

产品承认书

SPECIFICATION FOR APPROVAL

客户 Customer: _____

产品名称 Model Name: RT8125 PCIe1x 2.5G Lan Card

产品编号 Model number: EP-9635

日期 Date: _____

SIGNATURE:

业务 SALES	工程 ENG	制造 MFG	品质 QUALITY
APPROVED BY	CHECKED BY	CHECKED BY	TESTED BY

CUSTOMER APPROVAL:

CUSTOMER APPROVAL BY	
DATE	

1、 Product Photo

Top:



Bottom:

2、 Product specification

Model number	TXA073
Chipset	RTL8125
Port number	1* RJ45
Standard	IEEE 802.3、 IEEE 802.3u、 IEEE 802.3ab、 IEEE 802.3az、 IEEE 802.3bz
Network media	10Base-T,cat3 or above UTP,1000Base-Tx,cat5 or above UTP
Data rate	10/100/1G/2.5Gbps
Interface	PCI Express 1x slot
Auto MDIX	YES
Full Duplex Support	YES
MTBF	376,212 Hours
LED Indicator	Link/Act, Speed
Dimension	71.5*50*1.6mm
Support OS	Windows®10(32/64), Win7 (32/64), Win8,8.1 (32/64) Windows Server® 2012, 2008 LINUX up to 4.15
Environment	Operating Temperature: 0 °C-60 °C
	Relative Humidity: 10%-90%(non-condensing)
	Storage Temperature: -10°C-70°C
	Relative Humidity: 5%-90%(non-condensing)

3、 Chipset Description:

The Realtek RTL8125-CG 10/100/1000M/2.5G Ethernet controller combines a four-speed IEEE 802.3 compatible Media Access Controller (MAC) with a four-speed Ethernet transceiver, PCI Express bus controller, and embedded memory. With state-of-the-art DSP technology and mixed-mode signal technology, the RTL8125 offers high-speed transmission over CAT 5e UTP cable or CAT3 UTP (10Mbps only) cable. Functions such as Crossover Detection and Auto-Correction, polarity correction, adaptive equalization, cross-talk cancellation, echo cancellation, timing recovery, and error correction are implemented to provide robust transmission and reception capability at high speeds.

The RTL8125 supports the PCI Express 2.1 bus interface for host communications with power management, and complies with the IEEE 802.3u specification for 10/100Mbps Ethernet, the IEEE 802.3ab specification for 1000Mbps Ethernet and the IEEE 802.3bz specification for 2500Mbps Ethernet. It supports an auxiliary power auto-detect function and will auto-configure related bits of the PCI power management registers in PCI configuration space.

Advanced Configuration Power management Interface (ACPI)——power management for modern operating systems that are capable of Operating System-directed Power Management (OSPM)——is supported to achieve the most efficient power management possible. PCI MSI (Message Signaled Interrupt) and MSI-X are also supported.

In addition to the ACPI feature, remote wake-up (including AMD Magic Packet and Microsoft Wake-Up Frame) is supported in both ACPI and APM (Advanced Power Management) environments. To support WOL from a deep power down state (e.g., D3cold, i.e., main power is off and only auxiliary exists), the auxiliary power source must be able to provide the needed power for the RTL8125. To further reduce power consumption, the RTL8125 also supports PCIe L1 substate L1.1 and L1.2.

The RTL8125 supports 'RealWoW!' technology that enables remote wake-up of a sleeping PC through the Internet. This feature allows PCs to reduce power consumption by remaining in low power sleeping state until needed.

Note: The RealWoW!' service requires registration on first time use.

The RTL8125 supports Protocol offload. It offloads some of the most common protocols to NIC hardware in order to prevent spurious Wake-Up and further reduce power consumption. The RTL8125 can offload ARP (IPv4) and NS (IPv6) protocols while in the D3 power saving state.

The RTL8125 supports the ECMA (European Computer Manufacturers Association) proxy for sleeping hosts standard. The standard specifies maintenance of network connectivity and presence via proxies in order to extend the sleep duration of higher-powered hosts. It handles some network tasks on behalf of the host, allowing the host to remain in sleep mode for longer periods. Required and optional behavior of an operating proxy includes generating reply packets, ignoring packets, and waking the host.

Features:

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Function Block Diagram:

The RTL8125 supports IEEE 1588, IEEE 1588-2008, and IEEE 802.1AS, also known as Precision Time Protocol (PTP). IEEE 802.1AS is part of the Ethernet AVB (Audio Video Bridging) standard. PTP provides micro-second level accuracy time synchronization among multiple Ethernet devices. The RTL8125 implements hardware support for these standards. The RTL8125 supports IEEE 802.1Qav, also part of the Ethernet AVB standard. IEEE 802.1Qav is a forwarding and queuing mechanism enhancement. It provides guarantees for time-sensitive (i.e., bounded latency and delivery variation), loss-sensitive real-time audio video (AV) data traffic transmissions.

