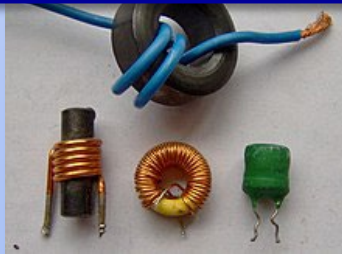
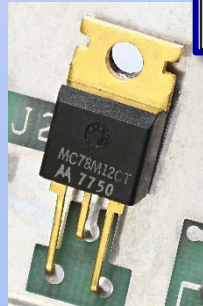
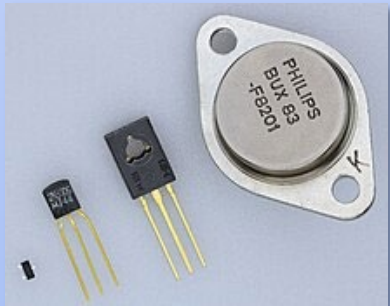
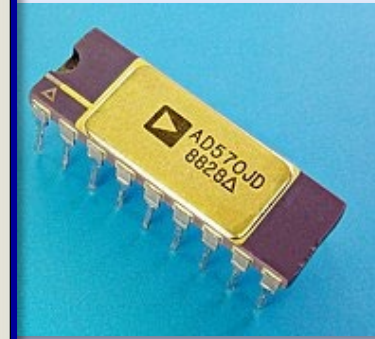
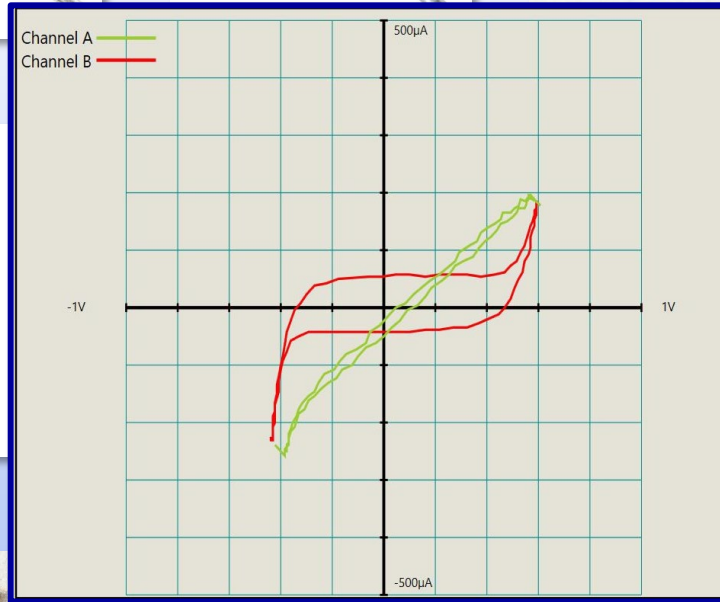
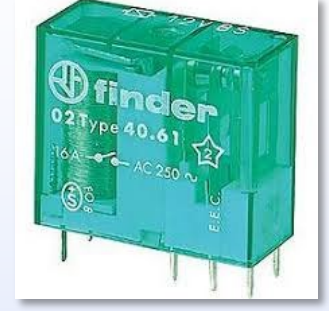
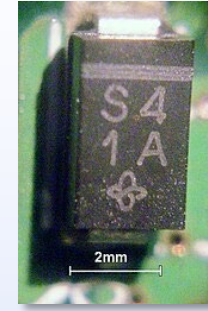
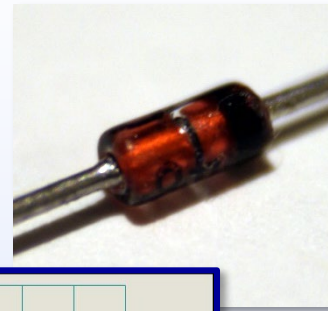


# Analog Signature Examples



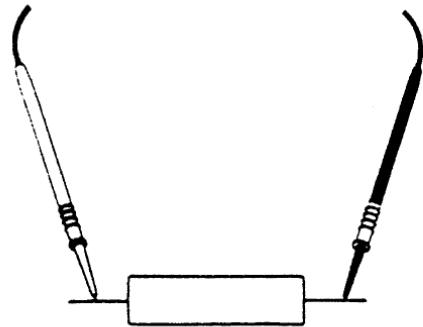
## Analog Signature Examples

The following pages have been compiled from signatures produced on a Polar Fault Locator by a selection of components. They include some comparisons of IC's from different vendors. We cannot guarantee that the signatures produced in your circuit will be exactly the same as these since manufacturers can change their processes which may alter the signatures. You should however find them useful when you do not have a known good board.

We also give an overview at the end of this section on typical defective IC signatures. This can help when comparing IC's from different vendors that produce different signatures.

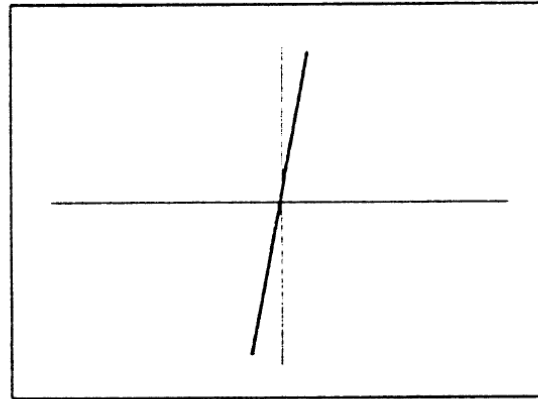
Experienced users of the Polar Fault Locator have little difficulty in recognizing a defective or potentially defective signature regardless of whether they have a comparison board.

