

Choosing the Right Processor for Your Low Power Application

Presenter: John Dixon







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Agenda

- TI's Embedded Processing Portfolio
- Identifying Low Power Markets
- Choosing the Right Processor
- TI's Recently Announced Low Power Processor Portfolio
- Sales Tools
 - Technology Calendar
 - Collateral
- Next Steps

TI Embedded Processing Portfolio

Microcontrollers			ARM-Based		DSP
16-bit	32-bit Real-time	32-bit ARM	ARM+	ARM + DSP	DSP
MSP430 Ultra-Low Power Up to 25 MHz Flash 1 KB to 256 KB Analog I/O, ADC, LCD, USB, RF Measurement, Sensing, General Purpose \$0.49 to \$9.00 	C2000™ Fixed & Floating Point Up to 300 MHz Flash 32 KB to 512 KB PWM, ADC, CAN, SPI, I²C Motor Control, Digital Power, Lighting, Sensing \$1.50 to \$20.00 	ARM Industry Std Low Power <100 MHz Flash 64 KB to 1 MB USB, ENET, ADC, PWM, SPI Host Control \$2.00 to \$8.00 	ARM9 Cortex A-8 Industry-Std Core, High-Perf GPP Accelerators MMU USB, LCD, MMC, EMAC Linux/WinCE User Apps \$8.00 to \$35.00 	C64x+ plus ARM9/Cortex A-8 Industry-Std Core + DSP for Signal Proc. 4800 MMACS/1.07 DMIPS/MHz MMU, Cache VPSS, USB, EMAC, MMC Linux/Win + Video, Imaging, Multimedia \$12.00 to \$65.00 	C647x, C64x+, C55x Leadership DSP Performance 24,000 MMACS Up to 3 MB L2 Cache 1G EMAC, SRIO, DDR2, PCI-66 Comm, WiMAX, Industrial/Medical Imaging \$4.00 to \$99.00+ 

Software & Dev. Tools



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Changing needs in the Marketplace

Need for low power to meet portability requirements

High-precision portable

- Ease of development
- High precision, Dynamic range
- Peripheral integration
- Up to 8 hours battery life (AA battery)



High performance portable

- More MMACs
- Lower system cost
- Peripheral integration
- Up to 8 hours battery life (AA battery)



Very low power portable

- Parallel processing
- Memory integration
- Enhanced low power I/O
- Up to 16 hours battery life (AA battery)



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Pricing is min \$10ku

Complete Low Power Offering

Understanding where/how to hunt

← - - - - VLP - - - - - | - ULP - - - - - →

Plugged/ USB powered				<1 day				<2 weeks				>6 months			
Voice	Music	Comms	Data	Voice	Music	Comms	Data	Voice	Music	Comms	Data	Voice	Music	Comms	Data
Hands Free Car Kit				SDR				Music recorder				Smoke detectors			
CPE				Wireless Microphone				audio recorder				intelligent sensors			
GPS dongle				Musical instruments				stethoscope				port. data acquisition			
Speakerphone				Barcode Scanner				ebook				wireless authentication			
VOIP Phones				NR Headphones				Door lock fingerprint Auth				port. monitoring			
DECT phones				Hands Free Audio				Cochlear implants				Tire pressure monitoring			
Touchscreens				Wireless printers				single par. port. medical				medical monitoring			
Fingerprint Auth				Multi par. Port. Medical				Infusion pumps				Medical implants			
				intelligence occupancy								intelligent watches			
				Artificial respirators								in-shoe pedometer			
				Clinical Diagnostics								Hearing aid			
												Fitness meter			
				100-140Mu				Market 2010 TAM				150Mu+			
				OMAP-L1x/C674x/C5000/ ARM9&11/ BF5XX/ ASSPs				Market Players				MSP430/ Microchip/ ARM7			
				200MIPS - 600MIPS				Performance				<200MIPS			
				<250mW				Total Power				<10mW			
				<5mW				Standby Power				<0.01mW			
				\$4.00-20.00				Price				\$0.50 - 5.00			
				<12bit ADC/ LDO				Analog integration				ADC/ DAC/ LDO/ FLASH			

Normalized to AAA battery (1200mAh) battery life

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goal:

Segment the markets different needs

standby versus Total

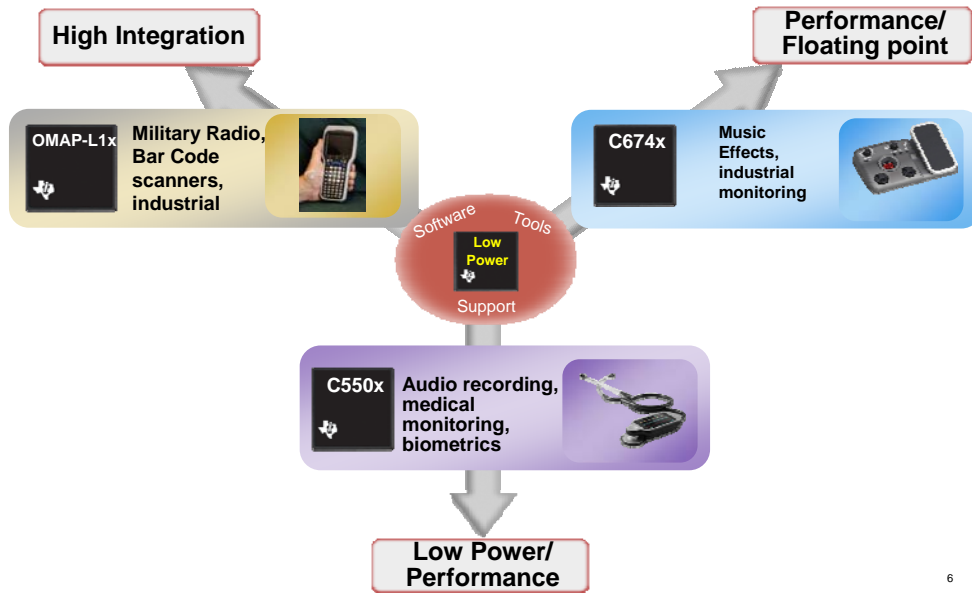
Performance

Existing versus future

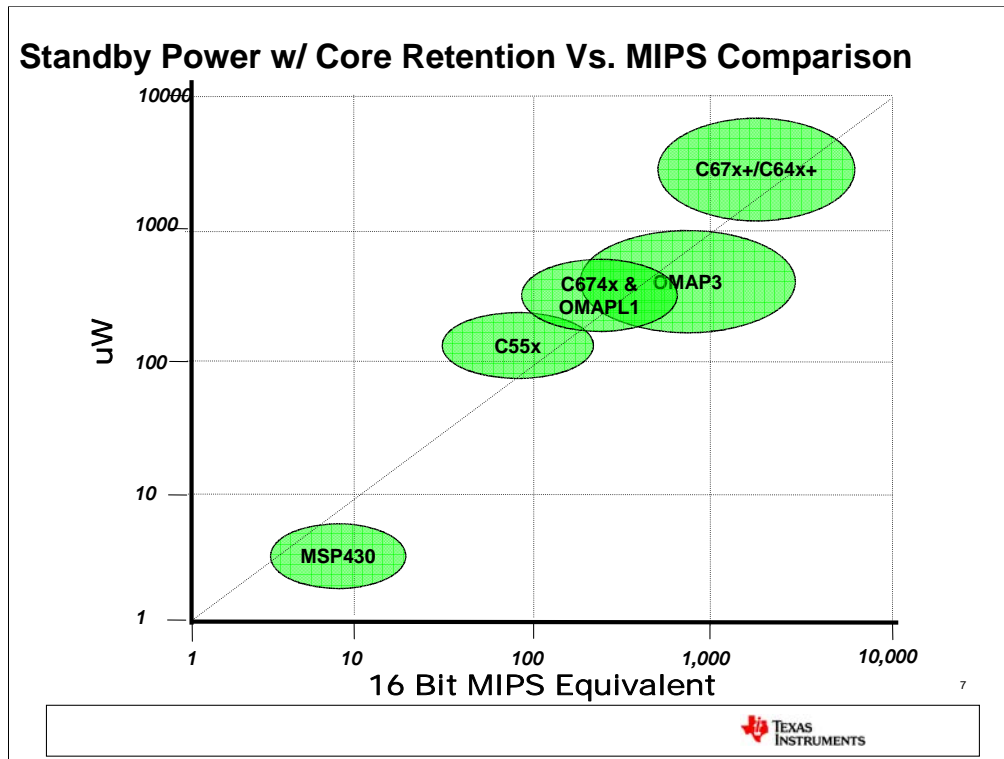
Performance needs of different markets

Integration needed

Choosing the Right Low Power Processor



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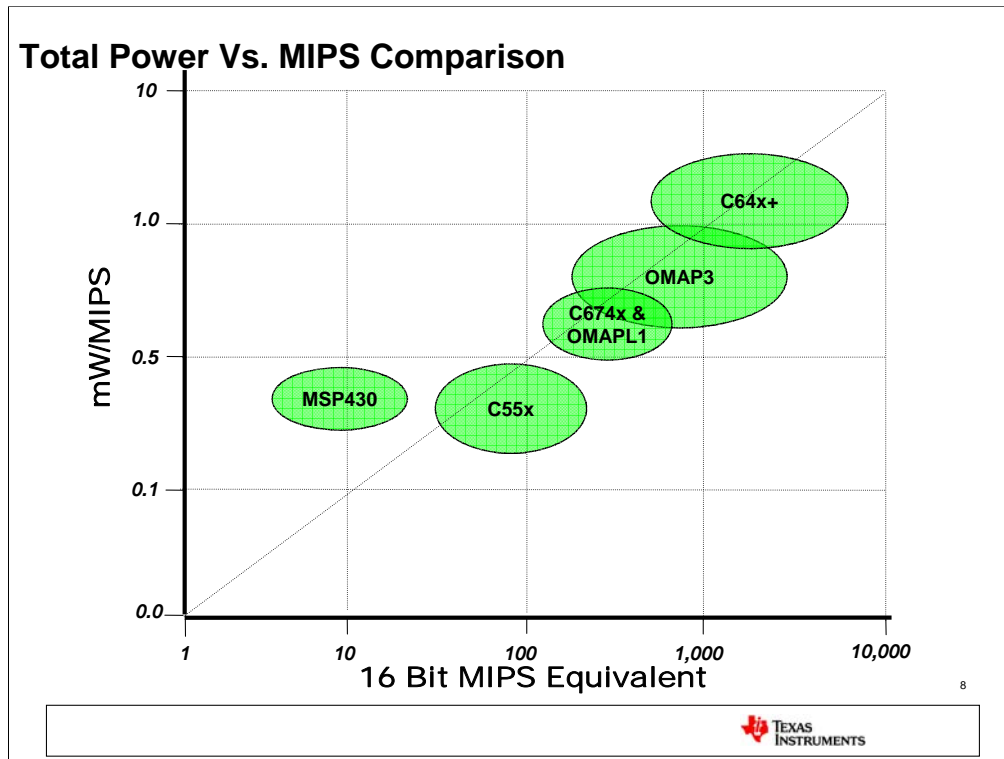


MSP430 : $2.6\mu\text{A} \times 1.8 = 4.68\mu\text{W}$

BlackFin – 1mW

C5505 – 200uA to 300uA

C28335 – STANDBY mode is ~8mA (HALT is 150uA but no retention in that)



