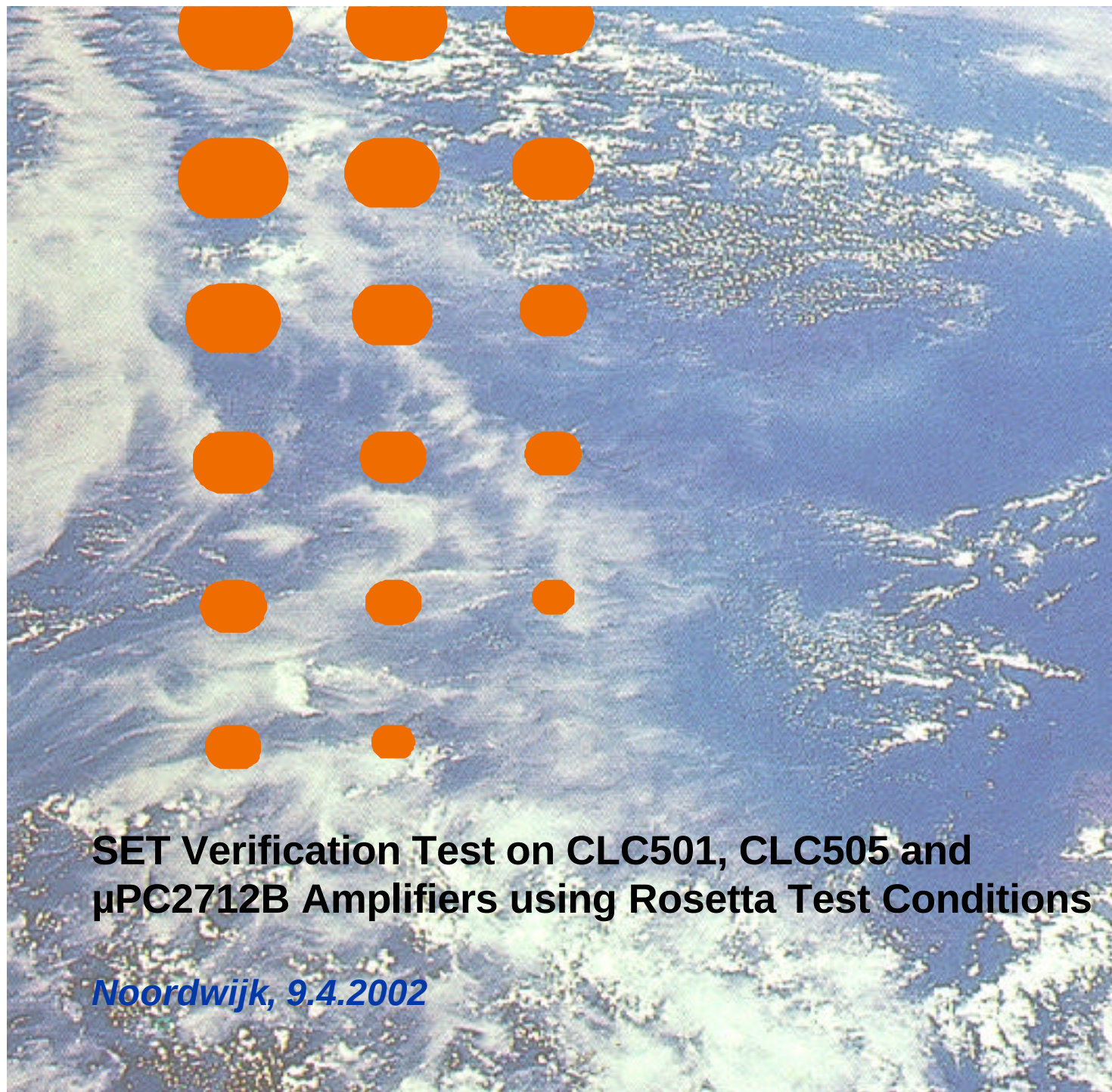




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**SET Verification Test on CLC501, CLC505 and
 μ PC2712B Amplifiers using Rosetta Test Conditions**

Noordwijk, 9.4.2002

Test Candidates

CLC501: High speed (50 MHz) Op Amp with programmable output voltage clamp,
National Semiconductor,
8 pin Cerdip

CLC505: High speed (100 MHz) Op Amp with programmable bandwidth,
National Semiconductor,
8 pin Cerdip

