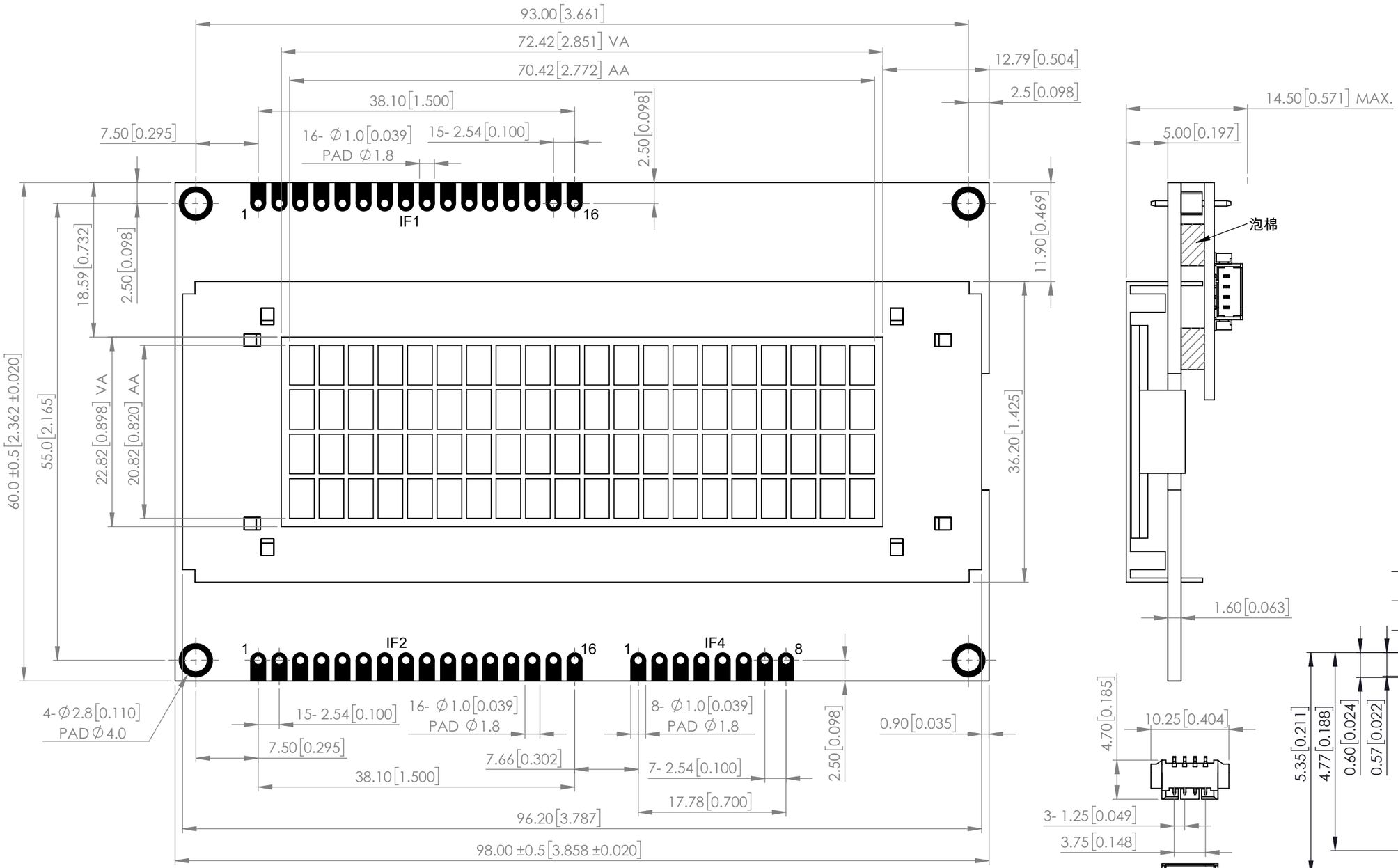
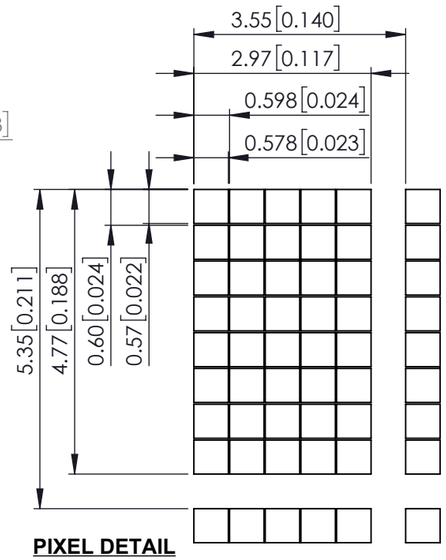
PART NUMBER	LOD-H02004DP-W-UR	REV	--



