

Producenci układów mikroprocesorowych: mikroprocesory, mikrokontrolery, procesory sygnałowe DSP, kontrolery sygnałowe DSC

semestr zimowy 2009/2010, WIEiK, PK

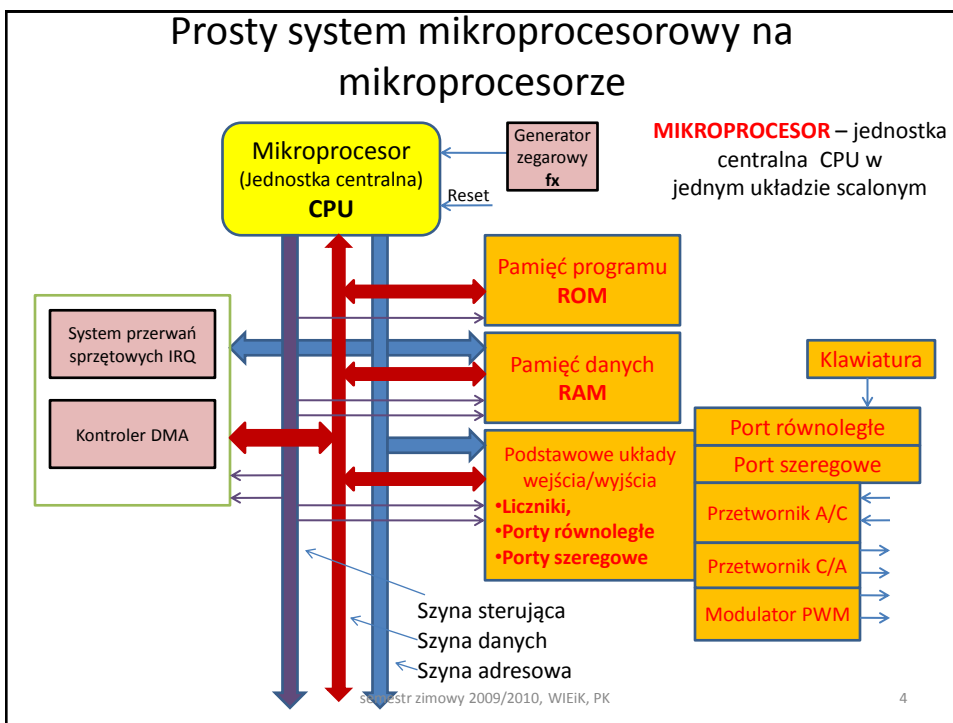
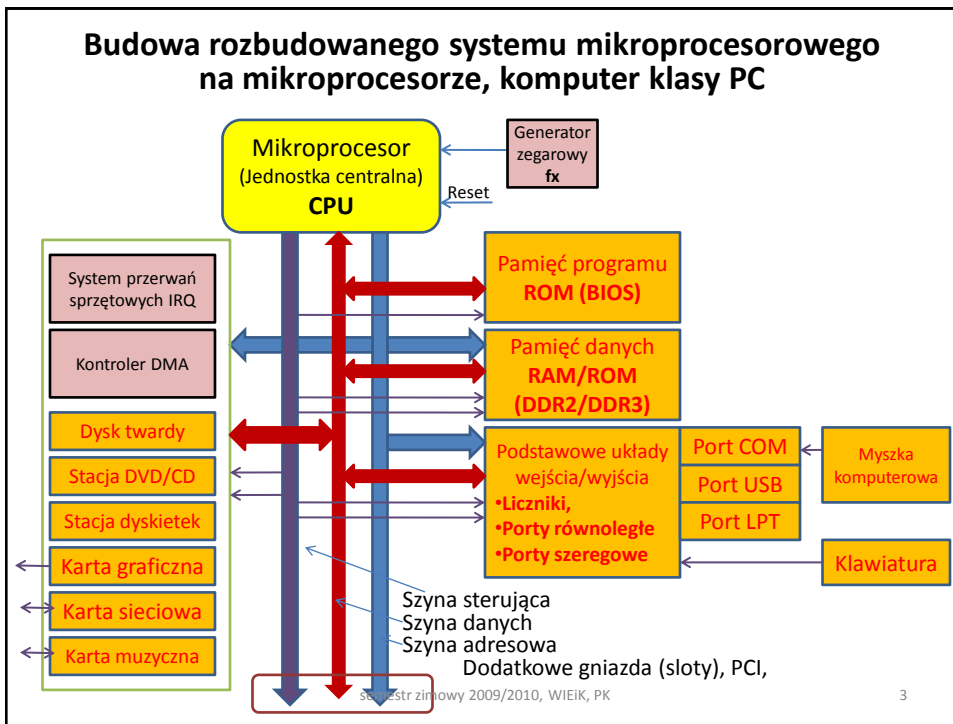
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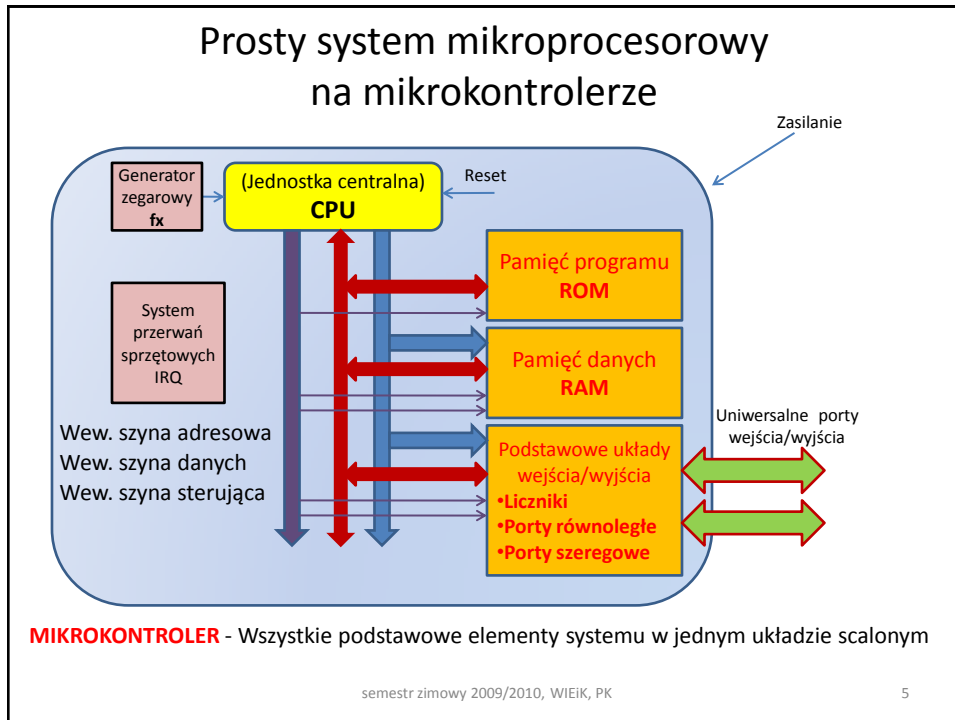
Mikroprocesor - Mikrokontroler

