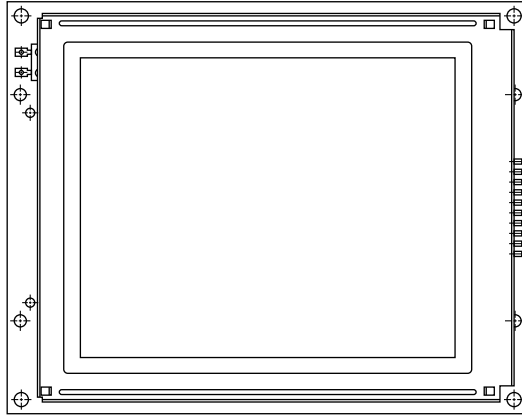


## 160 x 128 Graphic LCD



### FEATURES

- Type: Graphic
- Display format: 160 x 128 dots
- Built-in controller: RA6963
- Duty cycle: 1/128
- Optional N.V.
- + 5 V power supply
- View angle 12° horizontal only
- Material categorization: For definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)


**RoHS**  
COMPLIANT

MECHANICAL DATA		
ITEM	STANDARD VALUE	UNIT
Module Dimension	129.0 x 102.0	mm
Viewing Area	101.0 x 82.0	
Dot Size	0.54 x 0.54	
Dot Pitch	0.58 x 0.58	
Mounting Hole	122.0 x 96.2	
Character Size	N/a	

ABSOLUTE MAXIMUM RATINGS					
ITEM	SYMBOL	STANDARD VALUE			UNIT
		MIN.	TYP.	MAX.	
Power Supply	$V_{DD}$ to $V_{SS}$	4.75	5.0	5.25	V
Input Voltage	$V_I$	- 0.3	-	$V_{DD}$	

