

TRITON-ECO

The TRITON™ is a complete computer, implemented on a board smaller than a credit card, and ready to be designed into your embedded system. TRITON™ includes a 400MHz Intel® XScale™ processor, SDRAM and Flash memory. The integrated LCD-controller enables direct connection of a LCD screen, and the standard PCMCIA interface permits simple extension and integration into a target system. Made as a standard DIMM144 module, TRITON™ occupies an area of just 67.6 x 36.6 mm with a maximum height of 8.5 mm.

The TRITON-ECO is specifically targeted at embedded applications where price, high cpu-performance and low power consumption are critical factors.

When comparing the ECO to other products, we strongly encourage the customer to compare like-with-like. The main points to consider are:

- Expansion : no other low cost module provides data and address bus signals, LCD, 4 serial ports, signals to support memory cards or WLAN via CF drive
- Power consumption : 3 mA in sleep mode (other manufacturers to up to 50mA!), 230mA max
- Quality : manufactured in-house to ISO9001 quality standards
- Software : Linux distribution configured in-house
- Support : direct access to design engineers if required

XScale™

Intel's new XScale™ processor family increases efficiency and decreases processor power consumption. The Intel® XScale™ microarchitecture is based on the solid and widely used foundation of the Intel® StrongARM technology. Optimized for the development of highly efficient mobile internet devices, and for network infrastructure applications, Intel® StrongARM and Intel® XScale™ are compatible with the ARM architecture, which in turn guarantees the compatibility of software solutions.

Turbo mode enables the processor to scale its performance as high or as low as necessary in a single clock cycle, which helps conserve battery lifetime while still meeting performance requirements. In addition, the new micro-power management features for these devices allow the processors to potentially use less than half the power at the same performance levels of the Intel StrongARM SA-1110 applications processor.

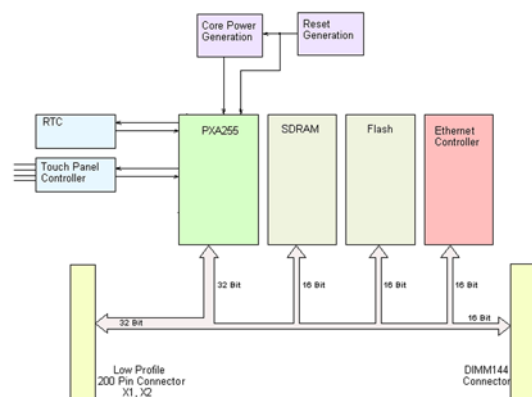
Redboot™

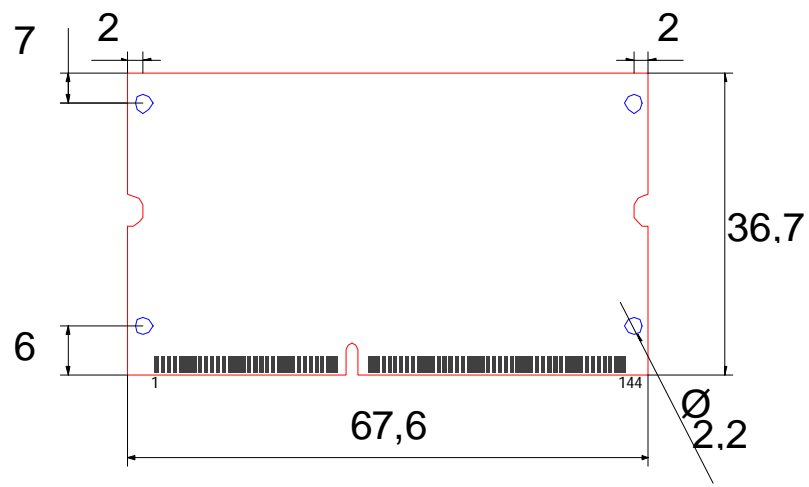
TRITON™ is delivered with pre-installed Redboot™ firmware. Redboot™ supports several low-level debugging options and file download via serial Xmodem or TFTP by Ethernet⁽²⁾. These files can also be stored into the permanent flash-memory to be started by command or power-on.

