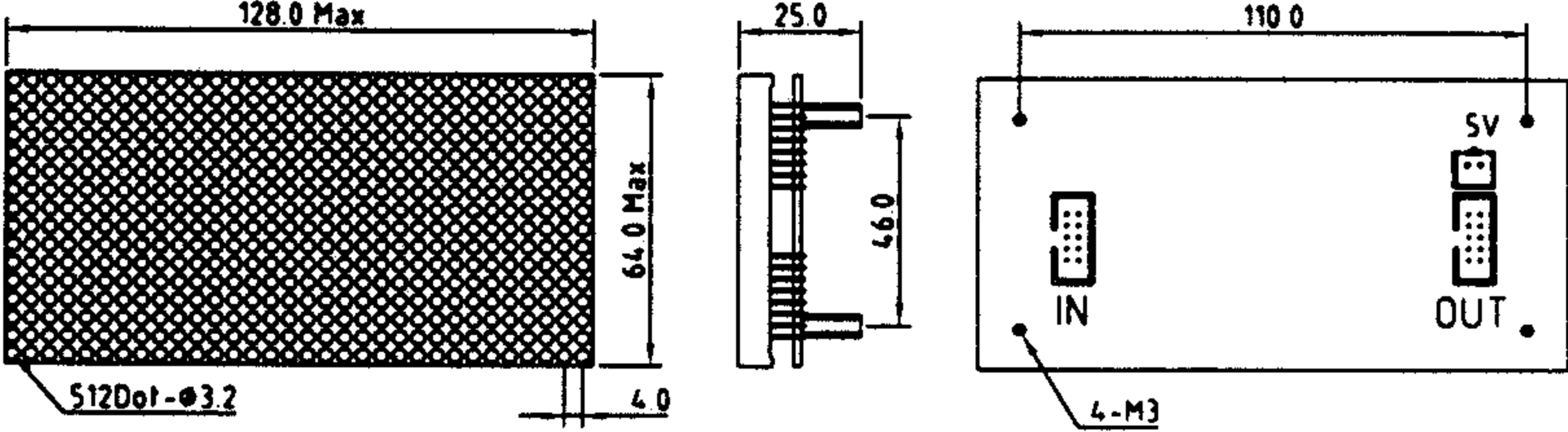


EPOXY MOLDED DOT MATRIX MODULE(Multi-Color)

MODEL	DIMENSION
<p>SMM 33216</p>	 <p>The technical drawing consists of three views: <ul style="list-style-type: none"> Top View: Shows a rectangular dot matrix with a maximum width of 128.0 mm and a maximum height of 64.0 mm. The dot pattern is labeled '512Dot-φ3.2'. Side View: Shows the module's profile with a total width of 25.0 mm and a height of 6.97 mm. Front View: Shows the module's length of 110.0 mm. It features an 'IN' port on the left and an 'OUT' port on the right. The 'OUT' port is labeled '5V'. The mounting holes are labeled '4-M3'. </p>
<p>Dot Size : ϕ 3.0 No.of Dot: 16 X 32 Emitting Size : 64 X 128mm Color : Red,Green and Amber Current Dissipation : 2.6A(Max.)</p>	

EPOXY MOLDED DOT MATRIX MODULE

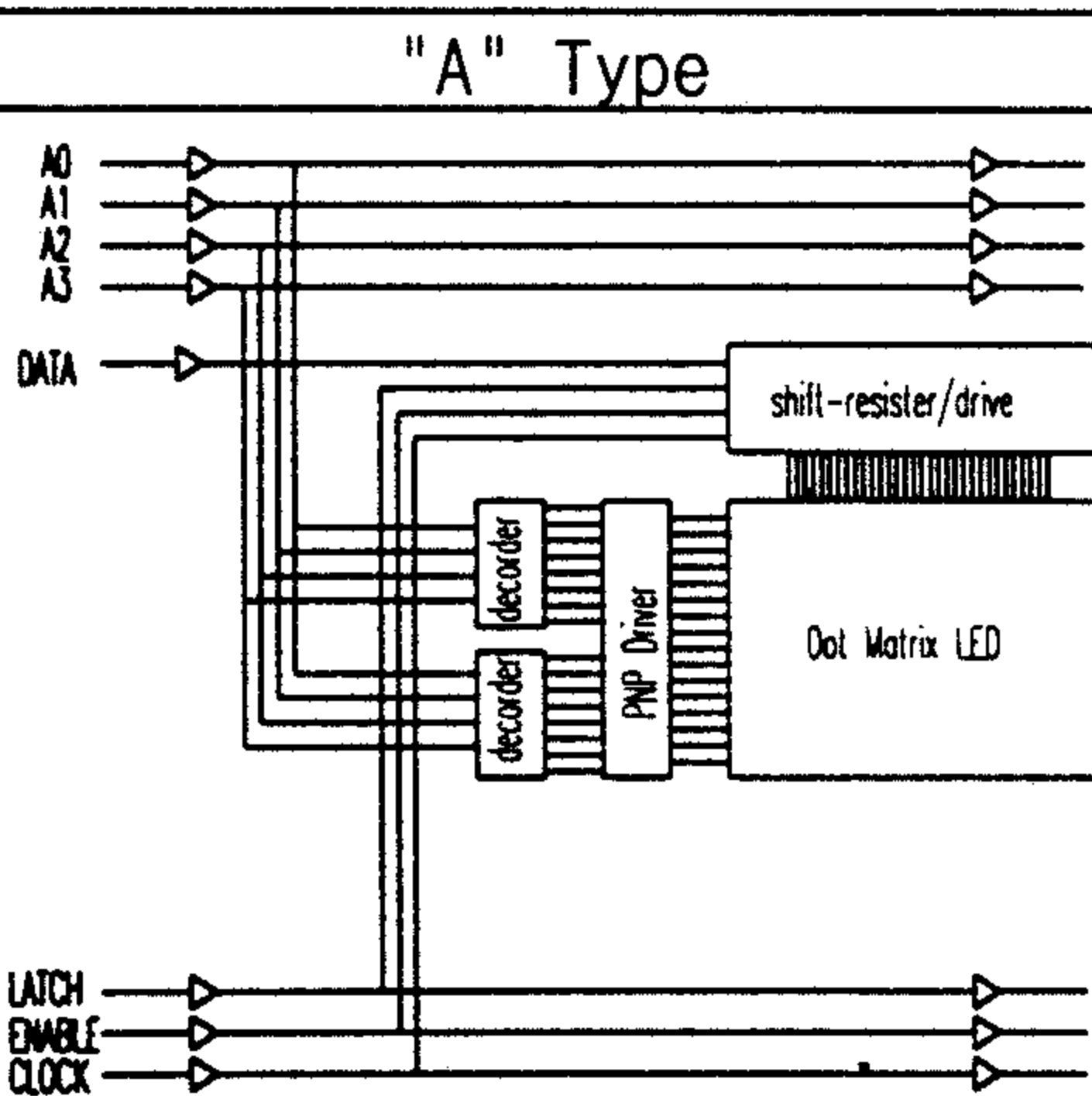
Electrical/Optical Characteristics (Ta=25°C)

