



### Feature

1. Built-in controller – 'Toshiba (T6963C)'
2. 1/128 duty cycle.
3. Built-in N/V
4. Temperature compensation optional

### Mechanical Data

Item	Standard Value	Unit
Module Dimension	144.0 x 104.0	mm
Viewing Area	114.0 x 64.0	mm
Dot Size	0.43 x 0.43	mm
Dot Pitch	0.45 x 0.45	mm

### Pin Assignment

Pin	Symbol	Function
1	Vss	Power supply (GND)
2	Vdd	Power supply (+5V)
3	Vo	Power supply for LCD driving
4	C/D	Command/data read/write
5	$\overline{RD}$	Data read
6	$\overline{WR}$	Data write
7-14	DB0-DB7	Data bus line
15	$\overline{CE}$	Chip enable
16	RESET	Reset signal
17	VEE	Negative voltage
18	MD2	Control Voltage
19	FS1	Font selection
20	NC	No connection

### Absolute Maximum Rating

Item	Symbol	Standard Value			Unit
		min.	typ.	max.	
Power Supply	VDD-VSS	4.75	5.0	5.25	V
Input Voltage	VI	-0.3	--	VDD	V

Note: VSS=0 Volt, VDD=5.0 Volt.

### Electronical Characteristics

Item	Symbol	Condition	Standard Value			Unit
			min.	typ.	max.	
Input Voltage	VDD	L level	0.7V <sub>DD</sub>	--	VDD	V
	VIO	H level	--	--	0.3V <sub>DD</sub>	V
Supply Current	IDD	VDD=+5V	0	55	60	mA
Recommended LC Driving Voltage for Normal Temp. Version module	VDD-VO	0°C	20.3	21.4	22.5	V
		25°C	18.0	19.1	20.2	
		50°C	17.8	18.9	20.0	
LED Forward Voltage	VF	25°C	--	4.2	--	V
LED Forward Current	IF	25°C	--	900	1800	mA
		25°C	--	250	590	
CCFL	IF	25°C	--	--	5.5	mA
		25°C	--	--	5.0	
EL Power Supply Current	IEL	Vel=110VAC;400Hz	--	--	5.0	mA