Operating Guide

EPIA-N800 Mainboard

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VIA EPIA-N800 Overview

The VIA EPIA-N800 Nano-ITX mainboard is a super compact native x86 mainboard optimized for entry level systems in embedded and productivity applications. The mainboard is based on the VIA VX800 Unified Digital Media IGP chipset featuring the VIA C-9 HC3 with 2D/3D graphics and video accelerators for rich digital media performance.

The VIA EPIA-N800 includes a powerful, secure, and efficient VIA Nano™ NanoBGA2 processor. The VIA Nano processor includes the VIA Padlock Security Engine, VIA CoolStream™ Architecture, VIA StepAhead™ Technology Suite, and VIA TwinTurbo™ technology.

The VIA EPIA-N800 supports up to 2 GB of 667/533 MHz DDR2 memory. The VIA EPIA-N800 provides support for high fidelity audio with its included VIA VT1708B High Definition Audio codec. In addition it supports two SATA (3.0 Gbps) storage device. Other supported storage includes CompactFlash and IDE.

The VIA EPIA-N800 is compatible with a full range of Nano-ITX, Mini-ITX, FlexATX, and MicroATX enclosures. The VIA EPIA-N800 is fully compatible with Microsoft® and Linux operating systems.

VIA EPIA-N800 Layout

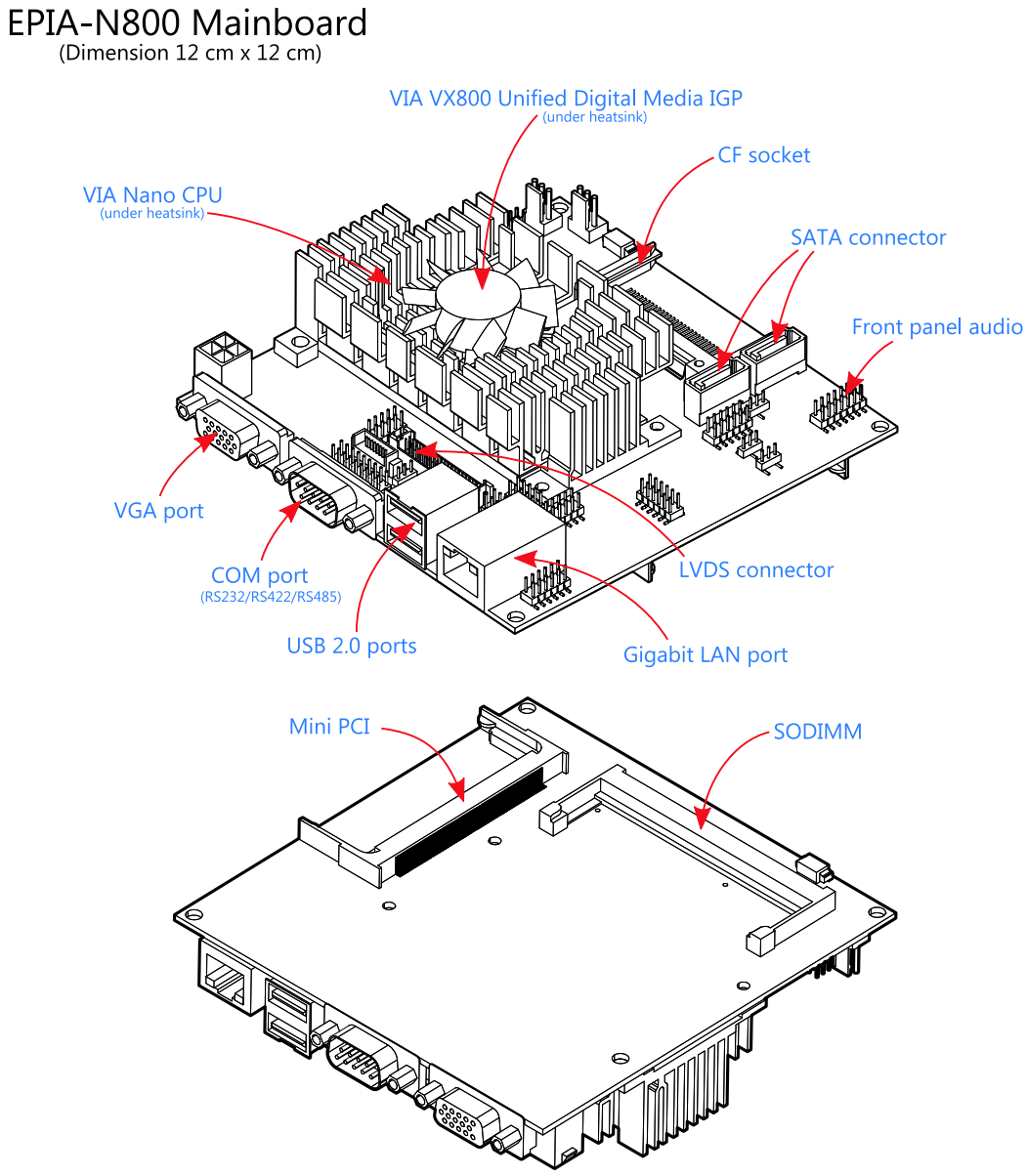


Figure 1: EPIA-N800 layout

VIA EPIA-N800 Specifications

Model Name	- EPIA-N800-13	- EPIA-N800-1oE
Processor	- VIA Nano™ 1.3+ GHz NanoBGA2 processor (400 MHz FSB)	- VIA Nano™ 1.0 GHz NanoBGA2 processor (400 MHz FSB)
Chipset	- VIA VX800 Unified Digital Media IGP Chipset	
System Memory	- 1 x DDR2 533/667 SODIMM slot - Up to 2 GB memory size	
VGA	- Integrated VIA C-9 HC3 DX9 3D/2D Graphics and unified video decoding acceleration	
Onboard IDE	- 1 x UltraDMA 133/100/66/33 pin connector (2.0 mm / 44-pin)	
Onboard LAN	- 1 x VIA VT6130 PCIe Gigabit LAN controller	
Onboard Audio	- 1 x VIA VT1708S High Definition Audio Codec	
