



>> APPLICATION NOTE (DOC No. HX8357-B-AN)

>> **HX8357-B**

320RGB x 480 dot, 262K color,
with internal GRAM, TFT Mobile
Single Chip Driver

Preliminary version 01 March, 2010

Himax Technologies, Inc.
<http://www.himax.com.tw>

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>> HX8357-B

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GRAM, TFT Mobile Single Chip Driver



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1. HX8357-B Reference FPC circuit and Initial code

1.1 CMO's F03509/03206 panel

1.1.1 HX8357-B MPU interface reference FPC circuit for CMO's F03509/03206 panel

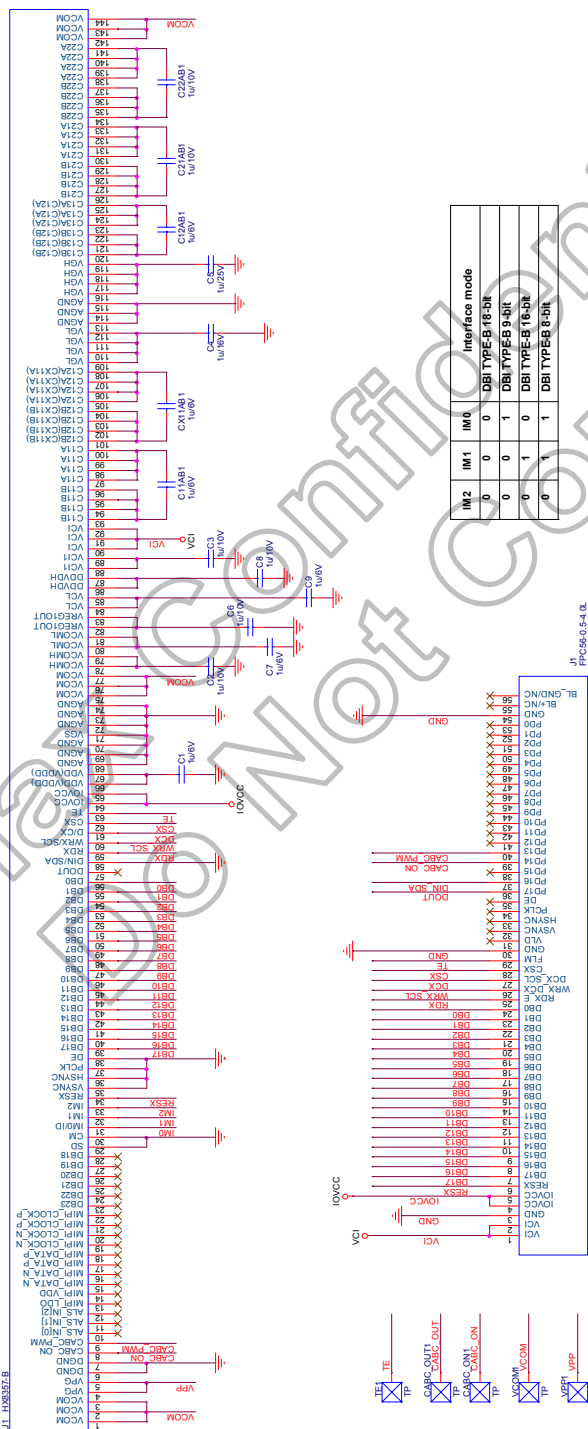


Figure 1. 1 MPU mode Reference FPC Circuit for CMO's F03509/03206 panel

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1.1.2 HX8357-B MPU interface reference initial code for CMO's F03509 panel

```
void LCD_Initial_HX8357B_CMO_3_5(void)
{
    All Power On();           // VCI & IOVCC On
    DelayX1ms(10);

    HW_RESET();              // Hardware Reset
    DelayX1ms(10);

    Set_NOKIA_8B_CMD(0x11);   //Sleep Out
    DelayX1ms(150);

    Set_NOKIA_8B_CMD(0xB4);    //Set RM, DM
    Set_NOKIA_8B_PA(0x00);     //MPU Mode

    Set_NOKIA_8B_CMD(0xC8);    //Set Gamma
    Set_NOKIA_8B_PA(0x00);
    Set_NOKIA_8B_PA(0x67);
    Set_NOKIA_8B_PA(0x04);
    Set_NOKIA_8B_PA(0x70);
    Set_NOKIA_8B_PA(0x00);
    Set_NOKIA_8B_PA(0x1E);
    Set_NOKIA_8B_PA(0x37);
    Set_NOKIA_8B_PA(0x01);
    Set_NOKIA_8B_PA(0x77);
    Set_NOKIA_8B_PA(0x07);
    Set_NOKIA_8B_PA(0x0F);
    Set_NOKIA_8B_PA(0x00);

    Set_NOKIA_8B_CMD(0xD0);    //Set Power
    Set_NOKIA_8B_PA(0x44);     //DDVDH
    Set_NOKIA_8B_PA(0x41);
