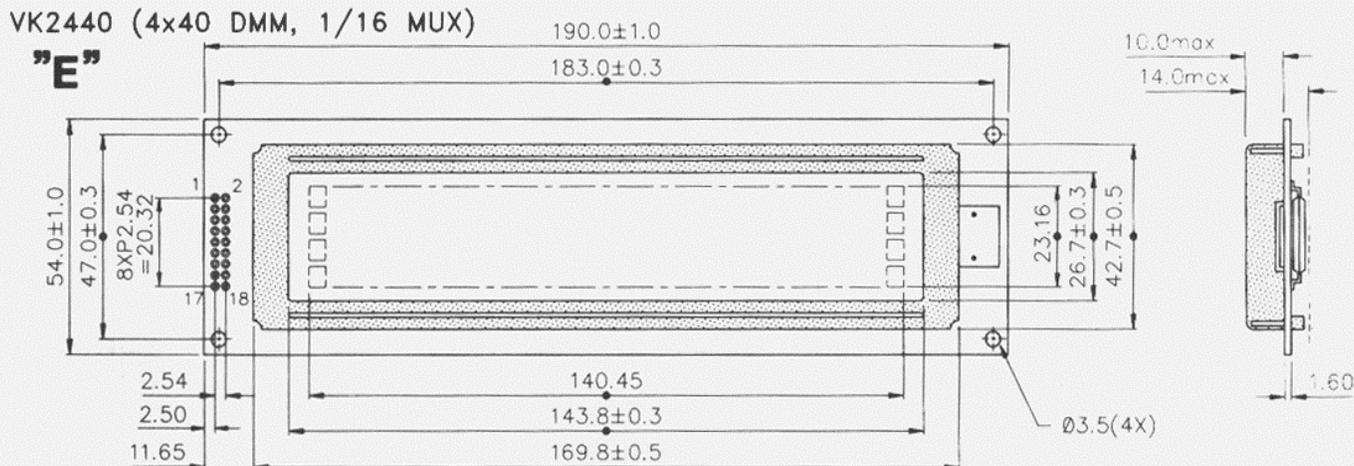
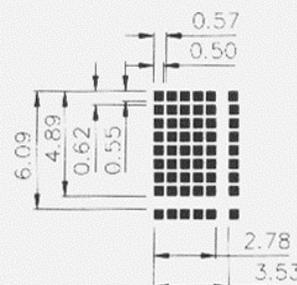
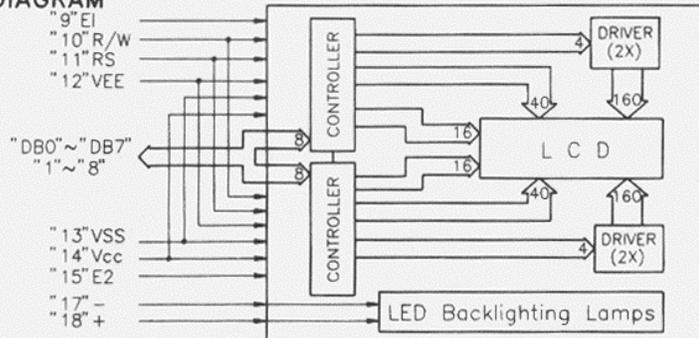


MODULE DIMENSIONS

DIMENSION IN MM



BLOCK DIAGRAM

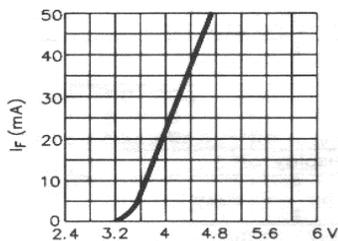


* LED ARRAY PROVIDE 5V OR 10V POWER SUPPLY OPTION

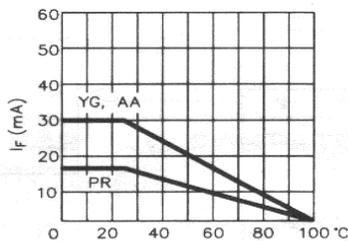
LIGHT EMITTING DIODE BACKLIGHTING

FEATURES

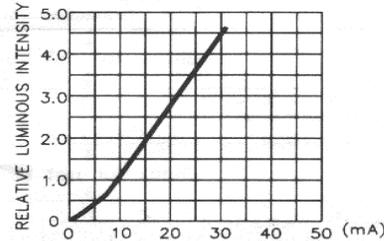
- NO NOISE INTERFERENCE.
- LONG LIFE, TYPICAL 100,000 HOURS.
- LOW VOLTAGE DC DRIVE-5V (10 VOLT OPTIONAL ON SOME MODULES)
- YELLOW-GREEN BACKLIGHTING STANDARD (PURE RED AND AMBER OPTIONAL)



