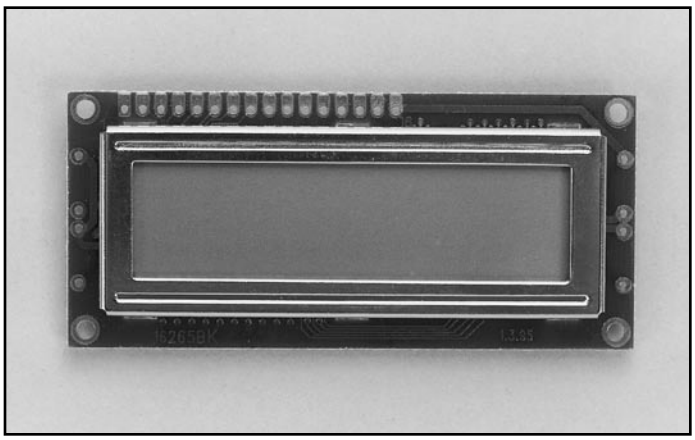


AND471GST-LED
Intelligent Character Display

The AND471GST-LED is an STN Positive Gray liquid crystal display. It has a transflective rear polarizer, yellow green LED backlight, 6 o-clock viewing angle with a normal temperature range, a 5V single supply voltage on a black frame.

Features

- STN Gray Positive LCD Type
- Transflective Rear Polarizer
- Yellow Green LED Backlight Type
- 6 O'Clock Viewing Direction
- Normal Temperature Range
- Black Frame
- **ROHS Compliant**

Mechanical Characteristics

Item	Standard Value	Unit
Module Dimension	122.0 (W) x 44.0 (H) x 8.8 (13.0 LED) Max (D)	mm
Viewing Area	99.0 (W) x 24.0 (H)	mm
Dot Size	0.92 (W) x 1.16 (H)	mm
Dot Pitch	0.98 (W) x 1.21 (H)	mm
Display Format	16 characters (W) x 2 lines (H)	—
Duty Ratio	1/16	—
Controller	ST7066U or equivalent	—

Electrical Absolute Maximum Ratings

Item	Symbol	Min.	Typ.	Max.	Unit
Power Supply for Logic	VDD - VSS	-0.3	—	7.0	V
Power Supply for LCD	VDD - VO	-0.3	—	10.0	V
Input Voltage	VI	-0.3	—	VDD	V
LED Power Dissipation	PAD	—	—	1794	mW
LED Forward Current	IAF	—	—	390	mA
LED Reverse Voltage	VR	—	—	8	V

Environmental Absolute Maximum Ratings

Item	Normal Temperature			
	Operating		Storage	
	Min.	Max.	Min.	Max.
Ambient Temperature	0 ºC	+50 ºC	-20 ºC	+70ºC
Humidity (without condensation)	Note 2, 4		Note 3, 5	

Note 2: Ta ≤ 50 ºC: 80% RH max; ta> 50ºC: Absolute humidity must be lower than the humidity of 85% RH at 50ºC.
Note 3: Ta at -20 ºC will be < 48 hours at 70 ºC will be <120 hrs when humidity is higher than 70%.
Note 4: Background color changes slightly depending on ambient temperature. This phenomenon is reversible.
Note 5: Ta ≤ 70ºC: 75 RH max; Ta > 70ºC: absolute humidity must be lower than the humidity of 75% RH at 70ºC.
Note 6: Ta at -30ºC will be <48 hrs, at 80ºC will be < 120 hrs when humidity is higher than 70%.

Product specifications contained herein may be changed without prior notice.

Electrical Characteristics

Item	Symbol	Condition	Min.	Typ.	Max.	Unit
Power Supply for Logic	VDD-VSS	—	4.5	5.0	5.5	V
Input Voltage	VIL	L Level	0	—	0.6	V
	VIH	H Level	2.2	—	VDD	V
LCM Recommend LCD Module Driving Voltage	VDD-VO	Ta = 0ºC	—	—	—	V
		Ta = 25ºC	4.2	4.5	4.8	
		Ta = 50ºC	—	—	—	
Power Supply Current for LCM	IDD	VDD = 5.0V, VDD-VO=4.5V	—	2.0	3.0	mA
LED Forward Voltage	VF	IF=260 mA	—	4.1	4.6	V
LED Forward Current	IF	—	—	260	—	mA
LED Reverse Current	IR	VR = 8V	—	—	0.2	mA

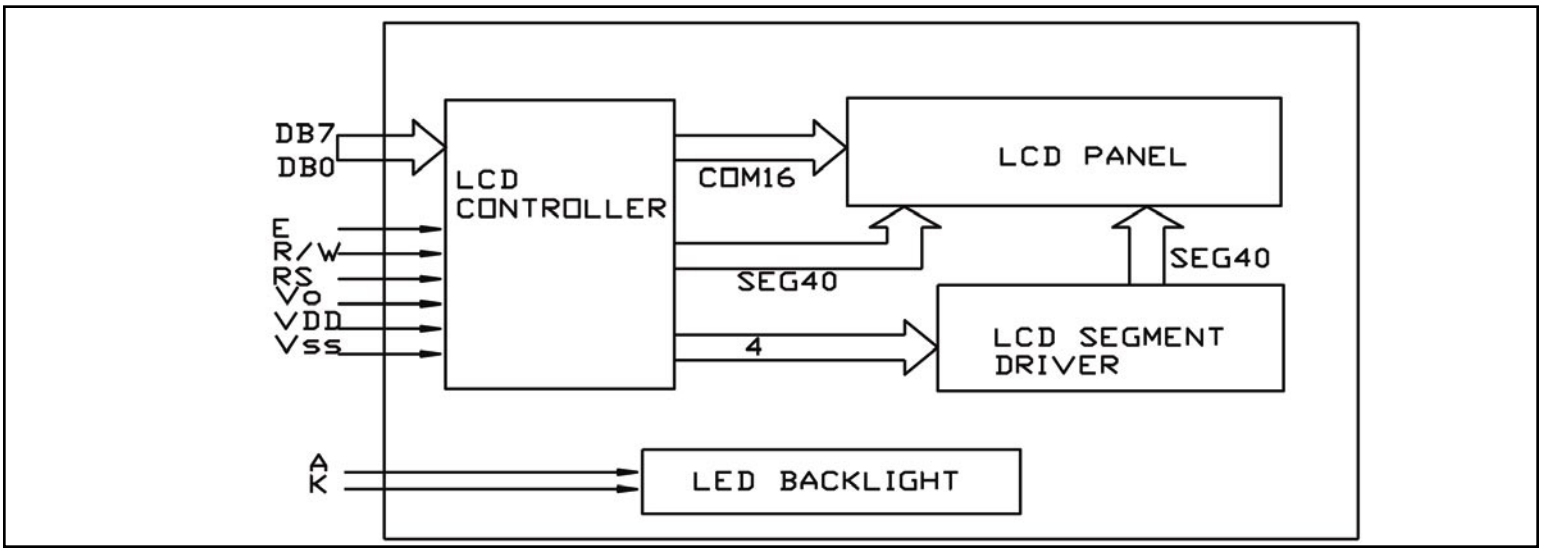
Optical Characteristics (Ta = 25 ºC)

Item	Symbol	Remarks	Specifications Min.	Typ.	Max.	Units
Viewing Angle	Φ f (12 o'clock)	When CR ≥ 1.4	–	20	–	deg
	Φ b (6 o'clock)		–	40	–	
	Φ l (9 o'clock)		–	30	–	
	Φ r (3 o'clock)		–	30	–	
Rise Time	Tr	VDD-VO = 4.5 V Ta = 25ºC	–	200	–	mS
Fall Time	Tf		–	250	–	
Frame Frequency	Frm		–	64	–	Hz
Contrast	Cr		–	3.0	–	–
Brightness of Backlight	L	IF = 260 mA	120	180	–	cd/m^2
Peak Emission Wavelength	λ P		567	570	577	nm

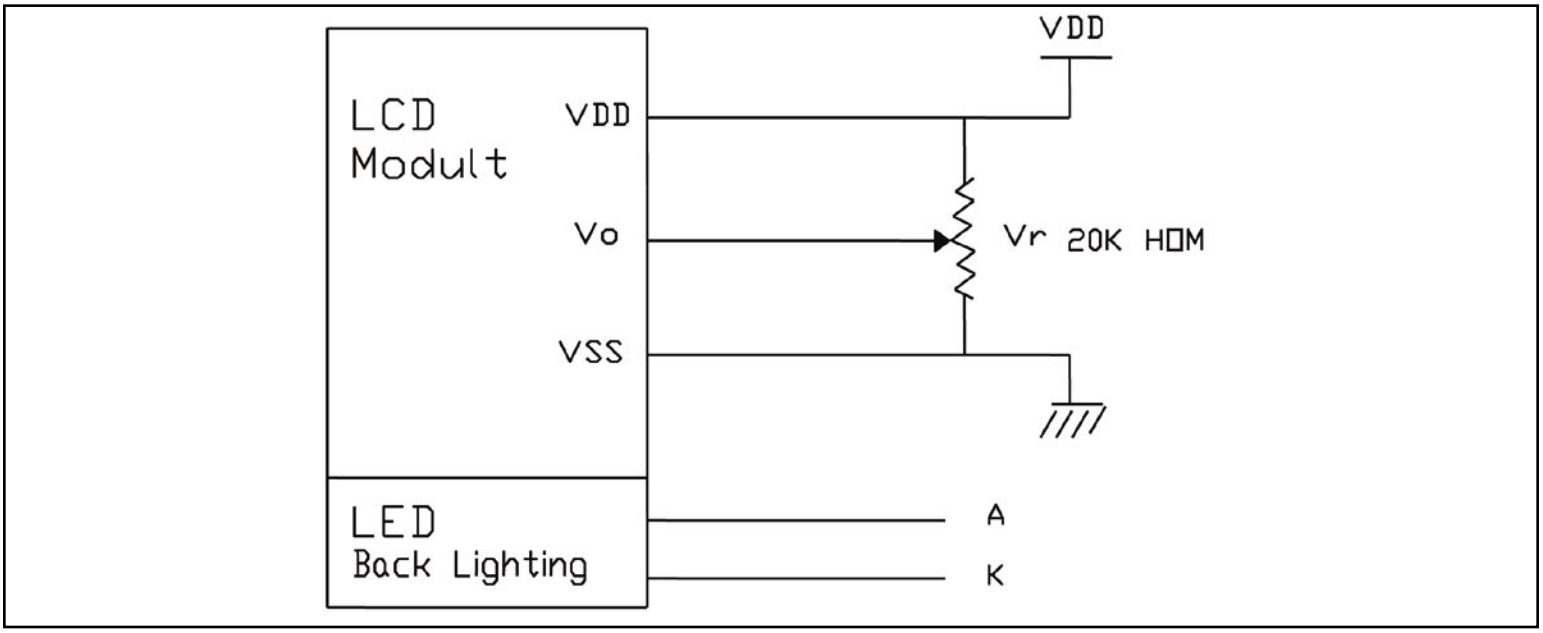
Interface Pin Assignment

Pin No.	Symbol	Level	Description		Pin No	Symbol	Level	Description
1	VSS	0V	Power Supply Ground		9	DB2	H/L	Data Bit 2
2	VDD	5.0V	Power Supply Voltage		10	DB3	H/L	Data Bit 3
3	V0	—	Contrast Adjustment		11	DB4	H/L	Data Bit 4
4	RS	H/L	Register Select		12	DB5	H/L	Data Bit 5
5	R/W	H/L	Read / Write		13	DB6	H/L	Data Bit 6
6	E	H, H —> L	Enable Signal		14	DB7	H/L	Data Bit 7
7	DB0	H/L	Data Bit 0		15	A	4.1V	LED Power Supply (+)
8	DB1	H/L	Data Bit 1		16	K	—	LED Power Supply (-)

