

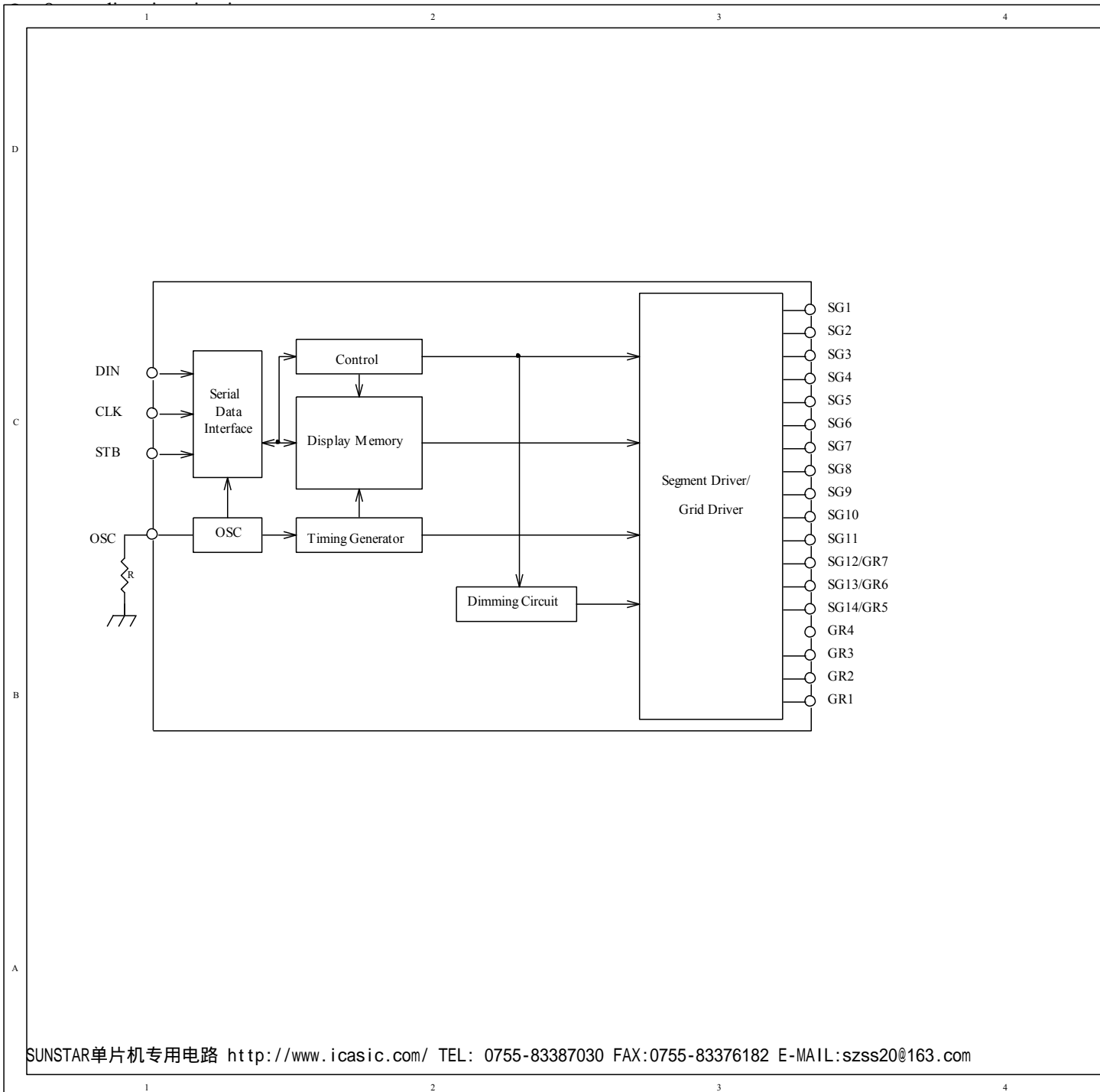
DESCRIPTION

SUNSTAR单片机专用电路 <http://www.icasic.com/> TEL: 0755-83387030 FAX:0755-83376182 E-MAIL:szss20@163.com

SDL8838 is an LED Controller driven on a 1/4 to 1/7 duty factor. Fourteen to eleven segment output lines, 4 to 7 grid output lines, one display memory, control circuit are all incorporated into a single chip to build a highly reliable peripheral device for a single chip microcomputer. Serial data is fed to DL8838 via a three-line serial interface. Housed in a 28-pin SO Package, DL8838's pin assignments and application circuit are optimised for easy PCB Layout and cost saving advantages.

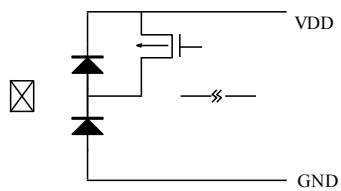
FEATURES

- CMOS technology
- Low power consumption



F F
E E
D D
C C
B B

2 3 4
2 3 4



Rev

Sheet of
Drawn By:

4

c

PIN DESCRIPTION

SUNSTAR单片机专用电路 <http://www.icasic.com/> TEL: 0755-83387030 FAX:0755-83376182 E-MAIL:szss20@163.com

Pin Name	I/O	Description	Pin No.
OSC	I	Oscillator Input Pin A resistor is connected to this pin to determine the oscillation frequency	1
DIN	I	Data Input Pin This pin inputs serial data at the rising edge of the shift clock (starting from the lower bit)	2
CLK	I	Clock Input Pin The pin reads serial data at the rising edge.	3
STB	I	Serial Interface Strobe Pin The data input after the STB has fallen is processed as a command. When this pin is "HIGH", CLK is ignored.	4
VDD	-	Power Supply	5,20
SG1 to SG11	O	Segment Output Pins(p-channel, open drain)	6~16
SG12/GR7 to SG14/GR5	O	Segment Output Pin/Grid Output Pin (CMOS Output)	17~19
GND	-	Ground Pin	21,26
GR4 to GR1	O	Grid Output Pins (n-channel, open drain)	22~25
NC	-	No Connection	27,28

FUNCTIONAL DESCRIPTION

Commands

A command is the first byte (b0 to b7) inputted to SDL8838 via the DIN Pin after STB Pin has changed from "HIGH" to "LOW" State. If for some reason the STB Pin is set to "HIGH" while data or commands are being transmitted, the serial communication is initialised, and the data/commands being transmitted are considered invalid.

COMMAND 1:DISPLAYMODE SETTING COMMANDS

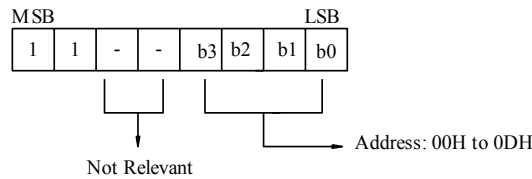
DL8838 provides 4 display mode settings as shown in the diagram below: As stated earlier a command is the first one byte (b0 to b7)transmitted to SDL8838 via the DIN Pin when STB is "LOW". However, for these commands, Bit No.3 to Bit No.6 (b2 to b5) are ignored, Bit No.7&Bit No.8 (b6 to b7)are given a value of "0".

The Display Mode Setting Commands determine the number of segments and grids to be used (1/4 to 1/7 duty, 14 to 11 segments). When these commands are executed, the display is forcibly turned off. A display command "ON" must be executed in order to resume display. If the same mode setting is selected, no command execution is take place, therefore, nothing happens.

When Power is turned "ON", the 7-Grid, 11-Segment Mode is selected.

COMMAND 3: AD

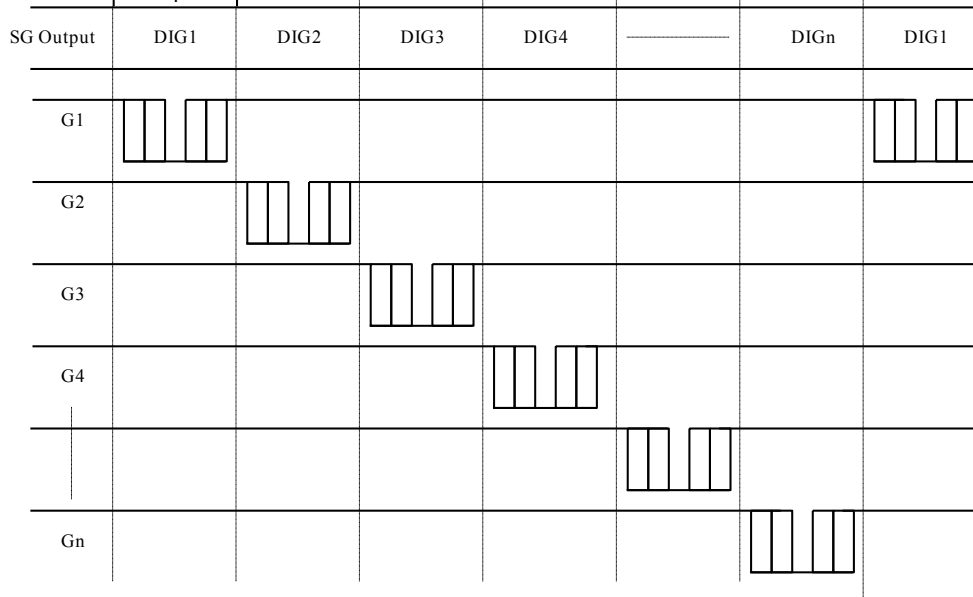
Address Setting
 valid if it has a value
 address is set. When
 Please refer to t



Display Mode and RAM Address

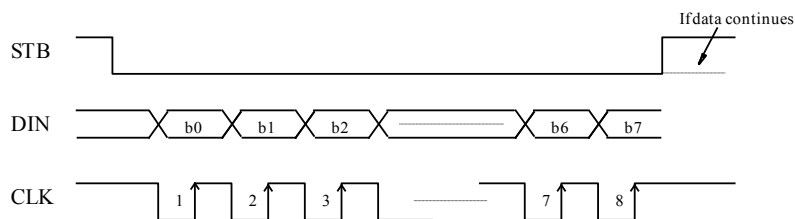
Data transmitted from an external device to DL8838 via the serial interface are stored in the Display RAM and are assigned addresses. The RAM Addresses of DL8838 are given below in 8 bits unit.

SG1	SG4	SG5	SG8	SG9	SG12	SG13	SG14	
00 _{HL}		00 _{HU}		01 _{HL}		01 _{HU}		DIG1
02 _{HL}		02 _{HU}		03 _{HL}		03 _{HU}		DIG2



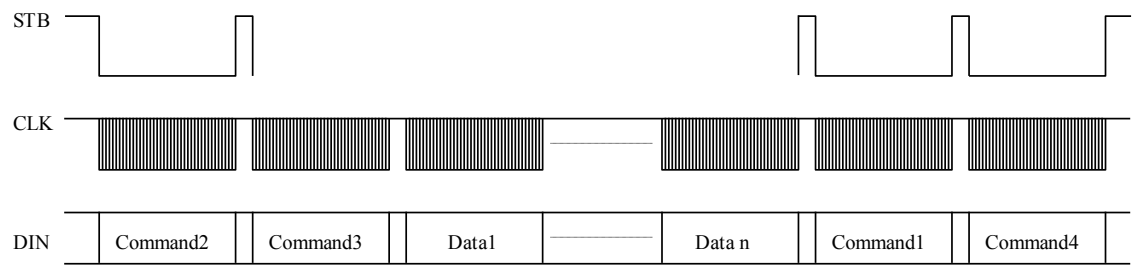
