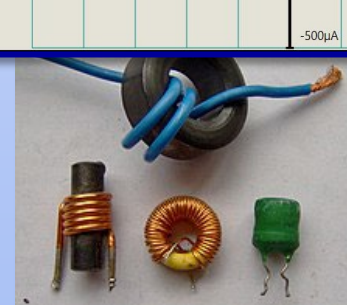
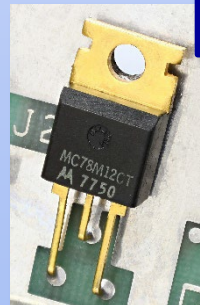
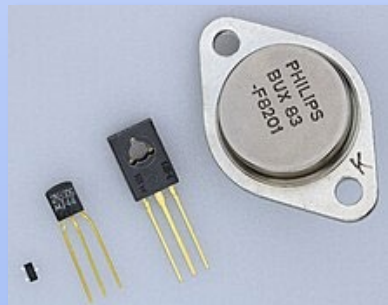
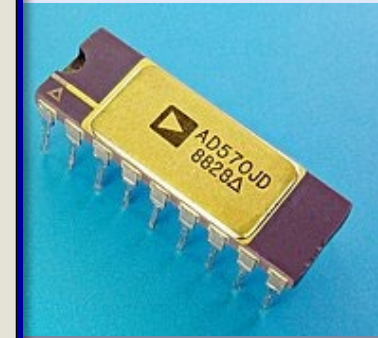
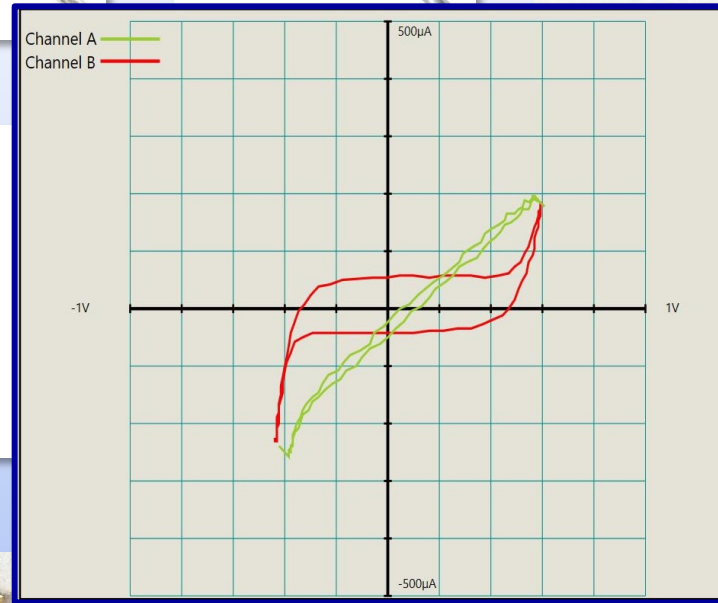
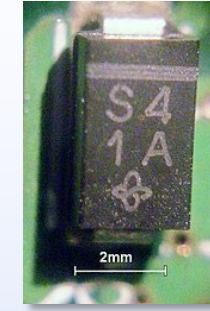
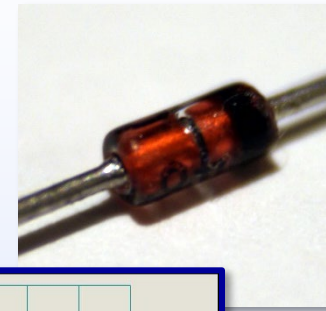
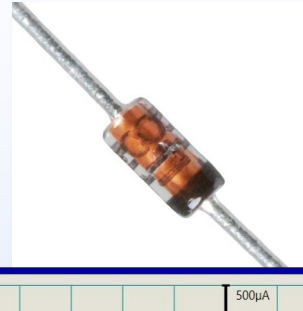


Analog Signature Examples



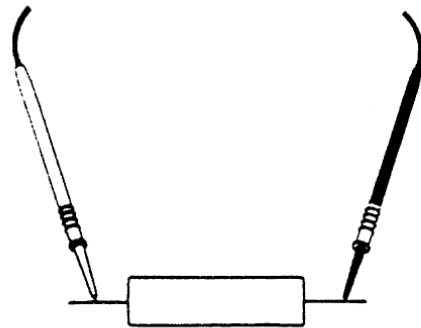
Analog Signature Examples

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.

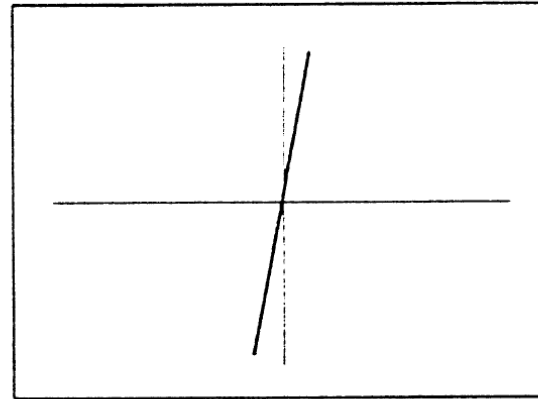
Experienced users of the Polar Fault Locator have little difficulty in recognizing a defective or potentially defective signature regardless of whether they have a comparison board.

