



# Communication Segment

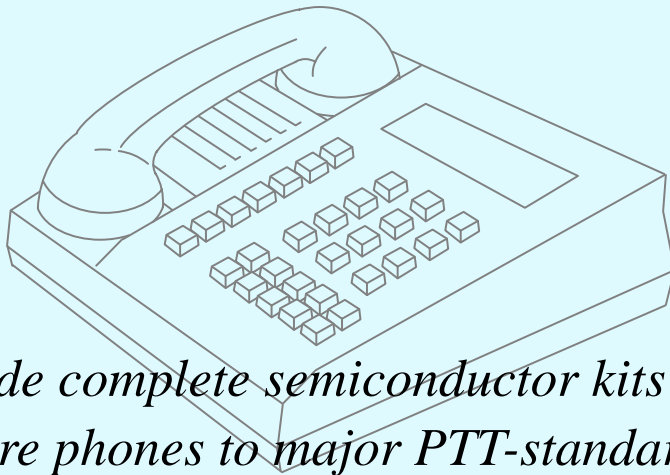
**Digital Networks**  
**Wireless Communication**  
**Wired Communication**

# Communication

**We've been supporting advances in communications industry for decades. Today, we continue to offer the best combination of applications knowledge and leading-edge solutions required by the merging of communications technologies.**

- State-of-the-art analog, digital, and mixed-signal solutions
- TEMIC has appropriate technologies and applications experience to help create the next generation of communications products
- Our products help you achieve time-to-market, flexibility, cost optimization, power consumption, and board space requirements critical to your designs

# Wired Analog Telephones



*Provide complete semiconductor kits for feature phones to major PTT-standards*

## **Benefits**

- Better performance
- Higher level of integration
- Easier to handle
- Lower system cost

## Basic Telephone

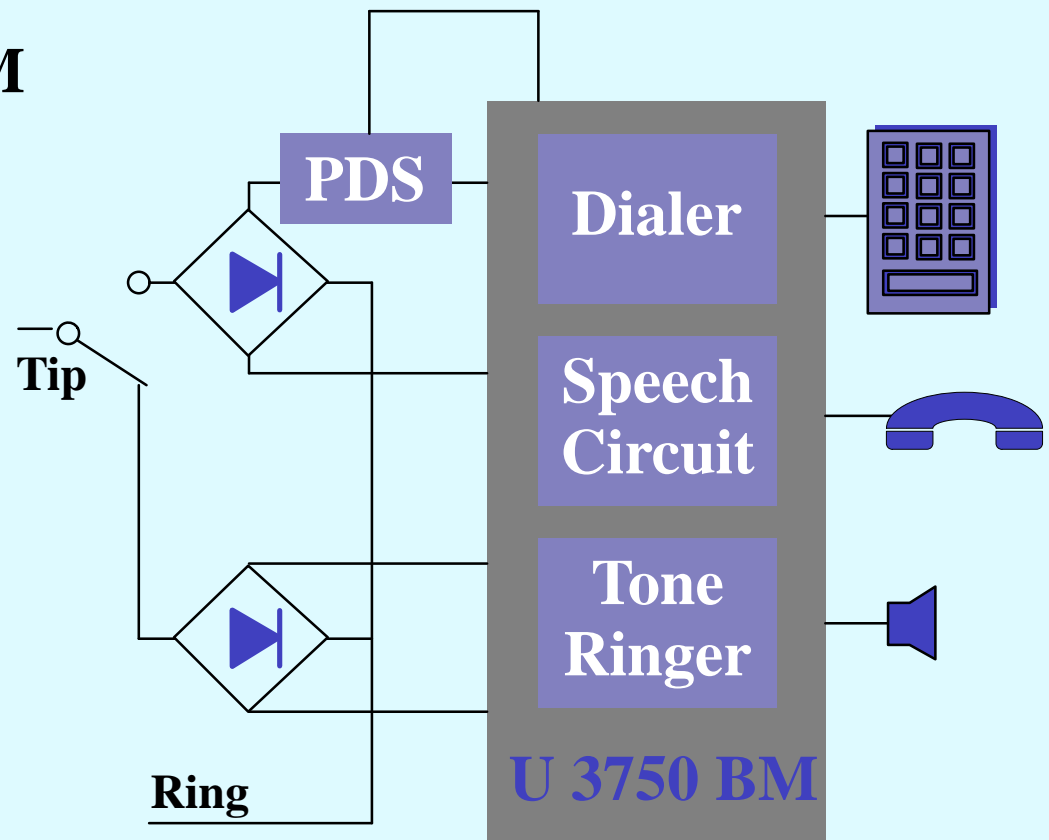
# One-Chip Solution

### One-chip telephone U 3750 BM

- Speech circuit with anticlipping
- Pulse/DTMF dialer with redial
- 2-tone ringer

### Pulse dialing switch, hook switch, and recall switch

- P-channel MOSFET VP2410L, BSS92
- N-channel MOSFET TN3012L, VN2410L, VN2010L, VN4012L



