BII-5110 Series Power Amplifier
Driving Sonar/HIFU Transducer/Projector

DESCRIPTION
BII-5110 series is 275 to 540 watt, switching mode power amplifier, which offers high efficiency and low power consumption for uses in underwater acoustic system.

APPLICATIONS
| Source Level Capability: 193.6/196.6 +DI (dB re µPa) | Acoustic Modem/Communication/Beacon/Transponder |
| Underwater Acoustic Positioning | Sub-bottom Investigation, Seafloor-mapping System |
| Navigation Echosounder | Dipping Sonar, Sonobuoy |
| Fishery Sounder/Netsonde | HIFU Transducer |

ABSOLUTE MAXIMUM RATINGS

<table>
<thead>
<tr>
<th>Model</th>
<th>BII-5111</th>
<th>BII-5112</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC Supply Voltage</td>
<td>+40 VDC</td>
<td>+40 VDC</td>
</tr>
<tr>
<td>Output Peak Current</td>
<td>20 A</td>
<td>20 A</td>
</tr>
</tbody>
</table>

SPECIFICATIONS

<table>
<thead>
<tr>
<th>Switch Mode Power Amplifier</th>
<th>BII-5111</th>
<th>BII-5112</th>
</tr>
</thead>
<tbody>
<tr>
<td>RMS Power Capability:</td>
<td>275W@+36VDC Power Supply</td>
<td>540W@+36VDC Power Supply</td>
</tr>
<tr>
<td></td>
<td>122W@+24VDC Power Supply</td>
<td>240W@+24VDC Power Supply</td>
</tr>
<tr>
<td></td>
<td>30W@+12VDC Power Supply</td>
<td>60W@+12VDC Power Supply</td>
</tr>
<tr>
<td></td>
<td>See Graph of SPL vs Frequency</td>
<td>See Graph of SPL vs Frequency</td>
</tr>
<tr>
<td>Output Signal Type:</td>
<td>Amplified Pulsed/Burst Pulse Train, FSK</td>
<td>Amplified Pulsed/Burst Square Wave, FSK</td>
</tr>
<tr>
<td>Quiescent Current:</td>
<td>1 mA</td>
<td>2 mA</td>
</tr>
<tr>
<td>Weight in Air:</td>
<td>9 grams</td>
<td>11 grams</td>
</tr>
</tbody>
</table>

Miscellaneous:
- Input Signal Type: Pulsed/Burst Pulse Train, Logic Signals, TTL and CMOS Compatible.
- Input Logic Voltage Level: Logic Low: 0 to 0.8V; Logic High: 3.5 to 5V. TTL and CMOS Compatible.
- Duty Cycle of Input Signal: ≤ 10% for Pulsed/Burst Pulse Train
- Output Voltage, High: ≥ (Vcc - 0.03) V
- Output Voltage, Low: ≤ 0.03 V
- Minimum Load: 2.0 Ω
- Operating Frequency: 1 kHz to 3 MHz, Limited by impedance matching & tuning network if any.
- Power Efficiency: > 93%
- Supply Voltage Vcc: +10 to +36 VDC
- Suggested DC Supply: Marine Battery, Automobile Battery, Fixed DC Linear Power Supply, Not Included.
- DO NOT use variable power supply whose maximum supply voltage is higher than the above rated voltage.
- DO NOT use switching mode DC power supply.
- Cable: 60mm wires
- Connector: Wire Leads
- Size: Rectangular PCB, LxWxH=68.6x36.1x36mm
- Mounting: 4xØD3.2mm through-holes
- Operating Temperature: -40°C to 85°C
- Storage Temperature: -50°C to 105°C
BII-5111 CONTROLS and TERMINALS:

<table>
<thead>
<tr>
<th>Signal</th>
<th>Wires' Colour</th>
</tr>
</thead>
<tbody>
<tr>
<td>IN</td>
<td>Input Signal</td>
</tr>
<tr>
<td>IN COM</td>
<td>Input Signal common</td>
</tr>
<tr>
<td>+Vs</td>
<td>Power Supply Positive Voltage</td>
</tr>
<tr>
<td>Vs COM</td>
<td>Power Supply Common</td>
</tr>
<tr>
<td>OUT</td>
<td>Output</td>
</tr>
<tr>
<td>OUT COM</td>
<td>Output Common</td>
</tr>
</tbody>
</table>

SUGGESTED WIRING:

Generation of Square Waveform and Pulse Signal:
1. Digital I/O Board or Microcontroller Digital I/O port.
2. Timer circuit or astable multivibrator.

BII-5111 Physical Size:

BII-5111 SHIPMENT:
Assembled BII-5111 board Qty.: 1
BII-5111 Signal Block Diagram

Signal Generators: BII-4021 Computer+DAQ Microcontroller Timer/Counter

Pulsed/Burst Pulse Wave: 1kHz to 3MHz, TTL/CMOS Level

BII-5111 Signal Output

Amplified Pulsed/Burst Pulse Train to drive transducer

BII-6000 Impedance Matching & Tuning

BII Transducer

BII-5112 CONTROLS and TERMINALS:

Signal
Input Pulse Wave

Wires' Colour
White

Pulse
Pulse Width Signal

Blue

Common
Common

Black x 2

Vs COM
Power Supply Common

Black x 2

+Vs
Power Supply Positive Voltage

Red x 2

OUT+
Output +

Brown x 2

OUT -
Output -

Yellow x 2

Warning: Out+ and Out- CAN NOT be connected to Common. Otherwise, the device will be damaged.

BII-5112 SUGGESTED WIRING:

Signal

COM

Pulse

COM

+Vs

COM

+12/+24/+36VDC Batteries

Load

Warning: Outputs of Power amplifier are differential, DO NOT Connect Out + or Out - to COM.
**Generation of Pulse Wave and Pulse Width Signal:**

1. Digital I/O Board or Microcontroller Digital I/O port.
2. Timer circuit or astable multivibrator.
3. Benthowave’s SONAR signal generation modules.

**BII-5112 Physical Size:**

![BII-5112 Physical Size Diagram]

**BII-5112 SHIPMENT:**

Assembled BII-5112 board  
Qty.: 1

**BII-5112 Signal Block Diagram**

![BII-5112 Signal Block Diagram]

**Pulse Width Signal:** $T = 10\mu s$ to 200ms, TTL/CMOS Level

**Pulse Wave:** 1kHz to 3MHz, TTL/CMOS Level