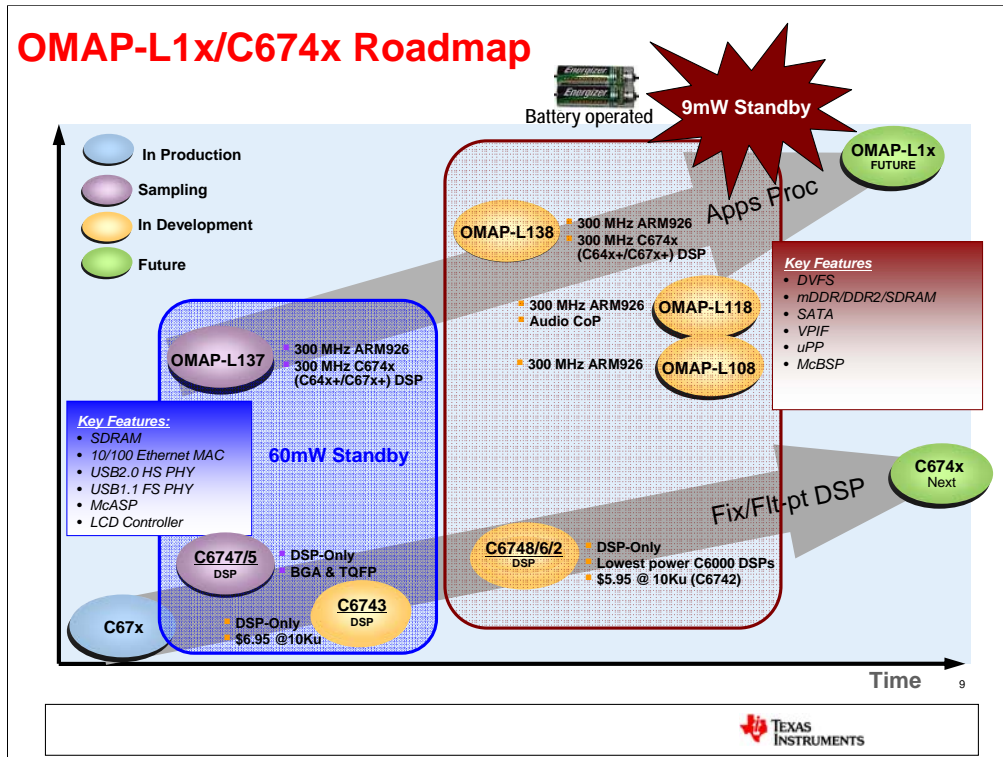
C2x/F2x – F28335 (290mA at 150MHz) : >2mW/MHz

MSP430: $0.165\text{mA/Hz} \times 1.8 = 0.28\text{mW/MHz}$, 2V-25MHz : $5.65\text{mA} \Rightarrow 0.452\text{mW/MHz}$

C5505 – 0.15mW/MHz to 0.45mW/MHz

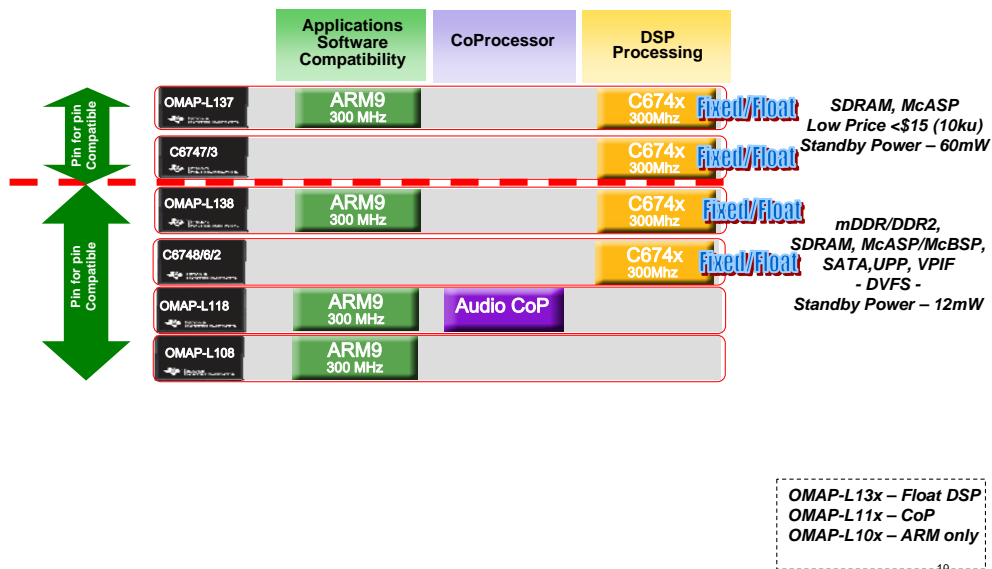
ULP100 – 0.2mW/MHz but at 32-bits so ~0.1mW/MHz

