外文资料与中文翻译

外文资料：

1 microcontroller features of the development of technology

SCM has been there since, SCM technology has gone through nearly 20 years of development journey. Throughout the past 20 years of SCM Exhibition history we can see that the SCM technology to the development of the microprocessor (MPU) technology and ultra-large-scale integrated circuit technology for the Exhibition for the pilot to pull a wide range of applications, showing more personality than the microprocessor trend of development：

SCM long life here said the long-life, on the one hand refers to the development of SCM products can be stable and reliable work 10, 20, on the other hand refers to the microprocessor compared to the long life. With the rapid development of semiconductor technology, MPU replacement faster, to 386,486,586 as the representative of the MPU, within a very short time to be out of Bureau, and the traditional microcontroller as 68 HC05, 8051, and so has been 15 years of age, the output is still rising. This is from Its application to the corresponding areas of adaptation, on the other hand is due to such CPU as the core, integrated with more I / O functions SCM module of the new series emerging. It is expected that the successful listing of the relatively young core CPU, also with the The I / O modules of the rich, have a long life cycle. New types of joining the CPU, the SCM team Has grown to the user brings more choice.

8, 16, 32-bit microcontroller common development this is the current SCM technology development trends of the other. For a long time, single - Machine

technology is the development of eight-oriented. As mobile communication, network technology, multimedia technology, and other high-tech products Access to family, 32-bit microcontroller applications have been developed by leaps and bounds. Motorola 68K for the CPU to the 32 of the 97 SCM　August sales of 10 million. That because of the past eight SCM function is growing, more and cheaper 32-bit machine, 16 SCM living space is limited, and 16-bit microcontrollers from the development of both varieties and production, in recent years have substantially more。

　　Of growth. SCM faster development in the MPU demonstrated by the faster clock frequency is increasing as the hallmark。The. The SCM is different, to enhance SCM anti-disturbance capacity, lower noise and lower clock frequency without sacrifice SCM offerings computing speed is the pursuit of technological development.8051 MCU with some manufacturers to improve the internal when the MCU Sequence, without raising the clock frequency of conditions, to raise a lot faster, Motorola MCU is used Suo Ring of technology or internal frequency technology to the internal bus speed significantly higher than the frequency of the clock generator. 68HC08 microcontroller to 4.9 M with external and internal clock oscillator of 32 M, and 32-bit microcontroller series M68K the use of 32 K external oscillator frequencies Up to 16 MHz internal clock above.

Low-voltage and low power consumption since the mid-1980s, NMOS technology SCM gradually replace the CMOS process, the power to　Dropped substantially, with the ultra-large-scale integrated circuit technology from 3 μ m of development to 1. 5, 1. 2, 0. 8, 0. 5, 0. 35，And the realization of nearly 0.2 μ m technology, all designed so that static clock frequency from DC to several trillion optional, so that power consumption declining Motorola recently introduced optional M. CORE in the 1.8 V

voltage to 50 M/48MIPS work at full speed, power is about 20mW. Almost all the SCM has Wait, Stop, and other power-saving operation mode. Allowing the use of the power supply voltage range Increasingly wide. General SCM can be three to 6 V work within the framework of the battery-powered SCM is no longer the need for power - Regulators take measures. SCM low-voltage power supply has been lower limit of 2.7 V to 2.2 V, 1.8V. The single 0.9V power supply Machine has come out.

Low noise and high technology to improve the reliability of the system MCU-electromagnetic interference ability, so that products can adapt to the adverse For the environment, to meet higher standards of electromagnetic compatibility requirements, the SCM businessmen in the internal circuits to SCM A number of new technical measures. NS such as National Semiconductor's internal COP8 SCM increased anti-EMI circuit, and strengthened

also introduced a low-noise LN series of SCM.

