The Embedded Newsletter

KINETIS

The Kinetis family is Freescales latest range of ARM Cortex based microcontrollers with over 600 member to suite a wide range of requirements.

K Series based on Cortex-M4 core clocked at 50 to 180 Mhz with 32 KB – 2MB of flash and up to 256 KB SRAM. The minimum chip has 32 pins, 128 KB flash, 16KB SRAM as well as the usual UART(s), PWM(s), it has 26 bits of GPIO, ADC(s), DAC(s), SPI and I2C bus interfaces. @ 100 off it sells at £1.56. Variants are available with CAN bus(s), USB, Touch sensors, LCD controllers, MPU as well as Ethernet with hardware encryption and enhanced low power modes. See over for a plan of the core.

L Series Cortex-M0 offer low power variants with many of the same options as the K series.

E Series Cortex-M0 are robust 5V tolerant versions with enhanced noise features.

EA Series Cortex-M0 are targeted at automotive applications.

V Series Cortex-M0 and M4 are for Motor Control with high speed/precision analogue and timing as well as Maths accelerator hardware.

M Series Cortex-M0 targeted at Metering and measuring applications they have multiple 24-bit Sigma Delta ADCs as well as security and LCD support.

W series Cortex-M0 and M4 are optimised for wireless applications with on chip transmitters and cryptography while still providing many of the rich I/O features described for the K series.

A Cortex M7 based member of the family is promised for those who need the extra processing power
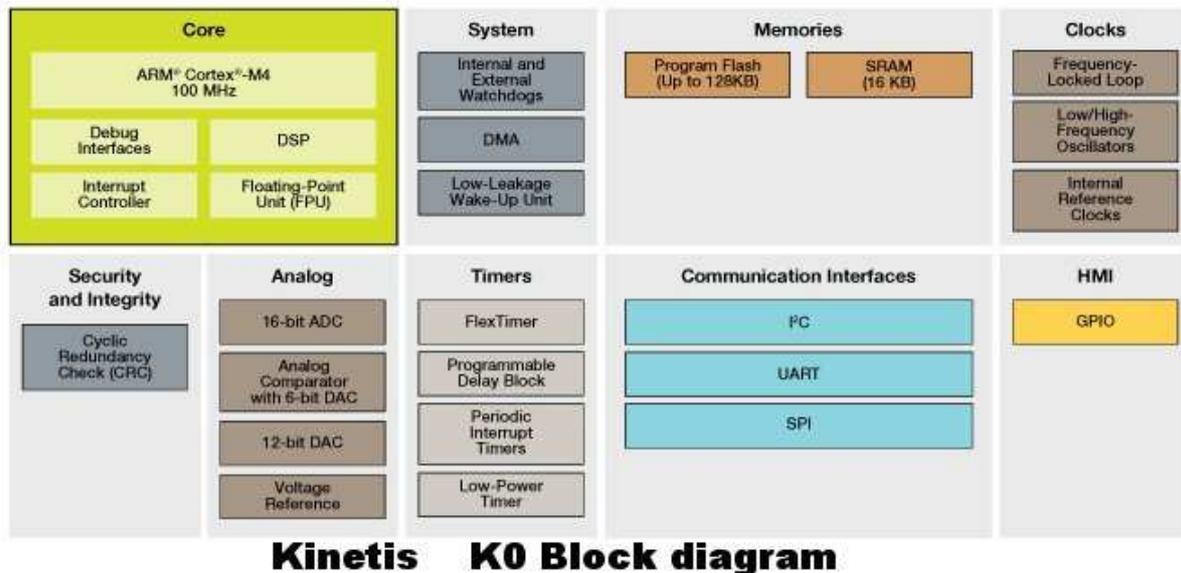
Development tools

And the good news is that they all have on-chip debugging interfaces using JTAG or SWD interfaces. The other good news is that P&E fully support debugging and Flash programming all the members of the Kinetis Family. Their Universal USB Interface (£130.00) and Universal FX (twice the price but 5 times faster download speed) will work with a wide range of development environments including the following:-

Freescale CodeWarrior 10.6, IAR Embedded Workbench, Keil μVision, Cosmic IDE & ZAP all have built in support for Multilink Universal & FX as well as Cyclone Max for both Debugging and flash Programming.

KDS Kinetis Design Studio, Atollic True STUDIO   use the free P&E Kinetis GDB server to support Multilink Universal & FX as well as Cyclone Max for both Debugging and flash Programming.

See over for more details of production tools for Kinetis and other Cortex microcontroller ranges

Kinetis K0 Block diagram

Production Flash Programming

No need to buy a complete development seat for production - the Universal or Universal FX along with the PROGACMP software package gives all you need for a low volume Kinetis flash programmer which will also work with a range of other Cortex devices

The Cyclone Range of Flash programmers.....

Recommended for high volume production applications

Cyclone Max as well as programming Kinetis® flash it will also program ColdFire® V2-4, Qorivva® 55xx/56xx/57xx ranges and PPC5xx/8xx plus it can be used for development of the Kinetis.

Cyclone for ARM® Cortex programs Kinetis, STM32, NXP, TI/Stellaris

Cyclone STM programs STM32, STM8, PC56

These all provide the following features

- Interactive programming packages are provided for each of the CPUs supported by the Cyclone for on chip or off chip memory, including memory on SPI.

- Or you can link the unit to a PC, download multiple target programs to the Cyclones memory and then disconnecting it from the PC when it becomes a manually controlled, standalone flash programmer.

- Or the cyclones can be driven by a PC via the Ethernet, USB or Serial port by automated commands either using command line instructions or from a C program using a dll provided.

- For the Cyclone Max if using CodeWarrior or a number of other leading C compilers support for code debugging is integrated into the C Debugging environment.

A Software Development Kit is available that allows multiple Cyclones to be driven by a single CPU for economical operation in large production environments and an SD card can provide additional storage on the Cyclone if required.

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