μ PC2712B: High speed (2.6 GHz) buffer amplifier,
NEC,
Ceramic Minimold package

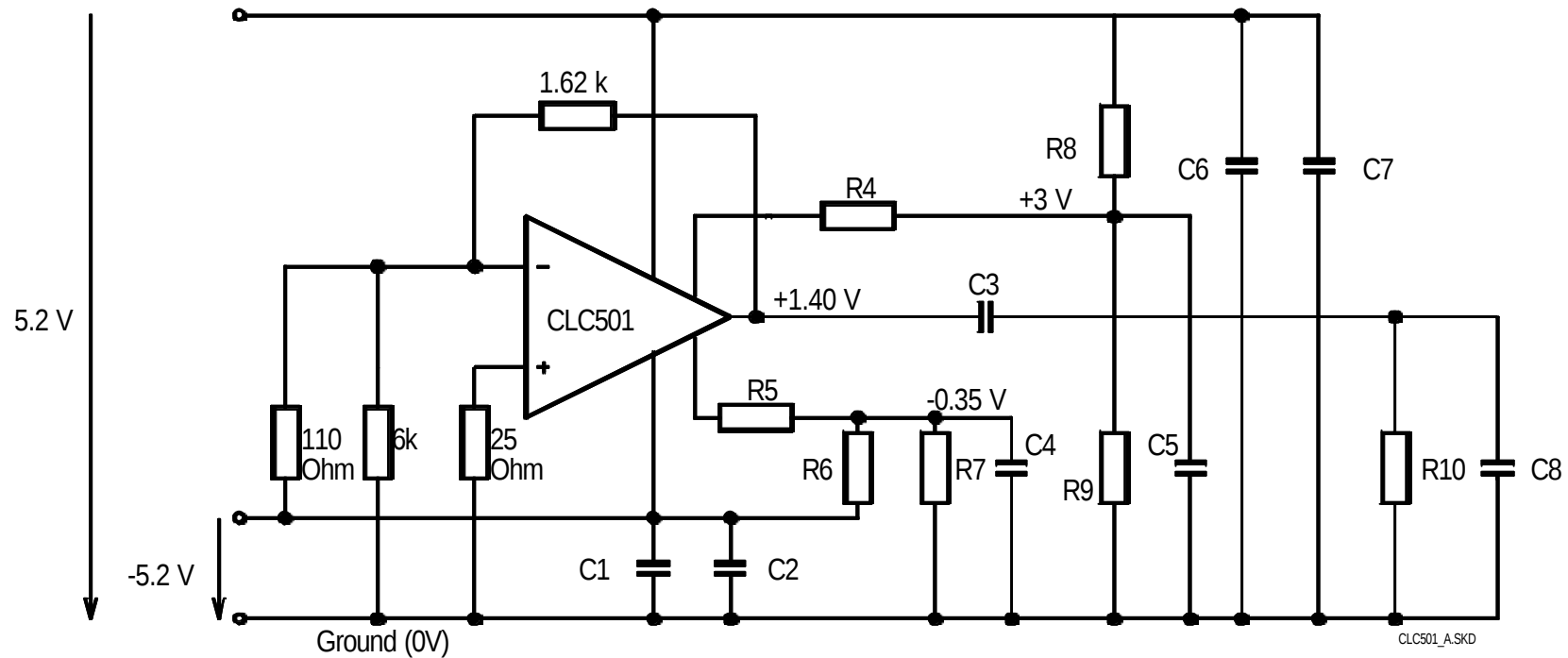
Application: Rosetta transponder hardware

Test Philosophy

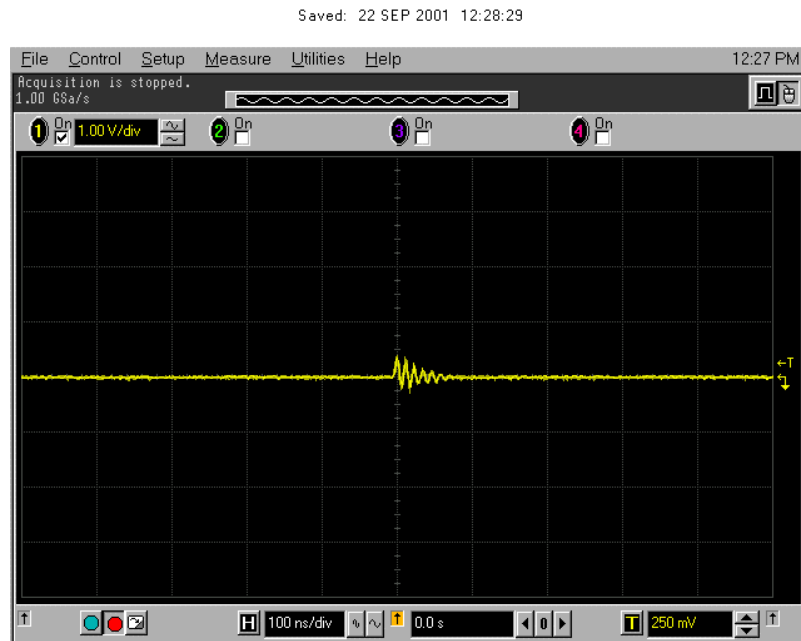
- Detection of SE induced transients at amplifier output
- Quantification of amplitude and duration of transients
- Detection of positive and negative transients
- Counting of events for determination of cross-section

