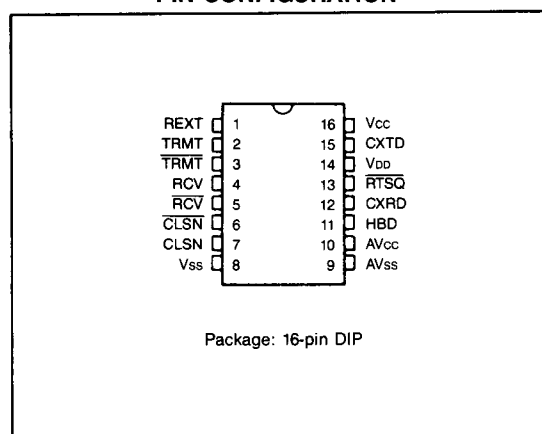


Ethernet™ Transceiver Chip

FEATURES

- Conforms to the Following Standards:
 - IEEE 802.3, 10BASE5 (Ethernet™)
 - IEEE 802.3, 10BASE2 (Cheapernet)
 - Ethernet™ Version 2.0
- Jabber Function
- Receive Based Collision Detection
- Defeatable Signal Quality Error (Heartbeat) Test
- Requires Minimum Board Space
 - On-Chip Voltage Reference
 - 16 Pin DIP
- No External Adjustments Required
- Low Power CMOS
- Direct Replacement for Intel's 82502

PIN CONFIGURATION



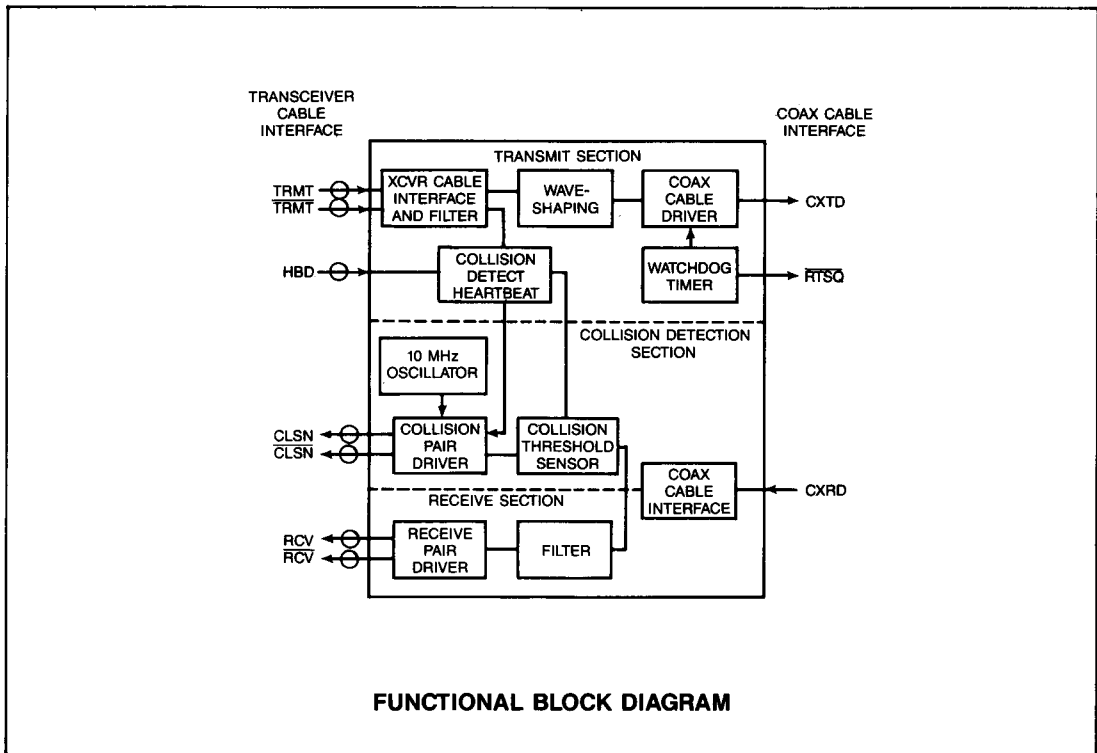
GENERAL DESCRIPTION

The COM82C502 Ethernet™ Transceiver Chip is a CMOS LSI device that provides the complete set of transmit, receive and collision detection functions specified by the IEEE 802.3, 10 BASE5 (Ethernet™) and 10BASE2 (Cheapernet) 10 Mbps baseband standards for the Media Attachment Unit (MAU). The COM82C502 teams up the COM82586 CSMA/CD LAN Coprocessor and the COM82C501 Ethernet™ Serial Interface enabling the designer to implement highly integrated IEEE 802.3 systems.

Three basic functional blocks make up the COM82C502: transmit, receive and collision detection. The transmit and receive sections transfer data from the transceiver drop

(Access Unit Interface or AUI) cable to the coaxial cable of the network and vice-versa. The collision detection section senses simultaneous transmissions by two or more network stations (collisions) on the coaxial cable and reacts by sending a 10 MHz signal across the transceiver drop cable to the station that it front ends.

