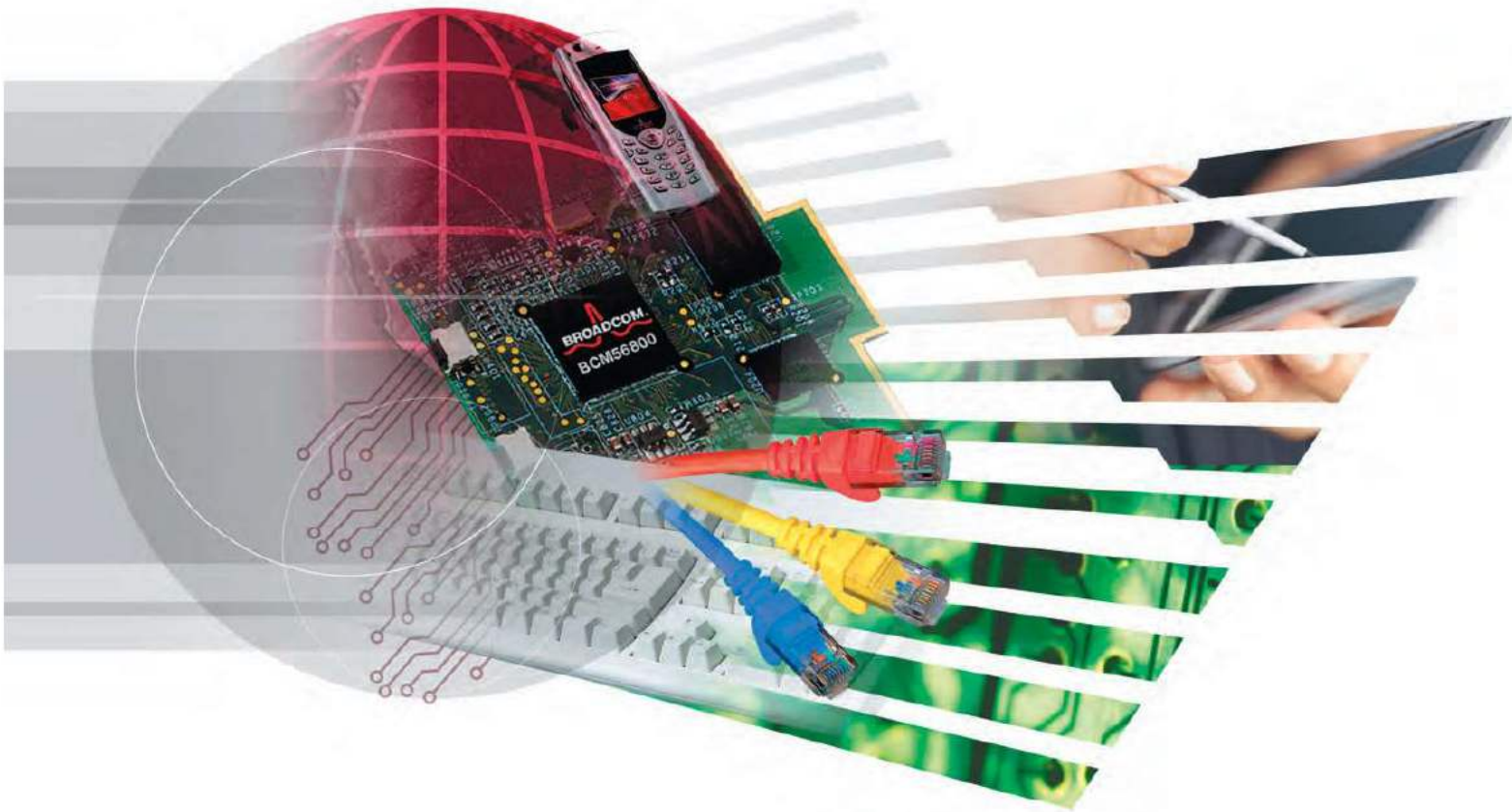


Broadcom Networking Solutions Product Guide

Summer/Fall 2006



▶▶ Product Selection Guide

BCM11xx Single Core MIPS Broadband Processor
BCM12xx Dual Core MIPS Broadband Processor
BCM14xx Quad Core MIPS Broadband Processor
BCM52xx 10/100 Phy
BCM53xx ROBO Ethernet Switches
BCM53xxx ROBO Ethernet Switches
BCM54xx 10/100/1000 Phy
BCM56xx Strata 1 and 2 Ethernet Switches
BCM56xxx Strata 3 Ethernet Switches
BCM57xx Gigabit Ethernet Controllers
BCM58xx Security Processor IC's
BCM80xx SerDes/Re-Timers
BCM81xx OC-192 Transceivers
BCM82xx OC-48 Transceivers
BCM87xx 10 GB Ethernet Transceivers
BCM9xxxx Evaluation Board xxxx = Product Number
SSLxxx Board Level SSL Acceleration Products
IPSxxx Board Level IPSec Acceleration Products
xxxxxG RoHS Compliant

High Speed Networking: Ethernet Switching Solutions

Broadcom® offers a diverse portfolio of switching products, including connectivity solutions that enable enterprise wiring closets, data centers and core networks, remote offices branch offices (ROBO), small-to-medium sized businesses (SMB), small offices home offices (SOHO) and personal computers.

Small-Medium Business Switch Solutions

Broadcom's ROBO-MX™ and ROBO-S™ products are the optimal solutions for SOHO, ROBO and SMB networking environments.

ROBO Switches

Based on the latest generations of proven technology, ROBO switches provide a new level of performance with high-density integrated Fast Ethernet, Fast Ethernet plus Gigabit and Gigabit Switches by incorporating high-end enterprise networking features such as network security and Quality of Service (QoS) for Voice over IP (VoIP) and multimedia applications.

Benefits of ROBO technology also include:

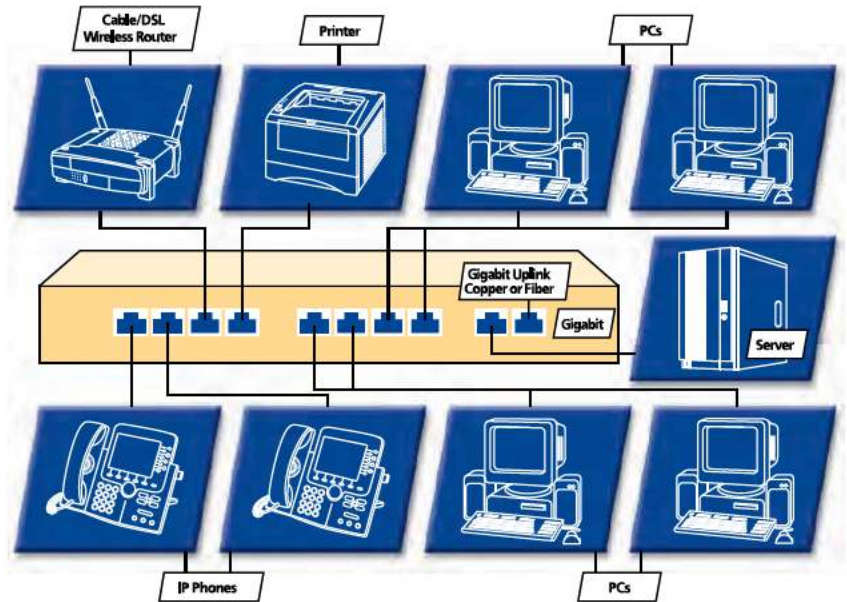
- ▶ Solutions that include integrated physical layer devices
- ▶ On-chip packet buffering that eliminates the need for external memory
- ▶ Built-in management features such as MB Autocast™, including support for remote network monitoring (RMON) and simple network management protocol (SNMP) protocols
- ▶ PoE Auto-MDIX to accommodate straight-through or cross-over cables
- ▶ 10/100 and 10/100/1000 Mbps products, which are available in a range of densities from 5 to 27 port solutions, including popular 8+2, 16+2 and 24+2 solutions
- ▶ Pure Gigabit products, which are available in a range of densities from 4 to 24 ports
- ▶ A cost-effective Layer 2 feature set
- ▶ Support of Broadcom's proven Switching Application Programming Interface (API)
- ▶ Firmware support that includes Peripheral Component Interconnect (PCI)
- ▶ 1-16 Port SerDes Solutions

Robo Debug Tools

The \$149 Avnet Robo Loader Board, when used with the included Avnet Robo Loader Windows GUI Software, allows the user easy access to a host of the registers to view, modify and verify settings via the SPI bus and a USB or RS232 capable Windows computer.

This tool is essential for any engineer debugging a Broadcom Robo based product and can be ordered through your local Avnet branch P/N AES-ROBOLOADER.

