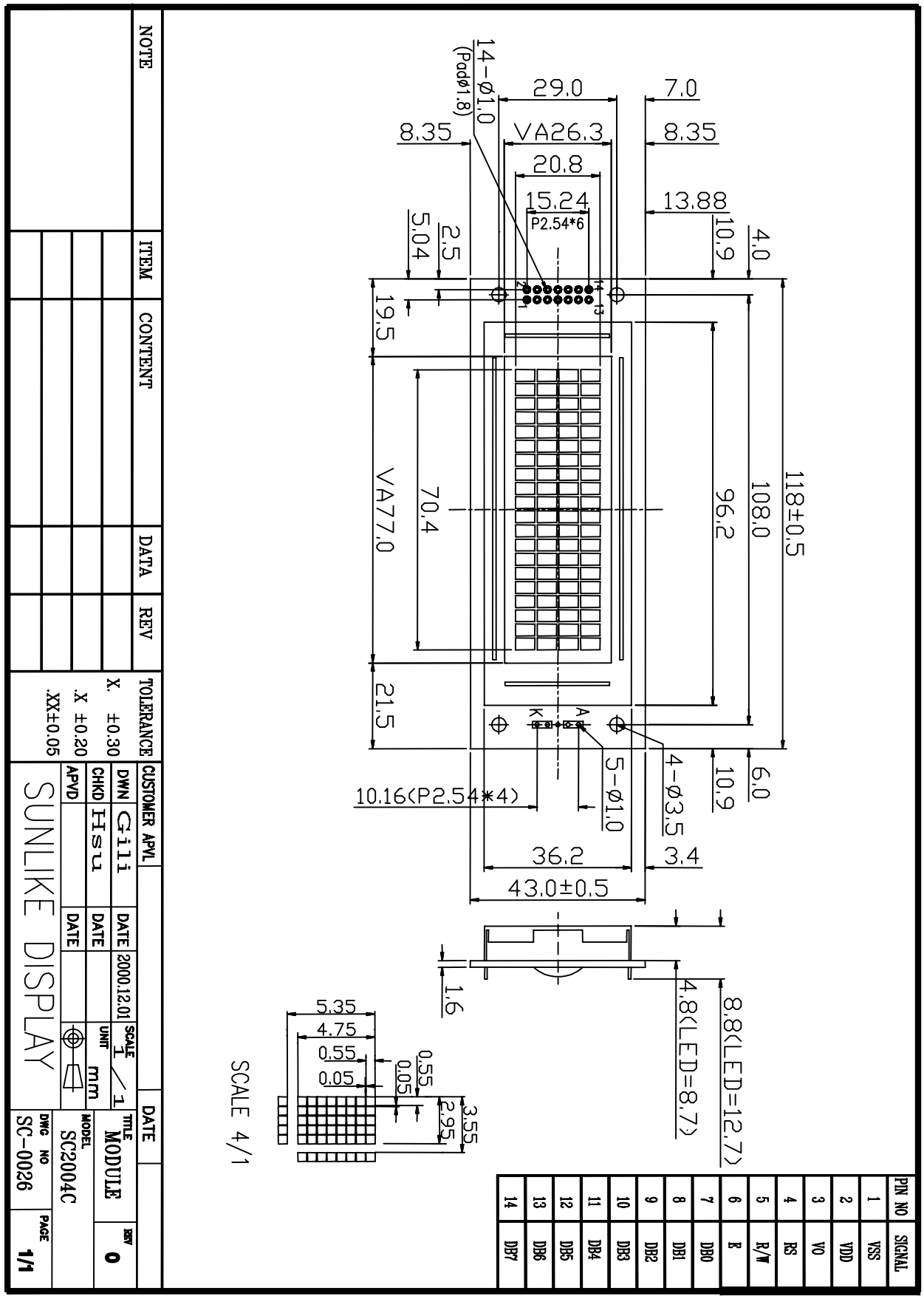
GENERAL SPECIFICATION

ITEM	DESCRIPTION				
Product No	SC2004CULB-XH-GS				
LCD Type	☐ STN Gray Positive	■ STN Yellow Green Positive	☐ STN Blue Negative		
	☐ TN Negative	☐ TN Positive			
	☐ FSTN Negative White & Black	☐ FSTN Positive Black & White			
Rear Polarizer	☐ Reflective	■ Transflective	☐ Transmissive		
Backlight Type	☐ NO B/L	■ LED	☐ CCFL	☐ EL	
Backlight Color	■ Yellow Green	☐ Green	☐ Amber	☐ White	☐ Other
View Direction	■ 6 O'clock	☐ 12 O'clock			
Temperature Range	■ Normal	☐ Wide			
Frame	☐ Black	■ Silver			

TO BE VERY CAREFUL !

The LCD driver ICs are made by CMOS process, which are very easy to be damaged by static charge, make sure the user is grounded when handling the LCM.



PIN NO	SIGNAL
1	VSS
2	VDD
3	V0
4	RS
5	R/W
6	E
7	DB0
8	DB1
9	DB2
10	DB3
11	DB4
12	DB5
13	DB6
14	DB7

NOTE	ITEM	CONTENT	DATA	REV

TOLERANCE: X. ±0.30 / .X ±0.20 / .XX±0.05

CUSTOMER APVL | DATE

DWN	Gili	2000.12.01
CHKD	Hsu	
APVD		
DATE	DATE	DATE

SCALE 1/1 | UNIT mm

SUNLIKE DISPLAY

TITLE MODULE | REV 0

MODEL SC2004C

DWG NO SC-0026 | PAGE 1/1

ABSOLUTE MAXIMUM RATING

(1) Electrical Absolute Ratings

Item	Symbol	Min.	Max.	Unit	Note
Power Supply for Logic	V_{DD}-V_{SS}	-0.3	7.0	Volt	
Power Supply for LCD	V_{DD}-V_O	-0.3	12.0	Volt	
Input Voltage	V_I	-0.3	V_{DD}	Volt	
