



design • manufacture • supply

**Midas Components Limited**  
Electra House  
32 Southtown Road  
Great Yarmouth  
Norfolk  
NR31 0DU  
England

**Telephone**  
**Fax**  
**Email**  
**Website**

+44 (0)1493 602602  
+44 (0)1493 665111  
sales@midasdisplays.com  
www.midasdisplays.com

<b>Specification</b>	
Part Number:	MCOB21605GX-ERP
Version:	
Date:	



design • manufacture • supply

# Content

- Coding system.....3
- Mechanical Specification.....4
- Mechanical Drawing.....5
- Pin Description .....6
- DC Characteristics .....7
- Optical Characteristics .....7
- Electrical Absolute Ratings .....8
- POWER SUPPLY.....8
- Application.....9
- SSD1311 CGROM CHARACTER CODE.....11



# Midas Displays OLED Part Number System

<b>MCO</b>	<b>B</b>	<b>21605</b>	<b>A</b>	<b>*</b>	<b>V</b>	<b>-</b>	<b>E</b>	<b>W</b>	<b>I</b>	<b>*</b>		
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>		<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>		
1	=	<b>MCO:</b>	Midas Displays OLED									
2	=	<b>Blank:</b>	<b>B:</b> COB (Chip on Board) <b>T:</b> TAB (Taped Automated Bonding)									
3	=	<b>No of dots:</b>	(e.g. 240064 = 240 x 64 dots)				(e.g. 21605 = 2 x 16 5mm C.H.)					
4	=	<b>Series</b>	A to Z									
5	=	<b>Series Variant:</b>	A to Z and 1 to 9 – see addendum									
6	=	<b>Operating Temp Range:</b>	A: -30+85° C		V: -40+80° C		Y: -40 +70° C		Z: -30+70° C			
			X: -40 +85° C									
7	=	<b>Character Set:</b>	<b>Blank:</b> Not Applicable <b>E:</b> Multi European Font Set (English/Japanese – Western European (K) – Cyrillic (R))									
8	=	<b>Colour:</b>	Y: Yellow		W: White		B: Blue		R: Red		G: Green	RGB: Full Colour
9	=	<b>Interface:</b>	<b>P:</b> Parallel		<b>I:</b> I <sup>2</sup> C		<b>S:</b> SPI		<b>M:</b> Multi			
10	=	<b>Voltage Variant:</b>	e.g. <b>3</b> = 3v									

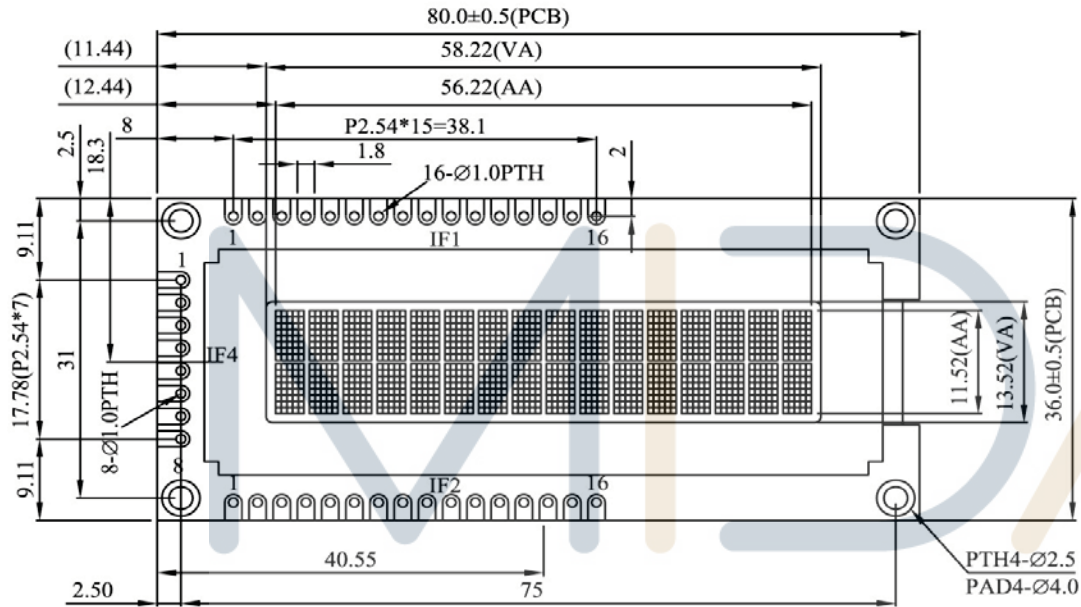
## Functions and Features

- 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°C ~ +80°C (Operating)
- Sunlight Readable Technology
- RoHS compliant