Analog Signature Examples

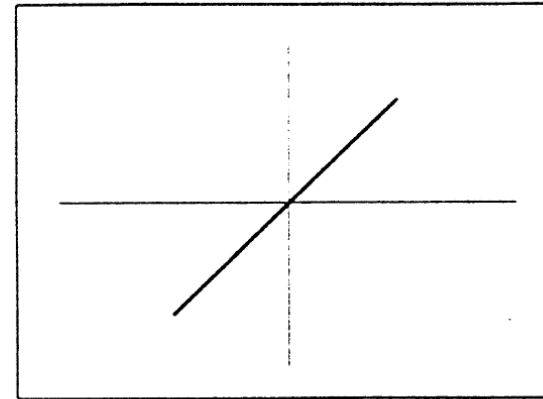


100 Ω
RESISTOR

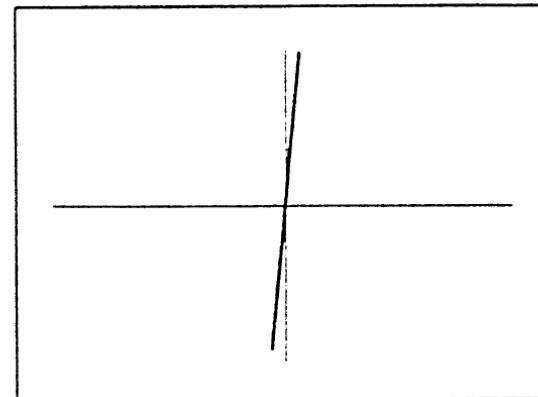
LOGIC



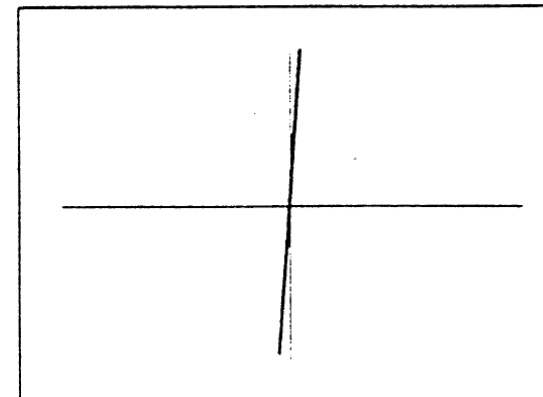
LOW



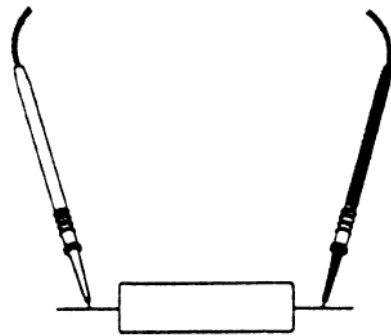
MEDIUM



HIGH

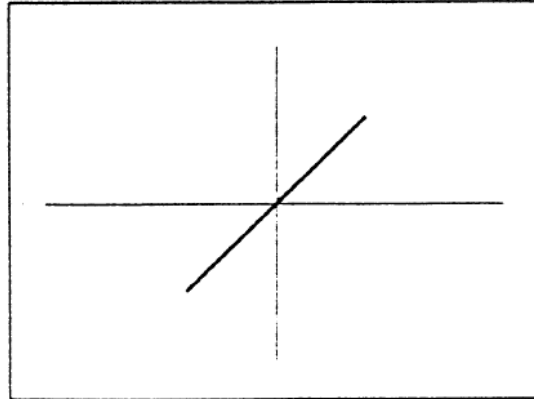


Analog Signature Examples

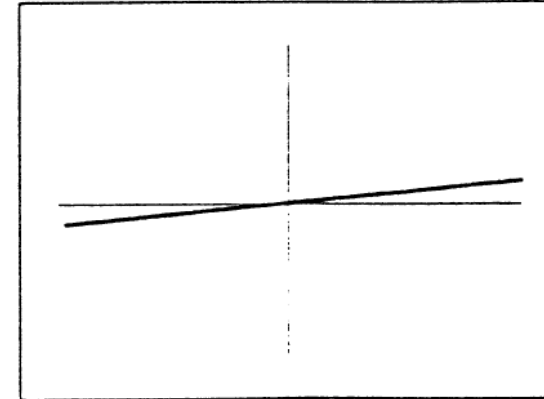


2K Ω
RESISTOR

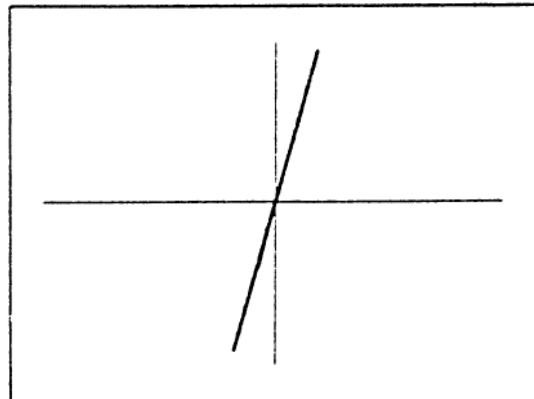
LOGIC



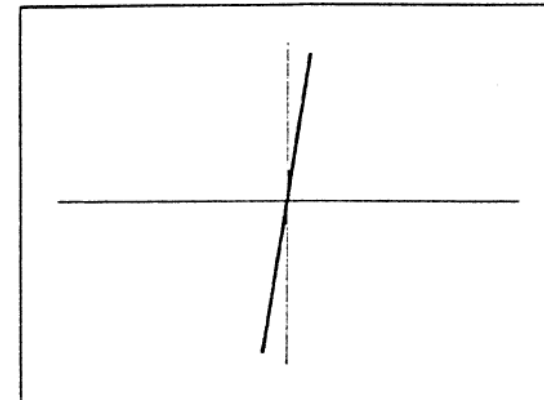
LOW



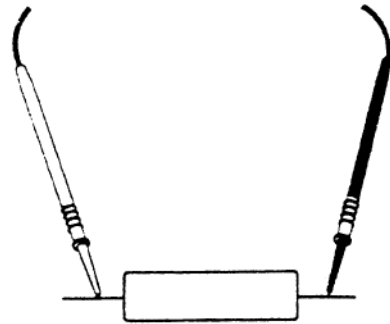
MEDIUM



HIGH

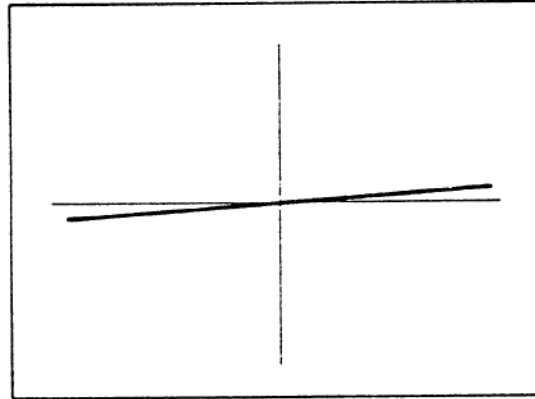


Analog Signature Examples

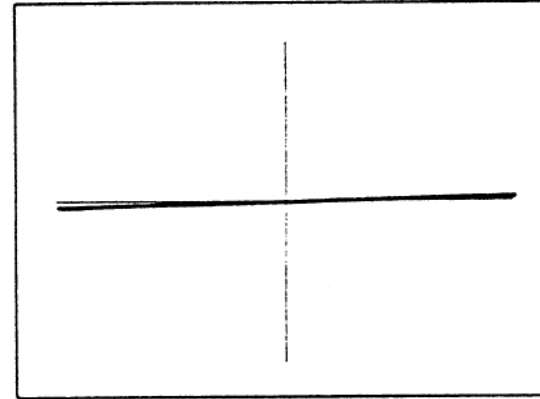


47K Ω
RESISTOR

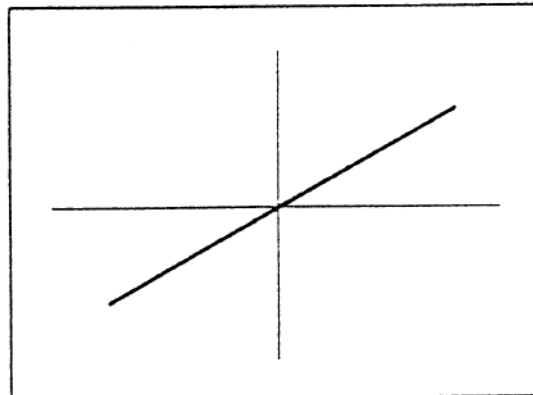
LOGIC



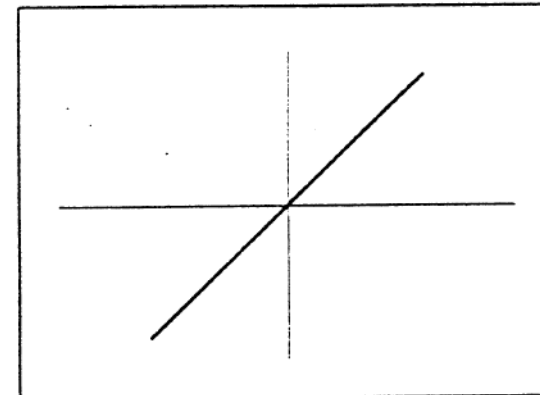
LOW



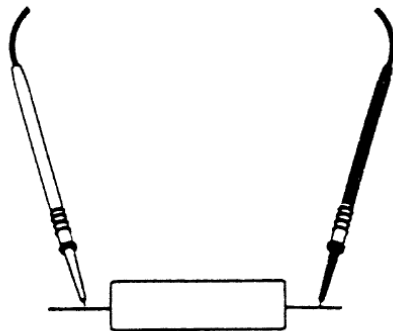
MEDIUM



HIGH

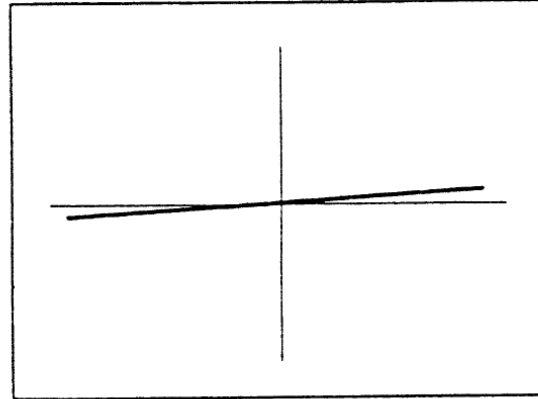


Analog Signature Examples

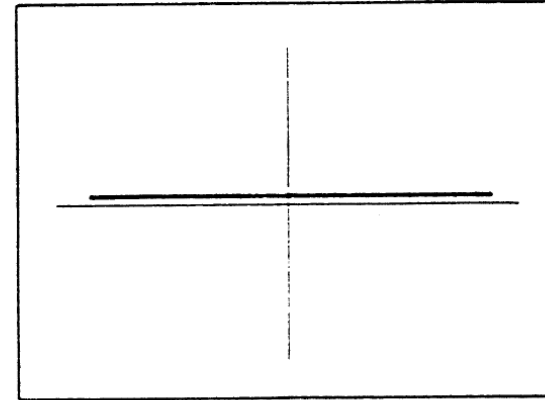


150K Ω
RESISTOR

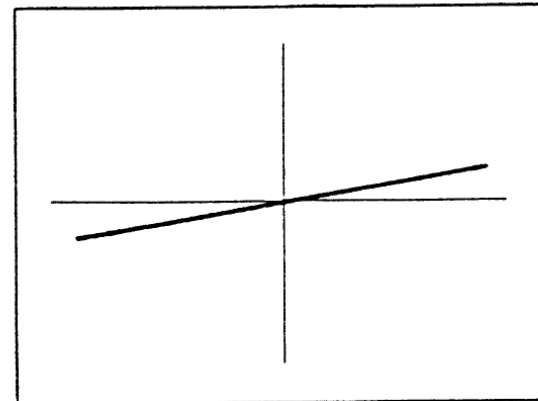
LOGIC



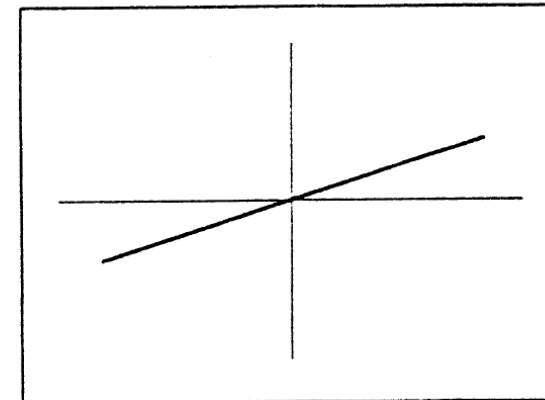
LOW



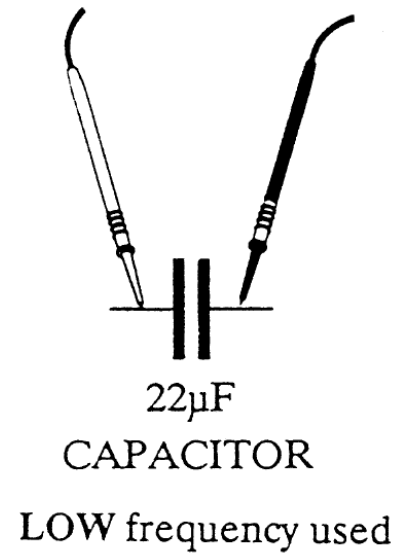
MEDIUM



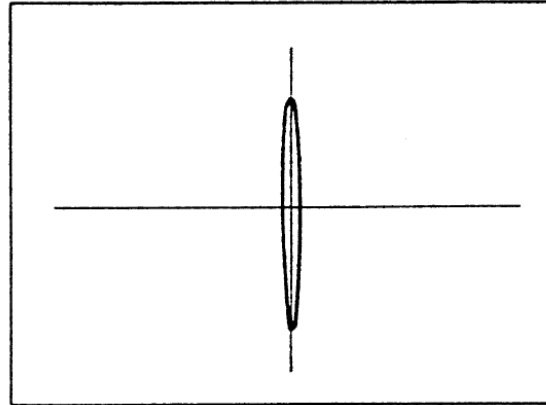
HIGH



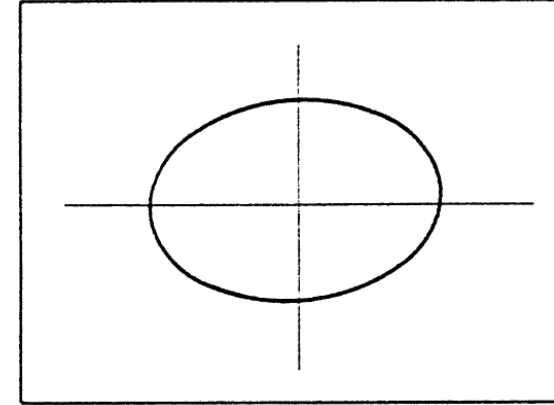
Analog Signature Examples



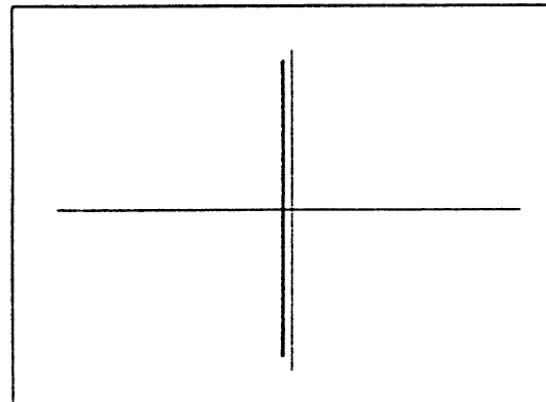
LOGIC



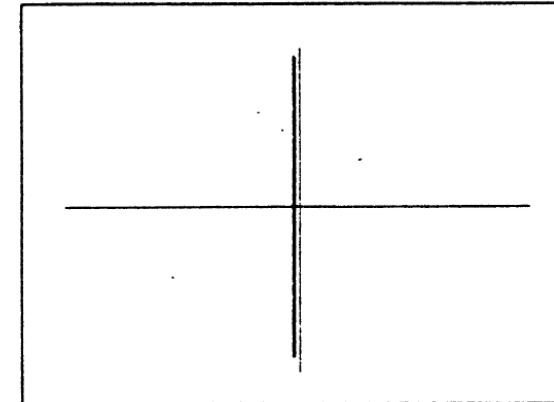
LOW



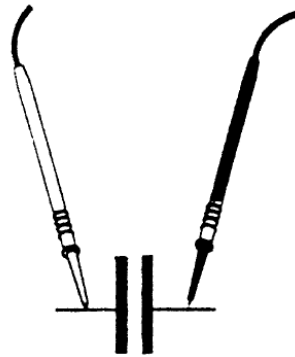
MEDIUM



HIGH



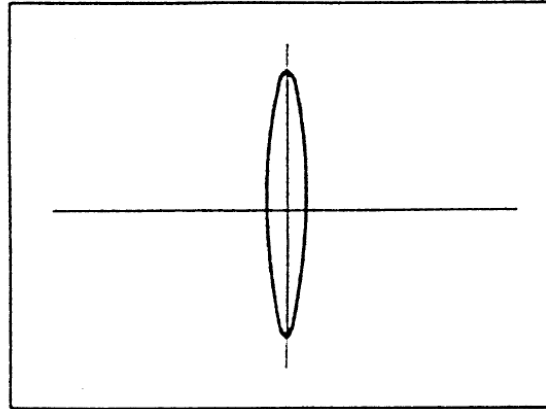
Analog Signature Examples



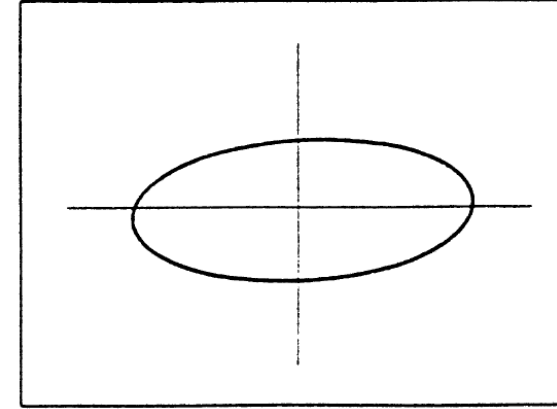
2.2 μ F
CAPACITOR

MED frequency used

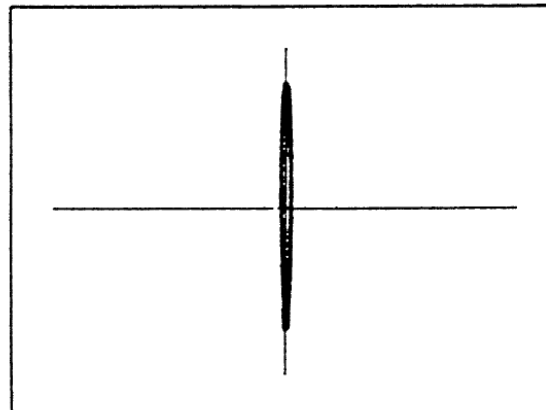
LOGIC



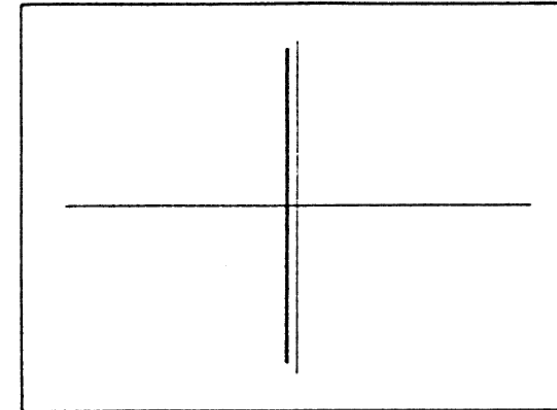
LOW



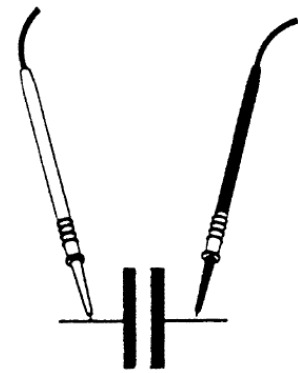
MEDIUM



HIGH

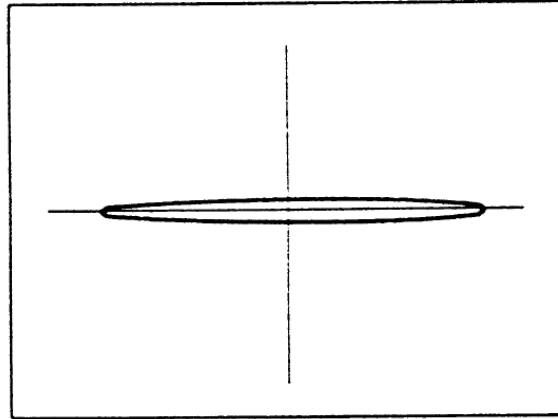


Analog Signature Examples

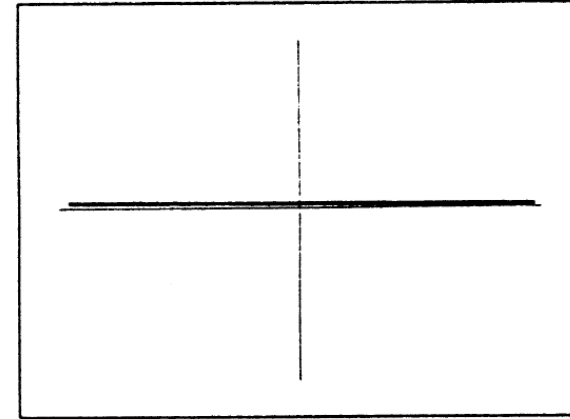


10nF (0.01 μ F)
CAPACITOR

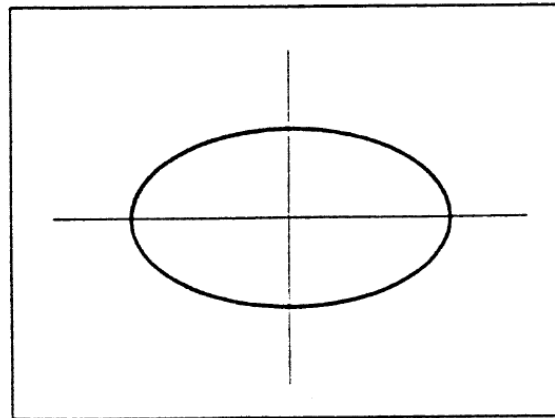
LOGIC



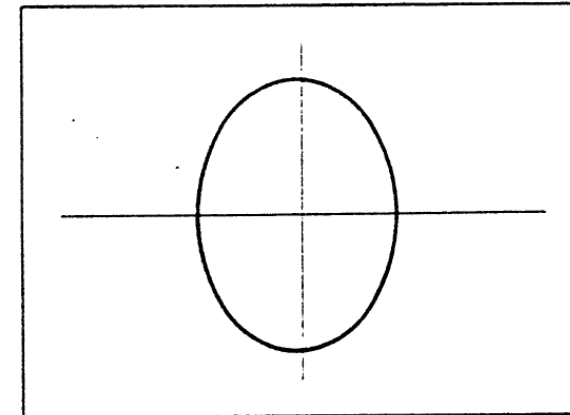
LOW



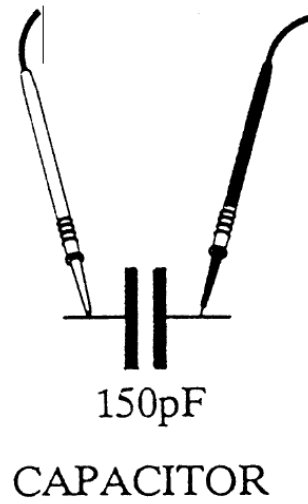
MEDIUM



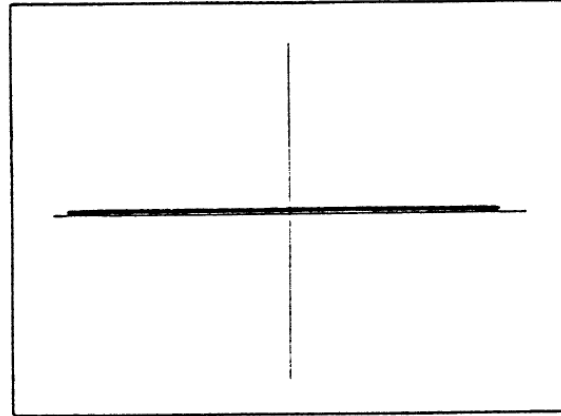
HIGH



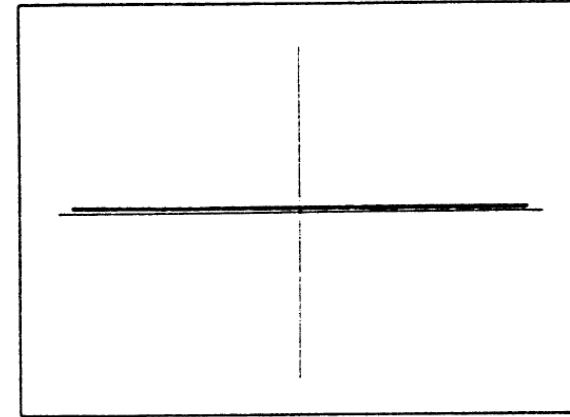
Analog Signature Examples



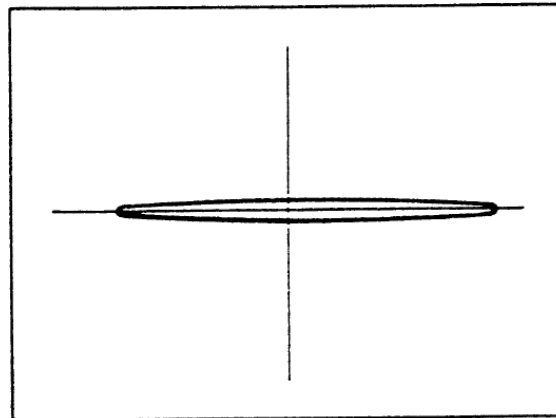
LOGIC



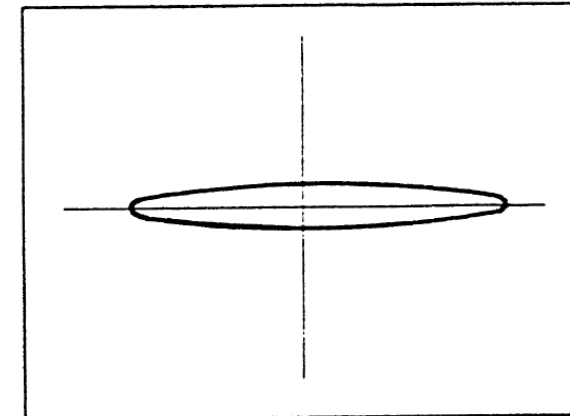
LOW



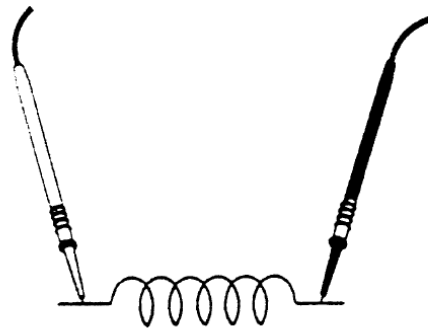
MEDIUM



HIGH



Analog Signature Examples

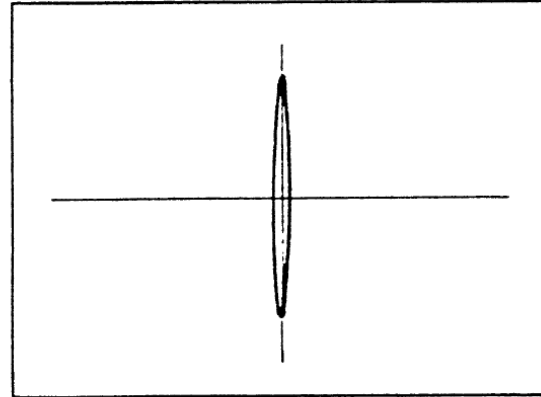


1mH

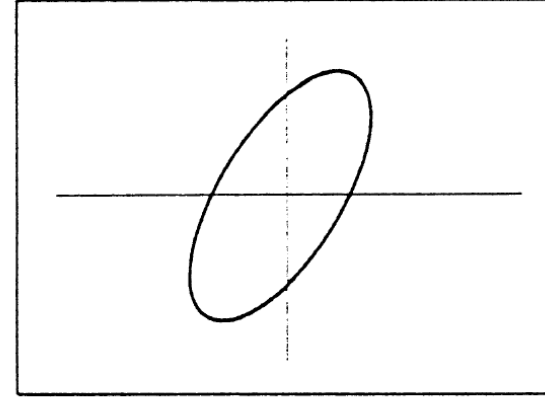
INDUCTOR

HIGH frequency used

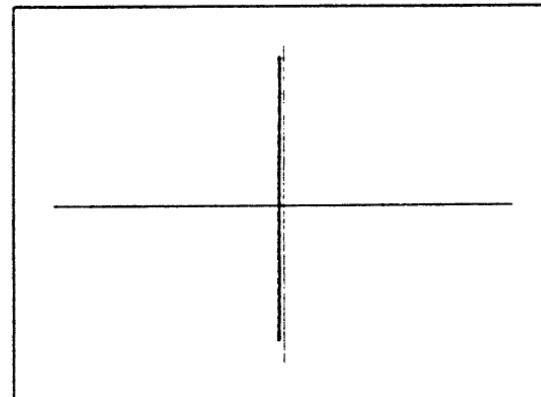
LOGIC



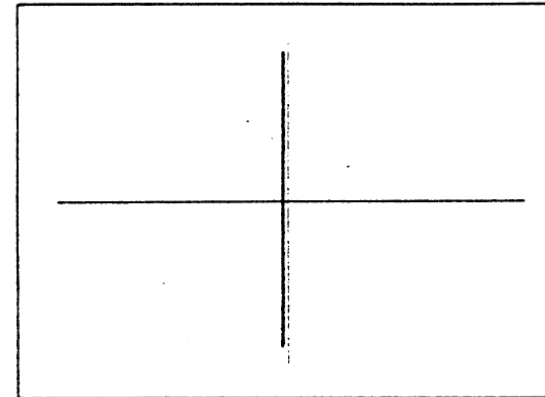
LOW



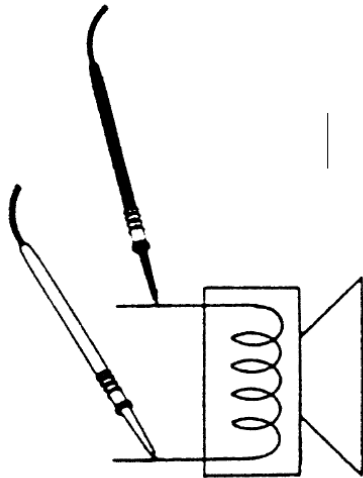
MEDIUM



HIGH

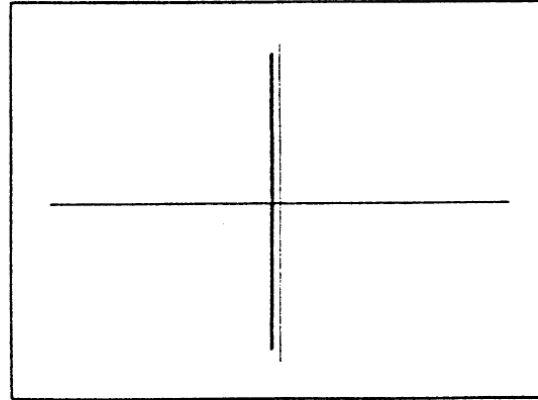


Analog Signature Examples

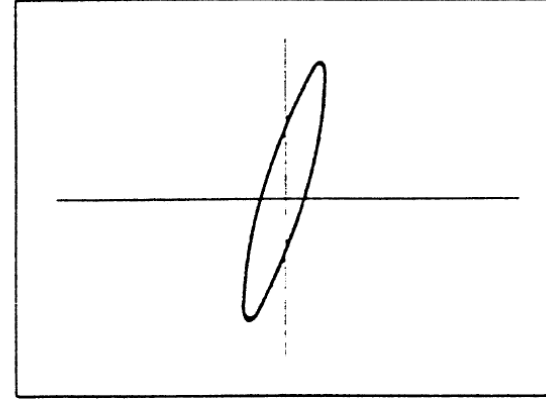


8Ω LOUDSPEAKER
HIGH frequency used

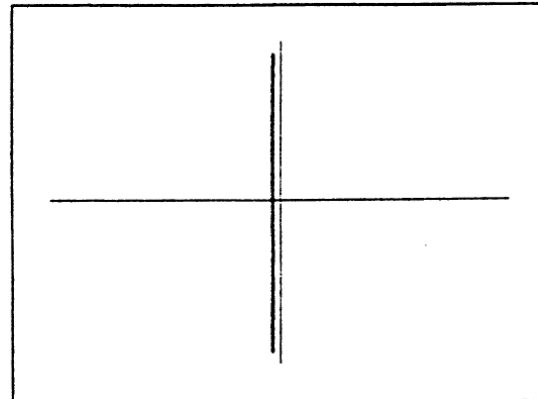
LOGIC



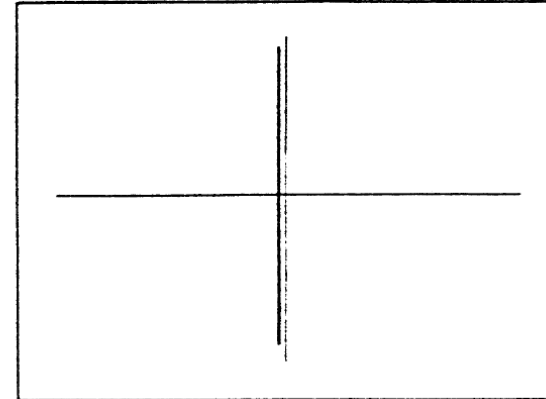
LOW



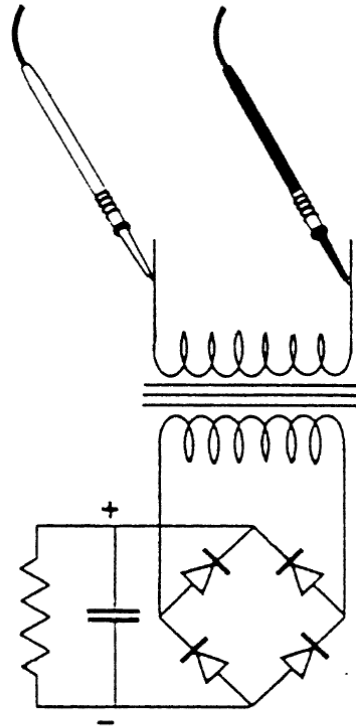
MEDIUM



HIGH



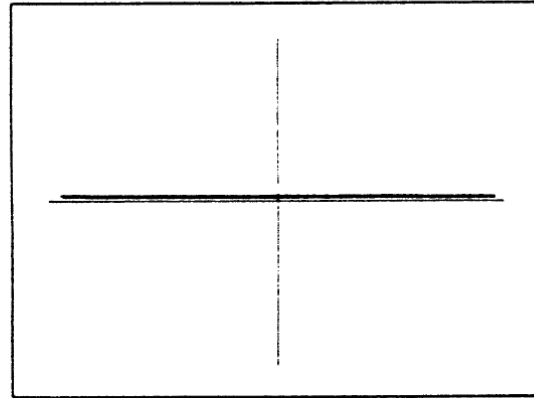
Analog Signature Examples



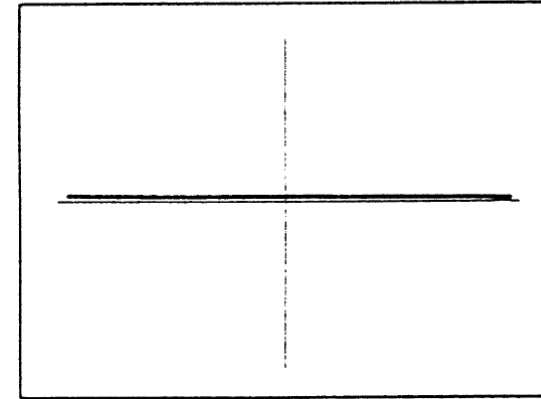
POWER TRANSFORMER
WITH BRIDGE RECTIFIER
ON SECONDARY

LOW frequency used

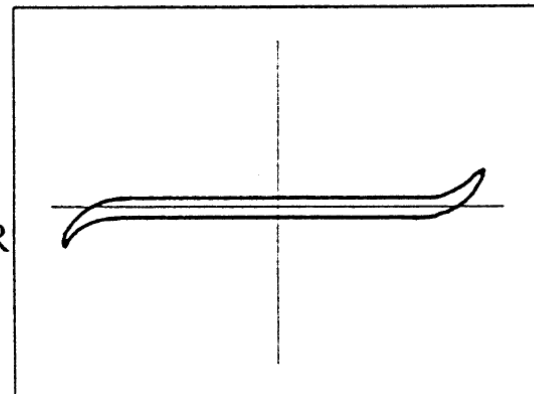
LOGIC



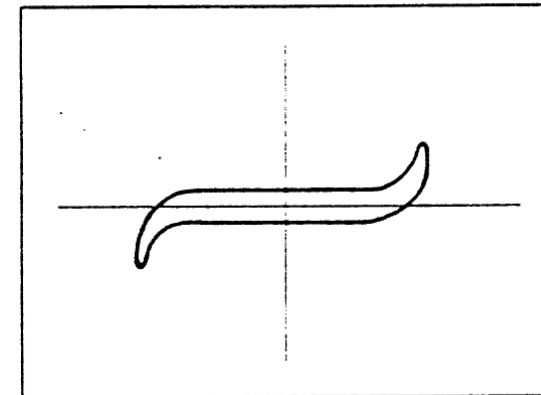
LOW



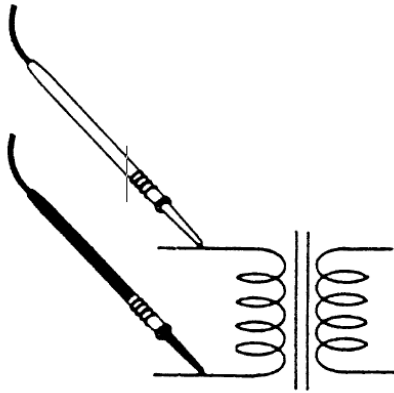
MEDIUM



HIGH



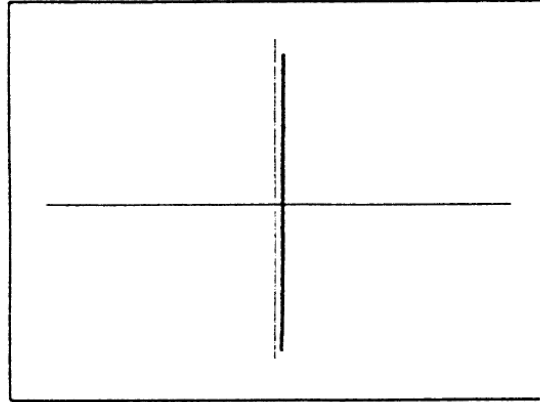
Analog Signature Examples



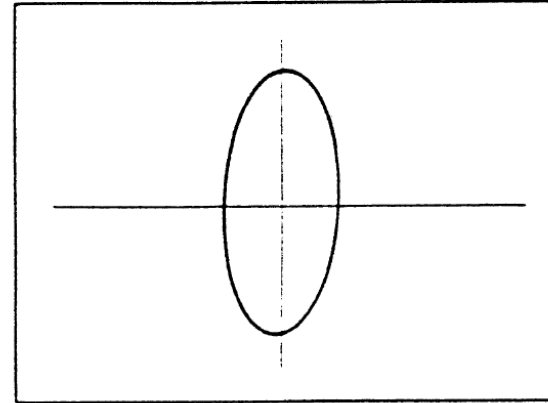
SMALL FERRITE
1:1 COUPLING
TRANSFORMER

HIGH frequency used

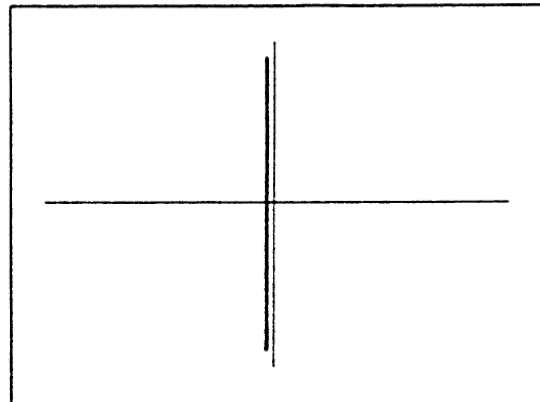
LOGIC



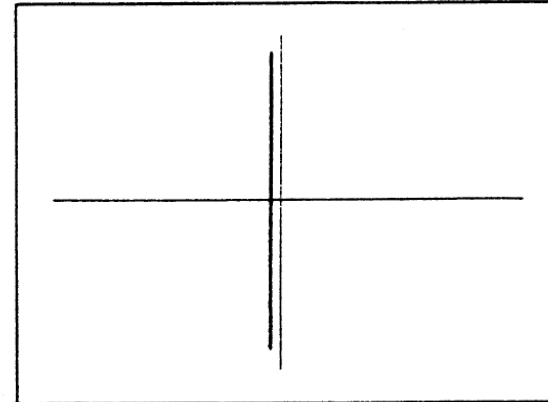
LOW



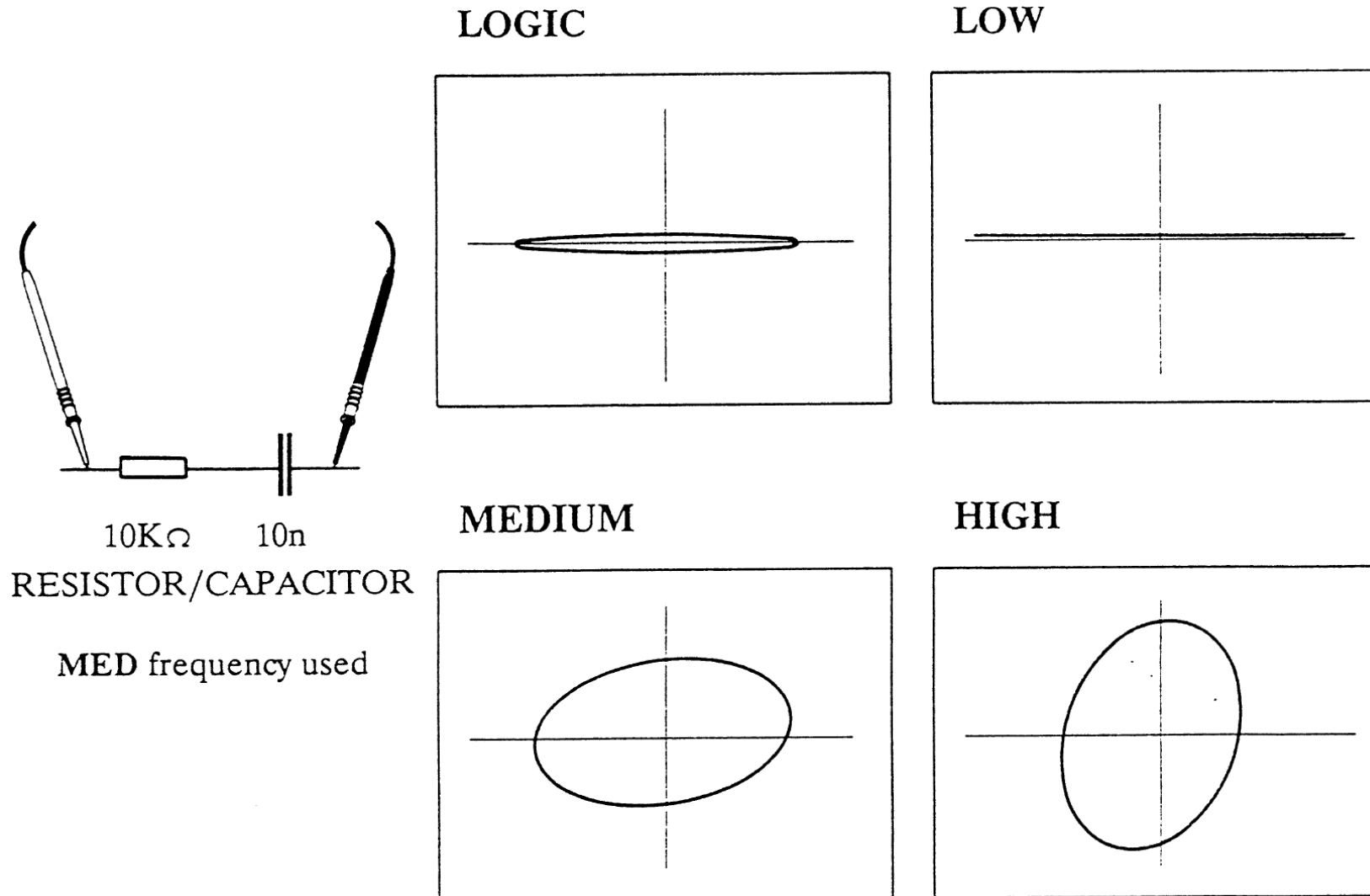
MEDIUM



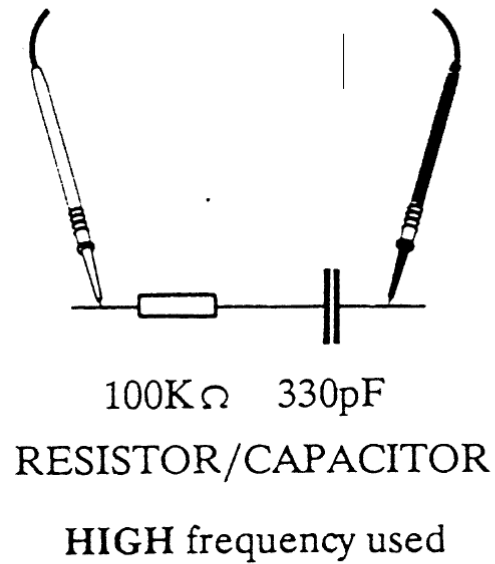
HIGH



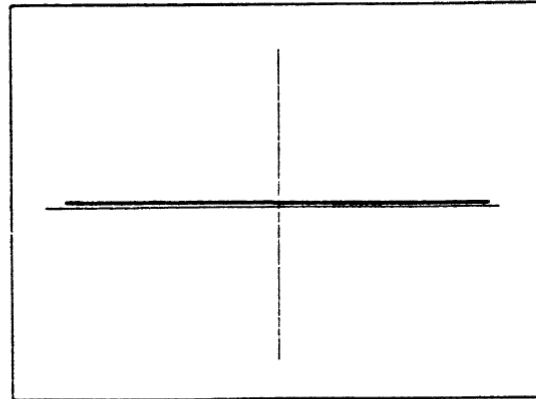
Analog Signature Examples



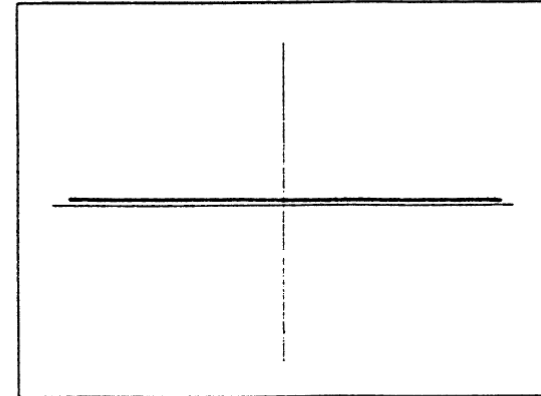
Analog Signature Examples



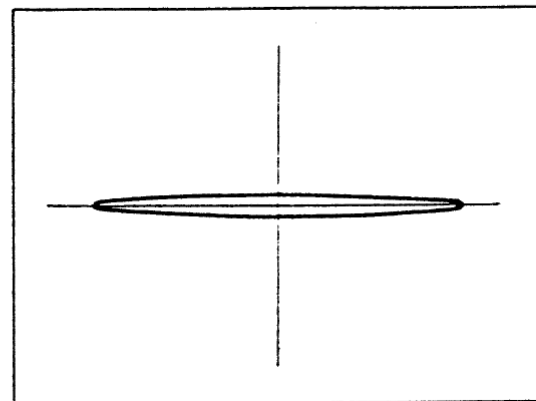
LOGIC



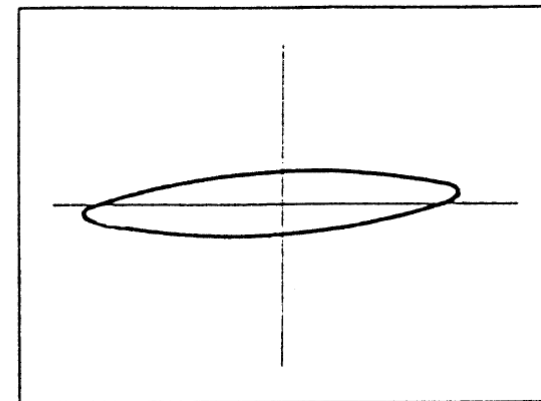
LOW



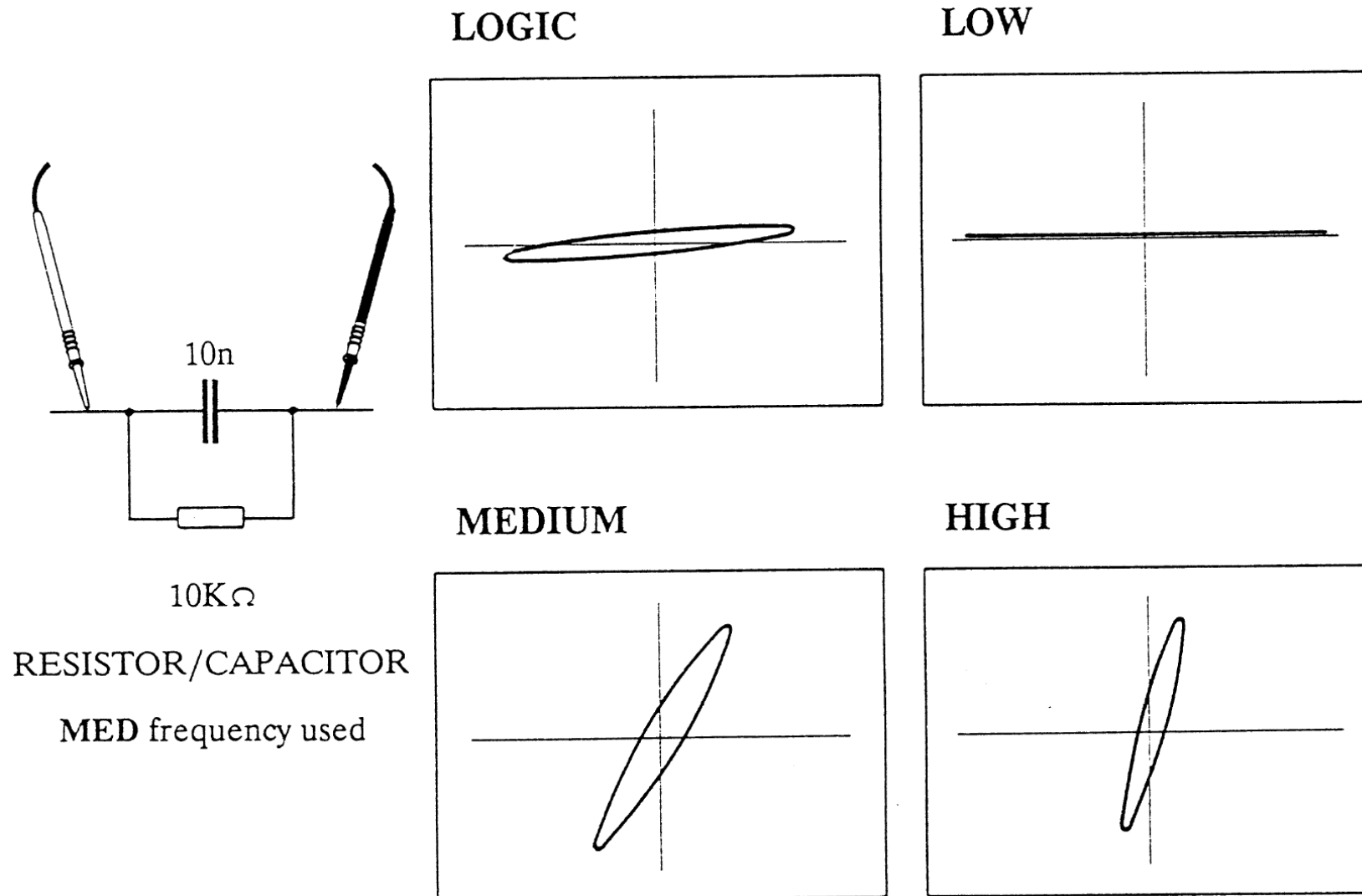
MEDIUM



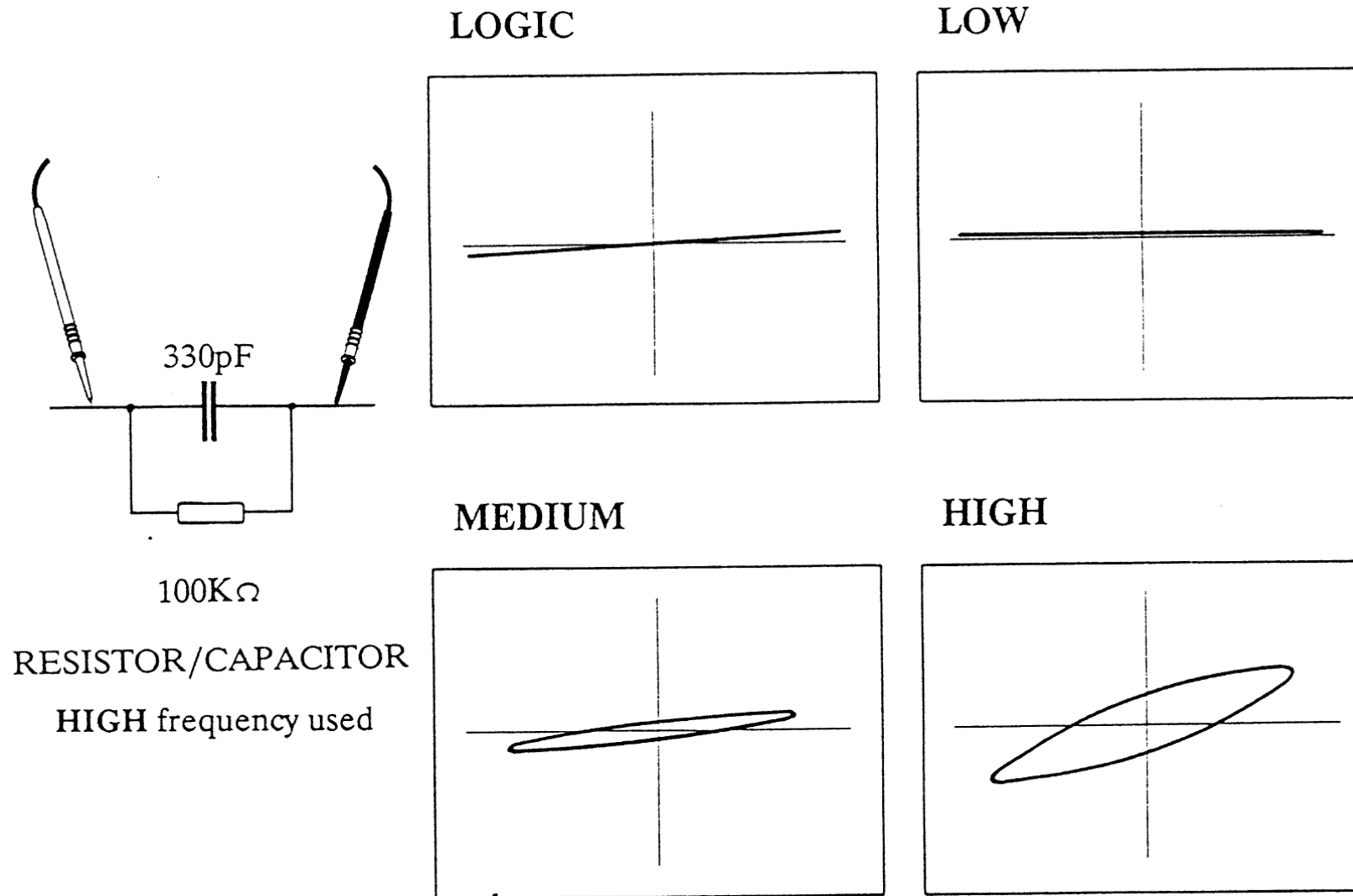
HIGH



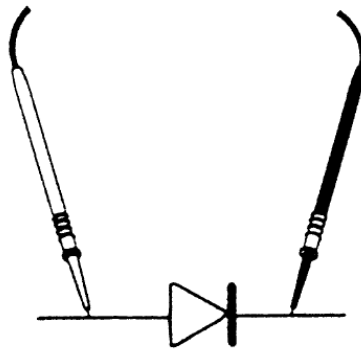
Analog Signature Examples



Analog Signature Examples

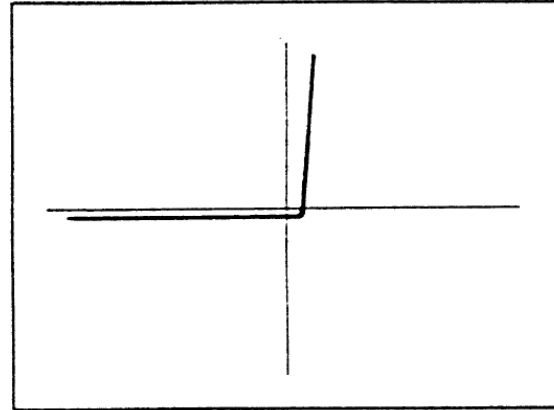


Analog Signature Examples

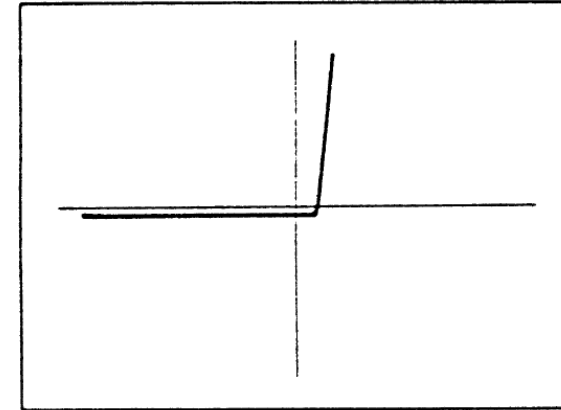


1N4148 SMALL
SIGNAL DIODE

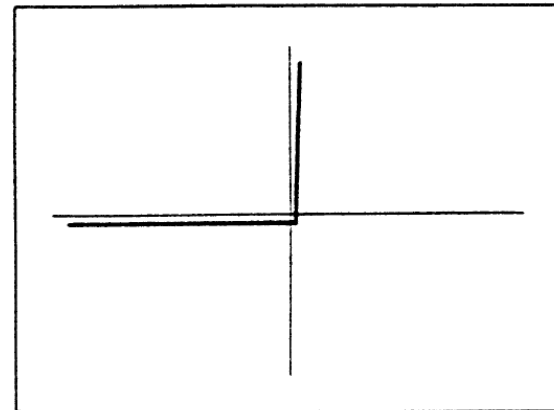
LOGIC



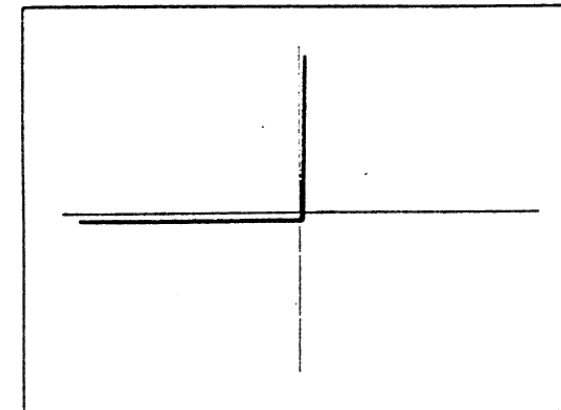
LOW



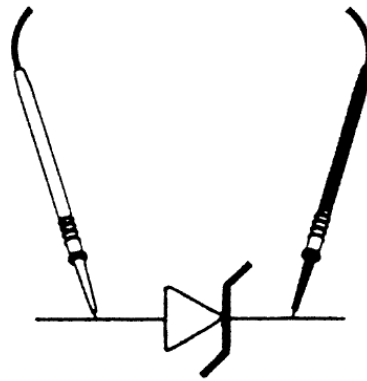
MEDIUM



HIGH

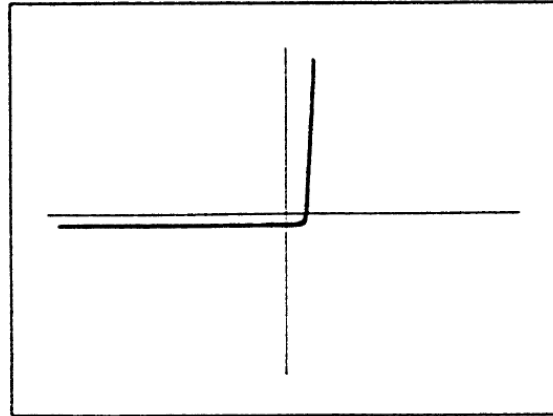


Analog Signature Examples

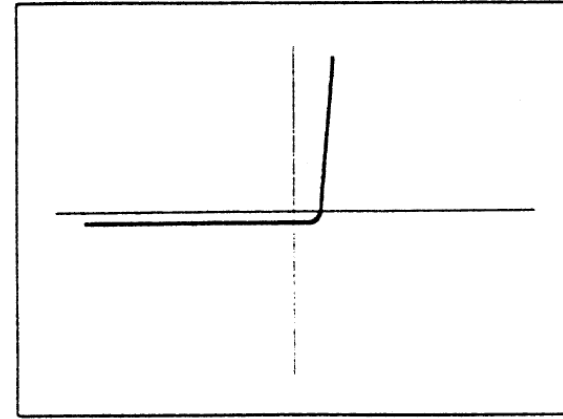


15V Zener

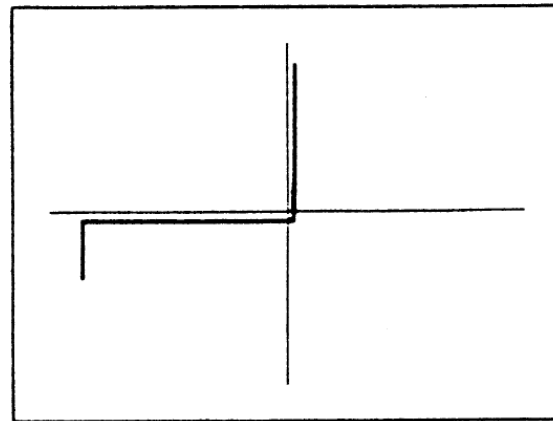
LOGIC



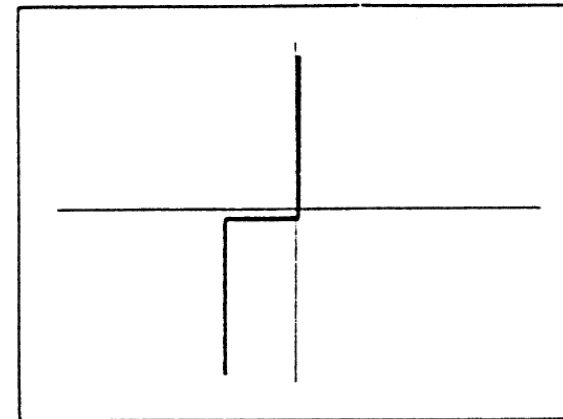
LOW



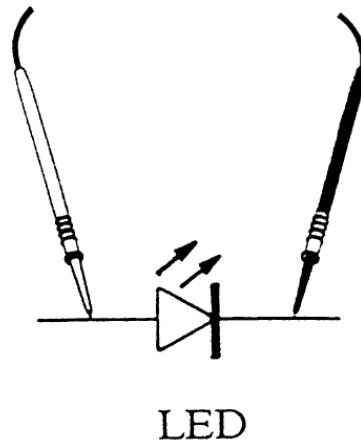
MEDIUM



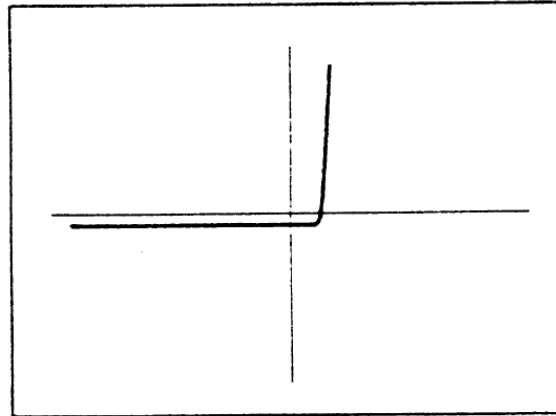
HIGH



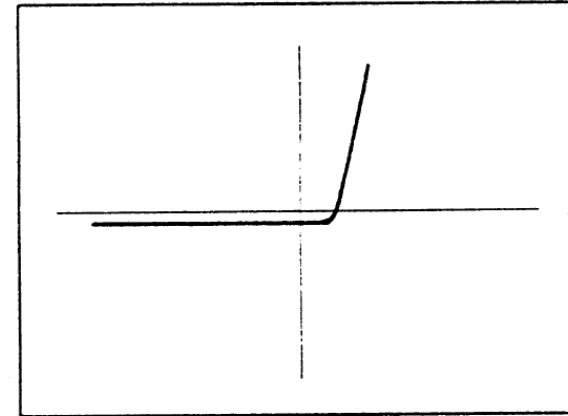
Analog Signature Examples



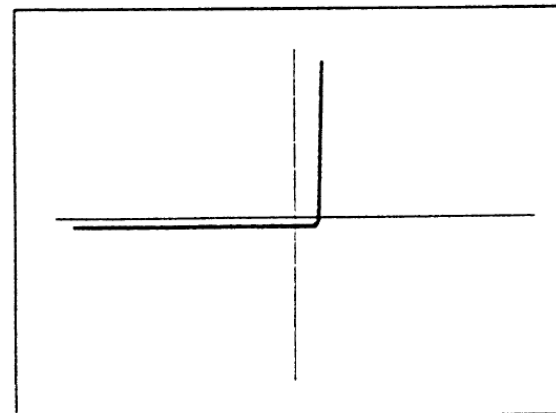
LOGIC



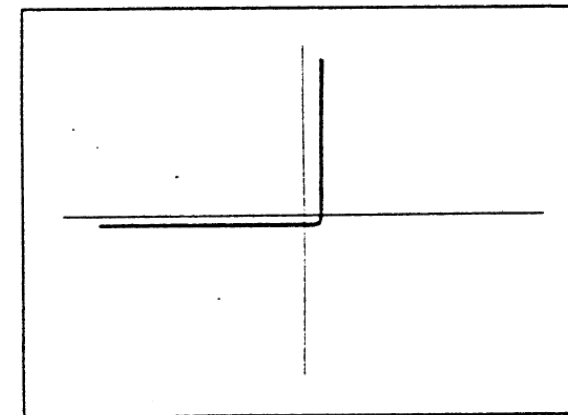
LOW



MEDIUM

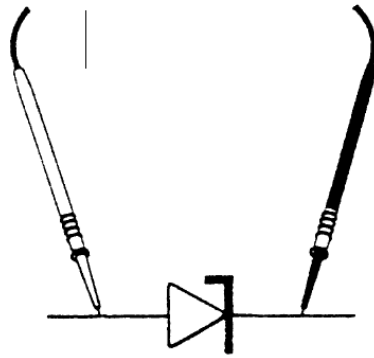


HIGH



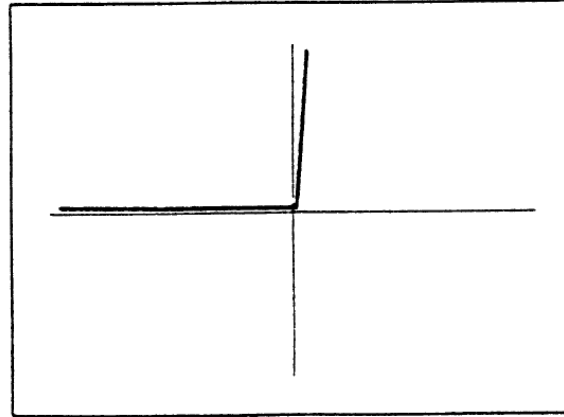
All measurements on this page in LOW frequency

