

“ BT IT ”

DNA

2021 2025

DNA

-

BT IT

16

1.1 1.2 1.3 1.4 2.1 2.2

2.3 2.5 2.6 3.1 3.2

5

5

DNA

90%

DNA

2

10

DNA

1%

3 DNA

K 128

2<sup>K</sup>

2

1.2

DNA

DNA

L-DNA D

/

DNA

DNA

D

2

3.8 bits/nt

99.9%

3

kg

2

200nt

10M

1.3

DNA

DNA

DNA

DNA

DNA

“ ”

1

CMOS

MEMS

DNA

1000

3%

40nt

3-5

1.4

DNA

“ ”

CMOS

1MHz

DNA

2-3

2. -

2.1

90%

5~10

3~5

10

1-2

2.2

-

3-5

“ -

- - ”

10-30

2.3

“ - - - ”

-

DNA

-

2.4

\ \ \

SVM\LDA\DNN

-

ADC            24 bit   ADC            16 KHz   ADC            120dB

ADC            125dB            5mW            120dB

0.8 $\mu$ Vpp            1G

216KB/s

120g

55nm

RISC-V

300 MHz

FPGA

60KLUTs

200 MHz

BRAM

3 Mbits

DSP

150

ADC DAC

10

5

3:1

2.5

10  
100  
3 nm  
320 /min  
1  
2.6

10  
100  
20  
20  $\mu\text{M/s}$   
1 mM/min  
10  
50 mC  
100

50  
20  $\mu\text{M/s}$   
1  
>1  
1  $\mu\text{V}$   
2

10  
10  
90%  
TOF  
80%  
1  
2  
99%  
2D  
3D

-

-

-

-

-

-

90

1 cm

3

100%

95%

2-3

5

3

2D

3D

-

60

30

60%

-

-

3

3. BT IT

3.1

,

5-10

1

3-5

3-5

5-10

3.2

4

1

4

10T

6

5

2

1

3

3.3

BT IT

95%

5

3.4

BT IT

20

50

10

30

5

20

3.5

IT

50

“ ”

1-2

5-10

5-10

3-5

5-10

IT

50-100

3.6

“ ”“ ”

5-10

3-5

3-5

“ ”“ ”

20000

2000

3-5

5-10 “ ”

1

1

1