- Obecnie większość systemów mikroprocesorowych przeznaczonych do sterowania i kontroli, budowanych jest w oparciu o mikrokontrolery.
- Typowe układy mikroprocesorowe 8-bitowe lub 16-bitowe (znane z lat 70, 80) są już nie stosowane.
- Dominującą rolę przejęły mikrokontrolery 8-bitowe, 16-bitowe i 32-bitowe (coraz bardziej popularne i tańsze).
- Typowe mikroprocesory 32, 64-bitowe klasy Pentium, Intel Core są stosowane w komputerach osobistych oraz w zastosowaniach przemysłowych wymagających stosowania systemów operacyjnych (np. Windows CE) i wymagających dużej mocy obliczeniowej (przetwarzania dużej liczby danych).

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Zalety stosowania mikrokontrolerów

- Minimalna liczba elementów zewnętrznych,
- małe wymiary, mała i nieskomplikowana płytką drukowaną,
- pojemność pamięci ROM i RAM oraz liczba i funkcje układów wejścia/wyjścia można dopasować do konkretnej aplikacji,
- łatwość w podłączaniu elementów i urządzeń zewnętrznych (klawiatury, diod LED, wyświetlaczy LED, LCD, dodatkowych pamięci, itp.)
- proste projektowanie systemu, programowanie i testowanie,
- bardzo duży wybór mikrokontrolerów 8, 16 lub 32-bitowych, duża liczba producentów,
- duża liczba firm produkujących mikrokontrolery z tej samej rodziny, np. 8051, ARM,
- mała moc pobierana,
- niskie koszty układów i całego systemu,
- obecne mikrokontrolery 32-bitowe osiągają bardzo duże moce obliczeniowe ($f_x=500\text{MHz}$), przy niewielkiej mocy pobieranej,
- możliwość korzystania z systemów operacyjnych klasy Linux

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Ograniczenia w stosowaniu mikrokontrolerów

- małe zasoby pamięci ROM i RAM,
- mikrokontrolery przewidziane są do prostych zadań sterowania, kontroli,
- relatywnie mała moc obliczeniowa w zależności od typu mikrokontrolera,
- ograniczona liczba języków programowania, dominuje assembler i język C, C++

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Technologia SoC – System on Chip

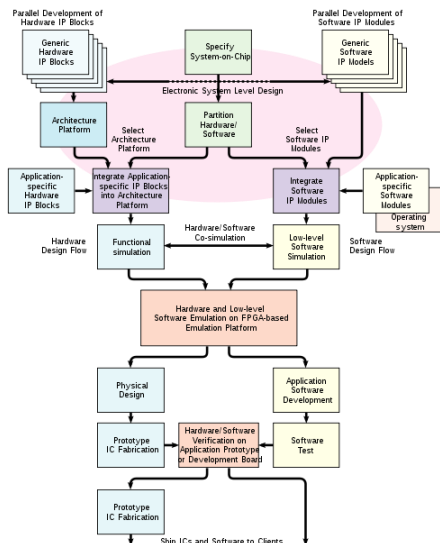
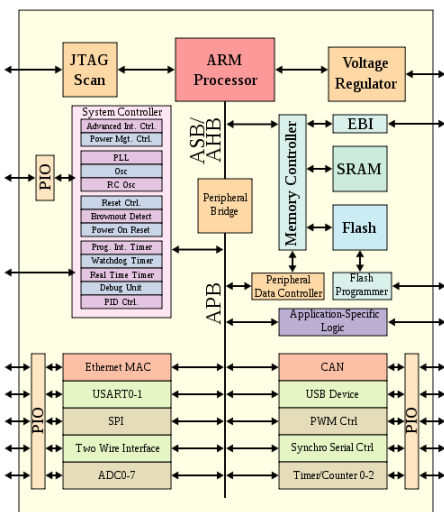
Połączenie bloków funkcjonalnych różnych typów w jednym układzie scalonym

- MCU + MPU + DSP
- Pamięć ROM, RAM
- Układy wejścia/wyjścia – timery, liczniki, A/D, D/A,.....
- Sterowniki PCI, SCSI, USB, 1394, IrDA, Bus Bridges
- Sterowniki graficzne
- Układy programowalne
- Moduły sieciowe wraz układem RF (Wireless)
- Multimedia - układy video, audio, HDTV
- Czujniki ruchu, położenia
-

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SoC



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Najprostsze systemy na mikrokontrolerach, układy 6-końcówkowe

Podstawowe parametry mikrokontrolerów 8-bitowych z rodziny PIC10F20x, firmy Microchip

		PIC10F200	PIC10F202	PIC10F204	PIC10F206
Clock	Maximum Frequency of Operation (MHz)	4	4	4	4
	Flash Program Memory	256	512	256	512
Memory	Data Memory (bytes)	16	24	16	24
	Timer Module(s)	TMR0	TMR0	TMR0	TMR0
Peripherals	Wake-up from Sleep on Pin Change	Yes	Yes	Yes	Yes
	Comparators	0	0	1	1
Features	I/O Pins	3	3	3	3
	Input-Only Pins	1	1	1	1
	Internal Pull-ups	Yes	Yes	Yes	Yes
	In-Circuit Serial Programming™	Yes	Yes	Yes	Yes
	Number of Instructions	33	33	33	33
	Packages	6-pin SOT-23 8-pin PDIP, DFN	6-pin SOT-23 8-pin PDIP, DFN	6-pin SOT-23 8-pin PDIP, DFN	6-pin SOT-23 8-pin PDIP, DFN

The PIC10F200/202/204/206 devices have Power-on Reset, selectable Watchdog Timer, selectable code-protect, high I/O current capability and precision internal oscillator.

The PIC10F200/202/204/206 device uses serial programming with data pin GP0 and clock pin GP1.