Analog Signature Examples

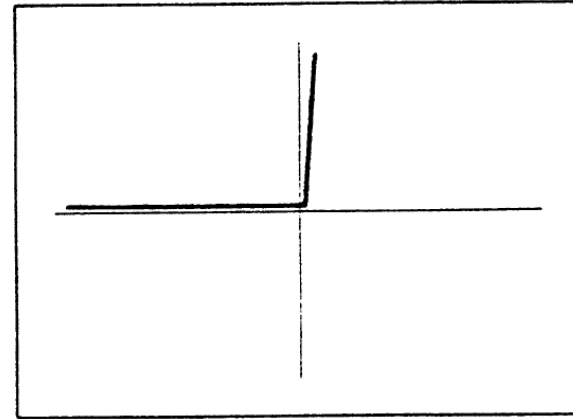


Schottky MBR735

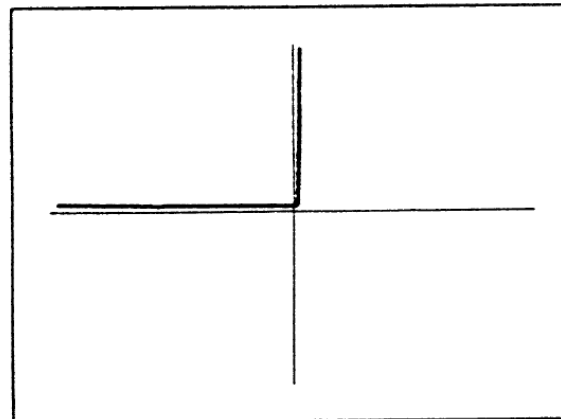
LOGIC



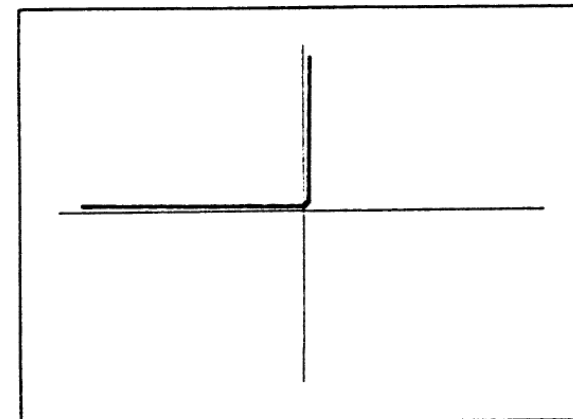
LOW



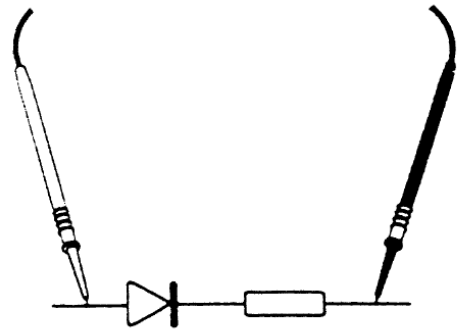
MEDIUM



HIGH



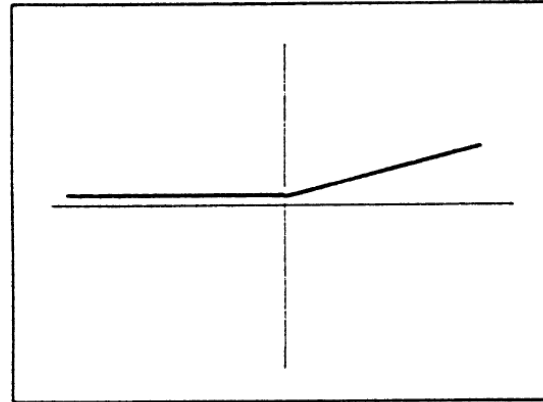
Analog Signature Examples



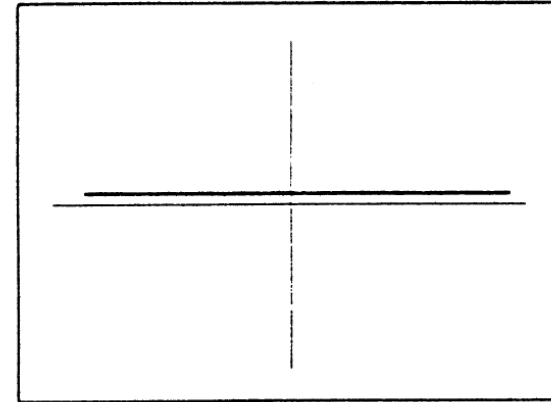
1N4148 10K Ω

DIODE/RESISTOR

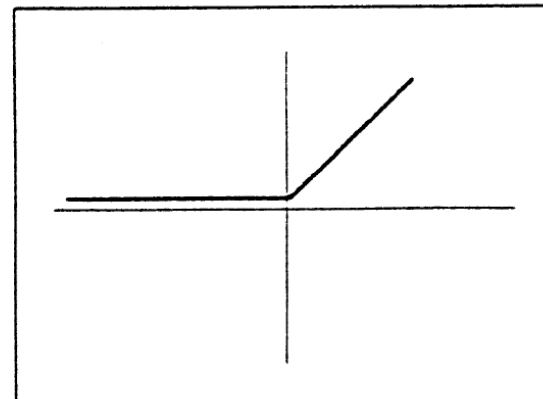
LOGIC



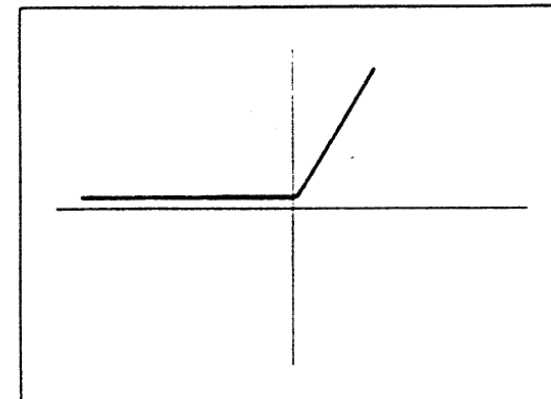
LOW



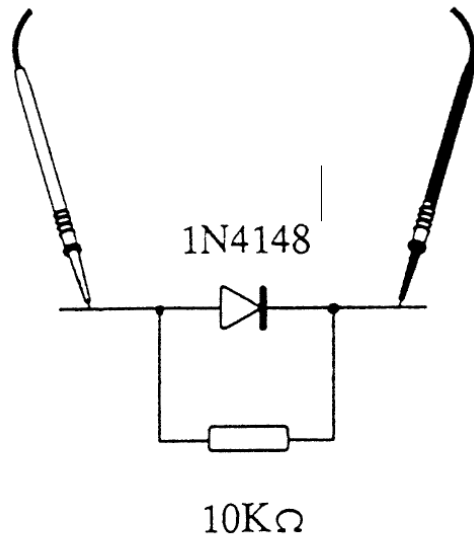
MEDIUM



HIGH

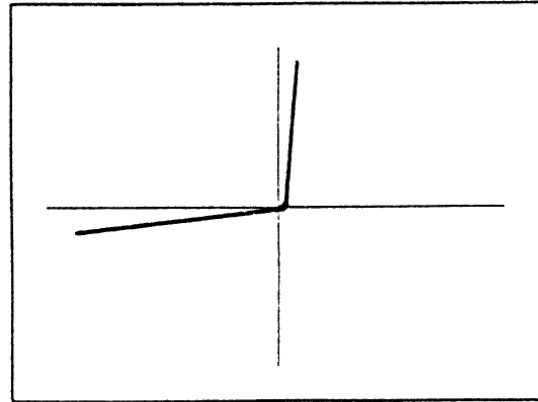


Analog Signature Examples

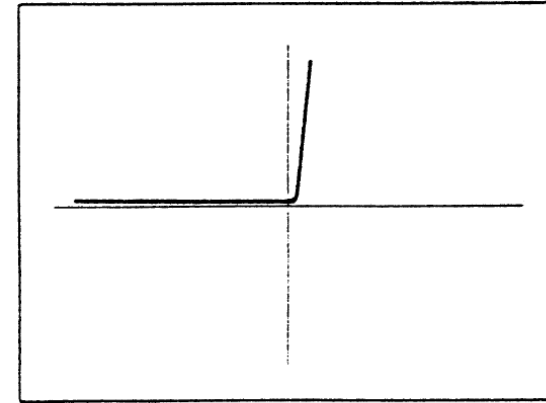


DIODE/RESISTOR

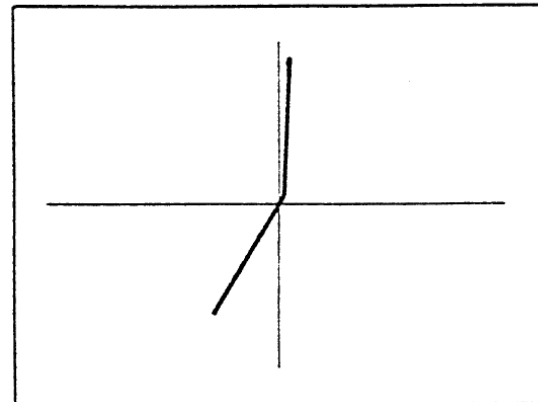
LOGIC



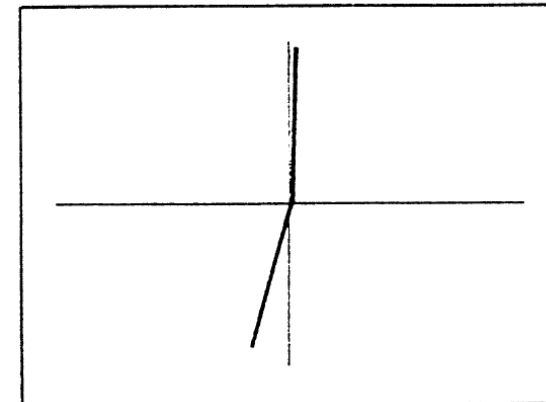
LOW



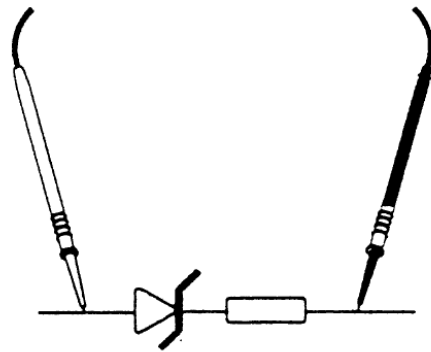
MEDIUM



HIGH



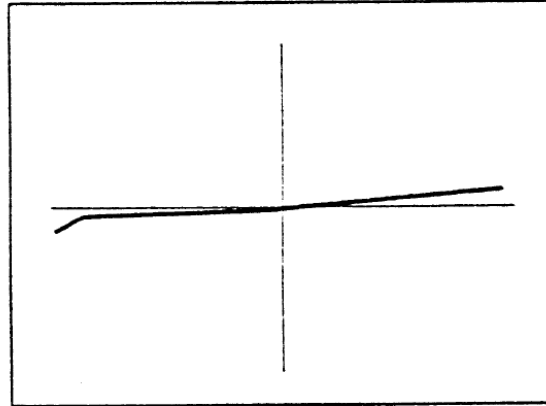
Analog Signature Examples



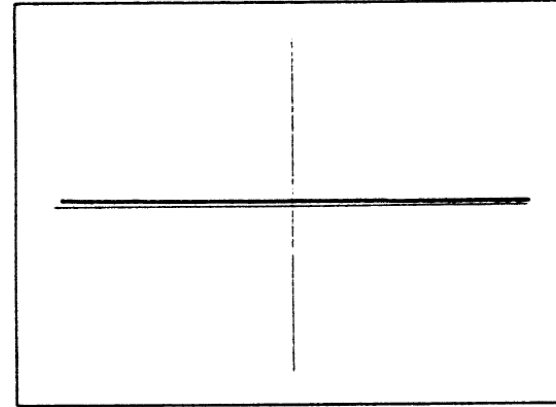
5V6 Zener 10K Ω

ZENER/RESISTOR

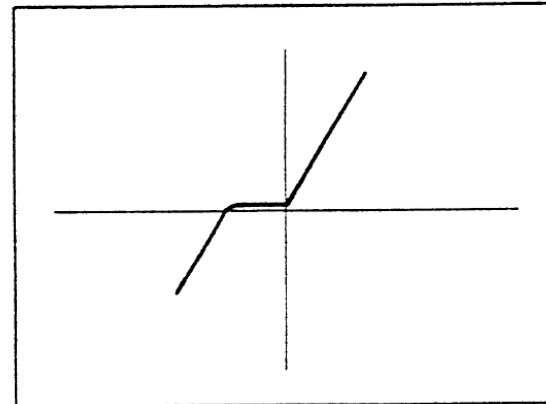
LOGIC



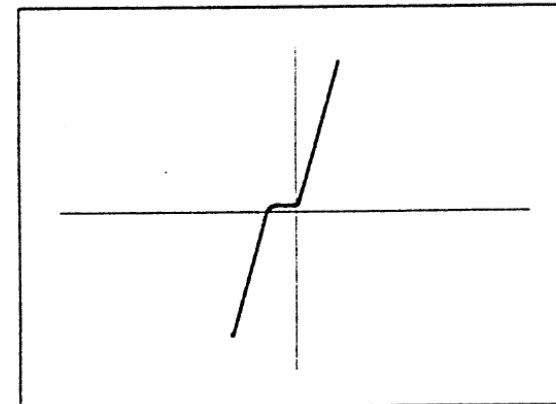
LOW



MEDIUM

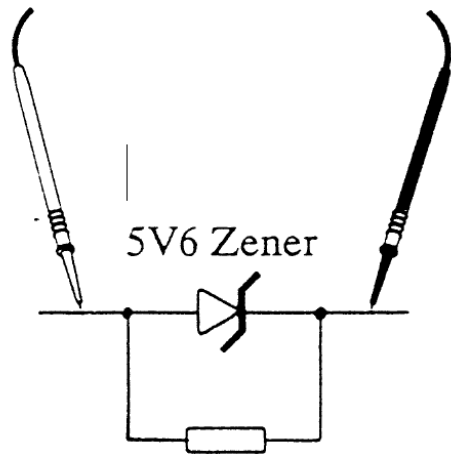


HIGH



All measurements on this page in LOW frequency

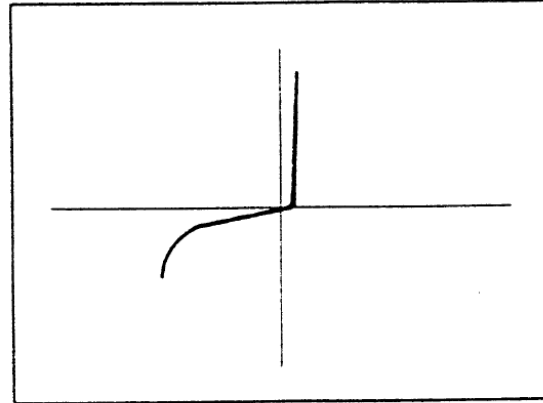
Analog Signature Examples



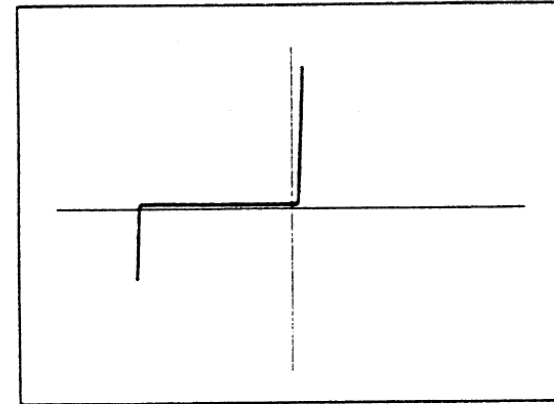
10K Ω

ZENER/RESISTOR

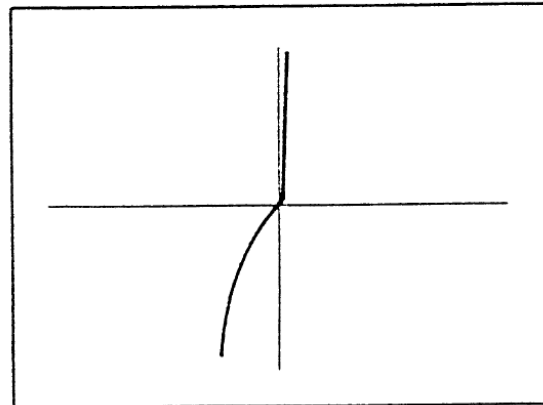
LOGIC



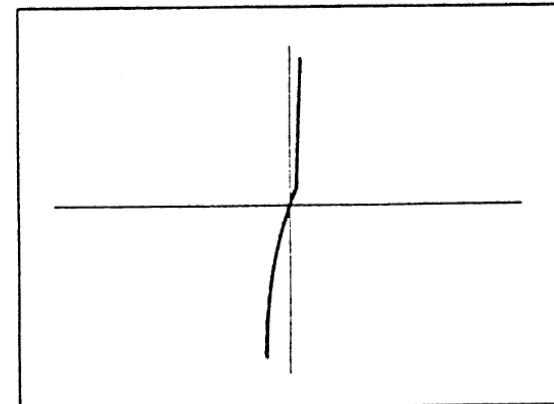
LOW



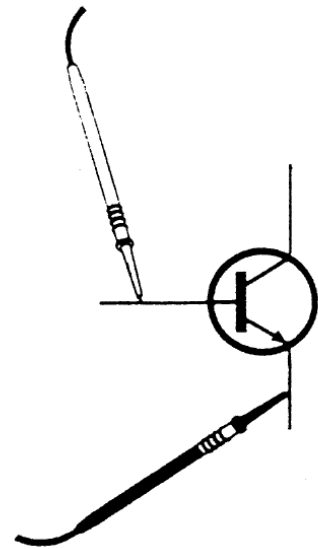
MEDIUM



HIGH

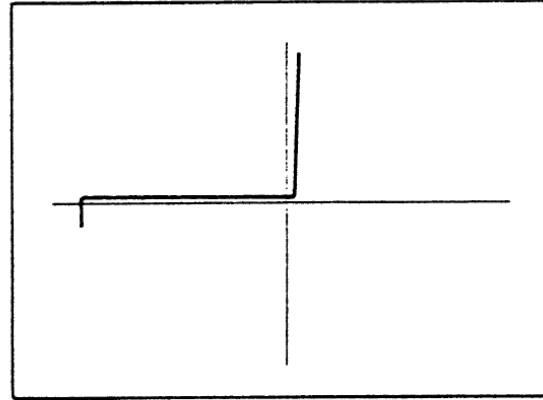


Analog Signature Examples

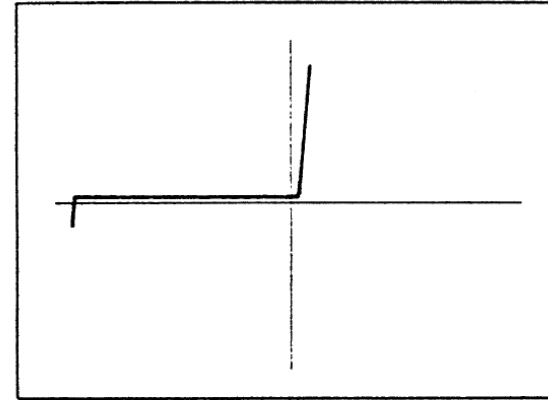


TYPICAL SMALL
SIGNAL (2N3904)
NPN TRANSISTOR

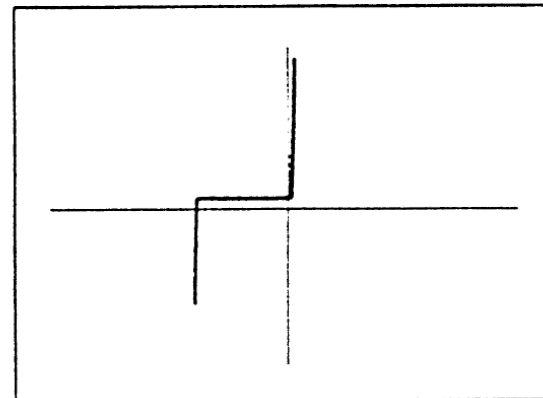
LOGIC



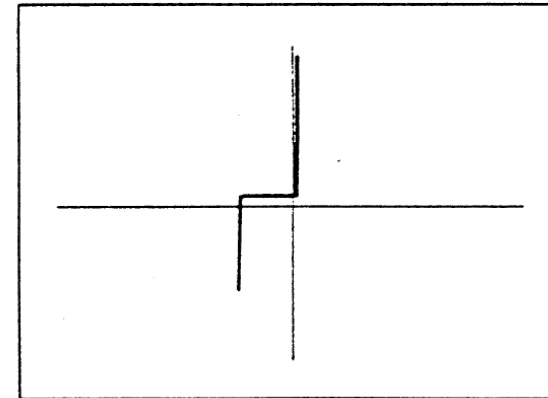
LOW



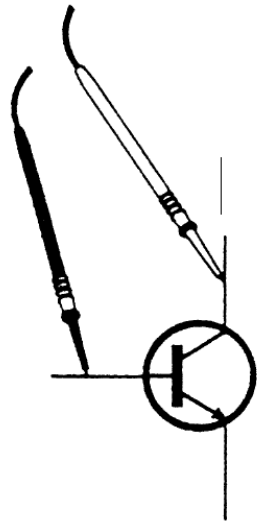
MEDIUM



HIGH

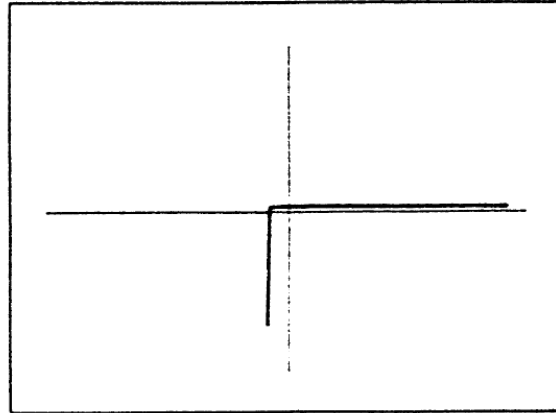


Analog Signature Examples

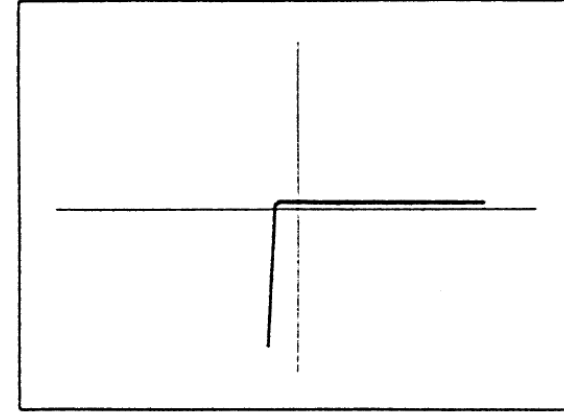


TYPICAL SMALL
SIGNAL (2N3904)
NPN TRANSISTOR

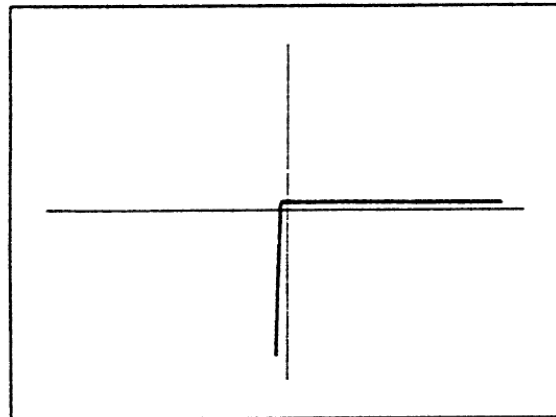
LOGIC



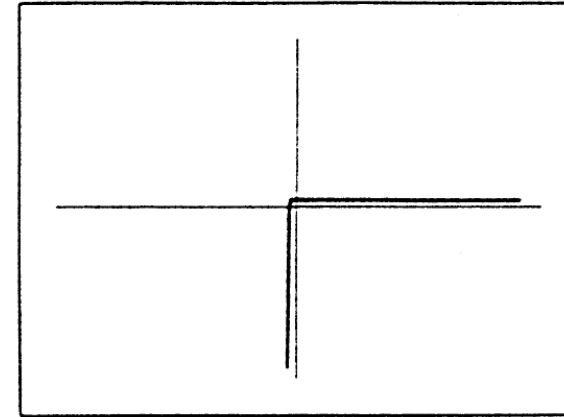
LOW



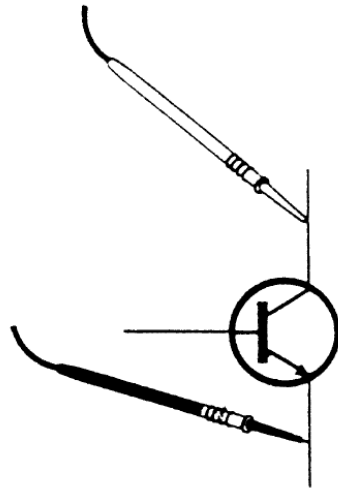
MEDIUM



HIGH

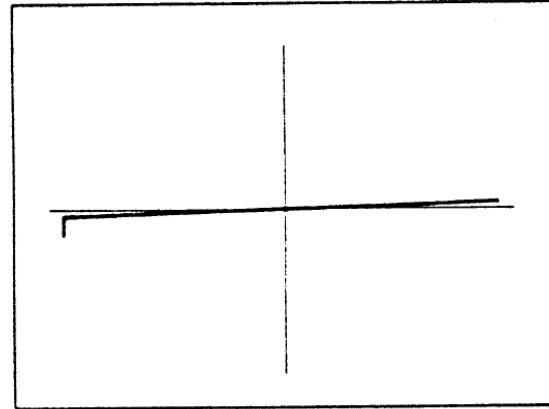


Analog Signature Examples

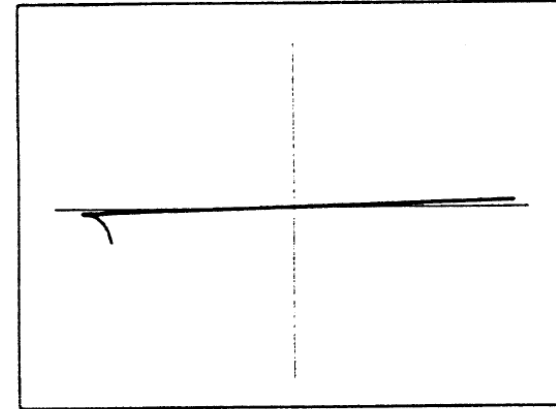


TYPICAL SMALL
SIGNAL (2N3904)
NPN TRANSISTOR

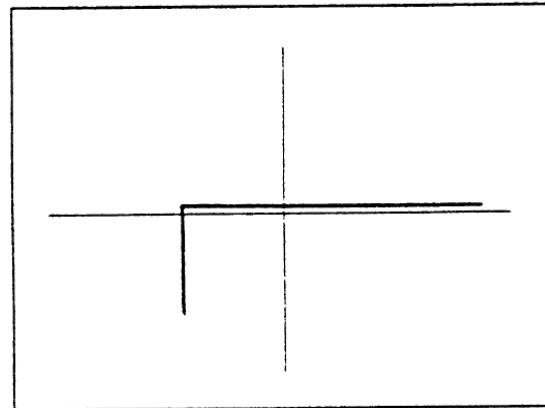
LOGIC



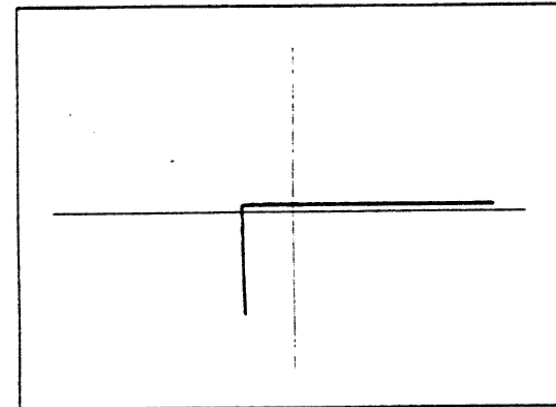
LOW



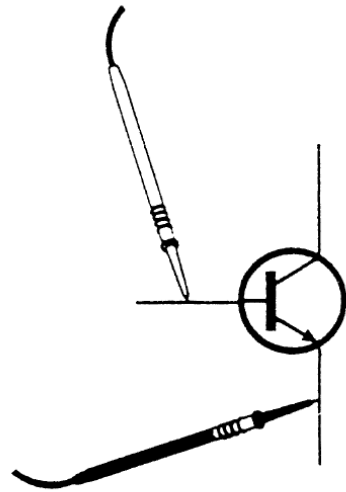
MEDIUM



HIGH

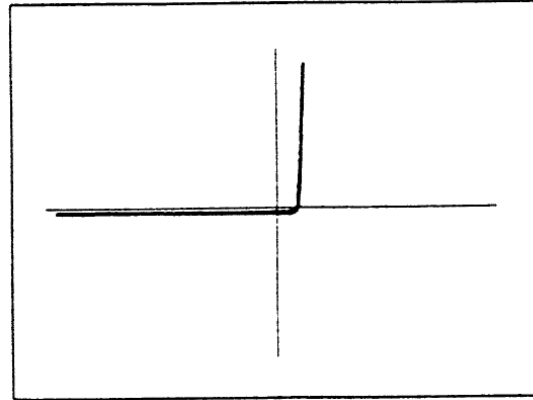


Analog Signature Examples

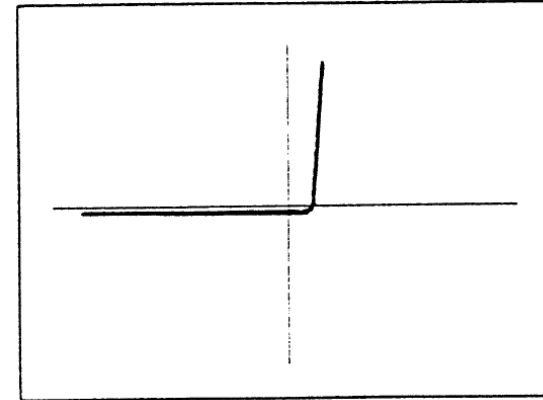


TYPICAL SMALL
SIGNAL DARLINGTON
(2N5308)
NPN TRANSISTOR

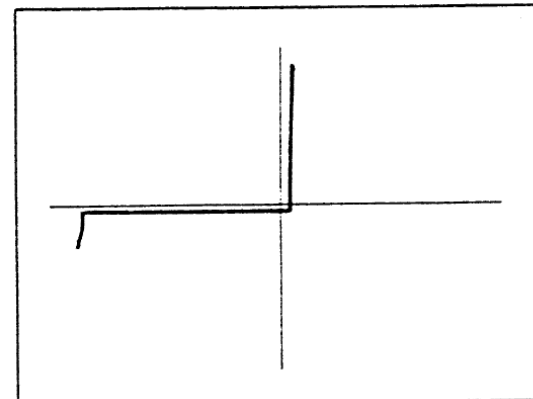
LOGIC



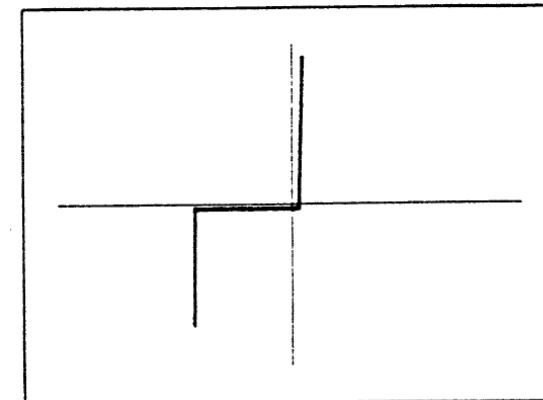
LOW



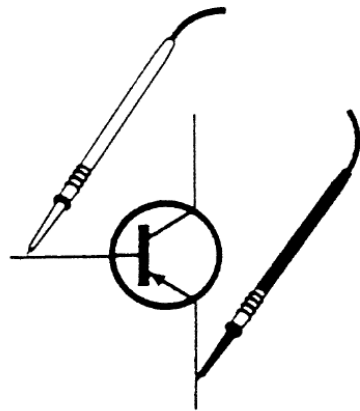
MEDIUM



HIGH

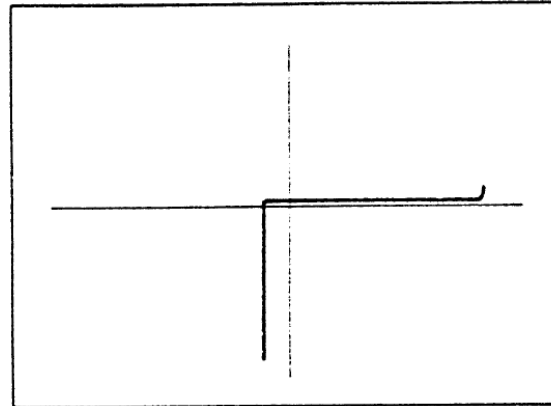


Analog Signature Examples

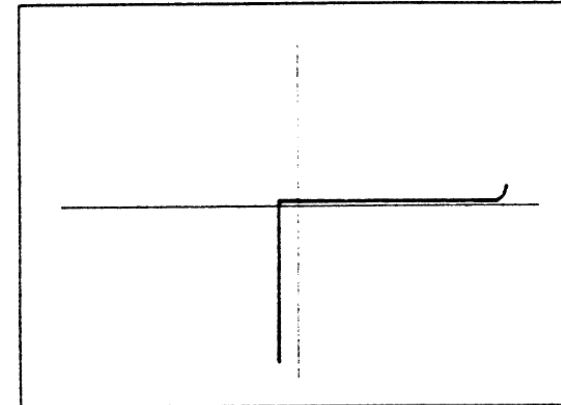


TYPICAL SMALL
SIGNAL (2N3906)
PNP TRANSISTOR

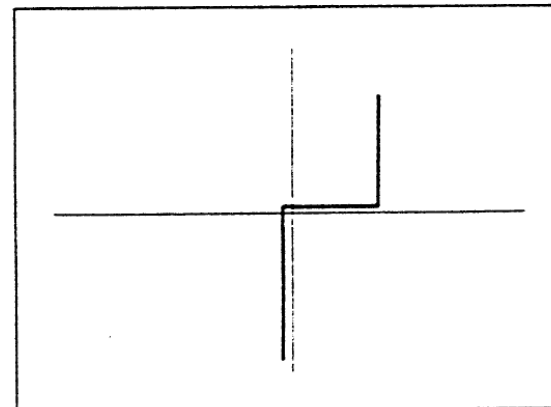
LOGIC



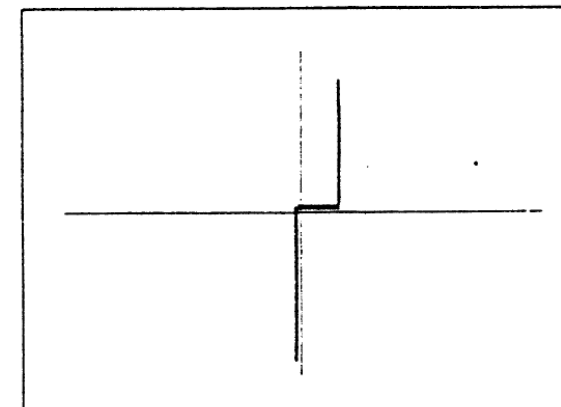
LOW



MEDIUM

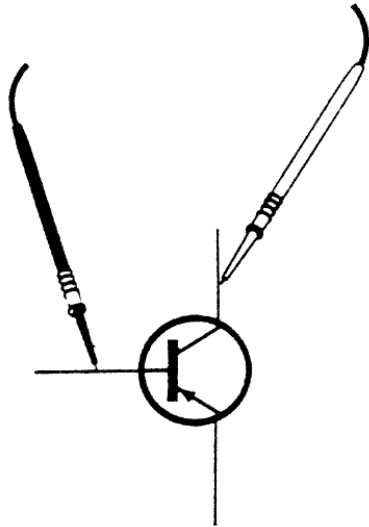


HIGH



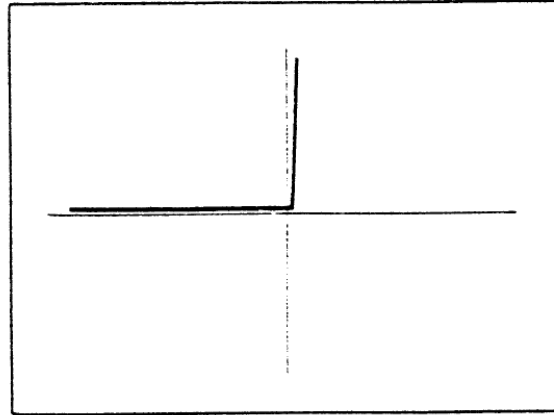
All measurements on this page in LOW frequency

