SPECIFICATIONS

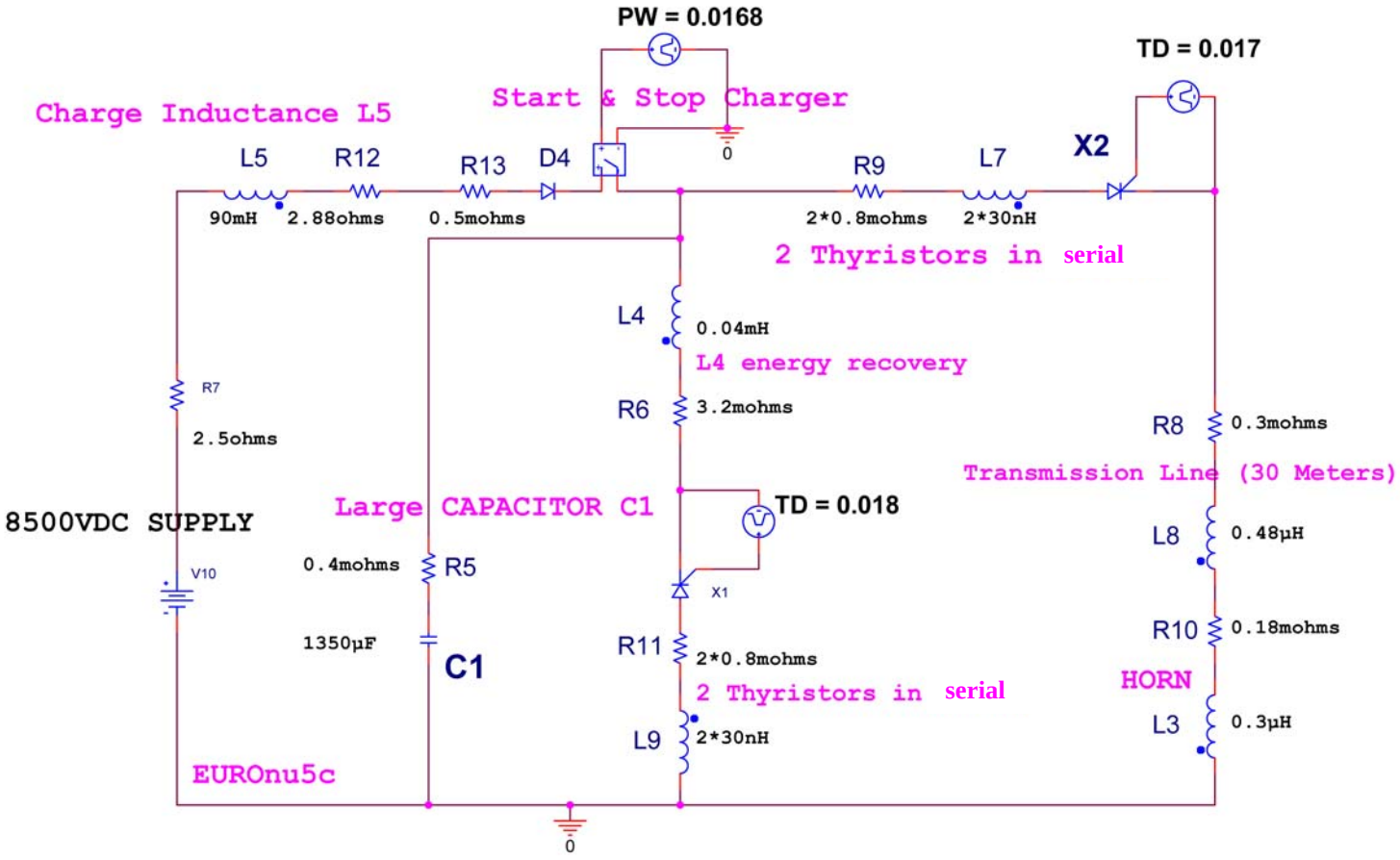
PULSER: 350kA maxi, ½ sinusoid, 100µs large, 50 pulses per second

