



VISSEM ELECTRONICS

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LED DOT MATRIX MODULE

VS064F-16S

VER 2.00

ISSUED DATE		2007.08.29	ITEM	DESIGN	CHECK	APPROVAL	REFERENCE
VER	2.00	2007.08.29	SIGNATURE		/		
			DATE	2007.8.29		2007.8.29	

1. MODEL NAME : VS064F-16S (Ver 2.00)

2. FEATURES

ITEM		DESCRIPTION
DISPLAY COLOR		FULL COLOR
STRUCTURE	SIZE(W×H×D)	128×64×17.3(mm)
	DOT PITCH	4(mm)
	NUMBER OF DOTS	512(32×16)DOTs
	LEDS PER DOT	1608 SMD R,G,B
WEIGHT		MAX.130 (g)
DRIVE MODE		1/16 DUTY
APPLICATION		INDOOR

3. ABSOLUTE MAXIMUM RATINGS

ITEM	SYMBOL	VALUE	UNIT	REMARK
SUPPLY VOLTAGE	V_{CC}	0 ~ +5.5	V	LED & LOGIC CIRCUIT
SIGNAL INPUT VOLTAGE LEVEL	V_{IH}, V_{iL}	-0.3 ~ $V_{CC}+0.3$	V	
OPERATING TEMPERATURE	$T_{op}^{[1]}$	-10 ~ +60	°C	DOT LIGHT-UP: 30%
		-10 ~ +45		DOT LIGHT-UP: 100%
STORAGE TEMPERATURE	T_{stg}	-20 ~ +80	°C	


NOTES : [1] TEMPERATURE OF LED SURFACE'S SHOULD BE REMAINED BELOW 60°C.
IN CASE OF NECESSITY, LED SYSTEM REQUIRES COOLING FAN.

4. RECOMMENDABLE OPERATING CONDITIONS

ITEM		SYMBOL	MIN.	TYP.	MAX.	UNIT	REMARK
SUPPLY VOLTAGE	LED & LOGIC CIRCUIT	V_{CC}	4.75	5	5.25	V	
		V_{IH}	$0.8 \times V_{CC}$	-	V_{CC}		
SIGNAL INPUT VOLTAGE LEVEL		V_{iL}	0	-	$0.3 \times V_{CC}$		
OPERATING TEMPERATURE		T_{op}	0 ~ 35			°C	

5. ELECTRICAL CHARACTERISTICS (AT $T_a = 25^\circ\text{C}$)

ITEM	SYMBOL	VALUE	UNIT	REMARK
CLOCK FREQUENCY	F	MAX. 16	Mhz	
CURRENT CONSUMPTION FOR MODULE	I_{LED}	MAX. 1.5	A	ALL ON
	I_{IC}	MAX.0.5		

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6. OPTICAL CHARACTERISTICS (AT Ta = 25℃)

ITEM		SYMBOL	MIN.	TYP.	MAX.	UNIT	REMARK
BRIGHTNESS	RED	L_v	-	440	-	cd/m ²	
	GREEN		-	1,150	-		
	BLUE		-	130	-		
	WHITE		-	1,650	-		
WAVELENGTH	RED	λ_p	618	-	628	nm	
	GREEN		525	-	530		
	BLUE		460	-	470		
VIEWING ANGLE	HOR.	$2\theta_{\frac{1}{2}}$	-	130	-	deg(°)	
	VER.		-	130	-		

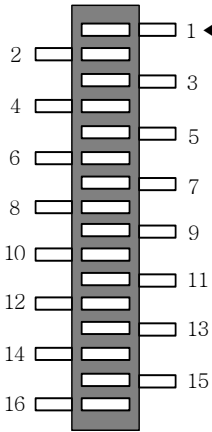
[REFERENCE]

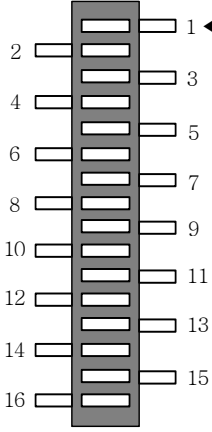
① DIFFERENCE OF BRIGHTNESS IN DISPLAY : ±15%


② DIFFERENCE OF BRIGHTNESS IN MODULE : 30%

7. SIGNAL FUNCTION

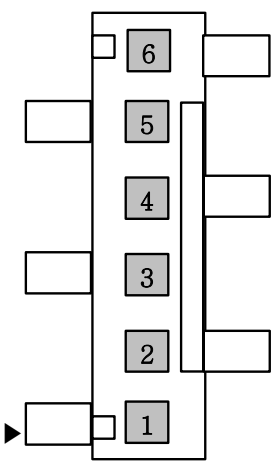
1) DATA SIGNAL CONNECTOR

PIN MAP (IN)	PIN NUMBER	PIN NAME	FUNCTION DESCRIPTION
 <p>TOP SIDE</p>	1	RED	DATA INPUT FOR RED COLOR
	2	GREEN	DATA INPUT FOR GREEN COLOR
	3	BLUE	DATA INPUT FOR BLUE COLOR
	5	G-CLOCK	GRAY CLOCK FOR INPUT DATA
	7	LATCH	DATA STROBE
	9	S-CLOCK	SHIFT CLOCK FOR INPUT DATA
	11	DIS	LINE DECORDER ENABLE SIGNAL
	13, 14, 15, 16	A[0:3]	4BIT LINE ADDRESS
	4, 6, 8, 10, 12	GND	GROUND OF THE MODULE