Onboard I/O Connectors	- 1 x USB pin header for two additional USB 2.0 ports - 1 x Front audio pin header for headphone-out/MIC-in or amplifier module - 1 x Dual-channel LVDS panel connector - 1 x Backlight control connector (for inverter power and brightness control) - 1 x CF connector - 2 x SATA connectors - 7th pin of SATA1 provides power for SATA DOM - 2 x 4-pin +5V SATA power connectors - 1 x SATA DOM power selector - 1 x SPI pin header - 1 x Digital I/O pin header - 1 x KB/MS pin header - 1 x SMBus pin header - 3 x RS-232 serial port pin header (with 5V/12V selector) - 1 x Front panel pin header - 1 x System temperature reading pin header - 2 x Fan connectors for CPU and system fans - 1 x +12V power connector - 1 x Power mode select connector (PS-on, 5Vsb)	
Expansion Slot	- 1 x Mini PCI slot	
Back Panel I/O	- 1 x Serial port (supports RS-232/422/485) - 1 x VGA port - 1 x RJ-45 LAN port - 2 x USB 2.0 ports	
BIOS	- Award BIOS - SPI 4/8 Mbit flash memory	
Operating System	Windows 2000/XP, Linux, WinCE, XPe	
System Monitoring & Management	- CPU voltage monitoring - Wake-on-LAN, Keyboard power-on, RTC Timer power-on, Watch Dog Timer - Fan speed detection - System power management and temperature monitoring - AC Power failure recovery	
Operating Temperature	0°C ~ 60°C	
Operating Humidity	0% ~ 95% (relative humidity; non-condensing)	
Form Factor	- Nano-ITX - 12 cm x 12 cm	

Note: This specification is subject to change without prior notice.

VIA EPIA-N800 Processor SKUs

The VIA EPIA-N800 is available in the following speed grades:

- 1.3+ GHz VIA Nano™ NanoBGA2 Processor
- 1.0 GHz VIA Nano™ NanoBGA2 Processor

VIA VX800 Chipset Overview

The VIA VX800 Unified Digital Media Chipset is designed to enable high quality digital video streaming and DVD playback in a new generation of fanless, small form factor PCs and IA devices. The VIA VX800 features VIA C-9 HC3 with 2D/3D graphics and video acceleration, DDR2 667/533 MHz support, motion compensation and dual display support to ensure a rich overall entertainment experience. Outstanding connectivity features include USB 2.0, 10/100/1000 LAN, SATA (3.0 Gbps), and ATA/133.

