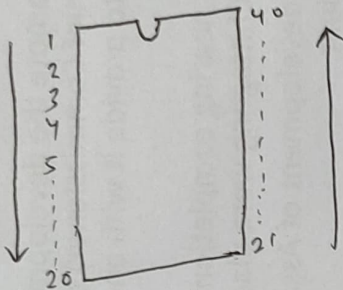


CSE 331 / L-17 / 18.04.2024 /

Interfacing



8086 \Rightarrow total 40 pin

\Rightarrow no need to memorize, just understand the job done by each pin.

⊗ Book Reference: Intel Microprocessor - Brey
chapter-9 \Rightarrow Page-321

⊗ 8086

Data Bus = 16 bit

Address Bus = 20 bit

Control Bus = x bit

\longleftarrow 36 + x + VEC + 2 GND

~~AD~~ AD = Address and Data

$AD_0 - AD_{15} = \text{Data} + \text{Address Bus merged}$

For separate the pin for address and data,
8086 used Buffer IC & Latch IC

40 pin IC + Latch IC \ll 60 pin processor

\Rightarrow in terms of cost and fabrication.

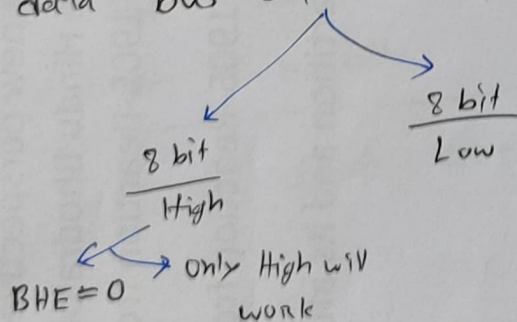
$A_{16} - A_{19} \Rightarrow \text{Address Pin} + \text{Status Pin}$

⊗ Difference between 8086 & 8088

- in Data Pin
- Pin number 34 and 28

⊗ BHE = Bus High Enable

$\Rightarrow \text{data bus} = 16 \text{ bit}$



$BHE=1$

works as SZ

and data bus will be used as normal



33/

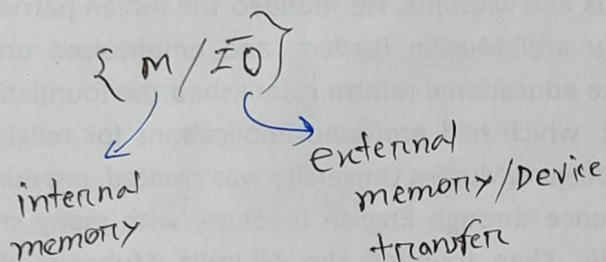
MN/ \overline{MX}

1 0

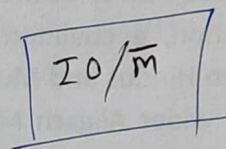
8086

MAX
MODE { MZN
MODE

8088

MZN
MODE { MAX
MODE28-Pin Connection:

8088



Clock Generator IC - 8284A for 8086

→ 1.2 V on average

19 ← Clock

22 ← Ready

21 ← Reset

Signal will generate

0 = Stand by

1 = Busy/Operating mode



Operating temperature:

32°F — 180°F

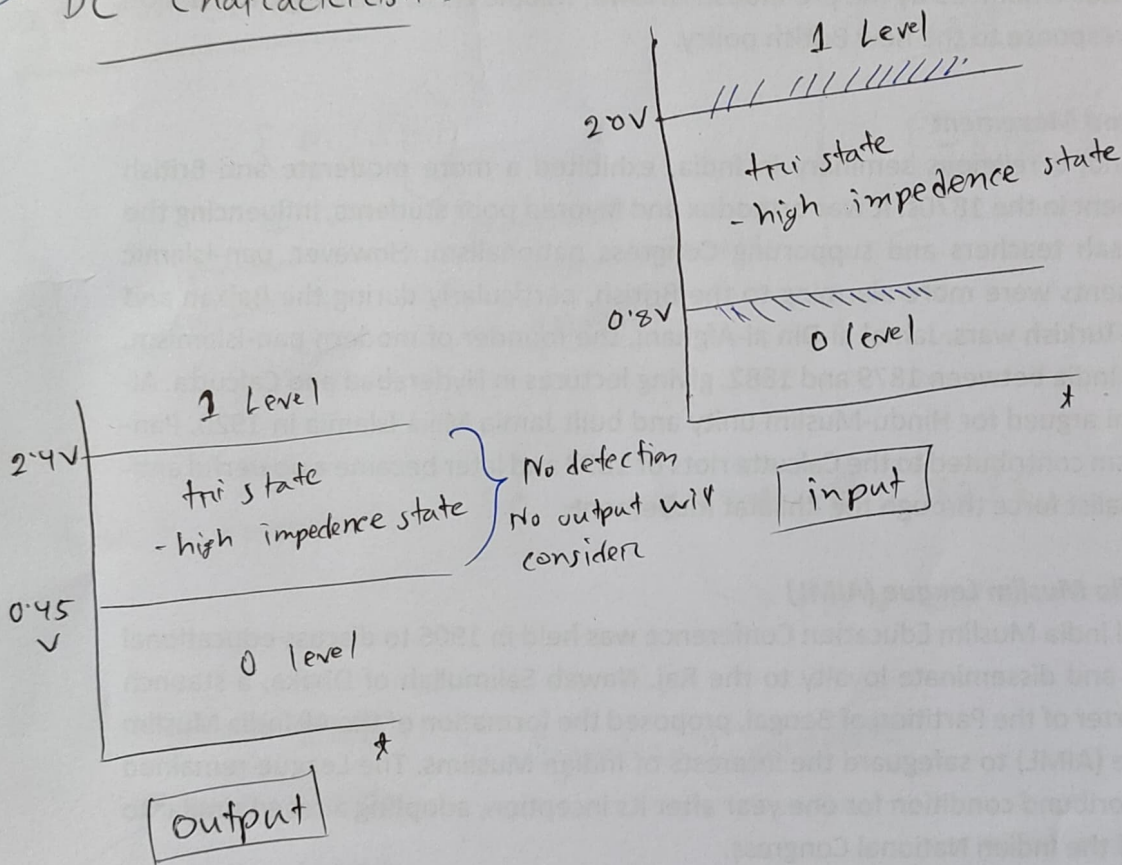
⇒ 0°C — 82.22°C

⊗ Current Rating : 8086 8088
 $\Rightarrow 360 \text{ mA} / 340 \text{ mA}$

$\Rightarrow 5 \text{ V} \pm 10\%$

⊗ Power Supply Requirements \Rightarrow from eBook Page-322
Use of CMOS

⊗ DC Characteristic:



⊗ TTL \Rightarrow Transistor transistor logic

- in output 0 level maximum is ~~0.45V~~ 0.40V
others are same

⊗ Noise immunity \Rightarrow difference between input to output in 0 level.

8086/8088 $\Rightarrow 0.35 \text{ V} = 350 \text{ mV}$

in TTL $\Rightarrow 0.40V \Rightarrow 400mV$

\hookrightarrow higher value is good

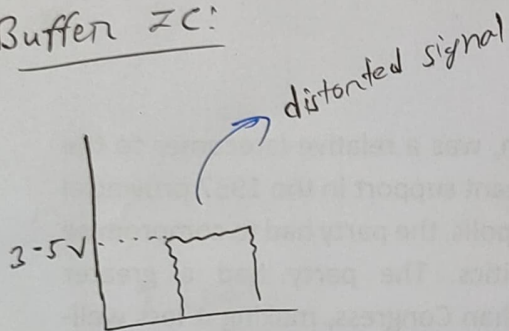
$N \uparrow \Rightarrow \text{connection} \uparrow$

On average - 10 connection

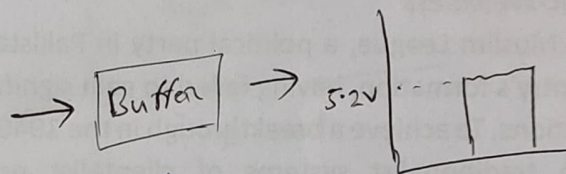
⊗ Buffers & Latches ZC

From - N. Mathivanan

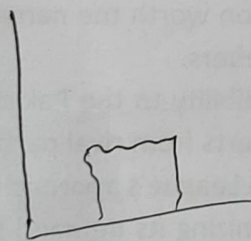
⊗ Buffer ZC:



\Rightarrow if we stop input
output will be stopped too



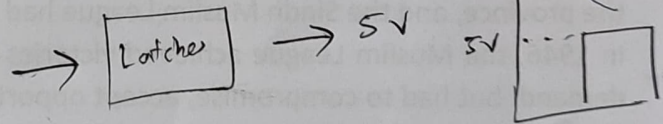
One kind of amplifier



\Rightarrow if we stop input
output will be on

\Rightarrow known as generator

- used to store memory like address.



No distortion
fix level
and std.

⊗ For long distance connection, we need to use buffer ZC.
for amplification.

⊗ 0 level \Rightarrow will activate the buffer

- two part:

- Unidirectional buffer
- Bi-directional buffer

1 level \Rightarrow will activate the circuit.

\Rightarrow if enable pin = 0 ; will activate the ZC

$DZR = 1 \Rightarrow A_0$ will activate, B_0 will be output

$DZR = 0 \Rightarrow B_0$ will activate, A_0 will be output.

⊗ Latches:

used D-flip flop + amplifier

↓
regenerate to
signal will give 5V

| $C_1 = \text{Pulse/Clock}$