UART CONNECTOR



PIXEL DETAIL

*UNLESS OTHERWISE SPECIFIED TOLERANCES PER DECIMAL PRECISION ARE: X=±1 (±0.039), X.X=±0.5 (±0.020), X.XX=±0.25 (±0.010), X.XXX=±0.127 (±0.005). LEAD SIZE=±0.05 (±0.002), LEAD LENGTH=±0.75 (±0.030). MIN= +DECIMAL PRECISION -0.00 MAX.= +0.00 -DECIMAL PRECISION

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98.0(L)*60.0(W)*14.5(H)mm, 5.35mm CHARACTER HEIGHT, 5*8 DOT MATRIX, OLED 20x4 , 5V.

****THE SPECIFICATIONS MAY CHANGE AT ANY TIME WITHOUT NOTICE DUE TO NEW MATERIALS OR PRODUCT IMPROVEMENT.****

DATE : 2018.03.15	DRAWN BY : C.C.
PAGE : 1 OF 7	CHKD BY : E.C.
SCALE : NTF	APRVD BY : G.Y.
UNIT : mm [INCH]	Pb

GENERAL SPECIFICATION

ITEM	DESCRIPTION
VIEWING AREA	58.22(W)mm×13.52(H)mm
MODULE SIZE	98.0(W)×60.0(H)×14.5max(D) mm
PIXELS SIZE	0.578(W)mm×0.57(H)mm
PIXELS PITCH	0.598(W)mm×0.60(H)mm
DISPLAY FORMAT	20 CHARACTERS (W)×4 LINES(H)
CONTROLLER INTERFACE	STM32F030C8T6 UART
ROM SELECTION	ENGLISH_JAPANESE CHARACTER FONT TABLE
BUILT-IN	WITH DC/DC CONVERTER
OLED TYPE	OLED WHITE & BLACK
BACKLIGHT TYPE	OLED
REAR POLARIZER	REFLECTIVE / POSITIVE
OLED COLOR	WHITE
TEMPERATURE RANGE	WIDE TEMP., 5V, SINGLE SUPPLY VOLTAGE
FRAME	BLACK

NOTE :
1. RoHS COMPLIANT.

CN1 PIN ASSIGNMENT

PIN NO.	PIN OUT	LEVEL	DESCRIPTION
1	TX1	H/L	SERIAL TRANSMIT SIGNAL
2	RX1	H/L	SERIAL RECEIVE SIGNAL
3	+5V	+5V	POWER SUPPLY VOLTAGE
4	VSS	0V	POWER SUPPLY GROUND

ABSOLUTE MAXIMUM RATING

(1) Electrical Absolute Ratings

ITEM	SYMBOL	MIN.	MAX.	UNIT
POWER SUPPLY FOR LOGIC	V_{DD}-V_{SS}	-0.3	5.5	VOLT
INPUT VOLTAGE	V_I	-0.3	V_{DD}	VOLT

(2) Environmental Absolute Maximum Ratings

ITEM	WIDE TEMPERATURE			
	OPERATING		STORAGE	
	MIN.	MAX.	MIN.	MAX.
AMBIENT TEMPERATURE	-40˚C	+70˚C	-40˚C	+85˚C
HUMIDITY (WITHOUT CONDENSATION)	SEE NOTE 1,2		SEE NOTE 1,3	

Note 1 : Background color changes slightly depending on ambient temperature. This phenomenon is reversible.
Note 2 : Ta≤70℃: 75%RH max
Ta>70℃: absolute humidity must be lower than the humidity of 75%RH at 70℃
Note 3 : Ta at -30℃ will be <48hrs, at 80 ℃ will be <120hrs when humidity is higher than 70%.

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ELECTRICAL CHARACTERISTICS

ITEM	SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT
POWER SUPPLY FOR LOGIC	V_{DD}-V_{SS}	-	4.5	5.0	5.5	VOLT
INPUT VOLTAGE	V_{IL}	L LEVEL	0	-	0.3 V_{DD}	VOLT
	V_{IH}	H LEVEL	0.7 V_{DD}	-	V_{DD}	VOLT
OUTPUT VOLTAGE	V_{OL}	L LEVEL	0	-	0.3 V_{DD}	VOLT
	V_{OH}	H LEVEL	0.7 V_{DD}	-	V_{DD}	VOLT
POWER SUPPLY CURRENT FOR OLED	I_{DD}	V_{DD}=3.3V Vo-V_{SS}=10.0V	-	50.0	80.0	mA