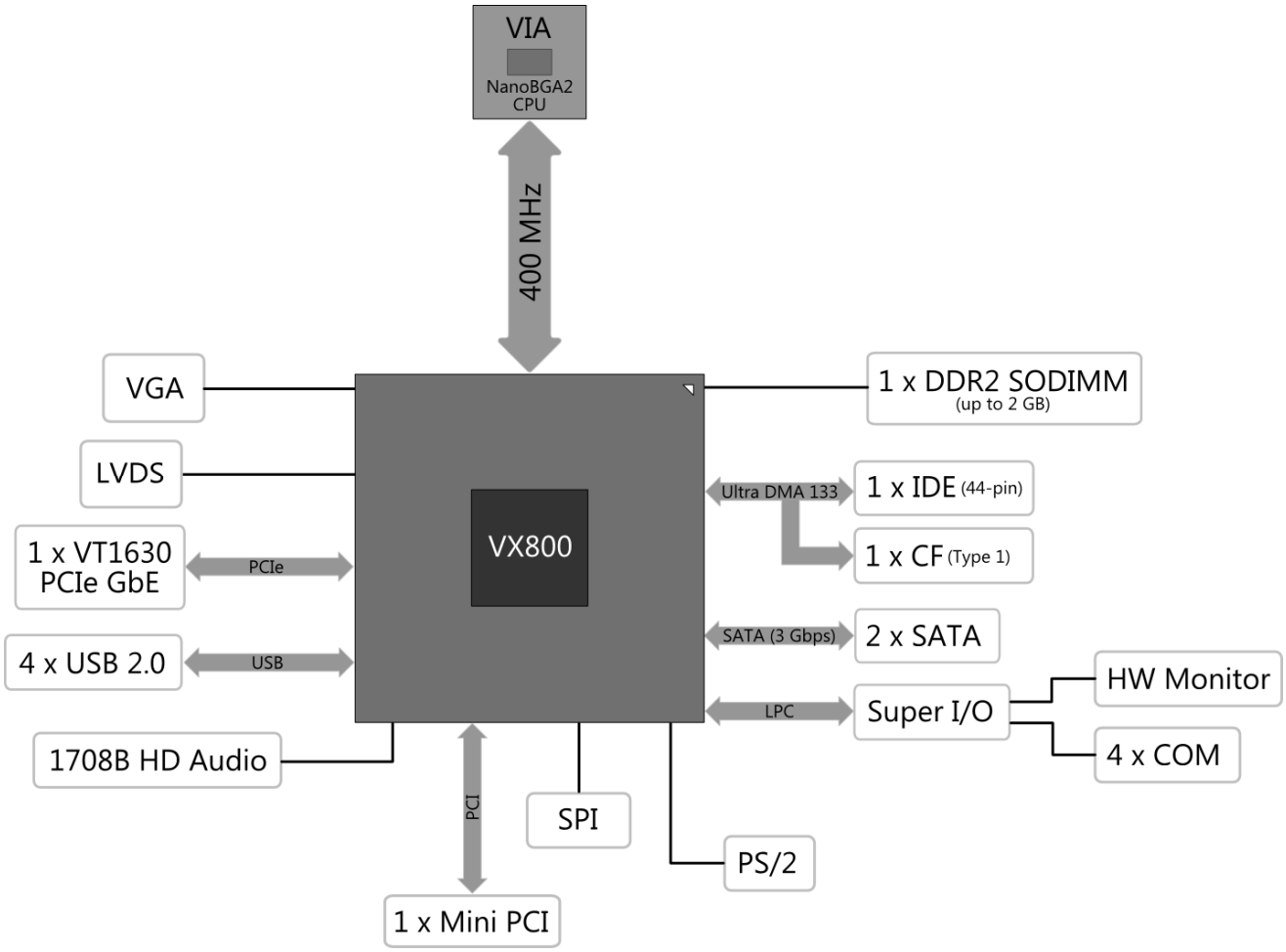


Figure 2: VX800 as implemented in EPIA-N800

