

## 10 POWER DEFINITION

### 10.1 Power Level

6 level modes are defined they are in order of Maximum Power consumption to Minimum Power Consumption

#### 1. Normal Mode On (full display), Idle Mode Off, Sleep Out.

In this mode, the display is able to show maximum 262,144 colors.

#### 2. Normal Mode Off (full display), Idle Mode Off, Sleep Out.

In this mode part of the display is used with maximum 262,144 colors.

#### 3. Normal Mode On (full display), Idle Mode On, Sleep Out.

In this mode, the full display area is used but with 8 colors.

#### 4. Normal Mode Off (full display), Idle Mode On, Sleep Out.

In this mode, part of the display is used but with 8 colors.

#### 5. Sleep In Mode

In this mode, the DC:DC converter, internal oscillator and panel driver circuit are stopped. Only the MCU interface and memory works with VDDI power supply. Contents of the memory are safe.

#### 6. Power Off Mode

In this mode, both VDD and VDDI are removed.

*Note: Transition between modes 1-5 is controllable by MCU commands. Mode 6 is entered only when both Power supplies are removed.*

## 10.2 Power ON/OFF Sequence

VDDI and VDD can be applied in any order.

VDD and VDDI can be power down in any order.

During power off, if LCD is in the Sleep Out mode, VDD and VDDI must be powered down minimum 120msec after RESX has been released.

During power off, if LCD is in the Sleep In mode, VDDI or VCI can be powered down minimum 0msec after RESX has been released.

CSX can be applied at any timing or can be permanently grounded. RESX has priority over CSX.

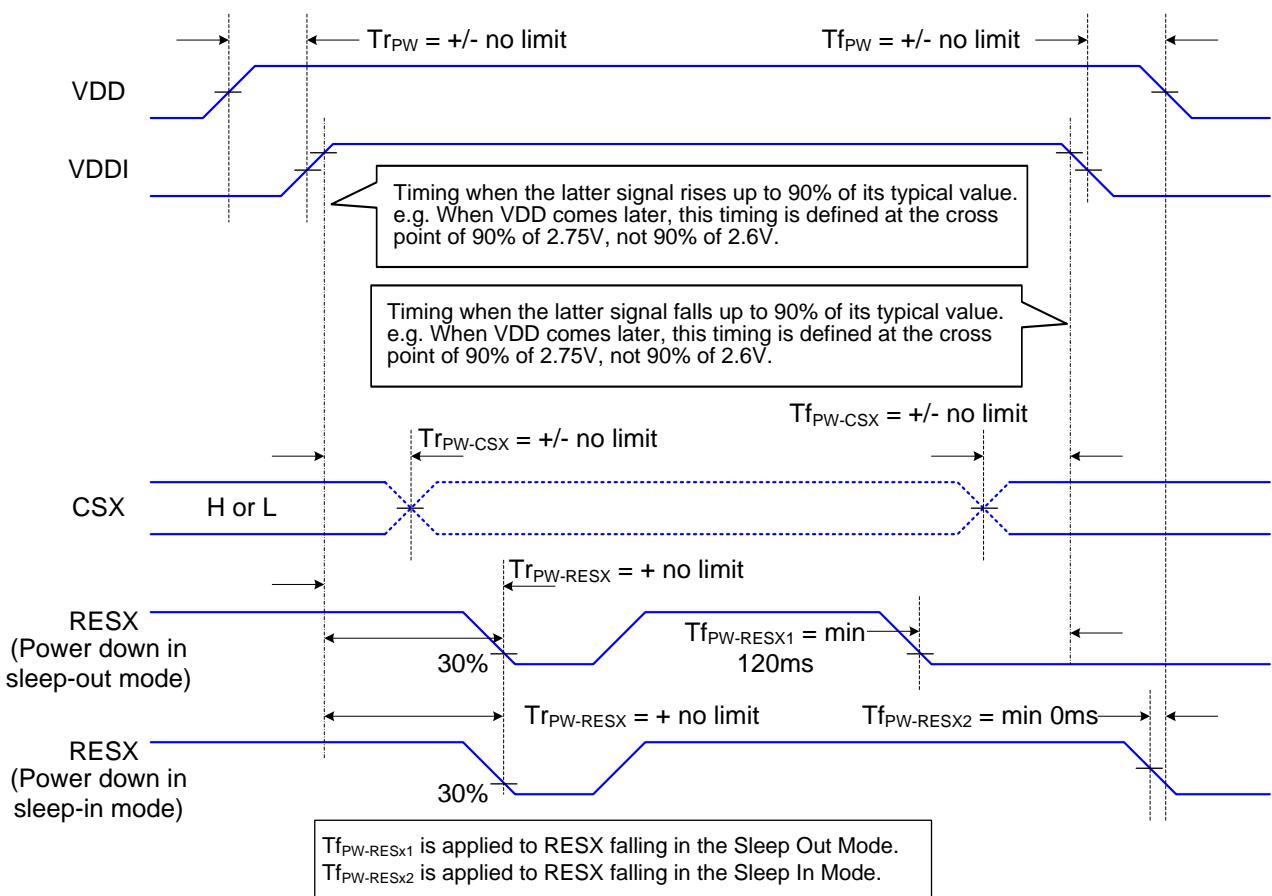
*Note 1: There will be no damage to the display module if the power sequences are not met.*