PIN MAP (OUT)	PIN NUMBER	PIN NAME	FUNCTION DESCRIPTION
 <p>TOP SIDE</p>	1	RED_OUT	DATA OUTPUT FOR RED COLOR
	2	GREEN_OUT	DATA OUTPUT FOR GREEN COLOR
	3	BLUE_OUT	DATA OUTPUT FOR BLUE COLOR
	5	G-CLOCK_OUT	GRAY CLOCK FOR OUTPUT DATA
	7	LATCH_OUT	DATA STROBE
	9	S-CLOCK_OUT	SHIFT CLOCK FOR OUTPUT DATA
	11	$\overline{\text{DIS_OUT}}$	LINE DECORDER ENABLE SIGNAL
	13, 14, 15, 16	A[0:3]_OUT	4BIT LINE ADDRESS
	4, 6, 8, 10, 12	GND	GROUND OF THE MODULE

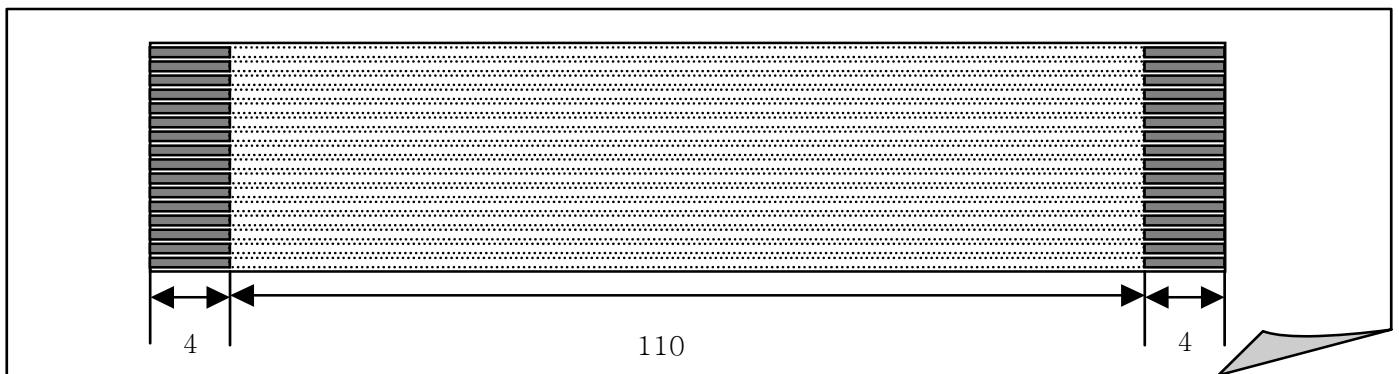
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2) POWER CONNECTOR

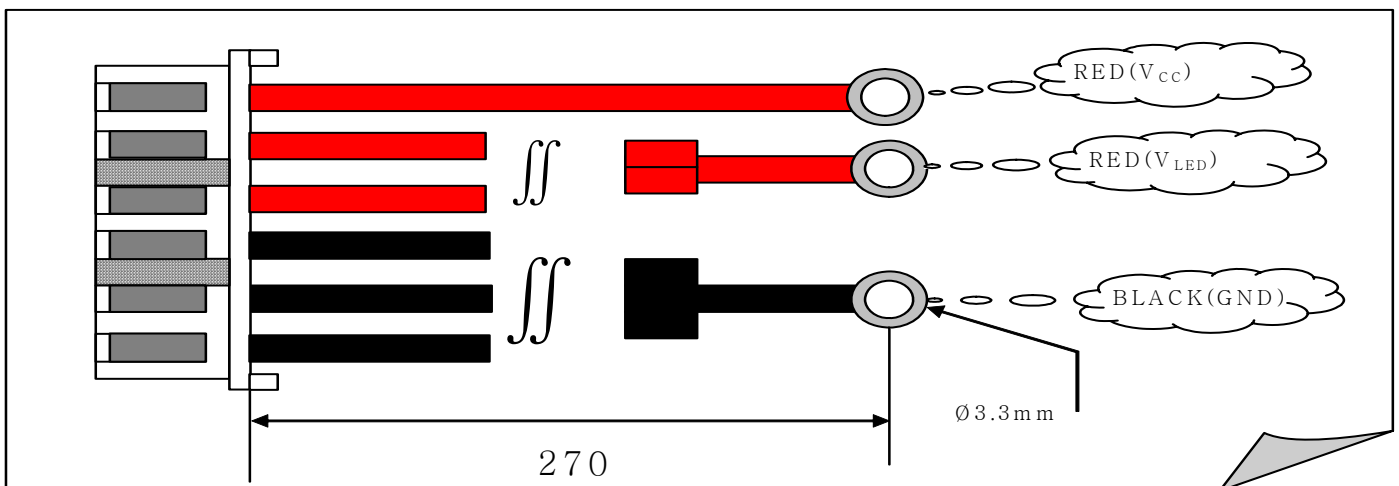
PIN MAP (POWER)	PIN NUMBER	PIN NAME	FUNCTION DESCRIPTION
	4,5,6	GND	GROUND OF THE MODULE
	2,3	V _{LED}	SUPPLY VOLTAGE FOR LED
	1	V _{IC}	SUPPLY VOLTAGE FOR IC

