Thermal Printheads

TOUGHNESS  HIGH SPEED

HIGH QUALITY

サーマルプリントヘッド

京セラ株式会社
KYOCERA Corporation
Kyocera offers both face-down IC bonding method, which realizes high productivity and reliability, and wire bonding method which enhances design flexibility.

Furthermore, by leveraging advanced thin film technology production lines all the way through from ceramic substrates to finished products, Kyocera willingly addresses demands for custom-designed thermal printheads with optimized selection from a variety of the glaze shapes, resistance and overcoat types which are necessary to deal with a variety of applications.

In addition, Kyocera delivers a wide variety of printhead structures, such as flat type, true edge type and corner edge type, as well as peripheral parts integration which cover the industry’s broad applications including bracket assembly on the printhead to meet customers’ requests.

### Features of Kyocera Thermal Printheads

Kyocera offers both face-down IC bonding method, which realizes high productivity and reliability, and wire bonding method which enhances design flexibility.

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### 品名表示方法 Part Numbering System

#### ラインタイプ Line type

<table>
<thead>
<tr>
<th>KFA-216-8 G AE 1</th>
</tr>
</thead>
<tbody>
<tr>
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</tbody>
</table>

① シリーズ名 Series ② 有効印字幅 Effective print width (mm) ③ コントロールコード Dot density (dot/mm) ④ グラズタイプ Glaze type ⑤ IC タイプ Driver IC type ⑥ データ入力数 Number of data inputs

注) 1997年以降のモデルについては、従来のCMOS-IC搭載を示す表示であった(M)の文字を省略し、ICタイプを2文字で表記しております。

Note: Since 1997, IC Type has been indicated by 2 characters; the previous indicator character ‘M’ representing CMOS-IC is no longer used.

#### シリアルタイプ Serial type

<table>
<thead>
<tr>
<th>KSH 128 A AF</th>
</tr>
</thead>
<tbody>
<tr>
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</tr>
</tbody>
</table>

① シリーズ名 Series ② ドット数 Total number of dots ③ 番号コード Design code ④ IC タイプ Driver IC type
New Technologies

TOUGHNESS

使用環境のダイナミックレンジを
広げるパフォーマンスの追求。

TOUGHNESS

Pursuing toughness to realize a
dynamic range of operating
environments.

TOUGHNESS

を使う環境を広げる
パフォーマンスの追求。

HIGH SPEED

速い情報やこんにちは
スープドライアプローチを追求。

HIGH QUALITY

高い解像度を要求するドット
印刷方法で、サーマルプリント
方式のメリットを最大活用。

HIGH SPEED

To enable customers to obtain
sought after information
instantly, we commit to develop
products by focusing on
speed and response.

HIGH QUALITY

Pursuing image quality by using dot
control techniques, Kyocera
maximizes the merit of thermal
printing methods.

■ アイコン説明  About Icons

RoHS

本カタログに掲載した全てのサーマルプリントヘッド製品は、RoHS指令に対応しています。
All the thermal printheads in this brochure comply with the RoHS Directive.

フラット 600dpi

Flat type 600dpi

フルグレーズ

Full glaze

ディープグレーズ

Deep glaze

コーガーチッジタイプ

Corner edge type

B-Edge

Real edge type

カード

Electronic Funds Transfer

Facsimile

テープ

Tape

デジタル写真業務

Industrial Color

デジタル写真民生

Consumer Color

Barcode

Stencil Printer

製版

副本

Traditional 600dpi

High resolution 600dpi

平滑なタイプ

Flat type

全面グレーズ

Flat glaze

部分グレーズ

Partial glaze

ダブルパーシャルグレーズ

Double partial glaze

薄グレーズ

Thin glaze

B-Edge

Real edge type

C-Edge

Corner edge type

SUPER-FINE GLAZE

Super fine glaze

高速化により消費電力を抑え、
地球環境の保全に貢献します。

Save power and save the earth
with high efficiency.

高速化により消費電力を抑え、
地球環境の保全に貢献します。

Save power and save the earth
with high efficiency.

