



十速科技股份有限公司  
tenx technology inc.

**Advance  
Information**

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# **TICE89**

## **Hardware**

### **User's Manual**

**Tenx reserves the right to change or discontinue this product without notice.**

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**Preliminary**

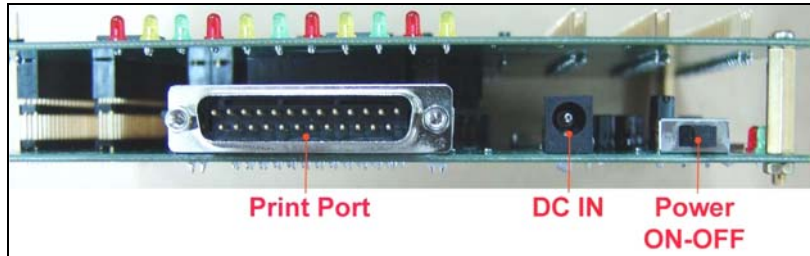
**tenx technology, inc.**

Rev 1.0, 2007/10/23

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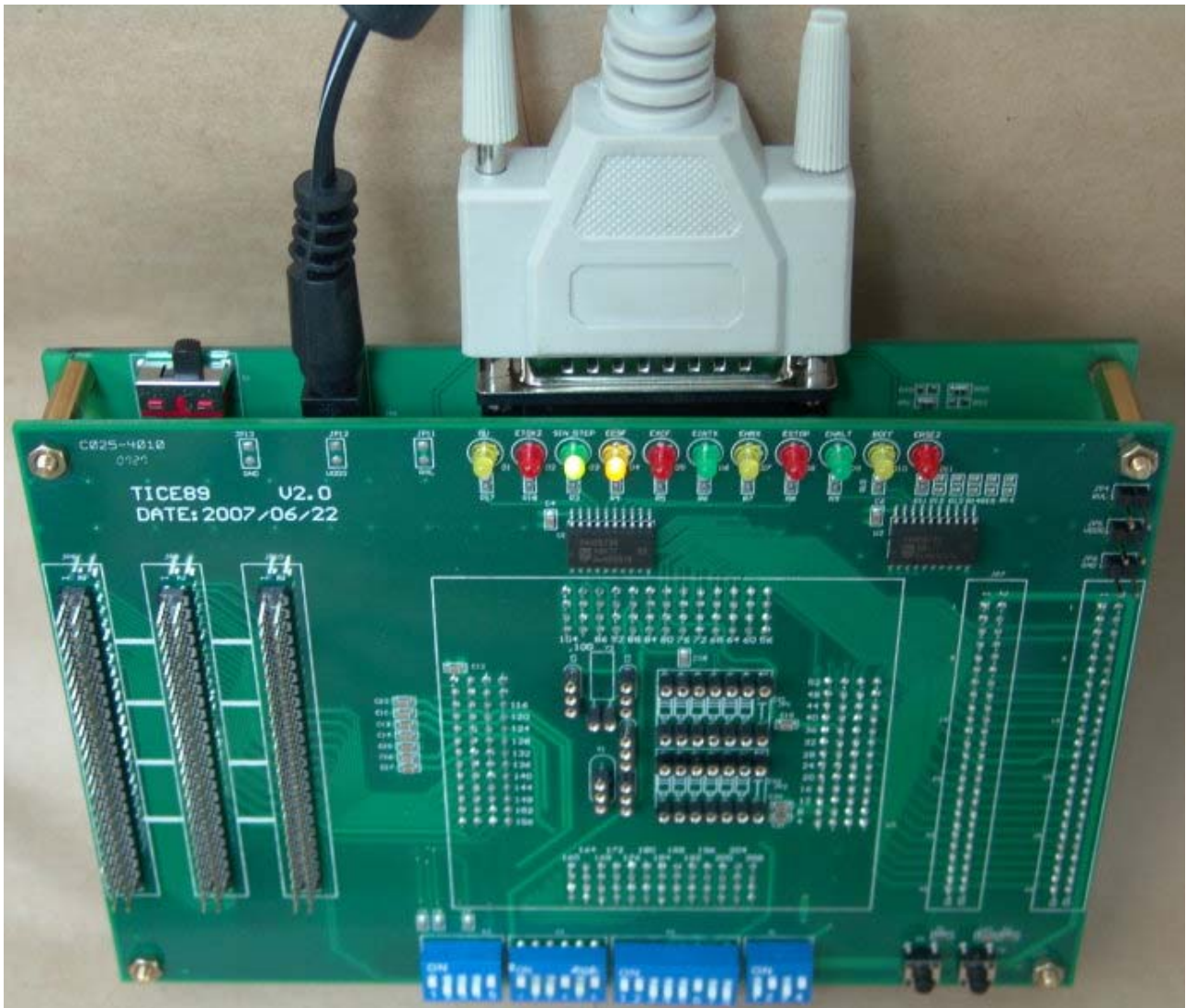
- 1. Supply MCU Model:  
TM89 series, TM8727
- 2. TICE89 Power Set up Guide:



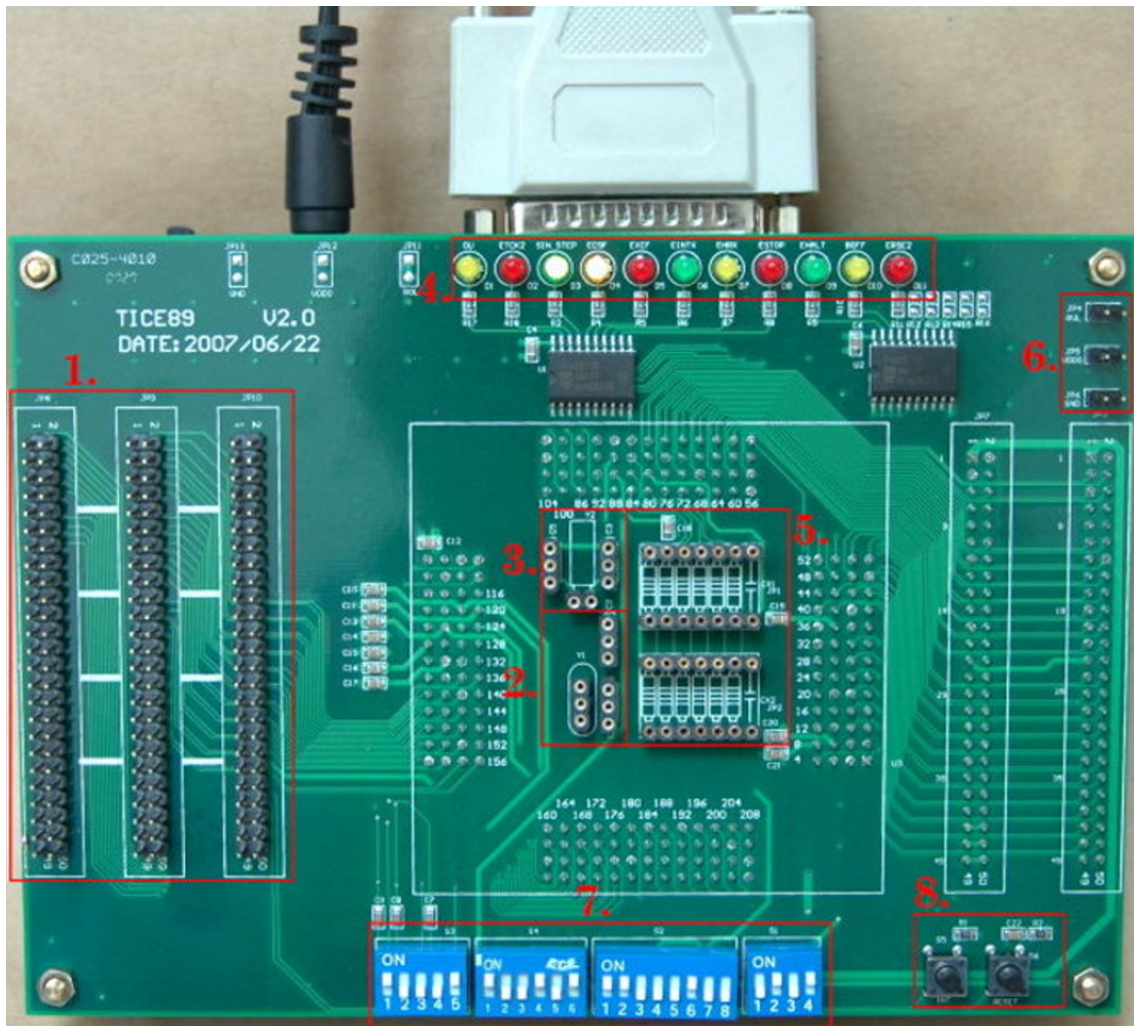
**Step-1:** Connect the computer and TICE89 with the printer port cable.