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- 400 MHz ARM926EJ-S™ ARM® Thumb® Processor
 - 32 KBytes Data Cache, 32 KBytes Instruction Cache, MMU
- Memories
 - DDR2 Controller 4-bank DDR2/LPDDR, SDRAM/LPSDR
 - External Bus Interface supporting 4-bank DDR2/LPDDR, SDRAM/LPSDR, Static Memories, CompactFlash, SLC NAND Flash with ECC
 - One 64-KByte internal SRAM, single-cycle access at system speed or processor speed through TCM interface
 - One 64-KByte internal ROM, embedding bootstrap routine
- Peripherals
 - LCD Controller supporting STN and TFT displays up to 1280*860
 - ITU-R BT. 601/656 Image Sensor Interface
 - USB Device High Speed, USB Host High Speed and USB Host Full Speed with On-Chip Transceiver
 - 10/100 Mbps Ethernet MAC Controller
 - Two High Speed Memory Card Hosts (SDIO, SDCard, MMC)
 - AC'97 controller
 - Two Master/Slave Serial Peripheral Interfaces
 - Two Three-channel 16-bit Timer/Counters
 - Two Synchronous Serial Controllers (I2S mode)
 - Four-channel 16-bit PWM Controller
 - Two Two-wire Interfaces
 - Four USARTs with ISO7816, IrDA, Manchester and SPI modes
 - 8-channel 10-bit ADC with 4-wire Touch Screen support
- System
 - 133 MHz twelve 32-bit layer AHB Bus Matrix
 - 37 DMA Channels
 - Boot from NAND Flash, SDCard, DataFlash® or serial DataFlash
 - Reset Controller with on-chip Power-on Reset
 - Selectable 32768 Hz Low-power and 12 MHz Crystal Oscillators
 - Internal Low-power 32 kHz RC Oscillator
 - One PLL for the system and one 480 MHz PLL optimized for USB High Speed
 - Two Programmable External Clock Signals
 - Advanced Interrupt Controller and Debug Unit
 - Periodic Interval Timer, Watchdog Timer, Real Time Timer and Real Time Clock
- I/O
 - Five 32-bit Parallel Input/Output Controllers
 - 160 Programmable I/O Lines Multiplexed with up to Two Peripheral I/Os with Schmitt trigger input
- Package
 - 324-ball TFBGA, pitch 0.8 mm

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**Podstawowe parametry
mikrokontrolera AT91SAM9G45,
firmy Atmel**

Wybrani producenci układów mikroprocesorowych, mikrokontrolerów, procesorów DSP, DSC

- AMD
- Analog Devices
- Atmel Corporation
- Infineon
- Intel
- Freescale Semiconductor
- Maxim (Dallas Semiconductor)
- Microchip
- NXP
- Rabbit Semiconductor
- Renesas Technology (Hitachi)
- Texas Instruments
- Samsung
- STMicroelectronics
- Zilog

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ATMEL Corporation

- [AVR® 8-bit RISC](#)
- [AVR32 32-bit MCU](#)
- [AT91SAM 32-bit ARM-based Microcontrollers](#)
- [DIOPSIS® \(ARM + DSP\)](#)
- [8051 Architecture](#)
- [MCU Wireless](#)

ATMEL - AVR 8-Bit RISC

- [Automotive AVR](#)
- [megaAVR](#) (ATMEGA8, ATMEGA32, ATMEGA128)
- [Battery Management AVR](#)
- [tinyAVR](#) (ATTINY2313)
- [CAN AVR](#) (AT90CAN128)
- [USB AVR](#)
- [LCD AVR](#)
- [XMEGA](#)

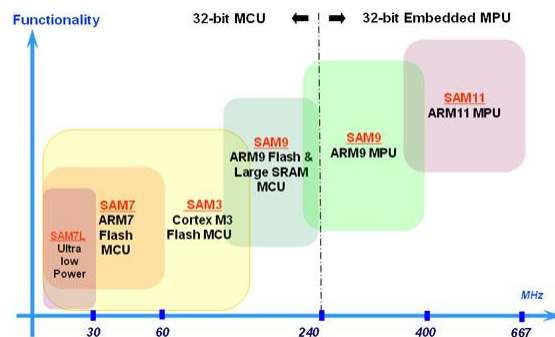
ATMEL - AVR32 32-bit MCU RISC

- [AP7000 Series](#)
- [UC3B Series](#)
- [UC3A0 Series](#)
- [UC3L Series](#)
- [UC3A1 Series](#)
- [UC3A3 Series](#)
- [UC3A3S Series](#)

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AT91SAM 32-bit ARM-based Microcontrollers

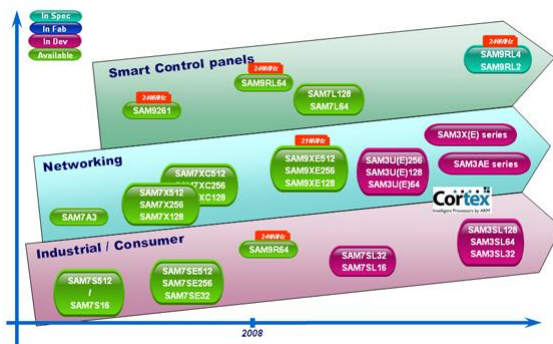


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AT91SAM Flash MCU

Flash memory od 16kB do 512kB,
częstotliwość pracy do 200 MHz.

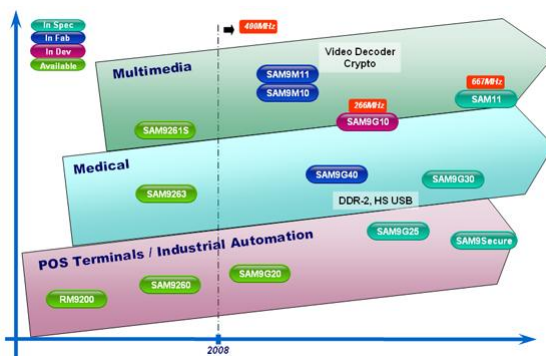


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AT91SAM Embedded MPUs

oparte na rdzeniu ARM926,
częstotliwość pracy do 400 MHz,
następna generacja 600 MHz+ ARM11



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ATMEL – 8051 MCU

- [CAN Networking MCUs](#) (AT89C51CC03)
- [Flash \(Reprogrammable\)](#) (AT89C2051, AT89C4051)
- [Flash ISP \(In-System Programmable\)](#) (AT89S2051, AT89C51RD2, AT89S8253)
- [Flash ISP - Single Cycle Core](#) (AT89LP2051, AT89LP4051)
- [ROMless](#) (AT80C51RD2)
- [Lighting MCUs](#)
- [USB MCUs](#)

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ATMEL – Secure Microcontrollers 8-/16-bit RISC CPU

SECURITY FEATURES **ROM OR FLASH** **EEPROM**

CRYPTO COPROCESSORS **secureAVR RISC core** **RAM**

WATCHDOG **TIMERS** **SPI/USB/MMC INTERFACES** **ISO 7816-3 INTERFACE** **ISO-14443 A/B INTERFACE**

BELGIË **BELGIQUE** **BELGIEN** **BELGIUM**
IDENTITEITSKAART CARTE D'IDENTITE PERSONALAUSWEIS IDENTITY CARD

Naam / Name Van Der Velden
Voornamen / Given names Great Hide
Gebortedatum en -datum / Place and date of birth Borsbèk 01 FEB 1985
Nationaliteit / Nationality Belg
Kaartnr. / Card No 000-5903301-01
Geldig van - tot / Valid from - until 01.01.2004 - 01.01.2009
Handtekening van de houder / Holder's signature [Signature]

