

# APPROVAL SHEET

**MODEL NAME : DOT MATRIX MODULE**

**PART NAME : SMM-223216**

**CUSTOMER NAME :**

**ISSUED : '05. 03. 31**

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Prepared by	Checked by	Approved by				

Remark

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## 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)

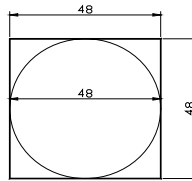
ITEM		SYMBOL	RATING	UNIT
DC Supply Voltage	Circuit	Vcc	5.15	V
	-	Vcc	-	V
Input Voltage	Circuit	Vin 1	-0.3 to Vcc +0.2	V
	-	Vin 2	-	V
Current Consumption	Circuit	IC	0.08(Vcc=5V)	A
	LED	IL	1.72(Vcc=5V)	A
Clock Frequency		f	20	MHz
Operating Temperature		Topr	-5~65	°C
Storage Temperature		Tstg	-20~85	°C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

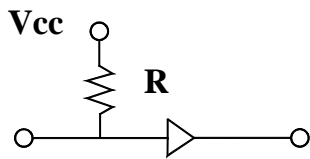
● MEASURE AREA :  $\Phi 120\text{mm}$   
(Note 1)



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

**5. INPUT LEVEL**

ITEM	SYMBOL	MIN	TYP	MAX	UNIT
Input"L"	V <sub>iL</sub>	-	-	0.8	V
Input"H"	V <sub>iH</sub>	2.4	-	-	