The RTL8125 supports IEEE 802.3az-2010, also known as Energy Efficient Ethernet (EEE). IEEE 802.3az-2010 operates with the IEEE 802.3 Media Access Control (MAC) Sublayer to support operation in Low Power Idle mode. When the Ethernet network is in low link utilization, EEE allows systems on both sides of the link to save power.

The RTL8125 is compatible with Microsoft NDIS5, NDIS6 (IPv4, IPv6, TCP, UDP) Checksum and Segmentation Task-offload (Large send and Giant send) features, and supports IEEE 802.1P Layer 2 priority encoding and IEEE 802.1Q Virtual bridged Local Area Network (VLAN) and IEEE 802.1ad Double VLAN. The above features contribute to lowering CPU utilization, especially benefiting performance when in operation on a network server.

The RTL8125 supports Receive-Side Scaling (RSS) to hash incoming TCP connections and load-balance received data processing across multiple CPUs. RSS improves the number of transactions per second and number of connections per second, for increased network throughput.

The maximum supported jumbo frame length of the RTL8125 is 16383 bytes

The RTL8125 supports Virtual Machine Queue (VMQ) which is a hardware virtualization technology for the efficient transferring of network traffic to a virtualized host OS. The VMQ technology uses a hardware packet filter to deliver packets from an external virtual machine; reducing the overhead of routing packets and copying from the management operating system to the virtual machine.

Note: The RTL8125 Virtual Machine Queue (VMO) is only functional in computers running Windows Server 2008 R2 with the Hyper-V server role installed.

The device features inter-connect PCI Express technology. PCI Express is a high-bandwidth, low-pin-count, serial, interconnect technology that offers significant improvements in performance over conventional PCI and also maintains software compatibility with existing PCI infrastructure.

The RTL8125 is suitable for multiple market segments and emerging applications, such as desktop, mobile, workstation, server, communications platforms, and embedded applications.

4、Features

Hardware

- Integrated 10/100/1000M/2.5G transceiver
- Supports 2.5G and 1G Lite mode
- Auto-Negotiation with Extended Next Page capability (XNP)
- Compatible with NBASE-T™ Alliance PHY Specification
- Supports PCI Express 2.1
- Supports pair swap/polarity/skew correction
- Configurable MDI port ordering (MDI swap) for easy PCB layout
- Crossover Detection & Auto-Correction
- Supports 1-Lane 2.5/5Gbps PCI Express Bus
- Embedded OTP memory can replace external EEPROM
- Supports hardware ECC (Error Correction Code) function
- Supports hardware CRC (Cyclic Redundancy Check) function
- Transmit/Receive on-chip buffer support
- Supports PCI MSI (Message Signaled Interrupt) and MSI-X
- Supports 25MHz Crystal / External Oscillator
- Generate reference clock from Crystal
- Supports power down/link down power saving/PHY disable mode
- LAN disable with GPIO pin
- Customized LEDs
- Controllable LED Blinking Frequency and Duty Cycle
- Self-Loopback diagnostic capability
- Thermal management
- 88-pin QFN ‘Green’ package
- Serial EEPROM
- Supports 32Mbytes External Serial Peripheral Interface (SPI) Flash
- Supports ECMA-393 ProxZzzy Standard for sleeping hosts
- Supports LTR (Latency Tolerance Reporting)
- Wake-On-LAN and ‘RealWoW!’ Technology (remote wake-up) support
- Supports 32-set 128-byte Wake-Up Frame pattern exact matching
- Supports Microsoft WPI (Wake Packet Indication)
- Supports PCIe L1 substate L1.1 and L1.2