When used in an Ethernet™ application, the COM82C502 can drive a transceiver cable up to 50 meters in length (for Cheapernet, there is no transceiver cable). The COM82C502 provides all active communications circuitry for the transceiver function in the Ethernet™ Cheapernet environment. It is an ideal companion to the COM82C501.



DESCRIPTION OF PIN FUNCTIONS

PIN NO.	NAME	SYMBOL	FUNCTION
2 3	Transmit Data Pair	<u>TRMT</u> , <u>TRMT</u>	A differentially driven input tied to the transmit pair of the transceiver cable. The transmit pair of the transceiver cable is driven with 10 Mbps Manchester encoded data from the serial interface of the data link (82501). TRMT/TRMT must be isolated from the transceiver cable by a pulse transformer. The last transition is expected to be positive indicating end of packet.
4 5	Receive Data Pair	<u>RCV</u> , <u>RCV</u>	An output driver pair that generates an ECL AC signal level to drive the transceiver cable receive pair with the 10 Mbps Manchester encoded data received from the coaxial cable of the network. RCV/RCV must be isolated from the transceiver cable by a pulse transformer. The last transition is always positive indicating the end of the packet. The current from the RCV pin is incrementally decreased after the last transition.
7 6	Collision Presence Pair	<u>CLSN</u> , <u>CLSN</u>	An output driver pair that generates a 10 MHz ECL AC signal level square wave on the collision presence pair of the transceiver cable when: a collision is detected on the coaxial cable of the network, during self-test as the collision circuit heartbeat indication, or after the watchdog timer has expired to indicate that the coaxial cable transmitter is disabled.
15	Coaxial Cable Transmit Data	CXTD	An output pin that transmits data onto the coaxial cable of the network by sinking current from the center conductor of the coaxial cable. The last data transition at the end of a packet is always low to high.
12	Coaxial Cable Receive Data	CXRD	An input pin that receives data from the coaxial cable of the network. Typical signal levels (referenced to V_{DD}) received on CXRD are -200 mV for high, -1.8V for a low and 0V during idle. The last data transition received is expected to be positive indicating the end of packet.

DESCRIPTION OF PIN FUNCTIONS

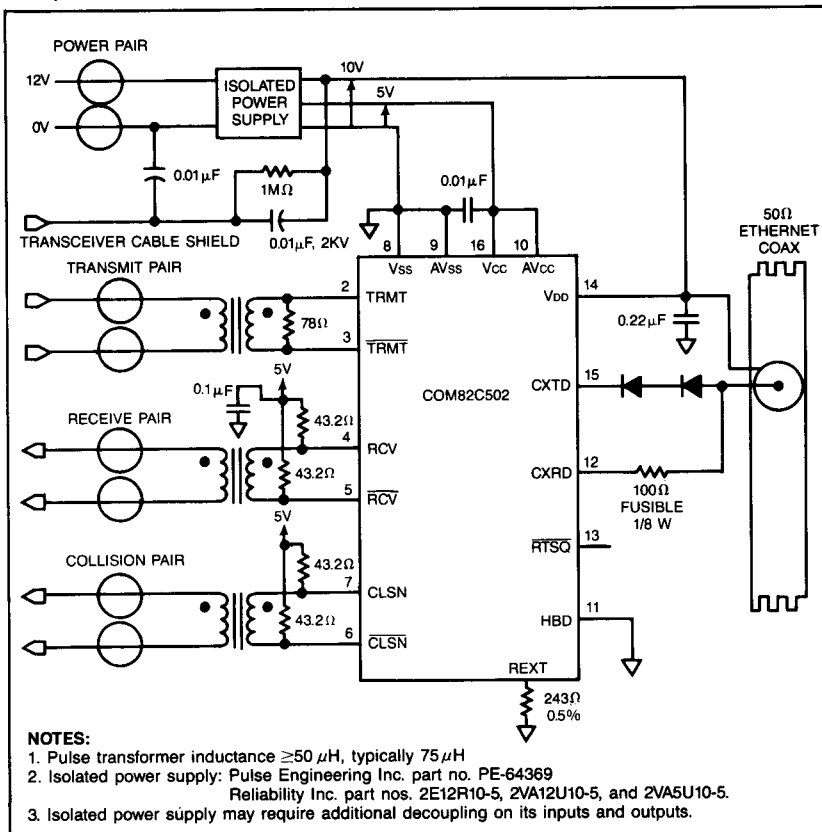
PIN NO.	NAME	SYMBOL	FUNCTION
11	Heartbeat Disable	HBD	A strapping option that when tied low (V_{SS}), allows the transceiver to generate a collision detect heartbeat signal after each packet. A high (V_{CC}) on this pin disables the heartbeat circuitry as well as the $6.4 \mu s$ transmit inhibit timer but keeps the collision circuit enabled for use in repeater applications.
1	External Resistor	REXT	A 243Ω 0.5% resistor is attached between REXT and ground (V_{SS}) to provide precision internal current levels.
13	Redundant Transmit Squelch	RTSQ	An open drain output that indicates the operational state of the 82502 transmitter. The output can be used to provide a redundant method of disabling the transceiver (MAU) transmitter for greater network reliability.
16	Power Supply	V_{CC}^*	+5 \pm 10% volts.
8	Ground	V_{SS}^*	GROUND
14	Power Coax Shield	V_{DD}^*	+10 \pm 10% volts.
10	Analog Power	AV_{CC}^*	+5 \pm 10% volts. Included to reduce the effects of the current fluctuations in the V_{CC} pin.
9	Analog Ground	AV_{SS}^*	Included to reduce the effects of current fluctuations in the V_{SS} pin.

