

**LPH-13216-27****LED PRINTHEAD**

1. Description

LPH-13216-27 is an LED imaging device which is used to illuminate a moving photoreceptor within an electronic printer.

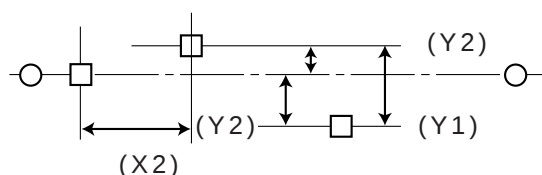
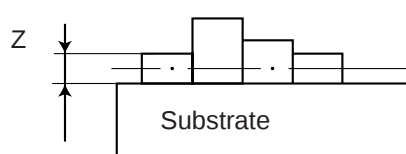
It has 2560 bit Driver ICs which consist of shift register, load , strobe and output driver.

It has an effective printing width of 8.31inches, a resolution of 300 dot per inch and can perform high -speed and high reliable printing.

2. Mechanical Characteristics (refer to Fig. LPH13216270-00010-C1) (Ta=25°C)

No.	Item	Ratings
(1)	Active Length	216.576 ± 0.3mm
(2)	Number of Emitters	2560 dots
(3)	Emitter Size	48 × 40μm ± 5
(4)	Emitter Pitch	84.6μm
(5)	Emitter Location Error X1 (chip to chip) (inside a chip)	± 20μm ± 5μm
(6)	Emitter Y Direction Error Y1 (chip to chip) Emitter Lincarity Y _L (along LED chips)	Max. 25μm 200μm
(7)	Emitter Height Lincarity (Z _L)	Max. 150μm (flatness)
(8)	LED Array Distance from origin Holes (refer to under drawing)	X2=18.712 ± 0.3mm Y2=0.0 ± 0.2mm Z=0.31 ± 0.1mm
(9)	Dimensions	262 ^L × 16 ^w × 18 ^H mm
(10)	Head Weight	approx. 100gr

—	1 5 0 μ m
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31698 GI, (IM) No.5900 1/8

3. Optical Characteristics (Ta=20°C)

Item	Sym.	Min	Typ	Max	Unit	Remarks
Light Wavelength	λ_p	730	740	750	nm	head to head
Light Output (Po MEAN)	Po MEAN	0.59	0.85	1.1	$\mu\text{W}/\text{dot}$	head avcrage ($\pm 30\%$)
Light Output Uniformity (Intensity)	ΔP_o	0		± 30	%/head	Head Overall (2560 LED)
Light Wavelength vs Temperature			+0.2		nm/°C	Peak Wavelength

4. Electrical Characteristics

4-1 Electrical Circuit

Item	Summary
(1) Equivalent Circuit	refer to Fig. LPH13216270-00010-C2
(2) Timing Chart	refer to Fig. LPH13216270-00010-C3
(3) Switching characteristics	refer to Item 5
(4) Data Transfer Method	1 input serial transfer
(5) Input Data Rate Per Line	10 MHz Max
(6) Inputs	Data ; Bits 1-2560
	LOAD ; End of Line (Active "H")
	Clock ; 10 MHz Negative edge
	$\overline{\text{STROBE}}$; LEDs ON Control (Active "L") 4 Line (640×4)
	Power ; 5±0.25 V DC 4.4 A Peak 640 LEDs ON
(7) Interface (Pin Assignment)	refer to Fig. LPH13216270-00010-C1

4-2 Absolute Maximum Ratings (Ta=25 ± 2°C Vss=0V)

Item	Sym.	Conditions	Min	Typ	Max	Unit	Remarks
Supply Voltage	V _{DD}		- 0.3		6.0	V	
Input Voltage	V _{IN}		- 0.3		V _{DD} +0.3	V	
LED Junction Temperature	T _J				80	°C	
Head Temperature	T _H				50	°C	AL base surface of the head

4-3 Recommended operating Conditions (at Vss=0V, Ta=25±2°C)

Item	Sym.	Conditions	Min	Typ	Max	Unit	Remarks
Supply Voltage	V _{DD}		4.75	5.0	5.25	V	
Clock Frequency	f(ϕ)	V _{DD} =5V			10	MHz	
Clock Duty	t _w	V _{DD} =5V	45	50	55	%	
"H" Level Input Voltage	V _{IH}	V _{DD} =5V	2.0		V _{DD}	V	
"L" Level Input Voltage	V _{IL}		V _{SS}		0.8	V	