LED Power Dissipation	P_{AD}	-	1.9	W	
LED Forward current	I_{AF}	-	420	mA	
LED Reverse Voltage	V_R	-	8	V	

(2) Environmental Absolute Maximum Ratings

Item	Normal Temperature				Wide Temperature			
	Operating		Storage		Operating		Storage	
	Min,	Max.	Min,	Max.	Min,	Max.	Min,	Max.
Ambient Temperature	0℃	+50℃	-20℃	+70℃	-20℃	+70℃	-30℃	+80℃
Humidity(without condensation)	Note 2,4		Note 3,5		Note 4,5		Note 4,6	

Note 2 Ta≦50℃: 80% RH max
Ta>50℃: Absolute humidity must be lower than the humidity of 85%RH at 50℃

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

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

Note 5 Ta≦70℃: 75RH max
Ta>70℃: absolute humidity must be lower than the humidity of 75%RH at 70℃

Note 6 Ta at -30℃ will be <48hrs, at 80 ℃ will be <120hrs when humidity is higher than 70%.

ELECTRICAL CHARACTERISTICS

Item	Symbol	Condition	Min.	Typ	Max.	Unit	note
Power Supply for Logic	V_{DD}-V_{SS}	-	4.5	5.0	5.5	Volt	
Input Voltage	V_{IL}	L level	0	-	0.6	Volt	
	V_{IH}	H level	2.2	-	V_{DD}	Volt	
LCM Recommend LCD Module Driving Voltage	V_{DD} –V_O	Ta＝0℃	-	-	-	Volt	
		Ta＝25℃	4.2	4.5	4.8		
		Ta＝50℃	-	-	-		
Power Supply Current for LCM	I_{DD}	V_{DD} =5.0V V_{DD}-V_O =4.5V	-	3.0	4.0	mA	
LED Forward Voltage	V_F	If＝280 mA	-	4.2	4.6	Volt	
LED Forward Current	I_F	-	-	280	-	mA	
LED Reverse Current	I_R	VR=8V	-	-	0.2	mA	

