High speed thermal printhead (300 dots / inch)

NM3004-UA10A

The NM3004-UA10A is a flat thin-film thermal printhead with a built in heat history control function, suited for general purpose compact printers as well as label printers with printing speeds up to 6 inch / second.

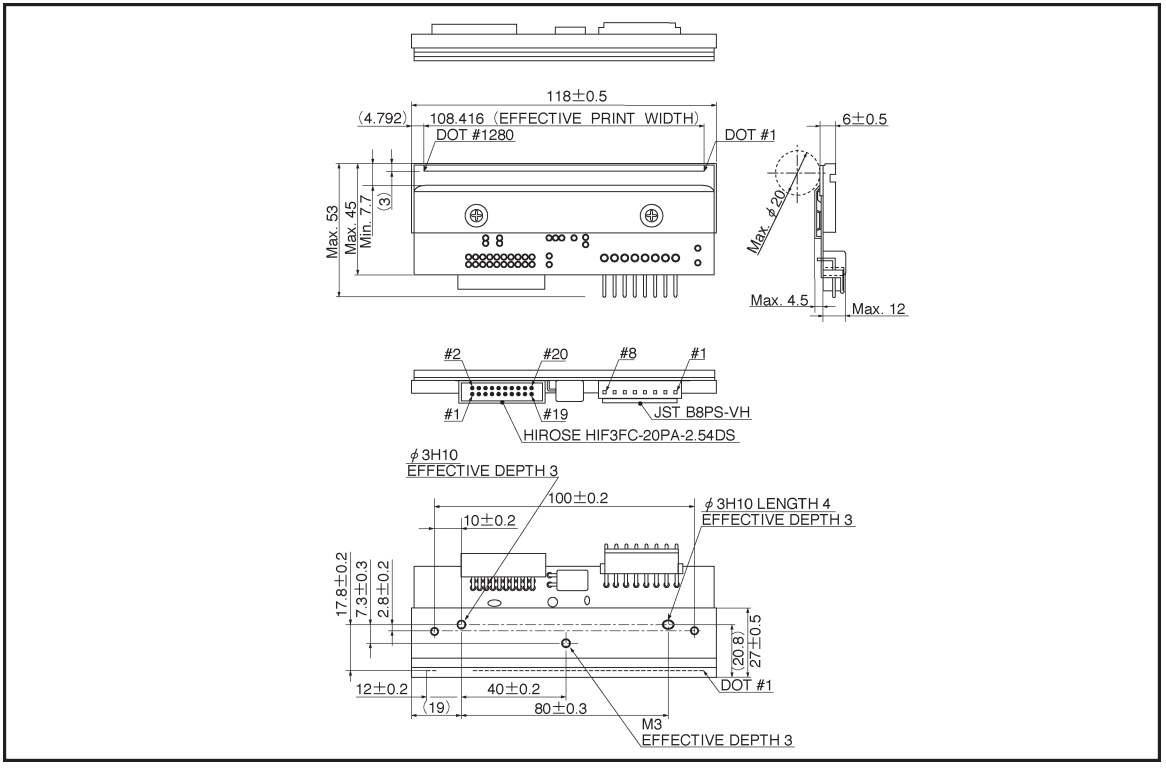
●Applications

High definition bar code label printers
High definition ticket printers
General purpose compact printers

●Features

1) High resolution of 300 dots / inch.
2) Special glazed components for high speed, high quality printing.
3) Our heat history control circuit reduces the load on the printer to control heat history.
4) Using a hard conductive film as a protective film on the heating element offers excellent resistance to electrostatic damage.

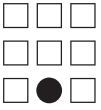
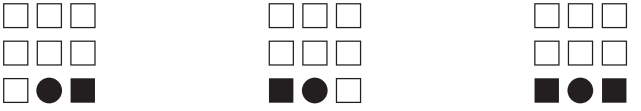
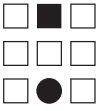
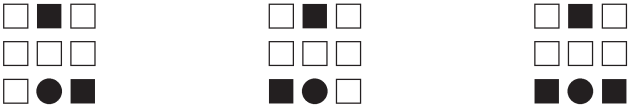
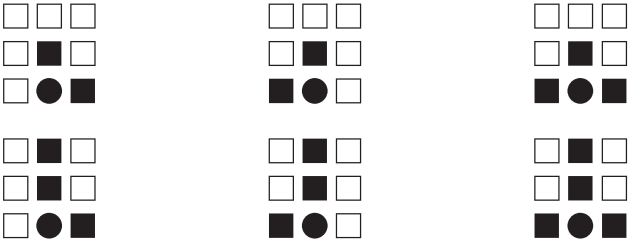
●External dimensions (Units: mm)



