



# Intel in Embedded. Roadmap to your Future.



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Intel is expanding its commitment to embedded developers with a range of leading-edge processors, flash memory, building blocks, tools, and technologies to help you meet stringent platform requirements and competitive development schedules. Wherever your embedded designs take you, from industrial control and automation to handheld transaction terminals or innovative medical imaging devices, Intel provides an embedded product roadmap to help you deliver innovative solutions while overcoming development challenges.

# Embedded Intel® Architecture Platforms

		Low Power				
		Intel® Pentium® M Processor, Intel® Pentium® M Processor Low Voltage, Intel® 855GME Chipset, Intel® 6300ESB ICH	Intel® Pentium® M Processor, Intel® Pentium® M Processor Low Voltage, Intel® 915GM Express Chipset, Intel® ICH6-M	Intel® Pentium® M Processor, Intel® E7520 Chipset, Intel® 6300ESB ICH	Intel® Pentium® M Processor, Intel® Pentium® M Processor Low Voltage, Intel® E7320 Chipset, Intel® 6300ESB ICH	Intel® Celeron® M Processor, Ultra Low Voltage Intel® Celeron® M Processor, Intel® 915GM Express Chipset, Intel® ICH6-M
CPU Features	Process	0.13µ / 90nm <sup>1</sup>	90nm	90nm	90nm	90nm
	Performance Frequency	1.6/400, 1.8/400 <sup>1</sup>	1.8/400, 2.0/533	2.0/533, 1.8/400	1.8/400	1.5/400
	LV Frequency	1.1/400, 1.4/400 <sup>1</sup>	1.4/400	1.4/400	1.4/400	1.0/400
	Performance TDP	24.5W, 21W <sup>1</sup>	27W <sup>1</sup>	27W, 21W	21W	21W
	LV TDP	12W, 10W <sup>1</sup>	10W	10W	10W	5.5W
	Intel® Extended Memory 64 Technology Support <sup>2</sup>	No	No	No	No	No
	L2 Cache	1M, 2M <sup>1</sup>	2M	2M	2M	1M, 512k
	Performance Vcc	1.484V, 1.276 - 1.340V <sup>1</sup>	1.260 - 1.356V	1.260 - 1.356V	1.260 - 1.356V	1.26V
	LV Vcc	1.18V, 1.116V <sup>1</sup>	1.116V	1.116V	1.116V	0.94V <sup>1</sup>
	TjMax	100°C, 100°C <sup>1</sup>	100°C	100°C	100°C	100°C
	Package(s)	µFC-BGA, µFC-PGA (LV 1.1 and 1.4 <sup>1</sup> GHz µFC-BGA only)	µFC-BGA, µFC-PGA (LV 1.4 GHz µFC-BGA only)	µFC-BGA, µFC-PGA (LV 1.4 GHz µFC-BGA only)	µFC-BGA, µFC-PGA (LV 1.4 GHz µFC-BGA only)	µFC-BGA, µFC-PGA, (LV µFC-BGA only)
	SSE Support	SSE2	SSE2	SSE2	SSE2	SSE2
	Enhanced Intel SpeedStep® Technology	Yes	Yes	Yes	Yes	No
FSB Parity	No	No	No	No	No	
MCH Features	TDP	2.6 - 4.3W	4.6 - 13.7W	6W - 9W	6W - 9W	4.6 - 13.7W
	DDR	200, 266, 333 MHz	333 MHz	266 MHz	266 MHz	333 MHz
	DDR2	No	400, 533 MHz	400 MHz	400 MHz	400, 533 MHz
	Max Memory Size	2 GB	2 GB	4 GB	4 GB	2 GB
	Channel Memory	Single	Single or Dual	Single or Dual	Single or Dual	Single or Dual
	ECC Memory	Yes with no GFX enabled or using int GFX	No	Yes	Yes	No
	Integrated Graphics	Yes	Yes	No	No	Yes
	Graphic Output Type	VGA, DVO, <sup>4</sup> LVDS	VGA, SDVO, <sup>4</sup> LVDS, TV Out	No	No	VGA, SDVO, <sup>4</sup> LVDS, TV Out
	AGP Port	Yes (4x)	No	No	No	No
Dual Independent Display Support	Yes	Yes	No	No	Yes	
Interconnect	Hub Interface 1.5	DMI	Hub Interface 1.5	Hub Interface 1.5	DMI	
PCI Express*	No	(1) x 16 graphics port	(3) x 8 ports	(1) x 8 ports	(1) x 16 graphics ports	
ICH Features	TDP (max)	3.9W	2.3W	3.9W	3.9W	2.3W
	AC'97	Yes	Yes	Yes	Yes	Yes
	Intel® High Definition Audio	No	Yes	No	No	Yes
	ATA/100	ATA 100 (2 channels)	ATA 100 (1 channel)	ATA 100 (2 channels)	ATA 100 (2 channels)	ATA 100 (1 channel)
	SATA/150	SATA 150 (2 ports)	SATA 150 (2 ports)	SATA 150 (2 ports)	SATA 150 (2 ports)	SATA 150 (2 ports)
	RAID	No	No	No	No	No
	USB	Yes 2.0 (4 ports)	Yes 2.0 (8 ports)	Yes 2.0 (4 ports)	Yes 2.0 (4 ports)	Yes 2.0 (8 ports)
	PCI	32/33	32/33	32/33	32/33	32/33
	PCI-X*	64/66	No	64/66	64/66	No
PCI Express	No	(4) x 1 ports	No	No	(4) x 1 ports	
GPIO	37 (23 dedicated)	34 (14 dedicated)	37 (23 dedicated)	37 (23 dedicated)	34 (14 dedicated)	

