**PULSED RF POWER AMPLIFIER**

**R&K-CA5712BW20-5959RP**

- **All Solid-State Amplifier**
- **Frequency Range:** 5712MHz ±10MHz
- **Output Power:** 800W (min.) @ Peak (Pulse)

**APPLICATION**

- **Accelerator**

**SPECIFICATIONS @ +25°C**

- **Frequency Range:** 5712MHz ±10MHz
- **Small Signal Gain:** +59.0dB (min.)
- **Output Power:** 800W (min.) @ Peak
- **Pulse Width:** 0.1μs ~ 5μs
- **Repetition:** 1μs ~ 50μs
- **Pulse Rise Time:** 100ns (max.) @ 10% ~ 90%
- **Pulse Fall Time:** 100ns (max.) @ 90% ~ 10%
- **Over/Under Shoot:** 3% (max.) @ Po=800W
- **Pulse Flatness:** +5% (max.) @ Po=800W @ Flat-top
- **Output Power Stability:** ±3% @ Pulse to Pulse Voltage fluctuation
- **Phase Stability:** ±3° @ In-pulse flat top
- **±1° @ Pulse to Pulse**
- **Impedance:** 50Ω
- **Harmonics:** 7 5712MHz : ± 25.0dBc (max.) @ Po=800W
- **Spurious:** ± 60.0dBc (max.) @ Po=800W
- **Input Return Loss:** 14.0dB (min.) / VSWR : 1.5 (max.)
- **Output Return Loss:** 14.0dB (min.) / VSWR : 1.5 (max.)
- **Maximum RF Input Power:** +10dBm
- **AC Supply Input:** AC100V ±15%/1φ, 50/60Hz, 200VA
- **Operating Temperature:** 0°C to +35°C
- **Storage Temperature:** -15°C to +55°C
- **Connectors:** RF - IN N - FEMALE, RF - OUT N - FEMALE
- **Size:** (W)480mm x (D)449.5mm x (H)177mm (EIA:4U)
- **Weight:** 30.0kg (max.)
- **Cooling:** Water Cooling
- **Protection Circuits:** Over Temperature Protection
- **Remote Interface:** Ethernet
- **Other Functions:** R&K Multi Monitoring System

**TYPICAL PERFORMANCE (Temp @ +25°C)**

- **Gain Flatness**
- **Return Loss**
- **Level & Phase Flatness**
- **Output Harmonics**
- **Output Power Linearity**

---

R&K reserves the right to make changes in the specifications of or discontinue products at any time without notice. R&K products shall not be used for or in connection with equipment that requires an extremely high level of reliability and safety such as aerospace uses or medical life support equipment. Further, the export of R&K products from Japan may be subject to an export license by the government of Japan, based on Japan's "Foreign Exchange and Foreign Trade Law".

R&K Company Limited
721-1 Maeda, Fuji-City, Shizuoka-Pref. 416-8577 Japan
Tel: +81-546-31-2600  E-mail: info@rkco.jp  Fax: +81-546-31-1600  URL: http://rk-microwave.com
TYPICAL PERFORMANCE (Temp @+25°C)

**Output Pulse**
- Frequency: 5712MHz
- Output Power: 800W
- Duty: 0.03%/100pps
- Pulse Width: 5usec
- Pulse Period: 16.67msec

**Pulse Rise**
- Frequency: 5712MHz
- Output Power: 800W
- Duty: 0.03%/100pps
- Pulse Width: 5usec
- Pulse Period: 16.67msec

**Pulse Fall**
- Frequency: 5712MHz
- Output Power: 800W
- Duty: 0.03%/100pps
- Pulse Width: 5usec
- Pulse Period: 16.67msec
**Used Offset Frequency Generator for measurement.** (fig.1)

**Offset Frequency Generator 5712MHz \(\Rightarrow\) 10MHz (RF Pulse Signal \(\Rightarrow\) I&Q Voltage)**

*I and Q value after 2.5us of the rising of a pulse are measured in each 2 seconds.*

