

MC11609A6W-FPTLW-V2	1 x 16	9mm Character Height	LCD Module
Specification			
Version: 1		Date: 29/09/2016	
Revision			

Display Features			
Character Count	1 x 16		
Appearance	Black on White		
Logic Voltage	5V		
Interface	SPI		
Font Set	English / Japanese		
Display Mode	Transflective		
Character Height	9.22mm		
LC Type	FSTN		
Module Size	122.00 x 33.00 x 15.20 mm		
Operating Temperature	-20°C ~ +70°C		
Construction	COB	Box Quantity	Weight / Display
LED Backlight	White	30 pcs	60 grams

* - For full design functionality, please use this specification in conjunction with the ST7070 specification. (Provided Separately)



FEATURES

AVAILABLE OPTIONS	CHARACTERISTICS		No.
DISPLAY FORMAT	16 Characters by 2 Lines		1~6
POLARIZER OPTIONS	Positive Transflective		7
BACKLIGHT TYPE OPTIONS	Edge Type LED Backlight (Long life span version)		8
BACKLIGHT COLOR OPTIONS	White color		9
LCD PANEL OPTIONS	FSTN		10
VIEWING ANGLE OPTIONS	6:00 (Bottom)		11
TEMPERATURE RANGE OPTIONS	-20 °C ~ 70 °C, Single Supply Voltage		12
SUGGESTED DRIVING VOLTAGE	V _{lcm} = 5.0V V _{led} = 5.0V		13
SUGGESTED LED DRIVING MODE	PIN8: LED+, PIN9: LED-		14
CONTROLLER ▲ ¹	ST7070		15
FONT MAP CODE	A Version		16
DRIVING DUTY	1/16		—
DRIVING BIAS	1/5		—

▲¹ Please ask for datasheet of the mentioned controller from Midas or Midas's authorized distributors. You can find the related information including AC & DC characteristics, Write & Read Timing diagram, Instruction table and descriptions, DDRAM & CGRAM, Rest Function and so on from the datasheet of controller.

▲¹ You can ask for the example of software program (C language) from Midas or Midas's authorized distributors.

MECHANICAL SPECIFICATIONS

OVERALL SIZE	122.0W x 33.0H	mm	THICKNESS	max 15.2	mm
VIEWING AREA	99.0W x 13.0H	mm	HOLE-HOLE	115.0W x 25.0H	mm
CHARACTER SIZE	4.84W x 9.22H	mm	CHARACTER PITCH	1.16W	mm
DOT SIZE	0.92W x 1.10H	mm	DOT PITCH	0.06W x 0.06H	mm

ABSOLUTE MAXIMUM RATINGS

ITEM	SYMBOL	CONDITION	MIN	TYP	MAX	UNIT
POWER SUPPLY (LOGIC)	V _{dd}	25 °C	-0.3	—	5.5	V
POWER SUPPLY (LCD)	V _{lcd}	25 °C	V _{ss} - 0.3	—	V _{ss} + 7.0	V
INPUT VOLTAGE	V _{in}	25 °C	-0.3	—	V _{dd} + 0.3	V
OPERATING TEMPERATURE	V _{opr}	—	-20	—	70	°C
STORAGE TEMPERATURE	V _{stg}	—	-30	—	80	°C

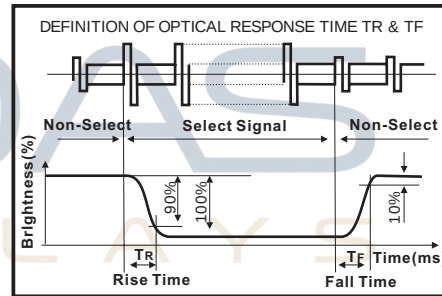
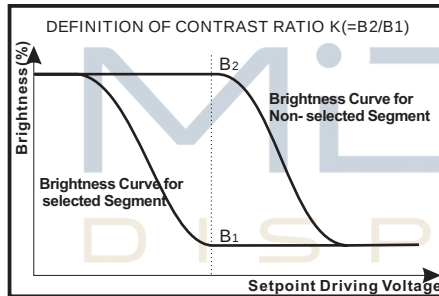
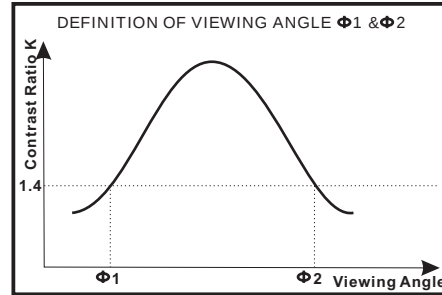
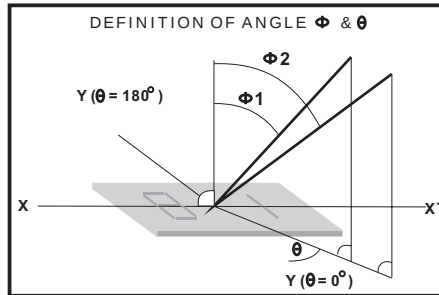
ELECTRONIC CHARACTERISTICS *

