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ILI9225

a-Si TFT LCD Single Chip Driver with 176RGBx220 Resolution and 262K color

Application Notes

Version: Preliminary V0.6
Date: May, 6th, 2008

Application FPC Circuit

1.1. CPT2.0"Panel
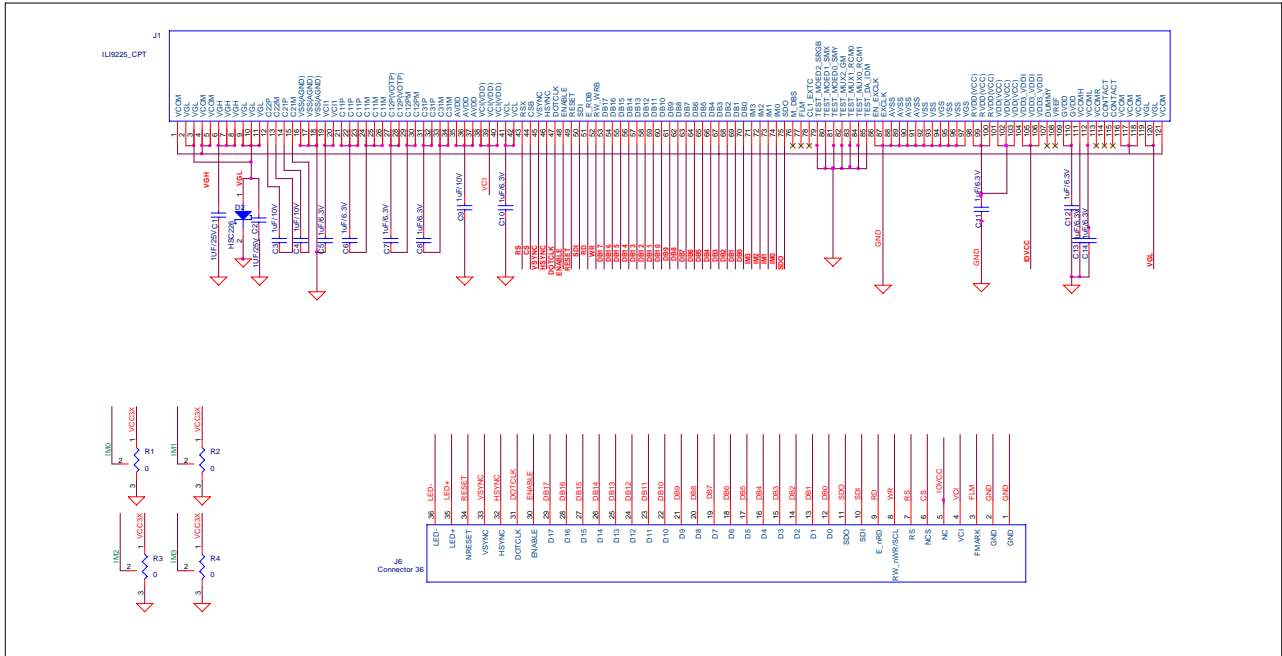
1.2 CPT 2.0 inch initial code

void ILI9225_CPT24_Initial(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(50); // Delay 50 ms
    //************* Start Initial Sequence **********//
        LCD_CtrlWrite_ILI9225(0x0001, 0x011C);     // set SS and NL bit
        LCD_CtrlWrite_ILI9225(0x0002, 0x0100);     // set 1 line inversion
        LCD_CtrlWrite_ILI9225(0x0003, 0x1030);     // set GRAM write direction and BGR=1.
        LCD_CtrlWrite_ILI9225(0x0008, 0x0808);     // set BP and FP
        LCD_CtrlWrite_ILI9225(0x000C, 0x0000);     // RGB interface setting   R0Ch=0x0110 for RGB 18Bit and R0Ch=0111for RGB16Bit
        LCD_CtrlWrite_ILI9225(0x000F, 0x0801);     // Set frame rate
        LCD_CtrlWrite_ILI9225(0x0020, 0x0000);      // Set GRAM Address
        LCD_CtrlWrite_ILI9225(0x0021, 0x0000);      // Set GRAM Address
    //*************Power On sequence ***************//
        delayms(50);    // Delay 50ms
        LCD_CtrlWrite_ILI9225(0x0010, 0x0A00);      // Set SAP,DSTB,STB
        LCD_CtrlWrite_ILI9225(0x0011, 0x1038);     // Set APON,PON,AON,VCI1EN,VC
        delayms(50);    // Delay 50ms
        LCD_CtrlWrite_ILI9225(0x0012, 0x1121);     // Internal reference voltage= Vci;
