Pi – Tek

OLED MODULE

SPECIFICATIONS

MODEL NO. : PH1602LY
PRODUCT TYPE: STANDARD

This specification may be changed without any notices in order improve performance or quality etc.

Content

History of versions and modifications

Revision	Date	Description	Changed By
1.0		Preliminary specification	

Coding system

P H 1602 L Y

P: PI-TEK INC.

H : Characters

1602: 2 lines x 16 characters

L: Model

Y: Yellow

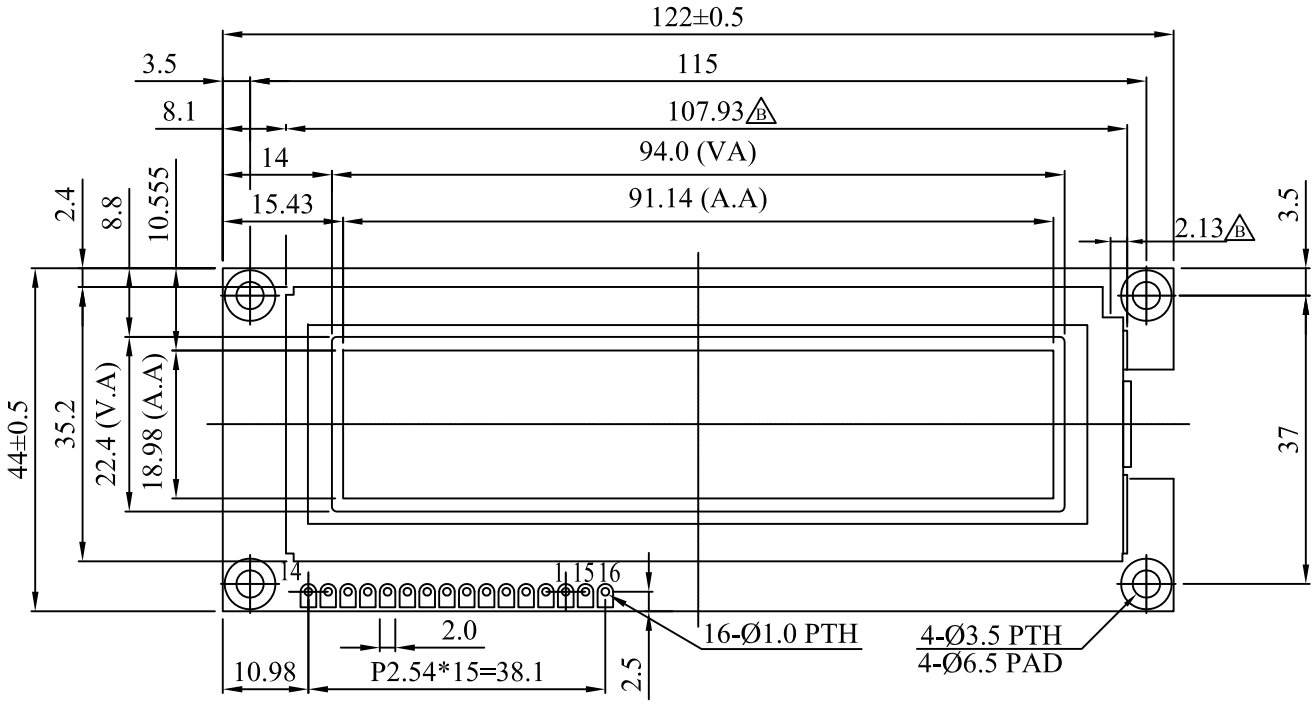
Functions and Features

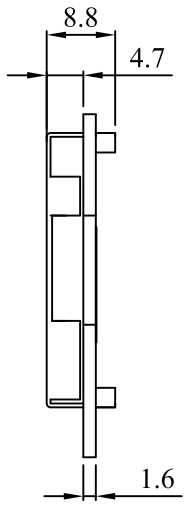
- 2 lines x 16 characters
- Built-in controller
- Parallel or serial MPU interface (Default 6800 MPU parallel)
- +2.8V ~ +5.3V Power Supply
- viewing angle “Free”
- Wide Temperature -40℃ ~ +80℃ (Operating)
- Sunlight Readable Technology
- RoHS compliant