Analog Signature Examples

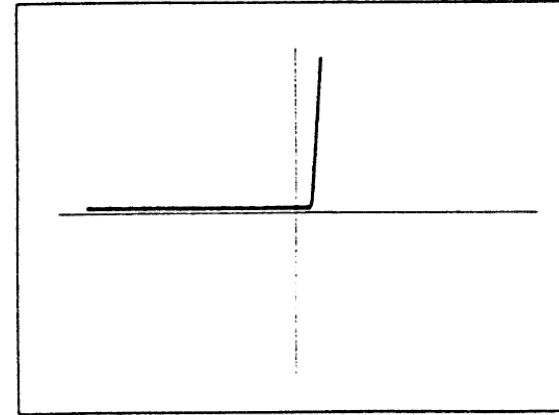


TYPICAL SMALL
SIGNAL (2N3906)
PNP TRANSISTOR

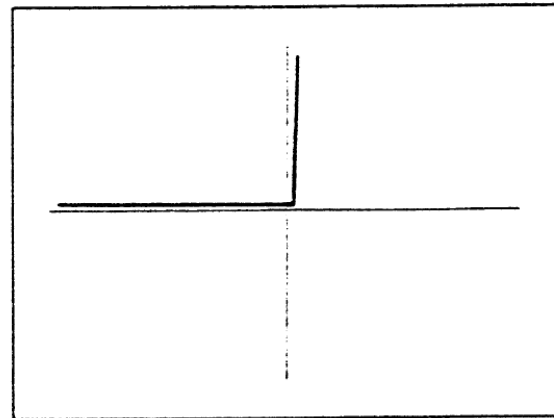
LOGIC



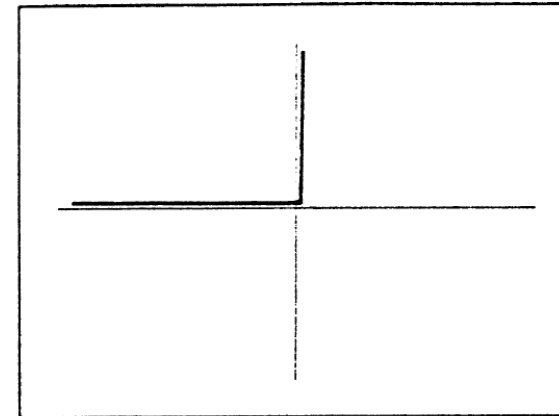
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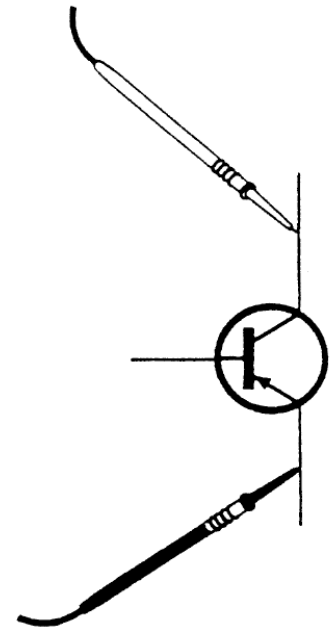
MEDIUM



HIGH

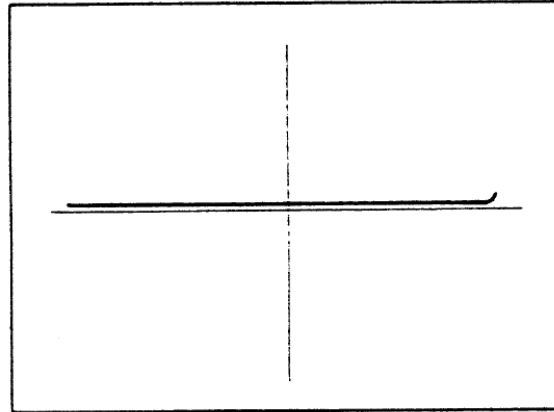


Analog Signature Examples

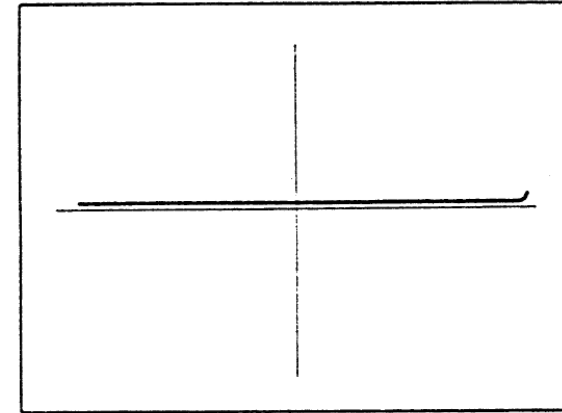


TYPICAL SMALL
SIGNAL (2N3906)
PNP TRANSISTOR

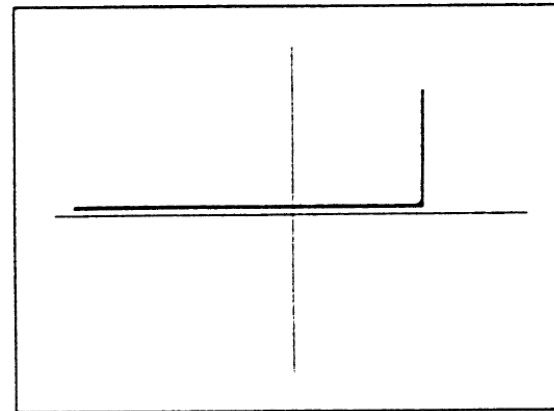
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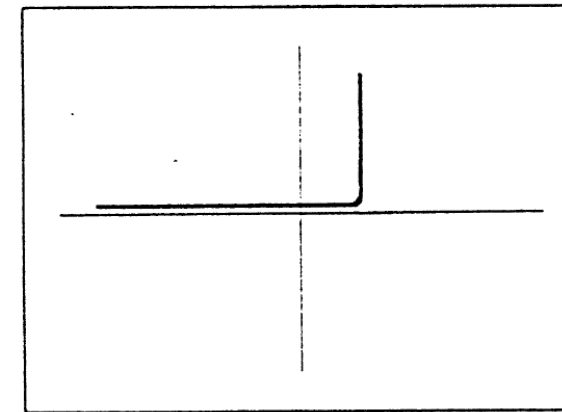
LOW



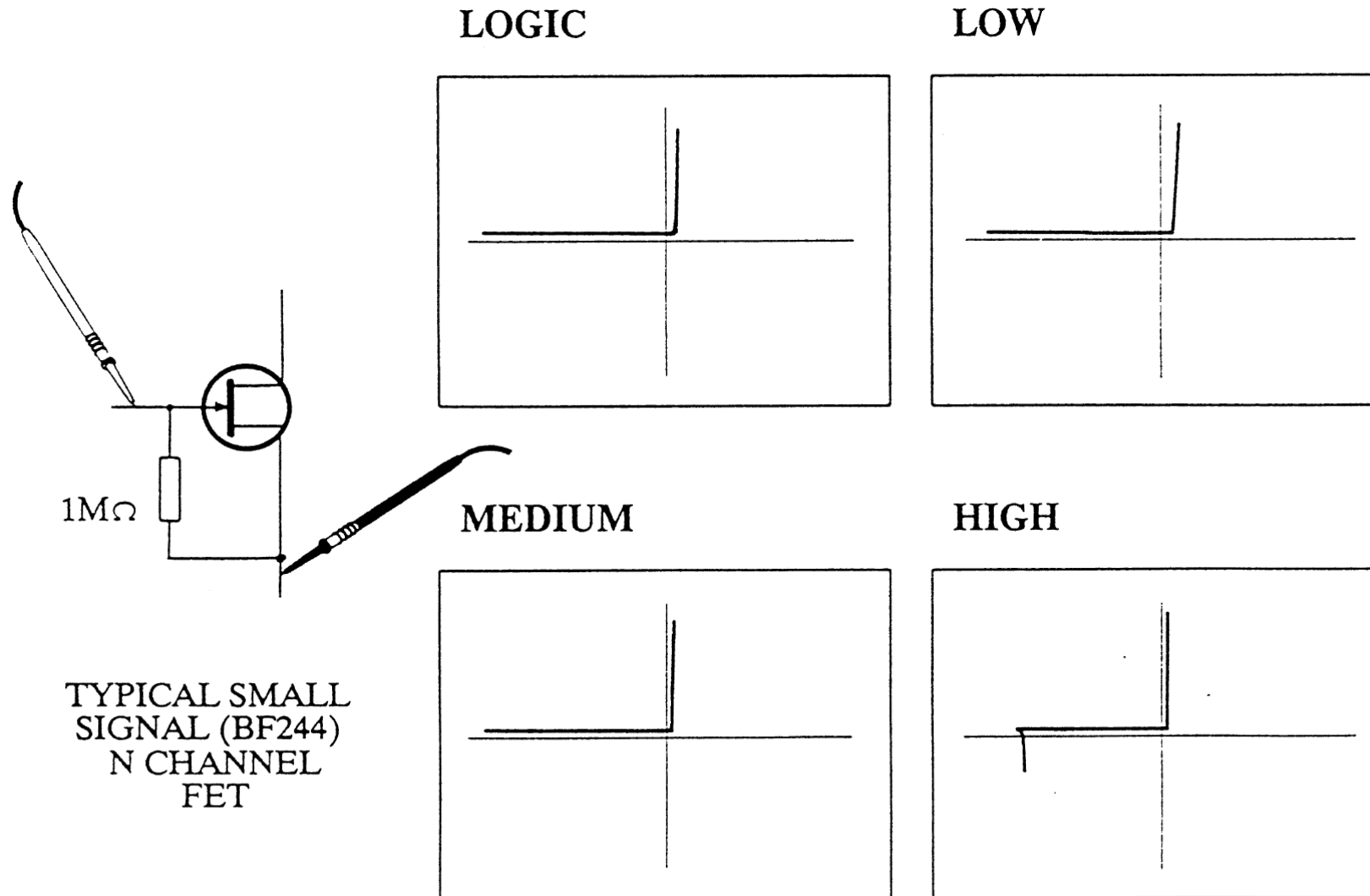
MEDIUM



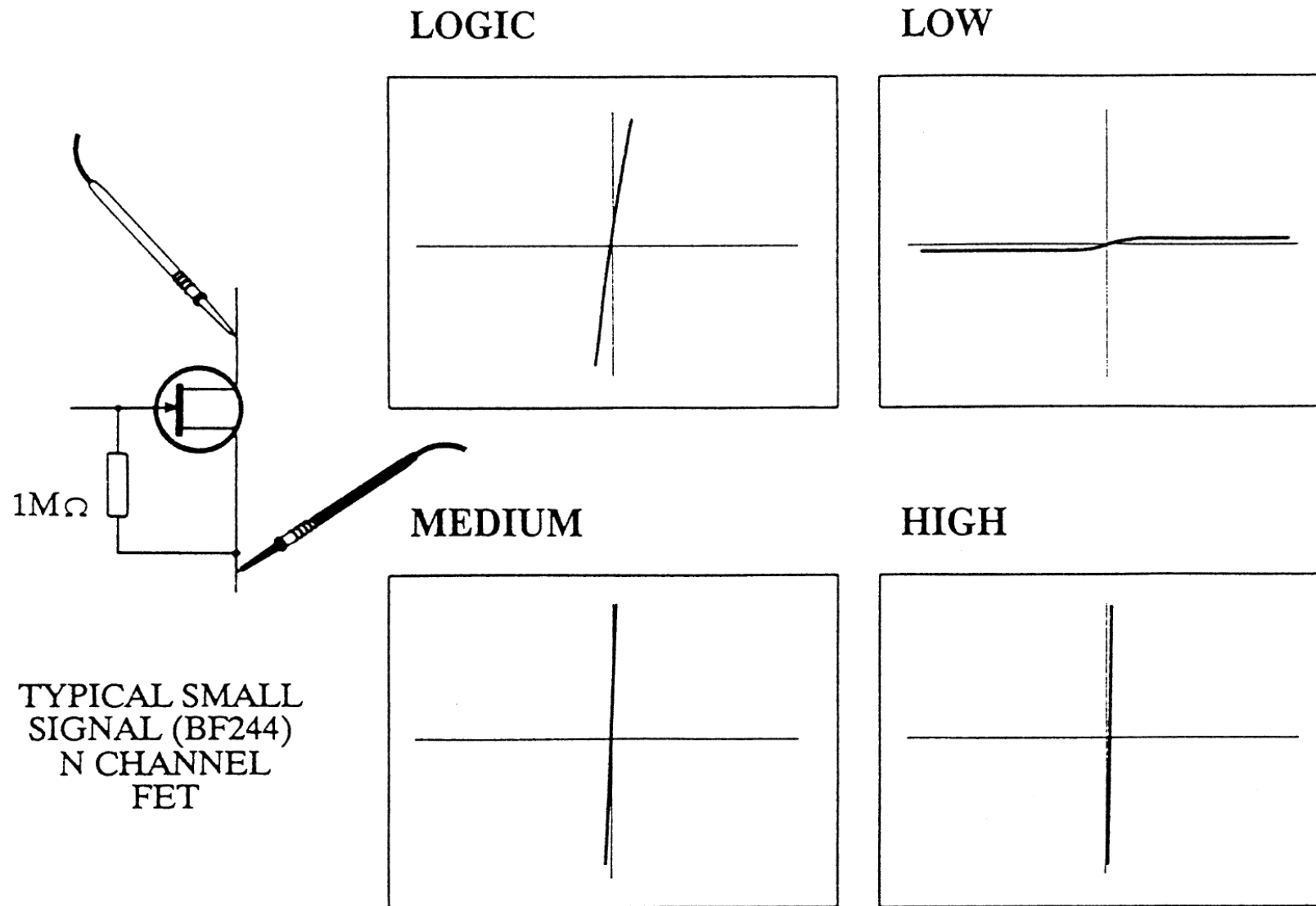
HIGH



Analog Signature Examples

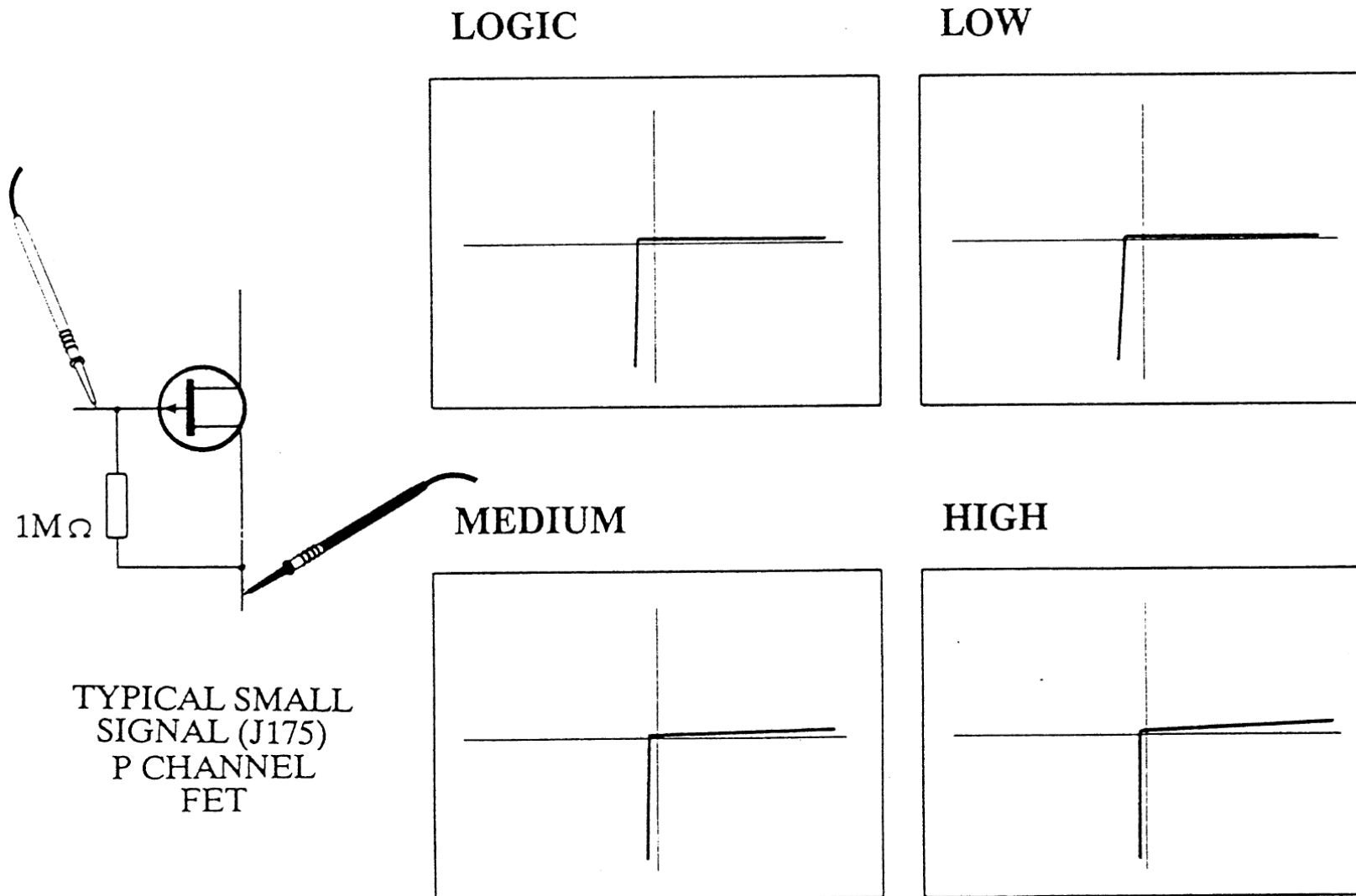


Analog Signature Examples



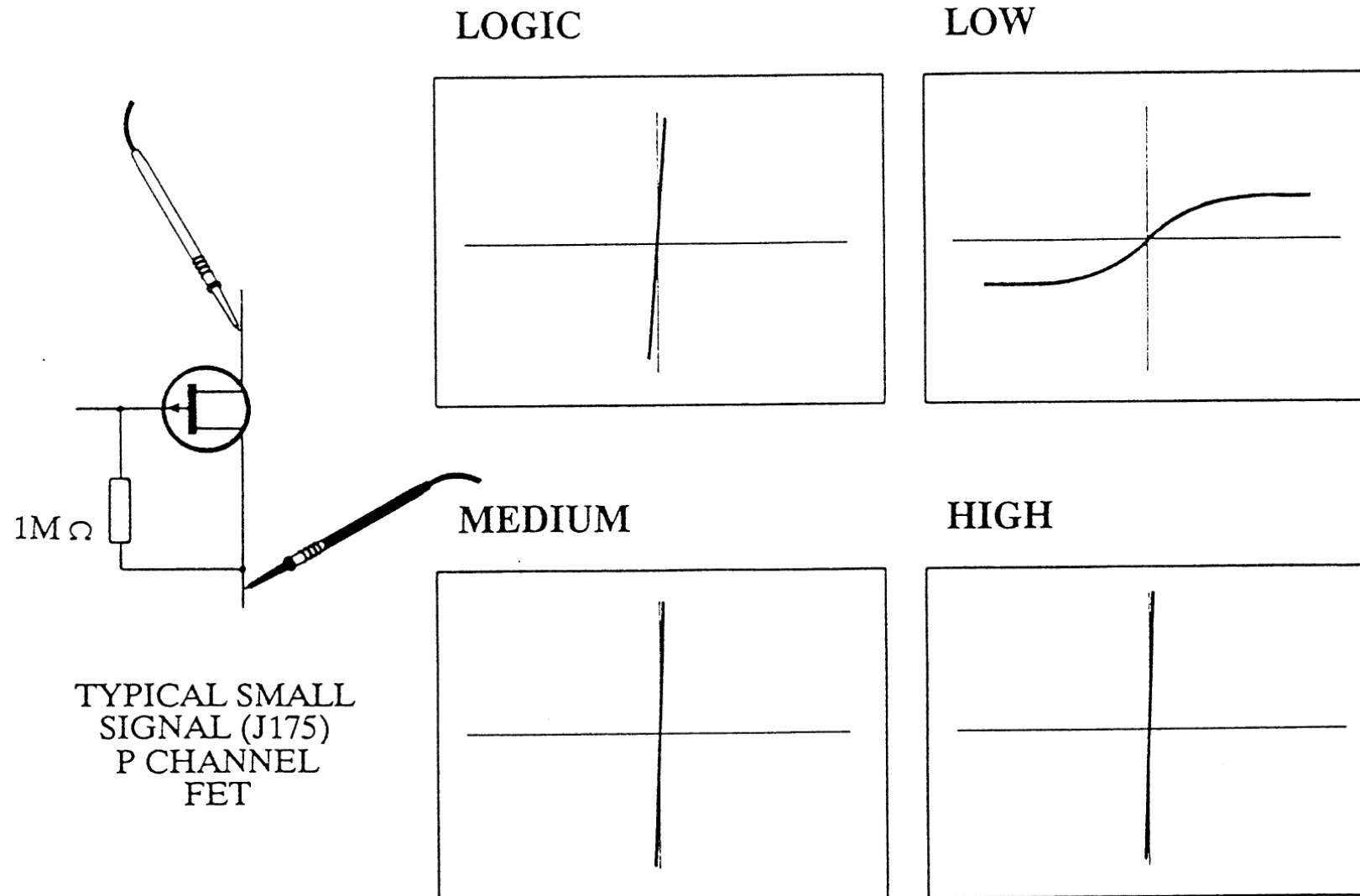
All measurements on this page in LOW frequency

Analog Signature Examples

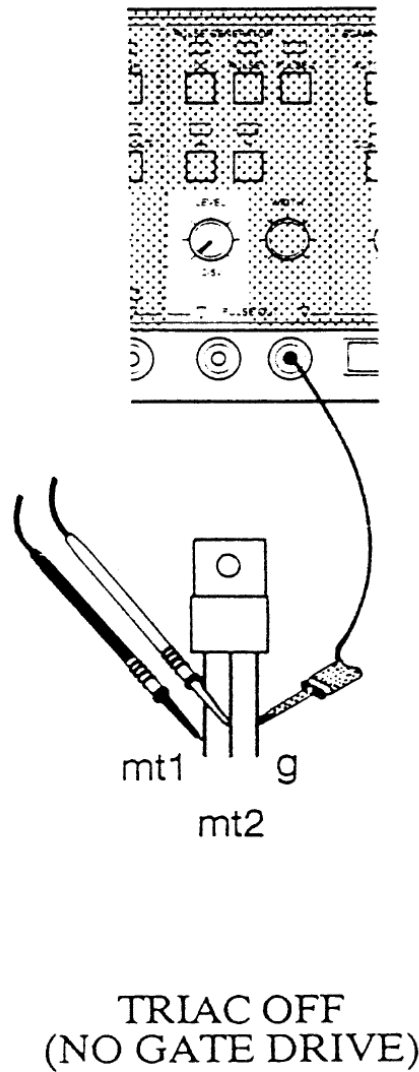


All measurements on this page in LOW frequency

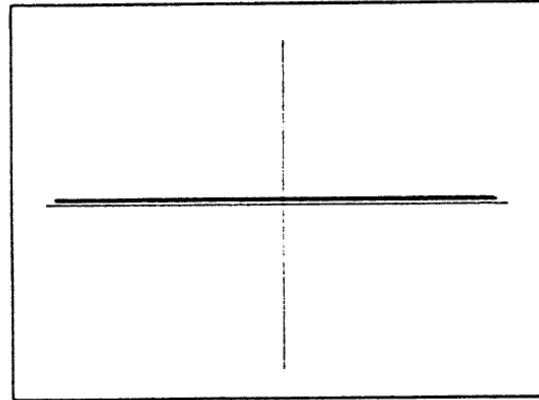
Analog Signature Examples



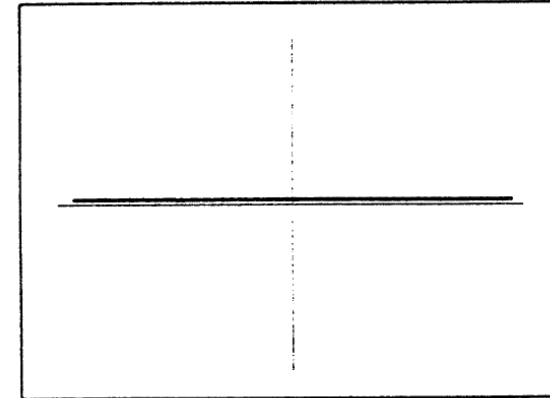
Analog Signature Examples



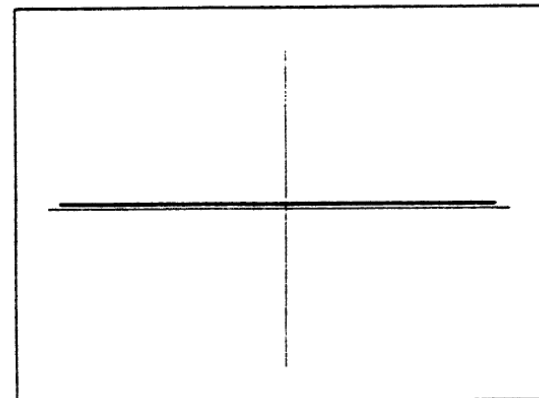
LOGIC



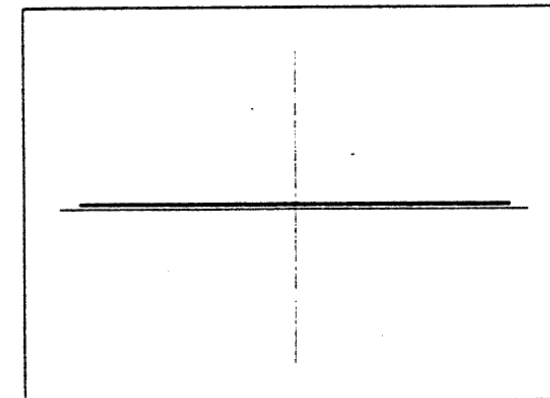
LOW



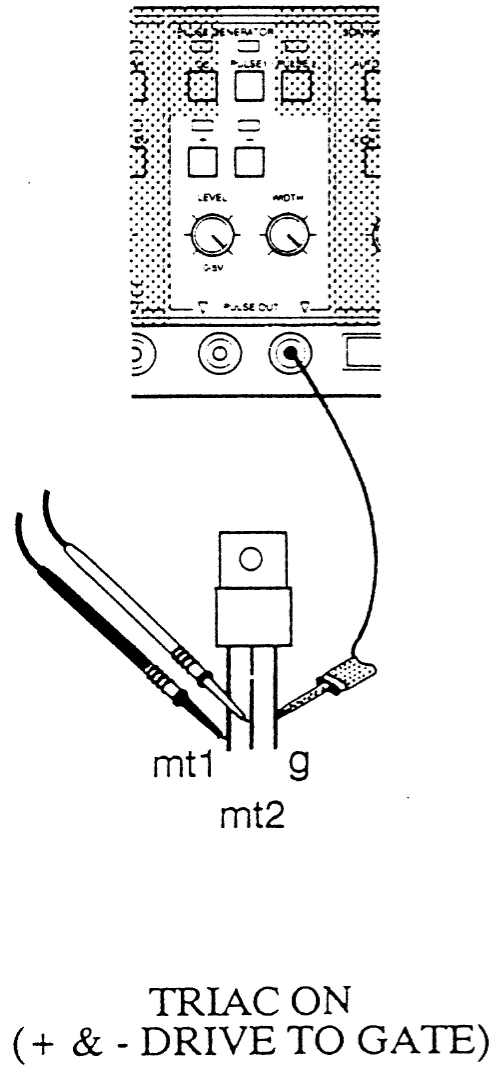
MEDIUM



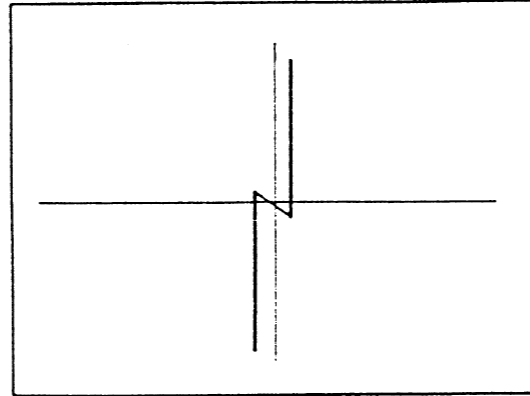
HIGH



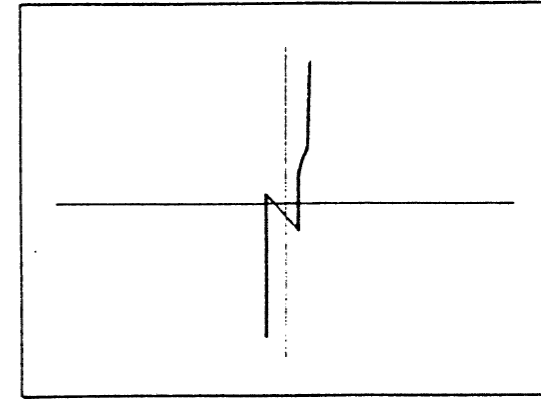
Analog Signature Examples



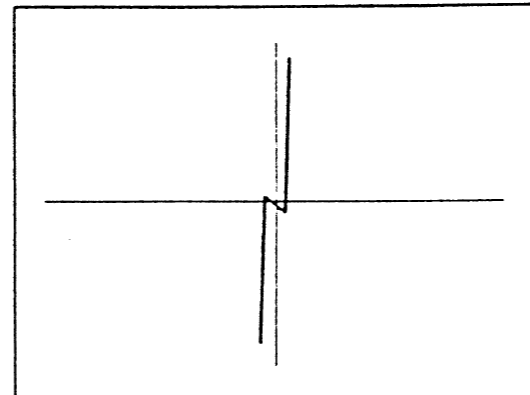
LOGIC



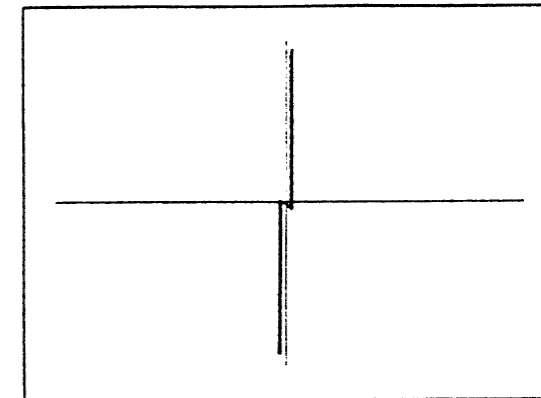
LOW



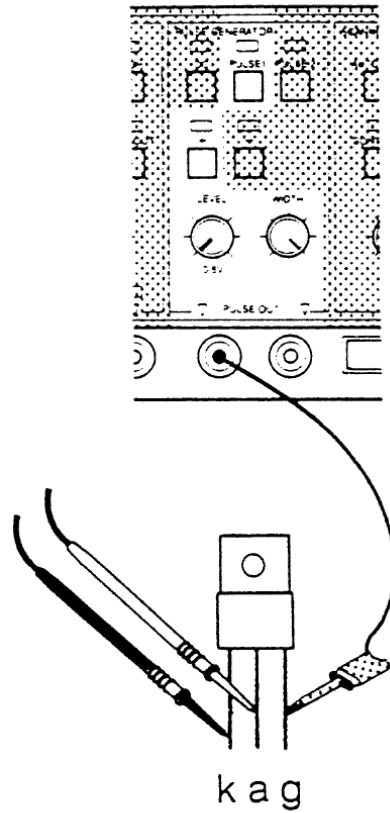
MEDIUM



HIGH

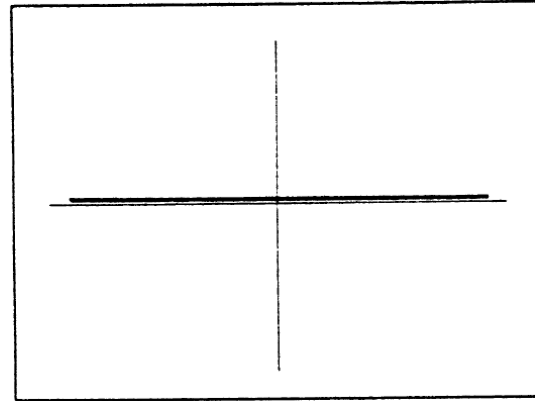


Analog Signature Examples

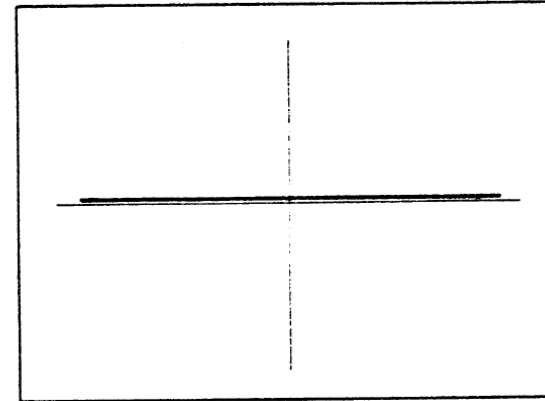


SCR OFF
(NO GATE DRIVE)