        LCD_CtrlWrite_ILI9225(0x0013, 0x0066);     // Set GVDD
        LCD_CtrlWrite_ILI9225(0x0014, 0x5F60);     // Set VCOMH/VCOML voltage
    //----------------------- Set GRAM area -------------------------------//
        LCD_CtrlWrite_ILI9225 (0x30, 0x0000);
        LCD_CtrlWrite_ILI9225 (0x31, 0x00DB);
        LCD_CtrlWrite_ILI9225 (0x32, 0x0000);
        LCD_CtrlWrite_ILI9225 (0x33, 0x0000);
        LCD_CtrlWrite_ILI9225 (0x34, 0x00DB);
        LCD_CtrlWrite_ILI9225 (0x35, 0x0000);
        LCD_CtrlWrite_ILI9225 (0x36, 0x00AF);
        LCD_CtrlWrite_ILI9225 (0x37, 0x0000);
        LCD_CtrlWrite_ILI9225 (0x38, 0x00DB);
        LCD_CtrlWrite_ILI9225 (0x39, 0x0000);
    // ----------- Adjust the Gamma   Curve ----------//
        LCD_CtrlWrite_ILI9225(0x0050, 0x0400);
        LCD_CtrlWrite_ILI9225(0x0051, 0x060B);
        LCD_CtrlWrite_ILI9225(0x0052, 0x0C0A);
        LCD_CtrlWrite_ILI9225(0x0053, 0x0105);
        LCD_CtrlWrite_ILI9225(0x0054, 0x0A0C);
        LCD_CtrlWrite_ILI9225(0x0055, 0x0B06);
        LCD_CtrlWrite_ILI9225(0x0056, 0x0004);
        LCD_CtrlWrite_ILI9225(0x0057, 0x0501);
        LCD_CtrlWrite_ILI9225(0x0058, 0x0E00);
        LCD_CtrlWrite_ILI9225(0x0059, 0x000E);
        delayms(50);    // Delay 50ms
        LCD_CtrlWrite_ILI9225(0x0007, 0x1017);
}
```
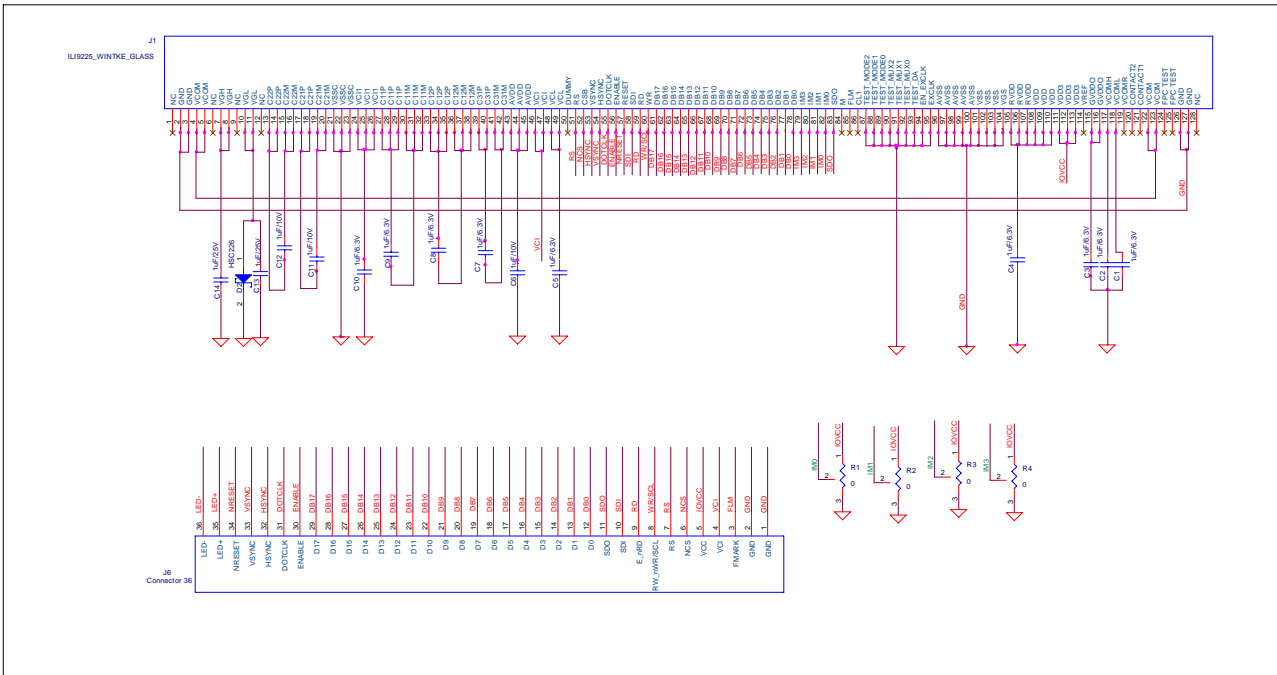
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void LCD_Enter Standby_ILI9225(void)

