

## Status report on the Beetle development

- BeetleFE and Beetle BG submitted july '99
- Chips have returned at ASIC-lab october '99
- essential parameters have been tested

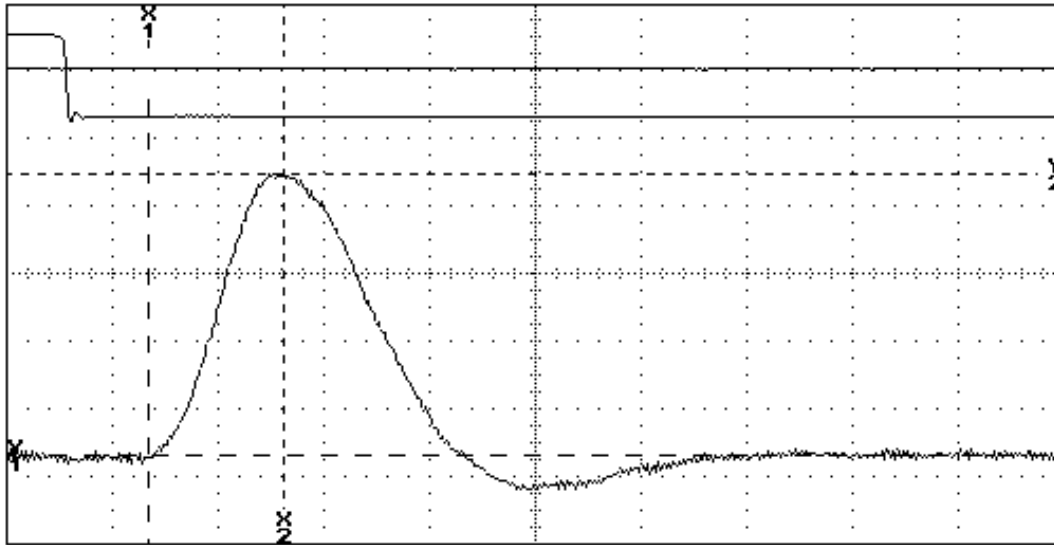
### Reminder:

BeetleFE: 3 different input stages  
(4 channels of each type)

BeetleBG: -current sources  
- voltage DACs  
- current DACs

# Transient Response $I_{pre} = 350\mu A$ 11.000 electrons

hp running



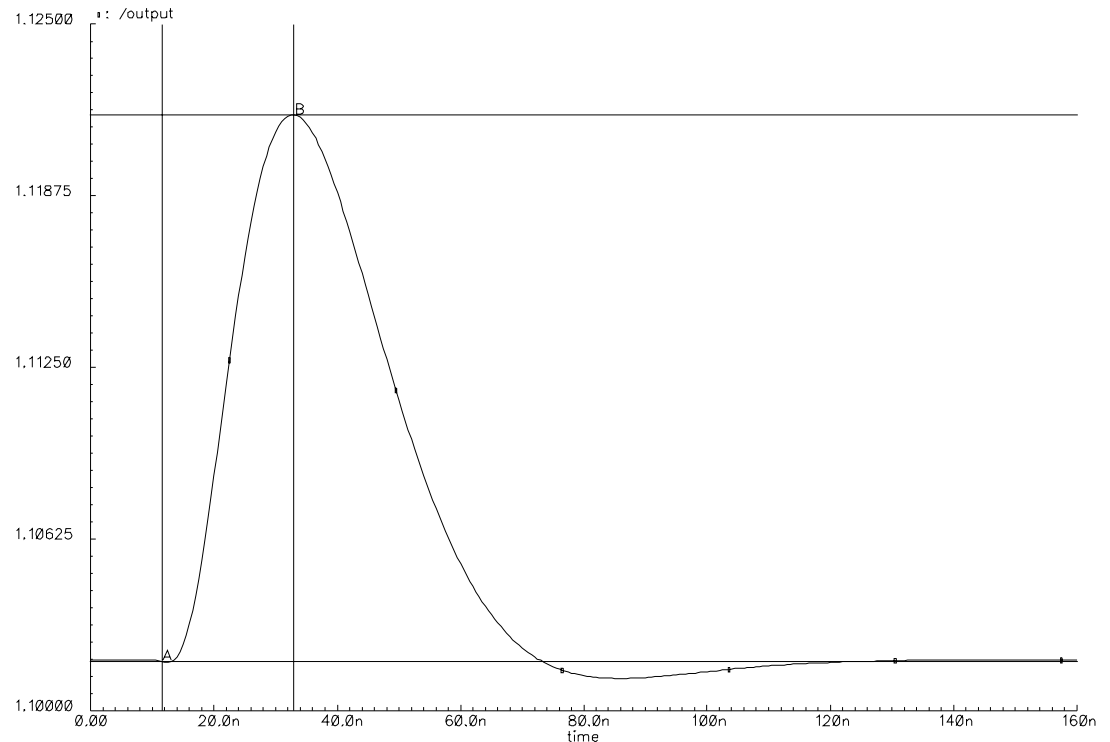
**1** 500 mV/div  
pos: -125.0 mV  
10.00:1 1MΩ dc