電池駆動対応

For battery operation

バッテリー

Battery

INDUSTRY

Industrial

FLAT

Flat

SILENT

静音

EFFICIENT

効率

FLAT

Flat

SILENT

静音

EFFICIENT

効率

FLAT

Flat

SILENT

静音

EFFICIENT

効率
<table>
<thead>
<tr>
<th>品種別用途例 Application Examples</th>
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### 無制約 spraying 例

<table>
<thead>
<tr>
<th>Series</th>
<th>Part Number</th>
<th>Effective Print Width (mm)</th>
<th>Number of Dots (dots)</th>
<th>Dot Density (dot/mm)</th>
<th>Dot Density (dot/mm)</th>
<th>Average Resistance (Ω)</th>
<th>Heater Plate Size (mm)</th>
<th>Logic Voltage (V)</th>
<th>VDD (V)</th>
<th>VH (V)</th>
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<tbody>
<tr>
<td>POS</td>
<td>KPB-12TAE1-STA</td>
<td>56.9</td>
<td>672</td>
<td>11.8</td>
<td>300</td>
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<tr>
<td>Barcode</td>
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<td>672</td>
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<td>300</td>
<td>1,500</td>
<td>16</td>
<td>3.3/5.0</td>
<td>7.2</td>
<td></td>
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<tr>
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<td>3.3/5.0</td>
<td>7.2</td>
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<tr>
<td>Barcode</td>
<td>KPB-216-8PAB1-STA</td>
<td>216.0</td>
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<td>8</td>
<td>203</td>
<td>1,500</td>
<td>16</td>
<td>3.3/5.0</td>
<td>7.2</td>
<td></td>
</tr>
</tbody>
</table>

### 有効記録幅 Effective Print Width

- **Part Number**: 部品番号
- **Width**: 幅
- **Number of Dots**: 総ドット数
- **Dot Density**: ドット密度
- **Average Resistance**: 平均抵抗値
- **Heater Plate Size**: プラテン径
- **Logic Voltage**: ロジック電圧
- **VDD**: VDD電圧
- **VH**: VH電圧

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(−) …プラテン径の制約はございません。 Technically, there is no constraint on platen diameter.
POS / Barcode

The number of ways in which bar-coded information is being utilized globally is rapidly increasing—not only for price tags but also for logistical applications in hospitals, libraries and municipal offices. Corresponding to the increase in volume of information in recent years, Kyocera offers solutions for a variety of printing needs including higher resolution and higher speeds.

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Effective Print Width</th>
<th>Number of Dots</th>
<th>Dot Density</th>
<th>Heater Resistance</th>
<th>Max. Platen Diameter</th>
<th>VDD</th>
<th>V</th>
<th>V</th>
<th>Print Speed</th>
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<tbody>
<tr>
<td>KPZ-48-BPB1-STA</td>
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<td>KPZ-72-BPB1-STA</td>
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<td>203</td>
<td>900</td>
<td>16</td>
<td>3.3/5.0</td>
<td>24</td>
<td>150</td>
</tr>
<tr>
<td>KPZ-72-BTA1-STA</td>
<td>72.0</td>
<td>576</td>
<td>8</td>
<td>203</td>
<td>900</td>
<td>16</td>
<td>3.3/5.0</td>
<td>24</td>
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<tr>
<td>KPZ-108-BTA1-STA</td>
<td>108.0</td>
<td>864</td>
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<td>203</td>
<td>900</td>
<td>16</td>
<td>3.3/5.0</td>
<td>24</td>
<td>150</td>
</tr>
<tr>
<td>KPZ-216-BPA1-STA</td>
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<td>1,500</td>
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<td>3.3/5.0</td>
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<td>100</td>
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<tr>
<td>KRB-57-BTA1-STS</td>
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<td>672</td>
<td>11.8</td>
<td>300</td>
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<tr>
<td>KRB-81-BTA1-STS</td>
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<td>1,500</td>
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<td>3.3/5.0</td>
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<tr>
<td>KRB-106-BTA1-STS</td>
<td>105.7</td>
<td>1,248</td>
<td>11.8</td>
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<td>800</td>
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</tr>
<tr>
<td>KRC-108-BTA01-STS</td>
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<td>864</td>
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<td>203</td>
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<td>3.3/5.0</td>
<td>24</td>
<td>300</td>
</tr>
</tbody>
</table>