**Step-2:** Plug the DC adaptor in the DC IN jack on the TICE89.

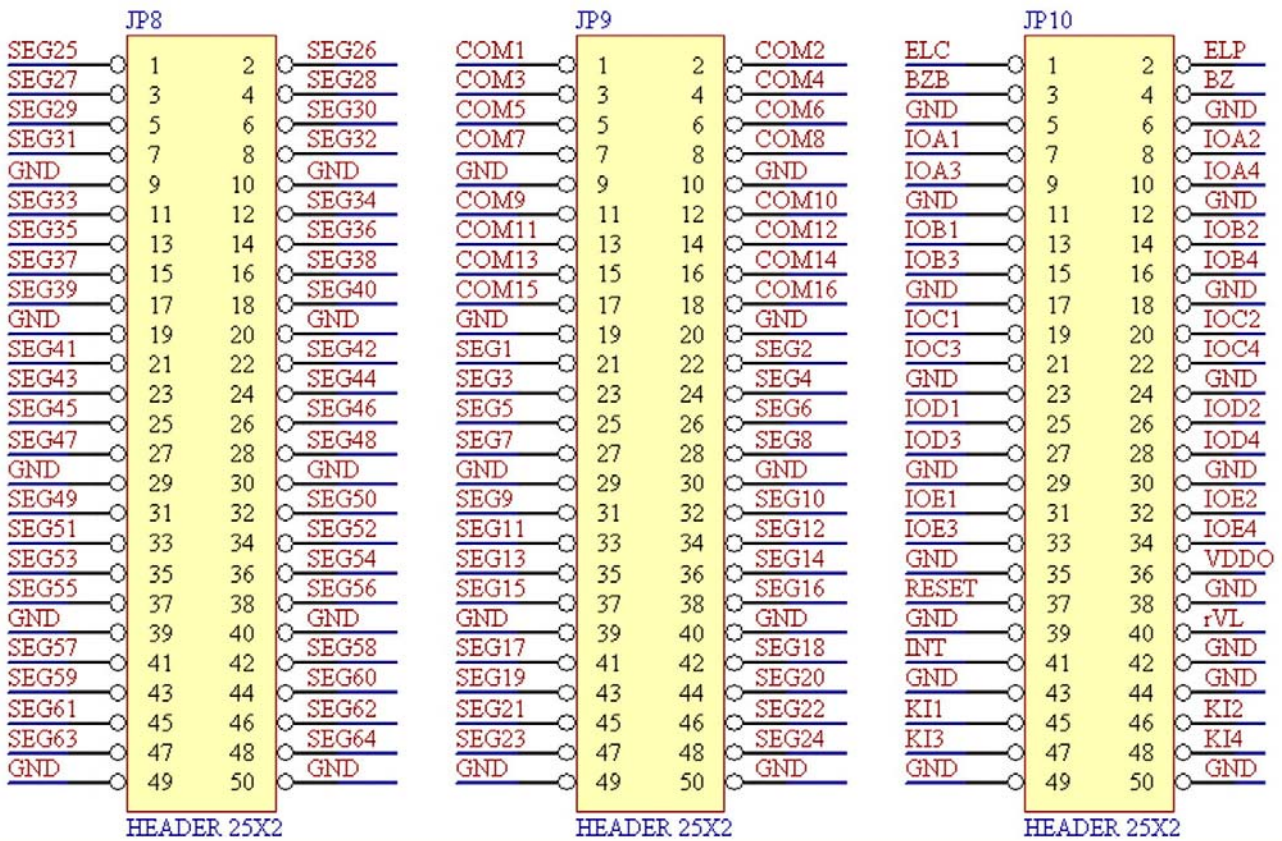
**Step-3:** Power on the TICE89. (Switch the Power ON-OFF button on.)



