



# AC104Z-QF

## Quad Ultra Low Power 10/100 Ethernet Transceiver

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*Silicon Solutions Empowering the Net™*

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### Features:

- 4 ports - SMII or 4 ports - RMII
- 4 ports - 10 Base-T / 100 Base-TX / 100 Base-FX
- Full Duplex or Half Duplex
- FEFI on 100FX
- Very small package - 128PQFP
- 280 sq. mm footprint
- Very low power - TYP 280mW (Per 100 Base-TX Port)
- Selectable transmit drivers for 1:1 or 1.25:1 transformers enable additional power reduction
- Cable Detect mode - TYP <40mW (Per Port)
- Power Down mode - TYP <3.3mW (Per Port)
- Fully compliant with IEEE 802.3 / 802.3u
- SMII/RMII
- Unique scrambler seed for each port to reduce emissions
- Baseline Wander Compensation
- Reverse polarity detection and correction
- R/W Register Bit indication
- Easy, intuitive LED outputs
- Cable length indicator
- 8 interrupts per port
- 16 bit diagnostic register
- JTAG Boundary Scan
- Programmable FIFO depth
- Programmable SMII clock skew

### Functional Description:

The AC104Z-QF is a highly integrated, low power, four port 10/100TX/FX Ethernet Transceiver. All four ports are configurable to either 10/100 TX or 100 FX. Functions include integrated SMII/RMII, ENDEC, Scrambler/De-Scrambler and fully compliant Auto-Negotiation. On chip filtering and wave shaping eliminate the need for external hybrid filters.

### Customer / Application:

- High Density switch
- Multi-port switched set top box
- Low power/ low cost stand alone switch

### Available Collateral:

- AC104Z-QF data sheet
- Verilog and Spice models
- Layout Guide and App Notes
- Demo Boards & Schematics

### Compelling evidence:

The AC104Z-QF provides all of the required features of a four port SMII/RMII compliant 10/100TX/FX Ethernet Transceiver. The AC104Z-QF has the smallest footprint and the lowest power consumption, on a per port basis, of any other solution; single, quad, hex or octal. When all system costs are considered, power, heat, components and real estate, the AC104Z-QF will provide the lowest overall system cost and most reliable design.

### Availability:

Samples: Now Production Q1/00

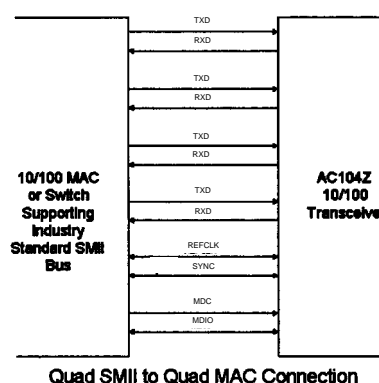
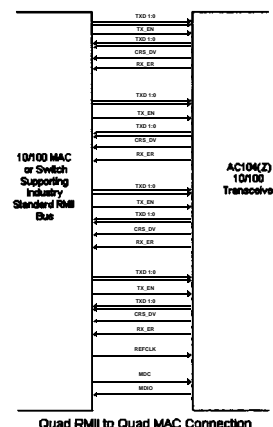
With three different physical media interfaces and two different system interfaces, the AC104Z Ultra Low Power Quad 10/100Mbps Ethernet transceiver has been designed to be the most flexible and cost effective Ethernet transceiver on the market today. These numerous options allow the AC104Z to be designed into many different applications, reducing the number of separate transceivers necessary to meet multiple design requirements.

For System/MAC interface, support is provided for:

- 10/100 SMII - as either forced, parallel detected or negotiated - full or half duplex
- 10/100 RMII - as either forced, parallel detected or negotiated - full or half duplex

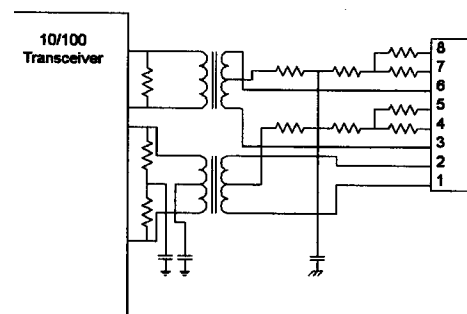
When running in SMII or RMII mode, the four 10/100 PHYs run entirely independent of one another allowing for 10Mbps or 100Mbps, full or half duplex, TX or FX , on a per port basis. (10M FX is not supported.)

JTAG Boundary Scan diagnostic capabilities.

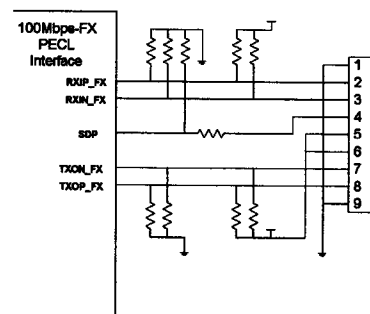


For the physical media connectivity, support is provided for:

- 10Base-T - as either forced, parallel detected or negotiated 10Mbps - full or half duplex
- 100Base-TX - as either forced, parallel detected or negotiated 100Mbps - full or half duplex
- 100Base-FX - forced 100Mbps - full or half duplex



Typical implementation of 10 Base-Tor 10/100 TX physical layer connections.  
Please refer to the latest documentation to determine correct component values.



Typical implementation of 100 FX physical layer connections.  
Please refer to the latest documentation to determine correct component values.