## Basic Telephone

# Modular Solution

**Speech circuit U 4030 B**

**Voice switch U 4084 B**

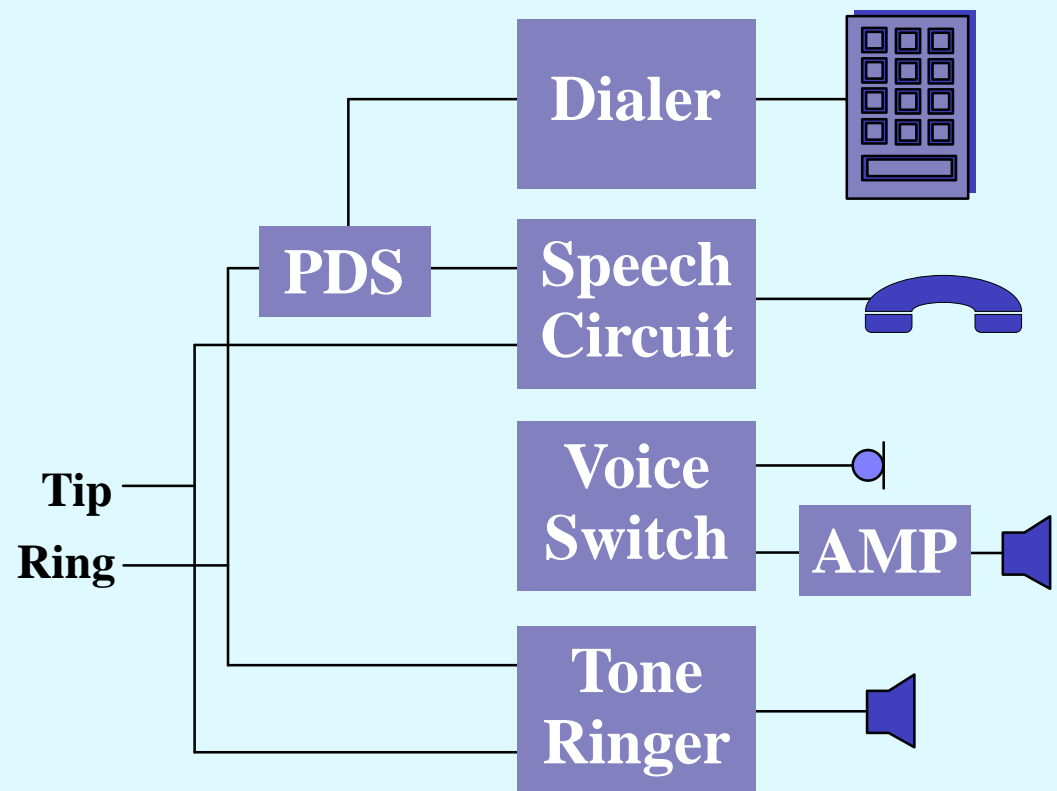
**Audio amplifier U 4083 B**

**Tone ringer**

- Two tone U 4072 B
- Three tone U 4076 B

**Pulse dialing switch, hook switch, recall switch**

- P-channel MOSFET VP 2410 L, BSS92
- N-channel MOSFET TN 3012 L, VN 2410 L, VN 2010 L, VN 4012 L



## Feature Telephone – Microcomputer

# Controlled Solution 1

**Speech circuit U 4050 B**

**Voice switch**

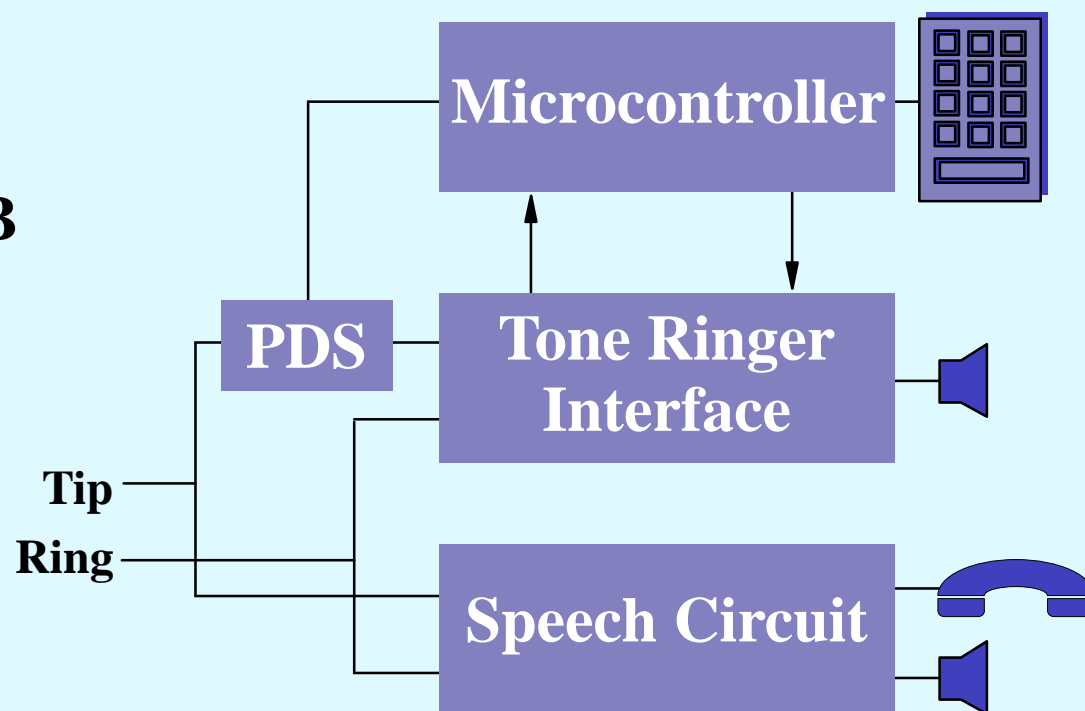
**Tone ringer interface U 4074 B**

**Microcontroller 80C51**

**Pulse dialing switch, hook switch**

**Recall switch**

- P-channel MOSFET VP 2410 L, BSS92
- N-channel MOSFET TN 3012 L, VN 2410 L, VN 2010 L, VN 4012 L



## Feature Telephone – Microcomputer

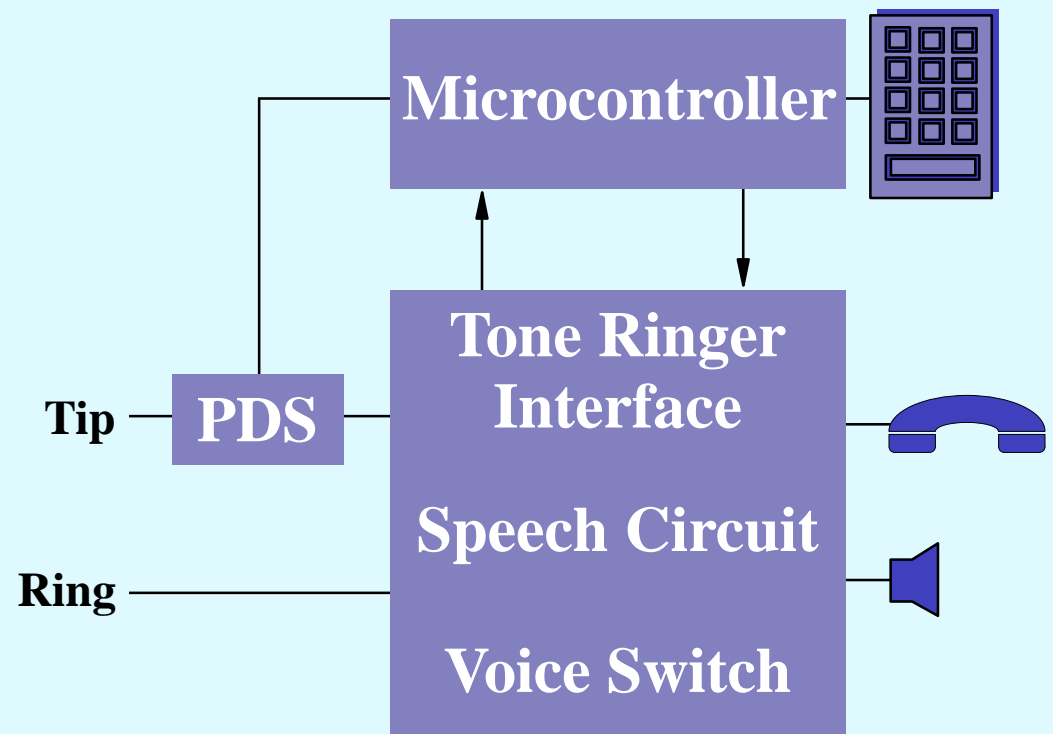
# Controlled Solution 2

**Feature phone IC U 4090 B**

**Microcontroller 80C51**

**Pulse dialing switch**

- P-channel MOSFET VP 2410 L, BSS92
- N-channel MOSFET TN 3012 L, VN 2410 L, VN 2010 L, VN 4012 L



