

GENERAL SPECIFICATION

ITEM	DESCRIPTION
LCD TYPE	STN, NEGATIVE
REAR POLARIZER	TRANSMISSIVE
BACKLIGHT TYPE	LED
BACKLIGHT COLOR	WHITE
TEMPERATURE RANGE	WIDE TEMP., 5V
VIEWING DIRECTION	12 O'CLOCK
VIEWING AREA	114.0 (W)mm x 64.0 (H)mm
MODULE SIZE	144.0 (W)mm x 104.0 (H)mm x 15.1 MAX(D)mm
PIXELS SIZE	0.40 x 0.40
PIXELS PITCH	0.45 x 0.45
DISPLAY FORMAT	240(W) x 128(H)
DUTY RATIO	1 / 128 DUTY

ABSOLUTE MAXIMUM RATING

(1) Electrical Absolute Ratings

ITEM	SYMBOL	MIN.	MAX.	UNIT
POWER SUPPLY FOR LOGIC	V _{DD} -V _{SS}	0	5.5	VOLT
POWER SUPPLY FOR LCD	V _{DD} -V _{EE}	0	22	VOLT
INPUT VOLTAGE	V _I	V _{SS}	V _{DD}	VOLT
LED POWER DISSIPATION	P _{AD}	-	720	mW
LED FORWARD CURRENT	I _{AF}	-	200	mA
LED REVERSE VOLTAGE	V _R	-	5	V

(2) Environmental Absolute Maximum Ratings

ITEM	WIDE TEMPERATURE			
	OPERATING		STORAGE	
	MIN.	MAX.	MIN.	MAX.
AMBIENT TEMPERATURE	-10 °C	+60 °C	-20 °C	+70 °C
HUMIDITY (WITHOUT CONDENSATION)	NOTE 1, 2		NOTE 1, 3	

Note 1: Background color changes slightly depending on ambient temperature.

This phenomenon is reversible.

Note 2: Ta ≤ 70°C: 75RH max

Ta > 70°C: absolute humidity must be lower than the humidity of 75%RH at 70°C

Note 3: Ta at -30°C will be <48hrs, at 80 °C will be <120hrs when humidity is higher than 75%.

*UNLESS OTHERWISE SPECIFIED TOLERANCES PER DECIMAL PRECISION ARE: X=±1 (±0.039), X.X=±0.5 (±0.020), X.XX=±0.25 (±0.010), X.XXX=±0.127 (±0.005). LEAD SIZE=±0.05 (±0.002), LEAD LENGTH=±0.75 (±0.030). MIN= ^{+DECIMAL PRECISION}_{-0.00} MAX.= ^{+0.00}_{-DECIMAL PRECISION}



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144.0(W)×104.0(H)×15.1(D)mm, 240x128 DOT MATRIX GRAPHIC LCD MODULE, STN GRAY, NEGATIVE, 1/128 DUTY, LED BACKLIGHT.

THE SPECIFICATIONS MAY CHANGE AT ANY TIME WITHOUT NOTICE DUE TO NEW MATERIALS OR PRODUCT IMPROVEMENT.

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DATE : 2018.04.30	DRAWN BY : C.C.
PAGE : 2 OF 4	CHKD BY : E.C.
SCALE : NTF	APRVD BY : G.Y.
UNIT : mm [INCH]	Ⓢ

ELECTRICAL CHARACTERISTICS

ITEM	SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT
POWER SUPPLY FOR LOGIC	VDD-VSS	-	4.5	5.0	5.5	VOLT
POWER SUPPLY FOR LCD	VEE-VSS	-	-14.2	-15.0	-15.9	VOLT
INPUT VOLTAGE	VIL	L LEVEL	0	-	0.8	VOLT
	VIH	H LEVEL	-2.2 VDD	-	VDD	VOLT
	VDD-VO	Ta=25°C	16.9	18.0	19.2	VOLT
POWER SUPPLY CURRENT FOR LCM	IDD	VDD=5.0V VDD-VO=18.0V	-	17.5	23.0	mA
	IOUT		-	5.0	-	
THE BRIGHTNESS OF BACKLIGHT	L	IF =160mA	160	200	-	cd/m ²
PEAK EMISSION WAVELENGTH	λP	IF =160mA	X=0.24 Y=0.22	X=0.28 Y=0.25	X=0.30 Y=0.29	nm
LED FORWARD VOLTAGE	VF	If=160mA	-	3.2	3.4	VOLT

