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Broadcom **Networking Solutions** Pr

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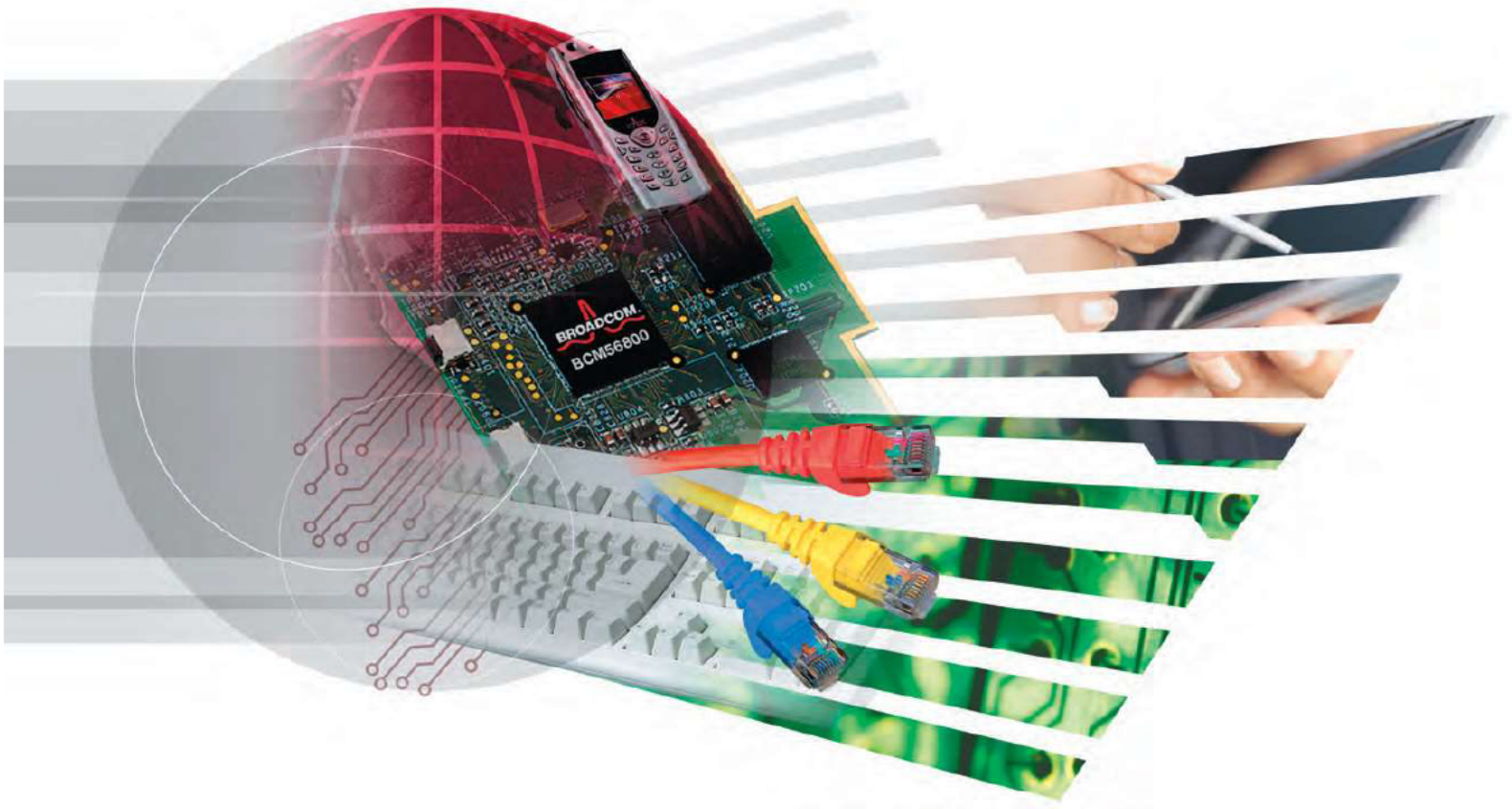


BROADCOM.

Product Selection Guide

BCM11xx	S ng e Core MIPS Broadband Processor
BCM12xx	Dua Core MIPS Broadband Processor
BCM14xx	Quad Core MIPS Broadband Processor
BCM52xx	10/100 Phy
BCM53xx	ROBO Ethernet Sw tches
BCM53xxx	ROBO Ethernet Sw tches
BCM54xx	10/100/1000 Phy
BCM56xx	Strata 1 and 2 Ethernet Sw tches
BCM56xxx	Strata 3 Ethernet Sw tches
BCM57xx	G gab t Ethernet Contro ers
BCM58xx	Secur ty Processor IC's
BCM80xx	SerDes/Re-T mers
BCM81xx	OC-192 Transce vers
BCM82xx	OC-48 Transce vers
BCM87xx	10 GB Ethernet Transce vers
BCM9xxxx	Eva uat on Board xxxx = Product Number
SSLxxx	Board Leve SLL Acce erat on Products
IPSxxx	Board Leve IPSec Acce erat on Products
xxxxxG	RoHS Comp ant

High Speed Networking: Ethernet Switching Solutions

Broadcom® offers a d verse portfo o of sw tch ng products, nc ud ng connect v ty so ut ons 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 persona computers.

Small-Medium Business Switch Solutions

Broadcom's ROBO-MX™ and ROBO- S™ products are the opt ma so ut ons for SO O, ROBO and SMB network ng env ronments.

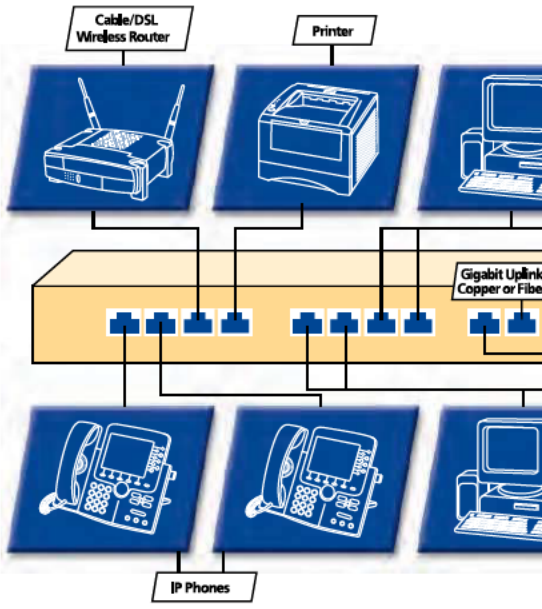
ROBO Switches

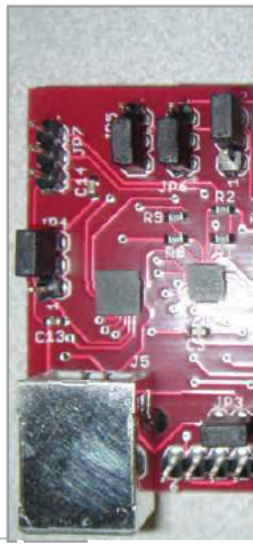
Based on e ght generat ons of proven techno ogy, ROBO sw tches prov de a new eve of nte gence w th n affordab e and h gh y ntegrated Fast Ethernet, Fast Ethernet p us G gab t and G gab t Sw tches by ncorporat ng h gh- eve enterpr se network ng features such as network secur ty and Qua ty of Serv ce (QoS) for Vo ce over P (Vo P) and mu t med a app cat ons.

