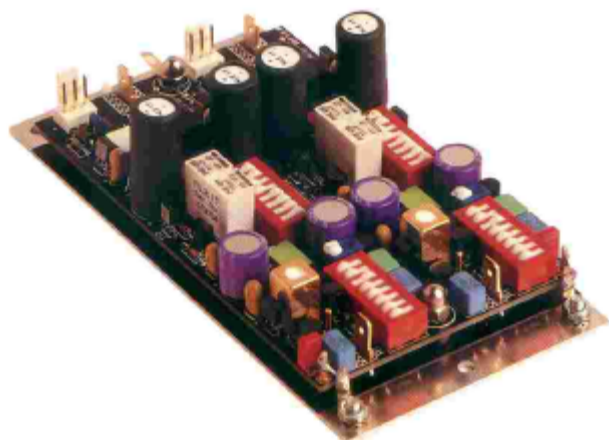


## CT100 phono stage DATA SHEET



**Phono preamplifier module with very accurate RIAA equalization (0.05dB).**

**Adapts to practically all MC and MM cartridges on the market through a wide range of gain, input resistance and input capacitance settings.**

**No step-up transformer required for MC cartridges.**

**Dual-mono design with option for using two separate power supplies.**

**Balanced output option built in.**

### DESCRIPTION

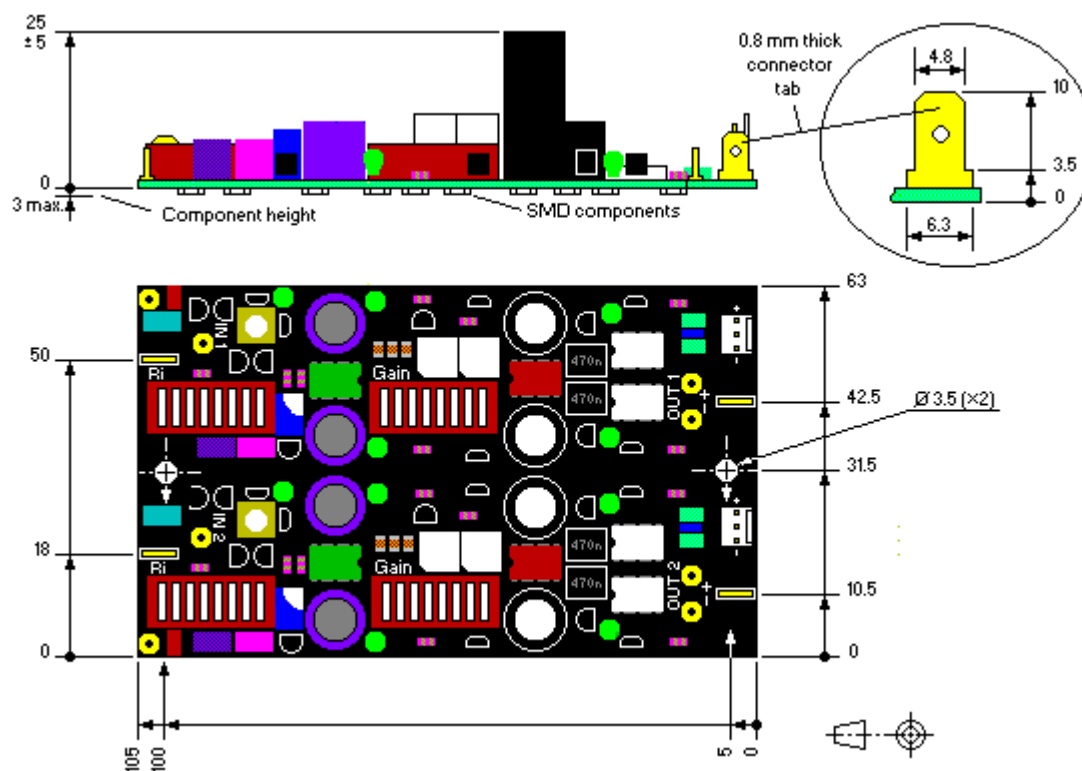
The CT100 is a two-channel phono preamplifier module with very accurate RIAA equalization and many features. It is realized with the best semiconductors available and non-inductive, low noise, SMD metal film resistors. The circuit is designed to accept both moving coil (MC) and moving magnet (MM) transducers/cartridges directly in order to eliminate the need for an external MC step-up transformer or amplifier. MC/MM input loading and input nominal level values are easy to select with high resolution by DIP-switches.

