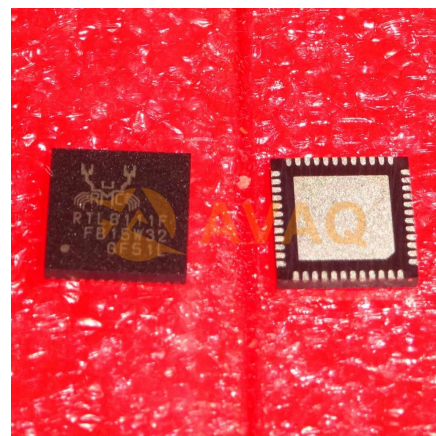


Integrated Gigabit Ethernet Controller

Manufacturer:	Realtek Semiconductor Corp
Package/Case:	QFN48
Product Type:	Communication & Networking ICs



Images are for reference only

[Inquiry](#)

General Description

The Realtek RTL8111F Gigabit Ethernet controller combines a triple-speed IEEE 802.3 compatible Media Access Controller (MAC) with a triple-speed Ethernet transceiver, PCI Express bus controller, and embedded memory. With state-of-the-art DSP technology and mixed-mode signal technology, the RTL8111F offers high-speed transmission over CAT 5 UTP cable or CAT 3 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 RTL8111F supports the PCI Express 1.1 bus interface for host communications with power management, and is compatible with the IEEE 802.3u specification for 10/100Mbps Ethernet and the IEEE 802.3ab specification for 1000Mbps Ethernet. It also supports an auxiliary power auto-detect function, and will auto-configure related bits of the PCI power management registers in PCI configuration space. The RTL8111F features embedded One-Time-Programmable (OTP) memory to replace the external EEPROM (93C46/93C56/93C66).

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 RTL8111F.

The RTL8111F 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 RTL8111F can offload ARP (IPv4) and NS (IPv6) protocols while in the D3 power saving state.

The RTL8111F 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.

The RTL8111F 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 RTL8111F is fully compatible with Microsoft NDIS5, NDIS6 (IPv4, IPv6, TCP, UDP) Checksum and Segmentation Task-offload (Large send and Giant

send) features, and supports IEEE 802 IP Layer 2 priority encoding and IEEE 802.1Q Virtual bridged Local Area Network (VLAN). The above features contribute to lowering CPU utilization, especially benefiting performance when in operation on a network server.

The RTL8111F 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 device also 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 RTL8111F is suitable for multiple market segments and emerging applications, such as desktop, mobile, workstation, server, communications platforms, and embedded applications.

Key Features

Integrated 10/100/1000 transceiver

Auto-Negotiation with Next Page capability

Supports PCI Express 1.1

Supports pair swap/polarity/skew correction

Crossover Detection & Auto-Correction

Wake-on-LAN and remote wake-up support

Microsoft NDIS5, NDIS6 Checksum Offload (IPv4, IPv6, TCP, UDP) and Segmentation Task-offload (Large send v1 and Large send v2) support

Supports EMAC-393 ECMA ProxZzy Standard for sleeping hosts

Supports Full Duplex flow control (IEEE 802.3x)

Supports jumbo frame to 9K bytes

Fully compatible with IEEE 802.3, IEEE 802.3u, IEEE 802.3ab

Supports IEEE 802.1P Layer 2 Priority Encoding

Supports IEEE 802.1Q VLAN tagging

Supports IEEE 802.3az-2010 (EEE)

Embedded OTP memory can replace the external EEPROM

Serial EEPROM

Transmit/Receive on-chip buffer support

Supports power down/link down power saving/PHY disable mode

Built-in switching regulator

Supports PCI MSI (Message Signaled Interrupt) and MSI-X

Supports quad core Receive-Side Scaling (RSS)

Supports Protocol Offload (ARP & NS)

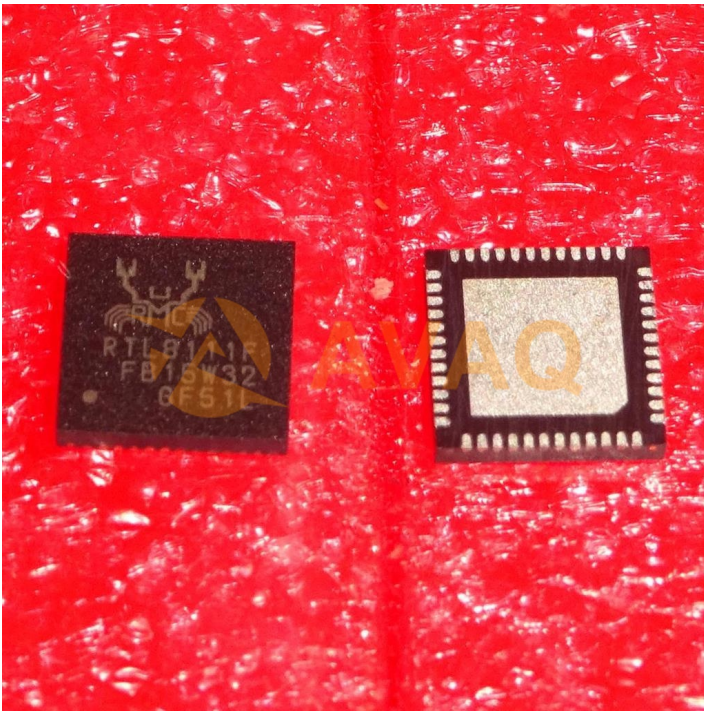
Supports Customized LEDs

Supports 1-Lane 2.5Gbps PCI Express Bus

Supports hardware ECC (Error Correction Code) function

Supports hardware CRC (Cyclic Redundancy Check) function

48-pin QFN 'Green' package



Recommended For You

RTL8152B-VB-CG

Realtek Semiconductor Corp

QFN24

RTL8100CL-LF

Realtek Semiconductor Corp

QFN128

RTL8111H-CG

Realtek Semiconductor Corp

QFN32