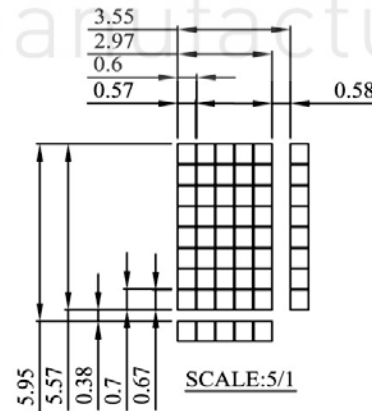
## Mechanical Specification

Item	Description	
Product No.	A11000000T 0U0G1 6 ÖYÖÜÚ	
Viewing Area	58.22(W)×13.52(H)	mm
Module Size	80.0(W)×36.0(H)×9.1 (D)	mm
Dot Size	0.57(W)×0.67(H)	mm
Dot Pitch	0.60(W)×0.70(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)	

# Mechanical Drawing



IF1,IF2	SYMBOL
1	VSS
2	VDD
3	V <sub>o</sub>
4	RS
5	R/W#
6	E
7-14	DB0-7
15-16	NC



# 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	V <sub>i</sub>	(Wide Voltage I/O Application)	2.8	5.0	5.3	Volt
Input Voltage	V <sub>IL</sub>	L level	0	-	0.2 VDD	Volt
Input Voltage	V <sub>IH</sub>	H level	0.8 VDD	-	VDD	Volt
Output Voltage	V <sub>OL</sub>	L level	0	-	0.1 VDD	
Output Voltage	V <sub>OH</sub>	H level	0.9 VDD	-	VDD	
Power Supply Current for OLED	I <sub>DD</sub>	Note	-	30		mA
Sleep Mode Current for VDD	I <sub>DD,SLEEP</sub>			1	10	μA

Note:

VDD = 5.0V, 25% Display Area Turn on. 100 cd/m<sup>2</sup>

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		80		cd/m <sup>2</sup>
Peak Emission Wavelength	C.I.E 1931	X=0.60 Y=0.30	X=0.64 Y=0.34	X=0.68 Y=0.38	

# 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/m <sup>2</sup> )		---	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.

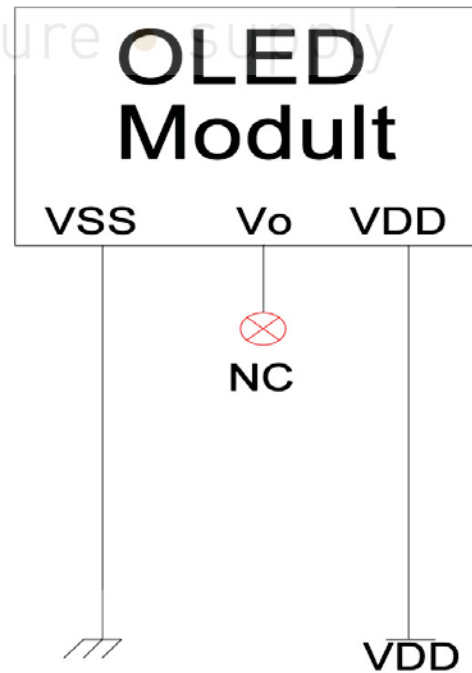
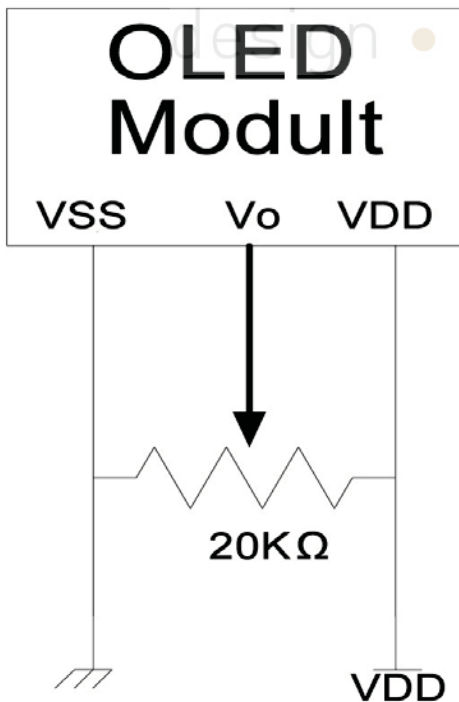
Note 3: Ta = 25°C, 25% Checkerboard.

