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VT6130 Gigabit Ethernet Controllers

# Velocity VT6130 Gigabit Ethernet Controllers



The VIA Velocity™ series offers two new single-chip Gigabit Ethernet Controllers with the PCI-Express x1 interface: the VIA VT6130.

Offering 2 gigabits per second of aggregate bandwidth, the VIA VT6130 supports critical performance and management related features. The driver and silicon have been developed together to provide optimal performance in terms of both throughput and host CPU utilization.

Supporting 10/100/1000 Mbps triple-speed and full/half-duplex capability at all speeds, the integrated PHY is fully compliant to IEEE 802.3 (10BASE-T), 802.3u (100BASE-TX), and 802.3ab (1000BASE-T) standards. With proven design, VIA Velocity™ controllers feature leading narrow band noise tolerance that delivers superior performance for real world PCBs and cables.



To maximize media-side traffic throughput, the VIA VT6130 provides on-chip RAM to enable efficient data buffering and maintain high performance as available PCI bandwidth changes. Host side CPU utilization is minimized by the adoption of an adaptive interrupt scheme that reduces interrupts called to CPU, and maximized use of packet bursts. The controller can also offload tasks from the host CPU to further improve overall system performance. Both TCP/UDP/IP checksum offloading and TCP segmentation offloading are supported.

To maximize network management features for the user, the VIA VT6130 includes sophisticated GigaCheck™ link management software. This software provides comprehensive cable diagnostics, operating analysis, and status information that greatly simplifies network management and troubleshooting.

## Applications

Packaged in a small form factor 64-pin QFN (9×9 mm), the VIA VT6130 device is optimized for LAN on Motherboard (LoM) applications for desktops and notebooks.

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**Highly Integrated Solution:** The VIA Velocity™ chip series are 10/100/1000 single chip solutions that include checksum offloading, jumbo frame support, a deep on-chip Tx/Rx packet buffer, and a full suite of management features, including compliance with IEEE 802.3ab, 802.3x, 802.1p, 802.1Q standards.

**Low Power:** The VIA VT6130 fully incorporates advanced power management schemes, such as PCI Power Management v1.1 and ACPI v2.0. This enables energy-efficient operation and lowers power consumption. The controllers can support multiple wake-up events through the detection of Magic packets, Interesting Pattern Match packets or Link Status changes. Two special events not defined in Wake-on-LAN standard, the AC Power Loss and PCI Abnormal Shut-Down Wake-Up, are also supported by detecting Magic packets. The controllers also support legacy Wake-on-LAN cases.

To further reduce system complexity and cost, on-chip regulator circuits permit a single 3.3V power supply to produce both 2.1V and 1.2V core power, selectable by the user.

**GigaCheck™ Software Interface:** The VIA Velocity™ chip series are provided with a full software suite that enables comprehensive cable diagnostics, operating analysis, and status information. The software also can provide information regarding connection speed, cable analysis, and VLAN management – all in an easy to use attractive interface.

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## Key Features

- Network Features
  - 1000BASE-T, 100BASE-TX, and 10BASE-T.
  - Compatible with IEEE 802.3, 802.3x, 802.3u, 802.1Q.
  - Auto-crossover (MDI/MDIX) support.
  - Auto Polarity correction.
  - Smart Cable Analyzer.
  - Automatic speed negotiation and smart speed shift down.
  - Support address filtering for unicast, multicast and broadcast.
  - Allow up to 64 perfect matching addresses.
  - Interrupt coalescing support.
  - Jumbo Frame support.
  - Ipv4, TCP, and UDP CheckSum offload support.
  - TCP large packet segmentation support.
  - Wake-on-LAN function support.



- WFM2.0 enable for server support.
- SNMP-management support.
- DMI2.0, PXE2.1 support.
- PCI PMU1.1 support.
- Supports statistics for RFC1213 (MIBII), RFC1398 (etherLike MIB), and 802.3 LME.
- Host Bus Features
  - Compliance with PCI Express Revision 1.1.
  - Support PCI Power Management v1.1 and ACPI v2.0
  - Advanced Error Reporting.
  - Supports MSI.
  - Transaction Layer CRC (ECRC) support.
  - Active state power management to LOS and L1.
  - Supports both 64-bit and 32-bit address access.
  - Beacon and WAKE# both supported.
  - Shadow EEPROM for LAN-on-Motherboard application support.
  - Supports SPI BROM in VT6130, and parallel BROM interface for VT6132.
- Power Information
  - 3.3V and 2.5V I/O support.
  - Integrated regulator controllers can provide 2.1V and 1.2V core power supply.
  - Programmable LED modes.
- Package Type Information
  - VT6130: 64-pin QFN (9mmx9mm)
- Complete driver support
  - Windows–Vista, Server 2003, XP, 2000, NT, ME, 98(SE), 95, WFW 3.11, WinCE 4.2/5.0/6.0
  - Novell– NetWare 6x, 5x, 4x, 3.11/3.12, Client32 for DOS & ODI DOS client
  - Boot Rom– PXE, RPL, PXERPL (PXE and RPL merged)
  - Linux– Kernel 2.2/2.4/2.6, IA64, SPARC, PPC
  - Unix– Solaris, SCO5, UnixWare, FreeBSD
  - DOS– Packet driver, PC NFS, MS LAN manager, LANTASTIC, LAN Server for DOS
  - Mac– OS 9.x/10.
- Other Benefits
  - Less BOM/ lower BOM cost for PCI-express Card and motherboard

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