In [1]:
```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
%matplotlib inline
```

In [2]:
```
data = pd.read_csv('2N2222Adc.csv', sep =';')
data = data.drop(['INDEX'], axis = 1)
data.columns = ['Vce', 'Ic']
data
```

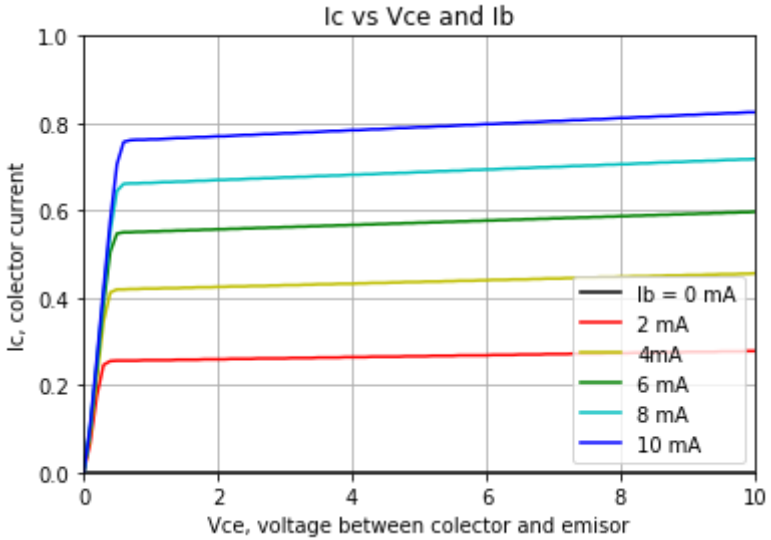
Out[2]:

	Vce	Ic
0	0.000000e+000	-1,71E-16
1	1,00E+05	2,25E-07
2	2,00E+05	3,53E-07
3	3,00E+05	4,79E-07
4	4,00E+05	6,05E-07
...	...	...
601	9,60E+06	8,23E+05
602	9,70E+06	8,23E+05
603	9,80E+06	8,24E+05
604	9,90E+06	8,25E+05
605	1,00E+07	8,25E+05

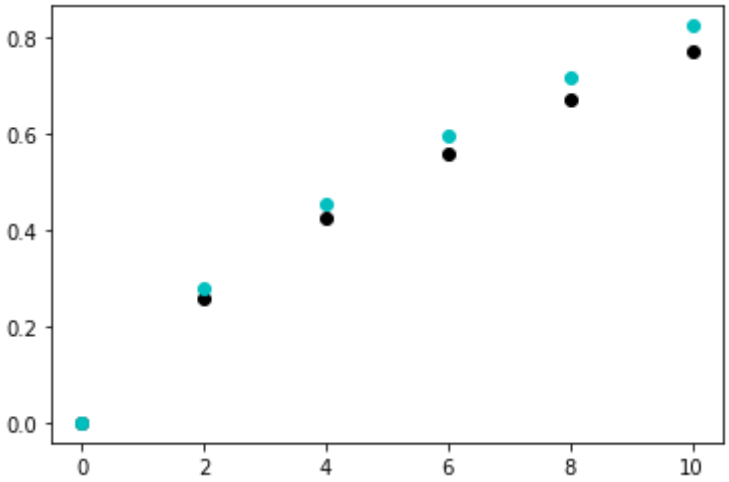
606 rows × 2 columns

In [3]:
```
data['Vce'] = data['Vce'].str.replace(',', '.').astype(np.float)/1E6
data['Ic'] = data['Ic'].str.replace(',', '.').astype(np.float)/1E6
```

In [4]:
```
n = (data.size/2/6).astype(np.int)
color = ['k-', 'r-', 'y-', 'g-', 'c-', 'b-']
for i in range(6):
    plt.plot(data['Vce'][n*i:n*(i+1)], data['Ic'][n*i:n*(i+1)], color[i])
plt.legend(['Ib = 0 mA', '2 mA', '4mA', '6 mA', '8 mA', '10 mA'], loc='best')
plt.grid(True)
plt.ylabel('Ic, colector current')
plt.xlabel('Vce, voltage between colector and emisor')
plt.title('Ic vs Vce and Ib')
plt.axis([0, 10, 0, 1])
plt.show()
```



In [8]:
```
# ib values must be in uA
t = data[data['Vce'] == 2]
plt.plot([0, 2, 4, 6, 8, 10], t['Ic'], 'ko')
t = data[data['Vce'] == 10]
plt.plot([0, 2, 4, 6, 8, 10], t['Ic'], 'co')
plt.show()
```



In [ ]: