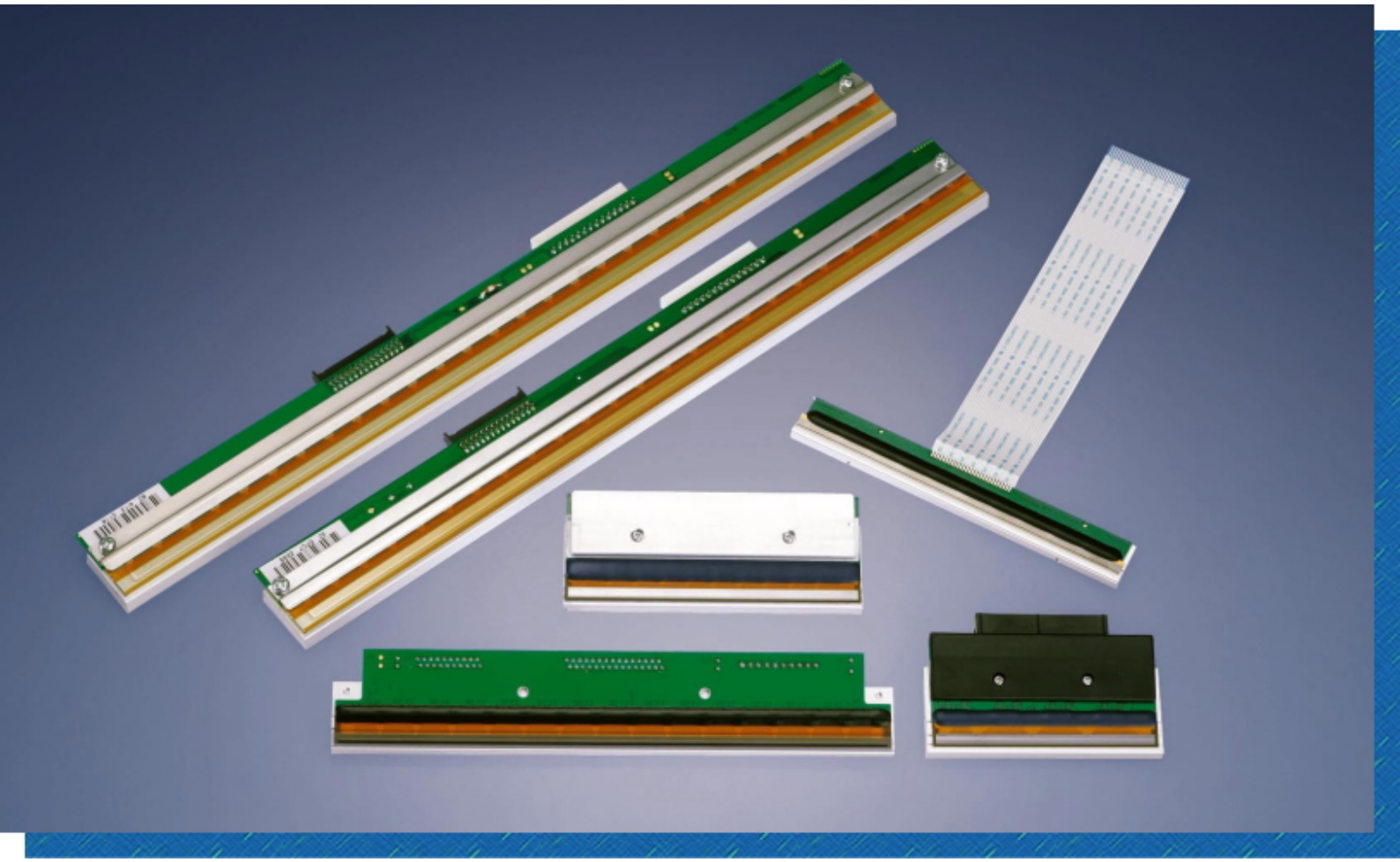
TOSHIBA
Leading Innovation

2009.01

Product Brochure

Thermal Print Head



TOSHIBA HOKUTO ELECTRONICS CORPORATION

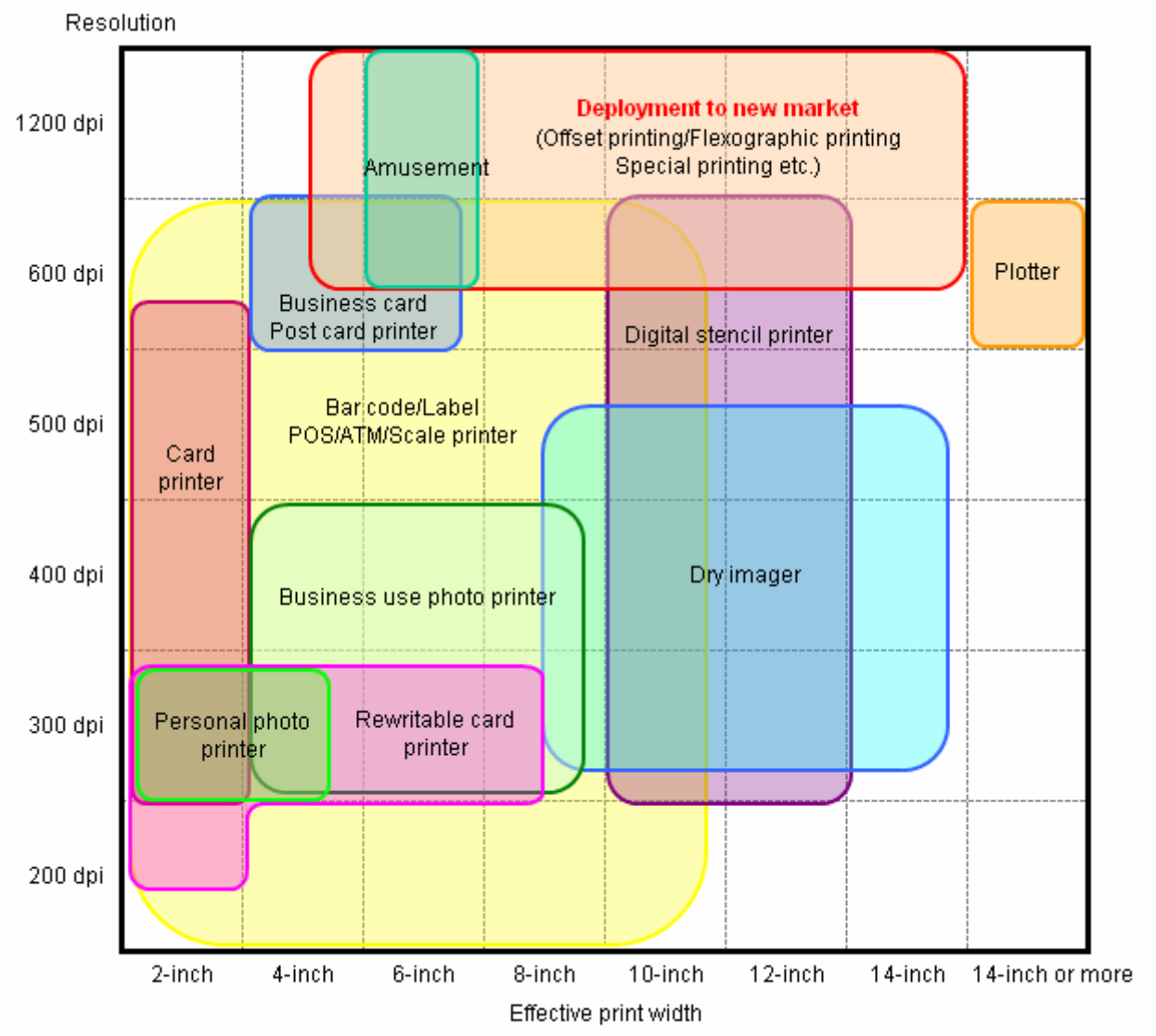
Thermal Print Head

■ Features

Toshiba Hokuto Electronics Thermal Print Head is composed of thin film realizing compact size, high reliability and high performance TPH by our excellent pattern process and high-density wire bonding process.
Our product line up offers variety of thermal print heads with print width from 2-inch to 14-inch and resolution ranging from 200 dpi to 1200 dpi.

We can provide customized TPH including mechanical and electrical interface for various uses.
We will be striving to realize the TPH with high image quality, high reliability and high quality through the consultation with customer and based on our rich experiences in halftone picture recording typically used in di-diffusion photo printer.

■ Principal applications of Toshiba Hokuto Electronics TPH



Thermal Print Head

■ Recommendation of U-shape electrode

Toshiba Hokuto Electronics recommends the U-shape electrode structure for the following assets. We have a lot of results of TPH of U-shape electrode for halftone picture recording typically used for di-diffusion printer.

U-shape electrode provides the following assets by eliminating common area.