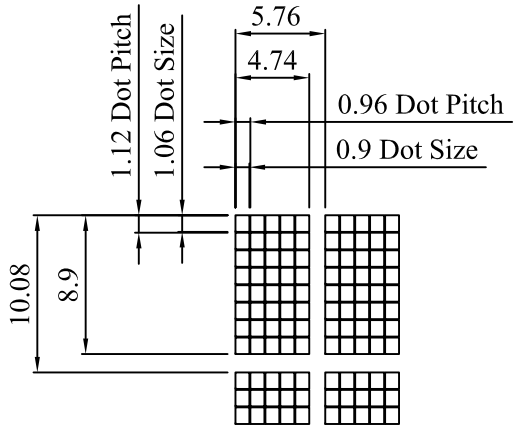
Mechanical Specification

Item	Description	
Product No.	PH1602LY	
Viewing Area	94.00(W)×22.40(H)	mm
Module Size	122.0(W)×44.0(H)×8.8 (D)	mm
Dot Size	1.06(W)×0.90(H)	mm
Dot Pitch	1.12(W)×0.96(H)	mm
Display Format	16 characters (W)×2 lines (H)	
Duty Ratio	1/16	Duty
Controller	SSD1311 or Equivalent	
Interface	6800 (Default) 8Bit 8080 (Option) SPI (Option) I2C (Option)	

PIN NO.	SYMBOL
1	Vss
2	Vdd
3	Vo
4	RS
5	R/$\overline{W}$
6	E
7	DB0
8	DB1
9	DB2
10	DB3
11	DB4
12	DB5
13	DB6
14	DB7
15	NC
16	NC







DOT SIZE
SCALE 2/1

Pi-Tek Pro Technology Inc.					Drawing Number		Rev.
							A
Projection Type		Tolerance			MODEL		
		Dimension	±0.3		PH1602L		
		Unit	mm		TITLE		
	Drawn	Checked	Approved	PM	OLED Module Drawing		
By	Eco-2048	Eco-1500	Eco-0150	Eco-0097	Scale	Sheet	Size
Note	2048.00	1500.00	0150.00	0097.00	3/2	1 of 1	A4

Pin Description

Parallel Interface (default):

Pin No.	Symbol	External Connection	Description
1	VSS	Power Supply	Ground
2	VDD	Power Supply	Supply Voltage for OLED and logic
3	Vo	-	Contrast Adjustment
4	RS(D/C#)	MPU	Register select signal. H: DATA, L: Command
5	R/W# (WR#)	MPU	6800-interface: Read/Write select signal, R/W=1: Read R/W: =0: Write 8080-interface: Active LOW Write signal.
6	E or /RD	MPU	6800-interface: Operation enable signal. Falling edge triggered. 8080-interface: Active LOW Read signal.
7-14	DB0~DB7	MPU	8-bit Bi-directional data bus lines
15-16	NC	-	No Connect

DC Characteristics

Item	Symbol	Condition	Min.	Type	Max.	Unit
Power Supply for Logic	VDD	(Wide Voltage I/O Application)	2.8	5.0	5.3	Volt
Input Voltage for I/O Pins	Vi	(Wide Voltage I/O Application)	2.8	5.0	5.3	Volt
Input Voltage	VIL	L level	0	-	0.2 VDD	Volt
Input Voltage	VIH	H level	0.8 VDD	-	VDD	Volt
Output Voltage	VOL	L level	0	-	0.1 VDD	
Output Voltage	VOH	H level	0.9 VDD	-	VDD	
Power Supply Current for OLED	IDD	Note	-	30		mA
Sleep Mode Current for VDD	IDD,SLEEP			1	10	μA

Note:

VDD = 5.0V, 25% Display Area Turn on.100 cd/㎡
When random texts pattern is running, averagely, about 1/4 of pixels will be on.