```
{
  LCD_CtrlWrite_ILI9225(0x0007, 0x0000);          // Set D1=0, D0=1
  delayms(50);
  LCD_CtrlWrite_ILI9225(0x0011, 0x0007);           // // Set APON,PON,AON,VCI1EN,VC
  delayms(50);
  LCD_CtrlWrite_ILI9225(0x0010, 0x0A01);          // Enter Standby mode
}
```

void LCD_Exit Standby _ILI9225(void)

```
{
  LCD_CtrlWrite_ILI9225(0x0010, 0x0A00);          // Exit Sleep/ Standby mode
  LCD_CtrlWrite_ILI9225(0x0011, 0x1038);           // // Set APON,PON,AON,VCI1EN,VC
  delayms(50)
  LCD_CtrlWrite_ILI9225(0x0007, 0x1017);           // Set D1=0, D0=1
}
```

2.1 WTK 1.8 2.0 2.2" Panel

a-Si TFT LCD Single Chip Driver
176RGBx220 Resolution and 262K color
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ILI9225

3.2 WTK 1.8" with TP Panel

void ILI9225_With TP_Initial(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(50); // Delay 50 ms
   //************* Start Initial Sequence **********//
      LCD_CtrlWrite_ILI9225(0x0001, 0x011C);      // set SS and NL bit
      LCD_CtrlWrite_ILI9225(0x0002, 0x0100);      // set 1 line inversion
      LCD_CtrlWrite_ILI9225(0x0003, 0x1030);      // set GRAM write direction and BGR=1.
      LCD_CtrlWrite_ILI9225(0x0008, 0x0808);      // set BP and FP
      LCD_CtrlWrite_ILI9225(0x000C, 0x0000);      // RGB interface setting   R0Ch=0x0110 for RGB 18Bit and R0Ch=0111for RGB16Bit
      LCD_CtrlWrite_ILI9225(0x000F, 0x0801);      // Set frame rate
      LCD_CtrlWrite_ILI9225(0x0020, 0x0000);       // Set GRAM Address
      LCD_CtrlWrite_ILI9225(0x0021, 0x0000);       // Set GRAM Address
   //*************Power On sequence ***************//
      delayms(50);    // Delay 50ms
      LCD_CtrlWrite_ILI9225(0x0010, 0x0A00);       // Set SAP,DSTB,STB
      LCD_CtrlWrite_ILI9225(0x0011, 0x1038);      // Set APON,PON,AON,VCI1EN,VC