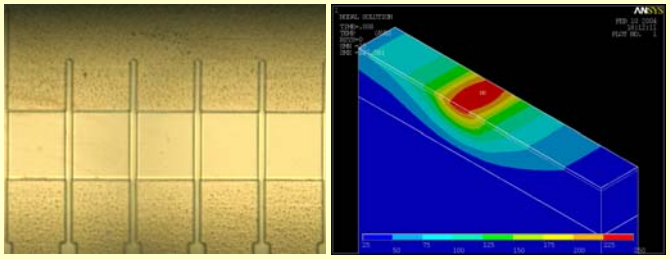
- Reduces image deterioration (uneven density) due to common drop
- Reduces over power setting to prevent the image deterioration
- Heater line laid out to heat sink edge provides advantage to deal with the hot peeling
- Enables to miniaturize substrate by eliminating common area.
- Rolled media can be cut at the position close to the heater. This contributes to reduce the roll back and save the amount of the media.

Slit in the hot point at the center of the heater provides the following effects.

- Uniforms the heater temperature. Low possibility of damaging the media by hot point at the center of the heater enables to cope with the problems such as wrinkle and sticking of the media.
- The density of picture point becomes the double of solution to reduce the dithering of print quality caused by smooth incline or by slit.

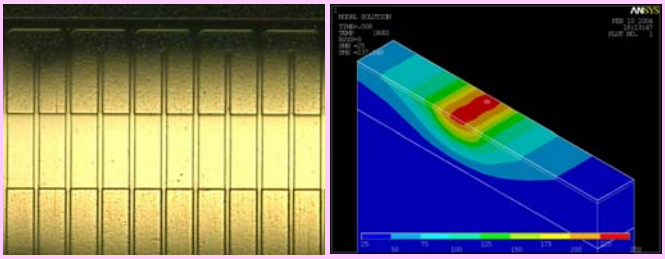
Common electrode type

Appearance of heater | Simulation of heating

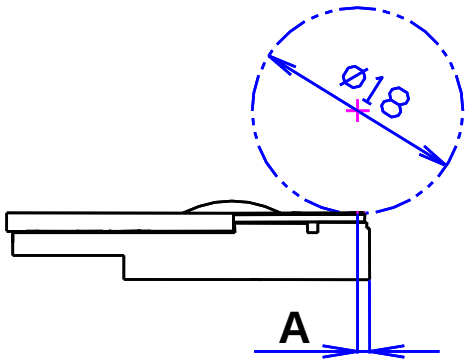


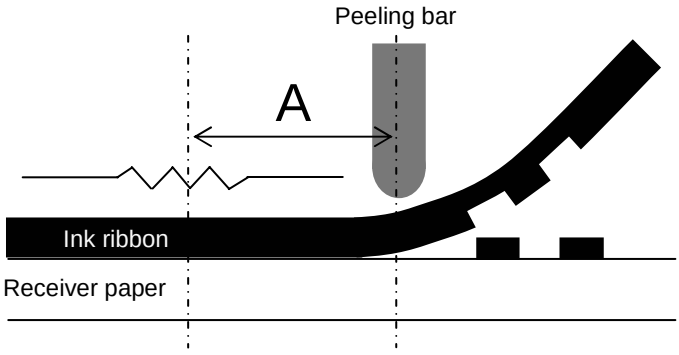
U-shape electrode type

Appearance of heater | Simulation of heating

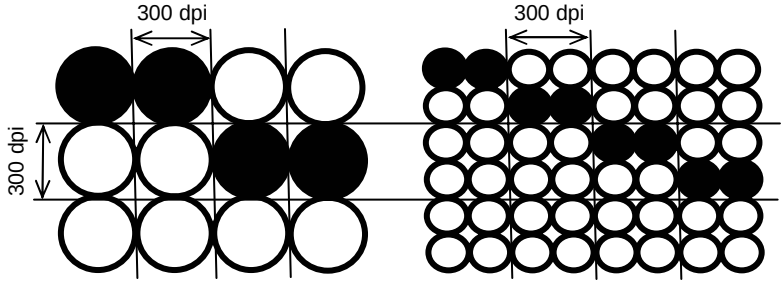


U-shape electrode has a slit in the electrode at the center of the heater to prevent heat concentration to the heater center. It reduces the damage to media.





Peeling off of electrode from the hot peeling media when ink is hot enables fine print with less reverse transcription. U-shape electrode has an advantage to shorten the distance (A) between heater and peeling bar.