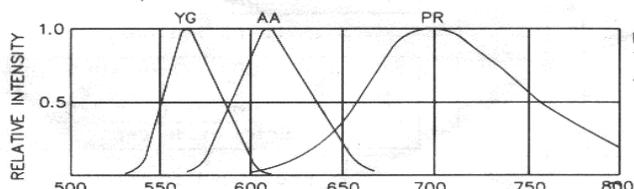
FORWARD CURRENT VS. FORWARD VOLTAGE.
(2 LED IN SERIES)



FORWARD CURRENT DERATING CURVE



RELATIVE LUMINOUS INTENSITY VS. FORWARD CURRENT



RELATIVE INTENSITY VS. WAVELENGTH

PR : PURE RED
YG : YELLOW-GREEN
AA : AMBER

WAVELENGTH NANOMETERS
TA=25°C

NOTE : SENSITIVITY OF EYE IS MAXIMUM AT 550nm.

DEFINITION OF TERMINALS		
PIN NO	SYMBOL	FUNCTION
1.	V _{SS}	Ground terminal of module
2.	V _{dd}	Supply terminal of module, +5V
3.	V _o	Power supply for Liquid Crystal Drive
4.	RS	Register Select RS = 0 ... Instruction Register RS = 1 ... Data Register
5.	R/W	Read/Write R/W = 1 ... Read R/W = 0 ... Write
6.	E	Enable
7~14.	DB0 ~ DB7	Bi-directional Data Bus. Data transfer is performed once, thru DB0-DB7, in the case of interface data length is 8-bits; and twice, thru DB4-DB7, in the case of interface data length is 4-bits. Upper four bits first then lower four bits
15.	LAMP- (L-)	LED or EL lamp power supply terminals
16.	LAMP+ (L+)	LED or EL lamp power supply terminals

*ALL LED BACKLIGHT MODELS HAVE A BUILT-IN LIMITING RESISTOR

OPERATING SPECIFICATIONS		
	STANDARD TEMP	WIDE TEMP
Operating temperature range	0°C to +50°C	-20°C to +70°C
Storage temperature range	-20°C to +70°C	-40°C to +85°C
Operating relative humidity	90% MAX	90% MAX

ELECTRICAL CHARACTERISTICS (Ta = +25°C)						
PARAMETER	SYMBOL	CONDITION	MIN	TYP	MAX	UNIT
Supply Voltage	VDD		4.5	5.0	5.5	V
LCD Drive Voltage						
Normal Temp Model (TN-STN)	VDD-V _o		4.2	4.5*	4.8	V
Wide Temp Model (TN)	(V _{LCD})		4.4	4.7	5.0	V
Wide Temp Model (STN)			6.4	6.8	7.5	V
Supply Current ¹	IDD	VDD = 5V V _o = 0V MIN	-	2.5	4.0	mA
Input Voltage ²	VIL		0	-	0.6	V
	VIH		2.2	-	VDD	V
Output Voltage ³	VOL	10L = 1.6 mA	-	-	0.4	V
	VOH	10H = 0.2 mA	2.4	-	-	V
LED Current	I _{LED}	L+ - L- = 5V	-	150	250	mA

* DRIVE VOLTAGE (V_{LCD}) IS IDENTICAL FOR LCD MODULES MANUFACTURES. ACCEPTABLE RESULTS CAN BE OBTAINED BY ADJUSTING V_{LCD}. IF THIS DOES NOT WORK, VIKAY CAN MODIFY DISPLAY TO MEET CUSTOM NEEDS CONSULT FACTORY

POWER SUPPLY REQUIREMENTS

- ◆ Wide Temperature Range Version
- ◆ Standard
- ◆ Super-Twist Display Version

MODULE EQUIVALENT LOAD

When RL=23.5K, VR=10~20K
RL=5K, VR=2~5K

This circuit shows the typical power supply connection for all dot matrix module. The display Voltage (V_{LCD}) is slightly different for different version (eg. standard, wide temp and supertwist.). Recommend end user to use **VARIABLE RESISTOR** as shows in the circuit for optimum V_{LCD} (V_{dd} - V_o) adjustment to obtain best display contrast and viewing angle.

NOTE: 1. Applies to DB0 - DB7, E, RS and RW
2. Applies to DB0 - DB7
3. Supply current may slightly exceed MAX. Rating if SAMSUNG controller is used without pull-up resistor for DB0 - DB7