CLASS-A STEREO POWER AMPLIFIER

A-48

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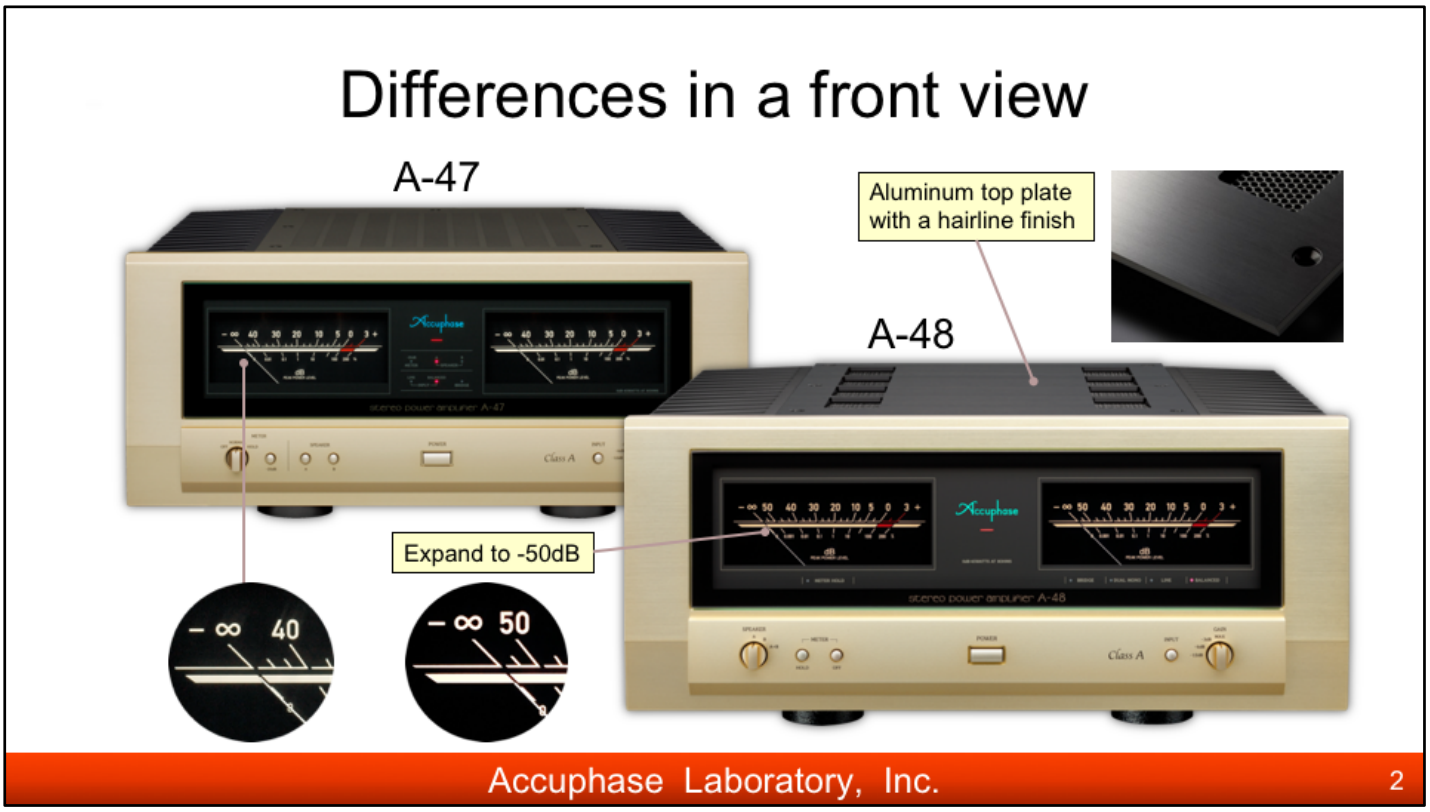
Accuphase class-A stereo power amplifiers have a long and distinguished history, since the P-260 launched in 1979, we have continued to develop them up until today.