    Set_NOKIA_8B_PA(0x07);     //VREG1

    Set_NOKIA_8B_CMD(0xD1);    //Set VCOM
    Set_NOKIA_8B_PA(0x2A);
    Set_NOKIA_8B_PA(0x14);

    Set_NOKIA_8B_CMD(0xE9);    //Set Panel
    Set_NOKIA_8B_PA(0x01);

    Set_NOKIA_8B_CMD(0x29);    //Display On
    DelayX1ms(5);
}
```

1.1.3 HX8357-B MPU interface reference initial code for CMO's F03206 panel

```
void LCD_Initial_HX8357B_CMO_3_2(void)
{
    All Power On();           // VCI & IOVCC On
    DelayX1ms(10);

    HW_RESET();              // Hardware Reset
    DelayX1ms(10);

    Set_NOKIA_8B_CMD(0x11);   //Sleep Out
    DelayX1ms(150);

    Set_NOKIA_8B_CMD(0xB4);   //Set RM, DM
    Set_NOKIA_8B_PA(0x00);    //MPU Mode

    Set_NOKIA_8B_CMD(0xC0);   //Set PANEL
    Set_NOKIA_8B_PA(0x14);
    Set_NOKIA_8B_PA(0x3B);
    Set_NOKIA_8B_PA(0x00);
    Set_NOKIA_8B_PA(0x02);
    Set_NOKIA_8B_PA(0x11);

    Set_NOKIA_8B_CMD(0xC8);   //Set Gamma
    Set_NOKIA_8B_PA(0x00);
    Set_NOKIA_8B_PA(0x37);
    Set_NOKIA_8B_PA(0x20);
    Set_NOKIA_8B_PA(0x03);
    Set_NOKIA_8B_PA(0x05);
    Set_NOKIA_8B_PA(0x0E);
    Set_NOKIA_8B_PA(0x55);
    Set_NOKIA_8B_PA(0x04);
    Set_NOKIA_8B_PA(0x77);
    Set_NOKIA_8B_PA(0x30);
    Set_NOKIA_8B_PA(0x07);
    Set_NOKIA_8B_PA(0x0A);

    Set_NOKIA_8B_CMD(0xD0);   //Set Power
    Set_NOKIA_8B_PA(0x44);    //DDVDH
    Set_NOKIA_8B_PA(0x41);
    Set_NOKIA_8B_PA(0x07);    //VREG1

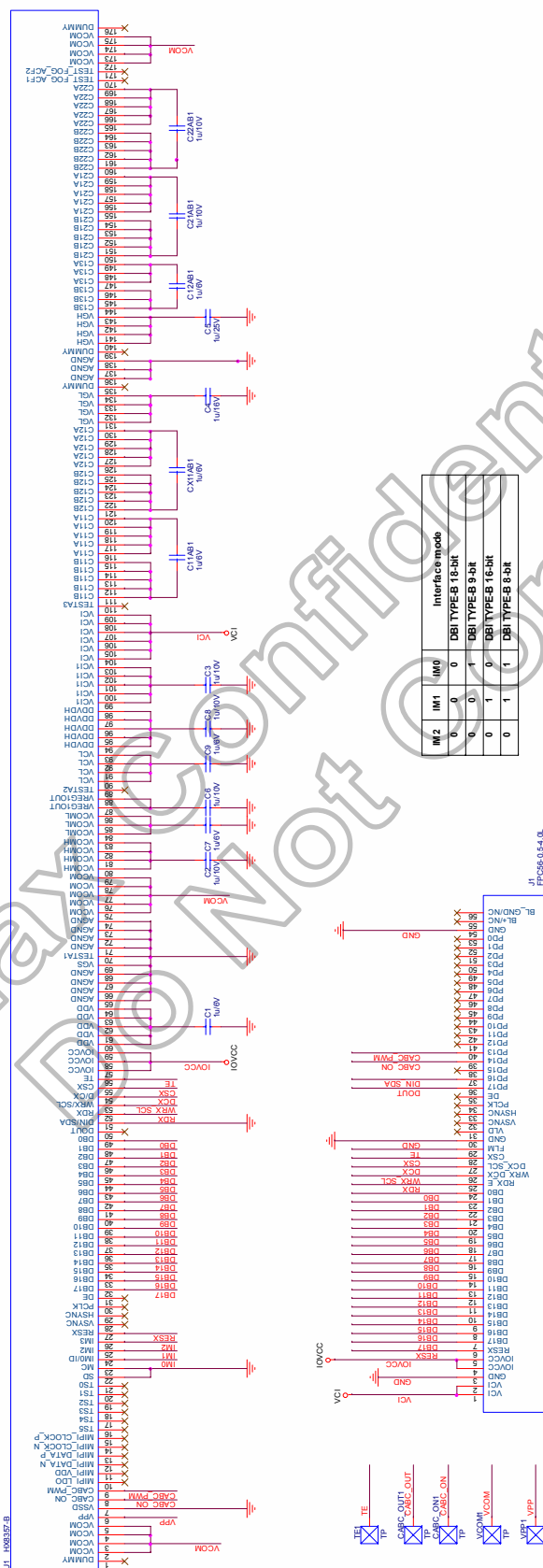
    Set_NOKIA_8B_CMD(0xD1);   //Set VCOM
    Set_NOKIA_8B_PA(0x47);    //VCOMH
    Set_NOKIA_8B_PA(0x0F);    //VCOML

    Set_NOKIA_8B_CMD(0xE9);   //Set Panel
    Set_NOKIA_8B_PA(0x01);

    Set_NOKIA_8B_CMD(0x29);   //Display On
    DelayX1ms(5);
}
```