4-4 Electrical Characteristics (Ta=25 ± 2°C, VDD=5V, VSS=0V)

Item	Sym.	Conditions	Min	Typ	Max	Unit	Remarks
"H" Level Input Voltage	V _{IH}	——	2.0		V _{DD}	V	every input
"L" Level Input Voltage	V _{IL}	——	0		0.8	V	every input
"H" Level Input Current	I _{IH1}	V _{IL} =V _{SS}			1.0	μA	DATA
	I _{IH2}	V _{IL} =V _{SS}			1.0	μA	CLK, LOAD
	I _{IH3}	V _{IL} =V _{SS}			10	μA	$\overline{\text{STB}}$
"L" Level Input Current	I _{IL1}	V _{IL} =V _{SS}			-1.0	μA	DATA
	I _{IL2}	V _{IL} =V _{SS}	-80	-250	-500	μA	$\overline{\text{STB}}$
	I _{IL3}	V _{IL} =V _{SS}	—	—	-1.0	μA	CLK
	I _{IL4}	V _{IL} =V _{SS}			-1.0	μA	LOAD
"H" Level Output Current	I _{OH}		-3.5	-5.0	-6.7	mA/dot	
Supply Current	I _{DD}	f(φ)=10MHz			300	mA	Out put off
Peak	I _{DD}	f(φ)=10MHz	2.4	3.6	4.4	A	All LEDs ON (640 dots on)
Average	I _{DD}	f(φ)=10MHz				A	$\overline{\text{STB}}$ duty % Max

5. Switching Characteristics

Parameter	Symbol	Ratings			Unit	Remarks
		Min	Typ	Max		
CLOCK Frequency	f(φ)	—	—	10	MHz	
CKOCK Rise / Fall Time	t _{cr}	—	—	35	ns	
	t _{cf}	—	—	35	ns	
LOAD Rise / Fall Time	t _{lr}	—	—	35	ns	
	t _{lf}	—	—	35	ns	
Data Setup Time	t _{sc}	30	—	—	ns	
Data Hold Time	t _{hold}	10	—	—	ns	
CLOCK → LOADH Setup Time	t _{SL}	50	—	—	ns	
LOAD Signal Pulse Width	t _{WL}	40	—	—	ns	
LOAD → $\overline{\text{STROBE}}$ Setup Time	t _{LS}	200	—	—	ns	
$\overline{\text{STROBE}}$ → DO	t _{psr}	—	—	250	ns	
Propagation Delay Time	t _{psf}	—	—	250	ns	

