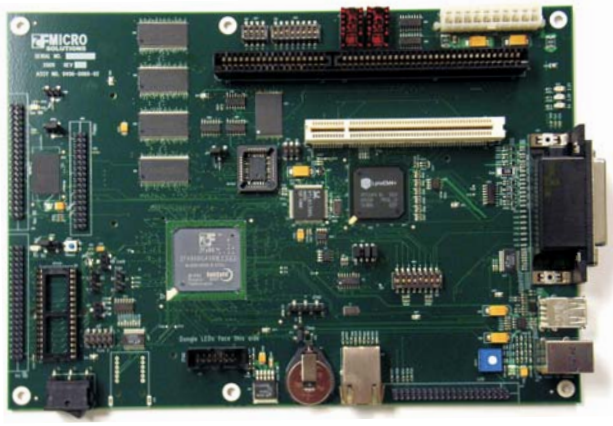
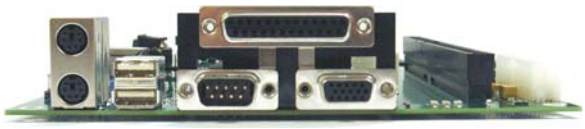
Easy Embedded PC™

254mm (10.0")





177mm (6.97")

EEPC™ — A Complete Open Source Embedded PC Reference Design — Build as is or Make It Your Own

- OrCad schematic
- PadsPCB Layout Design Files
- Bill of Materials
- $100 Target BOM cost at 10K (without modem module)
- **BIOS** and **DR-DOS** 7.03 licenses included with ZFx86
- S/W drivers to support all hardware
- ZF stocked parts kit: ZFx86, RTL8139DL, CY2292F*, AT29C040A*. All other parts available online at DigiKey, Mouser, RS Components (Allied), Symmetry (SST Nandrive)
  *pre-programmed

- **Open Source Design**
- **Known Good Design Reduces Time to Market**
- **Runs Legacy x86 S/W**
  186, 286, 386, 486 Code Compatible

A Complete x86 Board-level System

Just adapt the layout to your space and feature requirements and you can be shipping product in record time. All components were selected for easy sourcing and availability of software drivers. The design is based on the FailSafe® ZFx86 PC-on-a-chip, the only SOC that has an internal BIOS Update ROM that ensures your system will always be accessible, even if all Flash memory has been corrupted. The design also includes a fully implemented BIOS with free license to further shorten time-to-market and reduce cost and risk. ZF's design files, design guides and parts kits enable you to do it yourself.

486 CPU, Graphics and Ethernet Controller, and the entire design can be Powered Over Ethernet.

The ***EEPC*** was designed expressly for embedded applications with the most commonly used set of I/O, memory and traditional X86 PC functionality. It is the quickest way to create successful and reliable OEM products.

The ***EEPC*** incorporates all the features of a 486 PC including the most common peripherals in an easy to implement, ready to manufacture design. Ease of programming and reliable operation in embedded environments were the guiding factors in the design process.

Ultra-low Power Requirement

At less than 5W with the ZFx86 running at 100MHz the ***EEPC*** is ideal where low power is required for long battery life or harsh environments where airflow for heat dissipation is restricted and heatsinks and fans are unacceptable.

Lowest BOM Cost

Of prime importance in the design of any OEM product is the overall system cost in production. Created specifically to be cost-effective, the ***EEPC*** can be manufactured in 10K annual quantities for $100. No other design with as complete a feature list can be produced at a lower total bill of materials cost.

Long Product Life

Components were selected from manufacturers agreeing to make functionally pin compatible devices available for long life cycle embedded applications. Your ***EEPC*** based product will be stable, reliable and suited to the needs of embedded control markets over an extended lifetime.

Features

- Unequaled set of traditional PC H/W
- Ultra-low power sub-5W (with solid state disk only) at 100MHz
- Lowest embedded x86 PC BOM cost
- Long product life assured by component suppliers focused on embedded market ensures long-term availability
- A Complete System level architecture to minimize integration complexity
- ZF **PC BIOS** (Phoenix Technologies based) and **DR-DOS** 7.03 licenses included with every ZFx86 - no additional licensing or royalties
- BIOS supports CPU, support logic, super I/O devices, IRQ routing, boot block, setup, etc.
- Industry standard ISA & PCI busses
- Field configurable BIOS: Boot device select, com port configuration, remote console enable, and more

ZF Micro Solutions, Inc.
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Tel: +1-650-846-6500 www.zfmicro.com