Benefits of ROBO technology also include:

- So ut ons that nc ude ntegrated phys ca ayer dev ces
- On-ch p packet buffer ng that e m nates the need for externa memory
- Bu t- n management features such as M B Autocast™, nc ud ng support for remote network ng mon tor ng (RMON) and s mp e network management protoco (SNMP) protoco s
- P Auto-MD X to accommodate stra ght-through or cross-over cab es
- 10/100 and 10/100/1000 Mbps products, wh ch are ava ab e n a range of dens t es from 5 to 27 port so ut ons, nc ud ng popu ar 8+2, 16+2 and 24+2 so ut ons
- Pure G gab t products, wh ch are ava ab e n a range of dens t es from 4 to 24 ports
- A cost effect ve Layer 2 feature set
- Support of Broadcom's proven Sw tch ng App cat on Program nterface (AP)
- Fu management support that nc udes Per phera Component nterconnect (PC)
- 1-16 Port SerDes So ut ons

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





Robo Debug Tools

The $149 Avnet Robo oader Board, when used w th the nc uded Avnet Robo oader W ndows GU Software, a ows the user easy access to a of the reg sters to v ew, mod fy and ver fy sett ngs v a the SP bus and a USB or RS232 capab e W ndows computer.

Th s too s essent a for any eng neer debugg ng a Broadcom Robo based product and can be ordered through your oca Avnet branch P/N AES-ROBOLOADER.

High Speed Networking: Ethernet Switching Solutions

Small-Medium Business Switch Solutions

Robo Gigabit 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 (IMP)	WAN Port	External Chip Interface	7 Wire (GPSI)	MII	RvMII	RMII	GMII	RGMII	SGMII	1.25Gb/S SerDes	TBI	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 (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/s/w)	
BCM5398 Grippen 2005 Q4			9	8	1		MII RvMII GMII RGMII		IMP	IMP		IMP	IMP								1.0V Core 2.5V I/O	1.8V	452 PBGA		128K	X	X	X	4K	X	X	K	X	4	X	X		R	DSW	.13 µm, 5W, IEEE 802.1 based VLAN with 4K en mirroring; IGMP snoopin Broadcom's patented Lo Ethernet port; IEEE 802. and transmit statistics fo automatic learning and
BCM5397 Grippen 2005 Q4	1		6	5	1	1	MII (2) / RvMII / GMII / RGMII		WAN & IMP	IMP		IMP	IMP	16	16						1.2/2.5/3.3		457 FPGA 452 PBGA	Y	256K		X	X	8K		X	B	X	4	X	4K		RS	DSW	.13 µm, 3.4W, IEEE 802 based VLAN with 4K en mirroring; IGMP snoopin Broadcom's patented Lo Ethernet port; IEEE 802. and transmit statistics fo automatic learning and
BCM5396 Dino 2005 Q2			16		1		RGMII/GMII/ RvMII (1) SerDes/ SGMII (16)		IMP	IMP		IMP	IMP	16	16						1.2/2.5/3.3		256 BGA		256K		X	X	8K		X	B	X	4	X	4K		RS	DSW	.13 µm, 2.2W, 16 GigE Port-based ingress an EEPROM interfaces, S
BCM5345M Modena 2004 Q2			8		1		RGMII/GMII/ RvMII (1) SerDes/ SGMII (8)			IMP		IMP	IMP	8	8						1.2/2.5/3.3		256 BGA		128K		X	X	4K		X	B	X	4	X	4K		RS	D	.13 µm, 1.2W, 8 GigE port-based ingress an interfaces
BCM5389 Dino 2005 Q2			8		1		RGMII/GMII/ RvMII (1) SerDes/ SGMII (4)			IMP		IMP	IMP	8	8						1.2/2.5/3.3		256 FBGA		128K		X	X	4K		X	B	X	4	X	4K		RS	D	.13 µm, 1.2W, 8 GigE port-based ingress an interfaces
BCM5388 Enzo 2004 Q1			8	4			RGMII						4								1.2/2.5	1.2V	324 PBGA		1 M		X	X	4K		X	M	X	4	X	4K				4W max, integrated vo Cu only; unmanaged w
BCM5387 Dino 2005 Q2			5		1		RGMII/GMII/ RvMII (1) SerDes/ SGMII (4)			IMP		IMP	IMP	5	5						1.2/2.5/3.3		256 FBGA		128K		X	X	4K		X	B	X	4	X	4K		RS	D	.13 µm, ~1W, 4 GigE p port-based ingress an interfaces
BCM5385 Enzo 2004 Q1			5	4			RGMII						1								1.2/2.5	1.2V	324 PBGA		1 M		X	X	4K		X	M	X	4	X	4K				3.3W max, 4 ports ex Cu only; unmanaged w
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 EEPROM interfaces
BCM5382M Robo 2G 2004 Q1	9	8	2	1			MII/ RvMII/ 7-Wire/ GMII SerDes	1	2	1		1			2						3.3/1.2/2.5 & 1.8		324 PBGA	Y	256K		X	X	4K	X	X	B		2		4K	X	RS	D	.13 µm, 3.5W, 1 Gig-PH 4K 802.1Q VLAN with tr is GMII or SerDes and th
BCM5380M Robo 2G 2004 Q1	9	8	2	1			MII/ RvMII/ 7-Wire/ GMII SerDes	1	2	1		1			1			X	3	24	3.3/1.2/2.5 & 1.8		324 PBGA	Y	256K		X	X	4K	X	X	B		2		4K	X	RS	D	.13 µm, 3.5W, 1 Gig-P 4K 802.1Q VLAN with Gig port is GMII or Ser 24+2 non-blocking or
BCM5346M Modena 2004 Q1			16		1		RGMII PCI						16				IMP				1.25/2.5/3.3		676 BGA		512K		X	X	8K	X	X	P	X	4	X	4K		RS	DSW	~4W max, PCI CPU 32 tree support, backwar
BCM5346 Modena 2004 Q1			16				RGMII (16) GMII (1)					1	16								1.25/2.5/3.3		676 BGA		512K		X	X	8K	X*	X	P	X	4	X	4K		RS	DSW	~4W max, lite manag 802.1W/S spanning t extremely low cost
BCM5345M Modena 2004 Q1			24		1		RGMII (24)						16				IMP				1.25/2.5/3.3		676 BGA		512K		X	X	8K	X	X	P	X	4	X	4K		RS	DSW	~4W max, PCI CPU 32 tree support; backwar
BCM5345 Modena 2004 Q1			24		1		RGMII (24) GMII (1)					1	16								1.25/2.5/3.3		676 BGA		512K		X	X	8K	X*	X	P	X	4	X	4K		RS	DSW	~4W max; Lite Mana 802.1W/S spanning t extremely low cost
BCM5324M estarossa 2004 Q2	25	24	2				RGMII/GMII/ BI (2) MII/RvMII (1)		1	1		2	2		2						1.2/2.5/3.3		400 BGA	Y	256K		X	X	8K	X	X	M	X	4		4K		RS	DSW	~3.5W, 24 FE ports ex based trunking with fai EAPOL with secure MA access to internal regis
BCM5321M estarossa 2004 Q2	17	16	2				RGMII/GMII/ BI (2) MII/RvMII (1)		1	1		2	2		2						1.2/2.5/3.3		400 BGA	Y	256K		X	X	8K	X	X	M	X	4		4K		RS	DSW	~2.7W, 16 FE ports ex based trunking with fai EAPOL with secure MA access to internal regis
BCM5320M estarossa 2004 Q2	9	8	2				RGMII/GMII/ BI (2) MII/RvMII (1)		1	1		2	2		2						1.2/2.5/3.3		400 BGA	Y	256K		X	X	8K	X	X	M	X	4		4K		RS		~2W, 8 FE ports expan based trunking with fai EAPOL with secure MA access to internal regis