High Performance 8+2 port ROBOswitch™ for SOHO and Subnetwork Applications



High Speed Networking: Ethernet Switching Solutions

Small-Medium Business Switch Solutions										Robo Gigabit Switching										Notes																					
Part #/Family/Intro Date	FE 10/100 MACs	GE 10/100 Transceivers (PHYs)	GE 10/100/1000 MACs	Tri-Band Mgmt. Port (MMP)	WAN Port	External Chip Interface	7 Wire (GFS)	MII	Rx/MII	Rx/MII	GMII	RCMII	SGMII	1.25Gb/S SerDes	PCI	Expansion Bus / Turbo MII	Cascadable (Multi-Chip)	# of Non-Blocking Ports After Cascade	Voltage(s)	Internal Regulator(s) Output	Package (Pb, Pb Free)	Industrial Temp. Versions	On-Chip Packet Buffer (B)	IP v4 / v6 Support	Flow Control	Auto Layer 2 Address Learning/Aging	MAC Address Storage	Managed	CPU Interface	Trunking	DiffServ (Port / MAC / Both)	Egress Queues	Jumpo Frame Support	VLAN (802.1Q)	MIB Autoclear*	RMON / SNMP	Spanning Tree (802.1D/1s/w)	Notes			
BCM5398 Gripen 2005 Q4			9	8	1														1.0V Core 2.5V I/O	1.8V	452 PbGA		X	X	X	4K	X	X	K	X	4	X	X				R	D S W	.13 µm, 5W, IEEE 802.1p, IPv4/IPv6, MAC, port and DiffServ-based QoS; port-based VLAN; IEEE 802.1Q-based VLAN with 4K entries; MAC-based trunking with automatic link failover, port-based rate control; port mirroring; IGMP snooping; spanning tree support (up to 16); loop detection for unmanaged configurations with Broadcom's patented LoopD ech™ technology; double tagging (for ISP); IMP port able to be used as a standard Ethernet port; IEEE 802.1x support for secure user authentication; 70+ on-chip MIB counters to collect, receive and transmit statistics for each port; EEPROM, MDC/MDIO and SPI interface; 4K entry MAC address table with automatic learning and aging; 128-KB packet buffer; 128 multicast group support; J AG support		
BCM5397 Gripen 2005 Q4	1	6	5	1	1														1.2/2.5/3.3		457 FPGA 452 PbGA	Y	256K		X	X	8K	X	B	X	4	X	4K				R	D S W	.13 µm, 3.4W, IEEE 802.1p, IPv4/IPv6, MAC, port and DiffServ-based QoS; port-based VLAN; IEEE 802.1Q-based VLAN with 4K entries; MAC-based trunking with automatic link failover, port-based rate control; port mirroring; IGMP snooping; spanning tree support (up to 16); loop detection for unmanaged configurations with Broadcom's patented LoopD ech™ technology; double tagging (for ISP); IMP port able to be used as a standard Ethernet port; IEEE 802.1x support for secure user authentication; 70+ on-chip MIB counters to collect, receive and transmit statistics for each port; EEPROM, MDC/MDIO and SPI interface; 4K entry MAC address table with automatic learning and aging; 128-KB packet buffer; 128 multicast group support; J AG support		
BCM5396 Dino 2005 Q2		16			1														1.2/2.5/3.3		256 BGA		256K		X	X	8K	X	B	X	4	X	4K				R	D S W	.13 µm, 2.2W, 16 GigE ports expandable to 17 with SerDes/SGMII, Supports Broadcast throttling support, Port-based ingress and egress rate control and mirroring, 802.1s and 802.1w, unmanaged with SPI and EEPROM interfaces, Supports Rapid Spanning tree		
BCM5345M Modena 2004 Q2		8			1														1.2/2.5/3.3		256 BGA		128K		X	X	4K	X	B	X	4	X	4K				R	S	D	.13 µm, 1.2W, 8 GigE ports expandable to 9 with SerDes/SGMII, supports Broadcast throttling support, port-based ingress and egress rate control and mirroring, 802.1w, unmanaged with SPI and EEPROM interfaces	
BCM5389 Dino 2005 Q2		8			1														1.2/2.5/3.3		256 FBGA		128K		X	X	4K	X	B	X	4	X	4K				R	S	D	.13 µm, 1.2W, 8 GigE ports expandable to 9 with SerDes/SGMII; supports broadcast throttling support; port-based ingress and egress rate control and mirroring; 802.1w, unmanaged with SPI and EEPROM interfaces	
BCM5388 Enzo 2004 Q1		8	4																1.2/2.5	1.2V	324 PbGA	1 M		X	X	4K	X	M	X	4	X	4K									4W max, integrated voltage regulator; only 4 of 8 ports have integrated GigPHY; integrated PHYs support Cu only; unmanaged with SPI and EEPROM interfaces
BCM5387 Dino 2005 Q2		5			1														1.2/2.5/3.3		256 FBGA		128K		X	X	4K	X	B	X	4	X	4K				R	S	D	.13 µm, ~1W, 4 GigE ports expandable to 5 with SerDes/SGMII; supports broadcast throttling support; port-based ingress and egress rate control and mirroring, 802.1w, unmanaged with SPI and EEPROM interfaces	
BCM5385 Enzo 2004 Q1		5	4																1.2/2.5	1.2V	324 PbGA	1 M		X	X	4K	X	M	X	4	X	4K									3.3W max, 4 ports expandable to 5 with RGMII; integrated voltage regulator; integrated PHYs support Cu only; unmanaged with SPI and EEPROM interfaces
BCM5384 Enzo 2004 Q1		4	4																2.5	1.2V	324 PbGA	1 M		X	X	4K	X	M	X	4	X	4K									3.3W max, integrated voltage regulator; integrated PHYs support Cu only; unmanaged with SPI and EEPROM interfaces
BCM5382M Robo 2G 2004 Q1	9	8	2	1															3.3/1.2/2.5 & 1.8		324 PbGA	Y	256K		X	X	4K	X	X	B		2		4K	X		R	S	D	.13 µm, 3.5W, 1 Gig-PHY port does not have embedded PHY; same as BCM5380 but without expansion capab. 4K 802.1Q VLAN with trunk failover; supports non-802.3ad trunks; 4K IP multicast addresses; PHYless Gig port is GMII or SerDes and the Gig port with PHY is copper only; industrial temperature rated (-40 to 85C)	
BCM5380M Robo 2G 2004 Q1	9	8	2	1															3.3/1.2/2.5 & 1.8		324 PbGA	Y	256K		X	X	4K	X	X	B		2		4K	X		R	S	D	.13 µm, 3.5W, 1 Gig-PHY port does not have embedded PHY; expansion bus is now a 3 channel SerDes; 4K 802.1Q VLAN with trunk failover; supports non 802.3ad trunks; 4K IP multicast addresses; PHYless Gig port is GMII or SerDes and the Gig port with PHY is copper only; supports cascading to create up to 24+2 non-blocking or 27+8 blocking configurations; industrial temperature rated (-40 to 85C)	
BCM5346M Modena 2004 Q1		16			1														1.25/2.5/3.3		676 BGA		512K		X	X	8K	X	X	P	X	4	X	4K				R	S	W	--4W max, PCI CPU 32/33 MHz, per-port rate control, 802.1x access control support, 802.1W/S spanning tree support, backward compatible to 5632E; supports Broadcom switching API, extremely low cost
BCM5346 Modena 2004 Q1		16																	1.25/2.5/3.3		676 BGA		512K		X	X	8K	X*	X	P	X	4	X	4K				R	S	W	--4W max, lite management with 5 pin GPIO; per-port rate control; 802.1x access control support; 802.1W/S spanning tree support; backward compatible to 5632E; supports Broadcom switching API; extremely low cost
BCM5345M Modena 2004 Q1		24			1														1.25/2.5/3.3		676 BGA		512K		X	X	8K	X	X	P	X	4	X	4K				R	S	W	--4W max, PCI CPU 32/33 MHz; per-port rate control; 802.1x access control support; 802.1W/S spanning tree support; backward compatible to 5632E; supports Broadcom switching API; extremely low cost
BCM5345 Modena 2004 Q1		24			1														1.25/2.5/3.3		676 BGA		512K		X	X	8K	X*	X	P	X	4	X	4K				R	S	W	--4W max; Lite Management with 5 pin GPIO; per-port rate control; 802.1x access control support; 802.1W/S spanning tree support; backward compatible to 5632E; supports Broadcom switching API; extremely low cost
BCM5324M estorosa 2004 Q2	25	24	2																1.2/2.5/3.3		400 BGA	Y	256K		X	X	8K	X	X	M	X	4		4K				R	S	W	--3.5W, 24 FE ports expandable to 25 with MII; supports FX, double tagging, tagged VLAN, DiffServ and MAC based trunking with failover; bandwidth and rate control with 64K/128K/256K (up to 100 Mbps) resolution; EAPOL with secure MAC address; broadcast storm control; layer 3 IGMP snooping; 802.1s and 802.1w; access to internal registers through either MDC/MDIO or SPI; industrial temperature rated (-40 to 85C)
BCM5321M estorosa 2004 Q2	17	16	2																1.2/2.5/3.3		400 BGA	Y	256K		X	X	8K	X	X	M	X	4		4K				R	S	W	--2.7W, 16 FE ports expandable to 17 with MII; supports FX, double tagging, tagged VLAN, DiffServ and MAC based trunking with failover; bandwidth and rate control with 64K/128K/256K (up to 100 Mbps) resolution; EAPOL with secure MAC address; broadcast storm control; Layer 3 IGMP Snooping; 802.1s and 802.1w; access to internal registers through either MDC/MDIO or SPI; industrial temperature rated (-40 to 85C)
BCM5320M estorosa 2004 Q2	9	8	2																1.2/2.5/3.3		400 BGA	Y	256K		X	X	8K	X	X	M	X	4		4K				R	S	W	--2W, 8 FE ports expandable to 9 with MII; supports FX, double tagging, tagged VLAN, and DiffServ; MAC based trunking with failover; bandwidth and rate control with 64K/128K/256K (up to 100 Mbps) resolution; EAPOL with secure MAC address; broadcast storm control; layer 3 IGMP snooping; 802.1s and 802.1w; access to internal registers through either MDC/MDIO or SPI; industrial temperature rated (-40 to 85C)

High Speed Networking: Ethernet Switching Solutions

Small-Medium Business Switch Solutions

Part #/Family/Intro Date
 FE 10/100 MACs
 FE 10/100 Transceivers (Phys)
 GE 10/100/1000 MACs
 GE 10/100/1000 Transceivers (Phys)
 Tri-Band Mgmt. Port (MMP)
 WAN Port
 External Chip Interface
 7 Wire (GPS)
 MII
 RvMII
 RMII
 GMII
 RGMII
 SGMII
 1.25Gb/s SerDes
 TBI
 PCI
 Expansion Bus / Turbo MII
 Cascadeable (Multi-Chip)
 # of Non-Blocking Ports After Cascade
 Voltage(s)
 Internal Regulator(s) Output
 Package (Pb, Pb Free)
 Industrial Temp. Versions
 On-Chip Packet Buffer (B)
 IP v4 / v6 Support
 Flow Control (802.3x)
 Auto Layer 2 Address Learning / Aging
 MAC Address Storage
 Managed
 CPU Interface
 Trunking (Port / MAC / Both)
 DiffServ / Class of Service
 Egress Queues
 Jumbo Frame Support (9K)
 VLAN (802.1Q)
 MIB Autocast**
 RMON / SNMP
 Spanning Tree (802.1D/1s/w)
 Notes