Parameter	Symbol	Min	Typ	Max	Unit	Remark
Input Voltage	Vcc	4.85	5.00	5.15	V	
Clock Frequency	fCLK			7.0	MHz	
Driving Method		1/16 Duty Drive				Dynamic Drive
Luminous Intensity	Red	Iv	11		mcd	Per Dot
	Yellow Green		13			Per Dot
Peak Emission Wavelength	Red	λ_p	660		nm	
	Yellow Green		568			
Spectrum Radiation Bandwidth	Red	Δp	20		nm	
	Yellow Green		30			
Operating Temperature Range	Topr	-5 ~ +65			°C	
Storage Temperature Range	Tstg	-20 ~ +85			°C	

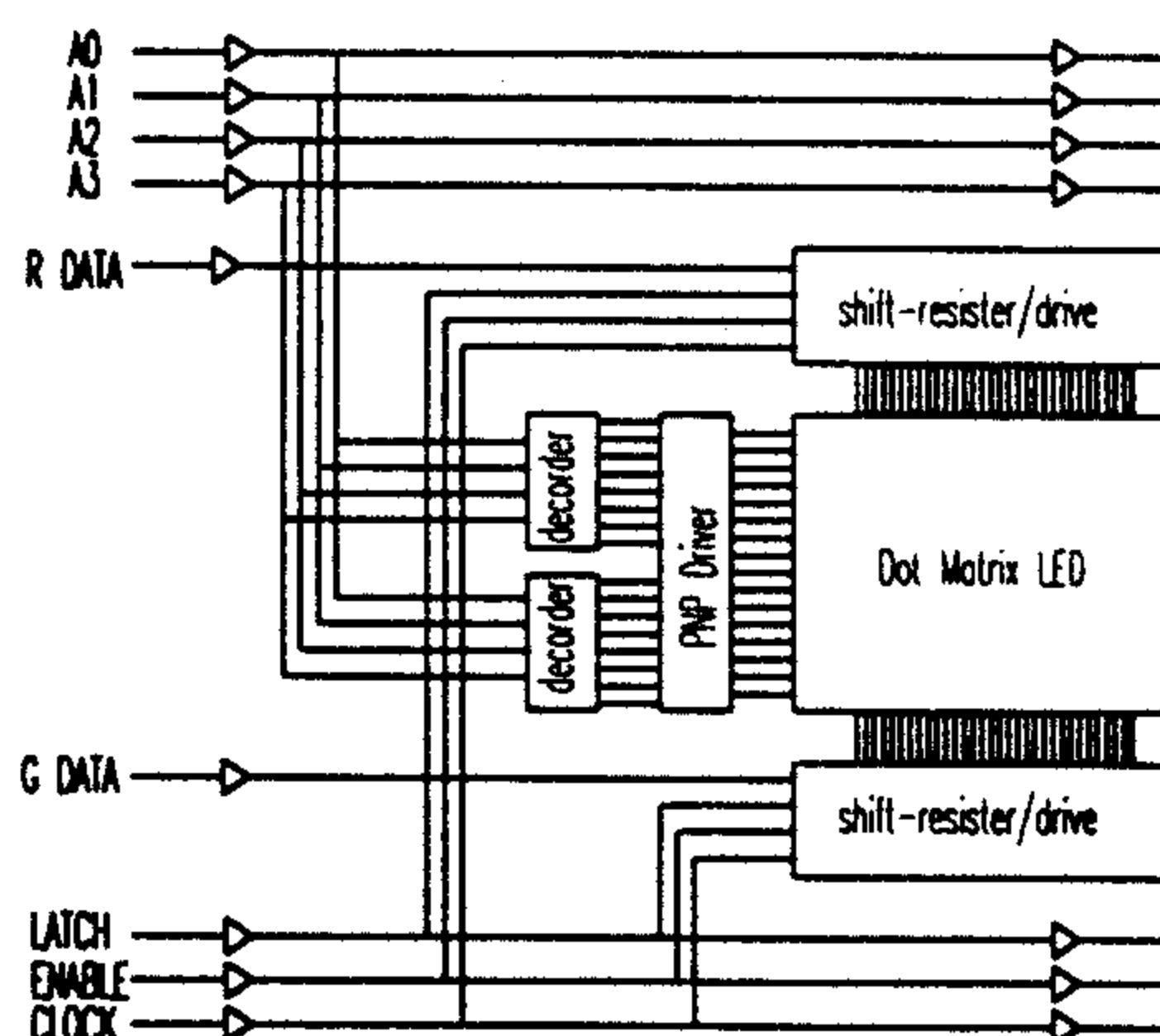
Pin Connection

Pin Arrangement	No	Name	Single Color	Multi-Color
	1	DATA	Data for RED, GREEN or AMBER signal	Data for RED signal
	2	DATA		Data for GREEN signal