ICONS	ITEM	SYMBOL	CONDITION	MIN	TYP	MAX	UNIT
	INPUT VOLTAGE	V _{dd}	—	—	5.0	—	V
	SUPPLY CURRENT	I _{dd}	V _{dd} =5V	—	1.5	—	mA
	DRIVING VOLTAGE FOR LCD PANEL	V _{lcd} = (V _{dd} - V ₀)	-20 °C	4.00	—	4.60	V
			0 °C	4.05	—	4.65	
			25 °C	4.10	4.50	4.70	
			50 °C	4.10	—	4.65	
			70 °C	4.05	—	4.65	

* All data are recorded from TEST REPORT #FSYP027800083

LCD CHARACTERISTICS

FOR STN/FSTN TYPE LCD Panel (TA=25 °C, Vlcd=5.0V ± 0.5V)							
ICONS	ITEM	SYMBOL	CONDITION	MIN	TYP	MAX	UNIT
 	VIEWING ANGLE	$\Phi 2 - \Phi 1$	K=4	40	—	—	deg
		θ		60			
	CONTRAST RATIO	K	—	6	—	—	—
	RESPONSE TIME(RISE)	TR	—	—	150	250	ms
	RESPONSE TIME(FALL)	TF	—	—	150	250	ms



LED CHARACTERISTICS

ICONS	ITEM	SYMBOL	CONDITION	MIN	TYP	MAX	UNIT
 	LED FORWARD VOLTAGE	Vf	25°C If = 3*5mA	2.6	—	3.0	V
	LED FORWARD CURRENT ▲2	If	25°C	—	3*5	—	mA
	LED REVERSE CURRENT	Ir	25°C Vr=5V	—	—	30	μA
	LED COLOR RANGE	X coordinate	25°C If = 3*5mA	0.26	—	0.30	—
		Y coordinate		0.27	—	0.31	—
	LED BRIGHTNESS (WITHOUT LCD)	Lv	25°C If = 3*5mA	—	191	—	cd/m²
	LED BRIGHTNESS UNIFORMITY	Lvmin/Lvmax	25°C If = 3*5mA	70	—	—	Ratio
	LED LIFE TIME	—	25°C If = 3*5mA	20K	—	—	Hours

▲2 YOUR ATTENTION: It is constant current (not constant voltage) that should be applied when driving LED backlight. Therefore, this data is very important!

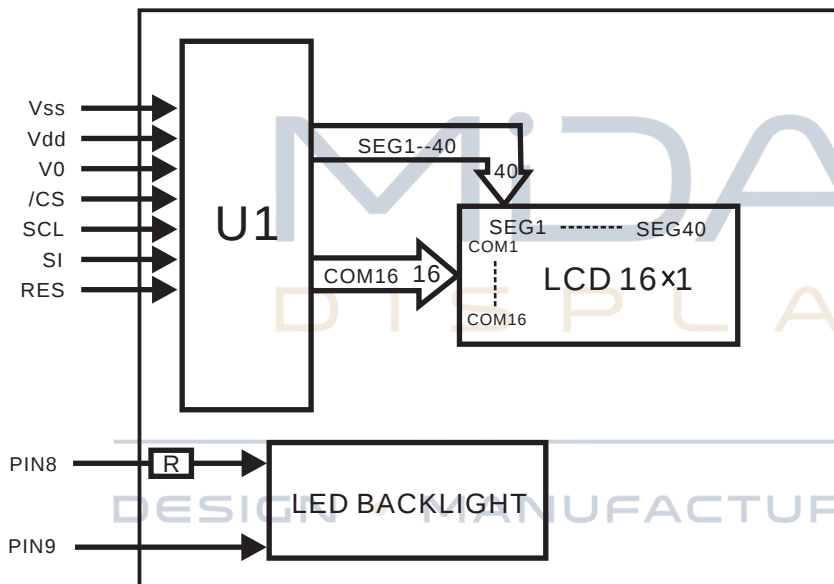
For operation above 25°C, The Ifm Ifp & Pd must be derated, the Current derating is -0.36*3mA/°C for DC drive and -0.86*3 mA/°C for Pulse drive, the power dissipation is -75*3 mW/°C The product working current must not be more than 60% of the Ifm if Ifp according to the working temperature.

