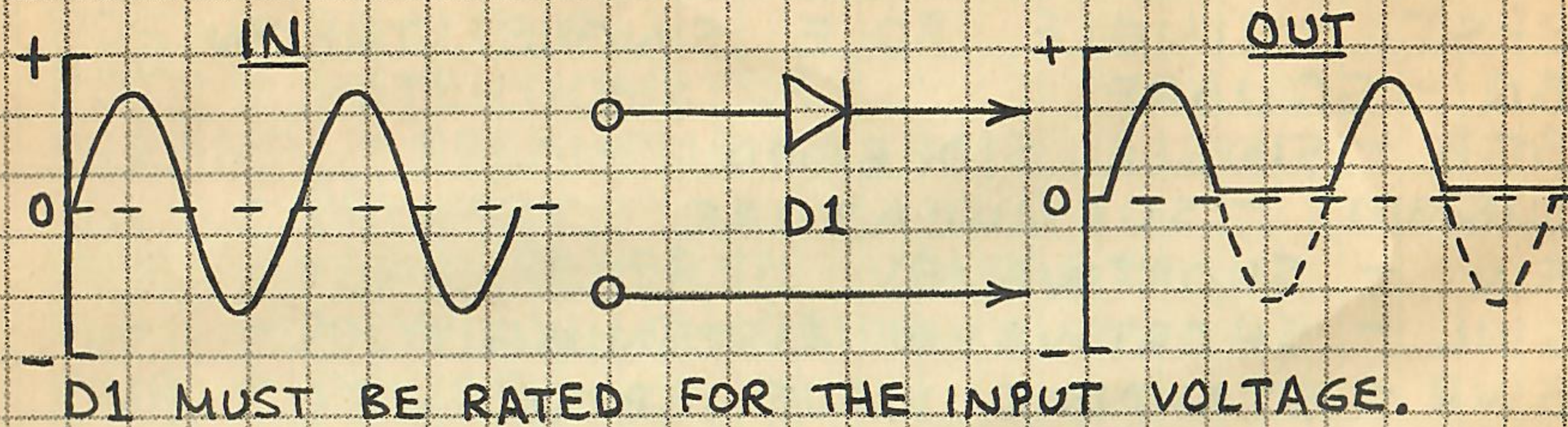
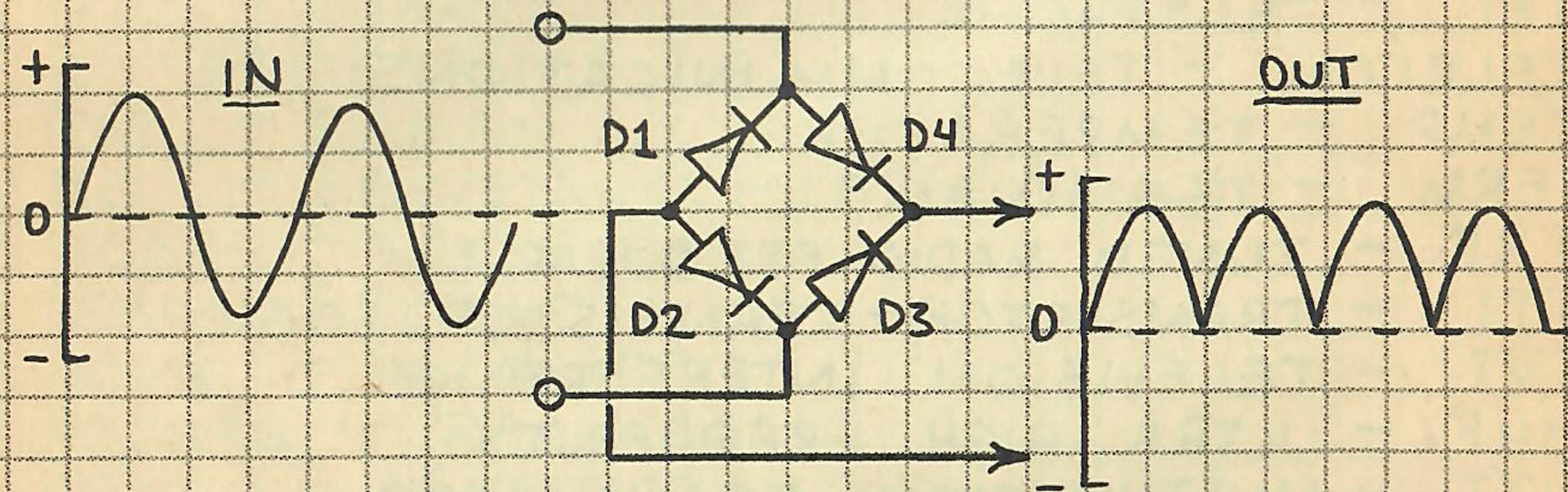