BlackFin – 0.18mW/MHz at 16-bits

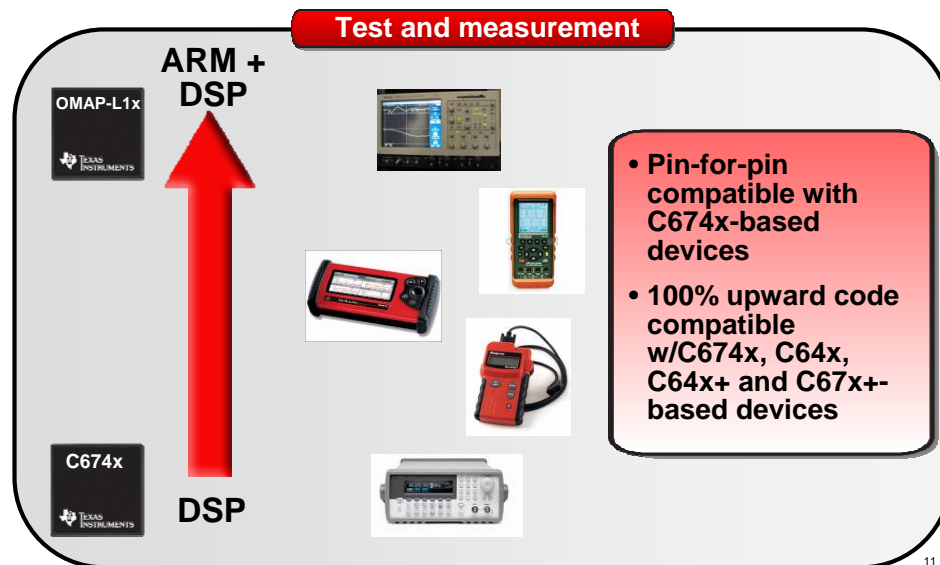


- OMAP3503 is the first in a line of OMAP35x solutions available to the general market it features a high performance Cortex-A8.
- OMAP3530, OMAP3525, and OMAP3515 are now sampling and include the Cortex-A8 as well as high performance graphics, DSP, and video accelerators as indicated.
- The OMAP35x devices in development are targeted to sample in 2009 and include the added features shown. These devices will remain as close to software and pin compatible as possible given the changes. They will not be 100% pin or software compatible and will not be drop in replacements due to the peripheral changes.
 - It is expected that these solutions will offer anywhere from \$2-3 in system BOM savings to as much as \$9 or \$10 depending on the then current memory pricing and additional features utilized
- OMAP NEXT will improve on the performance of the ARM core, increase video performance and add significant peripheral integration for broad markets.
- OMAP-L1x devices feature an ARM926EJ-S processor running at 300MHz.
- OMAP-L13x derivatives combine the ARM9 with a floating point 674x DSP
- OMAP-L12x derivatives combine the ARM9 with a fixed point C64x+ DSP
- All OMAP-L1x derivatives include a USB2.0 HS PHY, 10/100 Ethernet MAC, LCD Controller MMC/SD support and a host of additional peripherals. Some derivatives include a second USB1.1 PHY
- OMAP-L1x7 derivatives support SDRAM and are pin-for-pin compatible; while OMAP-L1x8 derivatives will support mDDR/DDR2 and SATA as shown above and are also pin-for-pin compatible.
- Pricing for the OMAP-L1x devices will be as low as \$7.95 in 10ku volumes.

Architecture, Software and Pin for Pin Compatibility



Increased scalability and compatibility for design of robust product lines



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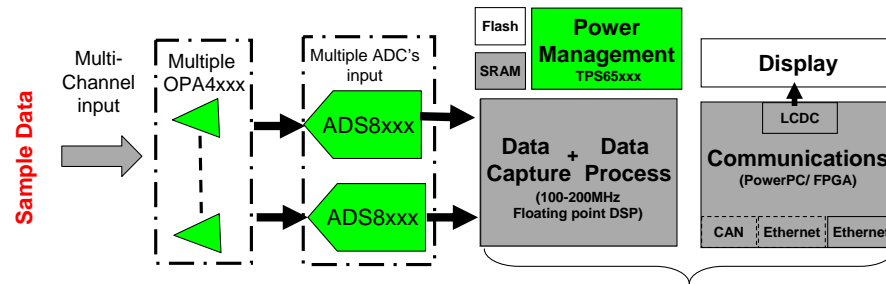
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Test and measurement (scalable, car diagnostics, lots of different ones, one for car, one for truck, one for motorcycle)

(low end C6743, middle C6747, high end OMAPL137)

Robotics (low end C6743, middle C6747, high end OMAPL137)

Existing solutions



Approx. Cost

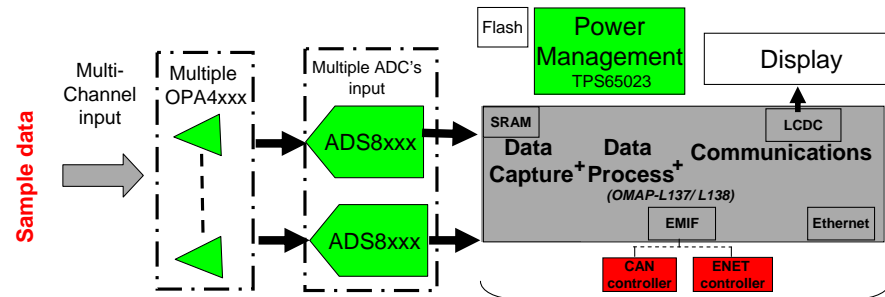
PowerPC ~ \$9 in 10ku
 Floating point DSP ~ \$15 in 10ku
 SRAM ~ \$2-4
 Total ~\$26-28

Communication

2 x EMAC or
 1 x EMAC and 1 x CAN

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Benefits of OMAP-L137 solution



- **\$9-11 Savings over existing multi processor solutions**

- OMAP-L137 processor controls both Data capture/ data processing & communications

- **5x less power consumption**

- Existing multi-processor solutions take up to 2.5Ws, OMAP-L137 is less than 0.50W

- **Easy system networking**

- One OMAP-L137 can support 2 EMACs (1 on-chip and 1 through USB or EMIF)
- On chip peripherals (SPI, UART, etc) simplify interfacing with other systems

- **LCD support up to QVGA allows rich user interface**

Approx. Cost

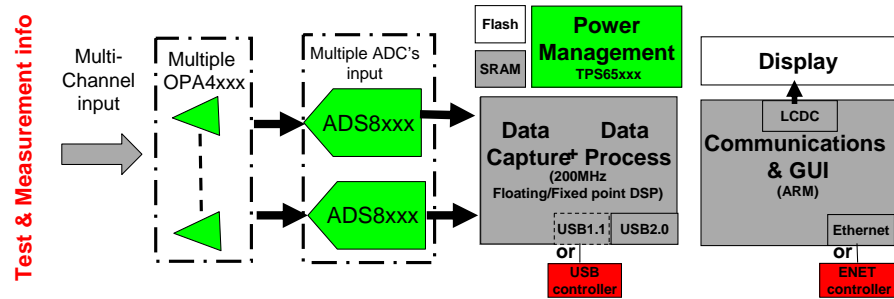
OMAP-L137 ~ \$14.45 in 10ku
+ EMAC or CAN controller~\$3-4
Total ~ \$17-18

Communication

2 x EMAC or
1 x EMAC and 1 x CAN

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Existing solutions



Approx. Cost (Option 1)

