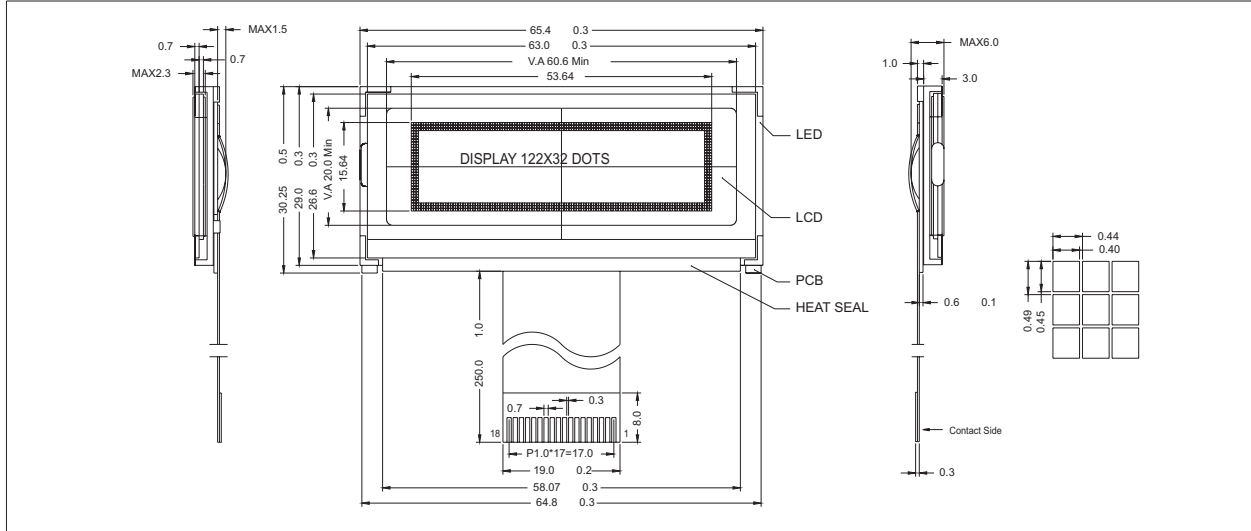


YMC12232-03

122x32DOTS
1/32DUTY, 1/5BIAS

1 EXTERNAL DIMENSION AND DISPLAY PATTERN



2 MECHANICAL DATA

ITEM	SPECIFICATION	UNIT
Module Size(W*H*T)	65.4.0 30.25 6.0	mm
Viewing Area(W*H)	60.6 20.0	mm
Number of Dots	122 32 with Cursor	mm
Dot Pitch (W*H)	0.40 0.45	mm
Dot Size (W*H)	0.44 0.49	mm

3 PIN CONNECTIONS(1)

PIN No.	SYMBOL	FUNCTION
1	Vdd	Logic Supply Voltage(+5.0v)
2	Vss	Ground(0v)
3	Vo	Power Supply For LCD Driving.
4	RES	Reset Signal
5	E1	Enable Clock
6	E2	Enable Clock
7	R/W	Read/Write Select
8	A0	Identify The Data or a Command.
9-16	DB0-DB7	Data Bus Line
17-18	LED+,LED-	LED Backlight

4 ABSOLUTE MAXIMUM RATINGS

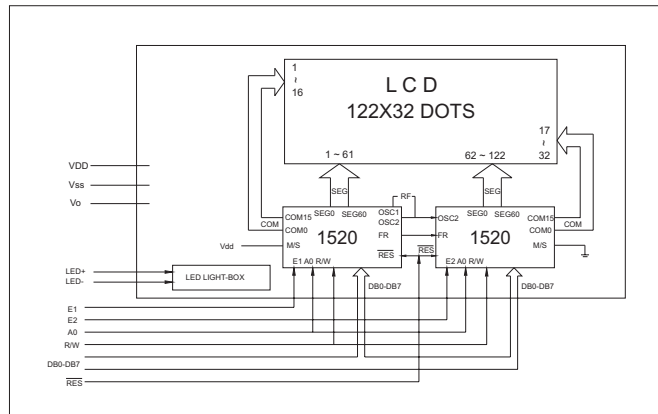
PARAMETER	SYMBOL	MIN	MAX	UNIT
Supply Voltage Logic	VDD-VSS	-0.3	8.0	V
Supply Voltage Driver	VDD-VEE	-0.3	13.5	V
Intut Voltage	VIN	-0.3	Vdd+0.3	V

Operating Temp	See page 9
Storage Temp	

5 ELECTRICAL CHARACTERISTICS(Ta=25 °C)

ITEM	SYMBOL	CONDITION	SPEC. VALUE			UNIT
			MIN.	TYP.	MAX.	
Supply Voltage (Logic)	$V_{cc}-V_{ss}$		4.5	5.0	5.5	V
Supply Current (Logic)	I_{DD}	$V_{DD}=5V$	-	0.5	1.0	mA
Input Voltage	HIGH	V_{IH}	-	$0.8V_{DD}$	-	V_{DD}
	LOW	V_{IL}	-	V_{SS}	-	$0.3V_{DD}$
Output Voltage	HIGH	V_{OH}	$I_{OH}=3.0mA$	$V_{DD}+2.4$	-	-
	LOW	V_{OL}	$I_{OL}=3.0mA$	-	-	$V_{DD}+0.4$
LCD Operating Voltage	$V_{cc}-V_0$	$V_{DD}=5V$ $T_a=25^\circ C$	-	5.0	-	V
Supply Voltage LCD Drive	I_{EE}		-	1.0	1.5	mA

