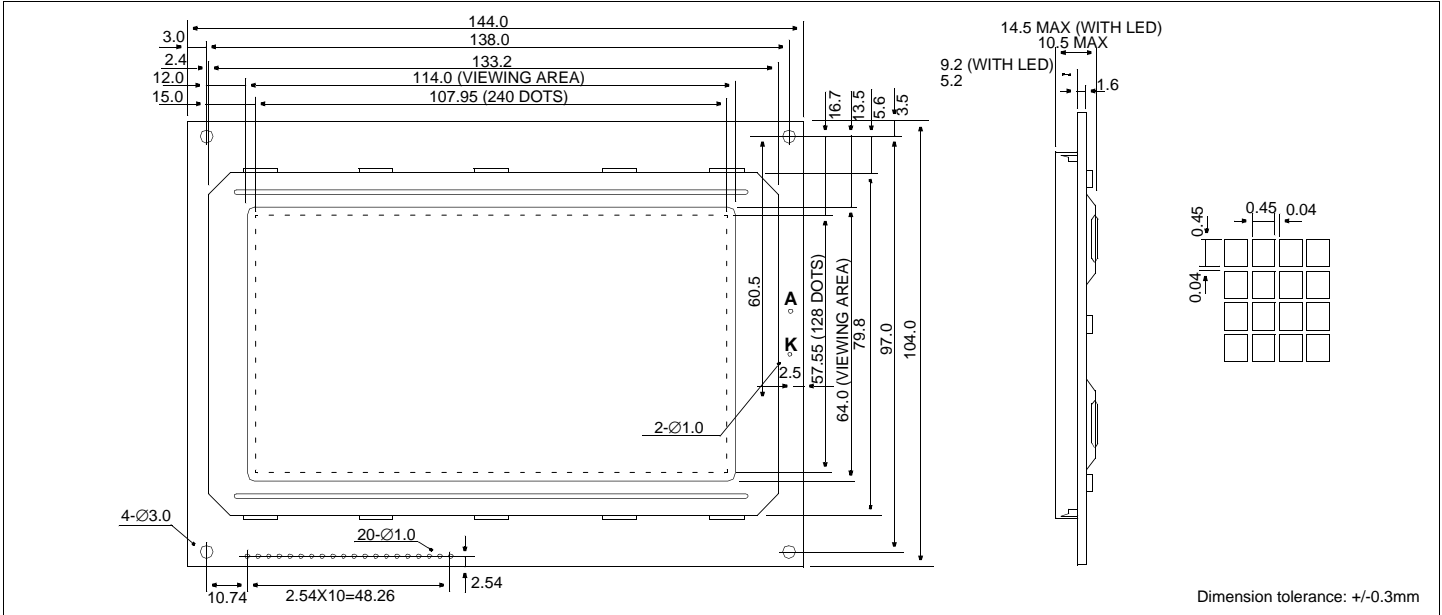


# HDM 128GS24

240 X 128 Dots Graphic

## Dimensional Drawing



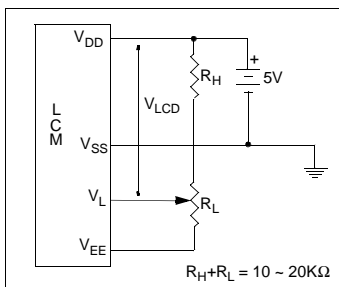
### Features

Backlight.....EL, LED or CCFL Optional  
 Options.....Gray STN / Yellow STN  
 Normal/Extended Temperature  
 Bottom / Top Viewing  
 Built-in Controller.....Toshiba T6963C

### Physical Data

Module Size.....144.0W x 104.0H x 12.5T mm  
 Viewing Area Size.....114.0W x 64.0H mm  
 Dot Pitch.....0.49W x 0.49H mm  
 Dot Size.....0.45W x 0.45H mm  
 Weight.....160g

### Power Supply



### Electrical Characteristics (V<sub>DD</sub>=5.0±0.25V 25°C)

PARAMETER	SYM	CONDITION	MIN	TYP	MAX	UNIT
OPERATING VOLTAGE	V <sub>DD</sub>	-	4.5	5.0	5.5	V
POWER SUPPLY FOR LCD	V <sub>DD</sub> -V <sub>L</sub>	-	-	17.5	-	V
INPUT HIGH VOLTAGE	V <sub>IH</sub>	-	V <sub>DD</sub> -2.2	-	V <sub>DD</sub>	V
INPUT LOW VOLTAGE	V <sub>IL</sub>	-	0	-	0.8	V
OUTPUT HIGH VOLTAGE	V <sub>OH</sub>	I <sub>OH</sub> =0.2mA	V <sub>DD</sub>	-	V <sub>DD</sub>	V
OUTPUT LOW VOLTAGE	V <sub>OL</sub>	I <sub>OL</sub> =1.2mA	0	-	0.4	V
POWER SUPPLY CURRENT	I <sub>DD</sub>	V <sub>DD</sub> =5.0V	-	13.0	20.0	mA
DRIVE METHOD	1/128 Duty					

### Absolute Maximum Ratings

PARAMETER	SYMBOL	MIN	MAX	UNIT
SUPPLY VOLTAGE	V <sub>DD</sub> -V <sub>SS</sub>	0	7.0	V
POWER SUPPLY FOR LCD	V <sub>L</sub>	-	-30.0	V
INPUT VOLTAGE	V <sub>IN</sub>	0	7.0	V
LED FORWARD CURRENT	I <sub>F</sub>		2250	mA
OPERATING TEMPERATURE	T <sub>OP</sub>	0	50	°C
STORAGE TEMPERATURE	T <sub>STG</sub>	-20	60	°C

### Pin Connections

PIN NO.	SYMBOL	FUNCTION	
1	V <sub>SS</sub>	0V	Ground
2	V <sub>DD</sub>	5V	Power supply for logic
3	V <sub>L</sub>	-12.5V	Operating voltage for LC
4	C/D	H/L	1=Command, 0=Data
5	RD	L	Data read
6	WR	L	Data write
7	DB0	H/L	Data bus
8	DB1	H/L	
9	DB2	H/L	
10	DB3	H/L	
11	DB4	H/L	
12	DB5	H/L	
13	DB6	H/L	
14	DB7	H/L	
15	CE	L	Chip enable
16	RESET	L	Reset
17	V <sub>EE</sub>	OUTPUT	#
18	MD2	H/L	Column select 0=40, 1=32
19	FS1	H/L	Text cell size 0=8x8, 1=6x8
20	N/C	-	No connection

# Has built-in inverter for negative power supply.