

**a-Si TFT LCD Single Chip Driver
320(RGB) x 480 Resolution, 16.7M-color
WITH INTERNAL GRAM**

Application Notes

Version: Preliminary V0.1

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1.2. HSD 3.5 Inch Initial Code

Void ILI9488_HSD_Initial_Code(void)

```
{// VCI=2.8V
//***** Reset LCD Driver *****//
LCD_nRESET = 1;
Delayms(1); // Delay 1ms
LCD_nRESET = 0;
Delayms(10); // Delay 10ms // This delay time is necessary
LCD_nRESET = 1;
Delayms(120); // Delay 120 ms
//***** Start Initial Sequence *****//
LCD_ILI9488_CMD(0xE0); //P-Gamma
LCD_ILI9488_INDEX(0x0F);
LCD_ILI9488_INDEX(0x15);
LCD_ILI9488_INDEX(0x13);
LCD_ILI9488_INDEX(0x0A);
LCD_ILI9488_INDEX(0x0D);
LCD_ILI9488_INDEX(0x08);
LCD_ILI9488_INDEX(0x49);
LCD_ILI9488_INDEX(0x89);
LCD_ILI9488_INDEX(0x3E);
LCD_ILI9488_INDEX(0x09);
LCD_ILI9488_INDEX(0x17);
LCD_ILI9488_INDEX(0x09);
LCD_ILI9488_INDEX(0x0C);
LCD_ILI9488_INDEX(0x03);
LCD_ILI9488_INDEX(0x00);

LCD_ILI9488_CMD(0xE1); //N-Gamma
LCD_ILI9488_INDEX(0x0F);
LCD_ILI9488_INDEX(0x37);
LCD_ILI9488_INDEX(0x33);
LCD_ILI9488_INDEX(0x0A);
LCD_ILI9488_INDEX(0x0B);
LCD_ILI9488_INDEX(0x02);
LCD_ILI9488_INDEX(0x41);
LCD_ILI9488_INDEX(0x34);
LCD_ILI9488_INDEX(0x2D);
LCD_ILI9488_INDEX(0x05);
```

```
LCD_ILI9488_INDEX(0x0F);
LCD_ILI9488_INDEX(0x03);
LCD_ILI9488_INDEX(0x15);
LCD_ILI9488_INDEX(0x11);
LCD_ILI9488_INDEX(0x00);

LCD_ILI9488_CMD(0XC0);    //Power Control 1
LCD_ILI9488_INDEX(0x17); //Vreg1out
LCD_ILI9488_INDEX(0x15); //Verg2out

LCD_ILI9488_CMD(0xC1);    //Power Control 2
LCD_ILI9488_INDEX(0x41); //VGH,VGL

LCD_ILI9488_CMD(0xC5);    //Power Control 3
LCD_ILI9488_INDEX(0x00);
LCD_ILI9488_INDEX(0x12); //Vcom
LCD_ILI9488_INDEX(0x80;)

LCD_ILI9488_CMD(0x36);    //Memory Access
LCD_ILI9488_INDEX(0x48);

LCD_ILI9488_CMD(0x3A);    // Interface Pixel Format
LCD_ILI9488_INDEX(0x66);

LCD_ILI9488_CMD(0XB0);    // Interface Mode Control
LCD_ILI9488_INDEX(0x00);

LCD_ILI9488_CMD(0xB1);    //Frame rate
LCD_ILI9488_INDEX(0xA0); //60Hz

LCD_ILI9488_CMD(0xB4);    //Display Inversion Control
LCD_ILI9488_INDEX(0x02); //2-dot

LCD_ILI9488_CMD(0XB6);    //RGB/MCU Interface Control
LCD_ILI9488_INDEX(0x02); //MCU
LCD_ILI9488_INDEX(0x02); //Source,Gate scan diection

LCD_ILI9488_CMD(0xBE);
LCD_ILI9488_INDEX(0x00);
```

```
LCD_ILI9488_INDEX(0x04);

LCD_ILI9488_CMD(0XE9);    // Set Image Function
LCD_ILI9488_INDEX(0x00);  // Disable 24 bit data input

LCD_ILI9488_CMD(0xF7);    // Adjust Control
LCD_ILI9488_INDEX(0xA9);
LCD_ILI9488_INDEX(0x51);
LCD_ILI9488_INDEX(0x2C);
LCD_ILI9488_INDEX(0x82);  // D7 stream, loose

LCD_ILI9488_CMD(0x11);    //Sleep out
Delayms(120);
LCD_ILI9488_CMD(0x29);    //Display on
}

Void ILI9488_EnterSleep_Code(void)
{
LCD_ILI9488_CMD(0x28)    //Display off
Delayms(10);
LCD_ILI9488_CMD(0x10);    // Internal oscillator will be stopped
Delayms(120);
}

Void ILI9488_ExitSleep_Code(void)
{
LCD_ILI9488_CMD(0x11);    // Sleep out
Delayms(120);
LCD_ILI9488_CMD(0x29)    //Display on
}
```


