How to drive e-paper display, E-ink Display technology,E-PAPER DISPLAY FAQ -1,Technical...

> Good Display is a professional E-ink Display (E-paper display) and OLED display factory in China, as .....

A:1,For 2-color(black and white) e-paper display, full refresh is generally around 6s. The display with partial refresh, full refresh：1s；partial refresh： 300ms around.

2, For 3-color(black, white and red/yellow) e-paper display, full refresh is generally around 12s except for GDEW0154C39 and GDEW0213C38, both of them are 25s around.

A: No, only the Raspberry Pi system.

Q: Lower Power Solution for the e-paper display.

A: Two ways: cancel the deep sleep mode, or add an analog switch at the front end of the driver circuit.

Q:If the waveform file does not correspond to the display, will it affect the refresh?

A:Wave files and e-paper must be one-to-one correspondence. If confused, it may affect the refresh.

Q:How to intuitively distinguish the full refresh and the partial refresh?

A:The picture does not flash when partial refresh.

Q:What is the meaning of the DSP in the e-paper timing diagram?

A:The DSP is the feedback information that the e-paper passes to the MCU. After receiving the information, the MCU indicates that the e-paper data transmission is completed. This command is generally not used.

Q:Can I use the emulator to power e-paper directly?

A:No. Because the power supply of the emulator is unstable, the voltage will be pulled down when the e-paper is refreshed, and eventually it will not work properly.

Q:How does the e-paper rotate 180 degrees?

A:This can usually be done by modifying the initial scan direction.

Q:I can't find the 0x11 and 0x13 commands in the e-paper specification. What should I do?

A:If the required command is not found in the specification, the customer can consult the IC manual, which has detailed command explanations.

Note:

1. After downloading the program of the e-paper, you need to remove the short cap of P12, otherwise the e-paper display will not be lit.

2. In the case of long-term non-refresh, we need to power off the electronic paper or put it into deep sleep mode, otherwise it will damage the IC.

Q:When there is a delay in the middle of the two pictures when the e-paper is refreshed, can it be removed?

A:Yes, it can be removed.

Q:Does Good Display's DEMO board support the GCC compilation environment?

A:This does not support, the DESPI board is the Keil development environment, and the Arduino board is the Arduino development environment.

Q:What is the capacitance range of the e-paper drive circuit?

A:In theory, 50V is needed, and the user can also use 25V instead of the actual design.

Q:Can I use the program of A to refresh the B?

A:No. You must select correctly the corresponding sample program.

Q:When testing three-color e-paper, the time interval is 10s, and refreshed in succession. Finally, the e-paper has residual image or even brushed. What is the reason?

A:The specification requires that the three-color e-paper refresh interval is 180 seconds. In the case, the customer only has 10 seconds. This is doing a destructive test, which is far exceeding the standard. We hope that the customers will strictly follow the specifications in future tests.

Q:After the e-paper enters deep sleep, can it be refreshed again?

A:Yes, but you need to re-do the e-paper initialization operation with the software.

Q:Can I use tri-color e-paper as a monochrome e-paper?

A:In theory, it is ok, but when users use it, they need to use a monochrome e-paper program to refresh the three-color screen.

Q:What is the bending angle of flexible e-paper?

A:Keep the chip from bending and the e-paper display portion can be bent up to 60 degrees.

Q:Is there a general program for low temperature e-paper?

A:Yes. You can use the programs of the normal temperature e-paper which has the same size and same resolution.

Q:Sometimes, the red three-color e-paper shows a red shallow, why?

A:When the three-color e-paper is placed for a long time, it is best to invert and brush it all white, otherwise the red particles will sink. It is best to refresh every 24H when using it.

Q:How to drive flexible e-paper?

A:You can use the program of the glass substrate e-paper which has the same size and same resolution.

Q:Picture production and Bitmap Convert for a three color e-paper

A:First make a three-color map, then separate the two parts with software, one part is black and white, and the other part is red and white. Then modulo refresh can be done (except for individual large sizes)

Q:Can I change the display orientation of the screen?

A:Normal is OK, you need to use the modulo software to select "horizontal scanning" + "bottom to top scanning" + "color reversal"

Q:Sometimes the screen does not show well, why?

A:The modulo mode is incorrect. If it is the partial part of the screen, maybe the picture size or modulo resolution is incorrect.

Q:Can I achieve partial refresh at the same time in different locations of the screen?