CLC501 DC Bias for Test (no AC Bias Applied)

RF Amplifier, Gain 23 dB, Output Clamp to +3/-0.35 V:



CLC501 Output Transients



LET = 2.4 MeV/cm²/mg

Amplitude: 0.3 V

Duration: <100 ns

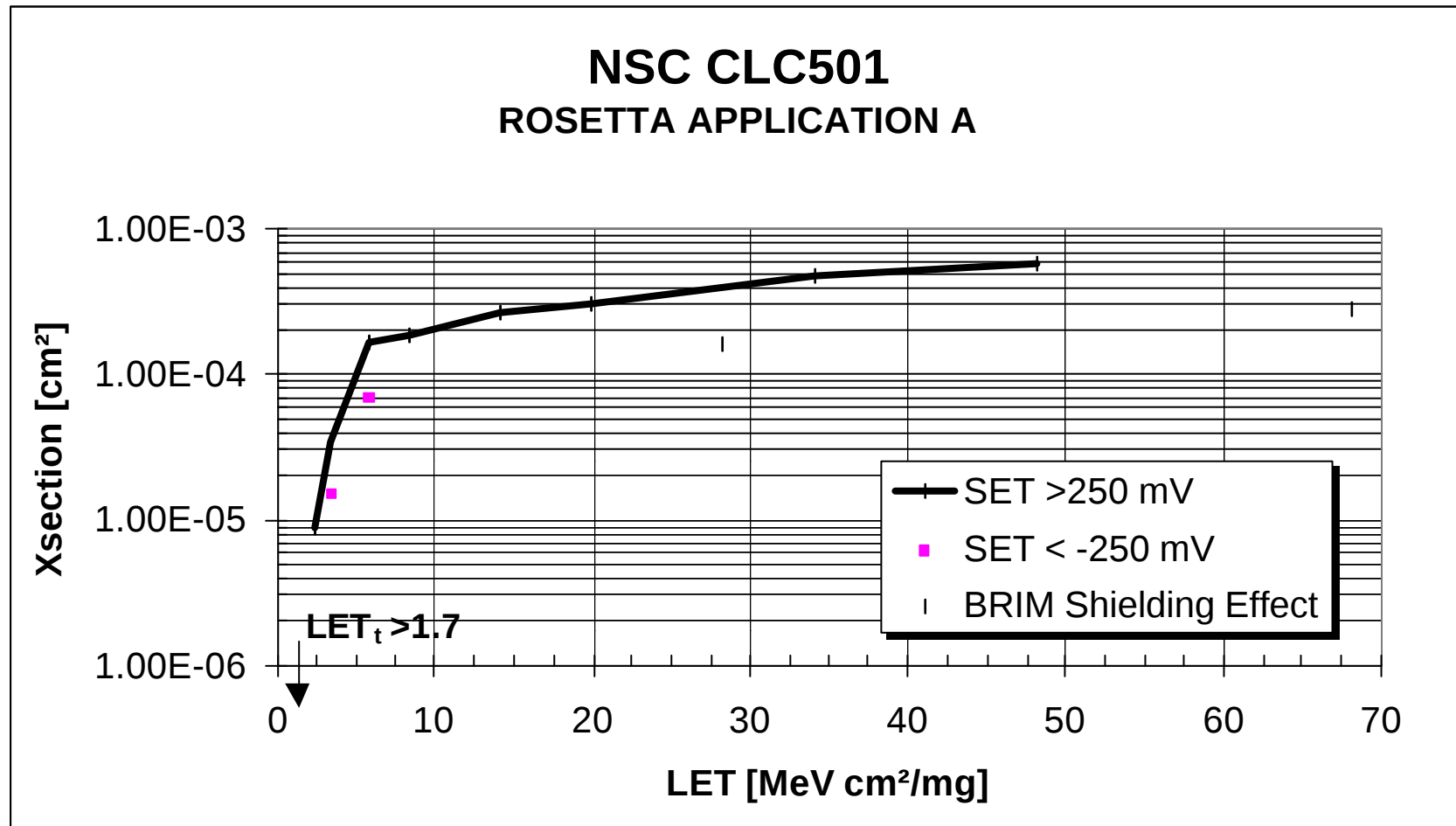


LET = 68 MeV/cm²/mg

