**TOKYO KEIKI Solid State High Power Amplifiers**

**Description**

TOKYO KEIKI offers customized RF and Microwave Solid State Power Amplifiers for a wide range of Markets including Defense Systems, Satellite Communication, Broadcast TV & Radio, Microwave Test Equipment and others. High power and high efficiencies are realized through innovative circuit topology techniques and optimum semiconductor device technologies. The circuit topology techniques include Single ended configurations, Power combining configurations, Doherty configurations, Feed Forward techniques and Digital pre-distortion techniques. Semiconductor device technologies used include LDMOS FETs, GaAs FETs and GaN HEMTs.

TOKYO KEIKI will produce customized Solid State Power Amplifiers per the examples below.

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Power (1dB Compression)</th>
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<tbody>
<tr>
<td>L - Band 0.5 to 1.5 GHz</td>
<td>~53 dBm</td>
</tr>
<tr>
<td>S - Band 2.0 to 4.0 GHz</td>
<td>~53 dBm</td>
</tr>
<tr>
<td>C - Band 4.0 to 8.0 GHz</td>
<td>~53 dBm</td>
</tr>
<tr>
<td>X - Band 8.0 - 12.0 GHz</td>
<td>~53 dBm</td>
</tr>
<tr>
<td>Ku - Band 12.0 - 18.0 GHz</td>
<td>~53 dBm</td>
</tr>
</tbody>
</table>

Note: Custom requirements for frequency ranges and higher powers can be accommodated

<table>
<thead>
<tr>
<th>Specialized Solid State Power Markets</th>
<th>Frequency (MHz)</th>
<th>Typical Power</th>
<th>Features</th>
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</table>
| Chemical Analysis - Nuclear Magnetic Resonance Spectroscopy | 10 - 500        | 250W          | • 19 inch Rack Mounted Enclosure  
• Power Supply  
• Power Control  
• Power Monitors  
• Power Alarms |
| Digital TV Relay Stations             | 470 - 770       | 50W           | • 19 inch Rack Mounted Enclosure  
• For Digital ISDB-T |
| Weather Radar Systems                 | 9000 - 10000    | 130W          | • Compact & Light Weight Packaging  
• High Efficiency |

Note: Custom requirements for frequency ranges and higher powers can be accommodated
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NMR Amplifier Example:

Tokyo Keiki offers very specialized RF and Microwave Power Amplifiers such as Amplifiers for NMR Spectroscopy applications which require exceptional pulse fidelity (rise time, tilt, fall time) and gain & phase linearity. Other features include:

- Broadband Frequency Range of 10MHz to >500MHz, typically achieved by splitting the frequency range into 2 bands
- 250W Power Output from a single Multi-stage LDMOS FET Amplifier. Higher powers can be achieved by combining power from 2 or more Multi-stage LDMOS FET Amplifiers.
- 60dB gain (other Gains can be accommodated)
- Power Output Control Available
- Power Output Monitor Available
- Power Supply to accommodate AC Power input
- 19 inch rack mounted enclosure
- Typical Block Diagram of Single Multi-Stage Amplifier:
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X-Band Amplifier Example:

Tokyo Keiki offers very specialized RF and Microwave Solid State High Power Amplifiers (SSPAs) over frequencies from less than 500MHz to greater than 18GHz. An X-Band SSPA Example is shown below.

- Output Power: 130W typ. (Pulse@30% duty)
- Drain Efficiency: > 36%
- Compact and Light Weight
- Frequency Characteristics are adjustable

![X Band GaN SSPA Example](image)

![X Band GaN SSPA In/Out & D.Eff. (Experimental Data)](image)
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Ku-Band Amplifier Example:

Tokyo Keiki offers very specialized RF and Microwave Solid State High Power Amplifiers (SSPAs) over frequencies from less than 500MHz to greater than 18GHz. A Ku-Band SSPA Example is shown below.

- Output Power: 5W typ. (Pulse @ 30% Duty Cycle)
- Drain Efficiency: > 40%
- Compact and Light Weight
- Frequency Characteristics are adjustable
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SSPA Examples: