
Marjory Digital Photo Frame Solution Companies in the Market

What's a digital photo frame?

Digital photo frames are common in 7 inch to 12 inch sizes. Some digital photo frames can only display JPEG pictures. Most digital photo frames display the photos as a slideshow and usually with an adjustable time interval. They also can send photos to the printer.

Others support additional multimedia content, including movie clips recorded in a digital camera's movie mode, MPEG video files and/or MP3 audio. Many can display text files.

Certain frames can load pictures over the Internet from RSS feeds, photo sharing sites such as Flickr, Picasa and from e-mail. Such networked models usually support wireless (802.11) connections.

Digital photo frames typically display the pictures directly from a camera's memory card, though certain frames also provide internal memory storage despite the high price of in-built memory. Some allow users to upload pictures to the frame's memory via a USB connection, or wirelessly via bluetooth technology.

Most 7 inch digital photo frame (17.5cm) models show images at 430 x 234 pixels. With some models the width of each landscape image is stretched to achieve an aspect ratio of 16:9, which results in noticeable distortion. Built-in speakers are common for playing video content with sound, and many frames come with remote controls.

Implementation

A digital photo frame consists of three main parts, the LCD-panel, the PCB and the outside frame:

- * The panel can have either an analog or digital interface and varies in size.

- * The PCB is the heart of the digital photo frame, as it includes the device's

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software.

In the near future, as electronic paper displays improve to support high quality color, digital photo frames are expected to adopt this technology, to provide visibility from any angle and in very bright environments, as well as reduced physical thickness and lower power consumption.

Digital Photo Frame Classification

Digital Photo Frame can be generally classified into three types:

- 1 simple function digital photo frame (jpeg format to display only the picture)
- 2 simple multi-media digital photo frame (not only can display images, can also play music and video)
- 3 high-level multi-media digital photo frame (not only can play images, audio and video, usually in support of 802.11 wireless connections, but also e-mail from the site and even download the pictures)

Components of the Digital Photo Frame

Digital Photo Frame from the three major parts: LCD screen, PCB circuit board and frame. LCD screen can be simulated can also be digital, and they adopted to distinguish between dimensions. PCB circuit board is the core of the digital photo frame, because it contains the necessary software. For end-users, the frame is an important criterion. Frame material is usually plastic or wood

Digital Photo Frame Solution Companies

1. ATMEL

ATMEL Corporation is the world's advanced semiconductor product design, manufacturing and marketing leader in products including microprocessors, programmable logic devices, nonvolatile memory, security chip, mixed-signal and RF radio frequency integrated circuits. Through a combination of these core technologies,

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ATMEL produce a variety of general-purpose and application-specific system-on-chip, to meet the needs of today's electronic system design engineers and the evolution of the growing demand. ATMEL integration at the system level has a world-class expertise and experience to the existing modules can be conducted on the basis of development, to ensure minimum delays and the risk of the development.

In image processing, using the hardware decoding JPEG, fast decoding, image decoding average 150ms, with a Motion-JPEG Playback function, and in a dynamic video processing is also not a sign of weakness, support MPEG1, MPEG4. AT76C120 supports up to 16 million pixels of image, though not the highest in the current solution, but sufficient to provide a good quality. AT76C120 with digital video output, you can directly drive the digital screen. In addition to good image processing capacity of external memory card support, AT76C120 also very strong across the board on the market compatible with all storage media: SD / MMC, MS / MSPro, Smart Media Card, xD picture, Compact Flash, MicroDrive (Compact Flash II), also support the on board NAND Flash and Hard Disk (can be applied to high-definition TV). In the USB interface, USB2.0 Slave support and USB1.1 Host. It can be seen in the image processing and storage to support the two terms of performance, ATMEL performance of this chip is good, which is also a Digital Photo Frame two most important performance parameters.

