

EXPERIMENTAL RESULTS

1. Extracting Diode Characteristics

1.1. Correct Polarization of the Diode

Table 1. Correct polarization of the diode

I_D (mA)	E_D (V)	$R_D = \frac{E_D}{I_D}$
0		
2		
4		
6		
8		
10		
12		
15		

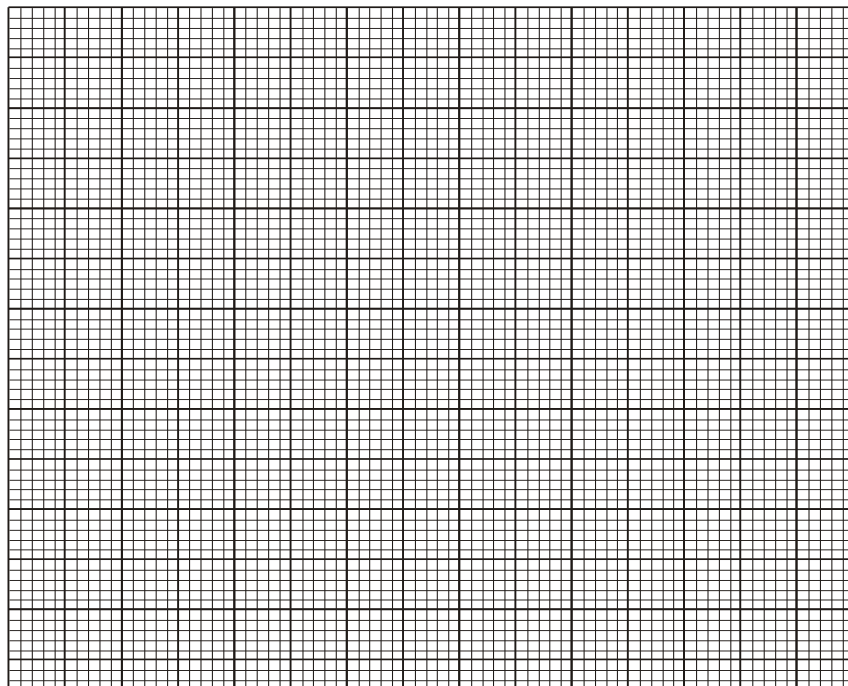


Figure 1. The correct bias characteristic curve of the diode

1.2. Diode Reverse Polarization

Table 2. Diode reverse polarization

E_D (V)	I_D (μA)
0	
4	
8	
12	

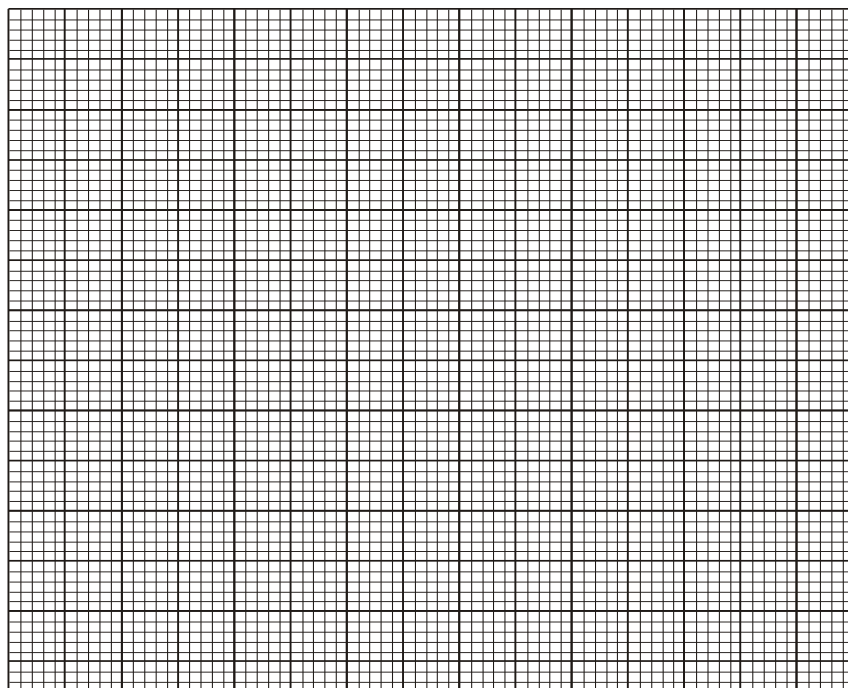


Figure 2. Reverse bias characteristic curve of the diode

- When the diode is in reverse bias, what is the current at the μA level?
- Interpret the graphs obtained in Figure 1 and 2.

2. Analyzing The Thyristor Experiment**2.1. Forward Blocking Mode Tests****Table 3.** Forward blocking mode tests

Supply Voltage (V_{DC})	Thyristor Current (I_{thy})	The Voltage Drop Over The Thyristor (E_{thy})
0		
5		
10		
15		
20		
25		
30		

- Interpret the results obtained.

2.2. Reverse Blocking Mode Test**Table 4.** Reverse Blocking Mode Test

Supply Voltage (V_{DC})	Thyristor Current (I_{thy})	The Voltage Drop Over The Thyristor (E_{thy})
0		
5		
10		
15		
20		
25		
30		

- Interpret the results obtained.

2.3. Forward Breakdown Voltage Of The Thyristor

Table 5. Forward breakdown voltage of the thyristor

Thyristor Forward Breakdown Voltage (V_{BO})	Thyristor Gate Current (I_g)
	0
	5
	10
	15
	30

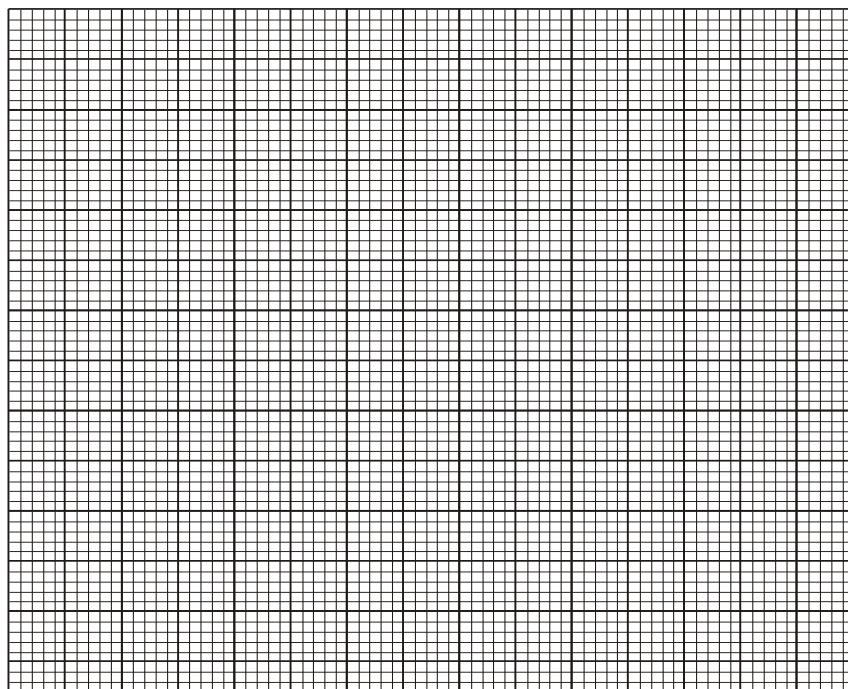


Figure 3. The change curve of $I_g - V_{BO}$

- Interpret the results obtained.

