

UNCONTROLLED DOCUMENT

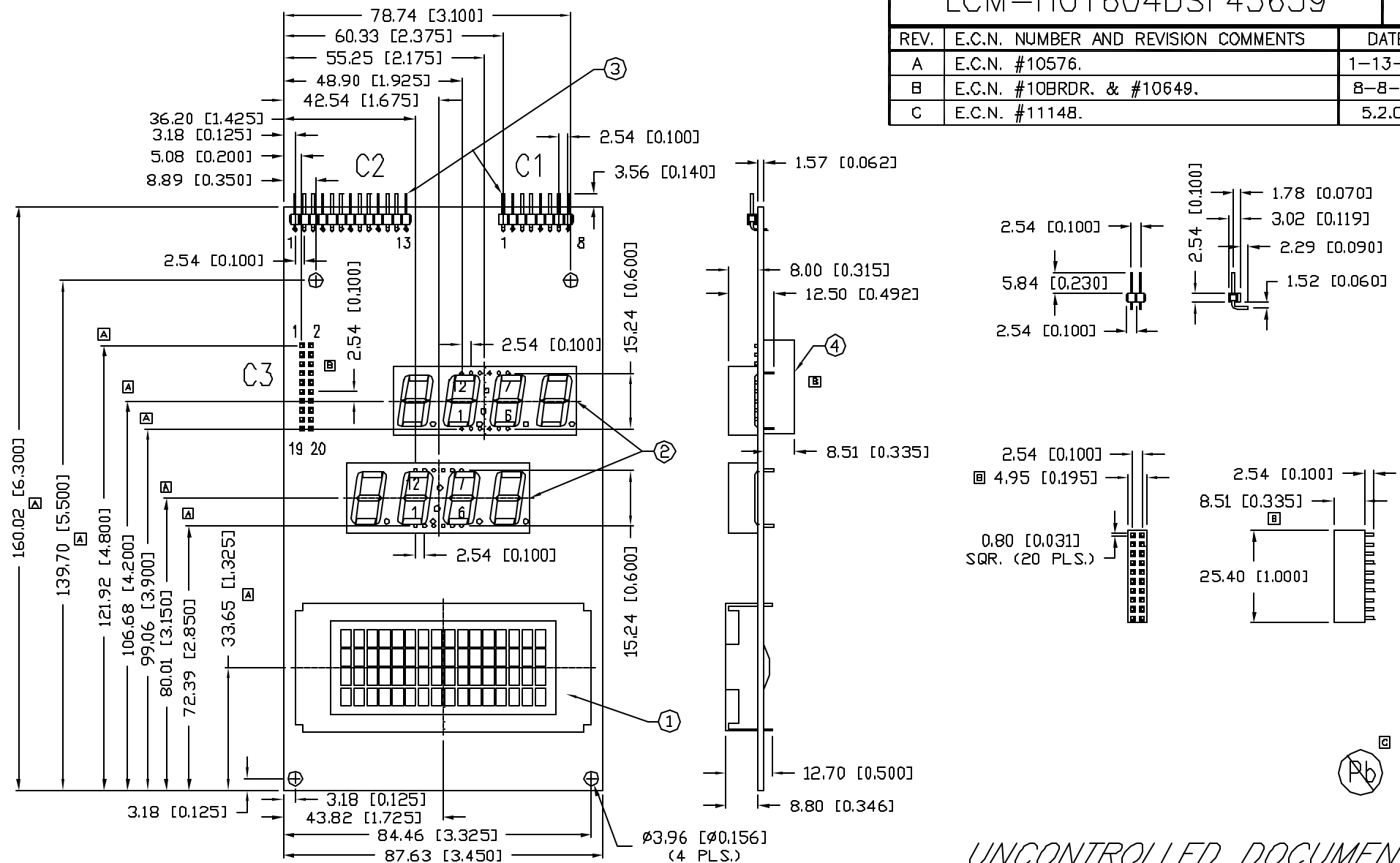
PART NUMBER

REV.

LCM-H01604DSF43639

C

REV.	E.C.N. NUMBER AND REVISION COMMENTS	DATE
A	E.C.N. #10576.	1-13-00
B	E.C.N. #10BRDR. & #10649.	8-8-00
C	E.C.N. #11148.	5.2.07



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

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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.

290 E. HELEN ROAD
PALATINE, IL 60067-6976
PHONE: +1.847.359.2790
US WEB: www.lumex.com
TW WEB: www.lumex.com.tw

DRAWN BY:

CHECKED BY:

APPROVED BY:

DATE: 9.22.99

JC

PAGE: 1 OF 3

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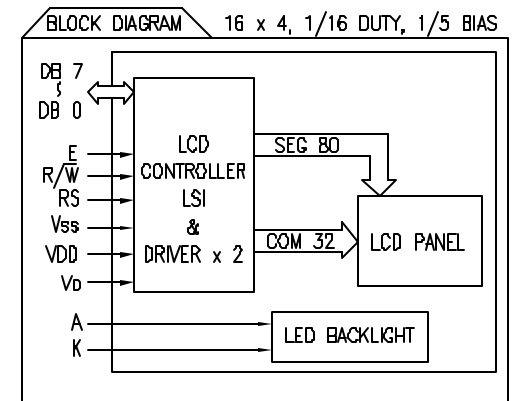
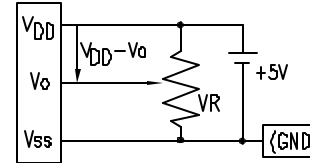
CUSTOM PCB,
1: 16 X 4 CHARACTER MODULE
2: QUAD DIGIT, SEVEN SEGMENT DISPLAY.