OTP and mask OTP is a one-time written into the SCM. SCM past that a product is put into operation mask of maturity As the hallmark of the SCM. As we need to mask the production cycle, while OTP-decline Singlechip prices, making In recent years the use of direct OTP completed the final product manufacturers more popular. It compared to mask a short production cycle, the small risk Characteristics. In recent years, OTP type of microcontroller to be significantly higher, to meet this demand in many microcontroller used in the film Programming (In System Programming). OTP programming of the chip can be technical or die Bonding surface paste Technology, welding in the first printing plate, and then leads through the MCU on the programming line, serial data, such as on-chip clock line Machine programming. Resolved the bulk write OTP chip vulnerable to the chip and into

contact with bad problems. So that the bare OTP Tablets are widely used to reduce the cost of the product. Programming line with the I / O line sharing, not to increase the additional pin microcontroller. Some manufacturers have introduced the SCM no longer mask type, for all the ISP functions of the OTP.

OTP MTP to MTP is the challenge for multiple programming mean. Some manufacturers to SCM MTP performance, OTP price launched The SCM, such as ATMEL AVR microcontroller, on-chip using FLASH, for multiple programming. Winbond's production company and 8051-compatible microcontroller also adopted the MTP performance, OTP price. These are the use of the ISP SCM technologies, such as installation Printed circuit board at a later time to download.

2 A wide selection of SCM

SCM Motorola Motorola is the world's largest manufacturers of SCM. All varieties, choice, new products Many of its features, there are eight of 68 HC05 and upgrading of products 68 HC08, 68HC05 have more than 30 series, more than 200 Varieties, production has more than 2 billion. 8 enhanced MCU 68 HC11 has more than 30 varieties, 100 million in annual output Upgrading of products are 68 HC12. 16 crew 68 HC16 has over 10 varieties. 32 SCM 683 XX series also There are dozens of varieties. In recent years, PowerPC, Coldfire, M. CORE as the CPU. DSP module will be assisted as Integrated SCM have also launched. SCM is still the first choice for licensing. Motorola is one of the characteristics of SCM Under the same speed used by the clock frequency than Intel category SCM much lower, thus making high-frequency low noise, interference can Resilient, more suitable for industrial areas and poor environment. Motorola 8-bit microcontrollers past the mask is the main strategy Recently introduced OTP plans to adapt to new trends in the development of SCM, in the 32 on board, M. CORE in performance and power

consumption Are better than the ARM7.

Microchip microcontroller   Microship SCM is the fastest growing market share of the SCM. Its main product is 16C Series 8-bit microcontrollers, CPU use RISC architecture, only 33 directives, run faster, and to a low-cost, general SCM prices are below a dollar. Microship SCM not mask products, all OTP devices, Micros hip stressed that the most cost-optimized design, suitable for consumption, low grade, price sensitive products.

Scenix SCM   Scenix MCU I / O modules with new I / O modules of the integrated combination of technology and technology is SCM

An indispensable important aspects. In addition to the traditional I / O modules such as parallel I / O, URT, SPI, I2C, A / D, PWM, PLL, DTMF, the new I / O modules emerging, such as USB, CAN, J1850, is the most representative of Motorola 32-bit microcontroller, which integrates a variety of communication protocols, including the I / O modules, and Scenix SCM in I / O modules Handling of the introduction of the Virtual I / O's new concept. adopted the structure of the RISC CPU, the CPU maximum operating frequency of 50MHz. Computational speed close to 50 MIPS. With a powerful CPU, all I / O functions will be able to use software to simulate SCM adopted 20/28-pin package. Offers a wide range of I / O's library for the realization of I / O modules Function. These software modules including the completion of the multi-channel UART, multi-channel A / D, PWM, SPI, DTMF, FSK, LCD Driver And so on, these are often used together hardware module is quite complex.

NEC MCU   MCU Zichengtiji to 8-bit microcontrollers 78 K series of the highest yield, but also 16, 32 Monolithic Machine. 16 adopt the octave above SCM technology in order to reduce the clock frequency. Some MCU with built-in

operation System. NEC's sales strategy focused on the customer service and invest considerable technical force to help the customers to develop products

Toshiba Toshiba MCU　MCU is characterized by plane from four to 64-wide range. 4 machine in the field of household electrical appliances are still more Big market. Eight major 870-series, 90 series, the MCU allows the use of such slow mode, a 32 K clock When power consumption to 10 μ A number of class. CPU's internal use of multiple registers, making interrupt response and processing more efficient. Toshiba's 32-bit microcontroller using the MIPS 3000A RISC CPU structure, and the VCD, digital cameras, image processing, etc. Market.