Rzeczpospolita Polska **DOŚĆ OSOBY**
REPUBLIC OF POLAND / IDENTITY CARD

MIASTO / SURNAME KOWALSKA
MIASTO / GIVEN NAMES ANNA
MIASTO / BIRTHDAY / FAMILY NAME NOWAK
MIASTO / BIRTHDAY / GIVEN NAMES JAN, BARBARA
MIASTO / DATE OF BIRTH Anna Kowalska
30.03.1972 K
DATA URODZENIA / DATE OF BIRTH PŁEĆ / SEX

Complete family of low-power, high-performance secure microcontrollers built around SecureAVR® 8-/16-bit RISC architecture

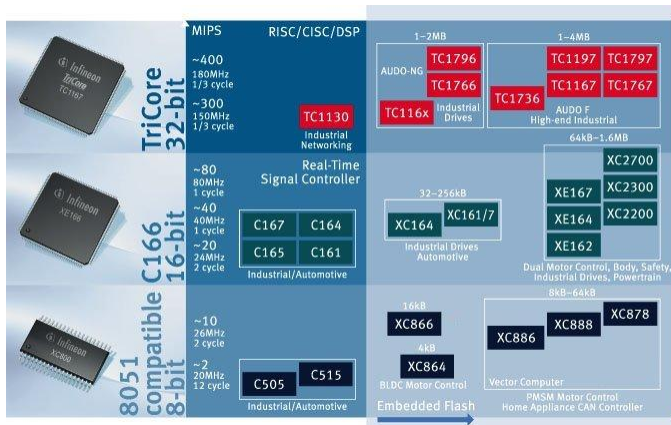
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- 32-Bit Microcontrollers
 - [Overview](#)
 - [AUDO FUTURE Family](#)
 - [AUDO-NextGeneration Family](#)
 - [TC11xx Family \(Industrial and Multi Market\)](#)
 - [XC2700 Family \(Powertrain\)](#)
 - [XC2300 Family \(Safety\)](#)
 - [XC2200 Family \(Body\)](#)
 - [TriCore® Architecture & Core](#)
 - [Archive of Discontinued Products \(Technical Documentation only\)](#)
 - [TriCore® Development Tools and Software](#)
 - [XC2000 Development Tools and Software](#)
- 16-Bit Microcontrollers
 - [Overview](#)
 - [XE166 Family \(Industrial\)](#)
 - [XC2700 Family \(Powertrain\)](#)
 - [XC2300 Family \(Safety\)](#)
- 8-Bit Microcontrollers
 - [Overview](#)
 - [C500 Family](#)
 - [XC800 I-Series \(Industrial & Multimarket\)](#)
 - [XC800 A-Series \(Automotive\)](#)
- Transmitter + Microcontroller
 - [Overview](#)
 - [SmartLEWIS MCU - Development Tooling](#)
- [XC2200 Family \(Body\)](#)
- [XC166 Family](#)
- [C166® Family](#)
- [C166® Architecture & Core](#)

Infineon



HITACHI
Semiconductor

RENESAS
Everywhere you imagine.

Renesas

Low Power

R8C 16-bit

Super Low Power 16-bit 8-bit

Price/Performance Value

RX 32-bit

R32C / M16C 32-bit 16-bit

H8SX 32-bit

H8S 16-bit

Higher Performance

Super H 32-bit

Development Tools / Alliance Partners

SH-Mobile

USB Device

- Automotive
- Home Appliance / Audio Visual
- Networking / Wireless

- Motor Control

- Industrial (UPS, Meter)
- Office Equipment / PC
- PLC MCU

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Producenci mikrokontrolerów z rodziny 8051/8052

- Actel Corporation
- Analog Devices
- ASIX Electronics
- Atmel
- CAST
- Digital Core Design
- Infineon
- Maxim (Dallas Semiconductor)
- NXP (dawniej Philips)
- Silicon Storage Tech., Inc.
- Silicon Laboratories (Cygnal Integrated Products)
- SST
- STMicroelectronics
- Teridian Semiconductor
- SMC
- Texas Instruments
- Ramtron

Procesory ARM

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MARKETS | PRODUCTS & SOLUTIONS | CONNECTED COMMUNITY | TECHNICAL SUPPORT | DOCUMENTATION

PRESS ROOM

ARM | IN THE NEWS | INVESTORS

15 Jan 2010 / ARM Congratulates Partners On A Successful CES™

06 Jan 2010 / ZILABS And ARM Showcase Next-Generation 1080p Blu-Ray Quality Connected HDTV Home Entertainment™

05 Jan 2010 / NXP To Show The First Fully Integrated 45nm Set Top Box SoC Based On ARM Cortex-A9 Processors™

Processor Architecture

All least 50 ARM processors are shipped every second – more than any other 32-bit processor IP supplier. ARM licenses its technology to more than 200 world-leading semiconductor companies.

- Application processors
- Embedded processors
- Graphics processors
- Video engines
- Smart card and secure IC processors
- Debug & trace, fabric and peripheral IP
- Security solutions
- Operating system support
- DesignStart

Multimedia

ARM and its Partners provide a range of graphics, audio and video solutions that enable multimedia applications on a wide range of current and upcoming consumer, wireless, automotive and enterprise devices.

- Accelerated media processing
- Jazelle Java execution environment
- Audio solutions
- Video solutions

ARM Powered Products

Palm Pre

Physical IP

SoC designers produced over 2000 designs with ARM Physical IP in 2008. Physical IP is used to construct the processor core and surrounding functional blocks. ARM provides silicon-proven IP for CMOS and SOI processes. The product portfolio includes an extensive set of EDA views with the widest available foundry and process choices.

- DesignStart
- Logic Libraries
- Memory Solutions
- Memory Test and Repair
- Interface Libraries
- High Speed Interface
- SOI (Silicon On Insulator) Physical IP

Development Tools

Every day thousands of developers leverage ARM® tools to design complex "system-on-chip" (SoC) solutions, develop software and embedded solutions, and build ARM Powered® devices.

Working with ARM

With over 200 processor licensees, 2,500 individual company users of ARM physical IP and 50,000 users of ARM development tools, ARM has highly adaptable business models with a range of entry points for all potential customers.

- IP Licensing models
- Development kits and software

ARM Partners

The ARM Connected Community is the broadest coalition of partner companies and most comprehensive ecosystem in the industry. The members include EDA vendors that provide flows to enable ARM IP within semiconductor foundry processes, software OS and IC design tools vendors that provide extended functionality, and downstream partners such as game developers and electronics distributors that are helping create the demand for ARM Powered products. IQ magazine illustrates the smart approach to designing with the ARM architecture.