The CT100 is ideal for the most demanding applications requiring accurate RIAA equalization, very low noise, extremely low distortion and superior sonic performance. CT100 is a pre-assembled PCB ready for building into an enclosure or even better into your turntable (shorter signal cables). The high output voltage from CT100 makes it equivalent to other signal sources like CD-players.

### OUTLINE DRAWING AND DIMENSIONS (mm)

### FEATURES

- Compact design. Dual-mono. Very low noise
- Balanced output option
- Non-inductive low noise SMD metal film resistors
- Input accepts moving coil/moving magnet (MC/MM) cartridges directly without step-up transformer
- Input loading 10 Ohm to 47kOhm for MC/MM selectable in 21 steps
- Input nominal levels 0.1mV to 10mV selectable in 34 steps
- High output drive. Balanced 28V. Unbal. 14V
- High accuracy RIAA equalization with 0.05dB tolerance
- Additional time constants of 3.18uS and/or 7950uS are selectable
- Total harmonic distortion 0.0003%
- Low output impedance - drives long signal cables
- High output current capability - drives even high impedance headphones
- Two-stage dual-supply voltage regulator on-board for each channel. Separate DC supply input for each channel (dual mono)



## SPECIFICATIONS

### MAXIMUM RATINGS

Note	Symbol, parameter	(conditions / comments)	Value	Unit
1	$V_S$ , supply voltage		+/-50	V
1	$V_{IN}$ , input voltage	( $A_V = 40\text{dB}$ to $80\text{dB}$ )	+/-1	V
1	$T_S$ , storage temperature range		-40 to +85	deg. C

### OPERATING RATING

Note	Symbol, parameter	(conditions / comments)	Value	Unit
2	$V_S$ , supply voltage range		+/-9 to +/-35	V
2	$T_A$ , ambient temperature range		-25 to +70	deg. C

### DC ELECTRICAL CHARACTERISTICS

(Typical values at  $T_A = +25$  deg.C and  $R_L = 1\text{k}$  unless otherwise specified)

Note	Symbol, parameter	(conditions / comments)	Value	Unit
	$R_{IN}$ , input resistance	(DIP-switch selectable)	10,15,18,20,25,30,40,50,60,70,80,90,100,150,180,200,250,400,600,1k,47k	Ohm
	$C_{IN}$ , input capacitance	(DIP-switch selectable)	Approx. 100,200,300,400	pF
3	$I_B$ , input bias current	(Input bias current cancellation pre-adjusted)	Max. 0.5	uA
4	PSRR, power supply rejection ratio	( $A_V = 40\text{dB}$ , 10Hz to 20kHz)	120	dB
	$R_O$ , output resistance	( $V_O = 1\text{V}$ , DC to 100kHz)	0.1	Ohm

$V_O$ , output voltage swing	(Unbalanced operation)	Min. 14.2	V
$I_O$ , output current	( $R_L = 100 \text{ Ohm}$ )	25	mA
$I_S$ , supply current	(Each channel)	22	mA

## AC ELECTRICAL CHARACTERISTICS

(Typical values at  $T_A = +25 \text{ deg.C}$  and  $R_L = 1k$  unless otherwise specified)