Green = Ultra Low Voltage Intel® Celeron® M processor; Red = Intel® Celeron® D processor.

<sup>1</sup>Intel® Pentium® M and Intel® Celeron® M processors on 90nm Technology.

<sup>2</sup>Thermal specs for Intel® Xeon™ processors and Intel® Pentium® 4 processor with Hyper-Threading Technology on 90nm are subject to the new Thermal Profile Specification Methodology. Please refer to individual product Electrical, Mechanical, and Thermal Specifications (EMTS) at [developer.intel.com/design/intarch/](http://developer.intel.com/design/intarch/) for details.

Low Power	Scalable			Performance
Intel® Celeron® M Processor, Ultra Low Voltage Intel® Celeron® M Processor Intel® E7520 Chipset, Intel® 6300ESB ICH	Intel® Pentium® 4 Processor with Hyper-Threading Technology, <sup>1</sup> Intel® Celeron® D Processor, Intel® 875P Chipset, Intel® 6300ESB ICH	Intel® Pentium® 4 Processor with Hyper-Threading Technology, Intel® Celeron® D Processor, Intel® 915GV Express Chipset, Intel® ICH6	Intel® Pentium® 4 Processor with Hyper-Threading Technology, Intel® Celeron® D Processor, Intel® 945G Express Chipset, Intel® ICH7/I77R	Intel® Xeon™ Processor with 800 MHz FSB, Low Voltage Intel® Xeon™ Processor, Intel® E7520 Chipset, Intel® 6300ESB ICH
90nm	90nm	90nm	90nm	90nm
1.5/400	3.0/800, 3.4/800, 2.8/533	3.4/800, 2.93/533	3.4/800, 2.93/533	3.2/800
1.0/400	No	No	No	2.8/800
21W	103 <sup>2</sup> /73, see below	115W, <sup>2</sup> 84W	115W, <sup>2</sup> 84W	103W
5.5W	No	No	No	55W
No	No	Yes	Yes	Yes
1M, 512k	1M, 256k	1M, 256k	1M, 256k	1M
1.26V	1.25V – 1.40V, 1.25V – 1.40V (optimized VID)	1.2V – 1.425V, 1.25V – 1.40V (optimized VID)	1.2V – 1.425V, 1.25V – 1.40V (optimized VID)	1.2875 – 1.4V (optimized VID)
0.94V <sup>1</sup>	No	No	No	1.1125 – 1.20V (optimized VID)
100°C	Tc MAX = 69.1 – 73.2°C, <sup>2</sup> Tc MAX = 67.0°C	Tc MAX = 67.7 – 72.8°C, <sup>2</sup> Tc MAX = 67.7°C	Tc MAX = 67.7 – 72.8°C, <sup>2</sup> Tc MAX = 67.7°C	Tc MAX = 72°C, <sup>2</sup> LV Tc MAX = 86°C <sup>2</sup>
µFC-BGA, µFC-PGA, (ULV µFC-BGA only)	FC-µPGA4	LGA-775	LGA-775	FC-µPGA4
SSE2	SSE3	SSE3	SSE3	SSE3
No	No	No	No	Yes, No
No	Yes	Yes	Yes	Yes
6W – 9W	10 – 10.1W	16.8 – 18.7W	22W	8 – 10W
