

## 10/100 Fast Ethernet MicroPHY



### Description

**Housed in a 32 pin, 5 x 5mm QFN package, the MicroPHY is the smallest Fast Ethernet PHY available that provides a full 802.3 Media Independent Interface (MII) to the system Media Controller.**

The 78Q2123/2133 MicroPHY is designed to meet the growing demands of non-traditional networked applications such as game consoles, Set-top Boxes, and digital TVs. The tiny size gives designers an edge when board space is at a premium and its single 3.3V supply requirements eliminates the need for 1.8V regulators or additional voltage conversion capacitors.

The integrated HP Auto MDI/MDI-X function, a must for consumer electronic applications, automatically compensates for crossover cable problems eliminating one of the most common items for consumer help lines.

The MicroPHY's full MII allows the device to easily interface to any 802.3 compliant MAC. The MicroPHY® offers all the essential pins for embedded applications including reset pin, power down pin, programmable LEDs and more. On-chip regulators masterfully achieve supply noise isolation among the various blocks while reducing the number of off-chip supply filtering components. A semi-digital architecture and digital clock recovery unit are used in the receiver to maximize circuit noise immunity.

The MicroPHY® includes integrated ENDECs, scrambler/ descrambler, dual-speed clock recovery, and full-featured auto-negotiation functions. The transmitter includes an on-chip pulse-shaper and a low-power line driver. The receiver has an adaptive equalizer and a baseline restoration circuit required for accurate clock and data recovery. The transceiver interfaces to Category-5 unshielded twisted pair (Cat-5 UTP) cabling via 1:1 isolation transformers without the need for external filtering.

KEY FEATURES:	BENEFITS:
<b>Low power and flexible power supply management</b> > Power down/save and transmitter disable > Power-off state dissipation < 20mW	<b>Optimized power conservation with automatic turn on when needed</b> > Prolonged battery life in stand-by operation > Increased reliability > Increased active working time during battery operation
<b>Single 3.3V supply operation with low power dissipation</b> > Optimized low power design	<b>Smallest external component BOM count, PCB footprint and BOM cost</b> > Does NOT require additional tantalum or ceramic voltage conversion capacitors for core operation
<b>HP Auto-MDI/X Automatic Cable Cross-over correction</b>	<b>Improved ease of use, simplified installation, and reduced support cost</b> > Straight-through or cross-over cable operation, independent of installation
<b>Fully integrated 802.3u Fast Ethernet Transceiver</b> <b>Commercial and Industrial Temperature Range</b>	<b>Ideal for embedded applications with integrated MAC on the SoC processor</b>



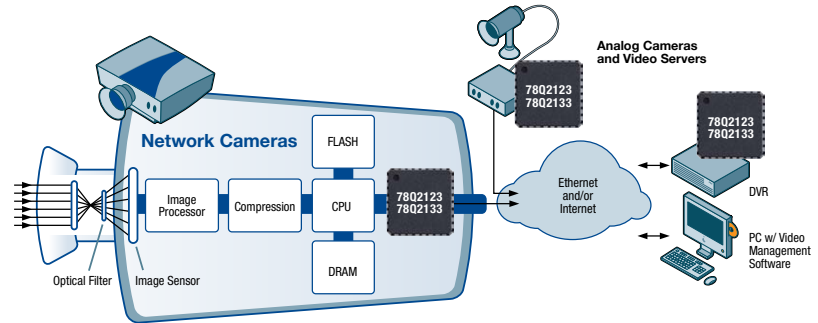
### Applications

- > High performance Satellite, Cable and IPTV Set Top Boxes
- > Multi Media Residential Gateways
- > High Definition 1080P/1080i DTV's
- > IP-PVR and video distribution systems
- > Digital Video Recorders/players
- > Routers and IAD's
- > Video over IP systems, IP-PBX
- > IP Security Cameras/PVRs
- > Low latency industrial automation

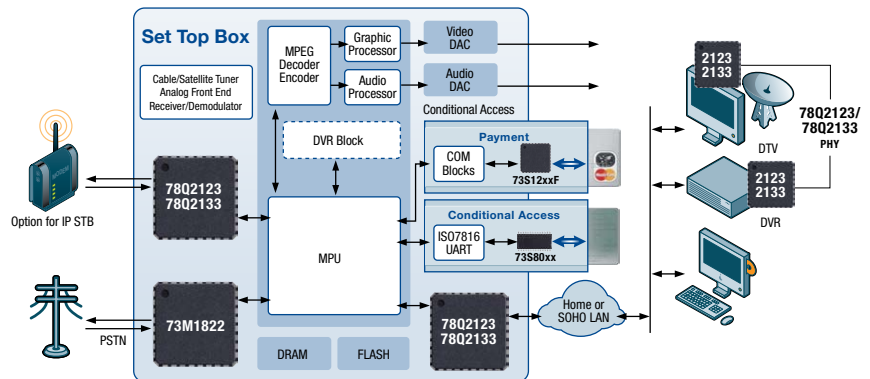
## Additional Features

- Full DUPLEX operation
- Full featured AUTO Negotiation functions
- 2 programmable LED indicators
- Auto polarity correction during auto negotiation and 10BASE-T signal reception
- User Programmable Interrupt pin
- Adaptive input receiver equalization and Base Line Wander correction for typical CAT5 cable operation to 140m
- On-chip crystal oscillator or external 25MHz clock support
- Separate Squelch and unSquelch Thresholds
- Natural loop-back operation
- Repeater operation supported
- Station Management Interface (SMI) per clause 22.2.4.4 of IEEE-802.3
- Operating Environment
  - 3.3V supply voltage
  - Industrial/commercial temperature grades
  - 2kV ESD protection
  - 32 lead QFN, RoHS package
  - 32 lead QFP, RoHS package

## Networked Security Camera Applications



## Set Top Box Applications



## Ordering Information

PART DESCRIPTION	ORDERING NUMBER
<b>78Q2123</b> 32-QFN, Lead Free, Commercial Temp	<b>78Q2123/F</b>
<b>78Q2123</b> 32-QFN, Lead Free, Tape and Reel, Commercial Temp	<b>78Q2123R/F</b>
<b>78Q2133</b> 32-QFN, Lead Free, Industrial Temp	<b>78Q2133/F</b>
<b>78Q2133</b> 32-QFN, Lead Free, Tape and Reel, Industrial Temp	<b>78Q2133R/F</b>