Amplitude: 1.05 V

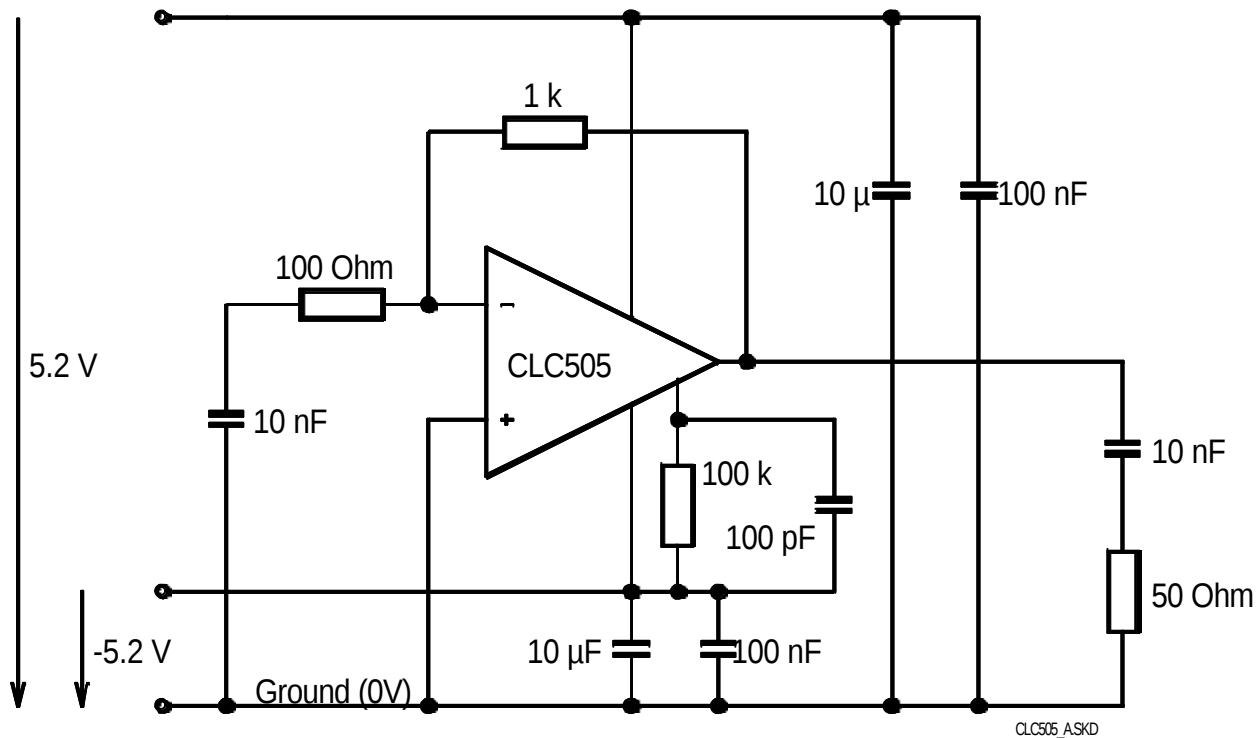
Duration: <100 ns

CLC501 Cross-Section

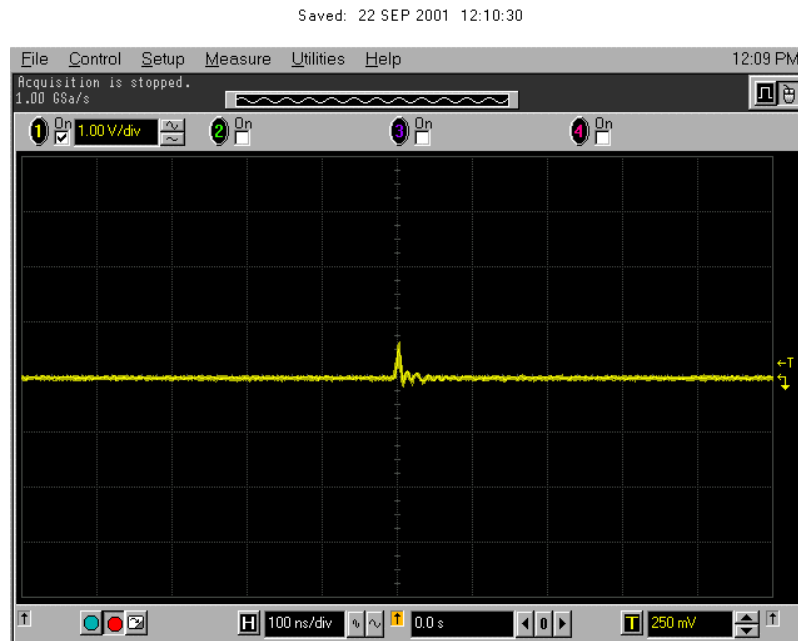


CLC505 DC Bias for Test (no AC Bias Applied)

RF Amplifier, Gain 20 dB, Bandwidth set to 100 MHz:



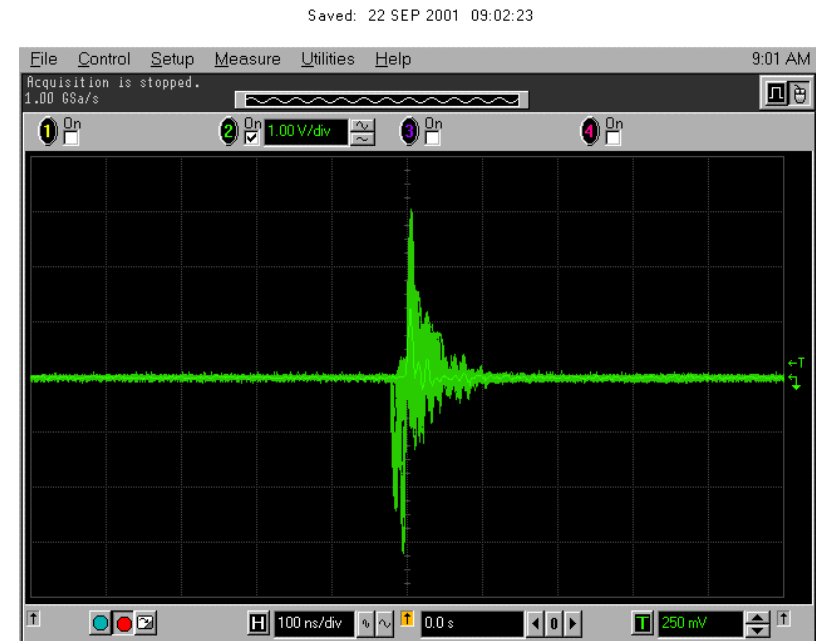
CLC505 Output Transients



LET = 3.4 MeV/cm²/mg

Amplitude: 0.7 V

Duration: <100 ns

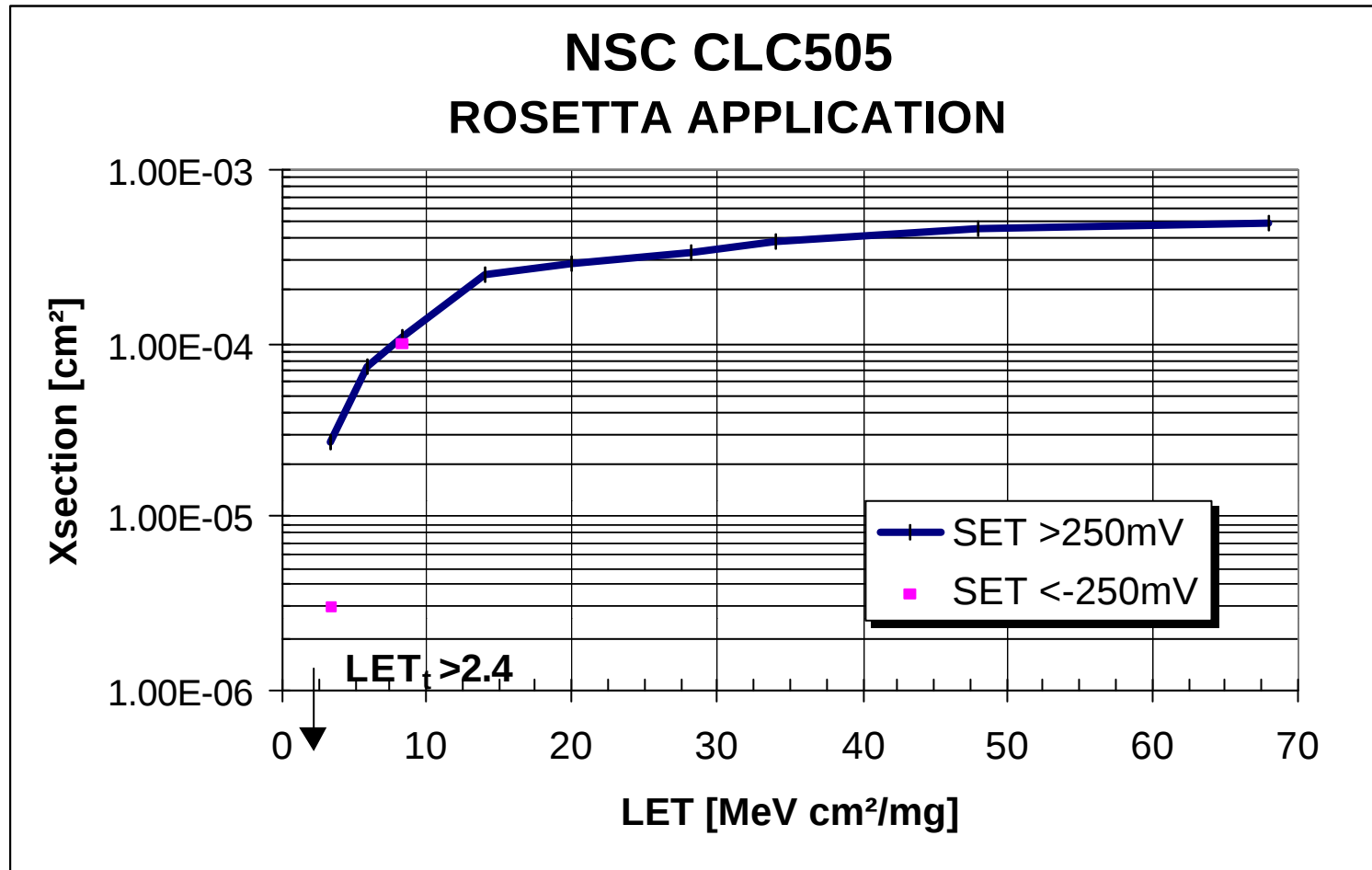


