9.16 MOBILE AND TABLET PROCESSORS

The craze of Mobile devices and tablets is fast growing among the users with various manufacturers competing in the market like Apple, Samsung, Sony etc. The type and speed of a processor can make a huge difference in the overall functionality of these devices. Some of the processors discussed earlier like Intel i3, i5, i7, Atom, AMD Phenom/ Athlon/Turion are used as mobile processors.

Let us discuss more about the processors used in these devices.

ARM Processors

Current tablet PCs are dominated by a processor architecture that was produced by ARM. The company designs the basic processor architecture and then licenses the designs to other companies that can produce them. As a result, similar ARM based processors are manufactured by a wide range of manufacturers.

The most dominant of the ARM processor designs to be used within tablet PCs is based on the Cortex-A. This series is comprised of four different designs that vary in their performance and features. List of the four models are:

- Cortex A5
- Cortex A8
- Cortex A9
- Cortex A15

As mentioned, this is the basis for the ARM based processors. Each manufacturer can make some small changes to the design but performance will be very similar between products within the same base design. For example, Apple's A5 and NVIDIA's Tegra 2 which are based on the Cortex-A9 with dual cores and 1GHz clock speeds will have very comparable base speed. The actual speeds can differ on parameters like the amount of memory, the operating system on each platform and the other hardware such as the graphics processor. However, if one processor is based on the Cortex-A8 while another is the Cortex-A9, the higher model will typically offer better performance at similar speeds.

x86 Processors

The primary market for x86 based processor are tablet PCs that run the Windows operating system. This is due to the fact that the existing versions of Windows are written for this type of architecture.

The two major suppliers of x86 processors are AMD and Intel. Intel offers a wide range of Atom processors but the most common series to be use for tablets is the Z series because of its lower power consumption and reduced heat generation.

New energy efficient Core i series processors based on the ultra low voltage are used in ultraportable laptop. They offer a similar level of performance but are not as compact as the Atom based processors.

AMD also offers several processors that could be used in tablet PCs that are based on new Fusion architecture. Two series of Fusion processors in the market are C and E series. The C series equates more to the Intel Atom Z series of processors in terms of performance while the E series is closer to the lower end to the Intel Core i ULV processors. List of x86 processors is given below:

- Intel Atom Z Series
- AMD Fusion C Series
- Intel Atom N Series
- AMD Fusion E Series
- Intel Core i3 ULV Series
- Intel Core i5 ULV Series

As the performance of x86 processor increases, the consumption of power also increases. As a result, the tablet will have a shorter battery life due to increased power consumption.

OMAP Processors

OMAP developed by Texas Instruments is a category of proprietary system on chips (SoCs) for portable and mobile multimedia applications. OMAP devices generally include a general-purpose ARM architecture processor core plus one or more specialized co-processors. Galaxy Nexus is an example of a smartphone using OMAP.

Nvidia Tegra

Tegra, developed by Nvidia, is a system on a chip (SoCs) series for mobile devices such as smartphones, personal digital assistants (PDA), and mobile Internet devices. The series emphasizes low power consumption and high performance for playing audio and video.

NVIDIA Tegra2 dual-core and Tegra3 quad-core processors deliver unprecedented performance in a wide range of mobile devices. Both of them integrate ARM Cortex-A9 CPU. The various models of Tegra 2 were available in the market from 2010. The devices using different models of Tgra 2 are: LG optimus 2X, Samsung Galaxy R, Toshiba AC100, Lenovo IdeaPad Tablet K1, Lenovo ThinkPad Tablet, Dell Streak Pro, Sony Tablet S etc.

Qualcomm's Snapdragon

Snapdragon is a family of mobile system on chips (SoC) by Qualcomm. Snapdragon is used as a "platform" in smartphones, tablets, and smartbook devices.

The original Snapdragon CPU 'Scorpion' having features similar to ARM Cortex-A8 is Qualcomm's own design. The successor to Scorpion named 'Krait' found in S4 Snapdragon and has many similarities with the ARM Cortex-A15 CPU. The snapdragon is available in various series like S1, S2, S3, S4 and S5. Snapdragon series are found in devices like Samsung Galaxy Ace Plus, Nokia Lumia 610, HTC Explorer, LG Optimus L3, HTC Desire Z, BlackBerry Bold 9900/9930 to name a few.