	3	A0	Raw address control	Raw address control
	4	A1	It can be controlled 0000 to	It can be controlled 0000 to
	5	A2	1111 (in 16 x 16 module)	1111 (in 16 x 16 module)
	6	A3		
	7	ENABLE	Brightness control	Brightness control
	8	LATCH	Data latch control "H" Data input and display "L" Data input disable and display memorized data	Data latch control "H" Data input and display "L" Data input disable and display memorized data
	9	CLOCK	Clock signal for data input and display	Clock signal for data input and display
	10	GND	Ground	Ground

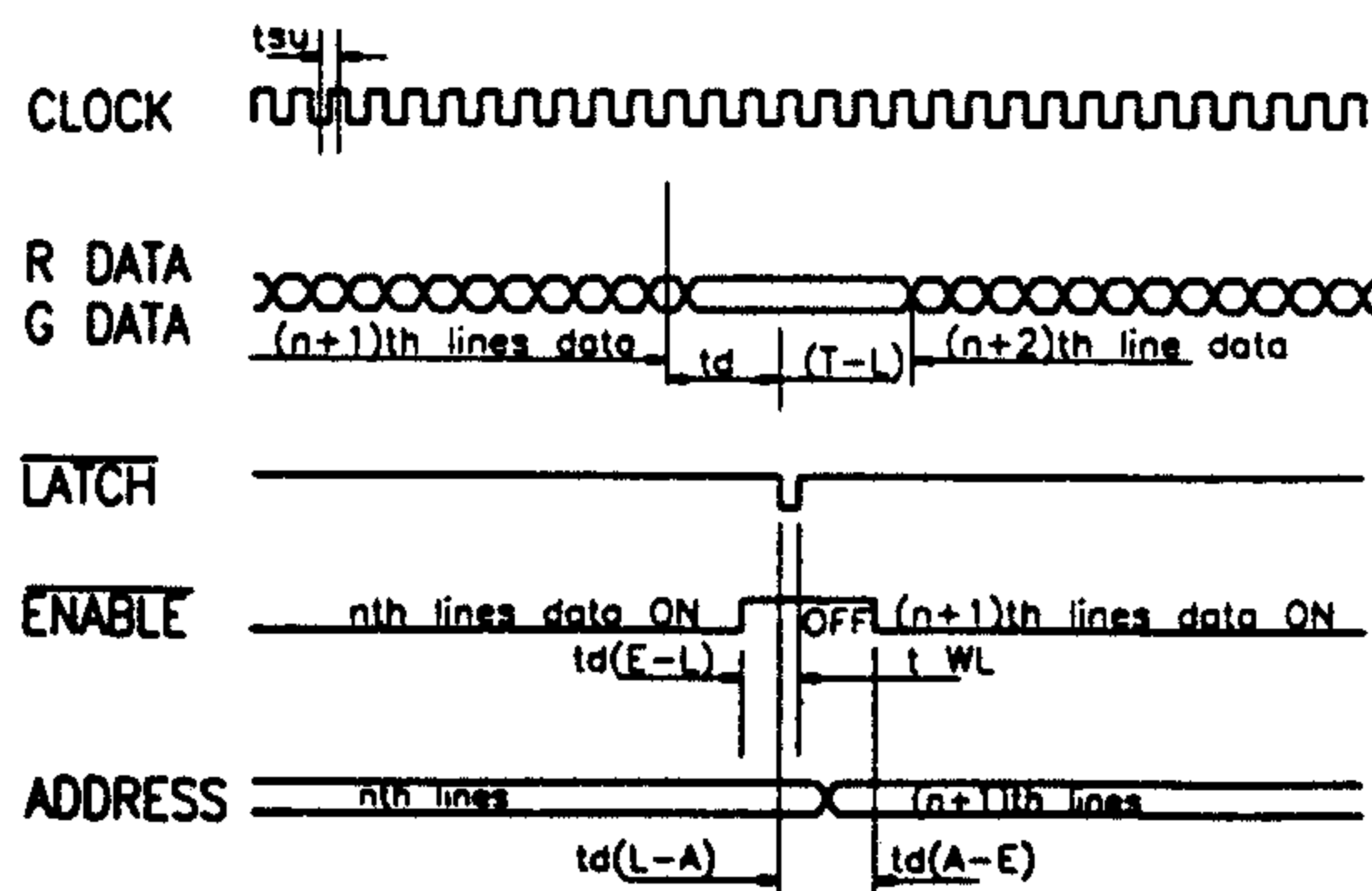
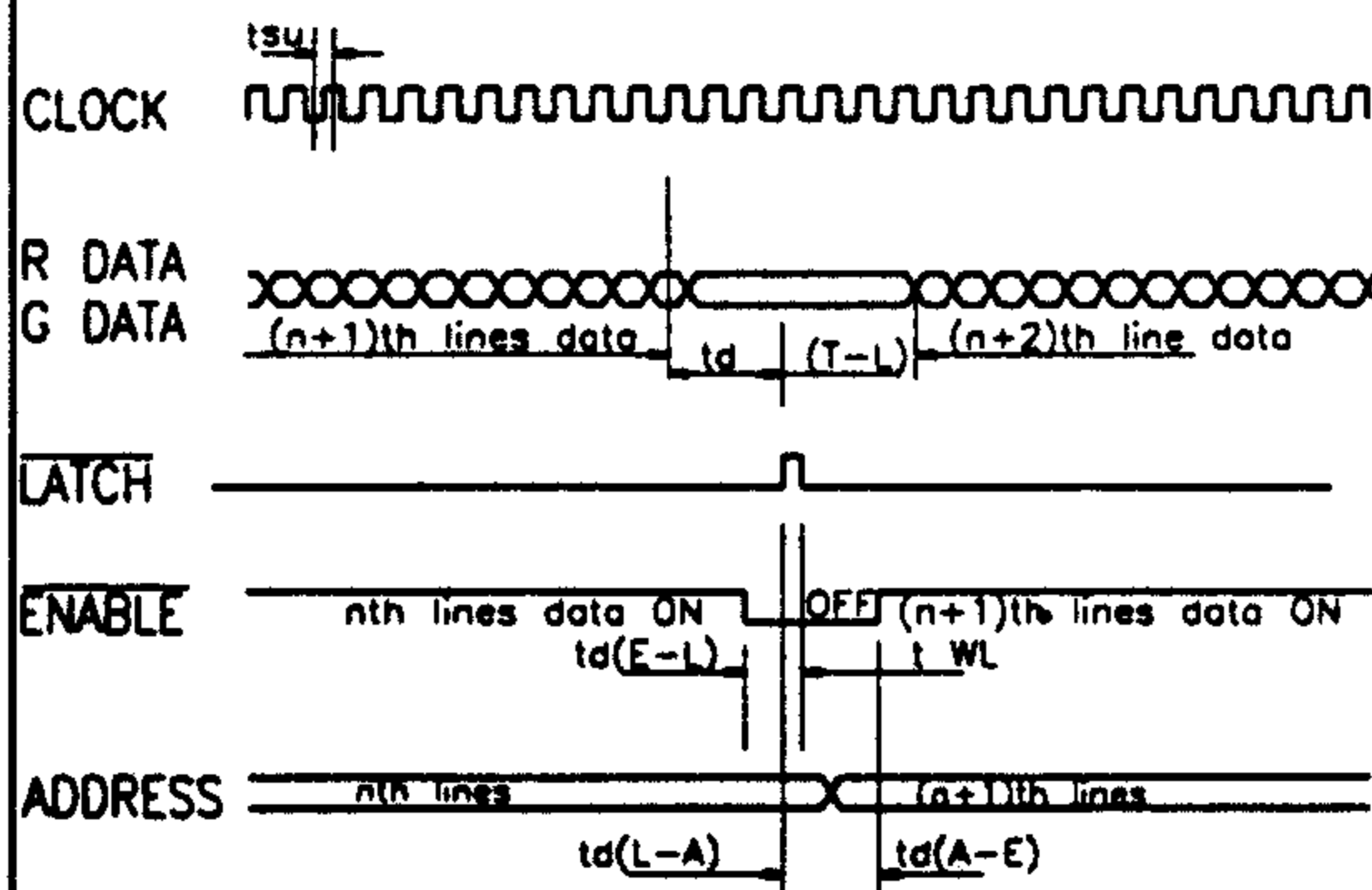
BLOCK DIAGRAM