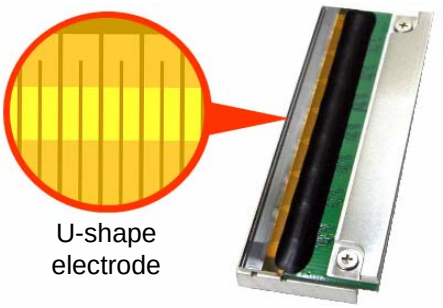


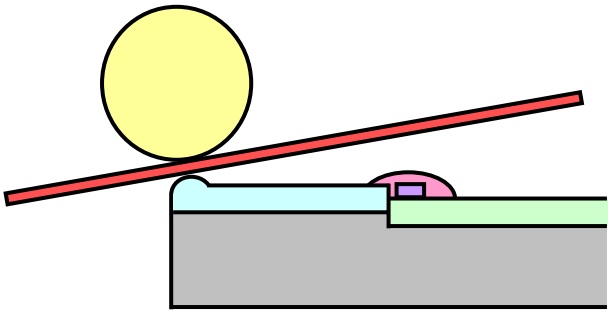
For example when choosing 600 dpi for sub scanning direction by customizing the heater length, space frequency of picture dots becomes equivalent to 600 dpi × 600 dpi enabling half tone expression with less dithering.
It also enables fine expression of oblique line of characters and is effective for binary recording of label printer.

Excellent speed/picture quality/efficiency/reliability

■ Realization of near-edge head

Near-edge head is a thermal print head developed and evolved further from the U-shape electrode to cope with the straight pass of hard media such as ID card. Near-edge head is an optimum print head for card printers and rewritable card printers.



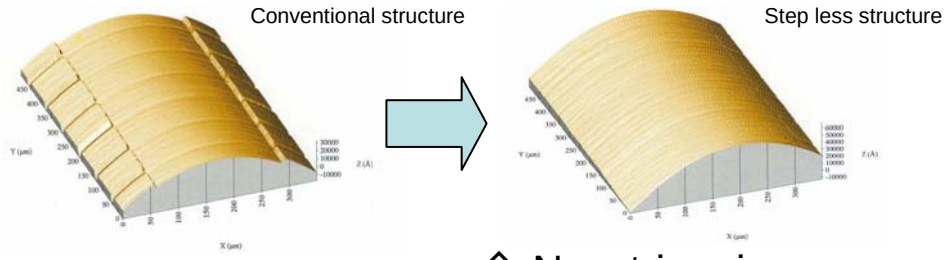


■ Optional specification for high speed, high picture quality, high efficiency and high reliability

Toshiba Hokuto Electronics can offer optional specification to realize high speed, high picture quality, high efficiency and high reliability according to customer's use.
However, there may be a case when the optional specification cannot be applicable to the product depending on the combination of optional products and the combination of the products with other specification. We can offer optimum combination to customer through the consultation on use, media and environment, taking cost-performance into consideration.

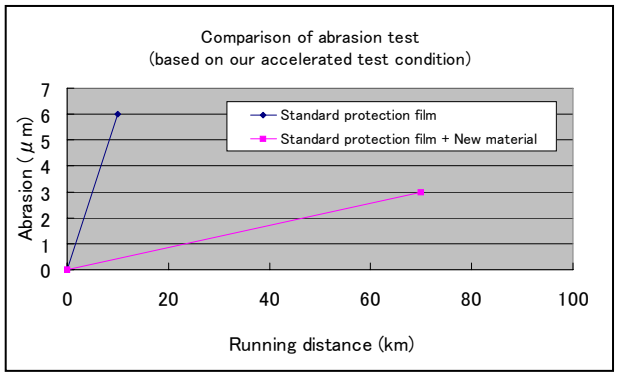
◇ Step less structure

The structure without step of lead improves heat efficiency by better contact of heater and media. It also reduces thermal time constant to enable high speed printing.



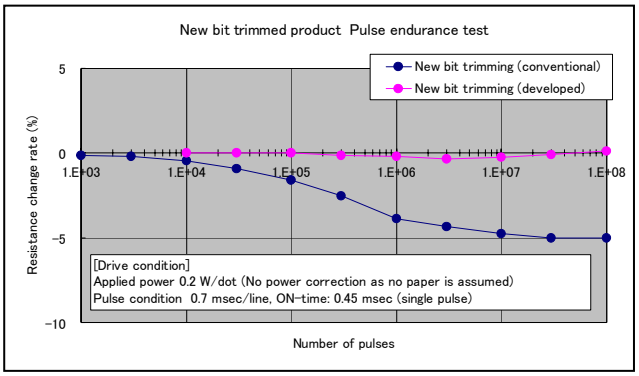
◇ Abrasion resistive film

New material is a film with abrasion resistance performance better than ordinary protection film. It is also excellent in ESD resistance performance as it has an electric conductivity.