High Speed Networking: Ethernet Switching Solutions

Small-Medium Business Switch Solutions

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 (IMP)	WAN Port	External Chip Interface	7 Wire (GPSI)	MII	RvMII	RMII	GMII	RGMII	SGMII	1.25Gb/S SerDes	TBI	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 (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/s/w)	
BCM5322M estarossa 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; supp based trunking with fa lover; bandwidth and r EAPOL with secure MAC address, broadcast access to internal registers through either M
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 <2W, 8 ports expandable to 9 with MII; n VLAN and DiffServ; MAC based trunking with 64K/128K/256K (up to 100 Mbps) r storm control; up to 4x speed MII interfac through either MDC/MDIO or SPI; MIB Au
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; feat compatible) include: supports pseudo-FX mo repeater mode, bandwidth and rate control w secure MAC address; broadcast storm contro internal registers through either MDC/MDIO support. **Note: Rev B0 of this device suppo
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; fe pin compatible) include: supports pseudo-F failover; repeater mode, bandwidth and rate EAPOL with secure MAC address; broadc and 802.1w; access to internal registers t 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; fea pin compatible) include: supports pseudo with failover; repeater mode, bandwidth a resolution; EAPOL with secure MAC addre 802.1s and 802.1w, access to internal reg temperature rated (-40 to 85C); MIB Auto
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 w th MII (Cascade to 32 ports); not pin con 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; lac Autocast support; .18 µm, 1.9W, includes i expandable to 9 with MII; not pin compati
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 with MII; not pin compatible with BCM5317 rated (-40 to 85C)
BCM5327 4th Gen 2002 Q2	9	8				1	M I		1													3.3/1.8		208 PQFP		256K		X	X	4K		X	P		2				R S	D	Unmanaged version of the BCM5327M; lac Autocast support; .18 µm, 1.9W, includes i expandable to 9 with MII; not pin compati
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 o provided for an additional X/FX uplink to 1K unicast addresses; EEPROM (93C46) or oscillator; low power 3.3/1.8V; 0.18 µm selectable; 128-pin MQFP package; D E
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, IGM expandable to 6 with MII; not pin compatibl 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 regulator (requires PNP) allowing 3.3V only pseudo-FX mode; tagged VLAN; DiffServ, b rate; EAPOL with secure MAC address; acc broadcast storm control; industrial tempera
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 pseudo-FX mode; tagged VLAN; DiffServ, b rate; EAPOL with secure MAC address; acc broadcast storm control; industrial tempera
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; lac Autocast support; .18 µm, 1.2W, includes i expandable to 6 with MII; not pin compatibl

High Speed Networking: Ethernet Switching Solutions

Enterprise Router and Switch Solutions

Broadcom's StrataXGS® and StrataSw tch® products are the opt ma so ut ons for enterpr se, metropo tan and carr er c ass network ng env ronn

StrataSwitch®

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

Benefits of StrataSwitch technology also include:

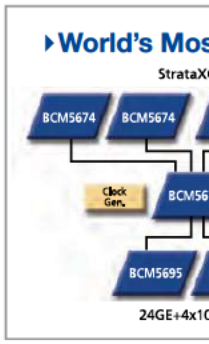
- Extreme y ow atency, non-b ock ng sw tch fabr c
- Efficient layer 2 and 3 switching across a stack
- D fferent ated serv ces v a the Fast F ter Processor, nc ud ng ContentAware™ Traffic classification and multiple c ass of serv ce queues
- Products use compat b e and proven AP
- 10/100 Mbps + 10/100/1000 Mbps products, wh ch are ava ab e n a range of dens t es to nc ude 26, 24+2, 16+2 and 8+2 port so ut ons

StrataXGS I™ and StrataXGS II™

By ach ev ng the h ghest eve of performance and ntegrat on, StrataXGS represents the next generat on of mu t - ayer sw tches des gned to enab e sca ab e sw tches for enterpr se, metropo tan and carr er c ass network ng env ronments.

StrataXGS benefits also include:

- EEE 802.3ae 10 Gbps ethernet support
- Cont nued comm tment to ow atency, non-b ock ng
- ntegrated SerDes
- Efficient layer 2 and 3 switching across a stack
- D fferent ated serv ces v a the Fast F ter Processor, nc ud ng ContentAware™ Traffic Classification and multiple c ass of serv ce queues
- Seam ess software ntegrat on w th prev ous StrataSw tch products
- Multiple configurations available, speeds ranging from 10 Mb/S to 10Gb/S
- 8-48 port 10/100 so ut ons, w th vers ons w th up to 4x10/100/1000 ports and 1x10G up nk
- 12 port 10/100/1000 so ut ons w th 1x10G up nk ports
- Pure 10Gb/S so ut ons
- Stackab e through 1G, 10G or G g 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 for both standalone and stackable and chassis switch configurations supporting enterprise and service provider markets. In addition, these devices are v such as b ade servers, P DSLAM (nternet Protoco D g ta Subscr ber L ne Access Mu t p exers), PON (pass ve opt ca network ng) and AdvancedTCA®(

- Supports a of the features of StrataXGS and
- Multiple configurations available, speeds ranging from 10 Mb/S to 12Gb/S
- 24 port 10/100 so ut ons, w th vers ons w th up to 4x10/100/1000 ports and 1x10G or G g up nk
- 16 port 2.5GbE w th 10GbE/ G g2/ G g+
- 24 port 10/100/1000 so ut ons w th up to 4x1
- Pure 10Gb/S so ut ons up to 20 ports
- Most G g2 ports a so capab e of dr v ng 1