# Analog Signature Examples

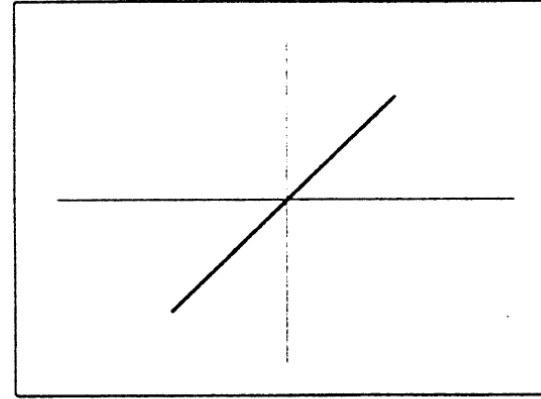


100  $\Omega$   
RESISTOR

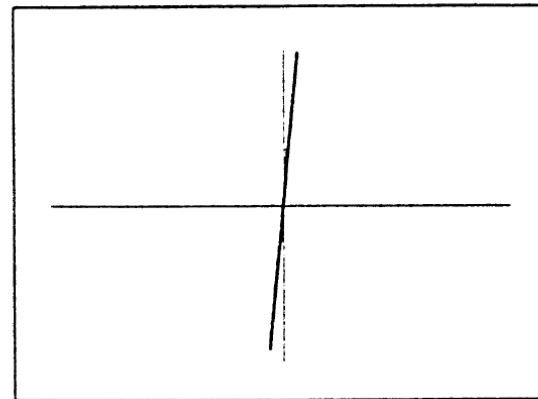
LOGIC



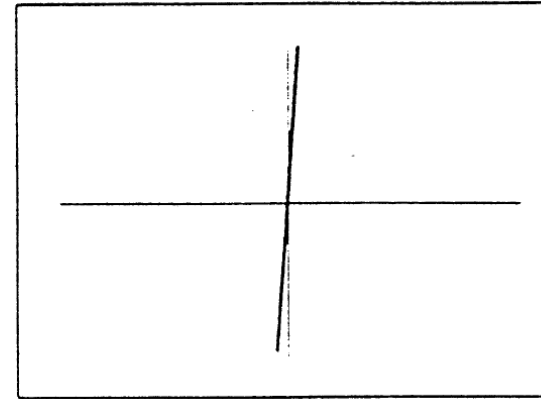
LOW



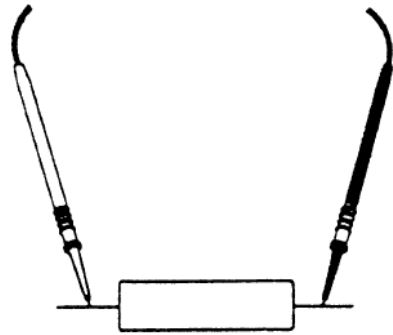
MEDIUM



HIGH

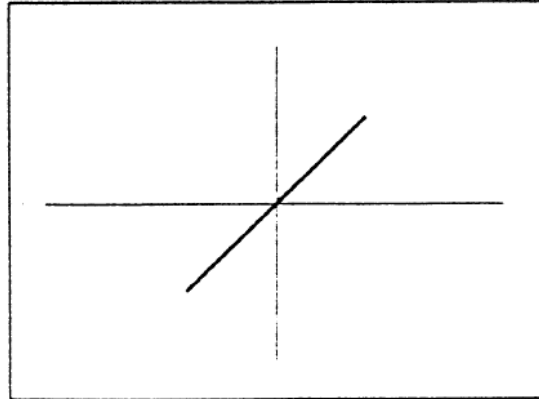


# Analog Signature Examples

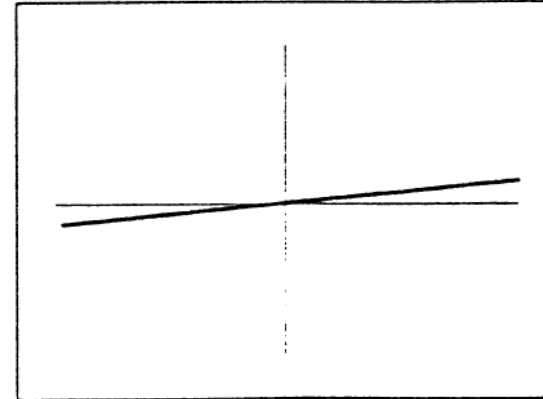


2K $\Omega$   
RESISTOR

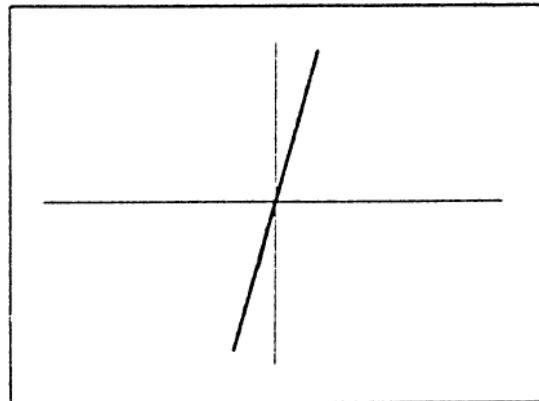
LOGIC



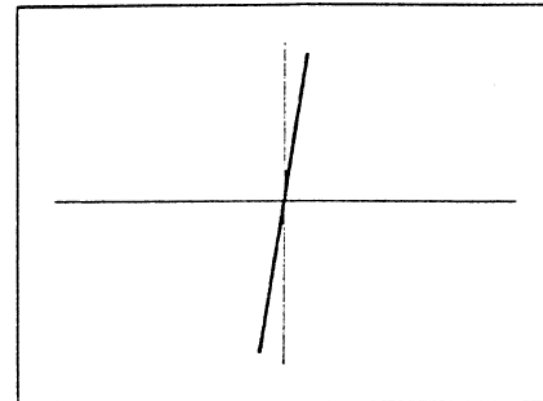
LOW



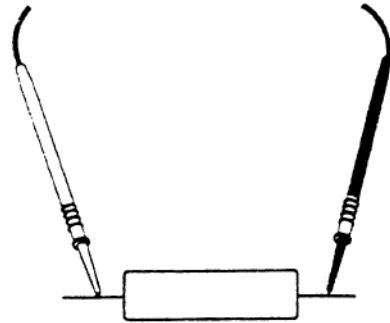
MEDIUM



HIGH

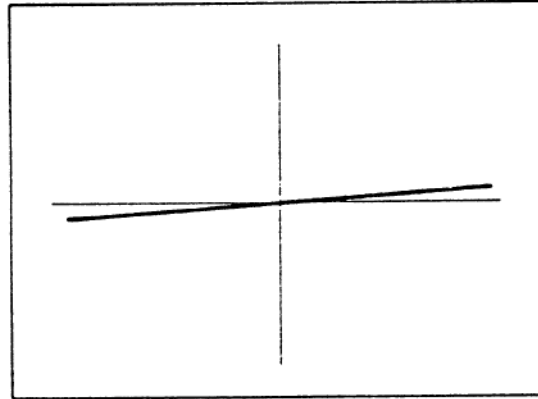


# Analog Signature Examples

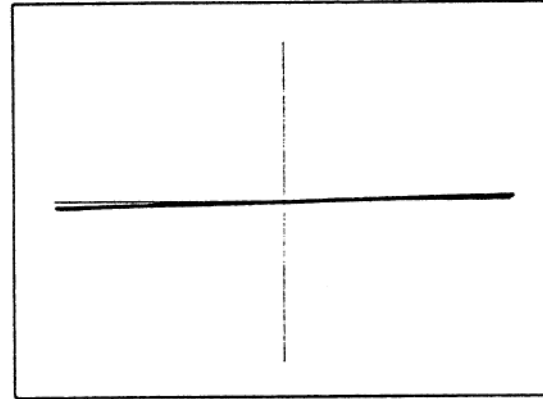


47K $\Omega$   
RESISTOR

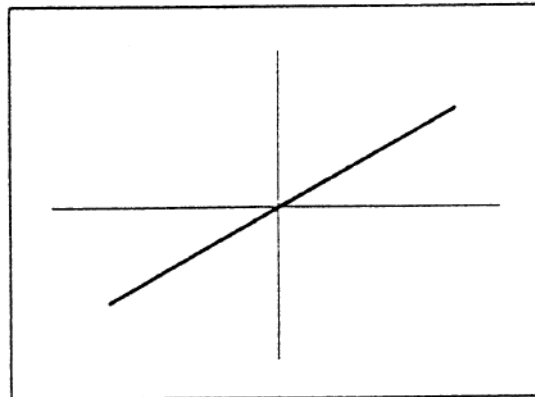
LOGIC



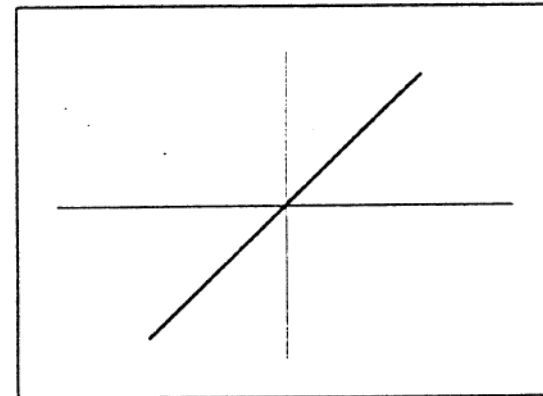
LOW



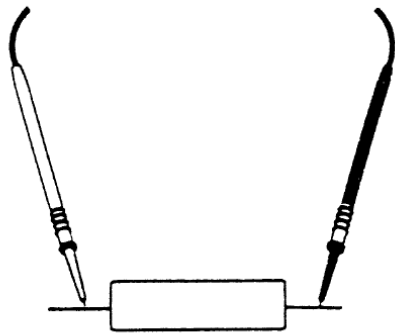
MEDIUM



HIGH

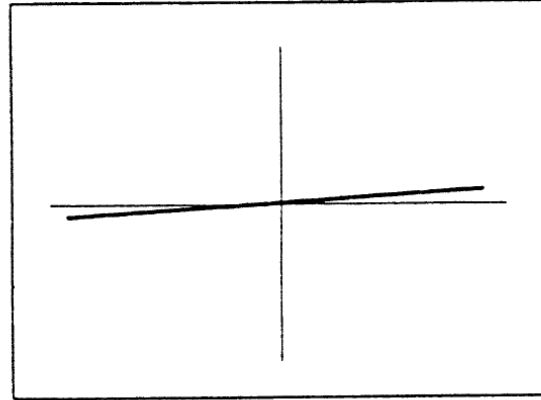


# Analog Signature Examples

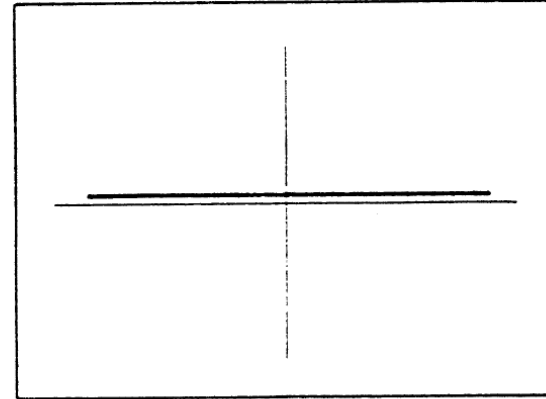


150K $\Omega$   
RESISTOR

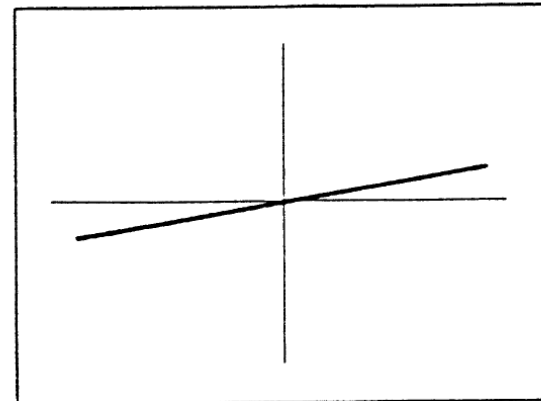
LOGIC



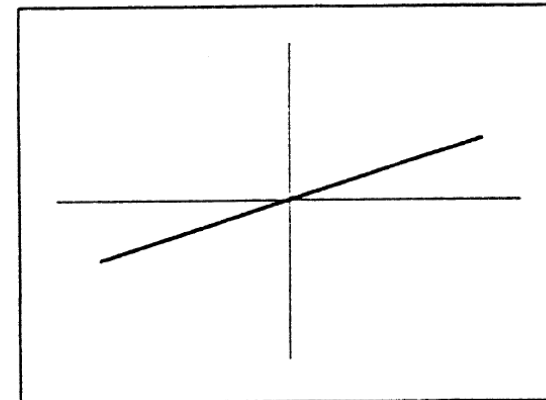
LOW



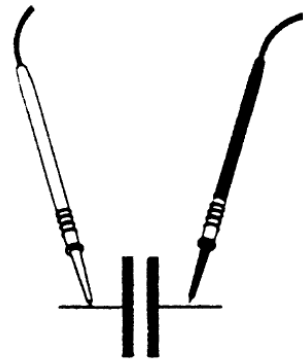
MEDIUM



HIGH



# Analog Signature Examples

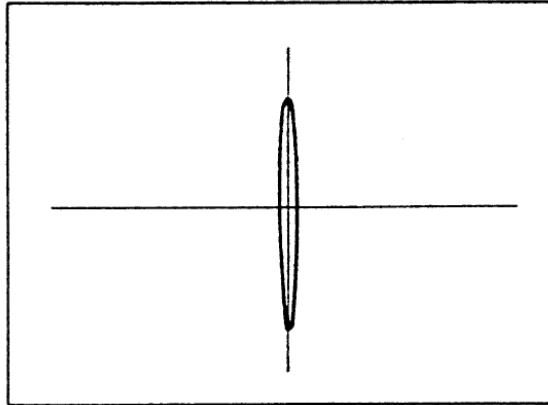


22µF

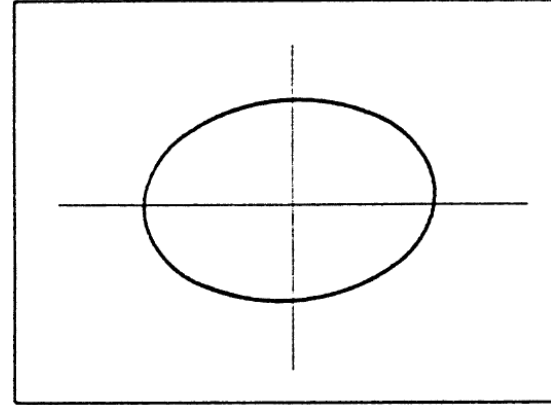
CAPACITOR

LOW frequency used

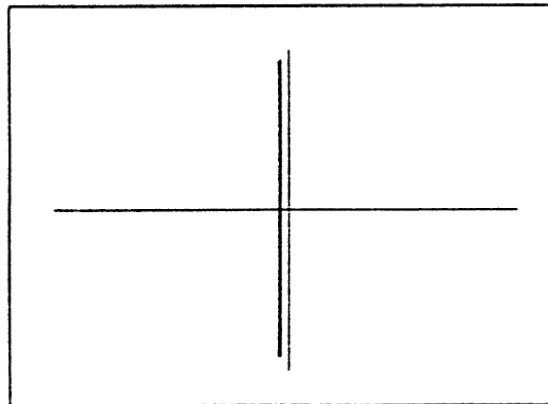
LOGIC



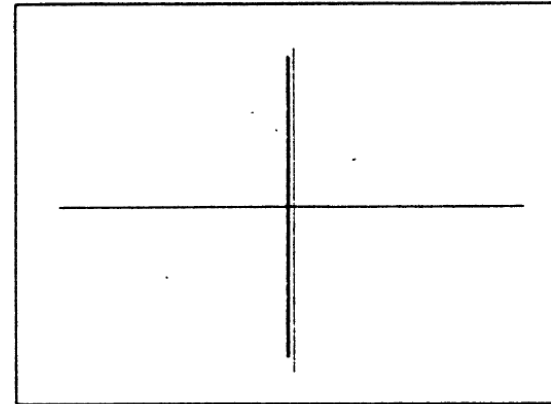
LOW



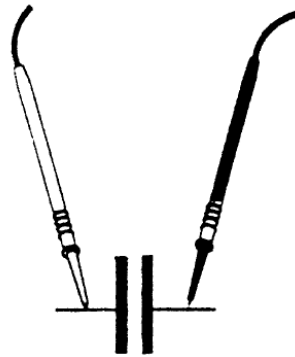
MEDIUM



HIGH

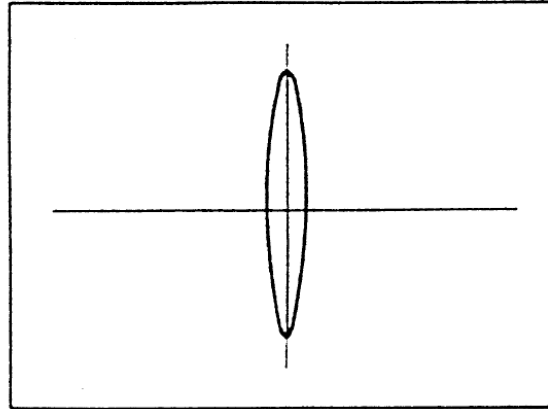


# Analog Signature Examples

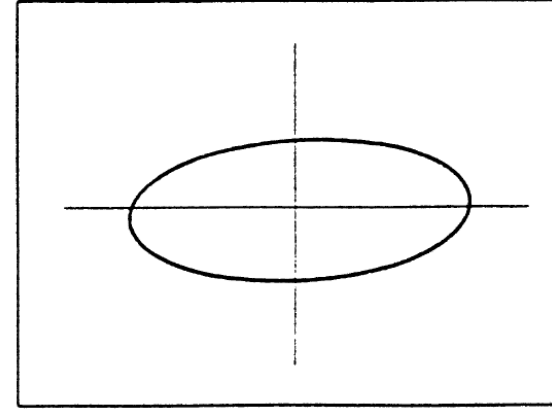


2.2 $\mu$ F  
CAPACITOR  
MED frequency used

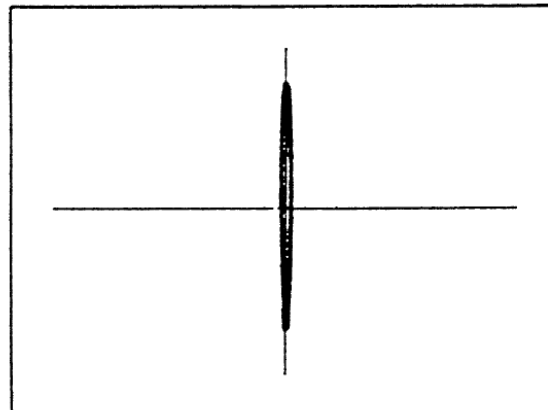
LOGIC



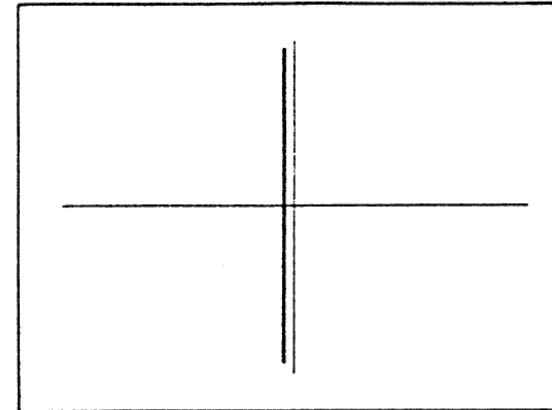
LOW



MEDIUM

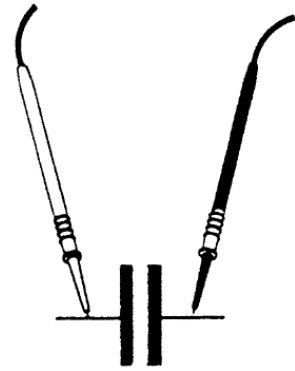


HIGH



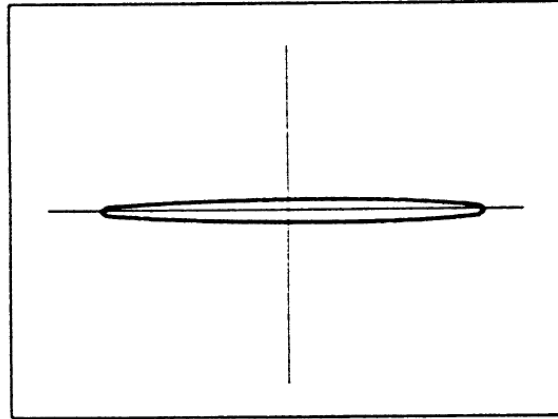


# Analog Signature Examples

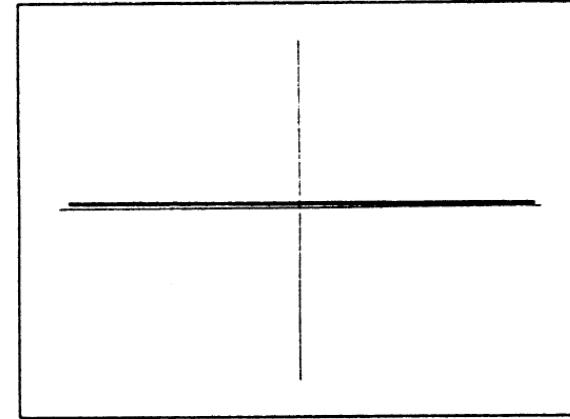


10nF (0.01 $\mu$ F)  
CAPACITOR

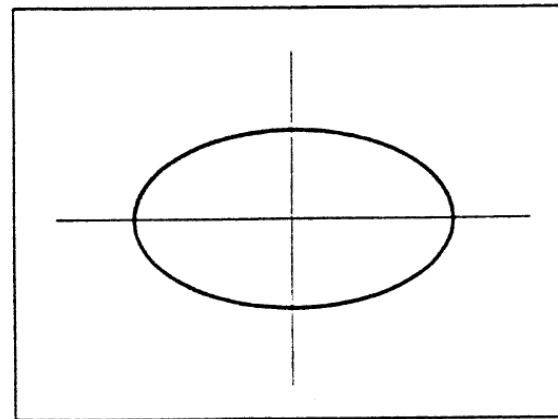
LOGIC



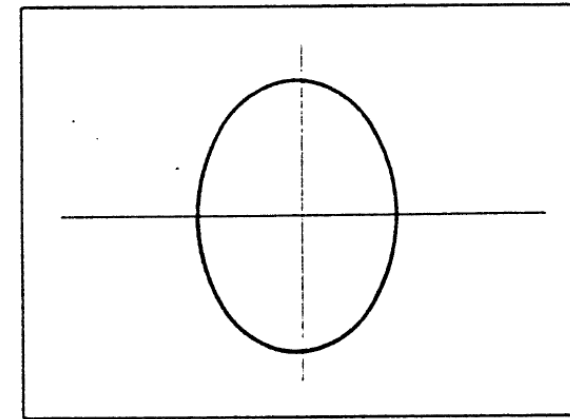
LOW



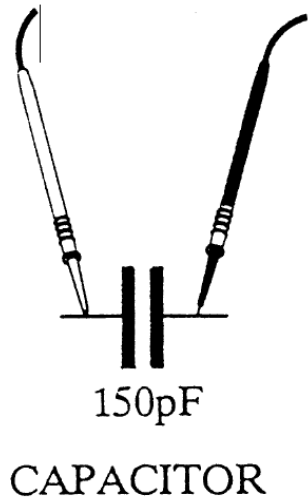
MEDIUM



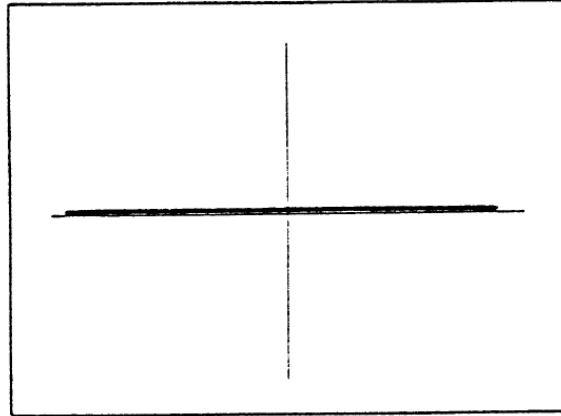
HIGH



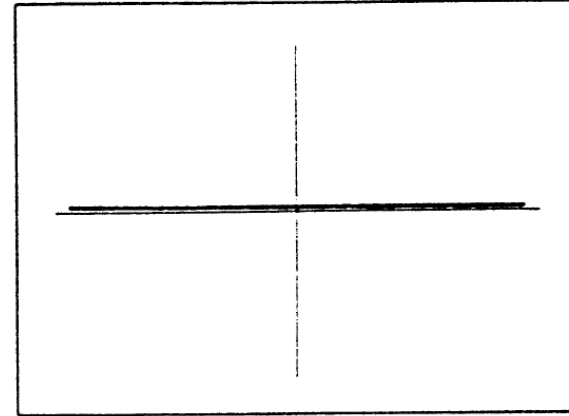
# Analog Signature Examples



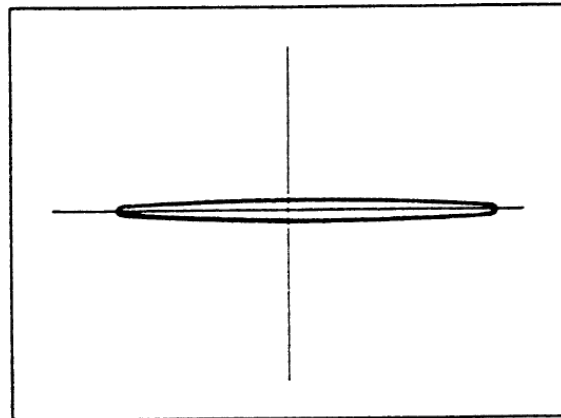
LOGIC



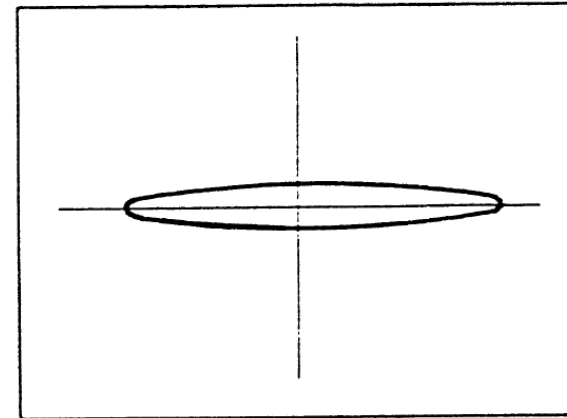
LOW



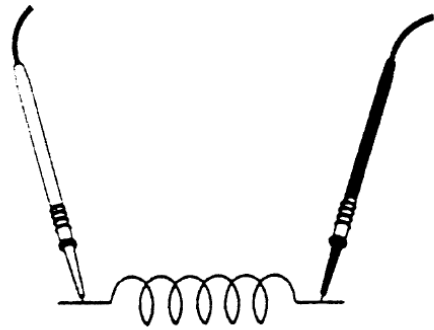
MEDIUM



HIGH



# Analog Signature Examples

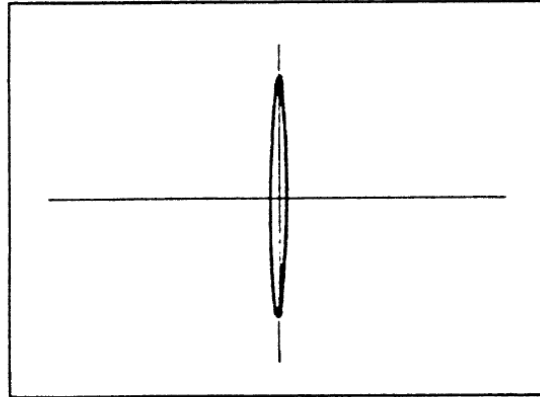


1mH

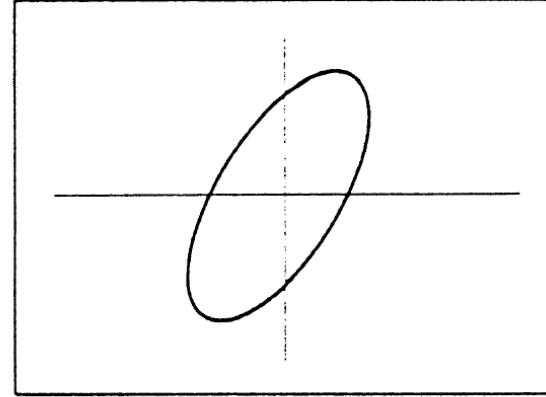
INDUCTOR

HIGH frequency used

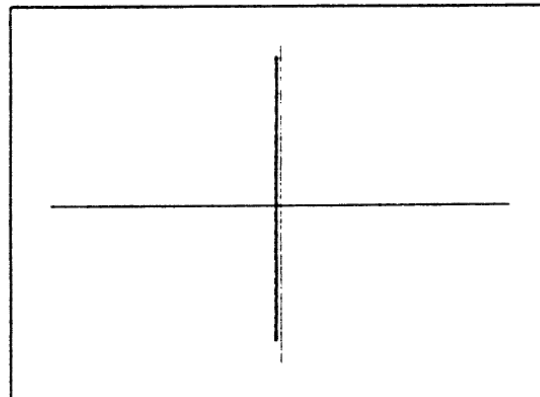
LOGIC



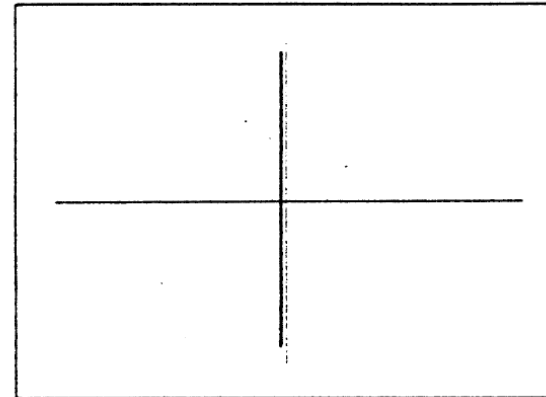
LOW



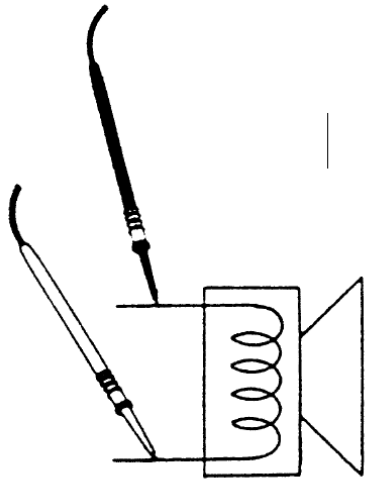
MEDIUM



HIGH

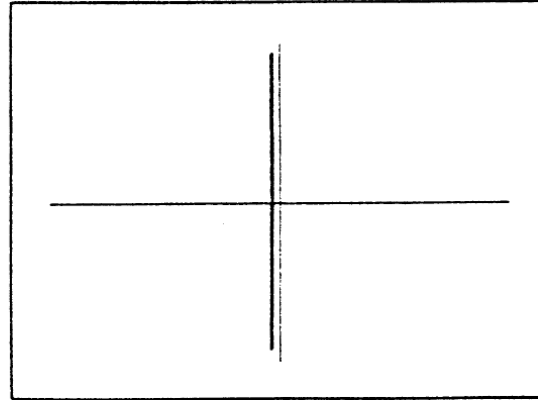


# Analog Signature Examples

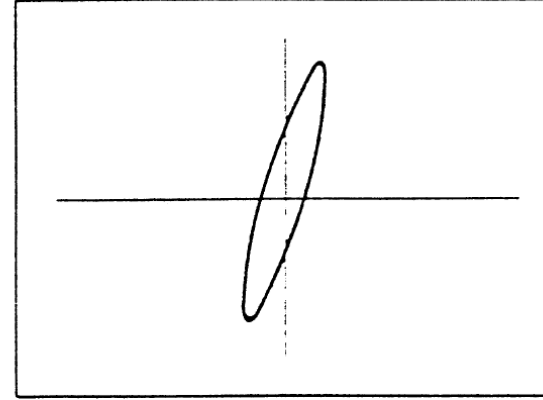


8Ω LOUDSPEAKER  
HIGH frequency used