266 MHz	266, 333, 400 MHz	333, 400 MHz	No	266, 333 MHz
400 MHz	No	400, 533 MHz	533, 667 MHz	400 MHz
4 GB	4 GB	4 GB	4 GB	32 GB Dual-Channel DDR 266, 24 GB Dual-Channel DDR2-333, 16 GB Dual-Channel DDR2-400
Single or Dual	Single or Dual	Single or Dual	Single or Dual	Single or Dual
Yes	Yes	No	No	Yes
No	No	Yes	Yes	No
No	No	VGA, SDVO <sup>4</sup>	VGA, SDVO <sup>4</sup>	No
No	Yes (8x)	No	No	No
No	No	No	Yes	No
Hub Interface 1.5	Hub Interface 1.5	x4 DMI	x4 DMI	Hub Interface 1.5
(3) x 8 ports	No	No	x16 (graphics or I/O)	(3) x 8 ports
3.9W	3.9W	3.8W	2.9 – 3.3W	3.9W
Yes	Yes	Yes	Yes	Yes
No	No	Yes	Yes	No
ATA 100 (2 channels)	ATA 100 (2 channels)	ATA 100 (1 channel)	ATA 100 (1 channel)	ATA 100 (2 channels)
SATA 150 (2 ports)	SATA 150 (2 ports)	SATA 150 (4 ports)	SATA-2 300 (4 ports)	SATA 150 (2 ports)
No	No	No	No, Yes (0, 1, 5, 10)	No
Yes 2.0 (4 ports)	Yes 2.0 (4 ports)	Yes 2.0 (8 ports)	Yes 2.0 (8 ports)	Yes 2.0 (4 ports)
32/33	32/33	32/33	32/33	32/33
64/66	64/66	No	No	64/66
No	No	(4) x 1 ports	(4) x 1 ports configurable, (6) x 1 ports configurable	No
37 (23 dedicated)	37 (23 dedicated)	38 (14 dedicated)	39 (14 dedicated)	37 (23 dedicated)

<sup>3</sup>Intel® EM64T requires a computer system with a processor, chipset, BIOS, operating system, device drivers and applications enabled for Intel EM64T. Processor will not operate (including 32-bit operation) without an Intel EM64T-enabled BIOS. Performance will vary depending on your hardware and software configurations. See [www.intel.com/info/em64t](http://www.intel.com/info/em64t) for more information including details on which processors support Intel EM64T or consult with your system vendor for more information.

<sup>4</sup>DVO/SDVO connections are dual pipe.

<sup>1</sup>Hyper-Threading Technology requires a computer system with an Intel® Pentium® 4 processor supporting Hyper-Threading Technology and an HT Technology-enabled chipset, BIOS and operating system. Performance will vary depending on the specific hardware and software you use. See <http://www.intel.com/info/hyperthreading> for more information including details on which processors support HT Technology.

