc	4.7		5.5	V
REQUIREMENTS		+V	11.4		12.6	V
V_{CC} SUPPLY CURRENT	Vcc=5.0V, +V=12.0V, total hybrid	Icc			25	mA
+V SUPPLY CURRENT	Vcc=5.0V, +V=12.0V, each channel, not transmitting	+I			25	mA
	Vcc=5.0V, +V=12.0V, One channel @ 100% duty cycle	$+I_{100\%}$			210	mA
POWER DISSIPATION	Vcc=5.0V, +V=12.0V, Transmit one channel @ 100% duty cycle	Pd2			0.96	W
OPERATING	Junction	Tj	-55		160	°C
TEMPERATURES	Case	Tc	-55		125	°C
	Storage	Ts	-65		150	°C
THERMAL IMPEDANCE	Junction to Case	θjc			8.8	°C/W
LOGIC I/O						
RXENA_A, TXA, TXA_L,	Vcc= 5.5V, Vil= 0.0V	Iil			-0.8	mA
TXINH_A, RXENA_B, TXB, TXB_L, TXINH_B	Vcc= 4.5V, Vih= 2.7V	Iih			40	uA
RXA, RXA_L, RXB, RXB_L	Vcc= 5.5V, Iol= -8 mA	Vol			0.5	V
	Vcc= 4.5V, Ioh= 400 uA	Voh	2.5			V
RECEIVER						
Input Resistance	1 MHz sine wave	Rin	7			k Ω
Input Capacitance	1 MHz sine wave	Cin			5	pF
Common Mode Rejection Ratio		CMRR	40			dB
Threshold Voltage	Differential	Vth	0.56		1.0	Vpp
Input Level	Differential	Vin	40			Vpp
Receiver Delay	Zero Crossing on bus to RX or RX_L	t_{RD}			400	nS
TRANSMITTER						
Output Voltage	Across 35 W load TXVOC = +V = 12.0V	V_{OUT}	6		9	Vpp
Rise/Fall Time	10% to 90% of peak to peak output	t_R , t_F	100	150	300	nS
Transmitter Delay	TX or TX_L edge to bus zero crossing	t_{TD}			250	nS
Output Dynamic Offset Voltage	Across 35 W load	Vdyn	-90		90	mV
Output Noise	Differential	Vnpp			10	mVpp
Output Resistance	Differential, not transmitting	Rout	10			kΩ

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36 Pin Package Functions			
Pin#	**Function**	**Pin#**	**Function**
1	TXOUT_A	36	TXA_L
2	TXOUT_A_L	35	TXA
3	GND_A	34	TXINH_A
4	NC	33	+5V_A
5	RXA	32	NC
6	RXENA_A	31	NC
7	GND_A	30	RXIN_A_L
8	RXA_L	29	RXIN_A
9	NC	28	+12V_A
10	TXOUT_B	27	TXB_L
11	TXOUT_B_L	26	TXB
12	GND_B	25	TXINH_B
13	NC	24	+5V_B
14	RXB	23	NC
15	RXENA_B	22	NC
16	GND_B	21	RXIN_B_L
17	RXB_L	20	RXIN_B
18	NC	19	+12V_B

Transformer Requirements:

The NHI-1523 requires a transformer with a turns ratio of 1.25:1.00 for Direct Coupling, and a turns ratio of 1.66:1.00 for Transformer Coupling to the Mil-Std-1553 Bus. Please contact Beta Transformer (www.bttc-beta.com) for a recommended transformer. The center tap on the transceiver side of the isolation transformer must be grounded.

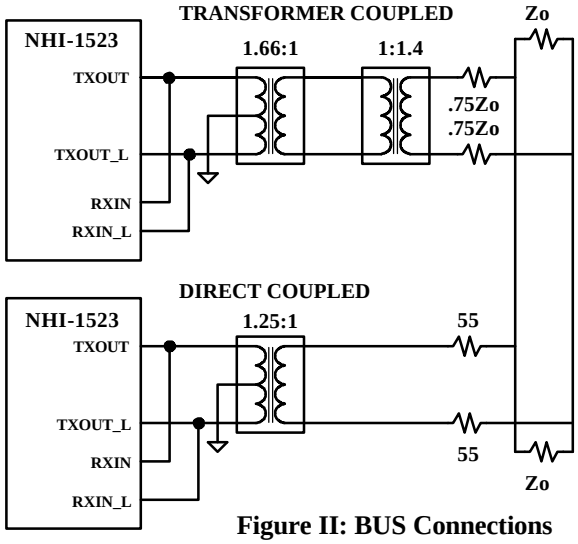
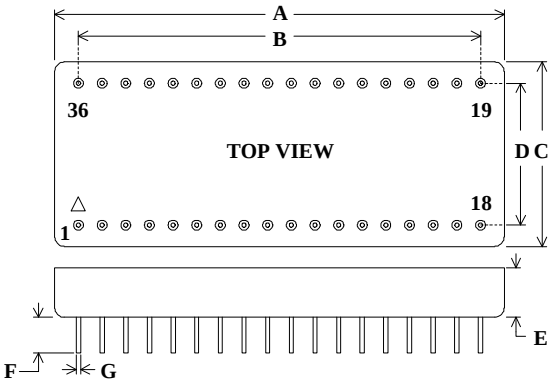
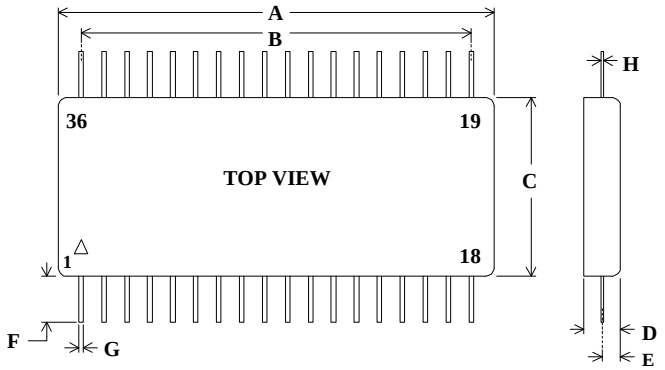