High Speed Networking: Ethernet Switching Solutions

Enterprise Router and Switch Solutions

XGS III

Part #/Family	Speed	Non-Blocking	SMII/SSSMII	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 (FFP or CAE)	Managed	Trunking (Port/Mac-Based)	Diffserv Class of Service	Egress Queues	Jumbo Frames	802.1Q VLANs / Single Double Tags	RMON/SNMP	Spanning Tree (802.1D/S/W)	Notes
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 S	D S W	~15W, XGS3 supporting 10-GbE/2.5-GbE/1-GbE ports with many feature en security, mirroring/FFP enhancements, hardware tunneling, larger layer 3 t centralized FFP CAMs; range checkers and slices; security BroadSafe DO 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 S	D S W	~15W, XGS3 supporting 10-GbE/2.5-GbE/1-GbE ports with many feature integrated security, mirroring/FFP enhancements, hardware tunneling, la XAUI/HiGig/HiGig+; centralized FFP CAMs; range checkers and slices; 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 S	D S W	~16W, XGS3 supporting 10-GbE/2.5-GbE/1-GbE ports with many feature integrated security, mirroring/FFP enhancements, hardware tunneling, la XAUI/HiGig/HiGig+; centralized FFP CAMs; range checkers and slices; 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, legacy HiGig/HiGig+ and HiGig2 ports; 2 more traffic classes — now 10 (i improved flow control and buffer management; same port switching; new support for link failover
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, legacy HiGig/HiGig+ and HiGig2 ports; 2 more traffic classes — now 10 (i improved flow control and buffer management; same port switching; new support for link failover
BCM56603 Easyrider	(2) HiGig+ Only	X							+	X		1.25 Core 1.25/3.3/2.5 I/O	1764 FCBGA Leaded Only	RLD RAM II	Ext	X	X	X	X	X	X	(I) 32K (E)512K	X	X	P	X	10	X	4K	R S	D S W	~16W, XGS3 large external buffer memory; CAM expansion and MPLS s network; supports external table expansion interfaces that enable the MAC, LSR and LER support; Virtual Routing (VRF), IPv6 routing and tunneling; security BroadSafe DOS attack detection/prevention; wireless switching
BCM56602 Easyrider	(1) 10/100/1000 (1) HiGig+ Only	X				X	X	X	+	X	X	1.25 Core 1.25/3.3/2.5 I/O	1764 FCBGA Leaded Only	RLD RAM II	Ext	X	X	X	X	X	X	(I) 32K (E)512K	X	X	P	X	10	X	4K	R S	D S W	~16W XGS3 large external buffer memory; CAM expansion and MPLS s network; supports external table expansion interfaces that enable the MA MPLS, LSR and LER support; Virtual Routing (VRF) IPv6 routing and tunnel security BroadSafe DOS attack detection/prevention; wireless switching
BCM56601 Easyrider	(12) 10/100/1000 (1) HiGig+ Only	X				X	X	X	+	X	X	1.25 Core 1.25/3.3/2.5 I/O	1764 FCBGA Leaded Only	RLD RAM II	Ext	X	X	X	X	X	X	(I) 32K (E)512K	X	X	P	X	10	X	4K	R S	D S W	~16W, XGS3 large external buffer memory; CAM expansion and MPLS s network; supports external table expansion interfaces that enable the MA MPLS, LSR and LER support; Virtual Routing (VRF) IPv6 routing and tunnel 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	RLD RAM II	Ext	X	X	X	X	X	X	(I) 32K (E)512K	X	X	P	X	10	X	4K	R S	D S W	~16W, XGS3 large external buffer memory; CAM expansion and MPLS s network; supports external table expansion interfaces that enable the MA MPLS, LSR and LER support; Virtual Routing (VRF) IPv6 routing and tunnel security BroadSafe DOS attack detection/prevention; wireless switching
BCM56580 Goldwing	(16)2.5GbE (4)10GbE/ HiGig2/ HiGig+	X				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 D	R S	D S W	he BCM56580 has a similar feature set as the BCM5650x family produc ECMP routes, L3 IPv6 LPM routes and ContentAware™ engine rules are si GbE/10-GbE switching solution with IPv4 and IPv6 L3 routing capability
BCM56504 Firebolt	(24) 10/100/1000 (4) 10GB	X				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 D	R S	D S W	~13W, XGS3 includes many feature enhancements over XGS2; some features hardware tunneling, larger layer 3 tables, full IPv6 support and selectable XA and slices; security BroadSafe DOS attack detection/prevention; wireless s
BCM56503 Firebolt	(24) 10/100/1000 (3) 10GB	X				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 D	R S	D S W	~12W, XGS3 includes many feature enhancements over XGS2; some featur enhancements, hardware tunneling, larger layer 3 tables, full IPv6 support a range checkers and slices; security BroadSafe DOS attack detection/prevent
BCM56502 Firebolt	(24) 10/100/1000 (2) 10GB	X				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 D	R S	D S W	~11W, XGS3 includes many feature enhancements over XGS2; some feature hardware tunneling, larger layer 3 tables, full IPv6 support and selectable XA and slices; security BroadSafe DOS attack detection/prevention; wireless sw
BCM56501 Firebolt	(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 D	R S	D S W	~11W, XGS3 includes many feature enhancements over XGS2; some featur enhancements, hardware tunneling, larger layer 3 tables, full IPv6 support a range checkers and slices; security BroadSafe DOS attack detection/prevent
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 D	R S	D S W	~9W, XGS3 includes many feature enhancements over XGS2; some features hardware tunneling, larger layer 3 tables, full IPv6 support and selectable XA and slices; security BroadSafe DOS attack detection/prevention, wireless sw
BCM56309 Helix	(24) 10/100/1000 (4) HiGig / 10G	X				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 D	R S	D S W	Layer two version of the 56304 device
BCM56308 Helix	(24) 10/100/1000 (3) HiGig / 10G	X				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 D	R S	D S W	Layer two version of the 56303 device