      delayms(50);    // Delay 50ms
      LCD_CtrlWrite_ILI9225(0x0012, 0x6121);      // Internal reference voltage= Vci;
      LCD_CtrlWrite_ILI9225(0x0013, 0x0062);      // Set GVDD
      LCD_CtrlWrite_ILI9225(0x0014, 0x5b60);      // Set VCOMH/VCOML voltage
   //----------------------- Set GRAM area -------------------------------//
      LCD_CtrlWrite_ILI9225 (0x30, 0x0000);
      LCD_CtrlWrite_ILI9225 (0x31, 0x00DB);
      LCD_CtrlWrite_ILI9225 (0x32, 0x0000);
      LCD_CtrlWrite_ILI9225 (0x33, 0x0000);
      LCD_CtrlWrite_ILI9225 (0x34, 0x00DB);
      LCD_CtrlWrite_ILI9225 (0x35, 0x0000);
      LCD_CtrlWrite_ILI9225 (0x36, 0x00AF);
      LCD_CtrlWrite_ILI9225 (0x37, 0x0000);
      LCD_CtrlWrite_ILI9225 (0x38, 0x00DB);
      LCD_CtrlWrite_ILI9225 (0x39, 0x0000);
   // ----------- Adjust the Gamma   Curve ----------//
      LCD_CtrlWrite_ILI9225(0x0050, 0x0000);
      LCD_CtrlWrite_ILI9225(0x0051, 0x000B);
      LCD_CtrlWrite_ILI9225(0x0052, 0x0a01);
      LCD_CtrlWrite_ILI9225(0x0053, 0x010c);
      LCD_CtrlWrite_ILI9225(0x0054, 0x010a);
      LCD_CtrlWrite_ILI9225(0x0055, 0x0B00);
      LCD_CtrlWrite_ILI9225(0x0056, 0x0000);
      LCD_CtrlWrite_ILI9225(0x0057, 0x0c01);
      LCD_CtrlWrite_ILI9225(0x0058, 0x0E00);
      LCD_CtrlWrite_ILI9225(0x0059, 0x000E);
      delayms(50);    // Delay 50ms
      LCD_CtrlWrite_ILI9225(0x0007, 0x1017);
}
```
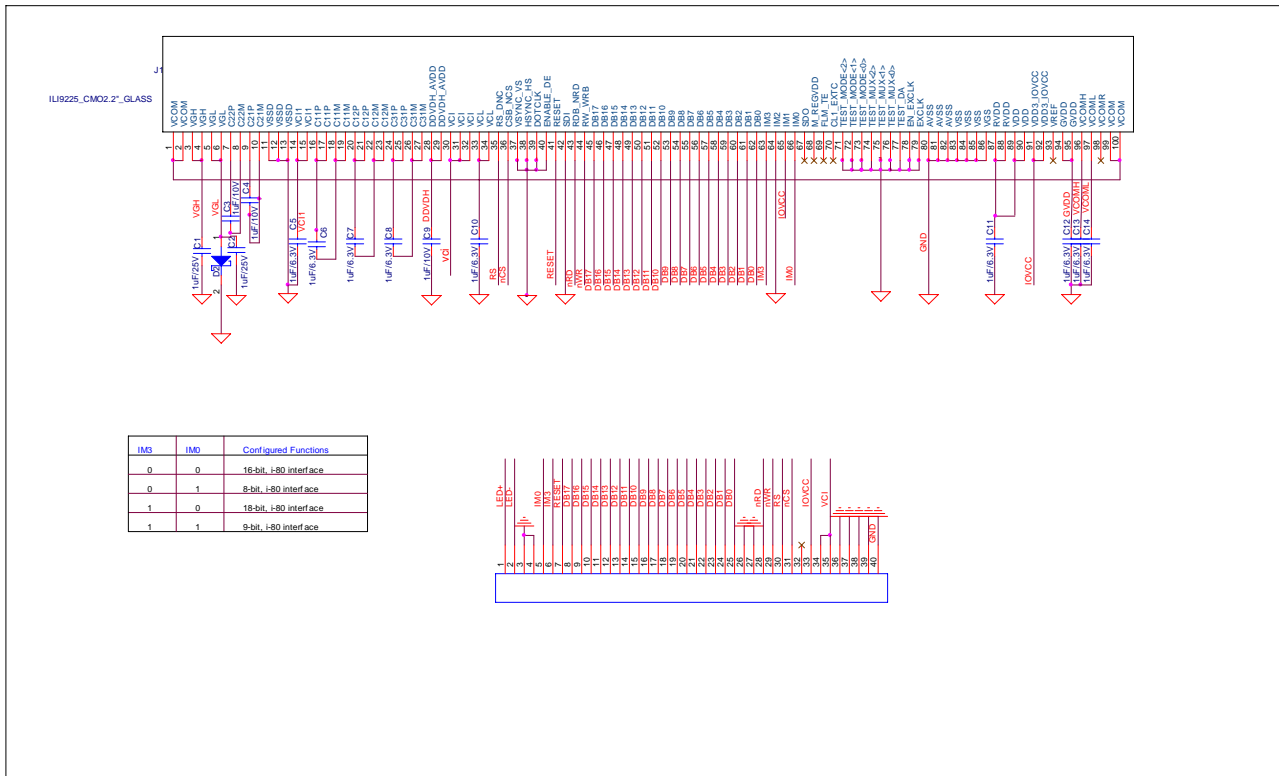
void LCD_Enter Standby_ILI9225(void)

```
{
    LCD_CtrlWrite_ILI9225(0x0007, 0x0000);        // Set D1=0, D0=1
    delayms(50);
    LCD_CtrlWrite_ILI9225(0x0011, 0x0007);         // // Set APON,PON,AON,VCI1EN,VC
    delayms(50);
    LCD_CtrlWrite_ILI9225(0x0010, 0x0A01);    //     // Enter Standby mode
}
```