The new A-48 is the latest class-A stereo power amplifier and the succession model of A-47.

A-48 achieved the further low noise performance and super high damping factor that are in the class of its own, with inheriting the ultimate technology features of the A-250, the flagship class-A monophonic power amplifier.

Accuphase also offers the new ideas to prevent the speaker short-circuit accident for a customer to use in relief.

Evolved A-48 will surely attract the customers with its pure class-A sound.

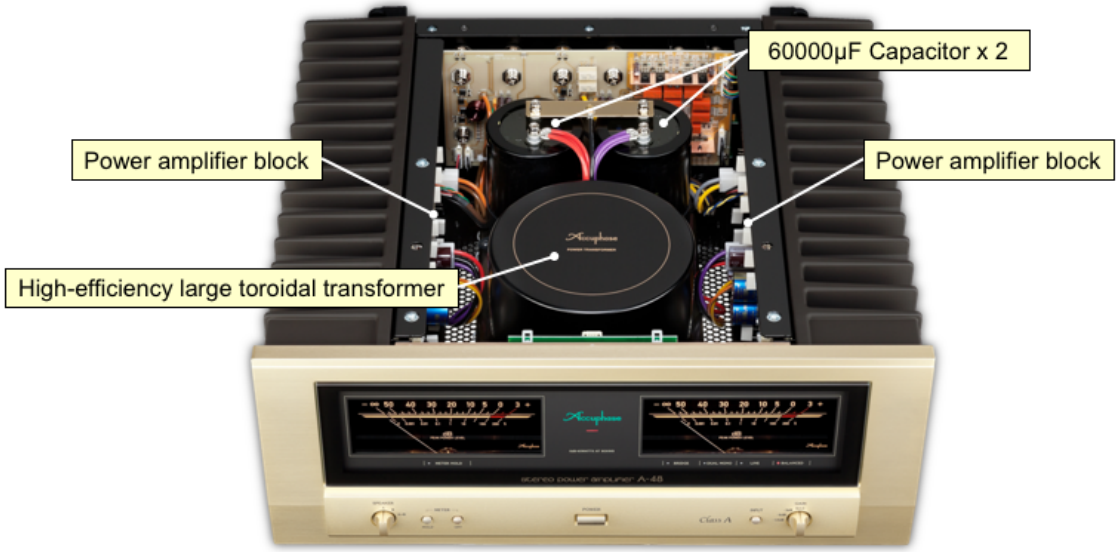


A-48 newly applied a top plate made of brushed aluminum with a hairline finish. It demonstrates a level of dedication and hands-on craftsmanship that pervades every aspect of this product.

**The former model A-47 used the velvet-coated iron top plate.

Needle power meter with indication range to -50dB is able to move even at the small volume level less than -60dB.

Internal view



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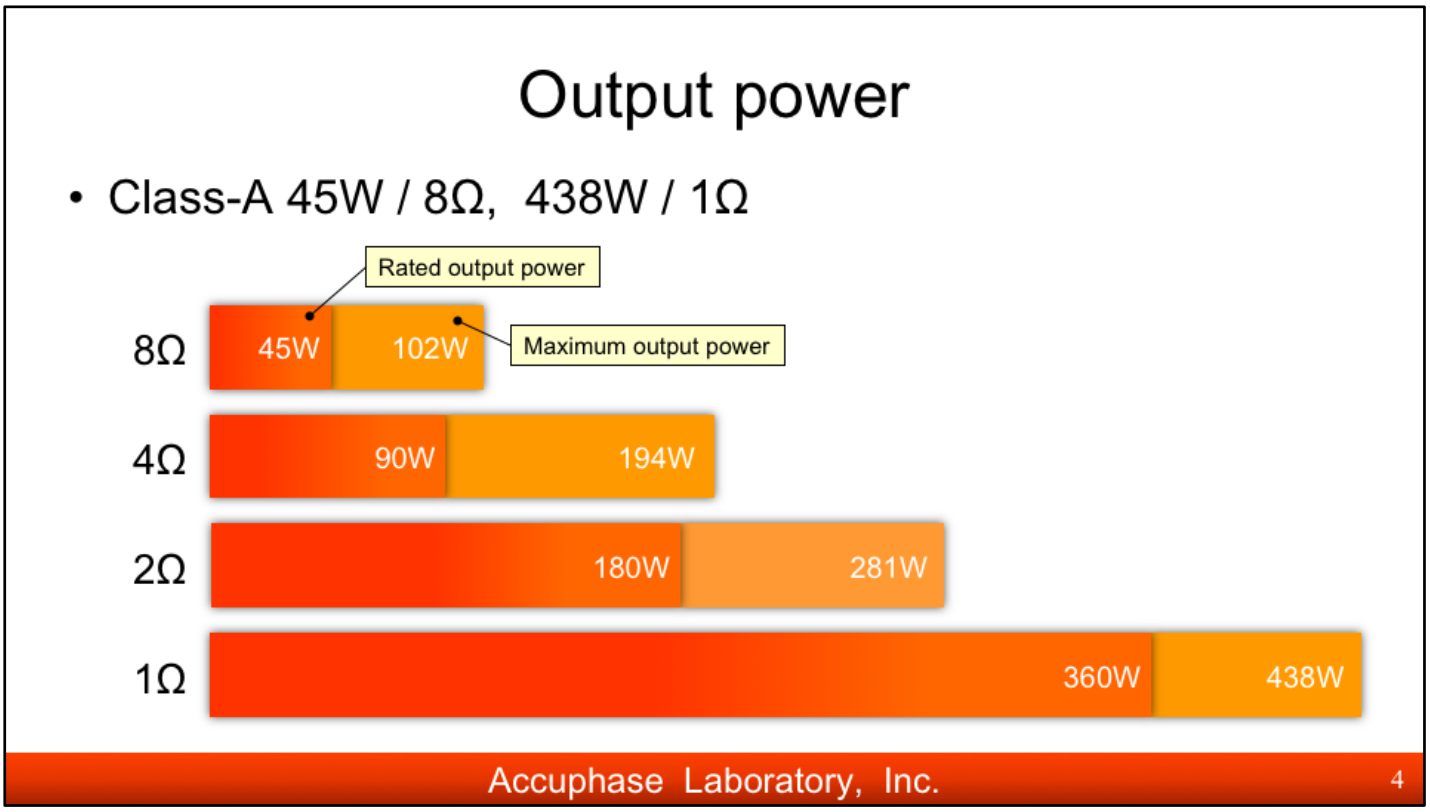
Strong power supply with a massive special made high-efficiency toroidal transformer and two large 60000μF special made filtering capacitors are installed.

The capacitance of capacitor is reinforced compared to the former model.
**A-47: 56000μF