ARM9 (no EMAC) ~ \$6 in 10ku
 DSP (1 USB2.0) ~ \$6 in 10ku
 USB Controller ~ \$2-3
 EMAC Controller ~\$3-4
 SRAM ~ \$2-4
 Total ~\$19-23

Communication

1 x EMAC and 2 USB

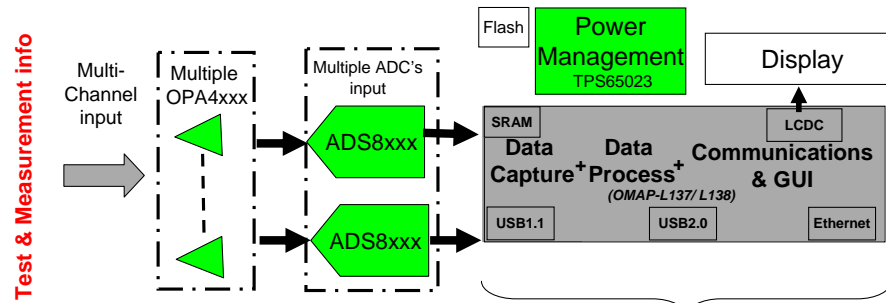
Approx. Cost (Option 2)

ARM9 with EMAC ~ \$9 in 10ku
 DSP (1 USB2.0)~ \$6 in 10ku
 USB Controller ~ \$2-3
 SRAM ~ \$2-4
 Total ~\$19-22

Communication

1 x EMAC and 2 USB

Benefits of OMAP-L137 solution



- **\$5-7 Savings over existing multi processor solutions**

- OMAP-L137 processor controls both Data capture/ data processing, communications and GUI

- **2x less processor power consumption**

- Existing multi-processor solutions with external controllers and memories take up to 1.0W, OMAP-L137 Total power is less than 0.50W (300MHz, 1.2V)

- **Easy system connectivity**

- One OMAP-L137 can support 1x EMACs and 2x USBs
- On chip peripherals (SPI, UART, etc) simplify interfacing with other systems

- **LCD support up to QVGA allows rich user interface**

- **Industrial temp. allows maximum product lifetime and reliability**

Approx. Cost

OMAP-L137 ~ \$14.45 in 10ku

Total ~ \$14.45

Communication

1 x EMAC and 2 x USB

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OMAP-L1x Applications Processors

Highest Peripherals Integration & Lowest System Cost ARM9-based SoCs

Product Attributes	NEW OMAP-L137	NEW OMAP-L138	NEW OMAP-L108	NEW OMAP-L118
Frequency (MHz); ARM/DSP	300/300	300/300	300	300
Peak MFLOPs	1800	1800	N/A	N/A
Peak MMACs	2400	2400	N/A	N/A
Total Power (25°C)	490mW ¹	440mW ²	TBD	TBD
Standby Power (25°C)	62mW	11mW	TBD	TBD
Memory (L1 Cache)	64KB	64KB		
Memory (L2 Cache)	256KB	256KB		
Memory (L3)	128KB	128KB	128KB	128KB
SDR Memory	32/16-bit	16 bit	16 bit	16 bit
DDR Memory		16 bit	16 bit	16 bit
McASP	3	1	1	1
McBSP		2	2	2
EMAC	1	1	1	1
USB 2.0	1	1	1	1
USB 1.1	1	1	1	1
uPP		1	1	1
UART	3	3	3	3
SATA		1	1	1
PWM	3	2	2	2
LDc	1	1	1	1
VPIF		1	1	1
Package (mm)	17x17 (BGA)	16x16 (BGA) 13x13 (nFPGA)	16x16 (BGA) 13x13 (nFPGA)	16x16 (BGA) 13x13 (nFPGA)
Pricing (1ku)	\$16.35	\$18.60	\$9.00	\$10.10
Availability	TMX-NOW	TMX-2Q09	TMX-3Q09	TMX-3Q09



(1) At room temperature (25 °C) with the core voltage (CVDD) set to 1.2V. 70% DSP CPU utilization (300 MHz); EMIFB active at 50% utilization (133 MHz/16-bit); 25 MHz McASP Receive; SPI master at 50% utilization (27MHz); GPIOs at 50 utilization (33MHz).






(2) At room temperature (25 °C) with the core voltage (CVDD) set to 1.2V. 70% DSP CPU utilization (300 MHz); DDR2/mDDR Controller active at 50% utilization (133 MHz/16-bit); 25 MHz McASP Receive; SPI master at 50% utilization (27MHz); GPIOs at 50 utilization (33MHz).

TMS320C674x DSPs

Highest Peripherals Integration and Low Cost Fixed/Floating Point Devices & Lowest System Cost Options

Product Attributes	Floating Pt C671x	Floating Pt C672x	Fixed Pt C6410	Fixed Pt C6421-400	NEW C6743	NEW C6745	NEW C6747	NEW C6742	NEW C6746	NEW C6748
DSP Frequency (MHz)	300	350	400	400	300/200	300/200	300/200	200	300	300
ARM Frequency (MHz)										
Peak MFLOP/MMACs	1800	2100	3200	3200	1800/2400	1800/2400	1800/2400	1800/2400	1800/2400	1800/2400
Total Power (25°C)	1.6W ¹	977mW ²	973mW ²	555mW ²	470mW ²	470mW ²	470mW ²	420mW ⁴	420mW ⁴	420mW ⁴
Standby Power (25°C)	1.1W	230mW	471mW	136mW	60mW	60mW	60mW	11mW	11mW	11mW
Memory (L1 Cache)	8KB	32KB (Prog)	32 KB	64 KB	64KB	64KB	64KB	64KB	64KB	64KB
Memory (L2 Cache)	256KB	256KB	128 KB	64 KB	128 KB	256KB	256KB	64KB	256KB	256KB
Memory (L3)							128KB			128KB
SDR Memory		32/16-bit	32/16-bit		16/8-bit	16/8-bit	32/16-bit	32/16-bit	32/16-bit	32/16-bit
DDR Memory				16/8-bit				32/16-bit	32/16-bit	32/16-bit
McASP	2	3	2	1	2	2	3	1	1	1
McBSP			2	1				1	2	2
EMAC				1	1	1	1		1	1
USB 2.0						1	1		1	1
USB 1.1							1			1
UHP	1	1	1	1			1	1	1	1
uPP									1	1
UART				2	2	3	3	1	3	3
SATA										1
PWM				3	3	3	3	3	3	3
MMC/SD					1	1	1		2	2
LCDC							1			1
Package (mm)	27x27 (BGA) 28x28 (PYP)	17x17 (BGA) 20x20 (QFP)	23x23 (BGA)	16x16 (BGA)	17x17 (BGA) 24x24 (QFP)	24x24 (QFP)	17x17 (BGA)		16x16 (BGA) 13x13 (nFPGA)	
Pricing (1ku)	\$36.60	\$32.50	\$19.58	\$11.73	\$9.00	\$11.25	\$12.95	\$6.70	\$13.50	\$15.20
Availability	NOW	NOW	NOW	NOW	TMX2009 TMS-1H09	TMX-NOW TMS-1Q09			TMX-1H09 TMS-3Q09	