The print speed will be changed, based on the print conditions.
Thermal Printheads

### Specifications

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Effective Print Width (mm)</th>
<th>Number of Dots</th>
<th>Dot Density (dot/mm)</th>
<th>Dot Density (dot/inch)</th>
<th>Heater Resistance (Ω)</th>
<th>Max. Platen Diameter (mm)</th>
<th>VDD Logic Voltage (V)</th>
<th>VH Logic Voltage (V)</th>
<th>Print Speed (mm/sec)</th>
</tr>
</thead>
<tbody>
<tr>
<td>KRC-57-12TAO1-STS</td>
<td>56.9</td>
<td>672</td>
<td>11.8</td>
<td>300</td>
<td>1,500</td>
<td>20</td>
<td>3.3/5.0</td>
<td>24</td>
<td>300</td>
</tr>
<tr>
<td>KRC-81-12TAO1-STS</td>
<td>81.3</td>
<td>960</td>
<td>11.8</td>
<td>300</td>
<td>1,500</td>
<td>20</td>
<td>3.3/5.0</td>
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<td>300</td>
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<tr>
<td>KRC-106-12TAO1-STS</td>
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<td>1,248</td>
<td>11.8</td>
<td>300</td>
<td>1,500</td>
<td>20</td>
<td>3.3/5.0</td>
<td>24</td>
<td>300</td>
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<tr>
<td>KRG-216-8TBO4-STA</td>
<td>216.0</td>
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<td>203</td>
<td>780</td>
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<td>3.3/5.0</td>
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<td>1,000</td>
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<td>3.3/5.0</td>
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<td>3.3/5.0</td>
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<td>350</td>
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<td>203</td>
<td>660</td>
<td>20</td>
<td>3.3/5.0</td>
<td>24</td>
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<td>832</td>
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<td>203</td>
<td>660</td>
<td>20</td>
<td>3.3/5.0</td>
<td>24</td>
<td>350</td>
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<tr>
<td>KPW-106-12TBB4-STA</td>
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<td>1,248</td>
<td>11.8</td>
<td>300</td>
<td>1,130</td>
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<td>350</td>
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<td>KBT-57-24TAQ2-STA</td>
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<td>1,800</td>
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<td>18</td>
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<td>24</td>
<td>250</td>
</tr>
</tbody>
</table>

印字速度は、印字条件によって異なります。The print speed will be changed, based on the print conditions.
### Barcode / Date Code

製造年月日や消費期限など、食品用軟包装に用いられる「日付け印字」は、このほかにも製造所固有記号など、オーダーメードで可変情報を印字し、トレーサビリティを確保する必要性が高まっています。京セラのコーナーエッジヘッドは、この分野で必要とされる高速印字で、社会に貢献しています。

In terms of product traceability, there is an increasing demand for on-demand 'date code' printing, such as date of manufacture and date of expiration. Kyocera contributes to this field through continual efforts to improve the high speed printing for corner edge printheads.

### Specifications

<table>
<thead>
<tr>
<th>品名 Part Number</th>
<th>有効記録幅 Effective Print Width</th>
<th>総ドット数 Number of Dots</th>
<th>ドット密度 Dot Density</th>
<th>平均抵抗値 Heater Resistance</th>
<th>VDD Logic Voltage</th>
<th>VH Printhead Operating Voltage</th>
<th>印字速度 Print Speed</th>
</tr>
</thead>
<tbody>
<tr>
<td>KCE-32-12PAT1-STB</td>
<td>32.0 mm dots dot/mm dot/inch Ω V V mm/sec MAX</td>
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<td>12</td>
<td>305</td>
<td>1.265</td>
<td>3.3/5.0</td>
<td>24</td>
</tr>
<tr>
<td>KCE-53-12PAT1-STB</td>
<td>53.3</td>
<td>640</td>
<td>12</td>
<td>305</td>
<td>1.265</td>
<td>3.3/5.0</td>
<td>24</td>
</tr>
<tr>
<td>KCE-107-12PAT2-STB</td>
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<td>1,280</td>
<td>12</td>
<td>305</td>
<td>1.265</td>
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<td>23.6</td>
<td>600</td>
<td>1.265</td>
<td>5.0</td>
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</tbody>
</table>

印字速度は、印字条件によって異なります。The print speed will be changed, based on the print conditions.
## POS System

Thermal Prinheads

**Electronics Fund Transfer**

POS systems and barcode systems are now being used more widely and are gaining popularity as POS and barcode systems. Kyocera is actively developing thermal printheads with low power consumption and high thermal efficiency for portable applications.

