



## AND1781STN-LED

### Intelligent Character Display

The AND1781STN is an STN, Yellow Green Transflective, Positive, Normal Temperature liquid crystal display. It has a transflective rear polarizer, LED backlight, 6 o'clock viewing direction.

### Features

- STN, Yellow Green, Transflective, Positive, Extended Temperature
- 160 x 128 Dots
- Yellow green LED Backlight
- 6 O'clock Viewing Direction
- Normal Temperature Range
- LCD Module 1/64 Duty, 1/9 Bias
- 175 Gram Weight
- **ROHS Compliant**

Product specifications contained herein may be changed without prior notice. It is therefore advisable to contact Purdy Electronics before proceeding with the design of equipment incorporating this product.

### Mechanical Characteristics

Item	Standard Value	Unit
Outline Dimensions	180.0 (W) * 65.0 (H) * 9.7 (LED=13.8) (D) max	mm
Viewing Area	134.0 (W) x 40.4 (H)	mm
Dot Size	0.49 (W) x 0.49 (H)	mm
Dot Pitch	0.53 (W) x 0.53 (H)	mm
Resolution	240 (W) x 64 (H)	dot matrix
Duty Ratio	1/64 Duty	
Controller	T6963C/Toshiba	

### Absolute Maximum Ratings - Electrical Absolute Ratings

Item	Symbol	Min.	Max.	Unit
Power Supply for Logic	VDD-VSS	-0.3	5.5	V
Power Supply for LCD	VDD-VO	0	24.0	V
Input Voltage	V1	-0.3	VDD	V
LED Power Dissipation	PAD	—	4761	mW
LED Forward Current	IAF	—	1035	mA
LED Reverse Voltage	VR		8	V

### Environmental Absolute Maximum Ratings

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

Note 2: Ta ≤ 50°C: 80% RH max

Ta > 50°C: Absolute humidity must be lower than the humidity of 85% RH at 50°C

Note 3: Ta at -20°C will be <48hrs at 70°C will be <120 hrs when humidity is higher than 75%.

Note 4: Background color changes slightly depending on ambient temperature. This phenomenon is reversible.

Note 5: Ta ≤ 70°C: 75RH max. Ta > 70°C: absolute humidity must be lower than the humidity of 75% RH at 70°C.

## Electrical Characteristics

Item	Symbol	Condition	Min.	Typ.	Max.	Unit
Power Supply for Logic	VDD-VSS	—	4.5	5.0	5.5	V
Input Voltage	VIH	L Level	0	—	0.6	V
	VIL	H Level	2.2	—	VDD	V
	VDD-V0	Ta = 0°C	—	—	—	V
		Ta = 25°C	10.8	12.2	13.1	V
		Ta = 50°C	—	—	—	V
Power Supply Current for LCM	IDD	VDD = 5V	—	16.0	25.0	mA
	IEE	VDD-V0=12.2V	—	2.4	—	mA
LED Forward Voltage	VF	If=690 mA	—	4.1	4.6	V
LED Forward Current	IF	—	—	690	—	mA
LED Reverse Current	IR	VR=8V	—	—	0.3	mA

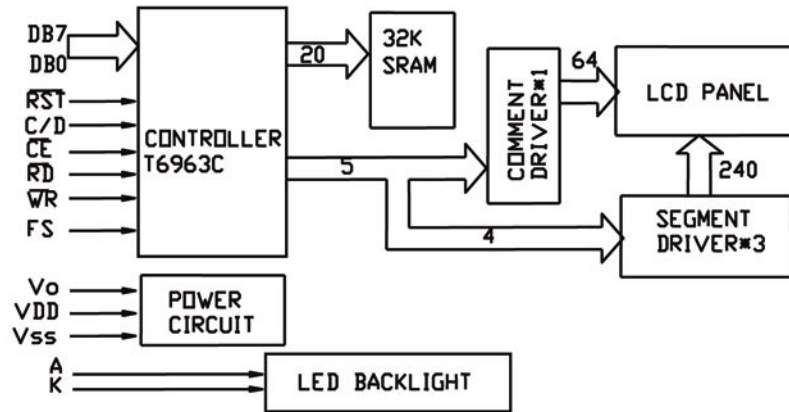
## Optical Specifications (LCD Module 1/64 Duty, 1/9 Bias, VOP = 12.0V, Ta = 25 °C)

Item	Symbol	Condition	Min.	Typ.	Max.	Degree
Viewing Angle Range	$\phi f$ (12 o'clock)	When Cr $\geq 1.4$	—	20	—	degree
	$\phi b$ (6 o'clock)		—	40	—	
	$\phi l$ (9 o'clock)		—	30	—	
	$\phi r$ (3 o'clock)		—	30	—	
Rise Time	Tr	VDD-V0=12.2V Ta=25°C	—	230	—	mS
Fall Time	Tf		—	250	—	
Frame Frequency	Frm		—	64	—	Hz
Contrast	Cr		—	5.0	—	
Brightness of Backlight	L	IF=690 mA	120	180	—	cd/m <sup>2</sup>
Peak Emission Wavelength	$\lambda P$		567	570	577	nm

## Interface Pin Assignment

Pin No.	Pin Out	Function Description	Pin No.	Pin Out	Function Description
1	FGND	For Ground	11	DB0	Data Bit 0
2	VSS	Power Supply Ground	12	DB1	Data Bit 1
3	VDD	Power Supply Voltage	13	DB2	Data Bit 2
4	V0	Contrast Adjustmnet Voltage	14	DB3	Data Bit 3
5	/WR	Data Write	15	DB4	Data Bit 4
6	/RD	Data Read	16	DB5	Data Bit 5
7	/CE	Enable Signal	17	DB6	Data Bit 6
8	C/D	Wr = "L", C/D = "H": Command Write; WR = "L", C/D = "L": Data Write; RD = "L", C/D = "H": Status Read; RD = "L", C/D = "L": Data Read	18	DB7	Data Bit 7
9	NC	No Connection	19	FS	H: 6*8/L : 8*8 Select of Font
10	/RST	Reset Signal	20	N/C	No connection

## Block Diagram



## Power Supply