Others



TIMING CHART



APPROVAL SHEET

MODEL NAME : DOT MATRIX MODULE

PART NAME : SMM-223216

CUSTOMER NAME :

ISSUED : '05. 03. 31

SAM KWANG			CUSTOMER			
Prepared by	Checked by	Approved by				

Remark

803 Silla Techno Vil., 39-3 Dang-dong Kunpo-City Kyungki-do, Korea
 TEL : int) 82-31-456-1444, FX.: int) 82-31-456-4224

1. OVERVIEW

Sam kwang has successfully developed a 16*32 LED dot matrix module. It is integrated with LED displays. This module is compact, slim and light. It is suitable for the wide applications of a graphic & video board beyond a Simple message board.

2. SPECIFICATION

ITEM	DESCRIPTION
Size(WxHxD)	48 X 96 X 20(mm)
Display Color	Red, Green, Amber, Black
Number of Dots	512(16X32)
Drive mode	Dynamic Drive(1/16 Duty)
Brightness Control	N.C
Viewing Angle	Horizontal : $\pm 45^\circ$, Vertical $\pm 45^\circ$
Weight	64 \pm 5g

3. ELECTRICAL CHARACTERISTICS

1) ABSOLUTE MAXIMUM RATINGS(Ta=25°C)

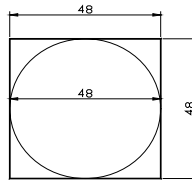
ITEM		SYMBOL	RATING	UNIT
DC Supply Voltage	Circuit	Vcc	5.15	V
	-	Vcc	-	V
Input Voltage	Circuit	Vin 1	-0.3 to Vcc +0.2	V
	-	Vin 2	-	V
Current Consumption	Circuit	IC	0.08(Vcc=5V)	A
	LED	IL	1.72(Vcc=5V)	A
Clock Frequency		f	20	MHz
Operating Temperature		Topr	-5~65	°C
Storage Temperature		Tstg	-20~85	°C
Isolation Voltage		Viso	AC500V(10mA), 1Minute(connector~supporter)	