1.2 Tianma's TM035NYH01 panel

1.2.1 HX8357-B MPU interface reference FPC circuit for Tianma's TM035NYH01 panel



FF-256-0.34-0L

- Note:
1. VCI, IOVCC are separated from different power source to get better display quality.
 2. DOUT pin must be left floating when no use.
 3. The input pin must be fixed IOVCC or GND when no use. Refer to "Pin Description".
 4. If Display quality normal, the capacitor of VCI1, VCOMH and VCOML can removed.

Figure 1. 2 MPU mode Reference FPC Circuit for Tianma's TM035NYH01 panel

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1.2.2 HX8357-B MPU interface reference initial code for Tianma's TM035NYH01 panel

```
void LCD_Initial_HX8357B_Tianma_3_5(void)
{
    TBD
}
```

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1.3 BOE's 3.5 inch panel

1.3.1 HX8357-B MPU interface reference FPC circuit for BOE's 3.5 inch panel

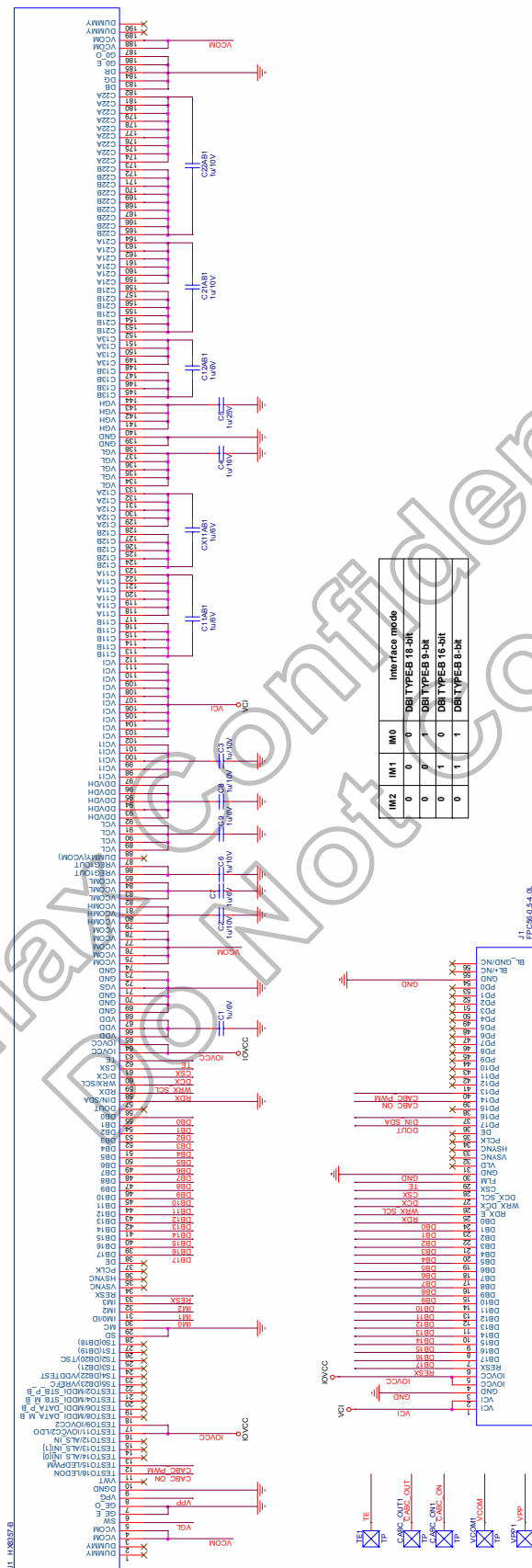


Figure 1. 3 MPU mode Reference FPC Circuit for BOE's 3.5 inch panel

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1.3.2 HX8357-B MPU interface reference initial code for BOE's 3.5 inch panel

```
void LCD_Initial_HX8357B_BOE_3_5(void)
{
    All Power On();           // VCI & IOVCC On
    DelayX1ms(10);

    HW_RESET();              // Hardware Reset
    DelayX1ms(10);

    Set_NOKIA_8B_CMD(0x11);   //Sleep Out
    DelayX1ms(150);

    Set_NOKIA_8B_CMD(0xB4);   //Set RM, DM
    Set_NOKIA_8B_PA(0x00);    //MPU Mode

    Set_NOKIA_8B_CMD(0xC0);   //Set PANEL