- critical lifetime 13.10^9 pulses
- modularity

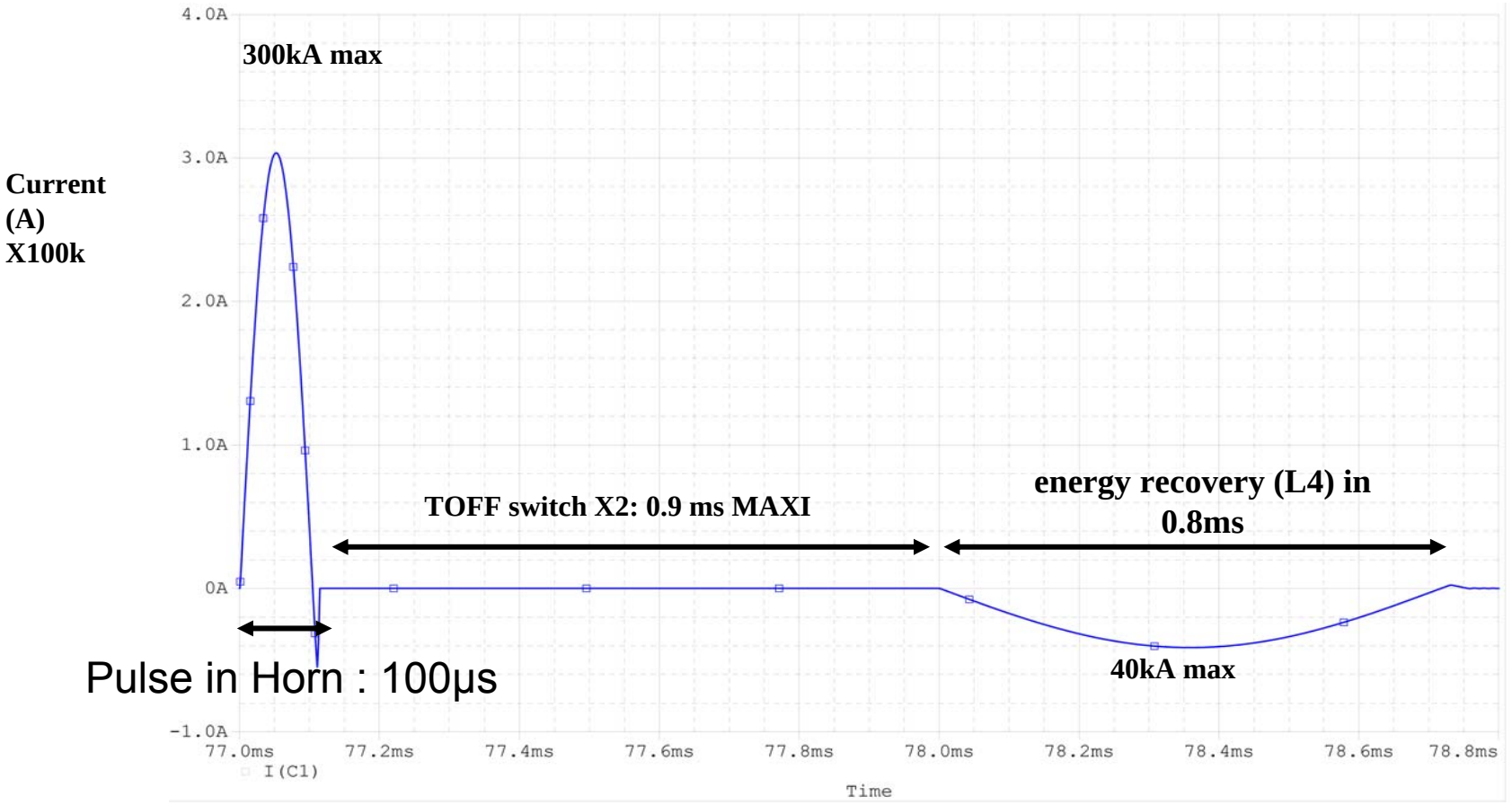
STUDY 2 SOLUTIONS :