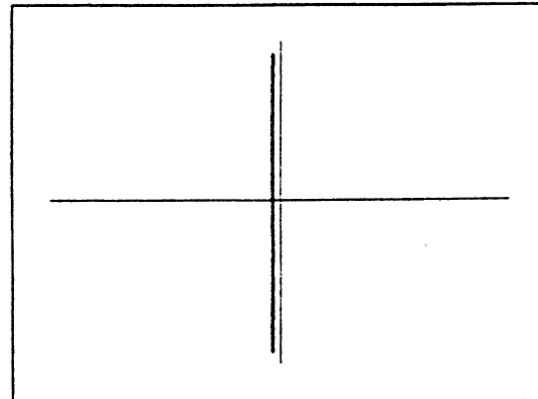
LOGIC



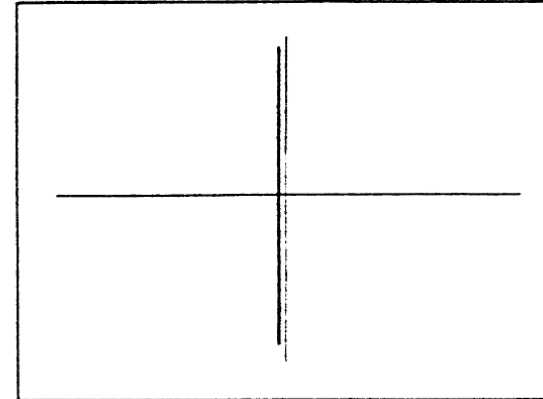
LOW



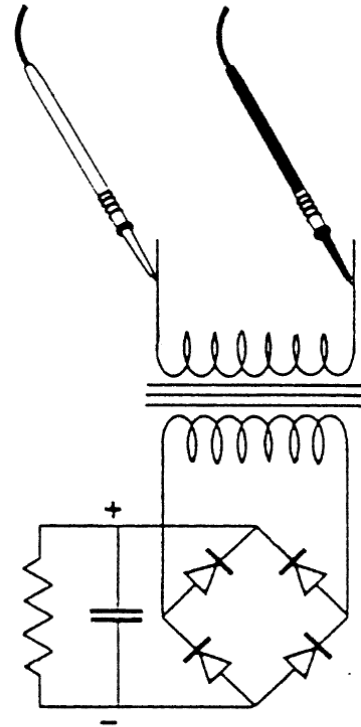
MEDIUM



HIGH



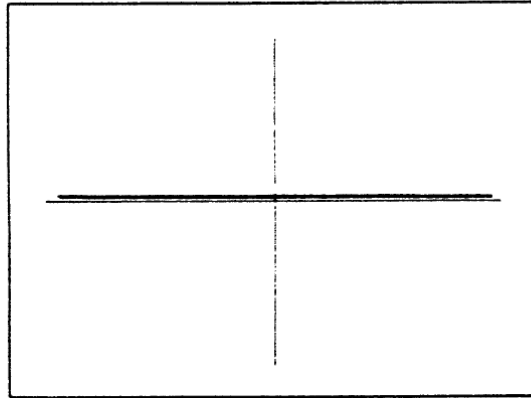
# Analog Signature Examples



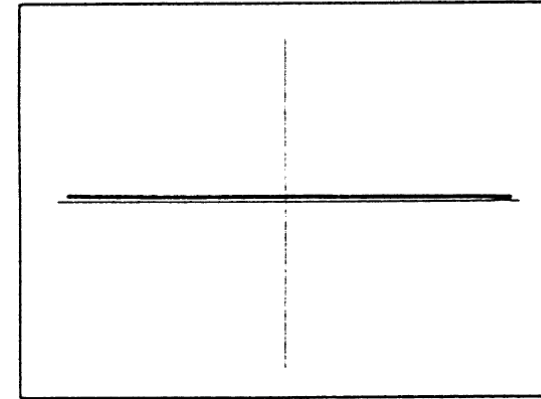
POWER TRANSFORMER  
WITH BRIDGE RECTIFIER  
ON SECONDARY

LOW frequency used

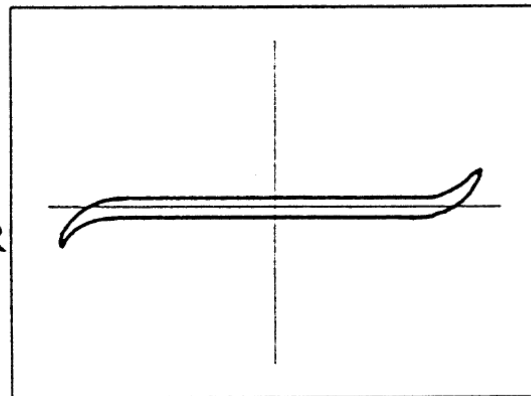
LOGIC



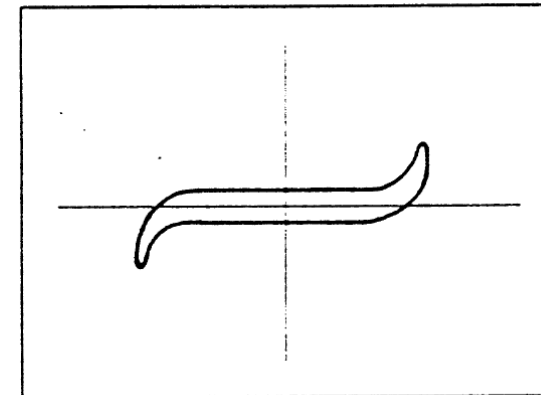
LOW



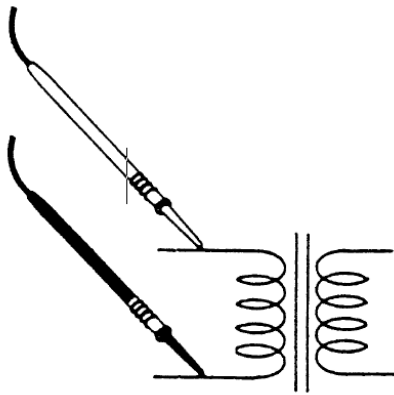
MEDIUM



HIGH



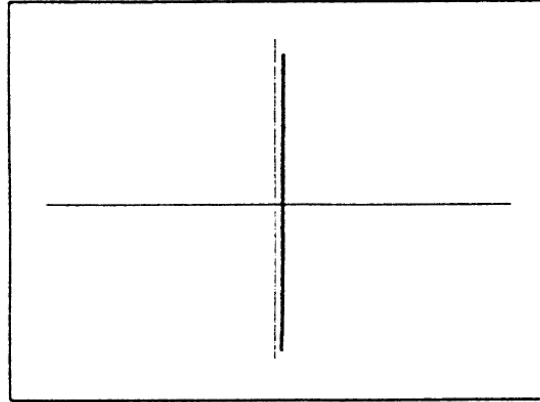
# Analog Signature Examples



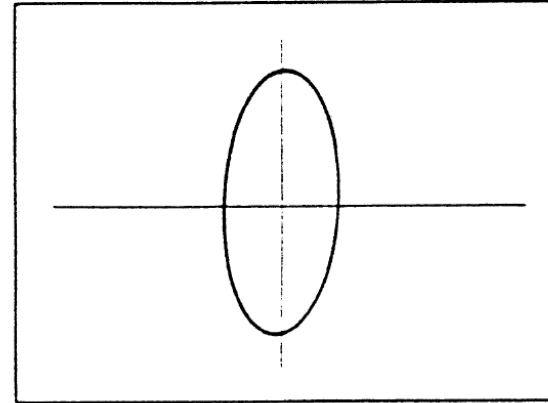
SMALL FERRITE  
1:1 COUPLING  
TRANSFORMER

HIGH frequency used

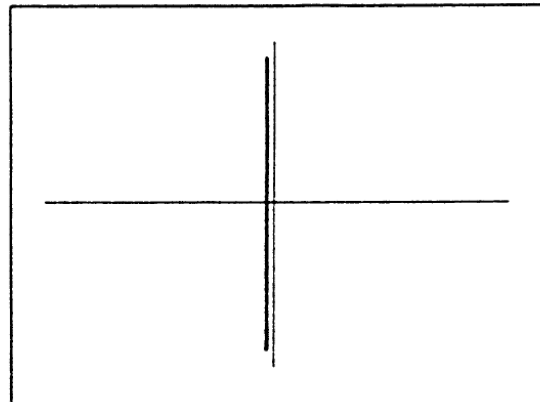
LOGIC



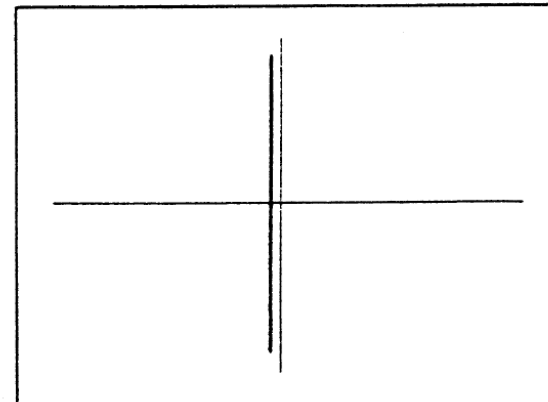
LOW



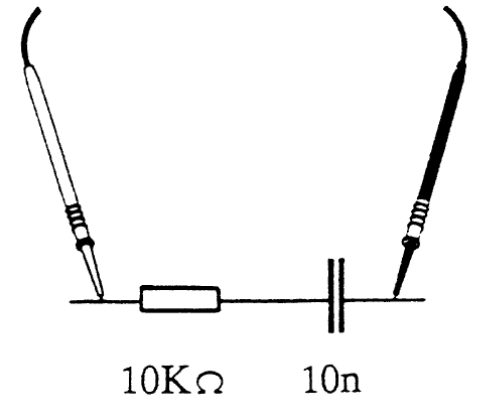
MEDIUM



HIGH



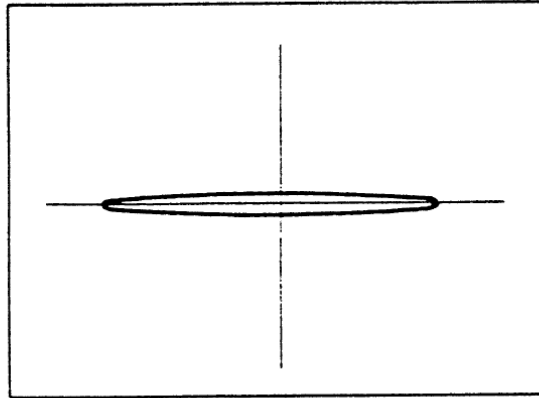
# Analog Signature Examples



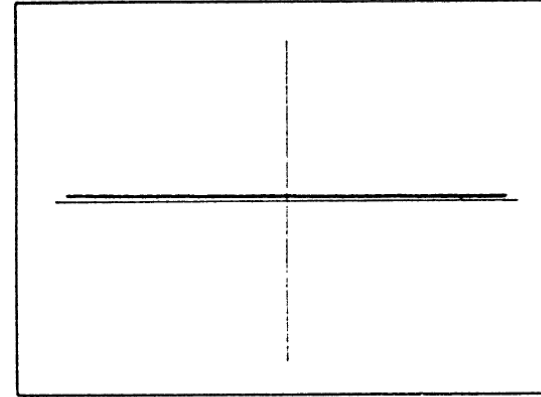
RESISTOR/CAPACITOR

MED frequency used

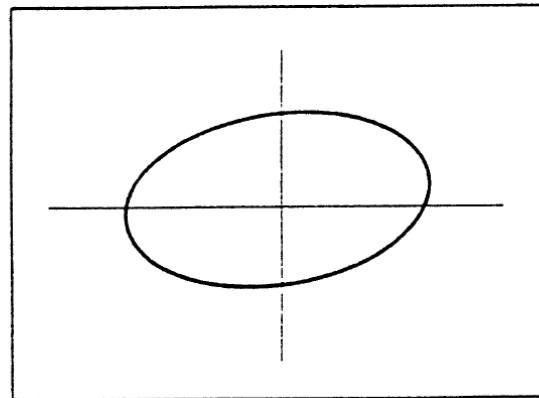
LOGIC



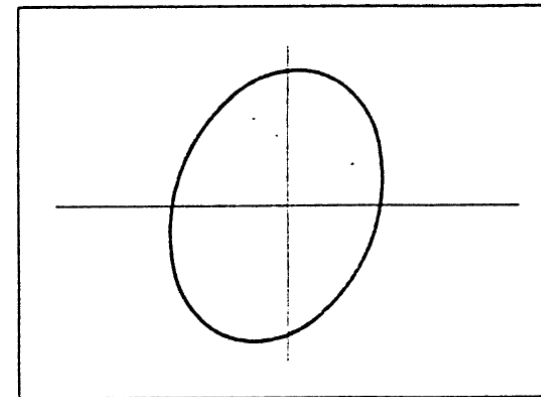
LOW



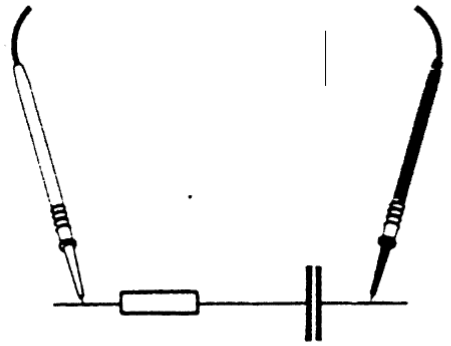
MEDIUM



HIGH



# Analog Signature Examples

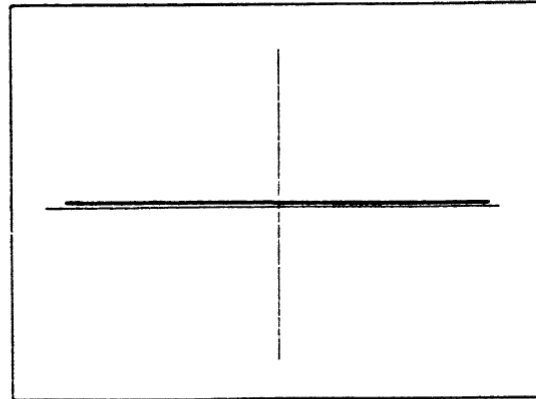


100K $\Omega$  330pF

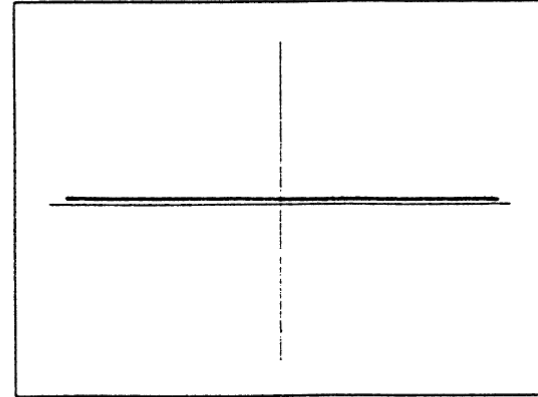
RESISTOR/CAPACITOR

HIGH frequency used

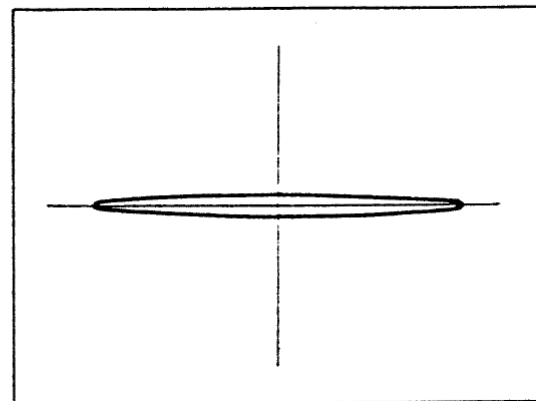
LOGIC



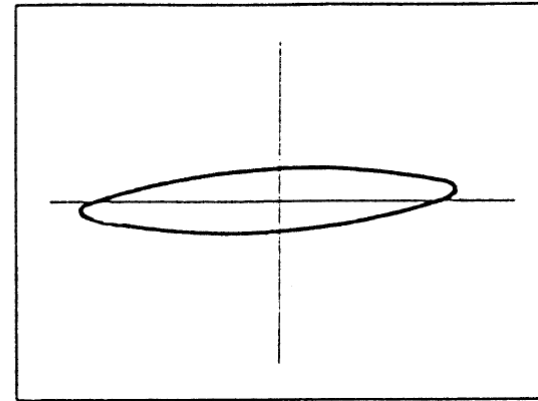
LOW



MEDIUM

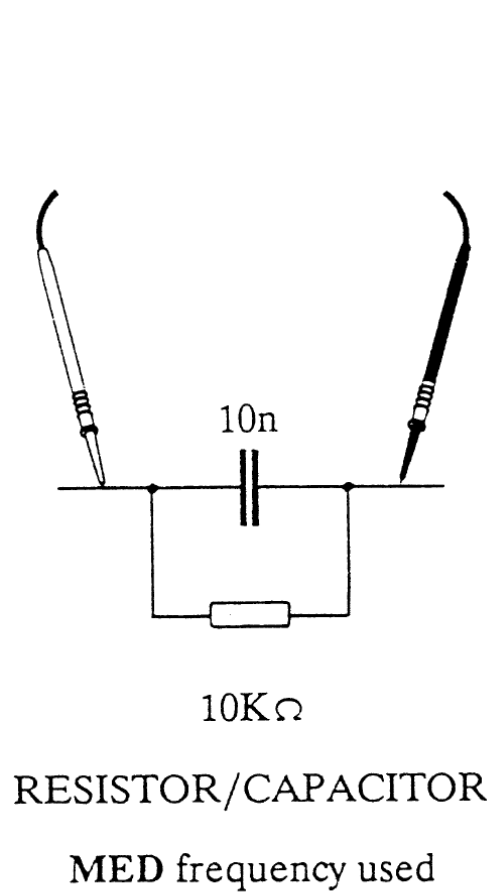


HIGH

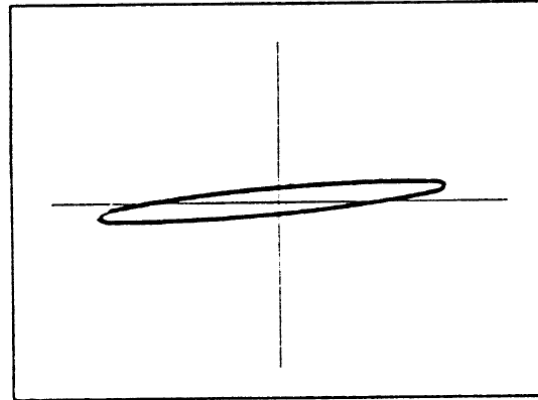




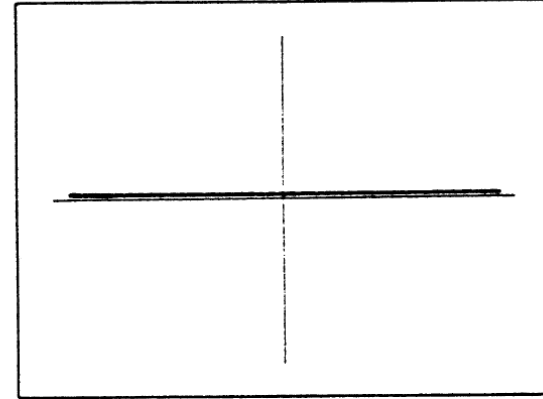
# Analog Signature Examples



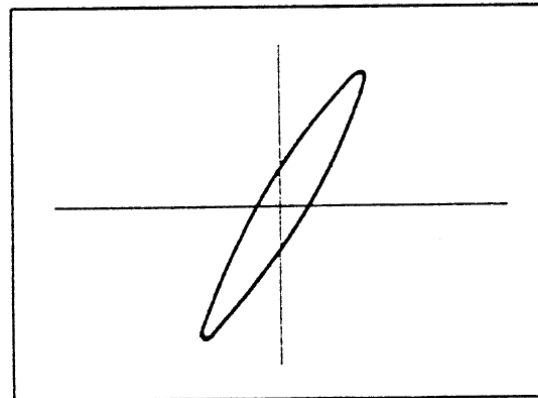
LOGIC



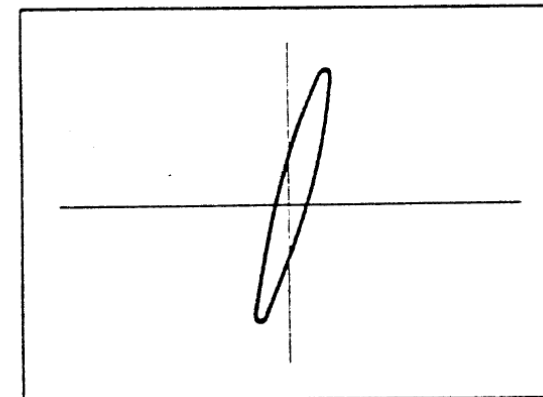
LOW



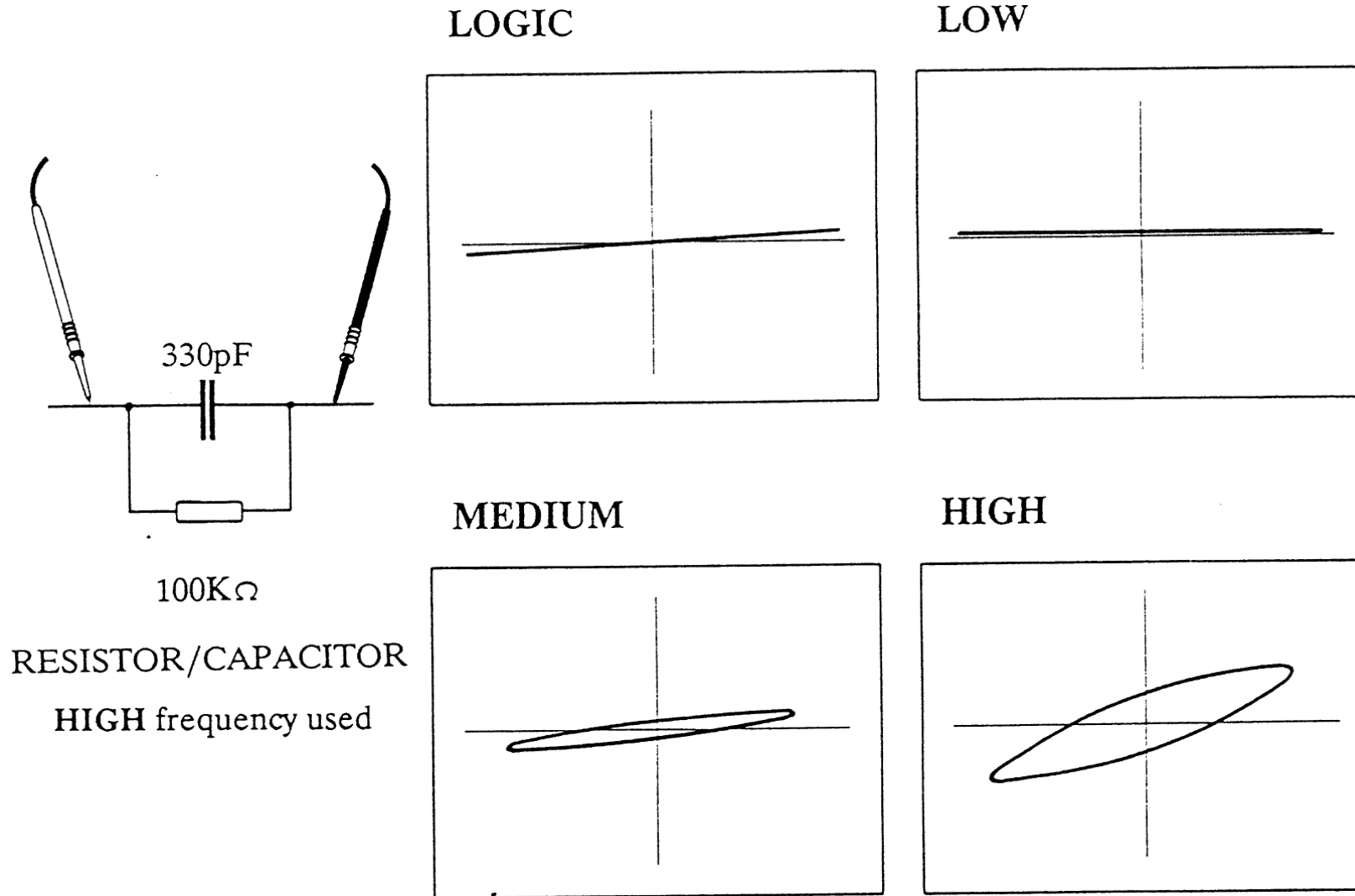
MEDIUM



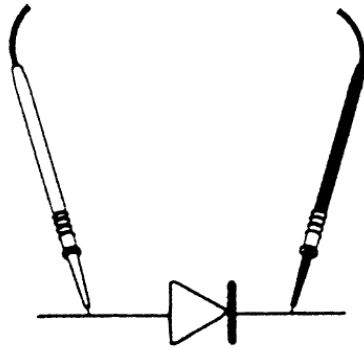
HIGH



# Analog Signature Examples

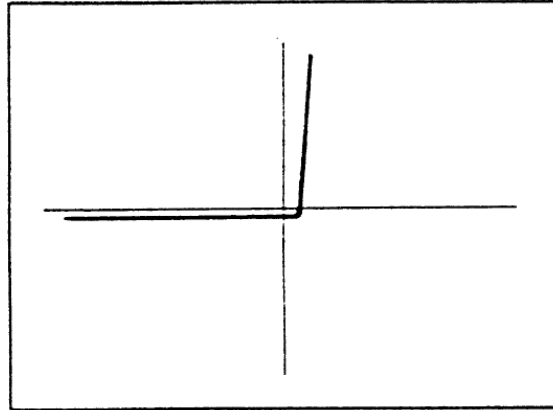


# Analog Signature Examples

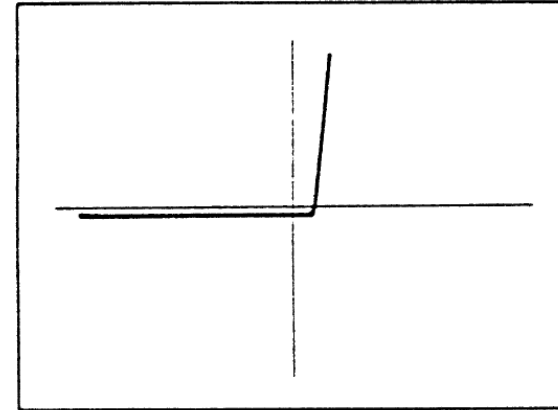


1N4148 SMALL  
SIGNAL DIODE

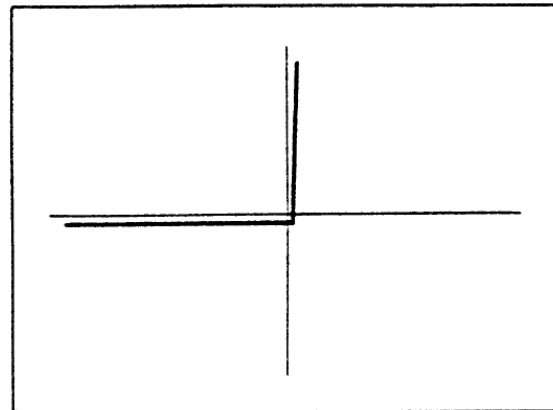
LOGIC



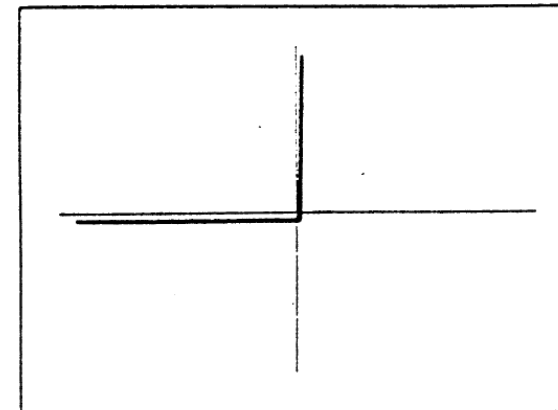
LOW



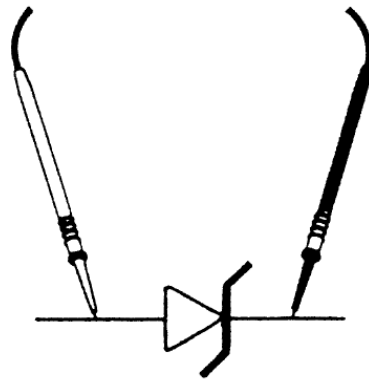
MEDIUM



HIGH

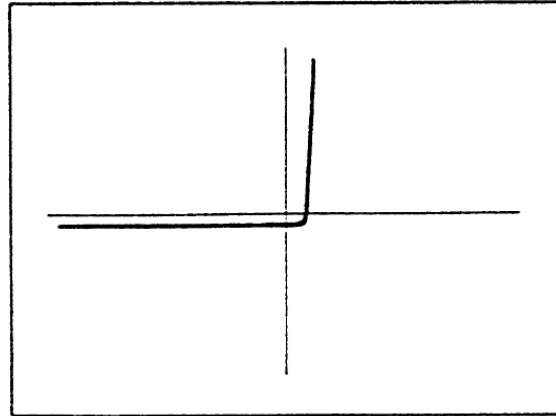


# Analog Signature Examples

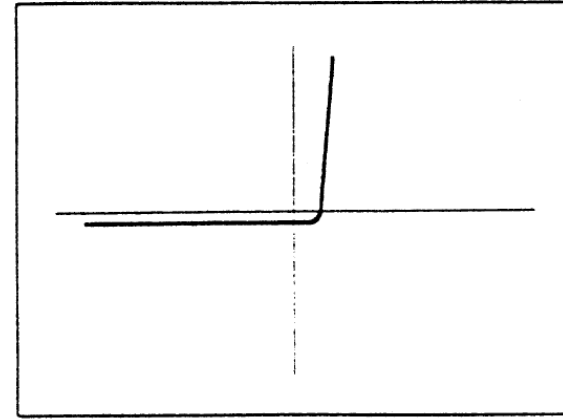


15V Zener

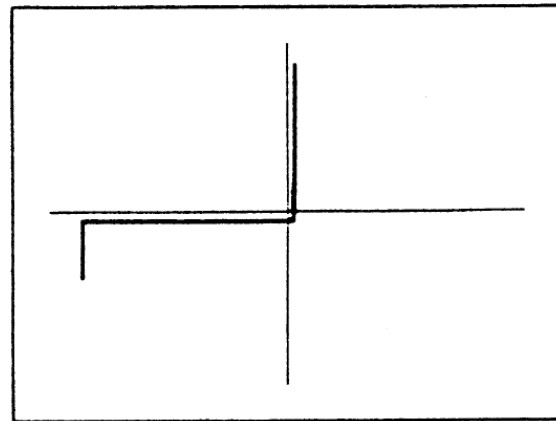
**LOGIC**



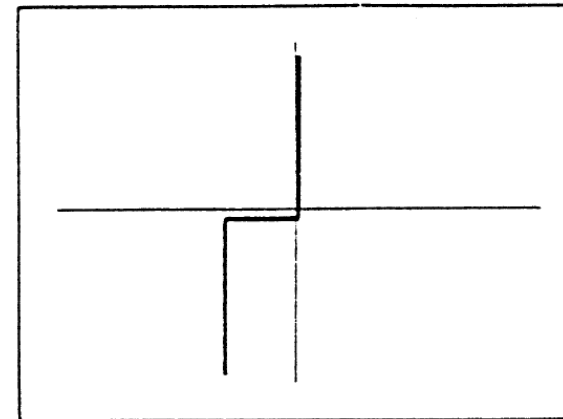
**LOW**



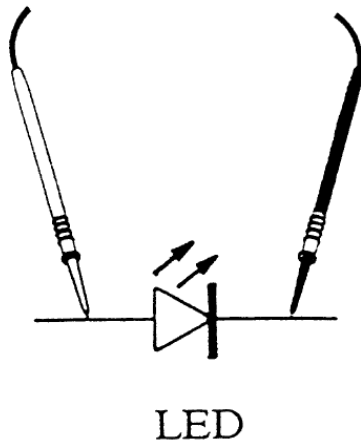
**MEDIUM**



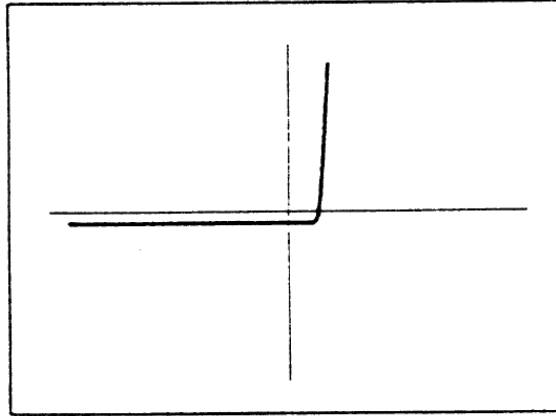
**HIGH**



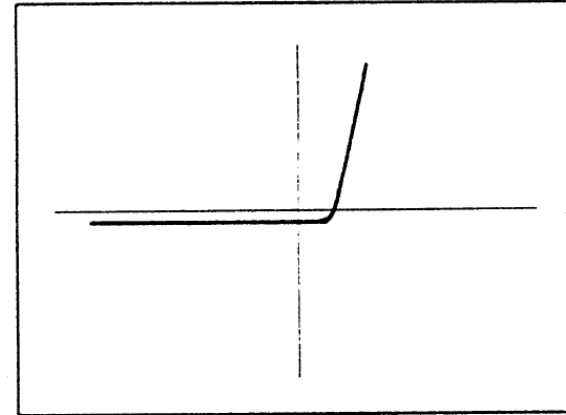
# Analog Signature Examples



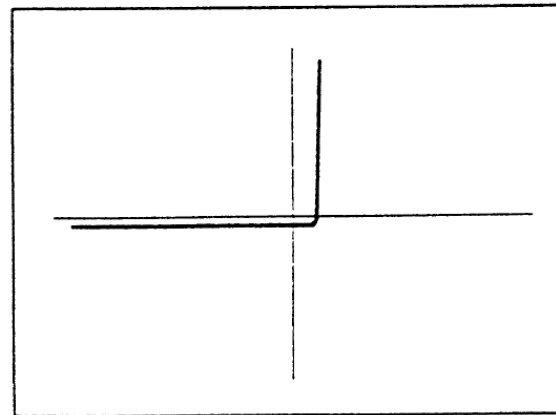
LOGIC



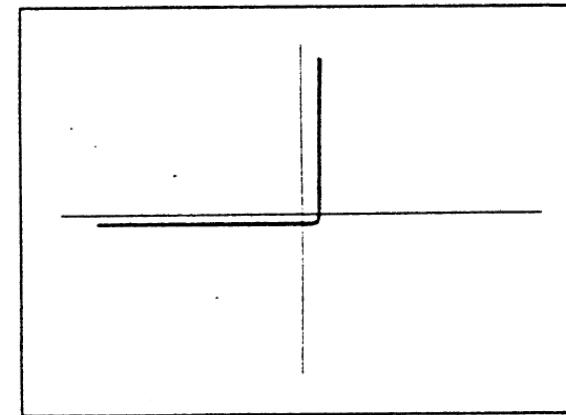
LOW



MEDIUM

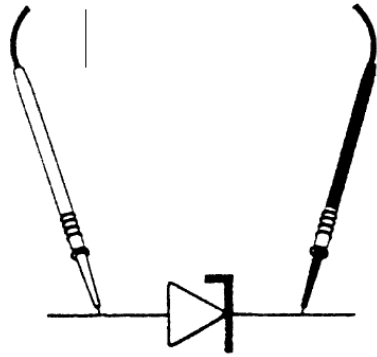


HIGH



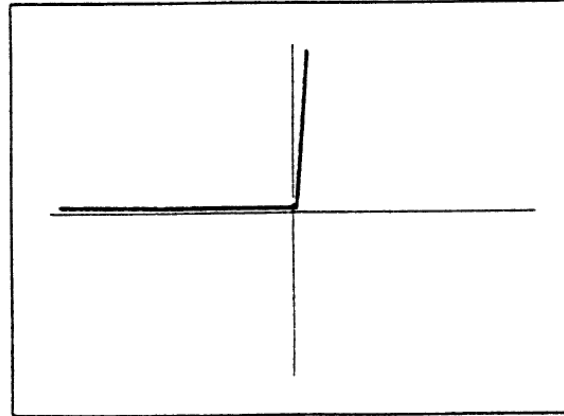
All measurements on this page in LOW frequency