## Feature Telephone

# Multi-Standard

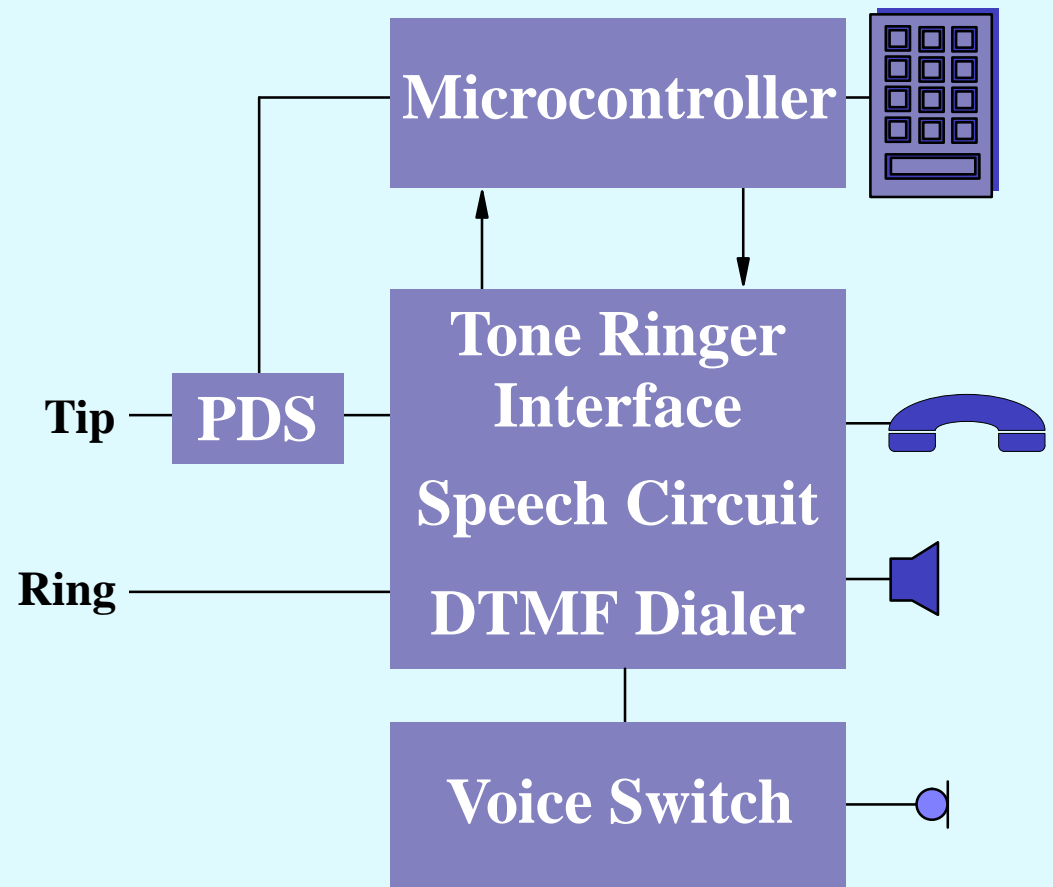
**Multi-standard feature phone  
IC U 3800 B**

**Voice switch U 4084 B**

**Microcontroller 80C51**

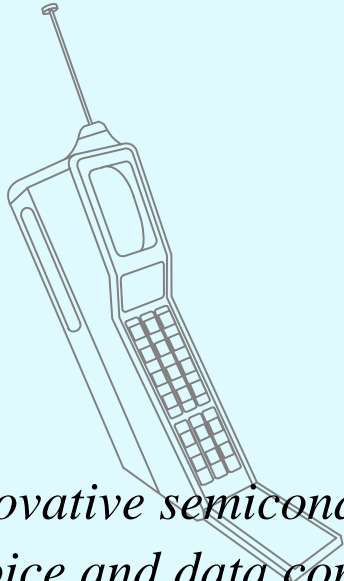
**Pulse dialing switch, hook  
switch, recall switch**

- P-channel MOSFET VP 2410 L,  
BSS92
- N-channel MOSFET TN 3012 L,  
VN 2410 L, VN 2010 L, VN 4012 L





# Wireless Communication



*Provide innovative semiconductor kits for  
selected voice and data communication  
standards*

## Benefits

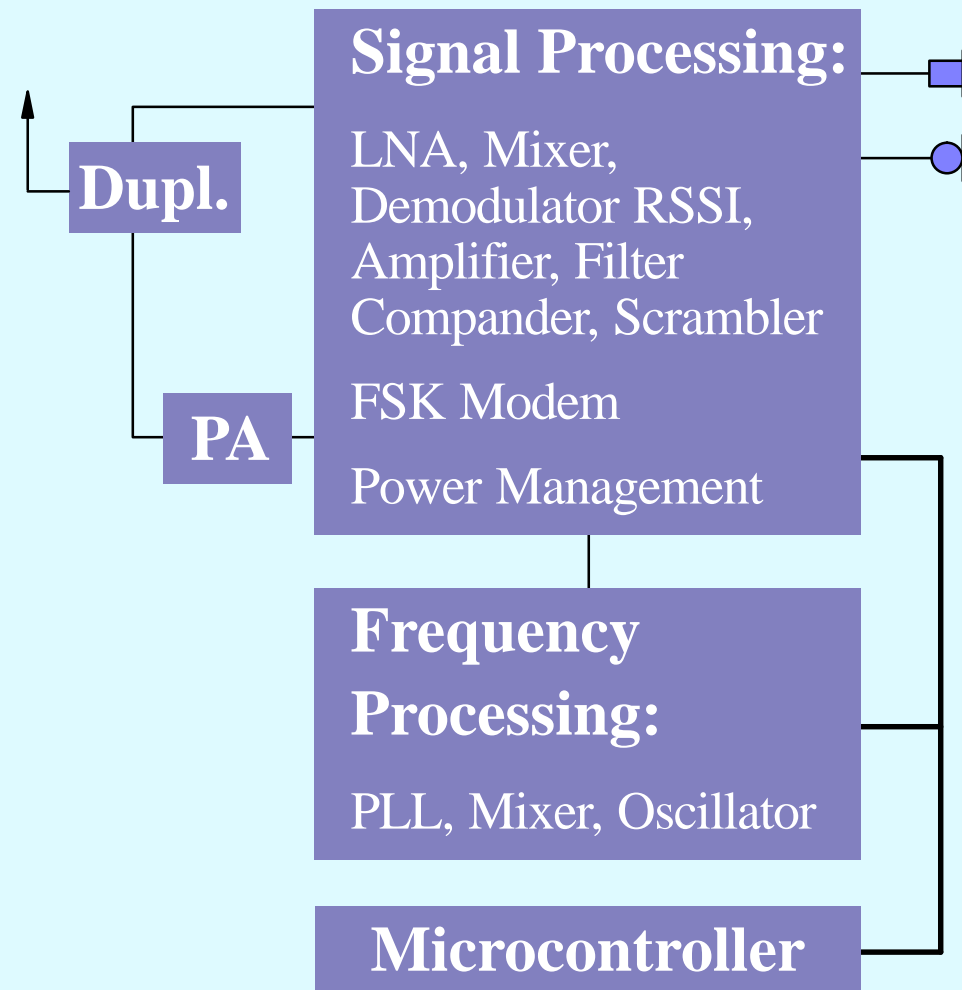
- Better performance
- Easier to handle
  - Alignment free
  - Specs over full temperature range
- Higher functionality
- Lower system cost
  - Reduce external components
  - Lower power
  - Higher efficiency
  - Less space