Figure II: BUS Connections



36 Pin Plug-In Package Detail

DIM	TYP (inches)	TOL (+/- inches)
A	1.900 SQ	0.010
B	17 EQ SP @	0.100 = 1.700
C	0.780	0.010
D	0.600	0.010
E	0.185	0.010
F	0.250	MIN
G	0.018	0.002

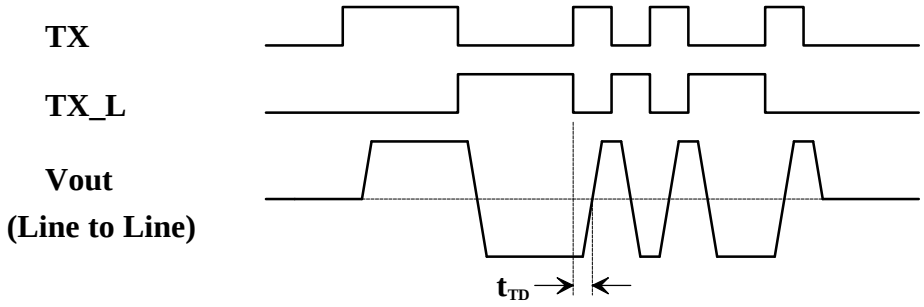


36 Pin Flatpack Package Detail

DIM	TYP (inches)	TOL (+/- inches)
A	1.900 SQ	0.010
B	17 EQ SP @	0.100 = 1.700
C	0.780	0.010
D	0.185	0.012
E	0.080	0.010
F	0.500	MIN
G	0.018	0.002
H	0.010	0.002

NHI-1523

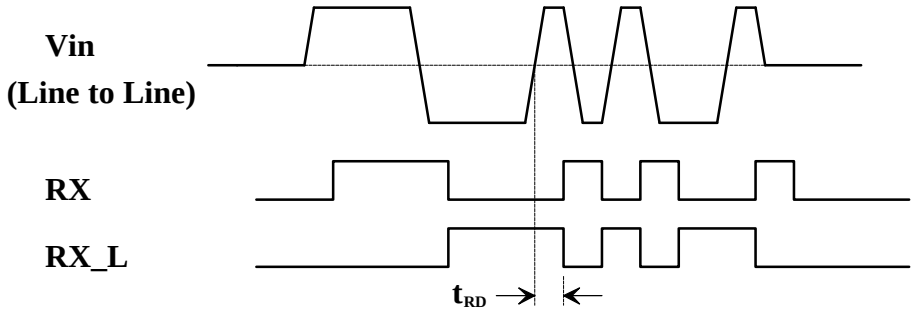
Transmit Waveforms



Transmitter Operation:

A high level input on TXINH will inhibit the transmitter outputs. If the TX & TX_L transmitter inputs are both high or both low, the transmitter is also inhibited.

Receive Waveforms



Receiver Operation:

A low level input on RXENA will disable the receiver outputs RX & RX_L regardless of bus activity.

The receiver output compatibility may be specified as logic 0 or logic 1 when in standby mode.

**** See Ordering Information**

Ordering Information:

NHI-1523 FP / M

Reliability Grade

883 = Fully Compliant with Mil-Std-883
M = Military, -55 to +125 °C
Blank = Industrial, -40 to +85 °C

Package Style

Blank = Plug-In
FP = Flatpack

Decoder Compatibility

22 = RX & RX_L, Standby = Logic 1
23 = RX & RX_L, Standby = Logic 0

**** SMD Listing: DESC Drawing# 5962-89826**

See QML-38534 for NHI's Manufacturer Qualification Under Mil-PRF-38534

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ISO 9001:2008, AS9100C:2009-01
EN9100:2009, JIS Q9100:2009
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