

LED DOT MATRIX MODULE

MODEL NAME : SLM1606M

SAMSUNG WATCH CO., LTD
DISPLAY BUSINESS SYSTEM TEAM

1. FUNCTION EXPLANATION

a. INPUT SIGNAL

. VCC : POWER SUPPLY SOURCE OF THE DISPLAY MODULE(FOR INTERNAL LOGIC AND LED)
----- PLUS(+) SIDE

. GND : POWER SUPPLY SOURCE OF THE DISPLAY MODULE ---- GROUND(-) SIDE

. RED DATA : RED DATA SIGNAL SYNCHRONIZED WITH THE CLOCK SIGNAL

. GREEN DATA : GREEN DATA SIGNAL SYNCHRONIZED WITH THE CLOCK SIGNAL

. CLOCK : CLOCK SIGNAL FOR DATA INPUT

. SELECT :
- . SIGNAL TO SELECT THE DATA FOR DISPLAY
- . WHEN HIGH, DISPLAYED BY INPUT DATA
- . WHEN LOW, DISPLAYED BY MEMORIZED DATA

. BRIGHT :
- . SIGNAL TO SELECT DISPLAY ON OR OFF
- . WHEN HIGH, DISPLAY OFF
- . WHEN LOW, DISPLAY ON
- . BRIGHTNESS CAN BE CONTROLLED BY PULSE SIGNAL FOR THIS LINE

. RESET :
- . SIGNAL TO INITIALIZE LIGHT POSITION OF LED
- . WHEN HIGH, DISPLAY WILL BE INITIALIZED
- . WHEN LOW, DISPLAY IS ON NORMAL MODE
- . HELD DATA IN MEMORY WILL NOT BE CLEARED

1. SPECIFICATION

CHARACTERISTIC	DETAIL
TYPE NAME	SLM1606M
COLOR OF DISPLAY	RED, GREEN, AMBER
DOT SIZE	5mm
DOT PITCH	6mm
Number of Dots	256 DOTS(16 * 16)
Weights (Typ.)	100g
Current Consumption	3.2A
Module Size	96 * 96 * 20 (W * H * T)

- . AMBER COLOR COMES FROM MIX OF RED AND GREEN.
- . SHOWS ALL THE CURRENT CONSUMPTION NOT ONLY OF LOGIC CIRCUITS, BUT OF ALL THE LED'S WITH ARE TURNED ON AT 5V.