2.2. CMI IPS 3.5 Inch Initial Code

Void ILI9488_CMI_Initial_Code(void)

```
{// VCI=2.8V
//***** Reset LCD Driver *****//
LCD_nRESET = 1;
Delayms(1); // Delay 1ms
LCD_nRESET = 0;
Delayms(10); // Delay 10ms // This delay time is necessary
LCD_nRESET = 1;
Delayms(120); // Delay 120 ms
//***** Start Initial Sequence *****//

LCD_ILI9488_CMD(0xE0); //P-Gamma
LCD_ILI9488_INDEX(0x0F);
LCD_ILI9488_INDEX(0x3E);
LCD_ILI9488_INDEX(0x30);
LCD_ILI9488_INDEX(0x06);
LCD_ILI9488_INDEX(0x0A);
LCD_ILI9488_INDEX(0x03);
LCD_ILI9488_INDEX(0x4D);
LCD_ILI9488_INDEX(0x56);
LCD_ILI9488_INDEX(0x3A);
LCD_ILI9488_INDEX(0x06);
LCD_ILI9488_INDEX(0x0F);
LCD_ILI9488_INDEX(0x04);
LCD_ILI9488_INDEX(0x18);
LCD_ILI9488_INDEX(0x13);
LCD_ILI9488_INDEX(0x00);

LCD_ILI9488_CMD(0XE1); //N-Gamma
LCD_ILI9488_INDEX(0x0F);
LCD_ILI9488_INDEX(0x37);
LCD_ILI9488_INDEX(0x31);
LCD_ILI9488_INDEX(0x0B);
LCD_ILI9488_INDEX(0x0D);
LCD_ILI9488_INDEX(0x06);
LCD_ILI9488_INDEX(0x4D);
LCD_ILI9488_INDEX(0x34);
LCD_ILI9488_INDEX(0x38);
```



```
LCD_ILI9488_INDEX(0x06);
LCD_ILI9488_INDEX(0x11);
LCD_ILI9488_INDEX(0x01);
LCD_ILI9488_INDEX(0x18);
LCD_ILI9488_INDEX(0x13);
LCD_ILI9488_INDEX(0x00);

LCD_ILI9488_CMD(0XC0);    //Power Control 1
LCD_ILI9488_INDEX(0x18); //Vreg1out
LCD_ILI9488_INDEX(0x17); //Verg2out

LCD_ILI9488_CMD(0xC1);    //Power Control 2
LCD_ILI9488_INDEX(0x41); //VGH,VGL

LCD_ILI9488_CMD(0xC5);    //Power Control 3
LCD_ILI9488_INDEX(0x00);
LCD_ILI9488_INDEX(0x1A); //Vcom
LCD_ILI9488_INDEX(0x80);

LCD_ILI9488_CMD(0x36);    //Memory Access
LCD_ILI9488_INDEX(0x48);

LCD_ILI9488_CMD(0x3A);    // Interface Pixel Format
LCD_ILI9488_INDEX(0x66); //18bit

LCD_ILI9488_CMD(0XB0);    // Interface Mode Control
LCD_ILI9488_INDEX(0x00);

LCD_ILI9488_CMD(0xB1);    //Frame rate
LCD_ILI9488_INDEX(0xA0); //60Hz

LCD_ILI9488_CMD(0xB4);    //Display Inversion Control
LCD_ILI9488_INDEX(0x02); //2-dot

LCD_ILI9488_CMD(0XB6);    //RGB/MCU Interface Control
LCD_ILI9488_INDEX(0x02); //MCU
LCD_ILI9488_INDEX(0x02); //Source,Gate scan dieection
```

```
LCD_ILI9488_CMD(0xBE);  
LCD_ILI9488_INDEX(0x00);  
LCD_ILI9488_INDEX(0x04);  
  
LCD_ILI9488_CMD(0xE9);    // Set Image Function  
LCD_ILI9488_INDEX(0x00);  //disable 24 bit data input
```

```
LCD_ILI9488_CMD(0xF7);    // Adjust Control  
LCD_ILI9488_INDEX(0xA9);  
LCD_ILI9488_INDEX(0x51);  
LCD_ILI9488_INDEX(0x2C);  
LCD_ILI9488_INDEX(0x82);  // D7 stream, loose
```

```
LCD_ILI9488_CMD(0x21);    //Normal Black
```

```
LCD_ILI9488_CMD(0x11);    //Sleep out  
Delayms(120);  
LCD_ILI9488_CMD(0x29);    //Display on  
}
```