- Energy recovery with a self
- Energy recovery with diode and resistor

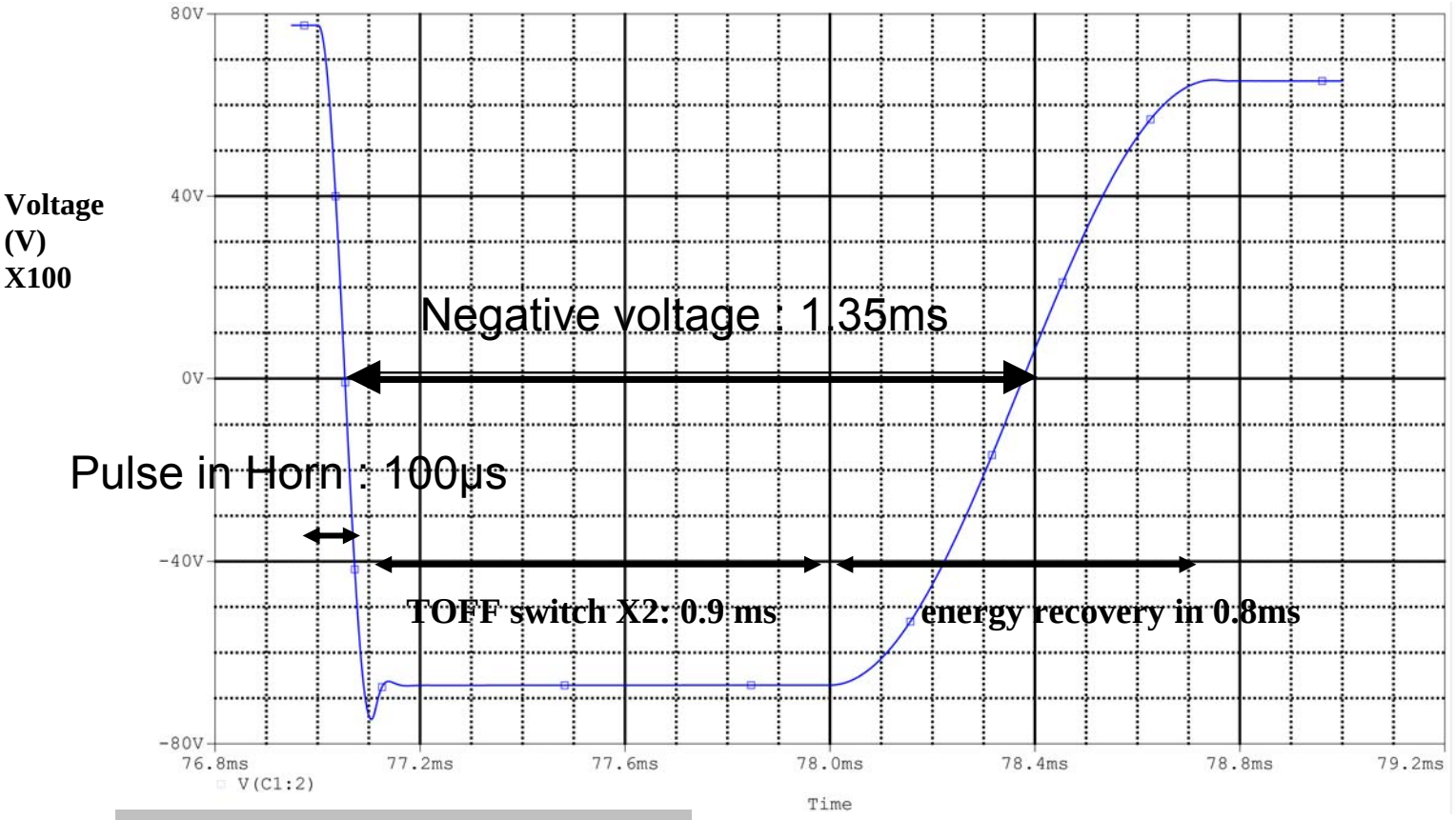
energy recovery with self (L4)



