


MC240128A6W-FPTLW-V2	240 x 128	LCD Module
<b>Specification</b>		
Version: 1	Date: 21/10/2016	
<b>Revision</b>		
1	19/10/2016	First Issue

Display Features			
Resolution	240 x 128		
Appearance	Black on White		
Logic Voltage	5V		
Interface	Parallel		
Font Set	N/A		
Display Mode	Transflective		
LC Type	FSTN		
Module Size	144.00 x 104.00 x 13.00mm		
Operating Temperature	-20°C ~ +70°C		
Construction	COB		Box Quantity
LED Backlight	White		Weight / Display
			...
			...

Display Accessories	
Part Number	Description
MCCMDB-16DIL	LCD Interconnect board, can be driven from either a PC or a single board computer with a USB output.
MCCBL1A16DIL P -DILS-150	16 Way, Dual in-line to Dual in-line connector cable.

Optional Variants	
Appearances	Voltage
Black on Yellow/Green White on Blue	



## FEATURES

AVAILABLE OPTIONS	CHARACTERISTICS
DISPLAY FORMAT	240 Characters by 128 Lines
POLARIZER OPTIONS	Positive Transflective
BACKLIGHT TYPE OPTIONS	Edge Type LED Backlight (Long life span version)
BACKLIGHT COLOR OPTIONS	White color
LCD PANEL OPTIONS	FSTN
VIEWING ANGLE OPTIONS	6:00 ( Bottom )
TEMPERATURE RANGE OPTIONS	-20°C ~ 70°C, Single Supply Voltage
SUGGESTED DRIVING VOLTAGE	V <sub>lcm</sub> = 5.0V V <sub>led</sub> = 5.0V
SUGGESTED LED DRIVING MODE	PIN19: LED+, PIN20: LED-
CONTROLLER ▲1	RA6963(RAIO)+NT7086
FONT MAP CODE	NO FONT SET
DRIVING DUTY	1/128
DRIVING BIAS	1/12

▲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	144.0W x 104.0H	mm	THICKNESS	max 13.0	mm
VIEWING AREA	114.0W x 64.0H	mm	HOLE-HOLE	138.0W x 97.0H	mm
CHARACTER SIZE	—	mm	CHARACTER PITCH	—	mm
DOT SIZE	0.40W x 0.40H	mm	DOT PITCH	0.05W x 0.05H	mm

## ABSOLUTE MAXIMUM RATINGS

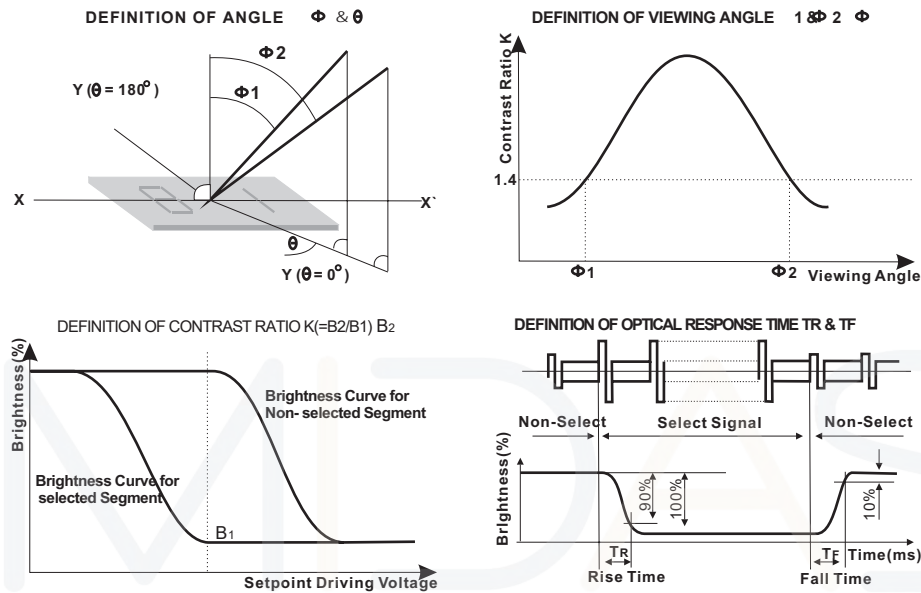
ITEM	SYMBOL	CONDITION	MIN	TYP	MAX	UNIT
POWER SUPPLY ( LOGIC)	V <sub>dd</sub>	25°C	-0.3	—	7.0	V
POWER SUPPLY (LCD)	V <sub>0</sub>	25°C	V <sub>dd</sub> -30	—	V <sub>dd</sub> +0.3	V
INPUT VOLTAGE	V <sub>in</sub>	25°C	-0.3	—	V <sub>dd</sub> +0.3	V
OPERATING TEMPERATURE	V <sub>opr</sub>	—	-20	—	70	°C
STORAGE TEMPERATURE	V <sub>stg</sub>	—	-30	—	80	°C