High Speed Networking: Ethernet Switching Solutions

Enterprise Router and Switch Solutions

Part #/Family	Speed	Non-Blocking	SMII/SSSMII	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 (FFP or CAE)	Managed	Trunking (Port/Mac-Based)	Diffserv Class of Service	Egress Queues	Jumbo Frames	802.1Q VLANs / Single Double Tags	RMON/SNMP	Spanning Tree (802.1D/S/W)	
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 I/O	1156FCBGA		.75 MB			X	X	X	X	8K		X	P	X	8	X	4K D	R S	D S W	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 I/O	1156FCBGA		.75 MB			X	X	X	X	8K		X	P	X	8	X	4K D	R S	D S W	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 I/O	1156FCBGA		.75 MB			X	X	X	X	8K		X	P	X	8	X	4K D	R S	D S W	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 I/O	1156FCBGA		.75 MB	X	X	X	X	X	X	8K		X	P	X	8	X	4K D	R S	D S W	6.5W, XGS3 includes many feature enhancements over X hardware tunneling, larger layer 3 tables, full IPv6 suppo and slices; security BroadSafe DOS attack detection/p
BCM56303 Helix	(24) 10/100/1000 (3) HiGig / 10G	X				X	X	X	H+		X	1.25 Core 1.25/3.3/2.5 I/O	1156FCBGA		.75 MB	X	X	X	X	X	X	8K		X	P	X	8	X	4K D	R S	D S W	5.9W, XGS3 includes many feature enhancements over X hardware tunneling, larger layer 3 tables, full IPv6 suppo and slices; security BroadSafe DOS attack detection/p
BCM56302 Helix	(24) 10/100/1000 (2) HiGig / 10G	X				X	X	X	H+		X	1.25 Core 1.25/3.3/2.5 I/O	1156FCBGA		.75 MB	X	X	X	X	X	X	8K		X	P	X	8	X	4K D	R S	D S W	5.4W, XGS3 includes many feature enhancements over X hardware tunneling, larger layer 3 tables, full IPv6 suppo and slices; security BroadSafe DOS attack detection/p
BCM56301 Helix	(4) HiGig / 10G	X						X	H+	X	X	1.25 Core 1.25/3.3/2.5 I/O	1156FCBGA		.75 MB	X	X	X	X	X	X	8K		X	P	X	8	X	4K D	R S	D S W	5.1W, XGS3 includes many feature enhancements over X hardware tunneling, larger layer 3 tables, full IPv6 suppo and slices, security BroadSafe DOS attack detection/p
BCM56300 Helix	(24) 10/100/1000	X				X	X	X			X	1.25 Core 1.25/3.3/2.5 I/O	1156FCBGA		.75 MB	X	X	X	X	X	X	8K		X	P	X	8	X	4K D	R S	D S W	4.3W, XGS3 includes many feature enhancements over X hardware tunneling, larger layer 3 tables, full IPv6 suppo and slices; security BroadSafe DOS attack detection/p
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 I/O	1156FCBGA		.75 MB	X	X	X	X	X	X	8K		X	P	X	8	X	4K D	R S	D	6.85W, XGS3 includes many feature enhancements ov enhancements, hardware tunneling, full IPv6 support a
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 I/O	1156FCBGA		.75 MB	X	X	X	X	X	X	8K		X	P	X	8	X	4K D	R S	D	3.75W, XGS3 includes many feature enhancements ov enhancements, hardware tunneling, full IPv6 support a
BCM56100 Felix	(24) 10/100 (2) 10/100/1000	X	X	X		X	X					1.25 Core 1.25/3.3/2.5 I/O	1156FCBGA		.75 MB	X	X	X	X	X	X	8K		X	P	X	8	X	4K D	R S	D	1.25W, XGS3 includes many feature enhancements ov enhancements, hardware tunneling and full IPv6 suppo
XGS II																																
BCM5698 Draco 1.5	(12) 10/100/1000	X				X	X					1.2 Core 1.2/3.3/2.5 I/O	480 EBGA		1 MB	X		X		X	X	16K	X	X	P	X	8	X	4K D	R S	D	Layer 2+ version of the BCM5696; no layer 3 functionali
BCM5697 Draco 1.5	(12) 10/100/1000 (1) 10GB	X				X	X	X	H+			1.2 Core 1.2/3.3/2.5 I/O	480 EBGA		1 MB			X		X	X	16K	X	X	P	X	8	X	4K D	R S	D	Layer 2+ version of the BCM5695; no layer 3 functionali
BCM5696 Draco 1.5	(12) 10/100/1000	X				X	X					1.2 Core 1.2/3.3/2.5 I/O	480 EBGA		1 MB	X		X		X	X	16K	X	X	P	X	8	X	4K D	R S	D	Enhanced version of BCM5691; pin for pin compatible w granularity; equal and weighted cost multi-path forwardi supports IP subnet based VLANs; enhanced rapid spanni for DSCP to 802.1p mapping; better IP multicast routing s industrial temperature rated (-40 to 85C)
BCM5695 Draco 1.5	(12) 10/100/1000 (1) 10GB	X				X	X	X	H+			1.2 Core 1.2/3.3/2.5 I/O	480 EBGA		1 MB	X		X		X	X	16K	X	X	P	X	8	X	4K D	R S	D	Enhanced version of BCM5690; pin for pin compatible w granularity;equal and weighted cost multi-path forwardin supports IP subnet based VLANs; enhanced rapid spanni for DSCP to 802.1p mapping; better IP multicast routing s industrial temperature rated (-40 to 85C)
BCM5676 Hercules 1.5	10GB	X						X	H			1.2 Core 1.2/3.3/2.5 I/O	600 EBGA		512K			X		X				X	P		8	X	4K D			~6W, adds advanced multicast capabilities and HiGig+ (
BCM5675 Hercules 1.5	10GB	X					X	X	H			1.2 Core 1.2/3.3/2.5 I/O	600 EBGA		1 MB			X		X				X	P		8	X	4K D	R		~12W, adds advanced multicast, trunking capabilities an
BCM5674 Lynx 1.5	10GB	X					X	X	H			1.2 Core 1.2/3.3/2.5 I/O	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- industrial temperature rated (-40 to 85C)