OPTICAL CHARACTERISTICS

Item	Symbol	Condition	Min.	Typ	Max.	Unit	note
Viewing angle range	Φf(12 o'clock)	When Cr≧ 1.4	-	10	-	Degree	9,10
	Φb(6 o'clock)		-	30	-		
	Φl(9 o'clock)		-	30	-		
	Φr(3 o'clock)		-	30	-		
Rise Time	Tr	V_{DD}-V_O =4.5V Ta=25℃	-	200		mS	
Fall Time	Tf		-	250			
Frame frequency	Frm		-	64	-	Hz	8,10
Contrast	Cr		-	3.0	-		7
The Brightness Of Backlight	L	IF=280 mA	90	140	-	cd/㎡	
Peak Emission Wavelength	λP		-	570	-	nm	

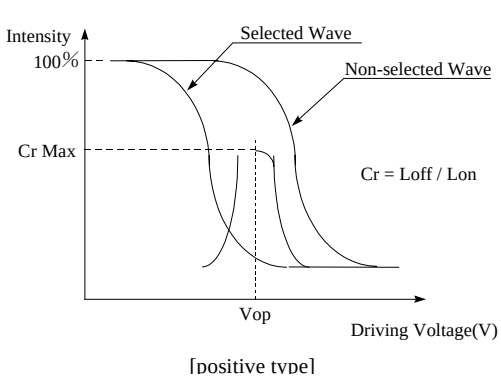
MECHANICAL SPECIFICATION

ITEM	DESCRIPTION
Product No.	SC2004C
Module Size	118.0(W)×43.0(H)×8.8(LED=12.7) max(D)
View Area	77.0(W)mm×26.3mm(H)
Dot Size	0.55 (W)mm×0.55(H)mm
Dot Pitch	0.60(W)mm×0.60(H)mm
Display Format	20 characters (W)×4 lines (H)
Duty Ratio	1/16 Duty 1/4 Bias
Controller	KS0066 or Equivalent

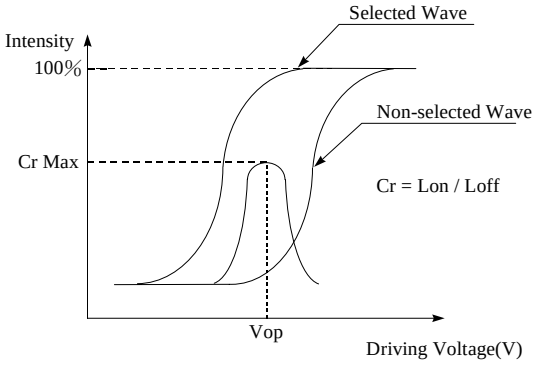
INTERFACE PIN ASSIGNMENT

Pin No.	Pin Out	Level	Description
1	VSS	0V	Power Supply Ground
2	VDD	5V	Power Supply Voltage
3	Vo	---	Contrast Adj
4	RS	H/L	Register Select
5	R/W	H/L	Read / Write
6	E	H,H→L	Enable Signal
7	DB0	H/L	Data Bit 0
8	DB1	H/L	Data Bit 1
9	DB2	H/L	Data Bit 2
10	DB3	H/L	Data Bit 3
11	DB4	H/L	Data Bit 4
12	DB5	H/L	Data Bit 5
13	DB6	H/L	Data Bit 6
14	DB7	H/L	Data Bit 7

[Note 7] Definition of Operation Voltage (Vop)