Feature Set

PROCESSOR - ZFx86 SOC

ZFx86 FailSafe PC-on-a-Chip embedded processor with legacy PC features
- 486 DX4 with FPU and 8K L1 cache
- Operates at: 25, 33, 50, 66 or 100MHz
- Runs Intel® x86 compatible operating systems and application software
- Integrated Chipset
- Super-I/O
- ISA, PCI & I^2C buses
- IDE hard disk interface (2 drives per primary and secondary interface)
- Floppy disk controller (1)
- 1 parallel, 2 serial ports
- 2 USB 1.1 ports for HID only
- Real Time Clock
- PS2 keyboard and mouse
- 256MB SDRAM controller

GRAPHICS CONTROLLER

Silicon Motion SM712 - 2D multimedia controller
- 4MB integrated memory
- Ultra Low-Power: Functional blocks and engine clock can be dynamically controlled to reduce overall power consumption.
  – Supports Standby and Suspend
- Full Feature Set
  – Dual-display technology supports a primary and secondary display and complete dual-display capability in Windows®95, 98, CE through Silicon Motion API
  – QuickRotate allows image rotation to 90X, 180X, and 270X
  – TFT/DSTN panel support for typical high-resolution panels
  – VGA CRT support
  – Up to 1024 x 768 resolution
- Software Support
  – Driver/BIOS support for Windows®95, 98, CE and Linux

SDRAM

Integrated Silicon Solution Inc. (ISSI)
IS42S32800D configured as a quad 2M x 32 DRAM
- 32M, 64M, 96M, or 128MB - Fully synchronous operation
- Four internal banks (2M x 32bit x 4bank)
- Long-term availability

MODEM (option)

RADICOM TINY MODEM ultra compact, integrated in an RJ11 jack (uses one RS232 port)
- Serial TTL Interface
- AT Command Set
- Up to 56 kbps data speeds downstream
- Fax / Voice-remote playback and recording
- Generates and detects DTMF tones in voice mode

POWER SUPPLY

LINEAR TECHNOLOGY LT1963A
- Output Current: 1.5A
- Dropout Voltage: 340mV
- Low Noise: 40µVRMS (10Hz to 100kHz)

ORDERING INFORMATION:
ZFx86-IDK-B-EPC board kit includes SCX-EPC-Q-01 board, Z-tag dongle, licensed SW images, manuals, reference design and CAD files.

DUAL SOLID STATE IDE DISK OPTIONS

APACER ADC III
- ATA/IDE bus interface / ATA command set compatible
- Connector Type: 32-pin male connector
- Low power consumption, supply voltage: 3.3V and 5V
- Sustained read: up to 35 MB/sec
- Sustained write: up to 25 MB/sec
- Intelligent endurance design: Advanced wear-leveling, Built-in Hardware ECC, Enhanced Data Integrity
- Intelligent power failure recovery
- Enhanced security: Secure Protection Zone, Quick Erase

and / or

SST NAND Drive SST85LD0128
- ATA/IDE Bus Interface
- Low Power, 3.3V Power Supply
- Endurance: 100K write cycles
- Data Retention: 10 years
- Fast Sustained Write (Host-to-Flash) up to 5 MByte/sec
- Fast Sustained Read (Flash-to-Host) up to 10 MByte/sec

ETHERNET

Realtek 10/100 RTL8139DL
Integrated Fast Ethernet MAC and PHY
- 10/100 Mb/s and 10/100 Mb/s N-way Auto-negotiation
- PCI local bus single-chip Fast Ethernet controller
  – PCI bus master data transfers and PCI space or I/O space mapped data transfers of RTL8139D(L)'s operational registers
  – PCI VPD (Vital Product Data)
  – ACPI, PCI power management
  – PCI multi-function - incorporate with other PCI master device
- Compliant to PC99 and PC2001 standards
- Auxiliary power-on internal reset, to be ready for remote wake-up when main power remains off
- Auxiliary power auto-detect, and sets the related capability of power management registers in PCI configuration space
- Loopback capability
- Half/Full duplex capability

ELECTRICAL

- Power
  – ATX power supply connector
  – Battery (2032)
- Connectors
  – Combo DSUB: VGA 15 pin, RS232 9 pin (COM1), Parallel 25 pin
  – RS232 - 10 pin (COM2) / 56Kbps modem (COM2) optional
  – LCD (40 pin)
  – PS2 keyboard/mouse
  – USB dual, stacked
  – Ethernet RJ45 (integrated transformer and LEDs)
  – Disk Drives: IDE two 40 pin; Floppy one 34 pin
  – Z-tag header
  – PCI- one 32 bit
  – ISA- one 16 bit
- Jumpers: CMOS RAM reset; Clock selection; Aux memory socket select
- Switches: Power rocker; DIP switches - two bootstrap and one LCD configuration
- LEDs: Ethernet activity (RJ45 connector), Hard Disk and power

PHYSICAL: 254mm x 177mm (10" x 6.97"), commercial temperature grade (0-70C)

INFORMATION SUBJECT TO CHANGE WITHOUT NOTICE

PN: DS-0005-09JUL2009

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