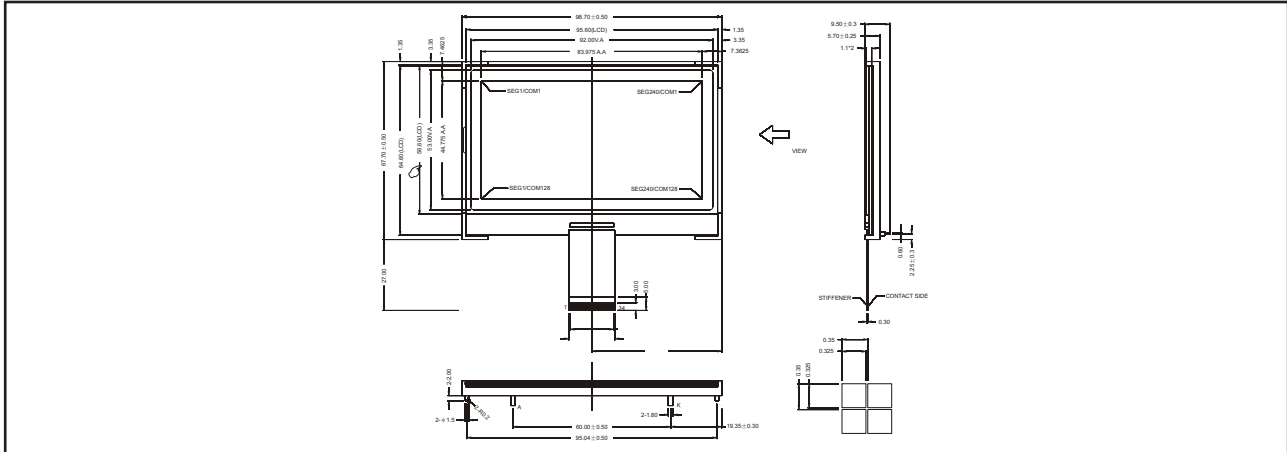


STANDARD COG MODULES

YMC 240128-13

240 X 128 DOTS, 1/128 DUTY, 1/12 BIAS

EXTERNAL DIMENSION AND DISPLAY PATTERN



MECHANICAL DATA

ITEM	SPECIFICATION	UNIT
Module Size (W x H x T)	98.7 x 67.7 x 9.5	mm
Viewing Area (W x H)	92.0 x 53.0	mm
Number of Dots	240 x 128	dots
Dot Pitch (W x H)	0.35x 0.35	mm
Dot Size (W x H)	0.325 x 0.325	mm

ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	MIN.	MAX.	UNIT
Supply Voltage Logic	$V_{DD} (V_{DD} - V_{SS})$	-0.5	4.0	V
Supply Voltage Drive	$V_{DD} - V_{EE}$	-0.5	20.0	V
Input Voltage	V_{IN}	-0.5	$V_{DD} + 0.3$	V
Operating Temperature		See page 8		
Storage Temperature				

PIN CONFIGURATION

PIN	SYMBOL	SIGNAL DESCRIPTION
1-6	$V_{0IN}, V_{0OUT}, V_1, V_2, V_3, V_4$	LCD Driving Supply Voltage
7	V_{OUT}	Chip's Power Supply Pin
8	C_{6P}	Connection Pin for Voltage Converter
9	C_{2N}	Connection Pin for Voltage Converter
10	C_{4P}	Connection Pin for Voltage Converter
11	C_{2N}	Connection Pin for Voltage Converter
12	C_{2P}	Connection Pin for Voltage Converter
13	C_{1P}	Connection Pin for Voltage Converter
14	C_{1N}	Connection Pin for Voltage Converter
15	C_{3P}	Connection Pin for Voltage Converter
16	C_{5P}	Connection Pin for Voltage Converter
17	C_{1N}	Connection Pin for Voltage Converter
18	C_{7P}	Connection Pin for Voltage Converter
19	V_{DDA}	Chip's Power Supply Pin
20	V_{SS}	Ground
21	V_{DD}	Chip's Power Supply Pin
22	XCS	Chip Select Input Pin
23	RES	Reset Input Pin
24	E	Read / Write Execution Control
25-32	D_7-D_0	The 8-bit Bi-Directional Data Bus to be connected to the MCU in Parallel Interface Mode
33	R/W	Read / Write Execution Control
34	A_0	Identify the Data or a Command