Optical Characteristics

Item	Symbol	Min.	Typ	Max.	Unit
Viewing angle range			Free		Degree
Dark Room Contrast	Cr		>10,000:1		
Brightness	Lbr		125		cd/㎡
Peak Emission Wavelength	C.I.E 1931	X=0.46 Y=0.45	X=0.50 Y=0.49	X=0.54 Y=0.53	

Electrical Absolute Ratings

Item	Symbol	Min.	Typ.	Max.	Unit	Notes
Power Supply for Logic	VDD	-0.3	5.0	5.5	Volt	1,2
Input Voltage for I/O Pins	VI	-0.3	5.0	5.5	Volt	1,2
Life Time (100 cd/㎡)		---	100,000	---	Hours	3

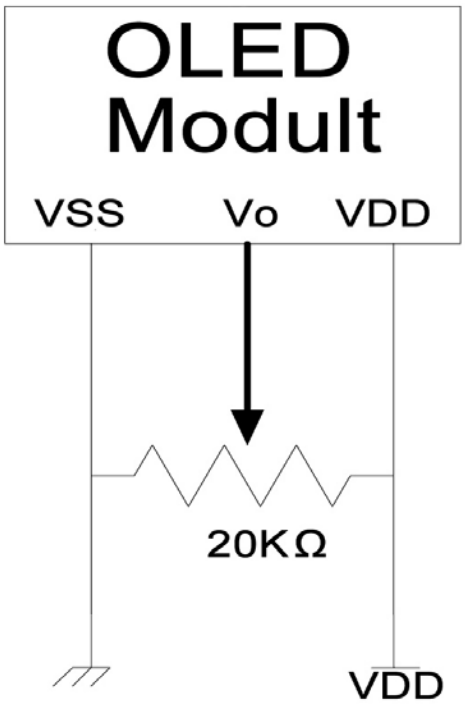
Note 1: All the above voltages are on the basis of “VSS = 0V”.

Note 2: When this module is used beyond the above absolute maximum ratings, permanent breakage of the module may occur.

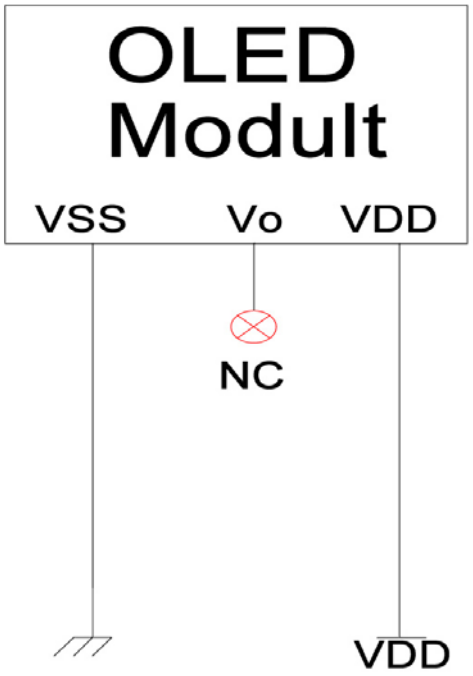
Note 3: Ta = 25°C, 25% Checkerboard.
Software configuration follows Section ACTUAL APPLICATION EXAMPLE Initialization. End of lifetime is specified as 50% of initial brightness reached. The average operating lifetime at room temperature is estimated by the accelerated operation at high temperature conditions.

POWER SUPPLY

Adjust Brightness by Software & Hardware(VR)