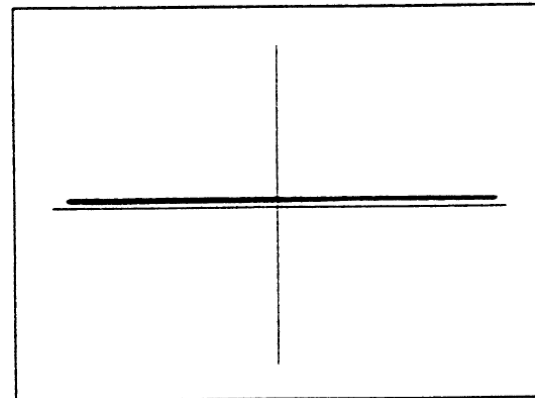
LOGIC



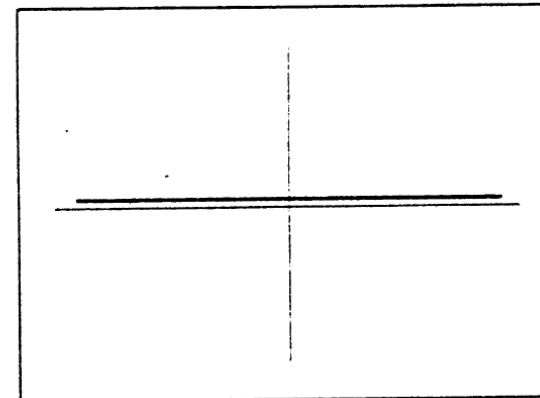
LOW



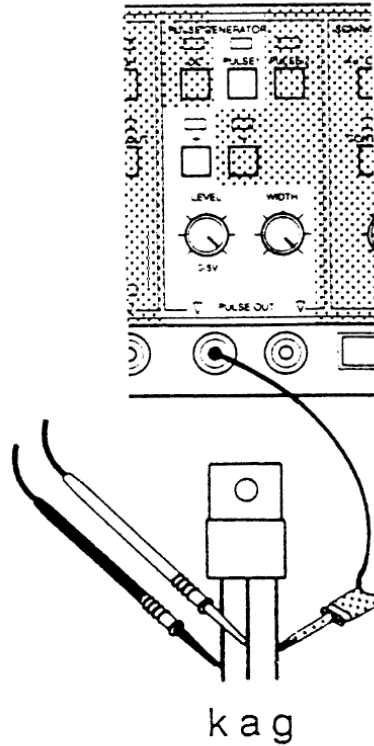
MEDIUM



HIGH

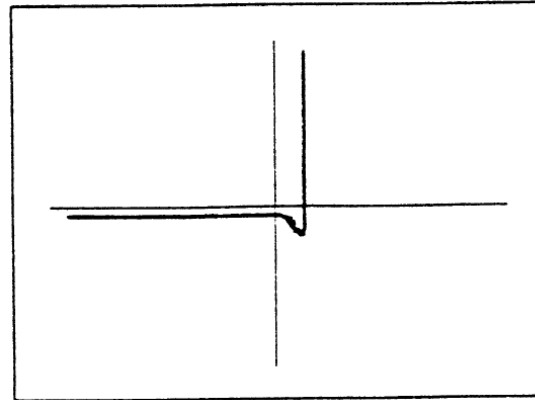


Analog Signature Examples

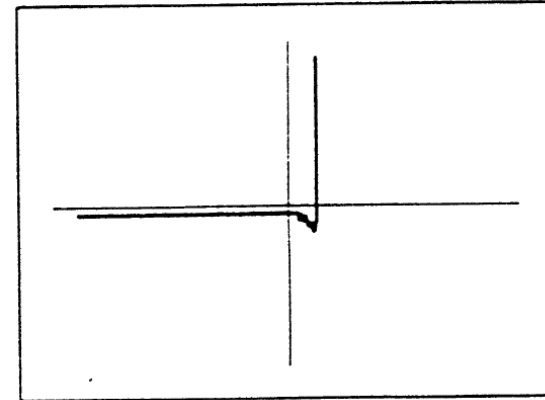


SCR ON
(+ DRIVE TO GATE)

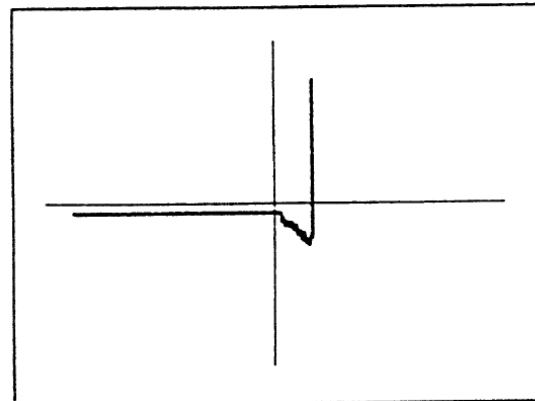
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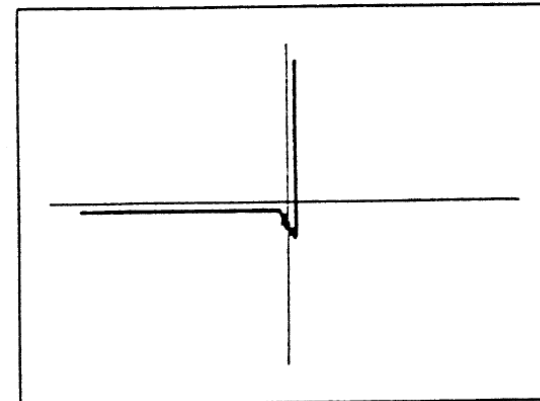
LOW



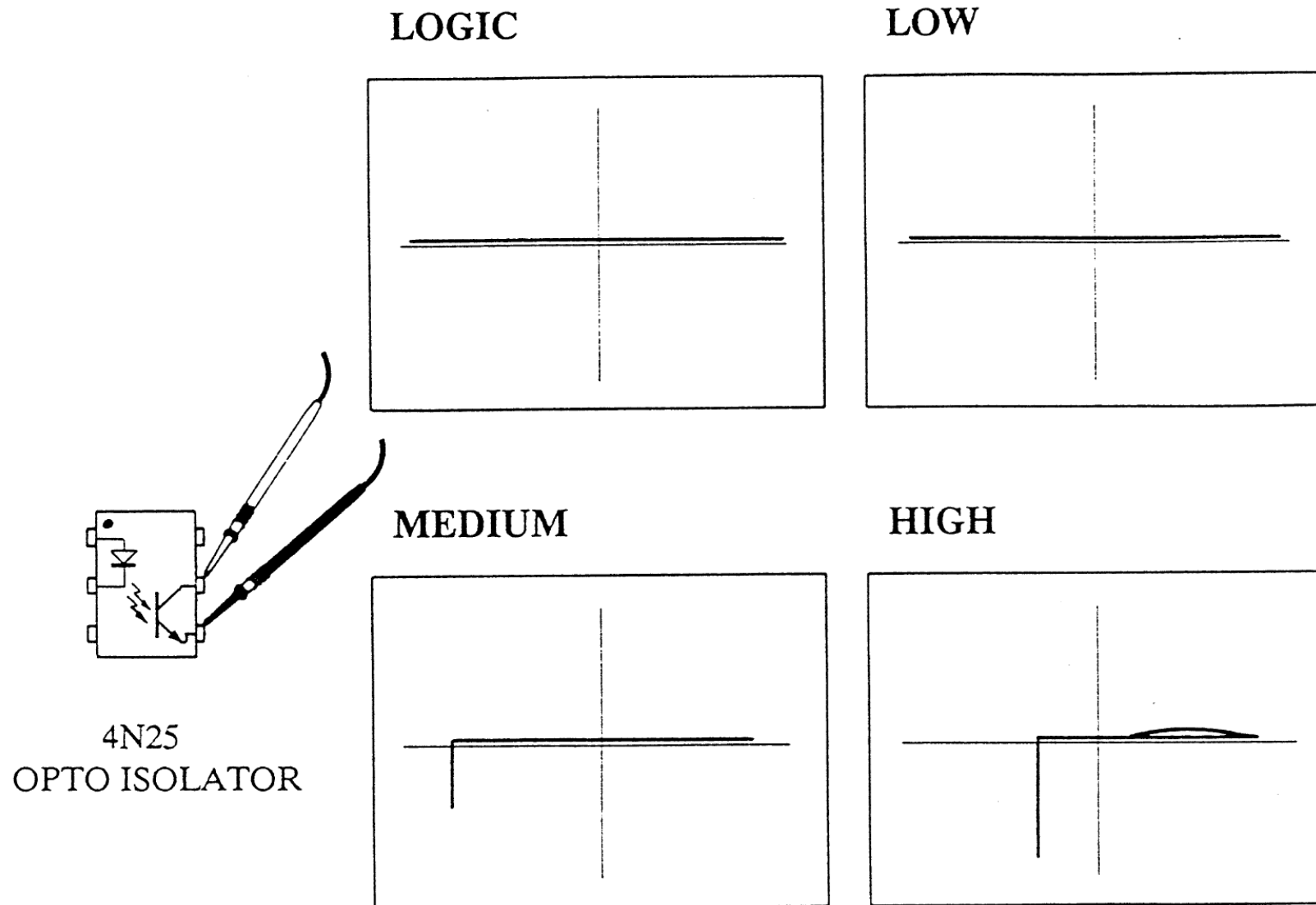
MEDIUM



HIGH

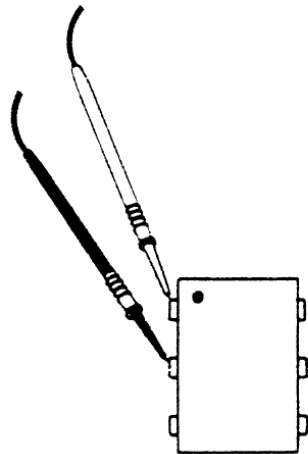


Analog Signature Examples



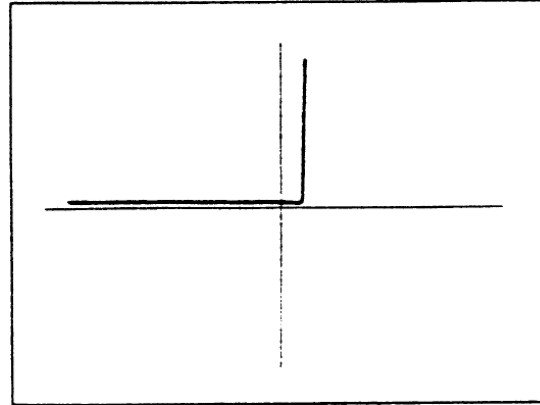
All measurements on this page in LOW frequency

Analog Signature Examples

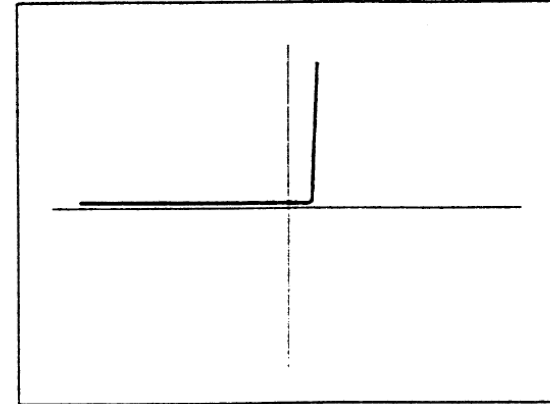


4N25
OPTO ISOLATOR

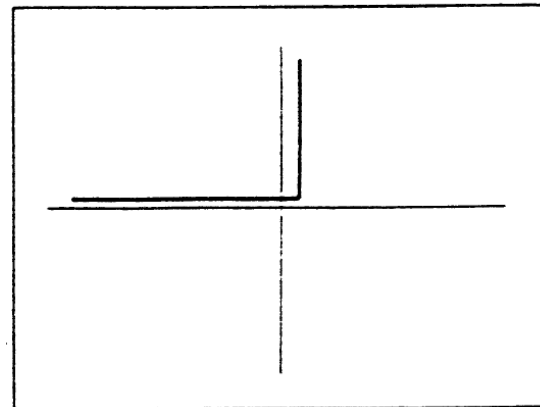
LOGIC



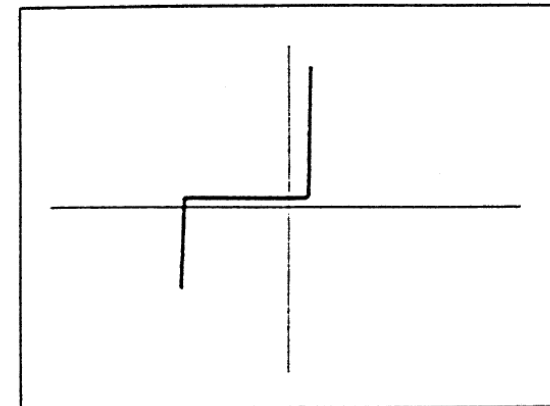
LOW



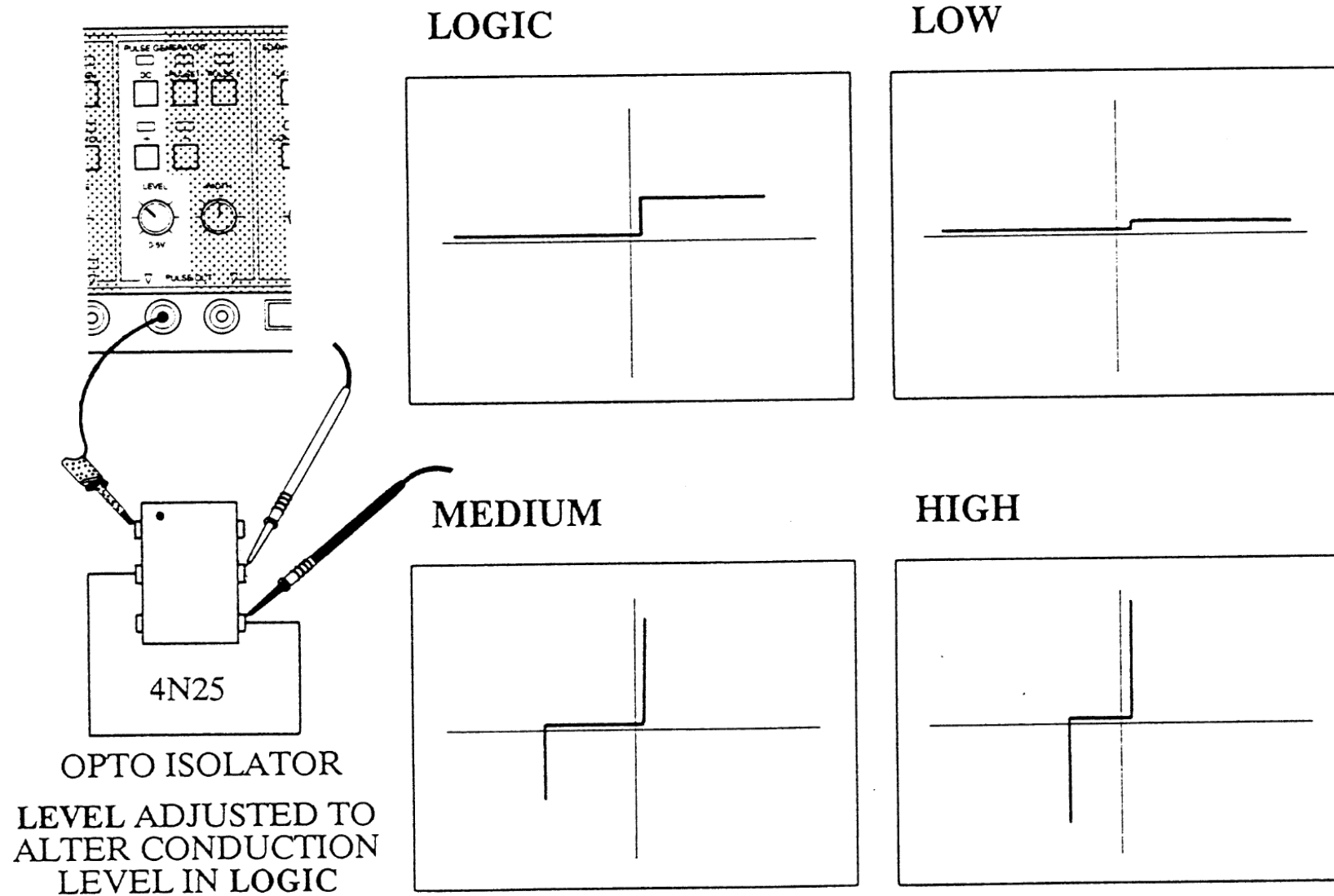
MEDIUM



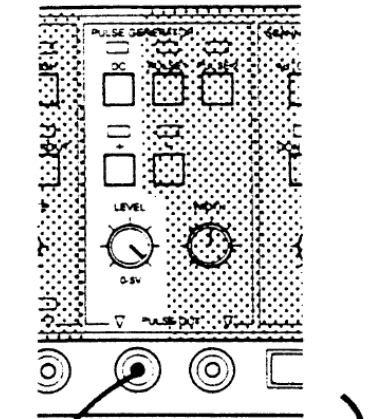
HIGH



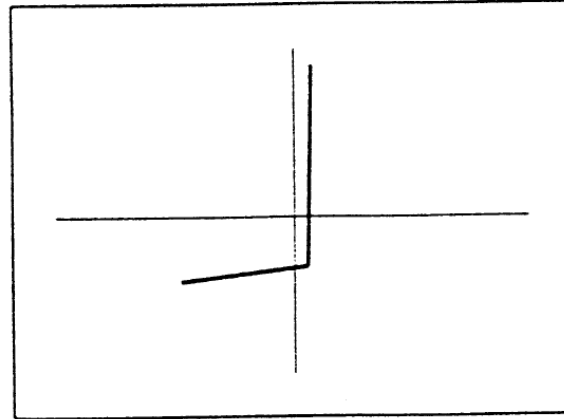
Analog Signature Examples



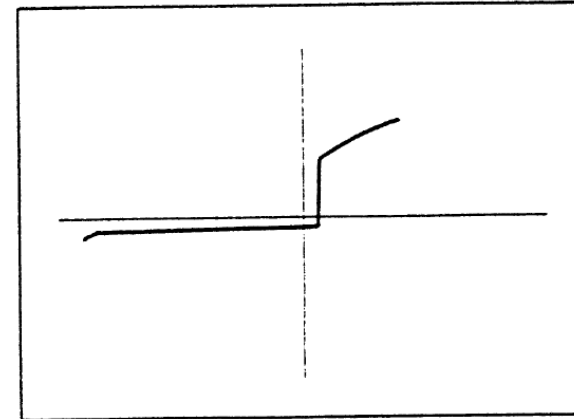
Analog Signature Examples



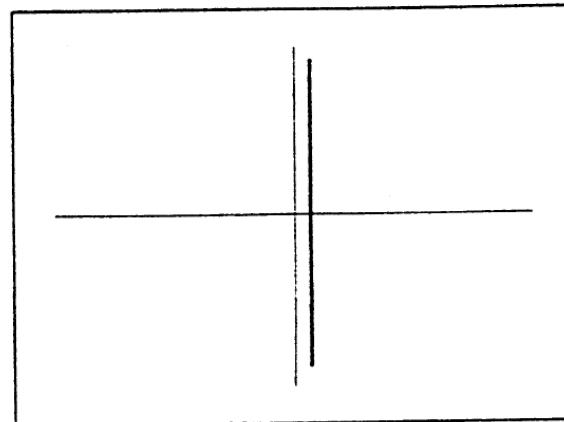
LOGIC



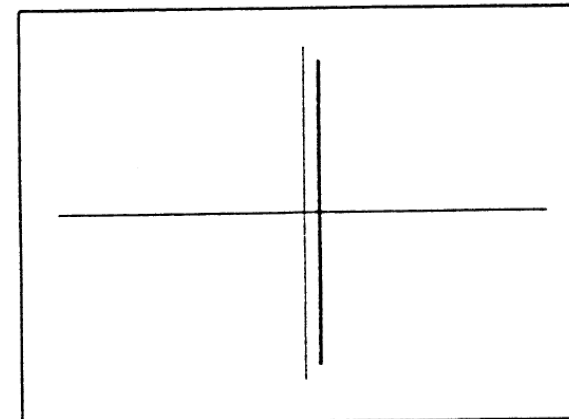
LOW



MEDIUM

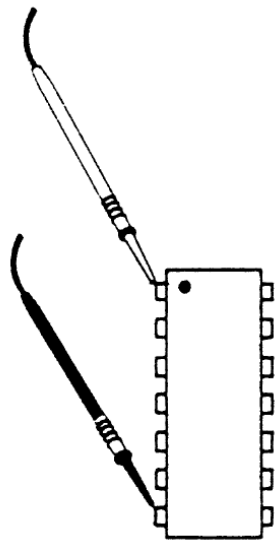


HIGH



4N25
OPTO ISOLATOR

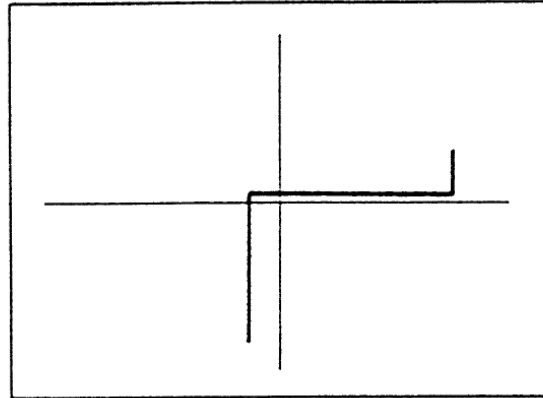
Analog Signature Examples



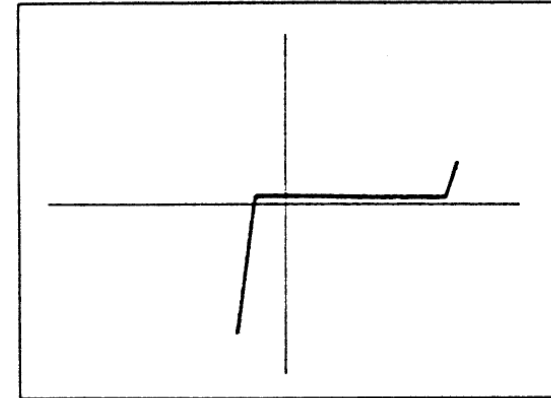
SN7400N (TEXAS)

TTL GATE
INPUT

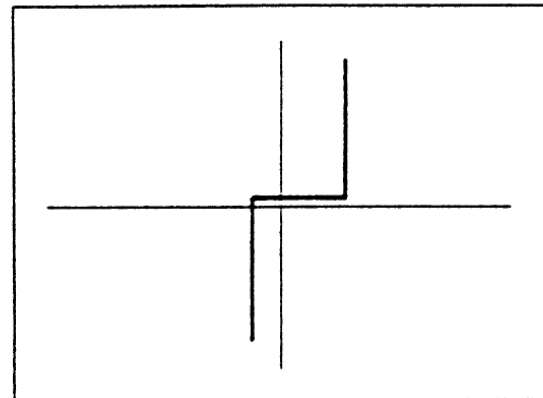
LOGIC



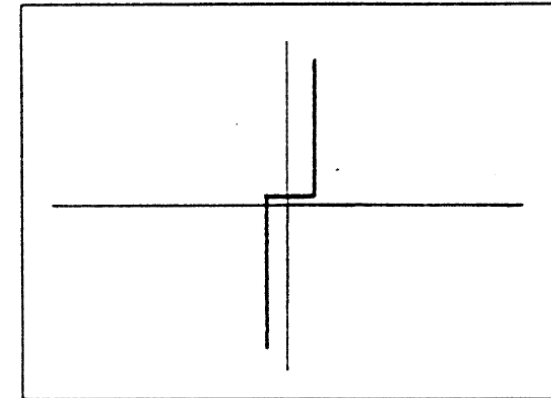
LOW



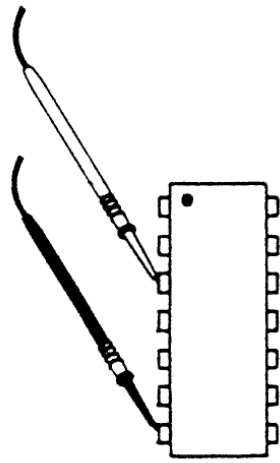
MEDIUM



HIGH



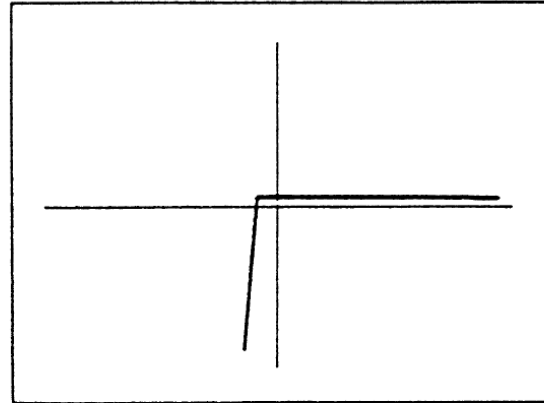
Analog Signature Examples



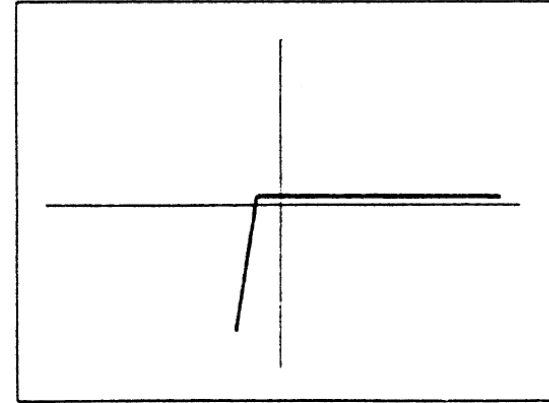
SN7400 (TEXAS)

TTL GATE
OUTPUT

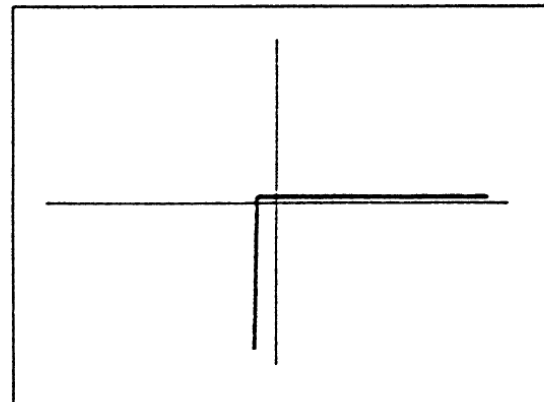
LOGIC



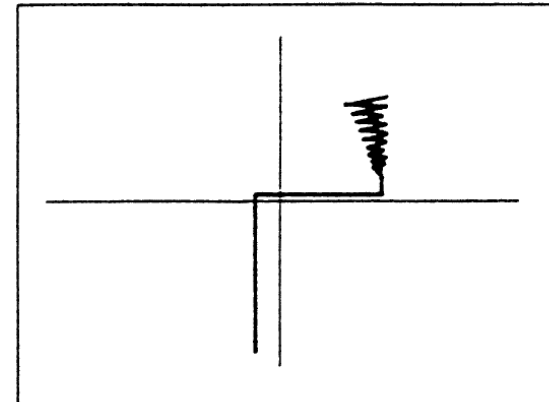
LOW



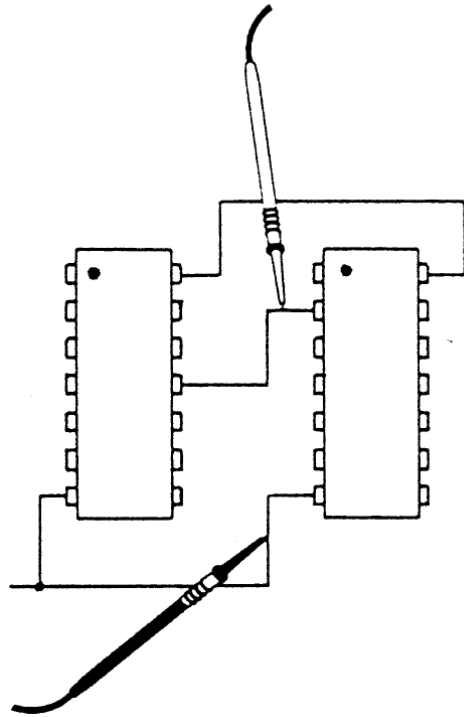
MEDIUM



HIGH



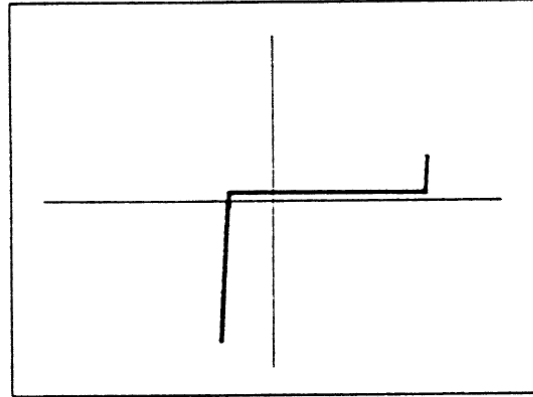
Analog Signature Examples



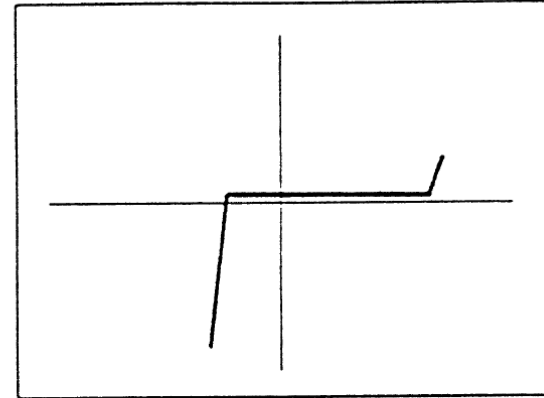
SN7400N (TEXAS)

TTL GATE
INPUT/OUTPUT
COMBINATION

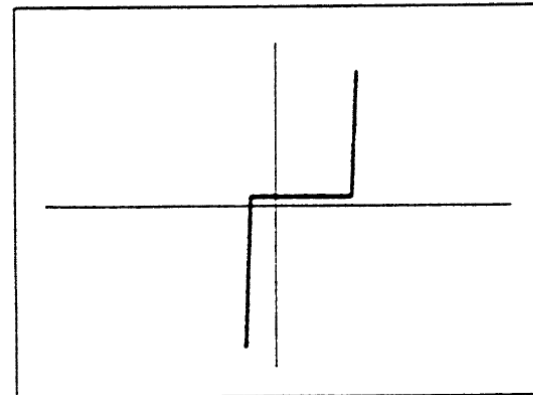
LOGIC



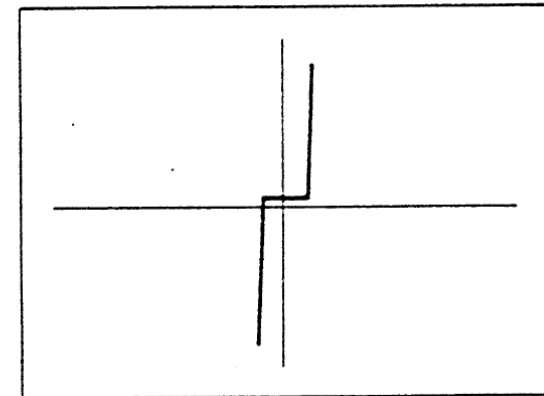
LOW



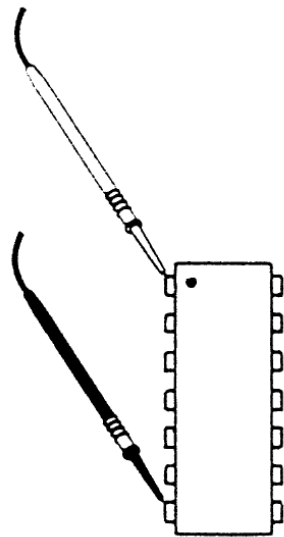
MEDIUM



HIGH



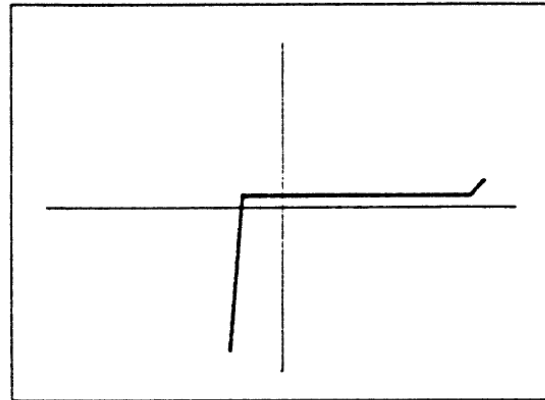
Analog Signature Examples



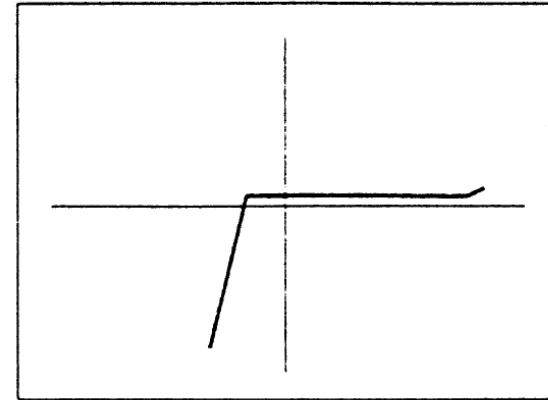
DM7400N
(NAT. SEM.)