energy recovery with self : current in capacitor C1

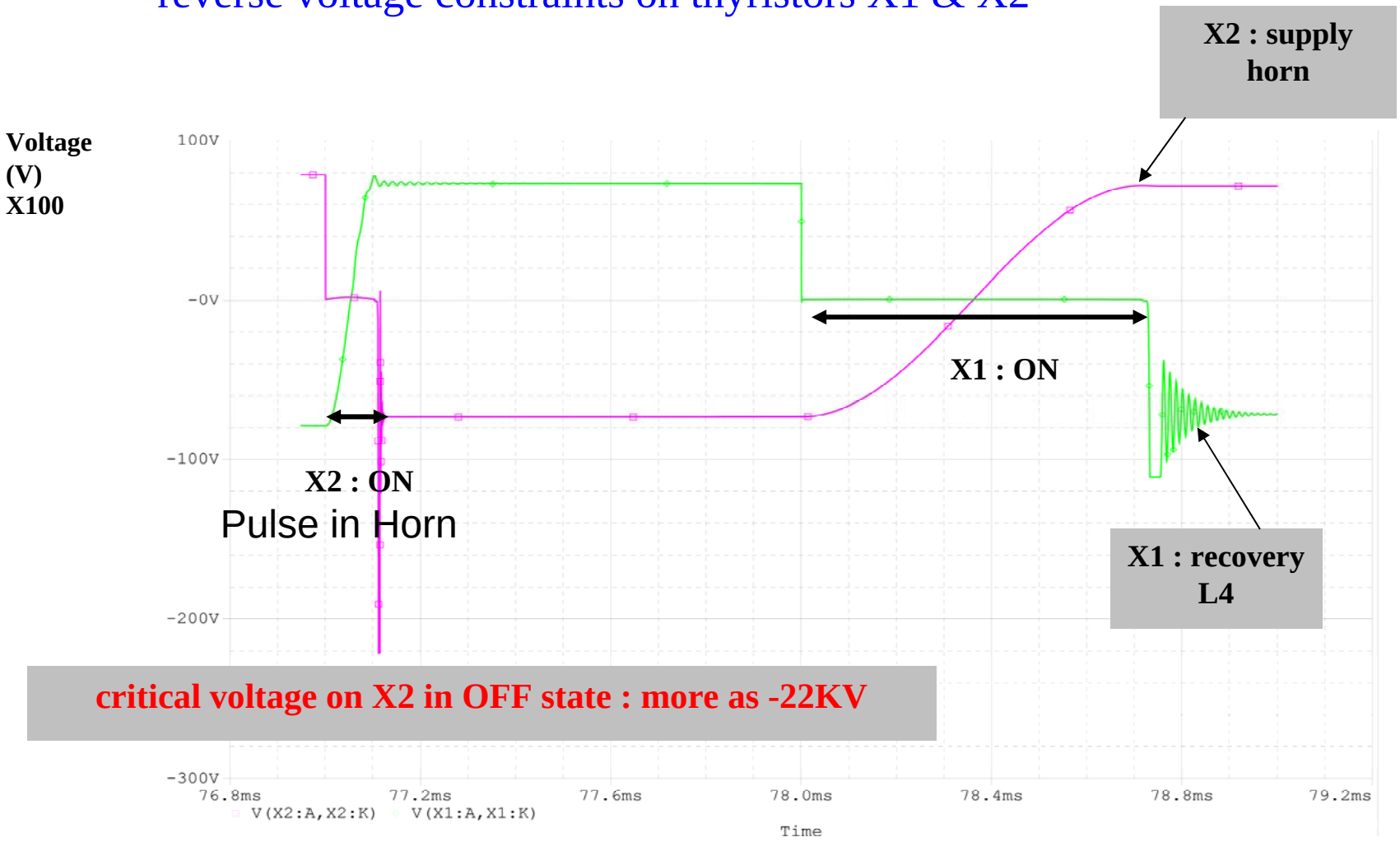


energy recovery with self : critical constraints on capacitor C1



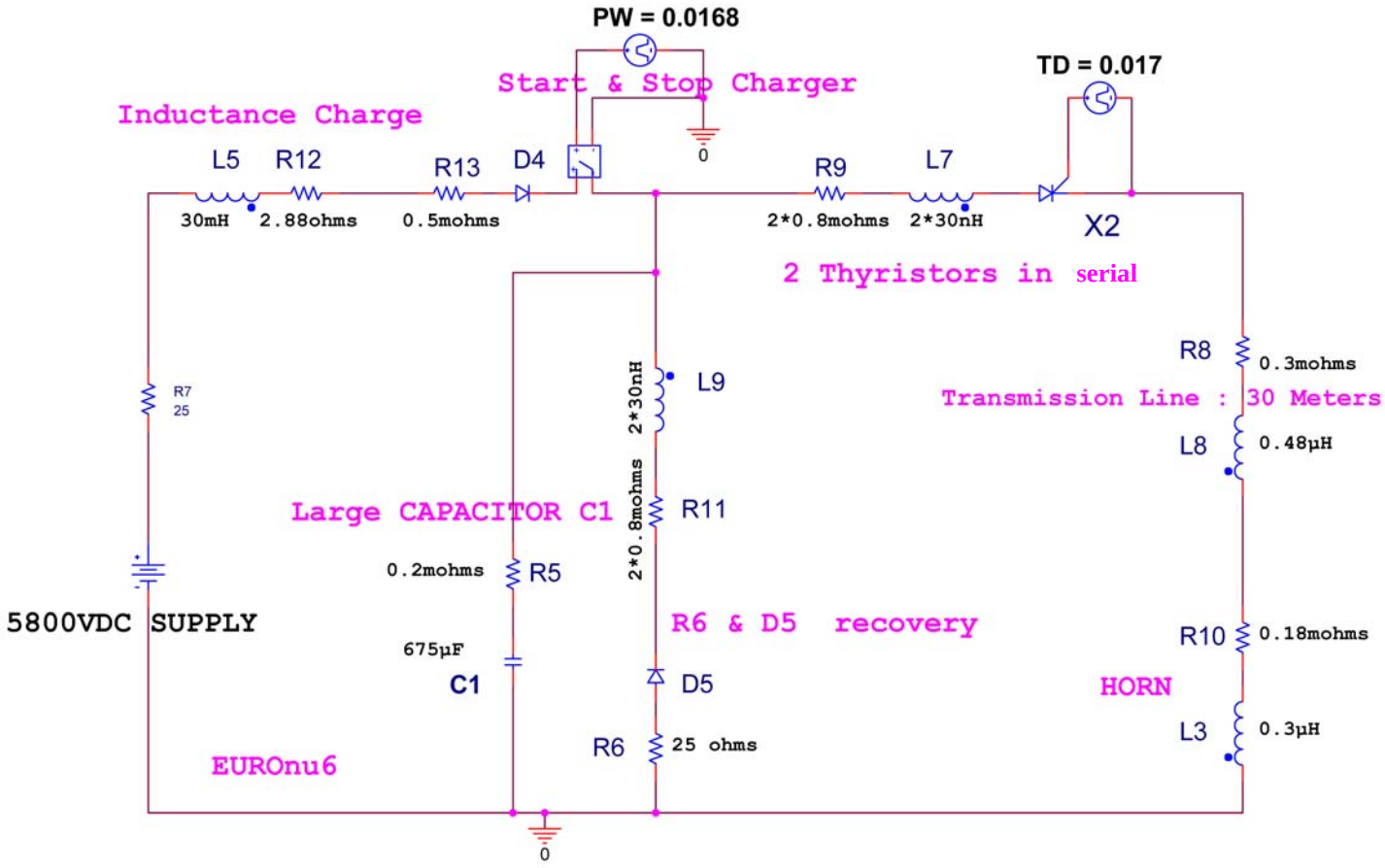
critical negative voltage on C1: - 8000 V

