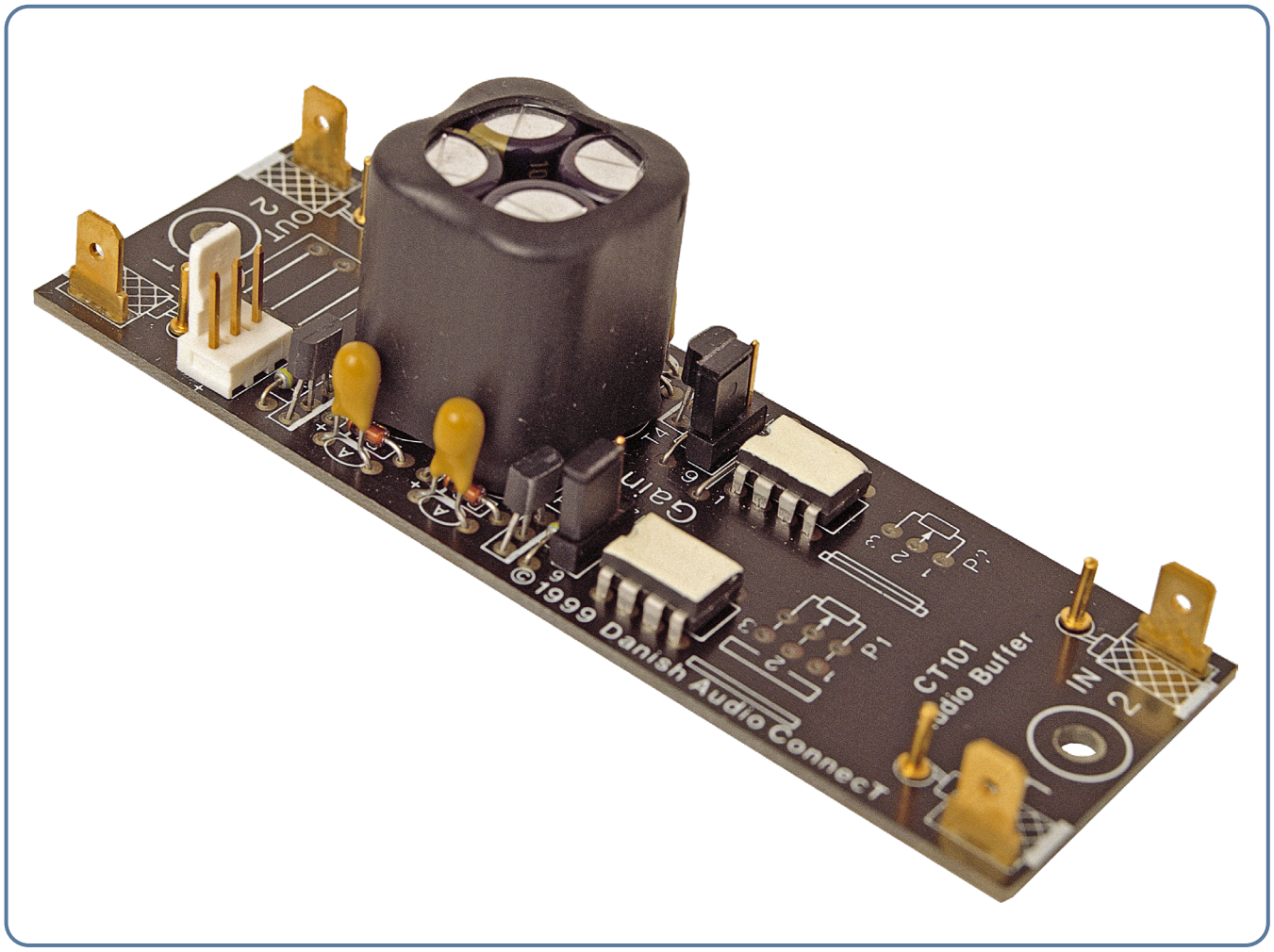
DACT

DANISH AUDIO CONNECT



Datasheet

CT101 line stage / linear preamplifier module

DACT
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CT101 2-channel line stage / preamplifier module

CT101 was designed specifically for high-end audio. It's uncoloured sound, compact design, low power consumption, and ability to drive difficult loads, makes it universal for line level audio applications. Mount a DACT CT2 stepped audio attenuator directly in the CT101 PCB, and you have an active high-end preamplifier with up to 12dB gain. Please observe that CT101 requires an external DC power supply (**not included**).