◇ New trimming process

We adopted new trimming process to add stabilization of resistance for the minimizing unevenness in head resistance due to conventional trimming process. This is optimum for the use of high speed printing such as graphic use and photo printing and the use requiring equalized head resistance.

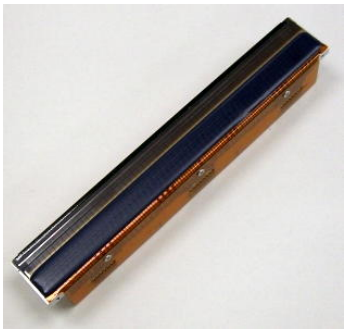


Topics

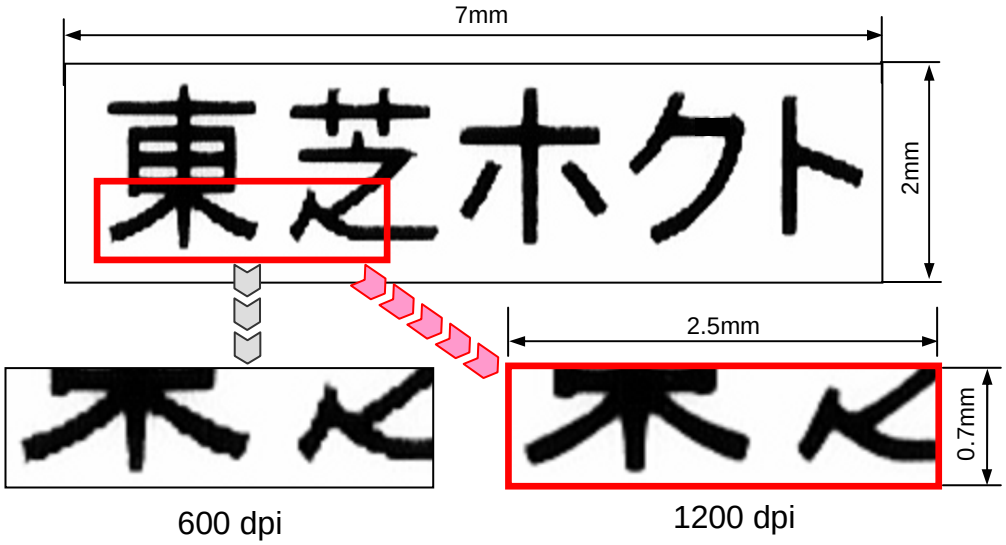
■ Realization of 1200 dpi

New TPH developed for the application field considered unable to use TPH for its less resolution such as amusement use, offset printing and image setter.

Our product line-up provides 6-inch and 14-inch TPH. We can provide TPH of other print width.
Please consult with us for new application of TPH.



Comparison of printed results of 600 dpi and 1200 dpi (4 pt)



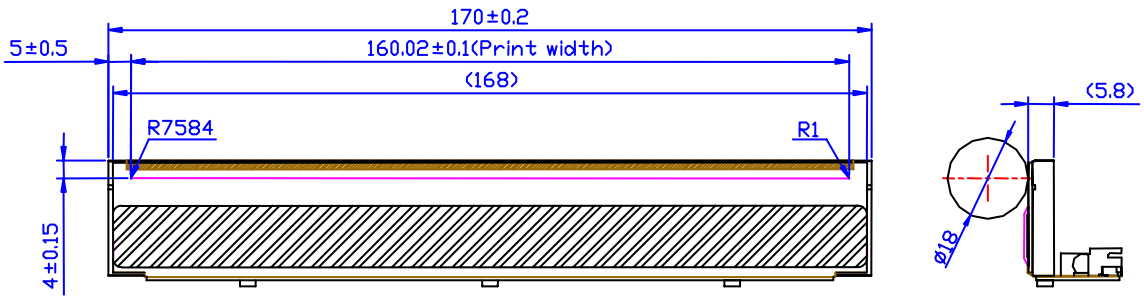
■ Product parameters

▼ Amusement

Model	Print width [mm]	Resolution [dpi]	Average resistance [Ω]	Heater size [mm]	Glaze	Dimensions [mm]	Data	Strobe
G5020	160	1200	17800	0.013x0.06	PEG	170x25.7x5.8 MAX ϕ 18	60	2
PEG: Partial etching glaze								

▼ Dry image setter

Model	Print width [mm]	Resolution [dpi]	Average resistance [Ω]	Heater size [mm]	Glaze	Dimensions [mm]	Data	Strobe
G5067	367	1200	5500	0.013 × 0.013	PEG	400x65.5x8.2 MAX ϕ 50	136	4
PEG: Partial etching glaze								



Binary recoding for POS terminal, Bar Code printer and Scale printer

■ Product Specification

▼ POS terminal, Label printer

Model	Print width [mm]	Resolution [dpi]	Head average resistance [Ω]	Heater size [mm]	Glaze	Dimensions [mm]	Data	Strobe	Features
G5035	56	200	800	(0.0525×2)×0.15	PG	65 × 15.2 × 6 MAXϕ14	1	4	Compact type
G5045	80	200	850	(0.0525×2)×0.15	PG	87 × 16 × 4.8 MAXϕ15	1	2	
F3980	104	200	800	(0.0525×2)×0.15	PG	118 × 15 × 5.1 MAXϕ14	2	2	
F3981	108	300	1250	(0.0315 ×2)×0.11	PG	118 × 15 × 5.1 MAXϕ14	2	2	

PG: Partial glaze

▼ Bar Code printer

Model	Print width [mm]	Resolution [dpi]	Head average resistance [Ω]	Heater size [mm]	Glaze	Dimensions [mm]	Data	Strobe	Features
G5036	104	200	660	0.112×0.165	PG	118 × 36.6 × 6.6 MAXϕ20	4	2	Highly endurable, high speed (100 to 300 mm/s) type
G5037	106	300	1130	0.07×0.1	PG	118 × 36.6 × 6.6 MAXϕ20	5	2	
F3831	106	400	1250	0.053×0.07	PEG	123 × 28 × 5.7 MAXϕ20	4	2	
G5119	106	600	1800	0.03×0.058	PEG	118 × 36 × 5.9 MAXϕ20	5	2	
G5039	168	200	630	0.112×0.13	PG	187 × 47 × 7 MAXϕ20	6	4	
G5040	168	300	1000	0.07×0.1	PG	187 × 47 × 7 MAXϕ20	8	4	
G5041	216	200	780	(0.0525×2)×0.13	PG	234 × 47.2 × 7 MAXϕ20	7	4	
G5042	216	300	990	(0.032×2)×0.11	PG	234 × 47.2 × 7 MAXϕ20	5	3	
F3826A	104	200	850	(0.0525×2)×0.17	NE-PG	118 × 25.4 × 5.8 ϕ17	4	2	Near-edge structure enables to print on thick paper. It is suitable for ticket printer
F3819A	128	300	1250	(0.0315×2)×0.12	NE-PG	140 × 25.4 × 5.8 ϕ17	4	2	

PG: Partial glaze / PEG: Partial etching glaze/ NE-PG: Near-edge type partial glaze

▼ Scale printer

Model	Print width [mm]	Resolution [dpi]	Head average resistance [Ω]	Heater size [mm]	Glaze	Dimensions [mm]	Data	Strobe	Features
G5018	56	200	800	(0.0525×2)×0.15	PG	65 × 15.2 × 6 MAXϕ14	1	4	Compact type
F3931A	56	200	850	(0.0525×2)×0.13	PG	63.8 × 24.9 × 6 MAXϕ16	1	2	Standard product
F3982	80	200	850	(0.0525×2)×0.15	PG	87 × 16 × 4.8 MAXϕ15	1	2	Highly endurable product with robust protection layer
F3830	80	300	1100	0.07×0.1	FG	91 × 37.5 × 6 MAXϕ20	2	2	High speed product with history control IC
F3688	80	300	850	0.07×0.1	FG	91 × 22.8 × 6 MAXϕ20	2	2	80mm standard product

FG: Full flat glaze/ PG: Partial glaze

▼ Digital stencil printer

Model	Print width [mm]	Resolution [dpi]	Head average resistance [Ω]	Heater size [mm]	Glaze	Dimensions [mm]	Data	Strobe	Features
F3383A	260	300	1900	0.045×0.04	FG	276 × 28.9 × 8 MAXϕ16	4	4	Standard product for B4 300 dpi printing
F3702	293	300	1900	0.045×0.04	FG	309 × 28.9 × 8 MAXϕ20	4	4	Standard product for A3 300 dpi printing

