

CA05 preamplifier board.

The CA05 preamplifier is a low noise preamplifier that can operate at liquid Argon temperature 87 K. The circuit based on JFET transistors and has a low consumption that permit use this preamplifier inside cryogenic vessel at low temperatures.

The preamplifier specification:

Power Consumption

Linearity

Sensitivity (Vout) 0.5 mV/fC.

Input Impedance 400 Ohm.

Open Loop Gain 150.

GAIN stability

(in range from -185 to 50 C) less then 1%.

Dynamic Range ± 0.5 V.

ENC (Cd=0) (*) 200 electrons.

ENC Slope (*) about 5 electrons/pF

Decay Time 220 μ s

(*) With a CR-RC2 shaper, RC = 3 μ s.

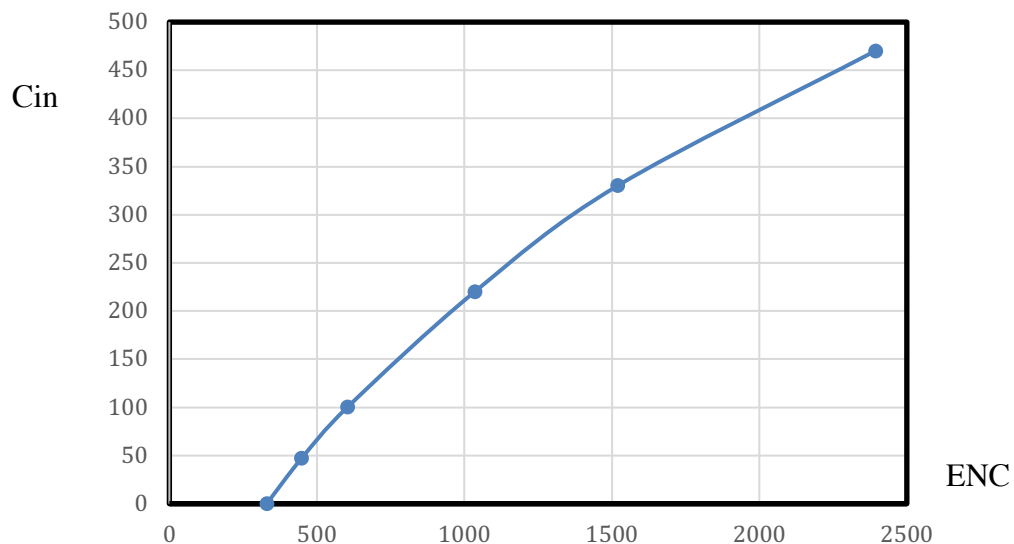


Figure 1 – Measured Equivalent Noise Charge for the pre-amplifier working in charge mode at room temperature. The ENC at $C_{in} = 0$ is 200 electrons and the ENC slope is about 5 electrons/pF.

POWER SUPPLY REQUIREMENTS:

P. Voltage (V)	Current
+6	5 mA
-6(-4)	2 uA (0,04uA)

DIMENSIONS:

PC board has dimensions 25,4x12,5 mm. The thickness is 1,6 mm.

WEIGHT:

Net 1,8 g. without header connector.

Net 2,5 g. with header connector.

Table 3. Ordering codes.

CA code	Description	Negative power supply
CA05_xxx_4V	PCB board without header	-4 Volt
CA05_xxx_6V	PCB board without header	- 6 Volt
CA05_045_4V	PCB board with header pin Ø 0,45 mm	-4 Volt
CA05_076_6V	PCB board with header pin Ø 0,76 mm	-6Volt