3) CONNECTOR CABLE SPECIFICATION

- DATA CABLE




- POWER CABLE



ITEM	VENDOR	MODEL NO.	SPECIFICATION	HOUSING MODEL NO.
DATA CABLE	YENSEN CONNECTOR	YSF51621B0T	16PIN, 1mm PITCH	FPC-16-120
POWER CABLE	GEOYOUNG CONNECTOR	GW-03	3PIN, 2.54mm PITCH	GH-0324-300RC

※ This connectors can be changed without a previous notice for quality improvement.

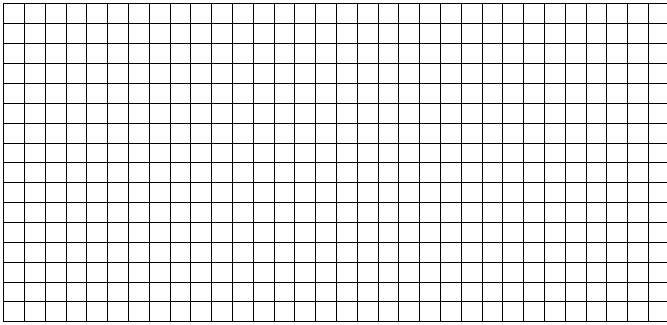
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8. SIGNAL CABLE CONNECTION

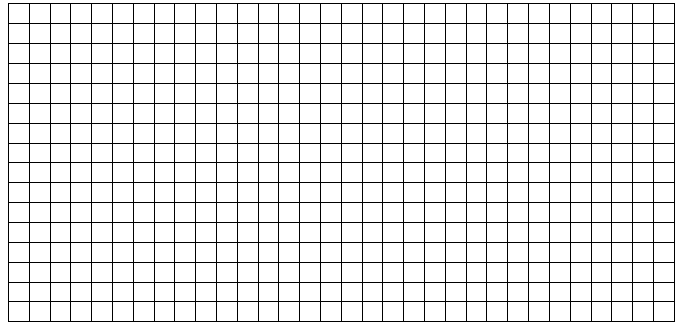
1) DIRECTION OF DATA

FRONT VIEW

DIRECTION OF DATA SHIFT



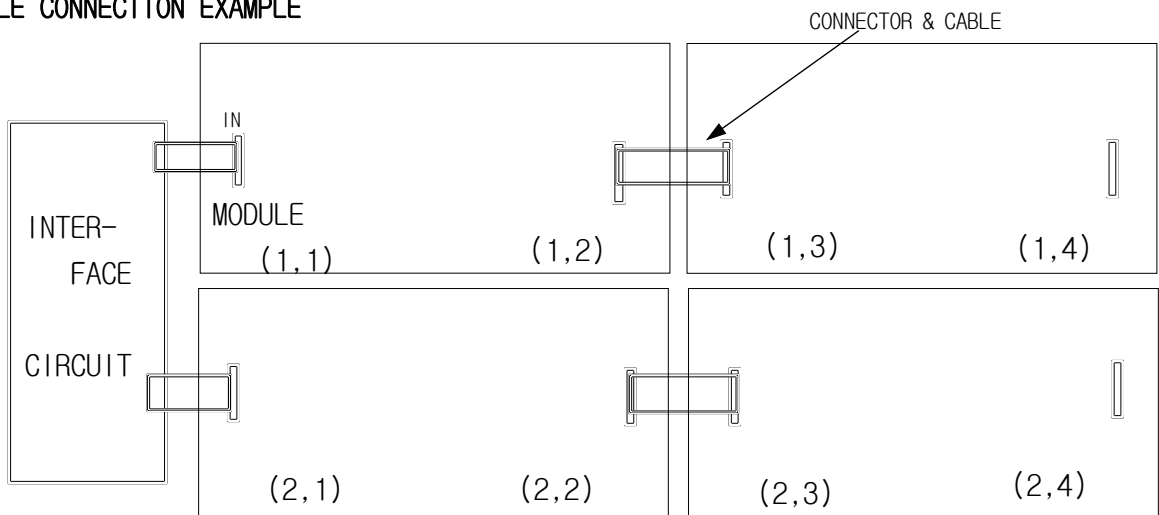
MODULE (A)



MODULE (B)


