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General description

The A1 V1.2 is a Current feedback design which has high bandwidth and high slewrate. The board has dual side components mainly.

This amplifier can easily run in class B meaning a few milliampere bias to class A. There is only one trimmer for bias so even if it is complex, it is easy to setup. It is delivered with all transistors mounted.

The Mirand A1 V1.2 has a built in DC protection and undervoltage shut down feature.

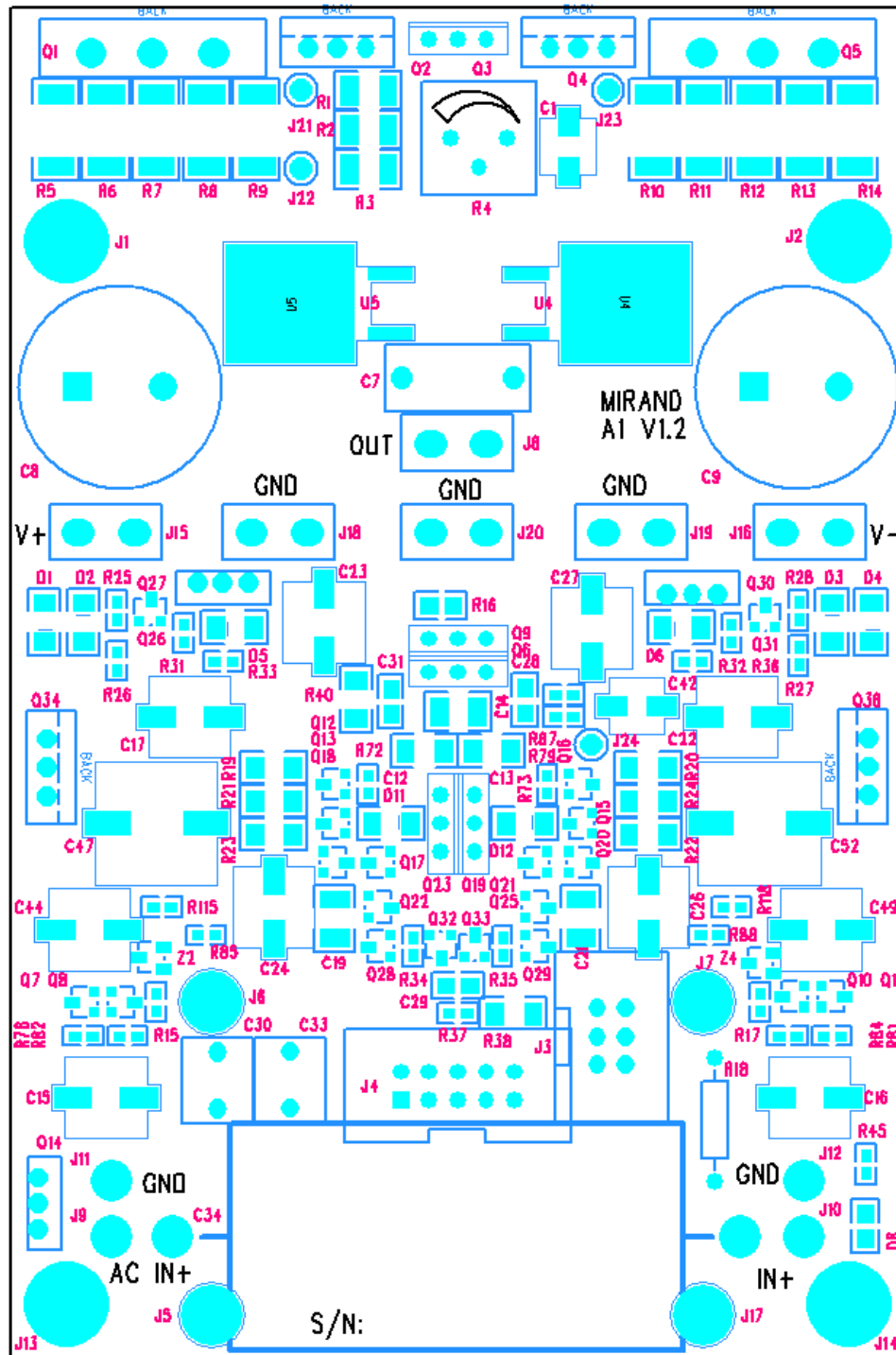
DC protection kicks in at 4Hz and 20Vrms output. And the lower the frequency the easier the DC protection is triggered. At 5Hz it can run full voltage swing.