## Cordless Telephone

# CT0

**Multichannel, fully programmable semiconductor kit for base and mobile station**

- Signal processor IC U 3500 BM
- Frequency processor U 3550 BM
- Microcontroller 80C51
- Low-Power Discretes

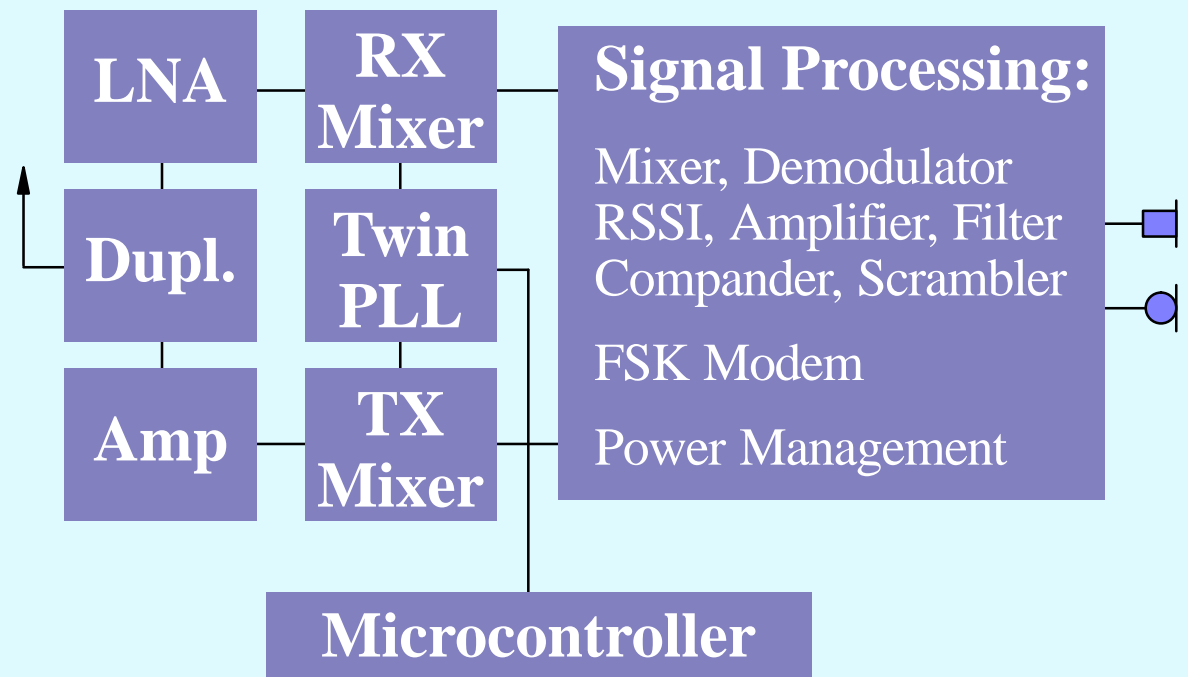


## Cordless Telephone

# CT1

### Same fully programmable semiconductor kit in base and mobile stations:

- Radio part
  - Low-noise amplifier S 822 T
  - RX mixer U 2796 B
  - Twin PLL U 2782 B
  - TX mixer U 2795 B
  - Output amplifier BFP67
- Signal processing IC U 3500 BM
- Microcontroller 80C51



## Cordless Telephone

# CT2

### Radio part

- GaAs front end U 7001 BG
- Transmitter/receiver combination U 2760 B
- Twin PLL U 2783 B

### Microcontroller 80C154

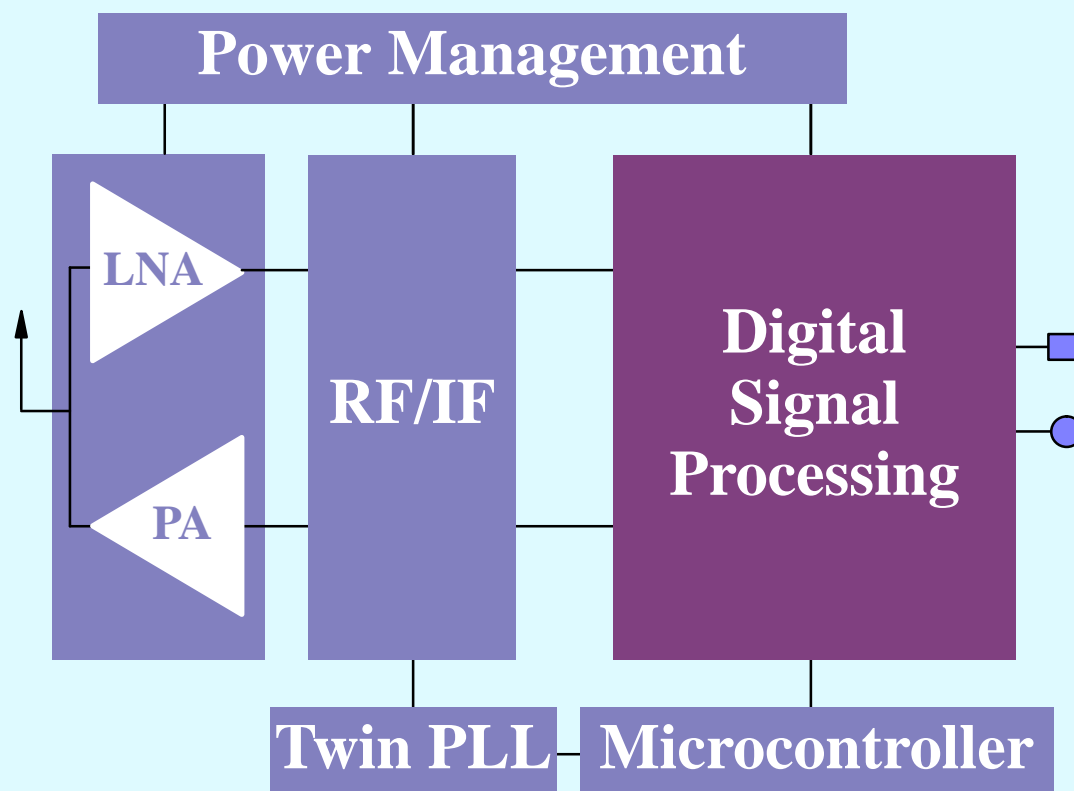
### Digital signal processor (planned)