**2** 100 mV/div  
pos: -250.0 mV  
1.000:1 50Ω dc

**3** 5.38 mV/div  
BW lim 14.78 mV  
5.375:1 1MΩ ac

-12.00 ns                      88.00 ns                      188.00 ns  
#Avg **16**                      20.0 ns/div                      repetitive Trigger Mode:  
y2( **3** )                      22.6758 mV                      x2( **3** )                      40.400 ns                      Edge  
y1( **3** )                      335.938 uV                      x1( **3** )                      14.800 ns  
delta y                      22.3399 mV                      delta x                      25.600 ns  
1/delta x                      39.0625 MHz                      **2** 25.00 mV

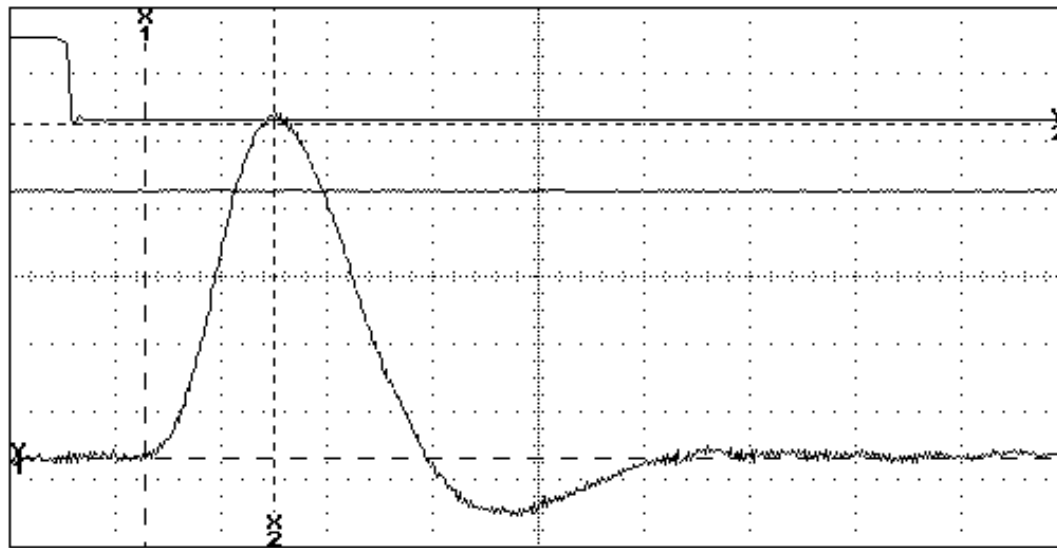
BestFitFrontendSet4 Frontend4\_Testbed\_schematic : Nov 3 10:13:30 1999  
Transient Response



A: (11.681n 1.10179)                      delta: (21.3315n 19.9069m)  
B: (33.0125n 1.12169)                      slope: 935.216K

