

BCM53154

Low-Power Five-Port GbE Time-Sensitive Networking Switch

Description

The Broadcom® BCM53154 is a next-generation ultra-low-power five-port GbE switch. The BCM53154 is based on the new 28-nm RoboSwitch™ 2 architecture and focuses on power-sensitive applications up to five ports—specifically daisy-chain and star topologies in industrial environments as well as low port count unmanaged and web-managed SMB switches.

The BCM53154 supports four 10/100/1000BASE-T ports with integrated GPPhyS, a single 1GbE/2.5GbE SGMII port, and a single RGMII 1GbE port.

The BCM53154 is designed for next-generation cost-sensitive applications in the Industrial and SMB markets that require advanced forwarding engines that were not available in prior ICs. Specifically, this new switch supports Time-Sensitive Networking (TSN) and low-latency cut-through forwarding technologies that are essential in many of today's Industrial market segments. The BCM53154 also supports the new IEEE 802.1BR Port-Extender standard that enables the construction of large, yet extremely cost-effective, distributed SMB switching platforms.

Users of the BCM53154 can take advantage of the IC-integrated ARM CPU to build a complete SMB or Industrial switching solution without adding an external processor. More so, for software needs users can utilize the RoboSwitch 2 ROBO-OS™ operating system and significantly reduce their time-to-market with the new hardware.

The BCM53154 is pin-to-pin compatible to RoboSwitch 2 devices BCM53112 and BCM5316X. This compatibility enables customers to easily build a full portfolio of industrial and SMB switches with almost no changes to their main PCBs. The new portfolio can support any speed from 100 Mb/s to 10GbE and any port count, from as small as 3-port switches up to 24-port switches by cascading two BCM53162 devices.

The BCM53154 supports many high-end features such as Virtual Switching Instances (VSI) for improving VLAN segregation for security-enhanced solutions, advanced QoS mechanism with ingress and egress rate-limiting, and a Content Field Processor (CFP) that enable users to classify traffic according to OSI model L1 to L4 fields.

The BCM53154 is supported by all software suites designed for the RoboSwitch 2 architecture. Basic, unmanaged software can be used to construct unmanaged switches with basic functionalities and no VLAN segregation. Web-managed software (such as the ROBO-OS operating system) can be used to build web-controlled switches while full-featured SDK software can be used to construct managed devices that are controlled by an external CPU.



Key Features

- Four 1GbE GPPhy ports
- One 1GbE/2.5GbE SGMII port
- An RGMII port to connect to an external CPU (or be used as a 1GbE customer port)
- An integrated ARM Cortex-M7 CPU
- Pin-to-pin compatibility to RoboSwitch 2 BCM53112 and BCM5316X devices
- TSN support: IEEE 802.1Qav, IEEE 802.1Qbv, IEEE 802.1Qci, IEEE 802.1AS, Cut-through
- IEEE 802.1BR port extender
- Supports Virtual Switching Instances (VSI) and advanced QoS features (policers, shapers, WRR, SP, and so on)
- CFP for classifying traffic up to L4
- Power-saving green technology per IEEE 802.3az Energy Efficient Ethernet
- Supports industrial temperature range (-40°C to +85°C)

Applications

- Industrial Ethernet
- Unmanaged/web-managed/managed standalone SMB switches
- Port extension solutions

Benefits

- Ultra-low-power design. Power can be further reduced for low port count applications (ports can be shut-off via software).
- Pin-to-pin compatibility with RoboSwitch 2 product families, specifically the BCM53162 to BCM5316X. This enables customers to build a large product portfolio with anything from 2-port to 24-port switches with the same base design.
- Advanced TSN protocol support such as IEEE 802.1Qav, IEEE 802.1Qbv, IEEE 802.1ASrev, and IEEE 802.1Qci for scheduling time-critical traffic streams across an entire network domain.
- Support for high-end QoS capabilities with hierarchical scheduling, eight egress buffer queues per port each with its own shaper, congestion avoidance mechanism, and dual leaky bucket ingress rate limiters.
- Advanced CFP (such as an access-list engine) that can classify up to L4 headers.
- Support for VSI for explicit segregation of bridging domains with advanced VLAN translation and encapsulation (for example, MAC-in-MAC).
- Port-extender support, per IEEE 802.1BR, for designing modular chassis devices or pizza box platforms with remote port extensions.
- Delivered with unmanaged software, web-managed software, or two different managed SDK software (RoboSwitch SDK and Network Switch SDK).

