BME 212 Electronics Laboratory

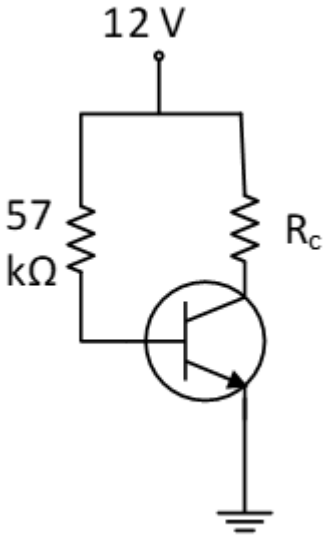
Experiment #3 Examination of BJT Characteristics

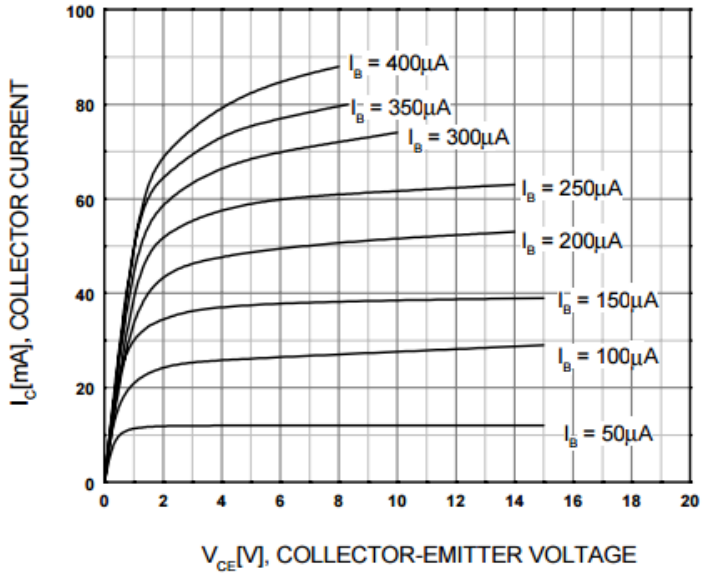
Objective

The objective of this experiment is to study the characteristic of a BJT transistor.

Preliminary Work

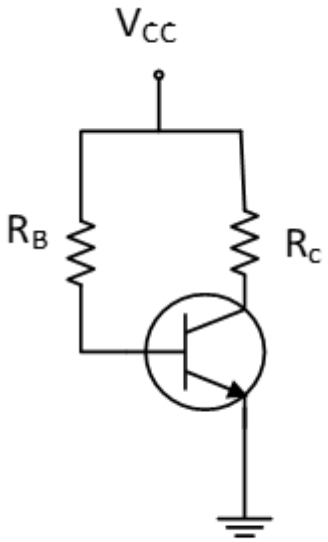
1- Find the minumum R_c value for safe operation of transistor in active region if Pmax = 500 mW.

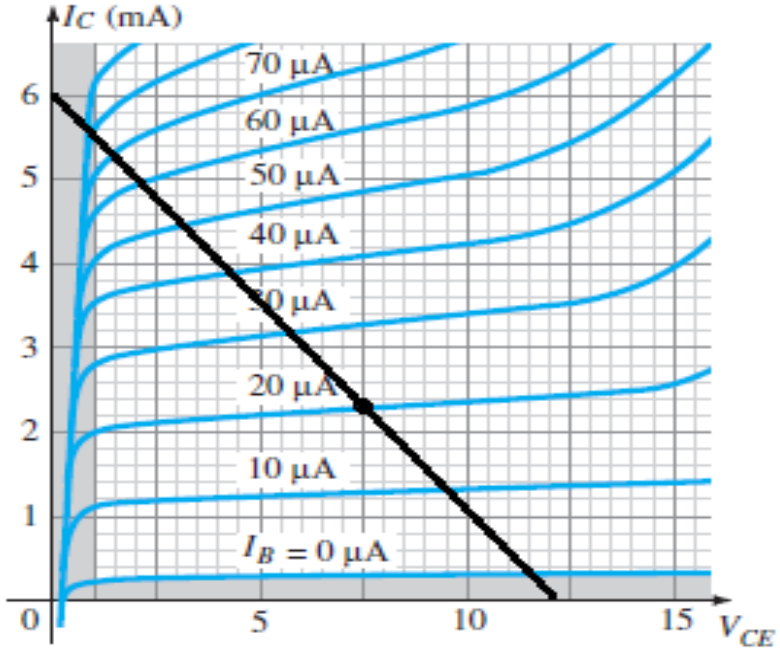




Preliminary Work (Cont.)