# Transient Response $I_{pre} = 600\mu A$ 11.000 electrons

hp running



-12.00 ns                      88.00 ns                      188.00 ns  
 #Avg **16**                      20.0 ns/div                      repetitive

y2( <b>3</b> )	26.8750 mV	x2( <b>3</b> )	38.000 ns
y1( <b>3</b> )	335.938 uV	x1( <b>3</b> )	13.600 ns
delta y	26.5391 mV	delta x	24.400 ns
		1/delta x	40.9836 MHz

MARKER

off  on

source x1, y1  
**Channel 3**

x1 position  
**13.60 ns**

y1 position  
**335.938 uV**

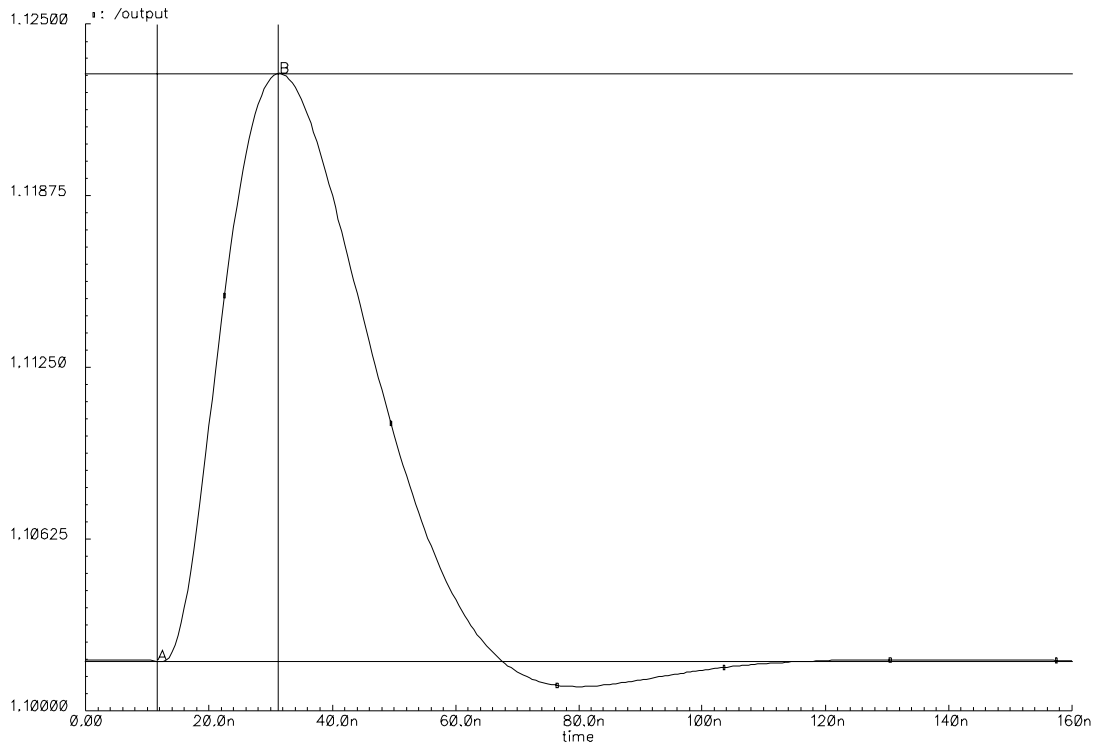
source x2, y2  
**Channel 3**

x2 position  
**38.00 ns**

y2 position  
