

PART NUMBER
LCM-X12232GXX/D

REV.

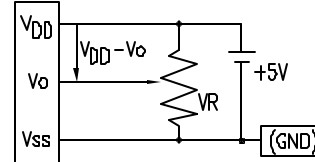
REV. E.C.N. NUMBER AND REVISION COMMENTS

DATE

PIN CONFIGURATION

PIN NO.	SYMBOL	LEVEL	FUNCTION
1	V _{SS}	-	POWER SUPPLY GND (DV) 5V FOR LCD DRIVE
2	V _{DD}	-	
3	V _O	-	
4	A _D	H/L	REGISTER SELECT SIGNAL H: DATA INPUT L: INSTRUCTION INPUT
5	E1	H,H->L	CHIP SELECT SIGNAL FOR IC1
6	E2	H,H->L	CHIP SELECT SIGNAL FOR IC2
7~14	DB0~DB7	H/L	DATA BUS
A	-	-	ANODE LED BACKLIGHT
K	-	-	CATHODE LED BACKLIGHT

V_{DD}-V_O: LCD DRIVING VOLTAGE
VR: 10KΩ-20KΩ



READ/WRITE TIMING FOR 68 PORT MPU

PARAMETER	SIGNAL	SYMBOL	MIN	MAX	UNIT
ADDRESS HOLD TIME	CS	t _{AH6}	10	-	ns
ADDRESS SETUP TIME	R/W	t _{AS6}	20	-	ns
SYSTEM CYCLE TIME	A _D	t _{CYC6}	1000	-	ns
DATA SETUP TIME	D ₀ ~D ₇	t _{DS6}	80	-	ns
DATA HOLD TIME		t _{DH6}	10	-	ns
OUTPUT DISABLE TIME		t _{OH6}	10	60	ns
ACCESS TIME		t _{ACC6}	-	90	ns
ENABLE PULSE WIDTH	E	t _{EW}	100	-	ns
			80	-	ns

ELECTRICAL CHARACTERISTICS

V_{DD}=4.5V to 5.5V, T_A=25°C

ITEM	SYMBOL	CONDITION	STANDARD VALUE			UNIT
			MIN.	TYP.	MAX.	
SUPPLY VOLTAGE FOR LOGIC	V _{DD} -V _{SS}	-	-	5.0	-	V
SUPPLY CURRENT FOR LOGIC	I _{DD}	V _{DD} =5V	-	-	3.0	mA
INPUT VOLTAGE**	HIGH	V _{IH}	-	0.2	-	V _{DD}
	LOW	V _{IL}	-	0	-	0.8
OUTPUT VOLTAGE***	HIGH	V _{OH}	I _{OH} =-3mA	2.4	-	V
	LOW	V _{OL}	I _{OL} =3mA	-	0.4	V
*LED BACKLIGHT	VOLTAGE	V _f	-	4.2	4.6	V
	CURRENT	I _f	-	170	330	mA
	POWER CONSUMPTION	P _D	-	710	-	mW
	LUMINOUS	L	I _f =170mA	70	-	cd/m ²
	COLOR	-	-	-	-	nm

*ONLY APPLIES TO MODULES WITH BACKLIGHT

**APPLIED TO TERMINALS DB0~DB7

***APPLIED TO TERMINALS E, A_O, DB0~DB7

ABSOLUTE MAXIMUM RATINGS

ITEM	SYMBOL	TEST CONDITION	STANDARD VALUE		UNIT
SUPPLY VOLTAGE FOR LOGIC	V _{DD} -V _{SS}	T _a =25°C	4.75	5.25	V
SUPPLY VOLTAGE FOR LCD DRIVE	V _{DD} -V _O	-	4.8@50°C	5.2@0°C	V
INPUT VOLTAGE	V _I	T _a =25°C	V _{SS}	V _{DD}	V
OPERATING TEMPERATURE	T _{opr}	LCM-S	0	50	°C
		LCM-H	-20	70	°C
		LCM-S	-20	70	°C
STORAGE TEMPERATURE	T _{stg}	LCM-H	-30	85	°C

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RELIABILITY NOTE

OUR MANY YEARS OF EXPERIENCE DATA ACCUMULATION INDICATE THAT SOLDER HEAT IS A MAJOR CAUSE OF EARLY AND FUTURE FAILURE. PLEASE PAY ATTENTION TO YOUR SOLDERING PROCESS.

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DRAWN BY: CHECKED BY: APPROVED BY: DATE: 12-9-98

SA/BC

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SCALE: N/A

122 x 32 DOT MATRIX GRAPHIC MODULE,
1/16 DUTY, 1/5 BIAS.