Fujitsu Fujitsu　MCU has eight, 16 and 32-bit microcontroller, but eight of the 16 aircraft is the CPU core　This means that eight planes and 16 aircraft used in the same direction, making development more easily. 8-bit microcontrollers are well-known MB8900 series, a 16-MB90 series.Fujitsu's focus on services big companies and big customers, to help the development of large customers Products.

Epson　Epson SCM good at manufacturing company known for liquid crystal displays, the Epson SCM major production for the company Supporting the LCD. SCM is characterized by its LCD driver has done some particularly good. In low-voltage, low power consumption is also very Characteristics. Currently 0.9 V-powered SCM has been listed in the near future, LCD display of watches category SCM will use 0.5 V power supply.

Class of 8051 MCU first introduced by Intel Corporation of the 8051/31 class SCM is the world's largest amount of several single - One of the machine. As Intel Corporation in embedded applications will focus on 186,386, such as the Pentium class PC compatible Development of high-end chip, the 8051 class SCM primarily by Philips, Samsung and Winbond, and other companies Jiechan. These companies

are

While maintaining compatibility with the 8051 microcontroller on the basis of 8051 to improve the lot of (such as timing characteristics). Improve the speed, descending Lower clock frequency, the relaxation of the supply voltage of the dynamic range, lower product prices.

Zilog microcontroller is Zilog Z8 microcontroller company's products, a multi-accumulator structure, have a stronger will interrupt handling OTP-based products, Z8 microcontroller development tools that can be cheap. Z8 microcontroller to low-cost advantage for low -Client applications, mainly to 18-pin package, ROM for the 0.5 ~ 2 K. Zilog companies have also recently introduced the Z86 series of SCM, The series can be integrated within the DSP units cheap.

NS MCU   MCU is COP8 National Semiconductor's products, the company to produce advanced simulation of the circuit Said. Can produce a high level of digital simulation of mixed circuit. COP8 SCM-chip integrated 16-bit A / D, which is in the SCM Rare. COP8 SCM internal use of the anti-EMI circuit, the watchdog circuit in STOP mode and the call SCM Peter methods are unique. In addition, COP8 encryption control procedures also do better.

Samsung   Samsung SCM SCM has KS51 and KS57 series four SCM, KS86 and KS88 series of 8-bit microcontrollers, KS 17 Series 16 SCM and KS32, 32-bit microcontrollers.Samsung MCU OTP-1 SP-programming in. Samsung public Secretary for the production of memory chips, the memory market oversupply situation, to get involved in the competition to participate in SCM. Samsung SCM technology in the developed countries to introduce to digest the technical, production compatible with the product, and then to price Georgia advantage to win. For example, in the four aircraft used on the NEC's technology, eight on board the

introduction of Zilog Z8 technology companies, 32 Plane purchase ARM7 core, DEC technology, Toshiba's technology. SCM die of their very competitive price Winbond　Winbond MCU is a 8051 class SCM, W78 their series with the standard 8051 compatible, W77 Series - Enhanced 51, 8051 the timing was improved.The same clock frequency speed of 2.5 times, FLASH capacity From 4 K to 64 K, a function of ISP. SCM in four areas Winbond with a 921 series and 741 series of LCD driver. 32K-,Winbond use HP PA-RISC microcontroller technology, low production of the 32-bit RISC MCU.

SCM vendors mentioned above is to enter the Chinese market as part of the SCM vendors, there are many well-known single - Film-makers such as Mitsubishi, Hitachi, TI and other paper does not mention. Overall, a well-known U.S. company's microcontroller technology Are still in the leading position, especially in high-end products, high-performance SCM has introduced new products.The Japanese of SCM in the manufacturing sector has also considerable advantages, is also actively for the home appliances major clients.South Korea and China's Taiwan Bay in the province of some companies to introduce technology to digest the United States on the basis of compatibility with low-priced products to seize the Chinese market.Has yet to a Chinese mainland company in the MCU so vast a place on the market, which can not but China's electronics industry is a tragedy. On the other hand this range, people dazzling variety of SCM, indeed SCM application engineers to provide a great choice. Such a variety of SCM can enter the Chinese market, this On the note of the practical application of our engineers have been able to all types of integrated MCU performance, price and other factors and the With a selection of objects. Than in the past to analyze, Copy foreign products mainly the idea of a considerable improvement. With the growth of China's economic strength,