## ELECTRONIC CHARACTERISTICS\*

ITEM	SYMBOL	CONDITION	MIN	TYP	MAX	UNIT
INPUT VOLTAGE	V <sub>lcm</sub> = V <sub>dd</sub>	+5.0	4.7	5.0	5.5	V
SUPPLY CURRENT	I <sub>dd</sub>	V <sub>dd</sub> =5V	—	29.0	—	mA
DRIVING VOLTAGE FOR LCD PANEL	V <sub>lcd</sub> = (V <sub>dd</sub> - V <sub>0</sub> )	-20°C	17.7	—	18.0	V
		0°C	—	—	—	
		25°C	17.0	17.5	17.7	
		50°C	—	—	—	
		70°C	16.3	—	16.5	

## LCD CHARACTERISTICS

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



## LED CHARACTERISTICS

ITEM	SYMBOL	CONDITION	MIN	TYP	MAX	UNIT
LED FORWARD VOLTAGE	Vf	25°C If = 75mA	2.6	—	3.0	V
LED FORWARD CURRENT ▲2	If	25°C	—	75	—	mA
LED REVERSE CURRENT	Ir	25°C Vr=5.0V	—	—	140	μA
LED COLOR RANGE	X coordinate	25°C If = 75mA	0.26	—	0.30	—
	Y coordinate		0.27	—	0.31	—
LED BRIGHTNESS (WITHOUT LCD)	Lv	25°C If = 75mA	—	420	—	cd/m <sup>2</sup>
LED BRIGHTNESS UNIFORMITY	Lvmin/Lvmax	25°C If = 75mA	70	—	—	Ratio
LED LIFE TIME	—	25°C If = 75mA	20K	—	—	Hours

▲2 Please notice that it is constant current (not constant voltage) that should be applied when driving LED backlight. Therefore, this data is very important!

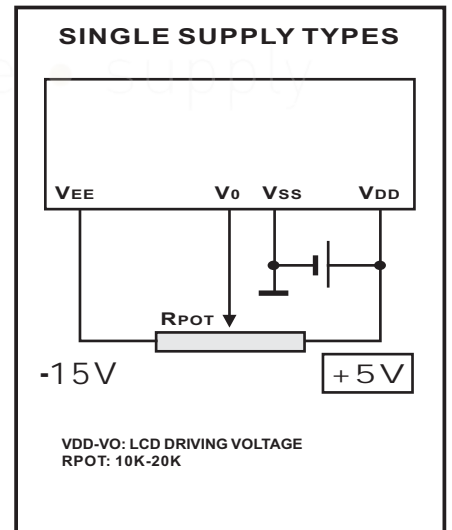
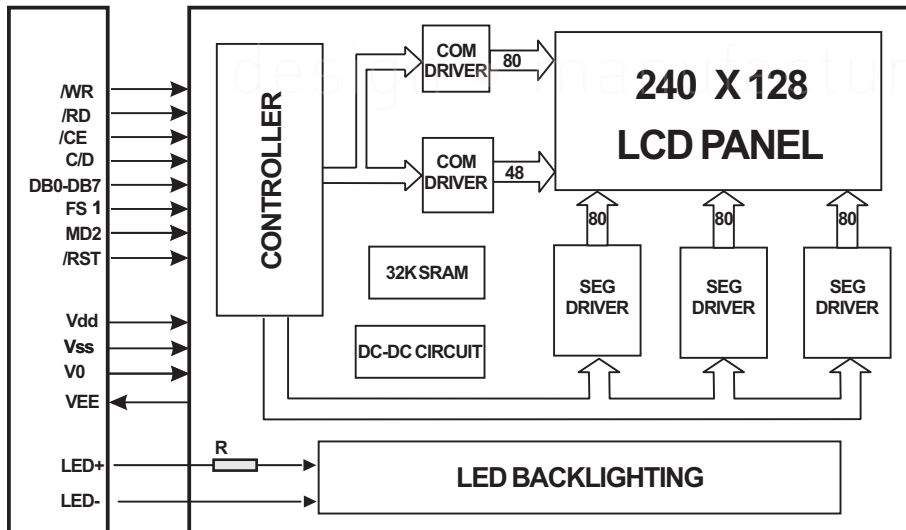
\* For operation above 25 C, The Ifm Ifp & Pd must be derated, the Current derating is -0.36\*14mA/ C for DC drive and -0.86\*14 mA/ C for Pulse drive, the power dissipation is -75\*14 mW/ C The product working current must not be more than 60% of the Ifm or Ifp according to the working temperature.



PIN	SYMBOL	DESCRIPTION	REMARKS
1	Vee	Negative voltage output	-15.0V
2	Vss	Power supply for LCM	
3	Vdd	Power supply for LCM	5.0V
4	V0	Contrast Adjust	
5	$\overline{WR}$	Data Write	
6	$\overline{RD}$	Data Read	
7	$\overline{CE}$	Chip Enable	
8	C/D	Command/Data Select	
9	RST	Reset Signal	
10	DB0	Data bus line	
11	DB1	Data bus line	
12	DB2	Data bus line	
13	DB3	Data bus line	
14	DB4	Data bus line	
15	DB5	Data bus line	
16	DB6	Data bus line	
17	DB7	Data bus line	
18	FS	Font Selection	
19	LED+	Power supply for BKL	5.0V
20	LED-	Power supply for BKL	

BLOCK DIAGRAM

POWER SUPPLY DIAGRAM



# ROM Code 0101

MSB \ LSB	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]
1	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]
2	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]
3	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]
4	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]
5	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]
6	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]
7	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]	[Pattern]

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