LCM CHARACTERISTICS

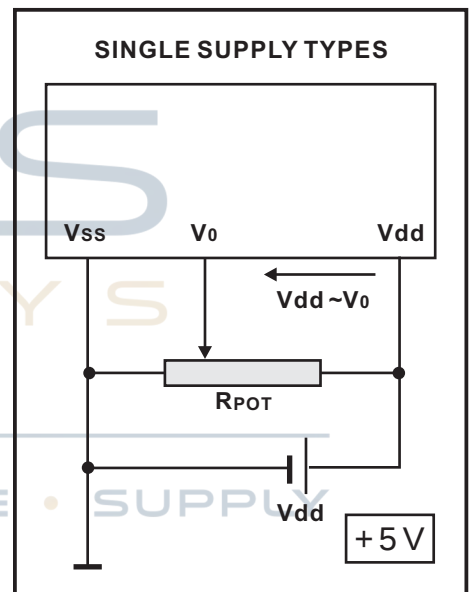
PIN ASSIGNMENT

PIN	SYMBOL	DESCRIPTION	REMARKS
1	Vss	GND	
2	Vdd	Power supply for LCM	5.0V
3	V0	Contrast Adjust	
4	/CS	Chip select pin for serialmode	
5	SCL	Serial clock input for serial mode	
6	SI	Data input pin for serial mode	
7	RES	Hardware reset pin, Low active	
8	LED+	Power supply for BKL	5.0V
9	LED-	Power supply for BKL	