void LCD_Exit Standby _ILI9225(void)

```
{
    LCD_CtrlWrite_ILI9225(0x0010, 0x0A00);        // Exit Sleep/ Standby mode
    LCD_CtrlWrite_ILI9225(0x0011, 0x1038);         // // Set APON,PON,AON,VCI1EN,VC
    delayms(50)
    LCD_CtrlWrite_ILI9225(0x0007, 0x1017);         // Set D1=0, D0=1
}
```

3.1 CMO 2.2 inch Panel

IM3	IM0	Configured Functions
0	0	16-bit, i-80 interface
0	1	8-bit, i-80 interface
1	0	18-bit, i-80 interface
1	1	9-bit, i-80 interface

3.2 **CM0 2.2" Panel**

void ILI9225_CMO22_Initial(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(50); // Delay 50 ms
    //************* Start Initial Sequence *********//
        LCD_CtrlWrite_ILI9225(0x0001, 0x011C);    // set SS and NL bit
        LCD_CtrlWrite_ILI9225(0x0002, 0x0100);    // set 1 line inversion
        LCD_CtrlWrite_ILI9225(0x0003, 0x1030);    // set GRAM write direction and BGR=1.
        LCD_CtrlWrite_ILI9225(0x0008, 0x0808);    // set BP and FP
        LCD_CtrlWrite_ILI9225(0x000C, 0x0000);    // RGB interface setting   R0Ch=0x0110 for RGB 18Bit and R0Ch=0111for RGB16Bit
        LCD_CtrlWrite_ILI9225(0x000F, 0x0801);    // Set frame rate
        LCD_CtrlWrite_ILI9225(0x0020, 0x0000);     // Set GRAM Address
        LCD_CtrlWrite_ILI9225(0x0021, 0x0000);     // Set GRAM Address
    //*************Power On sequence ***************//
        delayms(50);    // Delay 50ms
        LCD_CtrlWrite_ILI9225(0x0010, 0x0A00);      // Set SAP,DSTB,STB
        LCD_CtrlWrite_ILI9225(0x0011, 0x103B);      // Set APON,PON,AON,VCI1EN,VC
        delayms(50);    // Delay 50ms
        LCD_CtrlWrite_ILI9225(0x0012, 0x3121);      // Internal reference voltage= Vci;
        LCD_CtrlWrite_ILI9225(0x0013, 0x0066);      // Set GVDD