2- Find V_{CC}, R_B and R_C to achive the Q point given in the figure and calculate the β value of the transistor.





Procedure

Warning: Before starting the experiment, adjust the P_1 and P_2 potantiometers to maximum value and then decrease to have given I_B currents in a. and b.

1) For given circuit below,

a) Adjust the P_1 (100 kΩ)potantiometer value to have I_B = 50 uA.

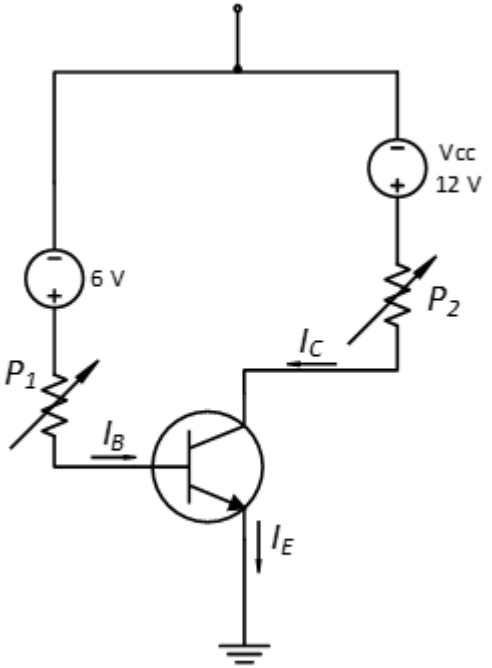
Adjust the P_2 (10 kΩ) potantiometer value for each V_{CE} voltage shown in table and measure the corresponding I_C values.

V_{CE} (V)	0.5	1	2	4	6	8	10	12

b) Adjust the P_1 potantiometer value to have I_B = 100 uA.

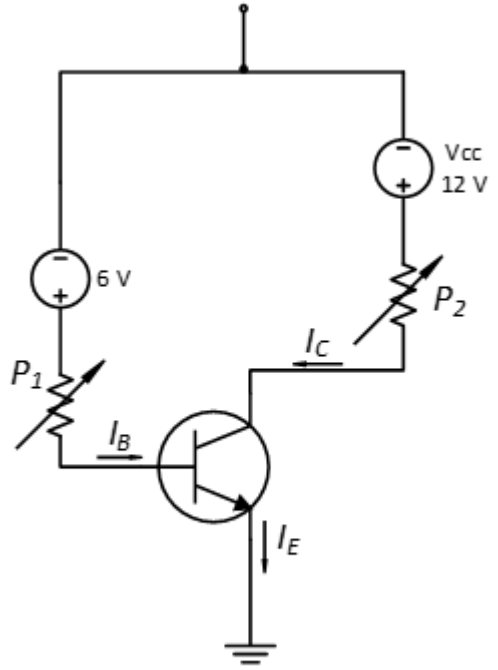
Adjust the P_2 potantiometer value for each V_{CE} voltage shown in table and measure the corresponding I_C values.

V_{CE} (V)	0.5	1	2	4	6	8	10	12



Procedure (Cont.)

c)Using measurements in steps a and b plot the I_C - V_{CE} characteristic (Indicate I_B on the graph).



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Results

1) a) Obtaining I_C values when I_B = 50 uA for following V_{CE} values.

V_{CE} (V)	0.5	1	2	4	6	8	10
I_C							

b) Obtaining I_C values when I_B = 220 uA for following V_{CE} values.

V_{CE} (V)	0.5	1	2	4	6	8	10
I_C							

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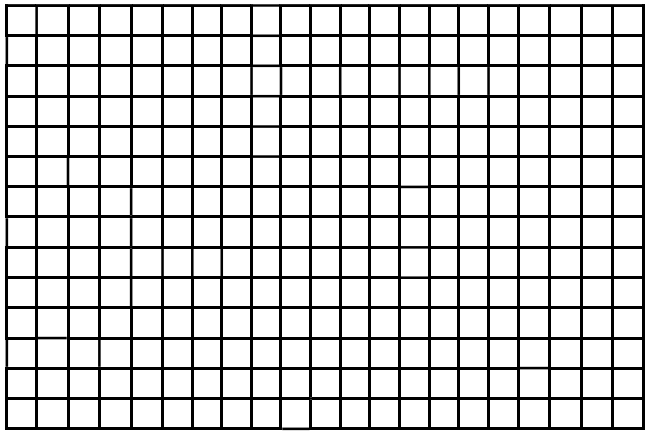
Results (Cont.)

c) Plot transistor characteristics



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