LET = 68 MeV/cm²/mg

Amplitude: 3 V

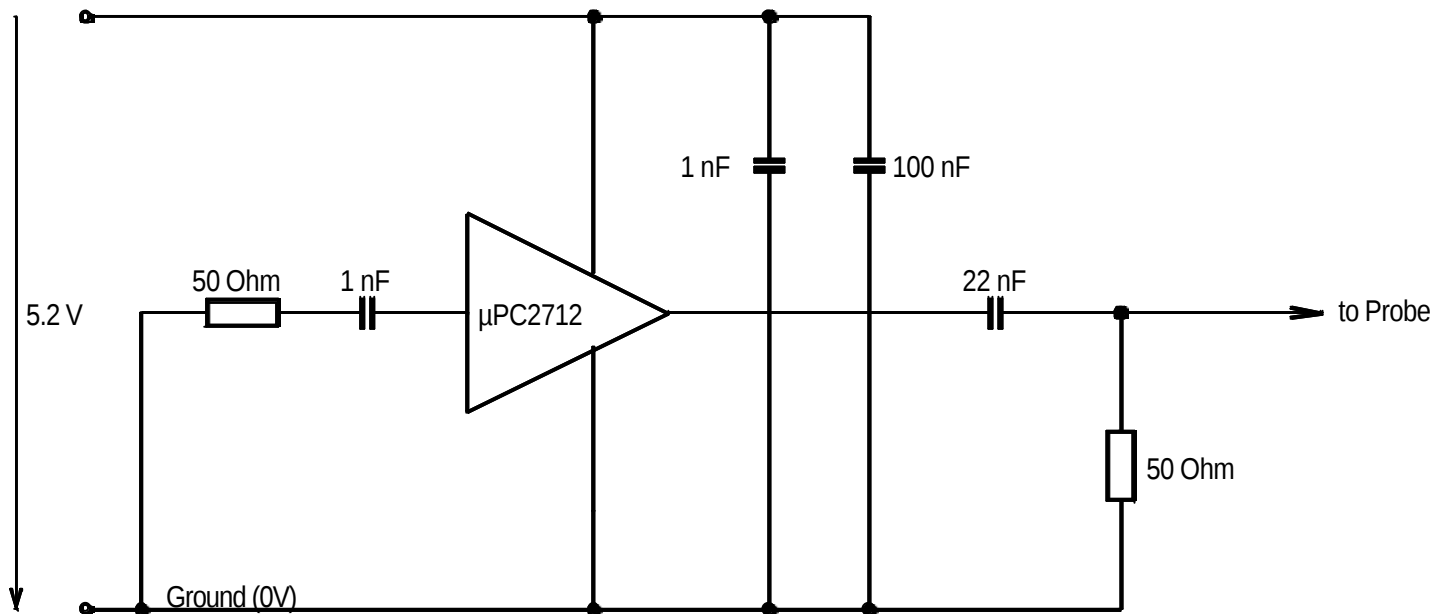
Duration: <100 ns

CLC505 Cross-Section



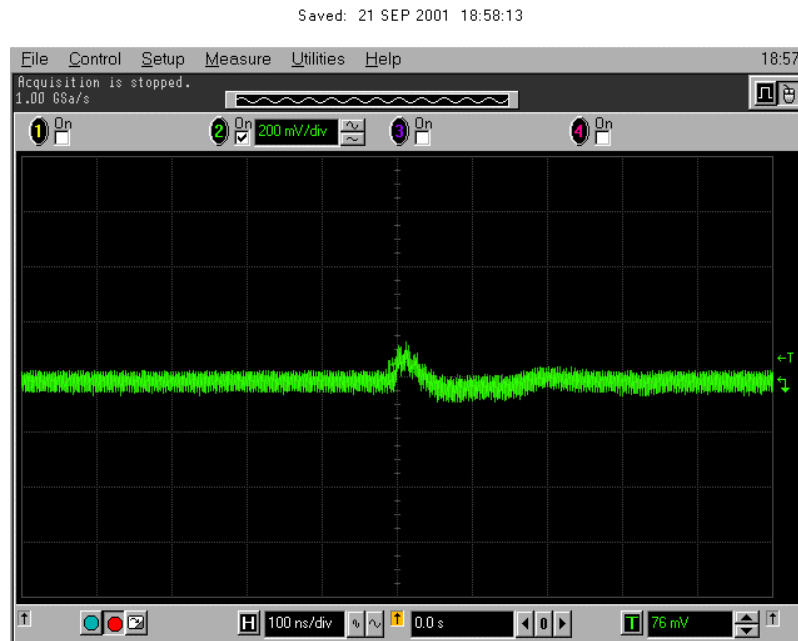