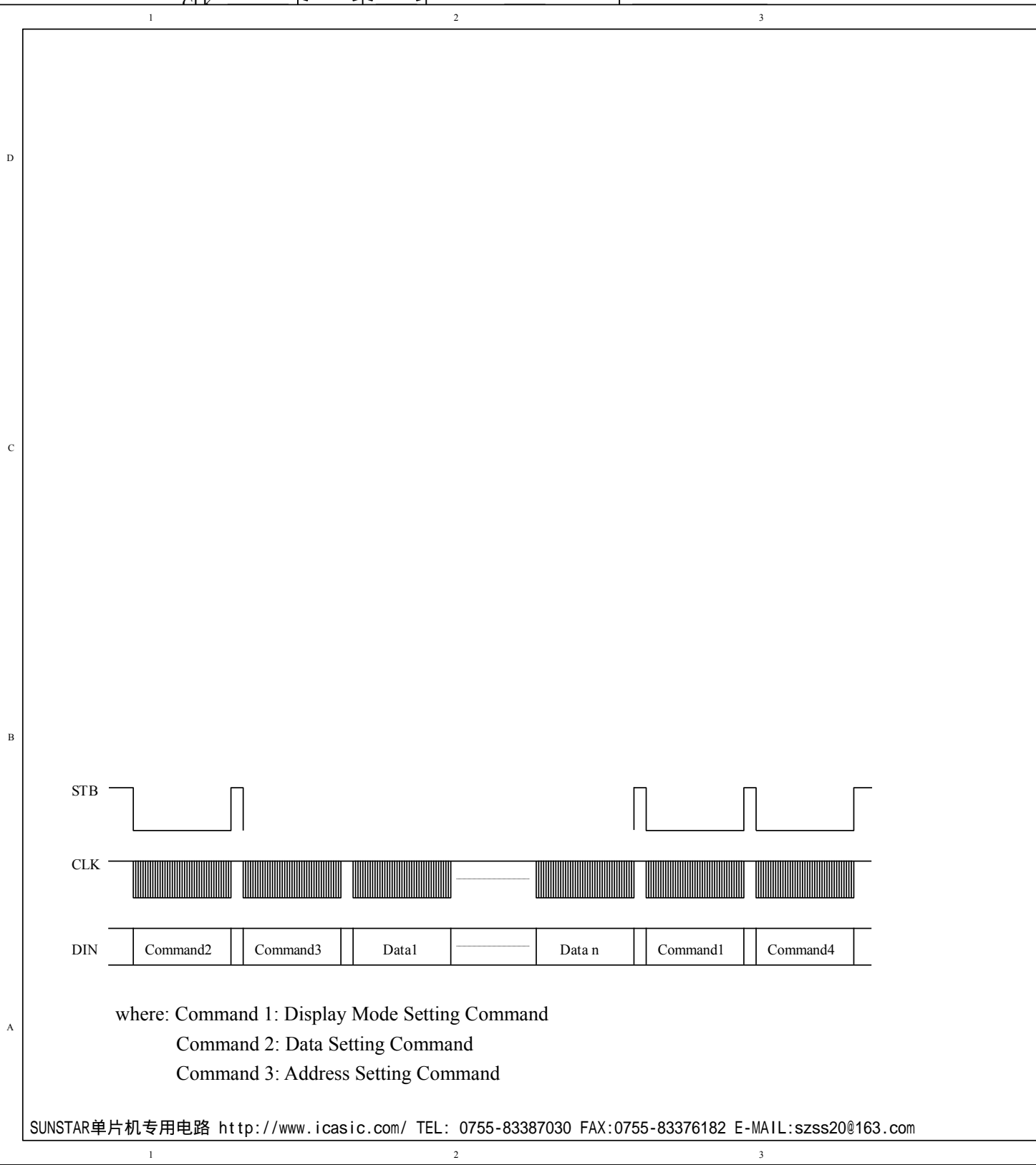
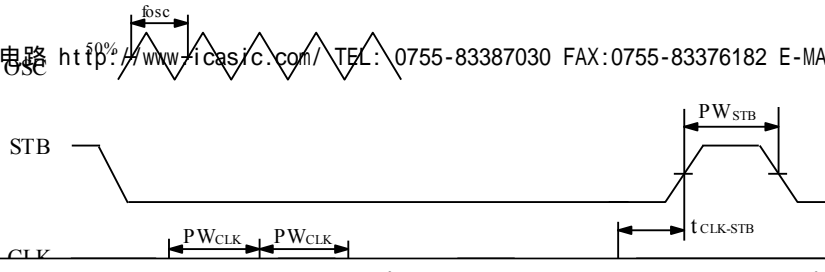
SERIAL COMMUNICATION FORMAT

FIG. 6-11 Serial Communication Format of DL8838

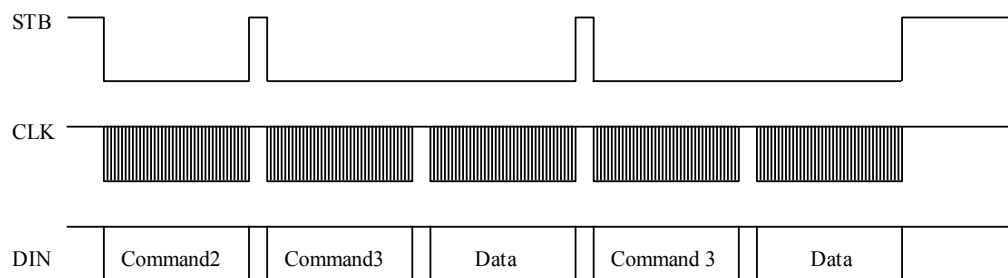


SWITCHING CHARACTERISTIC WAVEFORM

DL8838 Switching Characteristics Waveform is given below



where: Command 1: Display Mode Setting Command
 Command 2: Data Setting Command
 Command 3: Address Setting Command