REAR VIEW

2) SIGNAL CABLE CONNECTION EXAMPLE

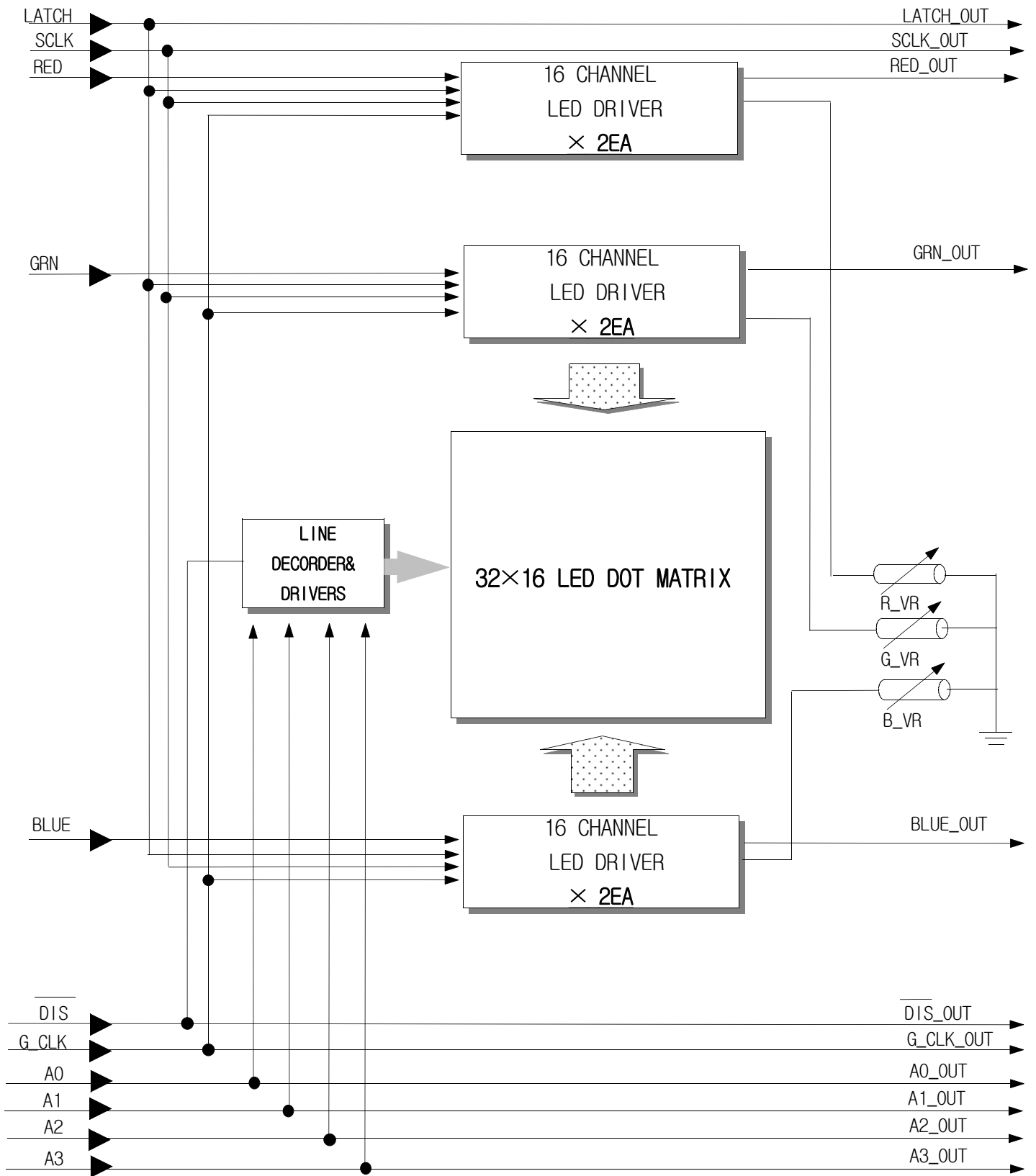



LATCH, DIS, G-CLK, GND,
CLOCK, DATA(R, G, B), ADDRESS(0-3)

▶ VS064F-16S IS CONSIST OF
128×64(32×16 Dots)