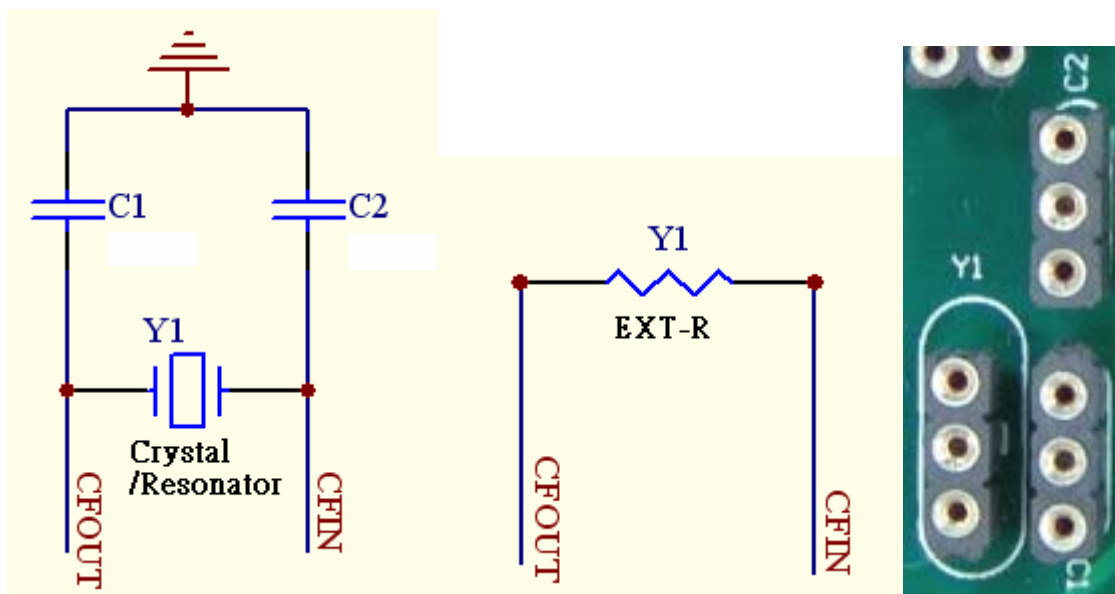
3. Hardware Set up Guide:



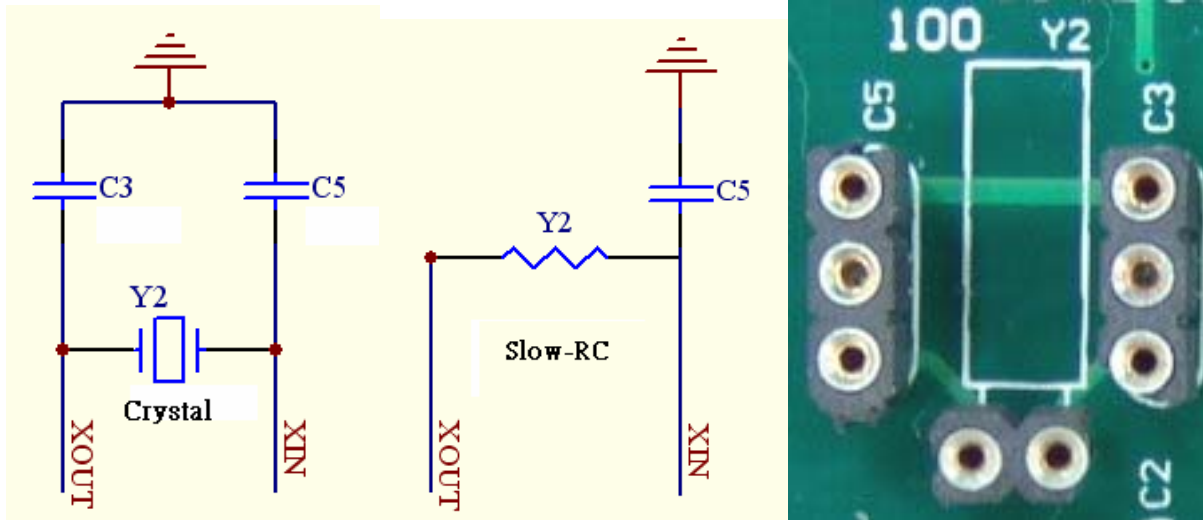
(1). JP8, JP9 and JP10: Connect to application circuit and LCD panel interface.



(2). Fast Clock Source: Connect with the Fast R or Crystal/Resonator. This clock source can be used under “Free Run” mode only. It can not be used in the “Free Run” option under ICE mode. (Please refer to the TICE89 software Integrated Development Editor.)



- (3). Slow Clock Source: Connect with the Slow RC or Crystal. This clock source can be used under “Free Run” mode only. It can not be used in the “Free Run” option under ICE mode. (Please refer to the TICE89 software Integrated Development Editor.)

