

Recording/Reproducing Heads

BHP, BHF Series

Thermal Print Heads

For General Use

The BHP and BHF series thermal print heads employ advanced substrate and thin-film materials. They are manufactured using proprietary thin-film production, mounting, and assembly technologies developed by TDK. These heads are suitable for use in high-speed and extended-life printers.

BHP AND BHF SERIES

FEATURES

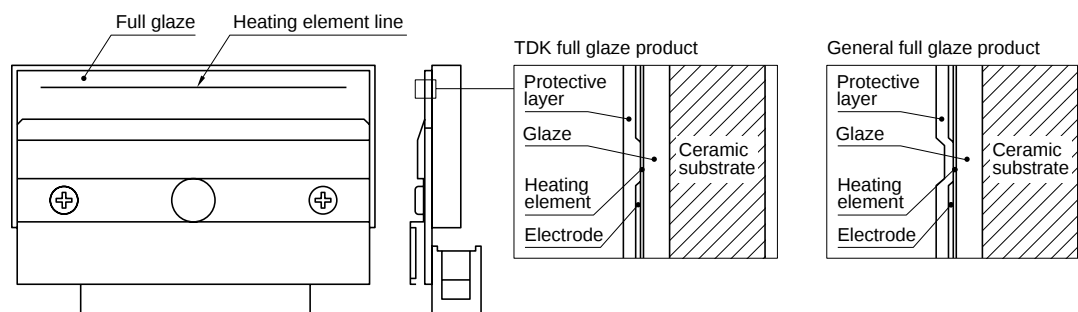
- All models employ Poly-Si heating elements and BP protective layers fabricated using the CVD method.
- All models use the standard flat-type substrate form.
- With the exception of certain models, either full or partial glaze can be specified along with a certain size and set of characteristics within the available range.
- All full glaze type models feature a flat protective layer on the surface of the heating element.
- Maximum platen diameter is $\varnothing 20\text{mm}$ for all models.
- Minimum wear life is 100km for all full glaze models and 60km for all partial glaze models.
- Rated pulse life for all models exceeds 1×10^8 pulses.

APPLICATIONS

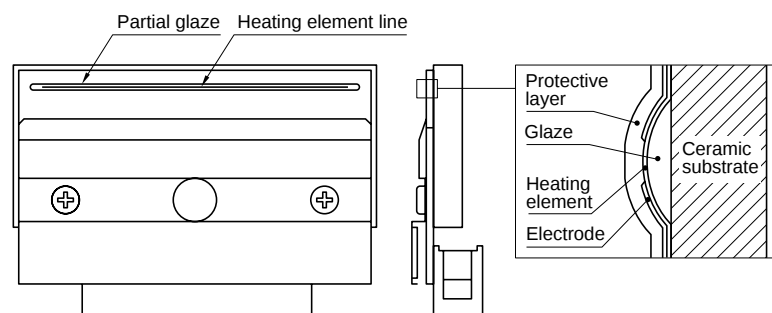
Bar code printers, label printers, ticket vending machines, prepaid card printers.

MODEL SYSTEMS

FLAT SUBSTRATE, FULL GLAZE TYPE



FLAT SUBSTRATE, PARTIAL GLAZE TYPE



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STANDARD CONTROL SYSTEM

FEATURES

- TDK thermal print heads with standard control systems feature a thin-film surface with outstanding thermal response.
- Heating element densities of 7.4, 8 and 12 dots/mm and effective printing widths of 56 to 128mm are available. Contact TDK for further details.

BASIC SPECIFICATIONS

Control system	Standard control system
Substrate style	Flat
Glaze type	Full glaze/Partial glaze
Heating element	Poly-Si layer
Protective film	BP protective layer

GENERAL CHARACTERISTICS/OUTER DIMENSIONS (Typical)

Part No.	Full glaze type	BHF4216SS	BHF4313SS
	Partial glaze type	BHP4217SS	BHP4314SS
Effective printing width	(mm)	56	80
Number of heating element	(dots)	448	640
Heating element density	(dots/mm)	8	8
Heating element pitch	(mm)	0.125	0.125
Heating element dimensions L×W	(mm)	0.13×0.11	0.13×0.11
Heating element average resistance	(Ω)	800	800
Heating element resistance variation	(%)	±8	±8
Applied power	(W/dot)	0.65	0.65
Standard voltage	(V)	24	24
Standard write pulse width	(ms)	0.4	0.4
Standard write pulse repetition period	(ms)	1.2	1.2
Maximum platen diameter	(mm)	20	20
Wear life	Full glaze type (km)	100	100
	Partial glaze type (km)	60	60
Pulse resistance	(Pulse)	1×10 ⁸	1×10 ⁸
Outer dimensions	Length (mm)	65	91
	Width (mm)	38	38
	Thickness (mm)	6	6



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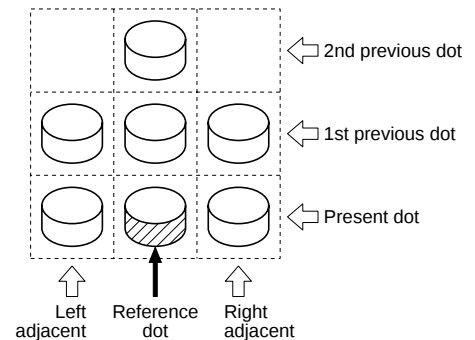
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HS TYPE(3-stage latch heat history control system type)

FEATURES

- Heat history control circuit enables faster heat response on thin-film portion. Effects on faster printing and higher print quality are expected.
- Pulse configuration is possible with a high degree of freedom within the control range indicated by the right-hand figure.
- This series includes heating element densities of 7.4, 8, and 12 dots/mm and effective printing widths of 56 to 128mm. Contact TDK for further details.



BASIC SPECIFICATIONS

Control system	6 dots thermal history and printing data control
Substrate style	Flat
Glaze type	Full glaze/Partial glaze
Heating element	Poly-Si layer
Protective film	BP protective layer

GENERAL CHARACTERISTICS/OUTER DIMENSIONS (Typical)

Part No.	Full glaze type	BHF4315HS	BHF6503HS
	Partial glaze type	BHF4316HS	BHF6504HS
Effective printing width	(mm)	80	128
Number of heating element	(dots)	640	1536
Heating element density	(dots/mm)	8	12
Heating element pitch	(mm)	0.125	0.0833
Heating element dimensions L×W	(mm)	0.13×0.11	0.1×0.07
Heating element average resistance	(Ω)	800	1500
Heating element resistance variation	(%)	±8	±8
Applied power	(W/dot)	0.65	0.35
Standard voltage	(V)	24	24
Standard write pulse width	(ms)	0.2 to 0.7	0.1 to 0.5
Standard write pulse repetition period	(ms)	0.85	0.6
Maximum platen diameter	(mm)	20	20
Wear life	Full glaze type	(km)	100
	Partial glaze type	(km)	60
Pulse resistance	(Pulse)	1×10 ⁸	1×10 ⁸
Outer dimensions	Length	(mm)	91
	Width	(mm)	38
	Thickness	(mm)	6



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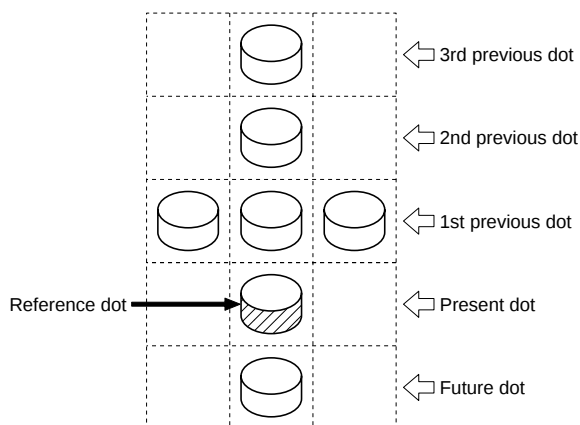
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FS TYPE(4-stage latch heat history control, next-stage printing data control system type)

FEATURES

- These thermal printer heads include a new BP protective layer and a polysilicon heating element made by the same CVD process used for the LH series.
- The thermal history limits of conventional thermal printer heads are surpassed by use of a newly designed five stage latch. This allows higher speed printing.
- Independent dot pulse control is possible within the range indicated by the right-hand figure.
- Data for the future dot position can be used to preheat the heater element(reference dot position is defined to be the location where printing starts, as shown in the right-hand figure).
- This series includes heating element densities of 7.4, 8, and 12 dots/mm and effective printing widths of 56 to 128mm. Contact TDK for further details.