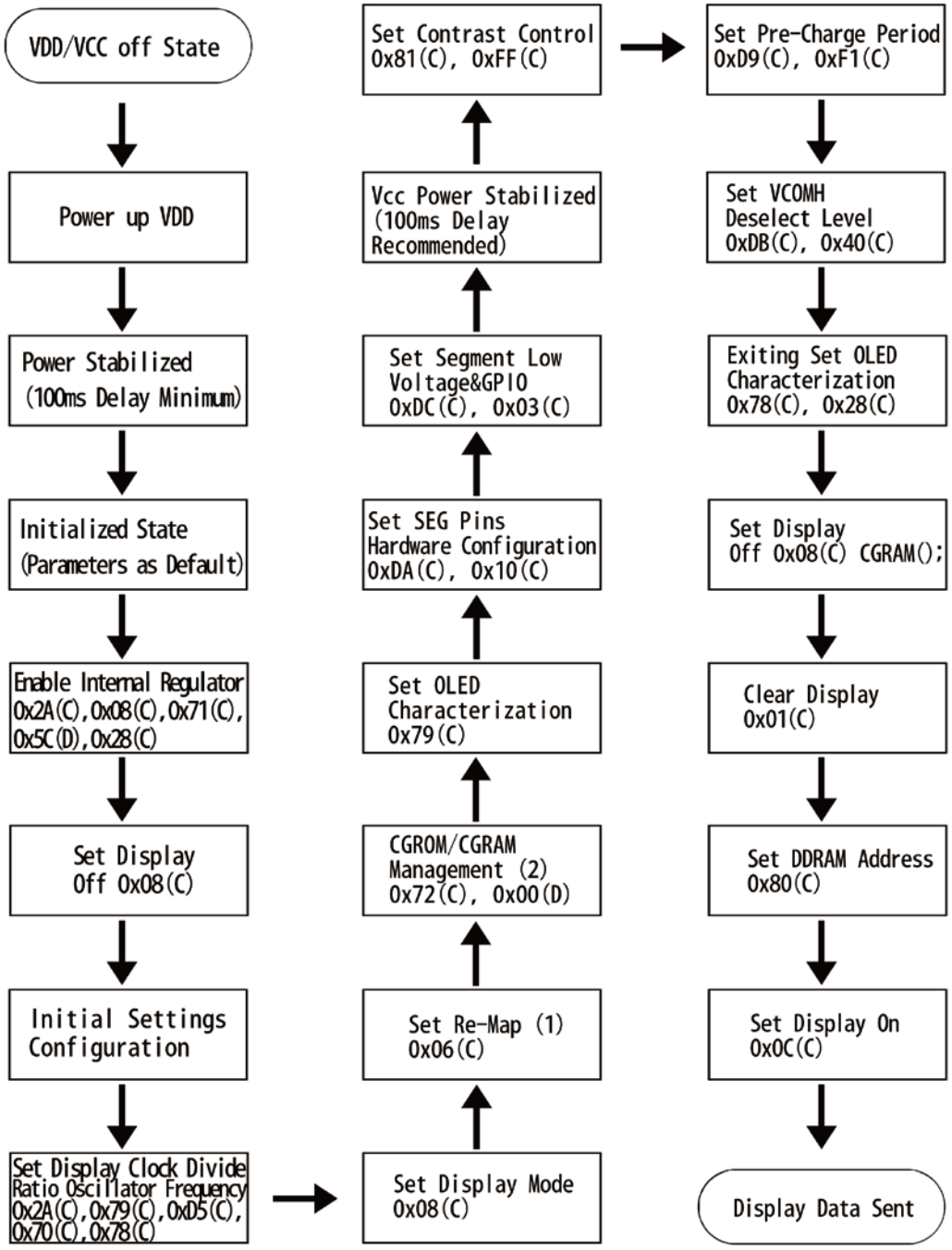


Adjust Brightness by Software(Only)