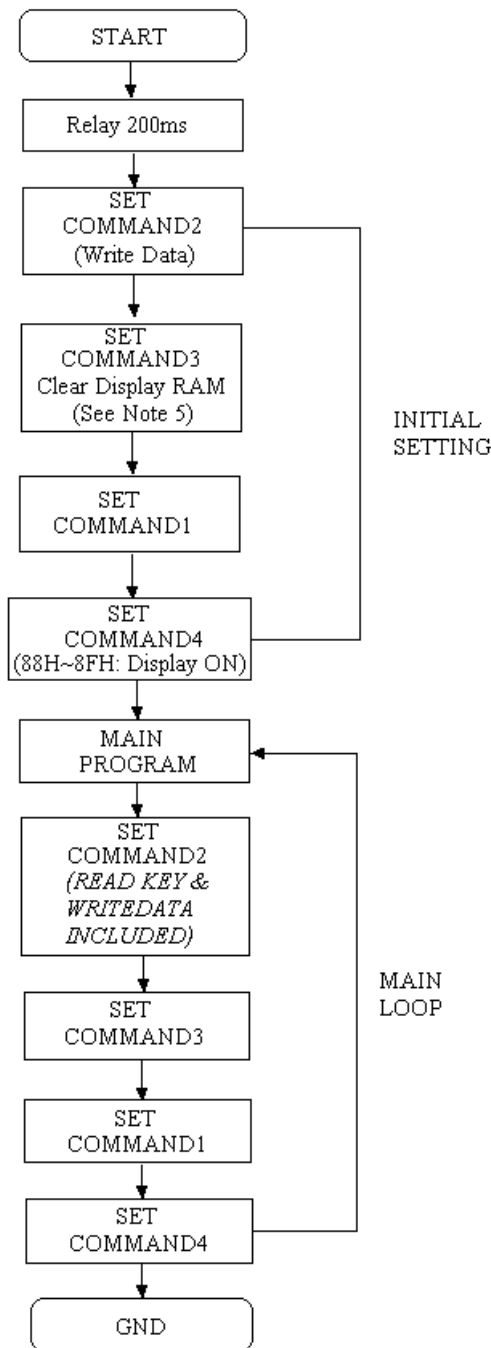
where:

- where: Command 2 — Data Setting Command
- Command 3 — Address Setting Command
- Data — Display Data

Title
Size Number
B
Date: 21-Feb-2004
File: E:\超晶规格图\xic\SC6961.Ddb

RECOMMENDED SOFTWARE PROGRAMMING FLOWCHART

SUNSTAR单片机专用电路 <http://www.icasic.com/> TEL: 0755-83387030 FAX:0755-83376182 E-MAIL:szss20@163.com



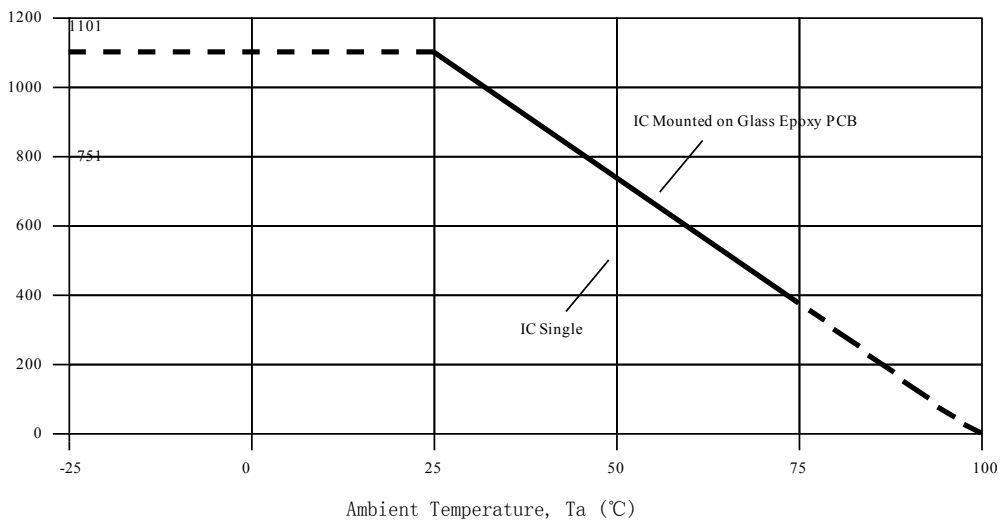
Note: 1. Command 1: Display Mode Commands