2. Amlogic

Jing Chen Semiconductor Co., Ltd. is a fast-growing company located in Shanghai Zhangjiang Hi-Tech Park Pudong New Area. Integrate the United States, Shanghai, Shenzhen, three of the resources and technical strength to engage in basic research and chip design; in the United States is mainly engaged in the development of basic research and chip design; in Shanghai is mainly engaged in the design of chip-based systems development and customer service; in Shenzhen chip is mainly engaged in marketing and customer service. With the advent of digital high-definition era, the company self-owned intellectual property rights in high-definition video formats and independent development of semiconductor technology, the technology of domestic enterprises to upgrade their competitiveness. This is a semiconductor crystal of the recent morning, goals and objectives. The company successfully developed high-definition DVD players produce a list of chips and high-HVD streaming media TV.

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Digital Photo Frame for the market, the introduction of crystalline semiconductor chip morning AML7216, the chip 32bit RISC processor, while the chip also integrates video and image co-processor which can be efficiently completed AML7216 video, audio decoder and post-processing work, and complete data exchange with the outside.

3. MXIC (Macronix International Co.)

Founded in 1989, Macronix International Co., is one of Taiwan's three major integrated circuits, is Taiwan's first listed on NASDAQ in the U.S. high-tech companies. Macronix International in Taiwan, the United States have research and development base in Suzhou in mainland China only about 150 people there is a R & D team. A number of technology companies residing in the international leading position. Macronix International products to non-volatile memory (Non-Volatile Memory)-based, and system integration chip (System on Chip) technology development for long-term strategy. Macronix International co-leader and system solutions, from R & D, design, manufacturing to marketing services, have the professional competence in one step.

For Digital Photo Frame, MXIC launch MP612, first of all to our attention immediately, which the chip is super-resolution images, JPEG format picture decoding in support of the largest 64 million pixels, this high-definition pixel is unmatched by other programs of. MP612 only supports JPEG decoder. In regard to video decoding, MP612 support Motion-JPEG, MPEG1 / 4, and has a data rate bit better. M-JPEG largest VGA @ 30fps; MPEG1 largest CIF @ 30fp; MPEG4 maximum QVGA @ 30fps. In the mathematical aspects of audio, MXIC do a more comprehensive and able to handle mp3, wma, aac_lc, MPEG Audio Level1 / 2. In external memory support, MXIC basically across the board in support of the existing memory cards: SD / MMC, MS, CF, XD, SM. The chip also supports and 64M-2GB of Build-In Memory. USB interface, MP612 support USB2.0, and has the OTG function, transfer rate quickly.

Software functions, MP612 relatively simple to do, the basic functions: multi-language OSD; the narrow picture to enlarge; document management, support for copy, delete, modify; play music while watching picture. Apart from that not too many other functions, at least not yet, such as TXT file to read, LCD backlight, such as the expansion of

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adaptive function, not to mention WiFi and Bluetooth functionality. Visibility, which chipset to focus on the picture quality or the handling of monographs on the treatment of high-quality screen as well as the program was very good in pre-market share.

Generally speaking, MP612 is a performance of all aspects of the program have a more balanced, so that its high-definition pixel size in the application of digital photo frame market are not a small advantage.

4. Sunplus (Sunplus Technology)

Sunplus Group, home entertainment platform by the focus on the parent company of Sunplus Technology leader, will be covered from the low-to high-end, from the individual to the family, from the consumer to the full range of communications IC product solutions.

Sunplus chips used in digital photo frame There are two, SPHE8104S and SPHE8104F, the functions of its video decoder more comprehensive to support MPEG1/2/4, but do not have the M-JPEG codec functions, not with MPEG2 Playback function. Audio processing, 8104S support mp3 and wma, but some version of the presentation did not mention to decode wma. In the external memory card support, 8104S only supports three-in-one card reader: SD / MMC / MS. Some vendors may require to be able to read CF card, this would become a bottleneck of this chip. USB interface, 8104S support USB2.0Host, this is satisfactory. 8104S, compared with, 8104F memory card support in the more powerful, according to the program's ability to develop different, the maximum support to all the memory cards: SD / MMC / MS / xD / CF. 8104F support and On-Board NAND Flash. In the USB interface, 8104F less than the 8104S, support USB1.1Host. Two types of chips will not be in the USB interface with OTG function.

