

IP1810 is a non-blocking, store-and-forward architecture switch controller, which builds 8-port 10/100Mbps Fast Ethernet MAC and PHY, 1-port GMAC with RGMII interface and 1-port with RGMII/MII for external CPU in a single chip.

IP1810 embeds a 4Mb SRAM for the use of packet buffer. It also provides various 2-wire interfaces, such as CPU interface, SMI, and EEPROM interface, which allow the user to access the internal register, external PHY's registers and EEPROM data. The serial LED can show the status of each port (such as Link, Speed, Activity and so on) by using 74HC164 or IP403 external device through 2-wire (LEDCLK, LEDDAT) signals driving from IP1810.

For avoiding loop occur, IP1810 supports STP, RSTP, and MSTP. Even a hardware loop detection mechanism is supported. There are 16K entries in the Lookup table. Hashing method can be selected either direct or CRC hashing for MAC address learning. Lookup Table aging time can be adjustable ranging from 55 seconds to 500 hours. IP1810 also provides the MAC learning threshold to limit the number of addresses learning.

An independent Multicast table supports 256 entries. For the Internet Group Management Protocol, IP1810 supports IGMP v1/v2/v3 for IPv4 and MLD v1/v2 for IPv6 packet snooping and aging time function. For the IGMPv3 and MLDv2 application, IP1810 provides up to 10 sets IPv4 or 4 sets IPv6 address per entry for source list table.

IP1810 has 4k entries for 802.1Q VLAN, which provides more security for VLAN member, and supports Independent VLAN Learning (IVL) and Share VLAN Learning (SVL). Further, IP1810 also has added/remove C-tag, S-tag, VLAN remarking, uplink link port and inactive VID redirect functions for the flexible VLAN application.

IP1810 has 128 entries for ACL table. The ACL (Address Control List) function provides advanced and flexible control mechanism to decide what packet should do (action) if the packet matches ACL rule.

ACL Rule and action:

Rules: (Port ID, DA, SA, DA/SA, DIP, SIP, TCP/UDP Port Number (DP and SP))^[1]_{SEP}

Actions: (Sniffer, Insert/remove Tag, Priority, Redirection, Trap to CPU, BW limited, DSCP, sFlow, Drop, PTP, MIB Counter)

For the Quality of Service application, IP1810 supports port-based, 802.1Q tag based, ACL based, IP CoS/DSCP based, SMAC based, IP address based, IGMP based and WAN/LAN based to decide the priority of output frame. For the Remarking application, IP1810 supports remarking for the DSCP, Ctag and Stag value of transmit packet.

For the link aggregation application, IP1810 provides eight hashing methods (Port ID, DA, SA, DA/SA, DIP, SIP, DP, and SP) and support six trunk groups' sets.

For meeting the various network applications, IP1810 also supports storm control, bandwidth rate control, Output Queues functions, Sniffer, sFlow, PTP, MIB counters and eight LED display modes. Therefore, IP1810 has the best adaptability and capability for the future network conditions.

IP1810 supports the web-based management interface, such as Microsoft Internet Explorer or Mozilla Firefox, Google Chrome, the user can more easily configure IP1810's functions by these browsers, and no extra program is needed. Besides, IP1810 also provides IRMP (IC+ remote management protocol) to let the users remotely configure the registers of IP1810.