Key specifications

- Supply voltage : +/-24VDC <-> +/-53VDC
- Bandwidth : 5Hz <-> 1.8MHz
- Slewrate : 200V/us
- Zin : 10KOhm.
- Peakcurrent continuous out : 15Apeak
- Stable into 2 Ohm load
- Size (WxLxH): 94x64x41mm

Connection diagram.

Layout of board:



POWER input

Type: Blade Faston 6.3mmx0.8mm			
PIN	Function	Description	Type
J15	V+ (+24VDC - +53VDC)	V+ Terminal from Power Supply	Input
J18,J19	GND	GND Terminal from Power Supply	Input
J16	V- (-24VDC - -53VDC)	V- Terminal from Power Supply	Input

Table 1: Power input connector Specification

POWER output

Type: Blade Faston 6.3mmx0.8mm			
PIN	Function	Description	Type
J8	SPK OUT	Output Terminal to Speaker	Output
J20	GND	GND Terminal to Speaker	Output

Table 2: Speaker output connector Specification

Signal input

Type: Molex KK grid 2.54mm header mates with Molex 0022012025 Crimp housing			
PIN	Function	Description	Type
J10	Signal in	Signal input for amp.	Input
J12	Signal GND	Signal GND input for amp.	Input

Table 3: Signal input connector Specification

Trimmers

Type: 3266W from bourns or similar. 12Turn			
Trimmer	Function	Description	Type
R4	Bias Trim	Bias Trim	Input

Table 4: Trimmer Specification

Test points

Type: 3266W from bourns or similar. 12Turn			
Test points	Function	Description	Type
J21,J23	Bias adjust	Adjustment of bias with trimmer R4, 2.5mA/mV	Input
J22, (J24 reference point)	Offset	Should be below 10mV	Input

Table 5: Test point Specification

Absolute Maximum Ratings.

Power Input (Table 1)

Symbol	Parameter	Value	Units
DC In min	Minimum input working voltage	+/-24	V DC
DC In max	Maximum input working voltage (63V on request)	+/-53	V DC
Bias Current	Bias Current (Max 50Watt per device, and 0.4K/W heatsink per device)	1A	A DC

Table 6: Absolute Maximum ratings

Signal Input (Table 3)

Symbol	Parameter	Value	Units
AC in max	Maximum Signal input	2	Vrms

Table 7: Absolute Maximum ratings

Speaker (Table 3)

Symbol	Parameter	Value	Units
Rload	Minimum Load	2	Ohm

Table 8: Absolute Maximum ratings

General Specifications

Unless otherwise specified $f=1\text{KHz}$, $P_o=1\text{W}$, $T_a=25^\circ\text{C}$, $\pm 50\text{VDC}$, $\text{Bias}=0.025\text{A}$

Symbol	Parameter	Typ	Units
P_o	Output power into 8R @1%THD+N	100	W
THD+N	8R, 27W	0.01	%
THD+N	8R, 1W	0.002	%
Z_{in}	Input resistance	10K	Ohm
Z_{out}	Output impedance into 8R, 1KHz	15m	Ohm
f_l	Lower bandwidth limit	5	Hz
f_u	Upper bandwidth limit	1.8M	Hz
Z_{Lmin}	Minimum load impedance	2	Ohm

Table 9: General Specification

General assembly notes.

To allow maximum heat transfer to the heatsink a firm pressure on as much of the Transistors surface is necessary especially when operated into class A. This can be done in two ways. Either by mounting the transistor by using an aluminium bar as pressure on the top side of the transistor or by using extra large Metric Fender washers. They are available in 9mm outside diameter. It is always good to use thermal grease with the isolation pad.

But for good reading I would suggest visiting Elliot Sound Products for an good guide:

<http://sound.westhost.com/heatsinks.htm>

Heatsink size notes.