TTL GATE
INPUT

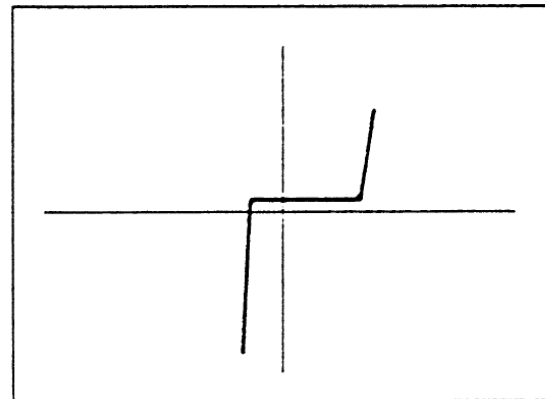
LOGIC



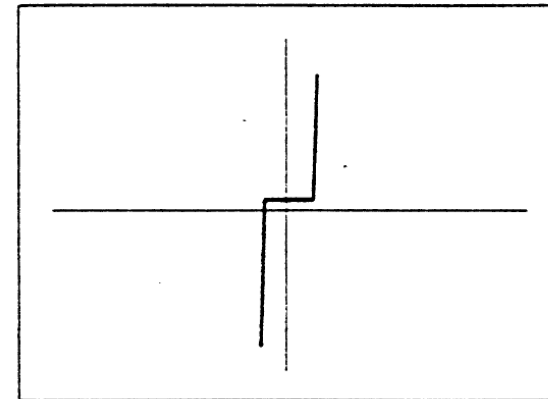
LOW



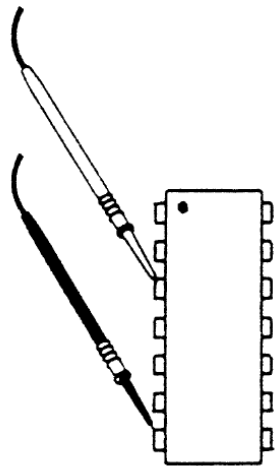
MEDIUM



HIGH



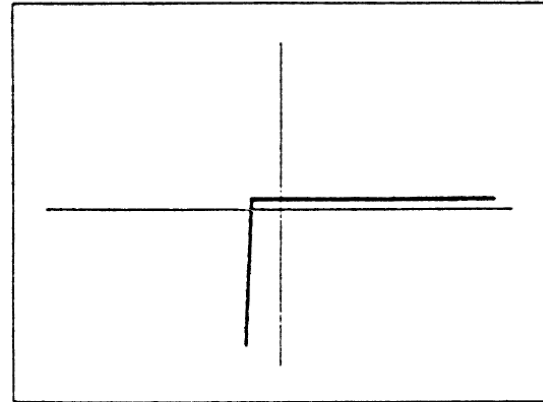
Analog Signature Examples



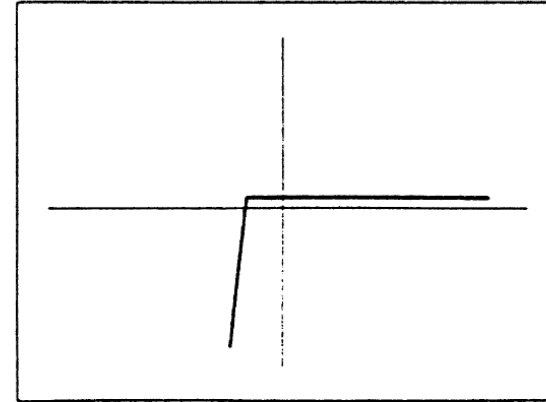
DM7400N
(NAT. SEM.)

TTL GATE
OUTPUT

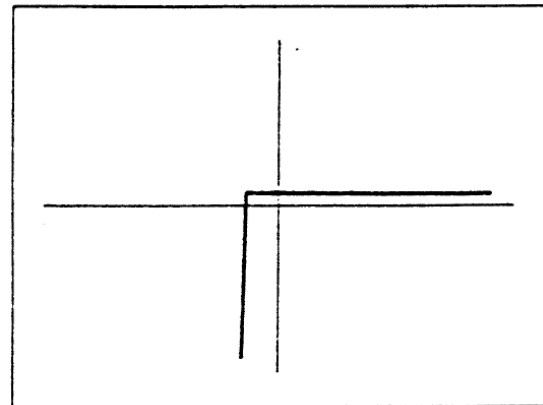
LOGIC



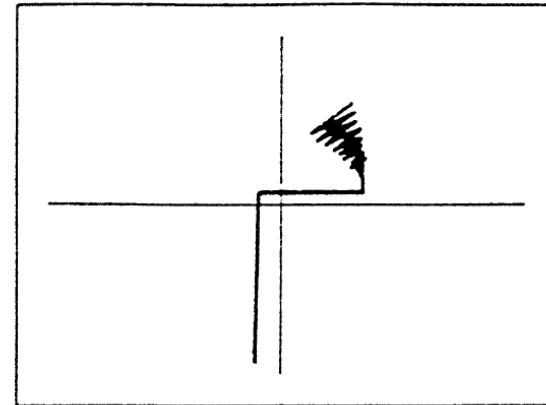
LOW



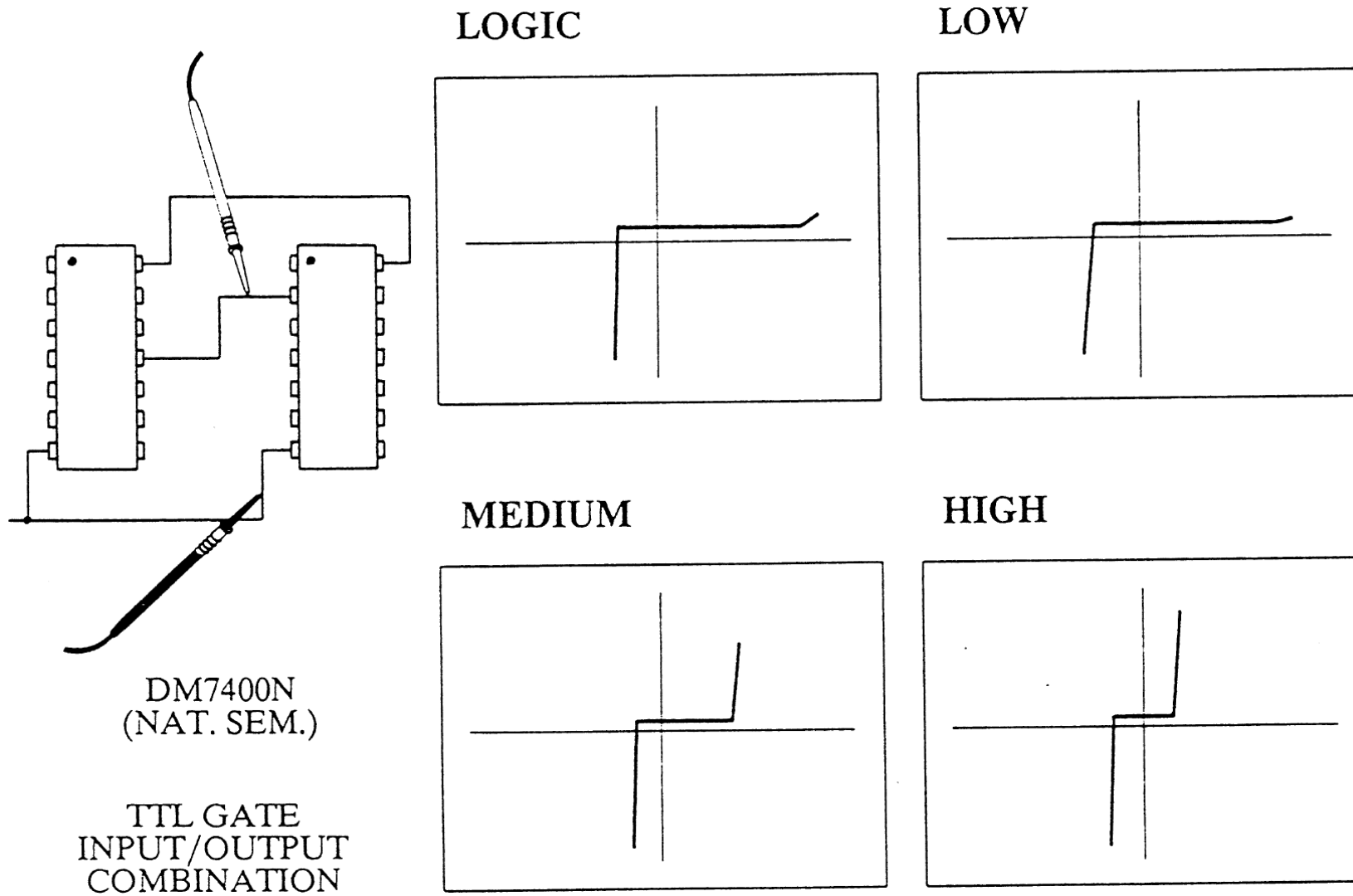
MEDIUM



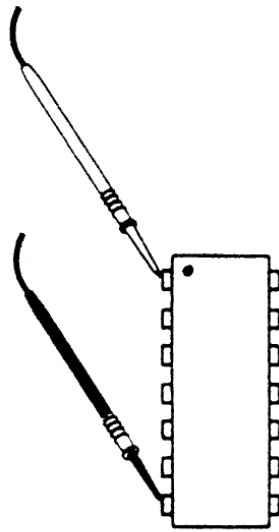
HIGH



Analog Signature Examples



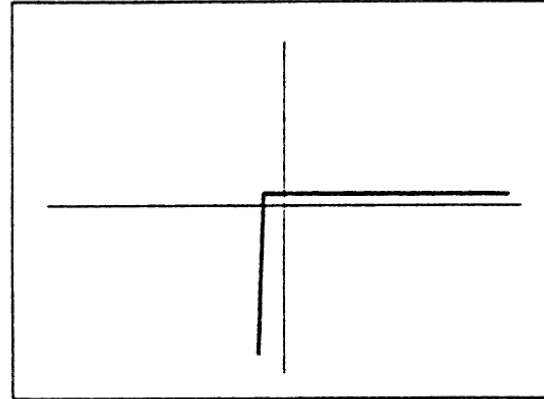
Analog Signature Examples



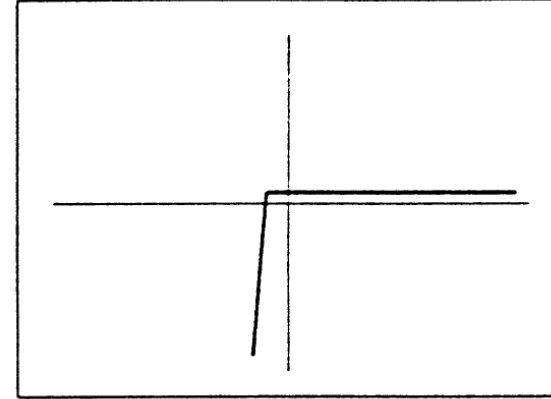
SN74LS00N (TEXAS)

LSTTL GATE
INPUT

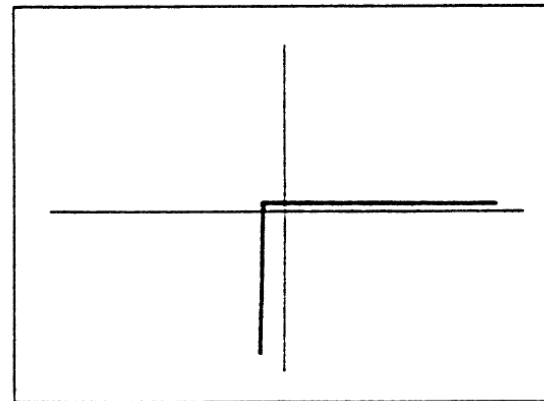
LOGIC



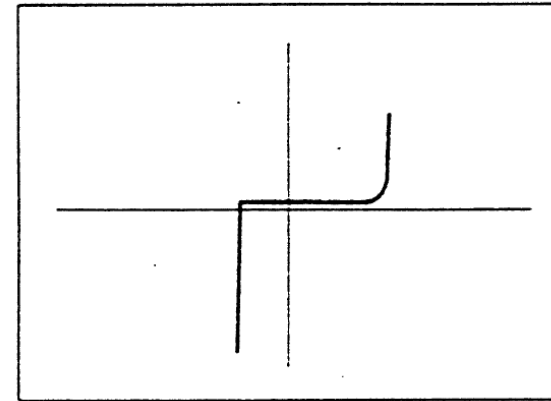
LOW



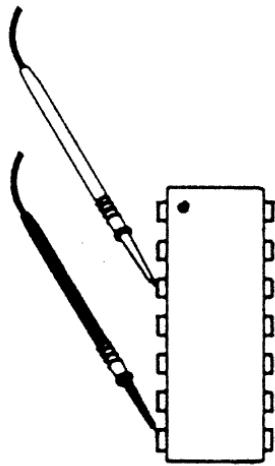
MEDIUM



HIGH



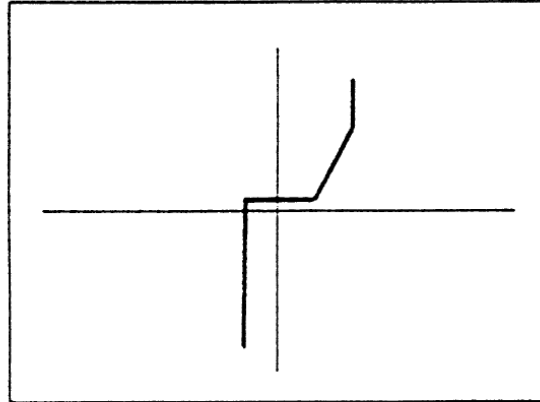
Analog Signature Examples



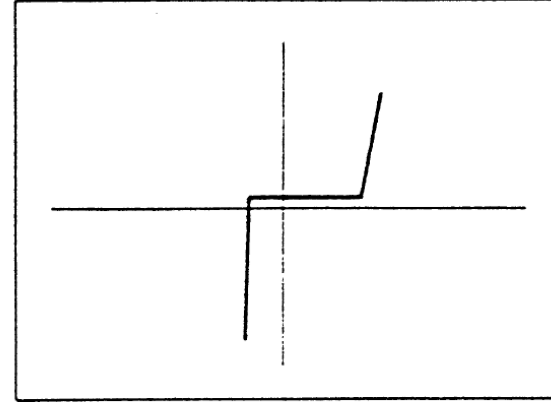
SN74LS00N (TEXAS)

LSTTL GATE
OUTPUT

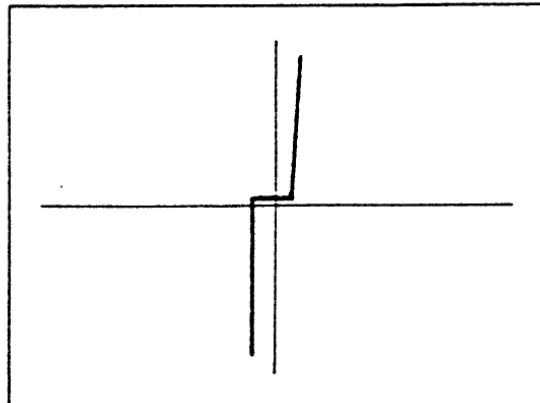
LOGIC



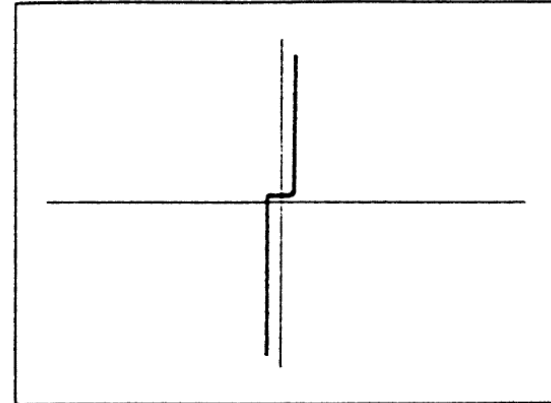
LOW



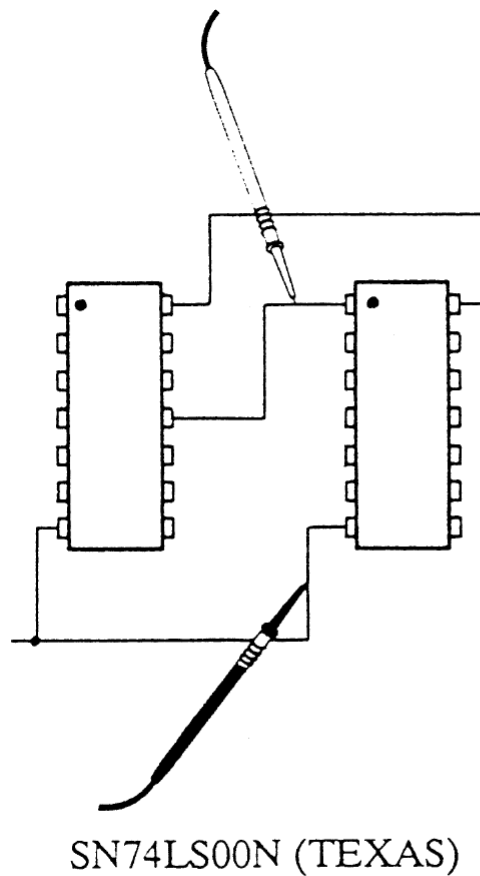
MEDIUM



HIGH

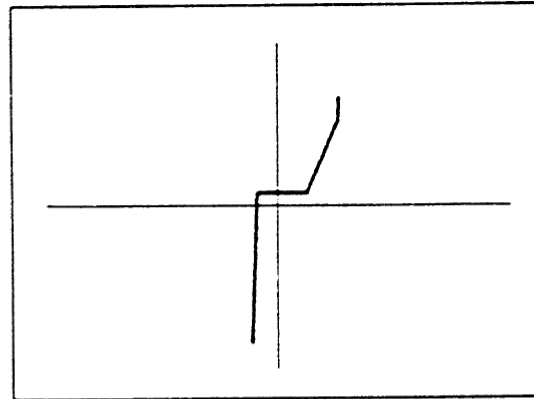


Analog Signature Examples

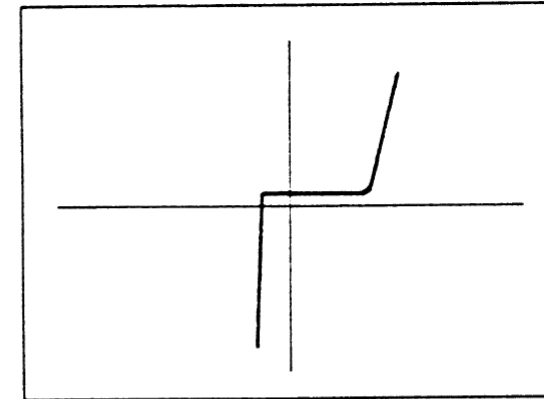


LSTTL GATE
INPUT/OUTPUT
COMBINATION

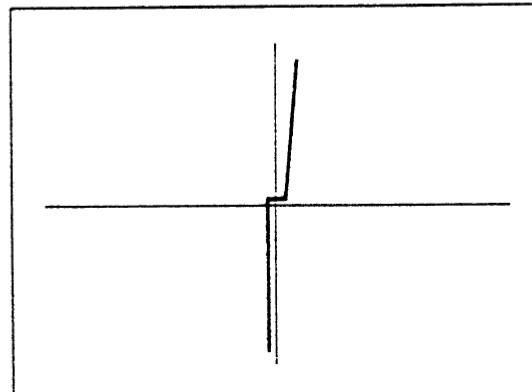
LOGIC



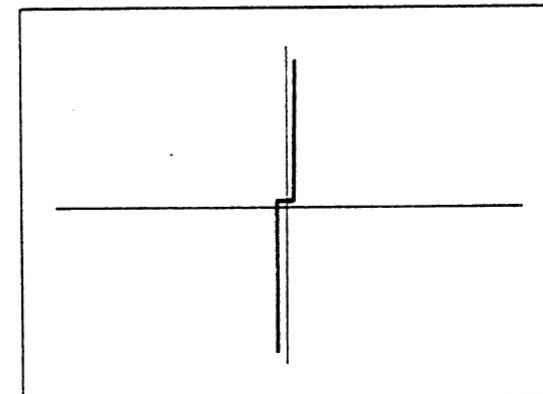
LOW



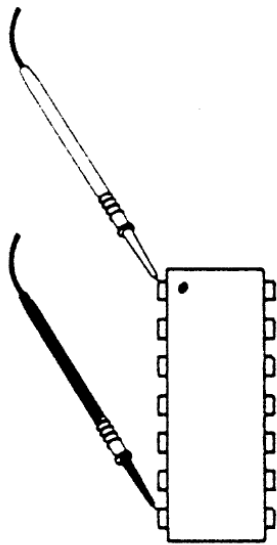
MEDIUM



HIGH



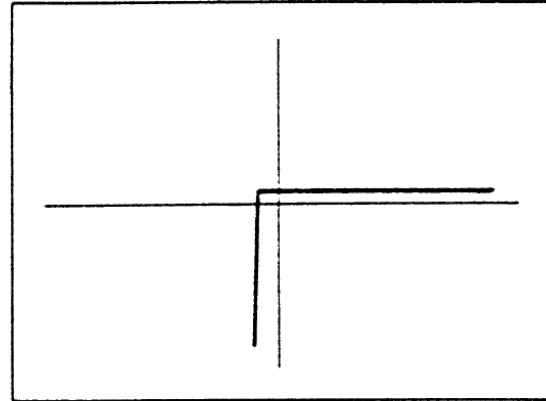
Analog Signature Examples



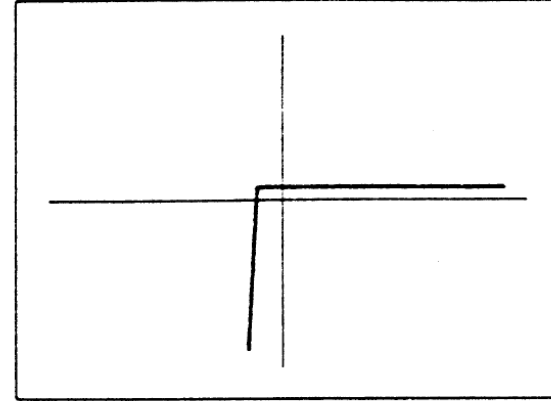
DM74LS00N
(NAT. SEM.)

LSTTL GATE
INPUT

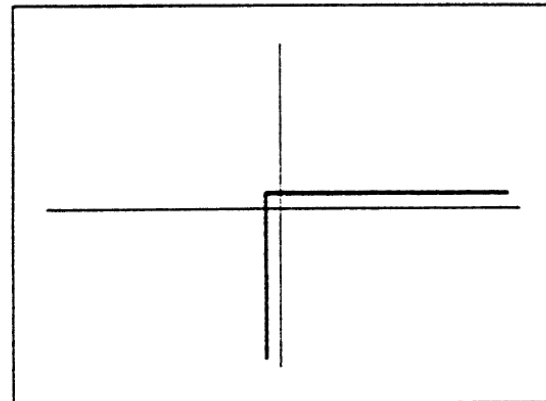
LOGIC



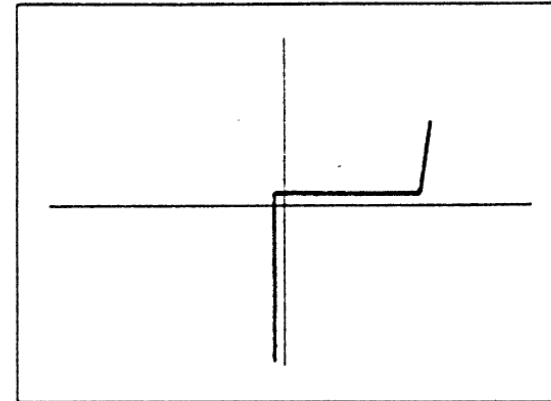
LOW



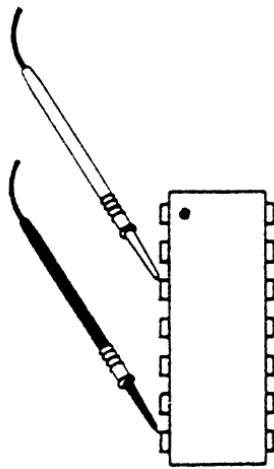
MEDIUM



HIGH



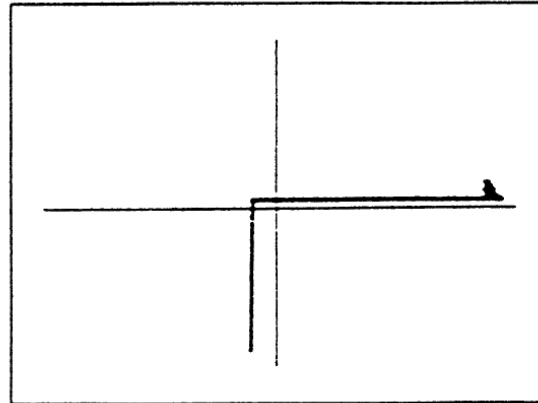
Analog Signature Examples



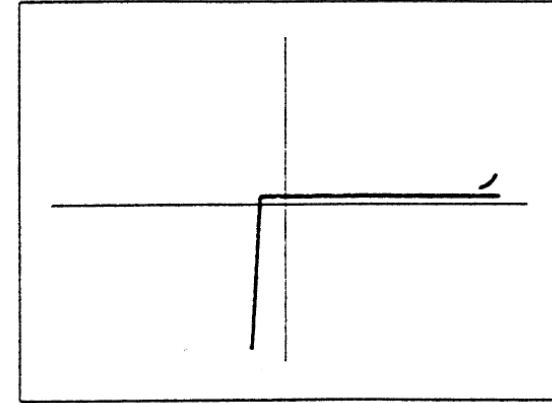
DM74LS00N
(NAT. SEM.)

LSTTL GATE
OUTPUT

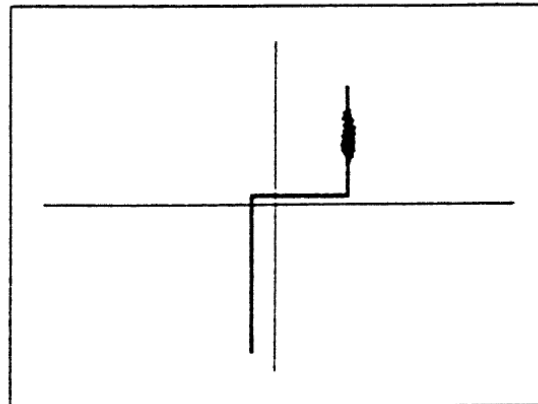
LOGIC



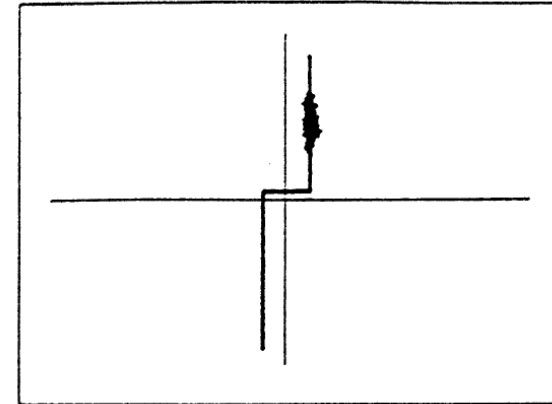
LOW



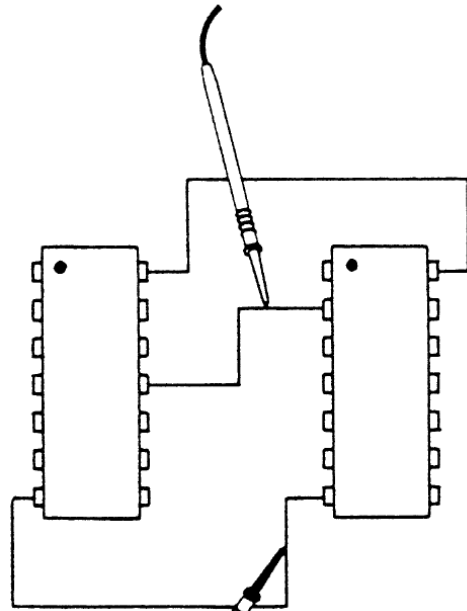
MEDIUM



HIGH



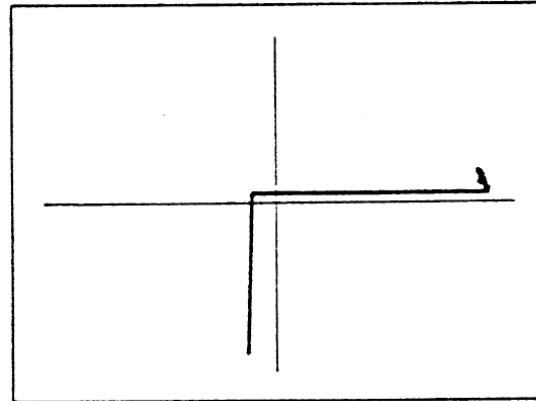
Analog Signature Examples



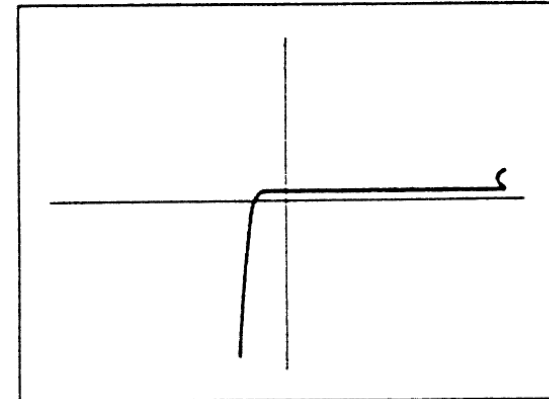
DM74LS00N
(NAT. SEM.)

LSTTL GATE
INPUT/OUTPUT
COMBINATION

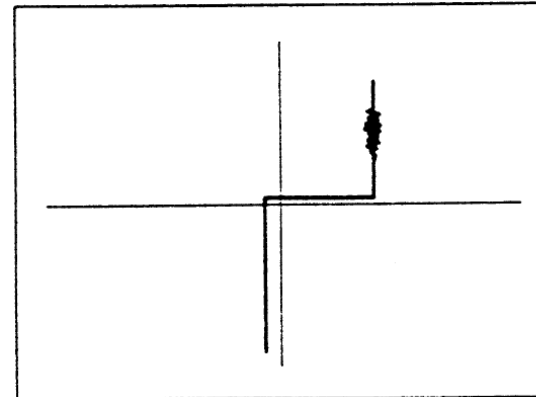
LOGIC



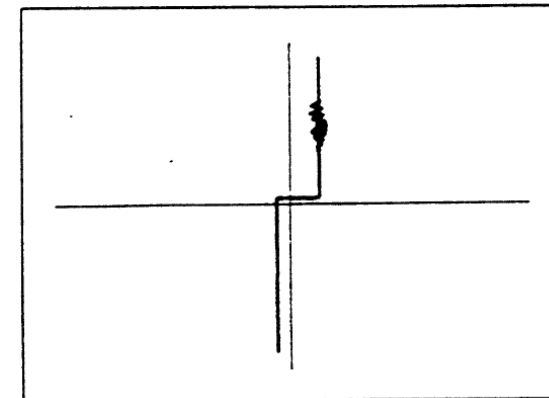
LOW



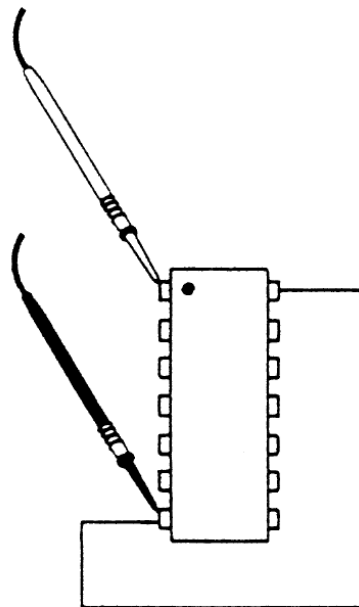
MEDIUM



HIGH



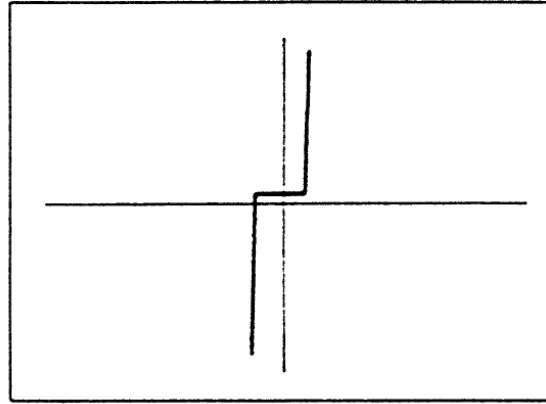
Analog Signature Examples



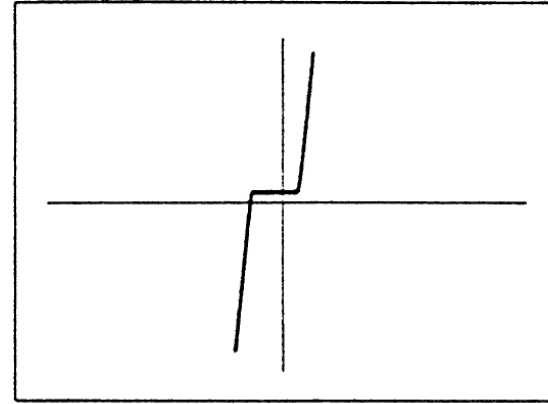
CD4001BCN
(NAT.SEM.)

CMOS GATE
INPUT

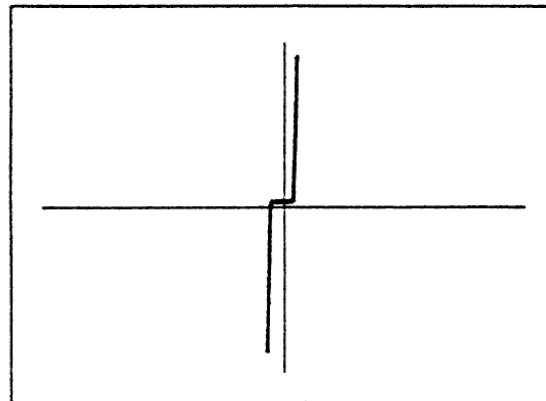
LOGIC



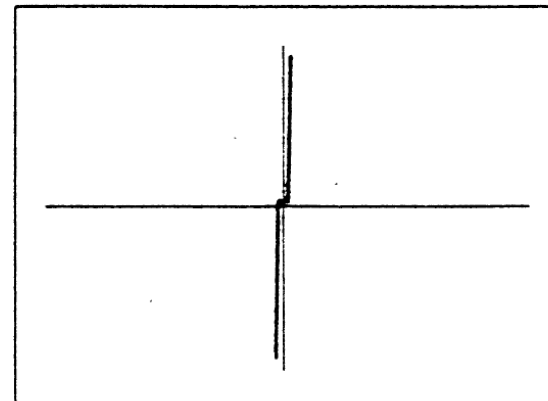
LOW



MEDIUM

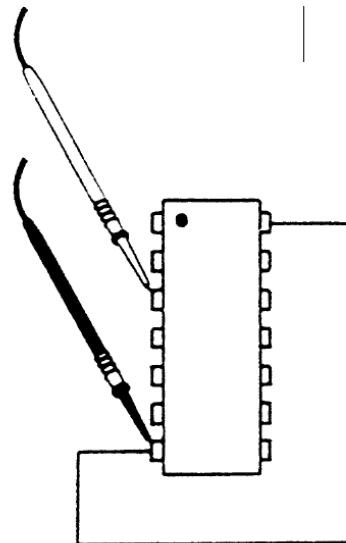


HIGH



All measurements on this page in LOW frequency with pins 7 and 14 shorted

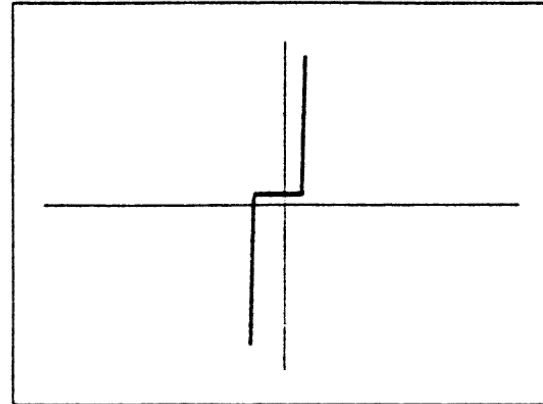
Analog Signature Examples



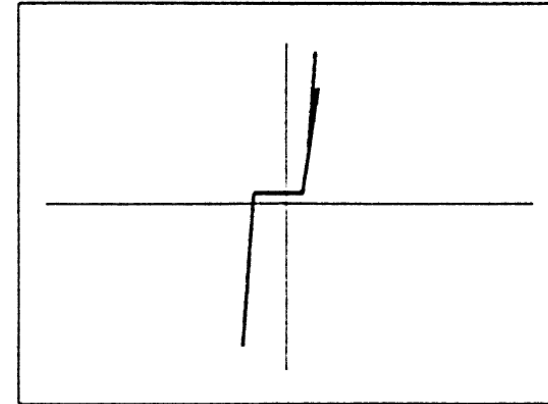
CD4001BCN
(NAT.SEM.)

