

VACUUM FLUORESCENT DISPLAY MODULE

ENGINEERING PROPOSAL

M162SD13AA

EVALUATION

- ACCEPTED WITHOUT ANY CHANGE
 THE FOLLOWING CHANGE IS REQUIRED

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VFD MODULE GROUP

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Important Safety Notice

Please read this note carefully before using the product.

Warning

- The module should be disconnected from the power supply before handling.
- The power supply should be switched off before connecting or disconnecting the power or interface cables.
- The module contains electronic components that generate high voltages which may cause an electrical shock when touched.
- Do not touch the electronic components of the module with any metal objects.
- The VFD used on the module is made of glass and should be handled with care. When handling the VFD, it is recommended that cotton gloves be used.
- The module is equipped with a circuit protection.
- Under no circumstances should the module be modified or repaired. Any unauthorized modifications or repairs will invalidate the product warranty.
- The module should be abolished as the factory waste.

1. FEATURES

This vacuum fluorescent display (VFD) module consists of a 16 character by 2 line 5×7 dot matrix display, DC-DC/AC converter, and controller/driver circuitry.

The luminance level of the VFD can be varied by setting eight bits in the function set instruction.

Two hundred and forty eight character fonts consisting of a alphabets, European font, numerals and other symbols can be displayed.

2. SPECIFICATIONS

2-1. GENERAL SPECIFICATIONS

Table-1

Item	Value	
Number of characters	16 characters × 2 lines	
Character configuration	5×7 dot matrix	
Display Area	86.7 × 12.0 mm	
Character Size	3.45 × 5.45 mm	
Character Pitch	5.55 × 6.55 mm	
Dot Size	0.57 × 0.65 mm	
Dot Pitch	0.72 × 0.80 mm	
Peak Wavelength of Illumination	Green ($\lambda_p=505\text{nm}$)	
Luminance	Minimum 350 cd/m ²	Typical 700 cd/m ²

2-2. ENVIRONMENTAL SPECIFICATIONS

Table-2

Item	Symbol	Min.	Max.	Unit	Comment
Operating Temperature	T_{opr}	-40	+85	°C	
Storage Temperature	T_{stg}	-40	+85	°C	
Operating Humidity	H_{opr}	20	85	%RH	Without condensation
Storage Humidity	H_{stg}	20	90	%RH	Without condensation
Vibration	-	-	4	G	Total amplitude: 1.5mm Freq: 10-55 Hz sine wave Sweep time: 1 min./cycle Duration: 2hrs./axis (X,Y,Z)
Shock	-	-	40	G	Duration: 11ms Wave form: half sine wave 3 times/axis (X,Y,Z,-X,-Y,-Z)

2-3. ABSOLUTE MAXIMUM SPECIFICATIONS

Table-3

Item	Symbol	Min.	Max.	Unit
Supply Voltage	V_{cc}	-0.3	6.5	V
Input signal Voltage	V_{IN}	-0.3	$V_{cc}+0.3$	V

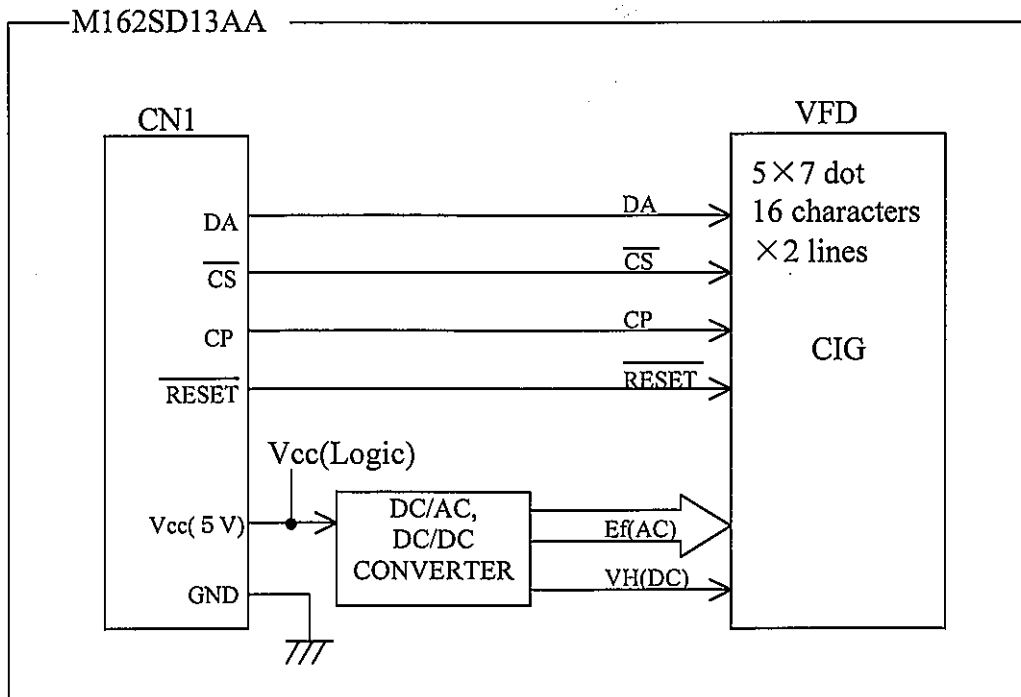
2-4. DC ELECTRICAL SPECIFICATIONS

Table-4

Item	Symbol	Min.	Typ.	Max.	Unit
Supply Voltage	V_{cc}	4.5	5.0	5.5	V
Supply Current	I_{cc}	-	200	300	mA
Power Consumption	-	-	1.0	1.5	W
High - Level Input Voltage	V_{IH}	0.8 V_{cc}	-	-	V
Low - Level Input Voltage	V_{IL}	-	-	0.2 V_{cc}	V
High - Level Input Current	I_{IH}	-	-	5.0	μA
Low - Level Input Current	I_{IL}	-	-	-5.0	μA

7. CIRCUIT BLOCK DIAGRAM

FIGURE-2



CHARACTER FONT TABLES (European Font)

Table-20

MSB LSB		0000	0001	0010	0011	0100	0101	0110	0111	1000	1001	1010	1011	1100	1101	1110	1111
0000	RAM0																
0001	RAM1																
0010	RAM2																
0011	RAM3																
0100	RAM4																
0101	RAM5																
0110	RAM6																
0111	RAM7																
1000																	
1001																	
1010																	
1011																	
1100																	
1101																	
1110																	
1111																	