Robo 10/100 Switching

Part #/Family/Intro Date	FE 10/100 MACs	FE 10/100 Transceivers (Phys)	GE 10/100/1000 MACs	GE 10/100/1000 Transceivers (Phys)	Tri-Band Mgmt. Port (MMP)	WAN Port	External Chip Interface	7 Wire (GPS)	MII	RvMII	RMII	GMII	RGMII	SGMII	1.25Gb/s SerDes	TBI	PCI	Expansion Bus / Turbo MII	Cascadeable (Multi-Chip)	# of Non-Blocking Ports After Cascade	Voltage(s)	Internal Regulator(s) Output	Package (Pb, Pb Free)	Industrial Temp. Versions	On-Chip Packet Buffer (B)	IP v4 / v6 Support	Flow Control (802.3x)	Auto Layer 2 Address Learning / Aging	MAC Address Storage	Managed	CPU Interface	Trunking (Port / MAC / Both)	DiffServ / Class of Service	Egress Queues	Jumbo Frame Support (9K)	VLAN (802.1Q)	MIB Autocast**	RMON / SNMP	Spanning Tree (802.1D/1s/w)	Notes	
BCM5322M estorossa 2004 Q2	27	24					MII RvMII	3	1												1.2/2.5/3.3	400 BGA	Y	256K		X	X	8K	X	X	M	X	4		4K	R	S	D	S	W	26 FE ports expandable to 27 with MII; supports FX, double tagging, tagged VLAN and DiffServ; MAC based trunking with fa lower; bandwidth and rate control with 64K/128K/256K (up to 100 Mbps) resolution; EAPOL with secure MAC address, broadcast storm control, Layer 3 IGMP snooping; 802.1s and 802.1w; access to internal registers through either MDC/MDIO or SPI; industrial temperature rated (-40 to 85C)
BCM5339M Robo-MX 2003 Q2	8*	8*					MII RvMII	1*	2									X			3.3/1.8	208 PQFP		256K		X	X	4K	X	X	P	X	4		512	X	R	S	D	S	One of 8 internal PHYs is not connected to switch fabric; MII interface is external for this PHY; <2W, 8 ports expandable to 9 with MII, new features include: supports pseudo-FX mode, tagged VLAN and DiffServ; MAC based trunking with failover; repeater mode; bandwidth and rate control with 64K/128K/256K (up to 100 Mbps) resolution; EAPOL with secure MAC address; broadcast storm control; up to 4x speed MII interface; 802.1s and 802.1w; access to internal registers through either MDC/MDIO or SPI; MIB Autocast** support
BCM5338M Robo-MX 2003 Q2	9	8		1			MII RvMII	1	1							4	36				3.3/1.8	208 PQFP	Y	256K		X	X	4K	X	X	M	X	4	512*	X	R	S	D	S	<2W, 8 ports expandable to 9 with MII; features in addition to those found on the BCM5328M (not pin compatible) include: supports pseudo-FX mode, tagged VLAN, DiffServ, MAC based trunking with fa lower; repeater mode, bandwidth and rate control with 64K/128K/256K (up to 100 Mbps) resolution; EAPOL with secure MAC address; broadcast storm control; up to 4x speed MII interface; 802.1s and 802.1w; access to internal registers through either MDC/MDIO or SPI; industrial temperature rated (-40 to 85C); MIB Autocast support. *Note: Rev B0 of this device supports the full 4K 802.1Q VLAN and Port-based VLAN	
BCM5337M Robo-MX 2003 Q2	9	8					MII RvMII	1	1												3.3/1.8	208 PQFP	Y	256K		X	X	4K	X	X	M	X	4	512	X	R	S	D	<2W, 8 ports expandable to 9 with MII; features in addition to those found on the BCM5327M (not pin compatible) include: supports pseudo-FX mode, tagged VLAN, DiffServ, MAC based trunking with failover; repeater mode, bandwidth and rate control with 64K/128K/256K (up to 100 Mbps) resolution; EAPOL with secure MAC address; broadcast storm control; up to 4x speed MII interface; 802.1s and 802.1w; access to internal registers through either MDC/MDIO or SPI; industrial temperature rated (-40 to 85C); MIB Autocast support		
BCM5335M Robo-MX 2003 Q2	6	5					MII RvMII	1	1												3.3/1.8	208 PQFP	Y	256K		X	X	4K	X	X	M	X	4	512	X	R	S	D	<2W, 5 ports expandable to 6 with MII; features in addition to those found on the BCM5325M (not pin compatible) include: supports pseudo-FX mode, tagged VLAN, DiffServ, MAC based trunking with failover; repeater mode, bandwidth and rate control with 64K/128K/256K (up to 100 Mbps) resolution; EAPOL with secure MAC address, broadcast storm control, up to 4x speed MII interface; 802.1s and 802.1w; access to internal registers through either MDC/MDIO or SPI; industrial temperature rated (-40 to 85C); MIB Autocast support		
BCM5328M 4th Gen 2002 Q2	9	8					MII RvMII 7-Wire	1	1	1						4	32				3.3/1.8	208 PQFP	Y	256K		X	X	4K	X	X	P		2		X	R	S	D	18 µm, 1.9W, includes int. oscillator; port-based VLAN; QoS, Auto-MDIX, 8 ports expandable to 9 with MII (Cascade to 32 ports); not pin compatible with BCM5317/18; supports non-802.3ad trunks; industrial temperature rated (-40 to 85C)		
BCM5328 4th Gen 2002 Q2	9	8					MII	1								1	4	32			3.3/1.8	208 PQFP		256K		X	X	4K		X	P	2			R	S	2	Unmanaged version of the BCM5328M; lacks SPI (supports EEPROM); RvMII, port mirroring and MIB Autocast support; 18 µm, 1.9W, includes int. oscillator; port-based VLAN; QoS, Auto-MDIX, 8 ports expandable to 9 with MII; not pin compatible with BCM5317/18; supports non 802.3ad trunks			
BCM5327M 4th Gen 2002 Q2	9	8		1			MII RvMII 7-Wire	1	1	1											3.3/1.8	208 PQFP	Y	256K		X	X	4K	X	X	P	2		X	R	S	D	18 µm, 1.9W, includes int. oscillator; port-based VLAN; QoS, Auto-MDIX, 8 ports expandable to 9 with MII; not pin compatible with BCM5317/18; supports non-802.3ad trunks; industrial temperature rated (-40 to 85C)			
BCM5327 4th Gen 2002 Q2	9	8		1			MII	1													3.3/1.8	208 PQFP		256K		X	X	4K		X	P	2		R	S	D	Unmanaged version of the BCM5327M; lacks SPI (supports EEPROM); RvMII, port mirroring and MIB Autocast support; 18 µm, 1.9W, includes int. oscillator; port-based VLAN; QoS, Auto-MDIX, 8 ports expandable to 9 with MII; not pin compatible with BCM5317/18; supports non 802.3ad trunks				
BCM5325U 4th Gen 2002 Q2	6	5					MII	1													3.3/2.5	128 PQFP	Y	64K		X	X	1K		X		2		R	S	D	Fully non-blocking configuration; 64 KB on-chip packet buffer; Media Independent Interface (MII) provided for an additional X/FX uplink to PHY; integrated address management supports up to 1K unicast addresses; EEPROM (93C46) allows further un-managed capab. lites; 25-MHz crystal or oscillator; low power 3.3/1.8V; 0.18 µm CMOS technology; HP auto-MDIX function hardware selectable; 128-pin MQFP package; D E/DPM power over Ethernet detection				
BCM5325M 4th Gen 2002 Q2	6	5					MII RvMII 7-Wire	1	1	1											3.3/1.8	128 PQFP	Y	128K		X	X	2K	X	X		2		X	R	S	D	18 µm, 1.2W, includes int. oscillator, IGMP snooping; port-based VLAN; QoS, Auto-MDIX, 5 ports expandable to 6 with MII; not pin compatible with BCM5315; supports non-802.3ad trunks; industrial temperature rated (-40 to 85C)			
BCM5325F 4th Gen 2002 Q2	6	5					MII RvMII 7-Wire	1	2	1											3.3/2.5	128H QFP	Y	128K		X	X	1K	X	X		X	4	16	X	R	S	D	18 µm, <1W, 5 ports expandable to 6 with MII; 5th PHY port can be setup as a 2nd MII; onboard 1.8V regulator (requires PNP) allowing 3.3V only supply; pin compatible with 5325 & 5325M; layer 3 IGMP; pseudo-FX mode; tagged VLAN; DiffServ, bandwidth and rate control with 10%, 20% to 100% of the rate; EAPOL with secure MAC address; access to internal registers through either MDC/MDIO or SPI; broadcast storm control; industrial temperature rated (-40 to 85C)		
BCM5325E 4th Gen 2002 Q2	6	5					MII RvMII 7-Wire	1	1	1											3.3/2.5	128 QFP	Y	128K		X	X	1K	X	X		X	4	16	X	R	S	D	18 µm, <1W, 5 ports expandable to 6 with MII; pin compatible with 5325 and 5325M; layer 3 IGMP; pseudo-FX mode; tagged VLAN; DiffServ, bandwidth and rate control with 10%, 20% to 100% of the rate; EAPOL with secure MAC address; access to internal registers through either MDC/MDIO or SPI; broadcast storm control; industrial temperature rated (-40 to 85C)		
BCM5325 4th Gen 2002 Q2	6	5					MII	1													3.3/1.8	128 PQFP		128K		X	X	2K		X	2		R	S	D	Unmanaged version of the BCM5325M; lacks SPI (supports EEPROM); RvMII, port mirroring and MIB Autocast support; 18 µm, 1.2W, includes int. oscillator; port-based VLAN; QoS, Auto-MDIX, 5 ports expandable to 6 with MII; not pin compatible with BCM5315; supports non-802.3ad trunks					

► High Speed Networking: Ethernet Switching Solutions

► Enterprise Router and Switch Solutions

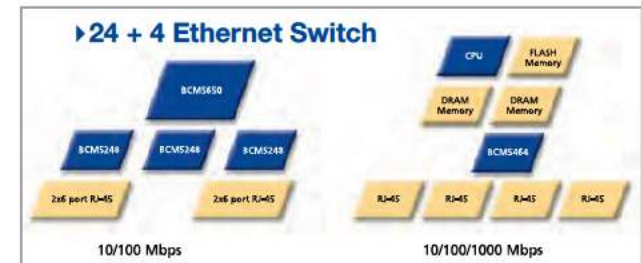
Broadcom's StrataXGS® and StrataSwitch® products are the optimal solutions for enterprise, metropolitan and carrier class networking environments.

► StrataSwitch®

StrataSwitch supports advanced applications and services via a multilayer 10/100 Mbps + 10/100/1000 Mbps switch architecture that combines switching, routing and traffic classification functionality into a single chip.

Benefits of StrataSwitch technology also include:

- Extremely low latency, non-blocking switch fabric
- Efficient layer 2 and 3 switching across a stack
- Differentiated services via the Fast Forward Processor, including ContentAware™ Traffic Classification and multiple classes of service queues
- Products use compatible and proven AP
- 10/100 Mbps + 10/100/1000 Mbps products, which are available in a range of densities to include 26, 24+2, 16+2 and 8+2 port solutions

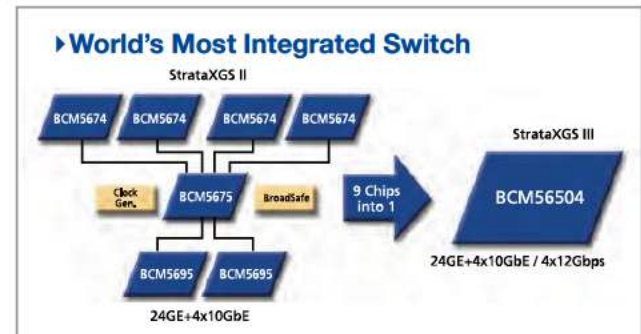


► StrataXGS I™ and StrataXGS II™

By achieving the highest level of performance and integration, StrataXGS represents the next generation of multilayer switches designed to enable manufacturers to build high-performance, scalable switches for enterprise, metropolitan and carrier class networking environments.

StrataXGS benefits also include:

- IEEE 802.3ae 10 Gbps ethernet support
- Continued commitment to low latency, non-blocking
- Integrated SerDes
- Efficient layer 2 and 3 switching across a stack
- Differentiated services via the Fast Forward Processor, including ContentAware™ Traffic Classification and multiple classes of service queues
- Seamless software integration with previous StrataSwitch products
- Multiple configurations available, speeds ranging from 10 Mb/S to 10Gb/S
- 8-48 port 10/100 solutions, with versions with up to 4x10/100/1000 ports and 1x10G uplink
- 12 port 10/100/1000 solutions with 1x10G uplink ports
- Pure 10Gb/S solutions
- Stackable through 1G, 10G or 10G ports



► StrataXGS III™

Introducing StrataXGS III, the world's first to incorporate ubiquitous security, wire-speed IPv6 routing and wireless LAN support. This exciting new family consists of multiple products that are ideal for both standalone and stackable and chassis switch configurations supporting enterprise and service provider markets. In addition, these devices are well-suited for use in embedded applications such as blade servers, PDSLAM (Internet Protocol Data Subscriber Line Access Multiplexers), PON (passive optical networking) and AdvancedTCA® (Advanced telecom computing architecture).

- Supports all of the features of StrataXGS and
- Multiple configurations available, speeds ranging from 10 Mb/S to 12Gb/S
- 24 port 10/100 solutions, with versions with up to 4x10/100/1000 ports and 1x10G or 10G uplink
- 16 port 2.5GbE with 10GbE/10G/10G+ solutions
- 24 port 10/100/1000 solutions with up to 4x10G uplink ports
- Pure 10Gb/S solutions up to 20 ports
- Most 10G ports also capable of driving 10Gb/S Ethernet, 10G, 10G+