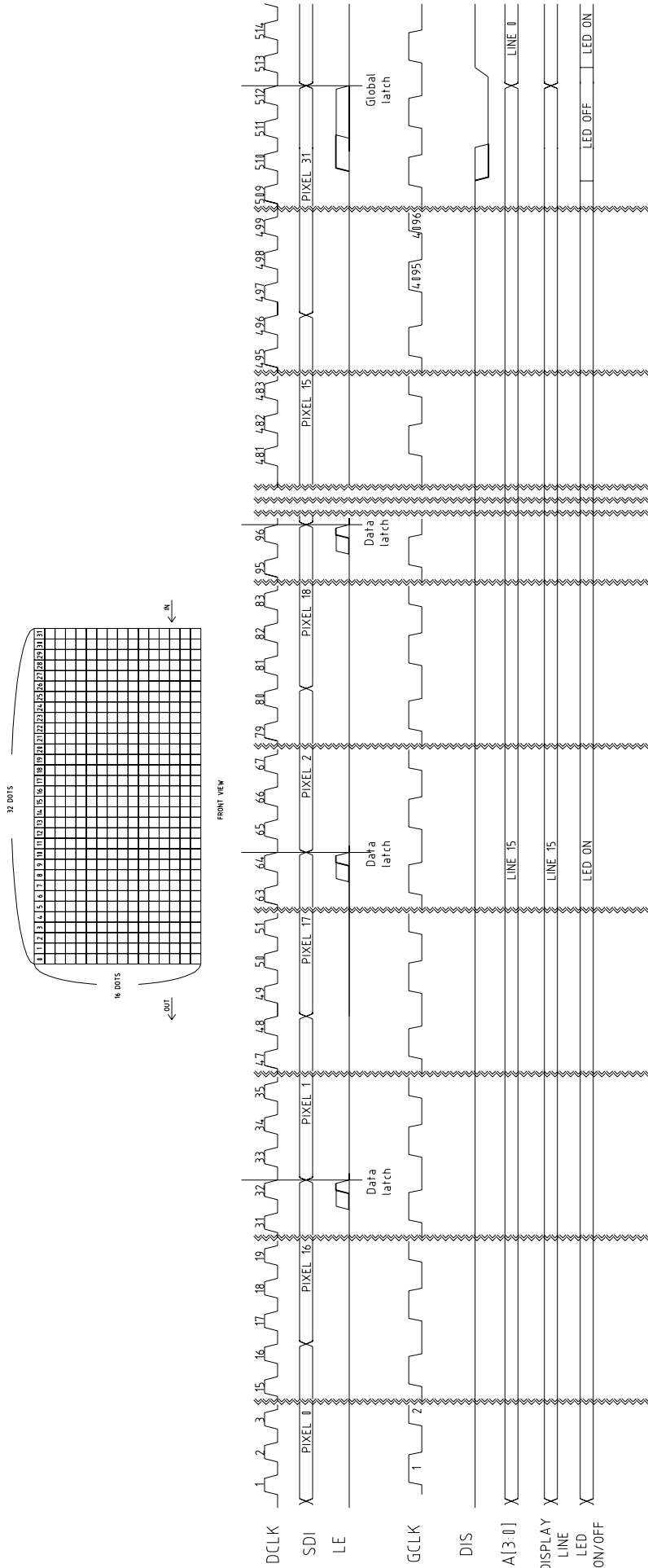
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9. BLOCK DIAGRAM



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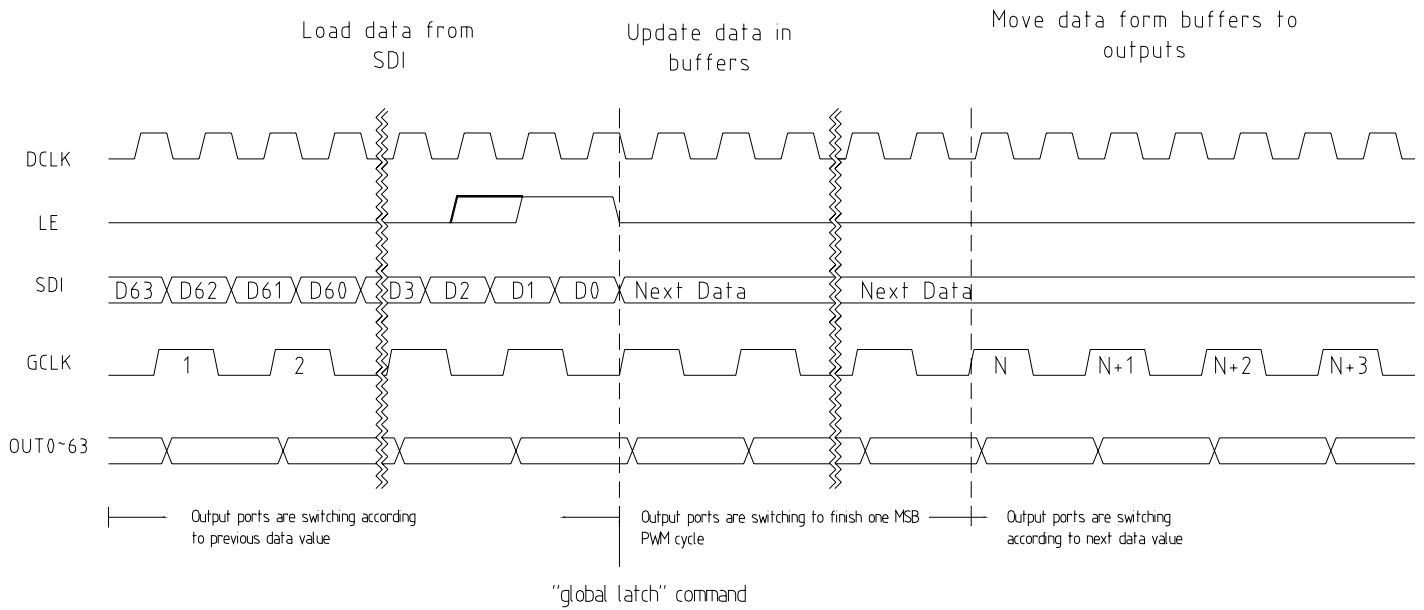
10. TIMING CHART (IN CASE OF ONE MODULE DISPLAY)



