

**Description:**

# NHI-1579 Series

**TABLE I: Electrical Specifications**

| Parameter                                                        | Condition                                        | Symbol                          | Min | Typ | Max  | Units |
|------------------------------------------------------------------|--------------------------------------------------|---------------------------------|-----|-----|------|-------|
| <b>POWER SUPPLY REQUIREMENT</b>                                  |                                                  | Vcc                             | 4.5 |     | 5.5  | V     |
| <b>TOTAL SUPPLY CURRENT</b>                                      | Vcc=5.0V, Not Transmitting                       | Icc1                            |     | 70  | 80   | mA    |
|                                                                  | Vcc=5.0V, Transmit one channel @ 50% duty cycle  | Icc2                            |     | 320 | 340  | mA    |
|                                                                  | Vcc=5.0V, Transmit one channel @ 100% duty cycle | Icc3                            |     | 570 | 615  | mA    |
| <b>POWER DISSIPATION</b>                                         | Vcc=5.0V, Not Transmitting                       | Pd1                             |     |     | 0.4  | W     |
|                                                                  | Vcc=5.0V, Transmit one channel @ 100% duty cycle | Pd2                             |     |     | 0.95 | W     |
| <b>OPERATING TEMPERATURES</b>                                    | Junction                                         | Tj                              | -55 |     | 165  | °C    |
|                                                                  |                                                  | Tc                              | -55 |     | 125  | °C    |
|                                                                  | Storage                                          | Ts                              | -55 |     | 165  | °C    |
| <b>THERMAL IMPEDANCE</b>                                         | Junction to Case                                 | qjc                             |     |     | 4    | °C/W  |
| <b>LOGIC I/O</b>                                                 |                                                  |                                 |     |     |      |       |
| RXENA_A, TXA, TXA_L,<br>TXINH_A, RXENA_B, TXB,<br>TXB_L, TXINH_B | Vcc= 5.5V, Vil= 0.0V                             | Iil                             |     |     | -0.4 | mA    |
|                                                                  | Vcc= 4.5V, Vih= 2.7V                             | Iih                             |     |     | 20   | uA    |
| RXA, RXA_L, RXB, RXB_L                                           | Vcc= 5.5V, Iol= -4mA                             | Vol                             |     |     | 0.4  | V     |
|                                                                  | Vcc= 4.5V, Ioh= 400 uA                           | Voh                             | 2.7 |     |      | V     |
| <b>RECEIVER</b>                                                  |                                                  |                                 |     |     |      |       |
| Input Resistance                                                 | Differential                                     | Rin                             | 20  |     |      | k W   |
| Input Capacitance                                                | Differential                                     | Cin                             |     |     | 5    | pF    |
| Common Mode Rejection Ratio                                      |                                                  | CMRR                            | 40  |     |      | dB    |
| Input Level                                                      | Differential                                     | Vin                             |     |     | 40   | Vpp   |
| Receiver Delay                                                   | Zero crossing on bus to RX or RX_L               | t <sub>RD</sub>                 |     | 250 | 350  | nS    |
| <b>TRANSMITTER</b>                                               |                                                  |                                 |     |     |      |       |
| Output Voltage                                                   | Across 140 W load                                | V <sub>out</sub>                | 29  |     | 36   | Vpp   |
| Rise/Fall Time                                                   | 10% to 90% of peak to peak output                | t <sub>r</sub> , t <sub>f</sub> | 100 | 150 | 300  | nS    |
| Transmitter Delay                                                | TX or TX_L edge to bus zero crossing             | t <sub>TD</sub>                 |     | 125 | 150  | 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    |

# NHI-1579 Series

Table II: Pin 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   | GND_A    |
| 7    | GND_A     | 30   | RXIN_A_L |
| 8    | RXA_L     | 29   | RXIN_A   |
| 9    | NC        | 28   | NC       |
| 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   | GND_B    |
| 16   | GND_B     | 21   | RXIN_B_L |
| 17   | RXB_L     | 20   | RXIN_B   |
| 18   | NC        | 19   | NC       |

## Transformer Requirements:

The NHI-1579 series requires a transformer with a turns ratio of 1:2.5 for Direct Coupling, and a turns ratio of 1:1.79 for Transformer Coupling to the Mil-Std-1553 Bus. Technitrol part number Q1553-45 or equivalent is recommended. The center tap on the transceiver side of the isolation transformer must be grounded.