2. Command 2: Data Setting Commands

3. Command 3: Address Setting Commands

4. Command 4: Display Control Commands

5. When IC power is applied for the first time, the contents of the Display RAM is not defined; thus, it is strongly suggested that the contents of the Display RAM must be cleared during the initial setting.



ABSOLUTE MAXIMUM RATINGS

(Unless otherwise stated, Ta=25°C, GND=0V)

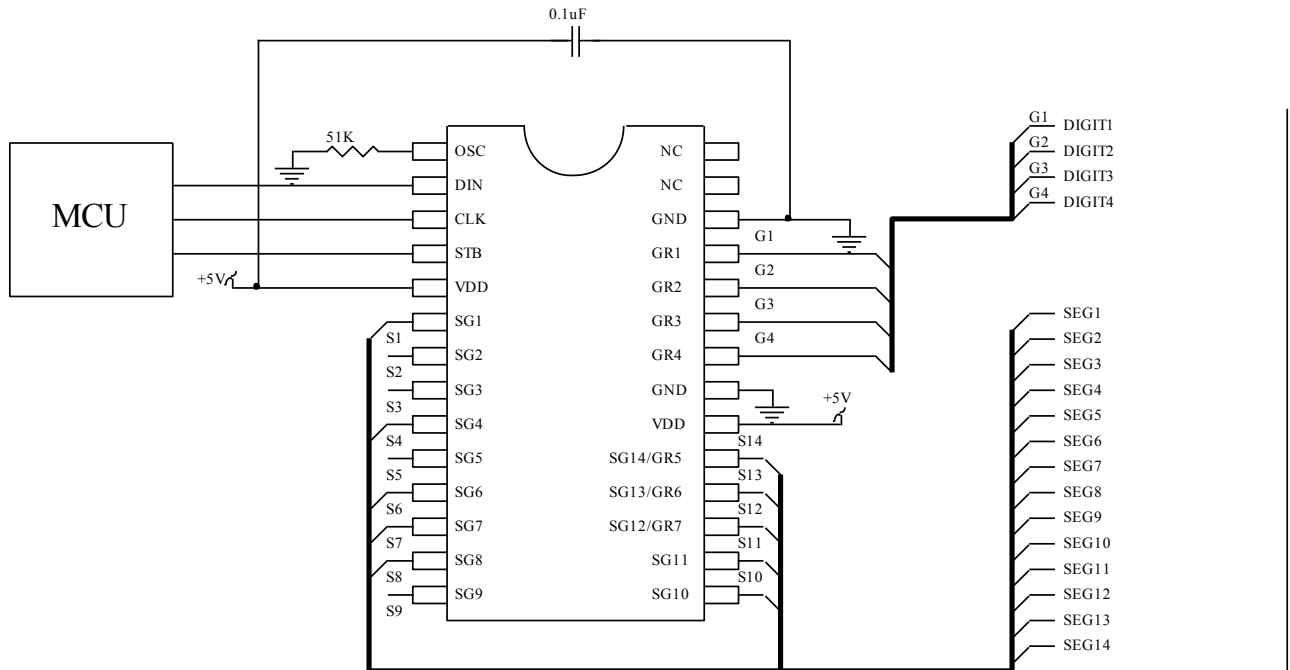
Parameter	Symbol	Ratings	Unit
Supply Voltage	V_{DD}	-0.5 to +7.0	Volts
Logic Input Voltage	V_I	-0.5 to $V_{DD} + 0.5$	Volts
Driver Output Current	I_{OLGR}	+250	mA
	I_{OHSG}	-50	mA
Maximum Driver Output Current/Total	I_{TOTAL}	400	mA