ARM Services

ARM Services provide many ways to get technical assistance for ARM design work, either directly from ARM or from one of our qualified service partners.

- Support and Maintenance
- Training
- Active Assist On-Site Services
- ARM Service Partners
- Documentation, Downloads and FAQs
- ARM Technical Forum
- Kel Technical Forum

Markets

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Liczba licencji na procesory ARM

(stan na 01.2010)

Rodzina procesorów Liczba licencji

– Cortex™	69
– ARM11™	72
– ARM9™	253
– ARM7™	171

Producenci wykorzystujący rdzeń ARM7

Procesor typu ARM7 obejmuje następujące rodziny procesorów:

- ARM7TDMI
- ARM7TDMI-S
- ARM7EJ-S

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Producenci wykorzystujący rdzeń ARM7

(stan na 01.2010)

[Accent](#)

[AMI Semiconductor](#)

[Analog Devices Inc.](#)

[Atmel Corporation](#)

[Broadcom Corporation](#)

[Canadian Micro Corporation](#)

[Chartered Semiconductor](#)

[Cirrus Logic](#)

[Conexant Systems Inc.](#)

[Dialog Semiconductor](#)

[DSPG](#)

[eSilicon Corporation](#)

[Flextronics](#)

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[Shanghai Intergrated Circuit Research](#)

[Center \(ICC\)](#)

[Sharp](#)

[Shenzhen State Microelectronics \(SMIT\)](#)

[SiRF Technology](#)

[Silicon Integrated Systems Corp.](#)

[Skyworks](#)

[SMIC Corporation](#)

[Socle Technology Corp](#)

[Sony](#)

[Spreadtrum Communications Inc.](#)

[STMicroelectronics](#)

[Texas Instruments](#)

[Toshiba](#)

[UMC](#)

[Verisilicon](#)

[Via Telecom/Via Technology](#)

[Winbond Electronics Corp.](#)

[Xi'an Huaxun](#)

[Yamaha Corporation](#)

[Zarlink Semiconductor](#)

[Zoran Corporation](#)

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Producenci wykorzystujący rdzeń ARM9 (stan na 01.2010)

Procesor typu ARM9 i ARM9E obejmuje następujące rodziny procesorów:

- ARM922T
- ARM946E-S
- ARM968E-S
- ARM926EJ-S

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Producenci wykorzystujący rdzeń ARM9 (stan na 01.2010)

[Accent](#)
[Alchip](#)
[Alereon](#)
[Altera](#)
[AMI Semiconductor](#)
[Analog Devices Inc.](#)
[Anyka](#)
[ARCA](#)
[Atheros Communications](#)
[Atmel Corporation](#)
[Austriamicrosystems](#)
[Avago Technologies](#)
[Broadcom Corporation](#)
[Cambridge Silicon Radio](#)
[Centrality Communications](#)
[Chartered Semiconductor](#)
[Chongqing Chongyou IT](#)
[Cirrus Logic](#)
[Conexant Systems Inc.](#)
[Datang Microelectronics Technology](#)
[eSilicon Corporation](#)
[Faraday Tech](#)
[Focus Enhancements](#)
[Freescale Semiconductor](#)
[Fujitsu](#)
[GCT Semiconductor](#)
[Global Unichip Corporation](#)
[Huawei Technologies](#)
[ICP](#)

[Infineon Technologies AG](#)
[Kawasaki Microelectronics](#)
[Key ASIC](#)
[LSI Logic](#)
[Marvell Semiconductor](#)
[Matsushita Electric Industrial](#)
[Micrel](#)
[Mindspeed Technologies Inc.](#)
[Moschip Semiconductor](#)
[Mtelevision](#)
[National Chip Implementation Center](#)
[NEC Electronics](#)
[Neo Magic Corporation](#)
[NuCore Technology](#)
[NXP](#)
[OKI](#)
[Parrot](#)
[Pixim](#)
[PulseLink](#)
[Qualcomm](#)
[Renesas Technology](#)
[RF Micro Devices](#)
[Rohm](#)
[Samsung Electronics](#)
[Sandbridge](#)
[Shanghai Jade Technologies](#)
[Shanghai Jiao Tong Uni](#)
[Shanghai Intergrated Circuit Research Center \(ICC\)](#)

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[Zoran Corporation](#)

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Producenci wykorzystujący rdzeń ARM11 (stan na 01.2010)

Rodzina procesora	Firma
ARM1136J(F)-S	Accent , Broadcom Corporation , Ceroma, eSilicon Corporation , Freescale Semiconductor , LSI Logic , Matsushita, Mindspeed, NEC Electronics , Qualcomm, Renesas , STMicroelectronics , Texas Instruments , Toshiba
ARM1156T2(F)-S	Comsys, LSI Logic , NEC Electronics
ARM1176JZ(F)-S	Broadcom Corporation , Infineon Technologies AG , Matsushita, NEC Electronics , NXP , Renesas , Sunplus, Texas Instruments , Toshiba
ARM11 MPCore	Intel Corporation , NEC Electronics , Netronome, nVIDIA , PMC Sierra, Renesas , Sarnoff

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Producenci wykorzystujący rdzeń ARM Cortex (stan na 01.2010)

Rodzina procesorów	Liczba licencji	Firma
Cortex-A9	9	NEC Electronics , nVIDIA , STMicroelectronics , Texas Instruments , Toshiba , Mindspeed Technologies
Cortex-A8	9	Broadcom Corporation , Freescale Semiconductor , Matsushita, Samsung Electronics , STMicroelectronics , Texas Instruments , PMC-Sierra
Cortex-R4(F)	14	Broadcom Corporation , Texas Instruments , Toshiba
Cortex-M3	29	Accent Srl , Actel Corporation , Broadcom Corporation , Ember, Energy Micro , Fujitsu, Luminary Micro , NXP , Fuzhou Rockchip Electronics CO., Ltd. , STMicroelectronics , Texas Instruments , Toshiba , Zilog ,
Cortex-M0	5	NXP , Triad Semiconductor , Melfas

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Intel

Desktop processors

- [Intel® Core™ i7 processor](#)
- [Intel® Core™ i5 processor](#)
- [Intel® Core™ i3 processor](#)
- [Intel® Core™ i7 vPro™ processor](#)
- [Intel® Core™ i5 vPro™ processor](#)
- [Intel® Pentium® processor](#)
- [Intel® Celeron® processor](#)



Intel

Laptop processors

- [Intel® Core™ i7 mobile processor](#)
- [Intel® Core™ i5 mobile processor](#)
- [Intel® Core™ i3 mobile processor](#)
- [Intel® Core™ i7 vPro™ processor](#)
- [Intel® Core™ i5 vPro™ processor](#)
- [Intel® Celeron® processor](#)



Intel

Server and workstation processors

- [Intel® server processors](#)
- [Intel® workstation processors](#)