energy recovery with self :
reverse voltage constraints on thyristors X1 & X2



critical voltage on X2 in OFF state : more as -22KV

energy recovery with diode D5 and resistor R6



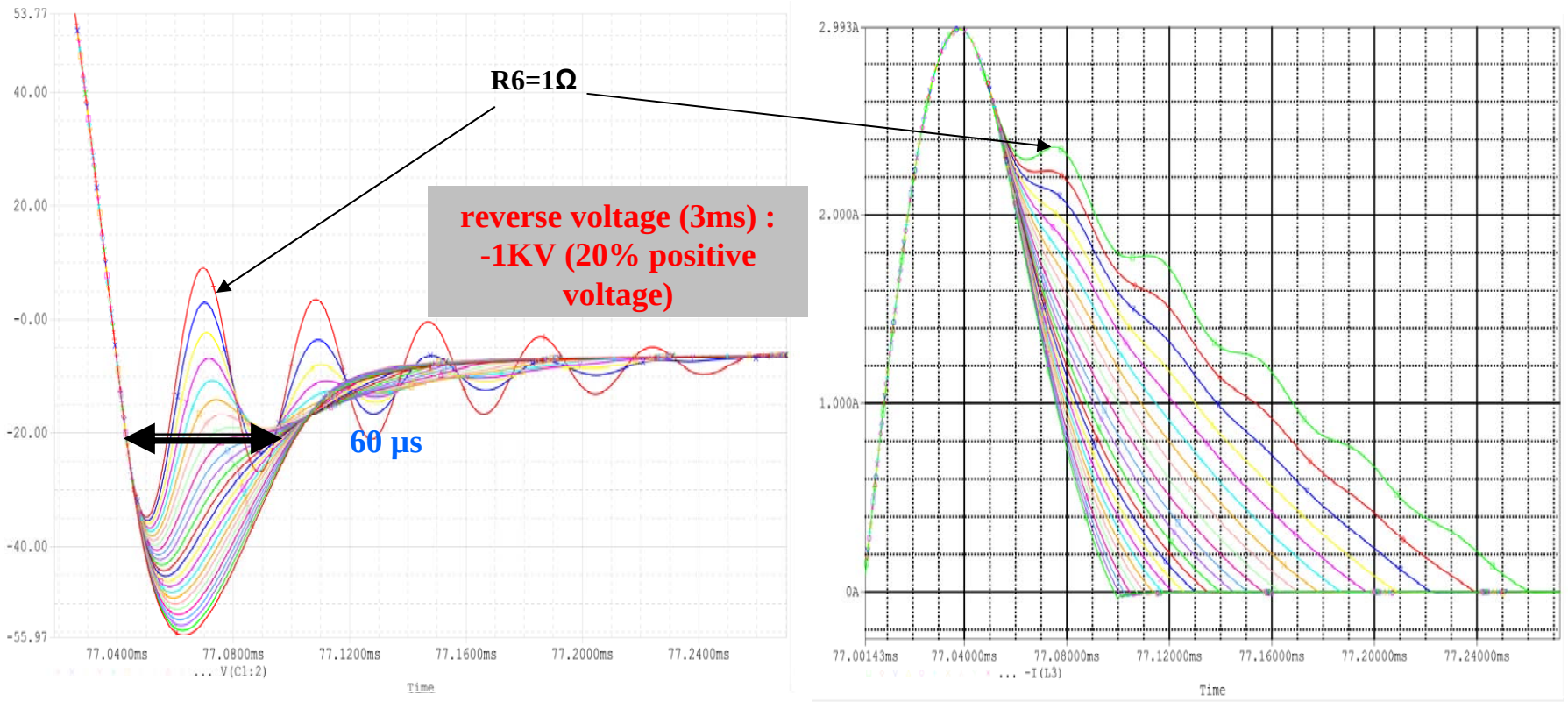
energy recovery with diode and resistor (vs R6 = 1 to 25 Ω)