OPTICAL CHARACTERISTICS

ITEM	SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT
VIEW ANGLE RANGE	Φf (12 O'CLOCK)	WHEN Cr ≧20	-	75	-	DEGREE
	Φb (6 O'CLOCK)		-	75	-	
	Φl (9 O'CLOCK)		-	65	-	
	Φr (3 O'CLOCK)		-	65	-	
RISE TIME	Tr	Vo-Vss =10.0V Ta=25°C	-	40	-	mS
FALL TIME	Tf		-	40	-	
FRAME FREQUENCY	Frm		-	64	-	Hz
CONTRAST	Cr		-	10000	-	-
BRIGHTNESS	L	-	100	120	-	cd/m^2
PEAK EMISSION WAVELENGTH	C.I.E (WHITE)		X=0.25 Y=0.27	X=0.29 Y=0.31	X=0.33 Y=0.35	mm

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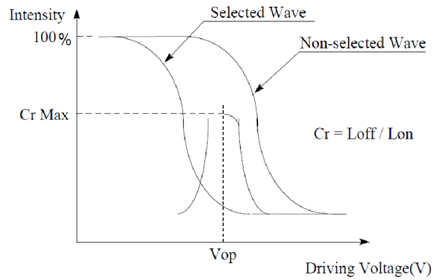
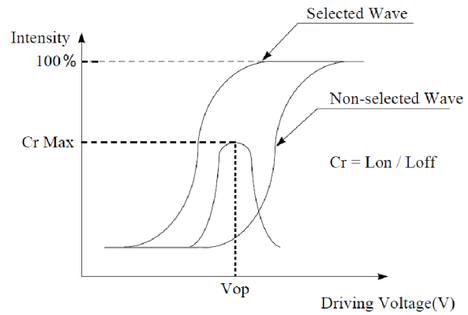
Definition of Operation Voltage (Vop)

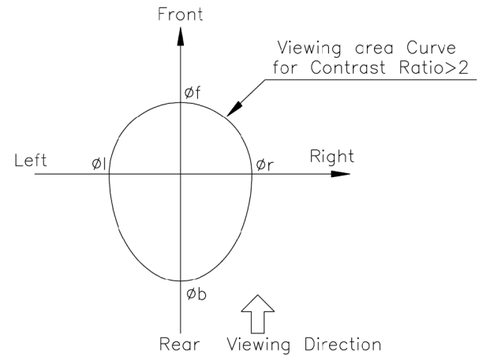


[positive type]



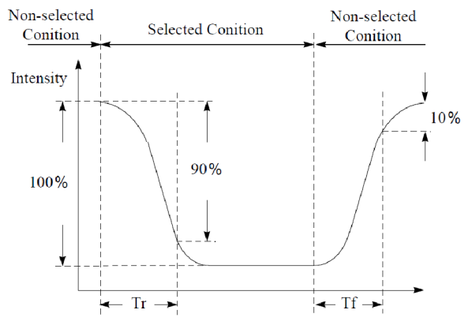
[Negative type]

Definition of Viewing Direction

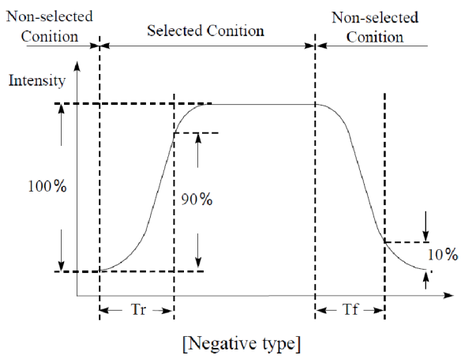


Conditions:
Viewing Angle(θ , φ): 0° , 0°
Driving Wave form : 1/N duty, 1/a bias

Definition of Response Time (Tr, Tf)

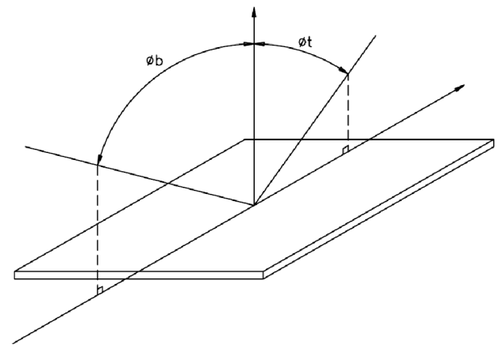


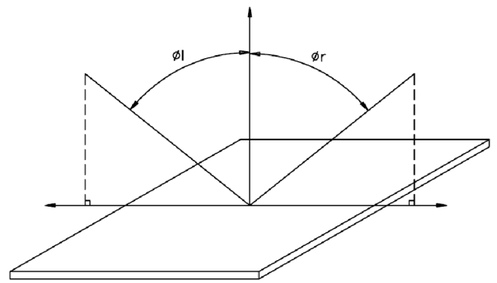
[positive type]