BLOCK DIAGRAM



POWER SUPPLY DIAGRAM

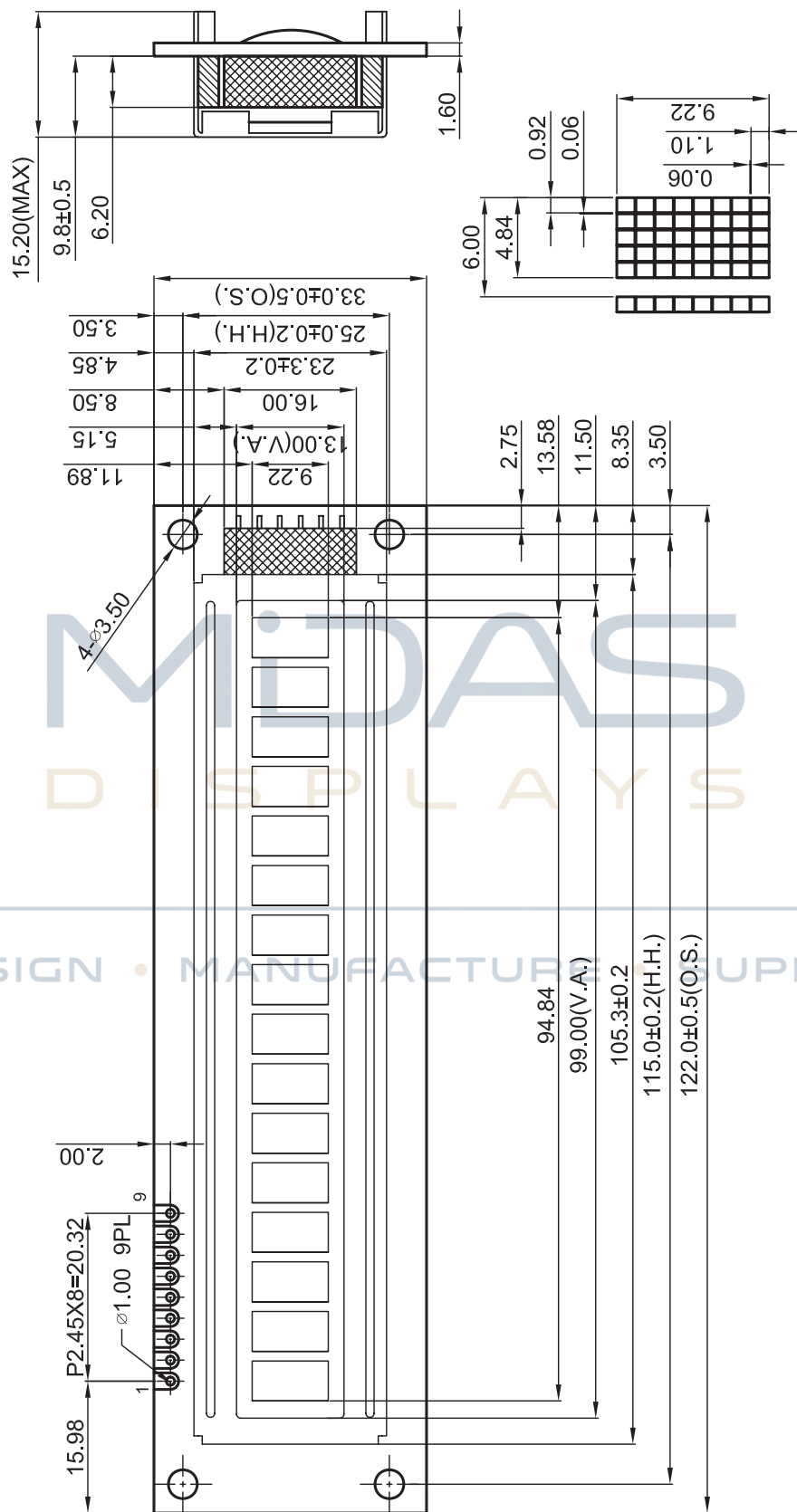


b8=0

b7-b4 b3-b0	0000	0001	0010	0011	0100	0101	0110	0111	1000	1001	1010	1011	1100	1101	1110	1111
0000	CG RAM (1)	◇		0	8	P	`	P	*	5	2	-	9	E	α	P
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0010	(3)	▶	"	2	B	R	b	r	`	8	7	イ	ツ	×	β	θ
0011	(4)	6	#	3	C	S	c	s	-	3	1	ウ	テ	ε	ε	∞
0100	(5)	A	\$	4	D	T	d	t	..	2	、	I	ト	ト	H	α
0101	(6)	A	%	5	E	U	e	u	~	1	.	オ	ナ	1	ε	U
0110	(7)	A	&	6	F	V	f	v	i	4	ヲ	カ	ニ	ヨ	ρ	Σ
0111	(8)	A	'	7	G	W	g	w	!	4	フ	キ	ヌ	ラ	9	π
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1010	(3)	E	*	:	J	Z	j	z	#	II	E	コ	ル	レ	j	チ
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1010	đ	đ	đ	đ	đ	đ	đ	đ	đ	đ	đ	đ	đ	đ	đ	đ
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1110	đ	đ	đ	đ	đ	đ	đ	đ	đ	đ	đ	đ	đ	đ	đ	đ
1111	đ	đ	đ	đ	đ	đ	đ	đ	đ	đ	đ	đ	đ	đ	đ	đ



PACKING DETAILS

FULL-SIZED PACKAGE
30 PCS/BOX
10 BOXES/CARTON
300 PCS/CARTON
18.00 KGS/CTN(G.W.)
0.054 M³/CARTON

HALF-SIZED PACKAGE
30 PCS/BOX
5 BOXES/CARTON
150 PCS/CARTON
9.00 KGS/CTN(G.W.)
0.027 M³/CARTON

PACKING DECLARATION
1. This packaging information is for reference only. The actual information is subject to the actual packaging. Especially for packaging of LCL, tolerances may exist.
2. Midas will not be responsible for quality problems caused by unnormal transportation conditions (including but not limited to climate factors or human factors, such as improper handling).