# Analog Signature Examples

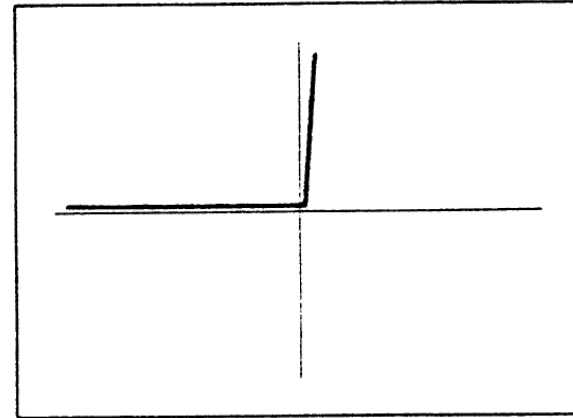


Schottky MBR735

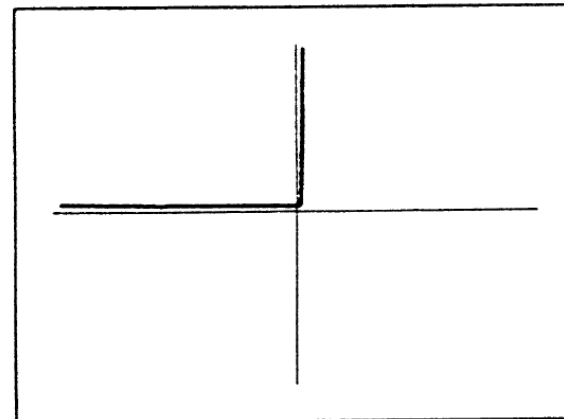
LOGIC



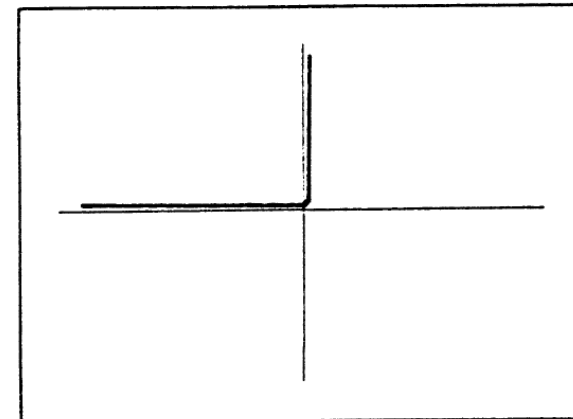
LOW



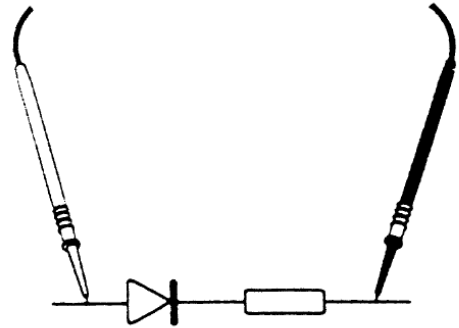
MEDIUM



HIGH



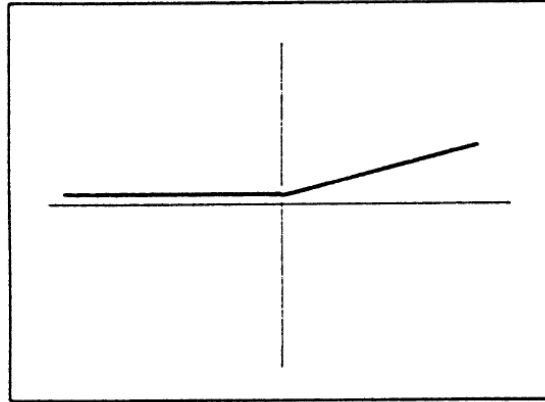
# Analog Signature Examples



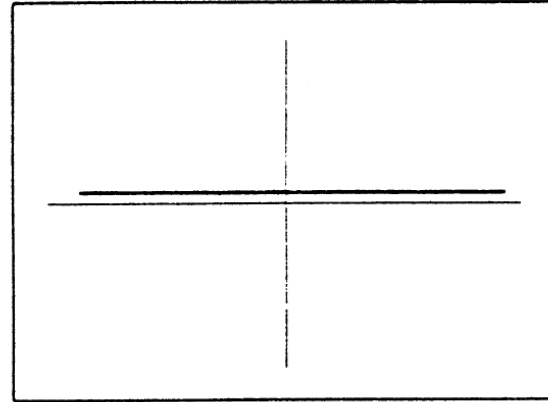
1N4148 10K $\Omega$

DIODE/RESISTOR

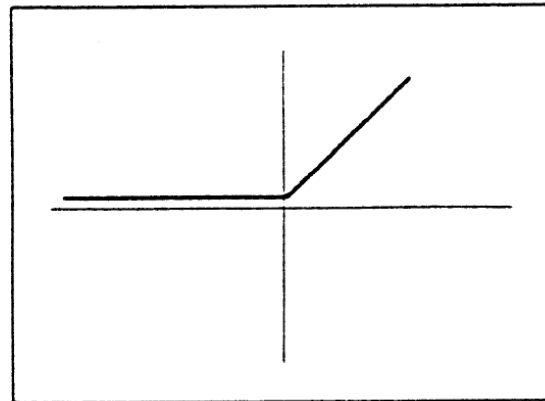
LOGIC



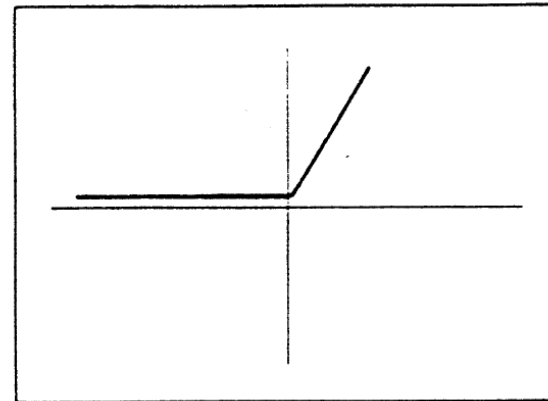
LOW



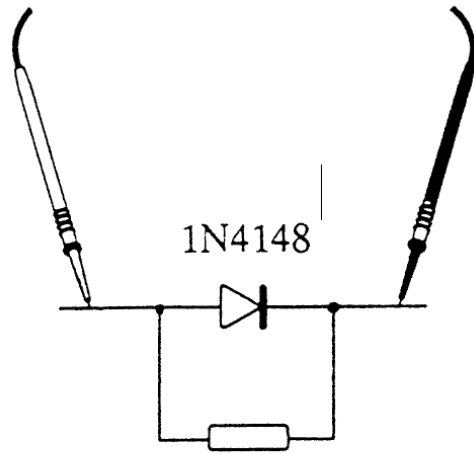
MEDIUM



HIGH



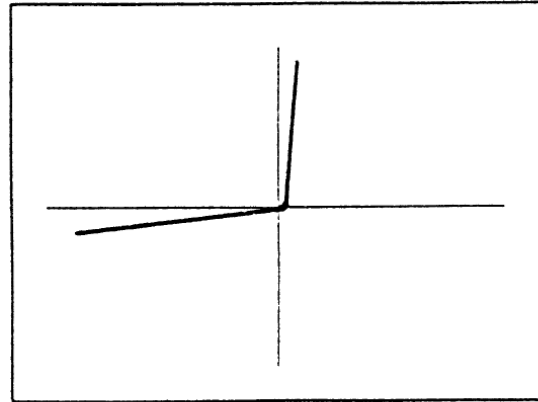
# Analog Signature Examples



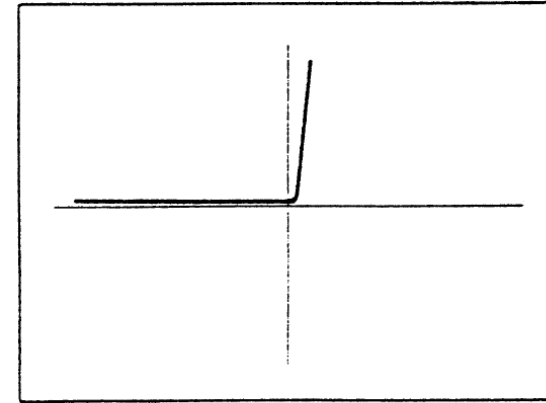
10K $\Omega$

DIODE/RESISTOR

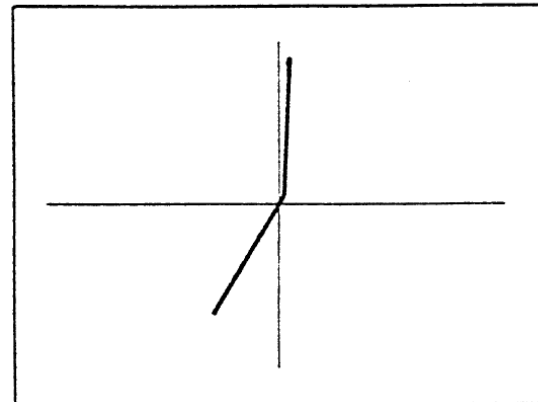
LOGIC



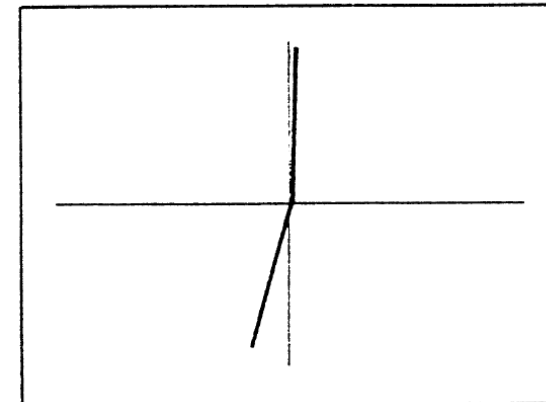
LOW



MEDIUM

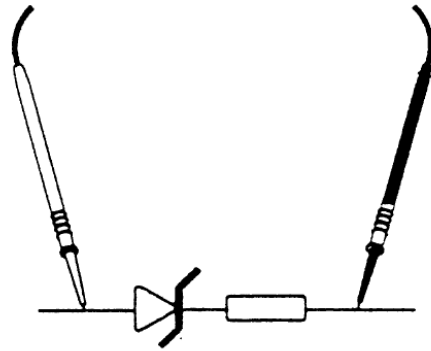


HIGH





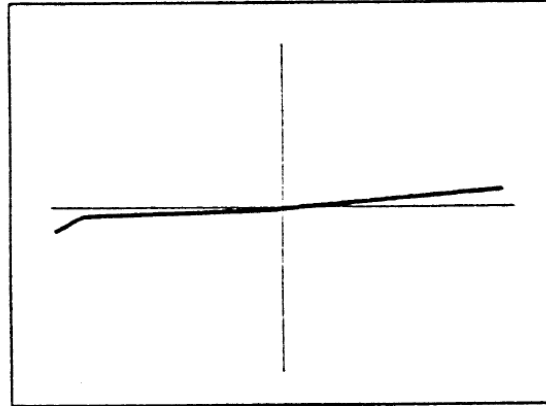
# Analog Signature Examples



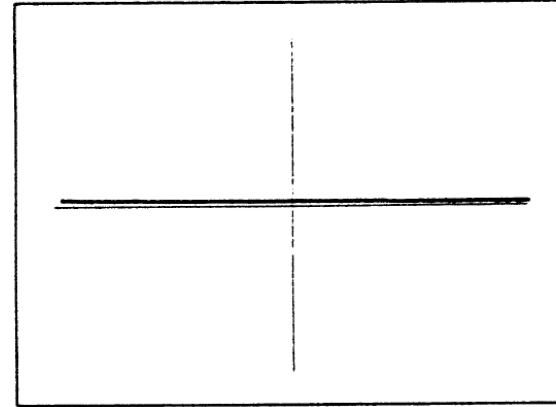
5V6 Zener 10K $\Omega$

ZENER/RESISTOR

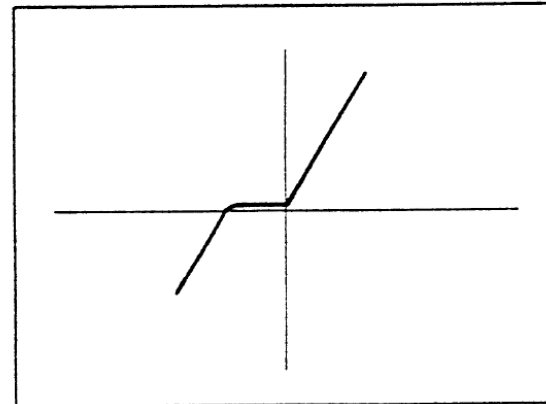
LOGIC



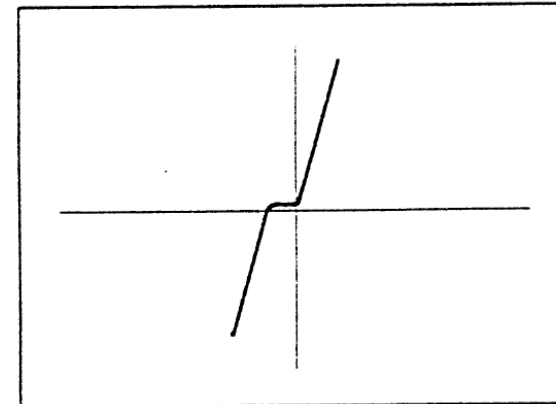
LOW



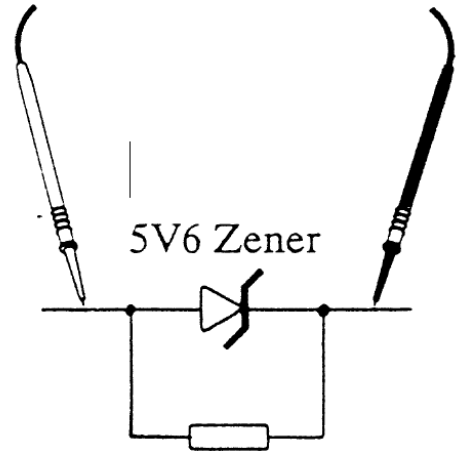
MEDIUM



HIGH



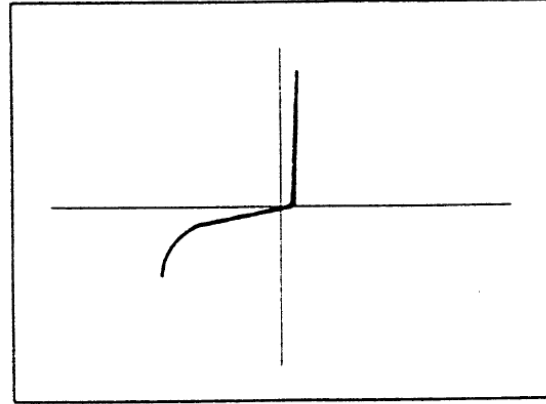
# Analog Signature Examples



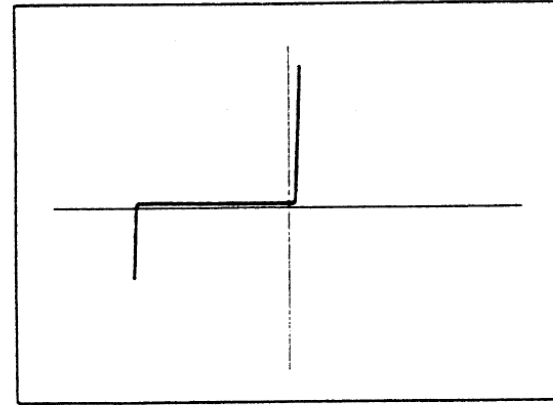
10K $\Omega$

ZENER/RESISTOR

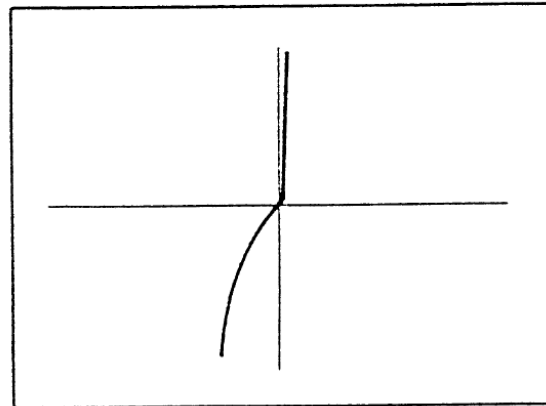
LOGIC



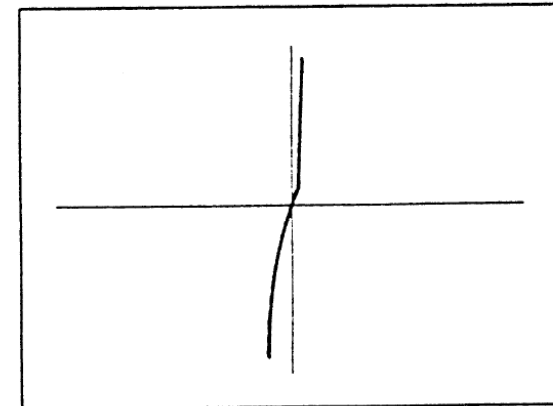
LOW



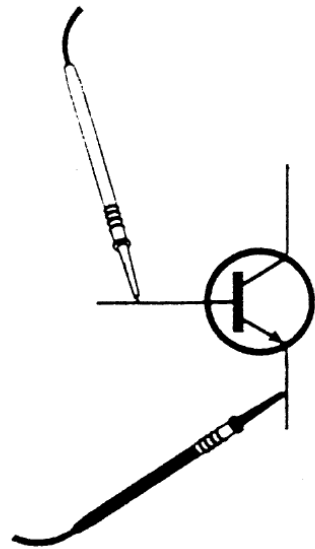
MEDIUM



HIGH

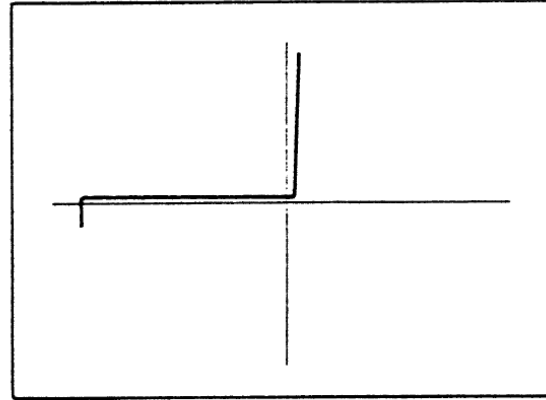


# Analog Signature Examples

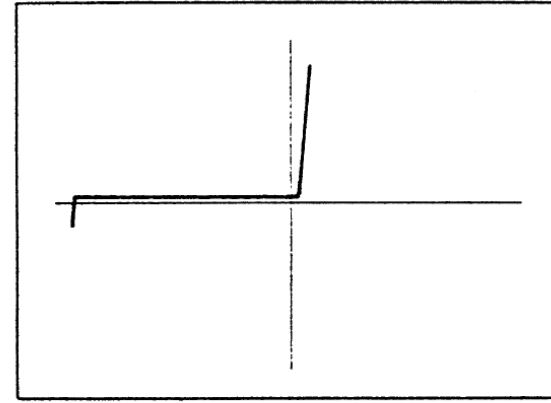


TYPICAL SMALL  
SIGNAL (2N3904)  
NPN TRANSISTOR

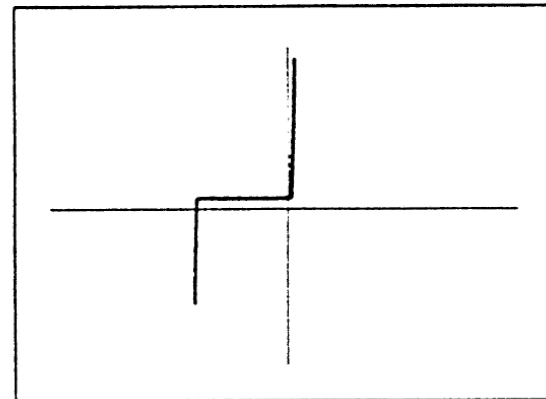
LOGIC



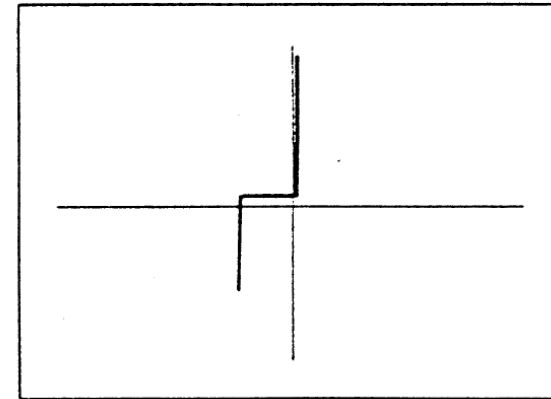
LOW



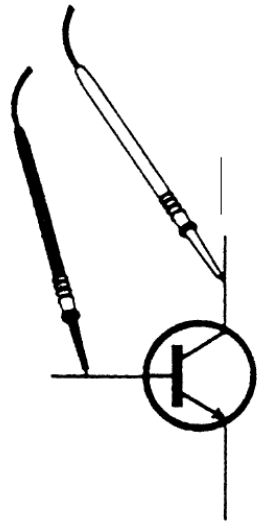
MEDIUM



HIGH

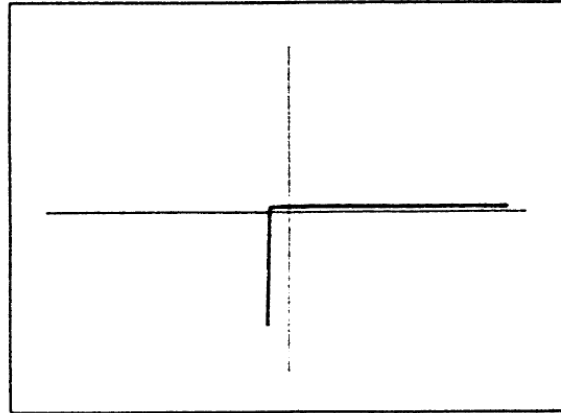


# Analog Signature Examples

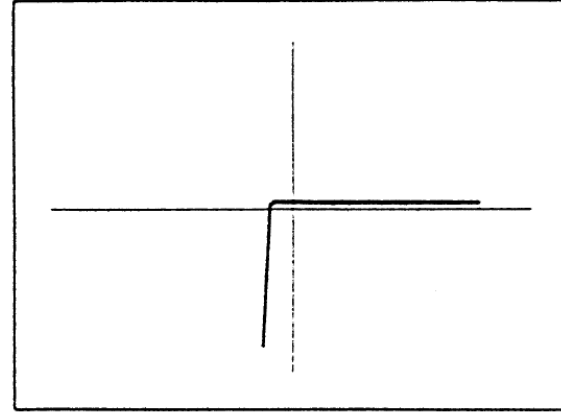


TYPICAL SMALL  
SIGNAL (2N3904)  
NPN TRANSISTOR

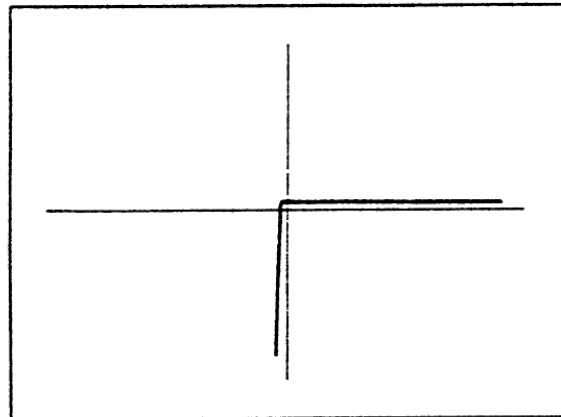
LOGIC



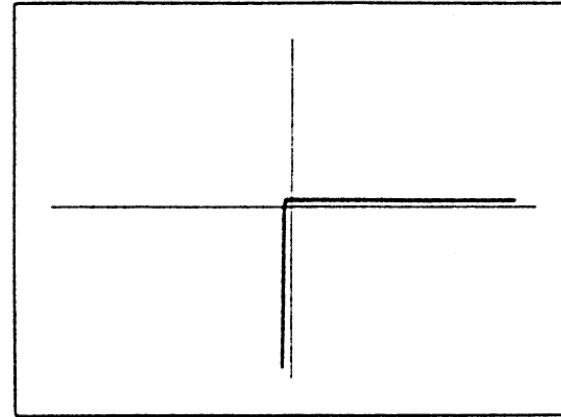
LOW



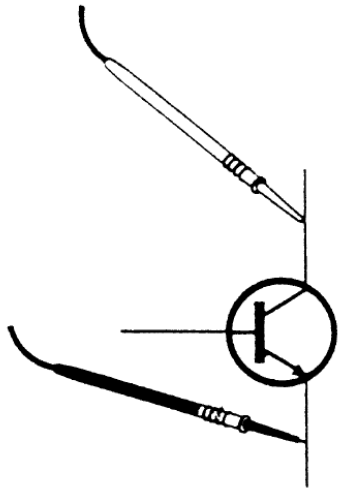
MEDIUM



HIGH

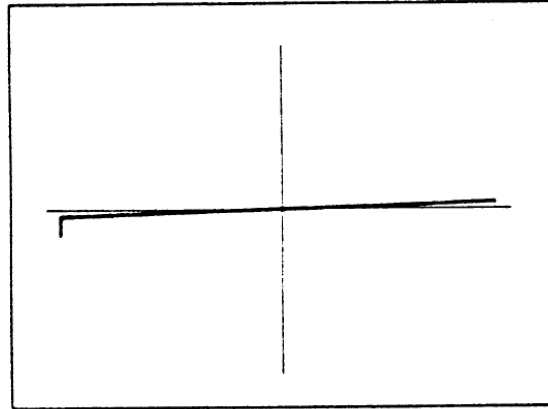


# Analog Signature Examples

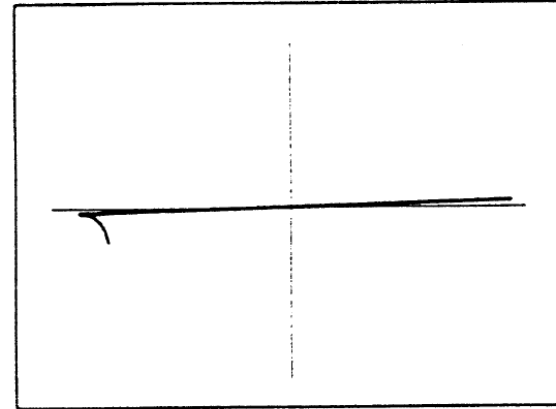


TYPICAL SMALL  
SIGNAL (2N3904)  
NPN TRANSISTOR

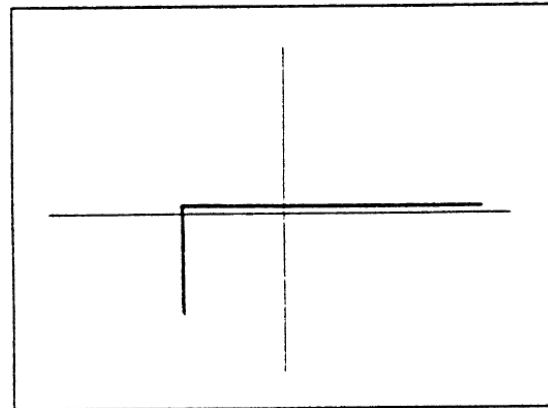
LOGIC



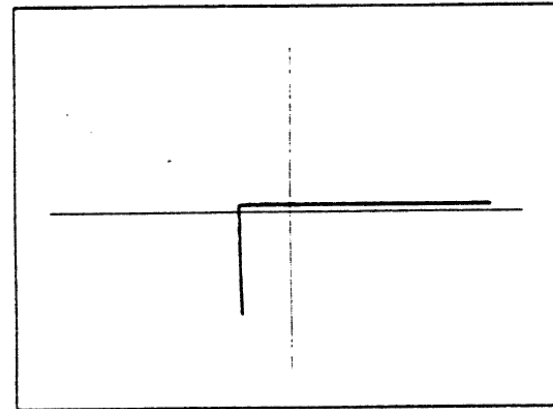
LOW



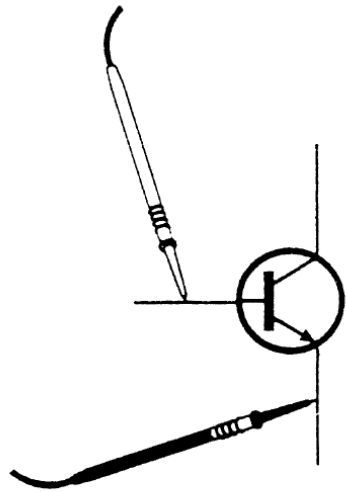
MEDIUM



HIGH

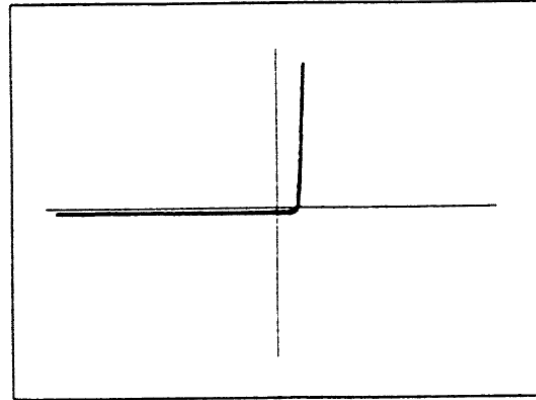


# Analog Signature Examples

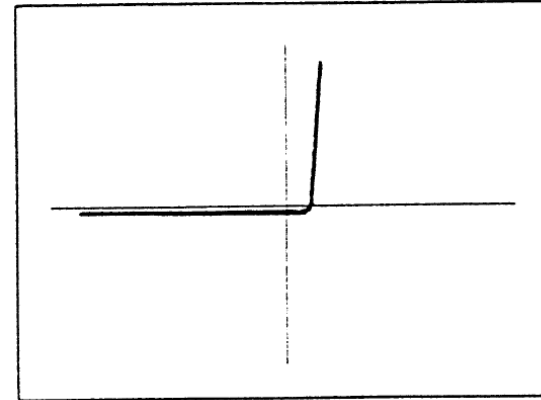


TYPICAL SMALL  
SIGNAL DARLINGTON  
(2N5308)  
NPN TRANSISTOR

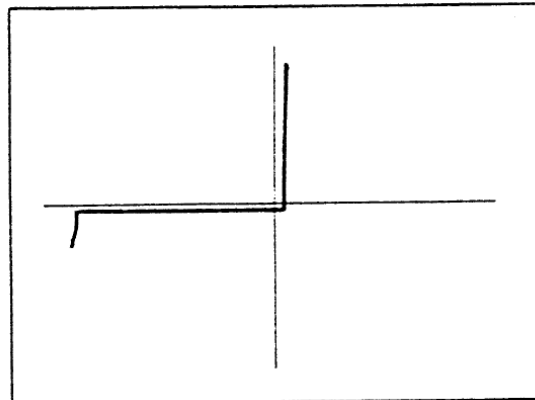
LOGIC



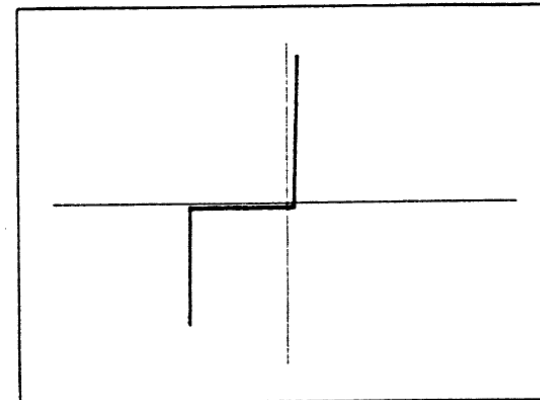
LOW



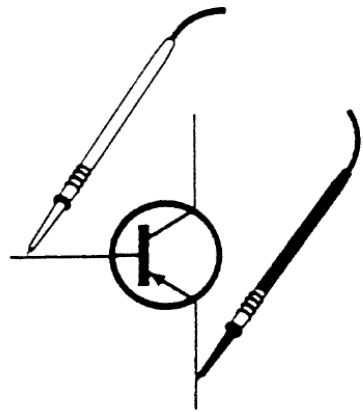
MEDIUM



HIGH

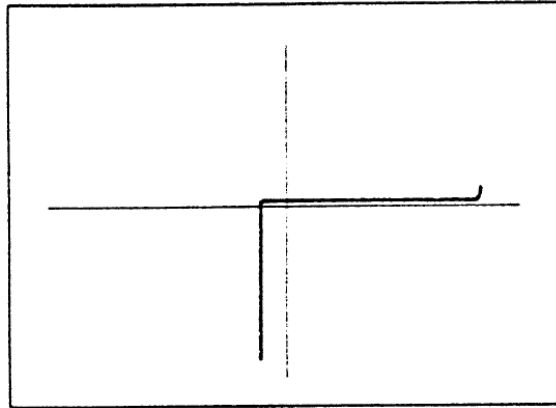


# Analog Signature Examples

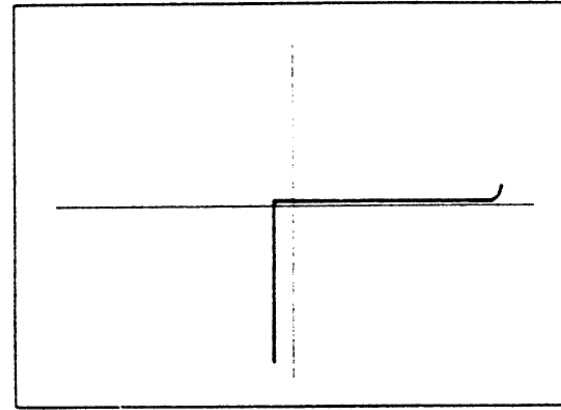


TYPICAL SMALL  
SIGNAL (2N3906)  
PNP TRANSISTOR

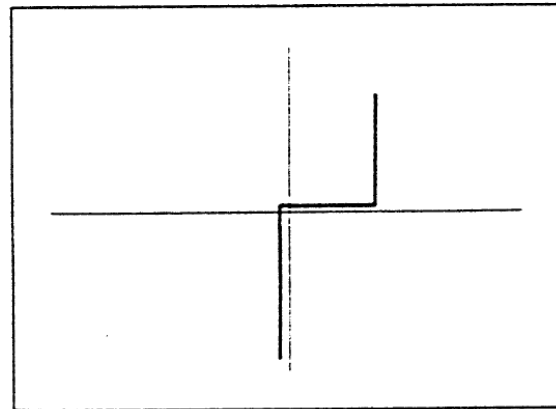
LOGIC



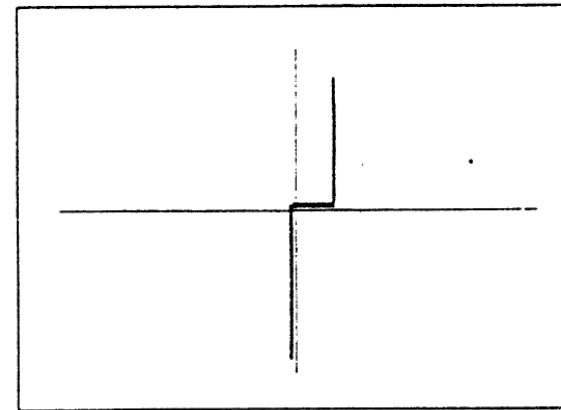
LOW



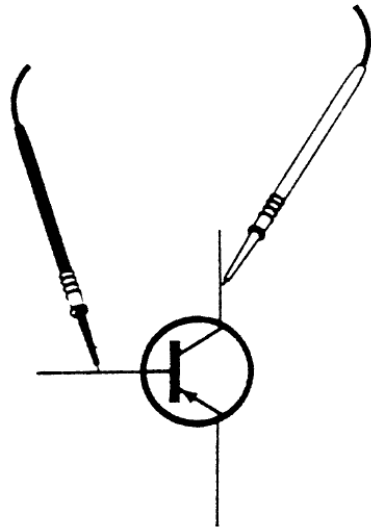
MEDIUM



HIGH

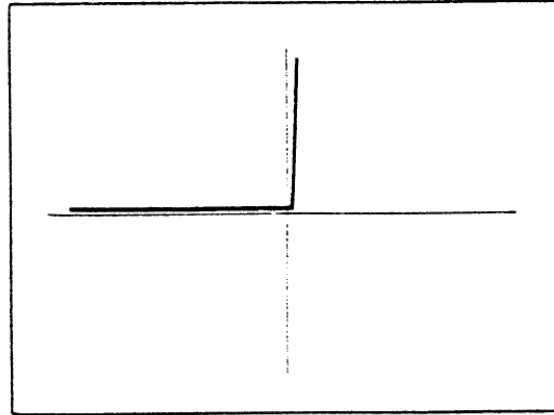


# Analog Signature Examples

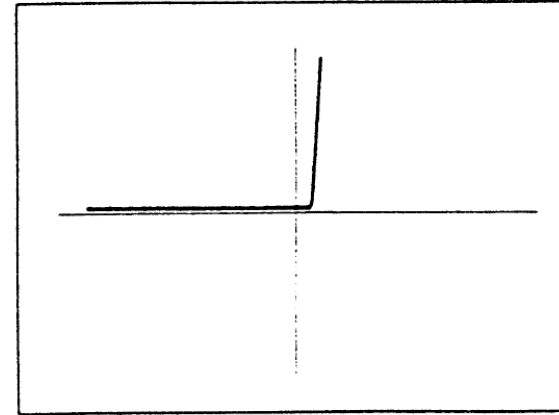


TYPICAL SMALL  
SIGNAL (2N3906)  
PNP TRANSISTOR

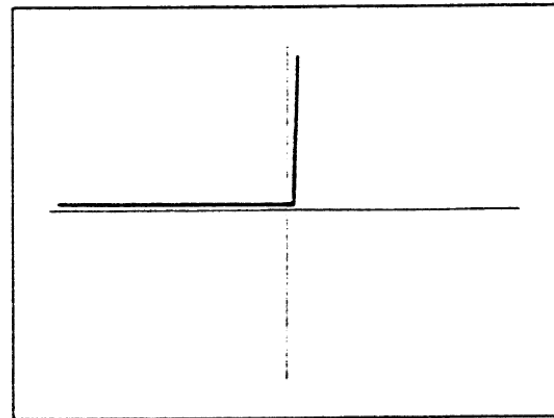
LOGIC



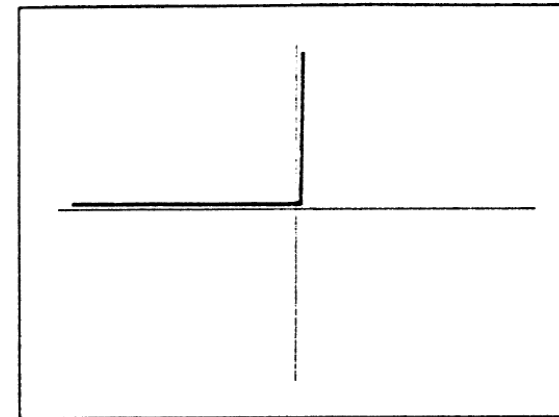
LOW



MEDIUM

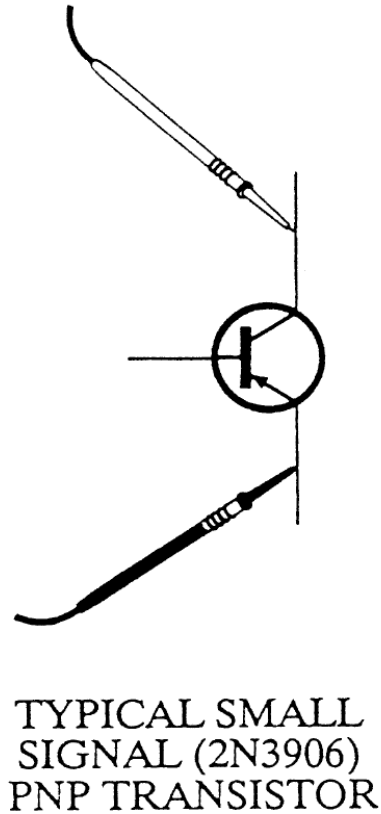


HIGH

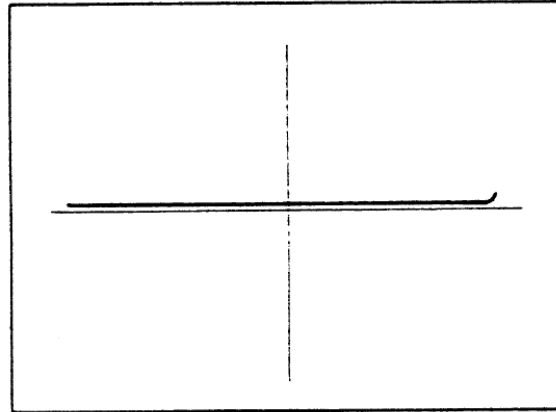




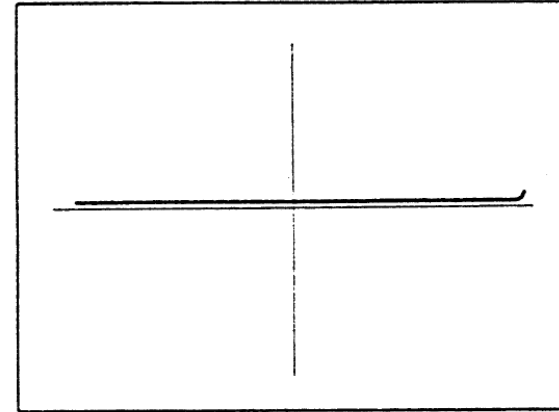
# Analog Signature Examples



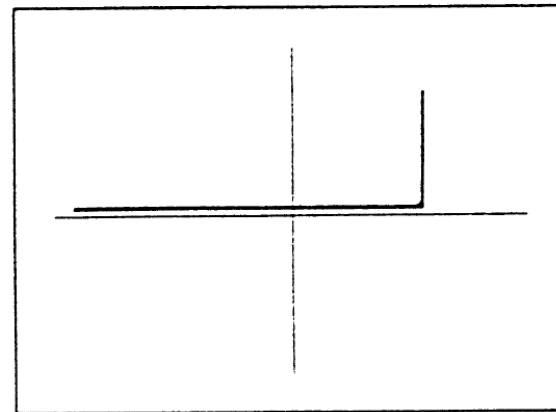
LOGIC



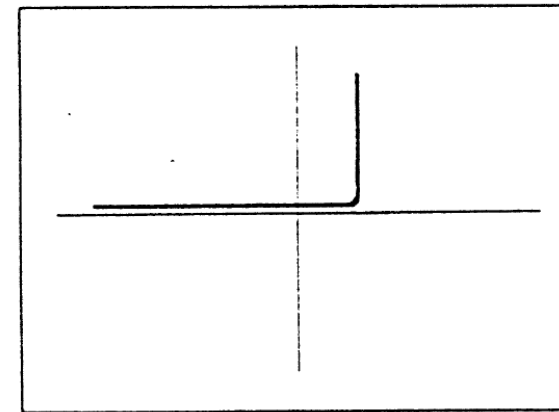
LOW



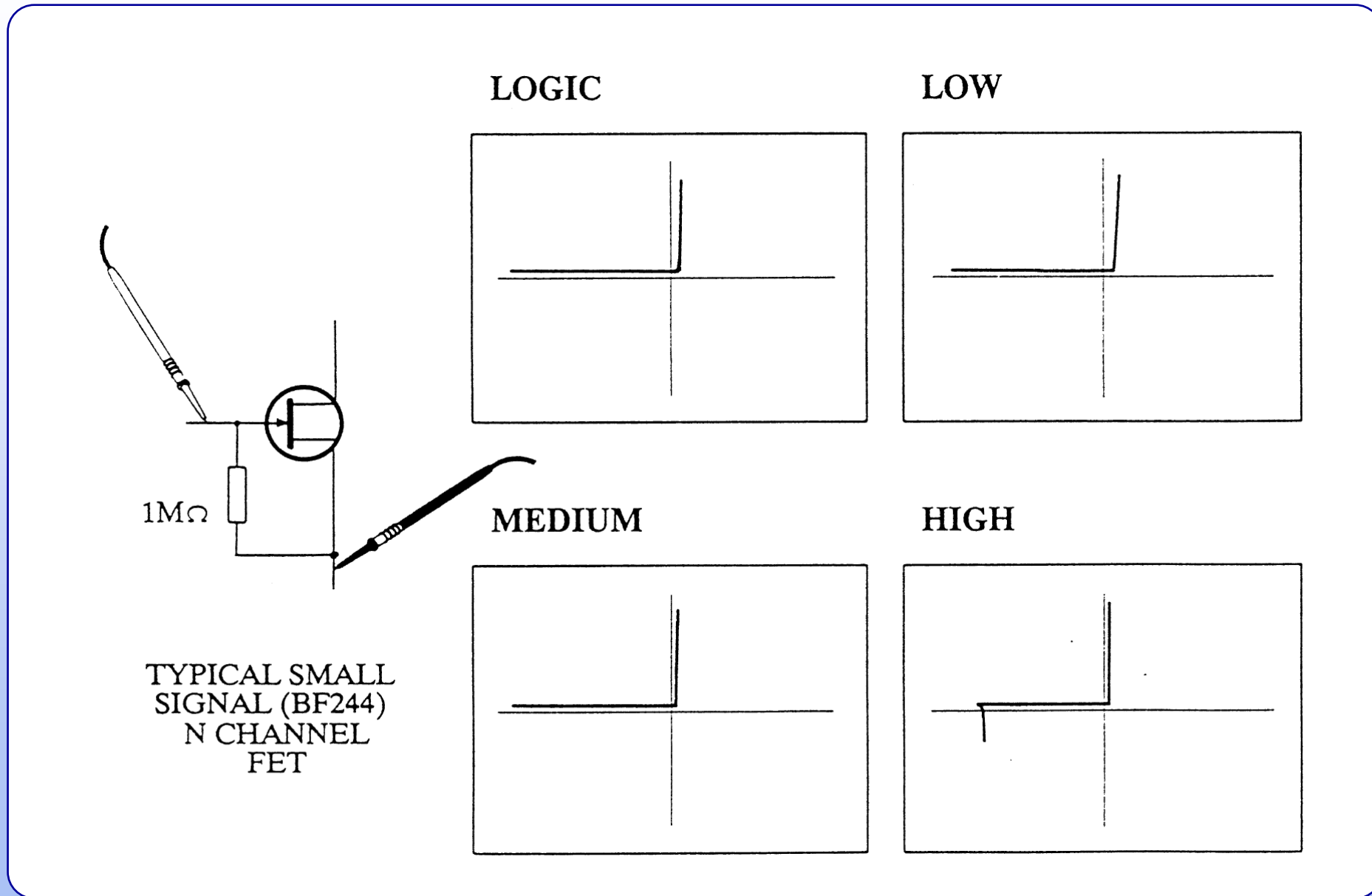
MEDIUM



HIGH

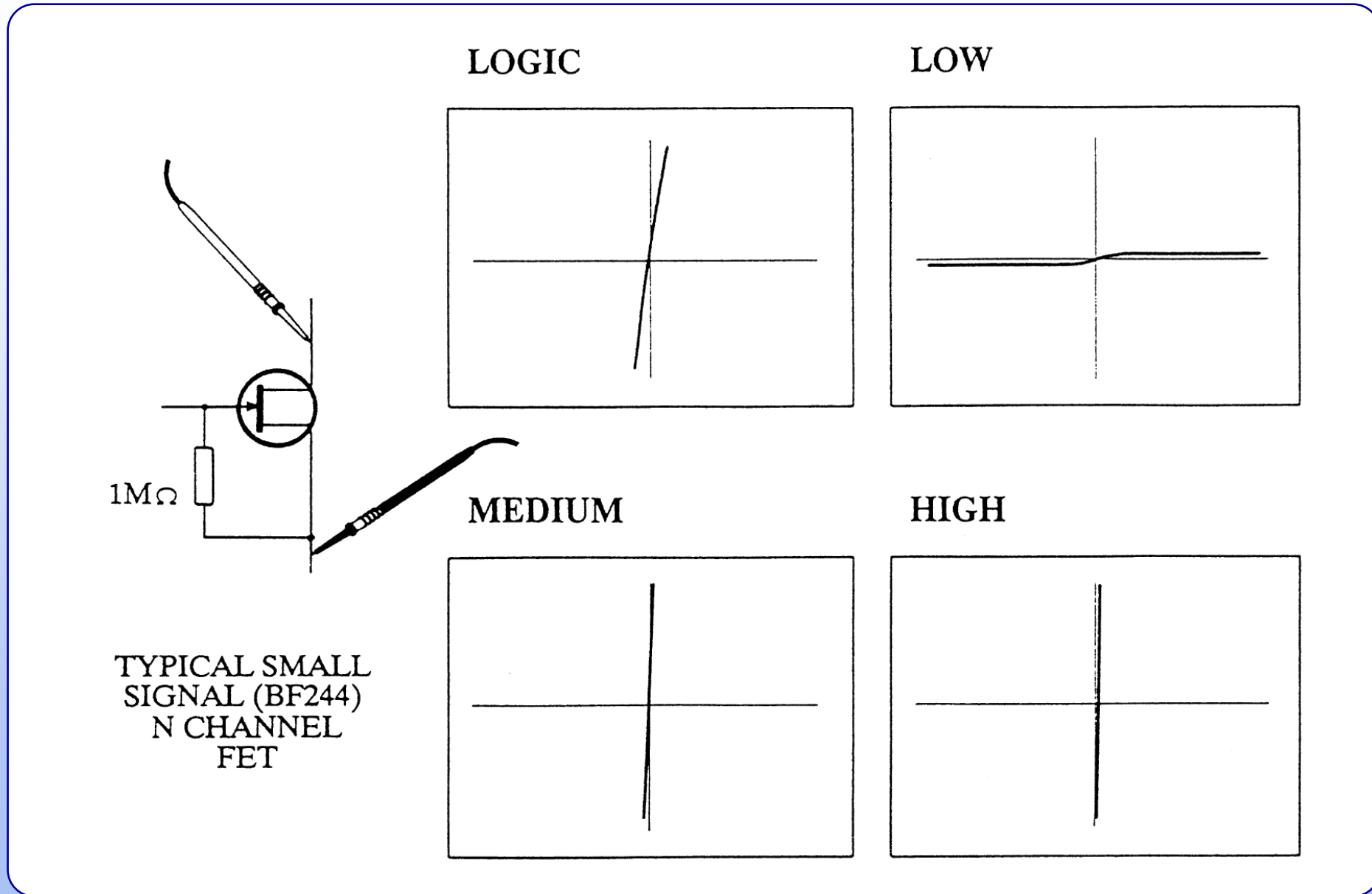


# Analog Signature Examples



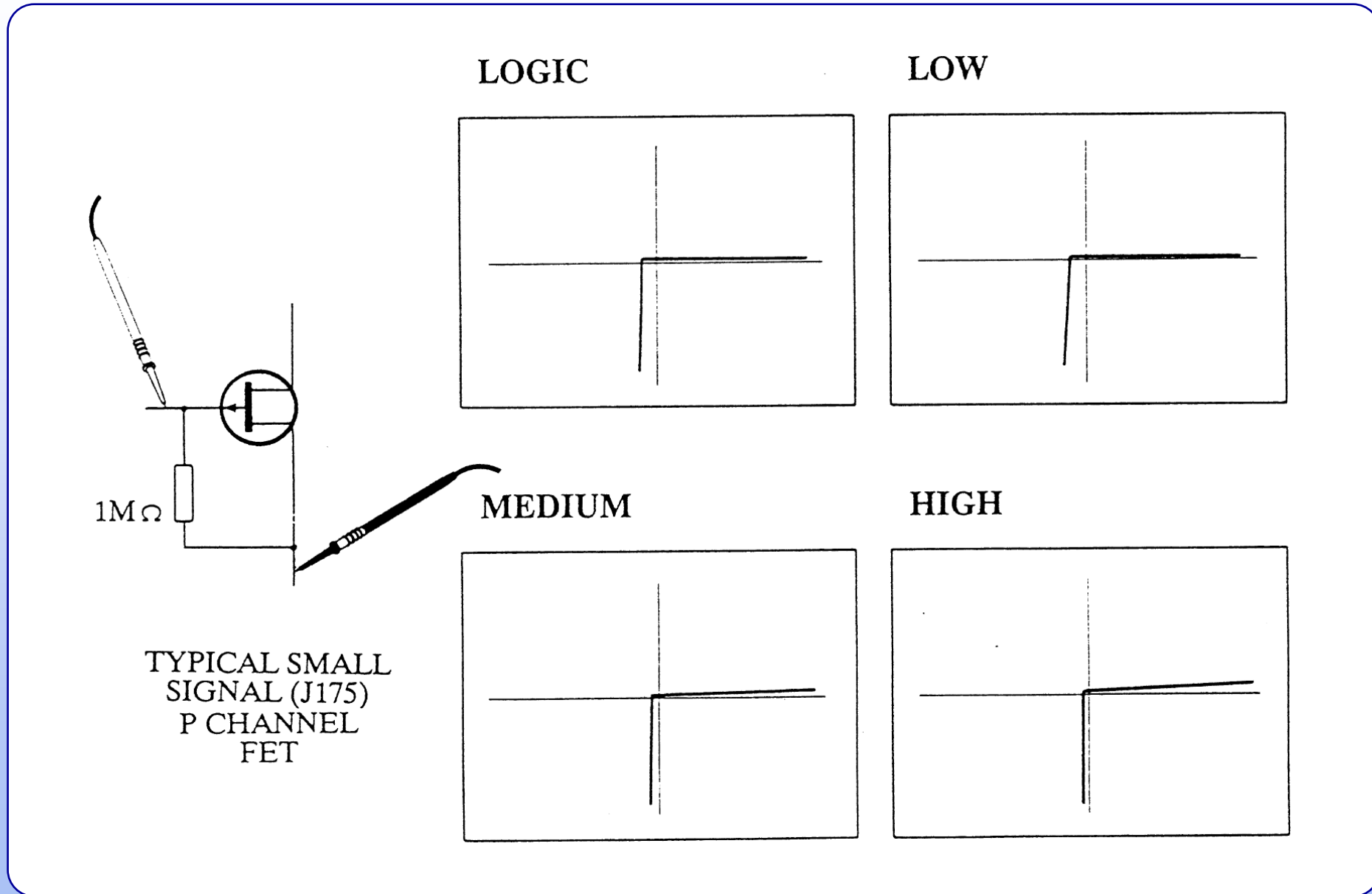
All measurements on this page in LOW frequency

# Analog Signature Examples



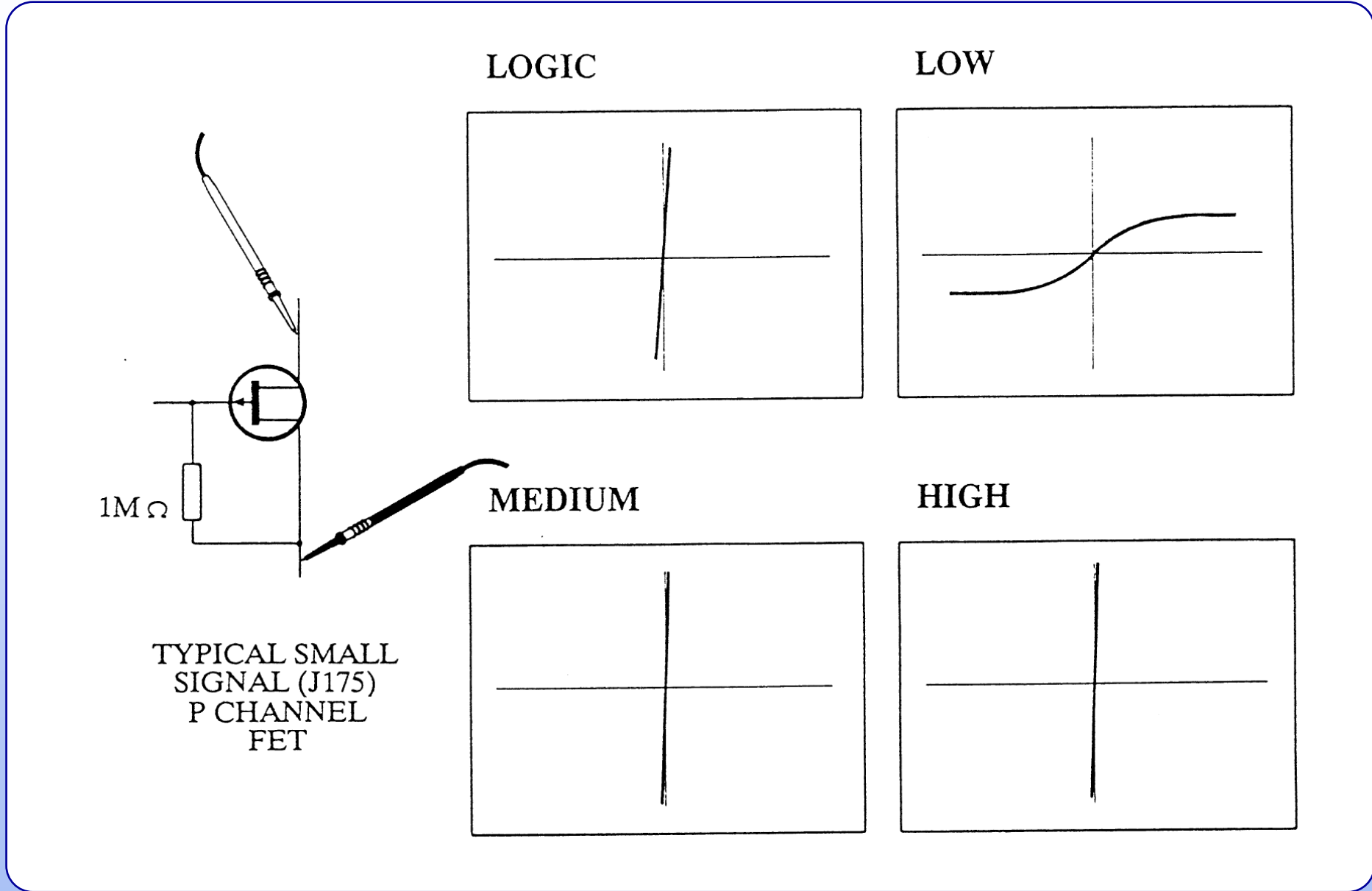
All measurements on this page in LOW frequency

# Analog Signature Examples



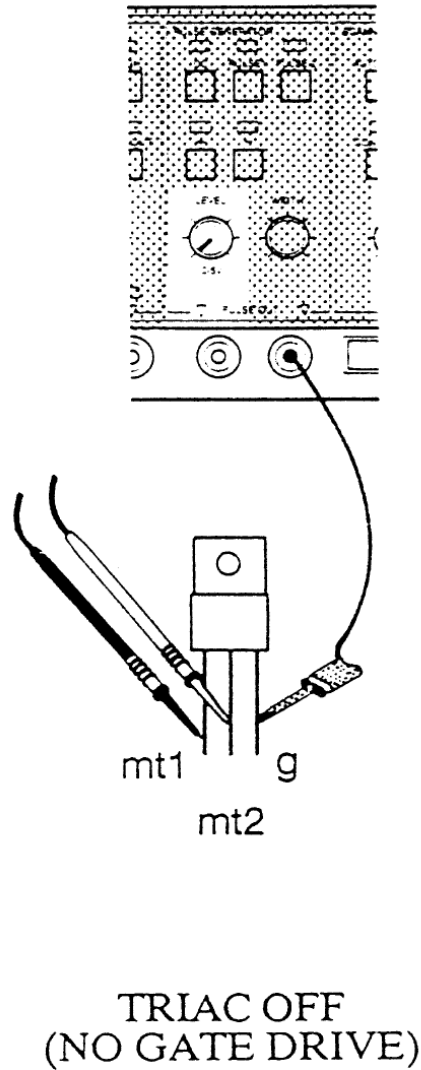
All measurements on this page in LOW frequency

# Analog Signature Examples

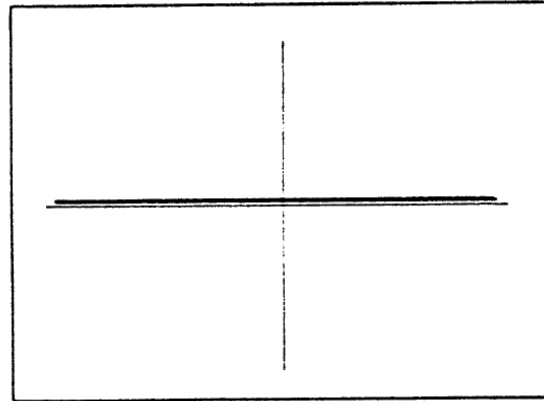


All measurements on this page in LOW frequency

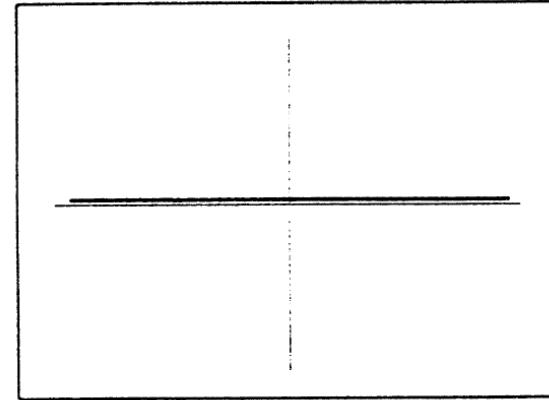
# Analog Signature Examples



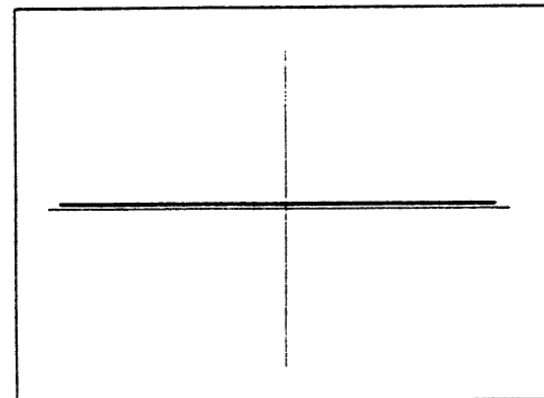
LOGIC



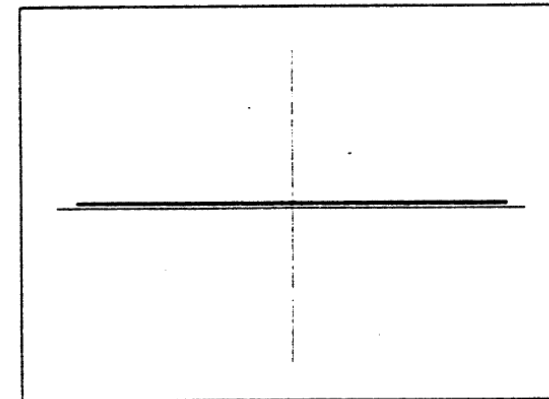
LOW



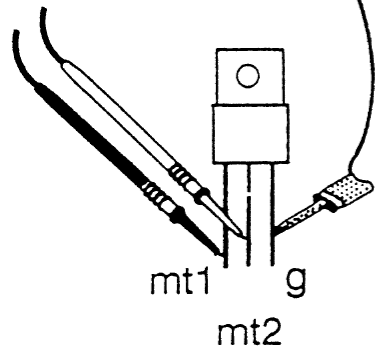
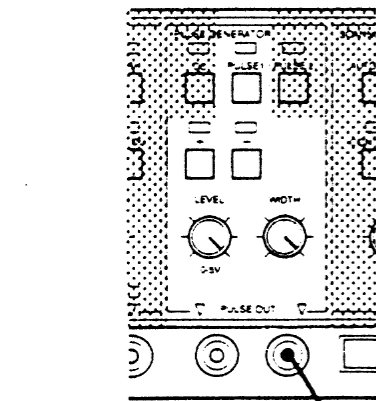
MEDIUM



HIGH

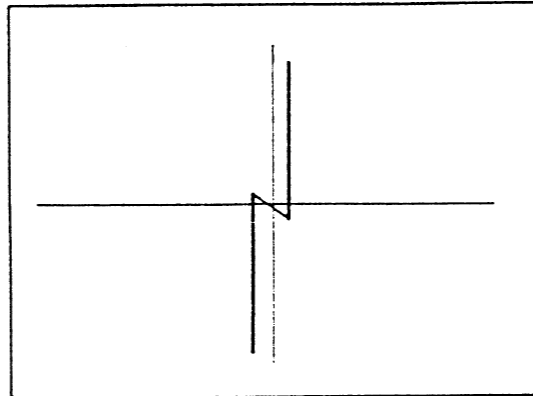


# Analog Signature Examples

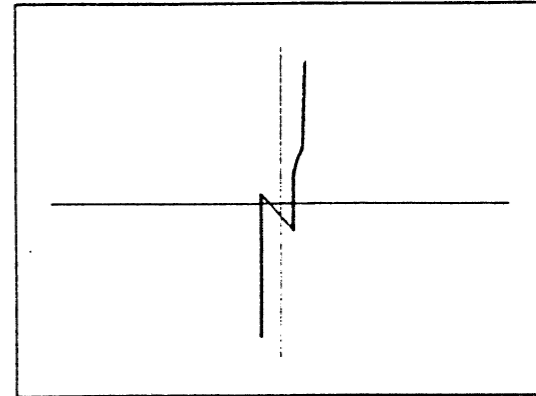


TRIAC ON  
(+ & - DRIVE TO GATE)

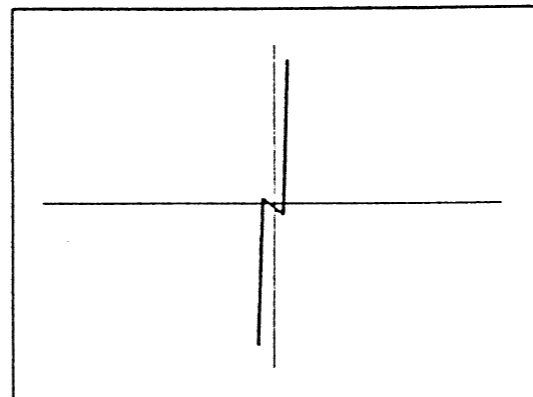
LOGIC



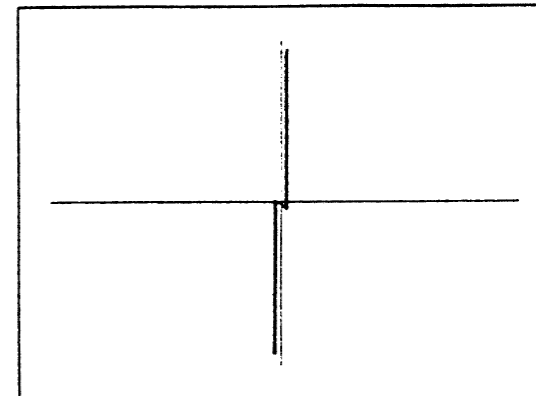
LOW



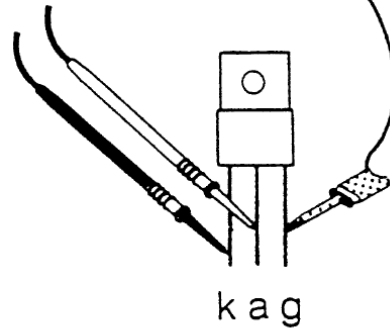
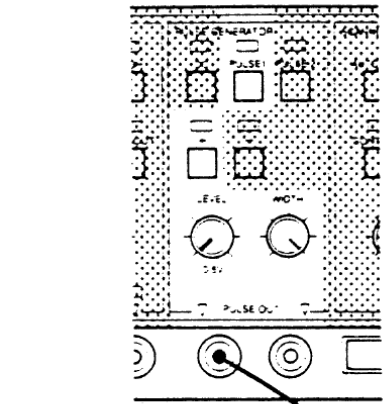
MEDIUM



