Device for Mobile Phones
Ultrasmall CSSD Dual SAW Filter
G5/G6 Series (SAW BPF 800MHz to 2,200MHz)

Thanks to our original manufacturing method, the world’s smallest, low-height dual SAW filter with $1.8\text{mm} \times 1.4\text{mm} \times 0.5\text{mm}$ (Max.) size has been realized.

* CSSD: Chip Size SAW Device

**Overview**

In recent years, mobile phones with integrated 3G systems such as W-CDMA and mobile phones with composite bands that can be used in various parts of the world have become rapidly popularized. Concurrently, internal circuits as well as RF blocks (dual filters, front-end modules, etc.) have become increasingly complex. Further miniaturization and thickness reduction of the incorporated parts are particularly essential for module purposes.

FUJITSU has developed an ultrasmall, CSSD dual SAW filter (balanced type and unbalanced type) that supports various mobile phone types.

**Product Features**

Fig.1 presents the external dimension diagram and terminal functions. Owing to the adoption of filter device miniaturization using our original design technique and our original high-density sealing and mounting technique, the ultrathin size of $1.8\text{mm} \times 1.4\text{mm} \times 0.5\text{mm}$ height (Max.), which is the smallest in the industry, has been realized.

In addition, hermetic structure by metal sealing, which is our original mounting technology, has been realized in this size. This delivers weather resistance with support for lead-free (high-temperature) reflowing, sufficient resistance against mechanical vibration and impact, and high reliability.

Fig.2 presents the frequency characteristic. Using our original electrode design, an extremely small insertion loss has been realized. The balanced and unbalanced types that are optimal for various RF-IC types are lined up for output (input). This is optimal for applications in mobile phones and front-end modules.

* Supported methods
  - GSM850+EGSM, DCS+PCS

* Ultrasmall size
  - Size: $1.8\text{mm} \times 1.4\text{mm} \times 0.5\text{mm}$ (Max.)

Photo 1 External View
New Products  G5/G6 Series

Ratio with our conventional product in volume: 42%
(conventional product: 2.5mm × 2.0mm × 0.6mm [Max.])

- **Low insertion loss (ex.: DCS Rx balanced type [150Ω])**
  Insertion loss (1,805 to 1,880MHz): 1.5 [Typ.] dB*

- **High attenuation properties (ex.: DCS Rx balanced type [150Ω])**
  Tx Band (1,710 to 1,785MHz): 17 [Typ.] dB*

*The figures provided are those as of the date of publication. Please note that they may be modified in the future without prior notice.

**Schedule**

- Sample: Being provided
- Scheduled time for mass production: from November 2005

**Future Development**

In the future, we will replenish our lineup and work to further realize low insertion loss and high attenuation to contribute to the improvement of reception sensitivity and blocking properties of the mobile phone.

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**Figure 1**  External Dimensions and Pin Functions

- **External dimensions**

  ![External Dimensions](image-url)

- **Pin functions**

<table>
<thead>
<tr>
<th>Pin No.</th>
<th>Pin names</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>IN</td>
<td>Filter 1 unbalanced pin</td>
</tr>
<tr>
<td>2</td>
<td>GND</td>
<td>Ground</td>
</tr>
<tr>
<td>3</td>
<td>GND</td>
<td>Ground</td>
</tr>
<tr>
<td>4</td>
<td>IN</td>
<td>Filter 2 unbalanced pin</td>
</tr>
<tr>
<td>5</td>
<td>GND</td>
<td>Ground</td>
</tr>
<tr>
<td>6</td>
<td>OUT</td>
<td>Filter 2 balanced pin</td>
</tr>
<tr>
<td>7</td>
<td>OUT</td>
<td>Filter 2 balanced pin</td>
</tr>
<tr>
<td>8</td>
<td>OUT</td>
<td>Filter 1 balanced pin</td>
</tr>
<tr>
<td>9</td>
<td>OUT</td>
<td>Filter 1 balanced pin</td>
</tr>
<tr>
<td>10</td>
<td>GND</td>
<td>Ground</td>
</tr>
</tbody>
</table>

*The gap between the terminals of this product is 0.23mm. If you have any mounting difficulties due to this small gap, please contact us.
We also offer dual SAW filters with 2.0mm × 1.6mm × 0.5mm (Max.) size and a gap of 0.27mm between terminals.*
Figure 2  Frequency Characteristic (ex.: PCS+DCS Rx balanced type [150])

- PCS Rx

- DCS Rx