### Specifications

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Effective Print Width</th>
<th>Number of Dots</th>
<th>Dot Density</th>
<th>Heater Resistance</th>
<th>Max Platen Diameter</th>
<th>VDD Logic Voltage</th>
<th>VH Operating Voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td>KSH64FA</td>
<td>8.0 mm</td>
<td>64 dots</td>
<td>8 dots/mm</td>
<td>203 Ω</td>
<td>12 mm</td>
<td>5.0 V</td>
<td>7.2 V</td>
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<tr>
<td>KSH128EA</td>
<td>16.0 mm</td>
<td>128 dots</td>
<td>8 dots/mm</td>
<td>203 Ω</td>
<td>14 mm</td>
<td>5.0 V</td>
<td>9 V</td>
</tr>
<tr>
<td>KSH256A80</td>
<td>21.7 mm</td>
<td>256 dots</td>
<td>11.8 dots/mm</td>
<td>300 Ω</td>
<td>12 mm</td>
<td>3.3/5.0 V</td>
<td>7.4 V</td>
</tr>
<tr>
<td>KS-09E</td>
<td>3.1 mm</td>
<td>9 dots</td>
<td>2.9 dots/mm</td>
<td>73 Ω</td>
<td>—</td>
<td>—</td>
<td>8 V</td>
</tr>
</tbody>
</table>

*Listed standard designs are applicable only to the wafers. Above outline drawing is an example of applying custom-designed FPC.*
Card Printer

Kyocera's innovative design for real edge printheads allows stiff media such as plastic cards to have a straight pass, which is most commonly required in the market for ID card printing.

<table>
<thead>
<tr>
<th>品名</th>
<th>Part Number</th>
<th>有効記録幅</th>
<th>Effective Print Width</th>
<th>総ドット数</th>
<th>Number of Dots</th>
<th>ドット密度（dot/mm dot/inch）</th>
<th>Dot Density</th>
<th>平均抵抗値</th>
<th>Heater Resistance</th>
<th>VDD Logic Voltage</th>
<th>VH Printhead Operating Voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td>KPE-57-12GBH1-STA</td>
<td>56.9</td>
<td>672</td>
<td>11.8</td>
<td>300</td>
<td>3,000</td>
<td>3.3</td>
<td>24</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>KPE-57-12GBH2-STA</td>
<td>56.9</td>
<td>672</td>
<td>11.8</td>
<td>300</td>
<td>3,000</td>
<td>3.3</td>
<td>24</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>KPE-57-12GBH4-STA</td>
<td>56.9</td>
<td>672</td>
<td>11.8</td>
<td>300</td>
<td>3,000</td>
<td>3.3</td>
<td>24</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>KLE-57-12WBH2-STA</td>
<td>56.9</td>
<td>672</td>
<td>11.8</td>
<td>300</td>
<td>3,000</td>
<td>3.3</td>
<td>24</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>KLE-57-12WBH4-STA</td>
<td>56.9</td>
<td>672</td>
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<td>300</td>
<td>3,000</td>
<td>3.3</td>
<td>24</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>KVE-57-12WBH2-STE</td>
<td>56.9</td>
<td>672</td>
<td>11.8</td>
<td>300</td>
<td>3,000</td>
<td>3.3</td>
<td>24</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>KPE-57-24GAG4-STA</td>
<td>57.0</td>
<td>1,344</td>
<td>23.6</td>
<td>600</td>
<td>2,850</td>
<td>5.0</td>
<td>24</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>KSB320AA-STD</td>
<td>40.0</td>
<td>320</td>
<td>8</td>
<td>203</td>
<td>1,250</td>
<td>5.0</td>
<td>24</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>KSB320BA-STD</td>
<td>40.0</td>
<td>320</td>
<td>8</td>
<td>203</td>
<td>850</td>
<td>5.0</td>
<td>24</td>
<td></td>
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</tr>
<tr>
<td>KLE-57-24GAG4-STA</td>
<td>57.0</td>
<td>1,344</td>
<td>23.6</td>
<td>600</td>
<td>2,850</td>
<td>5.0</td>
<td>24</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Color Printer

As digital cameras and smartphones have been rapidly growing in popularity, printers used for printing photos from digital devices have also come to be widely used. Kyocera is developing high quality, high speed and high durability printheads by optimizing overcoats and structures around the heater element.