2) RECOMMENDABLE DRIVE CONDITIONS

ITEM		SYMBOL	RATING	UNIT
DC Supply Voltage	Circuit	Vcc	4.75~5.15	V
	-	Vcc	-	V
Operating Temperature		Topr	0~40	°C

4. OPTICAL CHARACTERISTIC

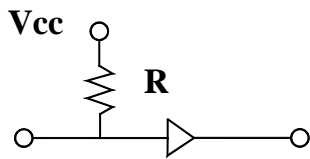
● MEASURE AREA : $\Phi 120\text{mm}$
(Note 1)



ITEM	SYMBOL	RATING			UNIT
		MIN	TYP	MAX	
Luminous Intensity	Red	LvR	-	-	cd/m ² (nit) Note 1
	Green	LvG	-	-	"
Peak Emission Wavelength	Red	λ_{pR}	-	645	nm
	Green	λ_{pG}	-	570	nm

5. INPUT LEVEL

ITEM	SYMBOL	MIN	TYP	MAX	UNIT
Input"L"	V _{iL}	-	-	0.8	V
Input"H"	V _{iH}	2.4	-	-	

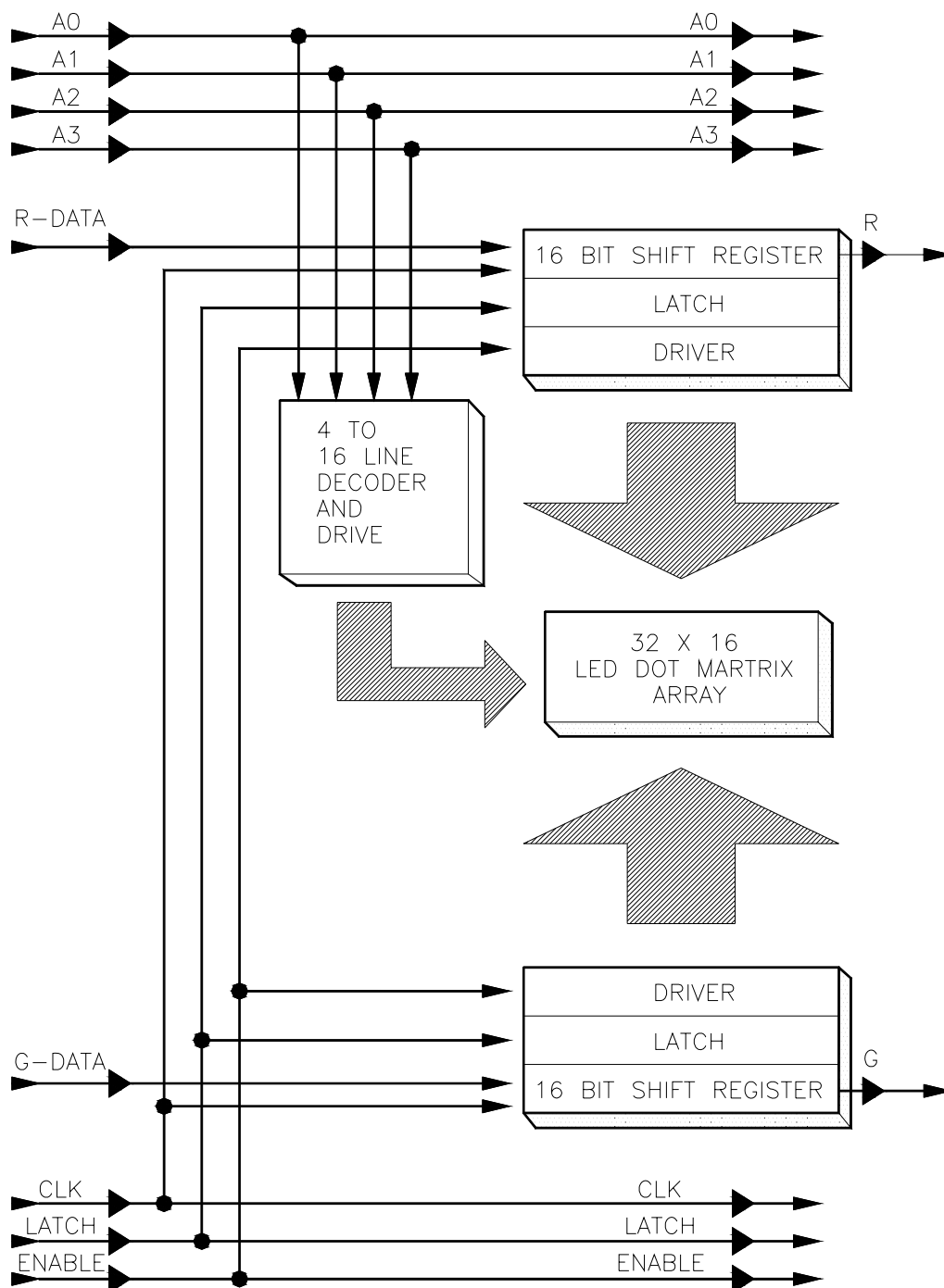


All input is pulled up 4.7k Ω

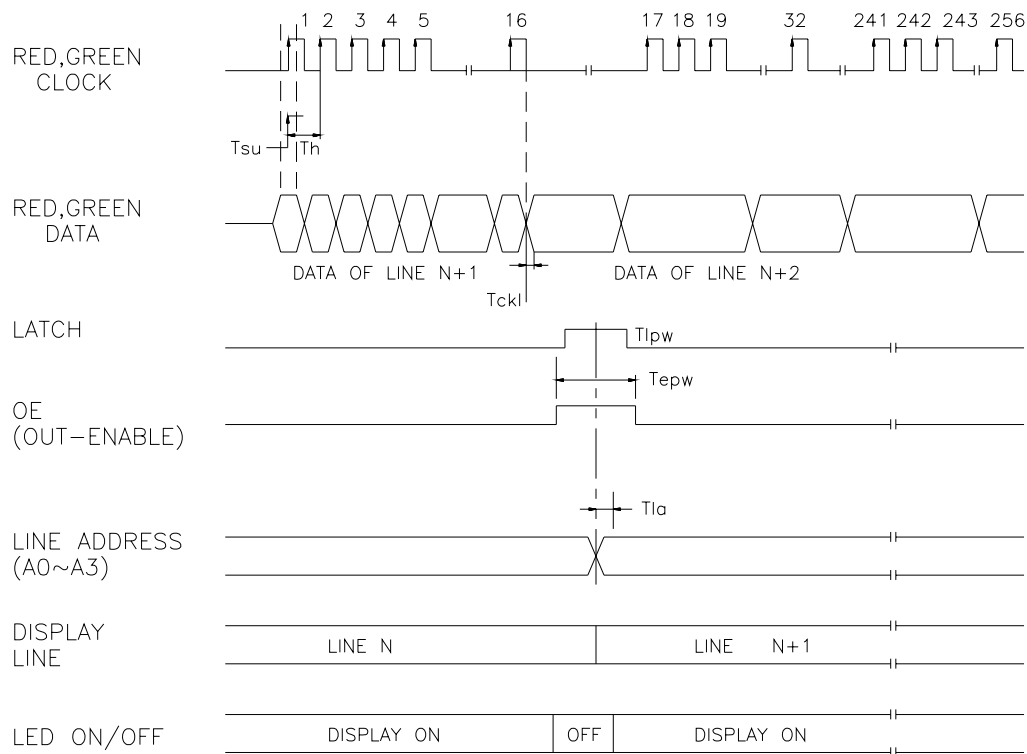
6. FUNCTION

ITEM	PIN NAME	FUNCTION DESCRIPTION	PIN NO.
Power pin	Vcc	Power supply for the circuit and LED	1
