P/N PREFIX/SUFFIX TABLE

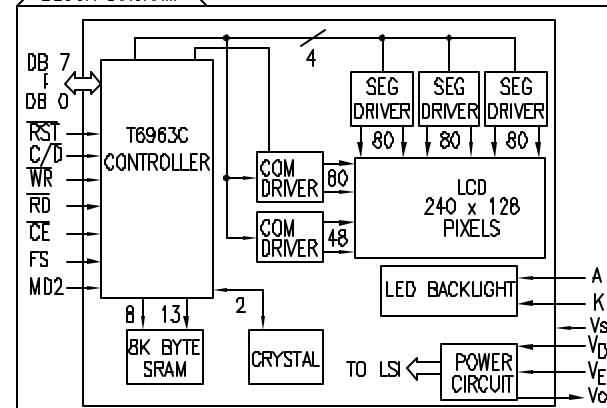| LCM-X	GXX	DESCRIPTION
STANDARD S	SR	STN, REFLECTIVE
	SF	STN, TRANSFLECTIVE W/LED BACKLIGHT
HIGH TEMP. H	WF-C	FSTN, TRANSFLECTIVE W/CCFL BACKLIGHT
	WF-L	FSTN, TRANSFLECTIVE W/WHITE EL BACKLIGHT

PIXEL DETAIL FACTORY PART#

- 0.40 [0.016]
- 0.05 [0.002]
- 0.40 [0.016]
- 0.05 [0.002]
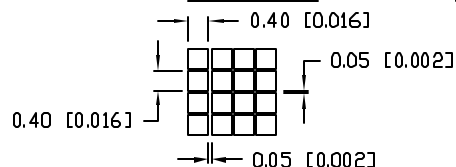
REV.	E.C.N. NUMBER AND REVISION COMMENTS	DATE
A	E.C.N. #10BRDR. & REDRAWN.	9.10.98
B	E.C.N. #10516.	5.10.99
C	E.C.N. #10BRDR. & #10969.	3.14.03

Dimensions (mm [in]):

- 144.00±0.50 [5.669±0.020]
- 138.00 [5.433]
- 134.00 [5.276]
- 114.00 [4.488] V.A.
- 107.95 [4.250] (PIXEL AREA)
- 57.55 [2.266] (PIXEL AREA)
- 3.00±0.30 [0.118±0.012] (2 PLS.)
- 5.00±0.20 [0.197±0.008] (2 PLS.)
- 15.00 [0.591] (2 PLS.)
- 3.50 [0.138]
- 9.30 [0.366]
- 17.00 [0.669]
- 104.00±0.50 [4.094±0.020]
- 97.00 [3.819]
- 79.40±0.30 [3.126±0.012]
- 64.00 [2.520] V.A.
- Ø1.00 [Ø0.039] Ø1.80mm PADS (5 PLS.)
- 4.00 [0.157]
- 3.50 [0.138]
- 15.30 [0.602]
- 23.00 [0.906]
- 2.50 [0.098]
- 2.54 [0.100] (19 PLS.)
- 48.26 [1.900]
- 3.00 [0.118]
- 59.00 [2.323]
- 69.00 [2.717]
- Ø3.50 [Ø0.138] Ø6.0mm PADS (4 PLS.)
- Ø1.00 [Ø0.039] (20 PLS.)
- 1.60 [0.063]
- 'A' MAX.
- 'B**'
- 'B*'

20 ... 1

BLOCK DIAGRAM

DB 7 / DB 0, RST, C/D, WR, RD, CE, FS, MD2 — T6963C CONTROLLER

- 8K BYTE SRAM
- CRYSTAL
- COM DRIVER
- SEG DRIVER (×3) — 80 / 80 / 80
- LCD 240 x 128 PIXELS
- LED BACKLIGHT
- POWER CIRCUIT
- TO LSI
- A, K, Vss, VDD, VEE, Vo

TYPE	DIM.	A	B*	B**	X	Y
REFLECTIVE OR EL		5.2	3.5	8.4	15.24	41.38
LED		10	3.5	8.4	5.08	46.46
CCFL		10	3.5	8.4	–	–

B*: WITHOUT NV+TC.
B**: WITH NV+TC.
NV-NEGATIVE VOLTAGE SUPPLY
TC-TEMPERATURE COMPENSATION

CAUTION: STATIC SENSITIVE DEVICE
FOLLOW PROPER E.S.D. HANDLING PROCEDURES
WHEN WORKING WITH THIS PART.

*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

REV.	PART NUMBER
C	LCM-X240128GXX(-X)

240 x 128 DOT MATRIX GRAPHIC MODULE,
1/128 DUTY.

DRAWN BY: CT	CHECKED BY:	APPROVED BY:	DATE: 7.7.98
			PAGE: 1 OF 2
			SCALE: N/A

PART NUMBER	REV.
LCM—X240128GXX(—X)	C

REV.	E.C.N. NUMBER AND REVISION COMMENTS	DATE
	SEE PAGE 1.	