Internet device processors

- [Intel® Atom™ processor](#)

Embedded and communications processors

- [Intel® Architecture Processors](#)
- [Intel® Network Infrastructure Processors](#)
- [Intel® I/O processors](#)

Intel - obecnie nie produkowane mikrokontrolery

8-bitowe

- rodzina 8051/8052

16-bitowe

- 80C251 (16-bitowa wersja 8051)
- 80C96
- 80C196
- 80C296

Mikroprocesory firmy Intel - obecnie nie produkowane

Chip	Date	MHz	Transistors	Memory	Notes
4004	4/1971	0.108	2,300	640	First microprocessor on a chip
8008	4/1972	0.108	3,500	16KB	First 8-bit processor
8080	4/1974	2-3	6,000	64KB	First general-purpose CPU on a chip
8085	4/1976	3-8	6,500	64KB	
8086	6/1978	5-10	29,000	1MB	First 16-bit CPU on a chip
8088	6/1979	5-8	29,000	1MB	Used in IBM PC
80286	2/1982	8-12	134,000	16MB	Memory protection present
80386	10/1985	16-33	275,000	4GB	First 32-bit CPU
80486	4/1989	25-100	1.2M	4GB	Built-in 8K cache memory
Pentium	3/1993	60-233	3.1M	4GB	Two pipelines; later models had MMX
Pentium Pro	3/1995	150-200	5.5M	4GB	Two levels of cache built in
Pentium II	5/1997	233-400	7.5M	4GB	Pentium Pro plus MMX
Pentium III	1998	550	9.5M		Streaming SIMD extensions (SSE)

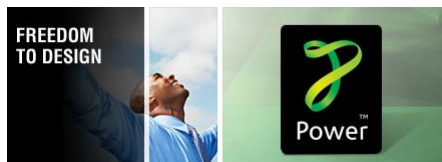
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IBM

- PowerPC®, POWER4™, POWER5™ and POWER6™
- PowerPC 4XX embedded cores
- PowerPC 7XX and 6XX Microprocessors
- PowerPC 9XX Microprocessors



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STMicroelectronics 

STMicroelectronics

STM8 - 8-bit MCUs

- [STM8A - 8-bit MCUs for Automotive](#)
- [STM8L - 8-bit ultra-low-power MCUs](#)
- [STM8S - 8-bit MCUs](#)

STM32 32-bit ARM Cortex MCUs

- [STM32F - 32-bit ARM Cortex MCUs](#)
- [STM32W - 32-bit ARM Cortex RF MCUs](#)

STMTouch - Touch Sensing MCUs

- [Resistive multi-touch screen microcontrollers](#)
- [Touch sensing library MCUs](#)

Established MCUs

- [ST6 - 8-bit MCUs](#)
- [ST7 - 8-bit MCUs](#)
- [ST10 - 16-bit MCUs](#)
- [STR7 - 32-bit ARM7 MCUs](#)
- [STR9 - 32-bit ARM9 MCUs](#)

Ultra-low-power MCUs

- [STM8L - 8-bit ultra-low-power MCUs](#)

RF MCUs

- [STM32W - 32-bit ARM Cortex RF MCUs](#)

Microcontrollers for automotive

- [8-bit Microcontrollers for automotive](#)
- [16-bit Microcontrollers for automotive](#)
- [32-bit Microcontrollers for automotive](#)

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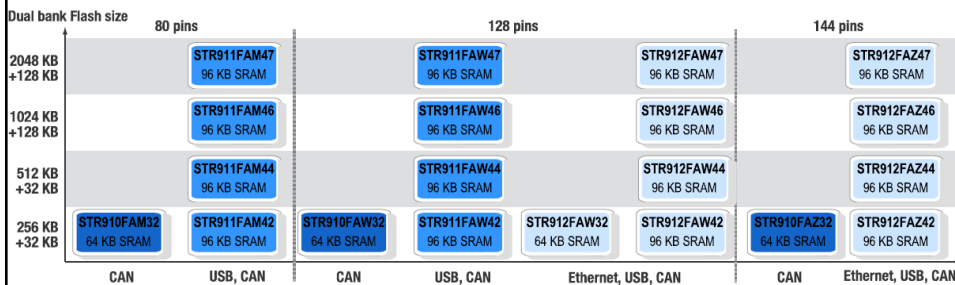
Rodzina ST7

Model	Pins	Flash (KB)
ST7Fox	8-32	2-8
ST7Lite	8-20	1-8
ST7226x	32-64	4-8
ST7232x	32-64	8-60
ST7234x/6x	32-48	8-16
ST7236x	32-64	32-60
ST7LNBx	16	1.5
ST78CR	24-44	16
ST7GEM	24-44	16
ST7263B	24-48	16-32
ST7260 + ST7260	24-48	4-8
ST7265x	48-64	16-32
ST7267	48-64	64
ST7268x	48-64	48
STM0x	32-68	8-60
ST7256x	144	16-60

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STMicroelectronics – STR9

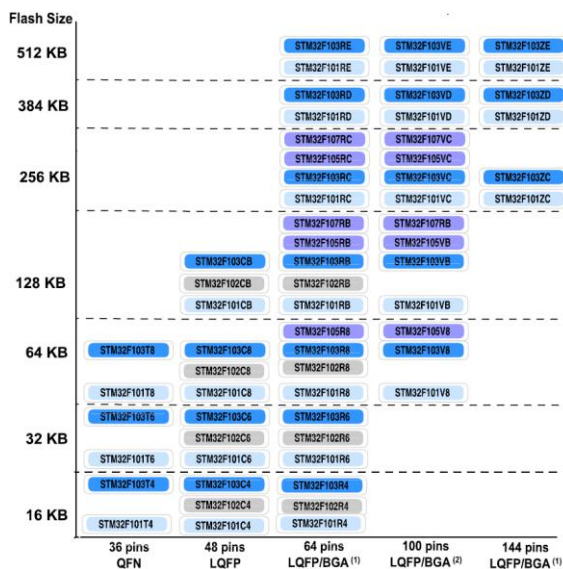
96MHz ARM966E-S CPU core with single-cycle DSP instructions and independent internal 32-bit buses



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STM32F - 32-bit ARM Cortex MCUs



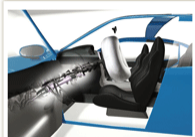
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Oferta STM – technika motoryzacyjna