Typical Applications



Power Use Models

- (1) At room temperature (25 °C) with the core voltage (CVDD) set to 1.4V. 70% DSP CPU utilization (300 MHz); EMIF active at 50% utilization (100 MHz/16-bit); 25 MHz McBSP
- (2) At room temperature (25 °C) with the core voltage (CVDD) set to 1.2V. 70% DSP CPU utilization (300 MHz); EMIF active at 50% utilization (100 MHz/16-bit); 25 MHz McASP; SPI at 50% utilization (10MHz)
- (3) At room temperature (25 °C) with the core voltage (CVDD) set to 1.2V. 70% DSP CPU utilization (300 MHz); EMIFB active at 50% utilization (133 MHz/16-bit); 25 MHz McASP Receive; SPI master at 50% utilization (27MHz); GPIOs at 50 utilization (33MHz).
- (4) At room temperature (25 °C) with the core voltage (CVDD) set to 1.2V. 70% DSP CPU utilization (300 MHz); DDR2/mDDR Controller active at 50% utilization (133 MHz/16-bit); 25 MHz McASP Receive; SPI master at 50% utilization (27MHz); GPIOs at 50 utilization (33MHz).

Clickable Typical End Applications

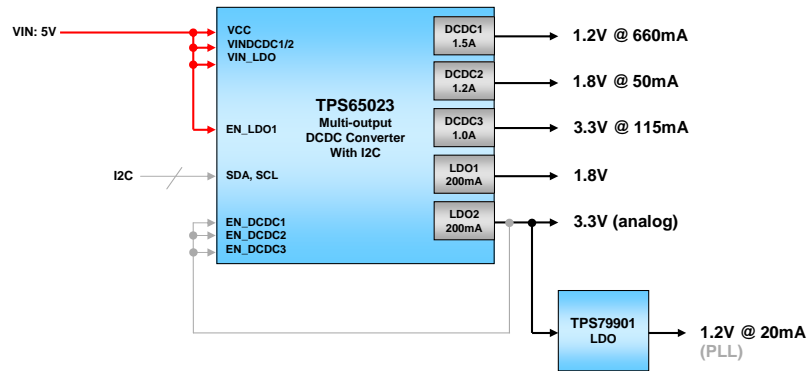
System Block Diagrams	Processor	Processor	Processor	Processor
Barcode Scanner	OMAP1X			
Software Defined Radio (SDR)	OMAP1x	C674X	C550x	
Personal Digital Assistant (PDA)	OMAP1x			
Portable Media Player	OMAP1x			
Full-Duplex Speakerphone	C674X			
Residential Gateway Solutions	C674x			
AV Receivers	C674X			
Audio Dock: Performance	C674X			
Integrated Access Device	C674x			
Magnetic Resonance Imaging (MRI)	C674x			
Pro Audio Mixer	C674X			
Process Automation and Control	C674X			
Radar/Sonar	C674x			

Clickable Typical End Applications

System Block Diagrams	Processor	Processor	Processor	Processor
Portable Blood Gas Analyzer	C674X			
MP3 Player/Recorder (Portable Audio)	C674X	C550x	C55x	
GPS: Personal Navigation Device	C674X	C550x		
Hands Free Kit	C674X	C550x		
Fingerprint Biometrics	C674X	C550x		
Military Target Detection and Recognition	C674X			
PABX Telephony Multi-Processing	C674X			
Portable Medical Instruments	C550x	C674X		
VoIP Solutions	C550x	C674x		
Active Noise Cancellation (ANC)	C550x			
Audio Dock: Basic	C550x			
Audio Dock: Portable	C550x			
Automated External Defibrillator	C550x			
ECG Electrocardiogram	C550x			
Pulse Oximetry	C550x			
USB Phone	C550x			
USB Speakers	C550x			
Weigh Scale / Bridge Sensor	C550x			
IP Phone: Wireless	C550x	C674x		19

Power Management Solution

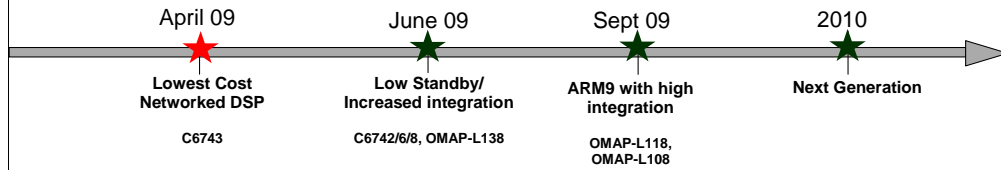
C6747/ C6745/ OMAP-L137



The TPS65023 is capable of providing all of your system power depending on your system's architecture.