●Characteristics

Parameter	Symbol	Typical						Unit
Effective printing width	—	108.4						mm
Dot pitch	—	0.0847						mm
Total dot number	—	1280						dots
Average resistance value	Rave	1000						Ω
Applied voltage	V_H	24.2						V
Applied power	P_O	0.45						W / dot
Print cycle	SLT	0.6						ms
Applied energy	LEVEL	1	2	3	4	5	6	—
	E_O	0.23	0.23	0.17	0.14	0.14	0.11	mJ / dot
Pulse width	T_{ON}	0.50	0.50	0.38	0.30	0.30	0.25	ms
Maximum number of dots energized simultaneously	—	1280						dots
Maximum clock frequency	—	5						MHz
Maximum roller diameter	—	20						mm
Running life / pulse life	—	$50 / 10^8$						km / pulses
Operating temperature	—	5～45						℃

●Level map

	Print Pattern	On Time	SLT=0.6ms
Level 1		Ton a	0.5 ms
Level 2		Ton b	0.5 ms
Level 3		Ton c	0.38 ms
Level 4		Ton d	0.3 ms
Level 5		Ton e	0.3 ms
Level 6		Ton f	0.25 ms

■: Heated dot.
□: Non-heated dot.
●: Dot to be printed.

This table shows a simple example. In actuality, the history of the previous level and the level before of the adjacent dots are included.

●Pin assignments

HIROSE

No.	Circuit	No.	Circuit
1	GND	11	CLK
2	N.C.	12	DI
3	N.C.	13	START
4	N.C.	14	LOAD
5	V_{DD}	15	RESET
6	V_{DD}	16	DO
7	INC	17	STB2
8	SET	18	STB1
9	E-OUT	19	TM
10	OR-ON	20	TM

JST

No.	Circuit
1	VH
2	VH
3	VH
4	VH
5	GND
6	GND
7	GND
8	GND

Added functions

SET :Sets all data to “HIGH”. (Usable for preheating, etc.)

OR-ON :Set at “HIGH” when considering the adjoining of the previous columns; otherwise set at “LOW”.

E-OUT :Outputs “HIGH” when a data transmission error occurs inside the head.

INC :Supports the increment function from level 1 to level 6. One level is incremented for one pulse. (See Fig. 2)

RESET :Sets all data at “LOW”. Clears data when printing is resumed after a pause. (See Fig. 2)

Note: Signals of SET, INC, START, and RESET detect the falling edge; the START signal transmits data to the driver IC at the falling edge and latches at the rising edge.

For two-part split printing, enter INC after 34 μ seconds of START7. (See Fig. 2)