- Wide operating supply range ±5V to ±100V
- Large bandwidth, DC to 25 MHz at 0dB gain
- Low Total Harmonic Distortion 0.0002%
- Low noise, -115dB at 0dB gain
- Large channel separation 120dB
- High slew rate 500V/us
- Drives difficult loads (output impedance 0.1ohm)
- Large output voltage swing ±14V
- Close channel matching ±0.05dB
- Compact, dual-mono design
- Very short signal path
- Use of low noise SMD metal film resistors
- Use of SMD decoupling capacitors
- Very low inductance and stray capacitance
- Dual on-board voltage regulators for each channel
- No magnetic parts in the signal path
- All PCB traces and connectors gold plated
- User settable gain 0, 6 or 12dB

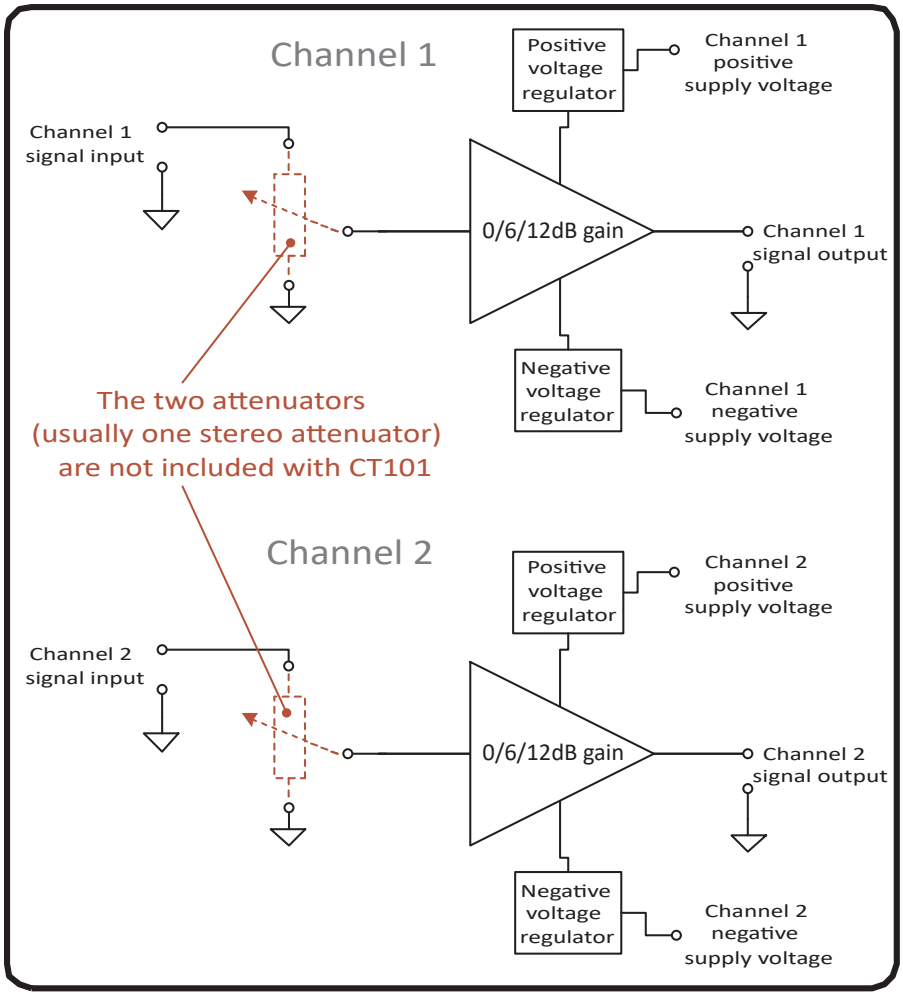
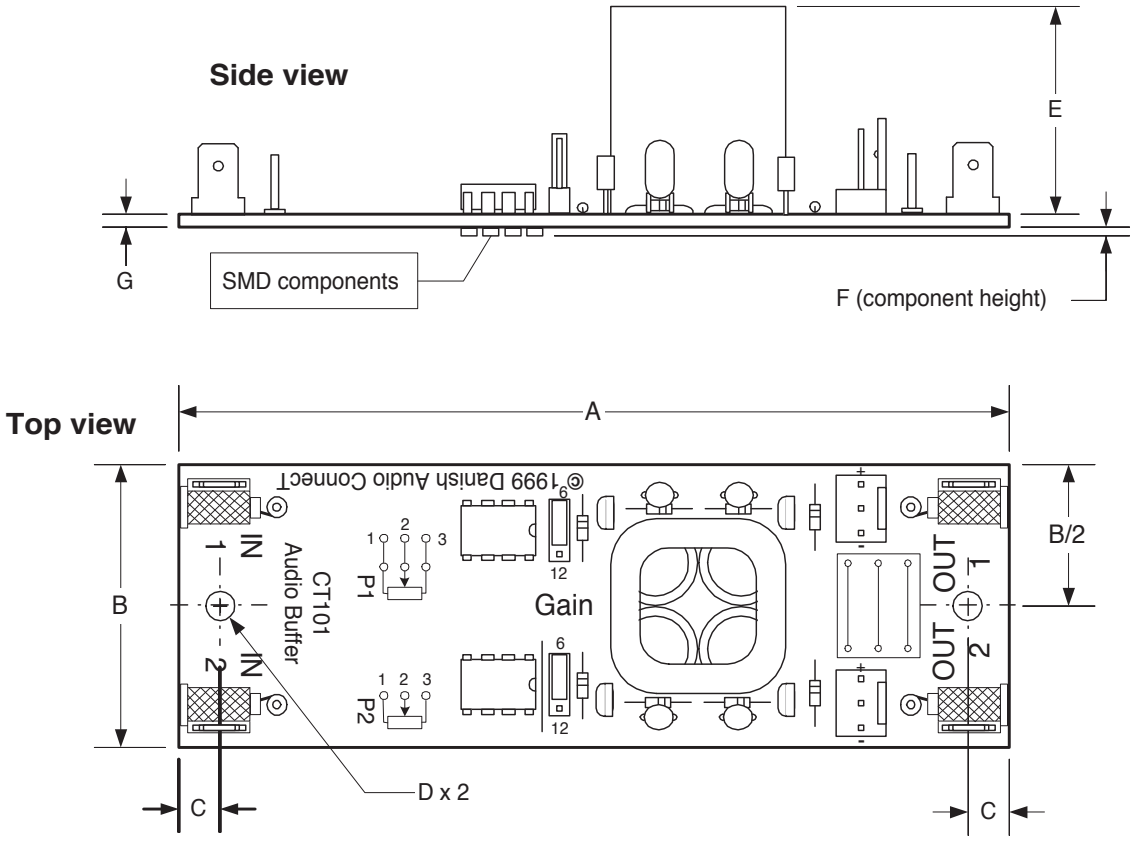