Block Diagram



Power Supply



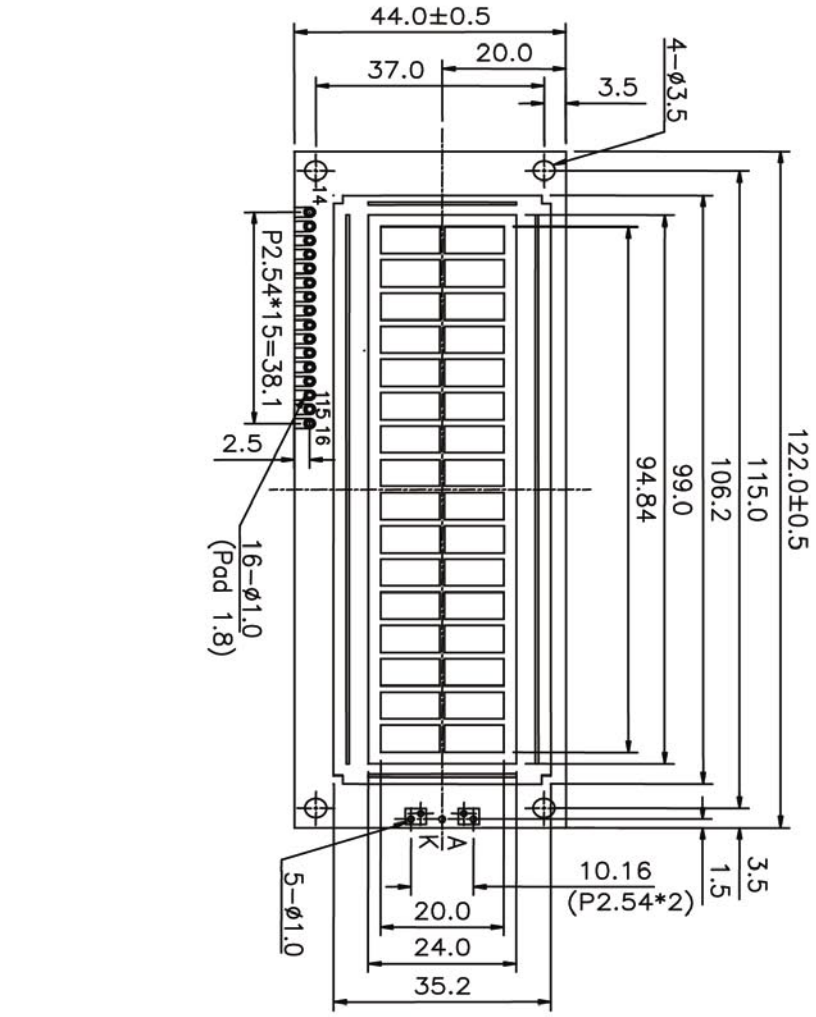
Backlight Specifications

Item	Symbol	Condition	Min.	Typ.	Max.	Units
Supply Current	ILED	V = 3.5V	43.2	48	75	mA
Supply Voltage	V	—	3.4	3.5	3.6	—
Reverse Voltage	VR	—	—	—	5	V
Luminous Intensity	IV	ILED = 48 mA	16	20 (Note 1)	—	cd/m^2
LED Life Time (For Reference Only)	—	ILED≤ 48 mA, 25 ºC, 50-60% RH, (Note 2)	—	50K	—	Hr
Color	White					

Note 1: The LED of B/L is drive by current only, drive voltage is for reference only. Drive voltage can make driving current under safety area (current between minimum and maximum.)
The luminous is measured through LCD panel.

Note 2: 50K hours is only an estimate for reference.

Mechanical Dimensions



PIN NO	SIGNAL
1	VSS
2	VDD
3	VO
4	RS
5	R/W
6	E
7	DB0
8	DB1
9	DB2
10	DB3
11	DB4
12	DB5
13	DB6
14	DB7
15	A
16	K