

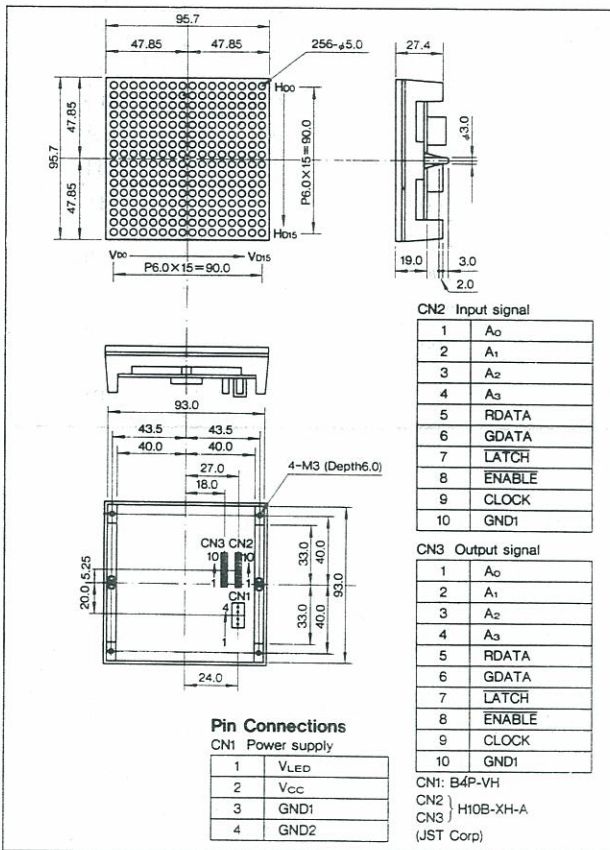
LT1450ED

16×16 Dot Matrix LED Unit for Outdoor Use

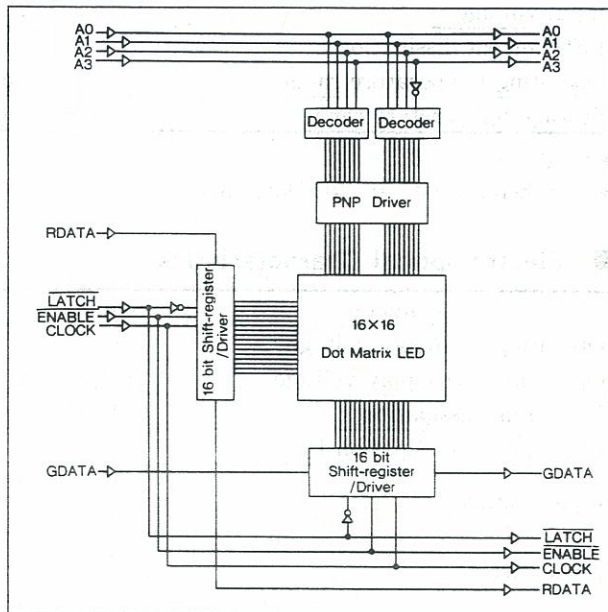
■ Features

1. 16×16 dot matrix LED unit
2. Active display size: 95.7mm square
3. Three color emission by use of dichromatic LED
4. Radiation color: Red, yellow-green and orange (mixed color)
5. Wide viewing angle
6. Built-in shift registers, latch circuits, LED driver ICs and scanning line select circuits
7. Clock frequency: 3MHz
8. Dynamic drive (Duty ratio: 1/16)

■ Outline Dimensions (Unit: mm)



■ Block Diagram



■ Terminal Functions

Connector	Pin No.	Name	Function	
CN1 (Power supply)	1	V _{LED}	Power supply for LED	
	2	V _{CC}	Power supply for IC	
	3	GND1	Ground for IC	
	4	GND2	Ground for LED	
CN2 (Input signal)	1~4	A ₀ ~ A ₃	Address specification signal for row driver	
	5	RDATA	Serial data input for red (H: lit, L: no lit)	
	6	GDATA	Serial data input for Yellow-green (H: lit, L: no lit)	
	7	LATCH	L: The contents are latched	
	8	ENABLE	"L": Each dot can be driven in accordance with data	
	9	CLOCK	Clock signal for data transmission in the shift-register. (L→H: The data are shifted)	
	10	GND1	Ground for IC	
	CN3 (Output signal)	1~4	A ₀ ~ A ₃	Buffered the input signals A ₀ ~ A ₃
		5	RDATA	Input signal is generated through 16-bit shift register in the unit.
		6	GDATA	
7		LATCH	Buffered the input signal LATCH.	
8		ENABLE	Buffered the input signal ENABLE	
9		CLOCK	Buffered the input signal CLOCK.	
10		GND1	Ground for IC	

SHARP

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■ Absolute Maximum Ratings

(Ta=25°C)

Parameter	Symbol	Rating	Unit
IC supply voltage	V _{CC}	6.0	V
LED supply voltage	V _{LED}	6.0	V
Input voltage	V _I	*15.5	V
LED current dissipation	I _{LED}	*2.8	A
Operating temperature range	T _{opr}	-10 to +45	°C
Storage temperature range	T _{stg}	-20 to +70	°C

