

Electro Dieus

FIVE-BAND AUDIO EQUALIZER

Datasheet



GENERAL DESCRIPTION

The **Five Band Audio Equalizer** is an analog audio processing unit designed to independently control gain across five distinct frequency bands, ensuring precise tonal balance and superior sound customization. Each band corresponds to a specific range of the audible spectrum—20–300 Hz, 300 Hz–1 kHz, 1–4 kHz, 4–10 kHz, and 10–20 kHz—providing fine adjustment capability from low bass to high treble.

The active filter sections feature a precision **constant-Q (constant bandwidth)** design for each of the five bands. Constant-Q ensures that the bandwidth of every filter remains narrow enough to prevent unwanted overlap between adjacent frequency ranges, yet broad enough to deliver the precise tonal shaping required in diverse acoustic environments. This approach provides predictable and stable response characteristics, maintaining consistent filter behavior regardless of the amount of boost or cut applied.

FEATURES

- Constant-Q Bandwidth Design
- Precise Level Control of Individual Bands
- Overall Level Control
- Direct Input from Consumer Electronics
- dB to dB Range
- Individual Band Level Indicators

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ELECTRICAL CHARACTERISTICS

PARAMETER	RATING			UNIT
	MIN.	TYP.	MAX.	
Supply Voltage ($\pm V_S$)	9	12	14	V
Supply Current (I_S)	100	300	400	mA
Input Voltage ($V_{in(rms)}$)	0.15	0.3	0.8	V
Input Current ($I_{in(rms)}$)	10	50	100	mA
Input Impedance (Z_{in})	-	~3	-	M Ω
Output Voltage ($V_{out(rms)}$)	0.4	2	2.8	V
Output Current ($I_{out(rms)}$)	~0	250	350	mA
Output Impedance (Z_{out})	-	8	-	Ω
Operating Temperature (T_A)	0	30	70	$^{\circ}\text{C}$

DEVICE SPECIFICATIONS(MECHANICAL)

PARAMETER	RATING	UNIT
Weight (m)	512.32	g
Dimensions <ul style="list-style-type: none">LengthBreadthHeight	287.11 148.05 100.00	mm mm mm

DEVICE SPECIFICATIONS(I/O)

- Input connector – 3.5 mm Aux Stereo 3 Pole TRS Jack
- Output connector – 3.5 mm Aux Stereo 3 Pole TRS Jack

DEVICE SPECIFICATIONS(Audio)

PARAMETER	RATING	UNIT
Bandwidth (BW)	20	kHz
Output Power (P_{OUT})	0.5	W

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TYPICAL CHARASTERISTICS

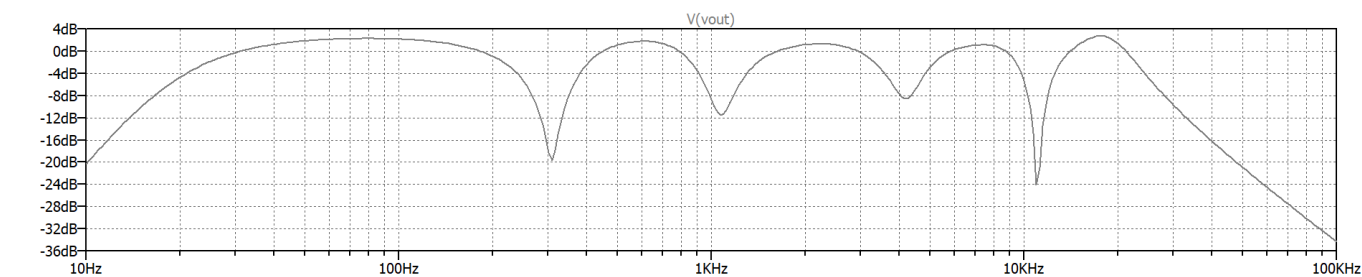
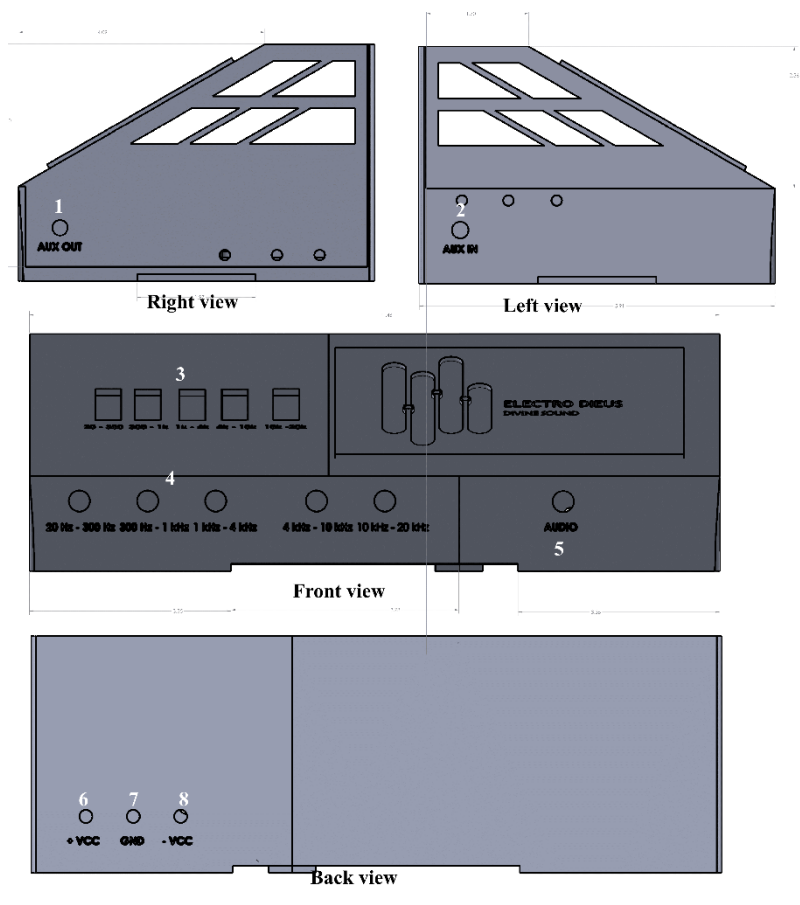