High Speed Networking: Ethernet Switching Solutions

Enterprise Router and Switch Solutions

Part #/Family	Speed	Non-Blocking SMM/SSSMM	TBI	GMII	SGMII	SerDes	Xaui	HiGig/HiGig+/HiGig2 (Stacking)	CF-4 Support (802-3ak)	PCI	Voltage	Package (Pb, Pb Free)	External RAM Interface	On-Chip Packet Buffer (B)	Layer 3 Switching	IPv6 Tunneling	Flow Control (802-3x)	End To End Flow Control	HOL Prevention	Auto L2 Address Learning	MAC Address Learning/Aging	Layer 4-7 Filtering (FPF or CAE)	Managed	Trunking (Port/Mac-Based)	DiffServ Class of Service	Jumbo Frames	802-1Q VLANs / Single Double Tags	RMON/SNMP	Spanning Tree (802-1D/1s/1w)	Notes				
XGS III																																		
BCM56802 Bradley	(16) 10GbE/HiGig2/HiGig+	X				X	X	H+2	X	X	1V Core 2.5/3.3V I/O	1156 FCBGA Pb Free Only		1.5	X	X	X	X	X	X	16K	X	X	P	X	8	X	4K	R	D	S	W	-15W, XGS3 supporting 10-GbE/2.5-GbE/1-GbE ports with many feature enhancements over XGS2; some features include: integrated security, mirroring/FPF enhancements, hardware tunneling, larger layer 3 tables, full IPv6 support and selectable XAUI/HiGig/HiGig+; centralized FFP CAMs; range checkers and slices; security BroadSafe DOS attack detection/prevention; wireless switching; industrial temperature rated (-40 to 85C)	
BCM56801 Bradley	(10) 10GbE (8) 10GbE/HiGig2/HiGig+	X				X	X	H+2	X	X	1V Core 2.5/3.3V I/O	1156 FCBGA Pb Free Only		1.5	X	X	X	X	X	X	16K	X	X	P	X	8	X	4K	R	D	S	W	-15W, XGS3 supporting 10-GbE/2.5-GbE/1-GbE ports with many feature enhancements over XGS2; some features include: integrated security, mirroring/FPF enhancements, hardware tunneling, larger layer 3 tables, full IPv6 support and selectable XAUI/HiGig/HiGig+; centralized FFP CAMs; range checkers and slices; security BroadSafe DOS attack detection/prevention; wireless switching; industrial temperature rated (-40 to 85C)	
BCM56800 Bradley	(20) 10GbE	X				X	X	H+2	X	X	1V Core 2.5/3.3V I/O	1156 FCBGA Pb Free Only		1.5	X	X	X	X	X	X	16K	X	X	P	X	8	X	4K	R	D	S	W	-16W, XGS3 supporting 10-GbE/2.5-GbE/1-GbE ports with many feature enhancements over XGS2; some features include: integrated security, mirroring/FPF enhancements, hardware tunneling, larger layer 3 tables, full IPv6 support and selectable XAUI/HiGig/HiGig+; centralized FFP CAMs; range checkers and slices; security BroadSafe DOS attack detection/prevention; wireless switching; industrial temperature rated (-40 to 85C)	
BCM56701 HumV	(12) HiGig2	X					X	H+2	X	X	1V Core 2.5/3.3V I/O	1156 FCBGA Pb Free Only		1.5	X	X	X	X	X	X		X	X	P	X	8	X	4K	R	S		Stacking fabric designed to interconnect XGSIII devices supporting 10/100/1000/2500/10G/12G SerDes and translation between legacy HiGig/HiGig+ and HiGig2 ports; 2 more traffic classes - now 10 (i.e. 8 for data, plus system control, queue management); improved flow control and buffer management; same port switching; new hashing algorithms for trunk load balancing; hardware support for link fallover		
BCM56700 HumV	(16) HiGig2	X					X	H+2	X	X	1V Core 2.5/3.3V I/O	1156 FCBGA Pb Free Only		1.5	X	X	X	X	X	X		X	X	P	X	8	X	4K	R	S		Stacking fabric designed to interconnect XGSIII devices supporting 10/100/1000/2500/10G/12G SerDes and translation between legacy HiGig/HiGig+ and HiGig2 ports; 2 more traffic classes - now 10 (i.e. 8 for data, plus system control, queue management); improved flow control and buffer management; same port switching; new hashing algorithms for trunk load balancing; hardware support for link fallover		
BCM56603 Easyrider	(2) HiGig+ Only	X								X	1.25 Core 1.25/3.3/2.5 I/O	1764 FCBGA Leaded Only	R/D RAM II	Ext	X	X	X	X	X	X		(I) 32K (E)512K	X	X	P	X	10	X	4K	R	D	S	W	-16W, XGS3 large external buffer memory; CAM expansion and MPLS support designed for absorbing round-trip delays in the network; supports external table expansion interfaces that enable the MAC, IPv4, IPv6, MPLS and ACL tables to be extended; MPLS, LSR and LER support; Virtual Routing (VRF), IPv6 routing and tunneling; centralized FFP CAMs; range checkers and slices; security BroadSafe DOS attack detection/prevention; wireless switching
BCM56602 Easyrider	(1) 10/100/1000 (1) HiGig+ Only	X				X	X	X		X	1.25 Core 1.25/3.3/2.5 I/O	1764 FCBGA Leaded Only	R/D RAM II	Ext	X	X	X	X	X	X		(I) 32K (E)512K	X	X	P	X	10	X	4K	R	D	S	W	-16W XGS3 large external buffer memory; CAM expansion and MPLS support designed for absorbing round-trip delays in the network; supports external table expansion interfaces that enable the MAC, IPv4, IPv6, MPLS and ACL tables to be extended; MPLS, LSR and LER support; Virtual Routing (VRF) IPv6 routing and tunneling; centralized FFP CAMs; range checkers and slices; security BroadSafe DOS attack detection/prevention; wireless switching
BCM56601 Easyrider	(12) 10/100/1000 (1) HiGig+ Only	X				X	X	X		X	1.25 Core 1.25/3.3/2.5 I/O	1764 FCBGA Leaded Only	R/D RAM II	Ext	X	X	X	X	X	X		(I) 32K (E)512K	X	X	P	X	10	X	4K	R	D	S	W	-16W, XGS3 large external buffer memory; CAM expansion and MPLS support designed for absorbing round-trip delays in the network; supports external table expansion interfaces that enable the MAC, IPv4, IPv6, MPLS and ACL tables to be extended; MPLS, LSR and LER support; Virtual Routing (VRF) IPv6 routing and tunneling; centralized FFP CAMs; range checkers and slices; security BroadSafe DOS attack detection/prevention; wireless switching
BCM56600 Easyrider	(12) 10/100/1000	X				X	X			X	1.25 Core 1.25/3.3/2.5 I/O	1764 FCBGA Leaded Only	R/D RAM II	Ext	X	X	X	X	X	X		(I) 32K (E)512K	X	X	P	X	10	X	4K	R	D	S	W	-16W, XGS3 large external buffer memory; CAM expansion and MPLS support designed for absorbing round-trip delays in the network; supports external table expansion interfaces that enable the MAC, IPv4, IPv6, MPLS and ACL tables to be extended; MPLS, LSR and LER support; Virtual Routing (VRF) IPv6 routing and tunneling; centralized FFP CAMs; range checkers and slices; security BroadSafe DOS attack detection/prevention; wireless switching
BCM56580 Goldwing	(16) 2.5GbE (4) 10GbE/HiGig2/HiGig+	X				X	X	H+2	X	X	1.25 Core 1.25/3.3/2.5 I/O	1156 FCBGA Pb Free Only		1.5 M	X	X	X	X	X	X		16K	X	X	P	X	8	X	4K	R	D	S	W	The BCM56580 has a similar feature set as the BCM5650x family product; main difference is the reduction in table sizes; as the ECMP routes, L3 IPv6 LPM routes and ContentAware™ engine rules are significantly reduced; allowing for a low cost, high-density GbE/10-GbE switching solution with IPv4 and IPv6 L3 routing capability
BCM56504 Firebolt	(24) 10/100/1000 (4) 10Gb	X				X	X	H+	X	X	1.25 Core 1.25/3.3/2.5 I/O	1156FCBGA		2 MB	X	X	X	X	X	X		16K	X	X	P	X	8	X	4K	R	D	S	W	-13W, XGS3 includes many feature enhancements over XGS2; some features include: integrated security, mirroring/FPF enhancements, hardware tunneling, larger layer 3 tables, full IPv6 support and selectable XAUI/HiGig/HiGig+; centralized FFP CAMs, range checkers and slices; security BroadSafe DOS attack detection/prevention; wireless switching; industrial temperature rated (-40 to 85C)
BCM56503 Firebolt	(24) 10/100/1000 (3) 10Gb	X				X	X	H+	X	X	1.25 Core 1.25/3.3/2.5 I/O	1156FCBGA		2 MB	X	X	X	X	X	X		16K	X	X	P	X	8	X	4K	R	D	S	W	-12W, XGS3 includes many feature enhancements over XGS2; some features include: integrated security, mirroring/FPF enhancements, hardware tunneling, larger layer 3 tables, full IPv6 support and selectable XAUI/HiGig/HiGig+; centralized FFP CAMs, range checkers and slices; security BroadSafe DOS attack detection/prevention; wireless switching
BCM56502 Firebolt	(24) 10/100/1000 (2) 10Gb	X				X	X	H+	X	X	1.25 Core 1.25/3.3/2.5 I/O	1156FCBGA		2 MB	X	X	X	X	X	X		16K	X	X	P	X	8	X	4K	R	D	S	W	-11W, XGS3 includes many feature enhancements over XGS2; some features include: integrated security, mirroring/FPF enhancements, hardware tunneling, larger layer 3 tables, full IPv6 support and selectable XAUI/HiGig/HiGig+; centralized FFP CAMs, range checkers and slices; security BroadSafe DOS attack detection/prevention; wireless switching; industrial temperature rated (-40 to 85C)
BCM56501 Firebolt	(4) 10Gb	X					X	H+	X	X	1.25 Core 1.25/3.3/2.5 I/O	1156FCBGA		2 MB	X	X	X	X	X	X		16K	X	X	P	X	8	X	4K	R	D	S	W	-11W, XGS3 includes many feature enhancements over XGS2; some features include: integrated security, mirroring/FPF enhancements, hardware tunneling, larger layer 3 tables, full IPv6 support and selectable XAUI/HiGig/HiGig+; centralized FFP CAMs, range checkers and slices; security BroadSafe DOS attack detection/prevention; wireless switching
BCM56500 Firebolt	(24) 10/100/1000	X				X	X			X	1.25 Core 1.25/3.3/2.5 I/O	1156FCBGA		2 MB	X	X	X	X	X	X		16K	X	X	P	X	8	X	4K	R	D	S	W	-11W, XGS3 includes many feature enhancements over XGS2; some features include: integrated security, mirroring/FPF enhancements, hardware tunneling, larger layer 3 tables, full IPv6 support and selectable XAUI/HiGig/HiGig+; centralized FFP CAMs; range checkers and slices; security BroadSafe DOS attack detection/prevention; wireless switching
BCM56309 Helix	(24) 10/100/1000 (4) HiGig / 10G	X				X	X	H+	X	X	1.25 Core 1.25/3.3/2.5 I/O	1156FCBGA		.75 MB			X	X	X	X		8K	X	P	X	8	X	4K	R	D	S	W	Layer two version of the 56304 device	
BCM56308 Helix	(24) 10/100/1000 (3) HiGig / 10G	X				X	X	H+	X	X	1.25 Core 1.25/3.3/2.5 I/O	1156FCBGA		.75 MB			X	X	X	X		8K	X	P	X	8	X	4K	R	D	S	W	Layer two version of the 56303 device	