SPC563M - 32-bit microcontrollers for powertrain systems



SPC560P, SPC56EL - 32-bit microcontrollers for chassis and safety

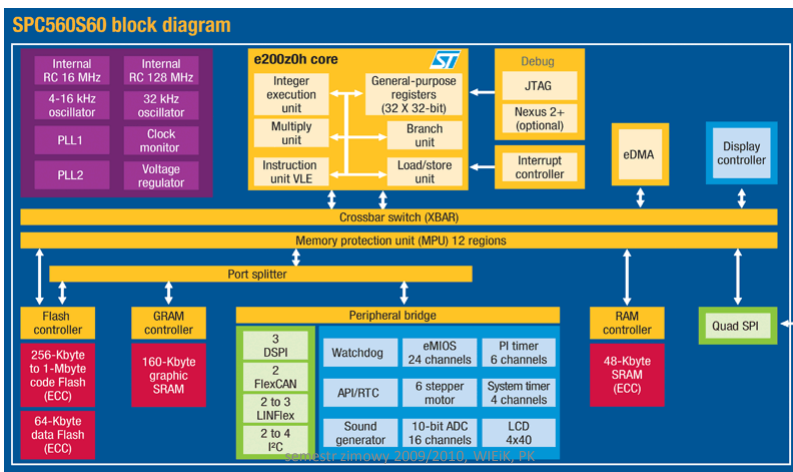


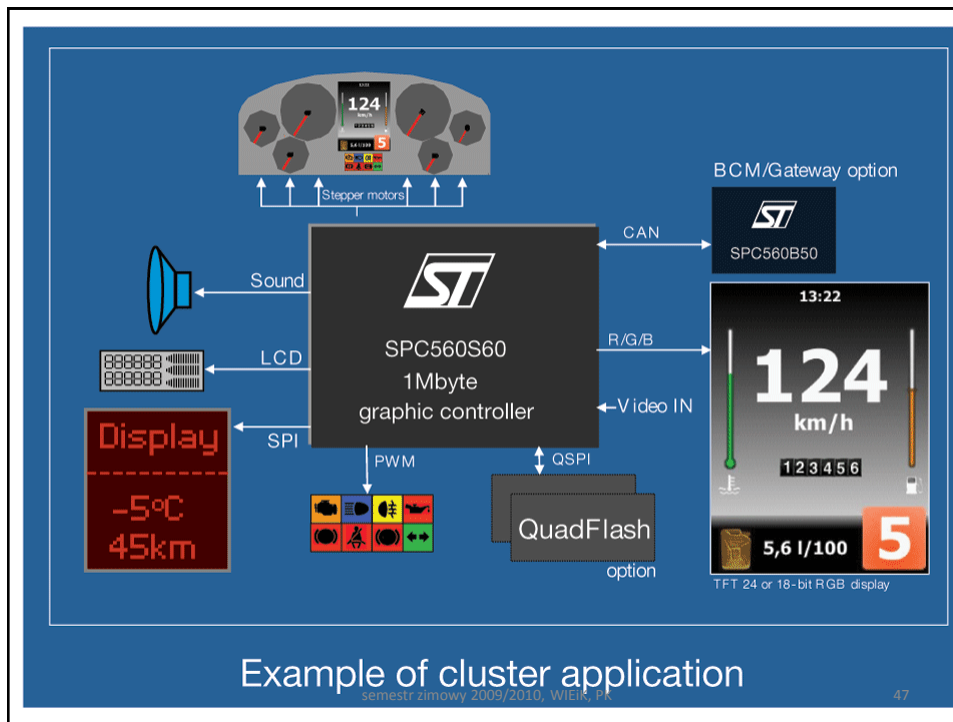
SPC56xB/C/D – 32-bit microcontrollers for car body and convenience



SPC56xS – 32-bit microcontrollers for clusters and dashboards

SPC56xS – 32-bit microcontrollers for clusters and dashboards (technika motoryzacyjna)





NXP Semiconductor

(dawniej Philips)

Rodziny mikrokontrolerów produkowanych przez NXP

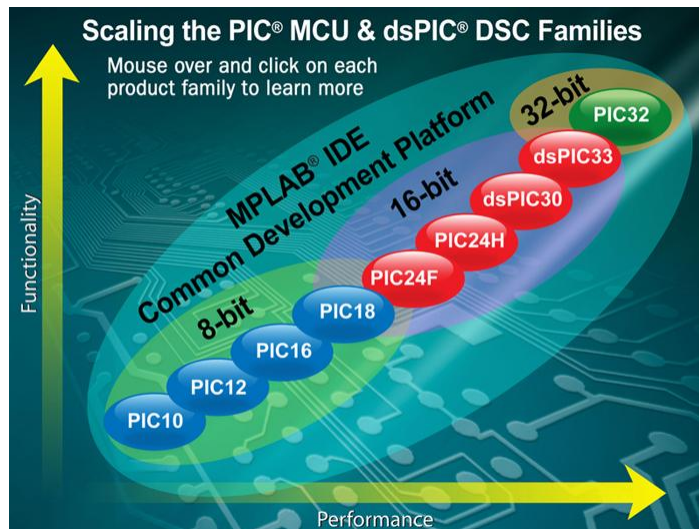
Rodzina procesorów	Liczba pozycji (stan na 01.2010)
Cortex-M3 (32-bit)	9
Cortex-M0 (32-bit)	
ARM7 (32-bit)	70
ARM9 (32-bit)	21
80C51 (8-bit)	210
XA (16-bit 8051)	13





A Leading Provider of Microcontrollers & Analog Semiconductors

Microchip



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Texas Instruments

- ARM® Cortex™-A8, Cortex™-M3, and ARM9™
- DSP C5000
- DSP C6000
- DSC C2000
- MSP430

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TI- ARM



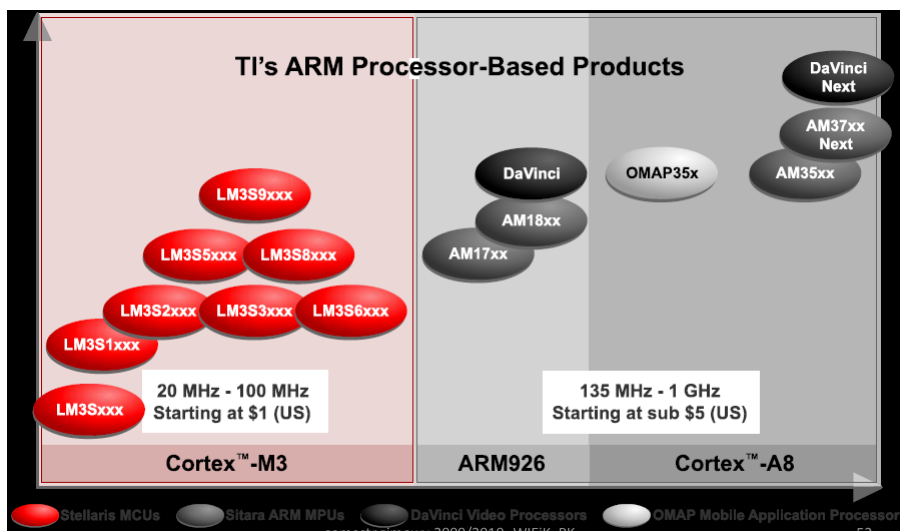
ARM® Cortex™-A8, Cortex™-M3, and ARM9™ family cores

- [Stellaris - 20 MHz - 100 MHz Starting at \\$1.00 \(USD\)](#)
 - [Cortex-M3](#)
- [Sitara - 375 MHz - 1 GHz Starting at sub \\$5.00 \(USD\)](#)
 - ARM926
 - Cortex-A8

- Stellaris® Cortex-M3™ microcontrollers (MCU),
- Sitara devices in the ARM9™ family
- Cortex-A8 processor-based microprocessors (MPUs).
- ARM9 family based DaVinci video processors
- OMAP devices featuring Cortex-A8 processors.