●Timing chart

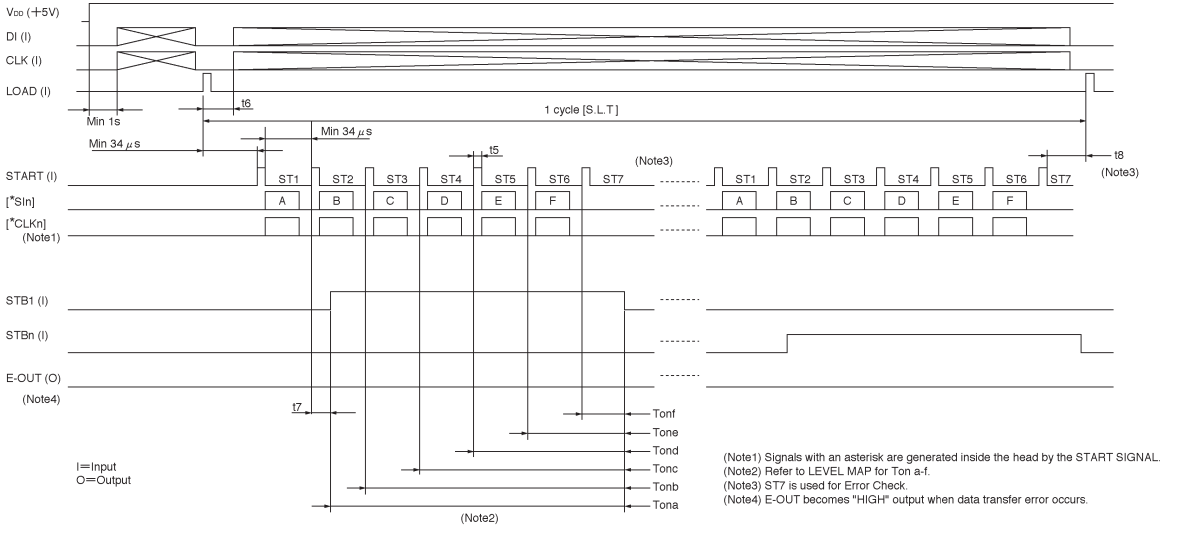


Fig.1

●Timing chart

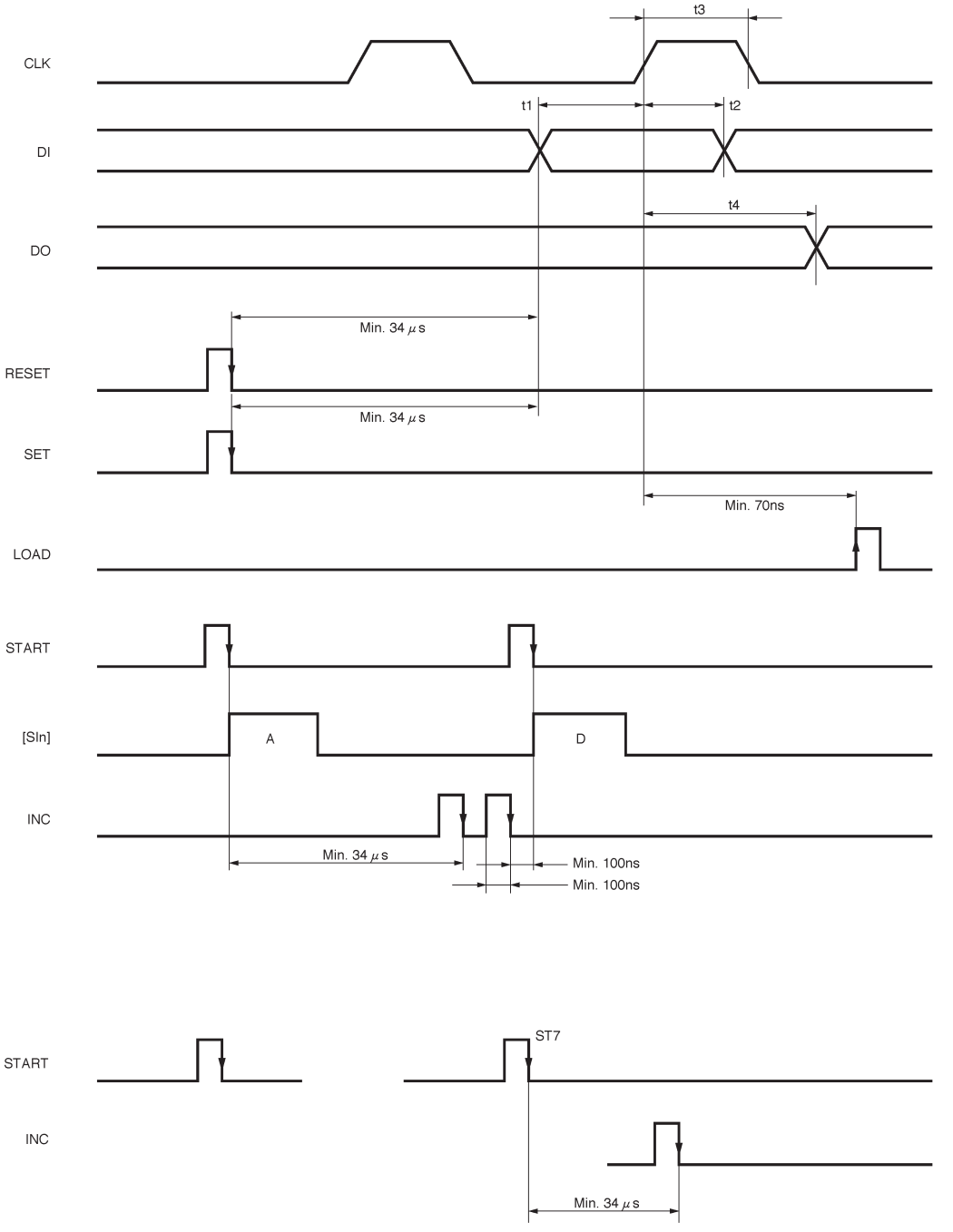


Fig. 2

●Equivalent circuit

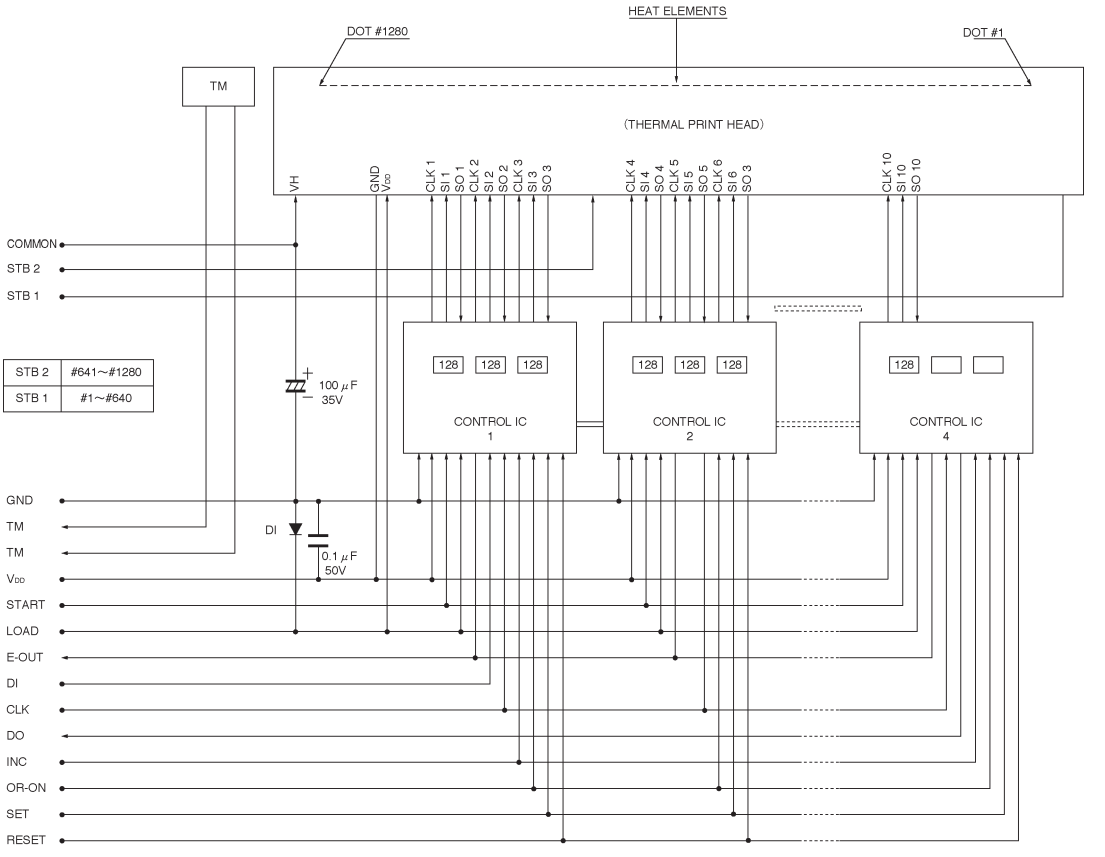


Fig. 3

●Supported speeds chart

Inch / second [IPS]											
0	1	2	3	4	5	6	7	8	9	10	OVER