Void ILI9488_EnterSleep_Code(void)

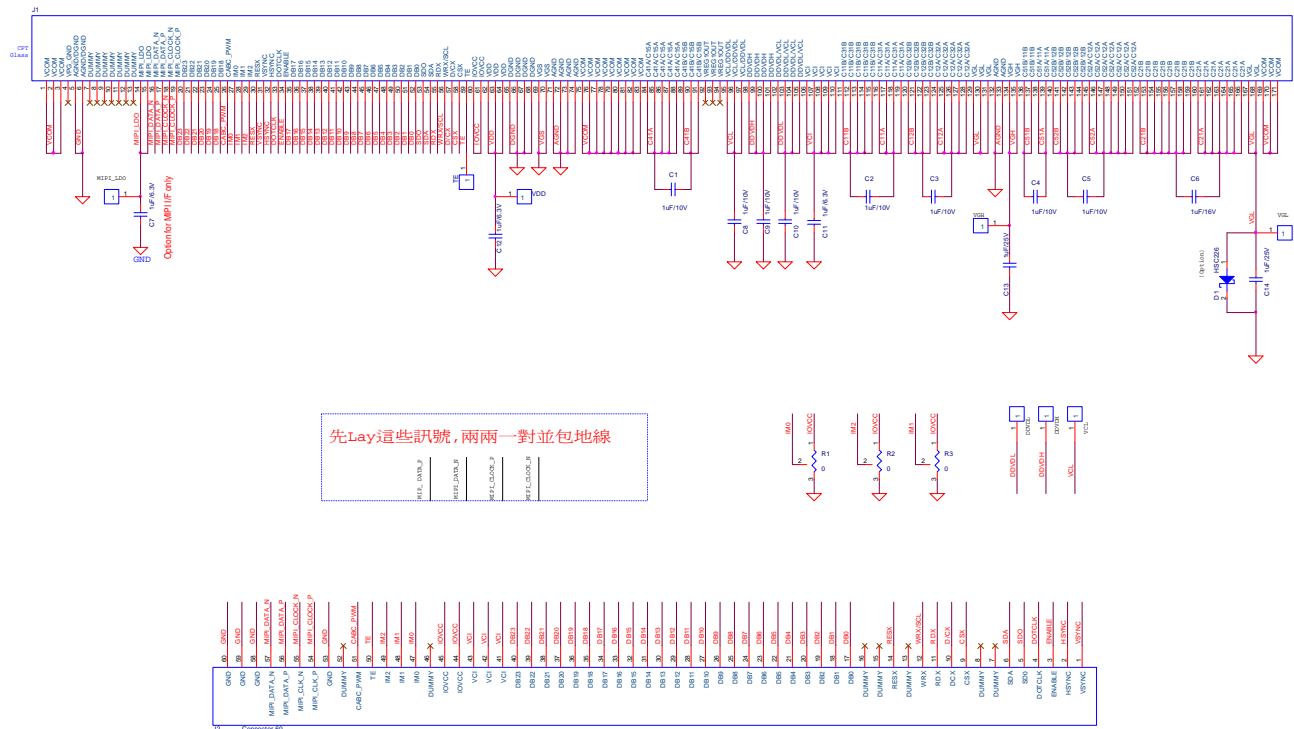
```
{  
LCD_ILI9488_CMD(0x28)    //Display off  
Delayms(10);  
LCD_ILI9488_CMD(0x10);    // Internal oscillator will be stopped  
Delayms(120);  
}
```

Void ILI9488_ExitSleep_Code(void)

```
{  
LCD_ILI9488_CMD(0x11);    // Sleep out  
Delayms(120);  
LCD_ILI9488_CMD(0x29)    //Display on  
}
```