When running at an bias of 0.2 – 0.35A two modules gets enough cooling from one 0.4K/W heatsink. In general, there should be a good airflow around the heatsink.

With 25mA bias 1K/W heatsink is good enough or just the baseplate (5mm thickness).

In general, it is not a good advice to go higher than 60 degrees. With a room temperature of 30 degrees Celsius, it will leave 30 degrees Celsius for the heatsink. With 0.4 K/W, it will give us 75Watt or 1 Ampere bias current with only one module per heatsink. 0.4K/W matches Fischer Elektronik SK56 100mm SA.

Cabling notes.

Always use shielded or at least twist the cables to reduce coupling as much as possible between the wires.

Trim procedure.

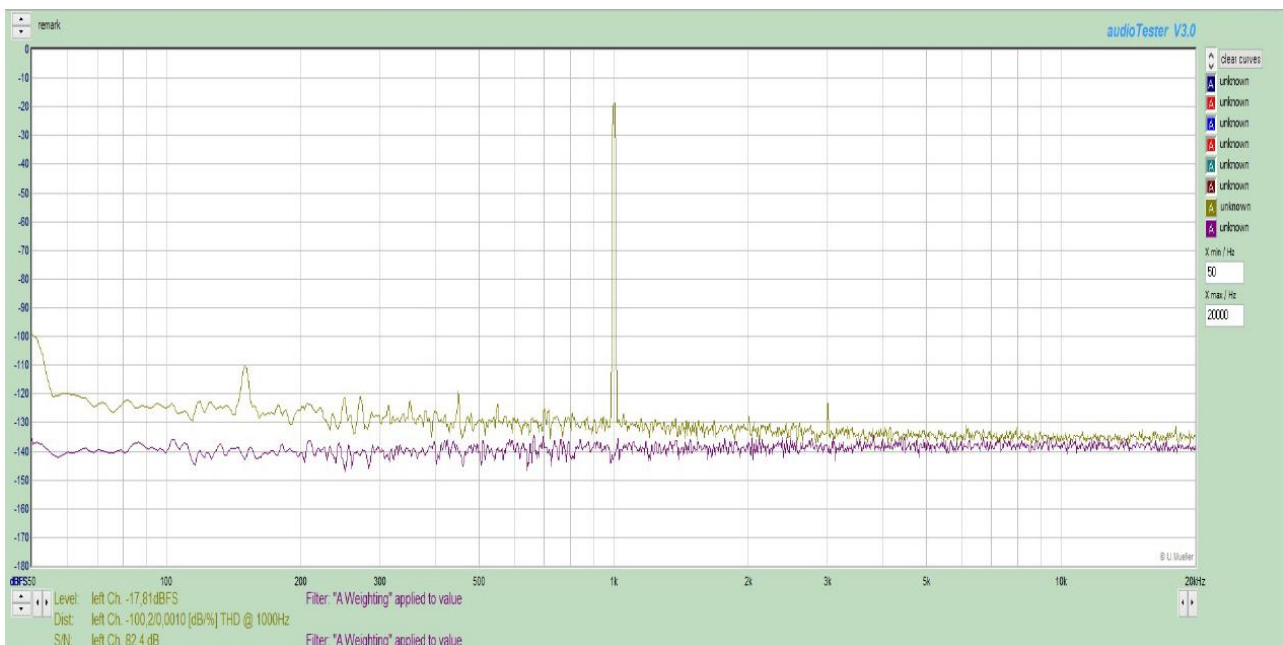
Before powering up turn trimmer R4 12 turns CW

Turn on the amp.