Features:

- Intel XScale™ PXA255 (400MHz)
- 16 MByte SDRAM
- 8/16 Mbyte Flash (NOR) memory
- Reset logic, I²C, JTAG interface
- 3 asynchronous, 1 synchronous serial interfaces
- LCD controller
- PC-CARD / compact-flash interface
- I²S, AC97 interface available
- Single 3,3V power supply
- Redboot™ firmware

Options: Ethernet, RTC and Touchscreen



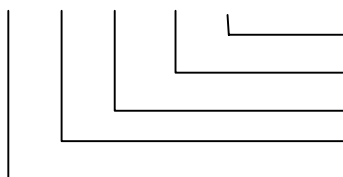


Ordering information

Order Number	PXA255	SDRAM	Flash	Ethernet	Touch Screen Controller	RTC	SAMTEC Expansion Connector
TRITON-ECO/400/16S/8F ¹	400MHz	16MB	8MB	x	-		x
TRITON-ECO/400/16S/16F ¹	400MHz	16MB	16MB	x	-		x
TRITON-ECO/400/16S/16F/RTC/ETH ²	400MHz	16MB	8MB	x	✓	✓	x

- 1. 16MB Flash required for standard TRITON Linux.
- 2. Minimum order quantity 1000 pieces

TRITON-ECO/ 400/ 16S/ 8F/ RTC/ ETN/ TS/



- TS:** Touch Screen Controller (only qty > 100)
- ETN:** Ethernet CS8900A, 10 Mbps
- RTC:** TSC2003
- 8F:** 8Mbyte Intel Strata-Flash / **16F:** 16Mbyte Intel StrataFlash
- 16S:** 16Mbyte SDRAM

Memory-Map

In the Intel PXA255 Developer's Manual you will find the memory map of the PXA255 processor on pages 2-28 and 2-29. The TRITON-ECO uses the memory as follows:

0xA000 0000 - 0xA0FF FFFF	16 MBytes SDRAM
0x007E 0000 - 0x007F FFFF	128 kBytes reserved flash area (FIS directory)
0x007C 0000 - 0x007D FFFF	128 kBytes reserved flash area (RedBoot config)
0x0004 0000 - 0x007B FFFF	7,5 MBytes flash area available
0x0000 0000 - 0x0003 FFFF	256 kBytes reserved flash area (RedBoot)



Note

The flash memory has an erase block size of 128 kBytes.