# Intel® Flash Memory

Intel StrataFlash® Embedded Memory (P30) <sup>1,2</sup>					
Density	Product	Organization	Access Time (ns)	Package	Pin/Ball Count
1 Gb <sup>2</sup>	48F4444PPV	64M x 16	85[25] <sup>b</sup> [20] <sup>c</sup>	RD/PF	88
512 Mb	48F4400POV	32M x 16	85[25] <sup>b</sup> [20] <sup>c</sup>	RD/PF/RC/PC	88/64
256 Mb	28F256P30	16M X 16	85[25] <sup>b</sup> [20] <sup>c</sup>	TE/JS/RC/PC	56/64
	48F4000POZ	16M X 16	85[25] <sup>b</sup> [20] <sup>c</sup>	RD/PF	88
128 Mb	28F128P30	8M X 16	85[25] <sup>b</sup> [20] <sup>c</sup>	TE/JS/RC/PC	56/64
	48F3000POZ	8M X 16	85[25] <sup>b</sup> [20] <sup>c</sup>	RD/PF	88
64 Mb	28F640P30	4M X 16	85[25] <sup>b</sup> [20] <sup>c</sup>	TE/JS/RC/PC	56/64
	48F2000POZ	4M X 16	85[25] <sup>b</sup> [20] <sup>c</sup>	RD/PF	88

Intel® Advanced+ Boot Block Flash Memory <sup>2</sup>								
Density	Product	Organization	Access Time (ns)	Package	Pin/Ball Count	Vcc	Vpp/Vpen	I/O
32 Mb	28F320C3	2M x 16	70, 90	TE/JS/GE/PH/RC/PC	48/64	2.7–3.6V	1.65–3.6V or 12V	1.65–2.5V or 2.7–3.6V
	28F320B3	2M x 16	70, 90	TE/JS/GE/PH	48	2.7–3.6V	2.7–3.6V or 12V	1.65–2.5V or 2.7–3.6V
16 Mb	28F160C3	1M x 16	70, 90	TE/JS/GE/PH/RC/PC	48/64	2.7–3.6V	1.65–3.6V or 12V	1.65–2.5V or 2.7–3.6V
	28F160B3	1M x 16	70, 90	TE/JS/GE/PH	48	2.7–3.6V	2.7–3.6V or 12V	1.65–2.5V or 2.7–3.6V
8 Mb	28F800C3	512K x 16	70	TE/JS/RC/PC	48/64	2.7–3.6V	1.65–3.6V or 12V	1.65–2.5V or 2.7–3.6V

Intel StrataFlash® Memory (J3) <sup>2</sup>								
Density	Product	Organization	Access Time (ns)	Package	Pin/Ball Count	Vcc	Vpp/Vpen	I/O
256 Mb	28F256J3	32M x 8 or 16M x 16	125[30] <sup>b</sup>	TE/JS/RC/PC	56/64	2.7–3.6V	3V	2.7–3.6V
128 Mb	28F128J3	16M x 8 or 8M x 16	120[25] <sup>b</sup>	TE/JS/RC/PC	56/64	2.7–3.6V	3V	2.7–3.6V
64 Mb	28F640J3	8M x 8 or 4M x 16	115[25] <sup>b</sup>	TE/JS/RC/PC	56/64	2.7–3.6V	3V	2.7–3.6V
32 Mb	28F320J3	4M x 8 or 2M x 16	110[25] <sup>b</sup>	TE/JS/RC/PC	56/64	2.7–3.6V	3V	2.7–3.6V

Intel® Wireless Flash Memory (W18/W30) <sup>2</sup>								
Density	Product	Organization	Access Time (ns)	Package	Pin/Ball Count	Vcc	Vpp/Vpen	I/O
128 Mb	28F128W18	8M x 16	65[20] <sup>b</sup> [11] <sup>c</sup> 80[25] <sup>b</sup> [14] <sup>c</sup>	GE, PH	56	1.7–1.95V	0.9–1.95V or 12V	1.7–2.24V
	28F128W30	8M x 16	70[25] <sup>b</sup> [20] <sup>c</sup> 85[25] <sup>b</sup> [22] <sup>c</sup>	GE, PH	56	1.7–1.95V	0.9–1.95V or 12V	2.2–3.3V
64 Mb	28F640W18	4M x 16	60[20] <sup>b</sup> [11] <sup>c</sup> 80[25] <sup>b</sup> [14] <sup>c</sup>	GE, PH	56	1.7–1.95V	0.9–1.95V or 12V	1.7–2.24V
	28F640W30	4M x 16	70[25] <sup>b</sup> [20] <sup>c</sup> 85[25] <sup>b</sup> [22] <sup>c</sup>	GE, PH	56	1.7–1.95V	0.9–1.95V or 12V	2.2–3.3V
32 Mb	28F320W18	2M x 16	60[20] <sup>b</sup> [11] <sup>c</sup> 80[25] <sup>b</sup> [18] <sup>c</sup>	GE, PH	56	1.7–1.95V	0.9–1.95V or 12V	1.7–2.24V
	28F320W30	2M x 16	70[25] <sup>b</sup> [20] <sup>c</sup> 85[30] <sup>b</sup> [20] <sup>c</sup>	GE, PH	56	1.7–1.95V	0.9–1.95V or 12V	2.2–3.3V