	GND	Ground of the module	2
Data Pin	Red Data	Data input for Red signal	1
	Green Data	Data input for Green signal	2
	Line Address(A0~A3)	Signal input for line address	3~6
	Enable	Display ON or OFF control ("H" off/"L" on)	7
	Latch	Signal input for Data latch	8
	Clock	Clock signal for Data input and display	9
	Gnd	Signal Ground	10
	Using variable resister	No. use	

7. BLOCK DIAGRAM



8. TIMING

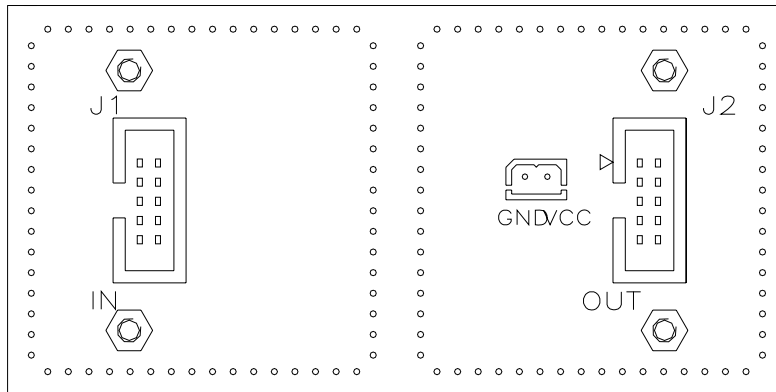


● OPERATING TIMING

(Ta=25°C, Vcc=5V)

NO	ITEM	SYMBOL	MIN	MAX	UNIT
1	Clock Cycle	T	-	20	MHz
2	Data Set up Time	Tsu	5	-	ns
3	Data Hold Time	Th	5	-	ns
4	Latch Pulse Width	Tlpw	5	-	ns
5	Clock-Latch Time	Tckl	20	-	ns
6	Enable-Latch Time	Tel	3	-	μs
7	Enable Pulse Width	Tepw	3	-	μs
8	Address-Enable Time	Tae	1.5	-	μs
9	Latch-Address Time	Tla	1.5	-	μs