### Power management

- Load switch, battery switches
- LITTLE FOOT Si9933DY
- LITE FOOT Si6433DQ

### DC/DC converter Si9145BY

### Battery charger U 2400 B, U 2402 B



## Cellular Radio

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# GSM

### **Radio part**

- LNA transistor S 822 T
- Demodulator U 2791 B
- Twin PLL U 2782 B
- Modulator U 2790 B, U 2793 B
- TX mixer U 2795 B

### **Baseband and audio processing**

- Mixed signal ASICs
- Application configurable system cells

### **Channel/speech processing**

- SPARClet, digital ASICs

### **Microcontroller 80C251**

### **Power management**

- Load switch, battery switch
- LITTLE FOOT, LITE FOOT
- DC/DC converter Si9145

### **Accessories**

- Battery charger U 2402 B
- DC/DC converter Si9150DY

## Wireless

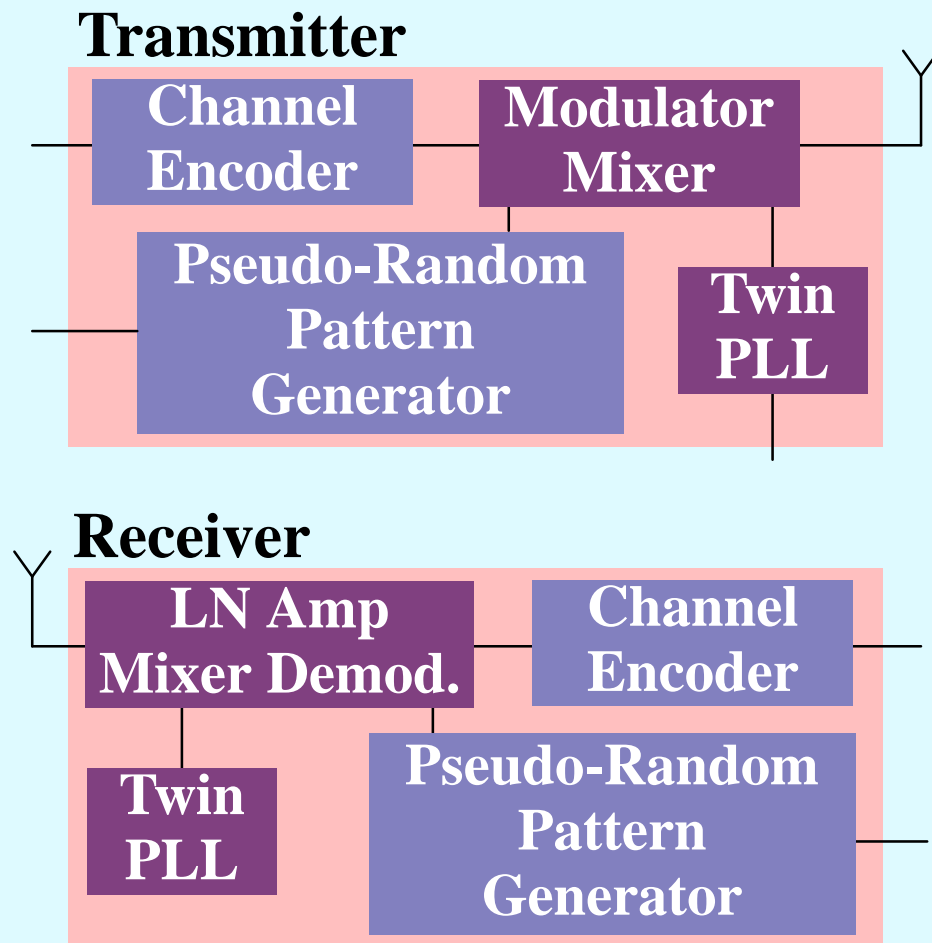
# Local Area Network

### Transmitter

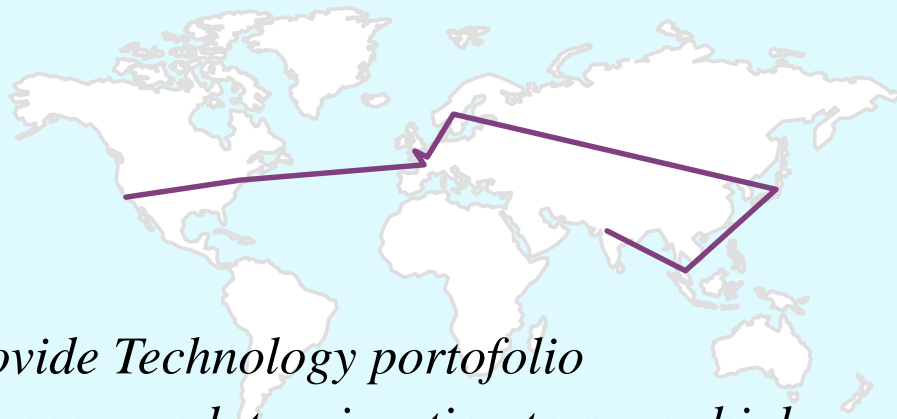
- 300 MHz modulator  
U 2793 B
- 2.5 GHz mixer U 2795 B
- 2.5 GHz modulator/mixer  
U 2891 B
- Twin PLL U 2784 B

### Receiver

- Low noise amplifier  
S 822 T
- Mixer U 2796 B
- Demodulator U 2791 B
- Twin PLL U 2784 B