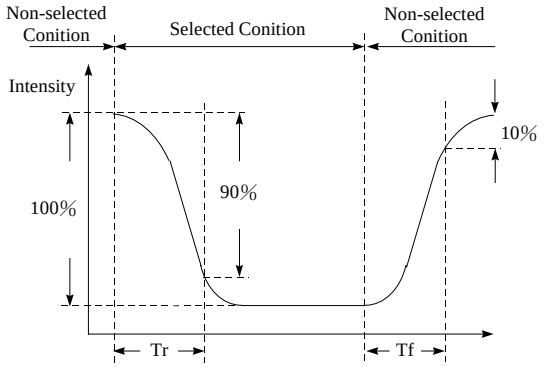


[positive type]

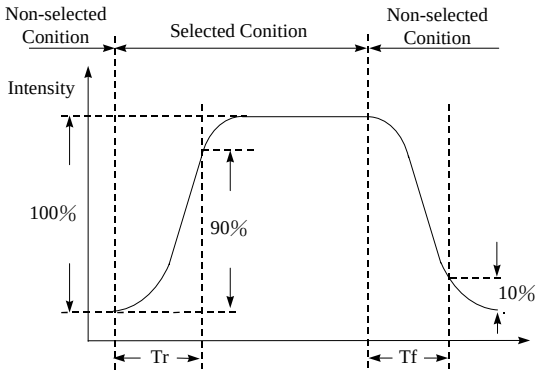


[Negative type]

[Note 8] Definition of Response Time (Tr, Tf)



[positive type]



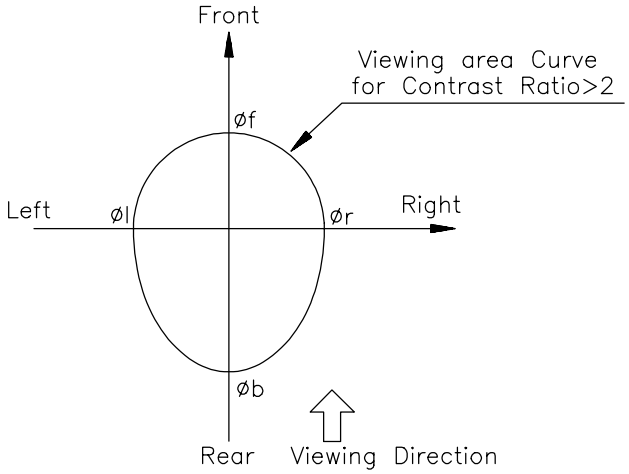
[Negative type]

Conditions:

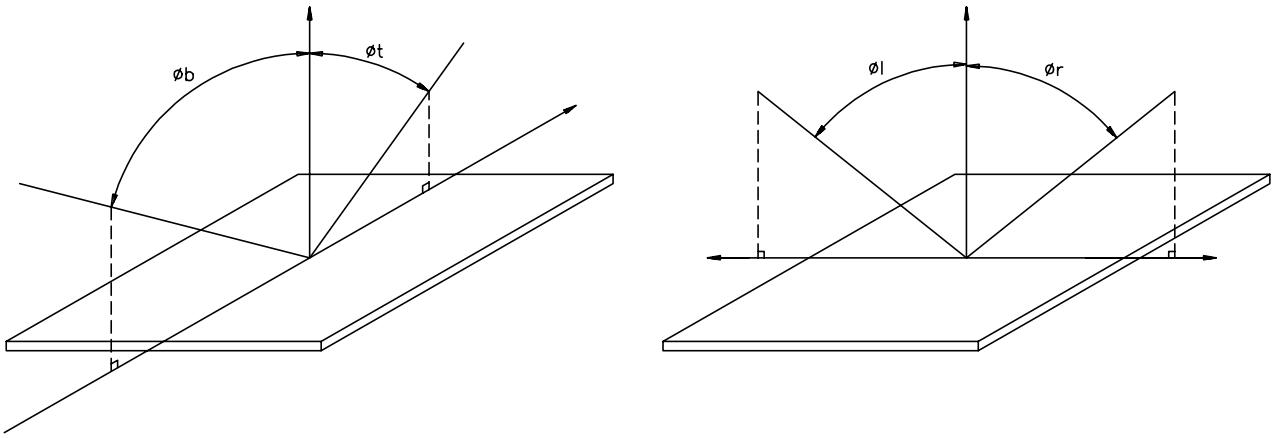
Operating Voltage : Vop **Viewing Angle(θ , φ): 0° , 0°**

