

# DMF-5002 (Built-in Controller LSI)

128×112 dots	1/112 Duty Drive
Variation	N, NY-EB

## MECHANICAL DATA

Item	Standard Value	Unit
Module Dimension	110(W)×90.6(H)×12.8max.(D)	mm
Viewing Area	77(W)×66(H)	mm
Dot Pixels	128(W)×112(H)	dots
Dot Size	0.50(W)×0.49(H)	mm
Dot Pitch	0.54(W)×0.53(H)	mm

## ABSOLUTE MAXIMUM RATINGS

Item	Symbol	Condition	min.	typ.	max.	Unit
Supply Voltage (Logic)	$V_{CC}-V_{SS}$	—	-0.3	—	7	V
Supply Voltage (LCD Drive)	$V_{CC}-V_{EE}$	—	-0.3	—	28	V
	$V_{CC}-V_{ADJ}$	—	0	—	27	V
Input Voltage	$V_I$	—	-0.3	—	$V_{CC}+0.3$	V
Operating Temperature	$T_{opr}$	—	0	—	+50	°C
Storage Temperature	$T_{stg}$	—	-20	—	+60	°C

## ELECTRICAL CHARACTERISTICS OPTICAL DATA $T_a=25\text{ }^\circ\text{C}$

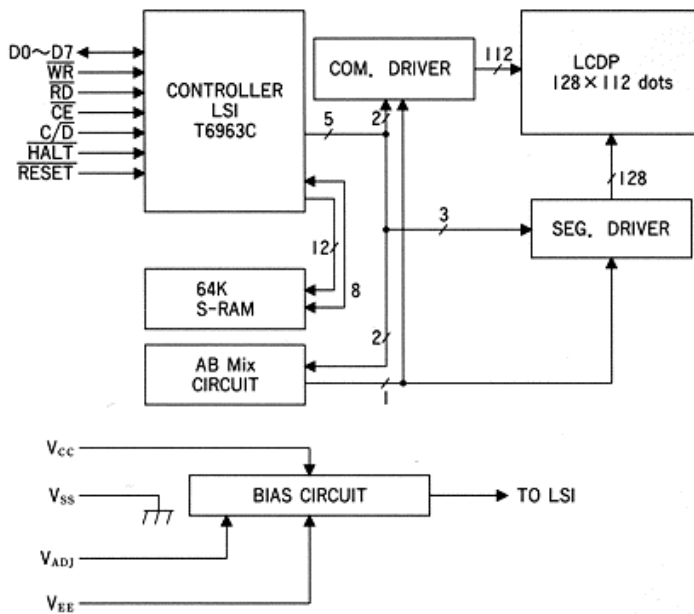
Item	Symbol	Condition	Standard Value			Unit
			min.	typ.	max.	
Supply Voltage (Logic)	$V_{CC}-V_{SS}$	—	4.5	5	5.5	V
Supply Voltage (LCD Drive)	$V_{CC}-V_{EE}$	—	21	—	26	V
Supply Current	$I_{CC}$	—	—	—	20	mA
	$I_{EE}$	—	—	—	10	mA
Input Voltage "H" Level	$V_{IH}$	High Level	$V_{CC}-2.2$	—	$V_{CC}$	V
Input Voltage "L" Level	$V_{IL}$	Low Level	0	—	0.8	V
Supply Voltage for LCD Drive 1/112duty Note 1	$V_{CC}-V_{ADJ}$	$T_a=0^\circ\text{C}$	—	—	21.9	V
		$T_a=25^\circ\text{C}$	—	18.3	—	V
		$T_a=50^\circ\text{C}$	15.3	—	—	V
Contrast Ratio Note 1	CR	$\theta=0^\circ \phi=-^\circ$	—	6	—	—
Response Time (rise) Note 1	$\tau_r$	$T_a=25^\circ\text{C}$	—	200	300	ms
Response Time (decay) Note 1	$\tau_d$	$T_a=25^\circ\text{C}$	—	340	510	ms