FACTORY PART#

$V_{DD}-V_0$: LCD DRIVING VOLTAGE
VR: 10KΩ ~20KΩ

$V_{DD}-V_0$
$V_{DD}=+5V$
LCD MODULE: V_{DD}, V_0, V_{ee}, V_{SS}

ABSOLUTE MAXIMUM RATINGS

ITEM	SYMBOL	MIN.	MAX.	UNIT
POWER SUPPLY FOR LOGIC	$V_{DD}-V_{SS}$	0	6.5	V
POWER SUPPLY FOR LCD DRIVING	$V_{DD}-V_{EE}$	0	22.0	V
INPUT VOLTAGE	V_I	V_{SS}	V_{DD}	V
STATIC ELECTRICITY			100	V

TIMING OF POWER SUPPLY AND INTERFACE SIGNAL

4.75V — 5V — 4.75V
0~50ms — 0~50ms
VDD, GND
VALID DATA
SIGNAL, GND — 0 MIN — 0 MIN — SIGNAL, GND
VEE, GND — GND, VEE
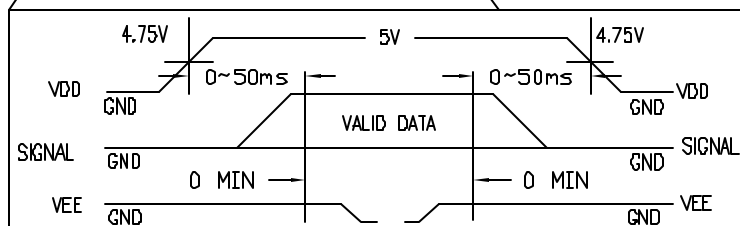
PIN CONFIGURATION

PIN #	SYMBOL	LEVEL	FUNCTION
1	Vss	–	GROUND (0V)
2	V_{DD}	–	POWER SUPPLY FOR LOGIC CIRCUIT
3	Vo	–	OPERATING VOLTAGE FOR LCD DRIVING
4	C/$\overline{D}$	H/L	$\overline{WR}$="L", C/$\overline{D}$="H": COMMAND WRITE, "L": DATA WRITE / $\overline{RD}$="L", C/$\overline{D}$="H": STATUS READ, "L": DATA READ
5	$\overline{RD}$	L	DATA READ
6	$\overline{WR}$	L	DATA WRITE
7~14	DB0~DB7	H/L	DATA BUS LINE
15	$\overline{CE}$	L	CHIP ENABLE
16	$\overline{RST}$	L	RESET
17	Vee	–	POWER SUPPLY FOR LCD DRIVING
18	MD2	H/L	COLUMNS SELECT: "H": 32 COLUMNS, "L": 40 COLUMNS
19	FS	H/L	FONT SELECT: "H": 6*8 PIXEL/FONT, "L": 8*8 PIXEL/FONT
20	N.C.	–	
	A	–	POWER SUPPLY FOR LED BACKLIGHT (ANODE)
	K	–	POWER SUPPLY FOR LED BACKLIGHT (CATHODE)
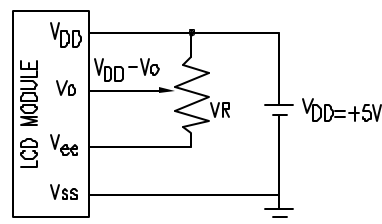
OPTO-ELECTRICAL CHARACTERISTICS

ITEM		SYMBOL	MIN.	TYP.	MAX.	UNIT
POWER SUPPLY VOLTAGE FOR LOGIC		$V_{DD}-V_{SS}$	+4.75	+5.0	+5.25	V
NEGATIVE POWER SUPPLY VOLTAGE FOR LCD DRIVE		$V_{EE}-V_{SS}$	−15.5	−16.0	−16.5	V
INPUT VOLTAGE: NOTE (1)	H LEVEL	V_{IH}	2.2	–	–	V
	L LEVEL	V_{IL}	0	–	0.8	V
OUTPUT VOLTAGE: NOTE (2)	H LEVEL	V_{OH}	2.4	–	V_{DD}	V
	L LEVEL	V_{OL}	0	–	0.4	V
POWER SUPPLY CURRENT FOR LOGIC: NOTE (4)		I_{DD}	–	12.0	–	mA
POWER SUPPLY CURRENT FOR LCD DRIVE: NOTE (4)		I_{EE}	–	5.0	–	mA
RECOMMENDED LCD DRIVING VOLTAGE: (NOTE 3)	Ta=0°C	$V_{DD}-V_0$	–	+19.4	–	V
	Ta=25°C Φ=10°C		–	+18.5	–	V
	Ta=50°C θ=0°C		–	+16.2	–	V
CLOCK OSCILLATION FREQUENCY		fosc	–	5	–	MHZ
*LED BACKLIGHT	VOLTAGE If=900mA	Vf	–	4.2	4.6	V
	CURRENT	If	–	900	–	mA
	POWER CUNSUMPTION	PD	–	3.8	–	W
	LUMINOUS If=900mA	L	60	–	–	cd/m²
	COLOR		–	–	574	nm

*ONLY APPLIES TO MODULES WITH BACKLIGHT

NOTE (1): APPLIED TO TERMINALS: FS, CE, $\overline{WR}$, $\overline{RD}$, C/$\overline{D}$, DB0~DB7, $\overline{RES}$, MD2.

NOTE (2): APPLIED TO TERMINALS: DB0~DB7.

NOTE (3): RECOMMENDED LCD DRIVING VOLTAGE MAY FLUCTUATE ABOUT ±1.0V BY EACH MODULE.

NOTE (4): $V_{DD}-V_{SS}=5.0V$, $V_{DD}-V_0=20.6V$.

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REV.	PART NUMBER
C	LCM—X240128GXX(—X)

240 x 128 DOT MATRIX GRAPHIC MODULE, 1/128 DUTY.

LUMEX
290 E. HELEN ROAD
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PHONE: +1.847.359.2790
US WEB: www.lumex.com
TW WEB: www.lumex.com.tw

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CT			PAGE: 2 OF 2
			SCALE: N/A

Mouser Electronics

Authorized Distributor

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