High Speed Networking: Ethernet Switching Solutions

Enterprise Router and Switch Solutions

Part #/Family	Speed	Non-Blocking	SMII/SSSMII	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 (FFP or CAE)	Managed	Trunking (Port/Mac-Based)	Diffserv Class of Service	Egress Queues	Jumbo Frames	802.1Q VLANs / Single Double Tags	RMON/SNMP	Spanning Tree (802.1D/S/W)	Notes
XGS I																																
BCM5693 Draco	(12) 10/100/1000	X				X	X				X	1.2 Core 1.2/3.3/2.5 I/O	480 EBGA		1 MB			X		X	X	16K	X	X	P	X	8	X	4K S	R S	D	Layer 2+ version of the BCM5691; .13 µm, 6.5W, supports up to 30 stacked mirroring; PCI interface; advanced diagnostic functions including J AG and co
BCM5692 Draco	(12) 10/100/1000 (1) 10GB	X				X	X	X	H		X	1.2 Core 1.2/3.3/2.5 I/O	480 EBGA		1 MB			X		X	X	16K	X	X	P	X	8	X	4K S	R S	D	Layer 2+ version of the BCM5690; .13 µm, 4.65W, proprietary 10 Gbps supports trunking and mirroring; PCI interface; advanced diagnostic fu industrial temperature rated (-40 to 85C)
BCM5691 Draco	10/100/1000	X				X	X				X	1.2 Core 1.2/3.3/2.5 I/O	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 10 advanced diagnostic functions including J AG and comprehensive BIS ;
BCM5690 Draco	(12) 10/100/1000 (1) 10GB	X				X	X	X	H		X	1.2 Core 1.2/3.3/2.5 I/O	480 EBGA		1 MB	X		X		X	X	16K	X	X	P	X	8	X	4K S	R S	D	.13 µm, 4.65W, proprietary 10-Gbps HiGig uplink; supports stacking up supports trunking and mirroring; egress rate control with 1024K granula diagnostic functions including J AG and comprehensive BIS ; industrial
BCM5673 Lynx	10GB	X					X	X	H			1.2 Core 1.2/3.3/2.5 I/O	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 t
BCM5671 Hercules	10GB	X					X	X	H		X	1.2 Core 1.2/3.3/2.5 I/O	600 EBGA		512K			X		X				X	P		8	X	4K S	R		.13 µm, ~5W, proprietary 10 Gbps (HiGig) switch fabric with integrated control with 1024K granularity; VLAN re-write through FFP; API switch co including J AG and comprehensive BIS ; industrial temperature rated (-
BCM5670 Hercules	10GB	X					X	X	H		X	1.2 Core 1.2/3.3/2.5 I/O	600 EBGA		1 MB			X		X				X	P		8	X	4K S	R		.13 µm, ~10W, proprietary 10 Gbps (HiGig) switch fabric with integrated control with 1024K granularity; VLAN re-write through FFP; API switch co including J AG and comprehensive BIS ; industrial temperature rated (-
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 I/O	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 tagg 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 I/O	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 tagg 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 I/O	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; interface supporting up to 64 MB packet buffer; industrial temperature r
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 I/O	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; interface supporting up to 64 MB packet buffer; industrial temperature r
BCM5656 ucana	(48) 10/100 (4) 10/100/1000	X	X	X	X							1.2 Core 1.2/3.3/2.5 I/O	961 PBGA	64b DDR				X		X	X	16K	X	X	P	X	8	X	4K D	R S	D S W	Layer 2+ version; supports MPLS (Martini Draft) and double VLAN tagging; 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 I/O	961 PBGA	64b DDR		X		X		X	X	16K	X	X	P	X	8	X	4K D	R S	D S W	Layer 3 version; supports MPLS (Martini Draft) and double VLAN tagging; s interface supporting up to 64 MB packet buffer; industrial temperature rate
BCM5651 ucana	(24) 10/100 (4) 10/100/1000	X	X	X	X							1.2 Core 1.2/3.3/2.5 I/O	941 PBGA	64b DDR				X		X	X	16K	X	X	P	X	8	X	4K D	R S	D S W	Layer 2+ version; supports MPLS (Martini Draft) and double VLAN tagging; 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 I/O	941 PBGA	64b DDR		X		X		X	X	16K	X	X	P	X	8	X	4K D	R S	D S W	Layer 3 version; supports MPLS (Martini Draft) and double VLAN tagging; s interface supporting up to 32 MB packet buffer; industrial temperature rate
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 I/O	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 replacemer 2.5 GB port; supports up to 30 stacked devices through one of two GigE p
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 I/O	600 PBGA	64b SD RAM	1 MB	X		X		X	X	8K	X	X	P	X	4	X	255 D	X	D S	Layer 3 version of the BCM564x; .13 µm, 3W, pin compatible replacement 2.5 GB port; supports up to 30 stacked devices through one of two GigE p (-40 to 85C)

Ethernet Physical Layer Solutions: Product Families

The Broadcom D g -P Y™ fam y of ow powered Ethernet phys ca ayer so ut ons address everything from the high-end enterprise to value minded SOHO (small office home office) network ng markets.

Digi-Φ™

Broadcom's fu -featured phys ca ayer so ut on s based on cutt ng edge DSP techno ogy. This architecture provides many benefits that its non-DSP competitors do not offer, including: ncreased re ab ty (qua ty we under 10 PPM), a sca ab e core that read y adapts from one manufactur ng process to the next and h gher nteroperab ty w th other transce vers.

By the end of 2005, Broadcom had sh pped over 1 b on ports that mp ement the D g -Φ techno ogy, many to ndustry ead ng sw tch vendors.

Benefits of Digi-Φ techno ogy a so nc ude:

- Exce ent EM performance
- Cons stent operat on across vo tage, temperature and process var at ons
- J tter va ues we be ow the EEE recommended m t
- Lower power operat on from 1.2 to 3.3 V
- Ab ty to w thstand h gher cab e-sourced ESD
- P Auto-MD X to accommodate stra ght-through or cross-over cab es
- 10 Mbps to 1 Gbps so ut ons, wh ch are ava ab e n a range of dens t es: s ng e, dua , quad, hex and octa

XAUI/SerDes Devices

Bu d ng on Broadcom's eadersh p n SerDes ret mers prov de except ona j tter performance t GR-253 specifications for Ethernet and SONE a mu t tude of data rates wh ch range from 1.0 be synthes zed from the on-ch p phase ock oc BCM804x dev ces prov de features such as pre limited-channels in an effort to provide designe h gh-speed copper nks.

Benefits of Broadcom SerDes technology also i

- App cat on support for 1x and 2x F bre Cha Gbps), OC-48 (with or without FEC), Gigab and others
- Ret mer products ava ab e n a range of dens
- SerDes products ava ab e n a range of dens

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)	100 B/FX (802.3u)	1000 B/X (802.3z)	10GB/FX (802.3ae)	10GB/X (802.3ak)	7 Wire (GPSI)	MII	RMII	SMII	SSSMII	GMII	RGMII	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	Programmable LED	HP Auto-MDI/MDIX	Auto Wiring Correction	Cable Plant Diagnostic	
Digi-Φ™																																						
BCM5488S	10/100/1000	8	X	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 mod loopback; Ethernet@WireSpeed; aut robust CESD tolerance; low EMI emis
BCM5488R	10/100/1000	8	X	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 mo MAC-side loopback; Ethernet@WireS polarity; robust Cable ESD (CESD) tole auto detection modes; internal termin
BCM5482S	10/100/1000	2	X	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 mo loopback; ethernet@WireSpeed; autom CESD tolerance; low EMI emissions; 10 secondary SerDes for SFP/fiber transce
BCM5482	10/100/1000	2	X	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 mod loopback; Ethernet@WireSpeed; aut CESD tolerance; low EMI emissions; 1 to an SGMII MAC or a SerDes/fiber tr
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 mod CESD tolerance; low EMI emissions; 10 regulators; trace matched output impe polarity; advanced power managemen
BCM5466SR	10/100/1000	4	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 RGMII enhancements; Ethernet@ advanced low power mode; supports SerDes pass-through mode allows co