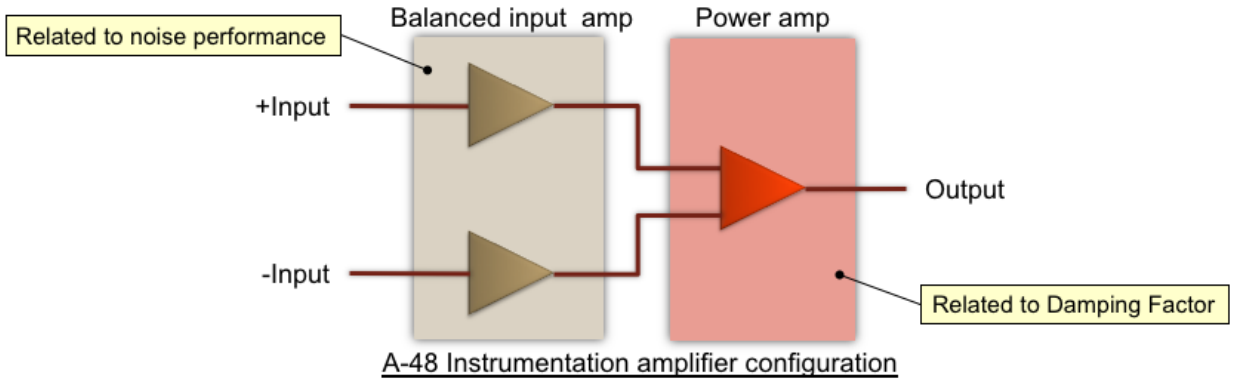


The continuous average output power(rated output power) is 45W into 8Ω load.
However, its actual maximum output power is bigger, saying 102W into 8Ω and 438W into 1Ω load.

**Output power is as same as A-47.

Highlights of electrical performance

- Ultra low noise
- Super high *Damping Factor



A-48 Instrumentation amplifier configuration

*Damping Factor: A index of speaker driving ability

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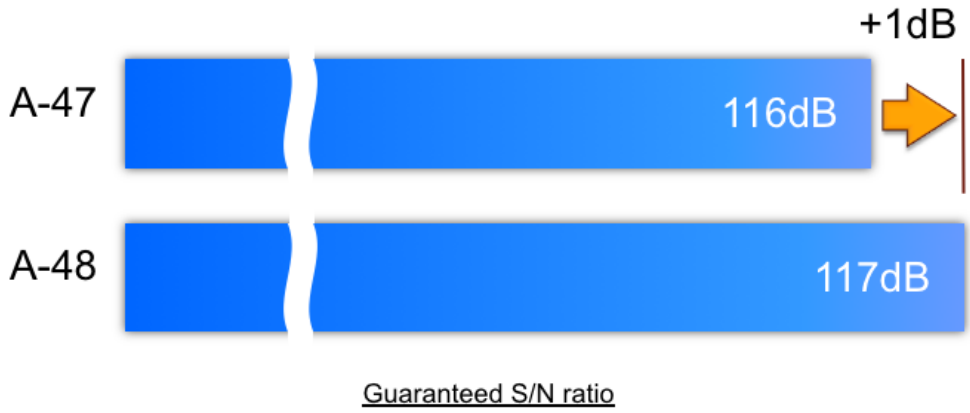
The performance highlights of A-48 are “Ultra low noise” and “Super high Damping Factor”.

The A-48 features the latest instrumentation amplifier topology. It consists of a complete balanced input amplifier block and a power amplifier block.

The balance input amplifier block is related to the noise performance and the power amplifier block is related to the Damping Factor.

Ultra low noise

- 1dB(10%) higher S/N ratio than the former model
  - S/N ratio: 117dB guarantee @Maximum-gain



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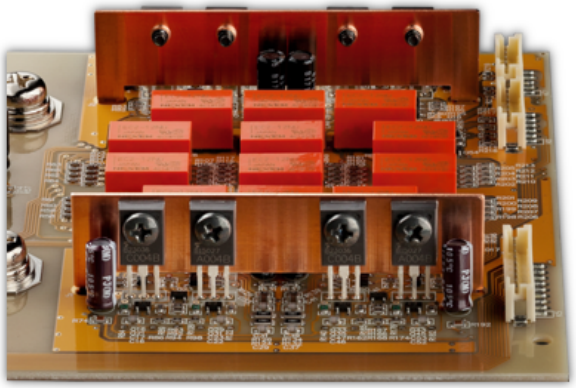
The former model A-48 has the excellent noise performance.
However A-48 achieves even 1dB higher guaranteed S/N ratio than A-47.