RECOMMENDED OPERATING RANGE

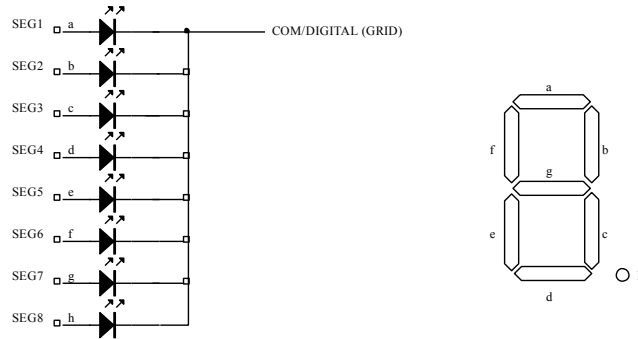
(Unless otherwise stated, Ta=-20 to +70°C, GND=0V)

Parameter	Symbol	Min.	Typ.	Max.	Unit
Logic Supply Voltage	V_{DD}	4.5	5	5.5	V
Dynamic Current (see Note)	I_{DDdyn}	-	-	5	mA
High-Level Input Voltage	V_{IH}	$0.8V_{DD}$	-	V_{DD}	V
Low-Level Input Voltage	V_{IL}	0	-	$0.3V_{DD}$	V

Note: Test Condition: Set Display Control Commands = 80H (Display Turn OFF State & under no load)

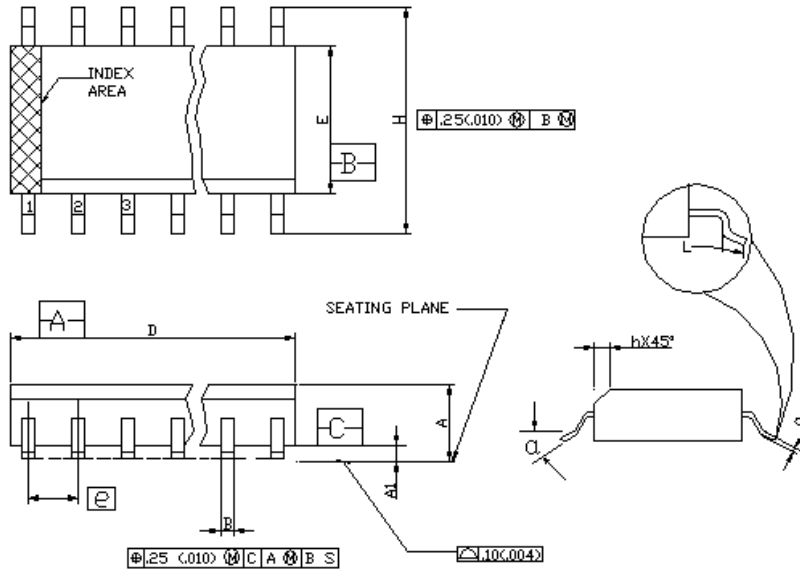


- Note:
1. The capacitor (0.1uF) connected between the GND and VDD Pins must be located as near as possible to the DL8838 chip.
 2. DL8838 power supply is separate from the application system power supply.



PACKAGE INFORMATION

28 Pins, SOP Package (300mil)



Revision

Sheet of
Drawn By:

4

Symbol	Dimensions in Millimeter		
	Min	Nom.	Max
A	2.35		2.65
A1	0.10		0.30
B	0.33		0.51
C	0.23		0.32
D	17.70		18.10
E	7.40		7.60
e		1.27 bsc	
H	10.00		10.65
h	0.25		0.75
L	0.40		1.27
α	0°		8°

1. Dimensioning and tolerancing per ANSI Y14.5-1982.
2. Dimension D does not include mold flash, protrusions or gate burrs. Mold flash, protrusions and gate burrs shall not exceed 0.15mm (0.006 in) per side.
3. Dimension E does not include interlead flash or protrusions. Interlead flash and protrusion shall not exceed 0.15mm (0.010 in) per side.
4. The chamfer on the body is optional. If it is not present, a visual index feature must be located within the crosshatched area.
5. "L" is the length of terminal for soldering to a substrate.
6. "N" is the number of terminal positions (N=28).
7. The lead width B as measured 0.36mm (0.014in) or greater above the seating plane, shall not exceed a maximum value of 0.61 mm (0.024 in).
8. Controlling dimension: MILLIMETER
9. Refer to JEDEC MS-013 Variation AE.

JEDEC is the registered trademark of JEDEC SOLID STATE TECHNOLOGY ASSOCIATION