    Set_NOKIA_8B_PA(0x14);
    Set_NOKIA_8B_PA(0x3B);
    Set_NOKIA_8B_PA(0x00);
    Set_NOKIA_8B_PA(0x02);
    Set_NOKIA_8B_PA(0x11);

    Set_NOKIA_8B_CMD(0xC8);   //Set Gamma
    Set_NOKIA_8B_PA(0x00);
    Set_NOKIA_8B_PA(0x36);
    Set_NOKIA_8B_PA(0x13);
    Set_NOKIA_8B_PA(0x21);
    Set_NOKIA_8B_PA(0x09);
    Set_NOKIA_8B_PA(0x0C);
    Set_NOKIA_8B_PA(0x46);
    Set_NOKIA_8B_PA(0x14);
    Set_NOKIA_8B_PA(0x77);
    Set_NOKIA_8B_PA(0x12);
    Set_NOKIA_8B_PA(0x06);
    Set_NOKIA_8B_PA(0x12);

    Set_NOKIA_8B_CMD(0xD0);   //Set Power
    Set_NOKIA_8B_PA(0x45);    //DDVDH
    Set_NOKIA_8B_PA(0x41);
    Set_NOKIA_8B_PA(0x02);    //VREG1

    Set_NOKIA_8B_CMD(0xD1);   //Set VCOM
    Set_NOKIA_8B_PA(0x44);    //VCOMH
    Set_NOKIA_8B_PA(0x0F);    //VCOML

    Set_NOKIA_8B_CMD(0xE9);   //Set Panel
    Set_NOKIA_8B_PA(0x01);

    Set_NOKIA_8B_CMD(0xEE);   //Set EQ
    Set_NOKIA_8B_PA(0x00);
    Set_NOKIA_8B_PA(0x00);
    Set_NOKIA_8B_PA(0x00);
    Set_NOKIA_8B_PA(0x00);
}
```

```
Set_NOKIA_8B_CMD(0xED); //Set DIR TIM
Set_NOKIA_8B_PA(0x00);
Set_NOKIA_8B_PA(0x00);
Set_NOKIA_8B_PA(0xA2);
Set_NOKIA_8B_PA(0xA2);
Set_NOKIA_8B_PA(0xA2);
Set_NOKIA_8B_PA(0xA2);
Set_NOKIA_8B_PA(0x00);
Set_NOKIA_8B_PA(0x00);
Set_NOKIA_8B_PA(0x00);
Set_NOKIA_8B_PA(0x00);
Set_NOKIA_8B_PA(0x00);
Set_NOKIA_8B_PA(0xAE);
Set_NOKIA_8B_PA(0xAE);
Set_NOKIA_8B_PA(0x01);
Set_NOKIA_8B_PA(0xA2);
Set_NOKIA_8B_PA(0x00);

Set_NOKIA_8B_CMD(0x29); //Display On
DelayX1ms(5);
}
```