Announcement Calendar (next 12 months)

Product announcements built momentum and deliver on roadmap forecasts



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OMAP-L1x & C674x Schedules

Linux

- **Montavista Pro5 – Kernel 2.6.18**
 - OMAP-L137 today
 - OMAP-L107 September (at RTM)
 - OMAP-L138/ L118/ L108 December
- **Open Source Kernel 2.6.28**
 - OMAP-L138 in June (at RTM)
 - OMAP-L137/ L118/ L108/ L107 September (at RTM)

Modeling

- **Mathworks**
 - Simulink WIP
- **National Instruments**
 - Labview WIP

WinCE6.0

- OMAP-L137 Beta version June
- OMAP-L138 Beta version July
- OMAP-L118/ 108/ 107 Beta version September

VxWorks6.0

- OMAP-L137 ARM side demo (NOW)
- OMAP-L137 Beta version May (ARM + DSP Link port)
- OMAP-L138 Beta version August
- OMAP-L118/ 108/ 107 Beta version September

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4) This is all about DaVinci, same development environment

OMAP-L137/ C6747 Starter Kit

Fully Integrated Out-of-Box Development Kit

OMAP-L137/ C6747 Starter Kit



Part Number: TMDXOSKL137

Available Sept. 08

\$395

Hardware

EVM board

- OMAP-L137/ C6747
- USB Interface
- AIC32 Stereo Codec
- Supports SD and other media interfaces

Emulation

- On-board XDS510 JTAG controller

Connectors

- Daughter Card connectors
- Expansion Port connectors

Software

- Development tools software including Montavista Linux 2.6.18, C6000 start Kit Code Composer Studio™, DSP/BIOS™ RTOS, Compiler, Assembler, and Linker
- Foundation software
- Full set of Linux and DSP drivers

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OMAP-L138 Development Tools

Community Board Includes:

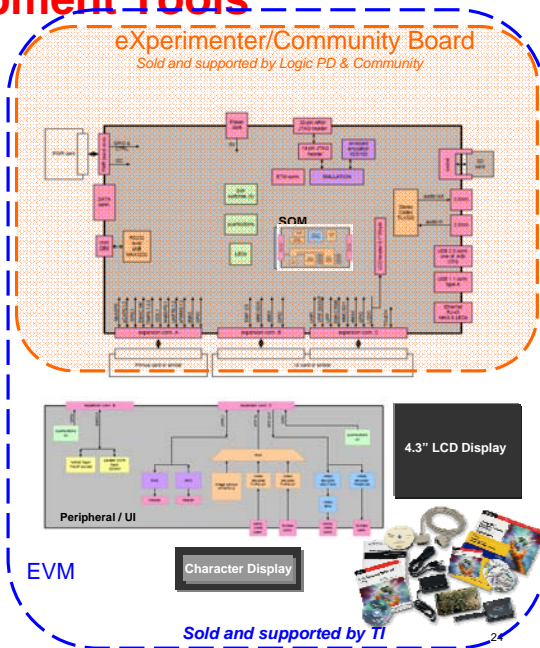
- SOM (OMAP-L138, 0.65mm ZCE)
- Baseboard w/limited peripherals
 - USB2.0, SATA, Audio Codec, MMC/SD, Ethernet
 - XDS100 JTAG Emulator
 - LCD & Expansion Connectors
- Estimated SRP \$169US
- Available July 2009 from LogicPD and authorized distributors
- Optional boards from Logic
 - 4.3" LCD Display
 - DSP-Only (C6748) Freon SOM – availability TBD

EVM Includes:

- Community Boards (SOM+Baseboard)
- UI Board
- 4.3" LCD Display & Character Display
- Printed documentation
- Software CDs
- SRP TBD

Open Source Software Community:

- Linux Drivers provided using DaVinci GIT Tree
- DSP/BIOS drivers provided using "MyRegisteredSoftware.com" TI portal
- Community board (similar to "beagleboard.org") is being investigated
- Wiki pages already available for preliminary device and SW information



Choosing the right TI processor

- demo

Backup

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NEW OMAP-L137 (C674x DSP + ARM9)

Schedule: TMX – NOW; TMS – 1Q09

Features

■ CPU Cores

- ARM926EJ-S™ (MPU) up to 300 MHz
- C674x DSP Core up to 300MHz

■ Memory

- ARM: 16K I\$, 16K D\$, 64K ROM
- DSP: 32K L1D, 32K L1P, 256K L2 Cache, 128K RAM
- 1MB ROM

■ Peripherals (1.8/ 3.3V IOs)

- 10/100 Ethernet MAC
- EMIF1 – Supports 133 MHz SDRAM (16/32-bit)
- EMIF2 – Supports Async/NAND Flash (8/16 bit)
- USB 2.0 - USB OTG
- USB 1.1 – USB Full speed (OHCI)
- UHPI, McASP (3), UART(2), I²C (2), SPI (2), RTC, Timers (3), MMC/SD (2), LCD Controller, GPIO

- Package - 17 x 17mm BGA (1.0mm pitch) ~256pins

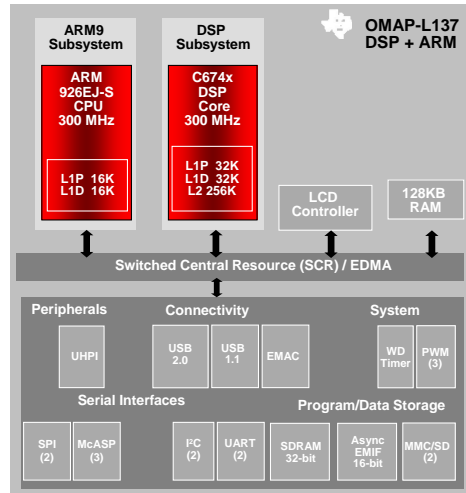
- Pin-to-pin compatible with C6747

- Power (1.2V Core, 3.3V IOs)

- Active < 490 mW @ 300MHz/1.2V/25C (estimate)
- Standby < 58 mW @ 300MHz/1.2V/25C (estimate)

Applications

- SDR, Portable Catalog, Bar Code Scanners, Portable Communications, Portable Medical, Portable Audio