        LCD_CtrlWrite_ILI9225(0x0014, 0x3660);      // Set VCOMH/VCOML voltage
    //----------------------- Set GRAM area -------------------------------//
        LCD_CtrlWrite_ILI9225 (0x30, 0x0000);
        LCD_CtrlWrite_ILI9225 (0x31, 0x00DB);
        LCD_CtrlWrite_ILI9225 (0x32, 0x0000);
        LCD_CtrlWrite_ILI9225 (0x33, 0x0000);
        LCD_CtrlWrite_ILI9225 (0x34, 0x00DB);
        LCD_CtrlWrite_ILI9225 (0x35, 0x0000);
        LCD_CtrlWrite_ILI9225 (0x36, 0x00AF);
        LCD_CtrlWrite_ILI9225 (0x37, 0x0000);
        LCD_CtrlWrite_ILI9225 (0x38, 0x00DB);
        LCD_CtrlWrite_ILI9225 (0x39, 0x0000);
    // ----------- Adjust the Gamma   Curve ----------//
        LCD_CtrlWrite_ILI9225(0x0050, 0x0400);
        LCD_CtrlWrite_ILI9225(0x0051, 0x080B);
        LCD_CtrlWrite_ILI9225(0x0052, 0x0E0C);
        LCD_CtrlWrite_ILI9225(0x0053, 0x0103);
        LCD_CtrlWrite_ILI9225(0x0054, 0x0C0E);
        LCD_CtrlWrite_ILI9225(0x0055, 0x0B08);
        LCD_CtrlWrite_ILI9225(0x0056, 0x0004);
        LCD_CtrlWrite_ILI9225(0x0057, 0x0301);
        LCD_CtrlWrite_ILI9225(0x0058, 0x0E00);
        LCD_CtrlWrite_ILI9225(0x0059, 0x000E);
        delayms(50);    // Delay 50ms
        LCD_CtrlWrite_ILI9225(0x0007, 0x1017);
}
```
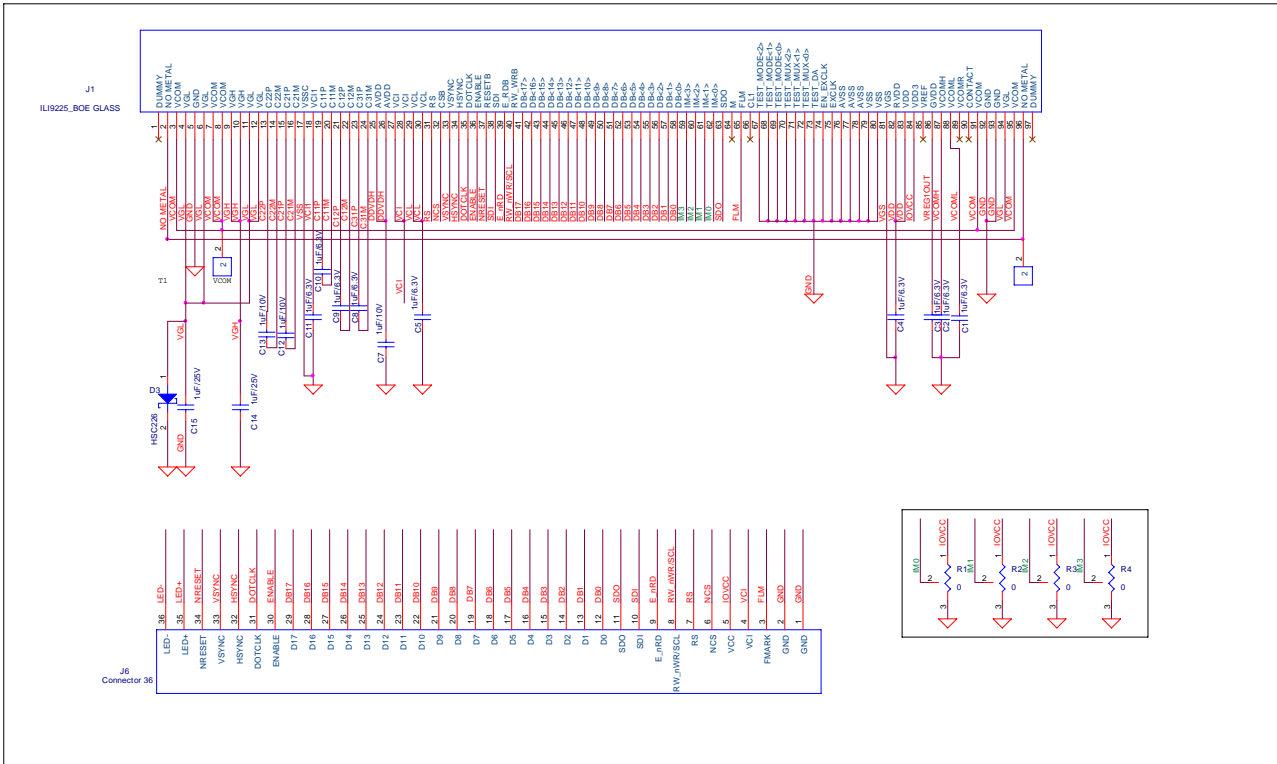
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void LCD_Enter Standby_ILI9225(void)

```
{
    LCD_CtrlWrite_ILI9225(0x0007, 0x0000);        // Set D1=0, D0=1
    delayms(50);
    LCD_CtrlWrite_ILI9225(0x0011, 0x0007);         // // Set APON,PON,AON,VCI1EN,VC
    delayms(50);
    LCD_CtrlWrite_ILI9225(0x0010, 0x0A01);    //    // Enter Standby mode
}
```

void LCD_Exit Standby _ILI9225(void)