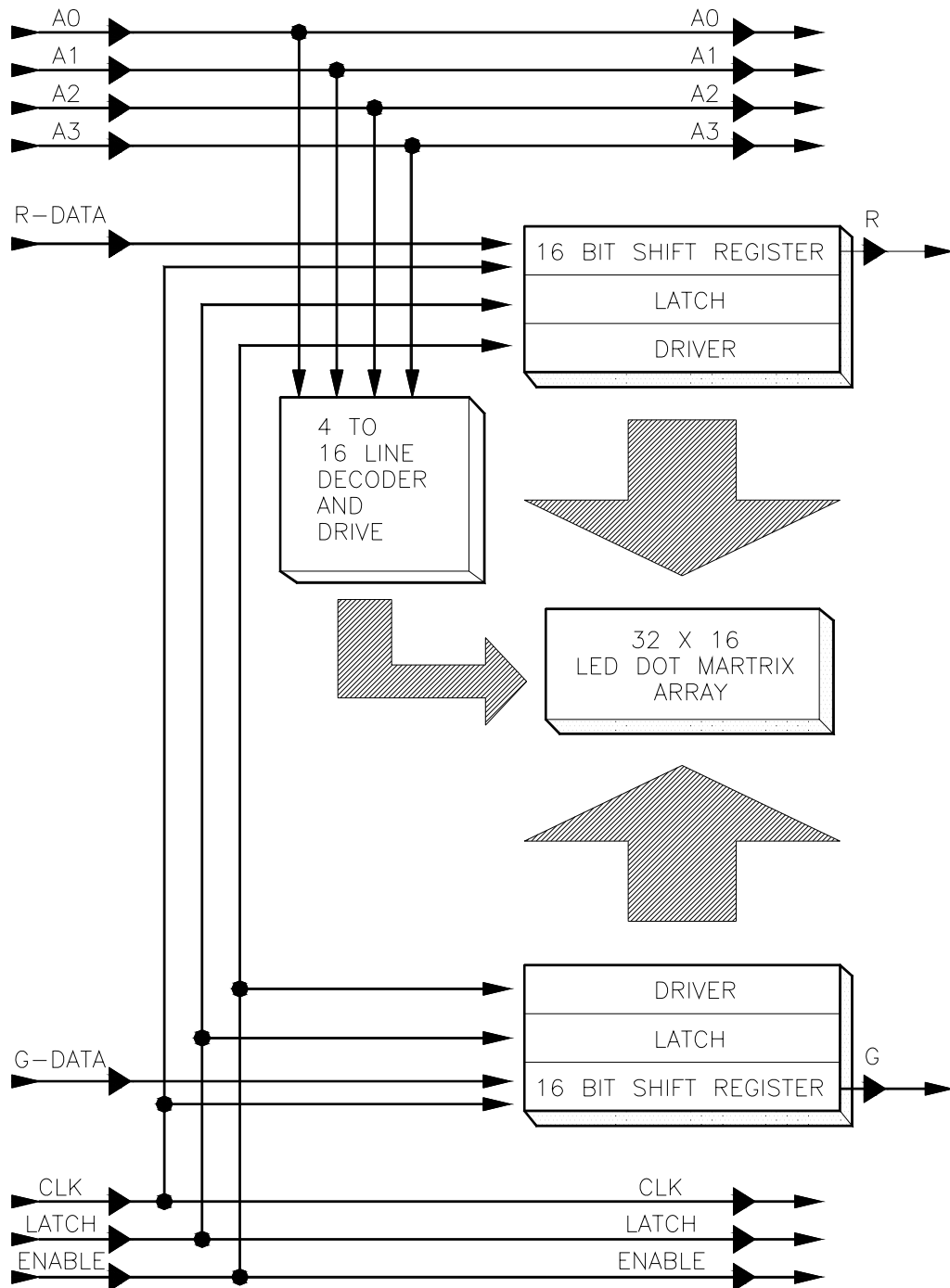


All input is pulled up 4.7k $\Omega$

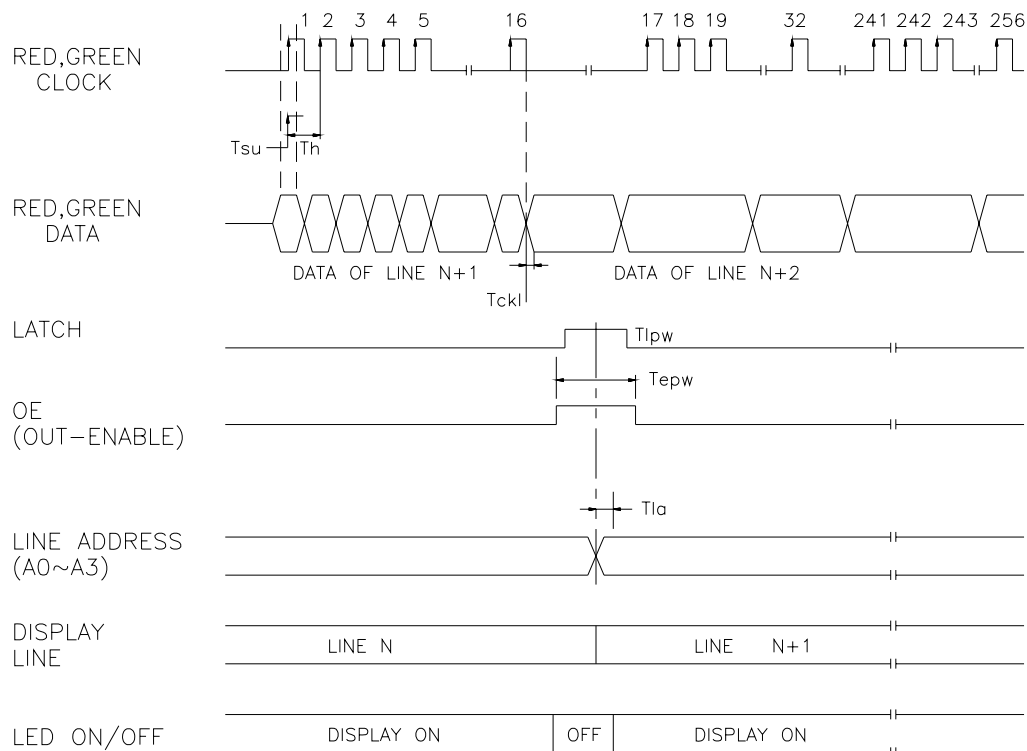
**6. FUNCTION**

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

