Intel® LXT971A
Dual-speed 3.3V 10/100 Ethernet Transceiver
With Intel® Carrier Class Ethernet Support

Product Description

High-performance network applications that demand lower power are growing rapidly in today's marketplace. Intel, a leading provider of Ethernet silicon solutions, has enhanced the commitment to its Ethernet product family with its latest 10/100 Fast Ethernet transceiver. The Intel® LXT971A is a next-generation low-power, single-port PHY with significantly expanded Cable Discharge Event (CDE) protection.

Revolutionary design techniques incorporate Intel's Optimal Signal Processing (OSP) architecture, an ideal combination of digital signal processing and analog design techniques designed for die size, power consumption, performance, reliability, and testability.
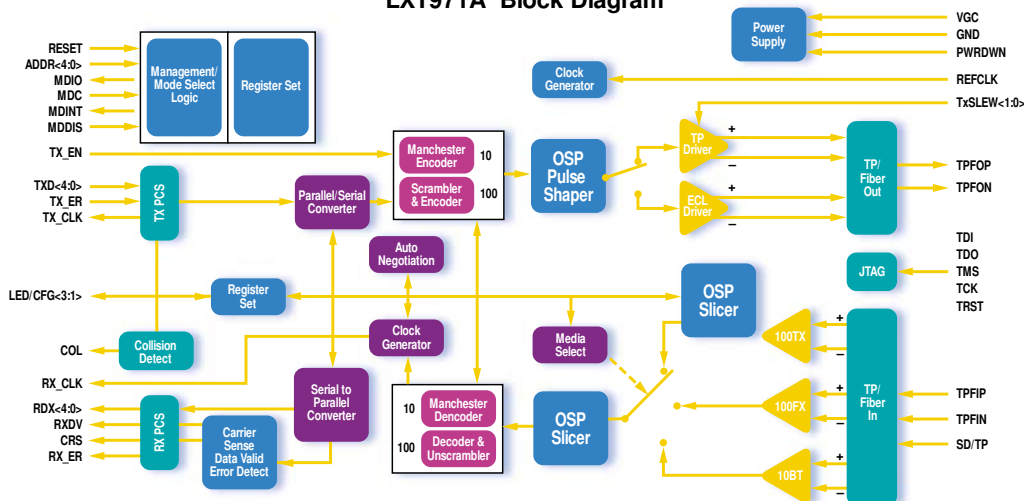
Applications

Low-power, dual-speed network applications for the LXT971A transceiver include: network interface cards (NICs), PCMCIA cards, cable modems, set-top boxes and IP phones.

The LXT971A includes an MII with extended register capability and an optional 2.5V power supply interface for additional power savings. For 100BASE-FX fiber networks, the LXT971A is designed with a pseudo-ECL (PECL) interface for seamless integration with common industry-standard fiber modules.

Innovative Packaging

Intel delivers the LXT971A in a 7mm x 7mm plastic ball grid array (PBGA) packaging. This revolutionary package helps save board space and is available in the popular industrial temperature range that is ideal for network applications in extreme thermal environments. For flexibility in very low-power applications, the

LXT971A offers a Sleep mode in addition to two Power Down modes. When the LXT971A detects an absence of energy on the twisted-pair input, it minimizes power consumption by shutting down the transmitter and placing the receiver in low-power mode.

Intel Carrier Class Ethernet

Many networking and telecom applications require high-performance Ethernet components capable of operating under harsh environmental conditions. Intel® Carrier Class Ethernet products support operation over the entire extended temperature range while providing features that increase reliability. Each device has an operation lifetime of at least 10 years with less than 100 failures per billion hours. All Intel Carrier Class Ethernet devices will be available a minimum of 5 years from product introduction.

The Intel Carrier Class Ethernet product portfolio includes solutions for Ethernet physical layer, switching and repeater technologies at a variety of speeds. Intel Carrier Class Ethernet products are ideal for applications where equipment must function reliably in uncontrolled environmental conditions such as base stations, telecom/network switches, factory floor equipment, and industrial computers.

Intel®
Internet Exchange
Architecture

intel®

LXT971A Block Diagram

Features	Benefits
■ 3.3V power supply	■ Helps lower power consumption
■ 64-pin, 7mm x 7mm PBGA package	■ Provides small-profile packaging
■ -40ºC to +85ºC temperature testing	■ Enables industrial applications
■ Sleep mode	■ Helps minimize power consumption
■ MII interface – 2.5V MII interface option	■ Complies with industry standards – Additional power savings
■ Optimal Signal Processing	■ Helps improve data recovery and EMI performance
■ Baseline Wander Correction	■ Provides consistent, error-free performance
■ Next Page Exchange	■ Enables transfer of additional information during auto-negotiation
■ PECL interface	■ Provides 100BASE-FX fiber-optic capability
■ Programmable LED drivers	■ Enables flexible network monitoring
■ 10/100Mbps full-duplex operation	■ Allows simultaneous transmit and receive
■ Boundary scan (JTAG) test port	■ Enables board-level testing of the LXT971A

LXT971A Product Family

Product Identifier	Package	Temperature Range
LXT971ABC	64-pin PBGA	Commercial 0℃ to +70℃
LXT971ABE	64-pin PBGA	Extended -40℃ to +85℃
LXT971ALC	64-pin LQFP	Commercial 0℃ to +70℃
LXT971ALE	64-pin LQFP	Extended -40℃ to +85℃

Intel® Internet Exchange Architecture

Intel® Internet Exchange Architecture (IXA) is an end-to-end family of high-performance, flexible and scalable hardware and software development building blocks designed to meet the growing performance requirements of today's networks. Based on programmable silicon and software building blocks, Intel® IXA solutions enable faster development, more cost-effective deployment, and future upgradability of network and communications systems. Additional information can be found at ww.intel.com/IXA.