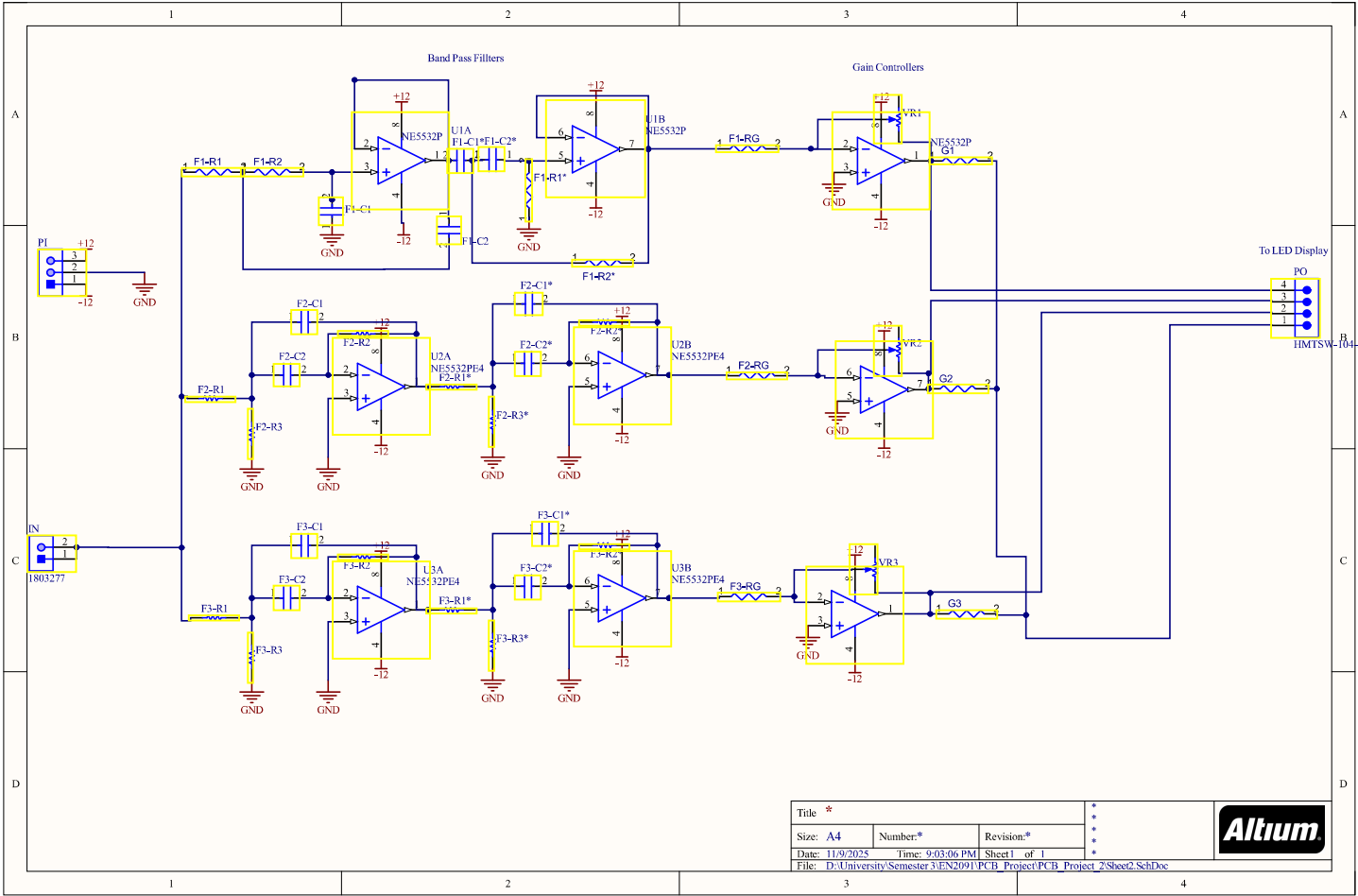
Figure 1: Frequency vs Gain

CONTROLS & FUNCTIONS

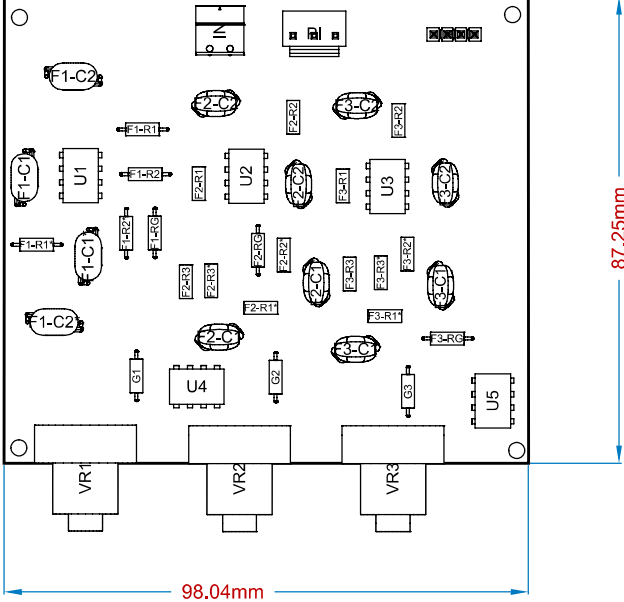


1	AUX out
2	AUX in
3	LED displays
4	Individual gain controllers
5	Volume Controller
