

## 6.0 ELECTRICAL CHARACTERISTICS

ITEM	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
INPUT VOLTAGE	V I	—	—	5.0	—	V
INPUT HIGH VOLTAGE	V IH	—	0.7VDD	—	VDD	V
INPUT LOW VOLTAGE	V IL	—	VSS	—	0.3VDD	V
SUPPLY CURRENT	I DD	VDD=5.0V	—	—	—	mA

## 7.0 OPTICAL SPECIFICATION

	SYMBOL	MIN.	TYP.	MAX.	UNIT
VIEW ANGLE CR $\geq$ 2 (VERTICALLY)	$\theta X$	30	35	—	DEGREE
VIEW ANGLE CR $\geq$ 2 (HORIZONTALLY)	$\phi$	—	—	—	DEGREE
CONTRAST RATIO	CR	2.0	2.5	—	
RESPONSE TIME 25°C (RISE)	T ON	—	110	220	ns
RESPONSE TIME 25°C (FALL)	T OFF	—	210	310	ns

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LCM NO: PC-064PYL

REF.NO: 9506401

REV. NEW

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### 8.0 INTERFACE PIN FUNCTION DESCRIPTION

PIN NO	SYMBOL	FUNCTIONS	
1	CLK	CLOCK	
2	DATA	DATA INPUT	
3	NO HOLE	NO CONNECTION	
4	GND	GROUND	
5	E	ENABLE	
6	VCC	POWER SUPPLY FOR LOGIC	

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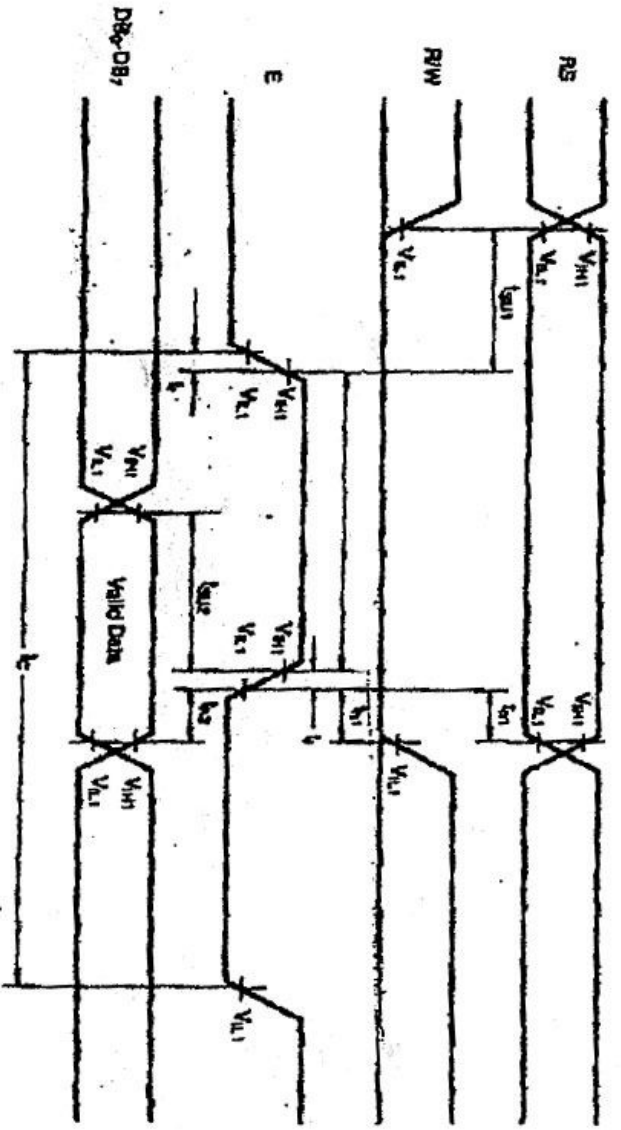
LCM NO: PC-054PVL

REF.NO: 9506401

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**9.0 AC characteristics** ( $V_{DD} = 5V \pm 10\%$ ,  $V_{SS} = 0V$ ,  $T_A = 25^\circ C$ )  
 Write mode

Characteristic	Symbol	Min	Typ	Max	Unit	Test pin
E cycle time	$t_c$	600	—	—	ns	E
E rise time	$t_r$	—	—	25	ns	E
E fall time	$t_f$	—	—	25	ns	E
E pulse width (High, Low)	$t_w$	220	—	—	ns	E
R/W and RS set-up time	$t_{su1}$	40	—	—	ns	R/W, RS
R/W and RS hold time	$t_{h1}$	10	—	—	ns	R/W, RS
Data set-up time	$t_{su2}$	60	—	—	ns	DB<math>\sim</math>DB</math>
Data hold time	$t_{h2}$	10	—	—	ns	DB<math>\sim</math>DB</math>