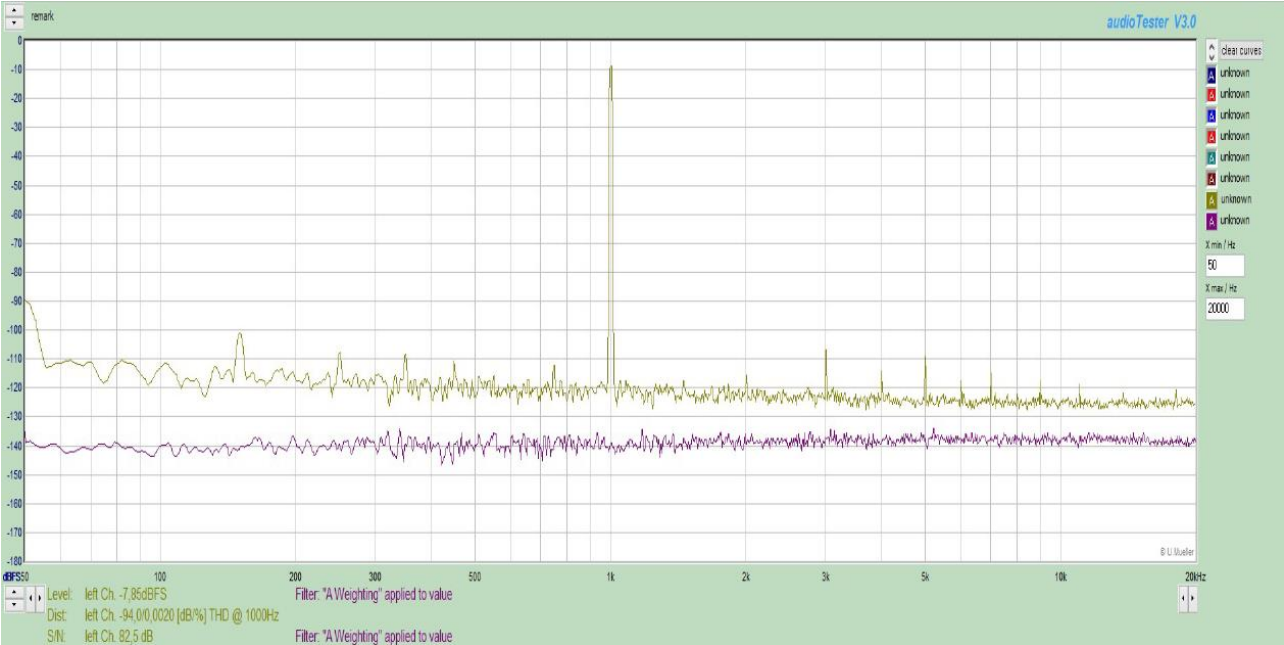
1. Wait 10 second.
2. Measure across J21 and J22
3. Turn R4 CCW until J21 and J22 are 10mVDC (25mA bias) (about 6 turns)
4. Wait 5 min.
5. Re-adjust R4 CCW or CW until J21 and J22 are 10mVDC (25mA bias)
6. Check the offset is still within +/-10 mV