A-47 guarantees, S/N ratio: 116dB @Maximum-gain

Technology for ultra low noise

- Fully discrete circuit configuration “Balanced input amplifier”
  – Same circuit configuration as Class-A Stereo Power amp A-75



Balanced input amplifier part

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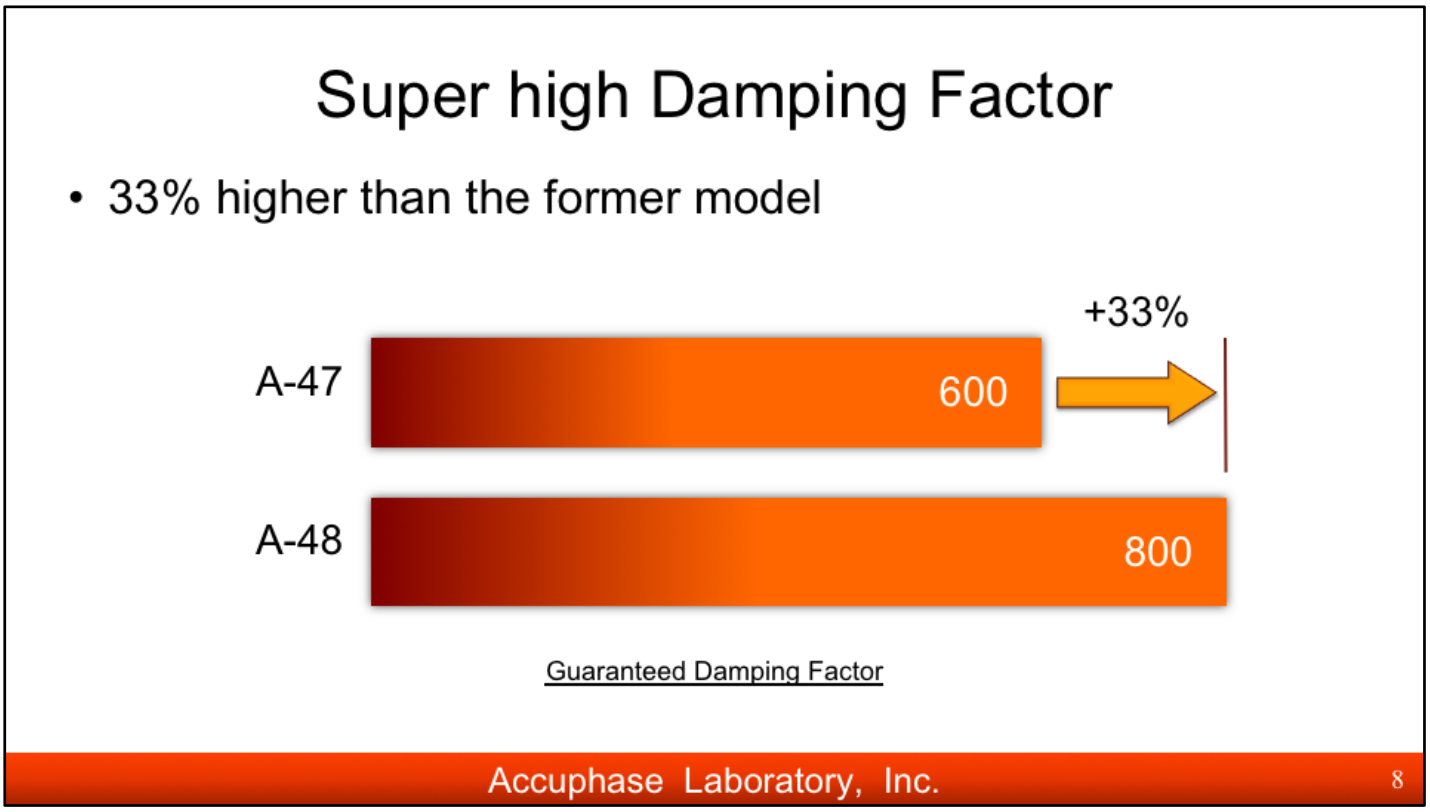
The output noise is reduced by the fully discrete configuration amplifier circuit which any ICs are not installed on the signal paths.