```
{
    LCD_CtrlWrite_ILI9225(0x0010, 0x0A00);        // Exit Sleep/ Standby mode
    LCD_CtrlWrite_ILI9225(0x0011, 0x103B);         // // Set APON,PON,AON,VCI1EN,VC
    delayms(50)
    LCD_CtrlWrite_ILI9225(0x0007, 0x1017);         // Set D1=0, D0=1
}
```

4.1 BOE- Hydis 2.2 inch Panel

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4.2   Hydis 2.2"Panel

void ILI9225_Hydis22_Initial(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(50); // Delay 50 ms
   //************* Start Initial Sequence *********//
      LCD_CtrlWrite_ILI9225(0x0001, 0x011C);      // set SS and NL bit
      LCD_CtrlWrite_ILI9225(0x0002, 0x0100);      // set 1 line inversion
      LCD_CtrlWrite_ILI9225(0x0003, 0x1030);      // set GRAM write direction and BGR=1.
      LCD_CtrlWrite_ILI9225(0x0008, 0x0808);      // set BP and FP
      LCD_CtrlWrite_ILI9225(0x000C, 0x0000);      // RGB interface setting   R0Ch=0x0110 for RGB 18Bit and R0Ch=0111for RGB16Bit
      LCD_CtrlWrite_ILI9225(0x000F, 0x0801);      // Set frame rate
      LCD_CtrlWrite_ILI9225(0x0020, 0x0000);       // Set GRAM Address
      LCD_CtrlWrite_ILI9225(0x0021, 0x0000);       // Set GRAM Address
   //*************Power On sequence ***************//
      delayms(50);    // Delay 50ms
      LCD_CtrlWrite_ILI9225(0x0010, 0x0A00);       // Set SAP,DSTB,STB
      LCD_CtrlWrite_ILI9225(0x0011, 0x103B);      // Set APON,PON,AON,VCI1EN,VC
      delayms(50);    // Delay 50ms
      LCD_CtrlWrite_ILI9225(0x0012, 0x6121);      // Internal reference voltage= Vci;
      LCD_CtrlWrite_ILI9225(0x0013, 0x006F);      // Set GVDD
      LCD_CtrlWrite_ILI9225(0x0014, 0x495F);      // Set VCOMH/VCOML voltage
//----------------------- Set GRAM area -------------------------------//
      LCD_CtrlWrite_ILI9225 (0x30, 0x0000);
      LCD_CtrlWrite_ILI9225 (0x31, 0x00DB);
      LCD_CtrlWrite_ILI9225 (0x32, 0x0000);
      LCD_CtrlWrite_ILI9225 (0x33, 0x0000);
      LCD_CtrlWrite_ILI9225 (0x34, 0x00DB);
      LCD_CtrlWrite_ILI9225 (0x35, 0x0000);
      LCD_CtrlWrite_ILI9225 (0x36, 0x00AF);
      LCD_CtrlWrite_ILI9225 (0x37, 0x0000);
      LCD_CtrlWrite_ILI9225 (0x38, 0x00DB);
      LCD_CtrlWrite_ILI9225 (0x39, 0x0000);
// ----------- Adjust the Gamma    Curve ----------//
      LCD_CtrlWrite_ILI9225(0x0050, 0x0000);
      LCD_CtrlWrite_ILI9225(0x0051, 0x0808);
      LCD_CtrlWrite_ILI9225(0x0052, 0x080A);
      LCD_CtrlWrite_ILI9225(0x0053, 0x000A);
      LCD_CtrlWrite_ILI9225(0x0054, 0x0A08);
      LCD_CtrlWrite_ILI9225(0x0055, 0x0808);
      LCD_CtrlWrite_ILI9225(0x0056, 0x0000);
      LCD_CtrlWrite_ILI9225(0x0057, 0x0A00);
      LCD_CtrlWrite_ILI9225(0x0058, 0x1007);
      LCD_CtrlWrite_ILI9225(0x0059, 0x0710);
      delayms(50);    // Delay 50ms
      LCD_CtrlWrite_ILI9225(0x0007, 0x1017);
}
```

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void LCD_Enter Standby_ILI9225(void)

```
{
  LCD_CtrlWrite_ILI9225(0x0007, 0x0000);        // Set D1=0, D0=1
  delayms(50);
  LCD_CtrlWrite_ILI9225(0x0011, 0x0007);        // // Set APON,PON,AON,VCI1EN,VC
  delayms(50);
  LCD_CtrlWrite_ILI9225(0x0010, 0x0A01);        //  // Enter Standby mode
}
```

void LCD_Exit Standby _ILI9225(void)

```
{
  LCD_CtrlWrite_ILI9225(0x0010, 0x0A00);        // Exit Sleep/ Standby mode
  LCD_CtrlWrite_ILI9225(0x0011, 0x103B);        // // Set APON,PON,AON,VCI1EN,VC
  delayms(50)
  LCD_CtrlWrite_ILI9225(0x0007, 0x1017);        // Set D1=0, D0=1
}
```