HIGH

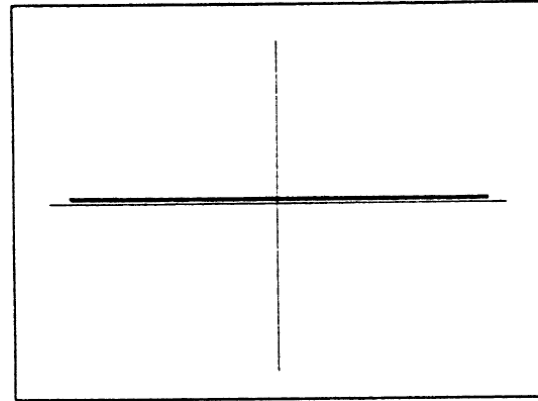


# Analog Signature Examples

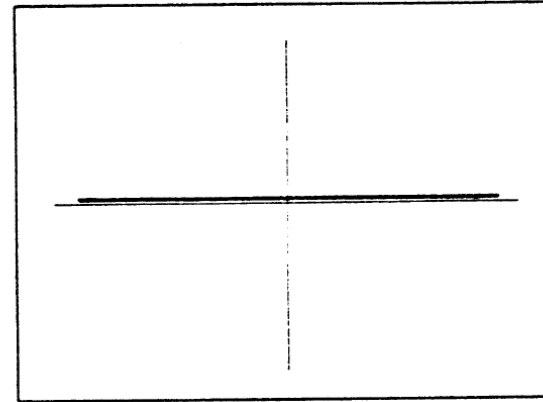


SCR OFF  
(NO GATE DRIVE)

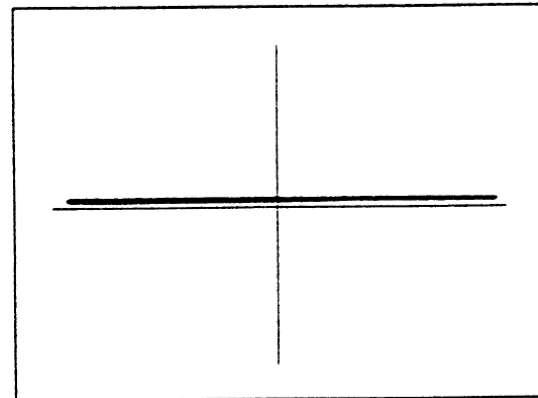
LOGIC



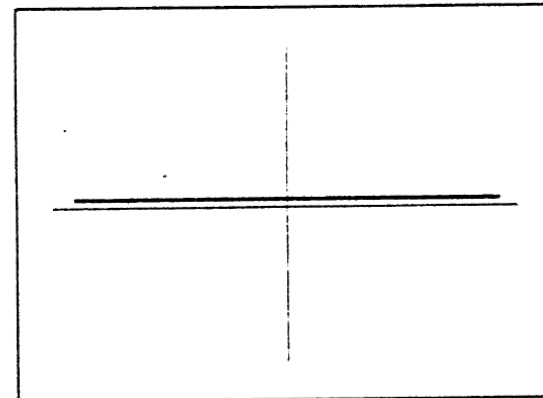
LOW



MEDIUM

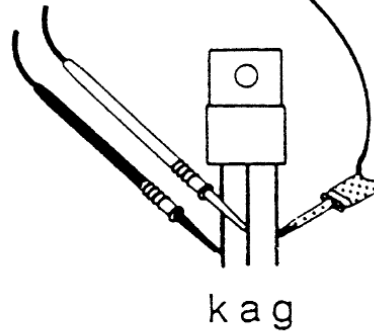
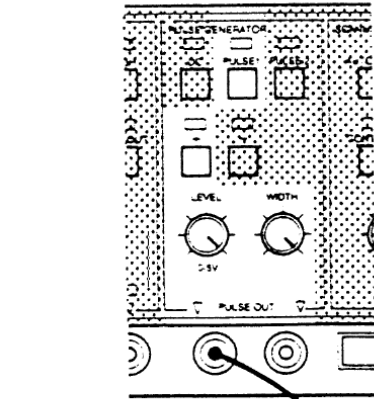


HIGH



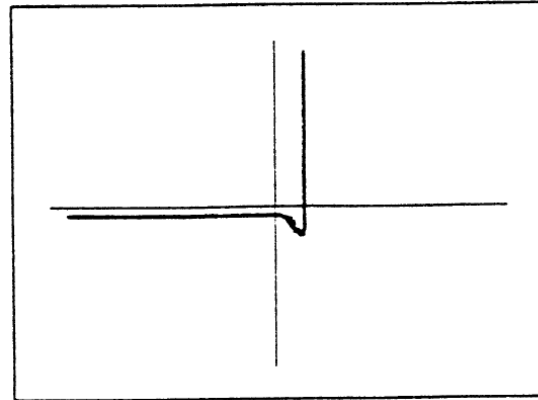


# Analog Signature Examples

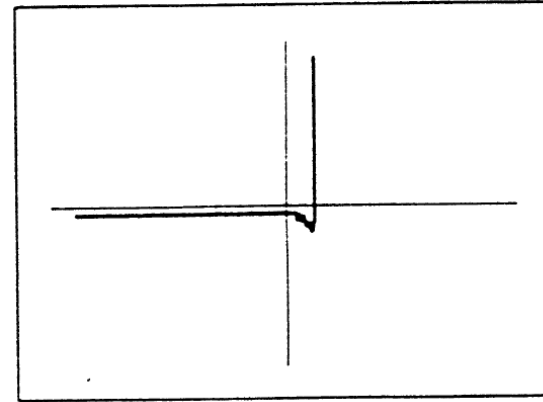


SCR ON  
(+ DRIVE TO GATE)

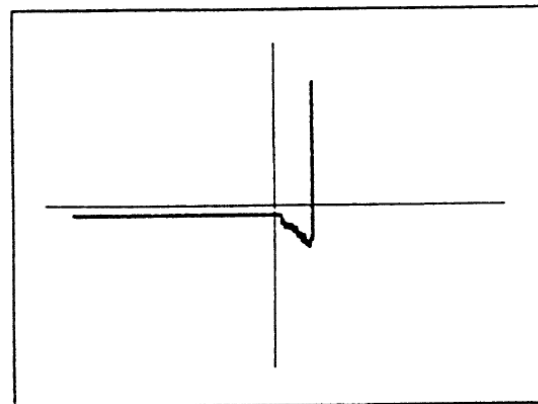
LOGIC



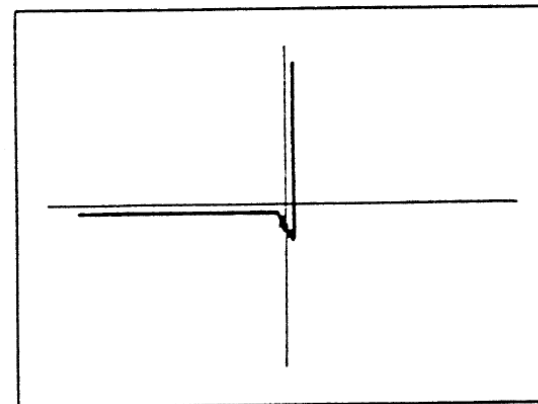
LOW



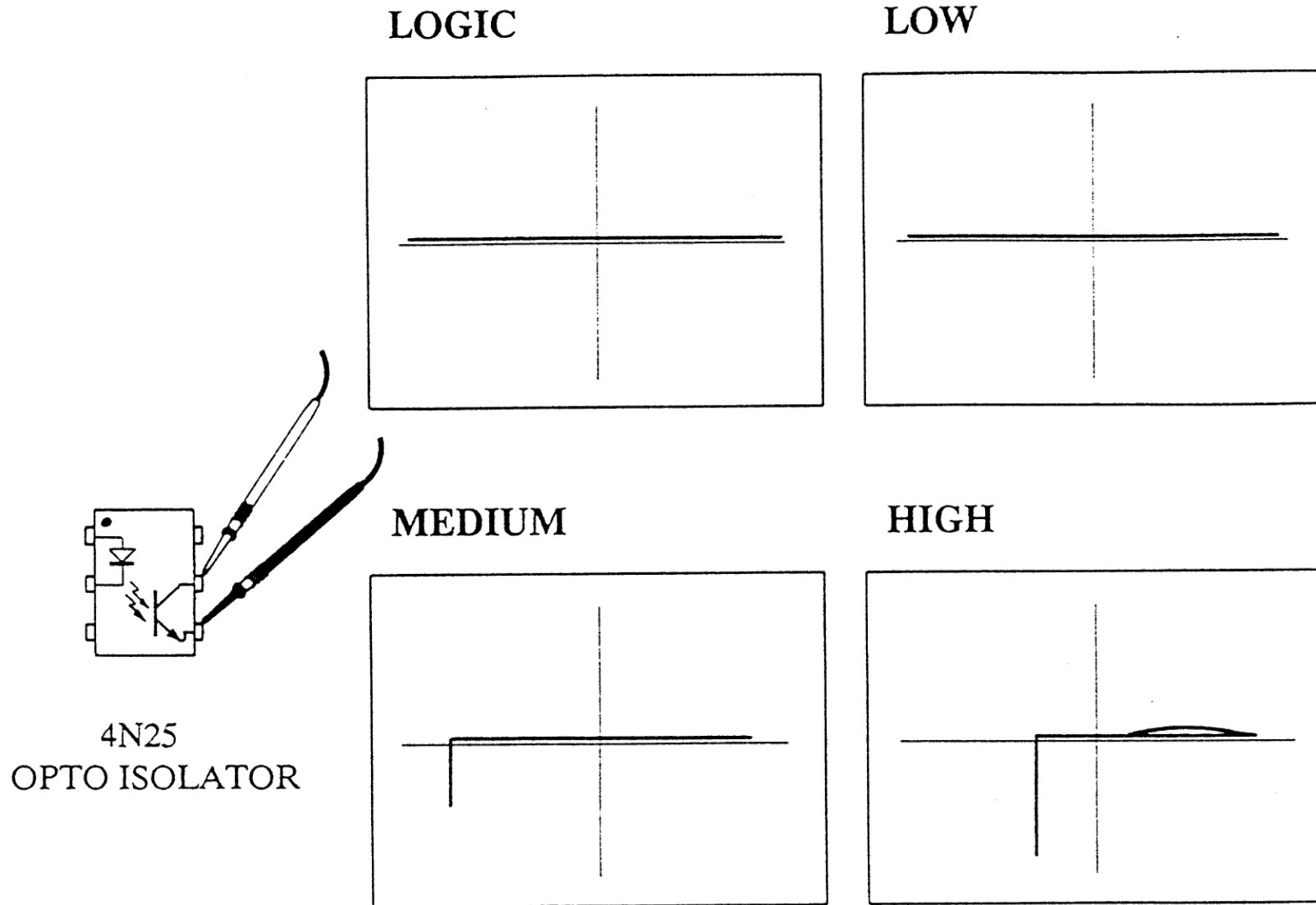
MEDIUM



HIGH

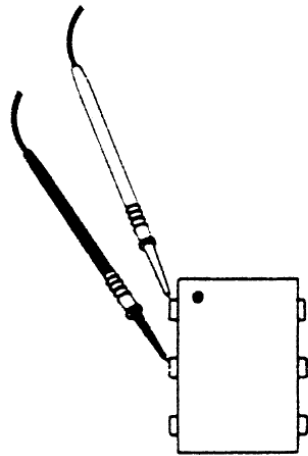


# Analog Signature Examples



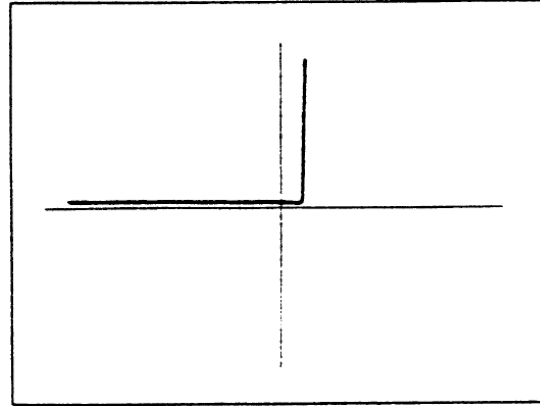
All measurements on this page in LOW frequency

# Analog Signature Examples

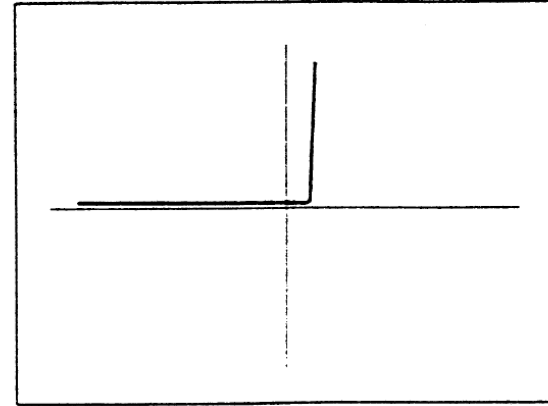


4N25  
OPTO ISOLATOR

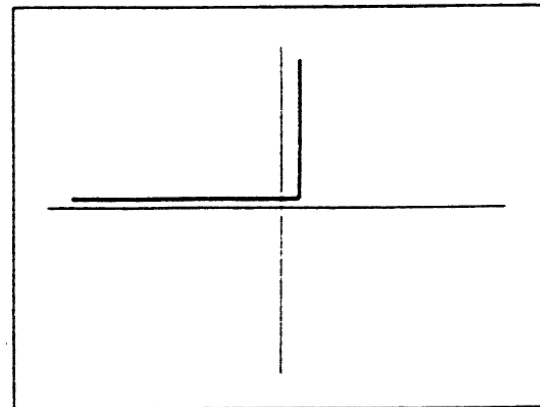
LOGIC



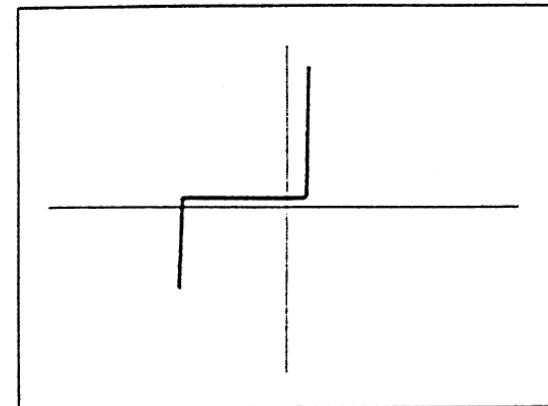
LOW



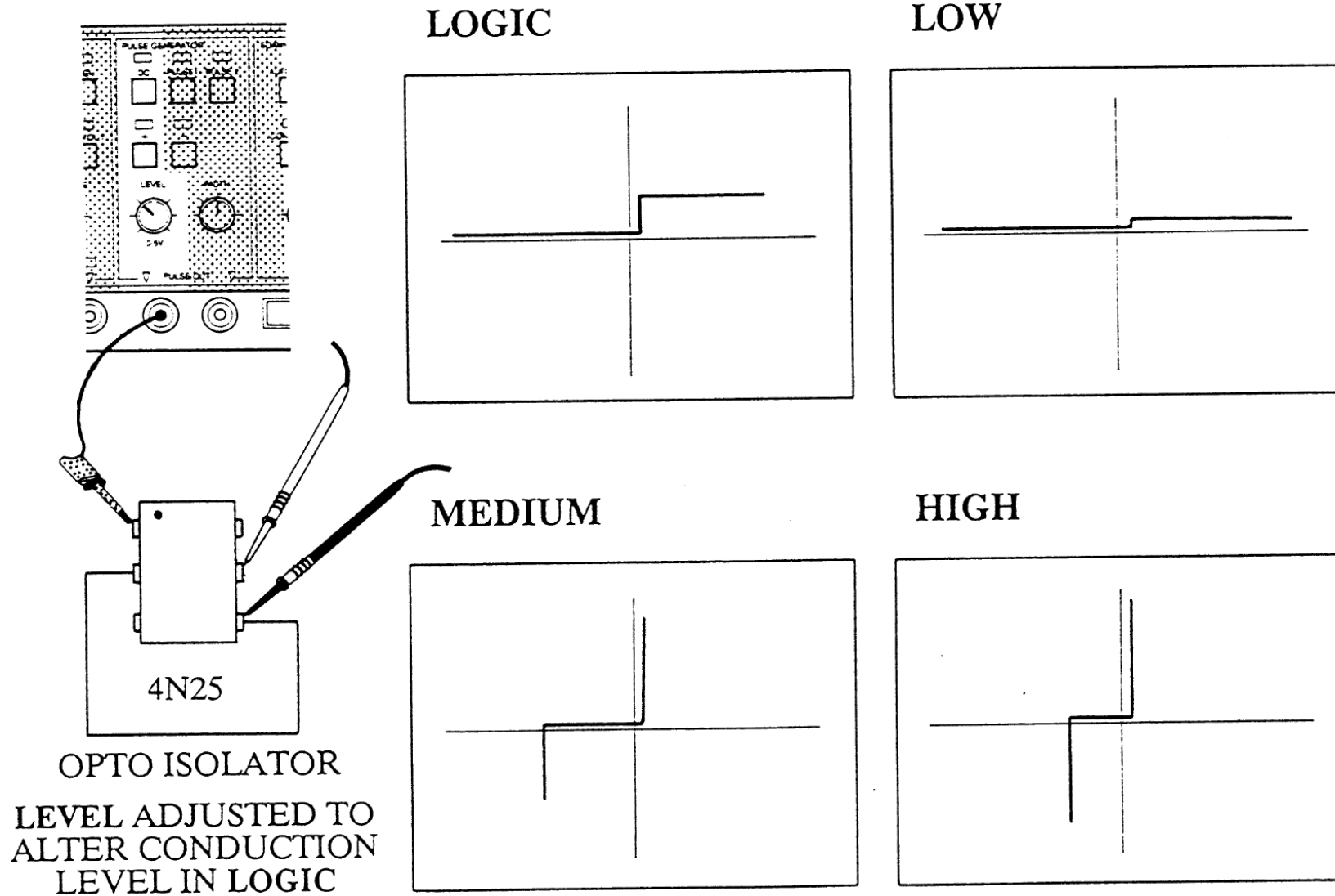
MEDIUM



HIGH

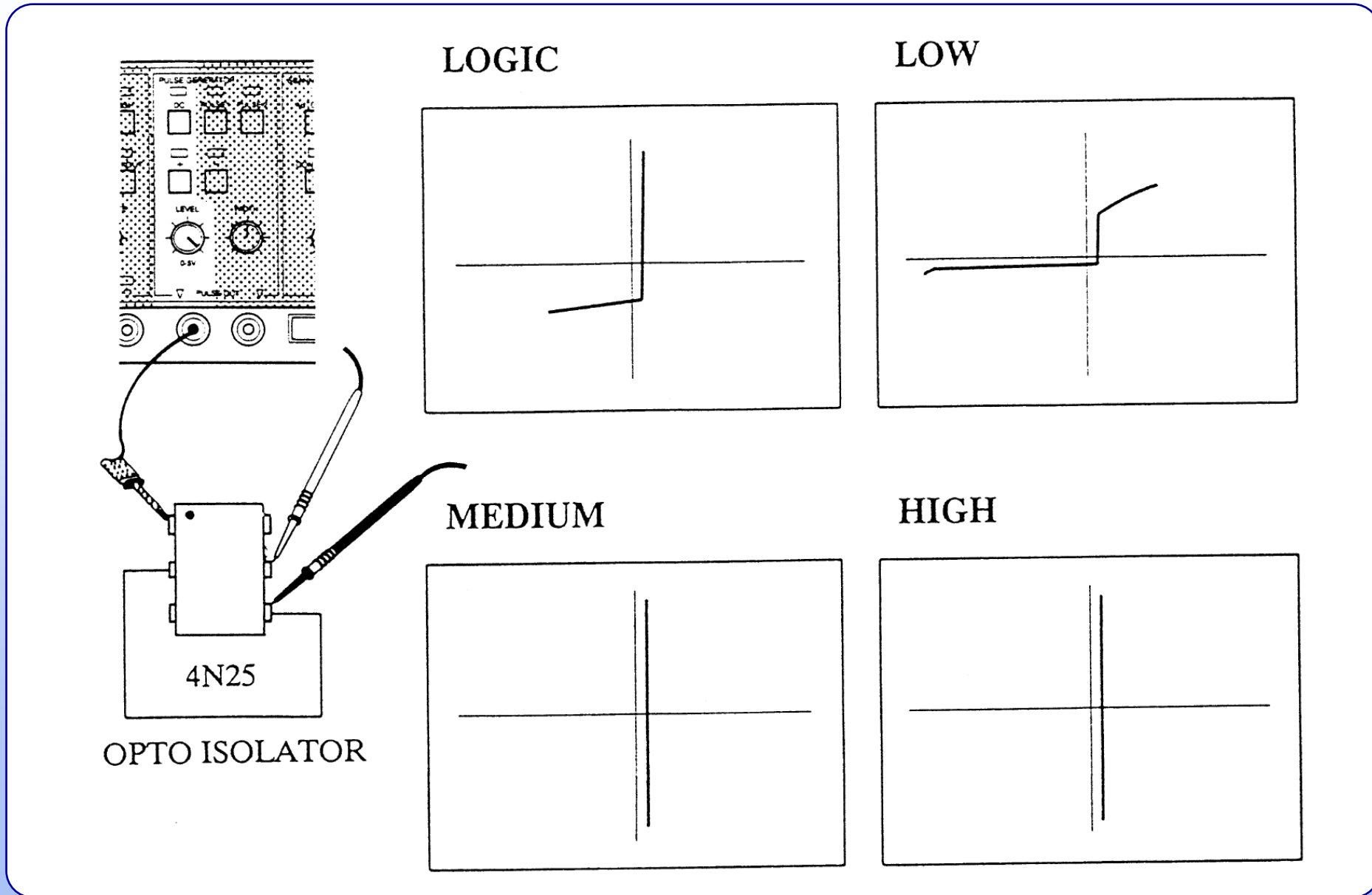


# Analog Signature Examples



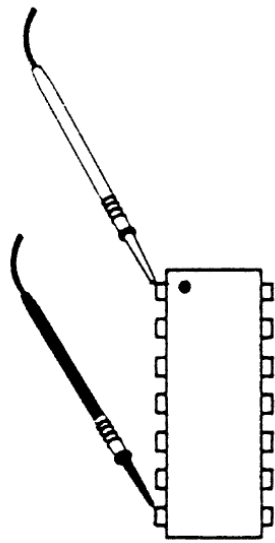
All measurements on this page in LOW frequency

# Analog Signature Examples



All measurements on this page in LOW frequency

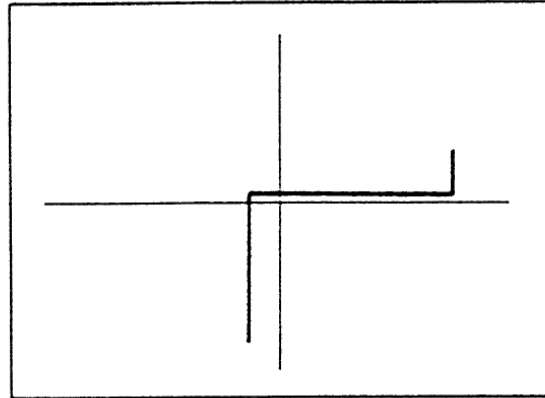
# Analog Signature Examples



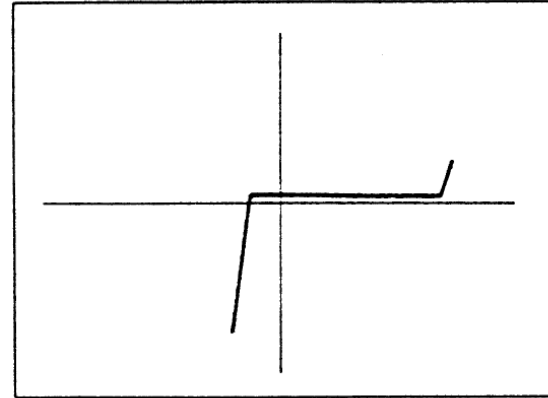
SN7400N (TEXAS)

TTL GATE  
INPUT

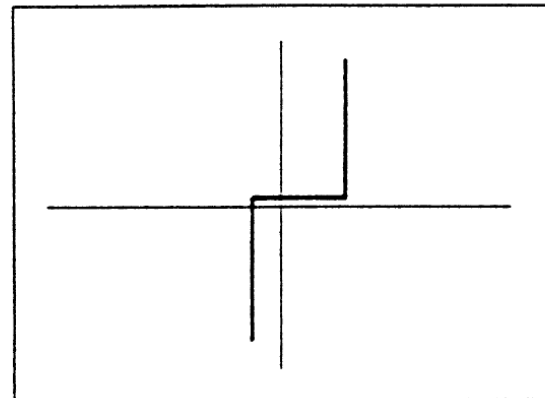
LOGIC



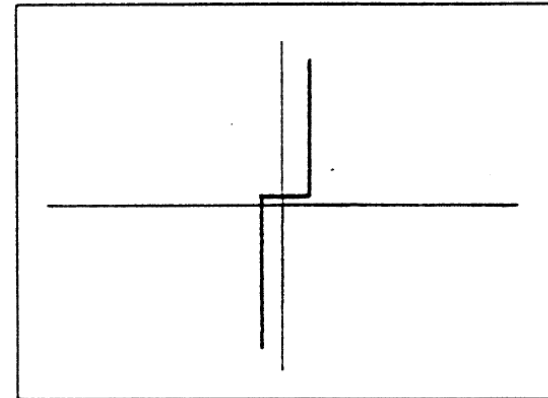
LOW



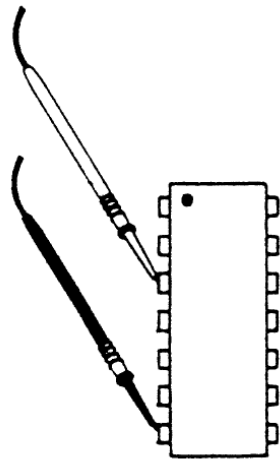
MEDIUM



HIGH



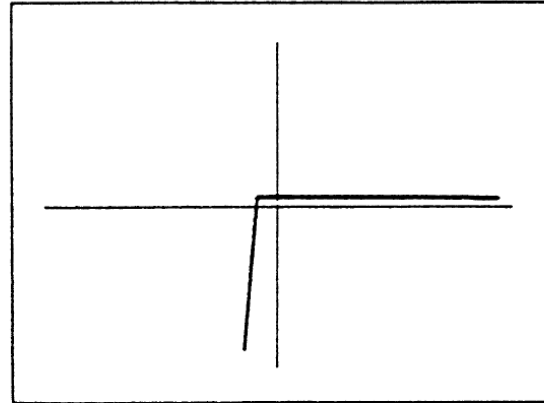
# Analog Signature Examples



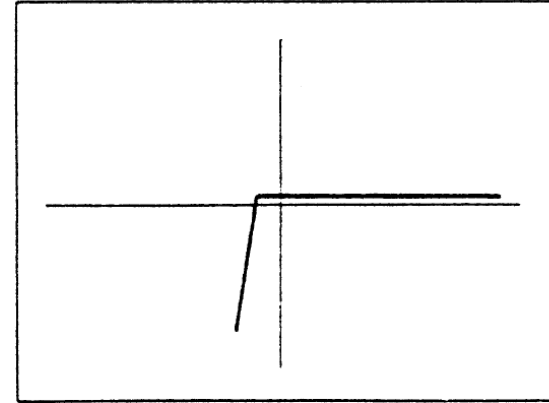
SN7400 (TEXAS)

TTL GATE  
OUTPUT

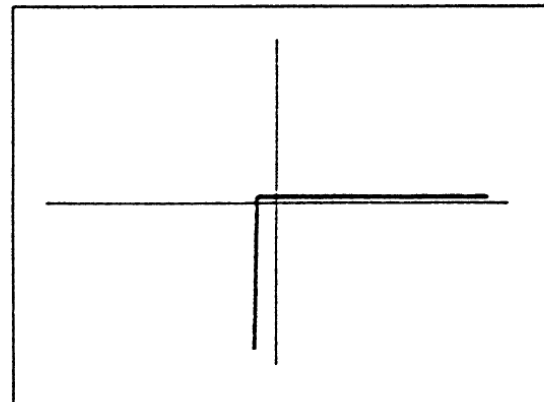
LOGIC



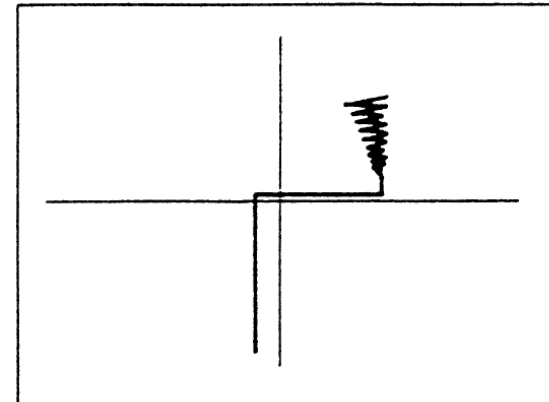
LOW



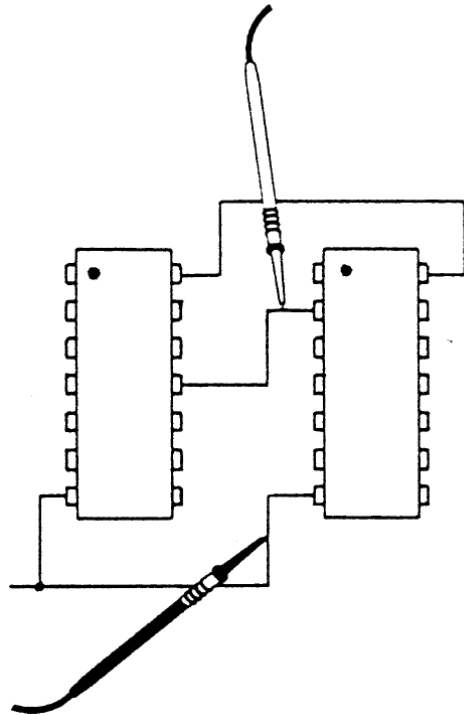
MEDIUM



HIGH



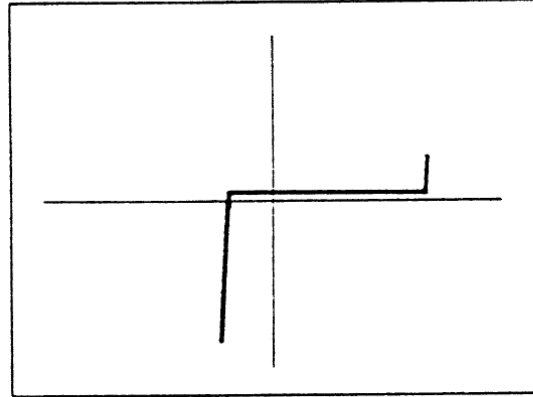
# Analog Signature Examples



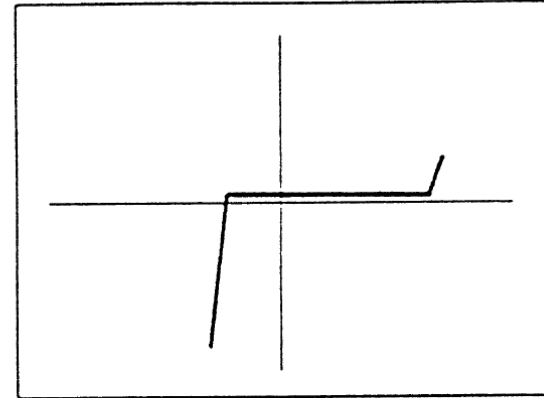
SN7400N (TEXAS)

TTL GATE  
INPUT/OUTPUT  
COMBINATION

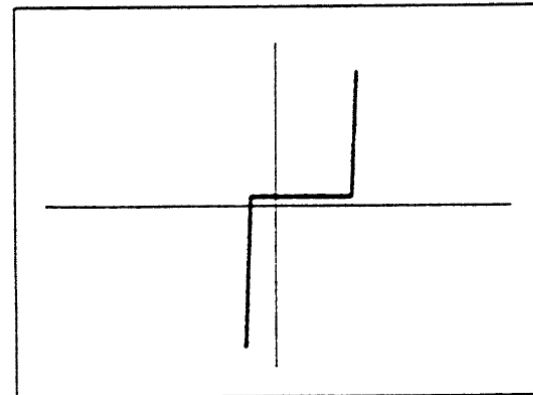
LOGIC



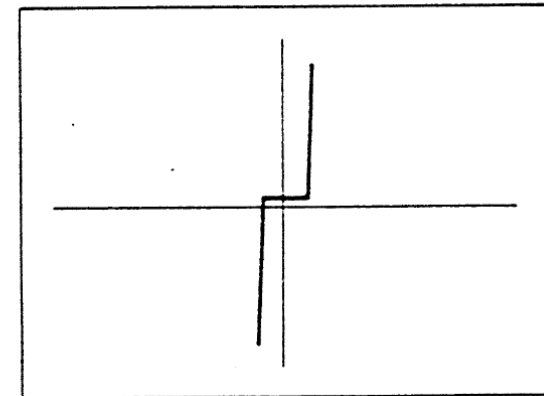
LOW



MEDIUM

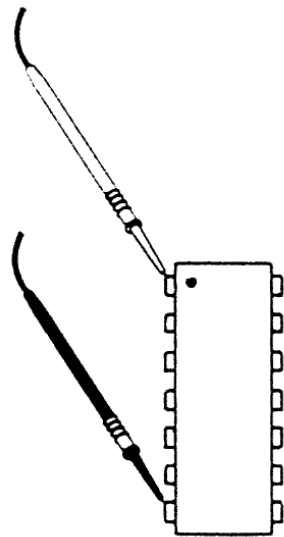


HIGH





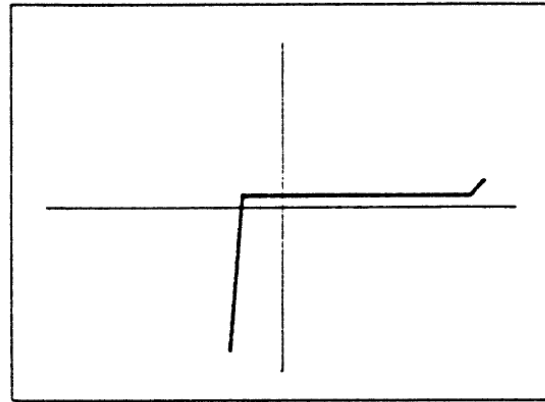
# Analog Signature Examples



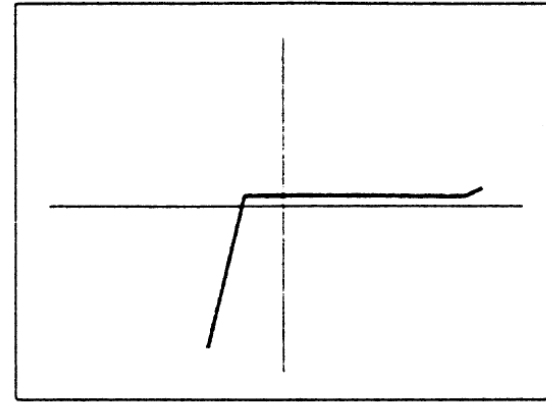
DM7400N  
(NAT. SEM.)