It is exactly same circuit configuration as Class-A Stereo Power amplifier A-75.



A-48 has the guaranteed 800 of Damping Factor.
It is 33% higher than the former model A-47.

**Damping Factor:
A index of speaker driving ability.
Higher Damping Factor amplifier has higher speaker driving ability.
D.F. = 8Ω / Output-impedance

Technology for super high Damping Factor

- Very low output impedance power amplifier engine
  - Same circuit configuration as Class-A Stereo Power amp A-75
  - MOS-FET 6 parallel push-pull output stage

Power amplifier engine

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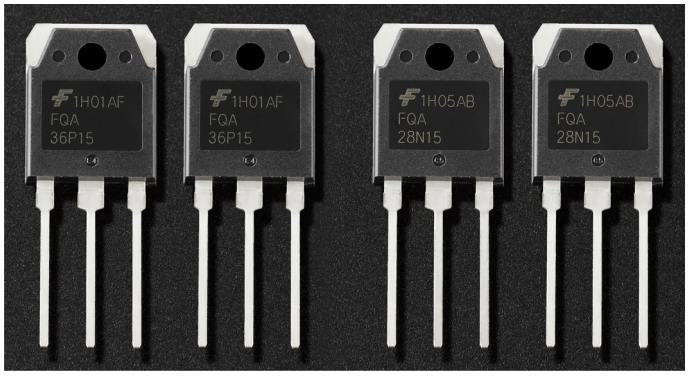
The output impedance is decreased by 6 parallel push-pull final stage arrangement of MOS-FETs.

Circuit configuration of the power amplifier engine is as same as Class-A Stereo Power amplifier A-75.

A-48 features the new power MOS-FET device which is heavy-duty and has the large rated current characteristic.

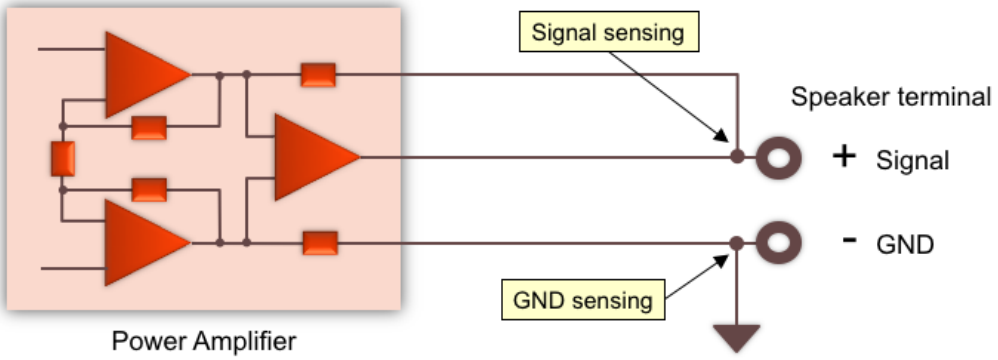
**Current capacity of power MOS-FET
A-47's MOS-FET(Toshiba): 10A
A-48's MOS-FET(Fairchild): 33A



A-48's MOS-FET

Technology for super high Damping Factor

- Balanced Remote Sensing
  - Feedback from nearby speaker terminals
  - Signal-line and GND-line sensing