CMOS GATE
OUTPUT

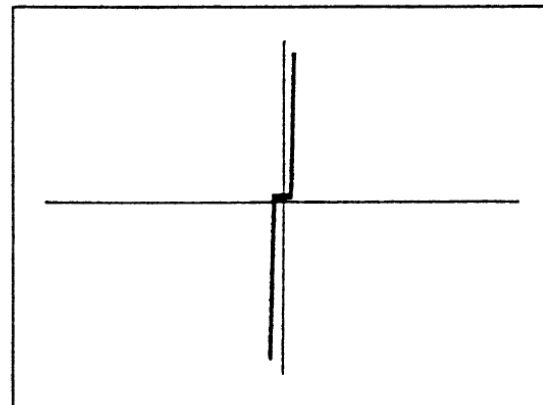
LOGIC



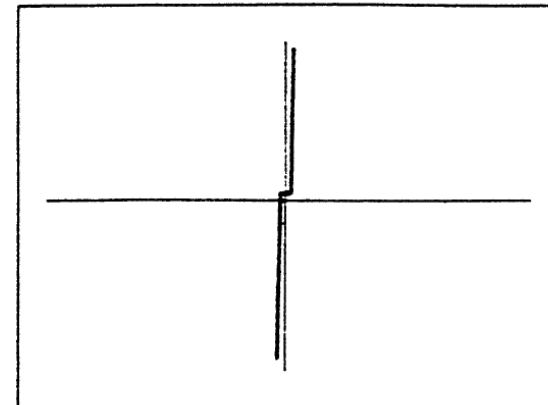
LOW



MEDIUM

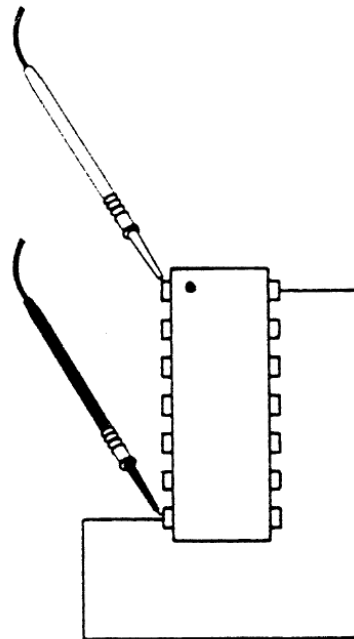


HIGH



All measurements on this page in LOW frequency with pins 7 and 14 shorted

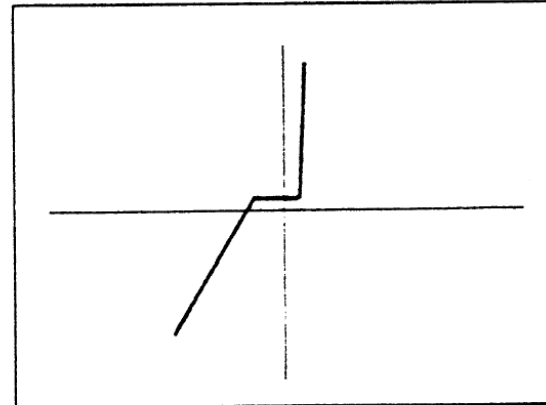
Analog Signature Examples



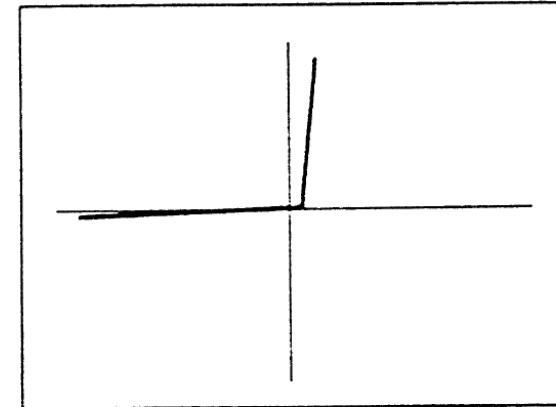
TC4001BP
(TOSHIBA)

CMOS GATE
INPUT

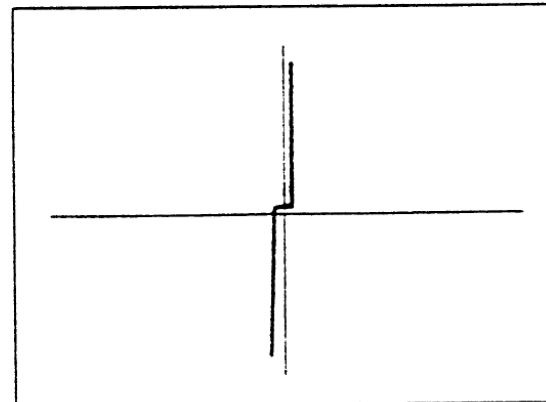
LOGIC



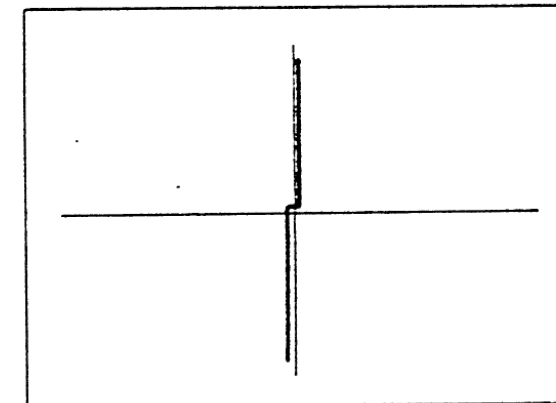
LOW



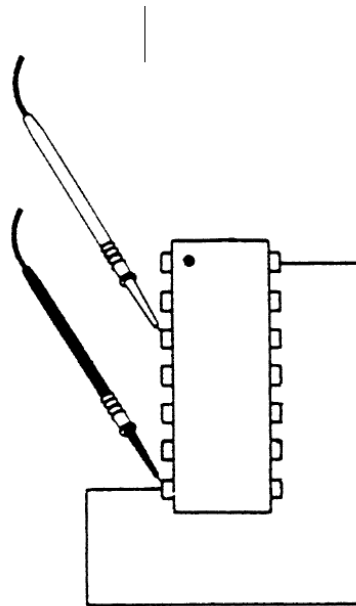
MEDIUM



HIGH



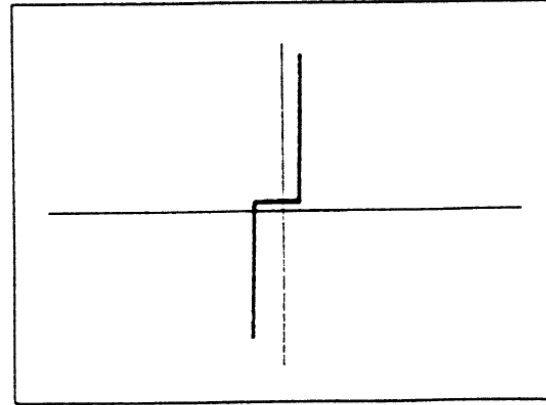
Analog Signature Examples



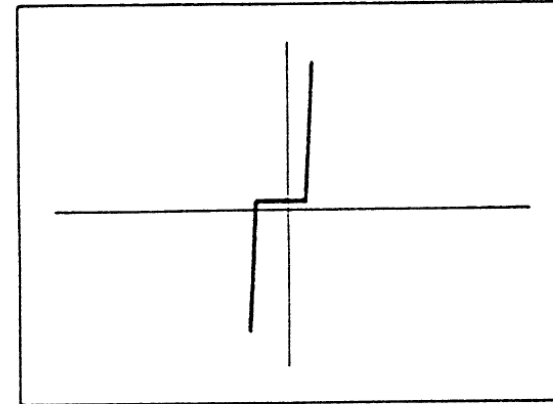
TC4001BP
(TOSHIBA)

CMOS GATE
OUTPUT

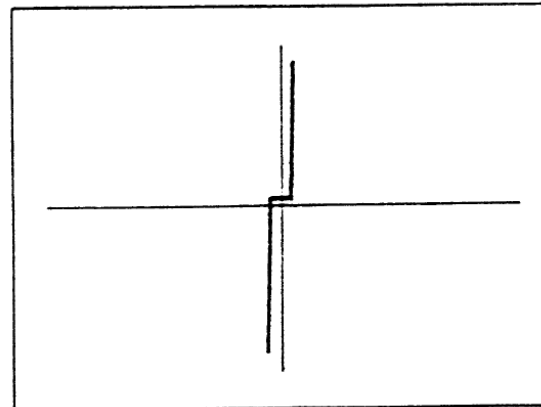
LOGIC



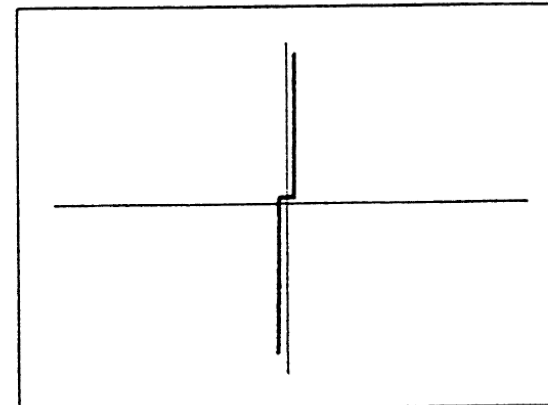
LOW



MEDIUM

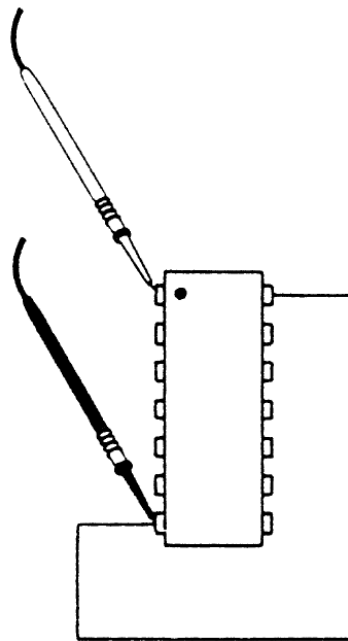


HIGH



All measurements on this page in LOW frequency with pins 7 and 14 shorted

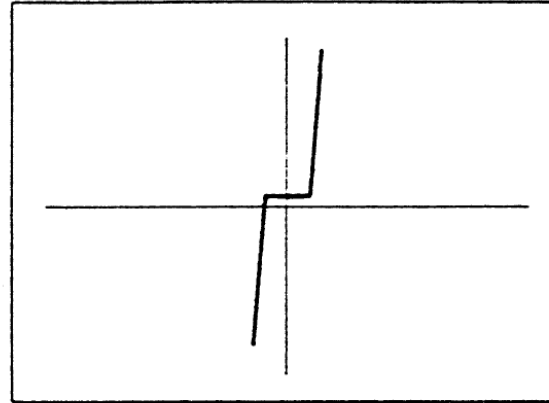
Analog Signature Examples



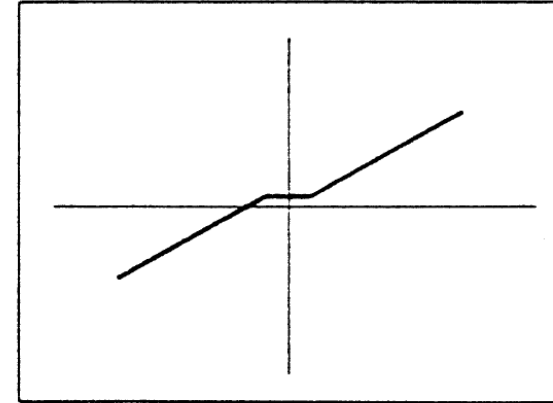
MM74HC00N
(NAT.SEM.)

HC GATE
INPUT

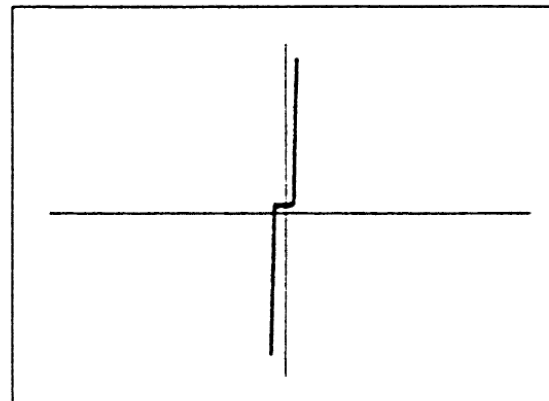
LOGIC



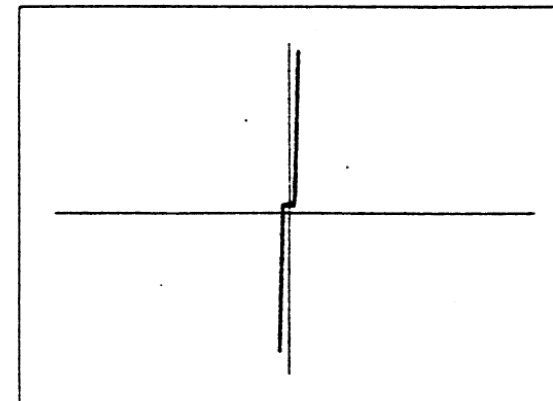
LOW



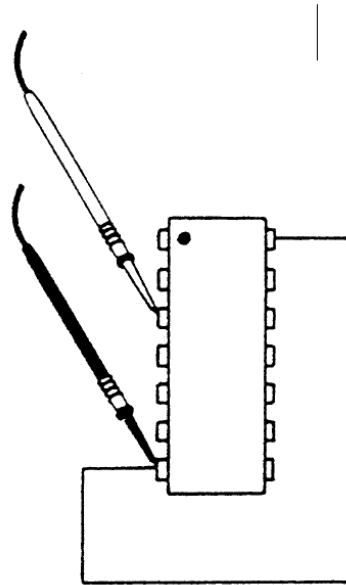
MEDIUM



HIGH



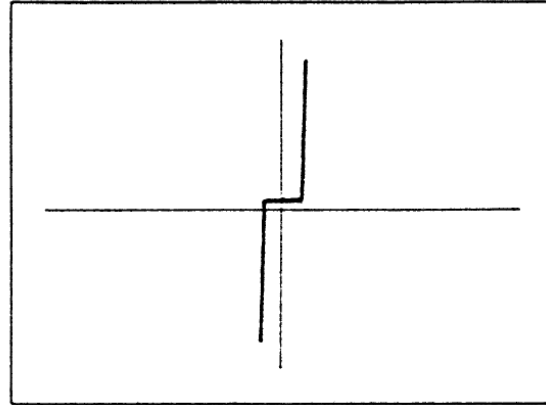
Analog Signature Examples



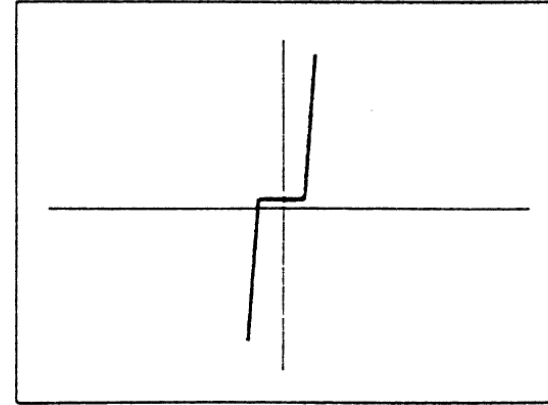
MM74HC00N
(NAT.SEM.)

HC GATE
OUTPUT

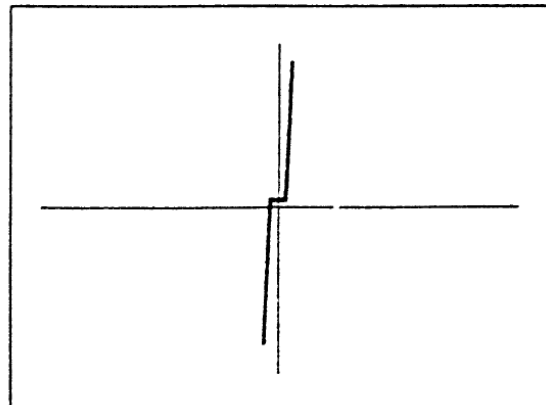
LOGIC



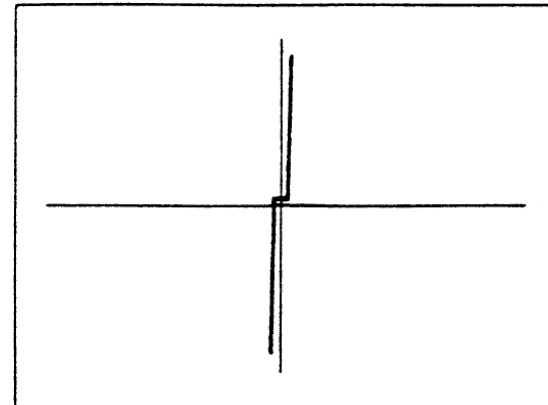
LOW



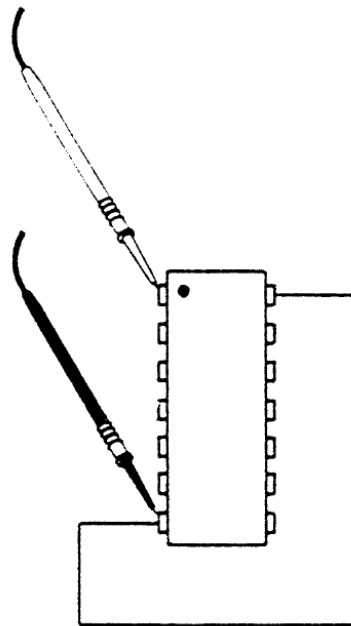
MEDIUM



HIGH



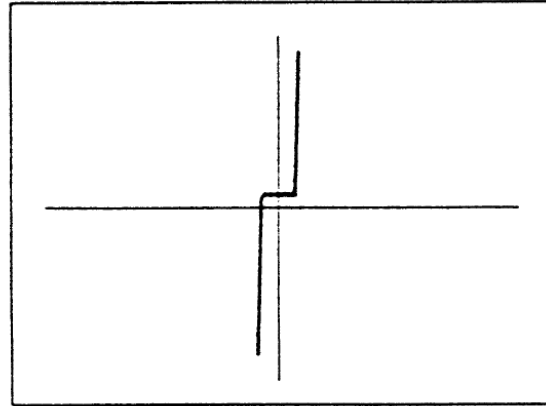
Analog Signature Examples



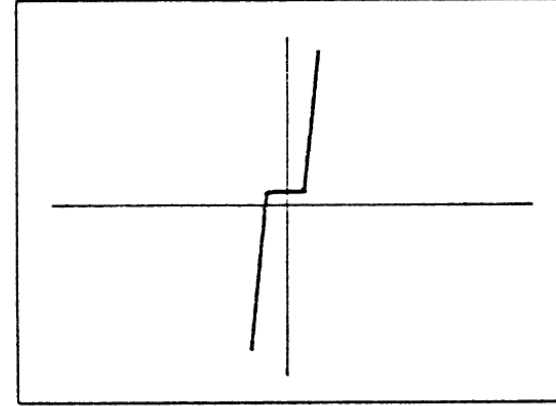
TC74HC00AP
(TOSHIBA)

HC GATE
INPUT

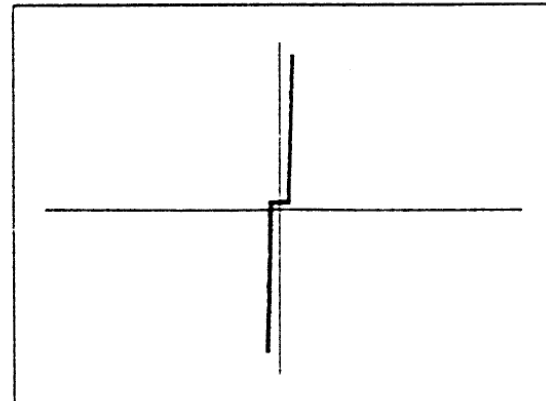
LOGIC



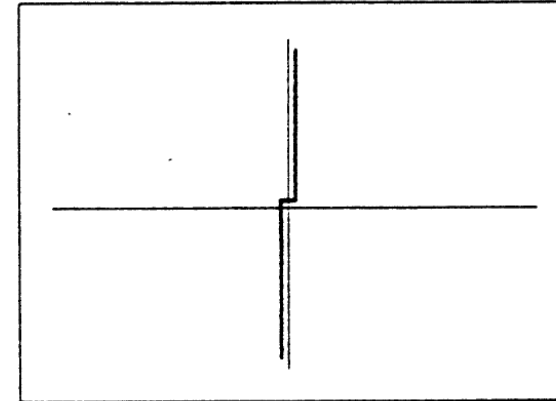
LOW



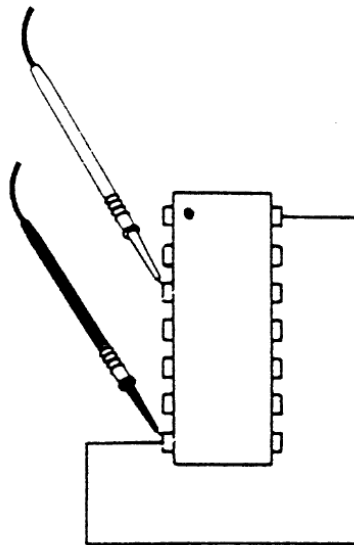
MEDIUM



HIGH



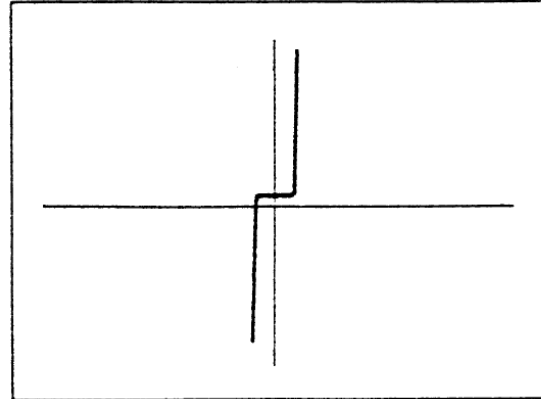
Analog Signature Examples



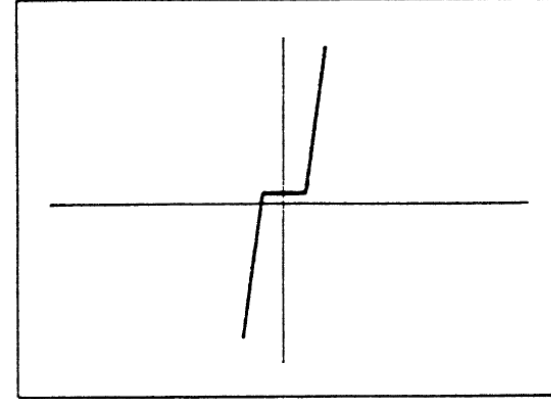
TC74HC00AP
(TOSHIBA)

HC GATE
OUTPUT

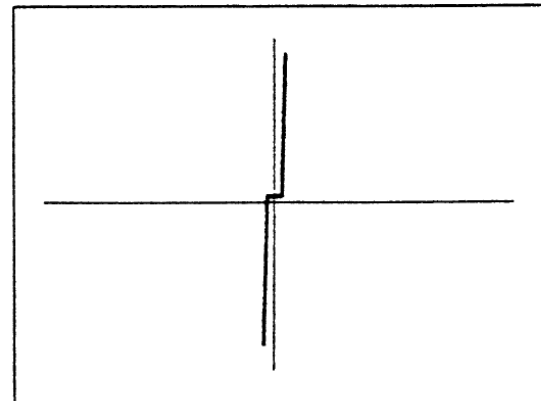
LOGIC



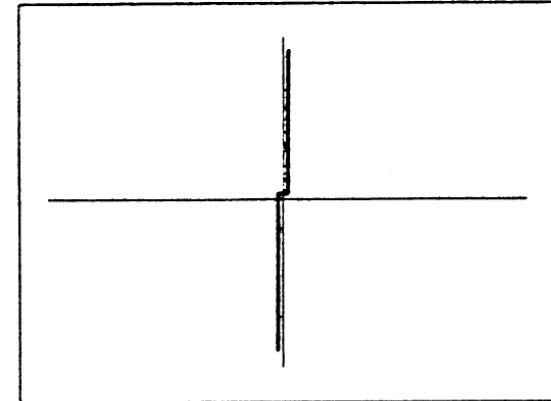
LOW



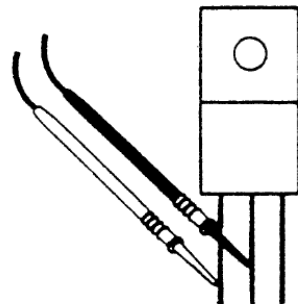
MEDIUM



HIGH



Analog Signature Examples

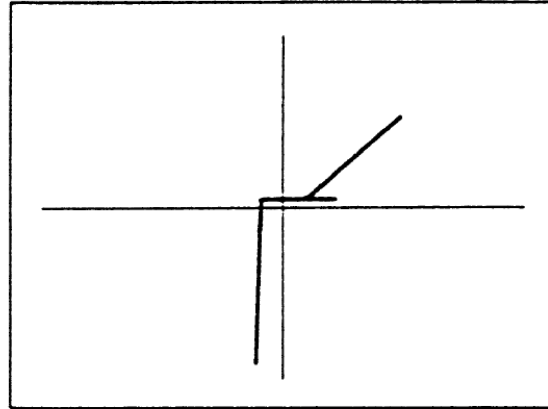


ogi

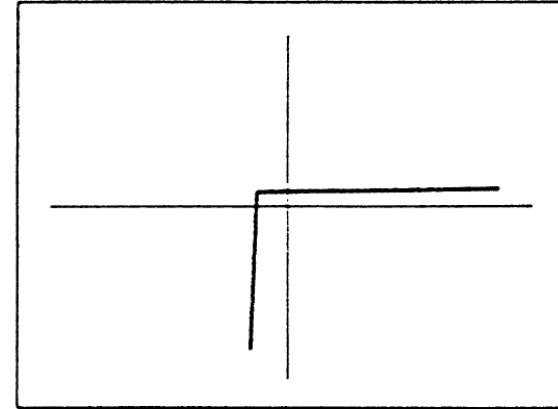
7805

VOLTAGE
REGULATOR
OUTPUT

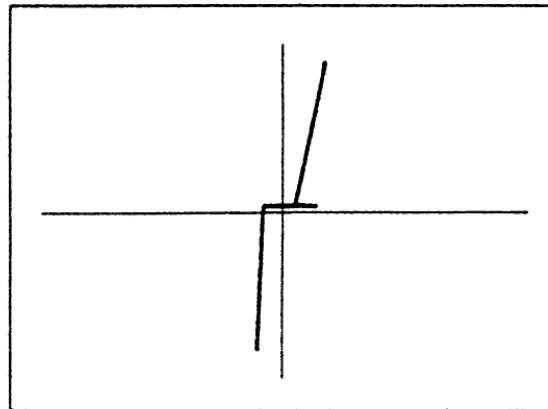
LOGIC



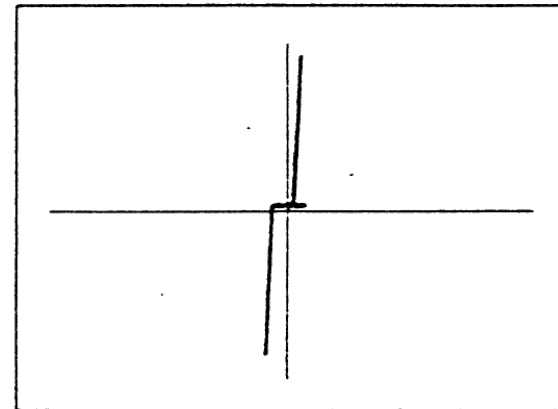
LOW



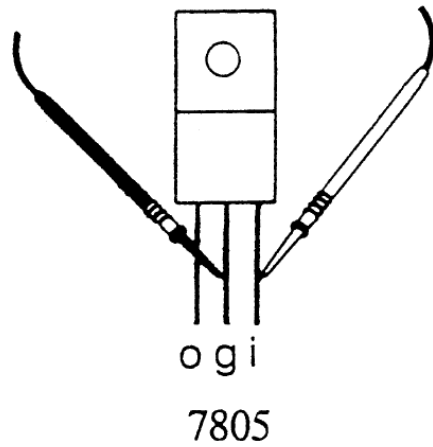
MEDIUM



HIGH

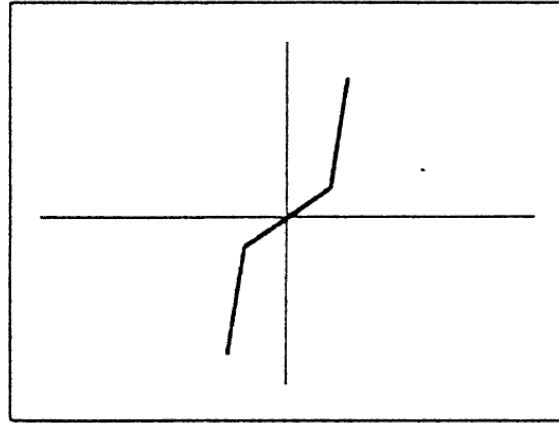


Analog Signature Examples

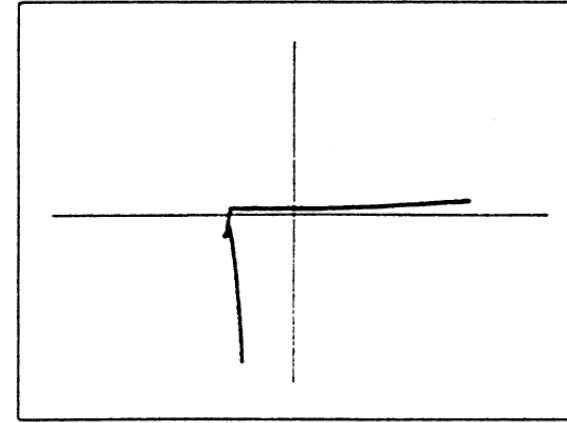


VOLTAGE
REGULATOR
INPUT

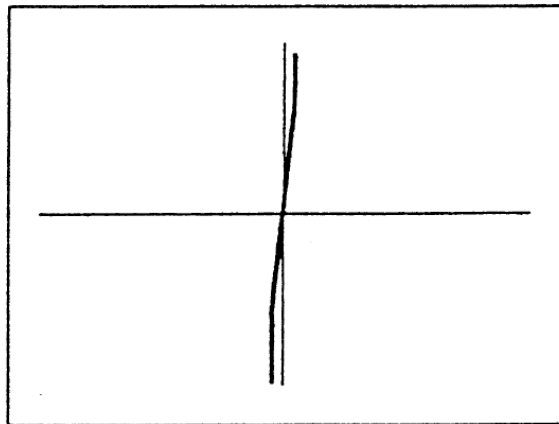
LOGIC



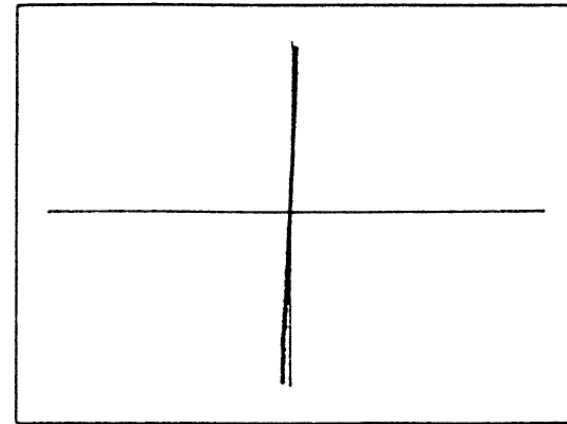
LOW



MEDIUM

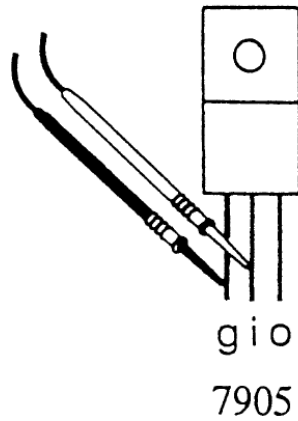


HIGH



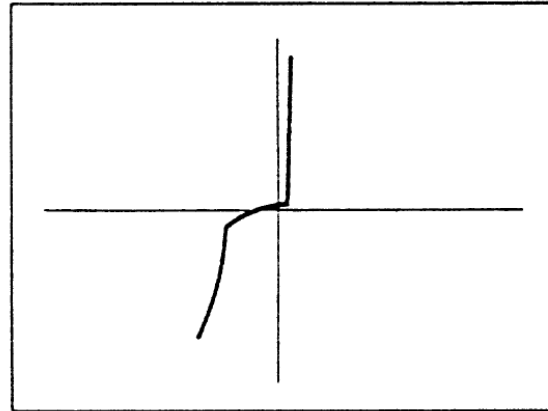
All measurements on this page in LOW frequency

