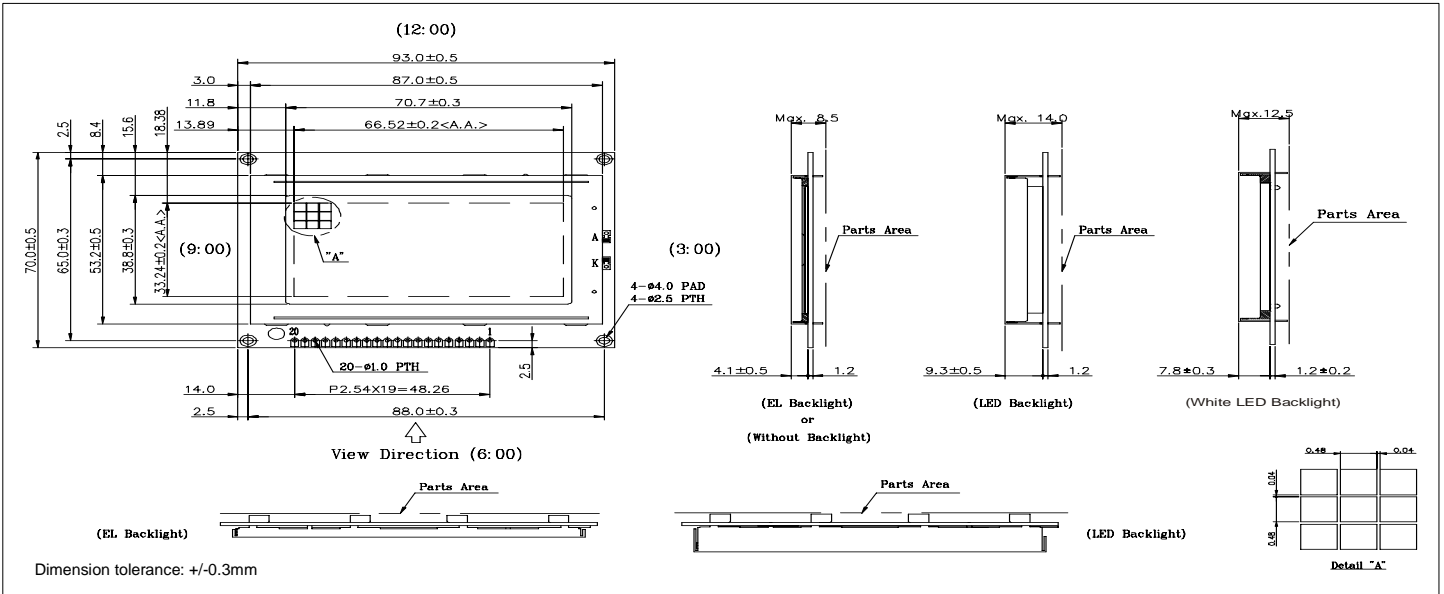


# HDM64GS12

## Dimensional Drawing

128 X 64 Dots Graphic



### Features

Backlight.....(White) LED, EL or NONE optional  
 Options.....Gray or Yellow STN, Black & White FSTN  
 Normal/Extended Temperature  
 Bottom / Top Viewing  
 Built-in Controller.....Samsung KS108B

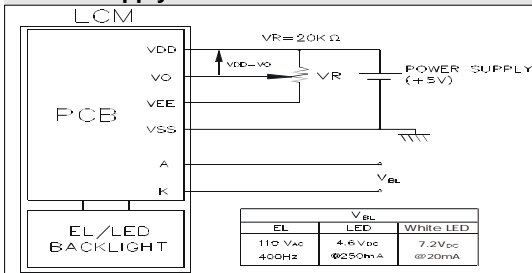
### Physical Data

Module Size (LED Backlight).....93.0W x 70.0H x 14.0T mm  
 (White LED Backlight).....93.0W x 70.0H x 12.5T mm  
 (None or EL Backlight).....93.0W x 70.0H x 8.5T mm  
 Viewing Area Size.....70.7W x 38.8H mm  
 Dot Pitch.....0.52W x 0.52H mm  
 Dot Size.....0.48W x 0.48H mm  
 Weight.....54.4g (None), 56.5g (EL), 76.5g (LED)

### Absolute Maximum Ratings

PARAMETER	SYMBOL	MIN	MAX	UNIT
Supply Voltage	$V_{DD}-V_{SS}$	0	7.0	V
Input Voltage	$V_{IN}$	-	7.0	V
Operating Temperature	$T_{OP}$	0	50	°C
Storage Temperature	$T_{STG}$	-20	70	°C
LED Peak Forward Current (White LED)	$I_p$		540	mA
			60	mA
EL Applied Voltage	$V_L$		150	$V_{rms}$
EL Applied Frequency	$F_L$		1000	Hz

### Power Supply



### Pin Connections

PIN NO.	SYMBOL	FUNCTION	
1	$V_{SS}$	0V	Ground
2	$V_{DD}$	5V	Power supply for logic
3	$V_L$	-	Operating voltage for LC
4	D/I	H/L	1=Data, 0=Instruction
5	R/W	H/L	1=Data read, 0=Data write
6	E	H/H->L	Enable
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	CS1	H	Left Half Chip Select
16	CS2	H	Right Half Chip Select
17	RS	L	Reset
18	$V_{EE}$	Output	#
19	K	(-F TYPE)	LED Cathode
	A	(-S TYPE)	LED Anode (White LED, -F TYPE)
20	A	(-F TYPE)	LED Anode
	K	(-S TYPE)	LED Cathode (White LED, -F TYPE)

# Has built-in inverter for negative power supply

### Electrical Characteristics (VDD=5.0±0.25V 25°C)

PARAMETER	SYM	CONDITION	MIN	TYP	MAX	UNIT
Input High Voltage	$V_{IH}$	-	.7 $V_{DD}$	-	$V_{DD}$	V
Input Low Voltage	$V_{IL}$	-	-	-	.3 $V_{DD}$	V
Power Supply Voltage	$V_{DD}-V_L$	$V_{DD}=5.0V$	13.0 8.9	13.5 9.2	14.0 9.5	V
Power Supply Current	$I_{DD}$	$V_{DD}=5.0V$	-	1.9	2.9	mA
LED Forward Current (White LED)	$I_F$	$V_F=4.6V$	-	250	540	mA
		$V_F=7.2V$	-	20	30	mA
EL Current	$I_L$	-	-	5.0	8.0	$mA_{rms}$
EL Power Consumption	$P_L$	-	-	0.55	-	W
DRIVE METHOD			1/64 Duty			