# Digital Networks



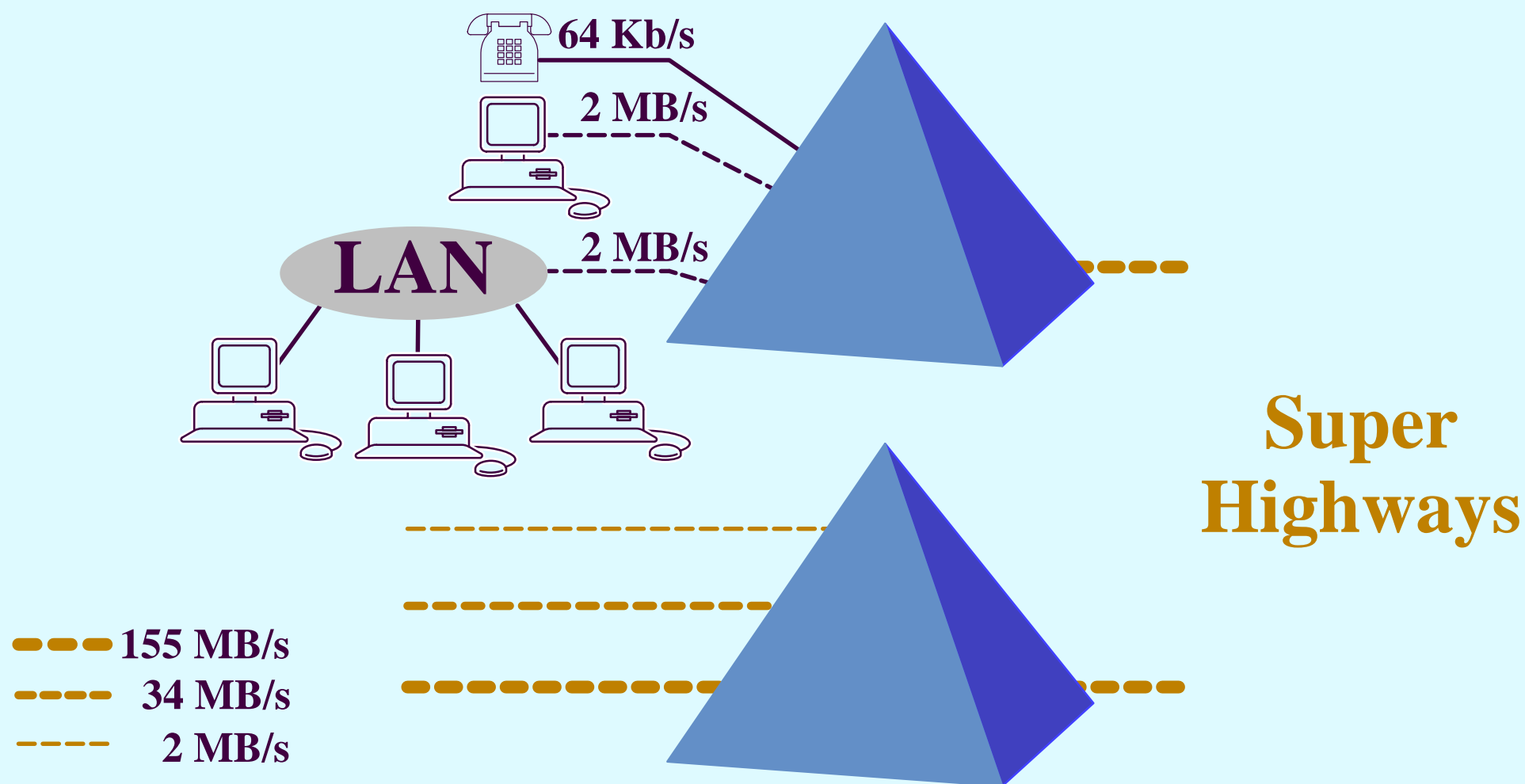
*Provide Technology portfolio  
to accommodate migration to super highways.*