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1.4 TRULY's 3.5 inch panel

1.4.1 HX8357-B MPU interface reference FPC circuit for TRULY's 3.5 inch panel

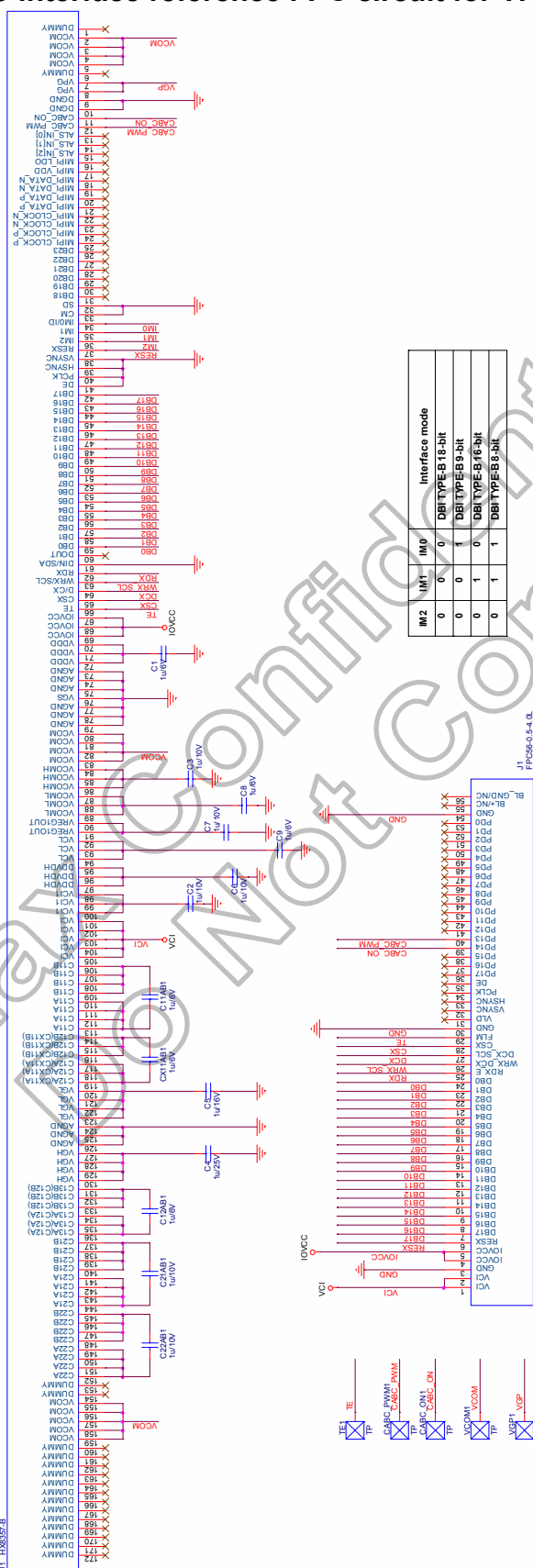


Figure 1. 4 MPU mode Reference FPC Circuit for TRULY's 3.5 inch panel

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1.4.2 HX8357-B MPU interface reference initial code for TRULY's 3.5 inch panel

```
void LCD_Initial_HX8357B_TRULY_3_5(void)
{
    All Power On();                // VCI & IOVCC On
    DelayX1ms(10);

    HW_RESET();                   // Hardware Reset
    DelayX1ms(10);

    Set_NOKIA_8B_CMD(0x11);       //Sleep Out
    DelayX1ms(150);

    Set_NOKIA_8B_CMD(0xB4);       //Set RM, DM
    Set_NOKIA_8B_PA(0x00);        //MPU Mode

    Set_NOKIA_8B_CMD(0xC0);       //Set PANEL
    Set_NOKIA_8B_PA(0x14);
    Set_NOKIA_8B_PA(0x3B);
    Set_NOKIA_8B_PA(0x00);
    Set_NOKIA_8B_PA(0x02);
    Set_NOKIA_8B_PA(0x11);

    Set_NOKIA_8B_CMD(0xC8);       //Set Gamma
    Set_NOKIA_8B_PA(0x02);
    Set_NOKIA_8B_PA(0x25);
    Set_NOKIA_8B_PA(0x01);
    Set_NOKIA_8B_PA(0x23);
    Set_NOKIA_8B_PA(0x02);
    Set_NOKIA_8B_PA(0x08);
    Set_NOKIA_8B_PA(0x67);
    Set_NOKIA_8B_PA(0x25);
    Set_NOKIA_8B_PA(0x57);
    Set_NOKIA_8B_PA(0x32);
    Set_NOKIA_8B_PA(0x04);
    Set_NOKIA_8B_PA(0x04);

    Set_NOKIA_8B_CMD(0xD0);       //Set Power
    Set_NOKIA_8B_PA(0x44);        //DDVDH
    Set_NOKIA_8B_PA(0x41);
    Set_NOKIA_8B_PA(0x06);        //VREG1