*Note 2: There will be no abnormal visible effects on the display panel during the Power On/Off Sequences.*

*Note 3: There will be no abnormal visible effects on the display between end of Power On Sequence and before receiving Sleep Out command. Also between receiving Sleep In command and Power Off Sequence.*

*Note 4: If RESX line is not held stable by host during Power On Sequence as defined in the sequence below, then it will be necessary to apply a Hardware Reset (RESX) after Host Power On Sequence is complete to ensure correct operation. Otherwise function is not guaranteed.*

The power on/off sequence is illustrated below



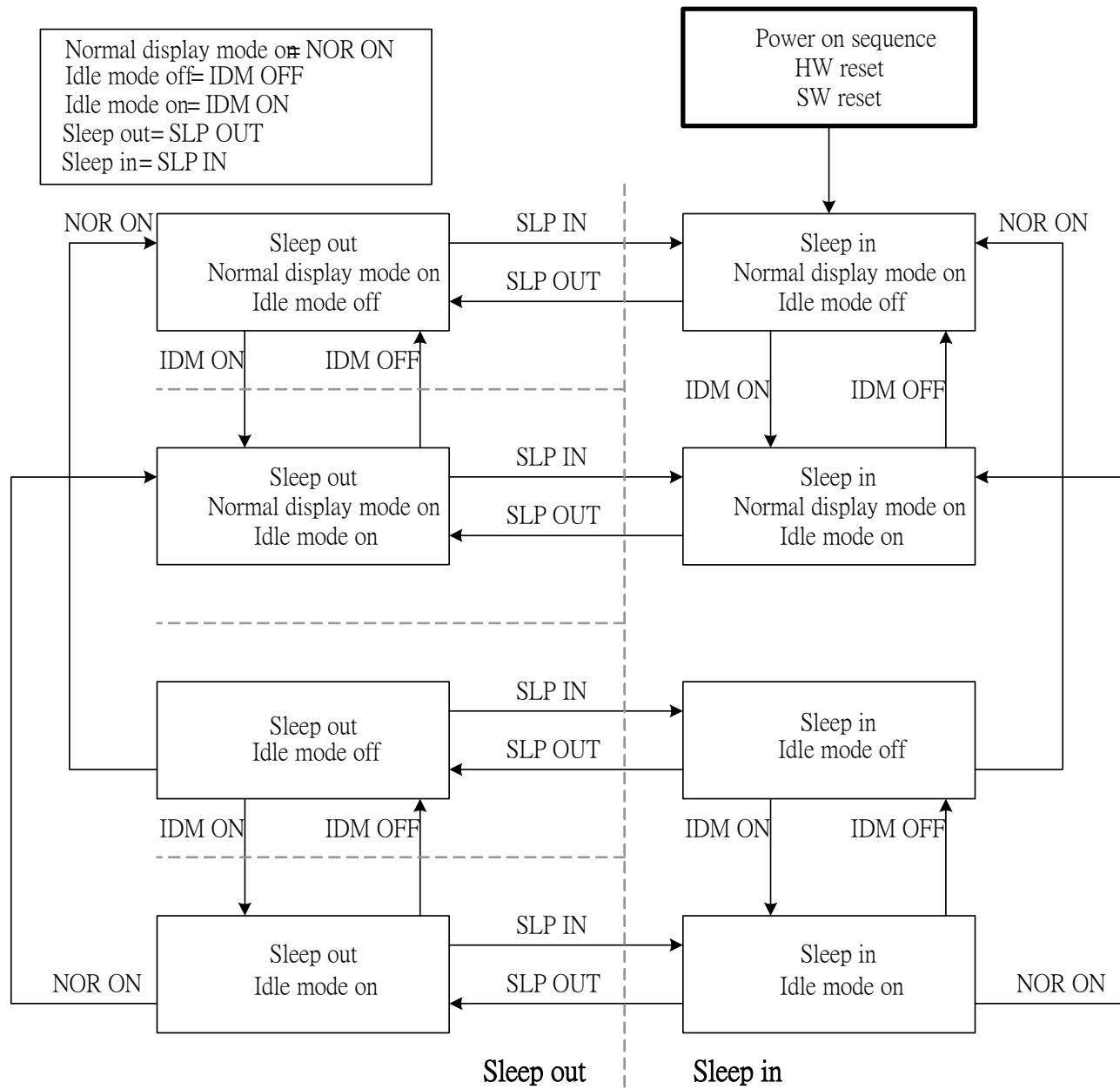
## 10.3 Uncontrolled Power OFF

The uncontrolled power-off means a situation which removed a battery without the controlled power off sequence. It will neither damage the module or the host interface.