## **Benefits**

- Complete semiconductor chipset for Wide Area Network/ISDN

## ISDN/WAN

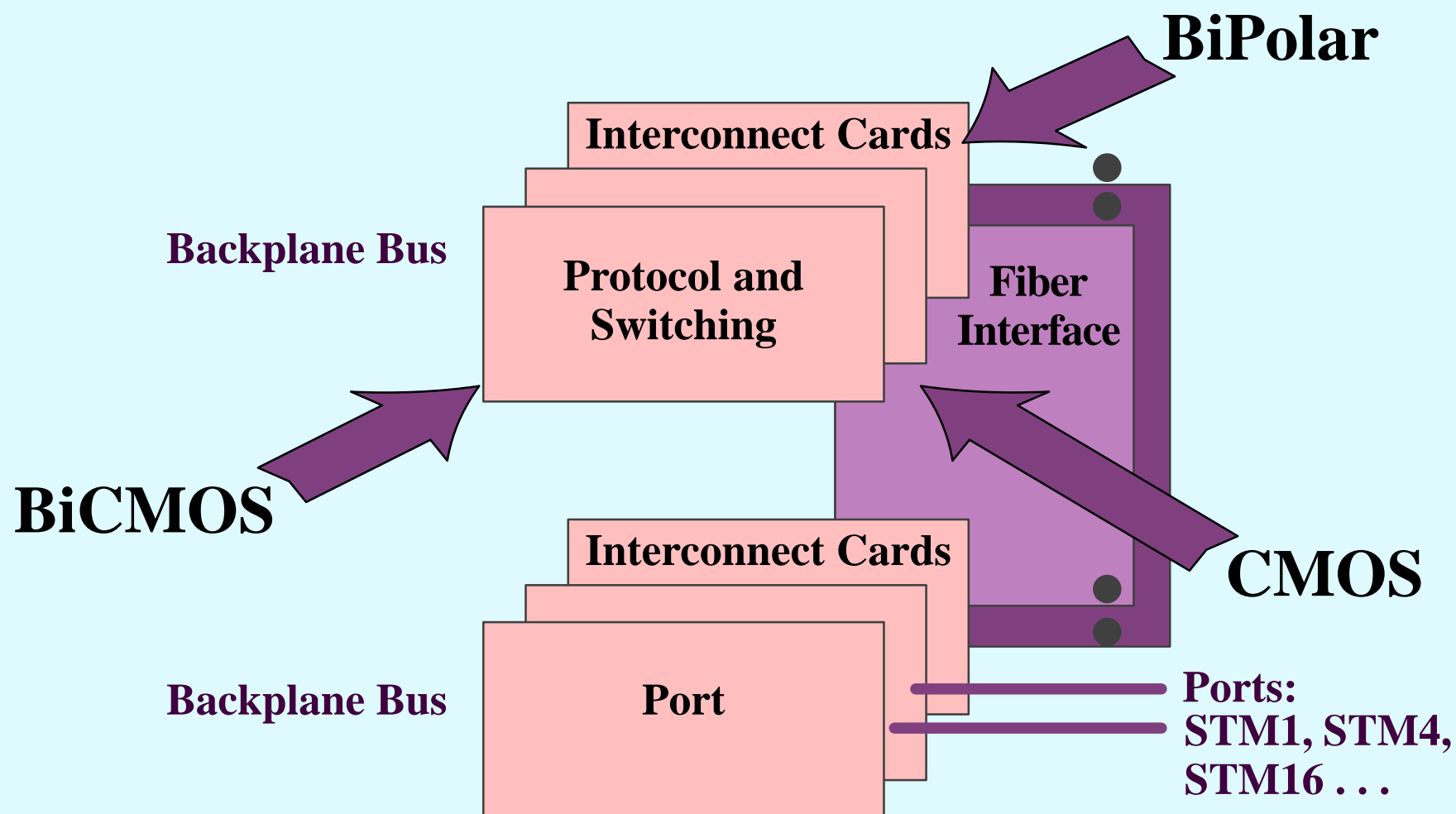
# Access Ramp to Super Highways





## TEMIC Technology

# Portfolio Illustration



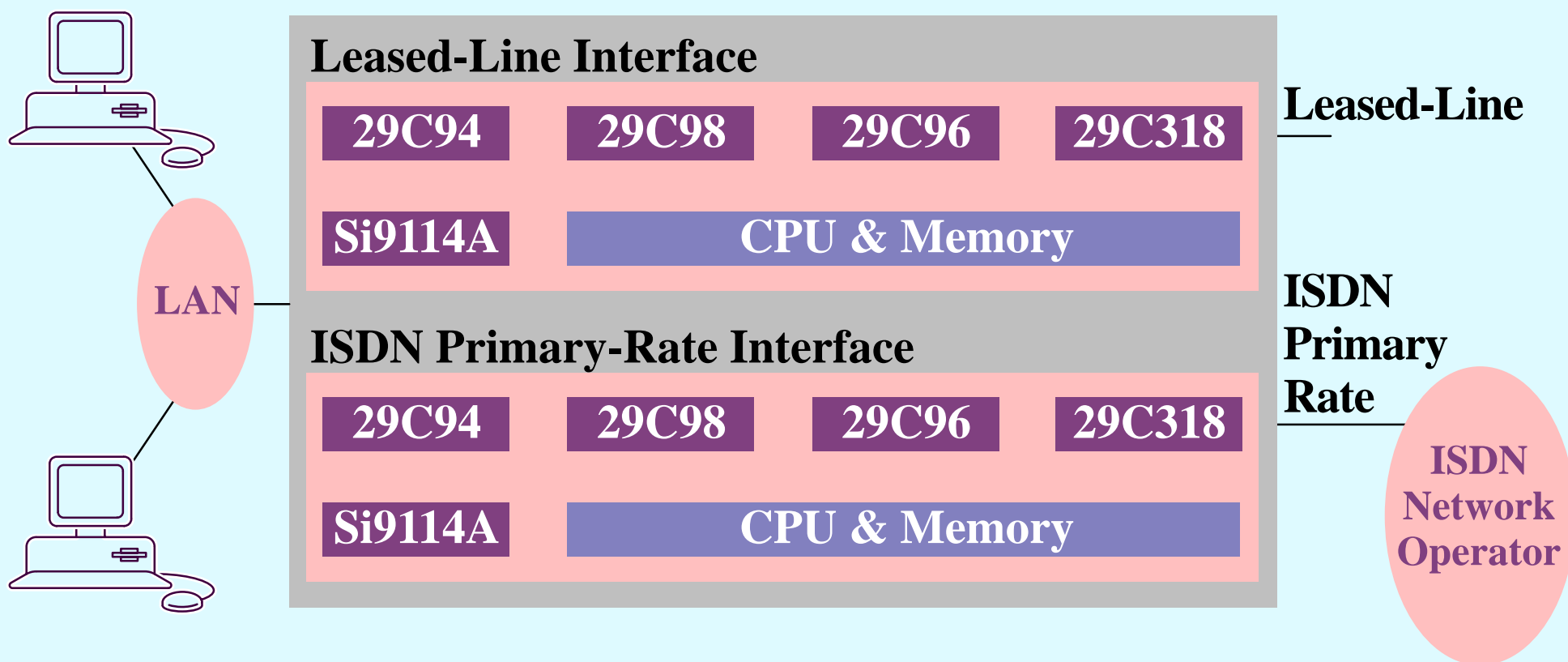
## WAN

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# Primary Rate Chipset

- Optimized chipset for ISDN router applications
- Highly integrated chipset to enable a complete ISDN primary access application to fit in PC add-on card
- Net telecom specialist can develop their own ISDN primary access application
- Same IC for US T1 standard and Europe / rest of the world E1 standard
- Euro ISDN NET5 certification

# Router ISDN Interface



## Protocol Controller

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# Multichannel HDLC/V.120

29C94 – 32 channels

29C948 – 8 channels

**New!**

- Full duplex channels with HDLC or clear channel mode
- Software programmable 2.048 Mbps (CEPT/E1) or 1.544 Mbps (T1/DS1) modes
- Dynamic channel allocation and hyperchannels
- System bus interface: 24-bit address and 8-bit data with DMA
- Typical applications:
  - 29C94 – central signalling and PRI data transfer
  - 29C948 – line-card signalling and 4 BRI interfaces

## Protocol Controller

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# Multichannel ECMA 102/V.110

29C95

- Full duplex channels with ECMA102 or clear channel mode
- Software programmable 2.048 Mbps (CEPT/E1) or 1.544 Mbps (T1/DS1) modes
- ECMA 102/V.110 frame generation/extraction, 7/8-bit characters, parity control, 1/2 stop bits
- Supports asynchronous speed – 600 to 19200 bps
- Dynamic channel allocation and hyperchannels
- System bus interface: 24-bit address and 8-bit data with DMA
- Pin and timing compatible with 29C94

E1/T1

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# B-Channel Resynchronizer

**New!**

29C98

- Channel delay equalization for E1 (32-channels) and T1 (24-channels)
- Supports bonding consortium recommendation modes 0, 1, and 2
- Maximum delay equalization up to 2 seconds
- External delay compensation RAM
  - Slow speed SRAM – up to 512 kbytes
- Interfaces
  - PCM line and system interface
  - 8-bit data and 12-bit address for processor bus
  - 8-bit and 19-bit address for delay compensation RAM
- Typical application: *Inverse Multiplexing*

## E1/T1

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# Frame Formatter

29C96

**Euro ISDN  
NET5 Qualified**

- Frame formats:
  - DS1 – DMI/4-frames, SLC-96, DDS; G702/D4, ESF
  - CEPT – double frame, CRC4 (with modification in G706)
- Signalling modes:
  - DS1 – transparent 0–16 states robbed bit or common channel
  - CEPT – transparent, IRSM or channel associated
- Memory time switch and 4 PCM interfaces with up to 8 Mbps speed
- CRC4, CRC6 control and generation
- Serial programming interface for 29C3XX line drivers
- NET5 approved

## E1/T1

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# Long Haul & Short Haul Line Drivers

29C318

29C310\*

29C304A\*

29C305A\*

- Long haul (up to 2 km) – 29C319 for E1 and 29C310 for T1
- Integrated E1/T1 short haul (up to 700 m) – 29C304A, 29C305A
- Suitable slicer levels for CEPT/DSX-1
- Programmable transmit equalizer
- Local and remote loopback functions
- Receive jitter attenuation starting at 3 Hz (short haul), and 6 Hz (long haul) devices
- Typical applications:
  - Long haul – remote PABX, cellular base station
  - Short haul – PABX

\*In North America use alternate source LXT310, LXT304A, LXT304A from Level1 Corp.