<table>
<thead>
<tr>
<th>品名</th>
<th>Part Number</th>
<th>有効記録幅</th>
<th>Effective Print Width</th>
<th>総ドット数</th>
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<th>Dot Density</th>
<th>平均抵抗値</th>
<th>Heater Resistance</th>
<th>Max. Patten Diameter</th>
<th>VDD Logic Voltage</th>
<th>VH Printhead Operating Voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td>KPR-106-12SAZ10-STA</td>
<td>106.1</td>
<td>1,256</td>
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<td>3,000</td>
<td>10.5</td>
<td>3.3/5.0</td>
<td>17</td>
<td></td>
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<td></td>
</tr>
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<td>KPU-162-12SBE30-STG</td>
<td>162.2</td>
<td>1,920</td>
<td>11.8</td>
<td>300</td>
<td>4,000</td>
<td>18.0</td>
<td>3.3/5.0</td>
<td>24</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

※ KPJ-162-12SBE30-STG の標準設計はウェハー部のみです。FPC および放熱板はカスタム設計が必要となります。
The standard design of KPJ-162-12SBE30-STG is applicable only to the wafer. Custom design is necessary for the FPC and the heatsink.
### Glaze Shapes

1. **Flat glaze (code G)**

   Flat glaze is a layer rather than a mound. It is very wide compared to the heater size, although it does not cover the whole ceramic substrate. Flat glaze printheads are preferred in fax application because the alignment of the platen roller to the heater line is less critical.

2. **Partial glaze (code P)**

   Classic partial glaze is a mound of glass underneath the heater line. Partial glaze printheads dominate the barcode and label printer applications. Most of the standard Kyocera printheads are built on partial glaze. The heater indentation is elevated by the glaze mound for good contact with the media. The size of the partial glaze mound is well balanced between efficient dissipation and accumulation of heat.

3. **Thin glaze (code T)**

   Thin glaze has smaller volume of glaze compared to partial glaze, so it more efficiently dissipates heat to the substrate and carries less heat over to the next print line. Thin glaze raises the print speed limit, beyond which history control is required. Thin glaze printheads are used to increase the speed of barcode and label printers.

4. **Double partial glaze (code W)**

   Double partial glaze has an additional convex just above the heater line, allowing for higher partial pressure against the media for more efficient heat transfer to the media. This feature works best for monochrome (black and white) printing with battery power.
5. フルグレーズ

Full glaze (code B)

- Electrode
- Heater element
- Overcoat

Full glaze is an advanced design to cover the entire surface of ceramic substrate. With its shape similar to flat glaze over the heater line area, it offers extended choice of glaze thickness for optimized heat control to create best print quality at any print speed requirements.

6. スーパーファイングレーズ

Super fine glaze (code S)

- Electrode
- Heater element
- Overcoat

The heater line is formed on the top of the convex portion of the glaze layer that covers the entire surface of the ceramic substrate. Featuring a precise convex shape and greater flexibility for choosing glaze thickness, the super fine glaze covers a wide range of print speed requirements, allowing for high print quality and high heat efficiency.

7. 端面（リアルエッジ）タイプ

Real edge type

The heater line is formed on the real edge of the ceramic substrate. Real edge type printheads have an advantage for full color printing on stiff media such as ID cards or prepaid cards that cannot be easily bent.

8. C端面（コーナーエッジ）タイプ

Corner edge type

Due to the location of glaze formed on the corner edge of the ceramic substrate, corner edge type printheads have a very small glaze volume and achieve a very quick heat response. The corner edge type is suitable for barcode and date code applications.