"TnT" - Thinnet Transceiver

Complete "On-Board" Thinnet Solution

HALO
ELECTRONICS, INC.

RoHS Compliant

Conflict FREE

✓ REACH
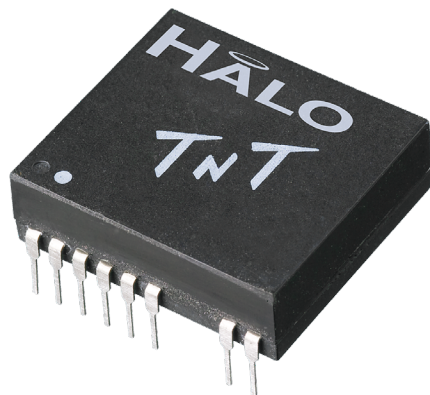
Product Features:

- Compliant with ANSI/IEEE802.3 and ISO8802-3 Standards for Thin Net
- Low Power Transceiver Chip and High Efficiency DC/DC Converter.
- Contains all Thin Net Transceiver Functions in a Single 20-pin Package.
- Squelch Circuits on All Signal Inputs to Eliminate Noise
- Heartbeat Function Enable/Disable
- Wide Variety of Input Voltages

Part Number	Input Voltage	Vee Ripple (Max. @ 20MHz)	Input Current (max)	Operating Temp.	Storage Temp.	Enable Feature
MD-001HRL	5V ±5%	100mVpp	225mA	0 to 70°C	-40 to +125°C	No
MD-002HRL	5V ±5%	100mVpp	235mA	0 to 70°C	-40 to +125°C	Yes
MD-003HRL	3.3V ±5%	100mVpp	340mA	0 to 70°C	-40 to +125°C	No
MD-004HRL	3.3V ±5%	100mVpp	340mA	0 to 70°C	-40 to +125°C	Yes
MD-012HRL	12V ±5%	100mVpp	110mA	0 to 70°C	-40 to +125°C	No
MD-013HRL	12V ±5%	100mVpp	115mA	0 to 70°C	-40 to +125°C	Yes
MDQ-001HRL	5V ±5%	40mVpp	225mA	0 to 70°C	-40 to +125°C	No

Notes:
1. Please contact the factory or representative for individual datasheets or additional information.
2. Surface mount options also available.

HALO's Commitment to Long Term Availability

The transceiver chip inside of the HALO TnT module is the H83C92. Over the years, the IC industry has either discontinued or announced End of Life (EOL) of the 83C92 ICs traditionally used in Thinnet applications. The IEEE802.3 compliant H83C92 transceiver chip has been developed by HALO to provide long term availability of the TnT module family.

Typical Applications:

• Backplane Applications

• Network Interface Cards

• 10BASE-T Hub with 10BASE2 Interface

• 10BASE2 Repeaters

• Thin Net Transceivers

• Print Servers

• Applications Requiring "Optional" 10BASE2 Ports

Dimensions: inch [mm]
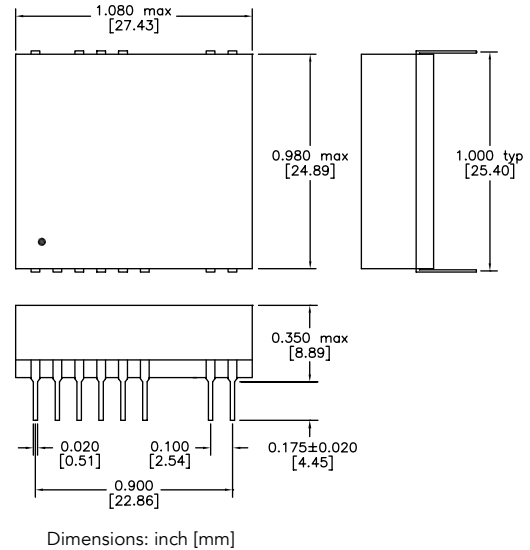
Description of Pin Functions

Pins 1 - 2 CD± *Collision*. A balanced 10MHz differential output from the module to the station equipment when a collision is detected, when excessive data occurs (jabber) or during the SQE Test (Heartbeat Test).

Pins 3 - 4 RX± *Receive Data*. A balanced line driver output from the module to the station equipment providing received data detected on the network.

Pins 5 - 6 TX± *Transmit Data*. A balanced line receiver input to the module from the station equipment to drive transmit data onto the network.

Pin 9 VCC ±5% *Input Supply*. (Please refer to the Module Descriptions)

Pin 10 GND *Ground*. Ground is referenced to the VCC. (Do not connect this ground to CABLE SHIELD since the COAX SHIELD must be isolated from the station equipment).