μ PC2712B DC Bias for Test (no AC Bias Applied)

RF Amplifier, Gain 20 dB:



UPC2712.SKD

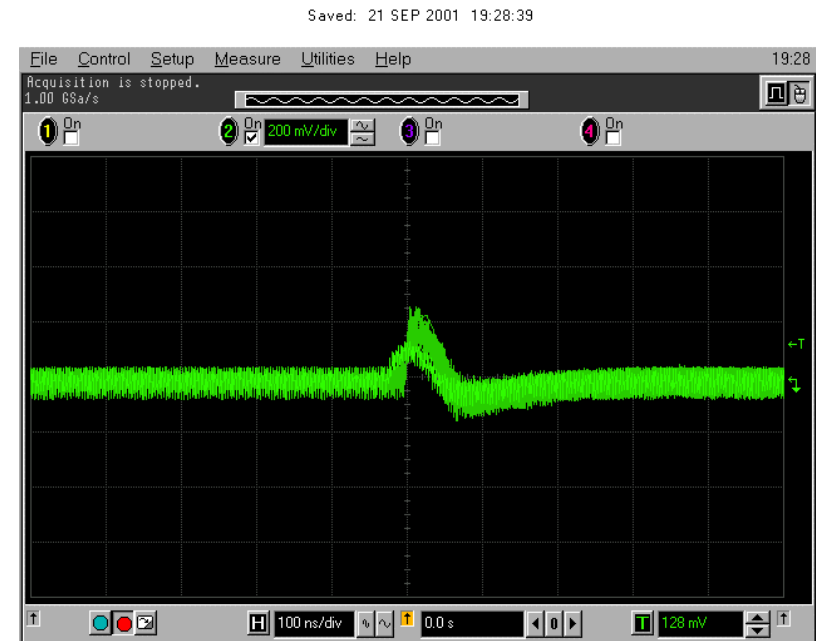
μ PC2712B Output Transients (no SET below 14.1 MeV/cm²/mg)