*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 (803.3u)	1000 B/T (802.3ab)	100 B/FX (802.3u)	1000 B/X (802.3z)	10GB/FX (802.3ae)	10GB/X (802.3ak)	7 Wire (GPSI)	MII	RMII	SMII	SSSMII	GMII	RGMII	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	Programmable LED	HP Auto-MDI/MDIX	Auto Wiring Correction	Cable Plant Diagnostic	
BCM5466R	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 1.8 V		256 FBGA	256 FBGA		X	X	X	X	Adds RGMII enhancements; Ethernet@WireSpeed and sup advanced low power mode; supports HS L voltage levels 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			1.2V	2.5 or 3.3V			256 FBGA	256 FBGA		X	X	X	X	Adds second SerDes interface to the BCM5464 (supports 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 .13 µm, 750mW/port; supports jumbo packets; industrial
BCM5464R	10/100/1000	4	X	X	X	X	X	X	X										X	X		X					1.2V	2.5 or 3.3V	1.5 or 1.8 V		256 FBGA	256 FBGA		X	X	X	X	Supports HS L voltage levels; adds SerDes interface to th .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 c
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	X	Adds SerDes interface to the BCM5461; .13 µm, 750mW/p jumbo packets; industrial temperature rated (-40 to 85C); b applications (including the 5481); SerDes-to-copper transla
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; s
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 pa 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 pa 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); inc packet support; lowest cost and sma lest single channel PH
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 Aut
BCM5238B	10/100	8	X	X																							1.8V	3.3V			256BGA	256BGA		X	X		X	215mW/port; next page and jumbo packet support; HP Aut
BCM5228U	10/100	8	X	X	X	X								X	X	X											2.5V	2.5 or 3.3V			208 PQFP	208 PQFP 208 MQFP	X	X	X		X	250mW/port; next page and jumbo packet support, industri 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 PQFP 208 MQFP	X	X	X		X	250mW/port; next page and jumbo packet support; industr 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	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 des
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 des
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); c legacy MAC support; excellent choice for backplanes; jumb
BCM5221	10/100	1	X	X	X	X		X				X	X	X													2.5 or 3.3V	2.5 or 3.3V			64 LQFP 64 S PBGA	64 LQFP		X	X			275mW/port; meets +/- 10% supply tolerance that is requi provides legacy MAC support
BCM5214	10/100	4	X	X	X	X								X	X												3.3V	3.3V			128 PQFP	128 PQFP						Digi-PHY RMII 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 EOL AC104; improv
SerDes																																						
BCM8040	1-3.2Gbps	8		X						X															X		1.2V	1.5 to 2.5V			484PBGA							8 independent retimers; .13 µm, 400mW/channel; includes supports multiple applications: 1x/2x/10x Fibre Channel, Gi and others; highly flexible and configurable; 8 independent XAUI retiming channels; single XAUI to redundant XAUI retir interconnects; 16-level transmit pre-emphasis; receive equ
BCM8020	1-3.2Gbps	8		X					X															X	X		1.2V	1.5 to 2.5V			484PBGA							8 independent SerDes transceivers; .13 µ m, 300mW per c pre-emphasis; supports multiple applications: 1x/2x/10x Fib Infiniband and others; 8 independent 1-Gbps to 3.2-Gbps t XAUI/ XGMII; redundant XAUI to single XGMII; quad channel 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; also supports SS L2 I/O

*Supports enhanced FX/EFX, no traditional FX.

Network Security Devices

Broadcom's s con so ut ons prov de secur ty over the network. These ch ps prov de a fam y of sca ab e secur ty processors that offer cryptograp Mbps to 4.8 Gbps and address the needs of multiple security markets that include: SOHO and remote access, branch office, enterprise and e-com office and service provider. All security products described in this section provide extensive API support by way of Broadcom's Software Referenc Most software s ava ab e for the fo ow ng p atforms: L nux®, W n98, W n2000, W nNT v4, FreeBSD®, VxWorks and So ar s. Most products sted n t standards-comp ant protoco s, nc ud ng PSec, nternet Key Exchange (KE), Secure Socket Layer (SSL) and Transport Layer Secur ty (TLS).

SSL

The CryptoNetX™ SSL product fam y prov des SSL board eve acce erat on so ut ons that range n performance from 800 to 12000 RSA transact ons per second. CryptoNetX SSL adapters offer comp ete SSL acce erator so ut ons des gned to acce erate the pub c key cryptograph c funct ons of SSL, thereby free ng the host CPU for other tasks. These modu es are offered n both 32/64-b t, 33-66 M z PC 2.2 or PC -X or 64-b t 133 M z PC -X comp ant vers ons that prom se eas er ntegrat on of SSL secur ty features nto ex st ng 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	BCM
IPSec	470	500	1 000	5(
AES	No	Yes	Yes	Ye
RC4	600	150 600	1 000	5(
Diffie-Hellman	3 200	200 400	15 000	4 6
RSA	4 000	275 550	15 000	4 6
RNG	Yes	Yes	Yes	Ye
Interfaces	PCI	PCI	PCI	PCI &
Local Memory	No	No	No	N
PCI Bus	32/64	32/64	32/64	
PCI Freq	33 66	33 66	33 66 133	PCIX 33 PCIe
System	125	133	200	2(
Technology	0 18	0 18	0 13	0
Package	256 TBGA	256 TBGA	400 PBGA	400

VPN

The CryptoNetX VPN product fam y prov des PSec board eve acce erat on so ut ons that range n performance from 200 to 1000 Mbps PSec (AE CryptoNetX VPN adapters are des gned to acce erate the cryptograph c funct ons of PSec thereby free ng the host CPU and enab ng better overa ne are offered n both 32/64-b t, 33-66 M z PC 2.2 or PC -X or 64-b t 133 M z PC -X comp ant vers ons that prom se eas er ntegrat on of SSL secur ty f

- PS200 (200 Mbps PSec)
- PS200A (200 Mbps PSec w th AES)
- PS300 (300 Mbps PSec)
- PS470 (470 Mbps PSec)
- PS500A (500 Mbps PSec w th AES)
- PS1000A (1000 Mbps PSec w th 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 Su
DES/3DES
AES
HMAC SHA 1
HMAC MD5
IPSec Processing SA Lookup Encap/Decap SA Update Policy Verification IPv4/IPv6 Support
On Chip SA Storage
Interfaces
System Clock
Local Memory
Key Protection
Technology
Package
Power

