

1 × 60 Watt Class D Audio Amplifier Board w DSP

multicomp PRO



**RoHS
Compliant**

FCCE

Features

- 3.6×2.7 Inches PCB Size
- Battery Board Supported
- Power Management Circuit
- DSP Integrated
- Gain of Speaker Output Adjustable
- Band-pass Filter of Speaker Output Adjustable
- High-pass Filter of 3.5mm Headphone Output Adjustable
- Volume of Speaker & 3.5mm Headphone Output Adjustable
- Signal Level Sensor System
- External 3.5mm AUX IN Port
- Power Switch Port
- 3.5mm Headphone Output
- Compatible with JAB2

Electrical Specifications

Specifications typical @ +25°C, powered by 24V DC. Specifications subject to change without notice.

| Parameter | | Conditions | Min. | Typ. | Max. | Units |
|---------------------------|-----------------------------------|---|------|------|------|-------|
| Number of Channels | | - | - | 1 | - | - |
| Minimum Load Impedance | | - | 3.2 | 4 | - | Ω |
| Efficiency | | 60W@4Ω | - | 84 | - | % |
| Nominal Power Requirement | | @24V, 200Hz | - | 80 | - | W |
| Operating Voltage | | @200Hz, 4Ω | 12 | 24 | 26 | V |
| Idle Power | | Signal detected | - | 2 | - | W |
| | | No Signal detected | - | 80 | - | mW |
| Switching Frequency | | SD Floating@24V | - | 400 | - | kHz |
| Power Consumption | | 1/4 of max output power@4Ω, 24V, 200Hz | - | 20 | - | W |
| | | 1/8 of max output power@2Ω, 24V, 200Hz | - | 10 | - | W |
| Control | Standby (Low = inputs enabled) | High-level Input Voltage | 3.3 | - | - | V |
| | | Low-level Input Voltage | - | - | 0.8 | |
| | Mute (High = outputs enabled) | High-level Output Voltage | 3.3 | - | - | |
| | | Low-level Output Voltage | - | - | 0.8 | |
| Standby Power | | SD short to GND, only when low power module available | - | 150 | - | mW |
| Under Voltage Protection | | - | 10 | 10.4 | 10.8 | V |

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Audio Performance

Specifications typical @ +25°C, powered by 24V DC. Specifications subject to change without notice.

| Parameter | Conditions | Min. | Typ. | Max. | Units | |
|--------------------------|---|------------|------|------|-------|----|
| Amp Gain | @4Ω, 200Hz | - | 26 | - | dB | |
| DSP Gain | SE1 (Single Amp) | @4Ω, 200Hz | -60 | - | 10 | dB |
| | SE2 (Headphone) | @4Ω, 200Hz | -60 | - | 2 | dB |
| Input Sensitivity | 60W@4Ω, 200Hz, 26dB | - | 770 | - | mV | |
| Filter Gain | Butter worth, Q= 0.707 | - | 4 | - | dB | |
| Cutoff Frequency | HFP | 60 | - | 120 | Hz | |
| | LFP | 200 | - | 400 | Hz | |
| SNR | 60W@2Ω, THD+N=1%, 26Db, A-weighting | | 88 | | dB | |
| THD+N | 1W@4Ω, 200Hz, 26dB | | 0.03 | | % | |
| | 10W@4Ω, 200Hz, 26dB | | 0.05 | | % | |
| Input Impedance | - | | 10 | | kΩ | |
| Supported Sampling Rates | - | - | 48 | - | kHz | |
| Output Noise Level | A-weighting, Input Connected to GND, 26dB | | 240 | | μV | |
| DC Offset | - | | 20 | | mV | |
| Max output Level | J3, 3.5mm Headphone Output Connector | | 4.5 | | dBu | |

Notes:

- JAB3 can be powered by 3S18650 Lithium Battery Balance and Protection Extension Board (AA-JA11113), which is designed for protecting batteries and balancing voltage. Please kindly be noticed that the battery charging circuit is integrated in JAB1/2, which means that JAB1/2 is a requisite if you want to charge battery board.
- Sure Electronics will update the hardware of JAB2 to make it fully compatible with JAB3. This means, when using JAB3 with this version JAB2 (PCB Version: AA-JA13217V150), some compatibility problem, like popping noise, may occur but will not affect the normal use. For more information about JAB2, contact at www.multicomp.com.
- Signal Level Sensor System has been employed in JAB3 for low power consumption. JAB3 will enter into standby mode when audio signal is not detected for long time (1min). Once audio signal is detected under this circumstance, JAB3 will restart to work. It is not malfunction if JAB3 enters into standby mode.
- JAB3 can be connected with JAB2 through J5 port on JAB3 with a 6pin cable. This cable is provided in the Functional Cables Package for JAB3.
- The basic cable package of JAB3 contains: one power cable, one speaker cable, one control cable and one 3.5mm AUX IN cable.