IEEE

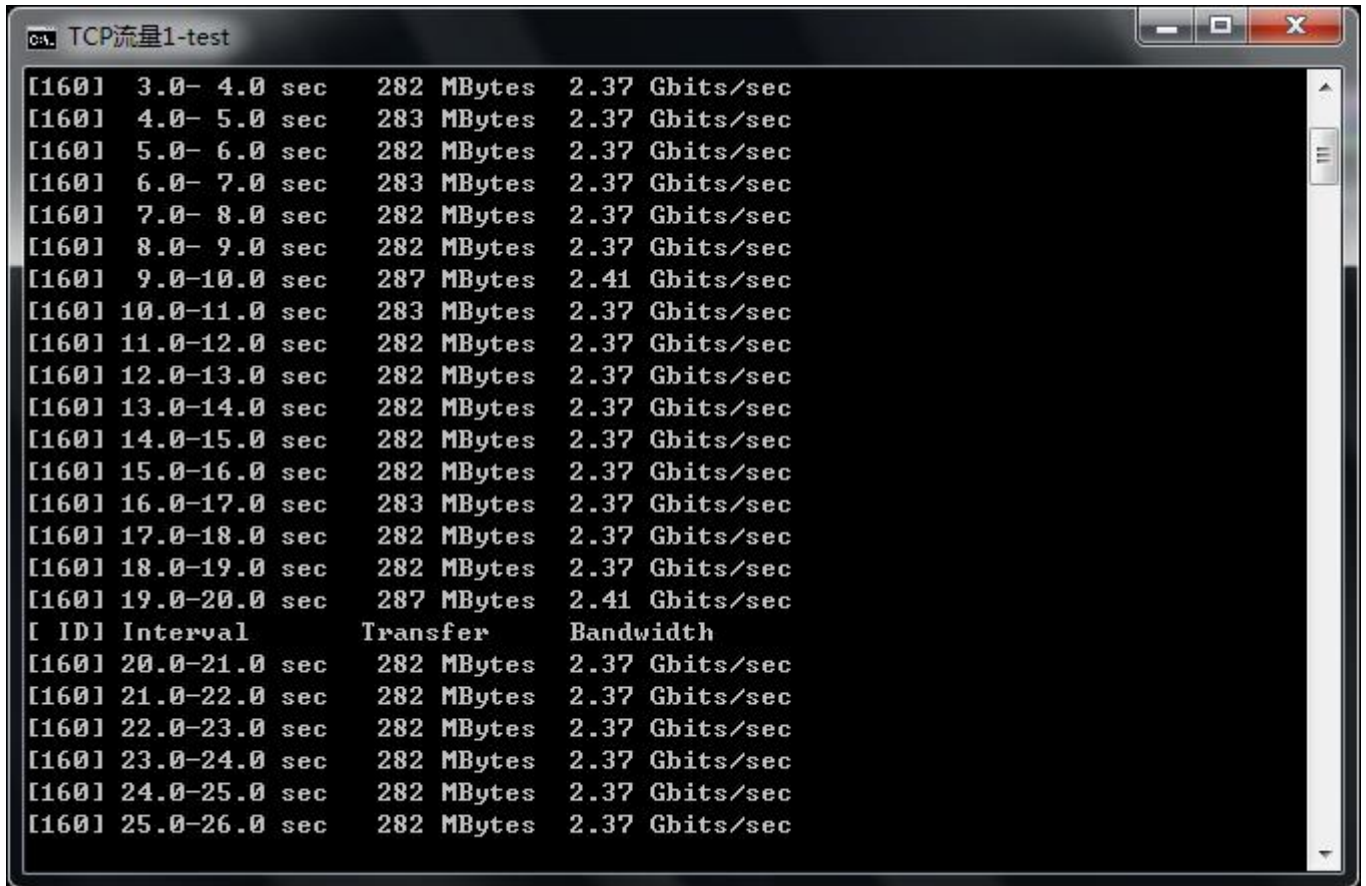
- Compatible with IEEE 802.3, IEEE 802.3u, IEEE 802.3ab
- Supports IEEE 1588v1, IEEE 1588v2, IEEE 802.1AS time synchronization
- Supports IEEE 802.1Qav credit-based shaper algorithm

5、LED State

NO.	10M	100M	1G	2.5G
LINK&ACT	Twinkle	Twinkle	Twinkle	Twinkle

SPEED	OFF	OFF	GREEN	ORANGE
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6、Throughput test



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CA: TCP流量1-test
[160] 3.0- 4.0 sec 282 MBytes 2.37 Gbits/sec
[160] 4.0- 5.0 sec 283 MBytes 2.37 Gbits/sec
[160] 5.0- 6.0 sec 282 MBytes 2.37 Gbits/sec
[160] 6.0- 7.0 sec 283 MBytes 2.37 Gbits/sec
[160] 7.0- 8.0 sec 282 MBytes 2.37 Gbits/sec
[160] 8.0- 9.0 sec 282 MBytes 2.37 Gbits/sec
[160] 9.0-10.0 sec 287 MBytes 2.41 Gbits/sec
[160] 10.0-11.0 sec 283 MBytes 2.37 Gbits/sec
[160] 11.0-12.0 sec 282 MBytes 2.37 Gbits/sec
[160] 12.0-13.0 sec 282 MBytes 2.37 Gbits/sec
[160] 13.0-14.0 sec 282 MBytes 2.37 Gbits/sec
[160] 14.0-15.0 sec 282 MBytes 2.37 Gbits/sec
[160] 15.0-16.0 sec 282 MBytes 2.37 Gbits/sec
[160] 16.0-17.0 sec 283 MBytes 2.37 Gbits/sec
[160] 17.0-18.0 sec 282 MBytes 2.37 Gbits/sec
[160] 18.0-19.0 sec 282 MBytes 2.37 Gbits/sec
[160] 19.0-20.0 sec 287 MBytes 2.41 Gbits/sec
[ ID] Interval      Transfer      Bandwidth
[160] 20.0-21.0 sec 282 MBytes 2.37 Gbits/sec
[160] 21.0-22.0 sec 282 MBytes 2.37 Gbits/sec
[160] 22.0-23.0 sec 282 MBytes 2.37 Gbits/sec
[160] 23.0-24.0 sec 282 MBytes 2.37 Gbits/sec
[160] 24.0-25.0 sec 282 MBytes 2.37 Gbits/sec
[160] 25.0-26.0 sec 282 MBytes 2.37 Gbits/sec
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