High Speed Networking: Ethernet Switching Solutions

Enterprise Router and Switch Solutions																						Notes								
Part #/Family	Speed	Non-Blocking SMI/SSSMI Tbl	GMII	SGMII	SerDes	Xaul	HiGig/HiGig+/HiGig2 (802.3ak) CX-4 Support (802.3ak) PCI	Voltage	Package (Pb, Pb Free)	External RAM Interface	On-Chip Packet Buffer (B)	Layer 3 Switching	IPv6 Tunneling	Flow Control (802.3x)	HOL Prevention	Auto L2 Address Learning/Agging	MAC Address Learning/Agging	Layer 4-7 Filtering/Agging	Managed	Trunking (Port/Mac-Based)	Egress Class of Service	Jumbo Frames	802.1Q VLANs / Single Double Tags	RMON/SNMP	Spanning Tree (802.1D/RS/TV)					
BCM56307 Helix	(24) 10/100/1000 (2) HiGig / 10G	X			X	X	X	H +	X	X	1.25 Core 1.25/3.3/2.5 V0	1156FCBGA	.75 MB			X	X	X	X	8K		X	P	X	8	X	4K D	R S W	D	Layer two version of the 56302 device
BCM56306 Helix	(4) HiGig / 10G	X					X	H +	X	X	1.25 Core 1.25/3.3/2.5 V0	1156FCBGA	.75 MB			X	X	X	X	8K		X	P	X	8	X	4K D	R S W	D	Layer two version of the 56301 device
BCM56305 Helix	(24) 10/100/1000	X			X	X	X		X		1.25 Core 1.25/3.3/2.5 V0	1156FCBGA	.75 MB			X	X	X	X	8K		X	P	X	8	X	4K D	R S W	D	Layer two version of the 56300 device
BCM56304 Helix	(24) 10/100/1000 (4) HiGig / 10G	X			X	X	X	H +	X	X	1.25 Core 1.25/3.3/2.5 V0	1156FCBGA	.75 MB	X	X	X	X	X	X	8K		X	P	X	8	X	4K D	R S W	D	6.5W, XGS3 includes many feature enhancements over XGS2; some features include: integrated security, mirroring/FFP enhancements, hardware tunneling, larger layer 3 tables, full IPv6 support and selectable XAUI/HiGig/HiGig+; centralized FFP CAMs; range checkers and slices; security BroadSafe DOS attack detection/prevention; wireless switching; industrial temperature rated (-40 to 85C)
BCM56303 Helix	(24) 10/100/1000 (3) HiGig / 10G	X			X	X	X	H +	X		1.25 Core 1.25/3.3/2.5 V0	1156FCBGA	.75 MB	X	X	X	X	X	X	8K		X	P	X	8	X	4K D	R S W	D	5.9W, XGS3 includes many feature enhancements over XGS2; some features include: integrated security, mirroring/FFP enhancements, hardware tunneling, larger layer 3 tables, full IPv6 support and selectable XAUI/HiGig/HiGig+; centralized FFP CAMs; range checkers and slices; security BroadSafe DOS attack detection/prevention; wireless switching; industrial temperature rated (-40 to 85C)
BCM56302 Helix	(24) 10/100/1000 (2) HiGig / 10G	X			X	X	X	H +	X		1.25 Core 1.25/3.3/2.5 V0	1156FCBGA	.75 MB	X	X	X	X	X	X	8K		X	P	X	8	X	4K D	R S W	D	5.4W, XGS3 includes many feature enhancements over XGS2; some features include: integrated security, mirroring/FFP enhancements, hardware tunneling, larger layer 3 tables, full IPv6 support and selectable XAUI/HiGig/HiGig+; centralized FFP CAMs; range checkers and slices; security BroadSafe DOS attack detection/prevention; wireless switching; industrial temperature rated (-40 to 85C)
BCM56301 Helix	(4) HiGig / 10G	X					X	H +	X	X	1.25 Core 1.25/3.3/2.5 V0	1156FCBGA	.75 MB	X	X	X	X	X	X	8K		X	P	X	8	X	4K D	R S W	D	5.1W, XGS3 includes many feature enhancements over XGS2; some features include: integrated security, mirroring/FFP enhancements, hardware tunneling, larger layer 3 tables, full IPv6 support and selectable XAUI/HiGig/HiGig+; centralized FFP CAMs; range checkers and slices; security BroadSafe DOS attack detection/prevention; wireless switching; industrial temperature rated (-40 to 85C)
BCM56300 Helix	(24) 10/100/1000	X			X	X	X		X		1.25 Core 1.25/3.3/2.5 V0	1156FCBGA	.75 MB	X	X	X	X	X	X	8K		X	P	X	8	X	4K D	R S W	D	4.3W, XGS3 includes many feature enhancements over XGS2; some features include: integrated security, mirroring/FFP enhancements, hardware tunneling, larger layer 3 tables, full IPv6 support and selectable XAUI/HiGig/HiGig+; centralized FFP CAMs; range checkers and slices; security BroadSafe DOS attack detection/prevention; wireless switching; industrial temperature rated (-40 to 85C)
BCM56102 Felix	(24) 10/100/1000 (2) 10/100/1000 (2) 10GB	X	X	X	X	X	X	H +	X		1.25 Core 1.25/3.3/2.5 V0	1156FCBGA	.75 MB	X	X	X	X	X	X	8K		X	P	X	8	X	4K D	R S D	D	6.85W, XGS3 includes many feature enhancements over XGS2; some features include: integrated security, mirroring/FFP enhancements, hardware tunneling, full IPv6 support and selectable XAUI/HiGig/HiGig+
BCM56101 Felix	(24) 10/100/1000 (2) 10/100/1000 (2) 10GB	X	X	X	X	X	X	H +	X		1.25 Core 1.25/3.3/2.5 V0	1156FCBGA	.75 MB	X	X	X	X	X	X	8K		X	P	X	8	X	4K D	R S D	D	3.75W, XGS3 includes many feature enhancements over XGS2; some features include: integrated security, mirroring/FFP enhancements, hardware tunneling, full IPv6 support and selectable XAUI/HiGig/HiGig+
BCM56100 Felix	(24) 10/100 (2) 10/100/1000	X	X	X	X	X					1.25 Core 1.25/3.3/2.5 V0	1156FCBGA	.75 MB	X	X	X	X	X	X	8K		X	P	X	8	X	4K D	R S D	D	1.25W, XGS3 includes many feature enhancements over XGS2; some features include: integrated security, mirroring/FFP enhancements, hardware tunneling and full IPv6 support
XGS II																														
BCM5698 Draco 1.5	(12) 10/100/1000	X			X	X					1.2 Core 1.2/3.3/2.5V0	480 EBGA	1 MB	X	X	X	X	X	16K		X	X	P	X	8	X	4K D	R S D	D	Layer 2+ version of the BCM5696; no layer 3 functionality
BCM5697 Draco 1.5	(12) 10/100/1000 (1) 10GB	X			X	X	X	H +			1.2 Core 1.2/3.3/2.5V0	480 EBGA	1 MB			X	X	X	16K		X	X	P	X	8	X	4K D	R S D	D	Layer 2+ version of the BCM5695; no layer 3 functionality
BCM5696 Draco 1.5	(12) 10/100/1000	X			X	X					1.2 Core 1.2/3.3/2.5V0	480 EBGA	1 MB	X		X	X	X	16K		X	X	P	X	8	X	4K D	R S D	D	Enhanced version of BCM5691; pin for pin compatible with BCM5691; new features include: limited IPv6, rate control with 64kbit granularity; equal and weighted cost multi-path forwarding; double tagging; 8k IP host support; 64k layer 3 routes now supported; supports IP subnet based VLANs; enhanced rapid spanning tree support; dynamic memory allocation; end to end flow control support for DSCP to 802.1p mapping; better IP multicast routing support that includes IP multicast replication with up to 4K replications per port; industrial temperature rated (-40 to 85C)
BCM5695 Draco 1.5	(12) 10/100/1000 (1) 10GB	X			X	X	X	H +			1.2 Core 1.2/3.3/2.5V0	480 EBGA	1 MB	X		X	X	X	16K		X	X	P	X	8	X	4K D	R S D	D	Enhanced version of BCM5690; pin for pin compatible with BCM5690; new features include: limited IPv6, rate control with 64kbit granularity; equal and weighted cost multi-path forwarding; double tagging; 8k IP host support; 64k layer 3 routes now supported; supports IP subnet based VLANs; enhanced rapid spanning tree support; dynamic memory allocation; end to end flow control support for DSCP to 802.1p mapping; better IP multicast routing support that includes IP multicast replication with up to 4K replications per port; industrial temperature rated (-40 to 85C)
BCM5676 Hercules 1.5	10GB	X				X	H				1.2 Core 1.2/3.3/2.5V0	600 EBGA	512K			X	X					X	P		8	X	4K D			-6W, adds advanced multicast capabilities and HiGig+ (12Gbps) to the BCM5671; integrated CX-4
BCM5675 Hercules 1.5	10GB	X			X	X	H				1.2 Core 1.2/3.3/2.5V0	600 EBGA	1 MB			X	X					X	P		8	X	4K D	R		-12W, adds advanced multicast, trunking capabilities and HiGig+ (12Gbps) to the BCM5670 (pin compatible); integrated CX-4
BCM5674 Lynx 1.5	10GB	X			X	X	H				1.2 Core 1.2/3.3/2.5V0	400 PBGA	512K	X		X	X	X	16K		X	X	P	X	8	X	4K D	S		-4W, adds advanced layer 3, FFP capabilities and HiGig+ (12Gbps) to the BCM5673; integrated CX-4; 802.3ae to HiGig conversion; industrial temperature rated (-40 to 85C)

High Speed Networking: Ethernet Switching Solutions

Enterprise Router and Switch Solutions

Part #/Family	Speed	Non-Blocking SMM/SSSMM	TBI	GMII	SGMII	SerDes	Xaui	HiGig/HiGig+/HiGig2 (Stacking)	CX-4 Support (802.3ak)	PCI	Voltage	Package (Pb, Pb Free)	External RAM Interface	On-Chip Packet Buffer (B)	Layer 3 Switching	IPV6 Tunneling	Flow Control (802.3x)	End To End Flow Control	HOL Prevention	Auto L2 Address Learning/Aging	MAC Address Storage	Layer 4-7 Filtering/Aging	Managed	Trunking (Port/Mac-Based)	Differs Class of Service	Egress Queues	Jumbo Frames	802.1Q VLANs / Single Double Tags	RMON/SNMP	Spanning Tree (802.1D/STP)	Notes
BCM5693 Draco	(12) 10/100/1000	X				X	X			X	1.2 Core 1.2/3.3/2.5 V0	480 EBGA	1 MB		X		X	X	16K	X	X	P	X	8	X	4K S	R	D	Layer 2+ version of the BCM5691; 13 µm, 6.5W, supports up to 30 stacked devices through any of its GigE ports; supports trunking and mirroring; PCI interface; advanced diagnostic functions including J AG and comprehensive BIS ; industrial temperature rated (-40 to 85C)		
BCM5692 Draco	(12) 10/100/1000 (1) 10GB	X				X	X	X	H	X	1.2 Core 1.2/3.3/2.5 V0	480 EBGA	1 MB		X		X	X	16K	X	X	P	X	8	X	4K S	R	D	Layer 2+ version of the BCM5690; 13 µm, 4.65W, proprietary 10 Gbps HiGig uplink; also supports stacking on GE ports; supports trunking and mirroring; PCI interface; advanced diagnostic functions including J AG and comprehensive BIS ; industrial temperature rated (-40 to 85C)		
BCM5691 Draco	10/100/1000	X				X	X			X	1.2 Core 1.2/3.3/2.5 V0	480 EBGA	1 MB	X	X		X	X	16K	X	X	P	X	8	X	4K S	D	.13 µm, 6.5W, supports trunking and mirroring; egress rate control with 1024K granularity; VLAN re-write through FFP; PCI interface; advanced diagnostic functions including J AG and comprehensive BIS ; industrial temperature rated (-40 to 85C)			
BCM5690 Draco	(12) 10/100/1000 (1) 10GB	X				X	X	X	H	X	1.2 Core 1.2/3.3/2.5 V0	480 EBGA	1 MB	X	X		X	X	16K	X	X	P	X	8	X	4K S	R	D	.13 µm, 4.65W, proprietary 10-Gbps HiGig uplink; supports stacking up to 32 5690s on GE ports for a total of 384 Gigabit ports; supports trunking and mirroring; egress rate control with 1024K granularity; VLAN re-write through FFP; PCI interface; advanced diagnostic functions including J AG and comprehensive BIS ; industrial temperature rated (-40 to 85C)		
BCM5673 Lynx	10GB	X				X	X	H			1.2 Core 1.2/3.3/2.5 V0	400 PBGA	512K	X	X		X	X	16K	X	X	P	X	8	X	4K S	S	.13 µm, ~4W, integrated CX-4; 802.3ae to HiGig conversion; industrial temperature rated (-40 to 85C)			
BCM5671 Hercules	10GB	X				X	X	H		X	1.2 Core 1.2/3.3/2.5 V0	600 EBGA	512K		X		X					P		8	X	4K S	R	.13 µm, ~5W, proprietary 10 Gbps (HiGig) switch fabric with integrated SerDes; supports trunking and mirroring; egress rate control with 1024K granularity; VLAN re-write through FFP; API switch compatible; PCI interface; advanced diagnostic functions including J AG and comprehensive BIS ; industrial temperature rated (-40 to 85C)			
BCM5670 Hercules	10GB	X				X	X	H		X	1.2 Core 1.2/3.3/2.5 V0	600 EBGA	1 MB		X		X					P		8	X	4K S	R	.13 µm, ~10W, proprietary 10 Gbps (HiGig) switch fabric with integrated SerDes; supports trunking and mirroring; egress rate control with 1024K granularity; VLAN re-write through FFP; API switch compatible; PCI interface; advanced diagnostic functions including J AG and comprehensive BIS ; industrial temperature rated (-40 to 85C)			
BCM5666L ucana	(24) 10/100 (4) 10/100/1000 (1) 10GB	X	X	X	X			X	H		1.2 Core 1.2/3.3/2.5 V0	961 PBGA	128b DDR			X	X	X	16K	X	X	P	X	8	X	4K D	R	S	D	Layer 2+ version; supports MPLS (Martini Draft) and double VLAN tagging; 128-bit DDR memory interface supporting up to 64 MB packet buffer; industrial temperature rated (-40 to 85C)	
BCM5666 ucana	(48) 10/100 (4) 10/100/1000 (1) 10GB	X	X	X	X			X	H		1.2 Core 1.2/3.3/2.5 V0	961 PBGA	128b DDR			X	X	X	16K	X	X	P	X	8	X	4K D	R	S	D	Layer 2+ version; supports MPLS (Martini Draft) and double VLAN tagging; 128-bit DDR memory interface supporting up to 64 MB packet buffer; industrial temperature rated (-40 to 85C)	
BCM5665L ucana	(24) 10/100 (4) 10/100/1000 (1) 10GB	X	X	X	X			X	H		1.2 Core 1.2/3.3/2.5 V0	961 PBGA	128b DDR		X	X	X	X	16K	X	X	P	X	8	X	4K D	R	S	D	Layer 3 version; supports MPLS (Martini Draft) and double VLAN tagging; supports trunking and mirroring; 128-bit DDR memory interface supporting up to 64 MB packet buffer; industrial temperature rated (-40 to 85C)	
BCM5665 ucana	(48) 10/100 (4) 10/100/1000 (1) 10GB	X	X	X	X			X	H		1.2 Core 1.2/3.3/2.5 V0	961 PBGA	128b DDR		X	X	X	X	16K	X	X	P	X	8	X	4K D	R	S	D	Layer 3 version; supports MPLS (Martini Draft) and double VLAN tagging; supports trunking and mirroring; 128-bit DDR memory interface supporting up to 64 MB packet buffer; industrial temperature rated (-40 to 85C)	
BCM5656 ucana	(48) 10/100 (4) 10/100/1000	X	X	X	X						1.2 Core 1.2/3.3/2.5 V0	961 PBGA	64b DDR			X	X	X	16K	X	X	P	X	8	X	4K D	R	S	W	Layer 2+ version; supports MPLS (Martini Draft) and double VLAN tagging; 128-bit DDR memory interface supporting up to 64 MB packet buffer; industrial temperature rated (-40 to 85C)	
BCM5655 ucana	(48) 10/100 (4) 10/100/1000	X	X	X	X						1.2 Core 1.2/3.3/2.5 V0	961 PBGA	64b DDR		X	X	X	X	16K	X	X	P	X	8	X	4K D	R	S	W	Layer 3 version; supports MPLS (Martini Draft) and double VLAN tagging; supports trunking and mirroring; 128-bit DDR memory interface supporting up to 64 MB packet buffer; industrial temperature rated (-40 to 85C)	
BCM5651 ucana	(24) 10/100 (4) 10/100/1000	X	X	X	X						1.2 Core 1.2/3.3/2.5 V0	941 PBGA	64b DDR			X	X	X	16K	X	X	P	X	8	X	4K D	R	S	W	Layer 2+ version; supports MPLS (Martini Draft) and double VLAN tagging; 64-bit DDR memory interface supporting up to 32 MB packet buffer; industrial temperature rated (-40 to 85C)	
BCM5650 ucana	(24) 10/100 (4) 10/100/1000	X	X	X	X						1.2 Core 1.2/3.3/2.5 V0	941 PBGA	64b DDR		X	X	X	X	16K	X	X	P	X	8	X	4K D	R	S	W	Layer 3 version; supports MPLS (Martini Draft) and double VLAN tagging; supports trunking and mirroring; 64-bit DDR memory interface supporting up to 32 MB packet buffer; industrial temperature rated (-40 to 85C)	
BCM5646	(24) 10/100 (1) 10/100/1000 (1) 10/100/1G/2.5G	X	X	X	X				X		1.2 Core 1.2/3.3/2.5 V0	600 PBGA	64b SD RAM	1 MB		X	X	X	8K	X	X	P	X	4	X	255 D	D	S	W	Layer 2+ version of the BCM564x; 13 µm, 3W, pin compatible replacement for the BCM5625; <120mW/port; urboGig proprietary 2.5 GB port; supports up to 30 stacked devices through one of two GigE ports; trunking and mirroring	
BCM5645	(24) 10/100 (1) 10/100/1000 (1) 10/100/1G/2.5G	X	X	X	X						1.2 Core 1.2/3.3/2.5 V0	600 PBGA	64b SD RAM	1 MB	X	X	X	X	8K	X	X	P	X	4	X	255 D	D	S	W	Layer 3 version of the BCM564x; 13 µm, 3W, pin compatible replacement for the BCM5625; <120mW/port; urboGig proprietary 2.5 GB port; supports up to 30 stacked devices through one of two GigE ports; trunking and mirroring; industrial temperature rated (-40 to 85C)	