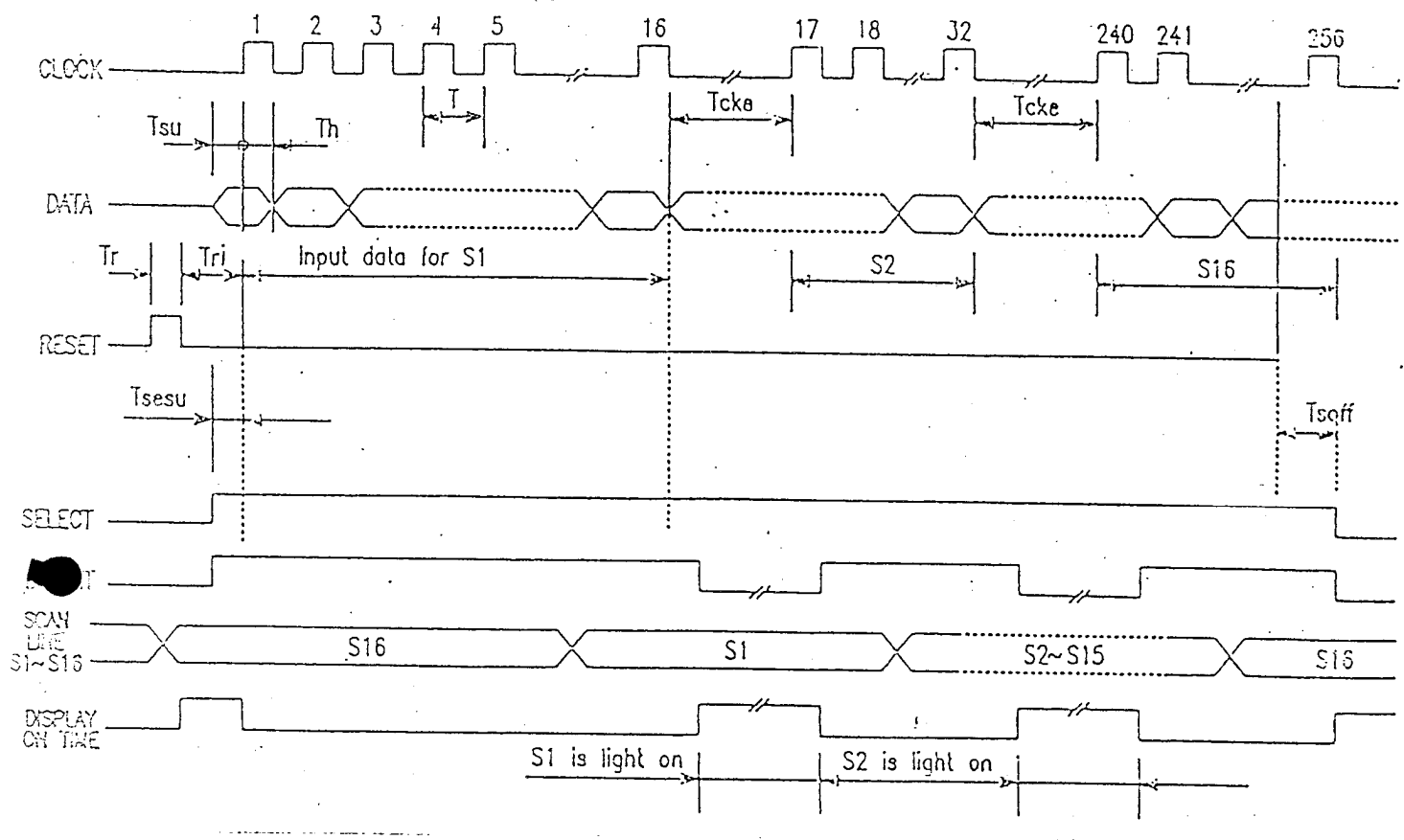
2. ELECTRICAL CHARACTERISTICS

— . MAXIMUM RATING (Ta=25 °C)

CHARACTERISTICS	SYMBOL	RATING	UNIT
SUPPLY VOLTAGE	Vcc	4.75 ~ 5.25	V
INPUT COLOK FREQUENCY	f	40	MHz
INPUT VOLTAGE	Vin	-0.3 ~ Vcc+0.3	V
OPERATING TEMPERATURE RANGE	Topr	-10 ~ +45	°C
STORAGE TEMPERATURE RANGE	Tstg	-20 ~ +70	°C
FRAME FREQUENCY	Ffr	70 ~ 100	MHz

- . LED DISPLAY SURFACE TEMPERATURE MUST BE MAINTAIN BELOW 70 °C.

5. TIMING CHART



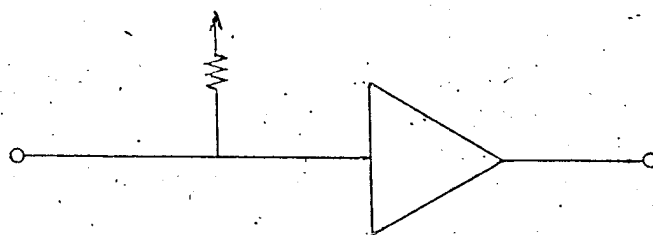
($T_a=25^{\circ}\text{C}$, $V_{cc}=5\text{V}$)

CHARACTERISTICS	SYMBOL	MIN.	MAX.	UNIT
CLOCK CYCLE(DUTY = 1/2)	T	—	25	ns
DATA SET UP TIME	T_{su}	10	—	ns
DATA HOLD TIME	T_h	10	—	ns
CLOCK ENABLE TIME	T_{cke}	NOTE 1	—	ns
RESET INPUT TIME	T_{ri}	10	—	ns
RESET TIME	T_r	20	—	ns
SELECT SET UP TIME	T_{sesu}	10	—	ns
SELECT OFF TIME	T_{soff}	10	—	ns

* NOTE 1

BRIGHTNESS OF LED IS DECIDED BY T_{cke} WIDTH.
BECAUSE, THIS TIME IS LIGHT ON TIME FOR Y1 — Y16 AND USUALLY THIS WIDTH IS USED AT ABOUT 30 μs .