Application

Power up Sequence



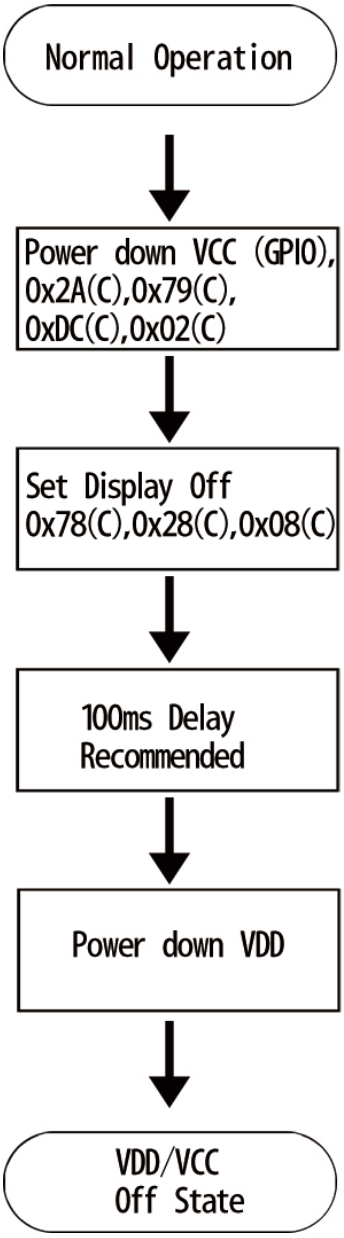
(1) This command could be programmable or defined by pin configuration.

(2) This command could be programmable or defined by pin configuration.

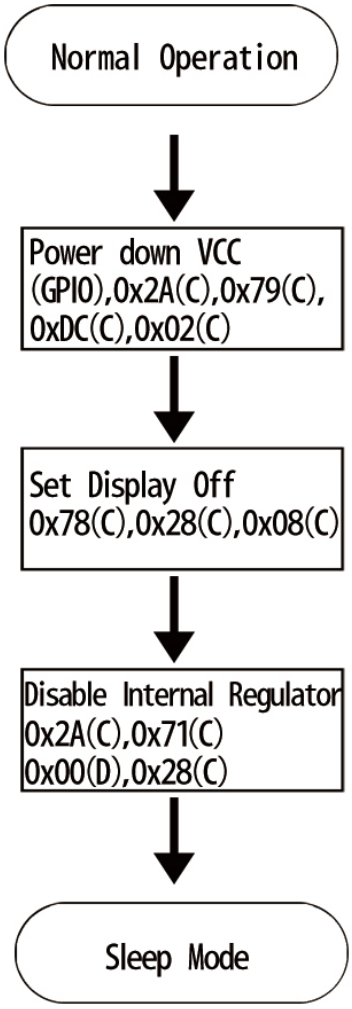
※（C）：Write Command ※（D）：Write Data

If the noise is accidentally occurred at the displaying window during the operation, please reset the display in order to recover the display function.