► Ethernet Physical Layer Solutions: Product Families

The Broadcom Digi-Phi™ family of low powered Ethernet physical layer solutions address everything from the high-end enterprise to value minded SOHO (small office home office) networking markets.

► Digi-Phi™

Broadcom's full-featured physical layer solutions are based on cutting edge DSP technology. This architecture provides many benefits that its non-DSP competitors do not offer, including: increased reliability (quality under 10 PPM), a scalable core that readily adapts from one manufacturing process to the next and higher interoperability with other transceivers.

By the end of 2005, Broadcom had shipped over 1 billion ports that implement the Digi-Phi technology, many to industry leading switch vendors.

Benefits of Digi-Phi technology also include:

- Excellent EM performance
- Consistent operation across voltage, temperature and process variations
- Jitter values well below the IEEE recommended limit
- Lower power operation from 1.2 to 3.3 V
- Ability to withstand higher cable-sourced ESD
- Support Auto-MDIX to accommodate straight-through or cross-over cables
- 10 Mbps to 1 Gbps solutions, which are available in a range of densities: single, dual, quad, hex and octa

► XAUI/SerDes Devices

Building on Broadcom's leadership in SerDes technology, the 80xx transceivers and retimers provide exceptional jitter performance that exceeds both the IEEE 802.3ae and GR-253 specifications for Ethernet and SONET. Their patented architecture supports a multitude of data rates which range from 1.0 Gbps to 3.2 Gbps. These rates can be synthesized from the on-chip phase-locked loop (PLL). In addition, the BCM802x and BCM804x devices provide features such as pre-emphasis and equalization of bandwidth limited-channels in an effort to provide designers highly robust, yet flexible solutions for high-speed copper links.

Benefits of Broadcom SerDes technology also include:

- Application support for 1x and 2x Fibre Channel, 10 G Fibre Channel (4 x 3.1875 Gbps), OC-48 (with or without FEC), Gigabit Ethernet, 10 Gigabit Ethernet, Infiniband and others
- Retimer products available in a range of densities to include four and eight port solutions
- SerDes products available in a range of densities to include four and eight port solutions

Digi-Phi™ and SerDes		Part	Speed	Ports	Auto-Neg	JTAG	10 B/T (802.3)	100 B/TX (802.3u)	1000 B/T (802.3ab)	1000 B/FX (802.3u)	1000 B/TX (802.3a)	10GbE/FX (802.3ae)	10GbE/TX (802.3ae)	7 Wire (6PSJ)	MMI	RMII	SSMII	CSMII	RGMMI	SGMII	TBI	RTBI	SerDes	SerDes Pass-Through	XGMII	Xaui	Core Voltage	Digital I/O	HSTL Support	Internal Regulators	Standard Package	Pb Free Package	Industrial Temp Available	HP Auto-MDIX/MDIX	Auto Wiring Correction	Cable Plant Diagnostic	Notes	
Digi-Phi™		BCM5488S	10/100/1000	8	X	X	X	X	X	X									X								1 or 1.2V	2.5 or 3.3V		X	484 PBGA	484 PBGA	X	X	X	X	X	.13 µm, 600mW/port; adds green mode to lower power even further; media converter mode; line-side and MAC-side loopback; Ethernet@WireSpeed; automatic detection and correction of wiring pair swaps; pair skew and polarity; robust CESD tolerance; low EMI emissions; 10K jumbo packets
		BCM5488R	10/100/1000	8	X	X	X	X	X	X									X	X							1 or 1.2V	2.5 or 3.3V	1.8	X	676 PBGA	676 PBGA	X	X	X	X	X	.13 µm, 600mW/port; adds green mode to lower power even further; media converter mode; line-side and MAC-side loopback; Ethernet@WireSpeed; automatic detection and correction of wiring pair swaps; pair skew and polarity; robust Cable ESD (CESD) tolerance; Low EMI emissions; 10K jumbo packets; RGMMI to SGMII-Slave mode; auto detection modes; internal termination
		BCM5482S	10/100/1000	2	X	X	X	X	X	X									X	X			X				1.2V	2.5 or 3.3V	1.8V	X	121 BGA	121 BGA	X	X	X	X	X	.13 µm, 600mW/port; adds green mode to lower power even further; media converter mode; line-side and MAC-side loopback; Ethernet@WireSpeed; automatic detection and correction of wiring pair swaps; pair skew and polarity; robust CESD tolerance; low EMI emissions; 10K jumbo packets; auto detection modes; two SerDes cores; primary SerDes SGMII; secondary SerDes for SFP/fiber transceiver, supports 100BASE-FX, SGMII-to-SGMII slave converter, internal termination
		BCM5482	10/100/1000	2	X	X	X	X	X	X									X	X			X				1.3V	2.5 or 3.3V	1.8V	X	121 BGA	121 BGA	X	X	X	X	X	.13 µm, 600mW/port; adds green mode to lower power even further; media converter mode; line-side and MAC-side loopback; Ethernet@WireSpeed; automatic detection and correction of wiring pair swaps; pair skew and robust CESD tolerance; low EMI emissions; 10K jumbo packets; auto detection modes; shared SerDes/SGMII for connection to an SGMII MAC or a SerDes/fiber transceiver
		BCM5481	10/100/1000	1	X	X	X	X	X					X				X	X								1.2V	2.5 or 3.3V	1.8V	X	64 MLP 68 MLP	64 MLP 68 MLP	X	X	X	X	X	.13 µm, 600mW/port; adds green mode to lower power even further; line-side loopback; Ethernet@WireSpeed; robust CESD tolerance; low EMI emissions; 10K jumbo packets; auto detection modes; internal termination; integrated voltage regulators; trace matched output impedance; detection and correction of pair swaps (MDI crossover); pair skew pair polarity; advanced power management IEEE 1149.1 (JTAG) boundary scan; super isolate mode
		BCM5466SR	10/100/1000	4	X	X	X	X	X	X									X	X			X	X	X		1.2V	2.5 or 3.3V			256 FBGA	256 FBGA	X	X	X	X	X	Adds RGMMI enhancements; Ethernet@WireSpeed and super isolate mode to 5464SR; pin compatible to 5464SR; advanced low power mode; supports HS L voltage levels; 0.13 µm, 750mW/port; supports jumbo packets; SerDes pass-through mode allows copper or fiber on line interface

*Supports enhanced FX/EFX, no traditional FX.