TTL GATE  
INPUT

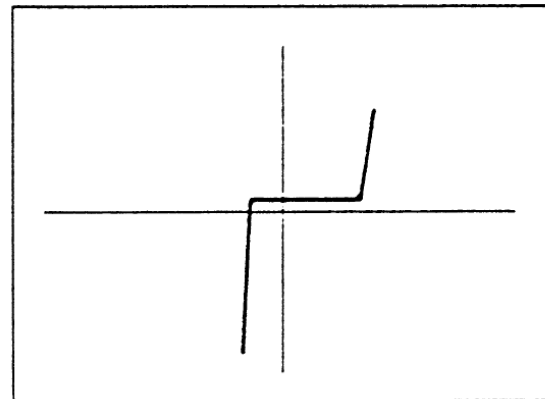
LOGIC



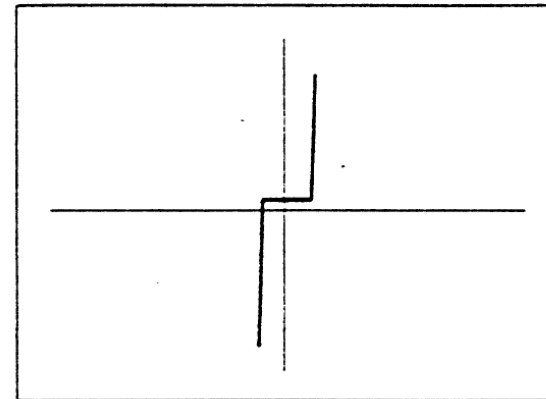
LOW



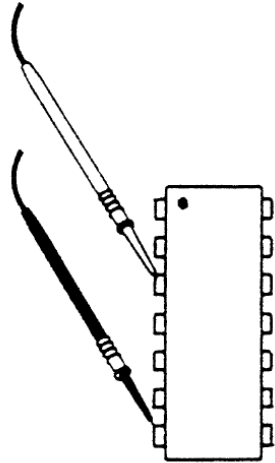
MEDIUM



HIGH



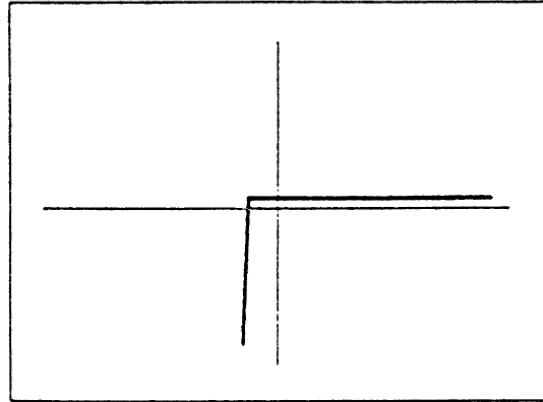
# Analog Signature Examples



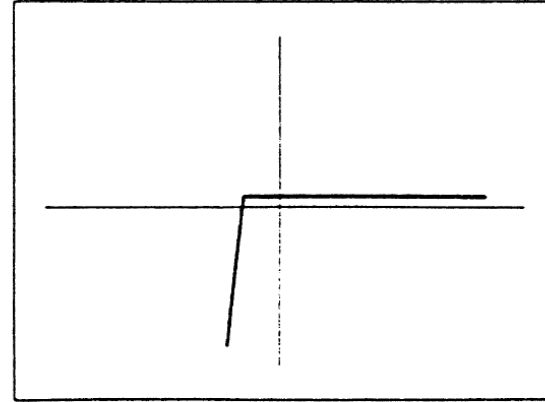
DM7400N  
(NAT. SEM.)

TTL GATE  
OUTPUT

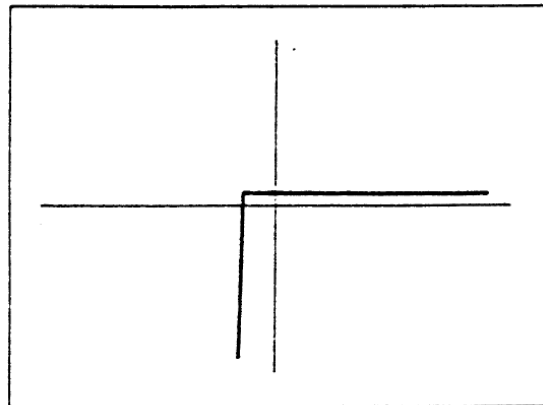
LOGIC



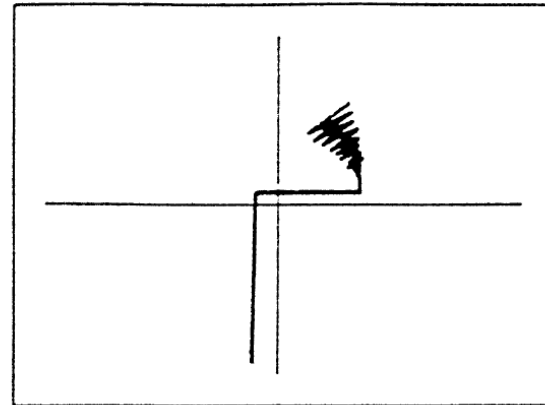
LOW



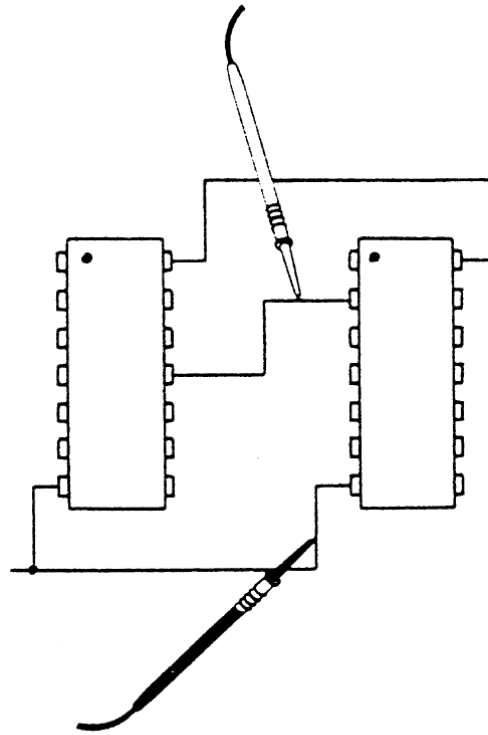
MEDIUM



HIGH



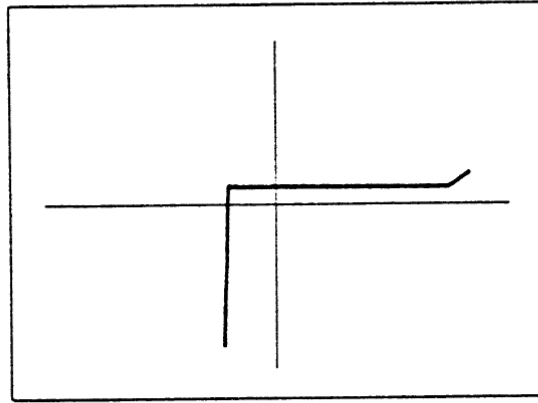
# Analog Signature Examples



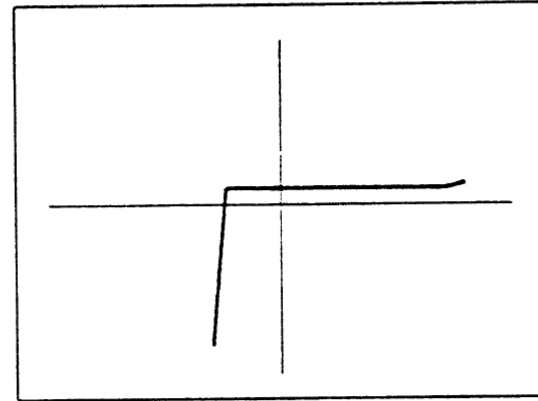
DM7400N  
(NAT. SEM.)

TTL GATE  
INPUT/OUTPUT  
COMBINATION

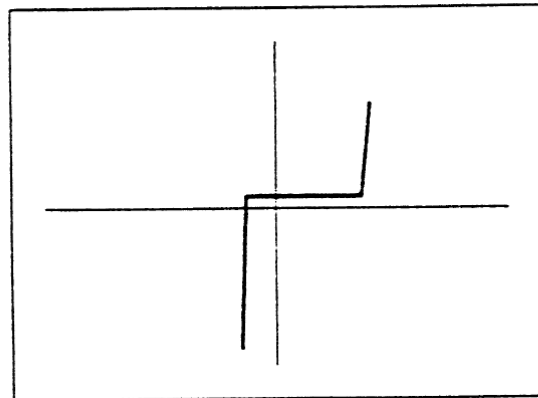
LOGIC



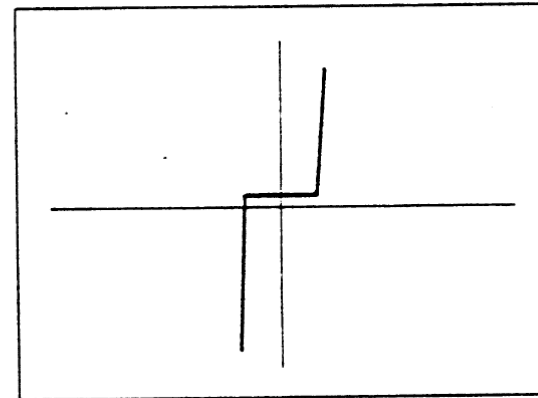
LOW



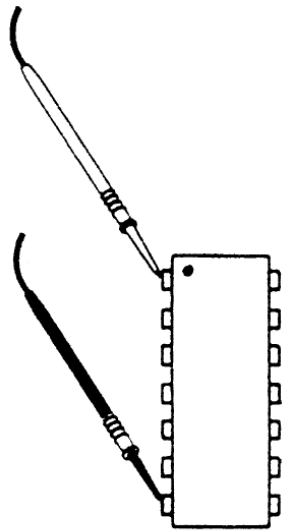
MEDIUM



HIGH



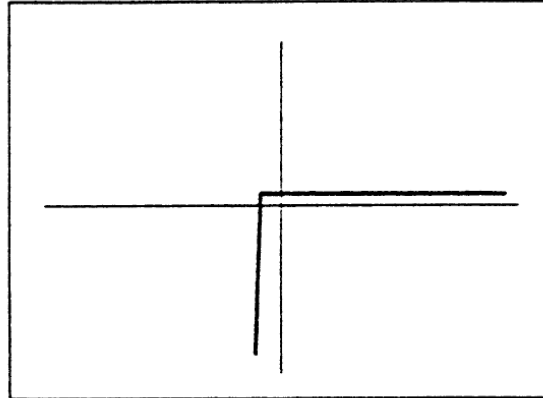
# Analog Signature Examples



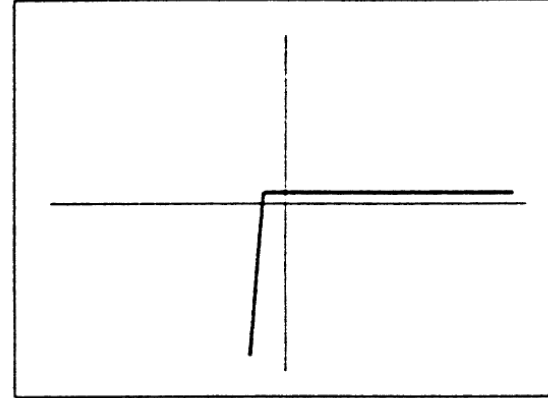
SN74LS00N (TEXAS)

LSTTL GATE  
INPUT

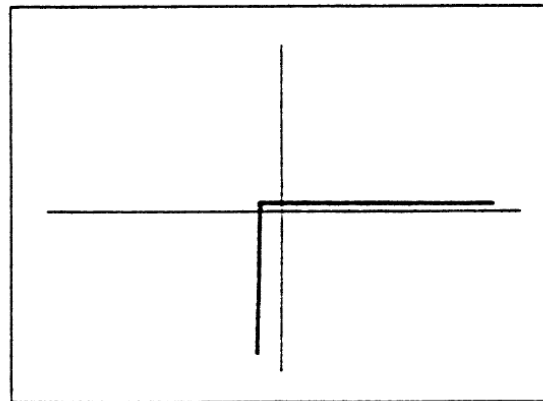
LOGIC



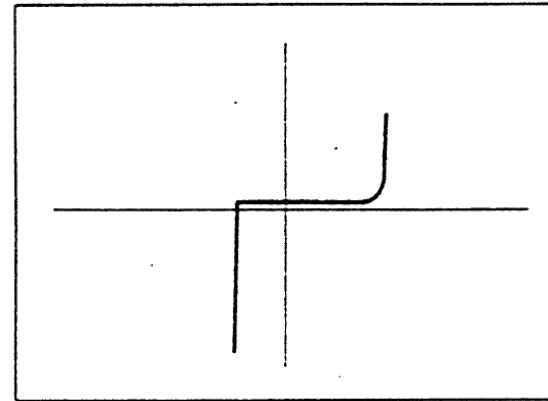
LOW



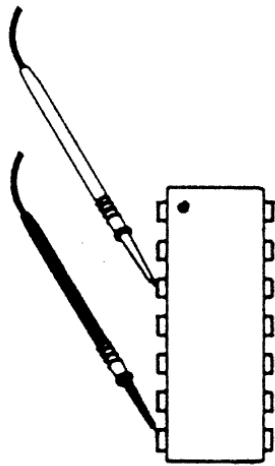
MEDIUM



HIGH



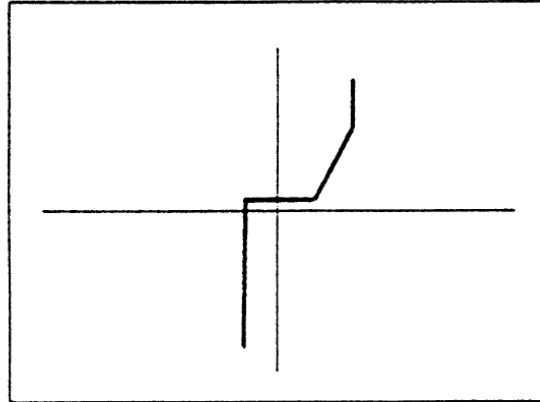
# Analog Signature Examples



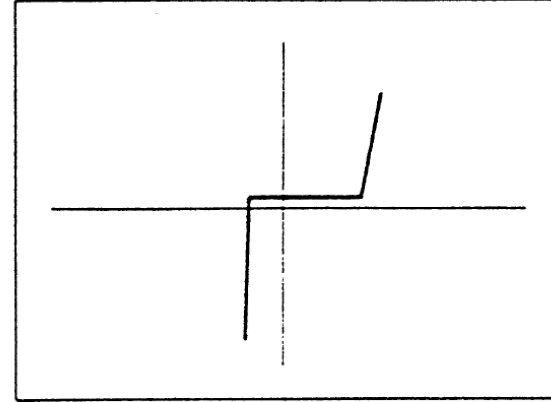
SN74LS00N (TEXAS)

LSTTL GATE  
OUTPUT

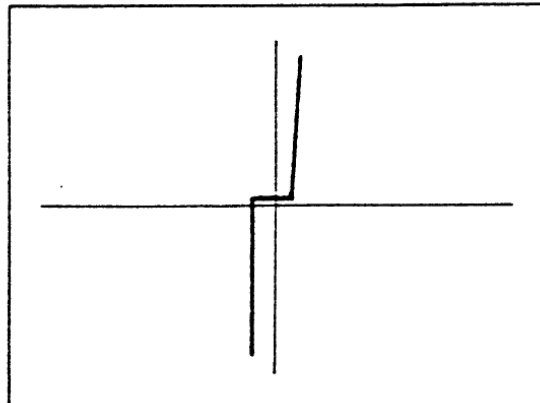
LOGIC



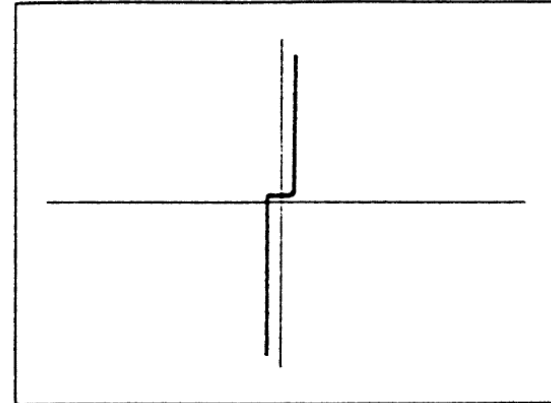
LOW



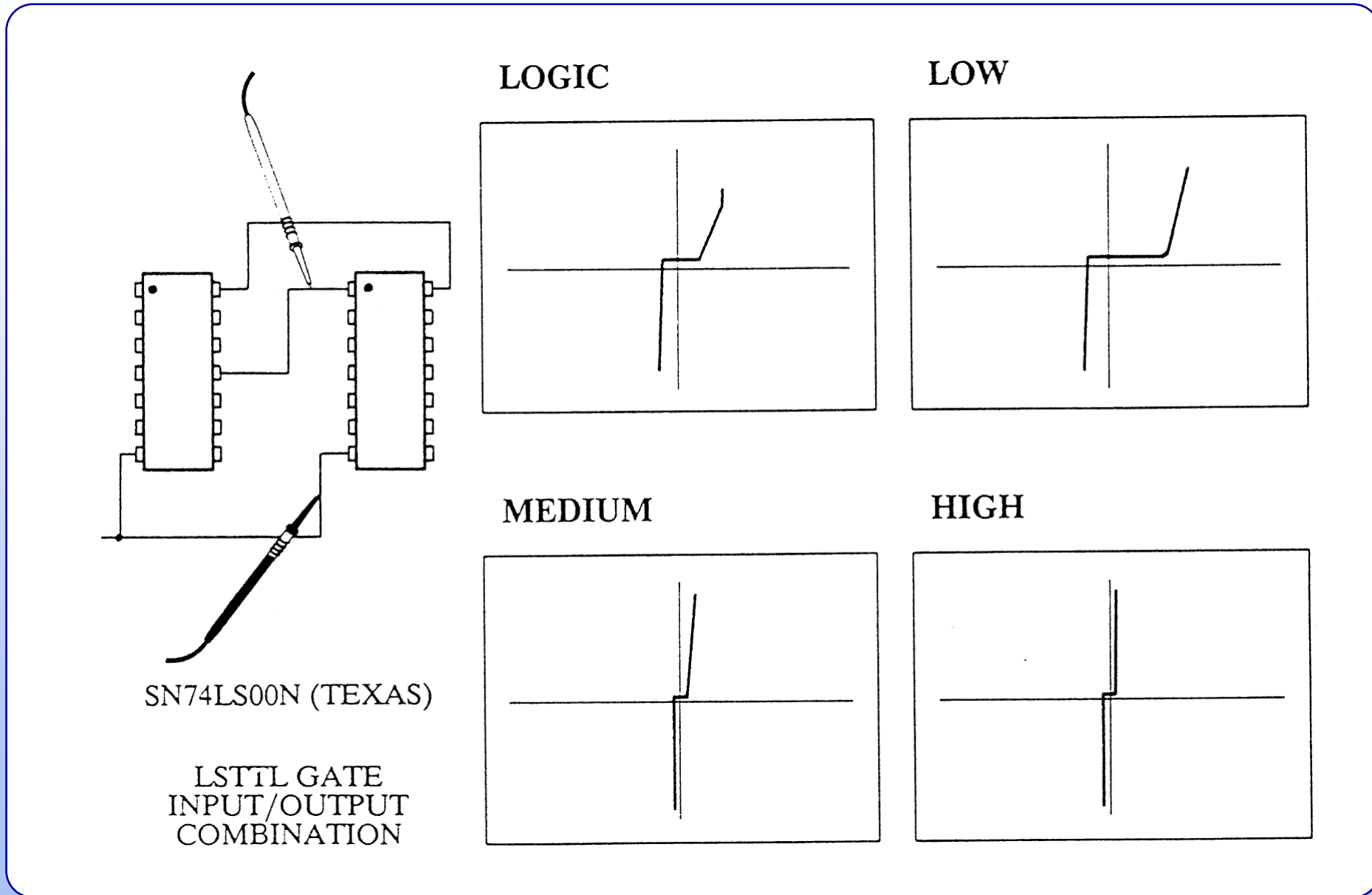
MEDIUM



HIGH

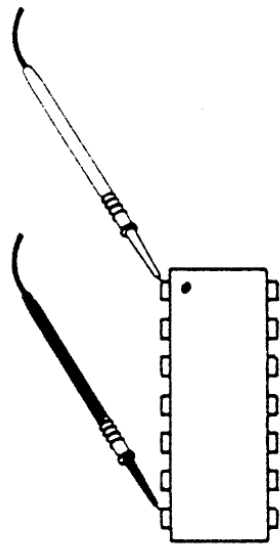


# Analog Signature Examples



All measurements on this page in LOW frequency

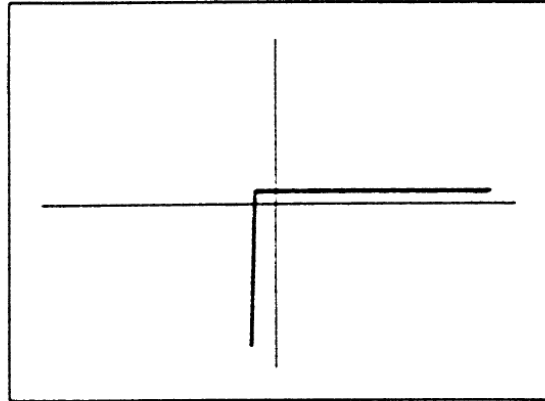
# Analog Signature Examples



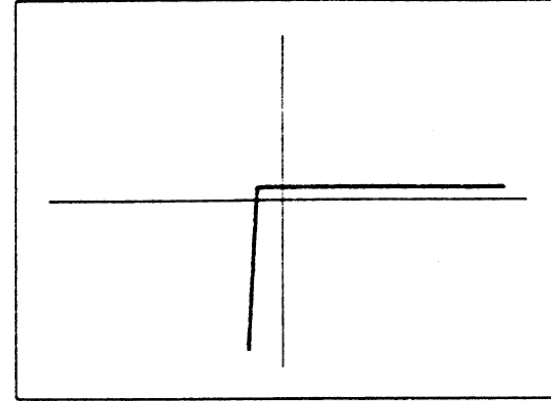
DM74LS00N  
(NAT. SEM.)

LSTTL GATE  
INPUT

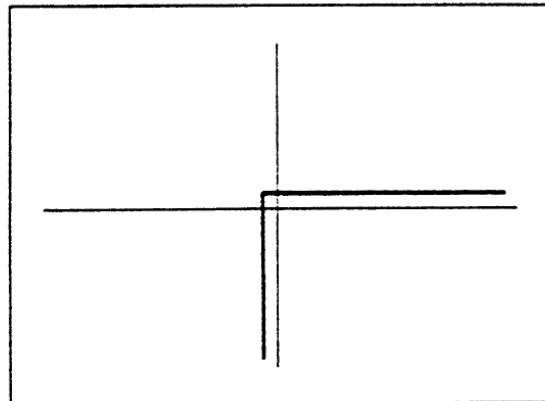
LOGIC



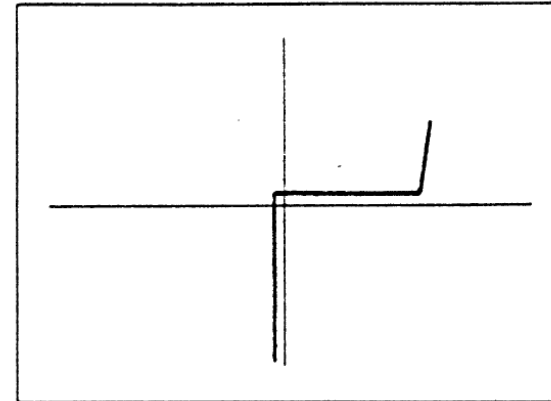
LOW



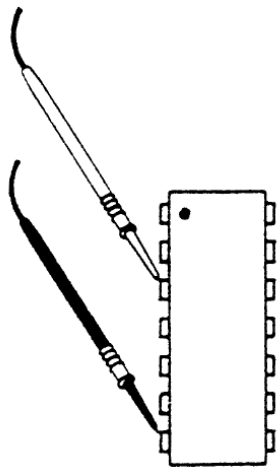
MEDIUM



HIGH



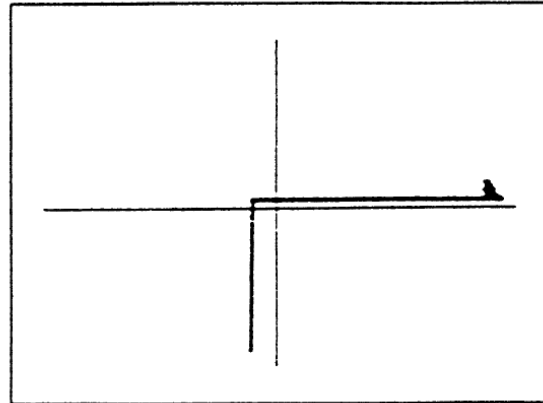
# Analog Signature Examples



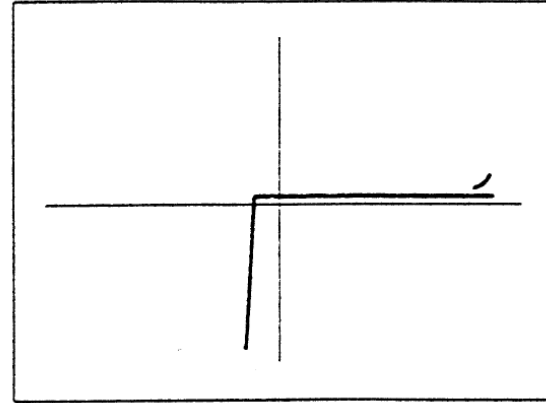
DM74LS00N  
(NAT. SEM.)

LSTTL GATE  
OUTPUT

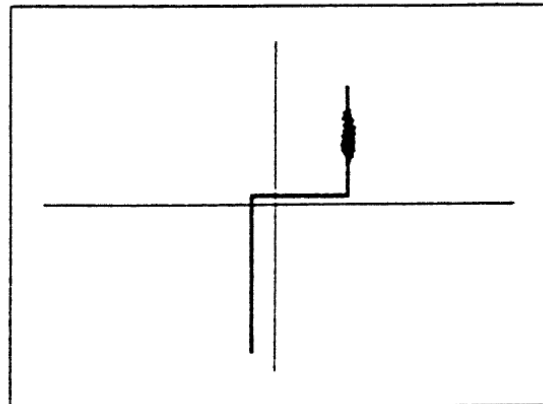
LOGIC



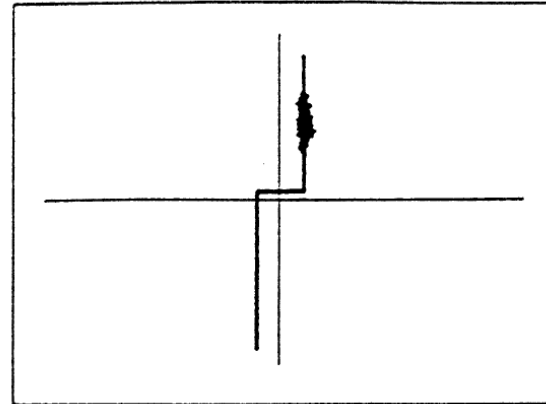
LOW



MEDIUM

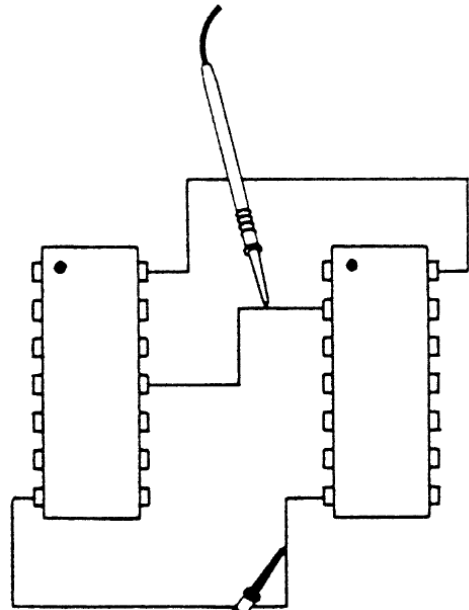


HIGH





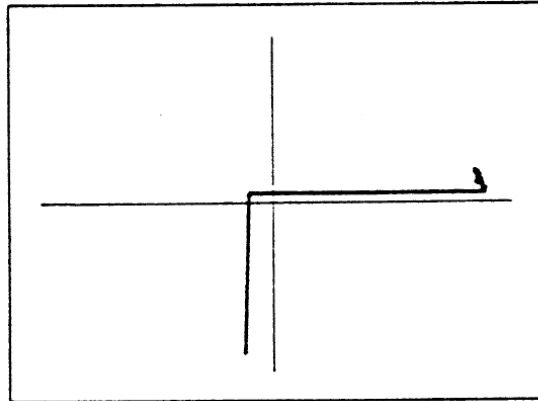
# Analog Signature Examples



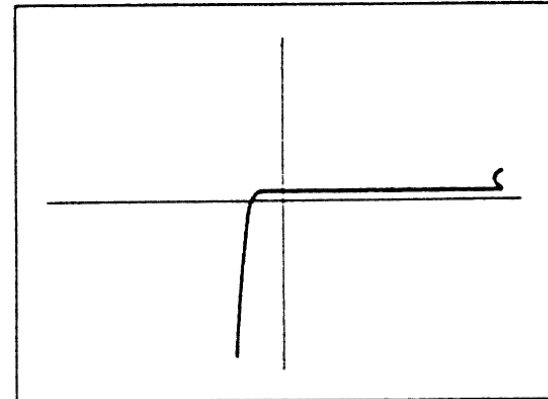
DM74LS00N  
(NAT. SEM.)

LSTTL GATE  
INPUT/OUTPUT  
COMBINATION

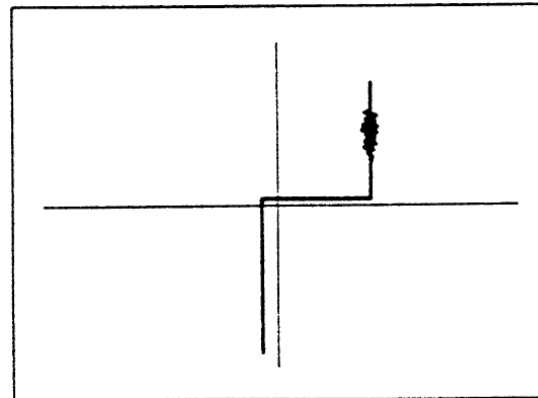
LOGIC



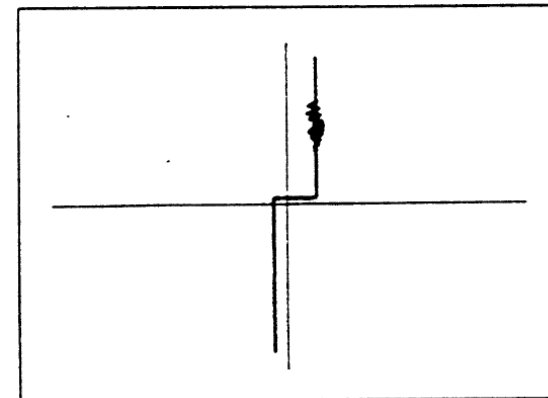
LOW



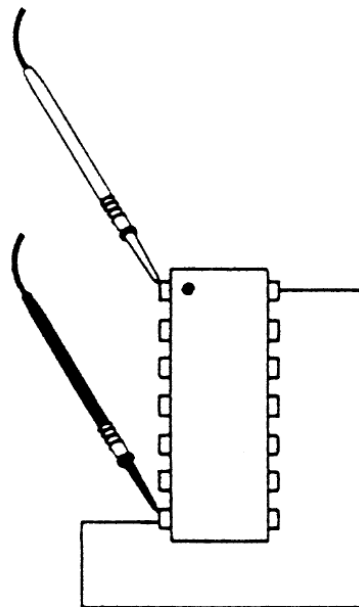
MEDIUM



HIGH



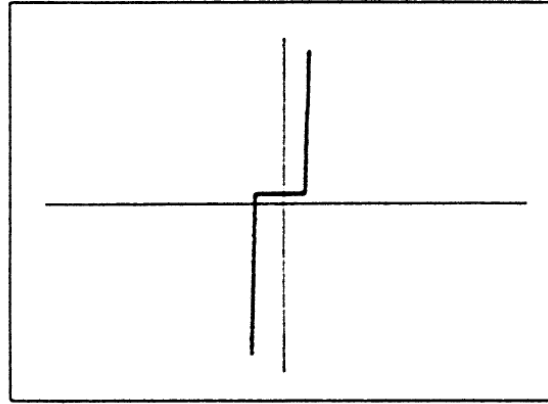
# Analog Signature Examples



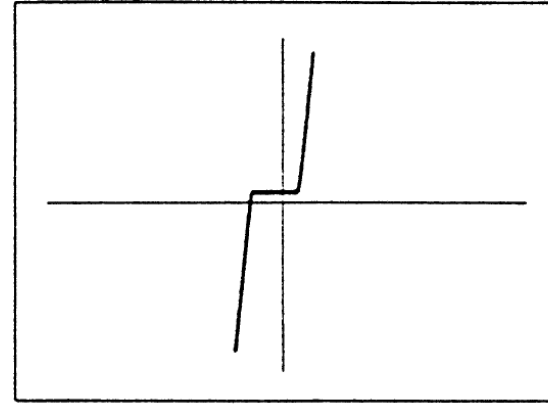
CD4001BCN  
(NAT.SEM.)

CMOS GATE  
INPUT

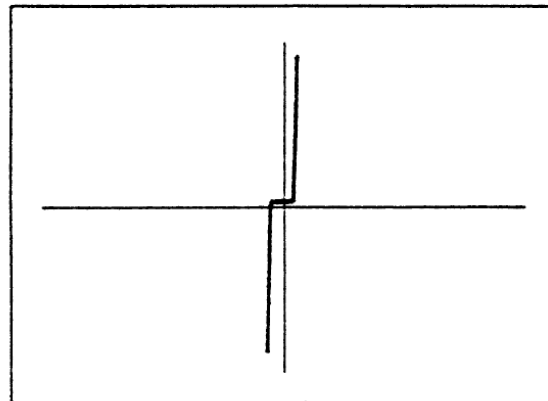
LOGIC



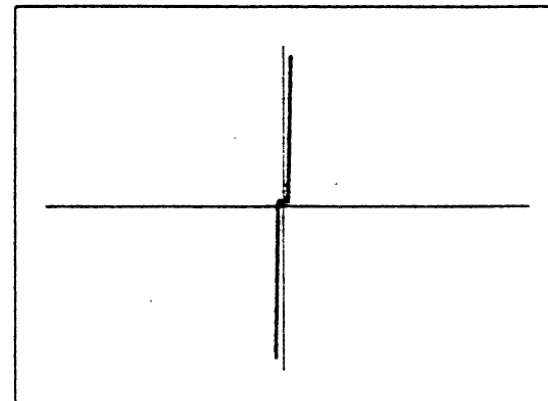
LOW



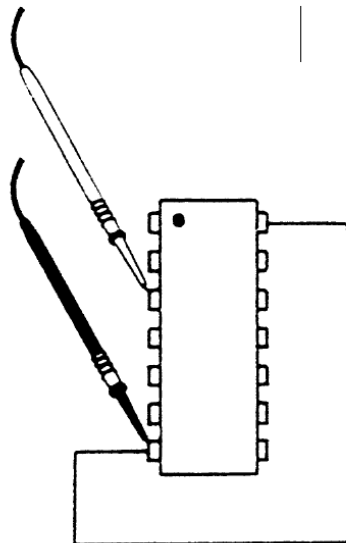
MEDIUM



HIGH



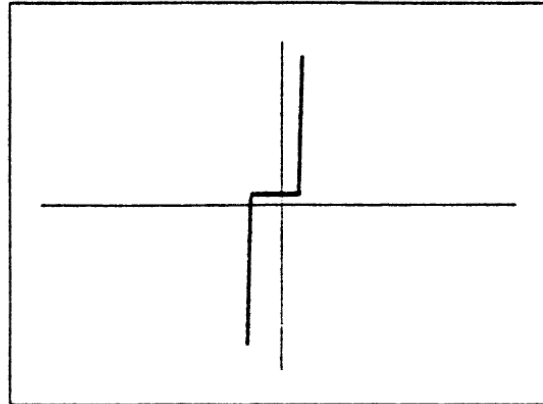
# Analog Signature Examples



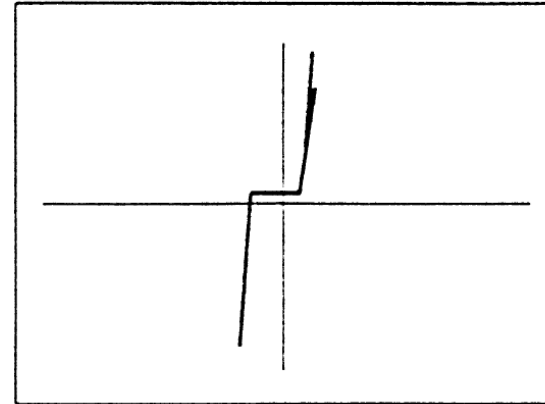
CD4001BCN  
(NAT.SEM.)