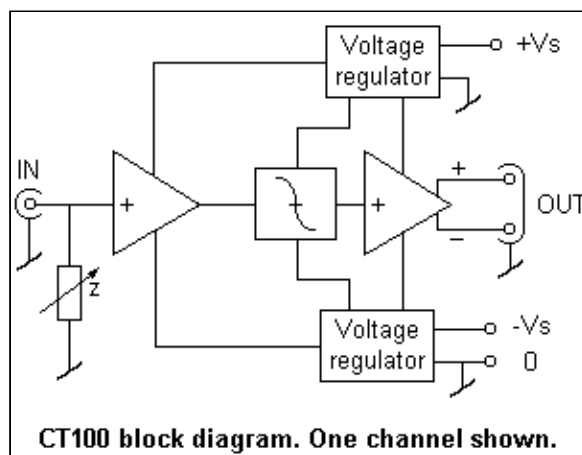
Note	Symbol, parameter	(conditions / comments)	Value	Unit
	$V_{IN}$ , input nominal levels	( $V_O = 1V$ ) (DIP-switch selectable) (0.10mV ~ $A_V = 80\text{dB}$ ) (1.0mV ~ $A_V = 60\text{dB}$ ) (10mV ~ $A_V = 40\text{dB}$ )	0.10, 0.12, 0.15, 0.18, 0.20, 0.25, 0.30, 0.40, 0.45, 0.50, 0.55, 0.60, 0.70, 0.80, 0.90, 1.0, 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.8, 2.0, 2.5, 3.0, 3.5, 4.0, 4.5, 5.0, 7.0, 8.0, 9.0, 10.0	mV
	$V_{INO}$ , input overload level	( $f = 1\text{kHz}$ , $A_V = 40\text{dB}$ )	100	mV
	$A_V$ , voltage gain	(DIP-switch selectable)	40 to 80	dB
4,5	$dA_V$ , RIAA equalization deviation	(Ref. = 1kHz, 10Hz to 20kHz)	0.05	dB
	BW, bandwidth	(-3dB, $V_O = 1V$ , $A_V = 40\text{dB}$ )	2	MHz
4	$e_n$ , input noise voltage density	( $f_0 = 1\text{kHz}$ , $A_V = 80\text{dB}$ )	0.5	nV/Hz
4,6	S/N, signal to noise ratio	( $A_V = 40/60/80\text{dB}$ )	98/90/71	dB
4	CS, channel separation	( $A_V = 40\text{dB}$ , 10Hz to 20kHz)	120	dB
4	THD, total harmonic distortion	( $A_V = 40\text{dB}$ , $f_0 = 1\text{kHz}$ )	0.0003	%

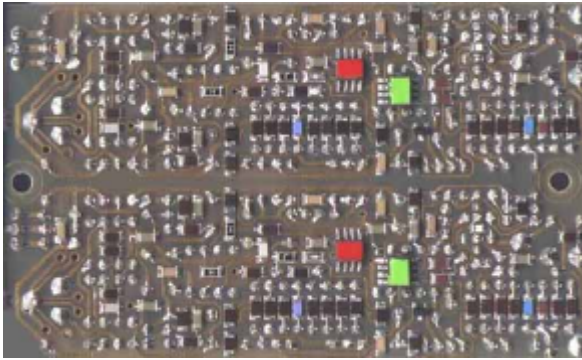
### Notes

- 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 At power up and power down the value may be maximum 5uA for less than one second.
- 4 Measured with Panasonic Audio Analyzer VP-7722P
- 5 RIAA time constants are 75uS, 318uS and 3180uS. Additional time constants of 3.18uS and 7950uS are DIP-switch selectable.
- 6 Input short-circuited. Reference: 1V. Response: RMS. Weighting: IHF-A

### TYPICAL APPLICATIONS

- High performance RIAA preamplifier for MC and MM cartridges
- High performance RIAA headphone amplifier
- Upgrading Hi-Fi equipment
- Reference RIAA preamplifier
- Test equipment RIAA preamplifier.





If you think the upper side of the CT100 PCB is already heavily packed with components then you should see the **S**urface **M**ount components on the backside.