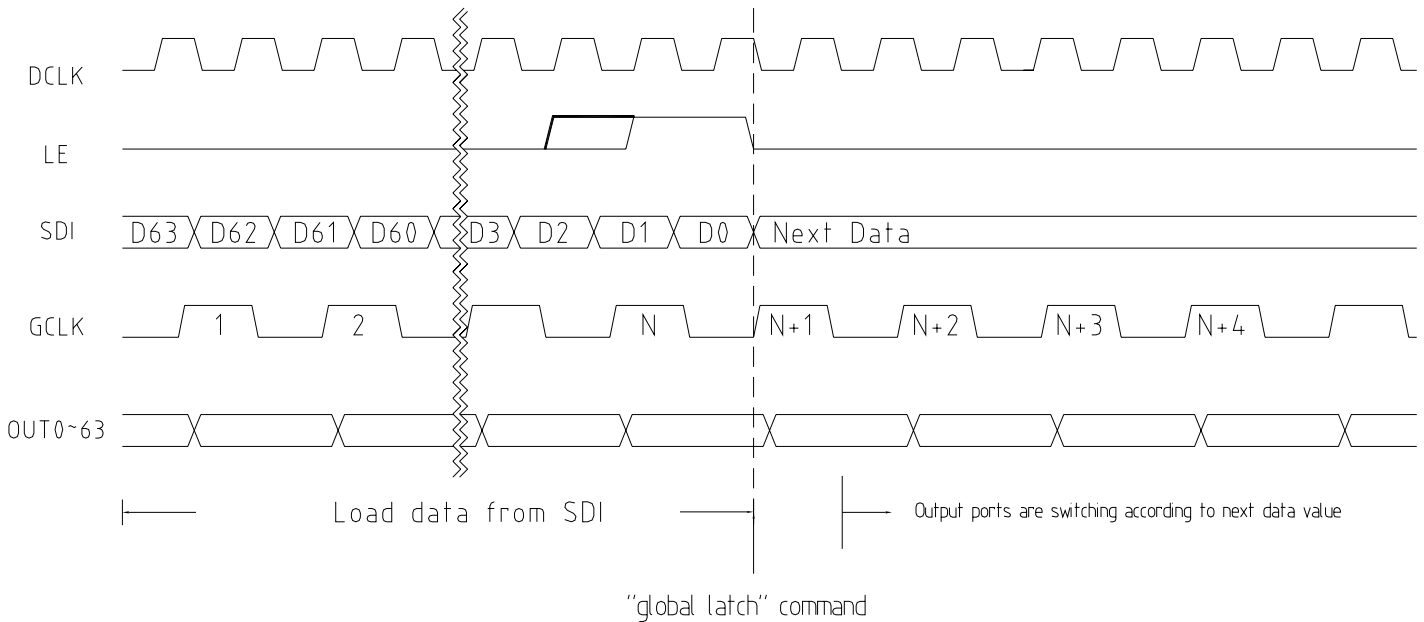
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* Synchronization for PWM Counting

1) when the bit "A" of Configuration Register is set to "0"

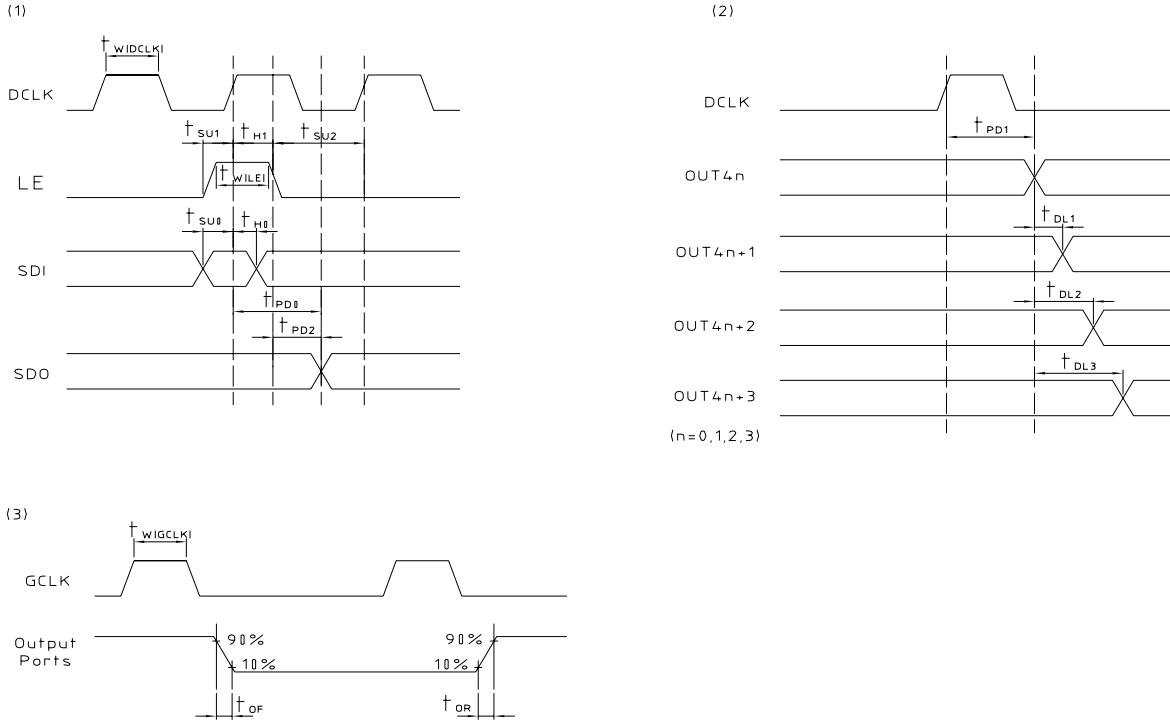


2) when the bit "A" of Configuration Register is set to "1" (default)