Voltage (V)
X100

Reverse voltage on capacitor C1

Current (A)
X100k

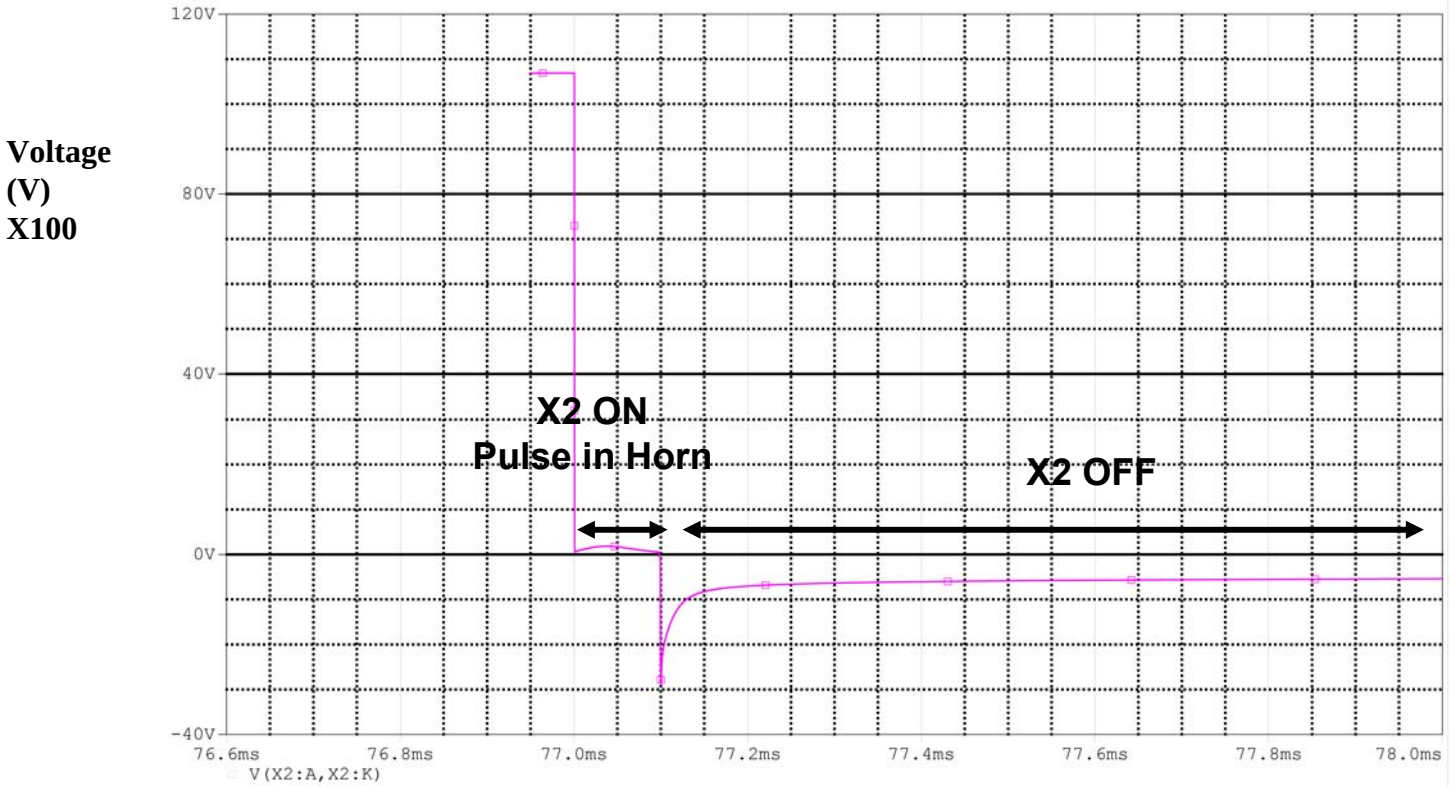
Current in horn



maxi reverse voltage (60µs) : -2KV to -5.5kV

energy recovery with diode and resistor

Critical reverse voltage
on switch X2 (supply horn)



critical reverse voltage : - 3000 V

WORK PLANNING

Comparison between 2 methods
(recovery on L4 OR D5&R6)

- DEFINE LIMIT MODULE (ex 1000V-15kA)
  - respect critical limits characteristics of X2 and capacitor C1 (vs lifetime of 13.10^9 pulses)
  - effect of SNUBBER on limitation of reverse voltage on X2 (and dV/dt)
  - thermal dissipation to evacuate
- DEFINE POWER SUPPLY
  - electric consumption and thermal dissipation
- COST of the 2 SOLUTIONS