

THE FORMATIVE YEARS: 1955-1960

1957 TRANSISTOR AND SOLID STATE CIRCUITS CONFERENCE

1.1 A DECADE RING COUNTER USING AVALANCHE-OPERATED JUNCTION TRANSISTORS

J. E. Lindsay - Radio Corp. of America, Camden

1. IMPROVED SWITCHING TIMES
2. CURRENT CONTROLLED N-TYPE NEGATIVE RESISTANCE CHARACTERISTICS SUITABLE FOR BISTABLE OPERATION
3. AVALANCHE-DERIVED PROPERTIES RELATIVELY INSENSITIVE TO TEMPERATURE CHANGE
4. IMPORTANT FEATURES CAN BE DESCRIBED ANALYTICALLY

SUMMARY OF AVALANCHE CHARACTERISTICS
FIGURE 1

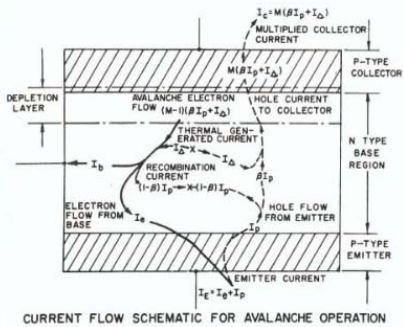
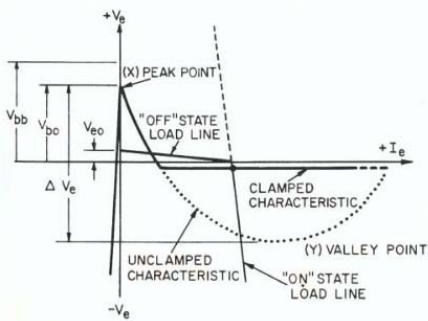


FIGURE 3



EMITTER INPUT CHARACTERISTIC AND LOAD LINES FOR THE BISTABLE FLIP-FLOP
FIGURE 5

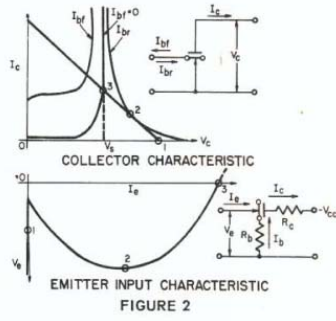
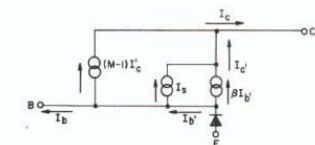
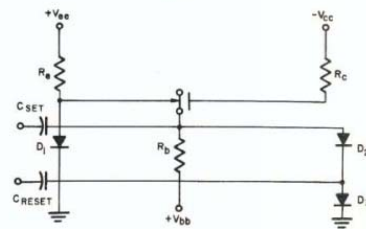


FIGURE 2



I_b' = CURRENT DUE TO ELECTRONS CROSSING EMITTER JUNCTION
 $\beta I_b'$ = HOLE CURRENT FROM EMITTER JUNCTION
 I_s = THERMAL CURRENT
 I_c' = HOLE CURRENT INTO COLLECTOR JUNCTION
 $(M-1) I_c'$ = CURRENT FROM AVALANCHE MULTIPLICATION AT COLLECTOR JUNCTION

FIGURE 4



BISTABLE FLIP-FLOP
FIGURE 6

The 1957 Technical Addendum to the Program Booklet.

A.2 BIAS CONSIDERATIONS IN TRANSISTOR CIRCUIT DESIGN

Sorab K. Gandhi - General Electric Company, Syracuse

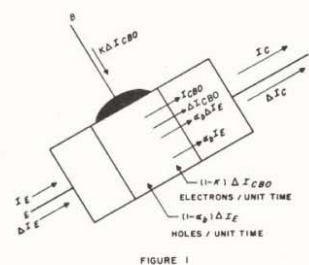


FIGURE 1

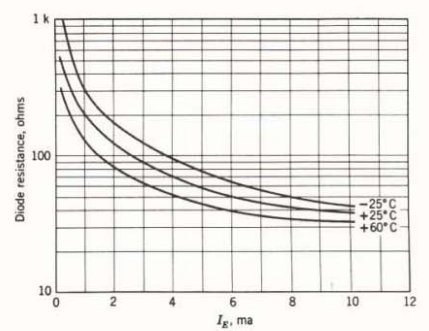


FIGURE 2

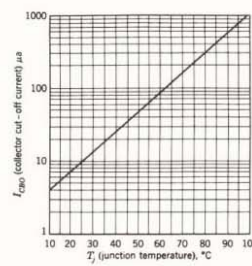


FIGURE 3

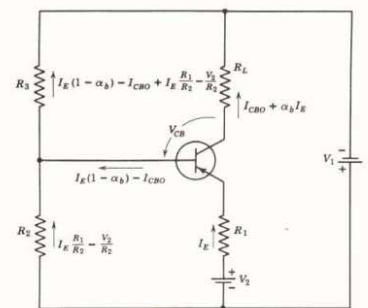


FIGURE 4

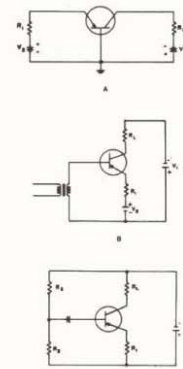


FIGURE 5

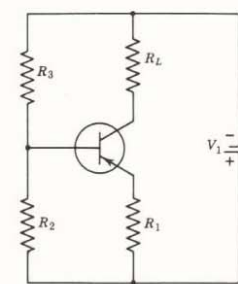


FIGURE 6

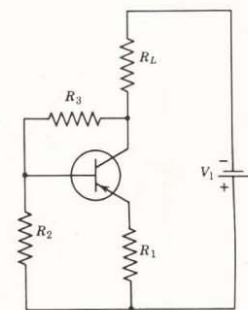


FIGURE 7