Software function, slightly different options on the differences, the basic functions: multi-language OSD; the narrow picture to enlarge; document management, support for copy, delete, modify; play music while watching picture. Expansion of functions: calendar clock. Some programs also provide Build In IR Game.

Generally speaking, Sunplus solution effects due to its restrictions, which in the end of

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the program, which has a cost advantage in the market or a share of possession.

5. ESS (million World)

ESS Technology, Inc. (ESS Technology Inc.) 1984 founding years in the United States, California, the company's founder will be the reconstruction of its audio compression technology used in the invention of electronic audio books and greeting cards. ESS then this audio technology used in personal computers, successfully developed the first single-chip stereo, the computer will be a huge area of concentration for a Sound Blaster semiconductor chips, as a personal computer and laptop audio chip technology guide . ESS Technology, Inc. today has developed into a global multi-media, personal computers, consumer electronics products such as the importance of the semiconductor chip manufacturers, with the exception of computer audio chips in addition, ESS's video technology (MPEG) and fax / modem technology (Modem) more customers provides a high-performance, technologically advanced, reasonably-priced chips and related software solutions, it is important to the success of ESS company one of the pillars.

Digital Photo Frame ESS applies to many kinds of chips, with the main ESS8381. For dealing with static images, ESS8381 support JPEG, BMP, GIF; but Sunplus facing the same issue, which is supported by the image pixels can not be too high, there is generally no higher than 6,000,000 pixels. Some programs may be able to provide support to a higher megapixel image solutions, the main difference between models may have, and other types of control are likely to do not support BMP and GIF format. For now it seems, ESS solution is difficult in the picture format and the pixels at the same time both. ESS programs and spend more time decoding, the general picture one needs five million pixel 1 ~ 2s. Dynamic image, the 8381 supports the MPEG1 / 4, does not support M-JPEG. In audio processing, the 8381 support mp3 and wma. Memory card support, the 8381 to do a more comprehensive and up xD, basically all the existing memory card support: CF / MicroDrive, SD / MS / MS PRO / MMC. 8381 and the USB interface is also ideal to support USB2.0Host, but if the need to support OTG, you need an external. But 8381 does not support NAND Flash, memory card can not be achieved with the NAND Flash Disk data. All ESS solutions do not support Bluetooth or WiFi. ESS performance of other solutions and is basically the same as 8381, in addition to support in the image on the slightly different format. In addition, it should be noted that, ESS solutions are a lot of image

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editing software, so processing speed may be quite slow.

ESS solutions to the basic functions are: multi-language OSD; the narrow picture to enlarge; document management, support for copy, delete, modify; AVI movie player; play music while watching picture. Expansion of functions: calendar clock.

Overall, ESS and Sunplus solution belong to the same level, in the more low-end market advantage.

6. Zoran (Zoran)

Zoran digital technology is headquartered in Santa Clara, California, is the world's leading consumer electronics chip solution provider. After more than two years of development, as well as in digital signal processing on the research and development, Zoran has developed high-performance digital audio, video and image processing capacity of the chip. Zoran-based chip DVD, DTV, DC, as well as image processing a variety of electronic products, such as access to a wide range of attention and praise.

Applications in the digital photo frame, Zoran programs are in low-end, with a better cost advantage. Static image processing, in accordance with the application program to the different chips normally only support JPEG, a small number of support TIFF, BMP, GIF. Dynamic image processing on at least support MPEG4, some support for MPEG1 / 2, but do not support M-JPEG. In audio processing, support mp3, wma, wav, sound playback is better. Zoran memory card types supported by the program provider should also vary, the basic support SD / MMC / MS, or a small number of follow-up version will support the xD and CF. Generally speaking, however, supported by comparison of a single memory card. USB interface to support USB2.0, and external OTG needs to achieve. Performance can be seen above, image processing, the Zoran and Sunplus, ESS close to or even better image processing, but its interface must support some less.

