

AND721/ST/ST-LED

20 Characters x 4 Lines

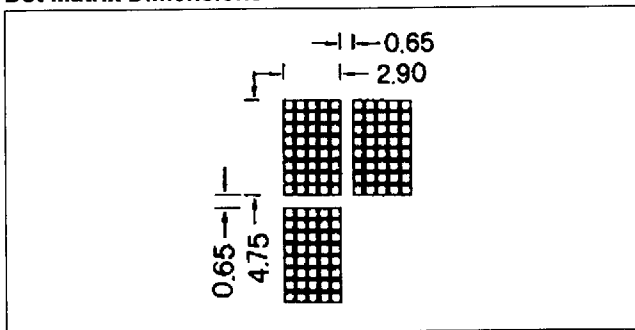
Intelligent Alphanumeric Displays

The AND721/ST/ST-LED devices are compact, LCD modules that have an on-board LCD controller and driver circuit. These devices can display 160 characters (numerals, letters, symbols and Kana letters), as well as eight custom characters.

Features

- AND721: Twisted Nematic
- AND721ST: Super Twist Technology
- AND721ST-LED: STN with LED backlight
- Low voltage, +5V single power supply
- Controller on board (HD44780)
- Direct interface to 4- or 8-bit CPU
- 11 commands for control

Dot Matrix Dimensions



Mechanical Characteristics

Item	Specification	Unit
Outline Dimensions	98 (W) x 60 (H) x 12 (D)	mm
Character Size	3.15 (W) x 8.70 (H)	mm
Viewing Area	76.0 (W) x 25.2 (H)	mm
Bezel Opening	76.0 (W) x 25.2 (H)	mm
Dot Size	0.65 (W) x 0.54 (H)	mm
Dot Pitch	0.63 (W) x 0.58 (H)	mm

Absolute Maximum Ratings

Item	Symbol	Rating	Unit
Supply Voltage	V_{DD}	7.0	V
Input Voltage	V_{IN}	$0 \leq V_{IN} \leq V_{DD}$	V

Absolute Maximum Ratings (Continued)

Item	Symbol	Rating	Unit
LED Forward Current	I_F	200	mA
LED Reverse Voltage	V_R	4	V
LED Power Dissipation	P_D	700	mW
Operating Temperature	T_{op}	-5 to +50	°C
Storage Temperature	T_{stg}	-20 to +60	°C

Electrical Characteristics (TA = 25°C)

Item	Symbol	Min.	Typ.	Max.	Unit
Supply Voltage	V_{DD}	4.75	5.0	5.25	V
	GND	2.2	—	—	
High Level In Voltage ($V_{DD} = 5.0V$)	V_{IN}	-0.5	—	V_{DD}	V
Low Level In Voltage ($I_{OH} = 0.2$ mA)	V_{IH}	0	—	0.5	V
High Level Output Volt. ($-I_{OH} = 0.2$ mA)	V_{OH}	$V_{DD} - 0.3$	—	—	V
Low Level Output Volt. ($I_{OL} = 1.2$ mA)	V_{OL}	—	—	0.3	V
LED Forward Voltage ($I_F = 90$ mA)	V_F	3.8	4.2	4.4	V
LED Reverse Current ($V_R = 4$ V)	I_R	—	—	100	μA

Optical Characteristics (TA = 25°C, $\phi = 0^\circ$, $\theta = 0$)

Item	Symbol	Min.	Typ.	Max.	Unit
Viewing Angle	ϕ	-10	25	40	degree
Contrast	K	—	3.0	—	—
Turn On	T_{on}	—	200	400	ms
Turn Off	T_{off}	—	250	400	ms

Connector Pin Assignment

Pin No.	Signal	Function
1	GND	Ground
2	V _{DD}	+5 Power Supply
3	V _O	LCD Drive Voltage
4	RS	"H" Data Input "L" Command Input
5	R/W	Read/Write
6	E	Enable
7	DB0	Data Bus DB0-DB7 are for 8-bit operation DB4-DB8 are for 4-bit operation
8	DB1	
9	DB2	
10	DB3	
11	DB4	
12	DB5	
13	DB6	
14	DB7	
15	LED	LED Anode
16	LED	LED Cathode

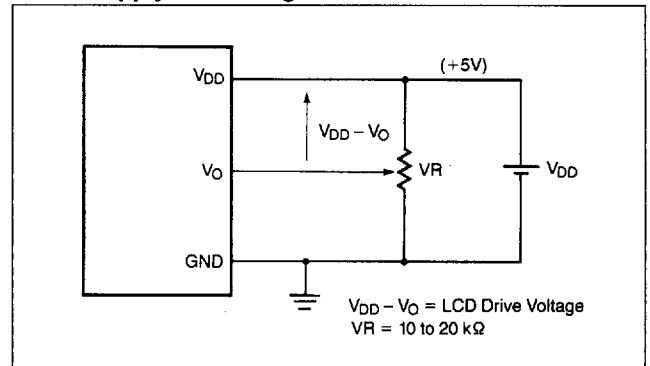
Power Supply

The LCD panel is driven by the voltage V_{DD}-V_O, so an adjustable V_O is required for contrast control and temperature compensation.

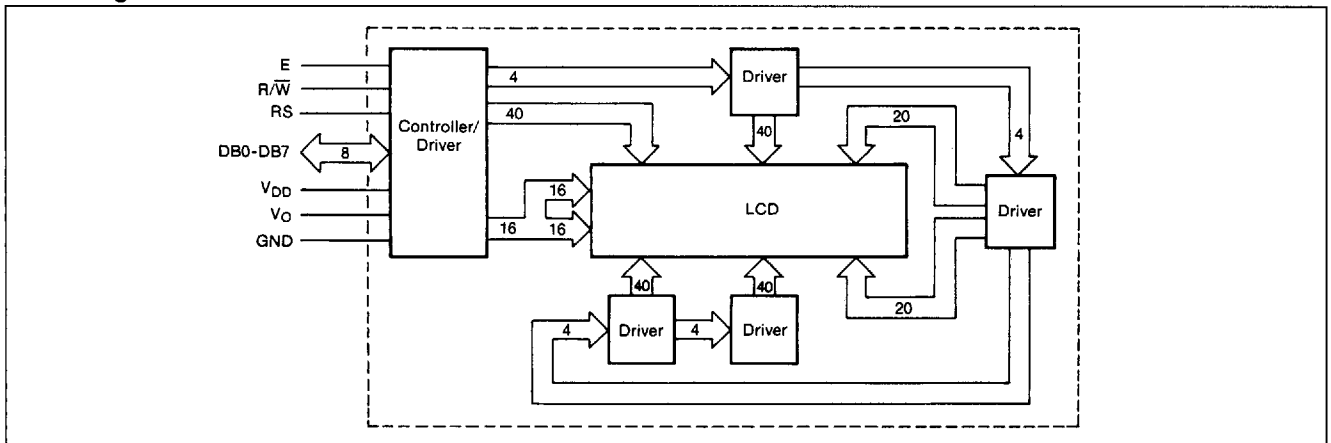
Temperature Variations

Temperature	V _{DD} -V _{EE}
0°C	4.80
+25°C	4.65
+50°C	4.35

Power Supply Block Diagram



Block Diagram



Dimensional Outline