Fig. 1. CT101 block diagram

CT101 2-channel line stage / preamplifier module



Symbol	Dimension, mm	Dimension, inch.
A	100mm	3.94"
B	34mm	1.34"
C	5mm	0.20"
D	Ø3.5mm	Ø0.14"
E	25 ± 5mm	0.98 ± 0.20"
F	< 3mm	< 0.12"
G	1.5mm	0.06"

Fig. 2. CT101 layout drawing and dimensions

Please be very cautious when connecting the CT101 to your audio equipment. CT101 is an active module, and in case of wrong connections or in case of failures, there is a risk of getting up to 14-15V DC offset on the output of CT101. High levels of DC offset may cause damages to power amplifiers, loudspeakers or any other connected equipment. Special attention is required when using DC-coupled power amplifiers.Before connecting the outputs of CT101, make sure of proper operation and check the DC-voltage at the CT101 outputs. The DC voltage should be no more than a few mVs. In case of any doubt, start out using a coupling capacitor in series with the CT101 output.

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CT101 2-channel line stage / preamplifier module

MAXIMUM RATINGS

Notes	Symbol	Parameter	Comment	Value	Unit
1	V_S	Supply voltage		±120	V
1	V_{IN}	Input voltage	A_V = 0/6/12dB	±10	V
1	T_S	Storage temperature range		-40 to +85	°C
				(-40 to 185)	F

MAXIMUM OPERATING RATINGS

Notes	Symbol	Parameter	Comment	Value	Unit
2	V_S	Supply voltage range		±5 to ±100	V
2	T_A	Ambient temperature range		-25 to +70	°C
				(-13 to 158)	F

RECOMMENDED OPERATING RATINGS

Notes	Symbol	Parameter	Comment	Value	Unit
3	V_S	Supply voltage range		±17 to ±35	V
3	T_A	Ambient temperature range		0 to +50	°C
				(32 to 122)	F

DC ELECTRICAL CHARACTERISTICS

Typical values at T_A = +25°C (77F), V_S = ±20V, R_L = 1kohm unless otherwise specified

Notes	Symbol	Parameter	Comment	Value	Unit
	A_V	Voltage gain	Set by jumper	0, 6 or 12	dB
	V_{OS}	Input offset voltage		1	mV
	I_B	Input bias current		0.2	uA
	R_{IN}	Input resistance		100	Mohm
	C_{IN}	Input capacitance		3	pF
3, 4	PSRR	Power supply rejection ratio	A_V = 0/6/12dB, 10Hz to 20kHz	120	dB
	R_O	Output resistance	A_V = 0dB, DC to 20kHz	0.1	ohm
	V_O	Output voltage swing	R_L = 10kohm	±14.2	V
	I_O	Output current swing	R_L = 100ohm	±25	mA
	I_S	Supply current, each channel	R_L: 5kOhm or greater	±3	mA

AC ELECTRICAL CHARACTERISTICS

Typical values at T_A = +25°C (77F), V_S = ±20V, R_L = 1kohm unless otherwise specified

Notes	Symbol	Parameter	Comment	Value	Unit
	BW	Bandwidth	-3dB, A_V = 0/6/12dB	25/10/4	MHz
	SR	Slew rate		500	V/us
	t_s	Settling time	0.1%	100	ns
	t_r, t_f	Rise and fall time		8	ns
	e_n	Input noise voltage density	f = 1kHz	8	nV*sgrt(Hz)
	I_n	Input noise current density		1	pA*sgrt(Hz)
4, 5	S/N	Signal to noise ratio	A_V = 0/6/12dB	115/112/107	dB
4, 6	CS	Channel separation	A_V = 0/6/12dB, 10Hz to 20kHz	120	dB
4	THD	Total harmonic distortion	A_V = 0/6/12dB, f_o = 1kHz	0.0002	%