9. PIN CONNECTION & Variable Resister



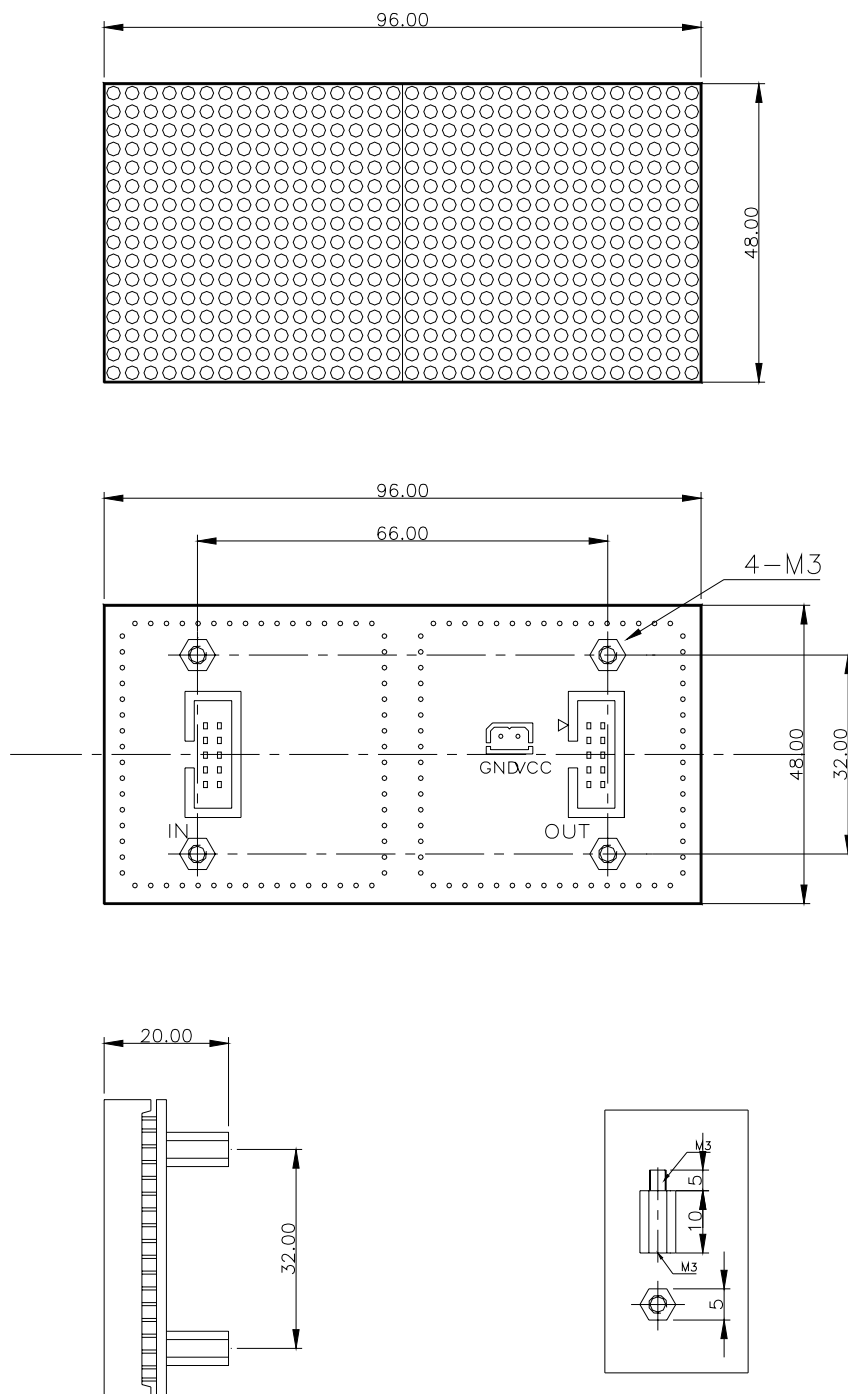
**1) J1(DATA INPUT)
PCB PRINT : J1**

		PIN NO	NAME
		1	RDATA
		2	GDATA
		3	A0
		4	A1
		5	A2
		6	A3
		7	ENABLE
		8	LATCH
		9	CLX
		10	GND

**2) J2(DATA OUT)
PCB PRINT : J2**

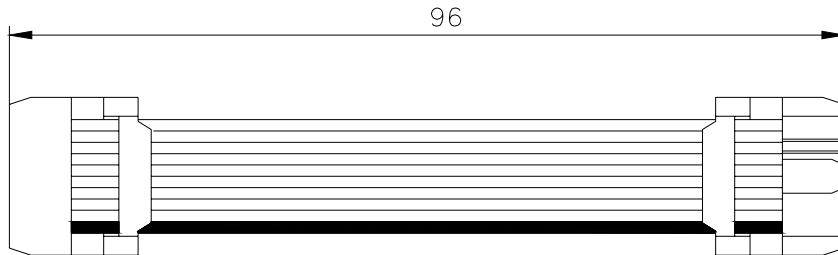
		PIN NO	NAME
		1	RDATA
		2	GDATA
		3	A0
		4	A1
		5	A2
		6	A3
		7	ENABLE
		8	LATCH
		9	CLX
		10	GND

10. DIMENSION

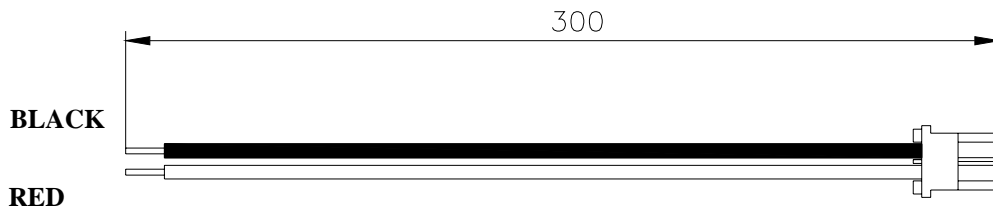


11. CONNECTION & CABLE (STANDARD)

1) DATA CABLE J1,J2 (TYPE:DB-10S)

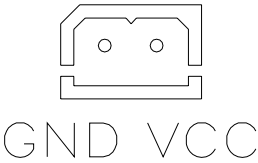


2) POWER CABLE J3 (연호전자 YMW025-2P)