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* Timing Waveform




* Switching Characteristics ($V_{DD}=5.0V$)

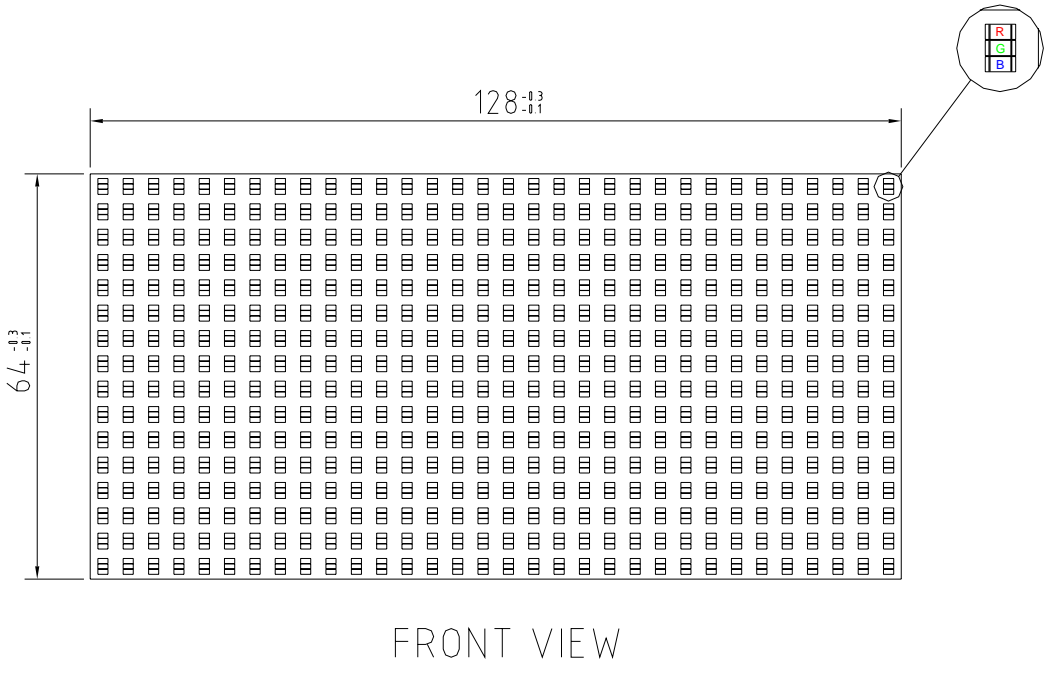
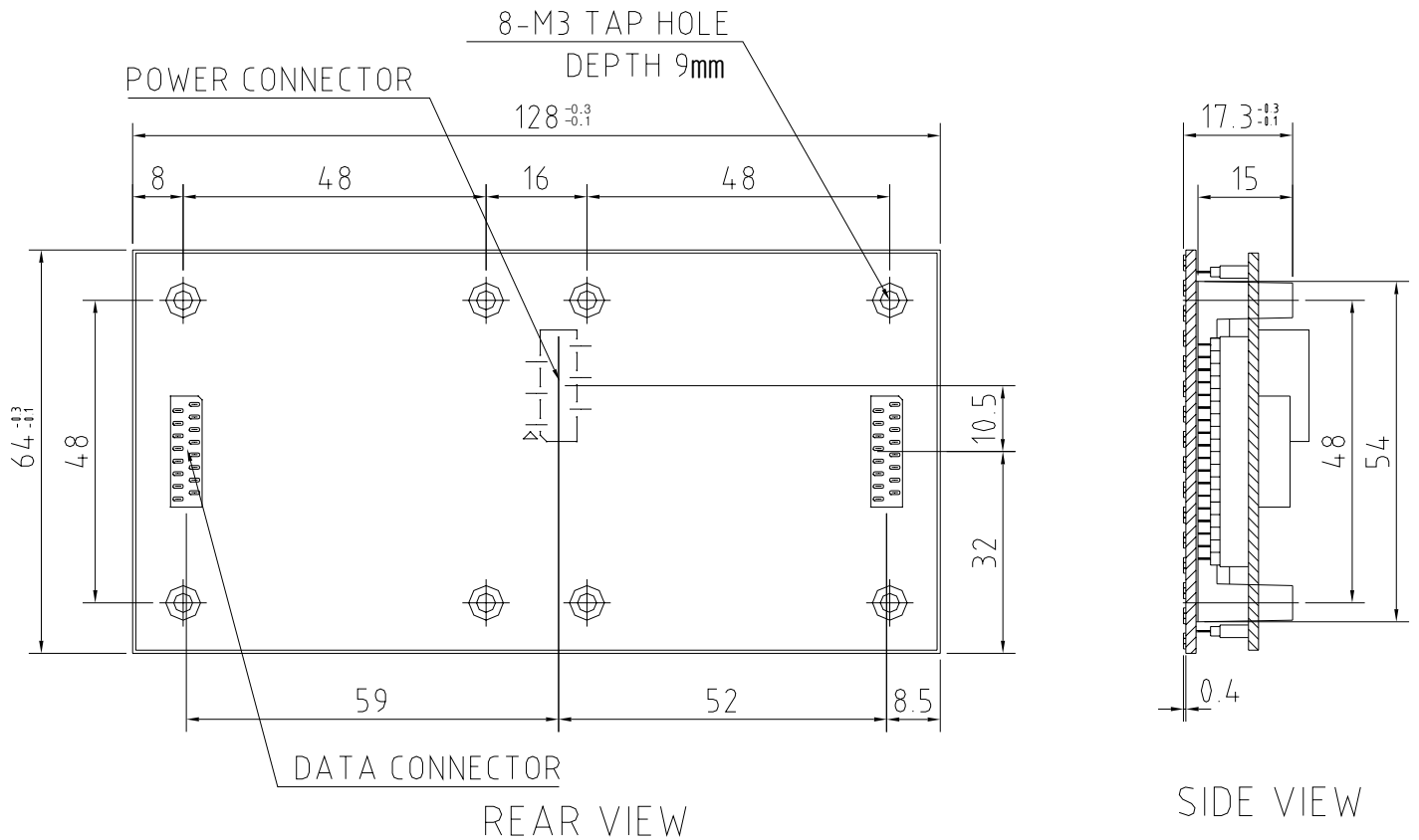
Characteristics		Symbol	condition	Min.	Typ.	Max.	Unit
Setup Time	SDI - DCLK \uparrow	t_{SU0}	$V_{DD}=3.3V$ $V_{IH}=V_{DD}$ $V_{IL}=GND$ $R_{EXT}=460\Omega$ $V_{LED}=4.5V$ $R_L=152\Omega$ $C_L=10pF$ $C_1=100nF$ $C_2=10uF$	1	-	-	ns
	LE \uparrow -DCLK \uparrow	t_{SU1}		1	-	-	ns
	LE \downarrow -DCLK \uparrow	t_{SU2}		5	-	-	ns
Hold Time	DCLK \uparrow -SDI	t_{H0}		3	-	-	ns
	DCLK \uparrow -LE \downarrow	t_{H1}		7	-	-	ns
Propagation Delay Time	DCLK - SDO	t_{PD0}		-	30	40	ns
	GCLK - OUT4n*	t_{PD1}		-	100	-	ns
	LE - SDO	t_{PD2}^{**}		-	30	40	ns
Stagger Delay Time	OUT4n+ 1*	t_{DL1}		-	40	-	ns
	OUT4n+ 2*	t_{DL2}		-	80	-	ns
	OUT4n+ 3*	t_{DL3}	-	120	-	ns	
Pulse Width	LE	$t_{W(L)}$	5	-	-	ns	
	DCLK	$t_{W(DCLK)}$	20	-	-	ns	
	GCLK	$t_{W(GCLK)}$	20	-	-	ns	
Output Rise Time of Output Ports		t_{OR}	-	90	-	ns	
Output Fall Time of Output Ports		t_{OF}	-	70	-	ns	
Error Detection Minimum Duration		t_{EDD}	-	1	-	us	