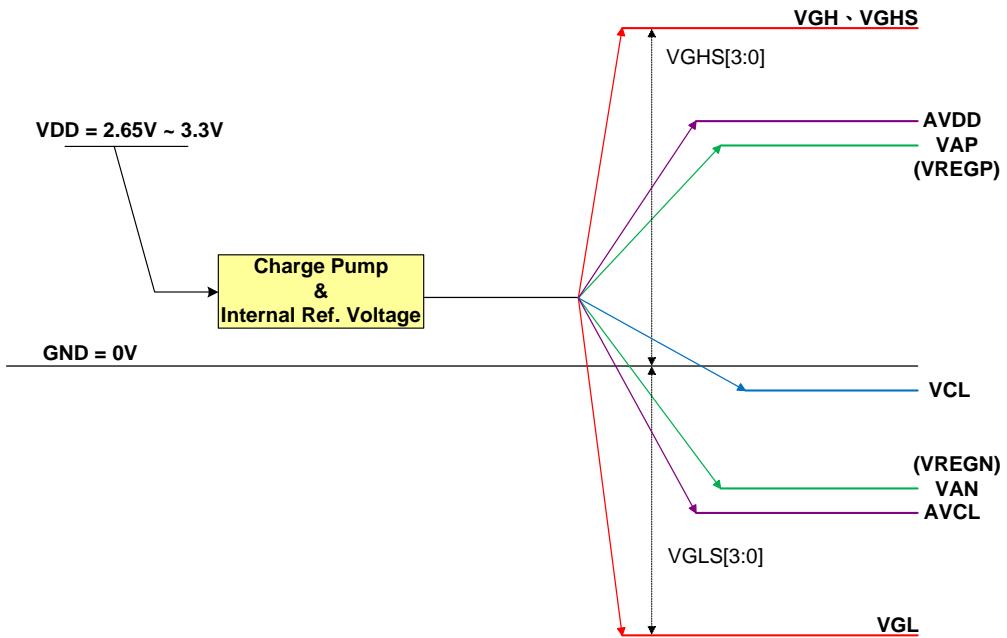
If uncontrolled power-off happened, the display will go blank and there will not any visible effect on the display

(blank display) and remains blank until “Power On Sequence” powers it up.

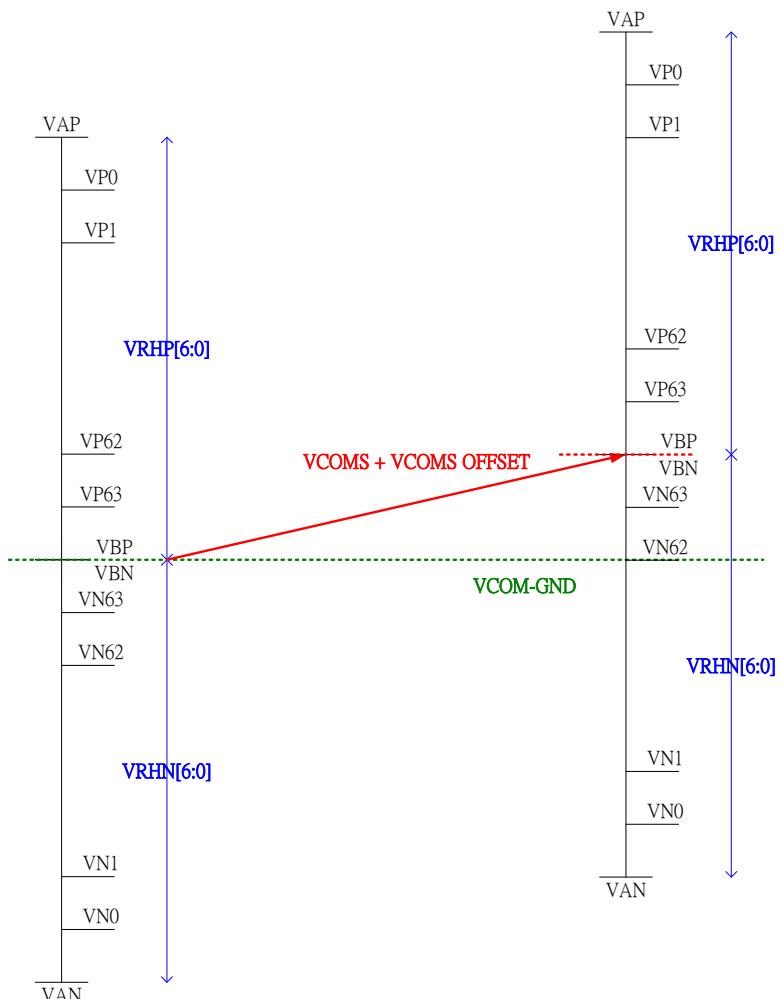
## 10.4 Power Flow Chart



## 10.5 Voltage Generation



## 10.6 Relationship about source voltage



## 11 NVM PROGRAMMING FLOW