**26.8750 mV**

BestFitFrontendSet4 Frontend4\_Testbed\_schematic : Nov 3 11:23:30 1999

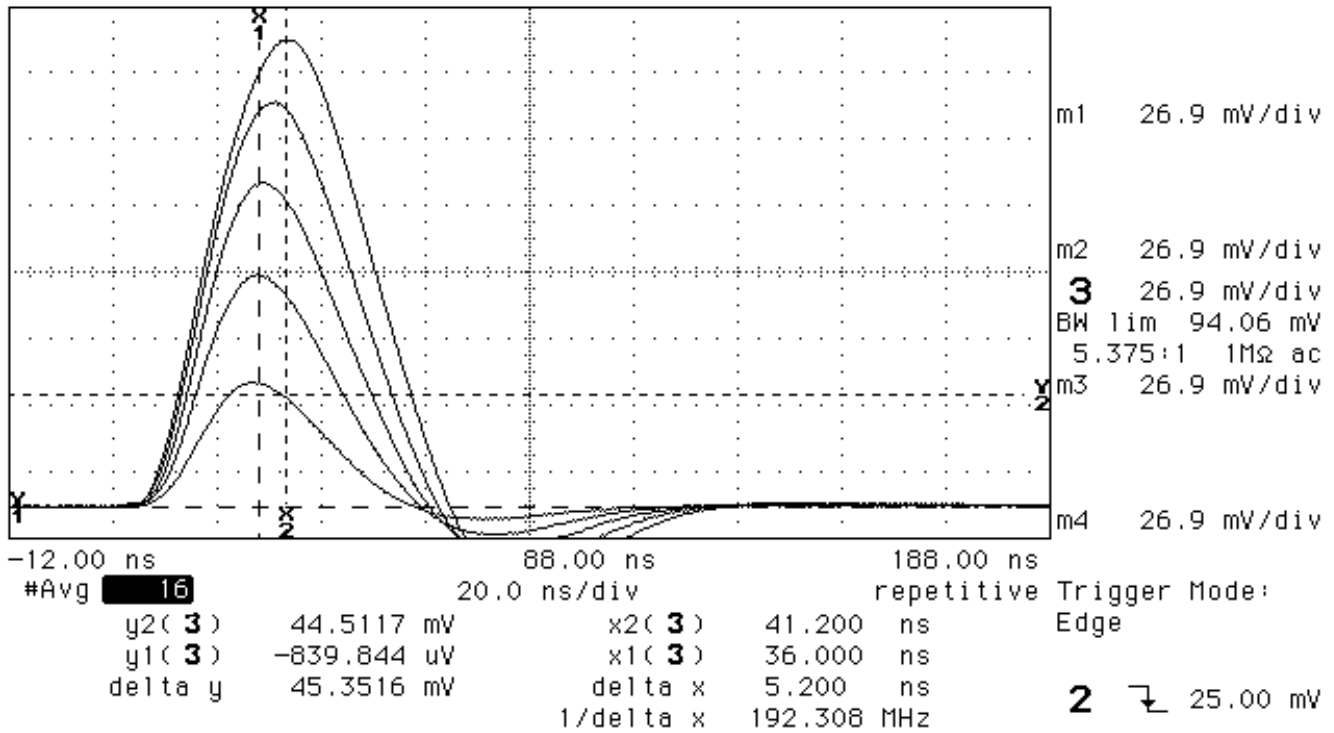
Transient Response



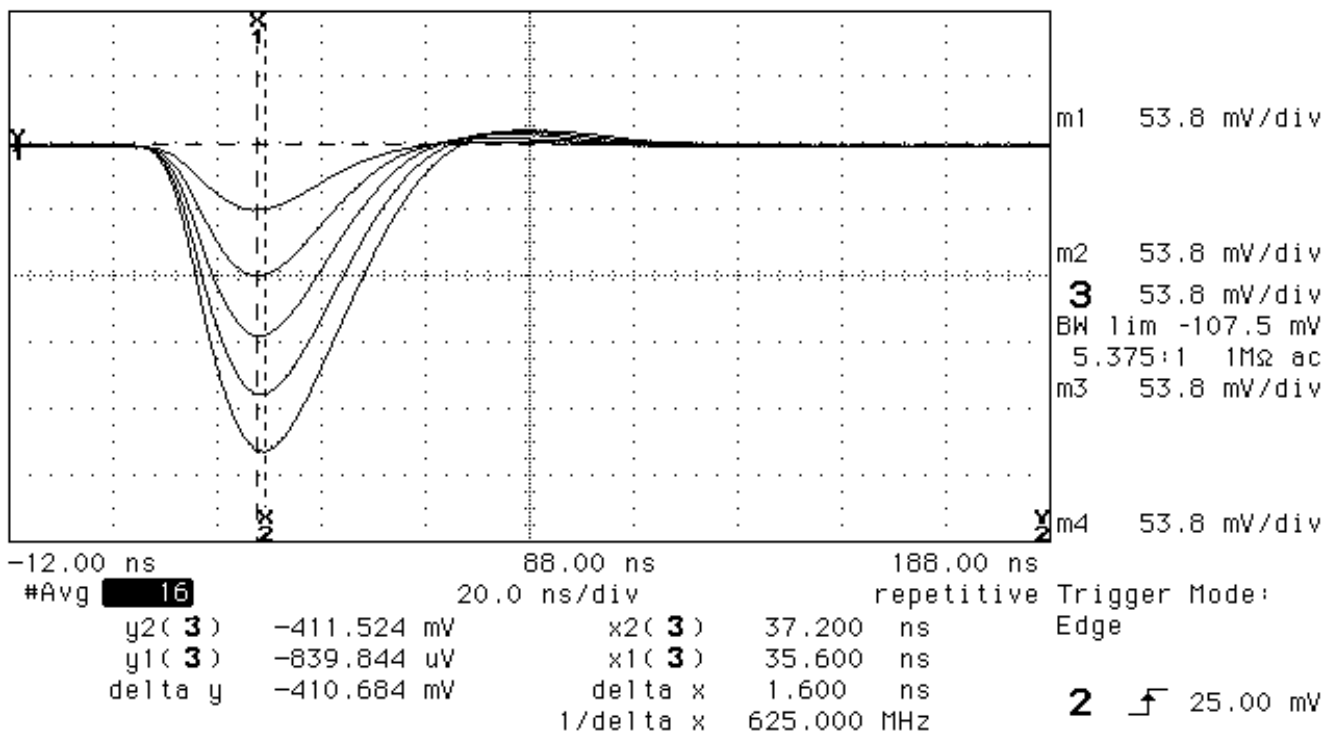
A: (11.6855n 1.10179)      delta: (19.7264n 21.4094m)  
 B: (31.4119n 1.1232)      slope: 1.08532M

Dynamic Range: -10 MIP to +10MIP (1MIP = 11.000 e)