Function of Potentiometers

Functions of potentiometers based on specific applications

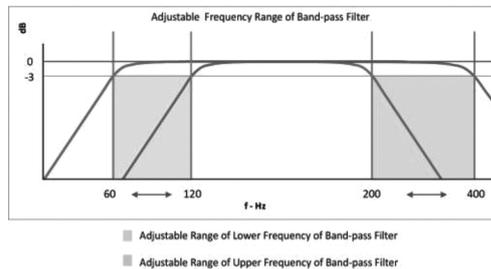
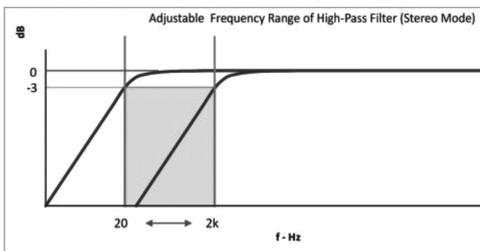
| Port | Function | JAB3S | JAB3M | JAB3S+ JAB2 | JAB3M+ JAB2 |
|------|----------|--------------------------------|--------------------------------|--------------------------------|-------------------------|
| POT1 | CH2 Gain | Gain of 3.5mm Headphone Output | Gain of 3.5mm Headphone Output | Gain of Speaker Output of JAB2 | Gain of Speaker of JAB2 |

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| Port | Function | JAB3S | JAB3M | JAB3S+ JAB2 | JAB3M+ JAB2 |
|------|------------------|--|--|--|--|
| POT2 | CH2 HPF | High-pass Filter of 3.5mm Headphone Output | High-pass Filter of 3.5mm Headphone Output | High-pass Filter of Stereo of JAB2 | High-pass Filter of Stereo of JAB2 |
| POT3 | CH1 HPF or BPF | High-pass Filter of Speaker Output | Band-pass Filter of Speaker Output | High-pass Filter of Speaker Output of JAB3 | Band-pass Filter of Speaker Output of JAB3 |
| POT4 | CH1 & CH2 Volume | Volume of Speaker & 3.5mm Headphone Output | Volume of Speaker & 3.5mm Headphone Output | Overall Volume of JAB3 & JAB2 | Overall Volume of JAB3 & JAB2 |

Note:

- The speaker output (J10) of the board with potentiometers is defined as CH1; 3.5mm headphone output (J3) or other integrated circuit output of the board with potentiometers is defined as CH2.
- JAB3S refers to JAB3 in stereo mode, namely 2 x 50 Watt Class D Audio Amplifier Board w DSP - JAB3 (AA-JA32172) and 2 x 30 Watt Class D Audio Amplifier Board w DSP - JAB3 (AA-JA32473); JAB3M refers to JAB3 in mono mode, namely 1 x 100 Watt Class D Audio Amplifier Board w DSP - JAB3 (AA-JA31181) and 1 x 60 Watt Class D Audio Amplifier Board w DSP - JAB3 (AA-JA31211).
- HPF refers to High-pass Filter; BPF refers to Band-pass Filter.
When CH1 is stereo output, the function of POT2 is HPF; when CH1 is mono output, the function of POT2 is BPF.
- Four applications are exemplified in this datasheet. For the functions of potentiometers when used in other applications, please check www.multicomp.com.

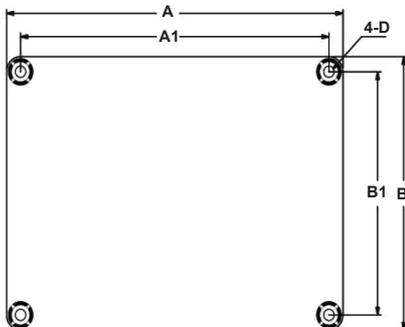


| Function | Range of Frequency |
|--------------------------------|------------------------|
| High-pass Filter (Stereo Mode) | 20Hz- 2kHz |
| High-pass Filter (Mono Mode) | 250Hz- 2kHz |
| Band-pass Filter | 60HZ-120Hz (High-pass) |
| | 200Hz-400Hz (Low-pass) |