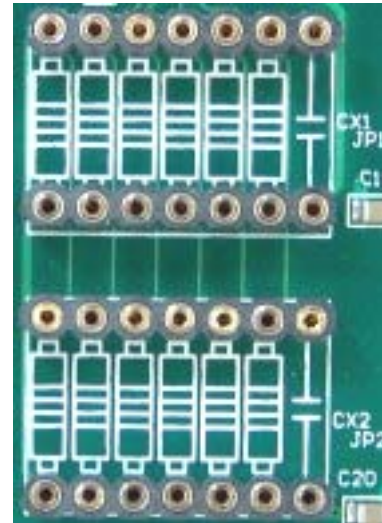
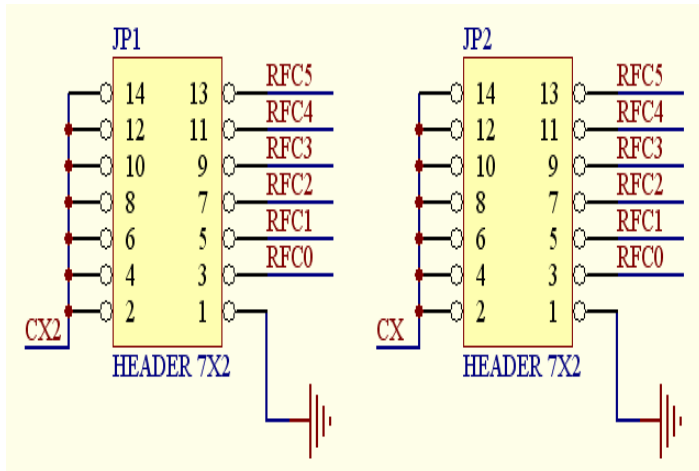


- (4). LED Description:



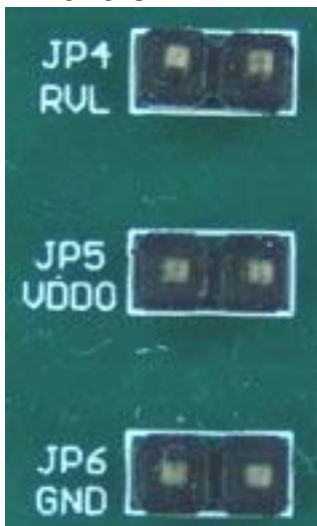
- D1: Stack Over/Underflow (On: Over/Underflow; Off: Normal)
- D2 and D3: Program execution
- D4: Fast/Slow Clock status (On: Fast; Off: Slow)
- D5: Positive Back-up Flag (On: 1; Off: 0)
- D6: Interrupt release Flag(On: 1; Off: 0)
- D7: Halt Release Flag(One: 1; Off: 0)
- D8: Stop model Flag (On: In Stop state)
- D9: Halt model Flag (On: In Halt state)
- D10: LCD OFF Flag(On: LCD OFF; Off: LCD ON)
- D11: Reset Flag(On: in Reset state)

(5). RFC connector:

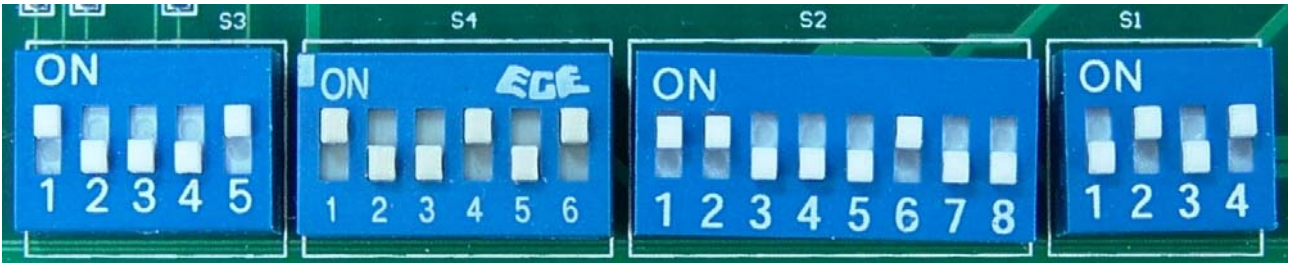


(6). POWER connector:

- JP4 RVL: RVL is an external regulated power source for LCD driver.  
 Output type: In normal condition.  
 Input type: When set the power source of LCD driver comes from RVL.)
- JP5 VDD0: The simulation voltage of TICE89. (Output)
- JP6 GND:



(7). SWITCH SET UP: When the switch is pushed to ON on S1, S2, S3 or S4, the bit will be set to 1.



