



ALPHANUMERIC DOT MATRIX MODULES

DOT CHARACTER PATTERNS

For 5 x 7 Dot Character Patterns

Character Codes (DD RAM Data)	CG RAM Address	Character Patterns (CC RAM Data)	
7 6 5 4 3 2 1 0 Higher Lower	5 4 3 2 1 0 Higher Lower	7 6 5 4 3 2 1 0 Higher Lower	
0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0	Character Pattern Example ¹⁾
			Cursor ← Position
0 0 0 0 0 0 0 1	0 0 0 0 0 0 0 1	0 0 0 0 0 0 0 1	Character Pattern Example ²⁾
0 0 0 0 0 1 1 1	0 0 0 0 0 1 1 1	0 0 0 0 0 1 1 1	*No Effect

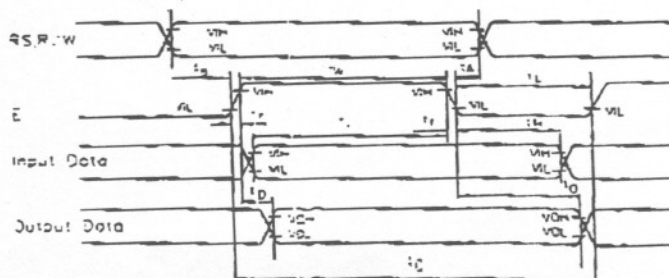
NOTE:
Character code bits 0.2
Correspond to CG RAM
address bits 3.5
(3 bits : 8 types)

TIMING CHARACTERISTICS FOR CONTROLLER CHIPS

CONTROLLERS CHIPS		SAMSUNG KS0066	RECOMMENDED TIMING	UNIT
PARAMETERS				
Enable Cycle Time	IC (min)	1000	1000	nS
Enable Pulse Width	tW (min)	450	450	nS
High Level	tH (min)	450	450	nS
Low Level	tL (min)			
E. Raise Time	tr (max)	25	25	nS
E. Fall Time	tf (max)	25	25	nS
Set-up Time	tB (min)	140	140	nS
Data Set-up Time	tI (min)	195	195	nS
Data Delay Time	tD (max)	320	320	nS
Address Hold Time	tA (max)	10	10	nS
Hold Time				
Input Data	tH (min)	10	10	nS
Output Data	tO (min)	20	20	nS

NOTE:
INITIALIZATION BY POWER-ON
RESET INVOLVES MANY UNSTABLE
FACTORS CAUSED BY POWER SUPPLY
FLUCTUATIONS.
THEREFOR, INITIALISING BY IN-
STRUCTIONS IS STRONGLY RECOM-
MENDED

TIMING DIAGRAM





MECHANICAL DATA

Item	Nominal Dimensions	Unit
Module Size(W x H x T)	58.0 x 32.0 x 9.5	mm
Viewing Area(W x H)	35.0 x 15.0	mm
Character Size(W x H)	2.45 x 5.0	mm
Dot Size(W x H)	0.45 x 0.5	mm
Weight		g

PIN CONNECTIONS

Pin	Symbol	Level	Function
1	Vss	—	GND (0V)
2	Vnn	—	Supply Voltage for Logic(+5V)
3	Vo	—	LCD Driving Voltage
4	RS	H/L	H : Data L : Instruction Code
5	R/W	H/L	H : Read L : Write
6	E	H,H>L	Enable Signal
7	DB0	H/L	Data Bus Line
8	DB1	H/L	
9	DB2	H/L	
10	DB3	H/L	
11	DB4	H/L	
12	DB5	H/L	
13	DB6	H/L	
14	DB7	H/L	
15	LEDA	—	LED Power Supply(+5V)
16	LEDK	—	LED Power Supply(0V)

Block diagram of the LCD module connection:

- LCD Controller LSI (KS0066 or Eqp.)**
 - Inputs: V_{ss} , V_{dd} , V_o , RS , R/W , E .
 - Bi-directional Data Bus: $DB0$ to $DB7$.
- LCD PANEL (8 Characters x 2 Lines)**
 - Connections to Controller: $16\ COM$ and $40\ SEG$.

Item	Symbol	Typ.	Max.	Unit
Forward Voltage	V_f	4.1	4.6	V
Forward Current	I_f	90	—	mA
Emission Wave Length	λ_e	588	—	nm