Ethernet Physical Layer Solutions: Product Families

Digi-Φ™ and SerDes		Part	Speed	Ports	Auto-Neg	JTAG	10 B/T (802.3)	100 B/TX (802.3u)	1000 B/T (802.3ab)	1000 B/FX (802.3u)	1000 B/FX (802.3ab)	10GB/FX (802.3z)	10GB/FX (802.3ae)	7 Wire (6P-5P)	MII	RMII	SMII	SSSMII	GMII	RGMI	SGMII	TBI	RTBI	SerDes	SerDes Pass-Through	XGMII	Xaul	Core Voltage	Digital I/O	KsTL Support	Internal Regulators	Standard Package	Pb-Free Package	Industrial Temp Available	Programmable LED	HP Auto-MDI/MDIX	Auto-Wiring Correction	Cable Plant Diagnostic	Notes	
BCM5466R	10/100/1000	4	X	X	X	X	X	X	X	X				X					X	X	X	X					1.2V	2.5 or 3.3V	1.5 or 1.8V	256 FBGA	256 FBGA		X	X	X	X		Adds RGMII enhancements; Ethernet@WireSpeed and super isolate mode to 5464SR; pin compatible to 5464SR; advanced low power mode; supports HS L voltage levels; 0.13 μm, 750mW/port; supports jumbo packets; pin 1Gbps line-side SerDes with RGMII MAC interface		
BCM5464SR	10/100/1000	4	X	X	X	X	X	X	X	X									X	X	X	X	X				1.2V	2.5 or 3.3V		256 FBGA	256 FBGA		X	X	X	X		Adds second SerDes interface to the BCM5464 (supports SGMII and SerDes media simultaneously); 13 μm, 750mW/port; supports jumbo packets		
BCM5464S	10/100/1000	4	X	X	X	X	X	X	X	X									X	X	X	X	X				1.2V	2.5 or 3.3V		354 FBGA	354 FBGA		X	X	X	X		Adds second SerDes interface to the BCM5464 (supports SGMII and SerDes media simultaneously); 13 μm, 750mW/port; supports jumbo packets; industrial temperature rated (-40 to 85C)		
BCM5464R	10/100/1000	4	X	X	X	X	X	X	X	X									X	X	X	X					1.2V	2.5 or 3.3V	1.5 or 1.8V	256 FBGA	256 FBGA		X	X	X	X		Supports HS L voltage levels; adds SerDes interface to the BCM5404 (for either MAC or media); 13 μm, 750mW/port; supports jumbo packets		
BCM5464	10/100/1000	4	X	X	X	X	X	X	X	X									X	X	X	X					1.2V	2.5 or 3.3V		354 RBGA	354 RBGA		X	X	X	X		Adds SerDes interface to the BCM5404 (for either MAC or media); 13 μm, 750mW/port; supports jumbo packets		
BCM5461S	10/100/1000	1	X	X	X	X	X	X	X	X				X					X	X	X	X	X				1.2V	2.5 or 3.3V		100 FPBGA 117 BGA 128 MQFP	100 FPBGA 117 BGA 128 MQFP	X	X	X	X			Adds SerDes interface to the BCM5461; 13 μm, 750mW/port; drop-in replacement for BCM5421S; supports jumbo packets; industrial temperature rated (-40 to 85C); best choice for single PHY capacitively coupled backplane applications (including the 5481); SerDes-to-copper translation for SFP and media converter applications		
BCM5461	10/100/1000	1	X	X	X	X	X						X						X	X	X	X					1.2V	2.5 or 3.3V		100 FPBGA 117 BGA 128 MQFP	100 FPBGA 117 BGA 128 MQFP		X	X	X	X		.13 μm, 750mW/port; drop-in replacement for BCM5421; supports jumbo packets; integrated voltage regulators		
BCM5248X	10/100	8	X	X	X	X	X						X				X										1.8V	3.3V		256BGA	256BGA		X	X	X			250mW/port; includes cable diagnostics capability; next page and jumbo packet support; HP Auto-MDI-X; smallest footprint per port available		
BCM5248U	10/100	8	X	X	X	X	X																				1.8V	3.3V		128 PQFP	128 PQFP		X	X	X			250mW/port; includes cable diagnostics capability; next page and jumbo packet support; HP Auto-MDI-X; smallest footprint per port available		
BCM5241	10/100	1	X		X	X							X	X													3.3 or 2.5V	3.3V		32MLP	32MLP	X	X	X	X			275mW/port; industrial temperature rated (-40 to 85C); includes cable diagnostics capability; next page and jumbo packet support; lowest cost and smallest single channel PHY ever; supports enhanced FX/EFX with or without FEC		
BCM5238U	10/100	8	X	X	X	X	X										X	X									1.8V	3.3V		128 PQFP	128 PQFP		X	X	X			215mW/port; next page and jumbo packet support; HP Auto-MDI-X; smallest footprint per port available		
BCM5238B	10/100	8	X	X																							1.8V	3.3V		256BGA	256BGA	X	X	X	X			215mW/port; next page and jumbo packet support; HP Auto-MDI-X; smallest footprint per port available		
BCM5228U	10/100	8	X	X	X	X									X	X	X										2.5V	2.5 or 3.3V		208 PQFP 208 MQFP	208 PQFP 208 MQFP	X	X	X	X			250mW/port; next page and jumbo packet support; industrial temperature rated (-40 to 85C); lead-free versions available		
BCM5228F	10/100	8	X	X	X	X	X								X	X	X										2.5V	2.5 or 3.3V		208 PQFP 208 MQFP	208 PQFP 208 MQFP	X	X	X	X			250mW/port; next page and jumbo packet support; industrial temperature rated (-40 to 85C); lead-free versions available		
BCM5228B	10/100	8	X	X	X	X	X								X	X	X										2.5V	2.5 or 3.3V		256 S PBGA	256 S PBGA	X	X	X	X			250mW/port; next page and jumbo packet support		
BCM5227U	10/100	8	X	X	X	X									X	X	X										2.5V	2.5 or 3.3V		208 PQFP			X	X	X			250mW/port; next page and jumbo packet support		
BCM5227B	10/100	8	X	X	X	X	X								X	X	X										2.5V	2.5 or 3.3V		256 S PBGA			X		X				250mW/port; next page and jumbo packet support	
BCM5226S	10/100	6	X	X	X	X	X										X										2.5V	2.5 or 3.3V		128 PQFP	128 PQFP		X	X	X			250mW/port; small footprint for space constrained hex designs; next page and jumbo packet support		
BCM5226R	10/100	6	X	X	X	X	X								X	X											2.5V	2.5 or 3.3V		160 PQFP			X	X	X			250mW/port; small footprint for space constrained hex designs; next page and jumbo packet support		
BCM5222	10/100	2	X	X	X	X							X	X													1.8V	3.3V		100PQFP 100BGA	100PQFP	X	X					<175mW/port; industrial temperature rated (-40 to 85C); cable length >140M; 7 wire serial mode that provides legacy MAC support; excellent choice for backplanes; jumbo packet support		
BCM5221	10/100	1	X	X	X	X	X						X	X	X												2.5 or 3.3V	2.5 or 3.3V		64 LOFP 64 S PBGA	64 LOFP	X	X						275mW/port; meets +/- 10% supply tolerance that is required for cardbus and PCI 2.2; 7 wire serial mode that provides legacy MAC support	
BCM5214	10/100	4	X	X	X	X									X	X											3.3V	3.3V		128 PQFP	128 PQFP							Digi-PHY RMI Quad		
BCM5208R	10/100	4	X	X	X	X							X														3.3V	3.3V		208 PQFP	208 PQFP								.35 μm, 600mW/port; step-up from the EDL AC104; improved cable ESD; next page functionality	
SerDes		Part	Speed	Ports	Auto-Neg	JTAG	10 B/T (802.3)	100 B/TX (802.3u)	1000 B/T (802.3ab)	1000 B/FX (802.3u)	1000 B/FX (802.3ab)	10GB/FX (802.3z)	10GB/FX (802.3ae)	7 Wire (6P-5P)	MII	RMII	SMII	SSSMII	GMII	RGMI	SGMII	TBI	RTBI	SerDes	SerDes Pass-Through	XGMII	Xaul	Core Voltage	Digital I/O	KsTL Support	Internal Regulators	Standard Package	Pb-Free Package	Industrial Temp Available	Programmable LED	HP Auto-MDI/MDIX	Auto-Wiring Correction	Cable Plant Diagnostic	Notes	
BCM8040	1-3.2Gbps	8		X										X												X	1.2V	1.5 to 2.5V		484PBGA									8 independent retimers; 13 μm, 400mW/channel; includes programmable Rx equalization and x pre-emphasis; supports multiple applications: 1x2x/10x Fibre Channel, GigE, 10GigE, OC-48 (with or without FEC), InfiniBand™ and others; highly flexible and configurable; 8 independent 1 Gbps to 3.2 Gbps retimers; dual independent XAUI to XAUI retiming channels; single XAUI to redundant XAUI retiming switch; programmable signal conditioning for copper interconnects; 16-level transmit pre-emphasis; receive equalization	
BCM8020	1-3.2Gbps	8		X						X																X	X	1.2V	1.5 to 2.5V		484PBGA									8 independent SerDes transceivers; 13 μm, 300mW per channel; includes programmable Rx Equalization and x pre-emphasis; supports multiple applications: 1x2x/10x Fibre Channel, GigE, 10GigE, OC-48 (with or without FEC), InfiniBand and others; 8 independent 1-Gbps to 3.2-Gbps transceivers; dual independent IEEE 802.3ae-compliant XAUI/XGMII; redundant XAUI to single XGMII; quad channel and XAUI to XAUI retiming; programmable signal conditioning for copper interconnects
BCM8011	3.125GBd	4		X						X	X														X	X	1.8V	1.5 to 2.5V	1.5 or 1.8V	324FPBGA										For 10GE XGMII/XAUI applications and 10Gbps backplanes; the four 3.125GBd links are not independent; also supports SS L2 I/O

*Supports enhanced FX/EFX, no traditional FX.

► Network Security Devices

Broadcom's solutions provide security over the network. These chips provide a family of scalable security processors that offer cryptographic functions at rates ranging from 100 Mbps to 4.8 Gbps and address the needs of multiple security markets that include: SOHO and remote access, branch office, enterprise and e-commerce, as well as those of the central office and service provider. All security products described in this section provide extensive API support by way of Broadcom's Software Reference Library for IPSec and SSL applications. Most software is available for the following platforms: Linux®, Windows®, FreeBSD®, VxWorks and Solaris. Most products listed in this document support the relevant standards-compliant protocols, including PSec, Internet Key Exchange (IKE), Secure Socket Layer (SSL) and Transport Layer Security (TLS).

► SSL

The CryptoNetX™ SSL product family provides SSL board-level acceleration solutions that range in performance from 800 to 12000 RSA transactions per second. CryptoNetX SSL adapters offer complete SSL accelerator solutions designed to accelerate the public key cryptographic functions of SSL, thereby freeing the host CPU for other tasks. These modules are offered in both 32/64-bit, 33-66 MHz PC 2.2 or PC -X or 64-bit 133 MHz PC -X compact versions that promise easier integration of SSL security features into existing OEM hardware.

- SSL800 (800 RSA/sec)
- SSL1600 (1,600 RSA/sec)
- SSL4000 (4,000 RSA/sec)
- SSK15K (15,000 RSA/sec)

SSL IC Summary							
BCM582x/5x SSL Summary	BCM5821	BCM5823	BCM5825	BCM5860	BCM5861	BCM5862	Units
IPSec	470	500	1 000	500	1000	2000	Mbps
AES	No	Yes	Yes	Yes	Yes	Yes	
RC4	600	150 600	1 000	500	1000	2000	Mbps
Diffie-Hellman	3 200	200 400	15 000	4 600	7 500	15 000	Key Ex/Sec
RSA	4 000	275 550	15 000	4 600	7 500	15 000	Private Key Ex/Sec
RNG	Yes	Yes	Yes	Yes	Yes	Yes	Ran Num Gen
Interfaces	PCI	PCI	PCI	PCI & PCIe	PCI & PCIe	PCI & PCIe	
Local Memory	No	No	No	No	No	No	
PCI Bus	32/64	32/64	32/64				Bits
PCI Freq	33 66	33 66	33 66 133	PCX 33 66 133 PCIe 4 lane	PCX 33 66 133 PCIe 4 lane	PCX 33 66 133 PCIe 4 lane	MHz
System	125	133	200	200	200	200	MHz
Technology	0 18	0 18	0 13	0 13	0 13	0 13	μ
Package	256 TBGA	256 TBGA	400 PBGA	400 PBGA	400 PBGA	400PBGA	

► VPN

The CryptoNetX VPN product family provides PSec board-level acceleration solutions that range in performance from 200 to 1000 Mbps PSec (AES/3-DES/ MAC-S A-1/ MAC-MD5). CryptoNetX VPN adapters are designed to accelerate the cryptographic functions of PSec thereby freeing the host CPU and enabling better overall network response time. These modules are offered in both 32/64-bit, 33-66 MHz PC 2.2 or PC -X or 64-bit 133 MHz PC -X compact versions that promise easier integration of SSL security features into existing OEM hardware.