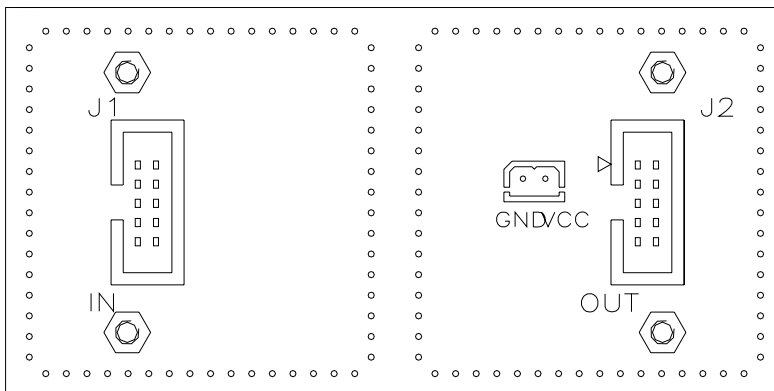


● OPERATING TIMING

(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**



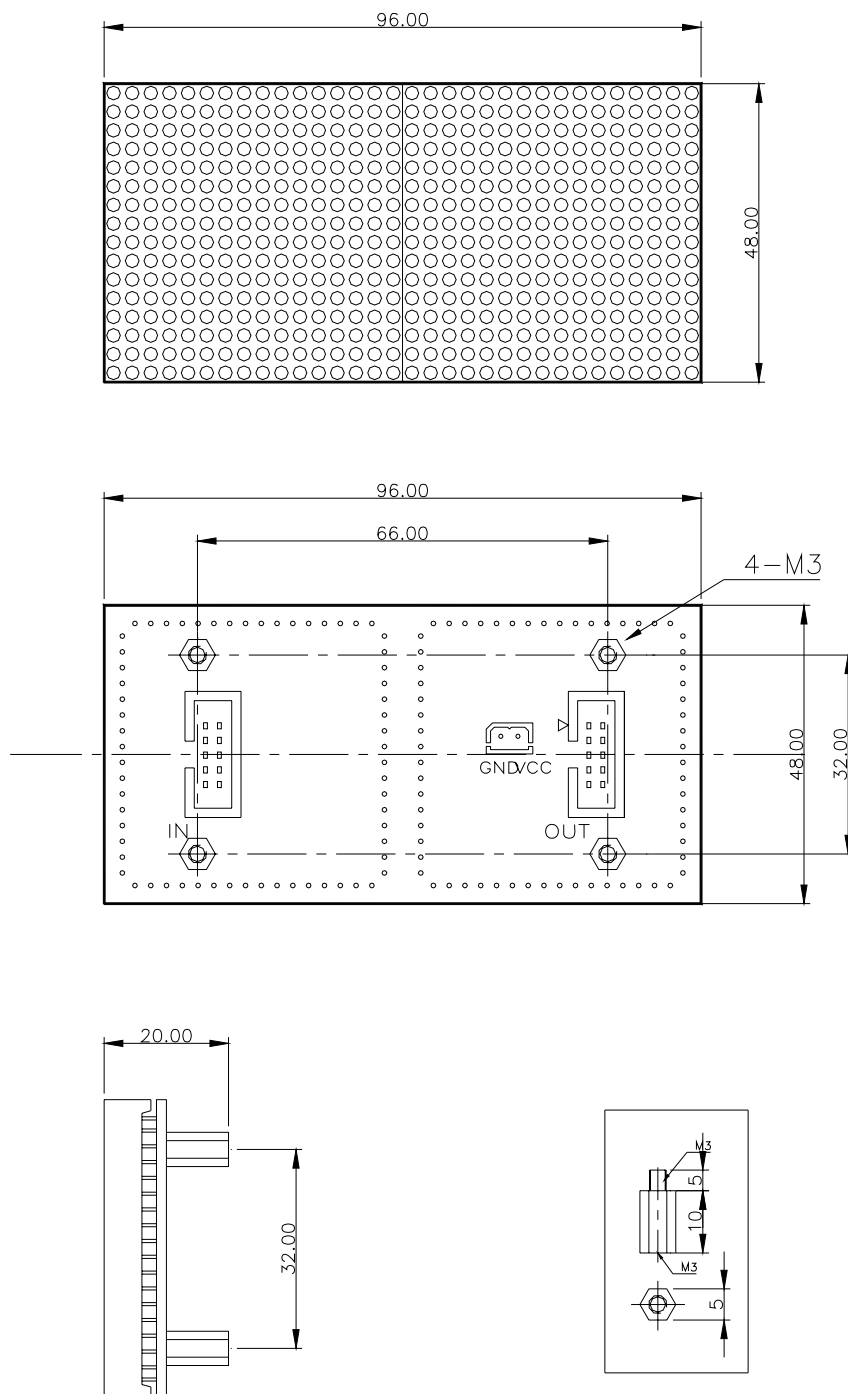
**1) J1(DATA INPUT)  
PCB PRINT : J1**

		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**

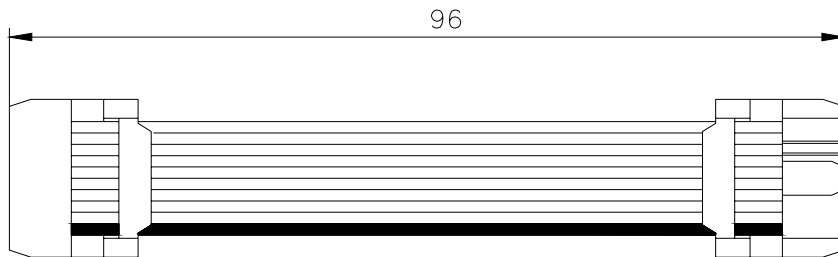
		PIN NO	NAME
		1	RDATA
		2	GDATA
		3	A0
		4	A1
		5	A2
		6	A3
		7	ENABLE
		8	LATCH
		9	CLX
		10	GND