TI- ARM

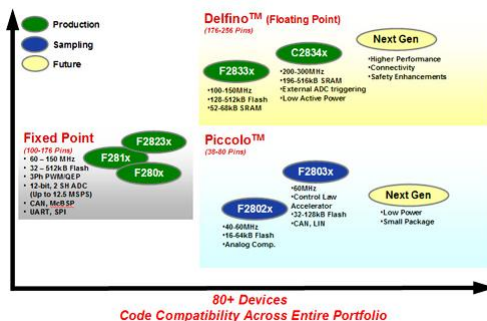


TI- DSP

Digital Signal Processors (174)

- [C5000™ Low Power DSPs \(38\)](#)
 - [TMS320C55x Low Power DSPs \(15\)](#)
 - [TMS320C54x Low Power DSPs \(23\)](#)
- [C6000™ Fixed-point DSPs \(61\)](#)
 - [TMS320C647x Multicore DSPs \(5\)](#)
 - [TMS320C645x DSPs \(10\)](#)
 - [TMS320C642x DSPs \(8\)](#)
 - [TMS320C641x DSPs \(29\)](#)
 - [TMS320C62x DSPs \(9\)](#)
- [C6000™ Floating/Fixed-point DSPs \(30\)](#)
 - [TMS320C674x Low Power DSPs \(9\)](#)
 - [TMS320C672x DSPs \(11\)](#)
 - [TMS320C67x DSPs \(10\)](#)
- [DaVinci™ Video Processors \(45\)](#)
 - [TMS320DM646x SOCs \(3\)](#)
 - [TMS320DM644x SOCs \(5\)](#)
 - [TMS320DM643x DSPs \(13\)](#)
 - [TMS320DM64x DSPs \(15\)](#)
 - [TMS320DM3x ARM9™ Based SOCs \(9\)](#)

C2000 MCUs for Real-time Control



MSP430™ 16-bit Ultra-Low Power MCUs



Key Features Hardware Ultra-low-power architecture and flexible clock system extends battery life, as low as:

- 0.1 μ A RAM retention
- .7 μ A RTC mode
- 165 μ A/MIPS

Integrated intelligent peripherals including wide range of high-performance analog and digital peripherals offload the CPU

16-bit RISC CPU architecture enables new applications with industry-leading code density

Easy to get started:

Complete development tools starting at only \$20

Integrated Peripherals

- 10-/12-bit SAR ADC
- 16-bit Sigma Delta ADC
- 12-bit DAC
- Comparator
- LCD driver
- Supply Voltage Supervisor (SVS)

- Operational amplifiers
- 16-bit and 8-bit timers
- LDO/PMM
- RF
- Watchdog timer
- UART/LIN
- I2C
- SPI
- IrDA
- USB
- Hardware multiplier
- DMA controller
- Temperature sensor
- Real-Time Clock

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Freescale Semiconductor (Motorola)



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Freescale - 8-bit Microcontrollers

8-bit Microcontrollers by Family

- [RS08 Microcontrollers](#)
- [HCS08 Microcontrollers](#)
- [HC08 Microcontrollers](#)
- [Embedded MCU plus Power](#)
- [HC05 Microcontrollers \(Legacy\)](#)
- [HC11 Microcontrollers \(Legacy\)](#)

Freescale - 16-bit Microcontrollers

- [S12 and S12X Microcontrollers](#)
- [HC16 Microcontrollers](#)
- [56800/E Digital Signal Controllers](#)
 - [DSP5685x](#)
 - [DSP56F80x](#)
 - [DSP56F82x](#)
 - [MC56F81xx](#)
 - [MC56F83xx](#)
 - [MC56F80xx](#)

Freescle - 68K/ColdFire family

- **ColdFire Microprocessors**
 - V4 Embedded MPU
 - V3 Embedded MPU
 - V2 Embedded MPU
 - V2 MCU
 - V1 MCU
- **68K Microprocessors**
 - M683XX MPU
 - M680X0 MPU
- 68K/ColdFire Peripherals

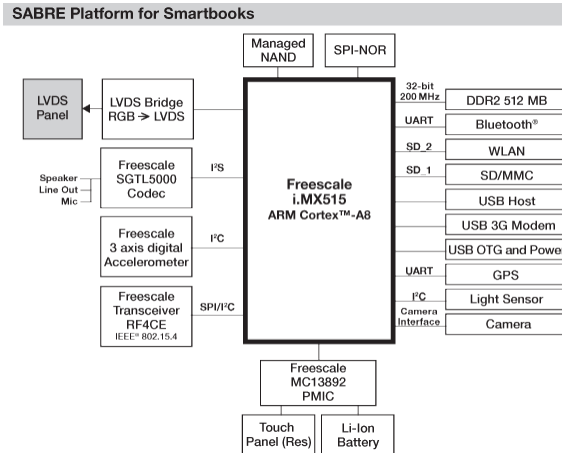
Freescle - i.MX Processors (ARM)

- [i.MX21 Processors](#)
- [i.MX23 Processors](#)
- [i.MX25 Processors](#)
- [i.MX27 Processors](#)
- [i.MX31 Processors](#)
- [i.MX35 Processors](#)
- [i.MX37 Processors](#)
- [i.MX51 Processors](#)
- [i.MXS Processors](#)

The i.MX applications processor family includes processors based on:

- ARM9,
- ARM11 ,
- ARM™ Cortex-A8 core technologies

i.MX51 Processors



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Freescal – 32-bit Power Architecture Processors

- PowerQUICC Communications Processors
- QorIQ Communications Platforms by Family
- Host and Integrated Host Processors (8xxx, 7xxx, 7xx, 6xx)
- Power Architecture Controllers (5xx/5xxx)
- single-, dual- and multicore processors built on Power Architecture technology.

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Freescle – DSP i DSC

- **Digital Signal Processors by Family**
 - 16-Bit StarCore-Based DSPs
 - 24-Bit General Purpose DSPs
- **Digital Signal Controllers by Family**
 - DSP5685x
 - DSP56F80x
 - DSP56F82x
 - MC56F81xx
 - MC56F83xx
 - MC56F80xx