*1 V_I < V_{CC} at V_{CC} ≤ 5.5

*2 When all dots are lit, Duty ratio: 1/16

■ Electro-optical Characteristics

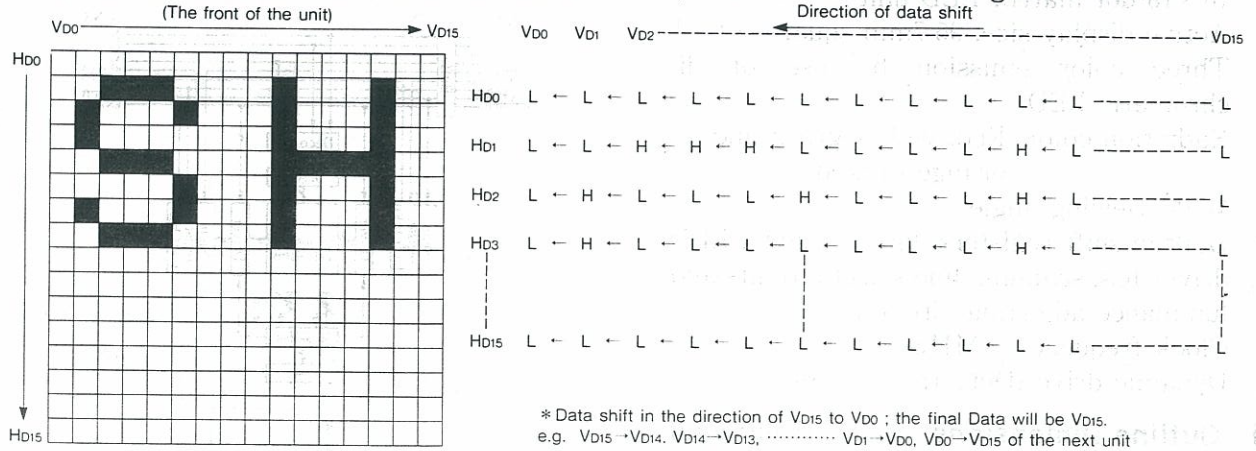
(Ta=25°C, V_{CC}=5V, V_{LED}=5V)

Parameter	Symbol	MIN	TYP	MAX	Unit	
Operating IC supply voltage	V _{CC}	4.75	5.0	5.25	V	
Operating LED supply voltage	V _{LED}	—	5.0	5.25	V	
IC current dissipation	I _{CC}	—	50	—	mA	
LED current dissipation I _{LED}	—	—	*32.4	—	A	
Input voltage	V _{IL}	—	—	1.5	V	
	V _{IH}	3.5	—	—	V	
Input current	I _{IL}	—	—	0.12	mA	
	I _{IH}	—	—	0.1	μA	
Clock frequency	f _{CLK}	—	—	3.0	MHz	
Frame frequency	f _{FR}	70	100	—	Hz	
*3 Luminance	Red	L _v	75	100	130	cd/m ²
	Yellow-green		75	100	130	
Peak emission wavelength	Red	λ _p	—	635	—	nm
	Yellow-green		—	565	—	
Spectrum radiation bandwidth	Red	Δλ	—	35	—	nm
	Yellow-green		—	30	—	

*3 Duty ratio: 1/16, When all dots are lit, f_{FR}=100Hz

Interface Signals

- Data being displayed corresponds to a dot pattern, where each dot is either on or off (high=on, low=off). The data for each dot is clocked into a register in a serial, synchronous fashion by the data transmission clock (CLOCK). The data scan direction is from right to left, thus the first bit input will control the left most dot in a row (scan line). Data is input for one row at a time. There are two data inputs (RDATA, GDATA). One is for the red LED, and the other is for the green LED.

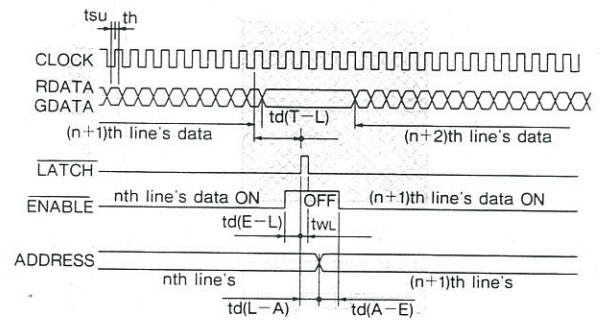


- When all of the data for one row has been clocked into the shift-register, a data latch signal (LATCH) should be enabled. The data latch signal sends the data from the shift-register to a line driver register. The data remains in the line driver register until another data latch signal occurs. Once the data is in the line driver register, the row for which it was intended, is enabled by the enable clock (ENABLE). The appropriate dots are then turned on or off. While one row is being enabled, the data for the next row is being clocked in.

The address (A₀-A₃) for the desired row must be present at the same time or after data latch signal, and prior to the enable signal.

- LT1450ED is driven dynamically, so you must scan each row continuously to maintain the correct display.

Timing chart



Connections Method