3. CPT 3.5 Inch Panel

3.1. Application circuit



CPT GLASS

3.2. CPT 3.5 Inch Initial Code

Void ILI9488_CPT_Initial_Code(void)

```
{// VCI=2.8V
//***** Reset LCD Driver *****//
LCD_nRESET = 1;
Delayms(1); // Delay 1ms
LCD_nRESET = 0;
Delayms(10); // Delay 10ms // This delay time is necessary
LCD_nRESET = 1;
Delayms(120); // Delay 120 ms
//***** Start Initial Sequence *****//
LCD_ILI9488_CMD(0xE0); //P-Gamma
LCD_ILI9488_INDEX(0x0F);
LCD_ILI9488_INDEX(0x1E);
LCD_ILI9488_INDEX(0x1A);
LCD_ILI9488_INDEX(0x0D);
LCD_ILI9488_INDEX(0x10);
LCD_ILI9488_INDEX(0x05);
LCD_ILI9488_INDEX(0x4E);
LCD_ILI9488_INDEX(0x79);
LCD_ILI9488_INDEX(0x41);
LCD_ILI9488_INDEX(0x0A);
LCD_ILI9488_INDEX(0x18);
LCD_ILI9488_INDEX(0x0A);
LCD_ILI9488_INDEX(0x10);
LCD_ILI9488_INDEX(0x04);
LCD_ILI9488_INDEX(0x00);

LCD_ILI9488_CMD(0xE1); //N-Gamma
LCD_ILI9488_INDEX(0x0F);
LCD_ILI9488_INDEX(0x36);
LCD_ILI9488_INDEX(0x30);
LCD_ILI9488_INDEX(0x06);
LCD_ILI9488_INDEX(0x07);
LCD_ILI9488_INDEX(0x01);
LCD_ILI9488_INDEX(0x40);
LCD_ILI9488_INDEX(0X34);
LCD_ILI9488_INDEX(0x31);
LCD_ILI9488_INDEX(0x02);
```

```
LCD_ILI9488_INDEX(0x0F);
LCD_ILI9488_INDEX(0x03);
LCD_ILI9488_INDEX(0x1E);
LCD_ILI9488_INDEX(0x1C);
LCD_ILI9488_INDEX(0x00);

LCD_ILI9488_CMD(0XC0);    //Power Control 1
LCD_ILI9488_INDEX(0x17);  //Vreg1out
LCD_ILI9488_INDEX(0x15);  //Verg2out

LCD_ILI9488_CMD(0xC1);    //Power Control 2
LCD_ILI9488_INDEX(0x41);  //VGH,VGL

LCD_ILI9488_CMD(0xC5);    //Power Control 3
LCD_ILI9488_INDEX(0x00);
LCD_ILI9488_INDEX(0x4D);  //Vcom
LCD_ILI9488_INDEX(0x80);

LCD_ILI9488_CMD(0x36);    //Memory Access
LCD_ILI9488_INDEX(0x48);

LCD_ILI9488_CMD(0x3A);    // Interface Pixel Format
LCD_ILI9488_INDEX(0x66);

LCD_ILI9488_CMD(0XB0);    // Interface Mode Control
LCD_ILI9488_INDEX(0x00);

LCD_ILI9488_CMD(0xB1);    //Frame rate
LCD_ILI9488_INDEX(0xA0);  //60Hz

LCD_ILI9488_CMD(0xB4);    //Display Inversion Control
LCD_ILI9488_INDEX(0x02);  //2-dot

LCD_ILI9488_CMD(0XB6);    //RGB/MCU Interface Control
LCD_ILI9488_INDEX(0x02);  //MCU
LCD_ILI9488_INDEX(0x02);  //Source,Gate scan diection

LCD_ILI9488_CMD(0xBE);
LCD_ILI9488_INDEX(0x00);
```

```
LCD_ILI9488_INDEX(0x04);

LCD_ILI9488_CMD(0XE9);    // Set Image Function
LCD_ILI9488_INDEX(0x00);  //disable 24 bit data input


LCD_ILI9488_CMD(0xF7);    // Adjust Control
LCD_ILI9488_INDEX(0xA9);
LCD_ILI9488_INDEX(0x51);
LCD_ILI9488_INDEX(0x2C);
LCD_ILI9488_INDEX(0x82);  // D7 stream, loose


LCD_ILI9488_CMD(0x11);    //Sleep out
Delayms(120);
LCD_ILI9488_CMD(0x29);    //Display on
}

Void ILI9488_EnterSleep_Code(void)
{
LCD_ILI9488_CMD(0x28)    //Display off
Delayms(10);
LCD_ILI9488_CMD(0x10);    // Internal oscillator will be stopped
Delayms(120);
}

Void ILI9488_ExitSleep_Code(void)
{
LCD_ILI9488_CMD(0x11);    // Sleep out
Delayms(120);
LCD_ILI9488_CMD(0x29)    //Display on
}
```