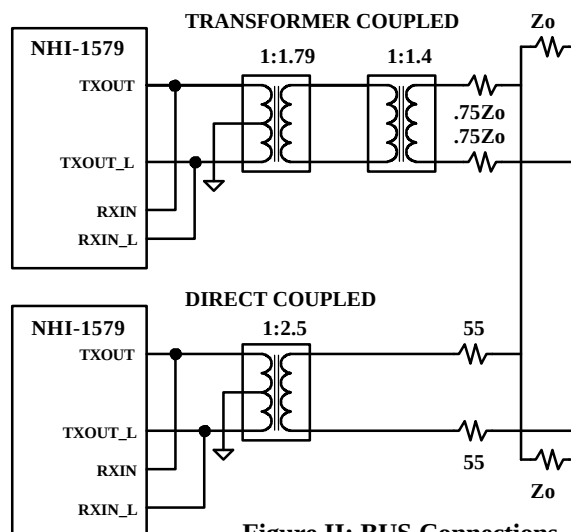
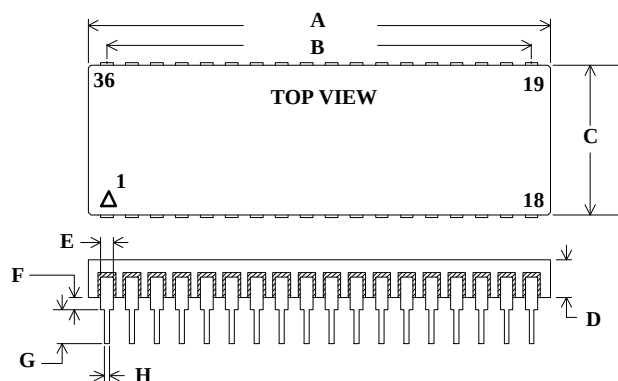
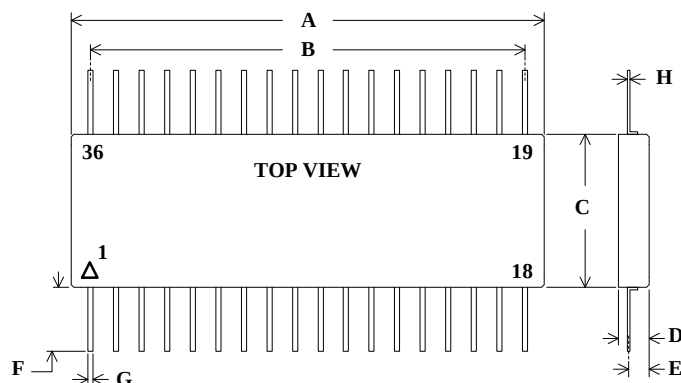


Figure II: BUS Connections



| DIM | TYP (inches) | TOL (+/- inches) |
|-----|--------------|------------------|
| A   | 1.850 SQ     | 0.015            |
| B   | 17 EQ SP @   | 0.100 = 1.700    |
| C   | 0.600        | 0.010            |
| D   | 0.140        | MAX              |
| E   | 0.050        | 0.002            |
| F   | 0.050        | 0.010            |
| G   | 0.150        | MIN              |
| H   | 0.018        | 0.002            |

36 Pin Ceramic Plug-In Package Detail

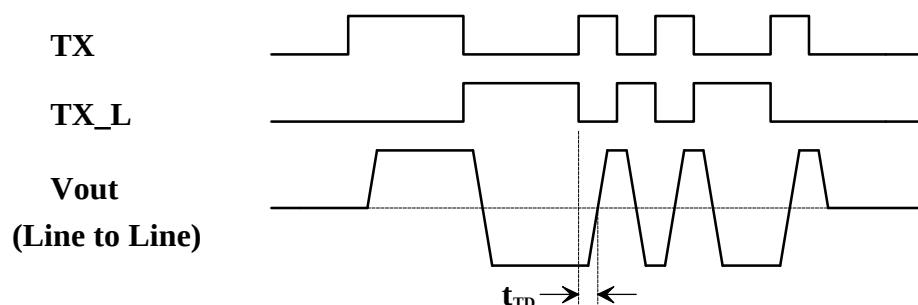


| DIM | TYP (inches) | TOL (+/- inches) |
|-----|--------------|------------------|
| A   | 1.850 SQ     | 0.015            |
| B   | 17 EQ SP @   | 0.100 = 1.700    |
| C   | 0.600        | 0.010            |
| D   | 0.120        | 0.012            |
| E   | 0.080        | 0.010            |
| F   | 0.500        | MIN              |
| G   | 0.018        | 0.002            |
| H   | 0.010        | 0.002            |

36 Pin Ceramic Flatpack Package Detail

# NHI-1579 Series

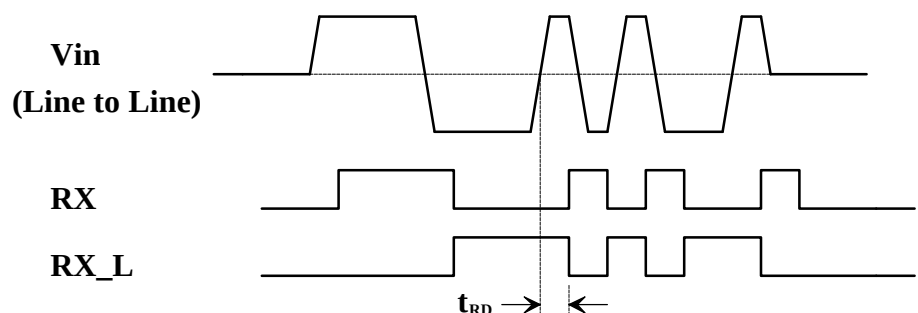
## Transmit Waveforms



## 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. The output drivers are short circuit protected and the device will "fold back" to decrease power dissipation under this condition until the fault is removed.

## 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-1579 FP / 883

### Reliability Grade

883 = Fully Compliant with Mil-Std-883

M = Screened to Mil-Std-883, -55 to +125 °C

Blank = Industrial, -40 to +85 °C

### Package Style

Blank = Plug-In

FP = Flatpack

### Transceiver Type and Decoder Compatibility

78 = MacAir, RX & RX\_L, Standby = Logic 0

79 = Mil-Std-1553, RX & RX\_L, Standby = Logic 0

80 = Mil-Std-1553, RX & RX\_L, Standby = Logic 1

81 = MacAir, RX & RX\_L, Standby = Logic 1

**\*\* SMD Listing: DESC Drawing# 5962-92061**

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