Analog Signature Examples

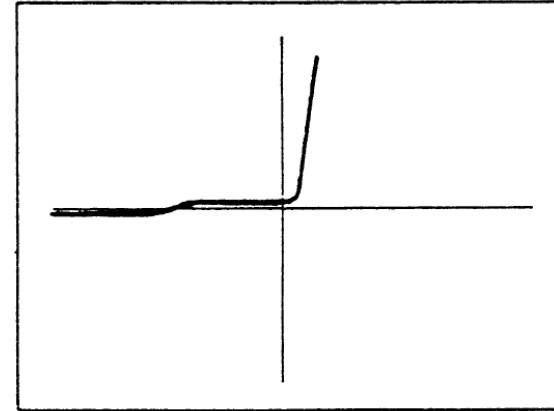


VOLTAGE
REGULATOR
INPUT

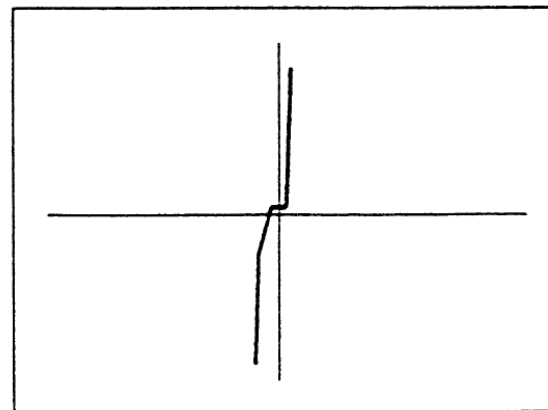
LOGIC



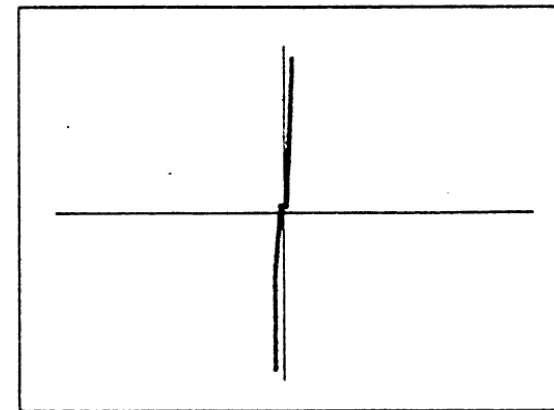
LOW



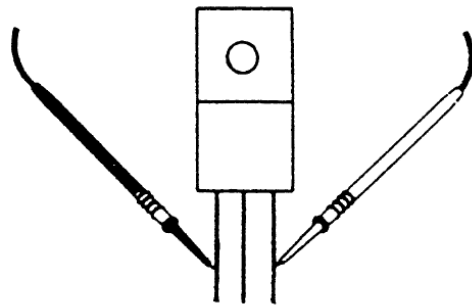
MEDIUM



HIGH



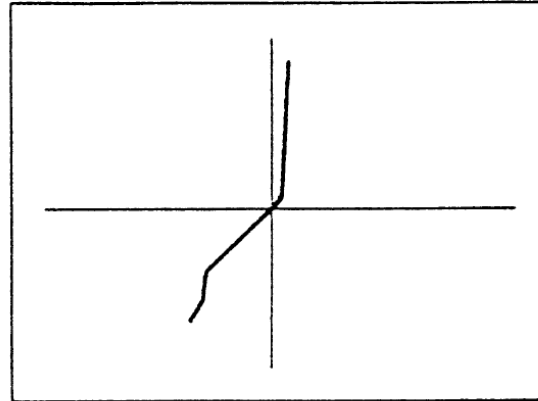
Analog Signature Examples



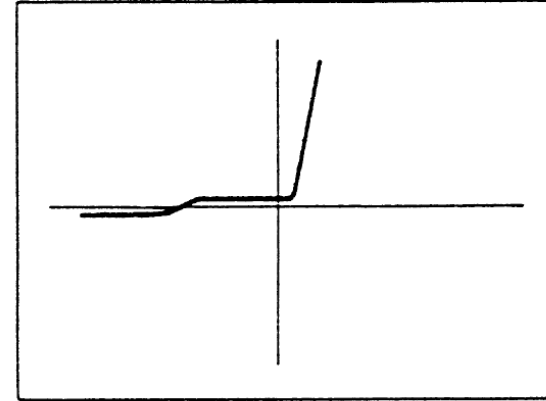
gio
7905

VOLTAGE
REGULATOR
OUTPUT

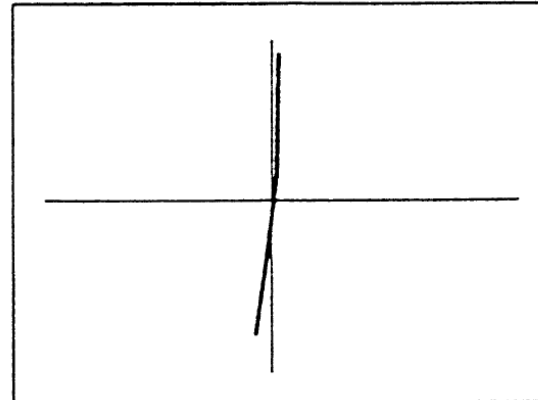
LOGIC



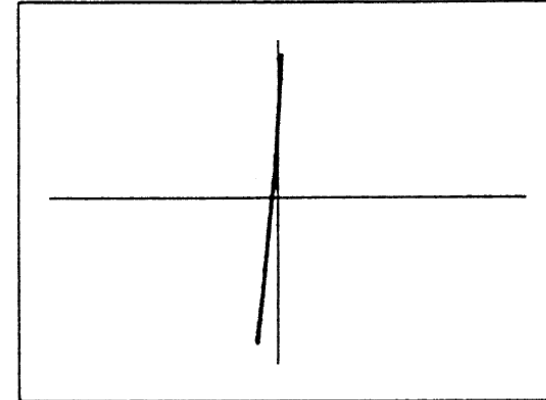
LOW



MEDIUM

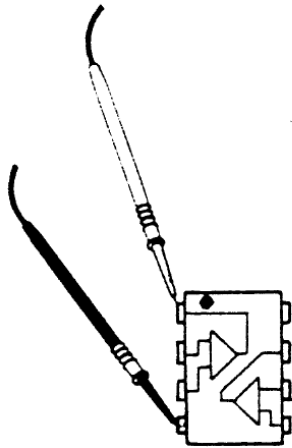


HIGH



All measurements on this page in LOW frequency

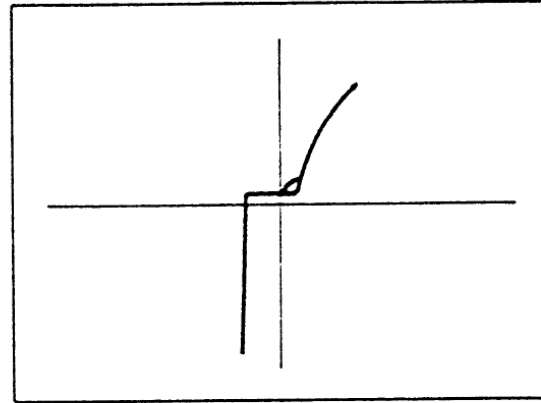
Analog Signature Examples



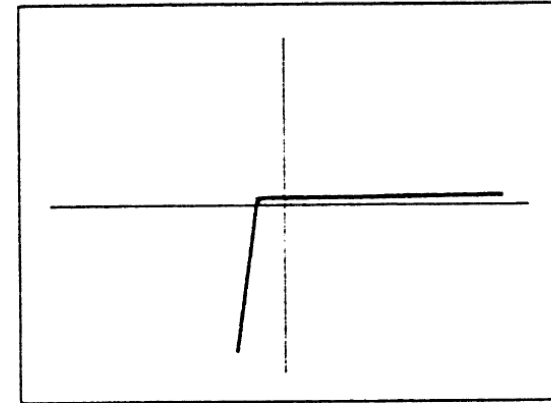
MC1458CP1

DUAL OP AMP
OUTPUT

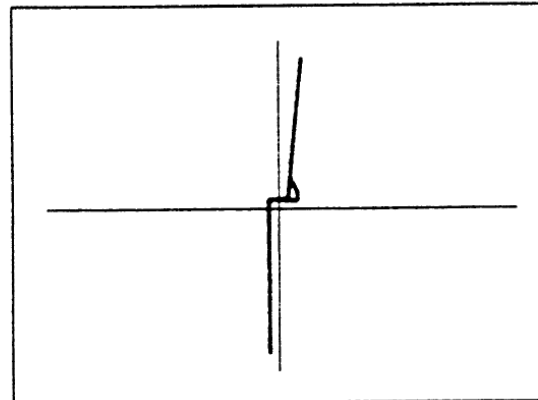
LOGIC



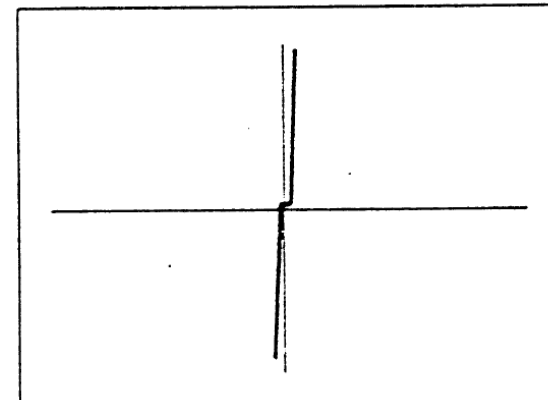
LOW



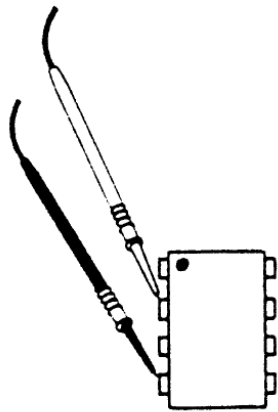
MEDIUM



HIGH



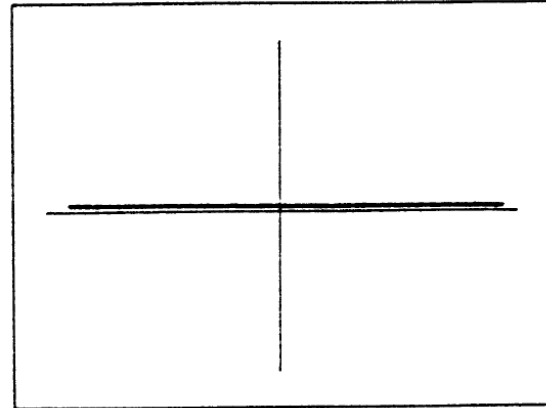
Analog Signature Examples



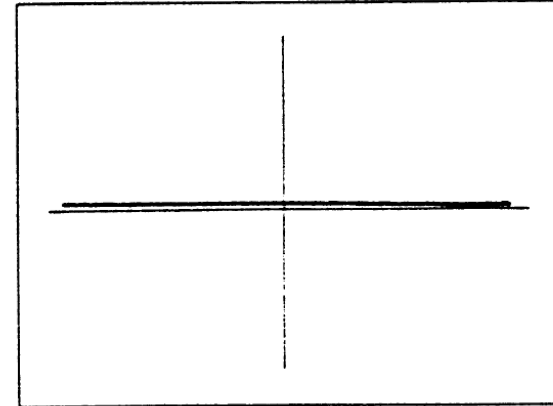
MC1458CP1

DUAL OP AMP
INPUT

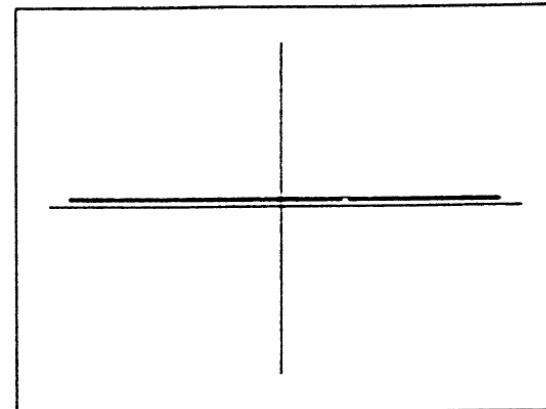
LOGIC



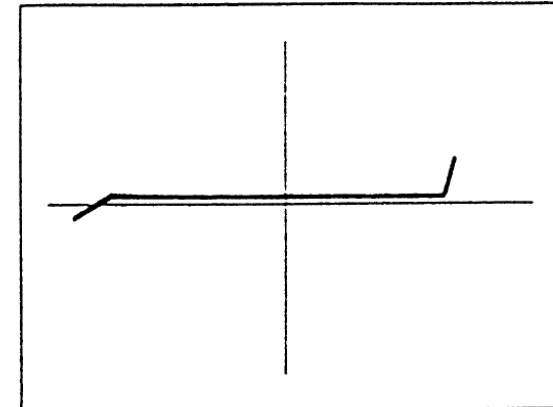
LOW



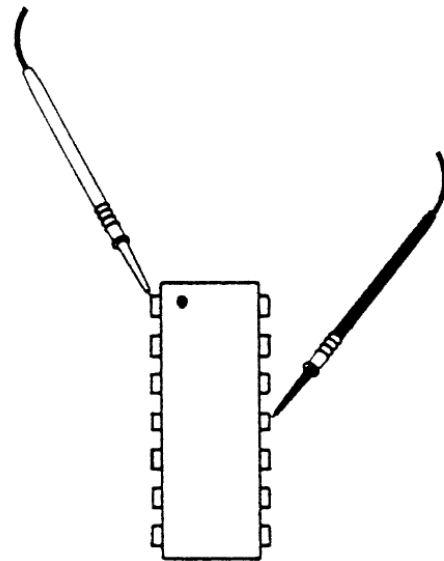
MEDIUM



HIGH



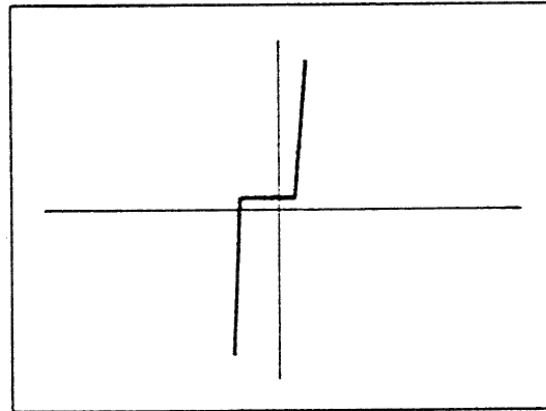
Analog Signature Examples



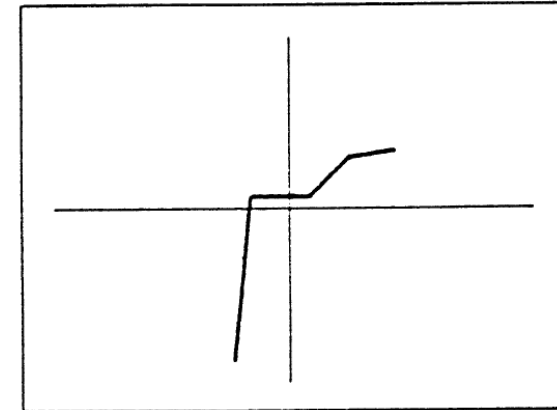
LM324

QUAD OP AMP
OUTPUT

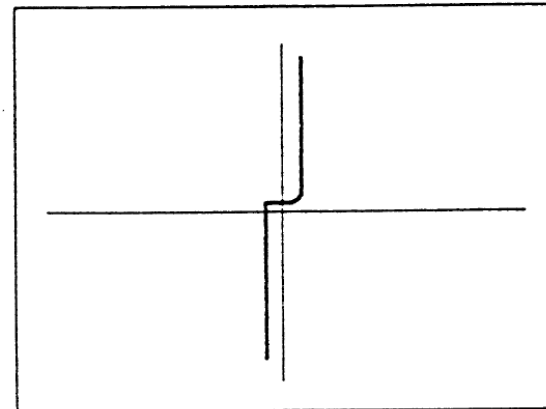
LOGIC



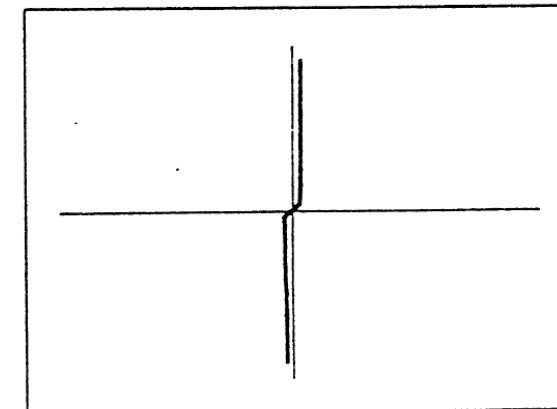
LOW



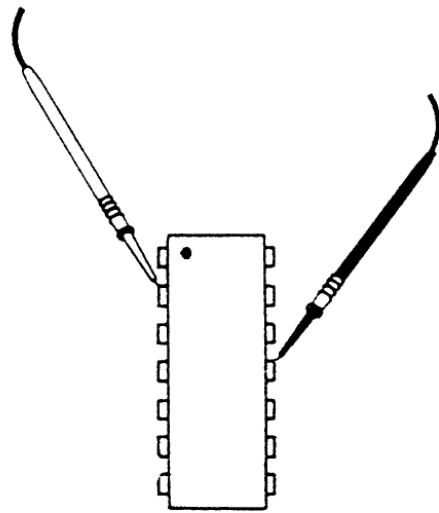
MEDIUM



HIGH



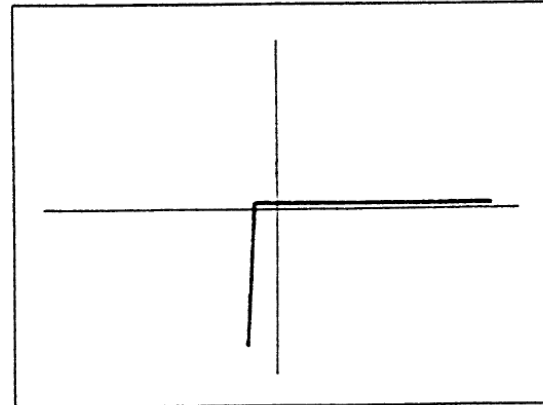
Analog Signature Examples



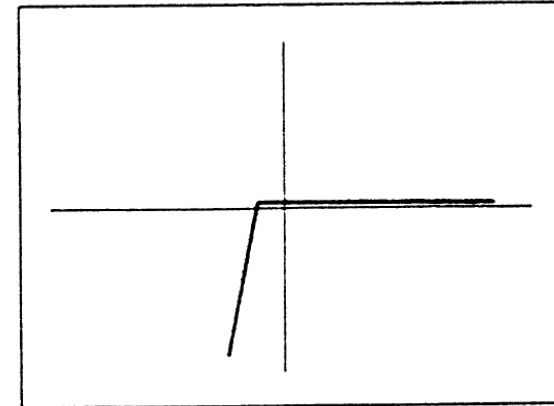
LM324

QUAD OP AMP
INPUT

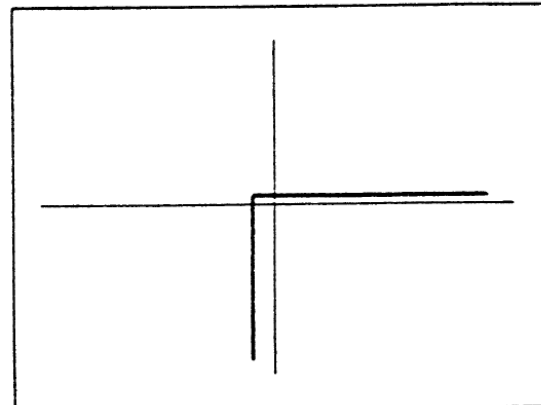
LOGIC



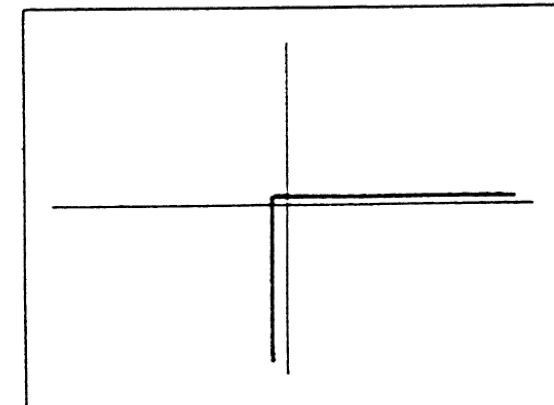
LOW



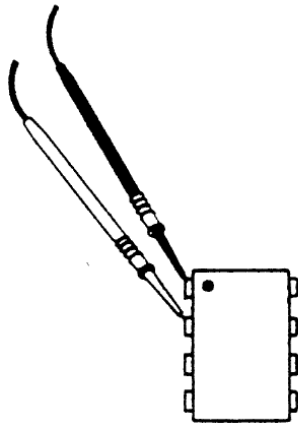
MEDIUM



HIGH

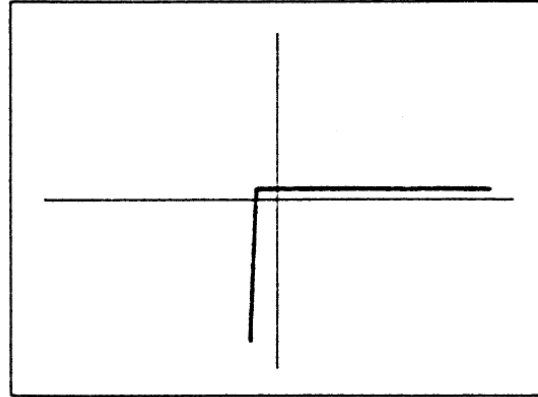


Analog Signature Examples

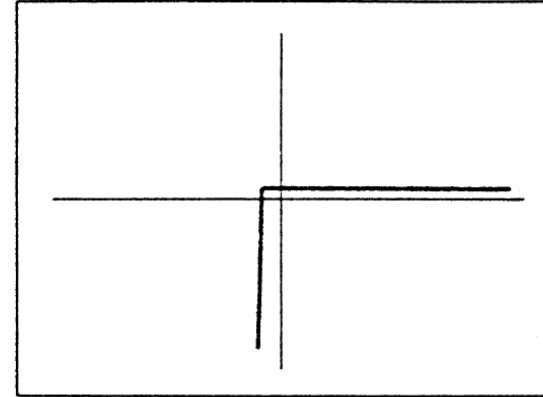


555 TIMER
TRIGGER INPUT

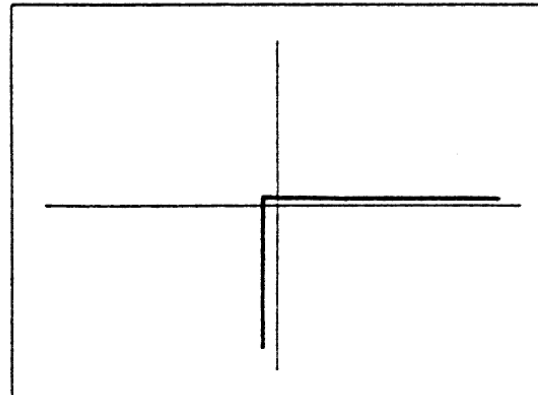
LOGIC



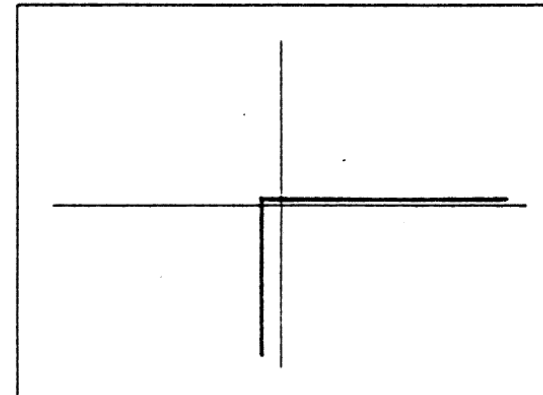
LOW



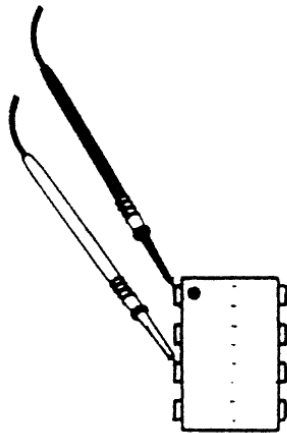
MEDIUM



HIGH

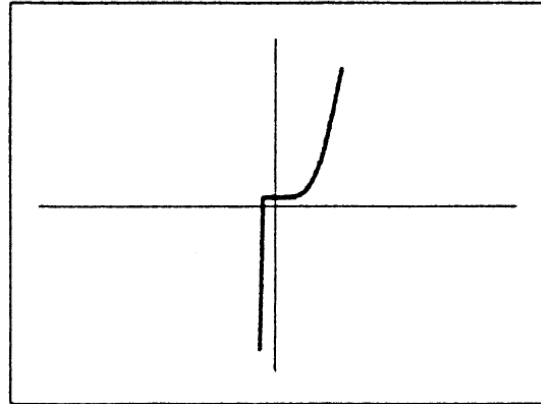


Analog Signature Examples

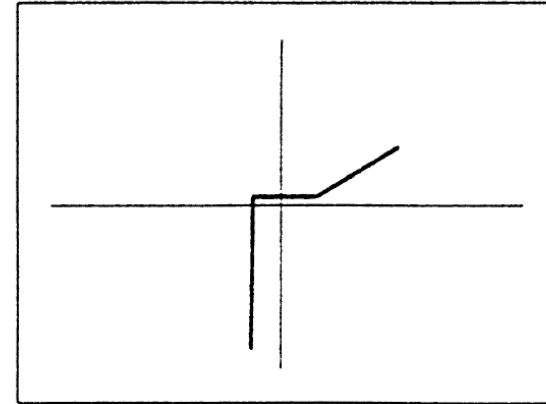


555 TIMER
OUTPUT

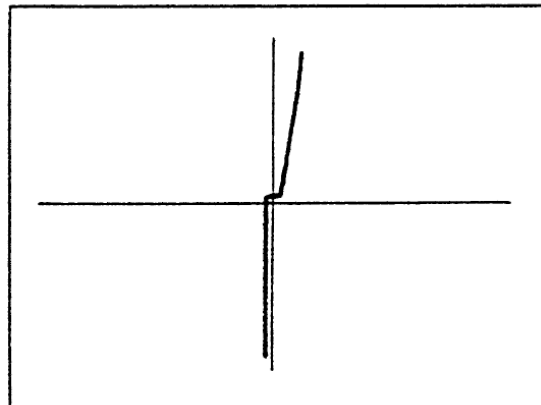
LOGIC



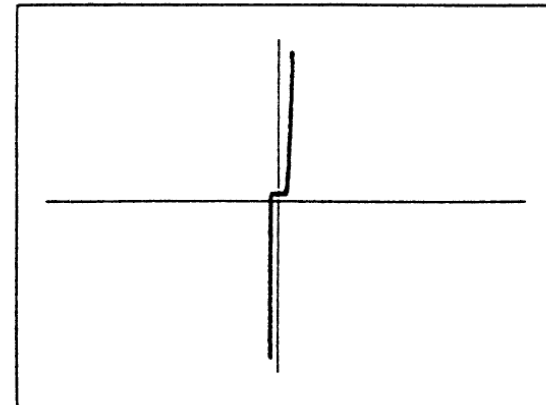
LOW



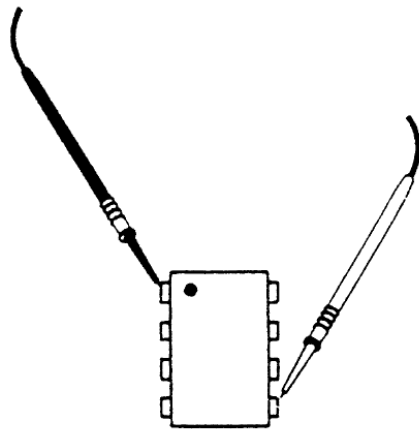
MEDIUM



HIGH

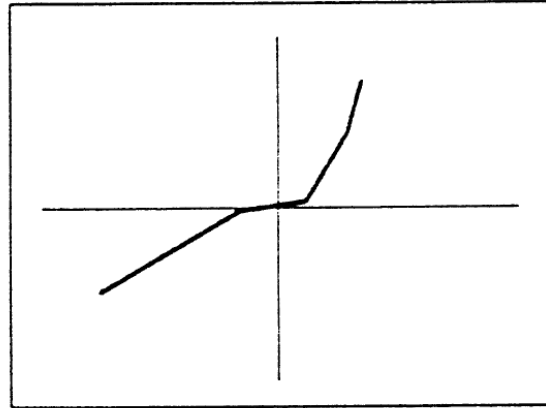


Analog Signature Examples

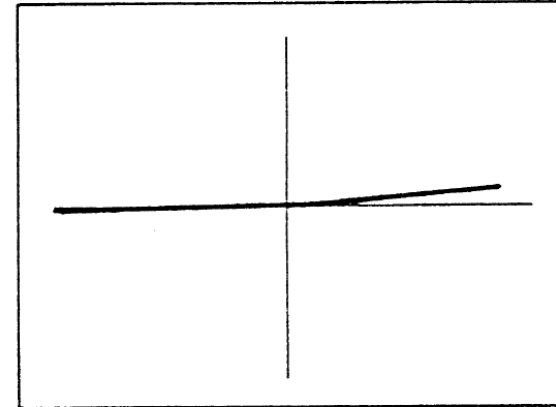


555 TIMER
CONTROL INPUT

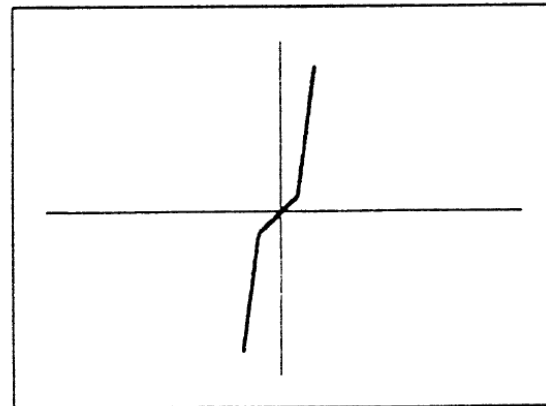
LOGIC



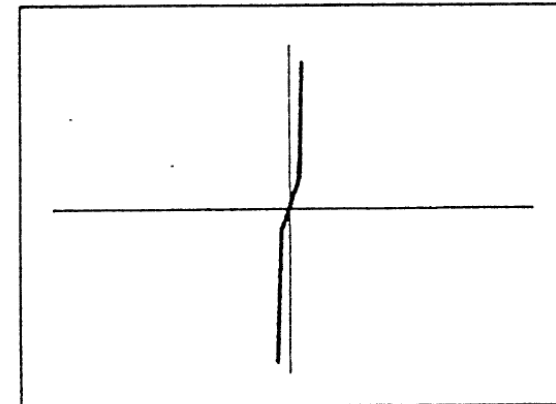
LOW



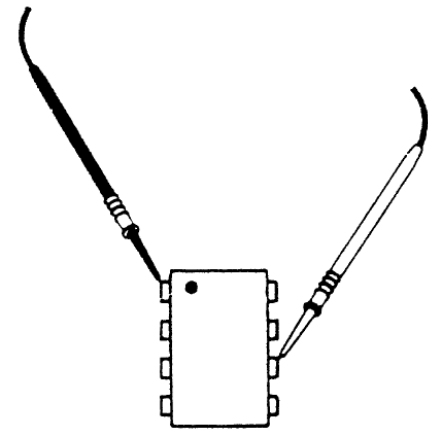
MEDIUM



HIGH

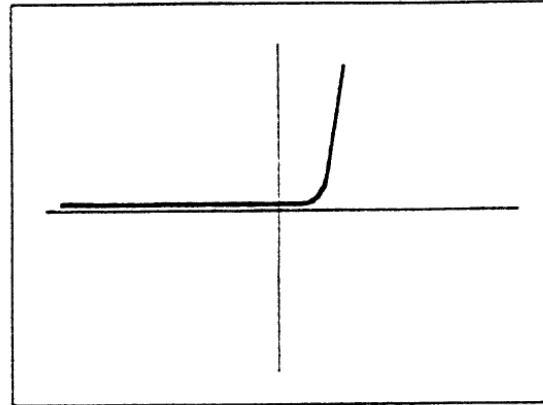


Analog Signature Examples

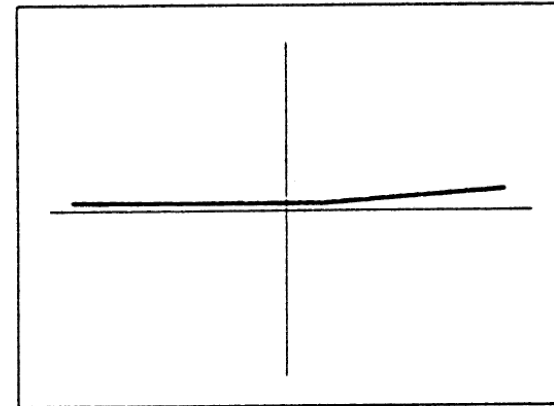


555 TIMER
THRESHOLD INPUT

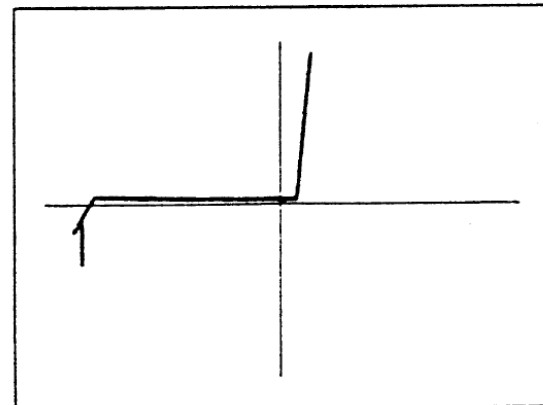
LOGIC



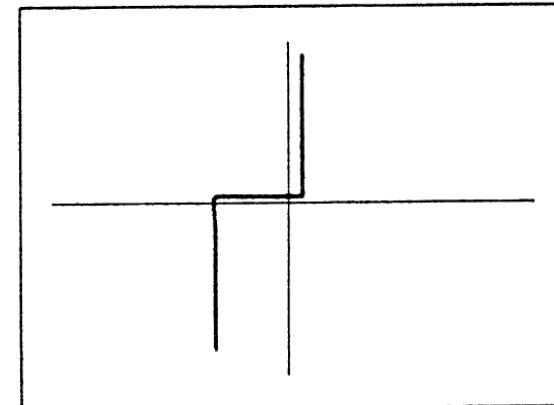
LOW



MEDIUM



HIGH



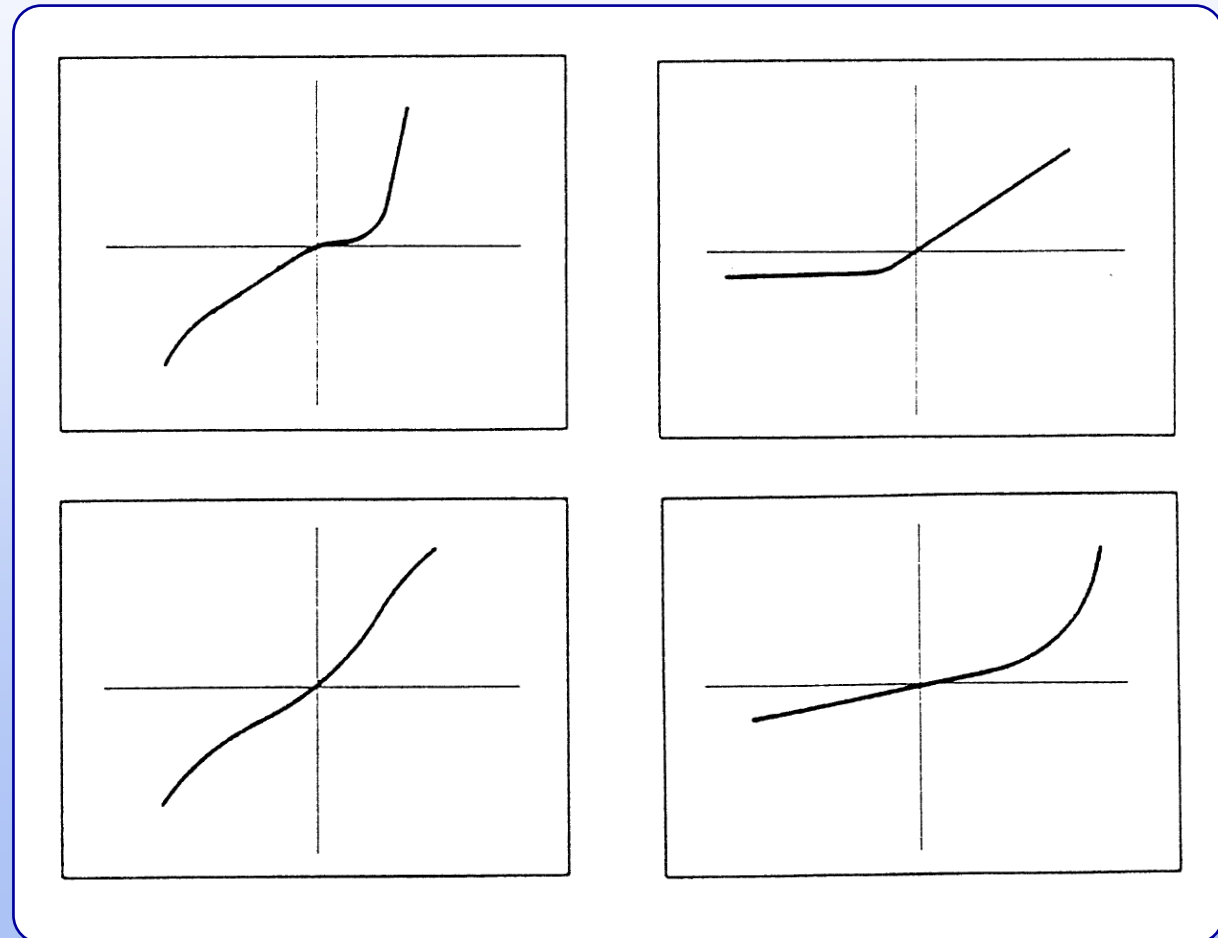
Analog Signature Examples

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



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Polar GRS550 Fault Locator



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