4.2. BOE 3.97 Inch Initial Code

Void ILI9488_BOE_Initial_Code(void)

```
{// VCI=2.8V
//***** Reset LCD Driver *****//
LCD_nRESET = 1;
Delayms(1); // Delay 1ms
LCD_nRESET = 0;
Delayms(10); // Delay 10ms // This delay time is necessary
LCD_nRESET = 1;
Delayms(120); // Delay 120 ms
//***** Start Initial Sequence *****//
LCD_ILI9488_CMD(0xE0); //P-Gamma
LCD_ILI9488_INDEX(0x0F);
LCD_ILI9488_INDEX(0x20);
LCD_ILI9488_INDEX(0x1D);
LCD_ILI9488_INDEX(0x0A);
LCD_ILI9488_INDEX(0x0B);
LCD_ILI9488_INDEX(0x03);
LCD_ILI9488_INDEX(0x53);
LCD_ILI9488_INDEX(0x58);
LCD_ILI9488_INDEX(0x45);
LCD_ILI9488_INDEX(0x0C);
LCD_ILI9488_INDEX(0x19);
LCD_ILI9488_INDEX(0x0C);
LCD_ILI9488_INDEX(0x18);
LCD_ILI9488_INDEX(0x0B);
LCD_ILI9488_INDEX(0x00);

LCD_ILI9488_CMD(0xE1); //N-Gamma
LCD_ILI9488_INDEX(0x0F);
LCD_ILI9488_INDEX(0x35);
LCD_ILI9488_INDEX(0x29);
LCD_ILI9488_INDEX(0x05);
LCD_ILI9488_INDEX(0x06);
LCD_ILI9488_INDEX(0x02);
LCD_ILI9488_INDEX(0x39);
LCD_ILI9488_INDEX(0X44);
LCD_ILI9488_INDEX(0x2B);
LCD_ILI9488_INDEX(0x03);
```



```
LCD_ILI9488_INDEX(0x0E);
LCD_ILI9488_INDEX(0x02);
LCD_ILI9488_INDEX(0x19);
LCD_ILI9488_INDEX(0x16);
LCD_ILI9488_INDEX(0x00);

LCD_ILI9488_CMD(0XC0);    //Power Control 1
LCD_ILI9488_INDEX(0x15);  //Vreg1out
LCD_ILI9488_INDEX(0x12);  //Verg2out

LCD_ILI9488_CMD(0xC1);    //Power Control 2
LCD_ILI9488_INDEX(0x41);  //VGH,VGL

LCD_ILI9488_CMD(0xC5);    //Power Control 3
LCD_ILI9488_INDEX(0x00);
LCD_ILI9488_INDEX(0x5A);  //Vcom
LCD_ILI9488_INDEX(0x80);

LCD_ILI9488_CMD(0x36);    //Memory Access
LCD_ILI9488_INDEX(0x48);

LCD_ILI9488_CMD(0x3A);    // Interface Pixel Format
LCD_ILI9488_INDEX(0x66);

LCD_ILI9488_CMD(0XB0);    // Interface Mode Control
LCD_ILI9488_INDEX(0x00);

LCD_ILI9488_CMD(0xB1);    //Frame rate
LCD_ILI9488_INDEX(0xA0);  //60Hz

LCD_ILI9488_CMD(0xB4);    //Display Inversion Control
LCD_ILI9488_INDEX(0x02);  //2-dot

LCD_ILI9488_CMD(0XB6);    //RGB/MCU Interface Control
LCD_ILI9488_INDEX(0x02);  //MCU
LCD_ILI9488_INDEX(0x02);  //Source,Gate scan diection

LCD_ILI9488_CMD(0xBE);
LCD_ILI9488_INDEX(0x00);
```

```
LCD_ILI9488_INDEX(0x04);

LCD_ILI9488_CMD(0XE9);    // Set Image Function
LCD_ILI9488_INDEX(0x00);  //disable 24 bit data input


LCD_ILI9488_CMD(0xF7);    // Adjust Control
LCD_ILI9488_INDEX(0xA9);
LCD_ILI9488_INDEX(0x51);
LCD_ILI9488_INDEX(0x2C);
LCD_ILI9488_INDEX(0x82);  // D7 stream, loose


LCD_ILI9488_CMD(0x11);    //Sleep out
Delayms(120);
LCD_ILI9488_CMD(0x29);    //Display on
}

Void ILI9488_EnterSleep_Code(void)
{
LCD_ILI9488_CMD(0x28)    //Display off
Delayms(10);
LCD_ILI9488_CMD(0x10);    // Internal oscillator will be stopped
Delayms(120);
}

Void ILI9488_ExitSleep_Code(void)
{
LCD_ILI9488_CMD(0x11);    // Sleep out
Delayms(120);
LCD_ILI9488_CMD(0x29)    //Display on
}
```

5. Revision History

Revision History

Version No.	Date	Page	Description
V0.1	2012/11/16	All	New creation