Internal heat history control

●Electrical characteristic curves

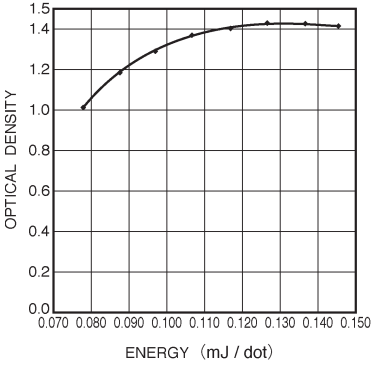


Fig. 4 Representative density curve

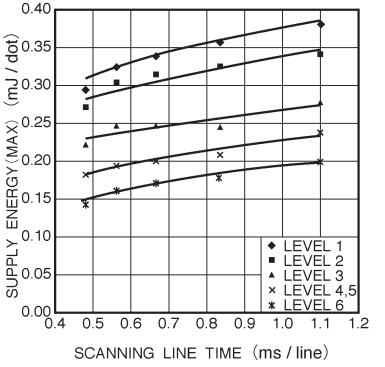


Fig. 5 Maximum energy curve

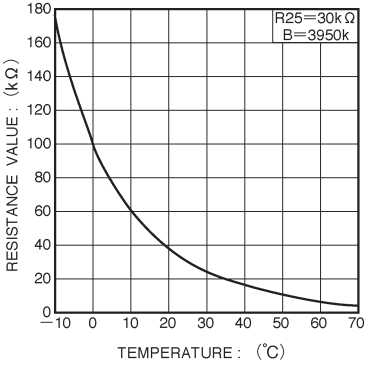


Fig. 6 Thermistor curve