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)

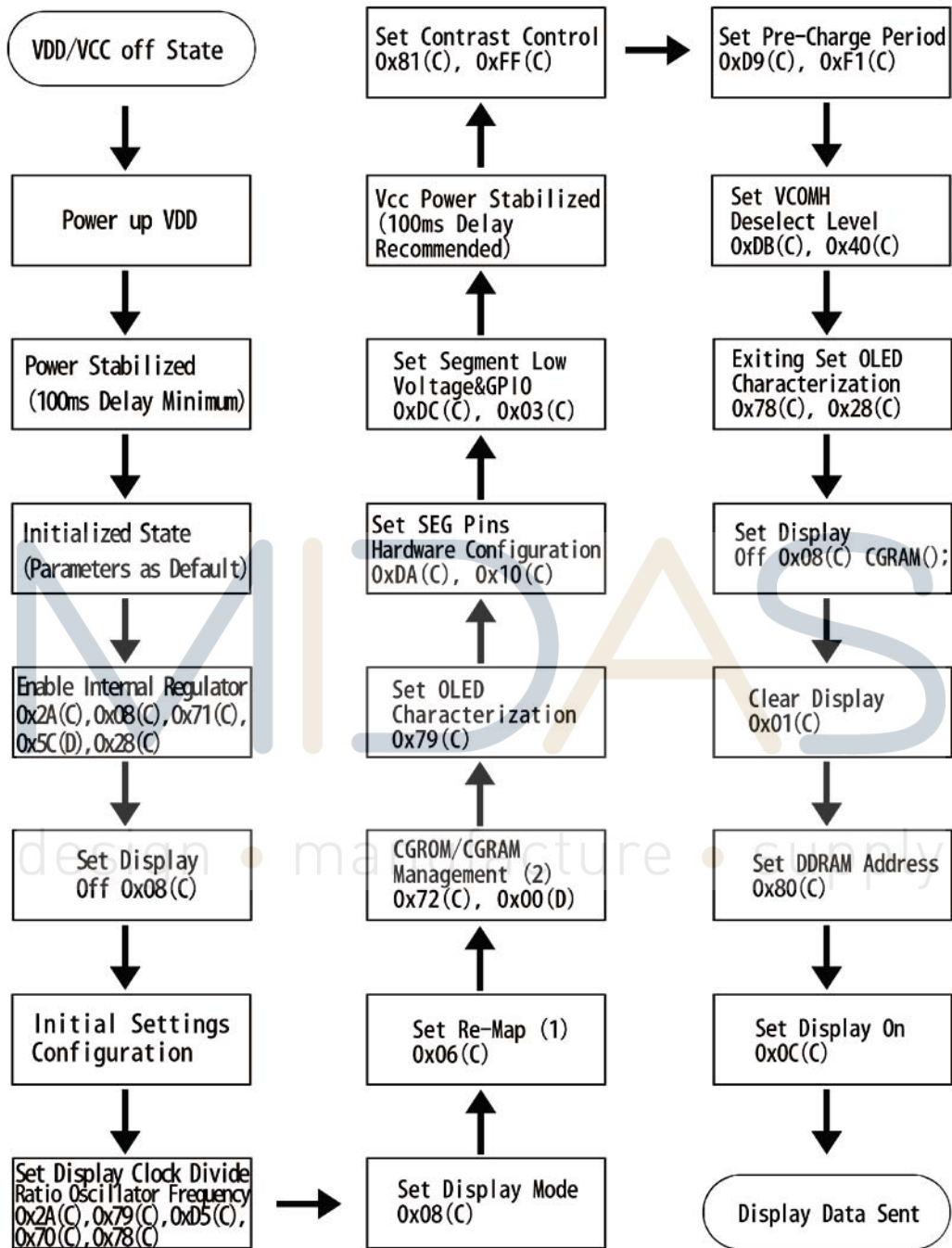
Adjust Brightness by Software(Only)