Figure 1: Daisy-Chain Application Using the BCM53154

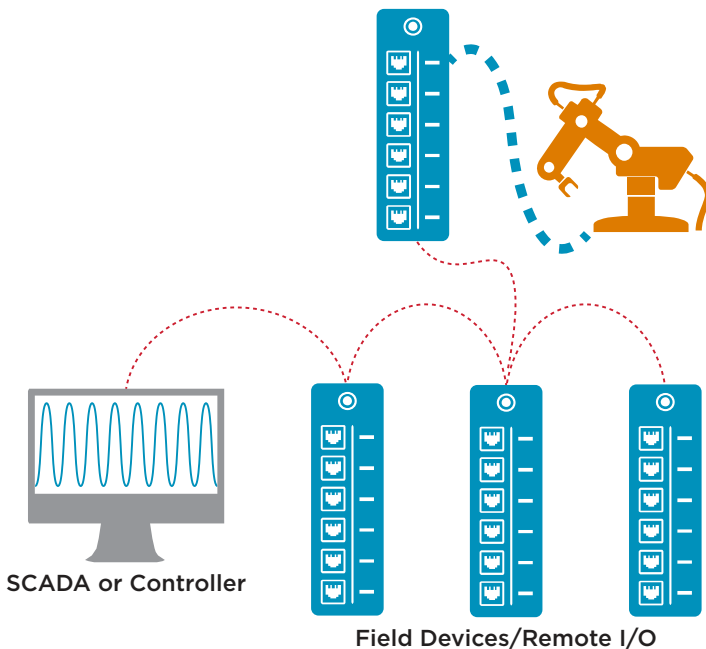
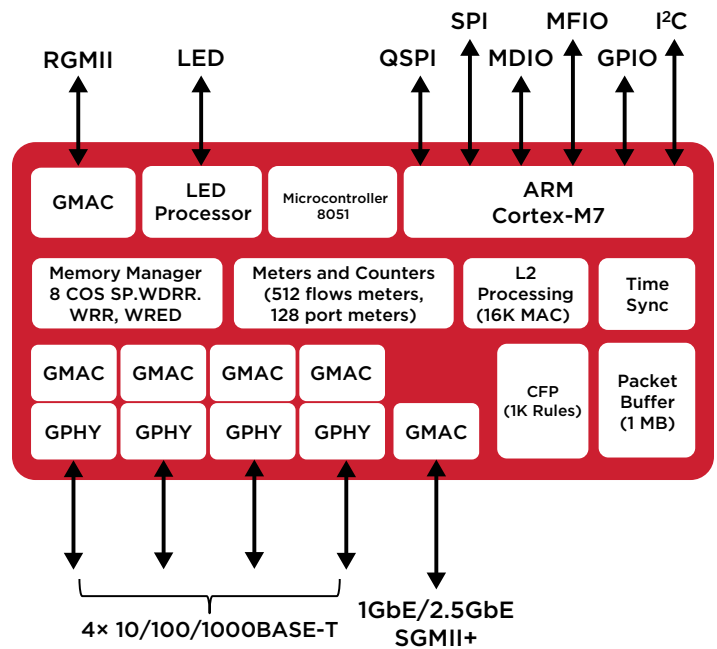


Figure 2: BCM53154 Block Diagram



Ordering Information

Description	Ambient Temperature	Package	Device ID
Intelligent, managed 100/1000BASE-T GPHY Roboswitch 2 Switch with 4x 10/100/1000BASE-T + 1x 1000FX/2500FX SGMII+ + 1x 1GE RGMII ports	Industrial (-40°C to +85°C)	19 mm x 19 mm	BCM53154MB1ILFBG