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Mechanical Dimensions

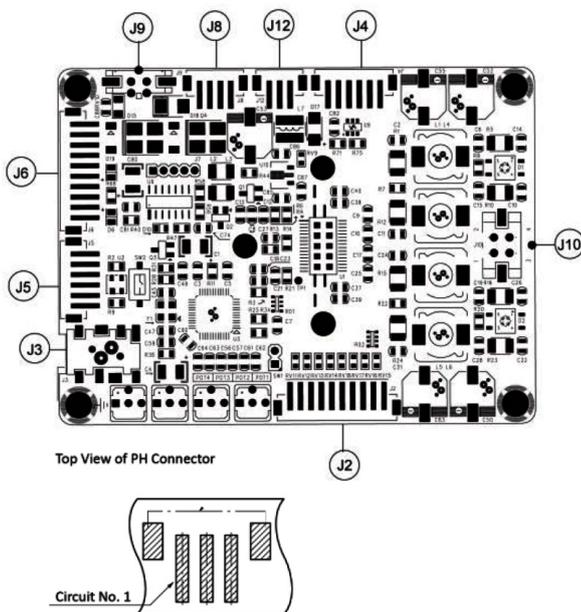


| A (inch/mm) | A1 (inch/mm) | B (inch/mm) | B1 (inch/mm) | D (inch/mm) |
|----------------|-----------------|----------------|-----------------|----------------|
| 3.6/91.44 | 3.3/83.8 | 2.7/68.6 | 2.4/61 | 0.14/3.6 |

Notes

All dimensions are typical in inches/mm
Tolerance x.xx = $\pm 0.02(\pm 0.5)$

Connections



DSP Extension Port

J2, PH- 10Pin- 2mm

| Pin | Definition | Pin | Definition |
|-----|------------|-----|------------|
| 1 | GND | 6 | MP00 |
| 2 | DATA | 7 | MP01 |
| 3 | LRCLK | 8 | MP05 |
| 4 | BCLK | 9 | MP04 |
| 5 | MP07 | 10 | +3.3V |

Programming Connector

J4, PH- 6Pin- 2mm

| Pin | Definition | Pin | Definition |
|-----|------------|-----|------------|
| 1 | SDA | 4 | GND |
| 2 | SCL | 5 | VIN |
| 3 | WP | 6 | RST |

Power Supply Connector

J9, Molex- 2Pin- 3mm

| Pin | Definition |
|-----|------------|
| 1 | VCC |
| 2 | GND |

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Switch Control Connector

J12, PH- 3Pin- 2mm

| Pin | Definition |
|-----|------------|
| 1 | STBY |
| 2 | GND |
| 3 | MUTE |

Audio Output Connector

J10, Speaker Output Connector
J3, 3.5mm Headphone Output Connector

Audio Extension and Compatible Port

J5, PH- 6Pin- 2mm

| Pin | Definition | Pin | Definition |
|-----|------------|-----|------------|
| 1 | LIN | 4 | GND |
| 2 | LOUT | 5 | ROUT |
| 3 | GND | 6 | RIN |

Battery Board Connection Connector

J8, PH- 4Pin- 2mm

| Pin | Definition | Pin | Definition |
|-----|------------|-----|------------|
| 1 | VBAT | 3 | GND |
| 2 | | 4 | |

Extension Connector

J6, PH- 10Pin- 2mm

| Pin | Definition | Pin | Definition |
|-----|------------|-----|------------|
| 1 | VCC | 6 | LIN |
| 2 | VCC | 7 | GND |
| 3 | GND | 8 | RIN |
| 4 | LED1 | 9 | KEY2 |
| 5 | KEY1 | 10 | LED2 |

Notes:

1. Short circuit 'STBY' and 'GND' to enter into 'Standby' mode.
2. Don't short circuit 'MUTE' and 'GND' at any time. This position is used to synchronize with 'MUTE' pin on JAB2 to eliminate the popping noise.
3. When JAB3 is used separately, the 'MUTE' position will malfunction; when JAB3 is used together with JAB2, J12 must be connected with the 3pos control port on JAB2 for controlling the whole system. Short circuit 'EN' with 'GND' on JAB2 for system control.

Part Number Table

| Description | Part Number |
|--|---------------|
| 1 × 60 Watt Class D Audio Amplifier Board w ADAU1701 DSP | SURE-JAB3-160 |

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