BASIC SPECIFICATIONS

Control system	5 stage latch, 6 dots thermal history printing data control, possible preheating
Substrate style	Flat
Glaze type	Full glaze/Partial glaze
Heating element	Poly-Si layer
Protective film	BP protective layer



GENERAL CHARACTERISTICS/OUTER DIMENSIONS (Typical)

Part No.	Partial glaze type	BHP4417FS	BHP6502FS
Effective printing width	(mm)	112	128
Number of heating element	(dots)	896	1536
Heating element density	(dots/mm)	8	12
Heating element pitch	(mm)	0.125	0.0833
Heating element dimensions LxW	(mm)	0.13x0.11	0.1x0.07
Heating element average resistance	(Ω)	800	1500
Heating element resistance variation	(%)	±8	±8
Applied power	(W/dot)	0.65	0.35
Standard voltage	(V)	24	24
Standard write pulse width	(ms)	0.2 to 0.7	0.1 to 0.5
Standard write pulse repetition period	(ms)	0.85	0.6
Maximum platen diameter	(mm)	20	20
Wear life	Full glaze type	(km)	100
	Partial glaze type	(km)	60
Pulse resistance	(Pulse)	1x10 ⁸	1x10 ⁸
Outer dimensions	Length	(mm)	120
	Width	(mm)	38
	Thickness	(mm)	6

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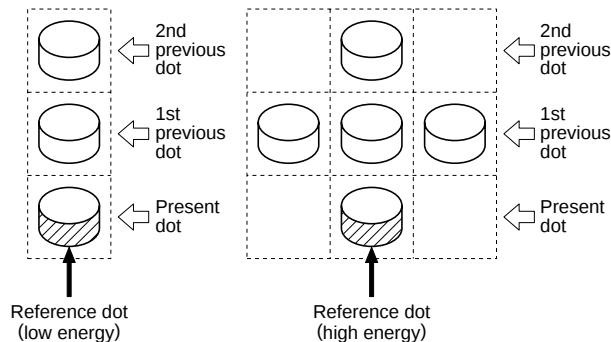
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BHP AND BHF SERIES

WS TYPE(Thermal history control type for two-color printing applications)

FEATURES

- These thermal printer heads include a new BP protective layer and a polysilicon heating element made by the same CVD process used for the LH series.
- Two types of data can be simultaneously input for red-black, blue-black, etc. two-color printing applications. Energy(pulse width) of each color can be configured independently.
- Independent thermal history control circuits are provided for two types of data with different energies. This fine control makes possible superb color formation.
- Independent dot pulse control is possible within the range indicated by the right-hand figure.



BASIC SPECIFICATIONS

Control system	Handling of 2 data types/2, 4 dots thermal history and printing data control
Substrate style	Flat
Glaze type	Full glaze/Partial glaze
Heating element	Poly-Si layer
Protective film	BP protective layer



GENERAL CHARACTERISTICS/OUTER DIMENSIONS (Typical)

Part No.	Partial glaze type	BHP3201WS	BHP4211WS	BHP4312WS
Effective printing width	(mm)	60.48	56	80
Number of heating element	(dots)	448	448	640
Heating element density	(dots/mm)	7.4	8	8
Heating element pitch	(mm)	0.135	0.125	0.125
Heating element dimensions L×W	(mm)	0.16×0.12	0.13×0.11	0.13×0.11
Heating element average resistance	(Ω)	600	800	800
Heating element resistance variation	(%)	±8	±8	±8
Applied power	(W/dot)	0.88	0.65	0.65
Standard voltage	(V)	24	24	24
Standard write pulse width	(ms)	0.2 to 0.7	0.2 to 0.7	0.2 to 0.7
Standard write pulse repetition period	(ms)	0.9	0.85	0.85
Maximum platen diameter	(mm)	20	20	20
Wear life	Full glaze type (km)	100	100	100
	Partial glaze type (km)	—	60	60
Pulse resistance	(Pulse)	1×10 ⁸	1×10 ⁸	1×10 ⁸
Outer dimensions	Length (mm)	72	65	91
	Width (mm)	39	38	38
	Thickness (mm)	6	6	6

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