CMOS GATE  
OUTPUT

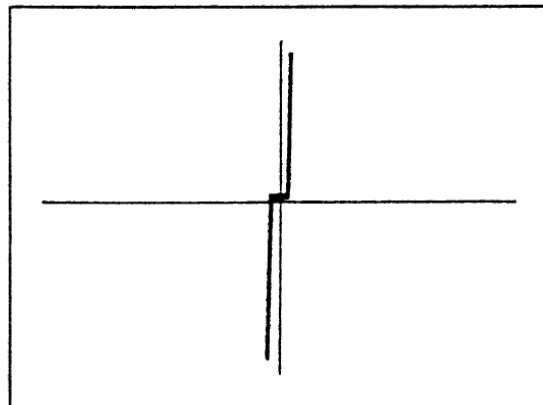
LOGIC



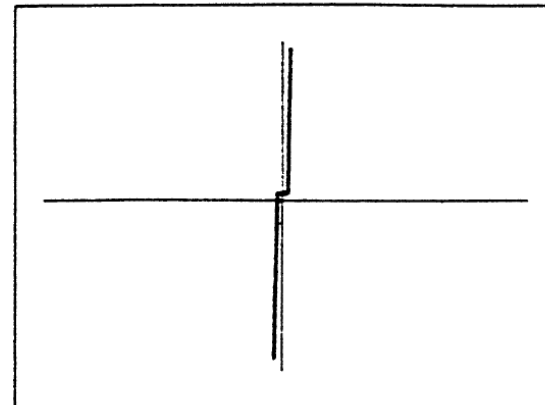
LOW



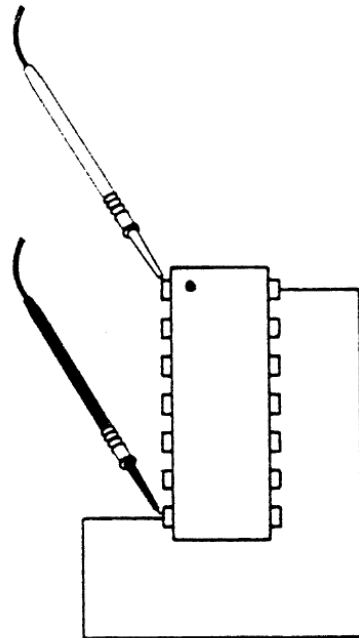
MEDIUM



HIGH



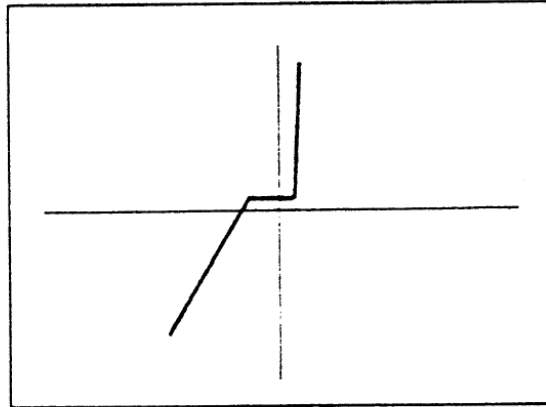
# Analog Signature Examples



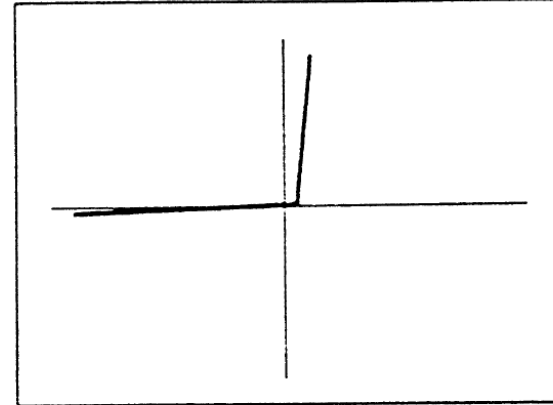
TC4001BP  
(TOSHIBA)

CMOS GATE  
INPUT

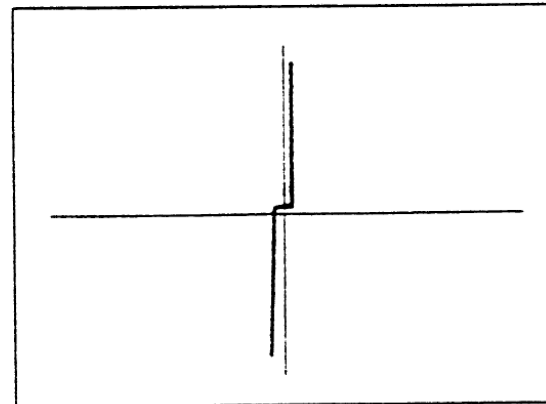
LOGIC



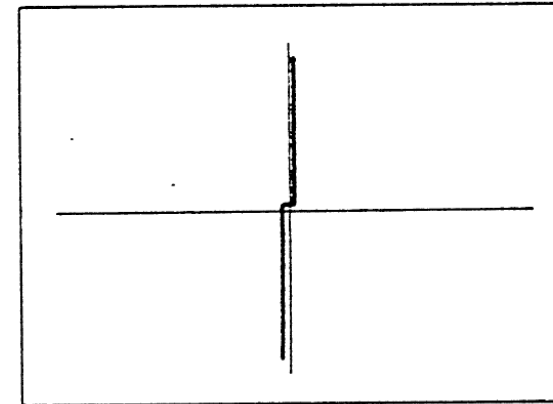
LOW



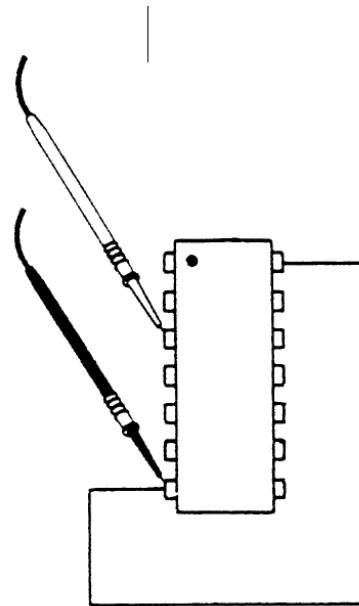
MEDIUM



HIGH



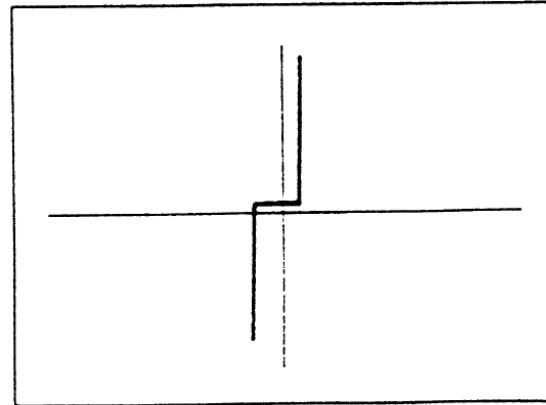
# Analog Signature Examples



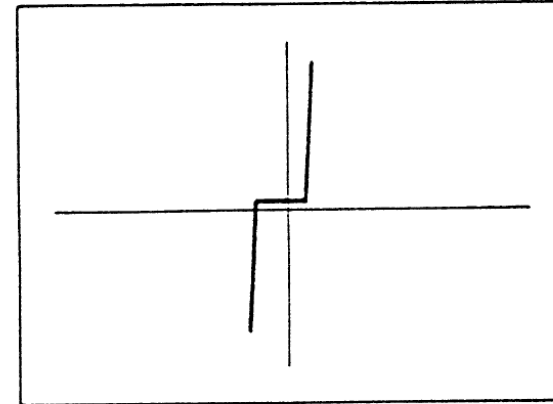
TC4001BP  
(TOSHIBA)

CMOS GATE  
OUTPUT

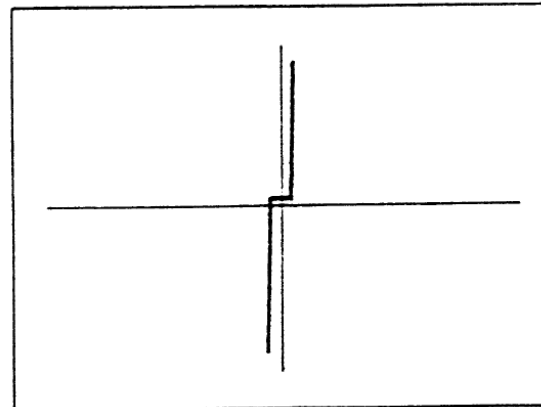
LOGIC



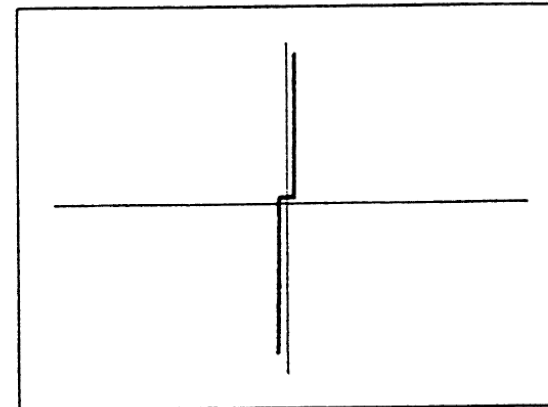
LOW



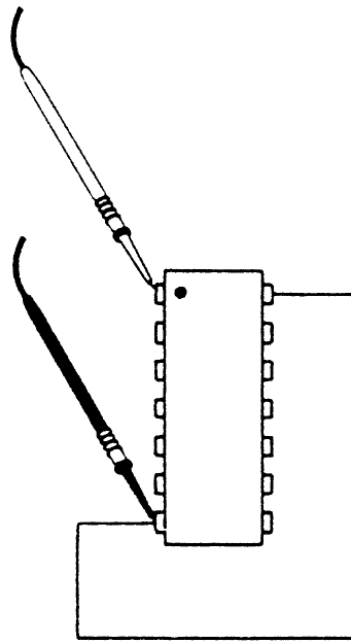
MEDIUM



HIGH



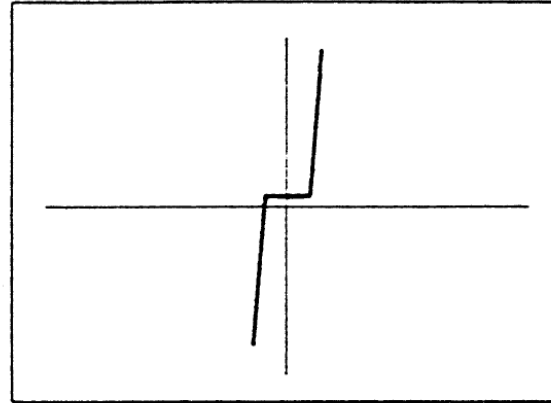
# Analog Signature Examples



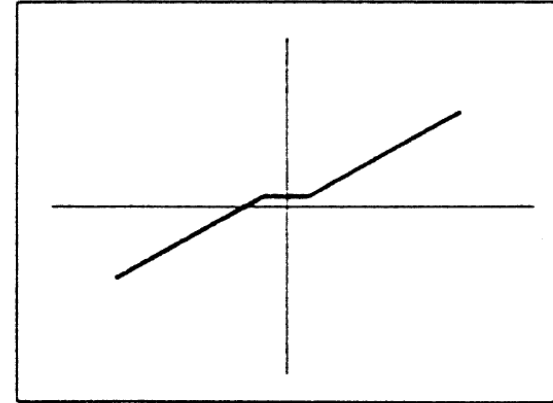
MM74HC00N  
(NAT.SEM.)

HC GATE  
INPUT

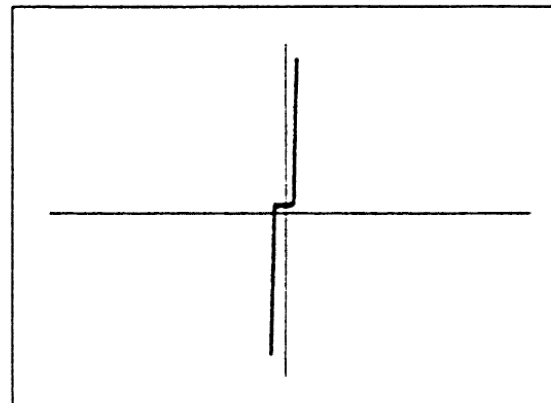
LOGIC



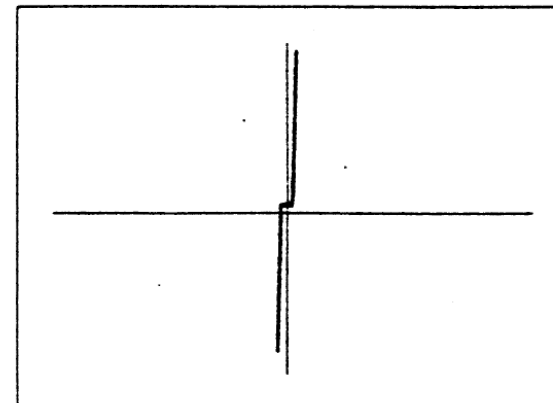
LOW



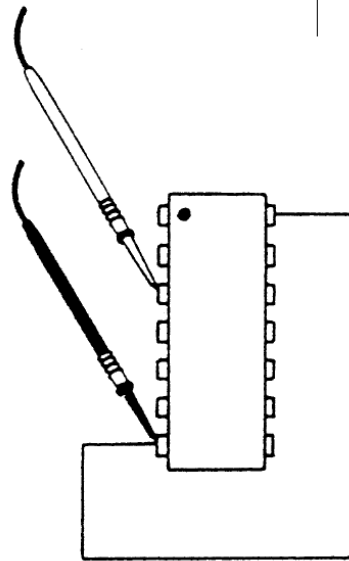
MEDIUM



HIGH



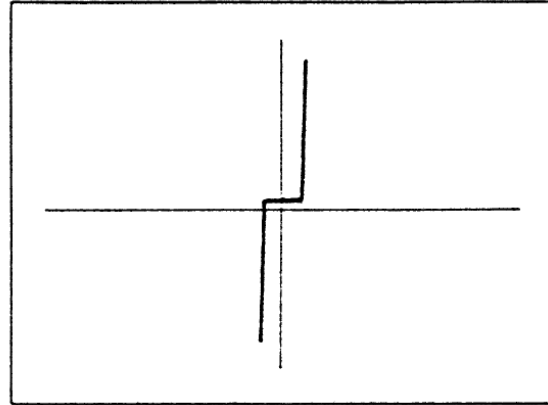
# Analog Signature Examples



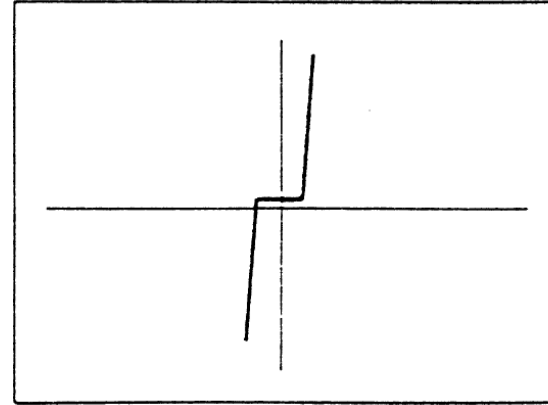
MM74HC00N  
(NAT.SEM.)

HC GATE  
OUTPUT

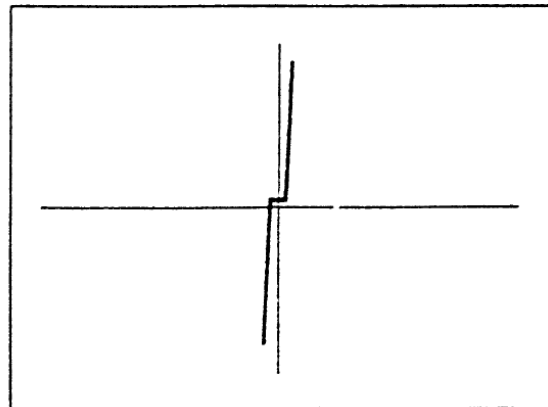
LOGIC



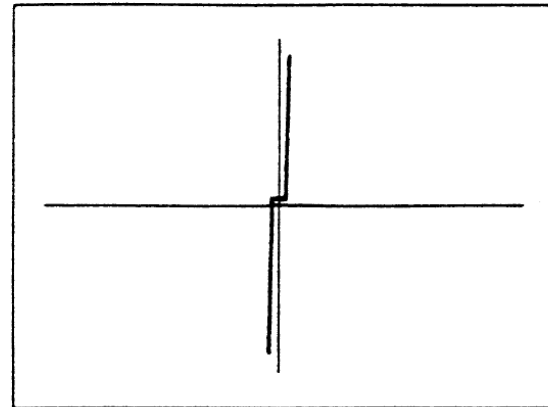
LOW



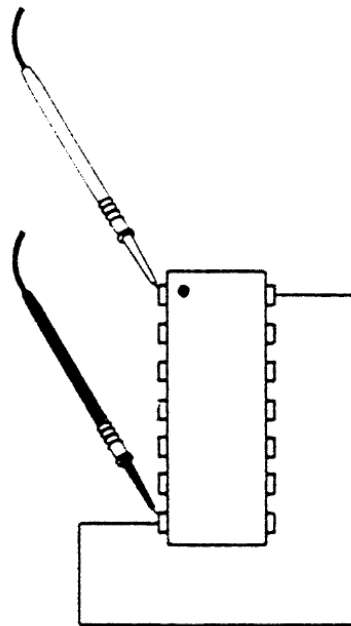
MEDIUM



HIGH



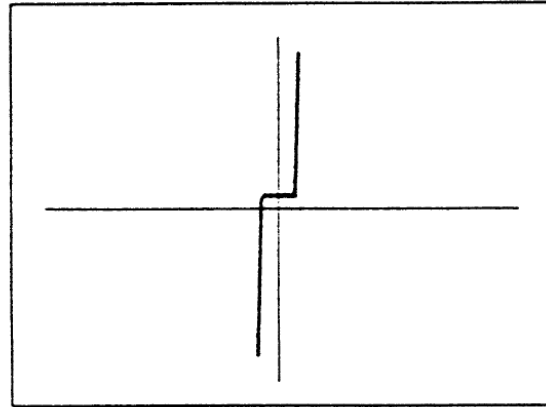
# Analog Signature Examples



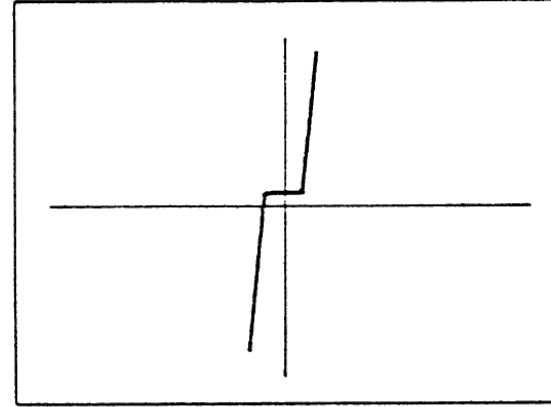
TC74HC00AP  
(TOSHIBA)

HC GATE  
INPUT

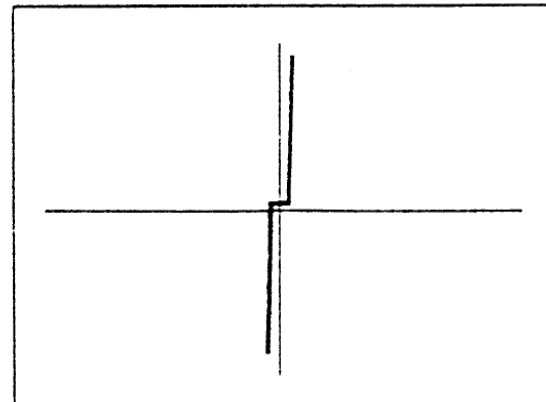
LOGIC



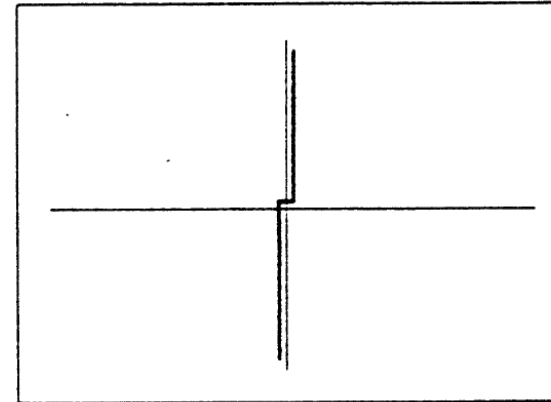
LOW



MEDIUM

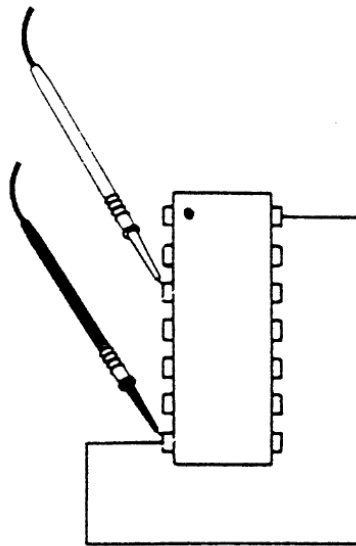


HIGH





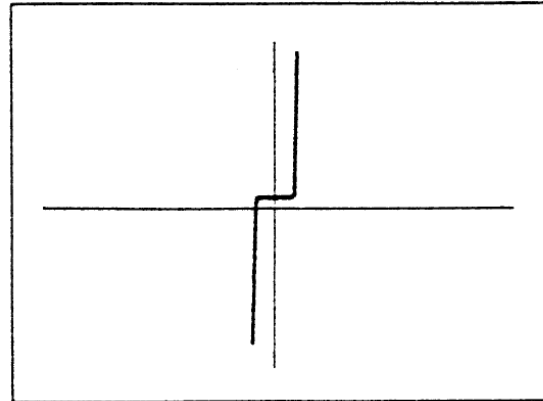
# Analog Signature Examples



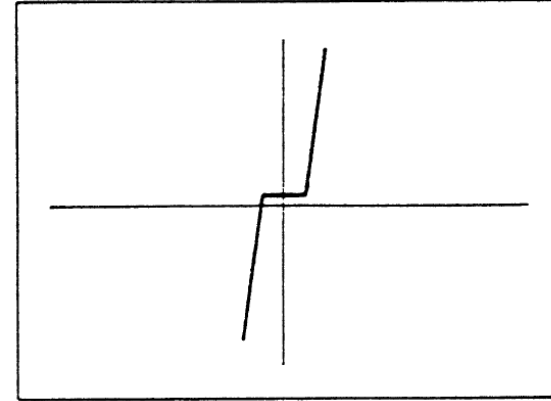
TC74HC00AP  
(TOSHIBA)

HC GATE  
OUTPUT

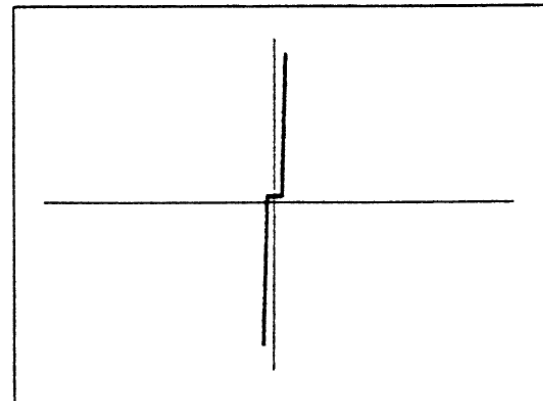
LOGIC



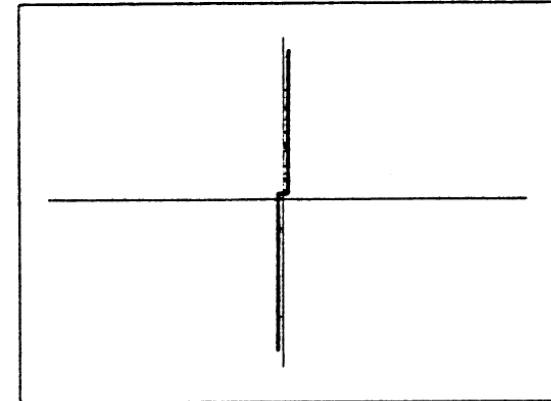
LOW



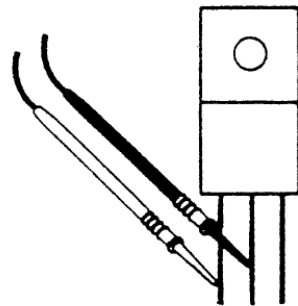
MEDIUM



HIGH



# Analog Signature Examples

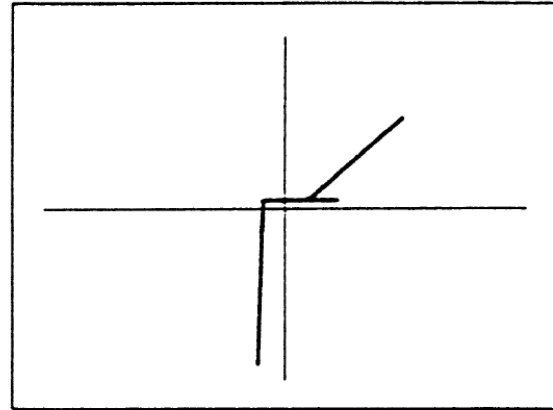


ogi

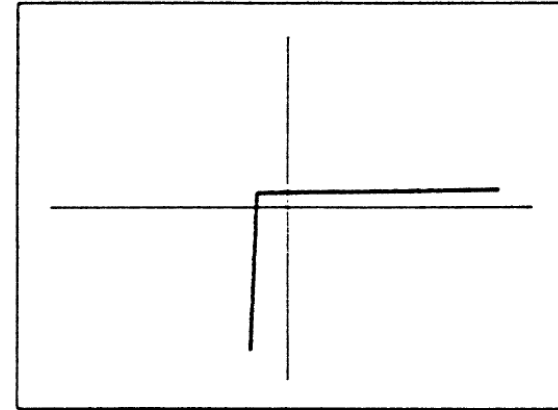
7805

VOLTAGE  
REGULATOR  
OUTPUT

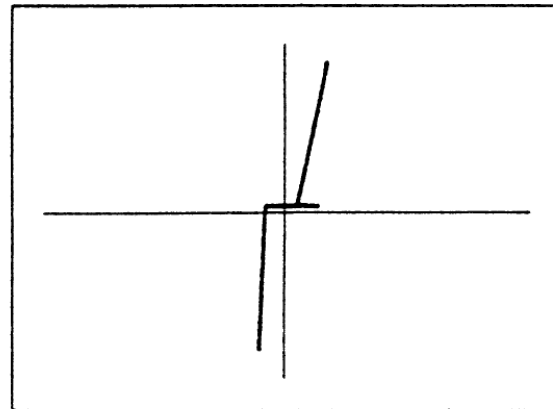
LOGIC



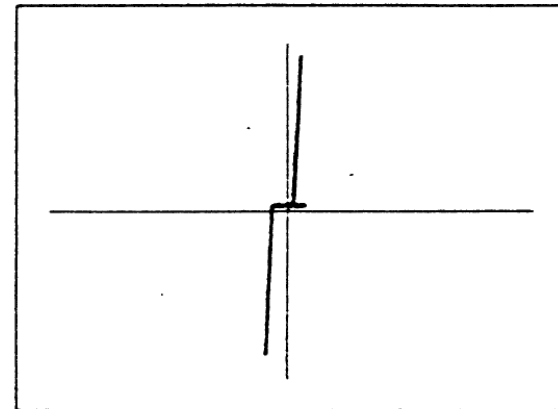
LOW



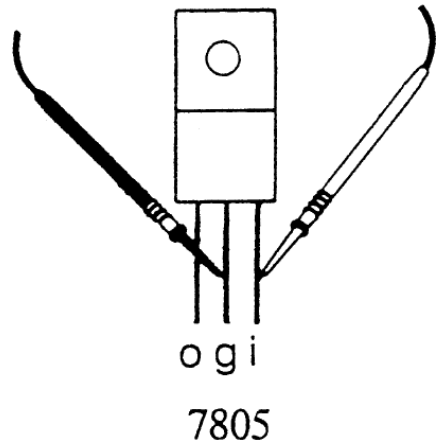
MEDIUM



HIGH

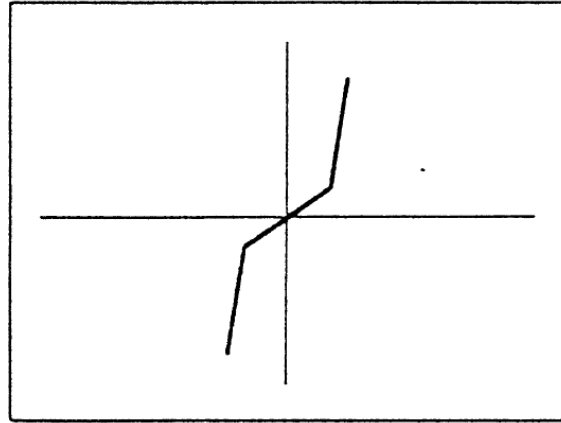


# Analog Signature Examples

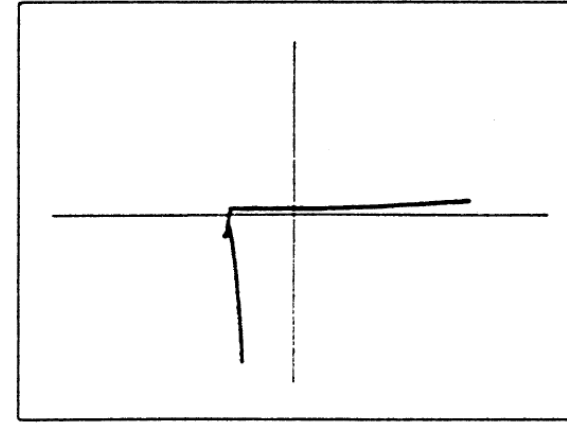


VOLTAGE  
REGULATOR  
INPUT

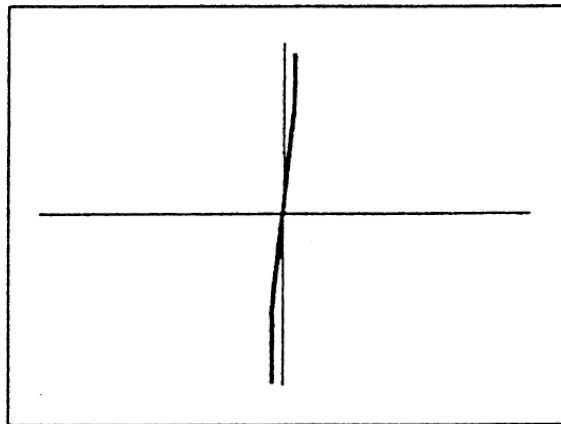
LOGIC



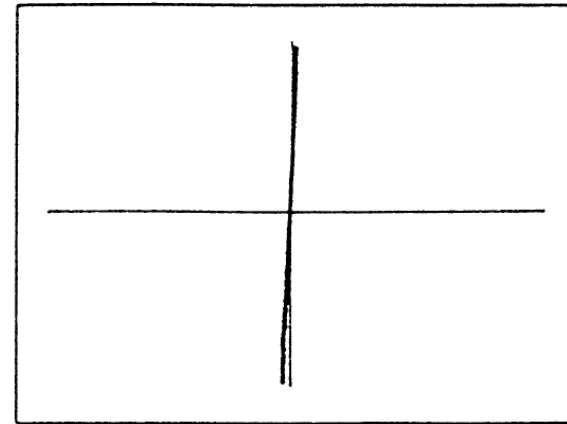
LOW



MEDIUM

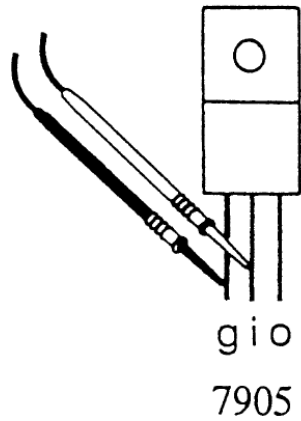


HIGH



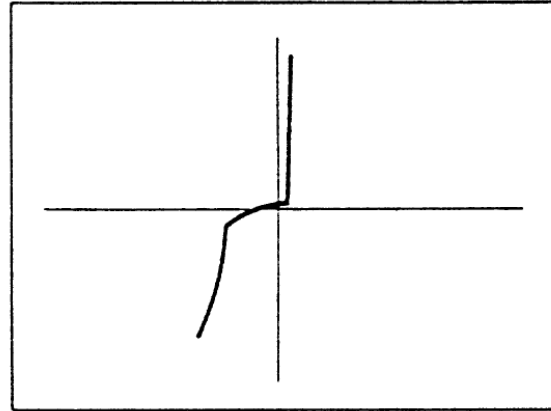
All measurements on this page in LOW frequency