Zoran chips based on the basic functions of solution: reduce the image to enlarge; document management, support for copy, delete, modify; AVI movie player. Expansion functions: play music while watching picture; calendar clock.

> swap

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7. MTK (Mediatek)

Luen Fat Science and Technology is a professional IC design company. Since the Republic of China since its establishment actively betting R & D resources to develop high-end consumer IC complete the program, now is the world's consumer IC chip group leader. The layout of a full range of products include optical storage chipsets, high-end digital consumer chipset, wireless communication chipsets and chipsets, such as digital television. On the field of optical storage, the global leader in science and technology made include the introduction of CD-ROM, DVD-ROM, DVD-Player, CD-R/RW, Combi, DVD-RW and other related control chipset. The field of high-end digital consumer, including DVD Player, DVD-Recorder etc to maintain the market share of the world's first.

Application and Digital Photo Frame MTK chip is MT8303. MT8303 static picture processing support JPEG, but limited support high-pixel images. Video support for MPEG1/2/4, do not support M-JPEG. Audio processing, MT8303 support mp3 and wma, the overall performance of audio and video in general. Memory card support, the only three-in-one card reader support SD / MMC / MS, USB only USB2.0, some versions also only supports USB1.1. Does not support NAND Flash as well as data between the memory card Disk. However, programs to support the chip section AV-IN, it can be simple point is that the digital picture frame when watching TV, and AV-IN and AV-OUT with the same interface. But do not personally feel that this design useful, because people at home will not have a clear look at the big TV is not enough to warrant the helplessly staring at the small screen now.

MT8303-based digital photo frame also features a single, basic functions: reduce the image to enlarge; document management, support for copy, delete, modify; AVI movie player. Basically, no extensions.

8. CheerTek (Cheertek)

Cheertek technology is mainly engaged in the digital audio-visual consumer electronics

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system-on-chip solutions, with comprehensive multi-media IC technology and product development experience, all bets in the multimedia integrated circuits of the research, development, design, application and sales, to meet the needs of modern life indispensable to the new demands of digital audio-visual.

Digital photo frame for the application of CT950 Cheertek, as well as the introduction of the 95X series of follow-up, continuous improvement of its performance, when the current market is the most extensive application of CT950, the program structure of the following chart (Figure 4).

Static image processing, CT950 support JPEG, image pixels generally about 15 million pixels. Video support for MPEG1/2/4, do not support M-JPEG. Audio processing, the support mp3 and wma. Memory card support of a more comprehensive and up xD not support, and other memory card support: CF / SD / MS / MS PRO / MMC, but the CT950 does not support NAND Flash. USB interface, the support USB1.1Host, individual programs can do to support USB2.0, skeptical individuals. CheerTek development on other chips, we give the following graph (Figure 5) as compared with the CT950, these chips are the follow-up products, performance better than the CT950.

Based on the Digital Photo Frame CT950 basic functions: multi-language OSD; the narrow picture to enlarge; document management, support for copy, delete, modify; AVI movie player; play music while watching picture. Expansion of functions: calendar clock.

9. SigmaTel (SigmaTel)

SigmaTel is the photo printer market system-on-chip (SoC) solutions to leading suppliers and use its expertise in image processing, has developed a digital photo frame solution. Oasis STDC7150 users to use advanced image processor as the core frame device solutions. STDC7150 for 32-bit RISC processor to support powerful and flexible embedded operating system user interface design.

STDC7150 solution based on image processing capabilities are relatively strong, pure hardware decoding JPEG, and image editing are any hardware implementation, image processing speed to support high-pixel images. However, the chip completely done only

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deal with static images, dynamic images can not be compatible, but not to play any video format (new models under development in the chip, the future to resolve the issue of dynamic image processing). The system architecture the following diagram (Figure 6).