<sup>1</sup> Vcc range = 1.7–2.0V; Vpp range = 0.9–3.6V or 9V; I/O range = 1.7–3.6V

<sup>2</sup> Extended Temperature Range: –40°C to +85°C

<sup>3</sup> Expanded Temperature Range: –25°C to +85°C

Access Time Footnotes:

b = Page Mode Access

c = Synchronous Burst Mode

## Intel® PCI Bridges

Primary and Secondary PCI Interface Features						
Transparent	Model Number	PCI Bus	Write Buffer	Read Buffer	Delayed Transaction Queue	CLK, REQ #, GNT # Pins
No	21555	64-bit	256 Bytes	256 Bytes	4 entries	9 sets @ 33 MHz, 4 sets @ 66 MHz
Yes	41210	64-bit	1 KByte	1 KByte	4 entries	6 sets per PCI-X bus
Yes	31154	64-bit	8 KBytes	8 KBytes	9–24	9 sets PCI-X
Yes	21154	64-bit	152 Bytes	152 Bytes	3 entries	9 sets @ 33 MHz, 4 sets @ 66 MHz
Yes	21152	32-bit	88 Bytes	72 Bytes	3 entries	4 sets

Other Product Features						
Transparent	Model Number	JTAG	GPIO	Package	PCI Revision	Max. Clock
No	21555	Yes	No	304	2.3	33 MHz/66 MHz
Yes	41210	Yes	No	521 FC3BGA	PCI Express*1.0a, PCI-X* v1.0b	133 MHz
Yes	31154	Yes	Yes	421 PBGA	PCI-X 1.0b, PCI 2.3	133 MHz
Yes	21154	Yes	Yes	304 PBGA	2.3	33 MHz/66 MHz
Yes	21152	No	No	160 PQFP	2.3	33 MHz

## Intel® Ethernet Transceivers (10/100 Mbps)

Primary PCI Interface Features								
Product	Package	Ports	Voltage	Power	Interface	Extended Temp (-40°C to 85°C)	Fiber	Sleep Mode
LXT971A	64-pin QFP, 64-ball BGA	1	2.5V/3.3V	380mW	MII	Yes	Yes	Yes
LXT972A	64-pin QFP	1	2.5V/3.3V	380mW	MII	No	No	No
LXT972M	48-pin LQFP	1	2.5V/3.3V	380mW	MII	No	No	No
LXT973	100-pin PQFP	2	2.5V/3.3V	250mW	MII	Yes	Yes	No
LXT9785	208-pin PQFP, 241-ball PBGA	8	2.5V/3.3V	250mW	SMII, SS-SMII, RMII (QFP) SMII, SS-SMII (BGA)	No	Yes	No
LXT9785E	208-pin PQFP, 241-ball PBGA	8	2.5V/3.3V	250mW	SMII, SS-SMII, RMII (QFP) SMII, SS-SMII (BGA)	Yes	Yes	No
LXT9785M	196-ball PBGA	8	2.5V/3.3V	250mW	SMII, SS-SMII	No	No	No