Network Security Devices

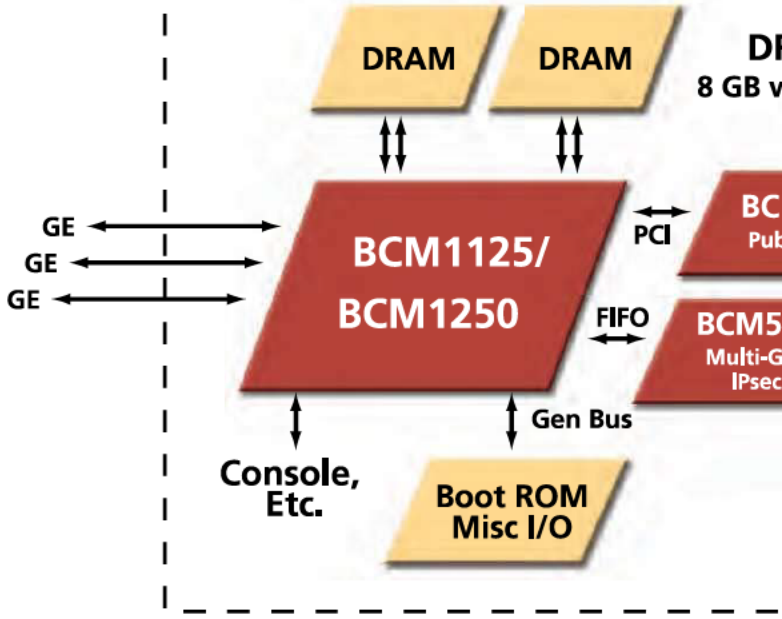
Board Summary

Feature	SSL800	SSL1600	SSL4000	SSL12000	Broad Products IPS200	IPS200A	IPS300	IPS470	IPS
DES/3DES					200	200	300	470	5
AES						200	No	No	5
HMAC SHA 1					200	200	300	470	5
HMAC MD5					200	200	300	470	5
Single Pass IPSec					Yes	Yes	Yes	Yes	Y
Diffie-Hellman	1 200	1 280	3 200	12 000	200	200	1 200	1 660	4
RSA	800	1 600	4 000	12 000	275	275	800	1 600	5
RNG	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Y
In er aces	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
Package	PCI Card	PCI Card	PCI Card	PCI Card	PCI Card	PCI Card	PCI Card	PCI Card	PCI
Export Classification	Re ail	Re ail	Re ail	Re ail	Non Re ail	Non Re ail	Non Re ail	Non Re ail	Non

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 Encrypt on Standards, Cryptograph c Funct on

DES

Data Encrypt on Standard, Cryptograph c Funct on, g oba standard, a popu ar symmetr c-key encrypt on method deve oped n 1975 and standard zed by ANSI n 1981 as ANSI X.3.92, part of IPSec standard

3DES

Tr p e DES, Cryptograph c Funct on, part of IPSec standard

DSA

D g ta S gnature A gor thm

FIPS 140-1

Federal standard defining security levels of cryptographic modules

Hash

One-way funct on, a cryptograph c checksum

HMAC

Hashed MAC, part of IPSec standard

IKE

Internet Key Exchange, the key exchange norma y used by VPN mechan sms.

IPSec

IP Secur ty, a set of protoco s be ng deve oped by the IETF to support secure exchange of packets at the IP ayer

MAC

Message Authent cat on Code

MD5

Message D gest, an a gor thm created n 1991 by Professor Rona d R vest used to create d g ta s gnatures. It s ntended for use w th 32-b t mach nes and s safer than the MD4 a gor thm, wh ch has been broken. MD5 s a one-way hash funct on, meaning that it takes a message and converts it into a fixed string of digits, also ca ed a message d gest, Cryptograph c Funct on, part of IPSec standard

Public-key cryptography

A cryptograph c system that uses two key and a pr vate or secret key known on y to

RC4

Symmetr c-key a gor thm, named for crea

RSA

A pub c-key encrypt on techno ogy deve acronym stands for R vest, Sham r and Ad The RSA algorithm is based on the fact th very arge numbers. Deduc ng an RSA key amount of computer process ng power an

SHA-1

Secure Hash A gor thm, Cryptograph c Funct

SSL

Short for Secure Sockets Layer, a protoco transm tt ng pr vate documents v a the Int key to encrypt data transferred over the S used n secure e-commerce app cat ons

Symmetric-key cryptography

An encrypt on system n wh ch the send a s ng e, common key that s used to encr

TLS

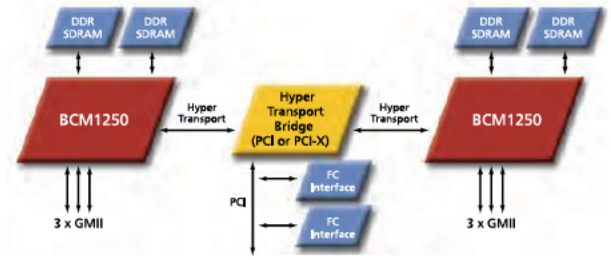
Transport Layer Secur ty, used n e-comm

VPN

V rtua Pr vate Network, a network constru nodes. For examp e, there are a number o networks us ng the Internet as the med un use encrypt on and other secur ty mechan users can access the network and that the

High Speed Networking: Communication Processors

Typical SAN Switch Implementation



The S Byte® ne of processors estab shes Broadcom as a p oneer and eader n s ng e/mu t p e core M PS-based commun cat ons so ut ons that nc ude ndus ow power and ntegrat on.

BCM1250

The BCM1250 t ght y ntegrates two 64-b t M PS CPU cores, each sca ab e from 600 M z to 1 G z, arge cache memory and ntegrated /O onto a s ng e ch p.

Key Features:	Customer Benefits:
Two 64 bi SB 1 cores each 2 5 wa s and scalable o 1 GHz	High per ormance mul i processing a low power
On chip coheren mul i processing bus ZBbus	High on chip bus bandwid h or as in ernal da a rans ers (>100 Gb/s)
512 K L2 cache 4 way associa ive	Large cache memory or as memory accesses wi h minimal la ency
DDR memory con roller wi h wo 64 bi channels	Suppor s up o 1 GB/channel and 2 DIMMs slo s/ channel wi h curren genera ion 256 Mb chips
Three 10/100/1000 MACs configurable to Packet FIFO in er aces	Suppor s E herne and/or POS connec ivi y
32 bi PCI (33/66 MHz)	Suppor s indus ry popular PCI devices
HyperTranspor (LDT) Bridge	High speed in er ace or connec ing co processors PCI peripherals or mul iple 1250 chips
In egra ed Sys em I/O	Elimina es need o buy a separa e sys em con roller
On chip JTAG in er ace	Easy debug and bring up
Comprehensive So ware Developmen Ki based on MIPS ISA ools and so ware (e g compilers debuggers OS)	High programming flexibility, minimizing software developmen e or

BCM1125

The BCM1125 dev ce extends Broadcom's reach nto h segments w th features that nc ude a s ng e S Byte SB-1 memory contro er, an on-ch p 256KB L2 cache, two 10/ a 32-b t 33/66 M z PC br dge and var ous other nput/

Key Features:	Customer Ben
One 64 bi SB 1 cores each 2 5 wa s and up o 800 MHz	High per ormanc
On chip coheren mul i processing bus ZBbus	High on chip bus (>100 Gb/s)
256 K L2 cache 4 way associa ive	Large cache mem minimal la ency
DDR memory con roller wi h wo 64 bi channels ECC pro ec ed	Suppor s up o 1
Three 10/100/1000 MACs configurable to Packet FIFO in er aces	Suppor s E herne
32 bi PCI (33/66 MHz)	Suppor s indus r
HyperTranspor (HT) Bridge	High speed in er peripherals
In egra ed Sys em I/O	Elimina es need
On chip JTAG in er ace	Easy debug and
Comprehensive So ware Developmen Ki based on MIPS ISA ools and so ware (e g compilers debuggers OS)	High programmi developmen e

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- Excess Inventory Management