A:This requires the customer to perform a unified operation during

the software design. First you need to brush the data in different locations to the electronic paper IC, and then uniformly perform UPDATE.

Q:Where is the 0 point coordinate?

A:The upper right corner of the positive direction of the e-paper is the coordinate origin.

Q:In the continuous full-screen partial refresh, the residual image of the e-paper is serious, how to solve it?

A:You can perform a full brush after several consecutive partial refreshes.

Q:How to make the Picture production and Bitmap Convert? And Can I change this method?

A:Our company can provide users with complete instructions, please ask your sales staff. In addition, the method is the factory default. If you feel inconvenient, you can modify the history of the e-paper writing function by programming.

Q:There are different points in the Screen. How to solve it?

A:Different sizes of e-paper has different size of the spots, and customers can refer to the specifications for comparison. In addition, about the spots, the e-paper has a acceptable range when out of the factory.

Q:How to distinguish the front and back of the screen?

A:The side with the protective film is the positive direction.

Q:Why does the e-paper display flash?

A:In order to eliminate the residual image, the e-paper needs to perform the clearing operation by flashing.

Q:Are there any special requirements for the use environment of e-paper?

A:Avoid direct sunlight and operate in strict accordance with the temperature and humidity range required by the specification. The tri-color screen needs to be placed upside down if it is not used for a long time, and the screen is completely white.

Q:How to download the program?

A:You need to purchase the JTAG emulator yourself, and you need to

install the KEIL4 software for program download.

Q:J-link download

A:Our DEMO board supports J-link and the download port is JTAG.

Q:Can I drive e-paper with an nRF chip?

A:Yes, you only need to reserve 6 IO to drive the e-paper.

Q:How to read registers?

A:You need to edit the SPI read function yourself and read it as described in the specification.

Q:The display color is too light, how to adjust?

A:The e-paper display effect is improved by adjusting the VCOM voltage driven by this e-paper. The higher the VCOM value, the heavier the display color. (OTP products cannot adjust the display effect temporarily)

Q:LCD modulo software can not be registered, how to solve it?

A:Please contact the sales, he will help you solve it.

Q:Does it support external Flash?

A:At present, our program does not add external flash. If you have any requirements, please refer to GDEW075Z09 specification, interface SPI.

Q:When the e-paper starts again after deeping sleep, there will be residual images left. How to solve it?

A:A full screen refresh is required when waking up the e-paper to ensure that the screen completely eliminates image sticking.

Q:Why the refreshing time of a SPI interface screen is longer than the parallel one?

A:Because the SPI screen can only transmit 1 bit of data at a time, but the parallel e-paper display can transmit multiple bits of data at the same time.

Q:Can keil4 project be downloaded with keil5?

A:Yes, but the customer needs to recompile the keil4 project with keil5 and then download it.

Q:How to write my own drive?

A:Each e-paper has a corresponding program flow chart, and the customer can write the driver according to this flow chart.

Q:What are LUT and OTP?

A:The LUT is a load waveform file, and the waveform file is divided into two types: OTP and registration. The OTP is a built-in waveform storage mode, and the register is an external waveform storage mode.

Q:How to choose MOS tube?

A:You'd better choose these two models: Si1304BDL or Si1308EDL SOT-23 (SC70). Otherwise, the power consumption of electronic paper will be too large during the design process.

Q:How to choose a diode?

A:Customers can match based on component parameters,MBR0530 30V 0.5A.

Q:How to choose the inductance?

A:Choose a wirewound inductor, 10uH 1A 1210 wirewound inductor, the greater the rated current of the inductor, the more energy stored, the better the boosting effect.

Q:After the software is transplanted, the working current of the electronic paper becomes larger. What is the reason?

A:Under normal circumstances, the ARM chip is used. If you use another chip, you need to set the program. The SPI working frequency should not exceed 2MHZ.

Q:When designing the driver circuit, the specification description is different from the circuit schematic. How to choose?

A:When designing, please refer directly to the circuit schematic of our adapter board.

Q:E-paper adapter board docks with other MCU

A:Usually we use e-paper of SPI interfaces. When users use them on other MCU devices, they only need to connect directly to their IO ports according to the circuit schematics we provide. The IO ports should best avoid JTAG, SWD, UART.

Q:Why the anti-display phenomenon occurs during the use of the e-paper display?

A:In fact, this is the process of e-paper refresh to eliminate the residual image, what you need is to see the final refresh screen. The refresh process can be ignored.