## Intel® PRO/100 Ethernet Controllers

Product Name	Intel® 82551QM, Intel® 82551ER	Intel® 82551IT	Intel® 82562ET, Intel® 82562GT	Intel® 82562EZ, Intel® 82562GZ	Intel® 82559, Intel® 82559C, Intel® 82559ER
Brand Name	Intel® PRO/100 M Network Connection	Intel® PRO/100 M Network Connection	Intel® PRO/100 VE Network Connection	Intel® PRO/100 VE Network Connection	Intel® PRO/100 Network Connection
Device	Single-port MAC/PHY	Single-port MAC/PHY	Single-port PHY	Single-port PHY	Single-Port MAC/PHY
Package Size	15x15mm	15x15mm	15.85x7.5mm	15x15mm	15x15mm
Physical Package	196-pin BGA	196-pin BGA	48-pin SSOP	196-pin BGA	196-pin BGA
Bus Type	PCI	PCI	LCI	LCI	PCI
Bus Speed	33 MHz	33 MHz	—	—	33 MHz
Bus Width	32-bit	32-bit	—	—	32-bit
Power (Typical)	0.61W	0.61W	0.3W	0.3W	0.675W
Power (Standby)	0.05W @ 3.3V	0.05W @ 3.3V	0.05W @ 3.3V	0.05W @ 3.3V	0/05W @ 3.3V
Operating Temperature	0–85°C	-40–85°C	0–85°C	0–85°C	0–85°C
Power Supply	3.3V	3.3V	3.3V	3.3V	3.3V
Order Code	GD82551QM, GD82551ER	GD82551IT	DA82562ET, DA82562GT	GD82562EZ, GD82562GZ	GD82559, GD82559C, GD82559ER
RoHS SKU	LU82551QM, LU82551ER	LU82551IT	EP82562ET, EP82562GT	LU82562E2, LU82562GZ	
Footprint Compatible	GD82562EZ, GD82540EM/EP, GD82541PI/ER	GD82562EZ, GD82540EM/EP, GD82541PI/ER		GD82562EZ, GD82540EM/EP, GD82541PI/ER, GD82547GI	

## Intel® PRO/1000 Gigabit Ethernet Controllers

Product Name	Intel® 82545GM	Intel® 82546GB	Intel® 82540EP, Intel® 82540EM	Intel® 82541PI, Intel® 82541ER	Intel® 82547GI	Intel® 82573E/V, Intel® 82573L	Intel® 82571EB
Brand Name	Intel® PRO/1000 MT	Intel® PRO/1000 MT	Intel® PRO/1000 MT	Intel® PRO/1000 MT	Intel® PRO/1000 CT	Intel® PRO/1000 PM	Intel® PRO/1000 PM
Device	Single-port MAC/PHY/SerDes	Dual-port MAC/PHY/SerDes	Single-port MAC/PHY	Single-port MAC/PHY	Single-port MAC/PHY	Single-Port MAC/PHY	Dual-port MAC/PHY/SerDes
Package Size	21x21mm	21x21mm	15x15mm	15x15mm	15x15mm	15x15mm	17x17mm
Physical Package	364-pin TFBGA	364-pin PBGA	196-pin TFBGA	196-pin PBGA	196-pin PBGA	196-pin TFBGA	256-pin FCBGA
Bus Type	PCI/PCI-X*	PCI/PCI-X	PCI	PCI	CSA	PCI Express*	PCI Express
Bus Speed	33/66/133 MHz	33/66/133 MHz	33/66 MHz	33/66 MHz	—	x1	x1/x4
Bus Width	32/64-bit	32/64-bit	32-bit	32-bit	—	—	—
Power (Typical)	~1.8W/~1.5W	~2.6W	~1.4W	~1.0W	~1.0W	~1.5W	~3.1W-1.5W (SerDes)
Power (Standby)	125mA @ 3.3V	220mA @ 3.3V	60mA @ 3.3V	45mA @ 3.3V	105mA @ 3.3V	11mA @ 3.3V	220 mA @ 3.3 V
Operating Temp	0–70°C	0–55°C	0–70°C	0–70°C	0–70°C	0–70°C	0–55°C
Power Supply	1.5, 2.5, 3.3V	1.5, 2.5, 3.3V	1.5, 2.5, 3.3V	1.2, 1.8, 3.3V	1.2, 1.8, 3.3V	1.2, 2.5, 3.3V	1.1, 1.8, 3.3 V
Order Code	RC82545GM	FW82546GB	RC82540EP, RC82540EM	GD82541PI, GD82541ER	GD82547GI	RC 82573E, RC82573V, RC82573L	HL82571EB
RoHA SKU	PC82545GM	NH82546B		LU82541PI, LU82541ER		PC82573E, PC82573V, PC82573L	JL82571EB
Footprint Compatible			Intel® 82551QM, Intel® 82551ER, Intel® 82562EZ, Intel® 82562EX	Intel® 82551QM, Intel® 82551ER, Intel® 82562EZ, Intel® 82562EX	Intel® 82551QM, Intel® 82562EX	Intel® 82562EZ, Intel® 82562EX, Intel® 82562GZ	

# Intel XScale® Technology-Based Processors

	PXA255	PXA270	IXP420	IXP421	IXP422	IXP423
Core Speed (MHz)	200/300/400	312/416/520/624	266/400/533	266	266	266
PCMCIA	■	■	PCI bridge needed	PCI bridge needed	PCI bridge needed	PCI bridge needed
CompactFlash*	■	■	expansion bus	expansion bus	expansion bus	expansion bus
ECC						
Dynamic Memory	16/32-bit wide	16/32-bit wide	16/32-bit wide	16/32-bit wide	16/32-bit wide	16/32-bit wide
SDRAM	100 MHz	100 MHz	133 MHz	133 MHz	133 MHz	133 MHz
DDR						
DDR2						
Static Memory	16/32-bit wide	16/32-bit wide	16-bit wide	16-bit wide	16-bit wide	16-bit wide
ROM	■	■	■	■	■	■
SRAM	■	■	■	■	■	■
FLASH	■	■	■	■	■	■
UART	Standard, Hardware, Full Function, Bluetooth*	Standard, Hardware, Full Function, Bluetooth	2	2	2	2
I <sup>2</sup> C	■	■	via GPIO	via GPIO	via GPIO	via GPIO
SPI			via GPIO	via GPIO	via GPIO	via GPIO
SSP	■	■				
NSSP	■	■				
Audio SSP	■	■				
HSS-Voice				■		■
HSS-WAN				■		■
UTOPIA 2				■		■
CSIX						
Ethernet MII/SMII			■ (2 MII)	■ (1 MII)	■ (2 MII)	■ (2 MII)
GPIO Number	85	119	16	16	16	16
DMA Controller	■	■				
LCD Controller	■	■				
USB Client	■	■	■	■	■	■
USB Host/OTG		■				
PCI 2.2 Host I/F			32-bit, 33/66 MHz	32-bit, 33/66 MHz	32-bit, 33/66 MHz	32-bit, 33/66 MHz
PCI-X						
PCI-express						
AES/DES/DES3					■	
SHA-1/MD-5					■	
SHA-256/-384/-512/EAU						
HW RNG						
HDLC Channels				■		■
MMC	■	■				
Expansion Bus			16-bit, 66 MHz	16-bit, 66 MHz	16-bit, 66 MHz	16-bit, 66 MHz
At MHz, Power Dissipation (typical for PXA; all others MAX)	at 200 MHz, 1637mW; at 300 MHz, 2057mW; at 400 MHz, 2598mW	at 200 MHz, 279mW; at 312 MHz, 390mW; at 416 MHz, 570mW; at 520 MHz, 747mW	at 266 MHz, 1.9W; at 400 MHz, 2.0W; at 533 MHz, 2.3W	at 266 MHz, 1.9W	at 266 MHz, 1.9W	at 266 MHz, 1.9W
Win CE.NET	■	■	■	■	■	■
PocketPC* 2002/ SmartPhone* 2002	■	■				
VxWorks*	■		■	■	■	■
Linux*	■	■	■	■	■	■
Other OS	Palm OS,* Symbian	Palm OS, Symbian				
SDK Available						
Development Platform	■	■	■	■	■	■
Extended Temperature	-40°C to 85°C	-40°C to 85°C	-40°C to 85°C			
Package Type	256-pin 17x17x1.75mm PBGA	360-pin 22x22x2.38mm, 356-pin 13x13mm VF BGA	492-pin 35x35x1.27 PBGA	492-pin 35x35x1.27 PBGA	492-pin 35x35x1.27 PBGA	492-pin 35x35x1.27 PBGA
Pb-Free	■	■	■	■	■	■