Conditions

- (1) V_{SS} = 0V
- (2) V_{DD} = 5V
- (3) Ta = 25°C ± 2°C

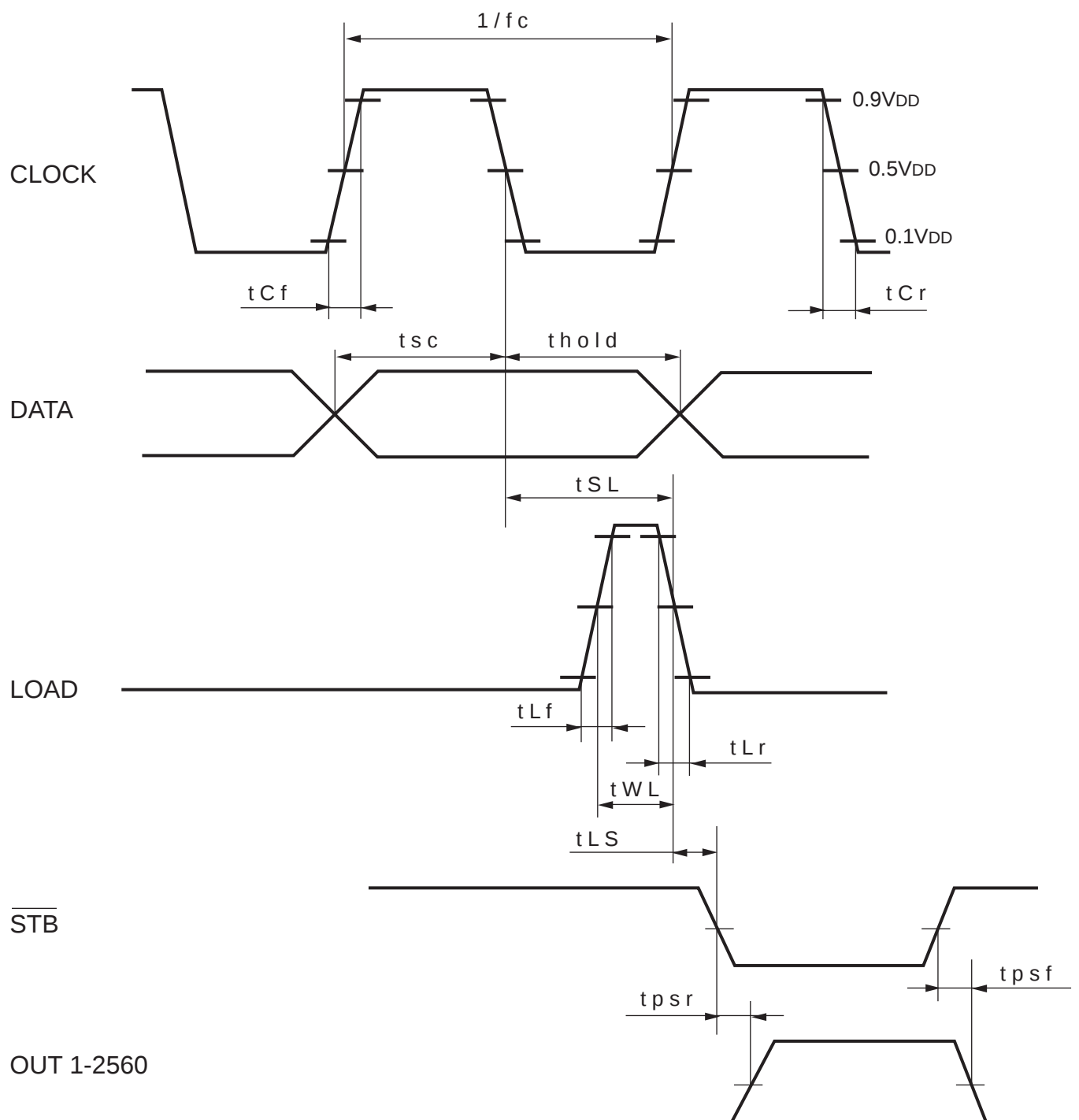
6. Enviromental Performance

Item	Guarantee Range
(1) Operating Temperature	5 to 40°C
(2) Operating Humidity	10 to 90 % RH (No Condensation and a max wet bulve temperature of 30°C)
(3) Storage Temperature	–25 to 70°C
(4) Storage Humidity	10 to 90 % RH (No Condensation)