***NOTE:**

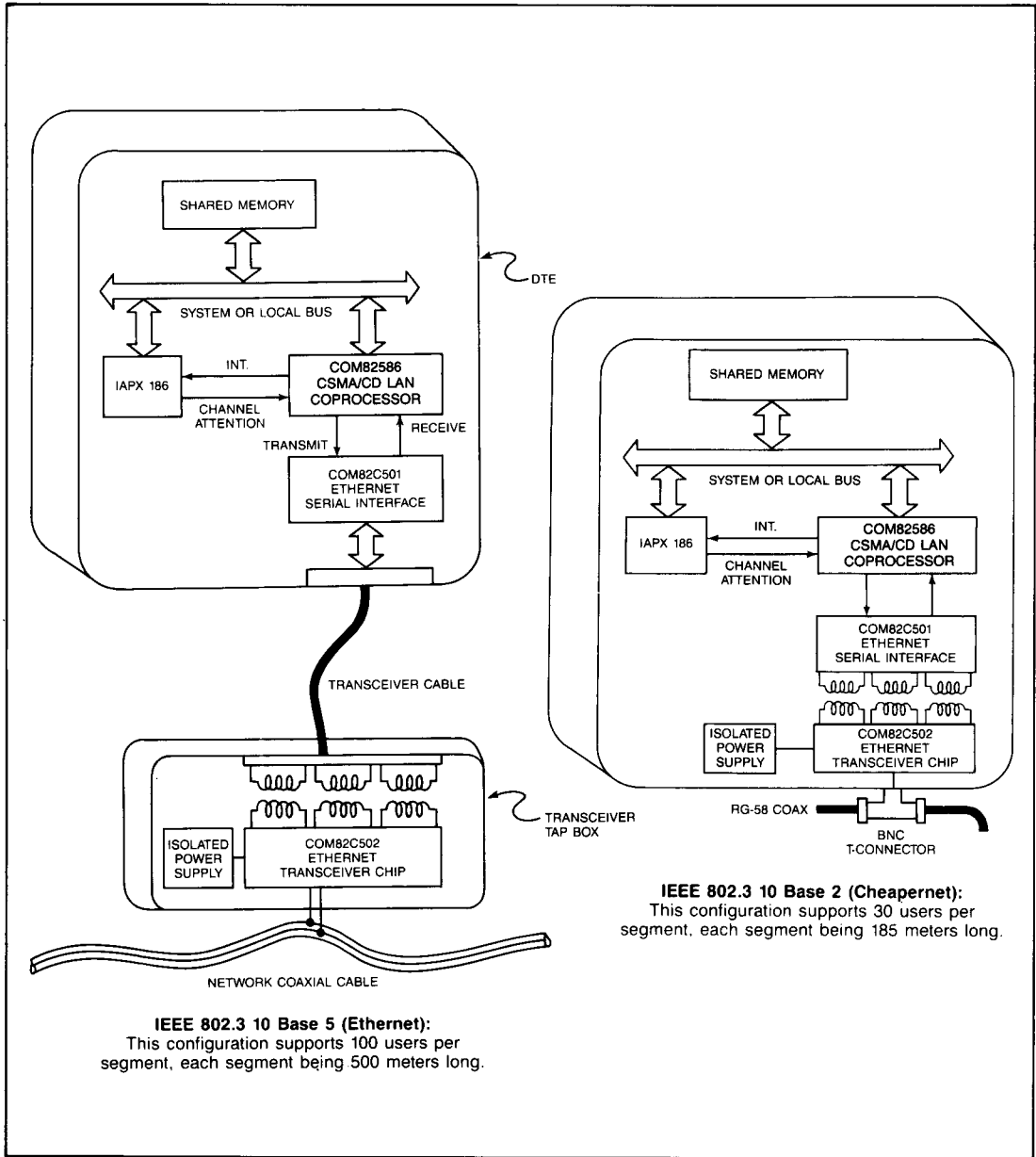
These voltages are referenced to V_{SS} . The shield of the coaxial cable of the Ethernet™ channel (V_{DD}) is connected to earth ground.

SECTION III

Design Example



Typical 10BASE5 (Ethernet™) Transceiver Implementation Using the COM82C502.



NOTE: For an updated data sheet please fill out the reply card in the back of this catalog or call SMC at (516) 273-3100.

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