#### Note

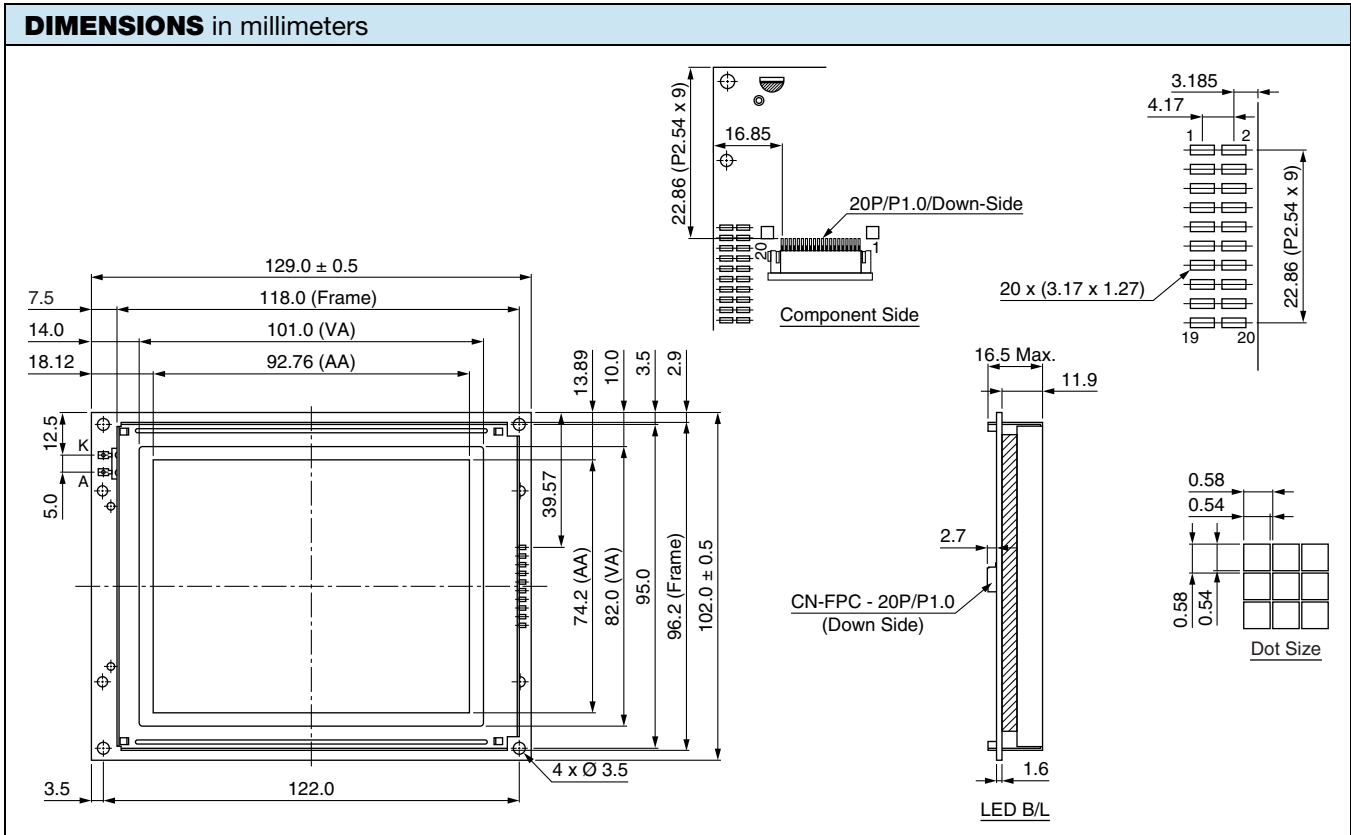
- $V_{SS} = 0$  V,  $V_{DD} = 5.0$  V

ELECTRICAL CHARACTERISTICS						
ITEM	SYMBOL	CONDITION	STANDARD VALUE			UNIT
			MIN.	TYP.	MAX.	
Input Voltage	$V_{DD}$	-	4.75	5.0	5.25	V
Supply Current	$I_{DD}$	$V_{DD} = +5$ V	-	45.0	50.0	mA
Recommended LC Driving Voltage for Normal Temperature Version Module	$V_{DD}$ to $V_0$	- 20 °C	19.9	21.0	22.1	V
		25 °C	18.6	19.1	19.6	
		70 °C	11.6	9.1	12.8	
CCFL Starting Voltage	$V_{FLS}$	25 °C	-	-	-	$V_{RMS}$
CCFL Driving Voltage	$V_{FLD}$	25 °C	-	256	560	$V_{RMS}$
CCFL Driving Current	$I_{FLD}$	$V_{FQ} = 450$ $V_{RMS}$ , 30 kHz	-	-	5.0	mA
LED Forward Voltage	$V_F$	25 °C	-	4.6	4.6	V
LED Forward Current	$I_F$	25 °C	-	-	500	mA
EL Power Supply Current	$I_{EL}$	$V_{EL} = 110$ $V_{AC}$ , 400 Hz	-	-	5.0	mA

OPTIONS									
PROCESS COLOR						BACKLIGHT			
TN	STN GRAY	STN YELLOW	STN BLUE	FSTN B&W	STN COLOR	NONE	LED	EL	CCFL
	x	x	x	x		x	x	x	x

For detailed information, please see the "Product Numbering System" document.

INTERFACE PIN FUNCTION		
PIN NO.	SYMBOL	FUNCTION
1	FG	Frame ground
2	V <sub>SS</sub>	Power supply (Ground)
3	V <sub>DD</sub>	Power supply (+ 5 V)
4	V <sub>ADJ</sub>	Contrast adjustment
5	V <sub>EE</sub>	Negative voltage output
6	$\overline{WR}$	Data write
7	$\overline{RD}$	Data read
8	$\overline{CE}$	Chip enable
9	$\overline{C/\overline{D}}$	Command/data read/write
10	$\overline{HALT}$	Clock operating stop signal
11	$\overline{Reset}$	Reset signal
12	DB0	Data bus line
13	DB1	Data bus line
14	DB2	Data bus line
15	DB3	Data bus line
16	DB4	Data bus line
17	DB5	Data bus line
18	DB6	Data bus line
19	DB7	Data bus line
20	NC	No connection





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