Description
The F6102 is an 8-element receiver silicon IC designed using a SiGe BiCMOS process for Ka-Band SATCOM phased array applications. The core IC has 6-bit phase control coupled with 30dB gain control on each channel to achieve fine beam steering and gain compensation between radiating elements. The device has 16dB nominal electric gain and -30dBm IP1dB. The core chip achieves an RMS phase error of 3° and RMS gain error of 0.3dB over the frequency of operation. The typical total power consumption is 0.32W (40mW per channel).

Competitive Advantage
- High integration
- Orthogonality of phase and amplitude control
- Advanced Serial Peripheral Interface (SPI) with 4-state memory
- Superior channel-to-channel isolation
- Minimal footprint

Features
- 17.5GHz to 21.5GHz operation
- 8 radiation channels
- 6-bit phase control
- 20ns typical gain settling time
- 20ns typical phase settling time
- 3° typical RMS phase error
- 0.3dB typical RMS gain error
- 30dB gain attenuation range
- 5-bit IC address
- Integrated proportional-to-absolute temperature (PTAT) sensor with external biasing
- -40°C to +95°C internal temperature sensor
- Programmable 4-state on-chip memory
- Supply voltage: +2.1V to +2.5V
- -40°C to +95°C ambient operating temperature range
- 27°C typical ambient operating temperature
- 5mm x 5mm, 40-QFN package

Typical Applications
- Ka-Band SATCOM
- Aerospace and Maritime
- Beam Steering
- Test and Measurement

Block Diagram
Figure 1. Block Diagram
## Ordering Information

<table>
<thead>
<tr>
<th>Orderable Part Number</th>
<th>Package</th>
<th>MSL Rating</th>
<th>Carrier Type</th>
<th>Temperature</th>
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<tbody>
<tr>
<td>F6102NTGK</td>
<td>5mm x 5mm 40-QFN</td>
<td>MSL 3</td>
<td>Tray</td>
<td>-40°C to +95°C</td>
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<td>F6102NTGK8</td>
<td>5mm x 5mm 40-QFN</td>
<td>MSL 3</td>
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<td>F6102EVB</td>
<td>Evaluation Board</td>
<td></td>
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<tr>
<td>F6102EVS</td>
<td>F6102 Evaluation Kit System, including Evaluation Board, 2x THRU Reference Fixture, FT2232H Mini-Module Microcontroller, Digital Cable, Power Cable, and USB-to-Mini Cable</td>
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</tbody>
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Corporate Headquarters
TOYOSU FORESIA, 3-2-24 Toyosu,
Koto-ku, Tokyo 135-0061, Japan
www.renesas.com

Contact Information
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