<table>
<thead>
<tr>
<th>I&amp;Q Voltage (\Rightarrow) Amplitude (pulse1 to Pulse12)</th>
<th>I (V)</th>
<th>Q (V)</th>
<th>Amp. (V)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pulse1</td>
<td>-0.3580484</td>
<td>0.2808751</td>
<td>0.45507</td>
</tr>
<tr>
<td>Pulse2</td>
<td>-0.3577279</td>
<td>0.2812032</td>
<td>0.45502</td>
</tr>
<tr>
<td>Pulse3</td>
<td>-0.3582698</td>
<td>0.2807787</td>
<td>0.45519</td>
</tr>
<tr>
<td>Pulse4</td>
<td>-0.3585437</td>
<td>0.2803415</td>
<td>0.45513</td>
</tr>
<tr>
<td>Pulse5</td>
<td>-0.3580955</td>
<td>0.2813021</td>
<td>0.45537</td>
</tr>
<tr>
<td>Pulse6</td>
<td>-0.3586152</td>
<td>0.2804006</td>
<td>0.45522</td>
</tr>
<tr>
<td>Pulse7</td>
<td>-0.3576975</td>
<td>0.2811989</td>
<td>0.45499</td>
</tr>
<tr>
<td>Pulse8</td>
<td>-0.35787</td>
<td>0.2809458</td>
<td>0.45497</td>
</tr>
<tr>
<td>Pulse9</td>
<td>-0.3579465</td>
<td>0.2809741</td>
<td>0.45505</td>
</tr>
<tr>
<td>Pulse10</td>
<td>-0.3581932</td>
<td>0.2807189</td>
<td>0.45509</td>
</tr>
<tr>
<td>Pulse11</td>
<td>-0.3584187</td>
<td>0.2806337</td>
<td>0.45521</td>
</tr>
<tr>
<td>Pulse12</td>
<td>-0.3584438</td>
<td>0.2806118</td>
<td>0.45522</td>
</tr>
</tbody>
</table>

\[r_\Delta \sqrt{(I^2+Q^2)}\]

**Std.(Amp.)/Mean(Amp.) in % = 0.026%**

(pulse1 to pulse12)

**Measuring Points**

- Measuring Point: 2.5us
- Pulse Width: 5us
- Pulse Period: 2sec
- Pulse Period: 2sec x 9
- Pulse Period: 2sec

---

R&K reserves the right to make changes in the specifications of or discontinue products at any time without notice. R&K products shall not be used for or in connection with equipment that requires an extremely high level of reliability and safety such as aerospace uses or medical life support equipment. Further, the export of R&K products from Japan may be subject to an export license by the government of Japan, based on Japan's *Foreign Exchange and Foreign Trade Law*. 

R&K Company Limited
721-1 Maeda, Fuji-City, Shizuoka-Pref. 416-8577 Japan
Tel: +81-545-31-2600 E-mail: info@rko.jp
Fax: +81-545-31-1600 URL: http://rk-microwave.com
**PULSED RF POWER AMPLIFIER**

**TYPICAL PERFORMANCE (Temp @+25℃)**

**• Pulse to Pulse Phase Jitter**

![Phase Jitter (12pulse)](image)

*Used Offset Frequency Generator for measurement. (fig.1)*

**Offset Frequency Generator 5712MHz ⇒ 10MHz (RF Pulse Signal ⇒ I&Q Voltage)**

*I* and Q value after 2.5us of the rising of a pulse are measured in each 2 seconds.

<table>
<thead>
<tr>
<th>Pulse No.</th>
<th>I (V)</th>
<th>Q (V)</th>
<th>Phase (deg.) ※</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pulse1</td>
<td>-0.3580484</td>
<td>0.2808751</td>
<td>-51.913504</td>
</tr>
<tr>
<td>Pulse2</td>
<td>-0.3577279</td>
<td>0.2812032</td>
<td>-51.856069</td>
</tr>
<tr>
<td>Pulse3</td>
<td>-0.3582698</td>
<td>0.2807787</td>
<td>-51.940269</td>
</tr>
<tr>
<td>Pulse4</td>
<td>-0.3585437</td>
<td>0.2803415</td>
<td>-52.004892</td>
</tr>
<tr>
<td>Pulse5</td>
<td>-0.3580955</td>
<td>0.2813021</td>
<td>-51.874875</td>
</tr>
<tr>
<td>Pulse6</td>
<td>-0.3586152</td>
<td>0.2804006</td>
<td>-52.004581</td>
</tr>
<tr>
<td>Pulse7</td>
<td>-0.3576975</td>
<td>0.2811989</td>
<td>-51.854122</td>
</tr>
<tr>
<td>Pulse8</td>
<td>-0.35787</td>
<td>0.2809458</td>
<td>-51.892628</td>
</tr>
<tr>
<td>Pulse9</td>
<td>-0.3579465</td>
<td>0.2809741</td>
<td>-51.895773</td>
</tr>
<tr>
<td>Pulse10</td>
<td>-0.3581932</td>
<td>0.2807189</td>
<td>-51.940244</td>
</tr>
<tr>
<td>Pulse11</td>
<td>-0.3584187</td>
<td>0.2806337</td>
<td>-51.966205</td>
</tr>
<tr>
<td>Pulse12</td>
<td>-0.3584438</td>
<td>0.2806118</td>
<td>-51.970321</td>
</tr>
</tbody>
</table>

*arctan(I/Q)*

Std.(Phase) in degree = 0.053deg. (pulse1 to pulse12)

**Measuring Points**

![Measuring Points Diagram](image)

R&K reserves the right to make changes in the specifications of or discontinue products at any time without notice. R&K products shall not be used for or in connection with equipment that requires an extremely high level of reliability and safety such as aerospace uses or medical life support equipment. Further, the export of R&K products from Japan may be subject to an export license by the government of Japan, based on Japan’s “Foreign Exchange and Foreign Trade Law”.