[Negative type]

Definition of viewing angle





Conditions:
Operating Voltage : Vop
Frame Frequency : 64 Hz

FUNCTIONAL SPECIFICATION

UART CONFIGURATION:

ITEM	SETTING VALUE
BAUD RATE	115200
DATA BIT	8
STOP BIT	1
PARITY BIT	NONE
FLOW CONTROL	NONE

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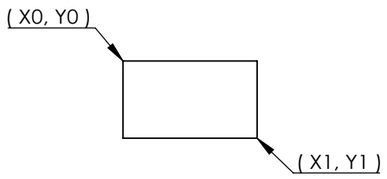
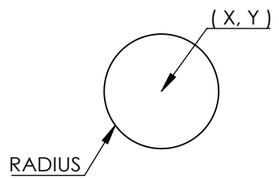
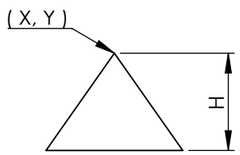
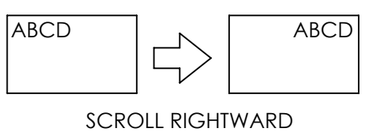
DIAGRAM	COMMAND*	EXAMPLE
	Write a 5X7 String	at**81**=(line,column,String) at**81**=(0,0,ABCD)
	Draw a Rectangle	at**91**=(X0 position,Y0 position,X1 position,Y1 position,**0 or 1**) at**91**=(0,0,55,7,1) : '1' positive mode
	Draw a Circle	at**94**=(X position,Y position,Radius,**0 or 1**) at**94**=(48,4,3,1) : '1' positive mode
	Draw a tip upward Triangle	at**96**=(X position,Y position,Height,**0 or 1**) at**96**=(48,1,3,1) : '1' positive mode
	Scroll the whole display rightward	at**d5**=(shif time in ms) at**d5**=(20)

* Please refer to detail commands on Lumex website: www.lumex.com/ezdisplay

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98.0(L)*60.0(W)*14.5(H)mm, 5.35mm CHARACTER HEIGHT, 5*8 DOT MATRIX, OLED 20x4 , 5V.

DATE : 2018.03.15	DRAWN BY : C.C.
PAGE : 5 OF 7	CHKD BY : E.C.
SCALE : NTF	APRVD BY : G.Y.
UNIT : mm [INCH]	Pb

ASCII code of 5X7 fonts and 8X16 fonts

Hex	Symbol	Hex	Symbol	Hex	Symbol
0x20		**0x40**	@	**0x60**	`
0x21	!	**0x41**	A	**0x61**	a
0x22	"	**0x42**	B	**0x62**	b
0x23	#	**0x43**	C	**0x63**	c
0x24	$	**0x44**	D	**0x64**	d
0x25	%	**0x45**	E	**0x65**	e
0x26	&	**0x46**	F	**0x66**	f
0x27		**0x47**	G	**0x67**	g
0x28	(	**0x48**	H	**0x68**	h
0x29	)	**0x49**	I	**0x69**	i
0x2a	*	**0x4a**	J	**0x6a**	j
0x2b	+	**0x4b**	K	**0x6b**	k
0x2c	,	**0x4c**	L	**0x6c**	l
0x2d	-	**0x4d**	M	**0x6d**	m
0x2e	.	**0x4e**	N	**0x6e**	n
0x2f		**0x4f**	O	**0x6f**	o
0x30	0	**0x50**	P	**0x70**	p
0x31	1	**0x51**	Q	**0x71**	q
0x32	2	**0x52**	R	**0x72**	r
0x33	3	**0x53**	S	**0x73**	s
0x34	4	**0x54**	T	**0x74**	t
0x35	5	**0x55**	U	**0x75**	u
0x36	6	**0x56**	V	**0x76**	v
0x37	7	**0x57**	W	**0x77**	w
0x38	8	**0x58**	X	**0x78**	x
0x39	9	**0x59**	Y	**0x79**	y
0x3a	:	**0x5a**	Z	**0x7a**	z
0x3b	;	**0x5b**	]	**0x7a**	{
0x3c	<	**0x5c**	\	**0x7a**	|
0x3d	=	**0x5d**	[	**0x7a**	}
0x3e	>	**0x5e**	^	**0x7a**	~
0x3f	?	**0x5f**	_	**0x7a**	<-