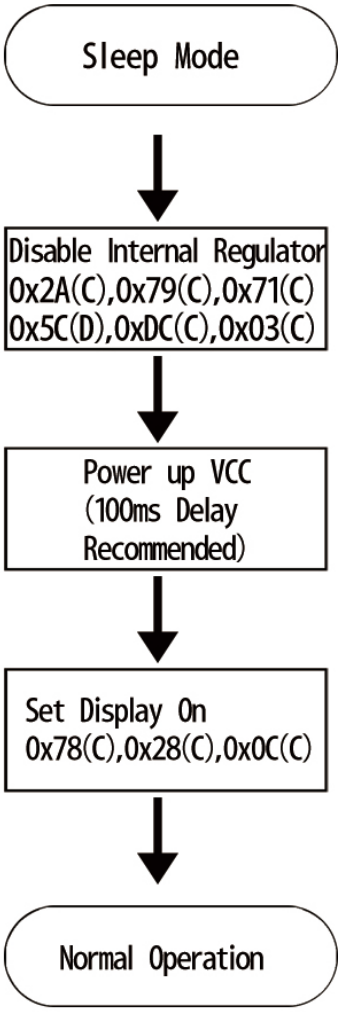
Power down Sequence



Entering Sleep Mode

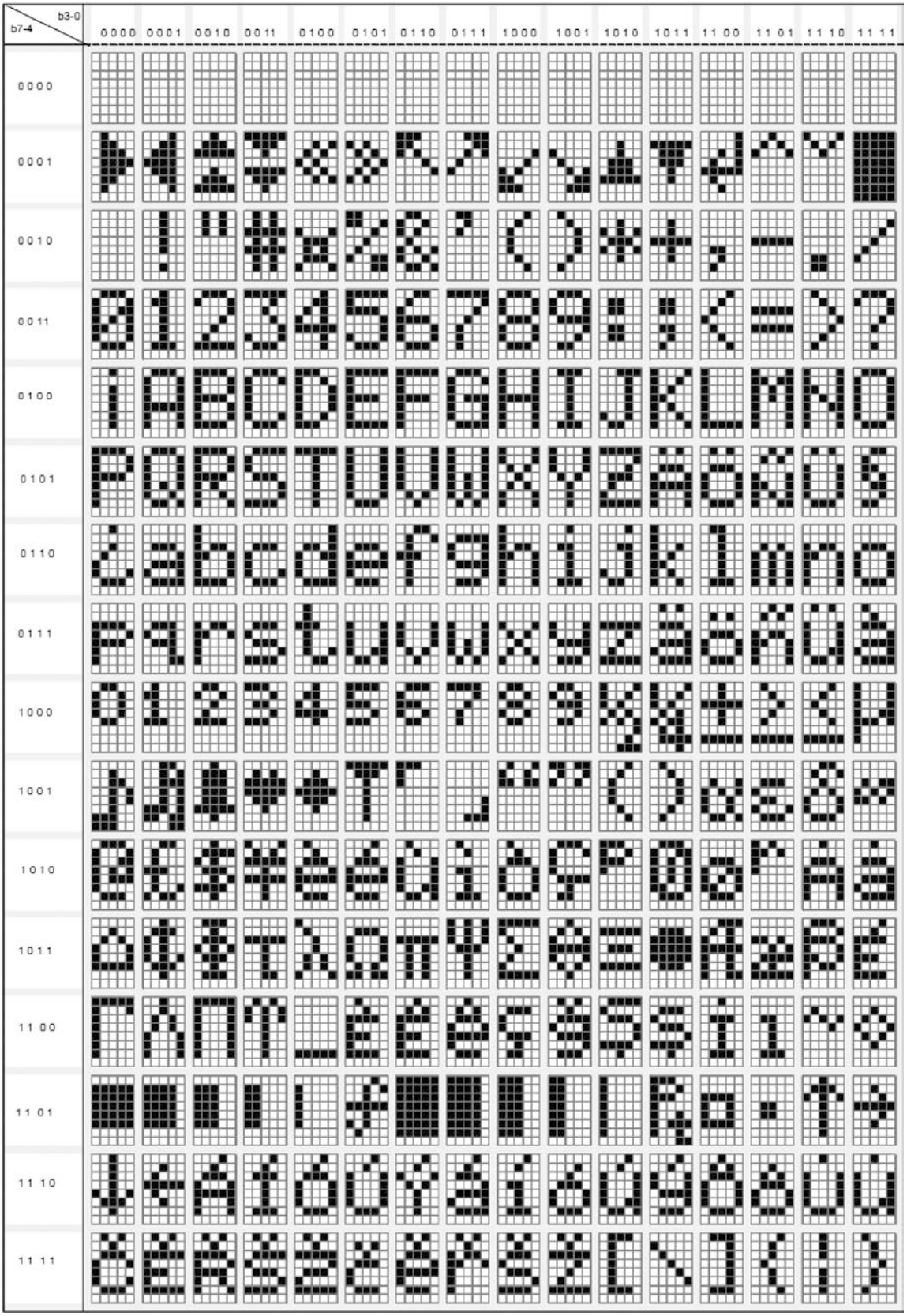


Exiting Sleep Mode

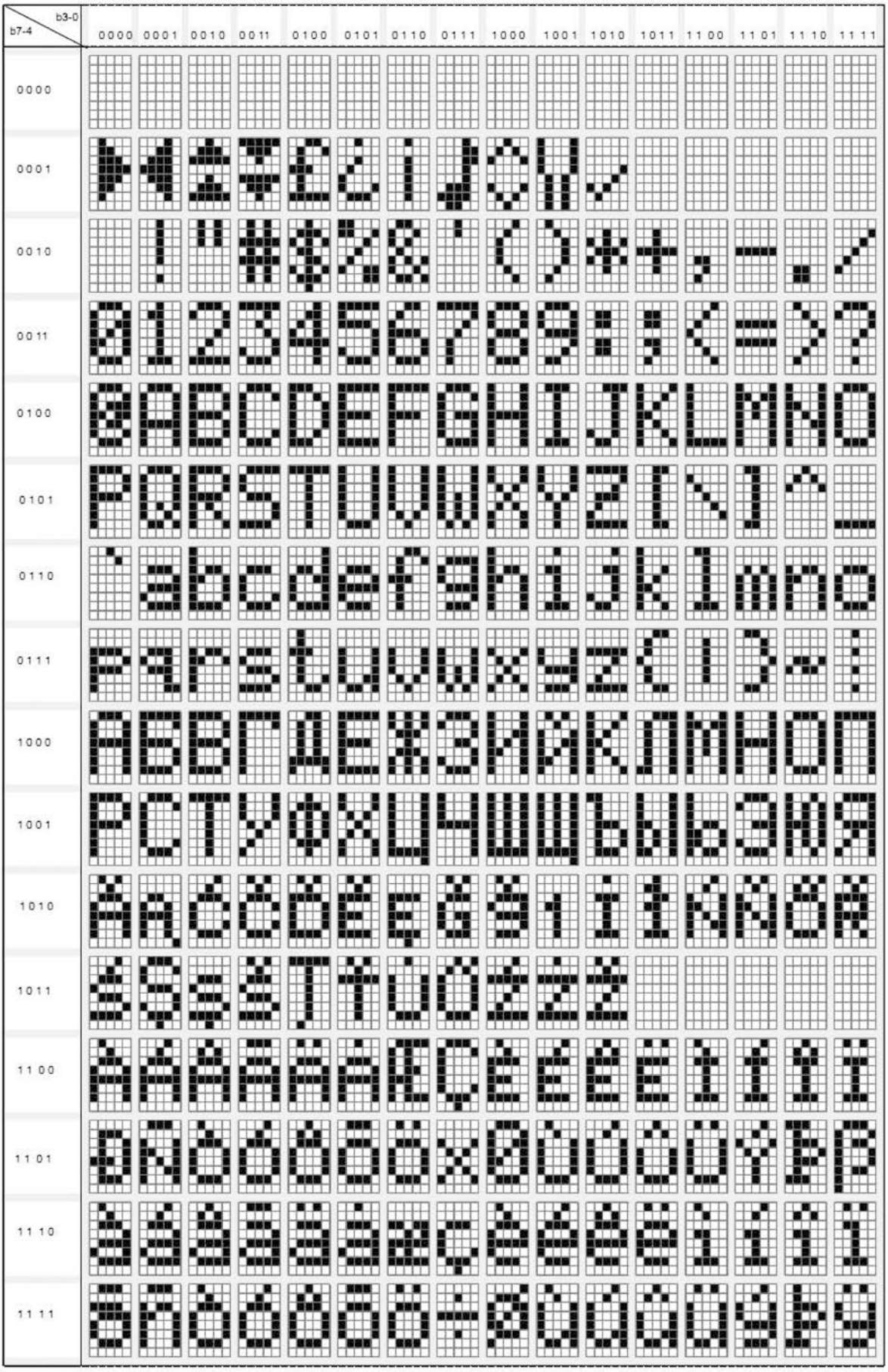


SSD1311 CGROM CHARACTER CODE