— . INPUT BUFFER CONDITION (R=47K Ω)



— . INPUT LEVEL (TTL LEVEL)

SYMBOL	CARATERISTICS	NIM.	TYP.	MAX.	UNIT
V _{IL}	LOW LEVEL INPUT VOLTAGE	—	—	0.8	V
V _{IH}	HIGH LEVEL INPUT VOLTAGE	2.2	—	—	V

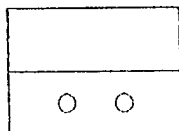
3. OPTICAL CHARACTERISTICS

PARAMETER		SYMBOL	MIN.	TYP.	MAX.	UNIT
LUMINOUS INTENSITY	RED	L _v	75/120	100/150	130/190	Cd/m ²
	GREEN		75/120	100/150	130/190	
PEAK EMISSION WAVE LENGTH	RED	λ_p	—	630	—	nm
	GREEN		—	565	—	
SPECTRUM RADIATION BANDWIDTH	RED	$\Delta\lambda$	—	35	—	nm
	GREEN		—	30	—	

. F_{tr} = 100 MHz

6. CONNECTOR CONFIGURATION

CN1



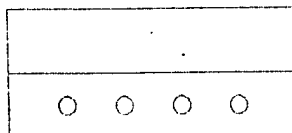
1 2

1	GND
2	SELECT

CONNECTOR TYPE NAME :

DF1-2P-2.5DSA (HIROSE KOREA,LED)

CN2



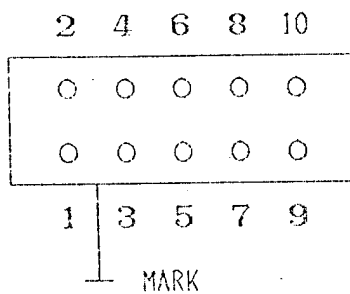
1 2 3 4

1	V c c
2	GND
3	GND
4	SELECT -

CONNECTOR TYPE NAME

DF-4P-2.5DSA (HIROSE KOREA,LTD.)

CN3



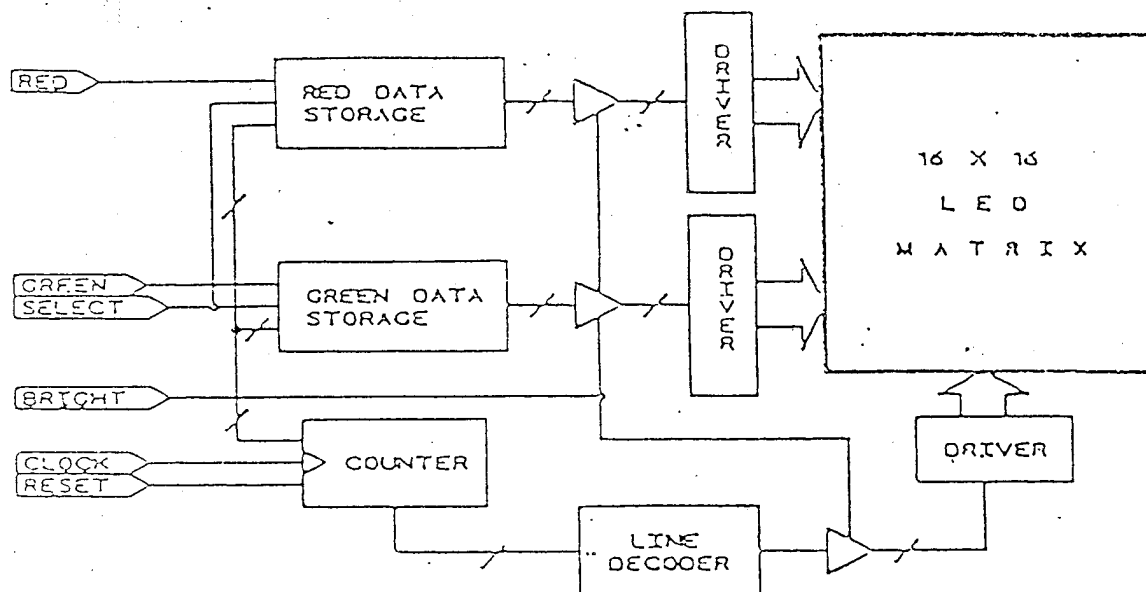
1	GND	6	CLOCK
2	RED DATA	7	GND
3	GND	8	BRIGHT
4	GREEN DATA	9	GND
5	GNE	10	RESET

CONNECTOR TYPE NAME

HIF3PB-10PA-2.54DS

(HIROSE KOREA,LTD.)

7. BLOCK DIAGRAM



8. CONNECTION OF LED MODULE