Frame Frequency : 64 Hz **Driving Wave form : 1/N duty, 1/a bias**

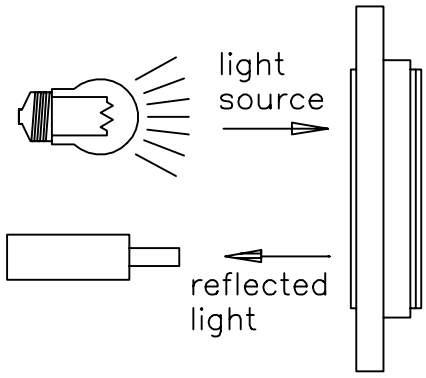
[Note 9] Definition of Viewing Direction



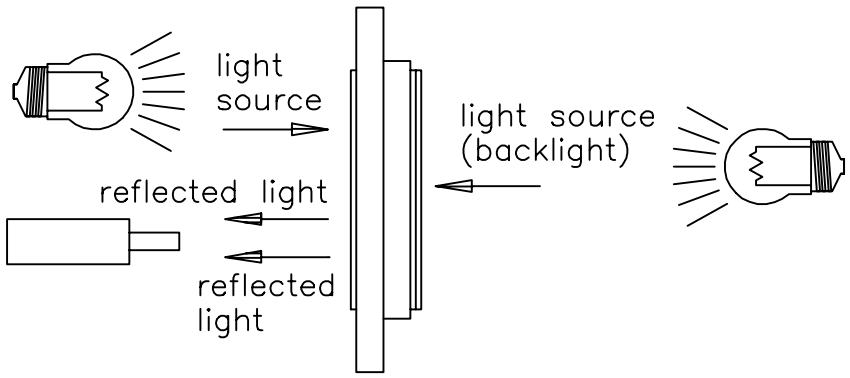
[Note 10] Definition of viewing angle



[Note 11] Description of Measuring Equipment

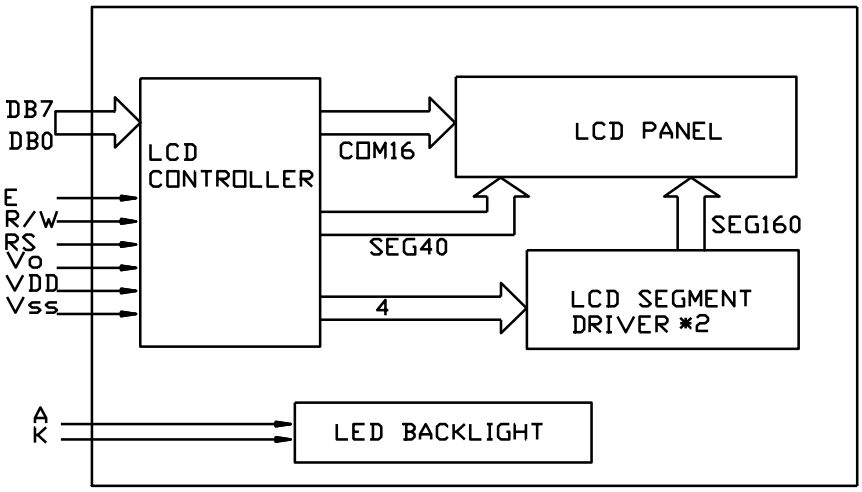


Reflective type



Transflective type

BLOCK DIAGRAM



POWER SUPPLY