# Analog Signature Examples

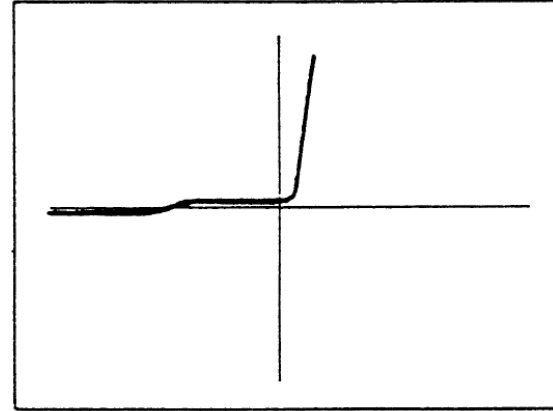


VOLTAGE  
REGULATOR  
INPUT

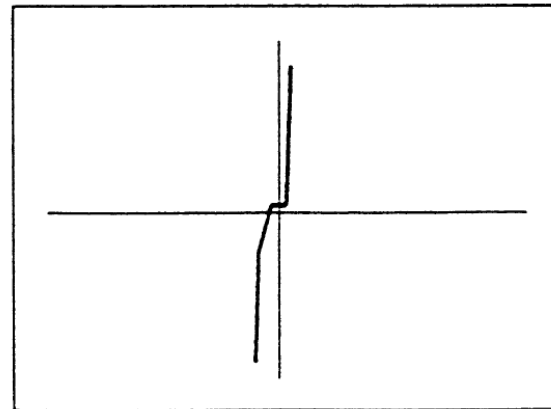
LOGIC



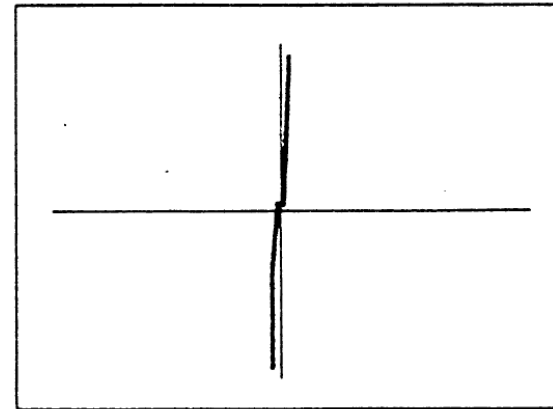
LOW



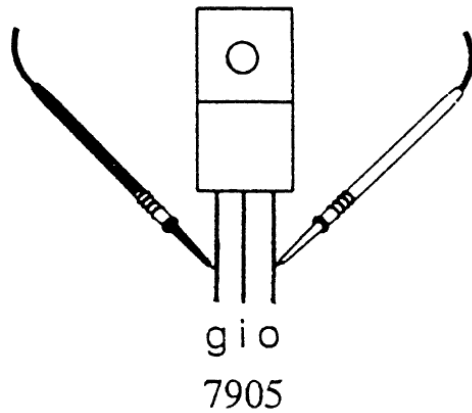
MEDIUM



HIGH

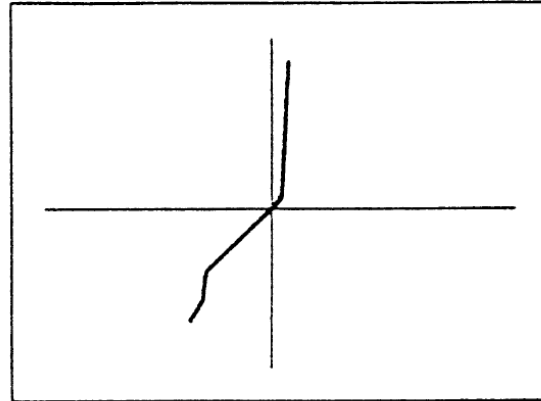


# Analog Signature Examples

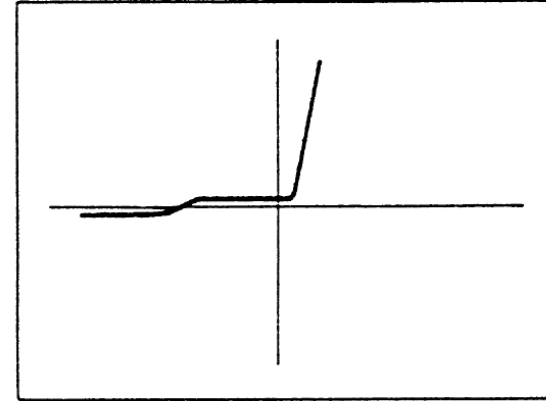


VOLTAGE  
REGULATOR  
OUTPUT

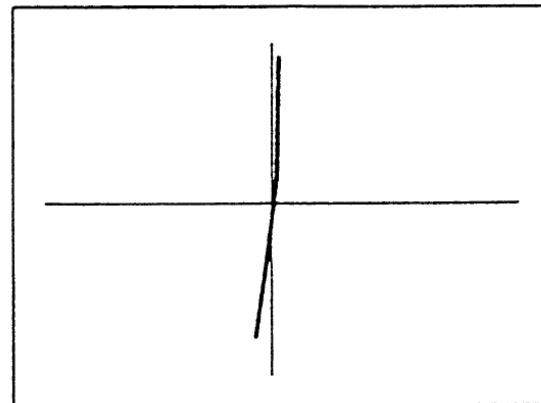
LOGIC



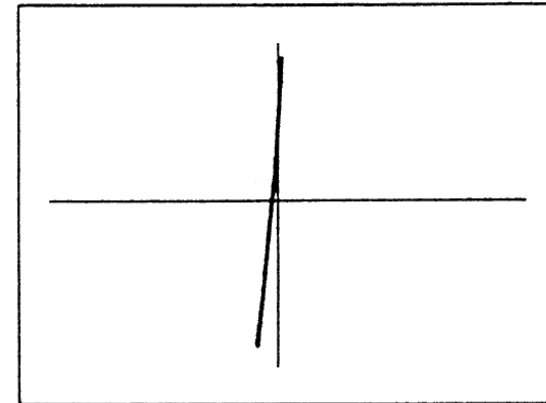
LOW



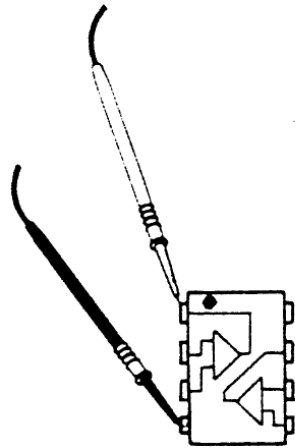
MEDIUM



HIGH



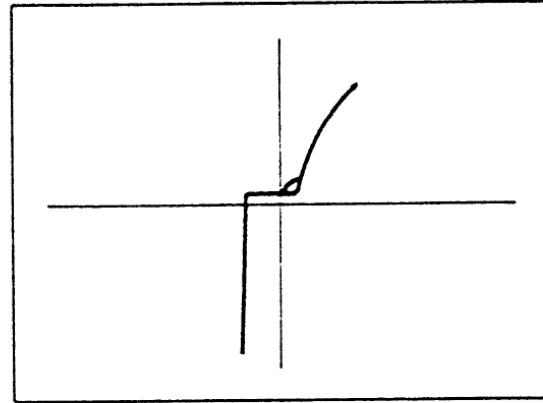
# Analog Signature Examples



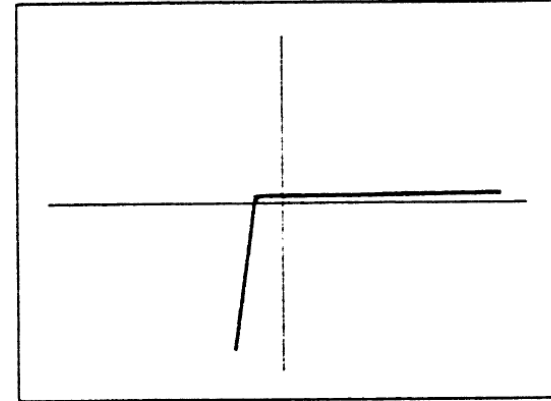
MC1458CP1

DUAL OP AMP  
OUTPUT

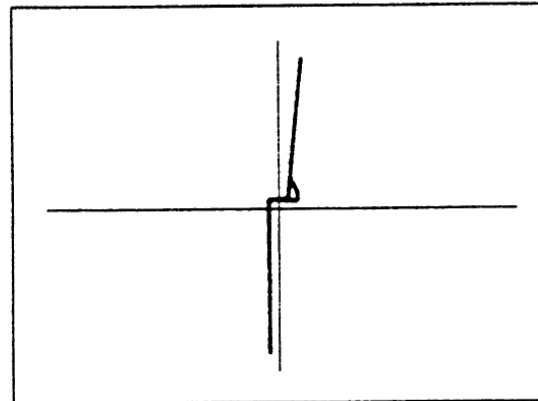
LOGIC



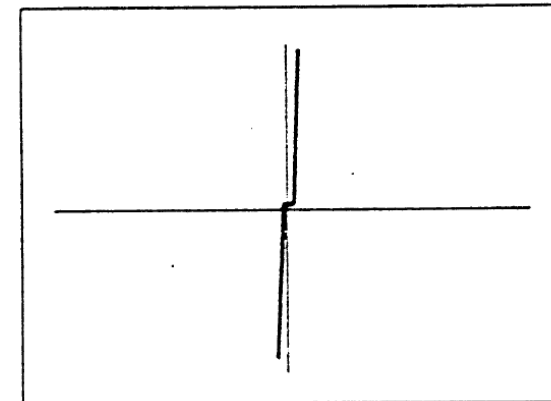
LOW



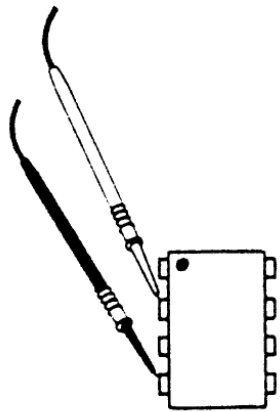
MEDIUM



HIGH



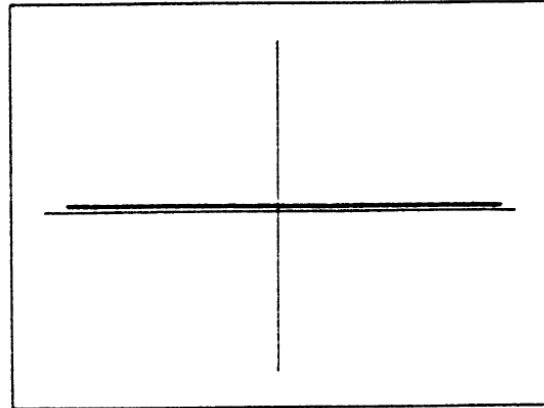
# Analog Signature Examples



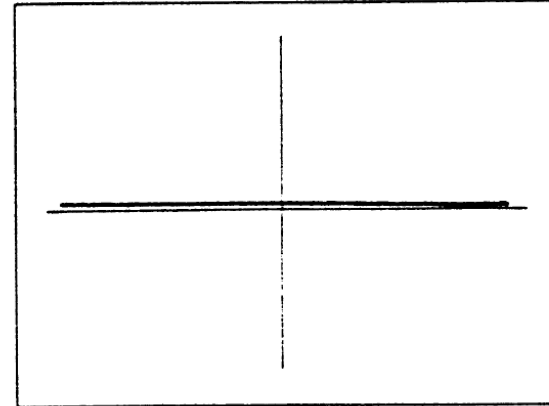
MC1458CP1

DUAL OP AMP  
INPUT

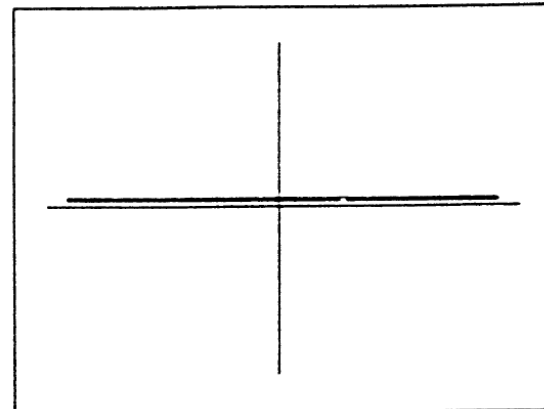
LOGIC



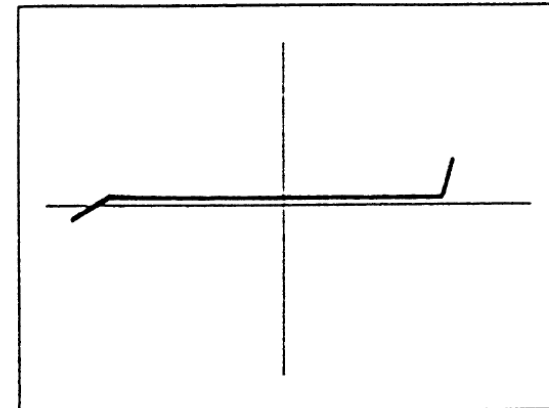
LOW



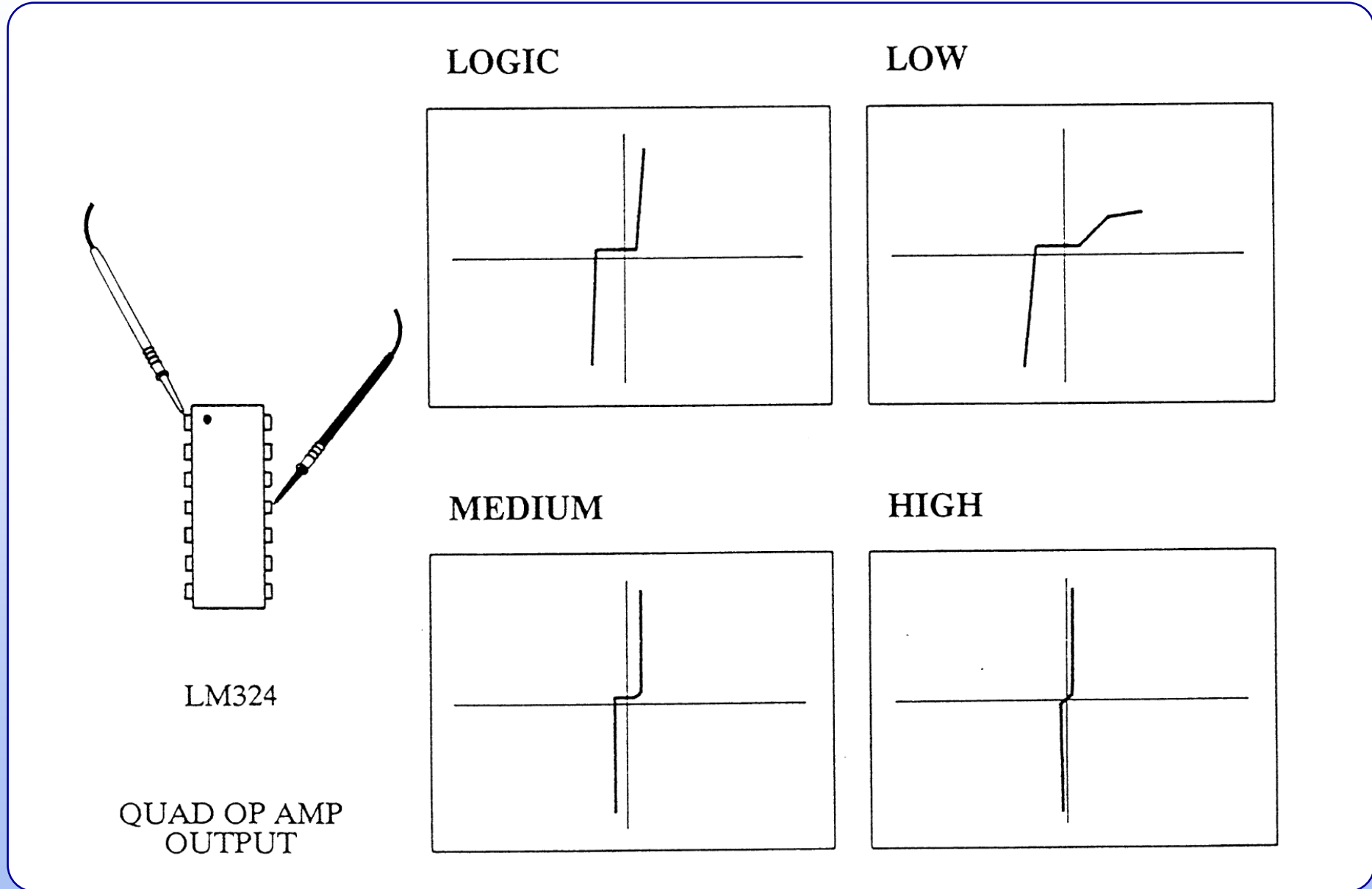
MEDIUM



HIGH



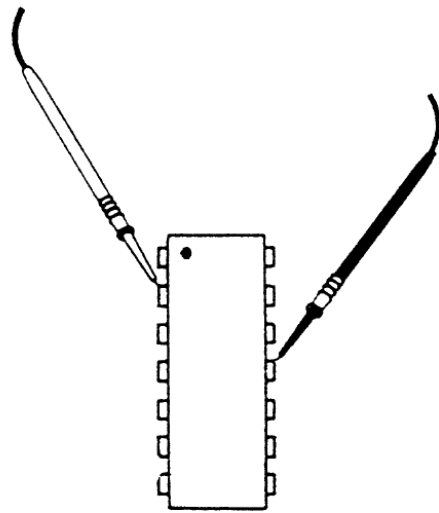
# Analog Signature Examples



All measurements on this page in LOW frequency



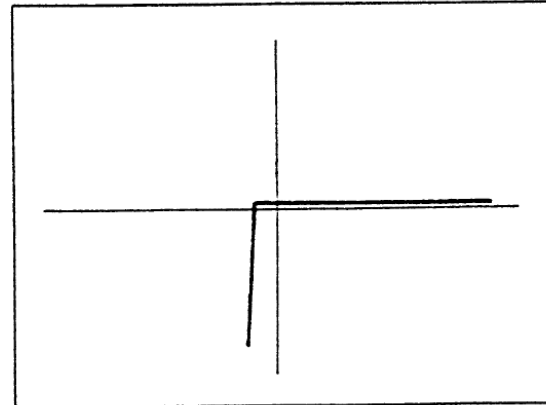
# Analog Signature Examples



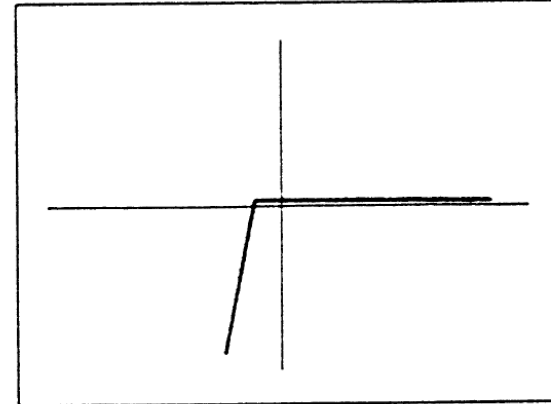
LM324

QUAD OP AMP  
INPUT

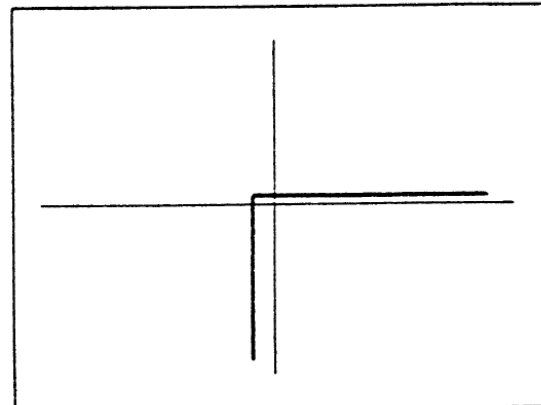
LOGIC



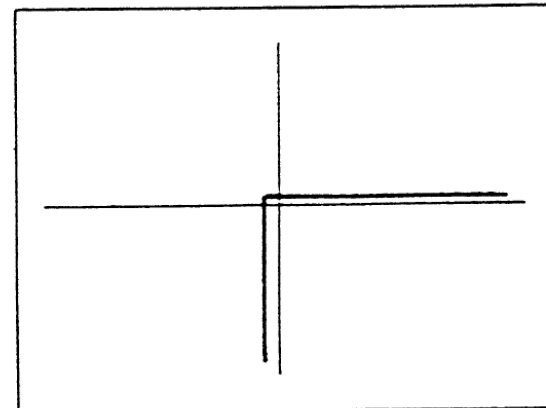
LOW



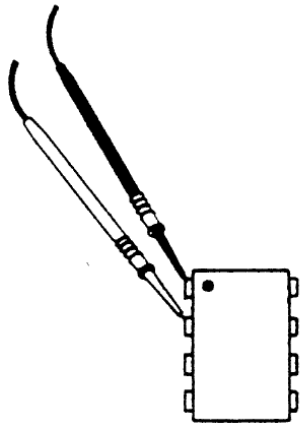
MEDIUM



HIGH

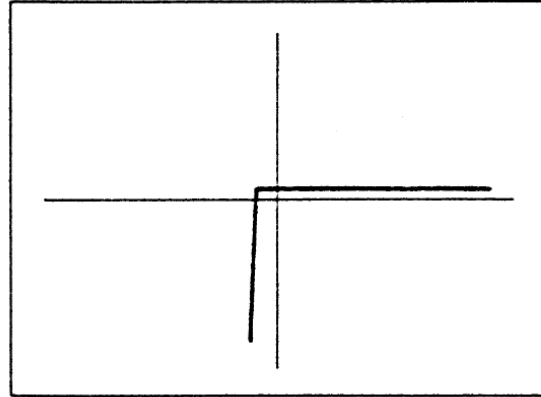


# Analog Signature Examples

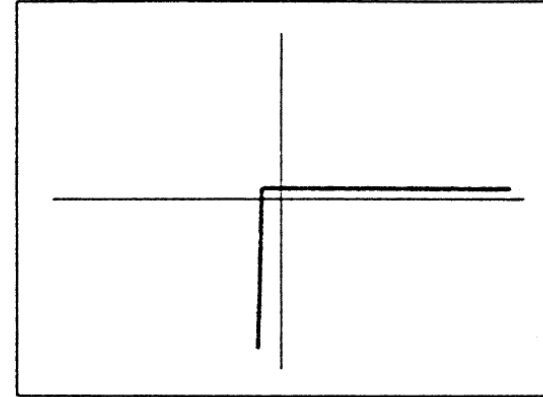


555 TIMER  
TRIGGER INPUT

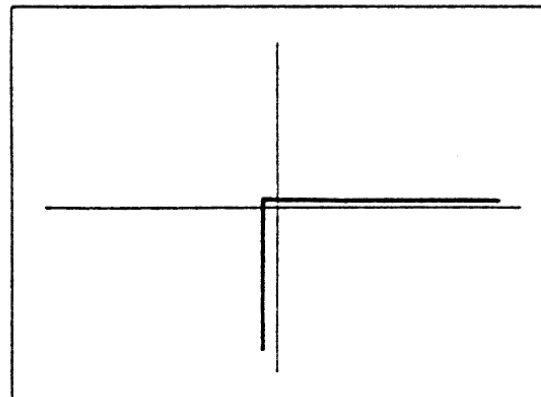
LOGIC



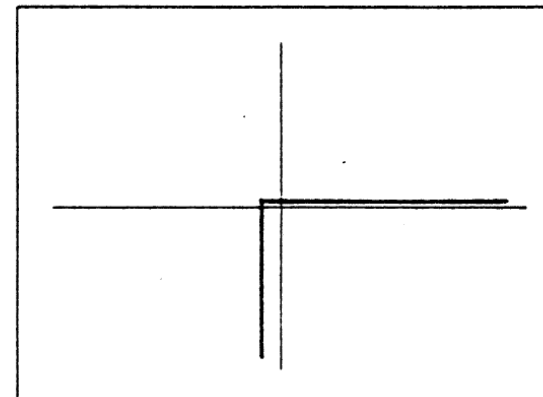
LOW



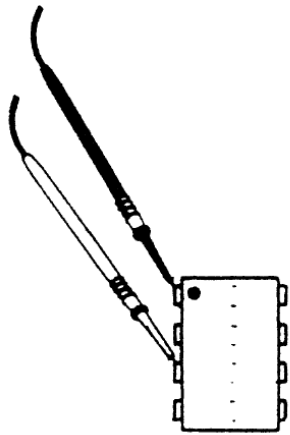
MEDIUM



HIGH

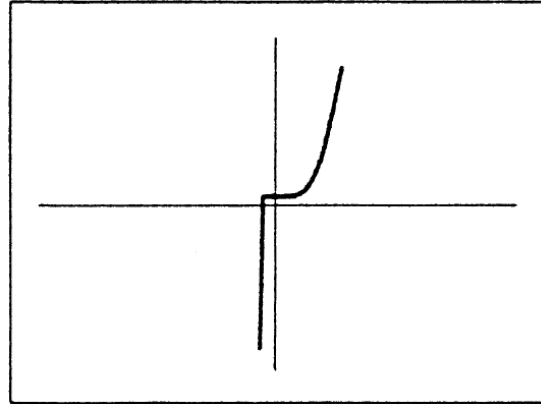


# Analog Signature Examples

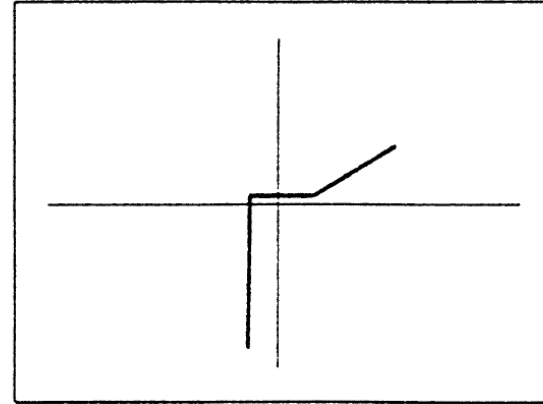


555 TIMER  
OUTPUT

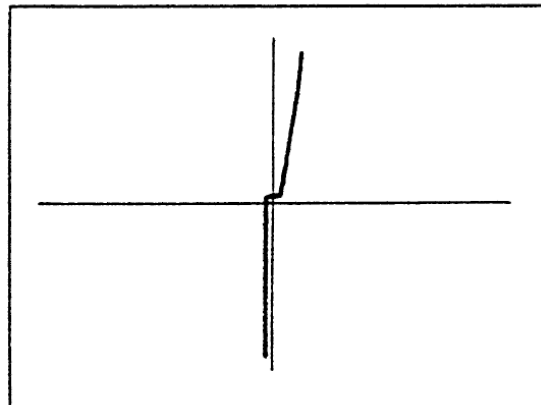
LOGIC



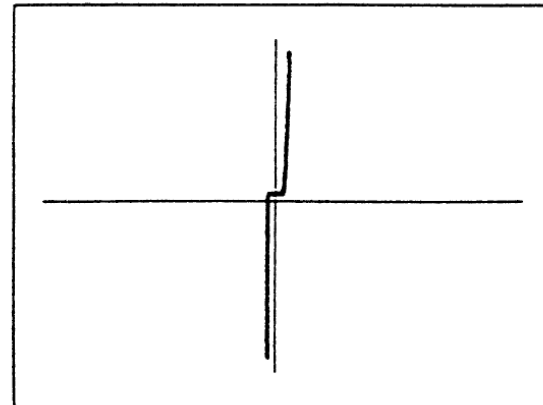
LOW



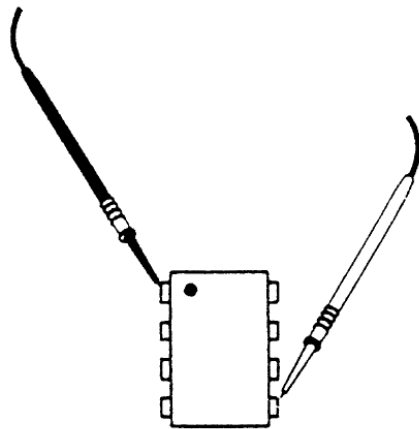
MEDIUM



HIGH

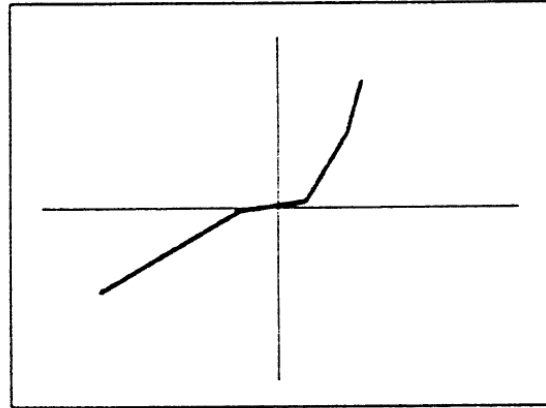


# Analog Signature Examples

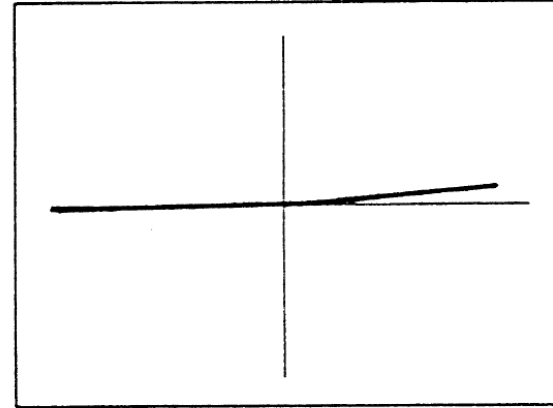


555 TIMER  
CONTROL INPUT

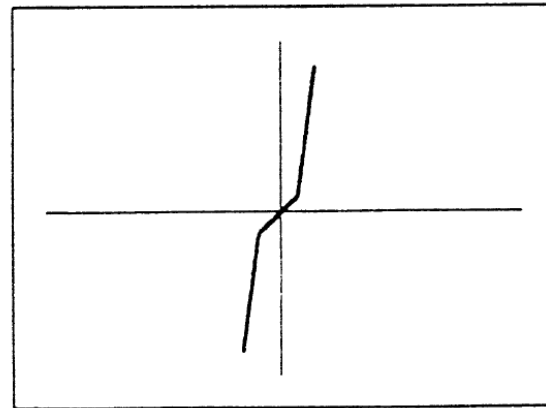
LOGIC



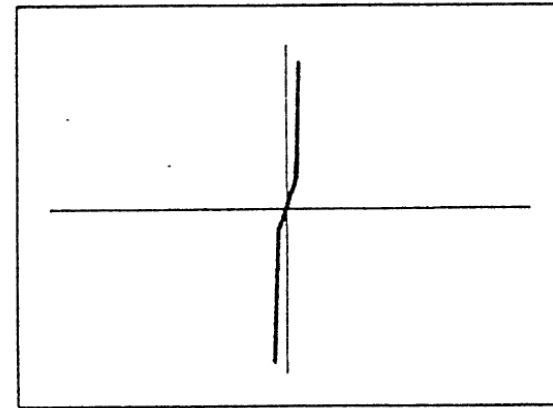
LOW



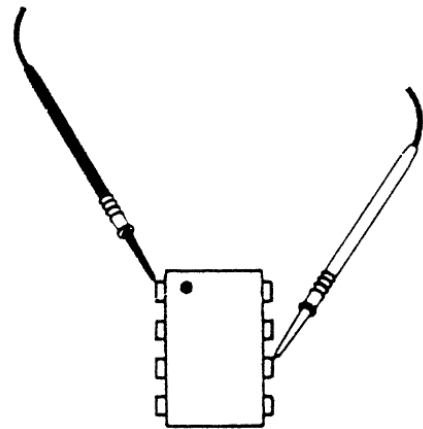
MEDIUM



HIGH

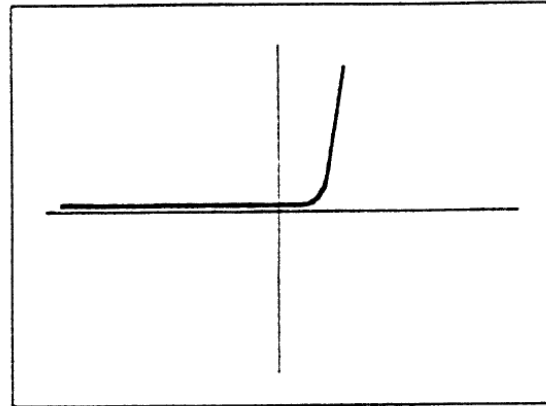


# Analog Signature Examples

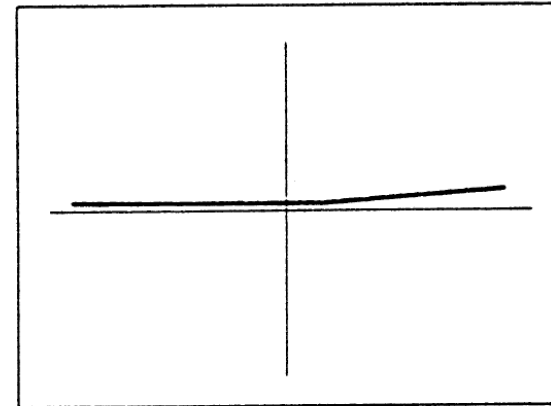


555 TIMER  
THRESHOLD INPUT

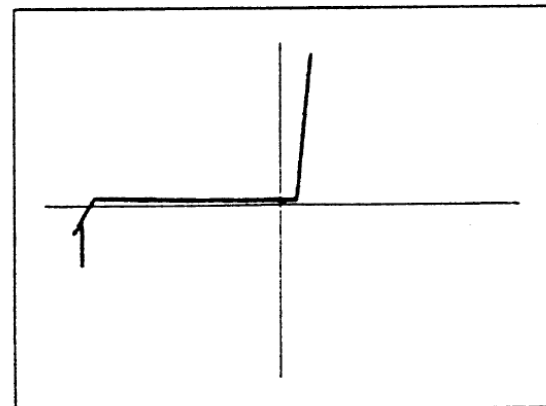
LOGIC



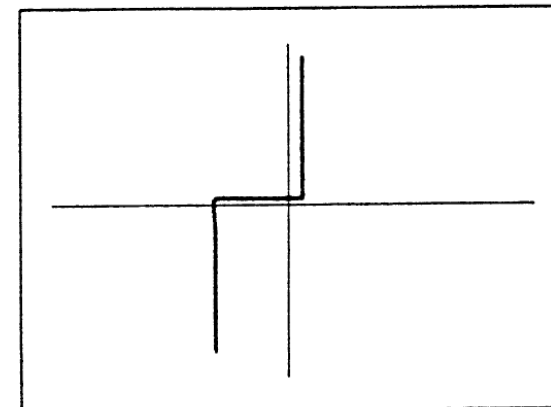
LOW



MEDIUM



HIGH



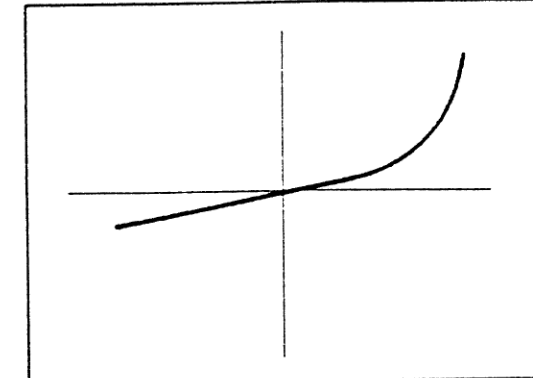
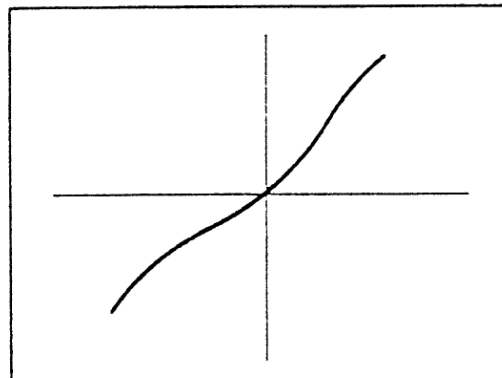
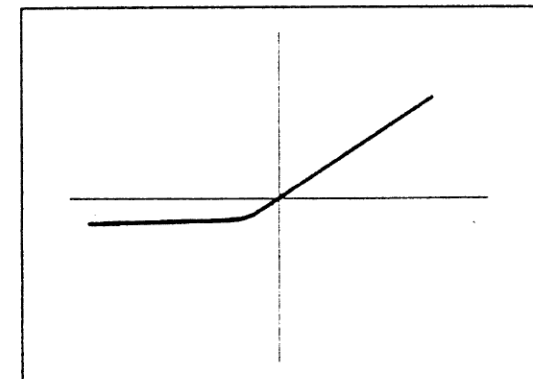
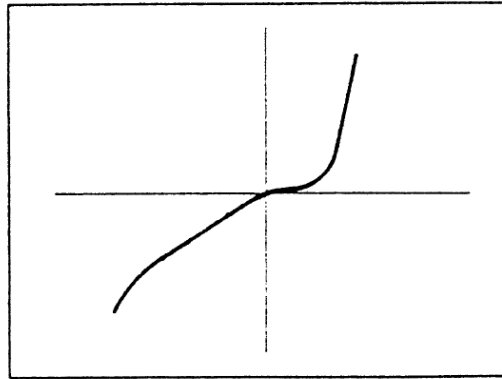
# Analog Signature Examples

The signatures produced by IC's usually arise from semiconductor junctions and these should produce either horizontal or vertical lines (ie a diode is off or on respectively). There may be a small slope associated with the lines but the transition from horizontal to vertical should be reasonably sharp.

The signs that you are looking for are:

- Lines that are neither vertical or horizontal
- Soft or rounded transitions („knees“)  
between the horizontal and vertical lines

The signatures on this page all indicate that the IC is potentially defective.



# Polar GRS200 Fault Locator



Polar Instruments GmbH  
A-4865 Nussdorf/Attersee  
Aichereben 16  
germany@polarinstruments.eu  
www.polarinstruments.eu  
Tel. +43 7666 20041-0

# Polar GRS550 Fault Locator



Polar Instruments GmbH  
A-4865 Nussdorf/Attersee  
Aichereben 16  
[germany@polarinstruments.eu](mailto:germany@polarinstruments.eu)  
[www.polarinstruments.eu](http://www.polarinstruments.eu)  
Tel. +43 7666 20041-0