* Referto the Timing Waveform, where $n=0,1,2,3$.

** In timing of "Read Configuration" and "Read Error Status Code", the next DCLK rising edge should be t_{PD2} after the falling edge of LE

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11. DIMENSION




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12. SAFETY


● Precautions in installing LED Module

1. Please escape the place where electromagnetic wave and noise is, which might cause malfunction to LED module, when install LED Display Board.
2. Since over voltage and reverse voltage might cause the problem in internal circuit and LED, please make sure and check the input voltage range, before operation.
3. Please escape the high humidity and leakage place which cause the LED module to be broken.
4. The temperature of the surface of LED module shall be under 60°C during operation.
5. Heating from LED might cause damage in LED module or/and malfunction in LED display board, user shall prepare suitable ventilation and cooling facility.
6. Even though the brightness become lower and lower, after long time use, it's prohibited to input over voltage in order to increase the brightness, which might cause severe damage to LED Module.
For the best operation, user shall operate LED module according to data sheet.
7. Please turn off the power supply, when display data are not charged.
8. Please be careful not to exposure LED Module to the dust, dirt, base, gas and other noxious gas, when install LED Display.
9. User shall consider the weight of LED module enough, when prepare steel structure and install LED Display Board.

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● Precautions in using LED Module

1. Any jumper and switch is set up properly before delivery, please do not modify or/and change setting without consulting with manufacturer.
2. The circuit part of LED Module include CMOS components, please treat carefully with consideration of static electricity
3. Impact and vibration to LED Module might be the reason of disconnection and dot off, please escape those factors.
4. It's highly recommended to escape the high temperature & humidity and be careful not to exposure LED module to dust, dirt, base and SO2 Gas and other noxious Gas in order to escape the potential problem.
5. Please be careful not to be scratched and hurt on the surface of LED module.
6. It's prohibited to clean up LED module with solvent.
In order to clean up LED module, it's highly recommended to use a piece of dried cloth and smooth brush.
7. Stacking LED modules without anti-impact material and wearing out the surface or/and edge of LED modules might cause fatal problem.
8. It's highly recommended to use twisted cable or shielded wire in order to remove the noise from high frequency.
9. When user use and store LED module, please pack LED module with anti-static material.

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