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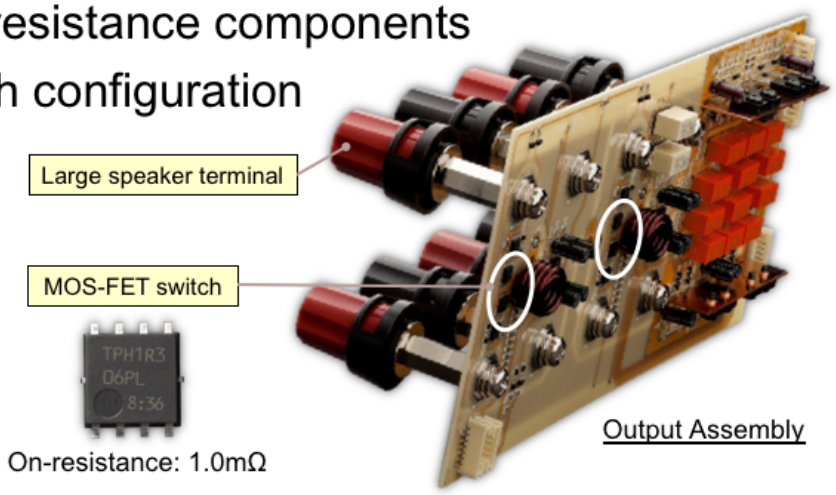
Remote Sensing is the technique to lower the output impedance of amplifier by the negative feedback with signal sensing from nearby the speaker terminals.

Balanced Remote Sensing is the technique to make the output impedance even lower by both the signal sensing and the GND sensing, that is the negative feedback of GND level.

Not only Damping Factor, but also Total Harmonic Distortion and Intermodulation Distortion are all improved by the Balanced Remote Sensing.

Technology for super high Damping Factor

- Speaker protection equipped with MOS-FET switch
- Using very low resistance components
- Short signal path configuration



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Mechanical relays are the common components for speaker protection.

But, As the contact resistance of mechanical relay is higher than people think, Accuphase has chosen the MOS-FET switch instead of conventional mechanical relays for speaker protection.

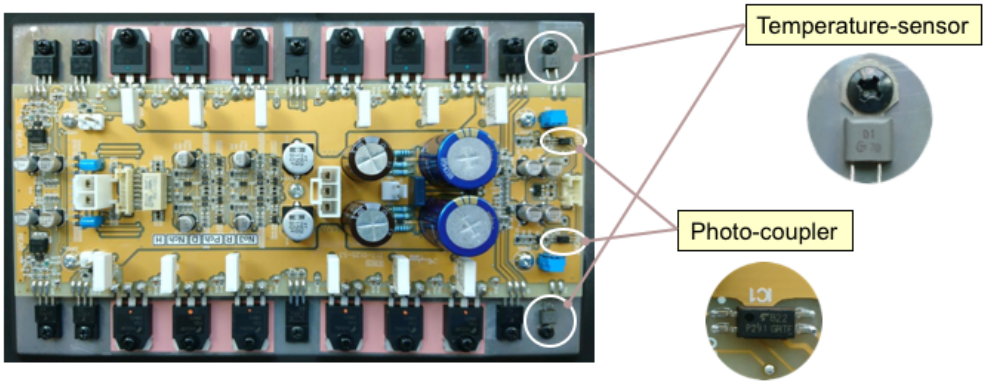
Thanks to this MOS-FET switch, the Damping Factor, reliability and sound quality are all improved.

A-48 features the new MOS-FET device for this switch which has very low on-resistance.
**On-resistance of MOS-FET device
A-47's MOS-FET: 1.9mΩ
A-48's MOS-FET: 1.0mΩ

A-48 employs carefully-selected very low impedance components such as the large speaker terminals and so on.
Making signal paths thick and short also helps attaining the low impedance.

Pursuing further product safety and reliability

- Power amplifier
  - Newly-developed protection circuit using Photo-couplers
  - Temperature-sensors are installed on the heatsink



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To enhance the further product safety and reliability, A-48 improves the protection circuit on Power amplifier section.

・ Newly-developed protection circuit
Over current protection circuit using photo-coupler is applied, it does not affect the sound quality at all.

・ Temperature-sensor
Temperature-sensors which detects the heatsink temperature are installed on the heatsink(2 sensors on a heatsink). Thanks to this, the unit accurately ascertains the high temperature alarm in power amplifier section.

**When these protection circuits are activate, the unit completely interrupts speaker output and makes the power meters flash to indicate an abnormal condition.