DIMM144 connector pinout

Pin	Signal	Description	Pin	Signal	Description
1	ETN_Rx+	* Ethernet Receive Input, positive	73	LDD5 / GPIO63	LCD interface data bus
2	ETN_Tx+	* Ethernet Transmit Output, positive	74	LDD2 / GPIO60	LCD interface data bus
3	ETN_Rx-	* Ethernet Receive Input, negative	75	LDD3 / GPIO61	LCD interface data bus
4	ETN_Tx-	* Ethernet Transmit Output, negative	76	LDD0 / GPIO58	LCD interface data bus
5	ETNLED1	* Ethernet LED 1	77	LDD1 / GPIO59	LCD interface data bus
6	FFRI / GPIO38	* Full Function UART Ring Ind. (3,3V)	78	GND	Ground
7	ETNLED2	* Ethernet LED 2	79	PWE# / GPIO49	PCMCIA Interface Write Enable
8	SDATA_IN0 / GPIO29	* AC97 Audio Port data in (input)	80	POE# / GPIO48	PCMCIA Interface Output Enable
9	SDATA_OUT / GPIO30	* AC97 Audio Port data out (output)	81	PIOW# / GPIO51	PCMCIA Interface I/O Write
10	SDATA_IN1 / GPIO32	* AC97 Audio Port data in (input)	82	PIOR# / GPIO50	PCMCIA Interface I/O Read
11	ACRESET#	* AC97 Audio Port reset signal (output)	83	PWAIT# / GPIO56	PCMCIA Interface Wait
12	BITCLK / GPIO28	* AC97 Audio Port bit clock (output)	84	PIOIS16# / GPIO57	PCMCIA Interface I/O select 16 Bit
13	SYNC / GPIO31	* AC97 Audio Port sync signal (output)	85	PREG# / GPIO55	PCMCIA Interface Register Select
14	DQM0	* data output byte enable 0	86	PSKTSEL / GPIO54	PCMCIA Interface Socket Select
15	DQM1	* data output byte enable 1	87	PCE1# / GPIO52	PCMCIA Interface Low Byte Enable
16	SDCLK0	* SMROM or synchronous Flash clock	88	PCE2# / GPIO53	PCMCIA Interface High Byte Enable
17	GND	GND	89	+3,3V	power supply
18	GND	GND	90	+3,3V	power supply
19	TMS	JTAG Test Mode Select	91	D14	memory data bus
20	TCK	JTAG Test Clock	92	D15	memory data bus
21	TRST#	JTAG Test Reset	93	D12	memory data bus
22	TDO	JTAG Test Data Out	94	D13	memory data bus
23	RESET_INPUT#	Reset Input	95	D10	memory data bus
24	TDI	JTAG Test Data In	96	D11	memory data bus
25	RESET_OUT#	Reset Output	97	D8	memory data bus
26	L_BIAS / GPIO77	LCD bias drive	98	D9	memory data bus
27	BT_RxD / GPIO42	Bluetooth UART Receive Pin (3,3V-Level)	99	D6	memory data bus
28	BATT_FAULT	Battery Fault, switch into sleepmode	100	D7	memory data bus
29	BT_TxD / GPIO43	Bluetooth UART Transmit Pin (3,3V-Level)	101	D4	memory data bus
30	IR_RxD / GPIO46	IrDA Receive Pin (3,3V- Level)	102	D5	memory data bus
31	FF_RxD / GPIO34	Full Function UART Peceive (3,3V-Level)	103	D2	memory data bus
32	IR_TxD / GPIO47	IrDA Transmit Pin (3,3V-Level)	104	D3	memory data bus
33	FF_TxD / GPIO39	Full Function UART Transmit (3,3V-Level)	105	D0	memory data bus
34	USB_N	USB-Port neg. Pin (3,3V-Level)	106	D1	memory data bus
35	+3,3V	Power supply	107	GND	Ground
36	RTC_VCC	* RTC Supply	108	GND	Ground
37	SDA	I2C data signal	109	RDY / GPIO18	Ready Pin (Wait)
38	USB_P	USB-Port pos. Pin (3,3V-Level)	110	WE#	Memory Write Enable
39	SSP_TxD / GPIO25	Synchronous Serial Port Transmit Pin	111	RD/WR#	Read not Write
40	SCL	I2C Clock Signal	112	OE#	Memory Output Enable
41	SSP_CLK / GPIO23	Synchronous Serial Port Clock Pin	113	GND	Ground
42	SSP_FRM / GPIO24	Synchronous Serial Port Frame Pin	114	CS5# / GPIO33	Chip Select
43	DREQ0 / GPIO20	DMA Request Channel 0	115	CS4# / GPIO80	Chip Select
44	SSP_RxD / GPIO26	Synchronous Serial Port Receive Pin	116	CS3# / GPIO79	Chip Select
45	FF_DCD / GPIO36	Full Function UART Carrier Detect (3,3V)	117	CS2# / GPIO78	Chip Select
46	DREQ1 / GPIO19	DMA Request Channel 1	118	nSDCAS	* SDRAM column address strobe (CAS)
47	FF_DTR / GPIO40	Full Function UART Data Term. Rdy. (3,3V)	119	A25	Memory address bus
48	FF_DSR / GPIO37	Full Function UART Data Set Rdy. (3,3V)	120	A24	Memory address bus
49	FF_RTS / GPIO41	Full Function UART Rdy. To Send (3,3V)	121	A23	Memory address bus
50	FF_CTS / GPIO35	Full Function UART Clear To Send (3,3V)	122	A22	Memory address bus
51	BT_RTS / GPIO45	Bluetooth UART Ready To Send Pin (3,3V)	123	A21	Memory address bus
52	BT_CTS / GPIO44	Bluetooth UART Clear To Send Pin (3,3V)	124	A20	Memory address bus
53	GPIO10	General Purpose I/O-Pin	125	A19	Memory address bus
54	GPIO11	General Purpose I/O-Pin	126	A18	Memory address bus
55	LDD14 / GPIO72	LCD interface data bus	127	A17	Memory address bus
56	LDD15 / GPIO73	LCD interface data bus	128	A16	Memory address bus
57	LDD12 / GPIO70	LCD interface data bus	129	A15	Memory address bus
58	LDD13 / GPIO71	LCD interface data bus	130	A14	Memory address bus
59	LDD10 / GPIO68	LCD interface data bus	131	A13	Memory address bus
60	LDD11/ GPIO69	LCD interface data bus	132	A12	Memory address bus
61	LDD8 / GPIO66	LCD interface data bus	133	A11	Memory address bus
62	LDD9 / GPIO67	LCD interface data bus	134	A10	Memory address bus
63	GPIO0	General Purpose I/O-Pin	135	A9	Memory address bus
64	GPIO1	General Purpose I/O-Pin	136	A8	Memory address bus
65	GND	Ground	137	A7	Memory address bus
66	GND	Ground	138	A6	Memory address bus
67	L_FCLK / GPIO74	LCD Interface Frame Clock	139	A5	Memory address bus
68	L_LCLK / GPIO75	LCD Interface Line Clock	140	A4	Memory address bus
69	L_PCLK / GPIO76	LCD Interface Pixel Clock	141	A3	Memory address bus
70	LDD6 / GPIO64	LCD interface data bus	142	A2	Memory address bus
71	LDD7 / GPIO65	LCD interface data bus	143	A1	Memory address bus
72	LDD4 / GPIO62	LCD interface data bus	144	A0	Memory address bus

(* TRITON-ECO /400/16S/16F/RTC/ETN)