    Set_NOKIA_8B_CMD(0xD1);       //Set VCOM
    Set_NOKIA_8B_PA(0x53);        //VCOMH
    Set_NOKIA_8B_PA(0x0F);        //VCOML

    Set_NOKIA_8B_CMD(0xE9);       //Set Panel
    Set_NOKIA_8B_PA(0x01);

    Set_NOKIA_8B_CMD(0xEE);       //Set EQ
    Set_NOKIA_8B_PA(0x00);
    Set_NOKIA_8B_PA(0x00);
    Set_NOKIA_8B_PA(0x00);
    Set_NOKIA_8B_PA(0x00);
}
```

```
Set_NOKIA_8B_CMD(0xED); //Set DIR TIM
Set_NOKIA_8B_PA(0x00);
Set_NOKIA_8B_PA(0x00);
Set_NOKIA_8B_PA(0xA2);
Set_NOKIA_8B_PA(0xA2);
Set_NOKIA_8B_PA(0xA2);
Set_NOKIA_8B_PA(0xA2);
Set_NOKIA_8B_PA(0x00);
Set_NOKIA_8B_PA(0x00);
Set_NOKIA_8B_PA(0x00);
Set_NOKIA_8B_PA(0x00);
Set_NOKIA_8B_PA(0x00);
Set_NOKIA_8B_PA(0xAE);
Set_NOKIA_8B_PA(0xAE);
Set_NOKIA_8B_PA(0x01);
Set_NOKIA_8B_PA(0xA2);
Set_NOKIA_8B_PA(0x00);

Set_NOKIA_8B_CMD(0x29); //Display On
DelayX1ms(5);
}
```

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2. Revision History

Version	Date	Description of changes
01	2010/03/01	1. New setup
	2010/04/16	1. Add HX8357-B MPU interface reference FPC circuit and initial code for Tianma's TM035NYH01 panel. 2. Add HX8357-B MPU interface reference FPC circuit and initial code for BOE's 3.5 inch panel. 3. Add Initial code for CMO's F03206 panel.
	2010/06/03	1. Modify the Note4 of Figure1.1, 1.2, 1.3 2. Add HX8357-B MPU interface reference FPC circuit and initial code for TRULY's 3.5 inch panel. 3. Modify the initial code for CMO's F03509/03206 and BOE's 3.5 inch panel. 4. Delete D1 of Figure1.1, 1.2, 1.3 and 1.4