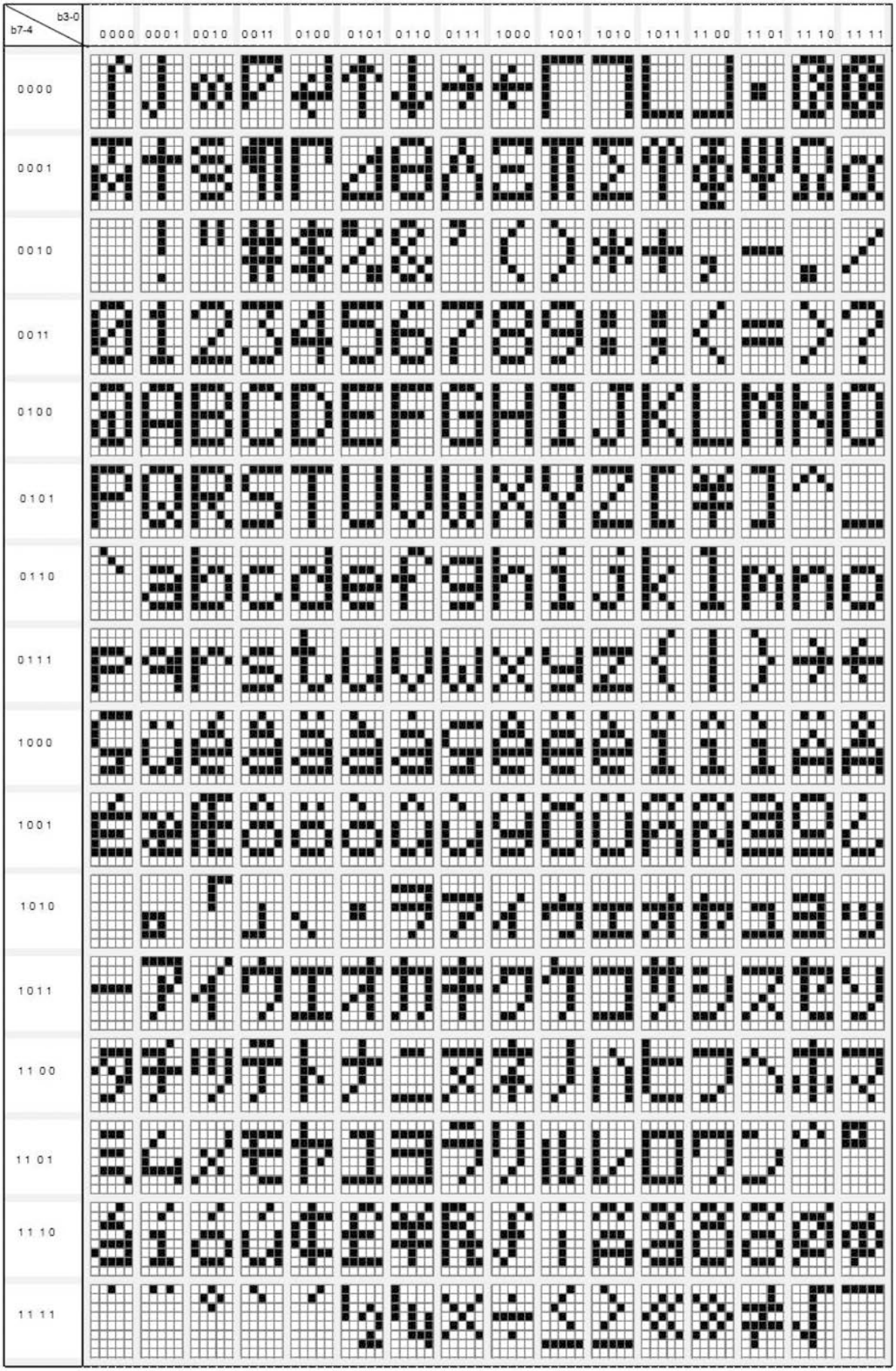
ROM A



ROM B


b3-0
b7-4
0000 0001 0010 0011 0100 0101 0110 0111 1000 1001 1010 1011 1100 1101 1110 1111
0000
0001
0010
0011
0100
0101
0110
0111
1000
1001
1010
1011
1100
1101
1110
1111

ROM C


b3-0
b7-4
0000 0001 0010 0011 0100 0101 0110 0111 1000 1001 1010 1011 1100 1101 1110 1111
0000
0001
0010
0011
0100
0101
0110
0111
1000
1001
1010
1011
1100
1101
1110
1111