FG: Full flat glaze

▼ Plotter

Model	Print width [mm]	Resolution [dpi]	Head average resistance [Ω]	Heater size [mm]	Glaze	Dimensions [mm]	Data	Strobe	Features
F3111	610	400	2000	0.053×0.085	FG	621 × 54 × 22 MAXϕ35	8	16	Long print width product tying two A3 heads
F3621	910	600	2000	0.032×0.05	FG	925 × 54 × 12.2 MAXϕ35	12	24	Long print width product tying three A3 heads

FG: Full flat glaze

▼ Printer unit

Model	Print width [mm]	Resolution [dpi]	Head average resistance [Ω]	Heater size [mm]	Glaze	Dimensions [mm]	Data	Strobe	Features
TPU08A4U1	216	200	2530	0.11×0.19	FG	300 × 48 × 44.5 MAXϕ14.3	1	4	Unit type TPH with a built-in platen roller and a stepping motor
TPU08B4U1	256	200	2530	0.11×0.19	FG	339.4 × 51 × 44.5 MAXϕ16	1	4	

FG: Full flat glaze

Multivalued recording for photo printer and card printer

■ Product Specification

▼ Card printer

Model	Print width [mm]	Resolution [dpi]	Head average resistance [Ω]	Heater size [mm]	Glaze	Dimensions [mm]	Data	Strobe	Features
G5136	57	300	2900	(0.031×2)×0.14	NE-PEG	70 × 25 × 5.8 ϕ20	2	1	Standard product
G5052	57	300	2900	(0.031× 2)×0.14	NE-PEG	70 × 25 × 5.8 ϕ20	2	2	Standard product
G5053	57	300	2900	(0.031×2)×0.14	NE-PEG	70 × 13 × 5.8 ϕ20	2	2	Compact type

NE-PEG: Near-edge type partial etching glaze

▼ Personal photo printer

Model	Print width [mm]	Resolution [dpi]	Head average resistance [Ω]	Heater size [mm]	Glaze	Dimensions [mm]	Data	Strobe	Features
G5021	56	310	5400	(0.03×2)×0.17	NE-PEG	69 × 13.5 × 5.8 MAXϕ10	6	2	Compact type
F3813B	105	310	5500	(0.03×2)×0.17	PEG	114 × 15 × 5.8 MAXϕ10	10	1	4-inch high speed product
F3857	105	400	7800	(0.021×2)×0.13	PEG	116 × 21 × 5.8 MAXϕ14	7	1	4-inch high resolution product
F3976	108	300	3000	(0.0315×2)×0.1	NE-PEG	114 × 13.4 × 5.9 MAXϕ10	10	2	Compact type

PEG: Partial etching glaze / NE-PEG: Near-edge type partial etching glaze

▼ Business use photo printer

Model	Print width [mm]	Resolution [dpi]	Head average resistance [Ω]	Heater size [mm]	Glaze	Dimensions [mm]	Data	Strobe	Features
F3530C	156	300	4800	(0.03×2)×0.16	PEG	170 × 31 × 5.8 MAXϕ16	30	1	6-inch standard product
G5125	156	300	4800	(0.03×2)×0.16	PEG	170 × 31 × 5.8 MAXϕ16	30	1	6-inch high speed product
F3836	216	300	4795	(0.031x2)×0.18	PEG	225 × 22 × 5.8 MAXϕ18	20	1	8-inch standard product

PEG: Partial etching glaze

▼ Amusement

Model	Print width [mm]	Resolution [dpi]	Head average resistance [Ω]	Heater size [mm]	Glaze	Dimensions [mm]	Data	Strobe	Features
G5020	160	1200	17800	0.013×0.06	PEG	170 × 25.7 × 5.8 MAXϕ18	60	2	1200 dpi high resolution product
F3802	162	600	7400	(0.013×2)×0.11	PEG	170 × 28 × 6 MAXϕ18	60	2	600 dpi U-shape electrode product

PEG: Partial etching glaze

▼ Dry imager

Model	Print width [mm]	Resolution [dpi]	Head average resistance [Ω]	Heater size [mm]	Glaze	Dimensions [mm]	Data	Strobe	Features
F3758A	356	320	7000	(0.029×2)×0.14	PEG	373 × 53 × 16 MAXϕ35	70	3	Standard product