STANDARD COG MODULES

YMC 240128-13

240 X 128 DOTS, 1/128 DUTY, 1/12 BIAS

ELECTRICAL CHARACTERISTICS, Ta = 25°C

ITEM	SYMBOL	CONDITION	SPEC. VALUE			UNIT
			MIN.	TYP.	MAX.	
Supply Voltage (Logic)	V _{DD} - V _{SS}		2.4	3.3	3.3	V
Supply Current (Logic)	I _{DD}	V _{DD} = 3.3V			1.6	mA
Input Voltage	HIGH	V _{IH}	0.7 V _{DD}		V _{DD}	V
	LOW	V _{IL}	V _{SS}		0.3 V _{DD}	V
Output Voltage	HIGH	V _{OH}	0.5			V
	LOW	V _{OL}			-0.5	V
LCD Operating Voltage	V _{DD} - V _{EE}	V _{DD} = 3.3V Ta = +25°C		13.5	18	V
Supply Current LCD Drive	I _{EE}				1.3	mA

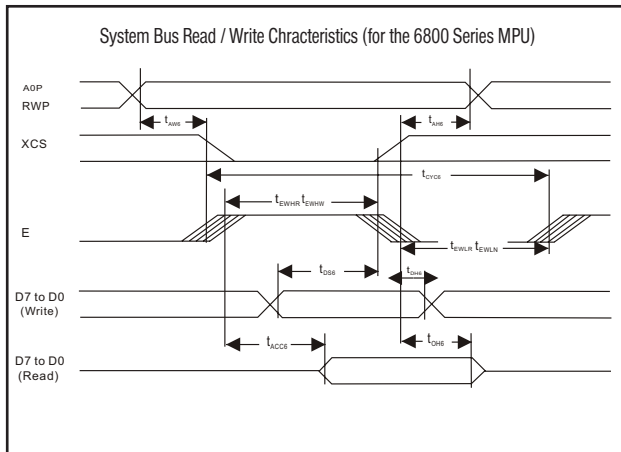
Note (1): Value is high reliability type.

Note (2): Electro-Optical Characteristics: See page 5.

BACKLIGHTING CHARACTERISTICS, Ta = 25°C, LED

ITEM	SYMBOL	CONDITION	SPEC. VALUE			UNIT
			MIN.	TYP.	MAX.	
Forward Current	I _F	V _F = 3.8V		90	120	mA
Power Consumption	P _{LED}			342		mW
Luminous	I _v	V _F = 3.8V	70			cd/m ²

AC CHARACTERISTICS



PARAMETER	SIGNAL	SYMBOL	CONDITION	MIN.	MAX.	UNIT
Address Hold Time	A0	t _{AH6}		20		ns
Address Setup Time		t _{AW6}		20		ns
System Cycle Time		t _{CYC6}		200		ns
Enable LPulse Width Write	WR	t _{CCLW}		100		ns
		t _{CCLR}		100		ns
Enable H Pulse Width Read	RD	t _{CCHW}		100		ns
		t _{CCHR}		100		ns
Write Data Setup Time	D ₀ to D ₇	t _{DS6}		150		ns
Write Data Hold Time		t _{DH6}		20		ns
Read Access Time		t _{ACC6}	C _L = 100pF		40	ns
Read Output Disable Time		t _{CH6}	C _L = 100pF		30	ns

Condition: V_{DD} = +3.3V, Ta = -30°C to +85°C, Die)