development of new products in the past the idea that too much emphasis on price new products Development can grade the weakness has improved, attention began to use the most advanced microcontroller development of high-grade products Since the development of means of the current SCM is still based simulator, the company can provide low-cost simulator, to facilitate Technical services and training, compared with the availability of high-performance, low-cost MCU is equally important. The monolithic Manufacturers in the development of tools and technical services also engaged in fierce competition. This competition and the introduction of new single-chip High-tech machines to show the advantages are complementary to each other. As a result of competition for the SCM application engineers to provide a broader Wider choice, and the ultimate beneficiaries of the SCM is the consumer products, because of all walks of life with SCM, This electronic advances in technology led to progress in all walks of life, but also promote the advance of human civilization.

3 The development of battery

In power plants and substations, in order to control, signals, protection, automatic devices, lighting and the exchange of the accident is not power blackouts and other power supply devices, generally are required to have a reliable DC power supply. To this end, power plants and more than 110 kV substation batteries are usually used as a DC power supply, but the power requirements of a high degree of reliability and stability, and its power supply capacity and voltage in the most serious accident to ensure the electrical equipment The reliable work. General substation with two batteries: lead-acid batteries and nickel-cadmium batteries. Ni-Cd batteries existence of the surface so that alkalization DC system insulation decline in prices, maintenance workload, in some important occasions even need to

configure the double sets of battery defects, and sealed lead-acid batteries to the whole, less maintenance, pollution-free and High-performance characteristics, adapted to the power system no less hungry people on duty to safeguard the needs of small equipment, on behalf of the DC system in the future development trend, as the current system of choice for substation DC battery.

Lead-acid battery is the large-capacity battery the main varieties, after more than 100 years of development and improvement of its low cost, high-voltage, abundant raw materials, manufacturing process is simple and in communications, transport, electricity and other departments have been widely used. However, due to various technical conditions of the restrictions adopted by the charging method failed to follow internal battery of physical and chemical laws, so that the whole process of charging there was a serious charge and a gas phenomenon, charging low efficiency, not because of charge and discharge control Reasonable and damage to the battery of a fairly large proportion. Large number of lead-acid battery charger have a common drawback, that is not very low level of intelligent people understand the changes in charging process, but use in the course of many irregularities, such as long-term status of the charge, the excessive discharge, Current charging and discharging too much, and long-term dissatisfaction with electricity, resulting in battery life be affected, causing great waste. Therefore, the study how to extend battery life, improve efficiency in the use of batteries, design a new smart. lead-acid battery charger is very important.

Constant current charging method: constant current charging that the charge current law is maintained at a constant value of the charge, charging that the adjustment of output voltage devices and battery or change the method of series

resistance and maintain the same charge current strength of the charging method. Constant current charging control method is simple, but because the battery capacity is accepted as the current charge of the process to gradually decline, to the late charge, the battery power capacity by the decline in charge current utilization rate much lower.

Constant Pressure charging method: constant pressure by means charging the battery terminal voltage maintained at a constant value of the charge. Now widely used constant pressure to improve the charging method, current restrictions on the use of constant pressure power charging a way, it is in charge of the entire process of charging power to maintain the same a constant voltage charging method. The rechargeable battery power supply voltage in charge of all time maintain a constant value, with the battery terminal voltage gradually increased, the current gradually reduced. And the constant current charging method, the charging process closer to the best of charge. With a constant voltage charging, the initial battery charging lower EMF, the charge current lot, with the charge, will gradually reduce the current, just simple control system. This method of charging a battery charge can be avoided, but in the initial charge current is too large, the battery life of a great impact on the battery plates and easy to bend, causing the battery scrap. In view of such shortcomings, constant pressure rarely used charge, in charge only low voltage power used in the current.

This method, including two-stage charging law and three-stage charging method.

Second phase of law is in charge at the beginning of a current to charge and scheduled a point after a lower current charge of a charging method. That is, first of all to constant current charge to the scheduled voltage value, then, the constant