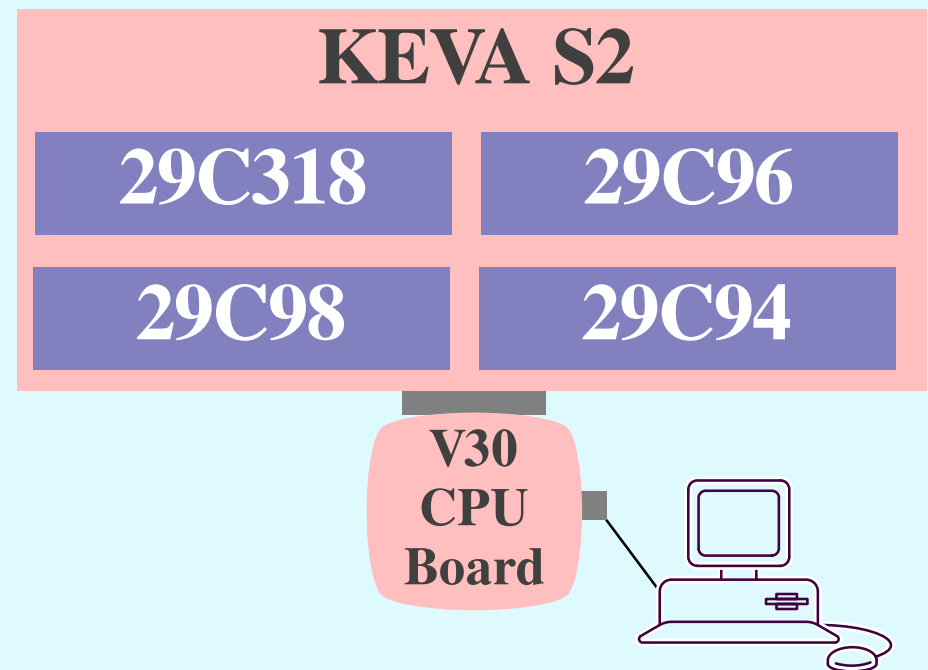


## ISDN

# Primary Rate Evaluation Board

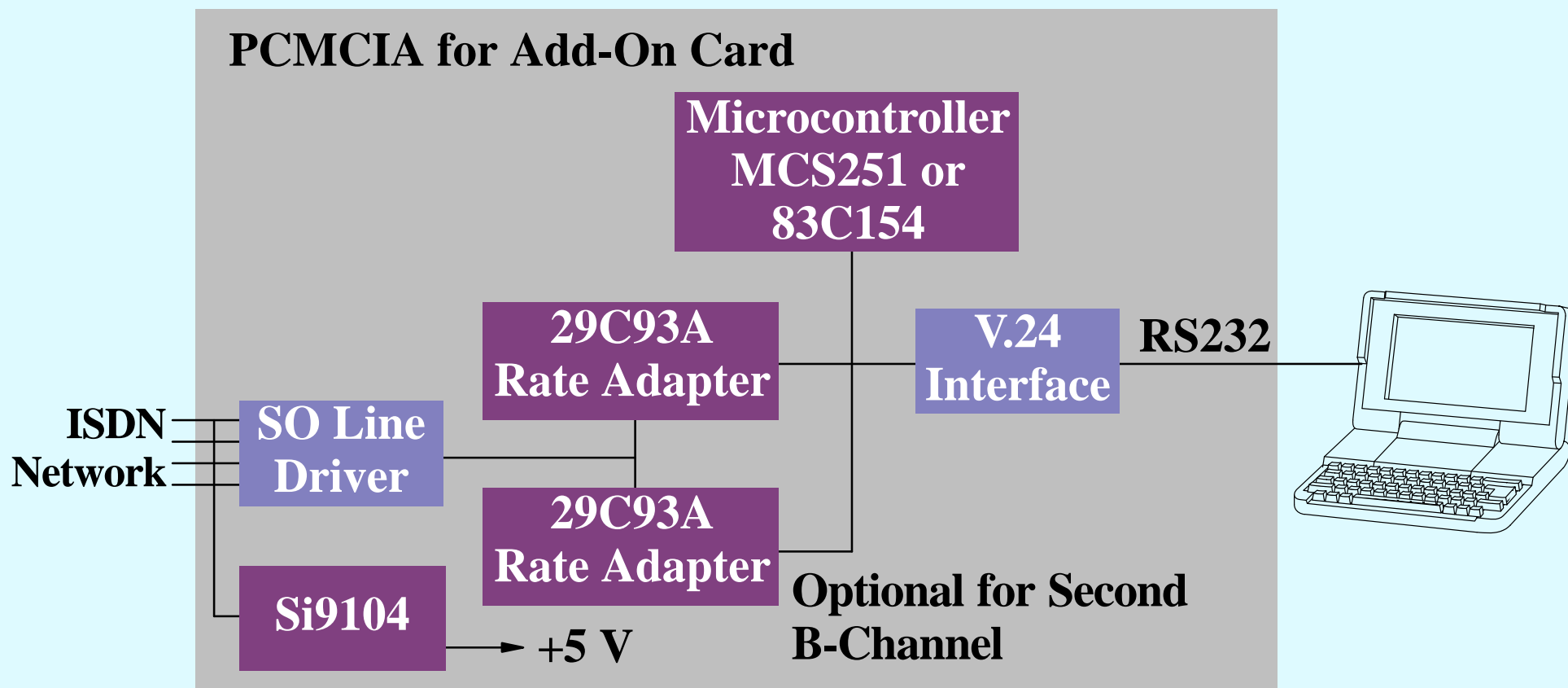
### KEVA S2 PC add-on board for ISDN primary rate

- E1/T1 chipset and CPU board with W30 processor
- ISDN bus interface and V.24 XX link
- 29C98 on satellite board
- Software drivers for components included



## ISDN

# Terminal Adapter



**X.21**

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# **Protocol Controller**

**29C921**

- Up to 2 Mbps operation
- Parity and invalid state check
- Repetitive characters filtering
- Receive FIFO
- Internal or external byte clock
- PQFP44 package
- Typical applications – leased-line interface and back-up unit

## ECMA 102/V.110

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# Terminal Rate Adapter

29C93A

- Rate adaptation between V.24 and ISDN S-interface
- For ECMA 102/V.110 for synchronous and asynchronous terminals
- Synchronous speed – from 600–64 kbps
- Asynchronous speed – from 50–57.6 kbps or 115.2 kbps
- Call set-up protocol through  $\mu$ P bus (V25bis)
- In-band parameter exchange (IPE) mode
- “End-to-end” or “local” flow control
- Network Independent Clock mode (NIC)
- Compatible with most common line drivers (IOM-2, SLD, SSI)
- PQFP44 package

**New!**

## ISDN

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# Terminal Adapter Evaluation Board

### Terminal adapter PC based evaluation system

- Software running under Windows
- CPU board for set-up and pattern loading
- Satellite board for 29C93A or 29C921