EVM Available

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TMS320C6747 DSP

Schedule: TMX – NOW; TMS – 1Q09

Features

■ New C674x Core

- Combines C64x+ & C67x+ cores
- Up to 300 MHz

■ Memory

- 32 KB L1D, 32 KB L1P, 256 KB L2
- 128KB RAM

■ Peripherals (3.3V I/Os)

- 10/100 Ethernet MAC (EMAC)
- USB 2.0 – USB OTG
- USB 1.1 – USB full speed (OHCI)
- EMIF1 – Supports 133 MHz SDRAM (16/32-bit)
- EMIF2 – Supports Async/NAND Flash (8/16 bit)
- UHPI, McASP (3), UART (3), I²C(2), SPI(2), RTC, PWM(6), MMC/SD, LCD Controller, Timers (2), GPIO

■ Package

- 17 x 17mm BGA (1.0mm pitch) ~256 pins
- Process: 0.065-mm
- Extended Temperature Grade Options

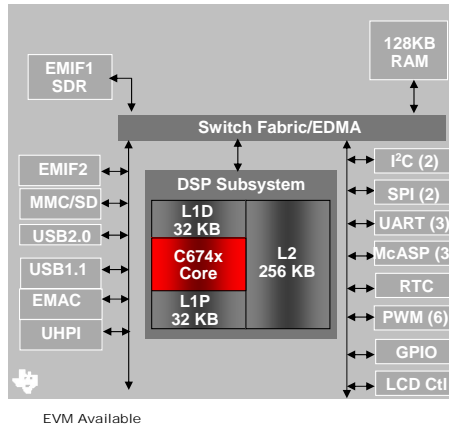
■ Pin to pin compatible with OMAP-L137

■ Power (1.2V Core, 3.3V IOs)

- Active < 470 mW @ 300MHz/1.2V/25C (estimate)
- Standby < 58 mW @ 300MHz/1.2V/25C (estimate)

Applications

- Portable Music effects, Audio Conferencing, Gaming, Industrial control, Catalog/General Purpose



C674x+ DSP based device with rich set of peripherals for networked audio/music applications as well as broader catalog market applications like communications, musical instruments etc.

The key features of the device are

- Up to 300 MHz C674x ISA that combines the C64x+ fixed point ISA as well as C67x+ floating point ISA
- Large L2 Cache along with dedicated 128 KB additional SRAM
- Efuse security for unique device ID feature
- Multiple connectivity options like EMAC, USB, UHPI and MMC/SD
- Two external memory ports – one for SDRAM and the other Asynch memory and NAND Flash
- Rich set of serial ports like I2C, UART, SPI, McASP
- Multiple Timers and PWM modules for reference clocks and pulses
- LCD controller for display control
- The device will support power consumption variance in application scenarios where full device performance is not required
- 3.3V IOs for efficient 3.3V system IO connectivity

Where do I find Customer Opportunities ?

Existing opportunities

Reasons why customers choose these processors

- ADI BlackFin customers
- DM644X customers with no video need
- PowerPC customers

OMAP-L1x



> \$14.34 (100u)

- They already have an ARM + DSP in system
- Need for Highly integrated scalable solution
- Want to add GUI to DSP based design
- Add network connectivity

- ADI Sharc customers
- C67X customers
- Professional Audio
- Industrial monitoring

C674x



> \$10.41 (100u)

- Need high precision/ Wide dynamic range DSP
- No DSP experience, want easy to program processor
- Want to add portability to product using floating point

- ADI BlackFin customers
- C5000 customers
- Wireless audio

C550x



> \$9.95 (100u)

- Want a low cost, ultra low power DSP
- Large amount of on-chip memory, don't want external memory







Take Out

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Introducing four new product lines yielding more than 15 new devices

Starting at 6.8μW and up to 2400 MMACs

New product generation	 <p>OMAP-L1x 300MHz DSP 300MHz ARM9</p>	High levels of integration and low power	Industry's lowest power ARM + DSP SoC
6mW – 435mW			
New product generation	 <p>C674X 300MHz DSP</p>	Industry's first low power floating-point DSP	20X lower standby power and 1/3 the power consumption of existing floating-point devices
6mW – 420mW			
 <p>C5000™ 34 Devices</p>	Low power DSPs since 1995	 <p>C550x 100MHz DSP</p>	Industry's lowest power fixed-point DSP
6.8μW–18/46mW			
 <p>MSP430 150+ Devices</p>	Ultra-low power MCUs since 1991	 <p>F5xx 25MHz MCU</p>	World's lowest power MCU
2.7μW-660μW			
1/2 the power consumption of existing 34 C55x devices		1/3 the power consumption of existing MSP430F2xx devices Enables 10+ year battery life	

Backup

Add in selection tool

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C2000 compared to OMAP-L13x/ C674x

Decision Criteria	Delfino			Low Power Processors	
	C2833x	F2823x	F2833x	C674x	OMAP-L137
Cores	Microprocessor	Microprocessor	Microprocessor	DSP	ARM + DSP
Commercial O/S (VxWorks etc)	N	N	N	N	Y
Small footprint proprietary O/S (DSP BIOS)	Y	Y	Y	Y	Y
Integrated Internet connectivity (EMAC)	N	N	N	Y	Y
External EMAC controller connectivity (via EMIF)	Y	Y	Y	Y	Y
Network connectivity (CAN)	Y	Y	Y	N	N
On Chip FLASH	N	Y	Y	N	N
On Chip ADC	N	Y	Y	N	N
Total Power Consumption	600mW (25C)	770mW (worst case)	770mW (worst case)	435mW (25C)	485mW (25C)
Mhz	300	150	150	300	300/ 300
MFLOPS	600	300	300	1800	2400
Code density	High	High	High	Med	Med
Industrial Temp	Y	Y	Y	Y	Y
Price Range (1ku)	\$8.95-16.39	\$12.88-14.55	\$13.85-15.65	\$9.00-12.95	\$16.35