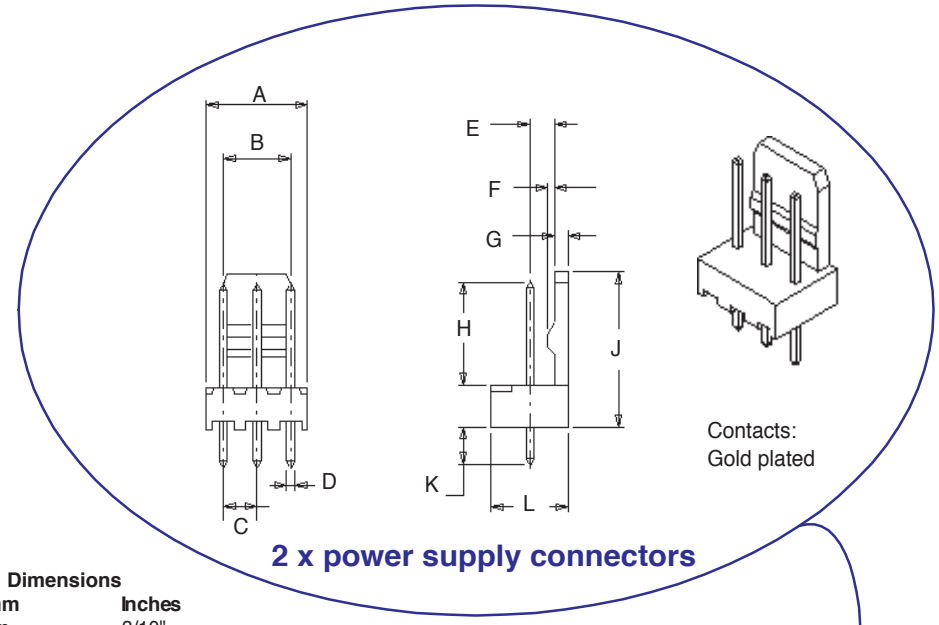
Notes

1 Exposure to maximum rating conditions for extended periods of time may affect device reliability.
2 Operating ratings indicate conditions for which other device parameters may not apply.
3 Probably greater. Limited by measuring instrument.
4 Measuring instrument: Panasonic Audio Analyzer VP-7722P.
5 Input short-circuited. Reference: 1V. Response: RMS. Weighting: IHF-A.
6 Average value over specified frequency range.

Most specifications are guaranteed by design and therefore not tested.

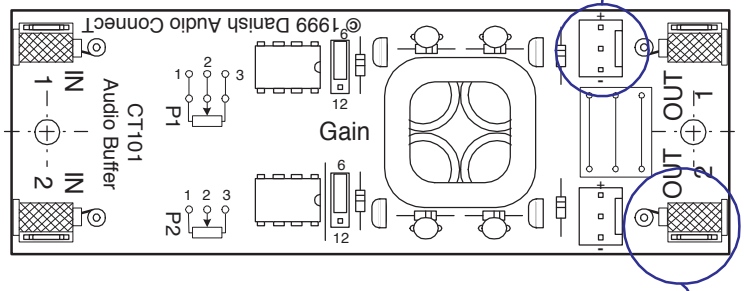
Table 1. CT101 specifications

CT101 2-channel line stage / preamplifier module



Dimensions

Symbol	mm	Inches
A	7.62mm	3/10"
B	5.08mm	2/10"
C	2.54mm x 2	1/10" x 2
D	0.63mm x 0.63mm	1/40" x 1/40"
E	1.88mm	0.74"
F	0.53mm	0.021"
G	1.00mm	0.039"
H	7.50mm TYP.	0.30" TYP.
J	11.7mm	0.46"
K	3.56mm TYP.	0.14" TYP.
L	5.8mm	0.23"
M	4.8mm	0.19"
N	Ø1.4mm	Ø0.055"
P	9mm	0.35"
Q	6.3mm	0.25"
R	0.8mm	0.031"
S	Ø1.3mm	Ø0.051"
T	6.5mm	0.26"



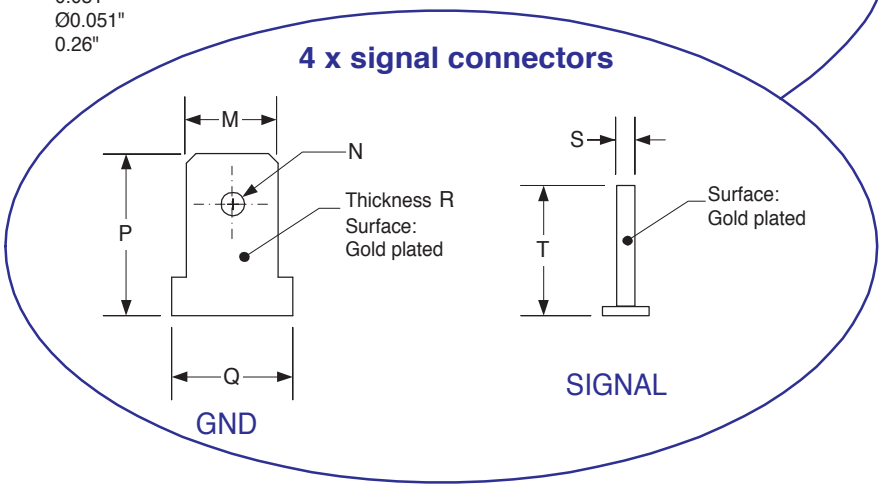


Fig. 3. CT101 connectors

Latest update: August 11, 2024