# Application

## Power up Sequence



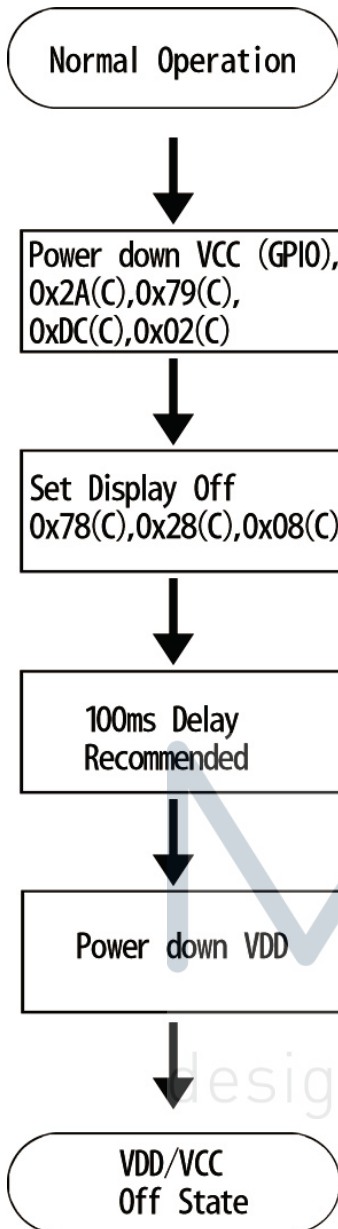
(1) This command could be programmable or defined by pin configuration.

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

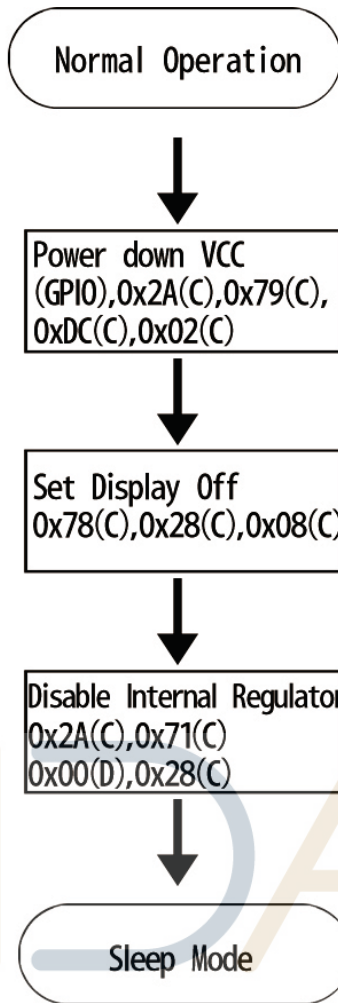
※ ( C ) : Write Command    ※ ( D ) : Write Data

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

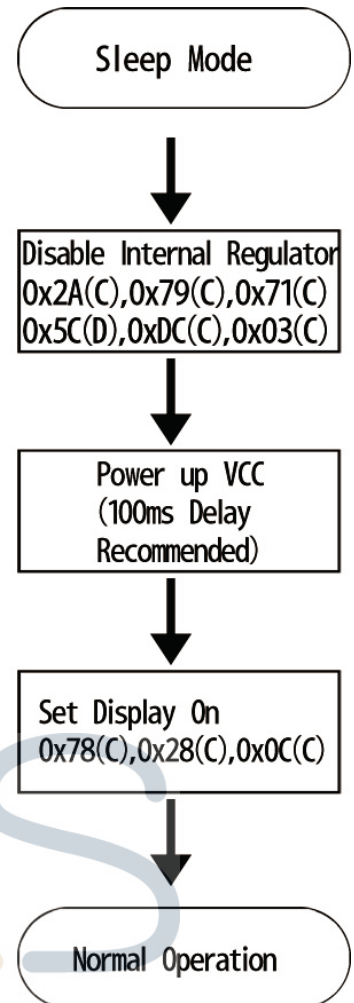
### Power down Sequence



### Entering Sleep Mode



### Exiting Sleep Mode



design • manufacture • supply

# SSD1311 CGROM CHARACTER CODE

ROM A

b7-4 \ b3-0	0000	0001	0010	0011	0100	0101	0110	0111	1000	1001	1010	1011	1100	1101	1110	1111
0000																
0001	✦	✧	✨	✩	✪	✫	✬	✭	✮	✯	✰	✱	✲	✳	✴	■
0010		!	"	#	\$	%	&	'	(	)	*	+	,	-	.	/
0011	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
0100	I	A	B	C	D	E	F	G	H	I	J	K	L	N	O	
0101	P	Q	R	S	T	U	V	W	X	Y	Z	A	B	C	D	E
0110	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	
0111	p	q	r	s	t	u	v	w	x	y	z	a	b	c	d	e
1000	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
1001	␣	␤	␥	␦	␧	␨	␩	␪	␫	␬	␭	␮	␯	␰	␱	␲
1010	␳	␴	␵	␶	␷	␸	␹	␺	␻	␼	␽	␾	␿	␿	␿	␿
1011	␿	␿	␿	␿	␿	␿	␿	␿	␿	␿	␿	␿	␿	␿	␿	␿
1100	Γ	Δ	Ε	Ζ	Η	Θ	Ι	Κ	Λ	Μ	Ν	Ξ	Ο	Π	Ρ	Σ
1101	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
1110	↓	←	↖	↗	↘	↙	↕	↔	↞	↠	↡	↣	↤	↥	↦	↧
1111	⊖	⊗	⊘	⊙	⊚	⊛	⊜	⊝	⊞	⊟	⊠	⊡	⊢	⊣	⊤	⊥

