

MLCM8016 (16 Characters X 2 lines, COG) *5 X 7 Dots Display Fonts *1/16 Duty Drive

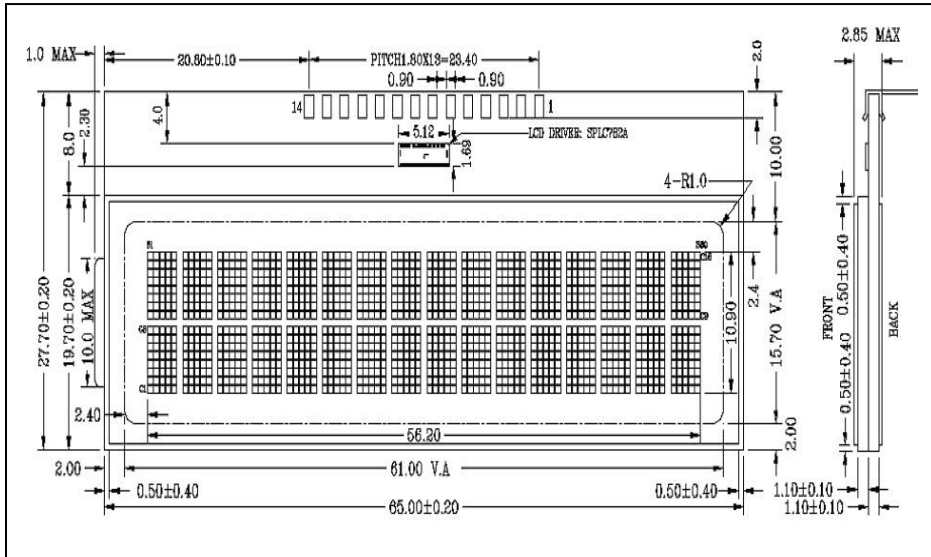


Fig 1.0 MLC1218 Dimension

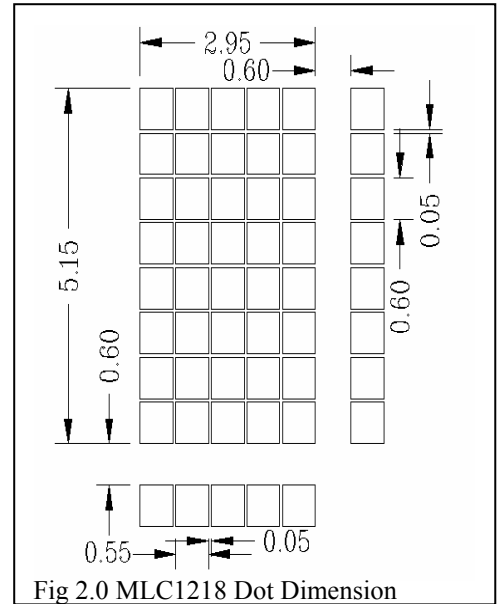


Fig 2.0 MLC1218 Dot Dimension

Table 1.0 Pin Assignment

Pin	Symbol	Level	Function
1	DB7	H/L	Data Bus Line
2	DB6	H/L	Data Bus Line
3	DB5	H/L	Data Bus Line
4	DB4	H/L	Data Bus Line
5	DB3	H/L	Data Bus Line
6	DB2	H/L	Data Bus Line
7	DB1	H/L	Data Bus Line
8	DB0	H/L	Data Bus Line
9	E	L→H	Start signal to read or write data
10	R/W	H/L	Select Read or Write H: Read L: Write
11	RS	H/L	Select Register H: Data Register (for read and write) L: Instruction Register (for write) Busy flag: Address Counter (for read)
12	VPP	-	LCD Voltage
13	VDD	-	Power Supply
14	GND	-	Logic Ground

Table 2.0 Absolute Maximum Rating

Characteristics	Symbol	Ratings
Operating Voltage	VDD	-0.3V to +7.0V
Driver Supply Voltage	VPP	VDD-0.3V to VDD+7.0V
Input Voltage Range	VIN	-0.3V to VDD + 0.3V
Operating Temperature	TA	-20°C to +70°C
Storage Temperature	TSTO	-30°C to +80°C

Table 3.0 DC Characteristics (TA = 25°C)

Characteristics	Symbol	Limit			Unit	Test Condition
		Min.	Typ.	Max.		
Operating Voltage	VDD	4.5	-	5.5	V	
Operating Current	IDD	-	0.8	1.0	mA	Internal Clock
Input High Voltage	VIH1	2.2	-	VDD	V	Pins: (E, RS, R/W, DB0-DB7)
Input Low Voltage	VIL1	-0.3	-	0.6	V	
Input High Current	IHI	-	-	2.0	A	Pins: (RS, R/W, DB0-DB7) VDD = 5.0V
Input Low Current	ILI	-30	-80	-125	A	
Output High Voltage	VOH1	2.4	-	VDD	V	I _{OH} = -0.1mA, Pins: DB0-DB7
Output Low Voltage	VOL1	-	-	0.4	V	I _{OL} = 0.1mA, Pins: DB0-DB7
LCD Voltage	VPP	4.8	-	5.2	V	1/4 or 1/5 bias

Table 4.0 AC Characteristics (TA = 25°C)

Characteristics	Symbol	Limit			Unit	Test Condition
		Min	Typ.	Max		
E Cycle Time	tc	500	-	-	ns	Pin E
E Pulse Width	tpw	230	-	-	ns	Pin E
E Rise/Fall Time	tr, tf	-	-	20	ns	Pin E
Address Setup Time	tsp1	40	-	-	ns	Pins: RS, R/W, E
Address Hold Time	tHD1	10	-	-	ns	Pins: RS, R/W, E
Data Setup Time	tsp2	80	-	-	ns	Pins: RS, R/W, E
Data Output Delay	td	-	-	160	ns	Pins: DB0-DB7
Time						
Data Hold Time during Write Mode	tHD2	10	-	-	ns	Pins: DB0-DB7
Data Hold Time during Read Mode	tHD2	5	-	-	ns	Pins: DB0-DB7