hp running

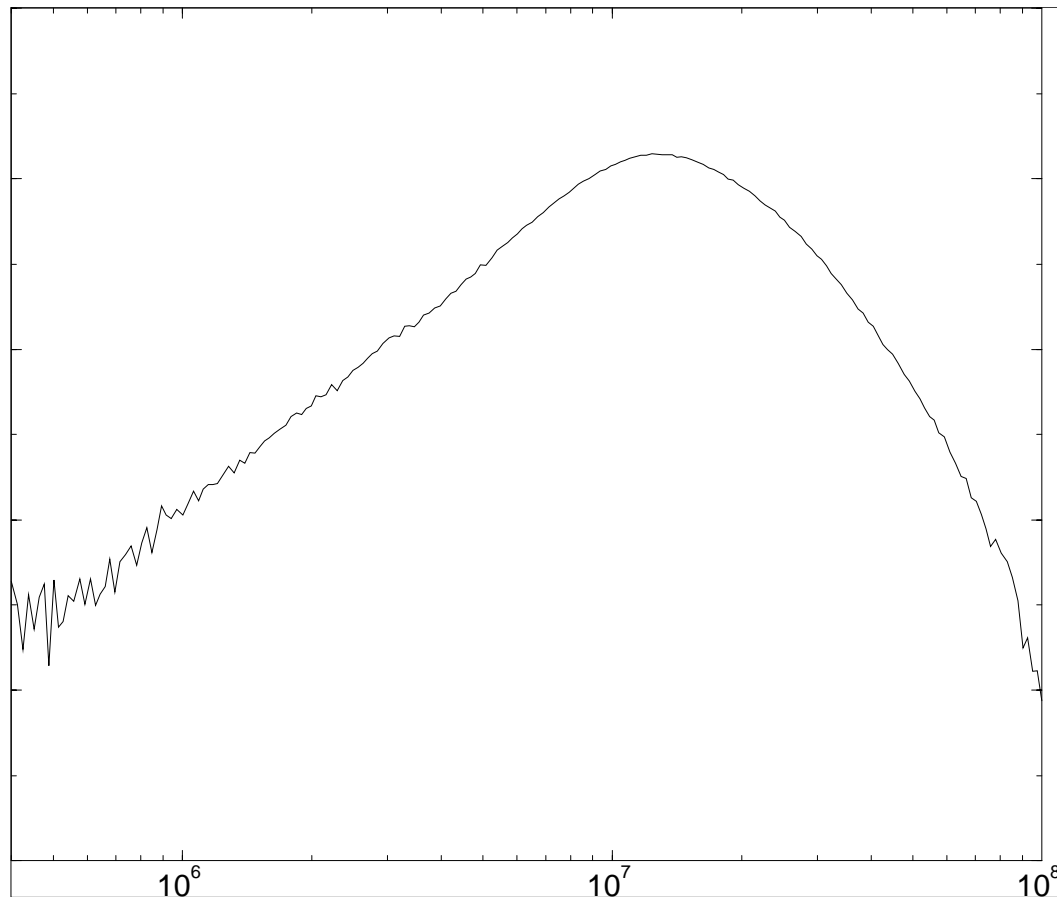
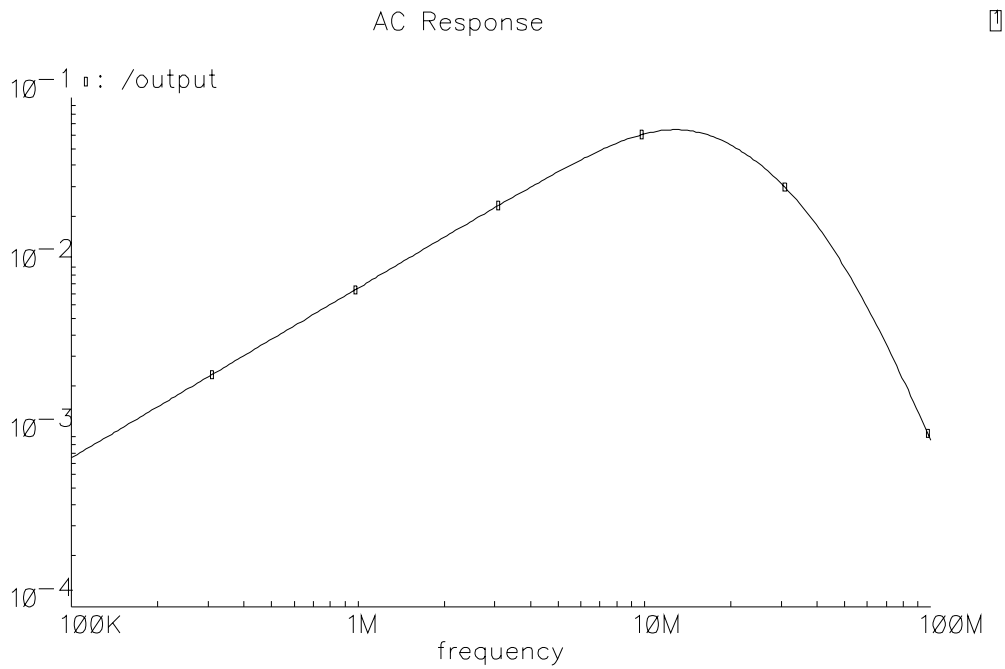


hp running



# Frequency response of the complete frontend

BeetleFrontendSet4 Frontend4\_Testbed schematic : Nov 4 12:31:43 1999



# ENC at different bias settings