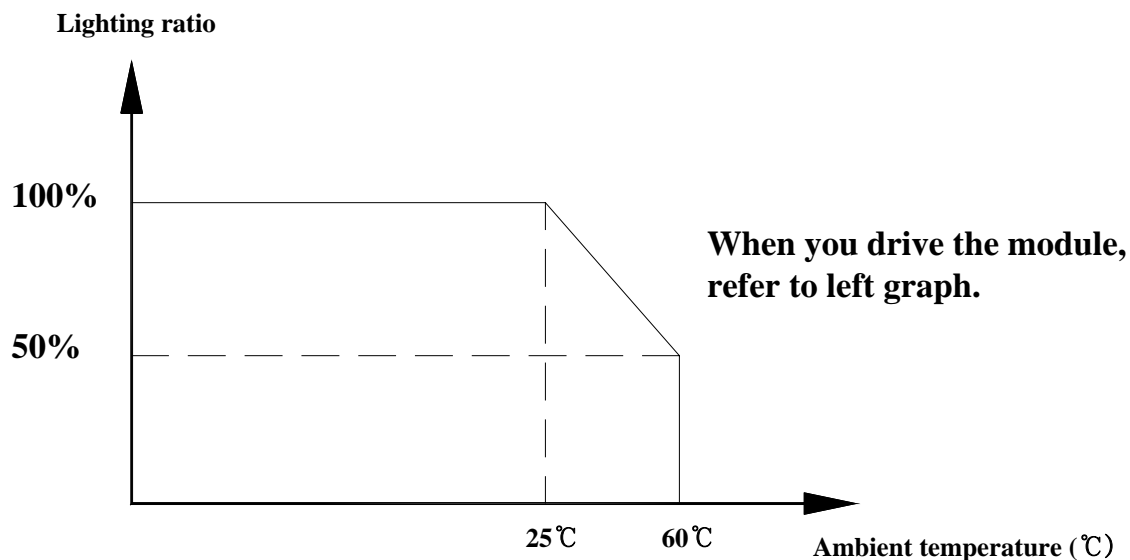


CONNECTION NO.	MODEL NO.	SPEC
J1, J2	DB-10S	96mm
J3	YMW025-2P(연호전자)	2P-300mm

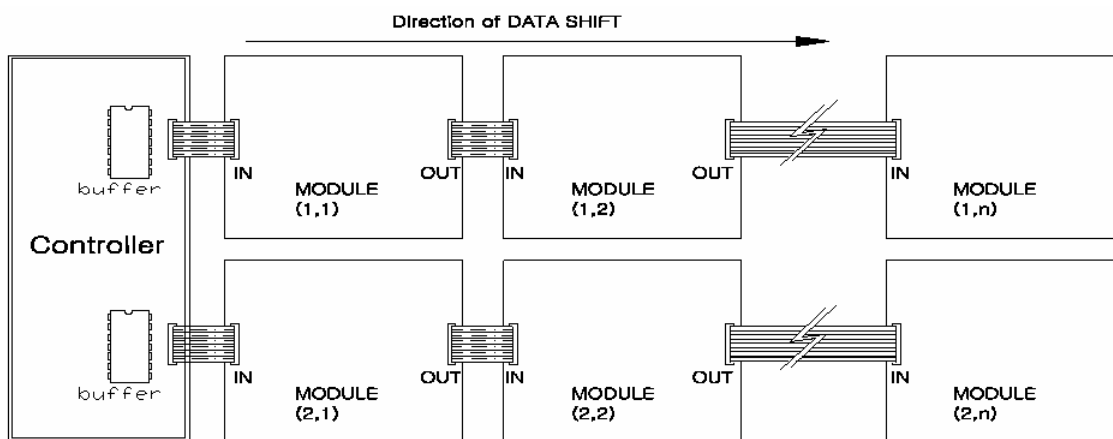
3) POWER CONNECTOR

	PIN NO	NAME	LEVEL	FUNCTION
	1	Vcc	5V	For the LED and Circuit
	2	Gnd	0V	Ground
	3	-	-	-
	4	-	-	-
	5	-	-	-

12. The rate of Lits defating curve



13. Example connect and Data Shift



※ The above drawing shows the back side of LDM

14. Matter on caution when installed (assembly)**설치(조립)시 주의 사항**

- 1) **It should be installed deeply considered in noisy place because wrong operation might be occurred.**
NOISE 환경이 취약한 곳에서는 오동작을 유발할 수 있으므로 충분히 고려하여 설치하도록 하여 주십시오.
- 2) **Make sure of power source before operating after being assembled module. Damage may be occurred by low voltage or short circuit.**
조립 후 동작을 시험하기 전에 반드시 전원부를 확인하여 주시기 바랍니다.
과전압, 쇼트 등에 의해 모듈이 파손될 수 있습니다.
- 3) **The module is not waterproofed. So, do waterproof treatment to instrument if you need.**
본 MODULE은 방수 처리가 되어있지 않았으므로 필요시 기구물에 방수가 될 수 있는 처리를 하여 주십시오.
- 4) **Please install module within guaranteed scope and specially escape installation from circumstance of smoke, dust, and SO₂-GAS.**
MODULE이 설치되는 환경은 보증범위 내에서 설치하여 주시고, 특히 연기, 먼지, 매연, SO₂-GAS등의 환경을 피하여 주십시오.
- 5) **Please turn off power source if there is no data transmission when you testing its operation after installation.**
설치 후 동작시험 시 DATA전송이 없을 경우에는 전원을 OFF하여 주십시오.
- 6) **Please establish polich of heat release and use it under circumstance within guarantee scope in case a lot of module is assembled and used.**
다량의 MODULE이 조립되어 사용되는 경우에는 충분한 방열대책을 수립하여 보증범위내의 환경에서만 사용하여 주십시오.
- 7) **In case it is used under below zero circumstance, it is favorable to use it with high voltage within maximum extent of value of input power source.**
영하 이하의 저온환경 하에서 사용시는 입력 전원을 정격치의 최대범위 한도 내에서 높은 전압으로 사용하는 것이 유리합니다.
- 8) **Please make instrument after examining weight fully as module weight is (330)g.**
중량을 충분히 검토하여 기구물을 제작하여 주십시오.