Intel Access

Developer's Site	developer.intel.com
Intel Internet Exchange Architecture Home Page	www.intel.com/IXA
Networking Components Home Page	developer.intel.com/design/network
Other Intel Support: Intel Literature Center	developer.intel.com/design/litcentr (800) 548-4725 7 a.m. to 7 p.m. CST (U.S. and Canada) International locations please contact your local sales office.
General Information Hotline	(800) 628-8686 or (916) 356-3104 5 a.m. to 5 p.m. PST

Figure 44. LXT971A LQFP Package Specifications

64-Pin Low Profile Quad Flat Pack

- Part Number - LXT971ALC   Commercial Temperature Range (0°C to +70°C)
- Part Number - LXT971ALE   Extended Temperature Range (-40°C to +85°C)

Dim	Millimeters	
	Min	Max
A	–	1.60
A_1	0.05	0.15
A_2	1.35	1.45
B	0.17	0.27
D	11.85	12.15
D_1	9.9	10.1
E	11.85	12.15
E_1	9.9	10.1
e	0.50 BSC[1]	
L	0.45	0.75
L_1	1.00 REF	
θ_3	11°	13°
θ	0°	7°

1. Basic Spacing between Centers
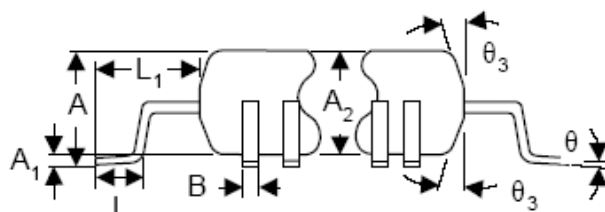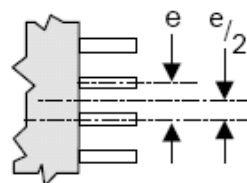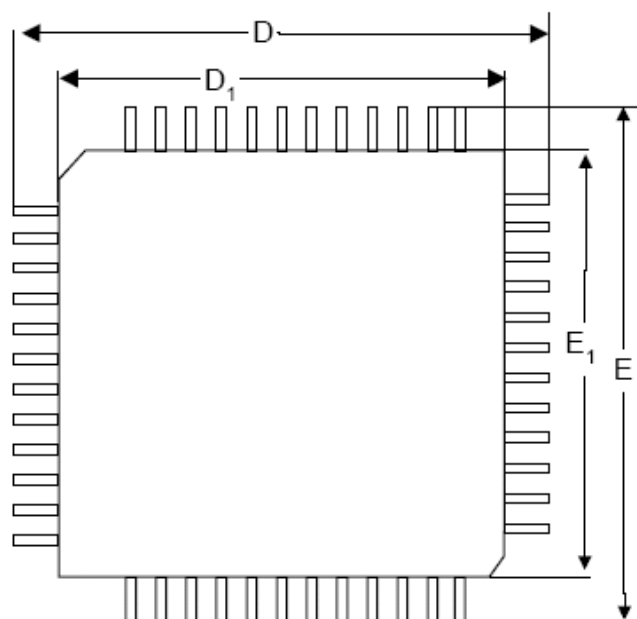
8.0   Product Ordering Information

Table 59. Product Information

Number	Revision	Qualification	Tray MM	Tape & Reel MM
DJLXT971ALC.A4	A4	S	834105	834916
DJLXT971ALE.A4	A4	S	835676	835791
FLLXT971ABC.A4	A4	S	834103	834926
FLLXT971ABE.A4	A4	S	834104	835080

Figure 45. Ordering Information - Sample

DJ   LXT   971A   L   C   A4   S   E001

Build Format
E000 = Tray
E001 = Tape and reel

Qualification
Q   = Pre-production material
S   = Production material

Product Revision
xn   = 2 Alphanumeric characters

Temperature Range
A   = Ambient (0 - 55° C)
C   = Commercial (0 - 70° C)
E   = Extended (-40 - +85° C)

Internal Package Designator
L   = LQFP
P   = PLCC
N   = DIP
Q   = PQFP
H   = QFP with heat spreader
T   = TQFP
B   = BGA
C   = CBGA
E   = TBGA
K   = HSBGA (BGA with heat slug)

xxxx = 3-5 Digit Alphanumeric Product Code

IXA Product Prefix
LXT   = PHY layer device
IXE   = Switching engine
IXF   = Formatting device (MAC)
IXP   = Network processor

Intel Package Designator
DJ   = LQFP
FA   = TQFP
FL   = PBGA (<1.0 mm pitch)
FW   = PBGA (1.27 mm pitch)
HB   = QFP with heat spreader
HD   = QFP with heat slug
HF   = CBGA
HG   = SOIC
S   = QFP
GC   = TBGA
N   = PLCC