Note 1: Applicable NY-EB

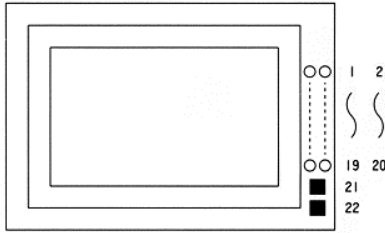
## PIN ASSIGNMENT CN1

Pin No.	Symbol	Level	Function
1	FG	—	Frame Ground
2	V <sub>SS</sub>	—	Power Supply (0V, GND)
3	V <sub>CC</sub>	—	Power Supply for Logic
4	V <sub>ADJ</sub>	—	Voltage Level for LCD Contrast Adjustment
5	V <sub>EE</sub>	—	Power Supply for LCD Drive
6	$\overline{WR}$	H/L	Write Signal ("L" Active)
7	$\overline{RD}$	H/L	Read Signal ("L" Active)
8	$\overline{CE}$	H/L	Chip Enable ("L" Active)
9	C/ $\overline{D}$	H/L	WRITE MODE H:Command Write L:Data Write READ MODE H:Status Read L:Data Read
10	$\overline{HALT}$	H/L	Clock Operating Stop Signal ("L" HALT)
11	$\overline{RESET}$	H/L	Reset Signal ("L" Reset)
12	D0	H/L	Display Data 0
13	D1	H/L	Display Data 1
14	D2	H/L	Display Data 2
15	D3	H/L	Display Data 3
16	D4	H/L	Display Data 4
17	D5	H/L	Display Data 5
18	D6	H/L	Display Data 6
19	D7	H/L	Display Data 7
20	NC	—	No Connection
21,22	EL	—	Power Supply for EL

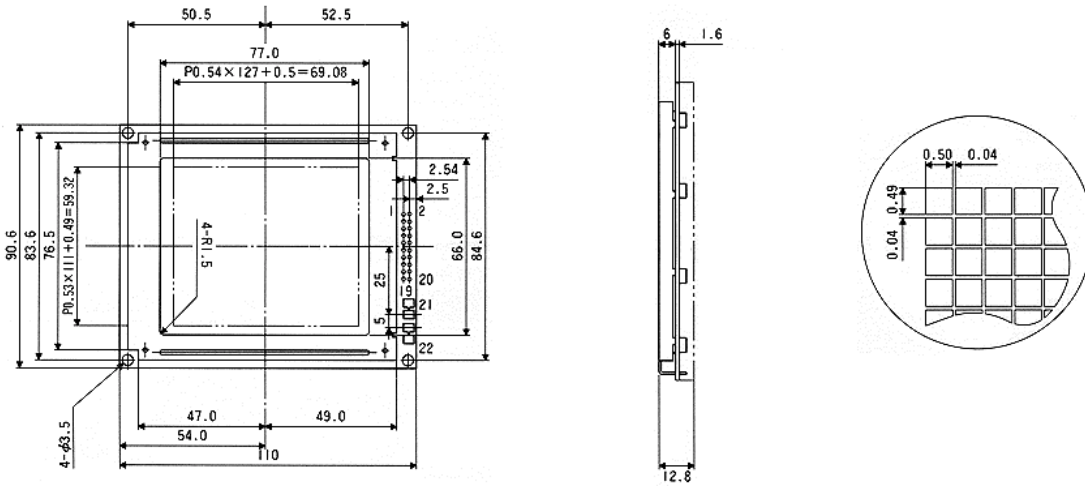
■ BLOCK DIAGRAM



■ PIN NBR. LAYOUT(TOP VIEW)



**■ DIMENSION**



**■ TIMING CHARACTERISTICS**

Item	Symbol	min.	typ.	max.	Unit
C/ $\bar{D}$ Set Up Time	$t_{CDS}$	100	—	—	ns
C/ $\bar{D}$ Hold Time	$t_{CDH}$	10	—	—	ns
CE, RD, WR Pulse Width	$t_{CP}$ $t_{RP}$ $t_{WP}$	80	—	—	ns
Data Set Up Time	$t_{DS}$	80	—	—	ns
Data Hold Time	$t_{DH}$	40	—	—	ns
Access Time	$t_{ACC}$	—	—	150	ns
Output Hold Time	$t_{OH}$	10	—	50	ns