Q:Can I use only one-half or one-quarter of the screen?

A:Yes. You just need to use the CS of the corresponding area.

Q:Can I directly partial refresh the e-paper display from the power-off state?

A:No.Residual image can not be eliminated if direct partial refresh

Q:After the e-paper partial refresh the full screen multiple times, a part of the screen displays a little fade, why?

A:This phenomenon can occur if you use a long-term power-on or long-term brush during use. It is recommended that customers do not use long-term brushing when using e-paper, and do power-off or deep sleep treatment when not refreshing for a long time.

Q:Can I partially refresh at the same time in multiple locations of the screen?

A:Yes. You just need to update the data together after all is transferred.

Q:Does our e-paper support python?

A:No.

Q:How to switch from GDEH series to GDEW series?

A:In terms of driving, the RESE needs to be adjusted to 0.47 ohms, and the software needs to refer to the driver again.

Q:Why the BUSY pin is always busy?

A:Usually, this is caused by the fact that your boost circuit is not working.

Q:Why is my boost circuit always unable to boost?

A:We recommend customers to use AO3400 series MOS tube.

Q:What is the purpose of the step of refreshing to white on the screen?

A:This part is the process of clearing the screen of e-paper.

Q:How to choose the FPC socket of SPI e-paper?

A:We should choose the FPC socket pin spacing of 0.5mm, the specific 1 foot position is based on the 1st foot on the FPC of the e-paper.

Q:Can parallel port e-paper support Linux system migration?

A:Yes. But for the time being, there is no porting tutorial in this area. The porting principle refers to the migration process of other single-

The porting principle refers to the migration process of other single chip platforms.

Q:After partial refresh, I want to switch to full brush, but the screen can't display anything, why?

A:When switching from partial refresh to full brush, full brush initialization function is required.

Q:How to write a electronic paper drive?

A:There are driving flowcharts in the e-paper specification, you can refer to the flowchart to write the code, and the specification contains detailed control command descriptions.

Q:When using the TCON board, the customer doesn't know how to download, and also can not download a program from SPI interface.

A:Just plug the JTAG connector into the N_J1 interface, the gap is plugged in, and then you can download with it. In addition, due to the early design reasons, the TCON board does not support SPI interface downloading for the time being, and we will continue to upgrade functions in the future. Thank you.

Q:Can I shorten the time for the e-paper partial refresh time provided by you?

A:No, what we are offering now is the limit refresh time of the e-paper's IC, which can no longer be shortened.

Q:Does e-paper support picture rotation?

A:No. The direction of the picture can only be changed by modulo mode, and it can only be in the direction of 90 degrees.

Q:My e-paper will have a residual image when it is brushed against a white background. Why?

A:Because you do not clear the screen when you are performing a full white screen.

Q:Can I drive an e-paper without using an external crystal?

A:This depends on the MCU. If the MCU used by the customer supports the internal crystal, then that is OK.

Q:Can I drive directly without the AVT6203 when making a parallel e-paper COG package?

A:At present, our company's e-paper is all COG package. When the parallel e-paper is not suitable for external TCON chip, it can simulate TCON action through single-chip software, which is soft TCON. This

way can not support partial refresh, and the response speed will also be slower.

Q:Can e-paper be used in the sun?

A:There must be sunlight blocking, otherwise the electronic paper will be damaged to varying degrees under direct sunlight.

Q:The content displayed of the e-paper is a bit offset, why?

A:Usually, it is caused by the instability of the customer's power supply.

Q:How can I confirm the direction of refresh of the e-paper?

A:Normally, the top right corner of the screen is the origin of the coordinates. From the origin of the coordinate to below is the X axis, to the right is the Y axis.

Q:After the electronic paper is powered off, streaks appear on the screen.Why?

A:This is because the customer did not add a sleep command before powering down.

Q:The white color displayed by red e-paper is lighter than the white displayed by black and white e-paper. Why?

A:Because there are red components in the red three-color e-paper, when the white color is displayed, the red particles will affect the display of the white particles, so it will be lighter. In addition, the white particles in the microcapsules of the three-color e-paper are less than those of the monochrome e-paper.

Q:The BUSY pin of my e-paper has always been busy, why?

A:Usually, this is because the customer's SPI serial port has not been successfully transplanted, resulting in the e-paper IC not working at all.

Q:I am looking for a replacement for the components of the driver circuit.

A:At present, SI1308EDL can be replaced by AO3400. There are no recommended models for other components.