# ROM B

b7-4	b3-0															
	0000	0001	0010	0011	0100	0101	0110	0111	1000	1001	1010	1011	1100	1101	1110	1111
0000																
0001	▲	◆	■	♣	♠	♣	♠	♣	♠	♣	♠	♣	♠	♣	♠	♣
0010	!	"	#	\$	%	&	'	(	)	*	+	,	-	.	/	
0011	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
0100	Ⓐ	Ⓑ	Ⓒ	Ⓓ	Ⓔ	Ⓕ	Ⓖ	Ⓗ	Ⓘ	⓷	⓸	⓹	⓺	⓻	⓼	⓽
0101	Ⓠ	Ⓡ	Ⓢ	Ⓣ	Ⓤ	Ⓥ	Ⓦ	Ⓧ	Ⓨ	Ⓩ	Ⓩ	Ⓩ	Ⓩ	Ⓩ	Ⓩ	Ⓩ
0110	Ⓩ	Ⓩ	Ⓩ	Ⓩ	Ⓩ	Ⓩ	Ⓩ	Ⓩ	Ⓩ	Ⓩ	Ⓩ	Ⓩ	Ⓩ	Ⓩ	Ⓩ	Ⓩ
0111	Ⓩ	Ⓩ	Ⓩ	Ⓩ	Ⓩ	Ⓩ	Ⓩ	Ⓩ	Ⓩ	Ⓩ	Ⓩ	Ⓩ	Ⓩ	Ⓩ	Ⓩ	Ⓩ
1000	Ⓐ	Ⓑ	Ⓒ	Ⓓ	Ⓔ	Ⓕ	Ⓖ	Ⓗ	Ⓘ	⓷	⓸	⓹	⓺	⓻	⓼	⓽
1001	Ⓠ	Ⓡ	Ⓢ	Ⓣ	Ⓤ	Ⓥ	Ⓦ	Ⓧ	Ⓨ	Ⓩ	Ⓩ	Ⓩ	Ⓩ	Ⓩ	Ⓩ	Ⓩ
1010	Ⓐ	Ⓑ	Ⓒ	Ⓓ	Ⓔ	Ⓕ	Ⓖ	Ⓗ	Ⓘ	⓷	⓸	⓹	⓺	⓻	⓼	⓽
1011	Ⓐ	Ⓑ	Ⓒ	Ⓓ	Ⓔ	Ⓕ	Ⓖ	Ⓗ	Ⓘ	⓷	⓸	⓹	⓺	⓻	⓼	⓽
1100	Ⓐ	Ⓑ	Ⓒ	Ⓓ	Ⓔ	Ⓕ	Ⓖ	Ⓗ	Ⓘ	⓷	⓸	⓹	⓺	⓻	⓼	⓽
1101	Ⓐ	Ⓑ	Ⓒ	Ⓓ	Ⓔ	Ⓕ	Ⓖ	Ⓗ	Ⓘ	⓷	⓸	⓹	⓺	⓻	⓼	⓽
1110	Ⓐ	Ⓑ	Ⓒ	Ⓓ	Ⓔ	Ⓕ	Ⓖ	Ⓗ	Ⓘ	⓷	⓸	⓹	⓺	⓻	⓼	⓽
1111	Ⓐ	Ⓑ	Ⓒ	Ⓓ	Ⓔ	Ⓕ	Ⓖ	Ⓗ	Ⓘ	⓷	⓸	⓹	⓺	⓻	⓼	⓽

# ROM C

b7-4	b3-0															
	0000	0001	0010	0011	0100	0101	0110	0111	1000	1001	1010	1011	1100	1101	1110	1111
0000	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0001	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V
0010	W	X	Y	Z	[	\	]	^	_	`	{		}	~		
0011																
0100																
0101																
0110																
0111																
1000																
1001																
1010																
1011																
1100																
1101																
1110																
1111																