Measurements

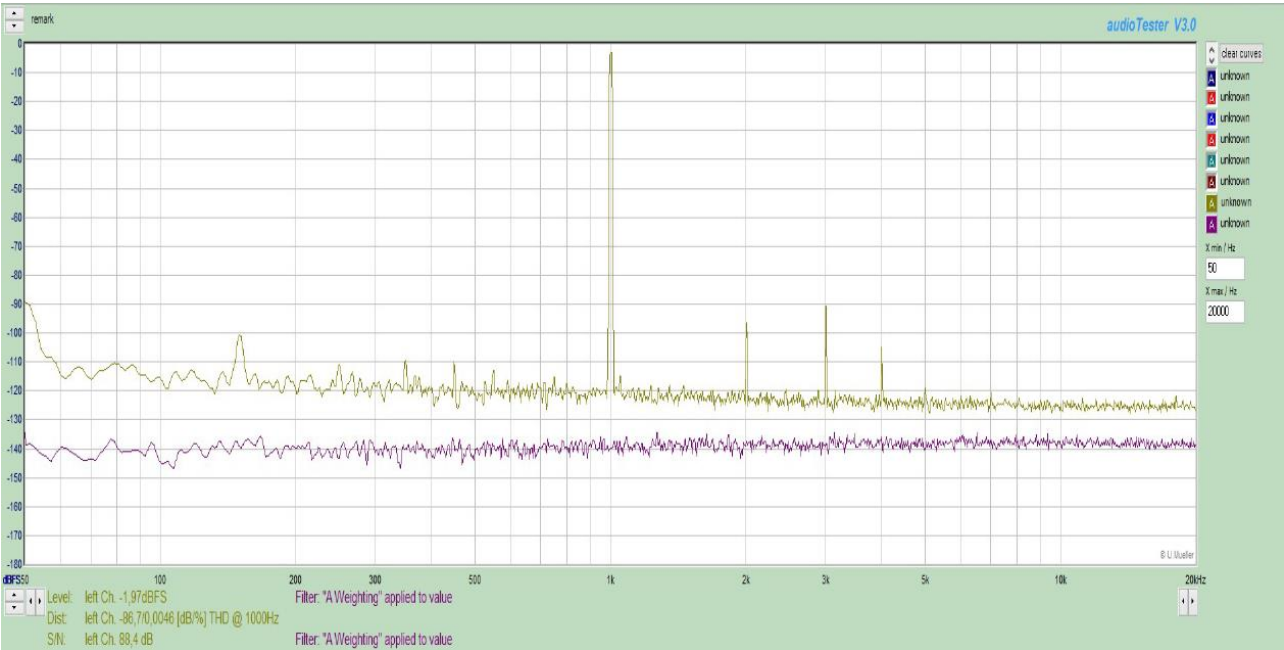
4Vrms 25mA bias no load: 0.001%



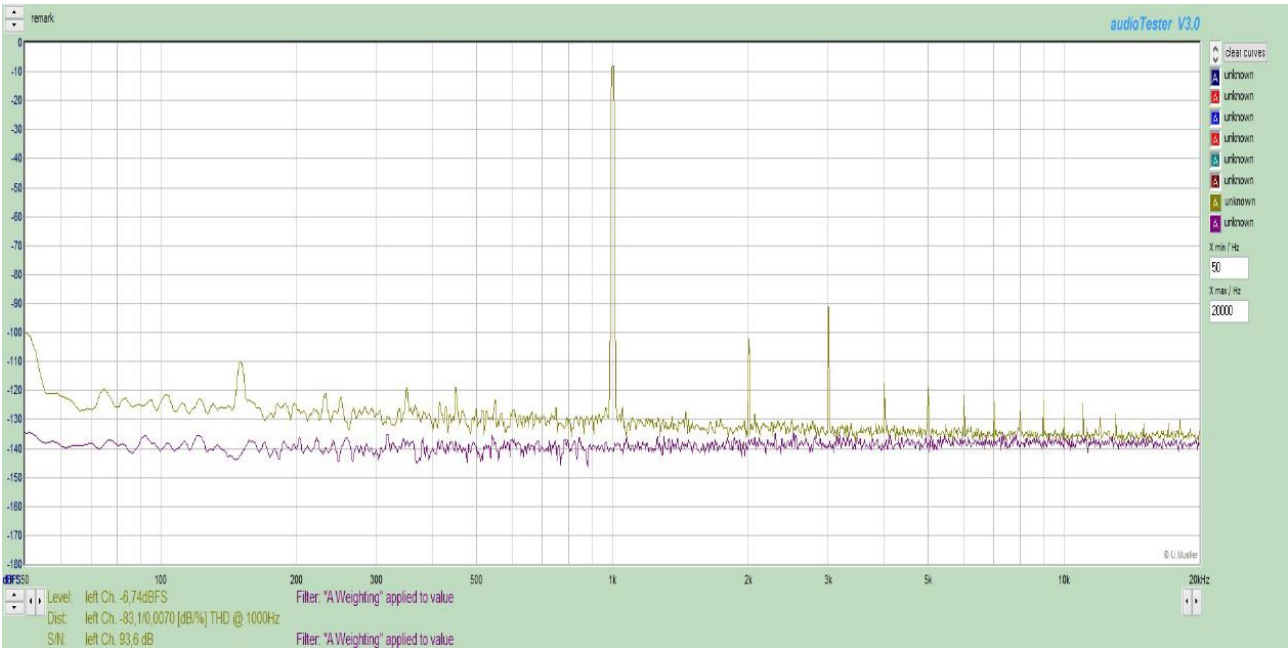
4Vrms 25mA bias 8R: 0.002%



8Vrms 25mA bias no load: 0.0046%

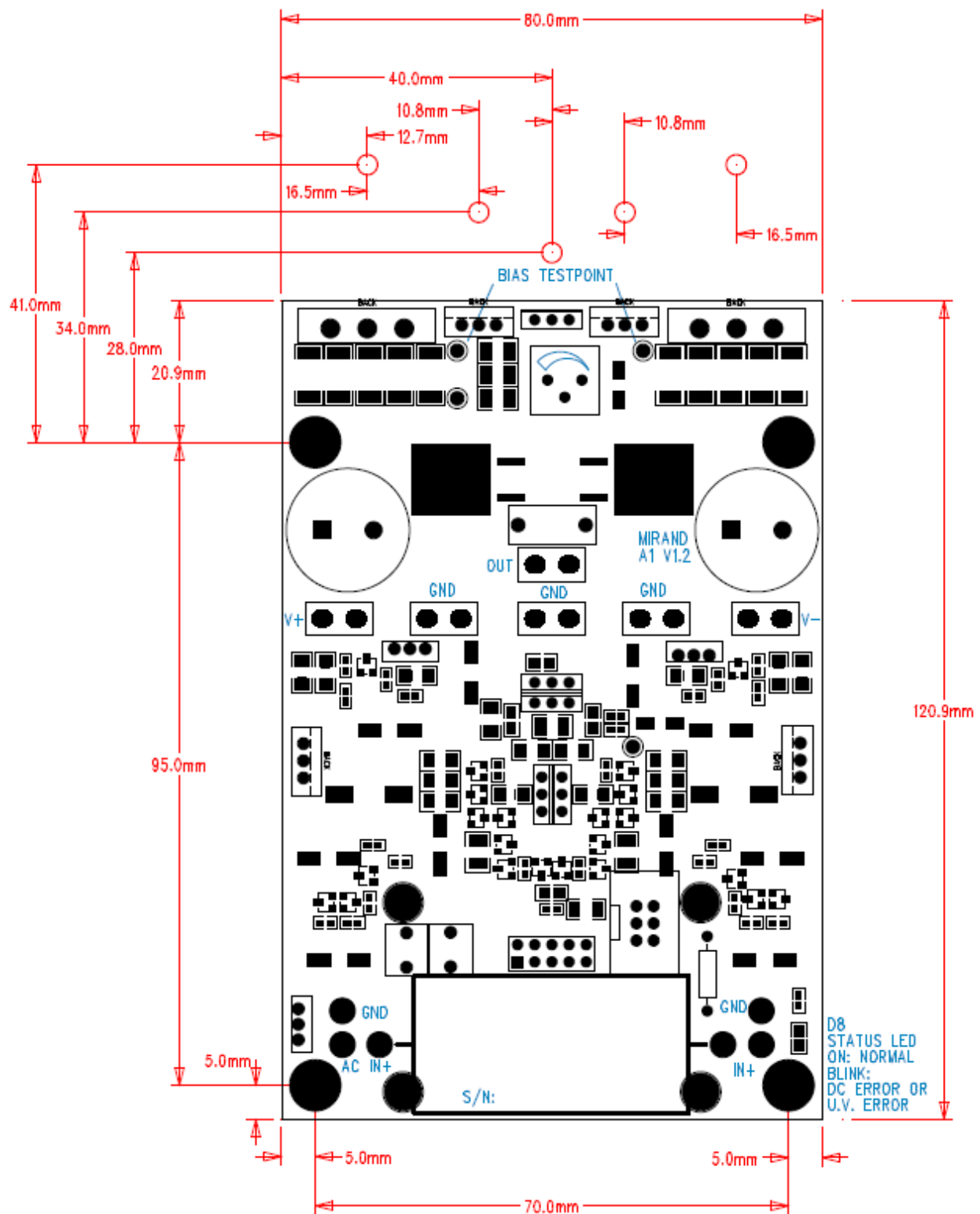


27W 25mA bias no load: 0.007%



Mechanical outline.

This picture show our normal mechanical outline we provide, but other setup can be provided as well.



Ordering information

Part number: MIRAND A1 V1.2

Contact information

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