ASCII code of 16X16 fonts

Hex	Symbol
0x30	0
0x31	1
0x32	2
0x33	3
0x34	4
0x35	5
0x36	6
0x37	7
0x38	8
0x39	9

No. of 8X16 pattern

No.	Symbol
0	0
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9

No. of 32X32 pattern

No.	Symbol
0	0
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10	°C
11	°F
12	

No. of 8X8 pattern

No.	Symbol
0	0
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9

No. of 16X16 pattern

No.	Symbol
0	0
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9

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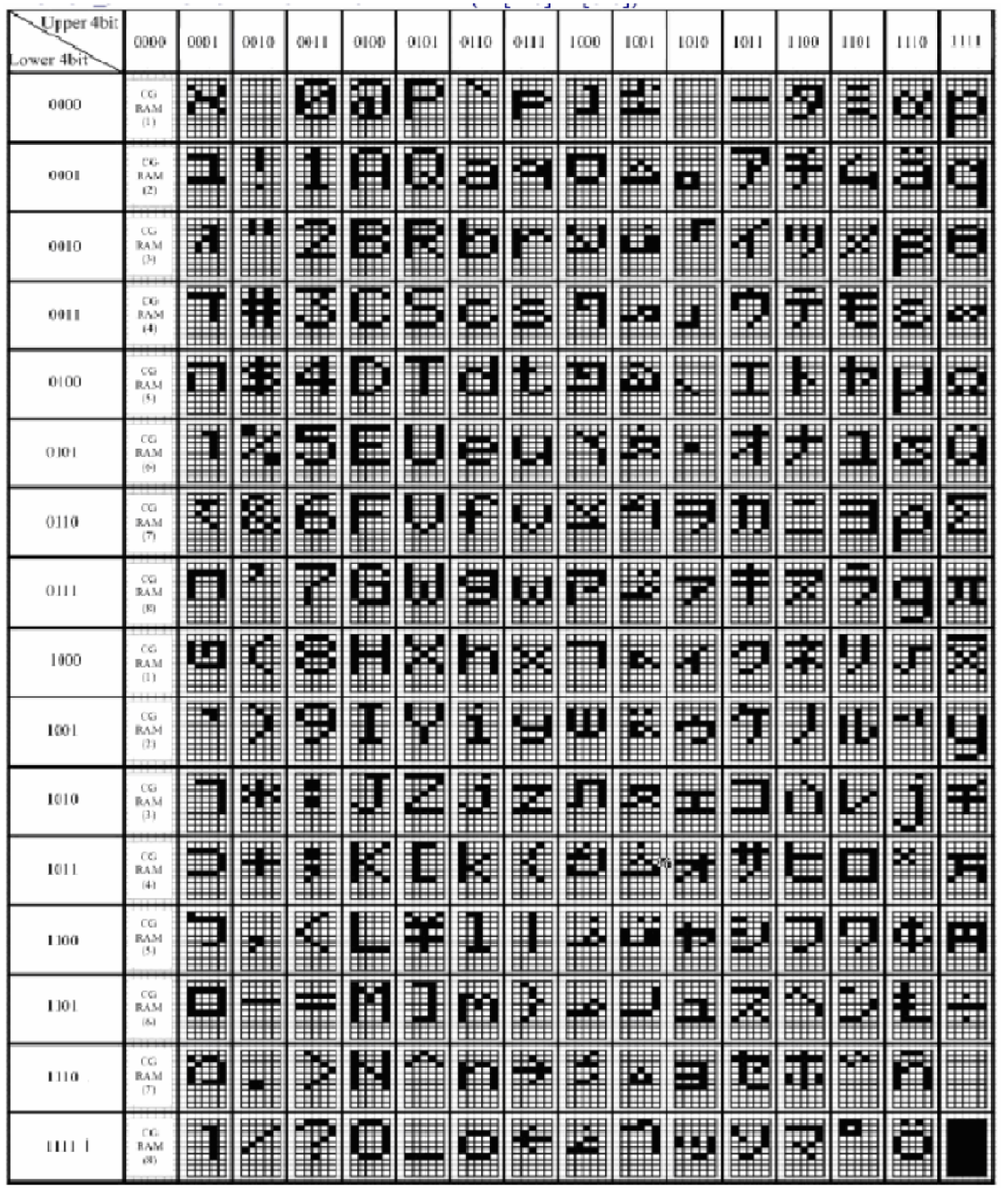
ASCII CODE OF 5X7 FONTS(HEX COMMAND MODE)



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