Audio processing, STDC7150 support mp3 and wav format. Memory card support, the support of almost all existing memory card: CF / SD / MMC / MS / xD, and supports NAND Flash. USB interface using USB2.0Host, USB2.0 high-speed interface to transfer photos easily in the NAND Flash. At the same time, the chip support directly to the printer to print photos.

In addition to the excellent display performance, STDC7150 Another feature is a WiFi and Bluetooth functionality, you can easily share photos online.

The basic function of the program are: multi-language OSD; the narrow picture to enlarge; document management, support for copy, delete, modify; play music while watching picture; print output. Expansion functions: Bluetooth; WiFi; calendar clock.

10. WinBond (Winbond)

Winbond Electronics Corporation was founded in 1987 in Hsinchu Science-Based Industrial Park, is a very large integrated circuits focused on the design, manufacture and marketing of high-tech companies. Winbond has always been based on the development of own-brand products are the company itself as the product over the years in the field of efforts to build Winbond has become a pioneer in Taiwan's semiconductor industry.

Application and Digital Photo Frame WinBond chip W90P710. The chip is based on the ARM7TDMI, the application of the system in the digital photo frame structure as illustrated (Figure 7).

The chip with the same type of SigmaTel, but also belong to the hardware decoding JPEG

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images, but you can not handle video. Higher picture quality, more suitable for large-size screens and applications. Audio support for mp3. Memory card, the only support SD / MMC card. USB interface only supports USB1.1. It appears from these, less than a lot of SigmaTel. And there is no Bluetooth and WiFi features.

W90P710 program based on the basic functions: multi-language OSD; the narrow picture to enlarge; document management, support for copy, delete, modify; play music while watching picture. Expansion of functions: calendar clock.

Summary

We are a mainstream solution in some detail here, but fragmented information has often become an obstacle to our decision-making. This chapter summarizes these mainstream programs, sub-classified the door, so that we clearly understand the characteristics and style of the program to help us find a suitable market position of their own development and avoid blind investment.

This chapter the main features and programs from a cost-effective, the program will be classified into three categories the mainstream: the first category, Atmel, Amlogic, MXIC, this category can be defined as the current high-end market in the solution; the second category, Sunplus, ESS , Zoran, MTK, CheerTek, this category can be defined as the current low-end market in the solution; the third category, SigmaTel, Winbond, this is a function of a single category.

The first solution, the performance generally more comprehensive, in the static image processing, video processing, audio processing, memory card support, USB, as well as the expansion of the basic functions are to do a full coverage. Comparison of three programs, as well as their own characteristics. Atmel's solutions in power well done, and its ultra-low power consumption, and support for IDE hard disk, you can become a TV Recorder as a bright spot; Amlogic solution for audio processing in a very good, and its USB interface resources are the richest It is also the only high-end programs can be Bluetooth-enabled; MXIC solutions in the picture shows the most outstanding of its 64 million-pixel picture decoding is very suitable for the application of large-size screen.

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PCBA three programs are a higher cost, of which the cost of MXIC much higher than the other two 1 ~ 2USD, and the development of a Amlogic program is not very mature, and may be a result of the program's various problems encountered in different situations .

Type II solutions, PCBA cost much smaller than the first category, mostly between 95 ~ 125RMB, and board structure is relatively simple. The main advantage of the cost of the expense of the cost of display performance. This type of effect in the picture shows the existence of common problem is the high-pixel images is not supported, so the display screen demanding customers, may not be suitable. And we must pay attention to this type of program, performance in other small differences, because some customers may have some hard and fast performance indicators. Especially in the memory card support, according to the different solution providers, and its memory card support of the difference may be relatively large. The expansion of such programs feature many of these can be customized according to the customer, they need to go with the program.

The third type of solution, I call it a class of single function, but its performance does not mean bad. Such basic solutions are to do with the framework of embedded digital photo frame, picture decoding performance of its hardware is very good, fairly good picture results can be compared with the first category, but a single other functions, such as can not see the film in any format. For some market position, can not play the film may be allowed to do so.