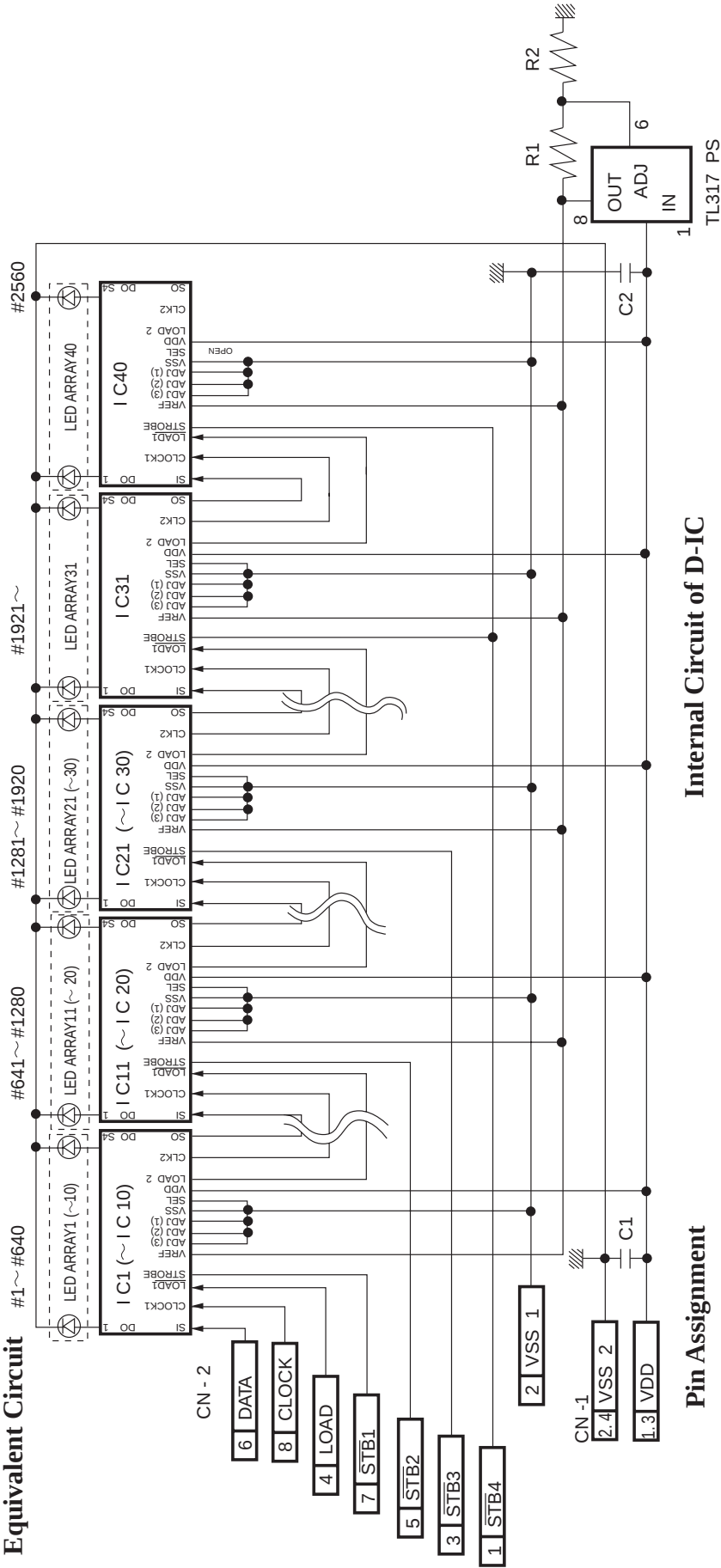
7. Life

- (1) Operating Conditions
LED ON Duty Cycle/Line 10% MAX
- (2) Judgement Criteria
The point where the minimum light output declines 10% from the initial value.
- (3) Life (LED on time)
100 hours min

Timing Chart



Equivalent Circuit



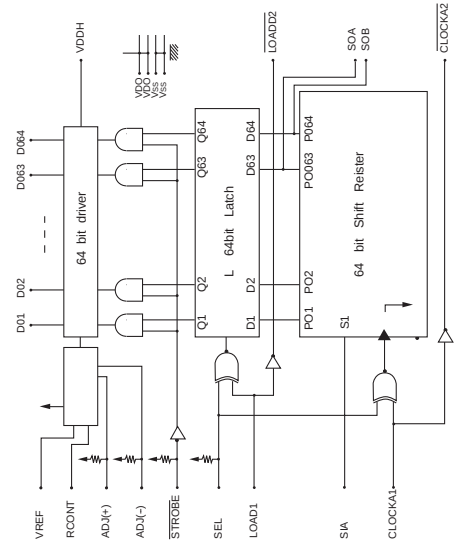
Pin Assignment

CN-1		CN-2	
	Signal		Signal
1	V _{DD}	1	STB 4
2	V _{SS} 2	2	V _{SS} 1
3	V _{DD}	3	STB 3
4	V _{SS} 2	4	LOAD
		5	STB 2
		6	DATA
		7	STB 1
		8	CLOCK

CN-1 : DF11-4DP-2DSA (HIROSE)

CN-2 : DF11-8DP-2DSA (HIROSE)

Internal Circuit of D-IC





CN-1		CN-2		
1	V _{bd}	1	STB 4	5
2	V _{ss 2}	2	V _{ss 1}	6
3	V _{bd}	3	STB 3	7
4	V _{ss 2}	4	LOAD	8
				CLOCK



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Precautionary instructions in handling gallium arsenic products

Special precautions must be taken in handling this product because it contains, gallium arsenic, which is designated as a toxic substance by law. Be sure to adhere strictly to all applicable laws and regulations enacted for this substance, particularly when it comes to disposal.

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