6	+V _{CC}
7	GND
8	-V _{CC}

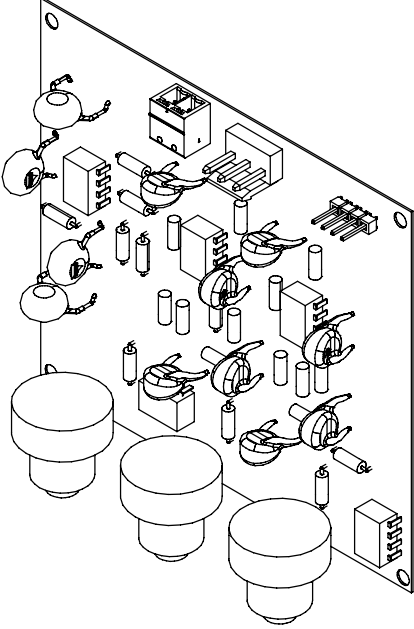
CIRCUIT DIAGRAMS, PCB LAYOUTS & ENCLOSURE DESIGN



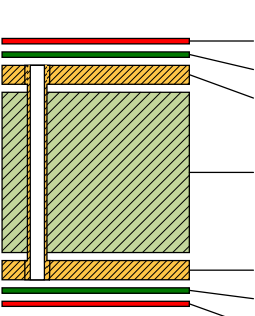
View from Top side (Scale 1:1)



View from Top side (Scale 1:1)