10. DIMENSION

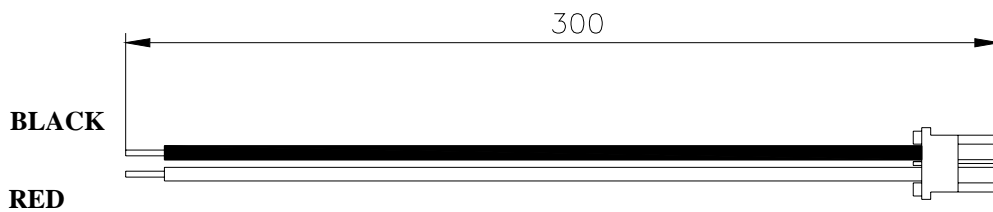


**11. CONNECTION & CABLE (STANDARD)**

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



**2) POWER CABLE J3 (연호전자 YMW025-2P)**



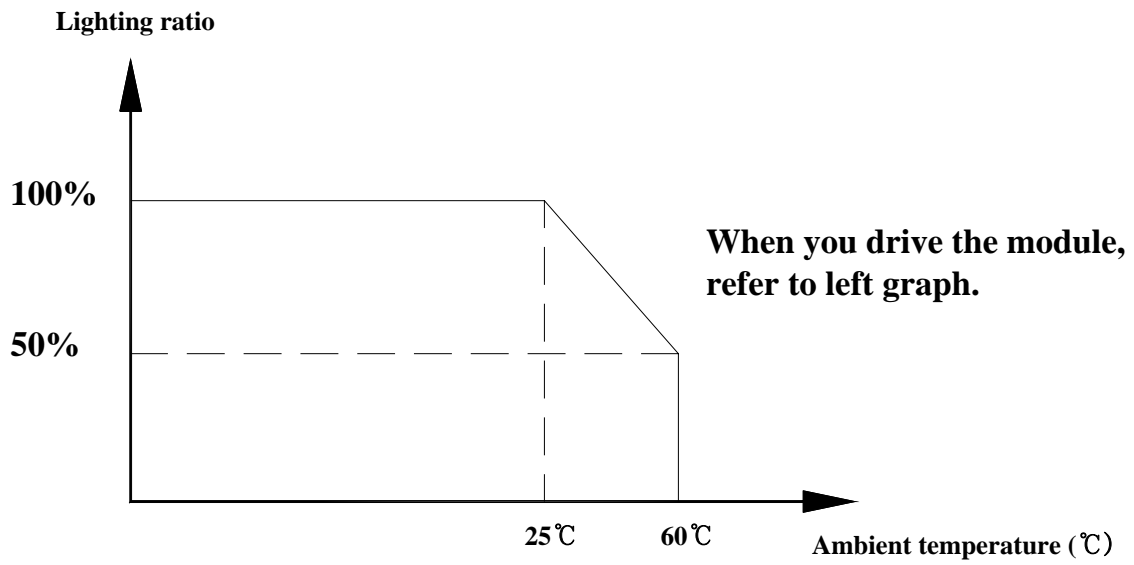
CONNECTION NO.	MODEL NO.	SPEC
J1, J2	DB-10S	96mm
J3	YMW025-2P(연호전자)	2P-300mm

**3) POWER CONNECTOR**

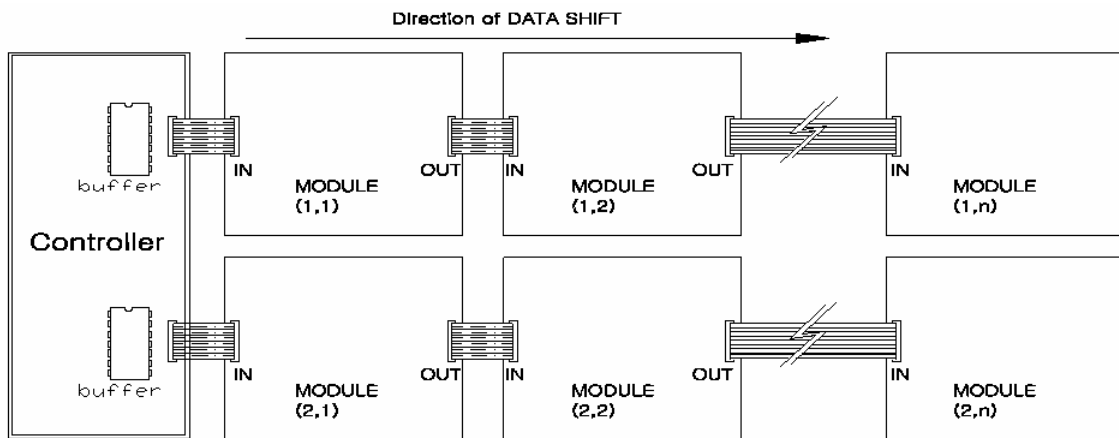
<p>GND VCC</p>	PIN NO	NAME	LEVEL	FUNCTION
	1	Vcc	5V	For the LED and Circuit
	2	Gnd	0V	Ground
	3	-	-	-
	4	-	-	-
	5	-	-	-



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 SO<sub>2</sub>-GAS.**  
MODULE이 설치되는 환경은 보증범위 내에서 설치하여 주시고, 특히 연기, 먼지, 매연, SO<sub>2</sub>-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 DATA 전송이 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.