- SWITCH S1 Description: Set the power mode of MCU(VDDO), according to the mask option file.



	Bit1	Bit2	Bit3	Bit4
Ext (5V)	1	0	0	1
Li (3V)	0	1	0	1
Ag (1.5V)	0	0	1	1
RVL*1	*	*	*	0

**Note:** Please clear all of the bits to zero before changing power mode in order to avoid burning down the power system.

\*1: RVL is an external regulated power source for LCD driver.

- SWITCH S2 Description: Set the Bias of LCD driver. Have to set it in accordance with each power mode.



	Bit1	Bit2	Bit3	Bit4	Bit5	Bit6	Bit7	Bit8
Ext/Li 1/2	1	1	1	VL2	0	VDDO	VL1	0
Ext/Li 1/3	1	1	0	VL2	0	VDDO	VL1	0
Ext/Li 1/4	1	0	0	VL2	0	VDDO	VL1	0
Ext/Li 1/5	0	0	0	VL2	0	VDDO	VL1	0
Ext/Li_DC	1	1	1	0	1	1	0	0
Ag 1/2	1	1	1	0	0	0	VL1	VDDO
Ag 1/3	1	1	0	0	0	0	VL1	VDDO



	Bit1	Bit2	Bit3	Bit4	Bit5	Bit6	Bit7	Bit8
Ag 1/4	1	0	0	0	0	0	VL1	VDDO
Ag 1/5	0	0	0	0	0	0	VL1	VDDO
Ag DC	1	1	1	0	1	0	0	1

**Mask Option file --> Power --> EXTERNAL REGULATOR for LCD:**

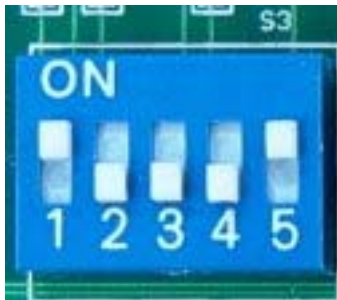
VL1 => 0: REGULATOR for LCD: NO USE  
 1: REGULATOR for LCD: VL1

VL2 => 0: REGULATOR for LCD: NO USE  
 1: REGULATOR for LCD: VL2

VDDO => 0: REGULATOR for LCD: VL1 or VL2  
 1: REGULATOR for LCD: NO USE

**RVL is an external regulated power source for LCD driver.**

- SWITCH S3: Set the combination of CUP related pin. (Please refer to the Bias selection setting on OPT file.)



**Mask Option file --> LCD --> Bias**

	Bit1	Bit2	Bit3	Bit4	Bit5
CUP1-2	1	*	0	0	*
CUP0-2	*	1	0	0	*
CUP0-1	*	*	0	0	*
CUP1-N	*	*	0	0	*
CUP0-N	*	*	0	0	1

- SWITCH S4: VDDT, BAK and VDDR



	Bit1	Bit2	Bit3	Bit4	Bit5	Bit6
VDDR = VDDO	1	0	*	0	*	*
VDDR = BAK	0	1	*	0	*	*
BAK = VDDO	*	*	1	0	*	*
BAK = 0.1 uF	*	*	0	0	*	*
VDDT = VDDO	*	*	*	0	1	0
VDDT = VDD5	*	*	*	0	0	1

VDDR: Positive Voltage for RFC  
 Normal: "VDDR = VDDO"

BAK: Positive Back-up Voltage  
 Mask Option file --> Power --> Power Source:  
 "VBAT for BCF = 0" => "BAK = VDDO"  
 "VL1 for BCF = 0" => "BAK = 0.1 uF" (For TM8727 Used)

VDDT: Select the output voltage for COM, SEG, IO, RFC, EL, and Alarm Pads.  
 When VDDO > VDD5, the setting must be "VDDT = VDDO"  
 When VDDO < VDD5, the setting must be "VDDT = VDD5"

VDD5: The highest output voltage of LCD driver  
 Example: If the LCD driver is 1/4 Bias and VL1 = 1.5V for each bias voltage, VDD5 = VL1 \* 4 = 1.5 \* 4 = 6 V

(8). INT and RESET

INT C and RESET C: According to the setting for INT and RESET pins specified in the mask option file, ICE will convert the signals applied on INT and RESET pins to "INT C" and "RESET C" that MCU needed.