1.5 AUO 2.2inch Panel
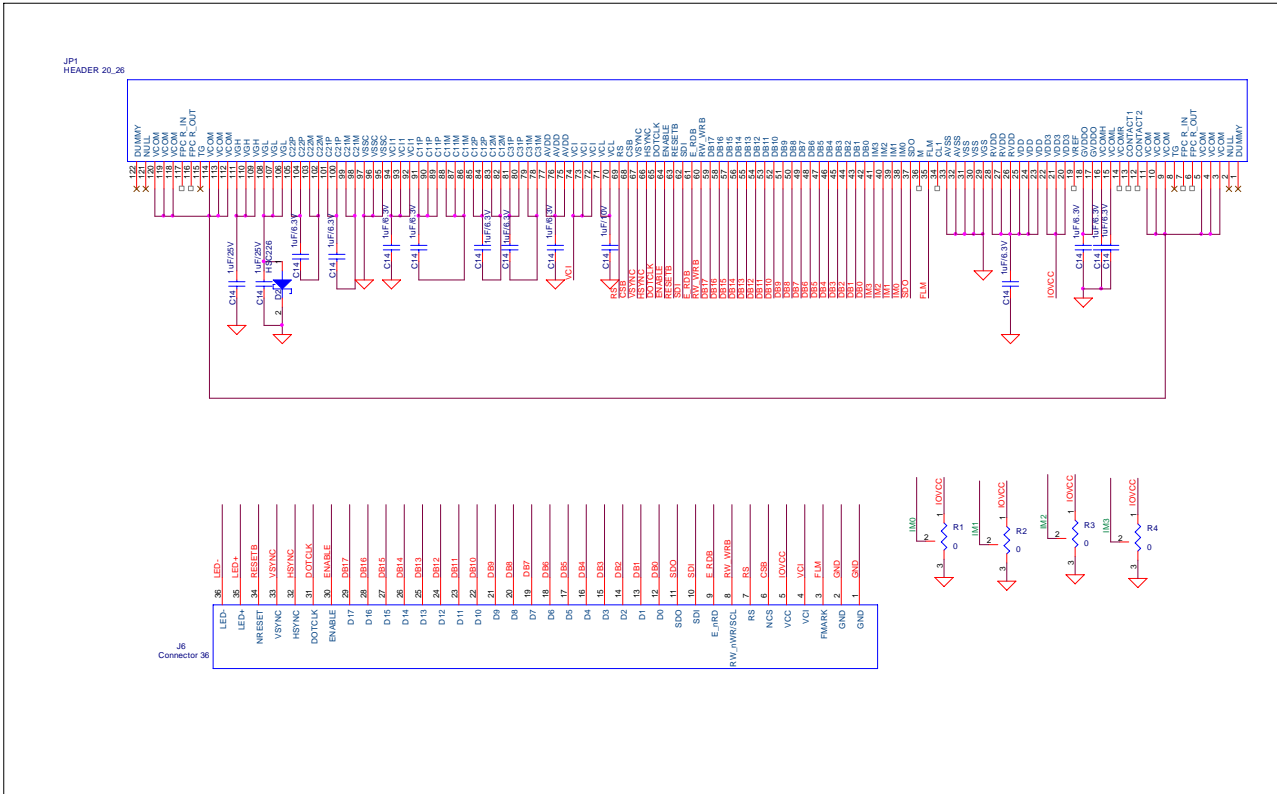
2. Revision History

Revision History

Version No.	Date	Page	Description
V0.1	2008/01/25		New Created
V0.2	2008/02/20		Add BOE FPC
V0.3	2008/03/07		Remove schottky diode form VGH pin
V0.4	2008/04/01		Add AUO 2.2 inch FPC
V0.5	2008/04/25		Add CPT2.0 CMO2.2 Hydis2.2 WKT1.8 panel initial code and modify AUO FPC pin define sequence
V0.6	2008/05/06		Modify CPT FPC circuit

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