LET = 14.1 MeV/cm²/mg

Amplitude: 0.5 V

Duration: <100 ns

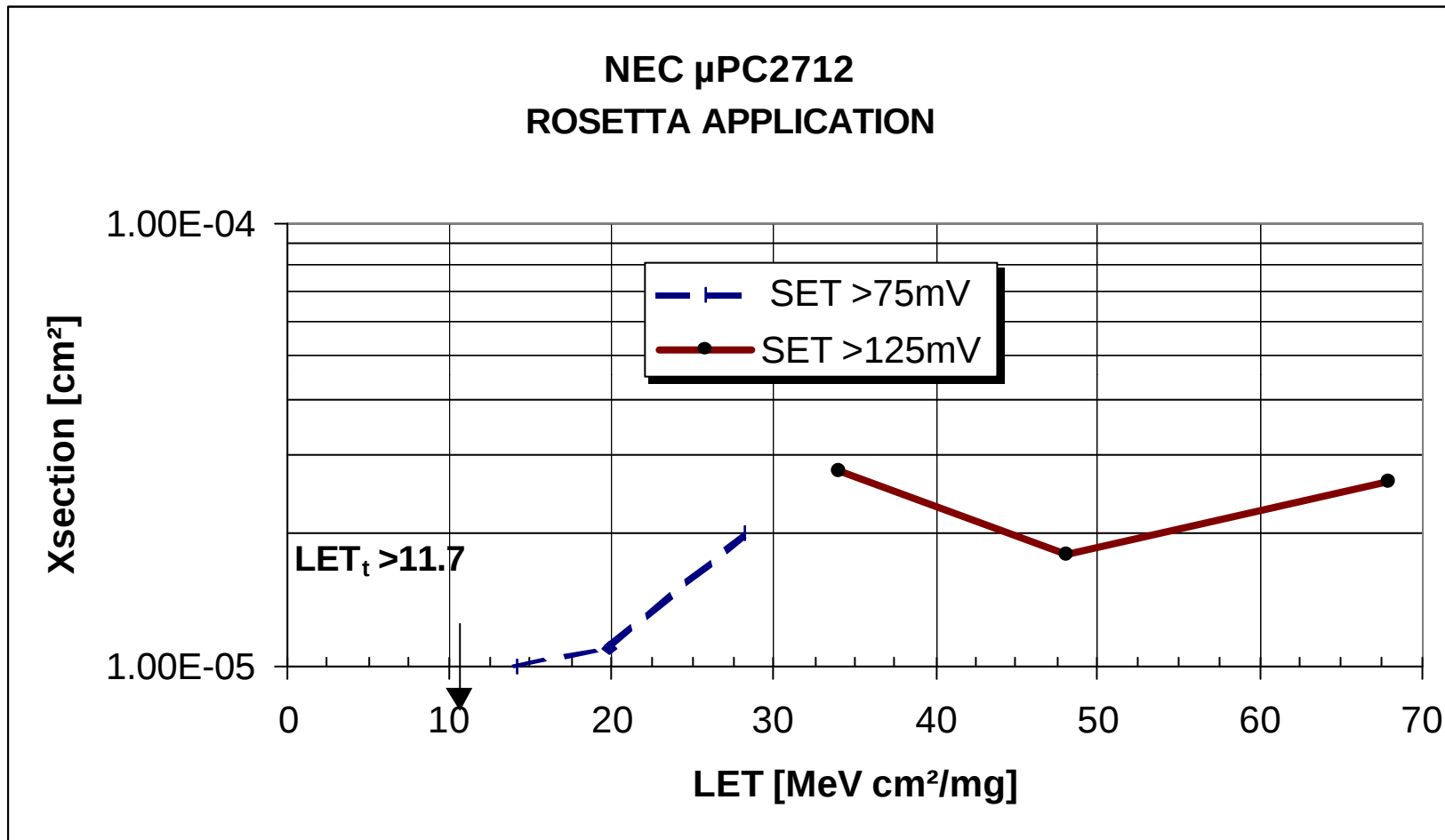


LET = 68 MeV/cm²/mg

Amplitude: 1.2 V

Duration: <100 ns

μ PC2712B Cross-Section



Results for all Test Candidates

- no SET of more than 100 ns observed
- amplitude of transients slightly increasing with LET
- no propagation of SET anticipated due to 10 μ s tolerance of circuitry
- no Single Event Latching, no degradation observed