6 BLOCK DIAGRAM



7 BACKLIGHTING CHARACTERISTICS(Ta=25 °C)

ITEM	SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIX
Supply Voltage	V_{LED}	$I_f=140mA$		2.1	2.3	V
Power Consumption	P_{LED}	$I_f=140mA$		0.29		W
Luminous	I_v	$I_f=140mA$		25		cd/m ²

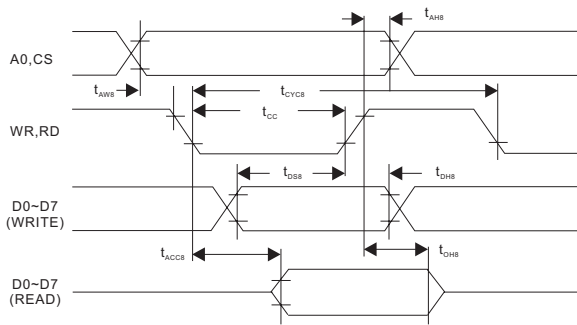
STANDARD CHARACTER MODULES

YMC12232-03

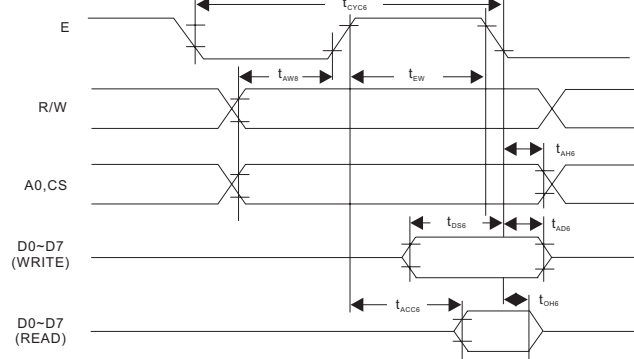
122x32DOTS
1/32DUTY, 1/5BIAS

8 TIMING CHART

READ/WRITE TIMING FOR THE 80-PORT MPU



READ/WRITE TIMING FOR THE 68-PORT MPU



9 READ/WRITE TIMING FOR THE 80-PORT MPU (TA=-20~75)

PARAMETER	SIGNAL	SYMBOL	CONDITION	RATING			UNIT
				MIN.	TYP.	MAX.	
Address hold time	A0,CS	tAHB	VSS=-5V	10	-	-	ns
			VSS=-3V	20	-	-	ns
Address set-up time	A0,CS	tAWB	VSS=-5V	20	-	-	ns
			VSS=-3V	40	-	-	ns
System cycle time	WR,RD	tCYC8	VSS=-5V	1000	-	-	ns
			VSS=-3V	2000	-	-	ns
Control pulse width	WR,RD	tCC	VSS=-5V	200	-	-	ns
			VSS=-3V	400	-	-	ns
Data set-up time	D0-D7	tDSB	VSS=-5V	80	-	-	ns
			VSS=-3V	160	-	-	ns
Data hold time	D0-D7	tDH8	VSS=-5V	10	-	-	ns
			VSS=-3V	20	-	-	ns
RD access time	D0-D7	tACC8	VSS=-5V	-	-	90	ns
			VSS=-3V	-	-	180	ns
Output disable time	D0-D7	tOH8	CL=100pF, VSS=-5V	10	-	60	ns
			CL=100pF, VSS=-3V	20	-	120	ns

10 READ/WRITE TIMING FOR THE 68-PORT MPU (TA=-20~75)

PARAMETER	SIGNAL	SYMBOL	CONDITION	RATING			UNIT	
				MIN.	TYP.	MAX.		
System cycle time	A0,CS	tCYC6	VSS=-5V	1000	-	-	ns	
			VSS=-3V	2000	-	-	ns	
Address set-up time	R/W	tAW6	VSS=-5V	20	-	-	ns	
			VSS=-3V	40	-	-	ns	
Address hold time	R/W	tAH6	VSS=-5V	10	-	-	ns	
			VSS=-3V	30	-	-	ns	
Control pulse width	R/W	tCS6	VSS=-5V	80	-	-	ns	
			VSS=-3V	160	-	-	ns	
Data set-up time	D0-D7	tDS6	VSS=-5V	10	-	-	ns	
			VSS=-3V	20	-	-	ns	
Data hold time	D0-D7	tOH6	CL=100pF, VSS=-5V	10	-	60	ns	
			CL=100pF, VSS=-5V	20	-	120	ns	
RD access time	D0-D7	tACC6	CL=100pF, VSS=-5V	-	-	90	ns	
			CL=100pF, VSS=-5V	-	-	180	ns	
Enable disable time	READ	E	tew	VSS=-5V	100	-	-	ns
				VSS=-3V	200	-	-	ns
	WRITE			VSS=-5V	80	-	-	ns
				VSS=-3V	160	-	-	ns

tCYC6 indicates the cycle during which CS/E are high; it does not indicate are cycle of the E signal.