VIA EPIA-N800 Dimensions

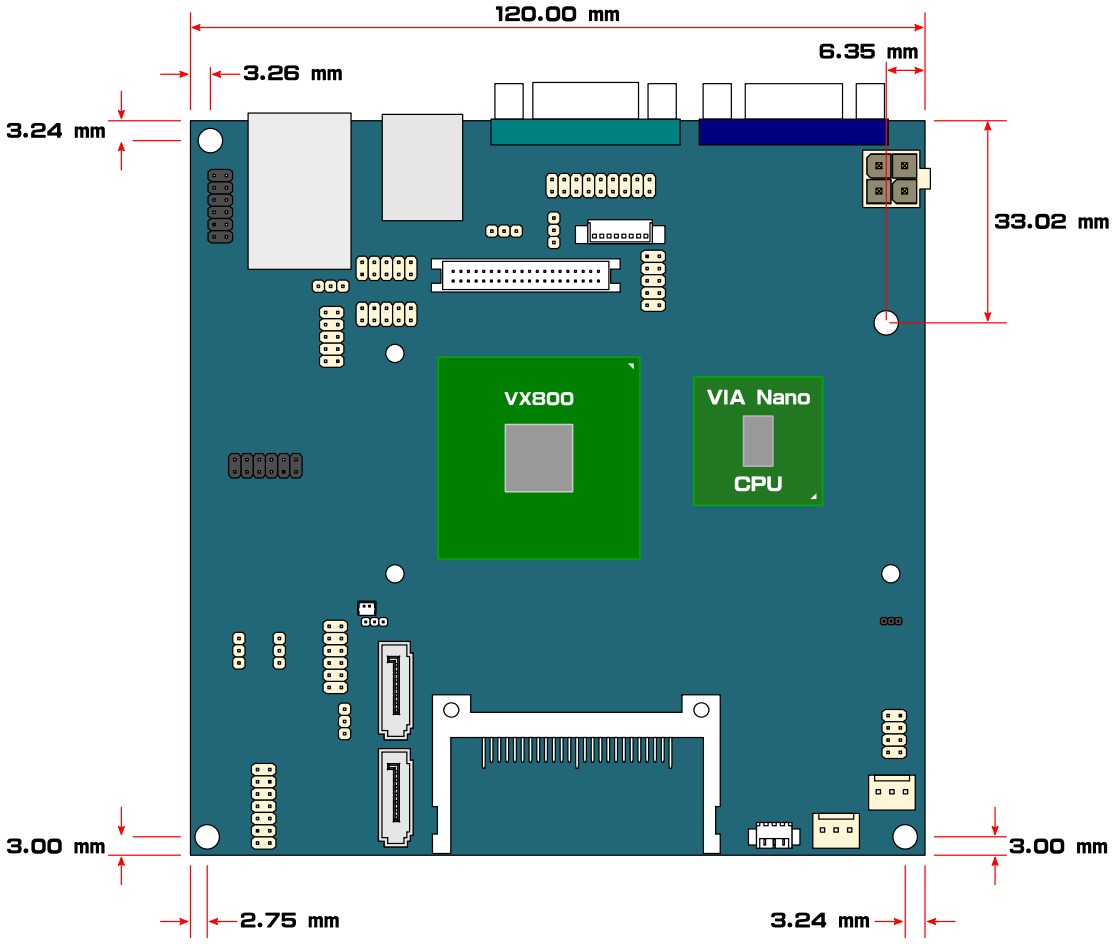
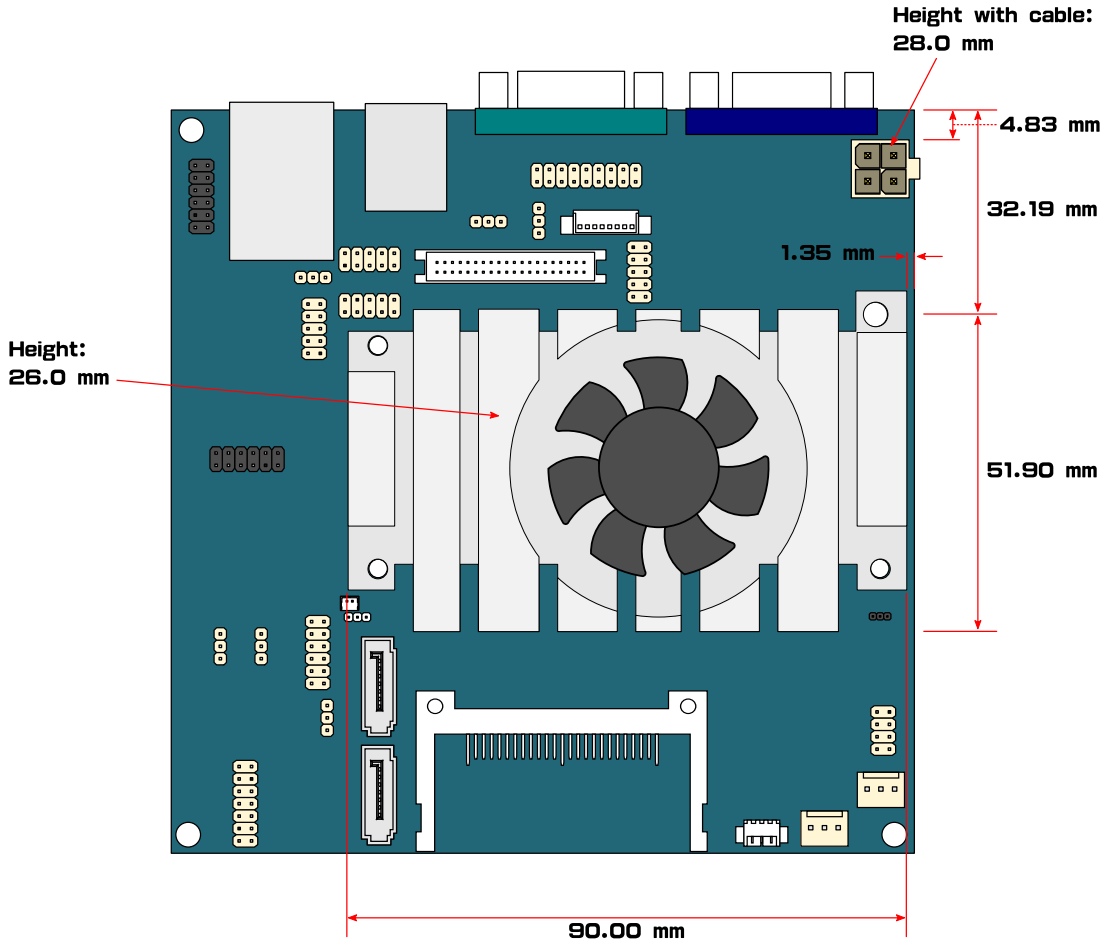