6. BASIC ELECTRONIC CIRCUITS

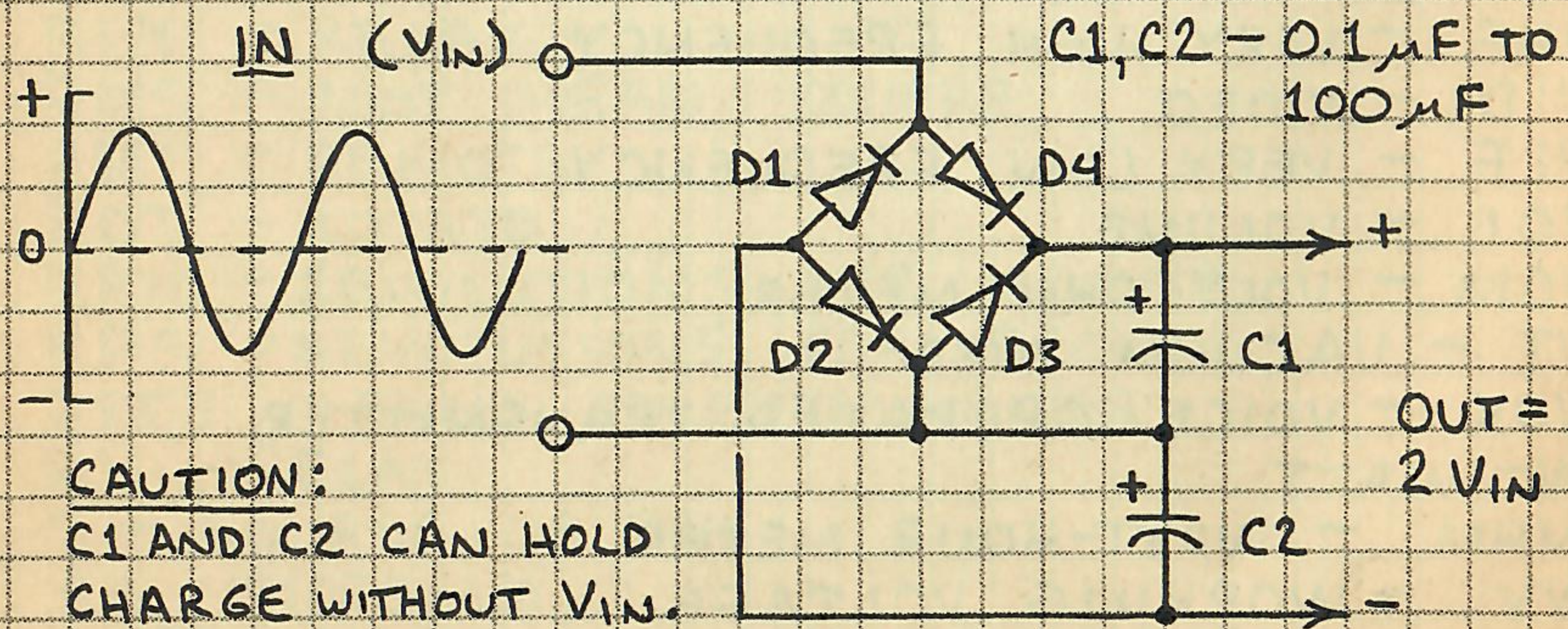
HALF-WAVE RECTIFIER



FULL-WAVE RECTIFIER

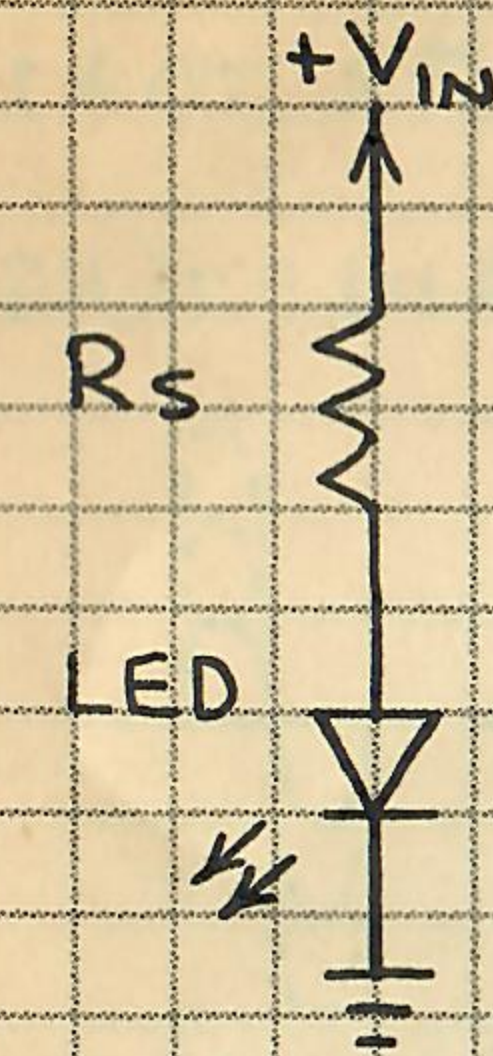


VOLTAGE DOUBLER



D1-D4, C1 AND C2 MUST BE RATED FOR AT LEAST TWICE THE INPUT VOLTAGE.

BASIC LED DRIVER



$$R_s = \frac{V_{IN} - V_{LED}}{I_{LED}}$$

V_{IN} = INPUT VOLTAGE

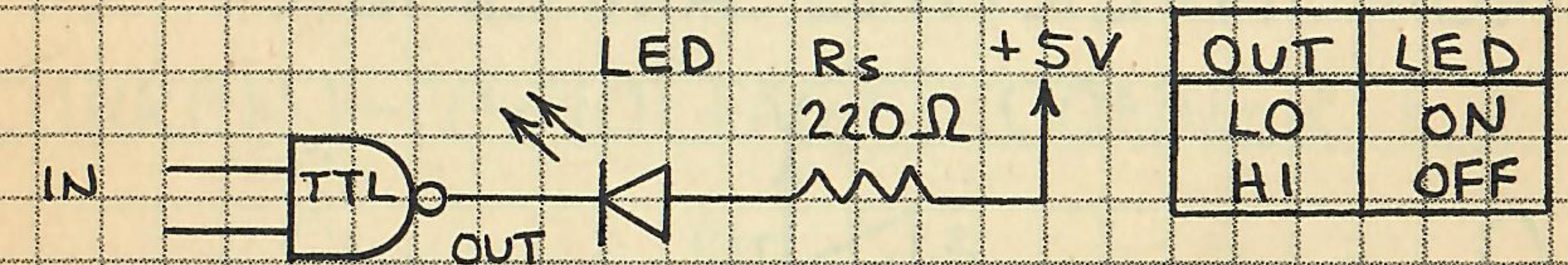
I_{LED} = LED FORWARD CURRENT (DESIRED OR SPECIFIED)

V_{LED} = LED VOLTAGE DROP

EXAMPLE: ASSUME $V_{IN} = 9$ VOLTS AND $V_{LED} = 1.7$ VOLTS. CALCULATE VALUE OF R_s FOR $I_{LED} = 20$ mA.

$$R_s = \frac{9 - 1.7}{.02} = 365 \text{ OHMS (OK TO USE CLOSEST STANDARD VALUE)}$$

LOGIC GATE LED DRIVERS



NOTE: CMOS WILL DIRECTLY DRIVE SUPER BRIGHT LEDs IF I_{LED} IS KEPT BELOW A FEW MILLIAMPERES.