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9.2

**CONTROL and DISPLAY COMMAND** (continued)

Command	RG	R/W	DB <sub>7</sub>	DB <sub>6</sub>	DB <sub>5</sub>	DB <sub>4</sub>	DB <sub>3</sub>	DB <sub>2</sub>	DB <sub>1</sub>	DB <sub>0</sub>	Execution time (f <sub>osc</sub> = 250kHz)	Remark						
SET CG RAM ADDRESS	L	L	L	H	CG RAM address (corresponds to cursor address)						40μS	CG RAM received	Data is sent and after this setting					
SET DD RAM ADDRESS	L	L	H	DD RAM address						40μS	DD RAM received	Data is sent and after this setting						
READ BUSY FLAG & ADDRESS	L	H	BF	Address Counter used for Both DD & CG RAM address						0μS	<table border="1"> <tr> <td>BF</td> <td>H</td> <td>Busy</td> </tr> <tr> <td></td> <td>L</td> <td>Ready</td> </tr> </table> <p>— Reads BF indication internal operating is being performed. — reads address counter contents</p>	BF	H	Busy		L	Ready	
BF	H	Busy																
	L	Ready																
WRITE DATA	H	L	Write Data						46μS	Write data into DD or CG RAM								
READ DATA	H	H	Read Data						46μS	Read data from DD or CGRAM								

X: Don't care

(table 1)

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9.4 2-Line by 8-Character Display Example

DD RAM address	1	2	3	4	5	6	7	8
00	01	02	03	04	05	06	07	07
40	41	42	43	44	45	46	46	47

For shift left	01	02	03	04	05	06	07	08
41	42	43	44	45	46	47	47	48

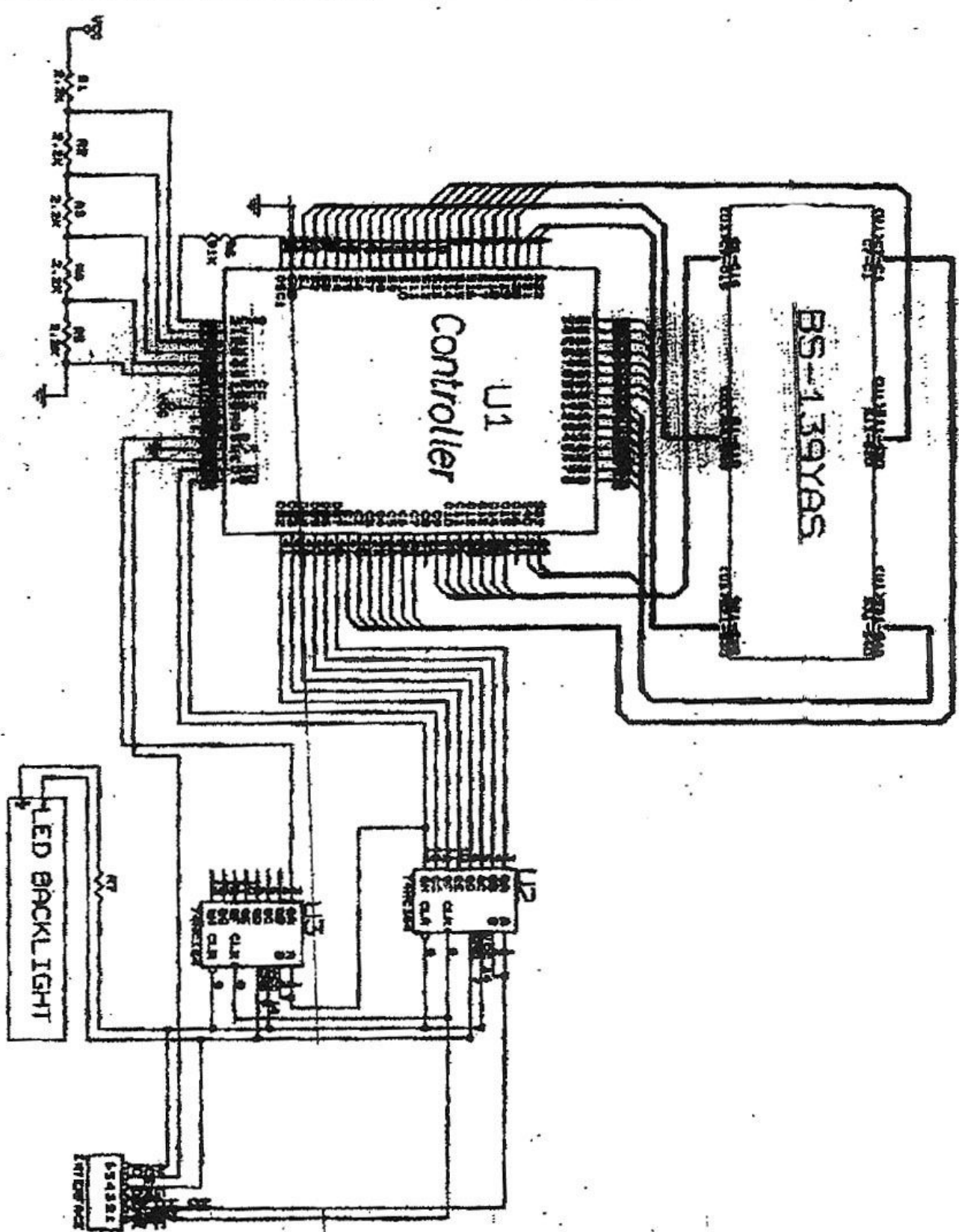
For shift right	27	00	01	02	03	04	05	06
07	40	41	42	43	44	45	45	46

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10.0 CIRCUIT.

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