Figure 3: EPIA-N800 mounting layout and dimensions

VIA EPIA-N800 Height Distribution



All other height is 21 mm or below.

Figure 4: EPIA-N800 height distribution (top)

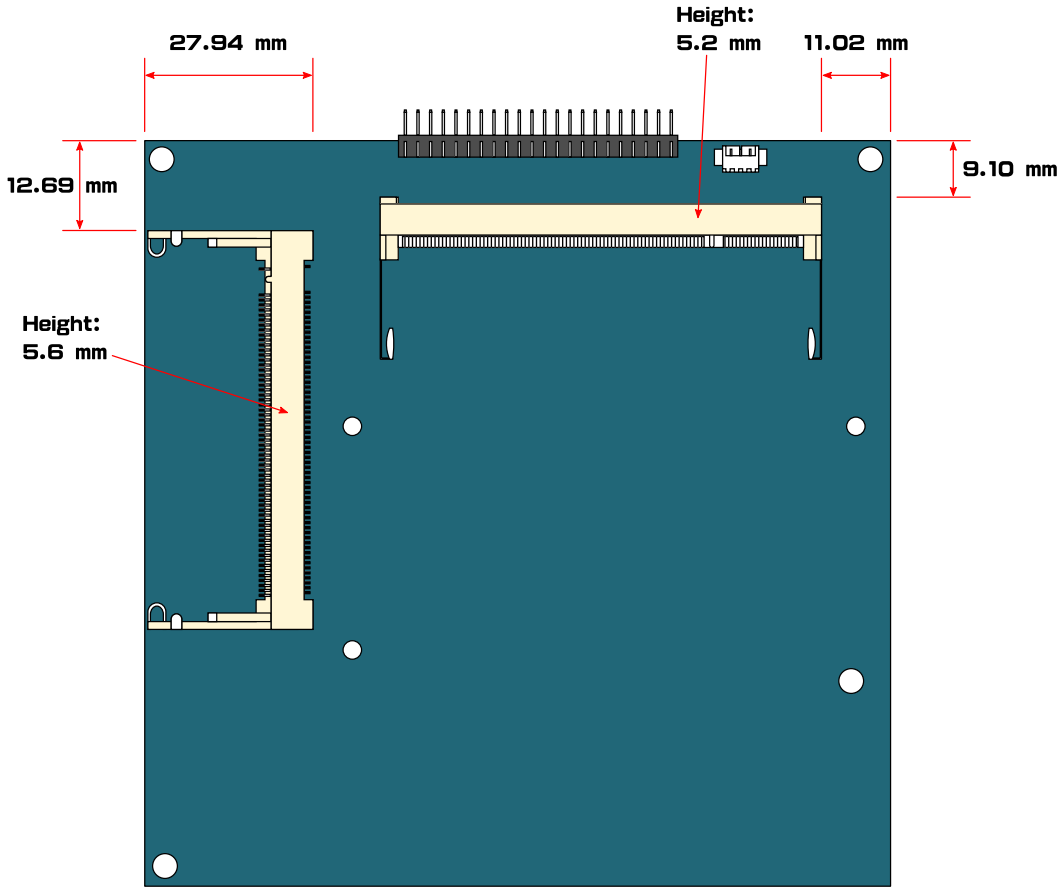


Figure 5: EPIA-N800 height distribution (bottom)

