

Emitter - Coupled Astable Multivibrator

Figure (c) shows the circuit diagram of an emitter coupled astable multivibrator.

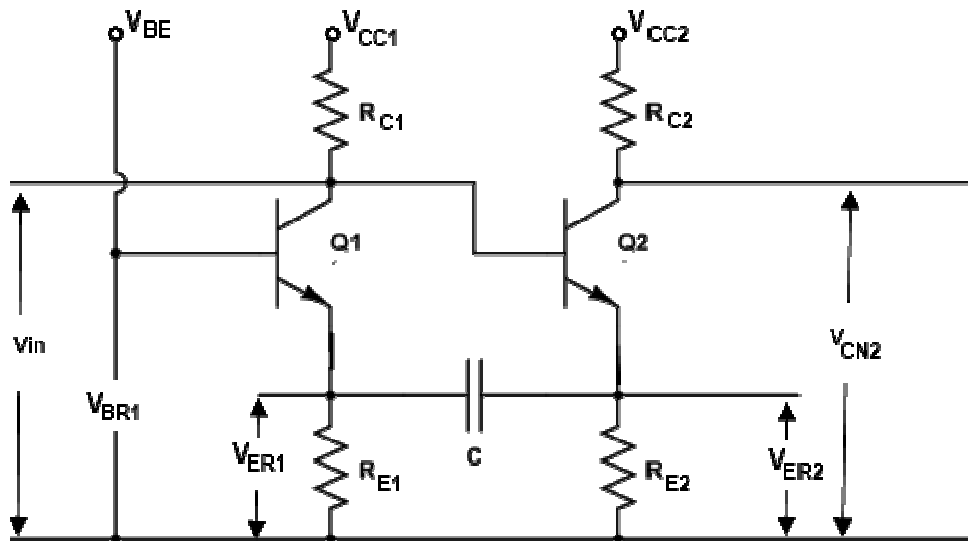


Figure (c) Emitter - Coupled astable multivibrator

In a collector coupled symmetrical astable multivibrator if it is desired to vary the frequency., then it is necessary

- (i) to vary both the timing capacitor simultaneously
- (ii) to vary both the timing resistor subject to the condition that the values are enough to keep the transistors in saturation
- (iii) to vary V_{BB} which also can not be varied over a long range. Thus it is difficult to achieve frequency control in collector coupled astable multivibrator, not an emitter coupled multivibrator, to be described here, has a single timing capacitor connected across the emitter. This capacitor can be varied easily.

In order to explain the operation of the circuit, it is necessary that the following conditions must be satisfied.

1. In D.C. conduction i.e. with timing capacitor C removed bias should be so adjusted that both the transistors are in active region.
2. Under D.C. condition, the D.C. loop gain should be less than unity to avoid bistable operation.

3. In the active region, the loop gain must be greater than unity at some non-zero frequency.
4. Bias conditions are so adjusted that with the capacitor C concerned, during normal operation, transistor C_1 operates between cut-off and saturation while transistor C_2 operates at the same time between its active region and the off region. This transistor Q_1 operates in saturated mode and transistor Q_1 operates in saturated mode and transistor Q_2 operates in unsaturated mode.