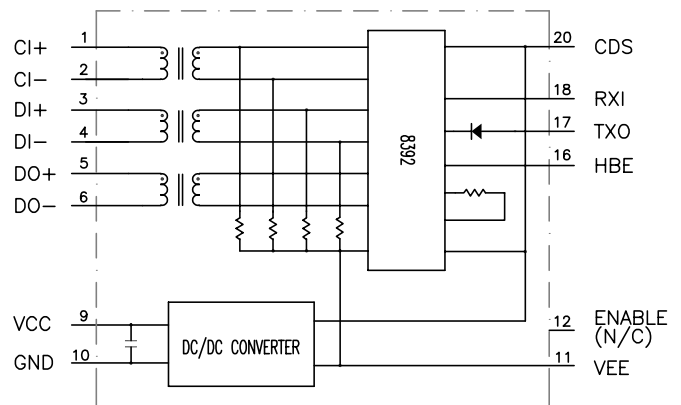**Pin 11 VEE *Negative Supply***. Nominally -9 volts referenced to coax shield ground.

Pin 12 NC *No Connection*. (Optional Enable feature - Module is off when a "0" signal is supplied. Unit is on when floating or a "1" signal is supplied).

Pin 16 HBE *Heartbeat Enable*. This input enables the SQE (also called Heartbeat) Test when connected to (isolated) ground and disables the test when connected to VEE. This pin must be connected to VEE for repeater applications.

Pin 17 TXO *Network Signal Transmitter*. Connects to the network COAX center conductor through an internal 1N916 diode, and transmits all signals from the MCC to the network.

Pin 18 RXI *Network Signal Receiver*. Connects to the network COAX center conductor, and receives packet data and detects the collision voltage levels.

Pin 20 CDS *Collision Detect Sense*. Connects directly to the network shield and references the collision detection voltage level.

For additional information contact your local representative, or HALO's support staff at (650) 903-3800 or info@haloelectronics.com

1. The HALO Electronics "TNT" family of modules is available with 3.3V, 5V, 8V or 12V input voltages. Care should be taken to connect the module to the correct supply voltage.

2. The standard MD series incorporates 1.5kΩ pull-down resistors internally, designed specifically for "on board" applications, not driving a 78Ω load. For applications requiring a 78Ω load the MDQ series is recommended. This series incorporates 1KΩ pull down resistors capable of driving terminated RX and CD lines.

3. RXI and TXO (Pins 17 and 18) must be tied together externally at the BNC connector. The 1N916 diode is contained within the TNT module.

4. For repeater applications, the SQE Test (Heartbeat Test) must be disabled. This is accomplished by connecting Pin 16 (HBE) to Pin 11 (VEE). For non-repeater applications Pin 16 (HBE) should be connected to isolated ground (CDS). It is not recommended to leave HBE floating.
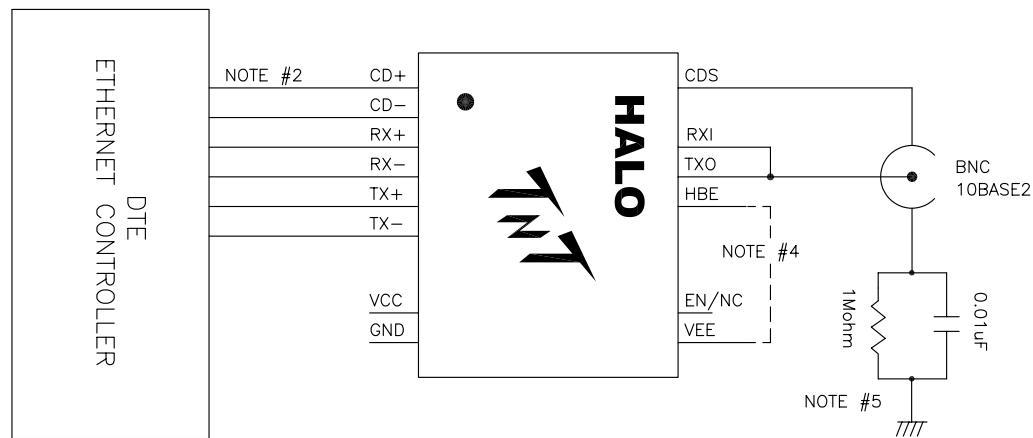
5. A 1MΩ, 750 volt minimum resistor to provide a static discharge path from the trunk of the coaxial cable and each DTE is required. Please see paragraph 10.7.2.4 of the IEEE 802.3 standard for more information. A .01µF, 500 VAC rms minimum capacitor is also recommended for safety considerations.

6. The TNT module should be located as close to the BNC connector as possible. This will assure the lowest shunt capacitance. IEEE 802.3 requires a maximum of 8pF shunt capacitance. Please see paragraph 10.6.3 and Appendix C3.

7. A de-coupling capacitor between VCC and GND is helpful to minimize noise on the supply line.
A low ESR 0.1µF, 50 volt capacitor is recommended. For repeater applications or noise sensitive applications a simple Pi filter is suggested. For additional Pi filter information please consult the factory.

8. Additional surge protection components are recommended for applications where higher voltage static surge is a concern. Please contact the factory for additional information.

HALO® Electronics is a leading supplier of high quality communication magnetics including signal transformers, filters, CMR chokes, PoE power transformers, DC/DC converters, and integrated Ethernet connectors. HALO's leading edge technology solutions are manufactured in ISO9001 and ISO14001 factories offering high quality products at a competitive price.

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