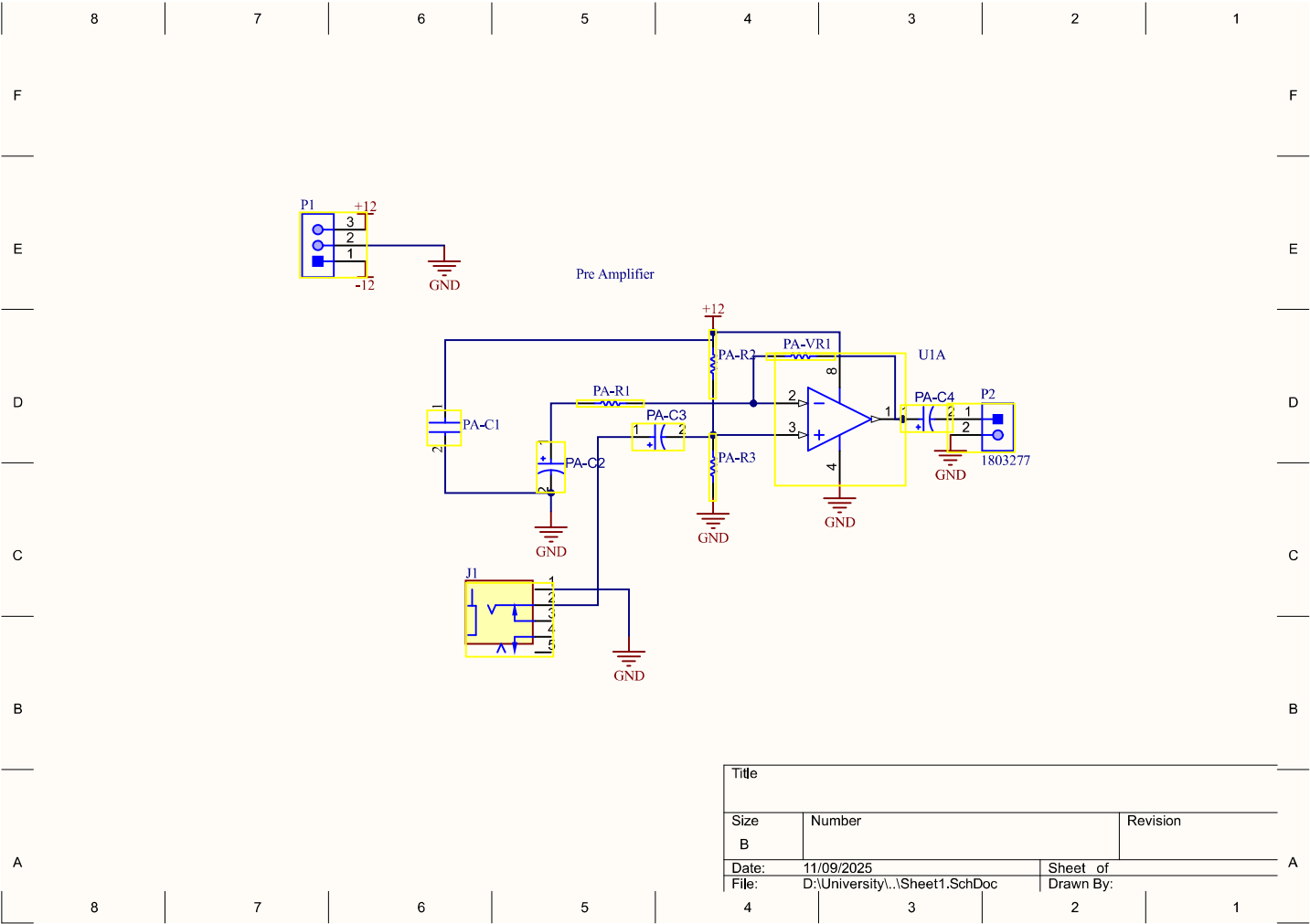


Layer Stack Legend

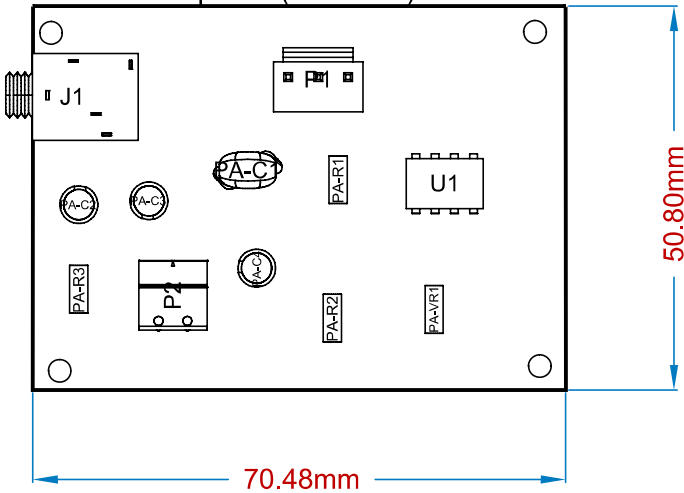


Material	Layer	Thickness	Dielectric Material	Type	Gerber
	Top Overlay			Legend	GTO
	Top Solder	0.01mm	Solder Resist	Solder Mask	GTS
	Top Layer	0.04mm		Signal	GTL
		0.32mm	FR-4	Dielectric	
	Bottom Layer	0.04mm		Signal	GBL
	Bottom Solder	0.01mm	Solder Resist	Solder Mask	GBS
	Bottom Overlay			Legend	GBO

Total thickness: 0.41mm



View from Top side (Scale 1:1)



View from Top side (Scale 1:1)