PEG: Partial etching glaze

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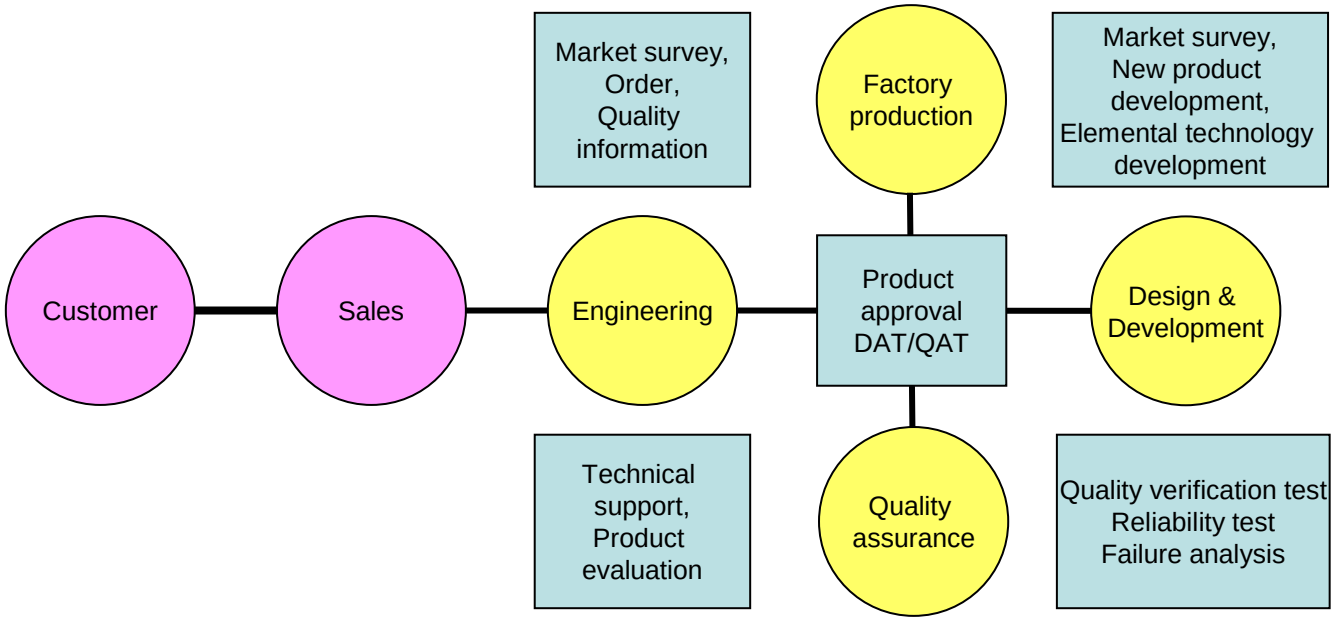
- The contents of this material are as of October 1, 2008. The contents are subject to change without prior notice. When using the product listed in this material, consult with our sales for the latest information.
- The products listed in this material are assumed to be used for general electronic equipment such as POS terminal, bar code printer, ticket vending machine, photo printer, etc.
- When purchasing and using the product listed in this material, be sure to refer to technical material or delivery specification of the product and follow the contents of the material.
- When designing and manufacturing equipment or product using TPH listed in this document, fully understand the features and characteristics of TPH and pay attention to the safety.
- When designing, check the latest product specification and use the product within the scope of product guarantee. Check the precautions and the condition for use to be considered referring to “Handling Guide for Thermal Print Head”.
- Be sure to consult with our sales prior to the application of the products listed in this material to the product (such as the product or system related to nuclear power plant, aviation and space flight, transportation machine, medical equipment and various safety equipment) where the defect, failure and malfunction of TPH causes to threat a human life directly or physical injury or serious property damage. Toshiba Hokuto Electronics Corporation shall not be liable for the damage incurred without consultation with us for the use of TPH.
- The products listed in this material shall not be applied to any product that is prohibited for its manufacture, use and sale by domestic or overseas laws, regulations and orders.
- Be sure to contact our sales for the details of RoHS compliance of the product listed in this material for each type of TPH.
- When using the products listed in this material, be sure to use them after sufficient survey of the relevant laws and regulations such as RoHS directives restricting the containment/use of certain substances and observe the said laws and regulations.
- Toshiba Hokuto Electronics Corporation shall not be liable to any damage due to customer’s non-observance of applicable laws and regulations.
- The export of several products among those listed in this material and the provision of their information to overseas countries are restricted by Export Control Law of Japan.
- The products listed in this material include the product under control of Export Administration Regulation by US Department of Trade. When exporting these products, the permission of US government is required depending on the destination for export.

■ After sale service system

Toshiba Hokuto Electronics recognizes that TPH is an electronic device to be customized in accordance with customer needs. We support our customers with all our divisions of sales, engineering, quality assurance and manufacture in unison, from development to mass production of TPH. We provide “Handling Guide for Thermal Print Head” to our customers for appropriate use of TPH with its full performance.



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