IXP425	IXP455	IXP460	IXP465	80219	IOP331	IOP332
266/400/533	266/400/533	266/400/533/667	266/400/533/667	400/600	500/667/800	500/667/800
PCI bridge needed	PCI bridge needed	PCI bridge needed	PCI bridge needed			
expansion bus	expansion bus	expansion bus	expansion bus			
		■	■	■	■	
16/32-bit wide	32-bit wide	32-bit wide	32-bit wide	32/64-bit wide	32/64-bit wide	32/64-bit wide
133 MHz						
	266 MHz	266 MHz	266 MHz	200 MHz	333 MHz	333 MHz
					400 MHz	400 MHz
16-bit wide	16/32-bit-wide	16/32-bit wide	16/32-bit wide	16/32-bit wide	16-bit wide	16-bit wide
■	■	■	■	■	■	■
■	■	■	■	■	■	■
■	■	■	■	■	■	■
2	2	2	2	0	2	2
via GPIO	■	■	■	■	■	■
via GPIO	■	■	■			
	■	■	■			
■	■		■			
■	■		■			
■	■		■			
■ (2 MII)	■ (3 MII or 3 SMII)	■ (2 MII or 2 SMII)	■ (3 MII or 6 SMII)			
16	16	16	16	8	8	8
				■	■	■
■		■	■			
	■ (no OTG)	■ (no OTG)	■ (no OTG)			
32-bit, 33/66 MHz	32-bit, 33/66 MHz	32-bit, 33/66 MHz	32-bit, 33/66 MHz	64-bit, 66 MHz/133 MHz	64-bit, 66 MHz/133 MHz	64-bit, 66 MHz/133 MHz
				■	■	■
■	■		■			
■	■		■			
■	■		■			
■	■		■			
16-bit, 66 MHz	16/32-bit, 80 MHz (w/ external mastering)	16/32-bit, 80 MHz (w/ external mastering)	16/32-bit, 80 MHz (w/ external mastering)	32-bit, 33/66/100/133 MHz	8/16-bit, 33/66/100/133 MHz	8/16-bit, 33/66/100/133 MHz
at 266 MHz, 1.9W; at 400 MHz, 2.0W; at 533 MHz, 2.3W	at 266 MHz, 2.9W; at 400 MHz, 3.0W; at 533 MHz, 3.1W;	at 266 MHz, 2.9W; at 400 MHz, 3.0W; at 533 MHz, 3.1W; at 667 MHz, 3.6W	at 266 MHz, 2.9W; at 400 MHz, 3.0W; at 533 MHz, 3.1W; at 667 MHz, 3.6W	at 400 MHz, 2.9W at 600 MHz, 3.5W	at 500 MHz, 7.9W; at 667 MHz, 8.1W; at 800 MHz, 8.2W	at 500 MHz, 7.9W; at 667 MHz, 8.1W; at 800 MHz, 8.2W
■				■		
■	■	■	■		■	■
■	■	■	■	■	■	■
				Wasabi, ECOS, Express Logic, Timesys	Timesys	Timesys
■	■	■	■	■	■	■
-40°C to 85°C	-40°C to 85°C	-40°C to 85°C	-40°C to 85°C	0°C to 85°C		
492-pin 35x35x1.27 PBGA	544-pin 35x35x127 PBGA	544-pin 35x35x127 PBGA	544-pin 35x35x127 PBGA	544-pin 35x35x1.27 LPBGA	829-ball 37.5x27.5 FCBGA	829-ball 37.5x27.5 FCBGA
■	■	■	■	■	■	■

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