- PS200 (200 Mbps PSec)
- PS200A (200 Mbps PSec with AES)
- PS300 (300 Mbps PSec)
- PS470 (470 Mbps PSec)
- PS500A (500 Mbps PSec with AES)
- PS1000A (1000 Mbps PSec with AES)

VPN (IPSec) IC Summary							
BCM580x VPN Summary	BCM5812	BCM5823	BCM5825	BCM5860	BCM5861	BCM5862	Units
DES/3DES	50	150 500	1 000	500	1000	2000	Mbps
AES	50	150 500	1 000	500	1000	2000	Mbps
RC4	80	150 600	1 000	500	1000	2000	Mbps
HMAC SHA 1	70	150 470	1 000	500	1000	2000	Mbps
HMAC MD5	80	150 470	1 000	500	1000	2000	Mbps
Diffie-Hellman	50	200 400	15 000	4 600	7 500	15 000	Key Ex/Sec
RSA	65	275 550	15 000	4 600	7 500	15 000	Private Key Ex/Sec
RNG	Yes	Yes	Yes	Yes	Yes	Yes	Ran Num Gen
Interfaces	PCI 32/33	PCI 64/66	PCI X 64/133 PCI 32/64 & 33/66	PCI X 64/133 PCIe 4 lane	PCI X 64/133 PCIe 4 lane	PCI X 64/133 PCIe 4 lane	Bits/MHz
Key Protection	No	No	No	Yes	Yes	Yes	MHz
System Clock	33	133	200	200	200	200	MHz
Technology	0 18	0 18	0 13	0 13	0 13	0 13	μ
Package	196 FBGA	256 TBGA	400 PBGA	400 PGA	400 PGA	400 PGA	
Power	0 45	1 3	<3 0			<5 0	Watts

BCM584x VPN Summary	BCM5840	BCM5841	Units
DES/3DES	2 400	600 4 800	Mbps
AES		600 4 800	Mbps
HMAC SHA 1	2 400	600 4 800	Mbps
HMAC MD5	2 400	600 4 800	Mbps
IPSec Processing	Partial	Partial	SAs
SA Lookup	2 K	0	
Encap/Decap	No	No	
SA Update	No	No	
Policy Verification	No	No	
IPv4/IPv6 Support	IPv4	IPv4	
On Chip SA Storage	2 048	No	SAs
Interfaces	PL3	PL3	
System Clock	50 100	50 100	MHz
Local Memory	No	No	
Key Protection	No	Yes	
Technology	0 18	0 18	μ
Package	208 MQFP	256 BGA	
Power	3	1 5 4 9	Watts

Network Security Devices

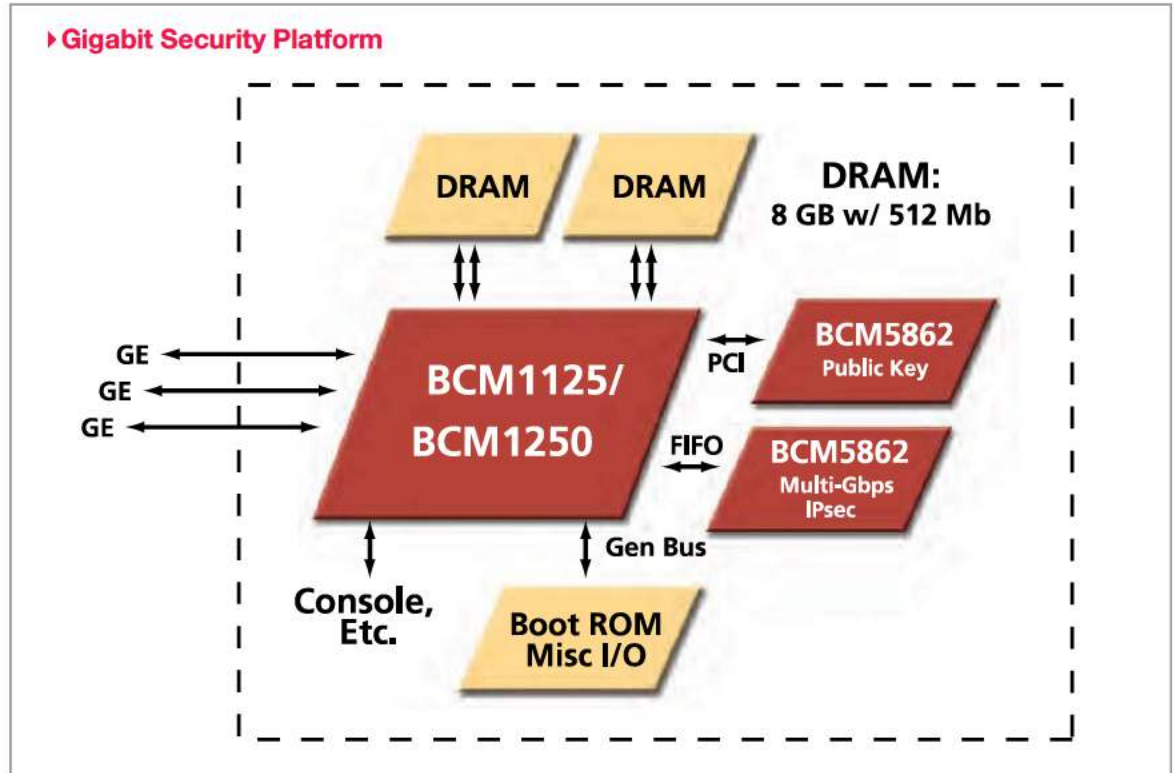
Board Summary

Feature	Broad Products										
	SSL800	SSL1600	SSL4000	SSL12000	IPS200	IPS200A	IPS300	IPS470	IPS500A	IPS1000A	Units
DES/3DES					200	200	300	470	500	1 000	Mbps
AES						200	No	No	500	1 000	Mbps
HMAC SHA 1					200	200	300	470	500	1 000	Mbps
HMAC MD5					200	200	300	470	500	1 000	Mbps
Single Pass IPsec					Yes	Yes	Yes	Yes	Yes	Yes	
Diffie-Hellman	1 200	1 280	3 200	12 000	200	200	1 200	1 660	400	12 000	Mbps
RSA	800	1 600	4 000	12 000	275	275	800	1 600	500	12 000	Mbps
RNG	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Interfaces	PCI 64/66	PCI 64/66	PCI 64/66	PCI X 64/133	PCI 32/33	PCI 32/33	PCI 64/66	PCI 64/66	PCI 64/66	PCI X 64/133	Bits/MHz
Package	PCI Card	PCI Card	PCI Card	PCI Card	PCI Card	PCI Card	PCI Card	PCI Card	PCI Card	PCI Card	
Export Classification	Releasable	Releasable	Releasable	Releasable	Non Releasable	Non Releasable	Non Releasable	Non Releasable	Non Releasable	Non Releasable	

Protocol Summary

	Application	
	VPN	E-Commerce
Protocol	IPSec IKE	SSL
OSI Layer	Layer 3	Layer 4-7
Encryption	DES 3DES RC4 AES	RC4 3DES AES
Authentication	MD5 SHA 1	MD5 SHA 1
Public Key	Diffie-Hellman	RSA

Gigabit Security Platform



▶▶ Network Security Acronyms/Definitions

▶ AES

Advanced Encryption Standards, Cryptographic Function

▶ DES

Data Encryption Standard, Cryptographic Function, global standard, a popular symmetric-key encryption method developed in 1975 and standardized by ANSI in 1981 as ANSI X.3.92, part of IPsec standard

▶ 3DES

Triple DES, Cryptographic Function, part of IPsec standard

▶ DSA

Digital Signature Algorithm

▶ FIPS 140-1

Federal standard defining security levels of cryptographic modules

▶ Hash

One-way function, a cryptographic checksum

▶ HMAC

Hashed MAC, part of IPsec standard

▶ IKE

Internet Key Exchange, the key exchange normally used by VPN mechanisms.

▶ IPsec

IP Security, a set of protocols being developed by the IETF to support secure exchange of packets at the IP layer

▶ MAC

Message Authentication Code

▶ MD5

Message Digest, an algorithm created in 1991 by Professor Ronald Rivest used to create digital signatures. It is intended for use with 32-bit machines and is safer than the MD4 algorithm, which has been broken. MD5 is a one-way hash function, meaning that it takes a message and converts it into a fixed string of digits, also called a message digest, Cryptographic Function, part of IPsec standard

▶ Public-key cryptography

A cryptographic system that uses two keys, a public key known to everyone and a private or secret key known only to the recipient of the message

▶ RC4

Symmetric-key algorithm, named for creator, Rivest Cipher

▶ RSA

A public-key encryption technology developed by RSA Data Security. The acronym stands for Rivest, Shamir and Adleman, the inventors of the technique. The RSA algorithm is based on the fact that there is no efficient way to factor very large numbers. Deriving an RSA key, therefore, requires an extraordinary amount of computer processing power and time

▶ SHA-1

Secure Hash Algorithm, Cryptographic Function, part of IPsec standard

▶ SSL

Short for Secure Sockets Layer, a protocol developed by Netscape for transmitting private documents via the Internet. SSL works by using a private key to encrypt data transferred over the SSL connection. Application protocols used in secure e-commerce applications

▶ Symmetric-key cryptography

An encryption system in which the sender and receiver of a message share a single, common key that is used to encrypt and decrypt the message

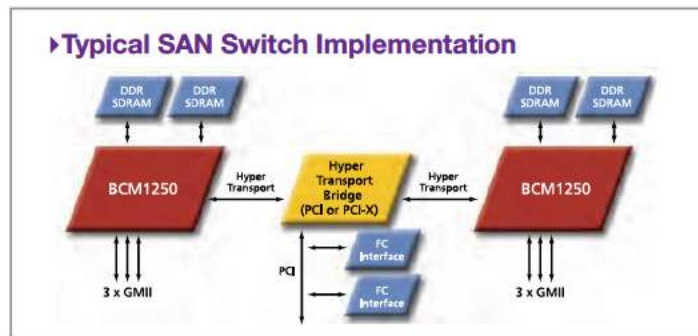
▶ TLS

Transport Layer Security, used in e-commerce applications

▶ VPN

Virtual Private Network, a network constructed by using public wires to connect nodes. For example, there are a number of systems that enable the creation of networks using the Internet as the medium for transporting data. VPN systems use encryption and other security mechanisms to ensure that only authorized users can access the network and that the data cannot be intercepted

High Speed Networking: Communication Processors



The S-Byte[®] line of processors establishes Broadcom as a pioneer and leader in single/multi-processor MIPS-based communications solutions that include industry-leading performance, low power and integration.

BCM1250

The BCM1250 tightly integrates two 64-bit MIPS CPU cores, each scalable from 600 MHz to 1 GHz, large cache memory and integrated I/O onto a single chip.

BCM1125

The BCM1125 device extends Broadcom's reach into high-volume, cost-sensitive segments with features that include a single S-Byte SB-1 CPU core, a 64-bit DDR memory controller, an on-chip 256KB L2 cache, two 10/100/1000 Ethernet MACs, a 32-bit 33/66 MHz PCI bridge and various other input/output (I/O) peripherals.

Key Features:

Customer Benefits:

Two 64-bit SB-1 cores each 250 MHz and scalable to 1 GHz	High performance multi-processing at low power
On-chip coherent multi-processing bus ZBbus	High on-chip bus bandwidth or as in external data busses (>100 Gb/s)
512 K L2 cache 4-way associative	Large cache memory or as memory accesses with minimal latency
DDR memory controller with two 64-bit channels	Support up to 1 GB/channel and 2 DIMMs slot/channel with current generation 256 Mb chips
Three 10/100/1000 MACs configurable to Packet FIFO interfaces	Support Ethernet and/or POS connectivity
32-bit PCI (33/66 MHz)	Supports industry popular PCI devices
HyperTransport (LDT) Bridge	High speed interface or connecting co-processors PCI peripherals or multiple 1250 chips
Integrated System I/O	Eliminates need to buy a separate system controller
On-chip JTAG interface	Easy debug and bring up
Comprehensive Software Development Kit based on MIPS ISA tools and software (e.g. compilers, debuggers, OS)	High programming flexibility, minimizing software development effort

Key Features:

Customer Benefits:

One 64-bit SB-1 core each 250 MHz and up to 800 MHz	High performance multi-processing at low power
On-chip coherent multi-processing bus ZBbus	High on-chip bus bandwidth or as in external data busses (>100 Gb/s)
256 K L2 cache 4-way associative	Large cache memory or as memory accesses with minimal latency
DDR memory controller with two 64-bit channels ECC protected	Support up to 1 GB with current generation 256 Mb chips
Three 10/100/1000 MACs configurable to Packet FIFO interfaces	Support Ethernet and/or POS connectivity
32-bit PCI (33/66 MHz)	Supports industry popular PCI devices
HyperTransport (HT) Bridge	High speed interface or connecting co-processors PCI peripherals
Integrated System I/O	Eliminates need to buy a separate system controller
On-chip JTAG interface	Easy debug and bring up
Comprehensive Software Development Kit based on MIPS ISA tools and software (e.g. compilers, debuggers, OS)	High programming flexibility, minimizing software development effort