VIA EPIA-N800 Side Profile

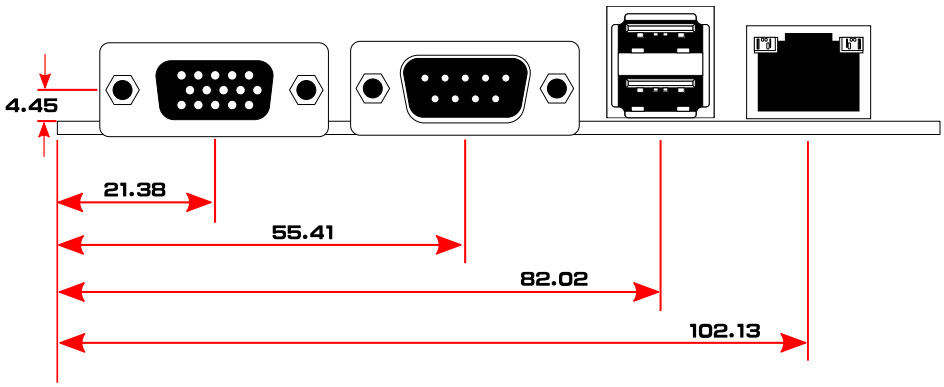


Figure 6: EPIA-N800 back panel ports

Power Consumption

Power consumption tests were performed on the VIA EPIA-N800 with the following components as shown in the table below.

Component	Description
CPU	Nano™ 1.3+ GHz (for EPIA-N800-13 test) Nano™ 1.0 GHz (for EPIA-N800-10E test)
Memory	InnoDisk M2SJ-2GHF6C05-C DDRII 667 2GB SODIMM
DVD drive	External Powered DVD ROM CRX890S
Hard disk drive	External Powered HDD WD1600BVT
CF Card	4GB InnoDisk iCF4000
Power supply	inSTEK GPC-3030DQ DC-in PSU

The following table shows a breakdown of the voltage, amp and wattage values while running common system applications.

VIA EPIA-N800-13

Test	Measured Voltage	Measure Amp	Watts
Playing a DVD	11.791	1.504	17.734
Playing MP3 – Media Player	11.670	1.443	16.840
Downloading files through the Network	11.628	1.362	15.837
Running 3DMark05	11.575	1.925	22.282
Running C.C. Winstone 2004	11.604	1.990	23.092
Idle	11.628	1.337	15.547
S3 mode	11.799	0.196	2.313

VIA EPIA-N800-10E

Test	Measured Voltage	Measure Amp	Watts
Playing a DVD	12.100	1.130	13.673
Playing MP3 – Media Player	12.080	1.120	13.530
Downloading files through the Network	12.100	1.280	15.488
Running 3DMark05	12.100	1.350	16.335
Running C.C. Winstone 2004	12.100	1.310	15.851
Idle	12.080	0.940	11.355
S3 mode	12.080	0.220	2.658

VIA EPIA-N800 Microsoft and Linux Driver Support

MICROSOFT DRIVER SUPPORT

The VIA EPIA-N800 mainboard is compatible with Microsoft operating systems. The latest Windows 2000 and Windows XP drivers can be downloaded from the VEPD website at www.viaembedded.com.

For embedded operating systems (Windows XP Embedded), the related drivers can be found in the VIA Embedded website at www.viaembedded.com.

LINUX DRIVER SUPPORT

The VIA EPIA-N800 mainboard is highly compatible with many Linux distributions.

Support and drivers are provided through various methods including:

- Using drivers provided by VIA
- Using a driver built into a distribution package
- Visiting www.viaembedded.com for the latest updated drivers
- Installing a third party driver (such as the ALSA driver from the Advanced Linux Sound Architecture project for integrated audio)

For OEM clients and system integrators developing a product for long term production, other code and resources may also be made available. You can submit a request to your VEPD support contact.

Contact

For more information on the VIA EPIA-N800 Nano-ITX mainboard contact your sales representative or visit our website at www.viaembedded.com.