LCM SPECS

PART NUMBER
LCM-H01604DSF43639REV.
CREV. E.C.N. NUMBER AND REVISION COMMENTS
SEE PAGE 1.

DATE

PIN CONFIGURATION			
PIN NO.	SYMBOL	LEVEL	FUNCTION
1	V _{SS}	-	POWER SUPPLY GND (0V) 5V FOR LCD DRIVE
2	V _{DD}	-	
3	V _O	-	
4	RS	H/L	REGISTER SELECT SIGNAL H: DATA INPUT L: INSTRUCTION INPUT
5	R/W	H/L	H: DATA READ (MODULE-->MPU) L: DATA WRITE (MODULE<--MPU)
6	E	H,H->L	ENABLE
7~14	DB0~DB7	H/L	DATA BUS-SOFTWARE SELECTABLE 4 OR 8 BIT MODE.
15	A	-	ANODE LED BACKLIGHT
16	K	-	CATHODE LED BACKLIGHT

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

ELECTRICAL CHARACTERISTICS		V _{DD} =4.7V to 5.3V, 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	-	2.0	3.0	mA
INPUT VOLTAGE	HIGH	V _{IH}	-	2.2	-	4.7	V
	LOW	V _{IL}	-	0	-	0.6	V
OUTPUT VOLTAGE	HIGH	V _{OH}	-	2.4	-	-	V
	LOW	V _{OL}	-	-	-	0.4	V
*LED BACKLIGHT	VOLTAGE	V _f	I _f =260mA	-	4.2	4.5	V
	CURRENT	I _f	-	-	260	400	mA
	POWER CONSUMPTION	P _D	-	-	1092	-	mW
	LUMINOUS	L	I _f =260mA	70	-	-	cd/m ²
	COLOR	-	-	-	-	-	nm

*ONLY APPLIES TO MODULES WITH BACKLIGHT

ABSOLUTE MAXIMUM RATINGS

ITEM	SYMBOL	TEST CONDITION	STANDARD VALUE		UNIT
			MIN	MAX	
SUPPLY VOLTAGE FOR LOGIC	V _{DD} -V _{SS}	T _a =25°C	4.7	5.3	V
SUPPLY VOLTAGE FOR LCD DRIVE	V _{DD} -V _O	-	4.2@50°C	4.8@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
STORAGE TEMPERATURE	T _{stg}	LCM-S	-20	70	°C
		LCM-H	-30	85	°C

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LDC SPECSELECTRO-OPTICAL CHARACTERISTICS $T_A=25^{\circ}\text{C}$ $I_f=10\text{mA}$

PARAMETER	MIN	TYP	MAX	UNITS	TEST COND
PEAK WAVELENGTH		565 (GREEN)		nm	
FORWARD VOLTAGE		2.2	2.6	V_f	
REVERSE VOLTAGE	5.0			V_r	$I_r=100\mu\text{A}$
AXIAL INTENSITY		3900		μcd	$I_f=10\text{mA}$
EMITTED COLOR:	GREEN				
FACE COLOR:	GRAY				
SEGMENT COLOR:	MILKY WHITE	DIFFUSED			

LIMITS OF SAFE OPERATION AT 25°C PER DIE

PARAMETER	MAX	UNITS
PEAK FORWARD CURRENT*	150	mA
STEADY CURRENT	25	mA
POWER DISSIPATION	105	mW
DERATE FROM 25°C	-1.2	mW/ $^{\circ}\text{C}$
OPERATING, STORAGE TEMP.	-40 TO +85	$^{\circ}\text{C}$
SOLDERING TEMP.	+260	$^{\circ}\text{C}$
2.0mm FROM BODY		3 SEC. MAX

* $t < 10\mu\text{s}$ CONNECTOR PINOUTS

C1 (LED)		C2 (SWITCH)		C3 (LCD)	
PIN	SEG	PIN	SWITCH	PIN	
1	A	1	1	1	R/W
2	B	2	2	2	KEYIN
3	C	3	3	3	DA0
4	D	4	4	4	DB8
5	E	5	5	5	DD9
6	F	6	6	6	DD10
7	G	7	7	7	DD11
8	COMMON CATHODE	8	8	8	DD12
		9	9	9	DD13
		10	10	10	DD14
		11	11	11	DD15
		12	12	12	MOSI
		13	GROUND	13	LED
				14	CLK
				15	5V
				16	5V
				17	GROUND
				18	GROUND
				19	LCD
				20	DA0

NOTES:

1. LCM-H01604DSF.
2. LDC-N5612NI (2 PCS.)
3. RIGHT ANGLE HEADERS, SAMTEC OR EQUIVALENT.
4. SAMTEC THRU HOLE CONNECTOR SSQ-110-01-T-D OR EQUIVALENT.

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