ELECTRICAL CHARACTERISTICS

PIN NO.	PIN OUT	FUNCTION DESCRIPTION
1	VSS	Power Supply Ground
2	VDD	Power Supply Voltage
3	Vo	Contrast Adjustment Voltage
4	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
5	/RD	Data Read
6	/WR	Data Write
7	DB0	Data Bit 0
8	DB1	Data Bit 1
9	DB2	Data Bit 2
10	DB3	Data Bit 3
11	DB4	Data Bit 4
12	DB5	Data Bit 5
13	DB6	Data Bit 6
14	DB7	Data Bit 7
15	/CE	Enable Signal
16	/RST	Reset Signal
17	VEE	No Connection
18	MD	H : 32/L : 40 Select of Columns
19	FS	H : 6*8/L : 8*8 Select of Font
20	NC	No Connection

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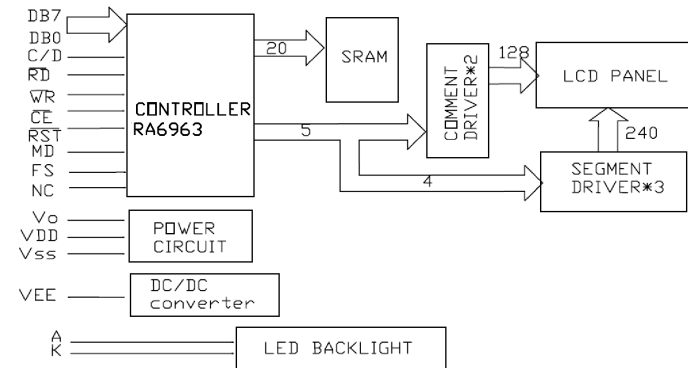
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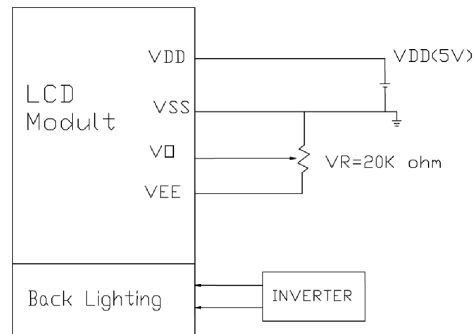
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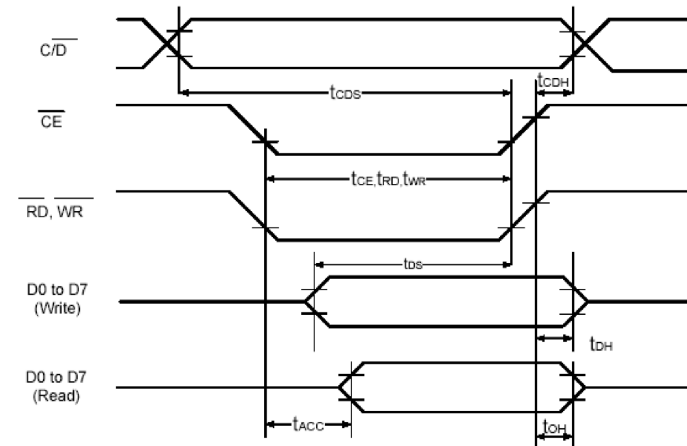
BLOCK DIAGRAM



POWER SUPPLY



TIMING CHARACTERISTIC



ITEM	SYMBOL	TEST CONDITIONS	MIN	MAX	UNIT
C/D Set Up Time	t_{CDS}	--	100	--	ns
C/D Hold Time	t_{CDH}	--	10	--	ns
/CE, /RD, /WR Pulse Width	t_{CE}, t_{RD}, t_{WR}	--	80	--	ns
Data Set Up Time	t_{DS}	--	80	--	ns
Data Hold Time	t_{DH}	--	40	--	ns
Access Time	t_{ACC}	--	--	150	ns
Output Hold Time	t_{OH}	--	10	50	ns

*VDD=+5V±5%, GND=0V, Ta=-20~70 degree

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