3. MOSFET Experiments

3.1. MOSFET ON-OFF Test

Table 6. MOSFET ON-OFF Test

Gate Voltage (V_{GS})	Output Voltage (V_{OUT})
0	
2	
3	
3.3	
3.8	
4	
4.2	
5	
8	

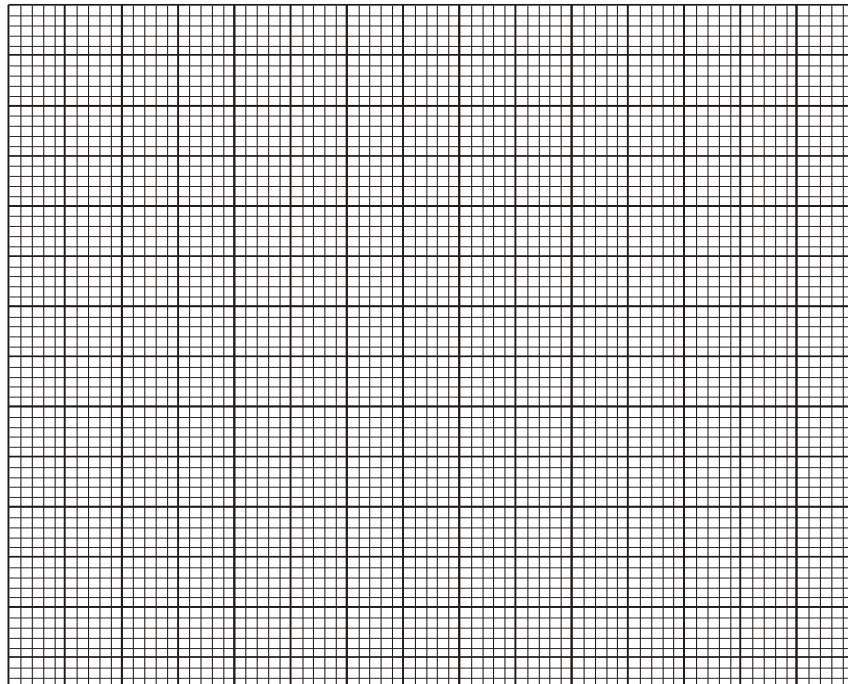


Figure 4. The change curve of $V_{GS} - V_{out}$

- Interpret the results obtained.

3.2. MOSFET Switching Test

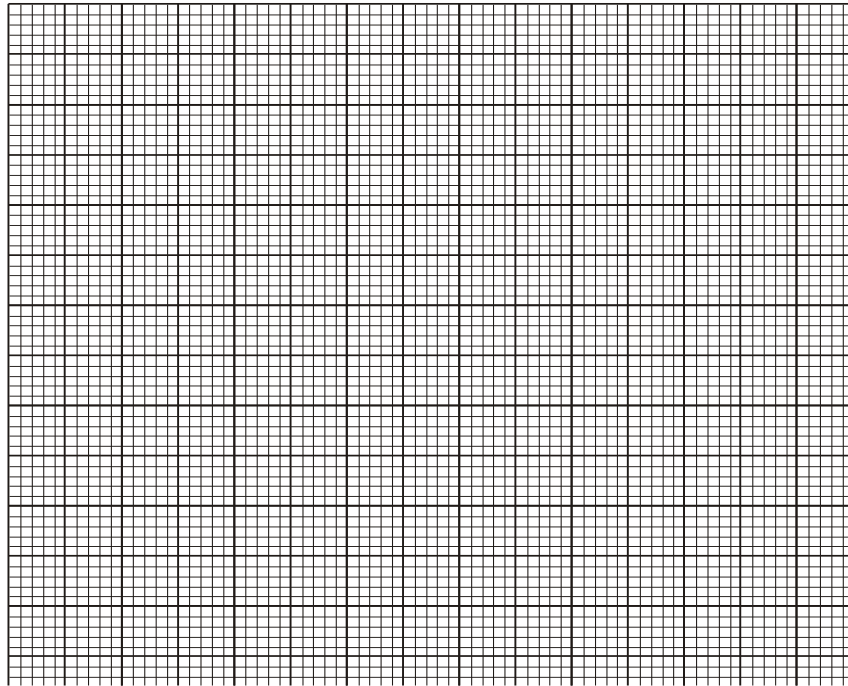


Figure 5. V_{GS} and V_{DS} voltages (for 10 V)

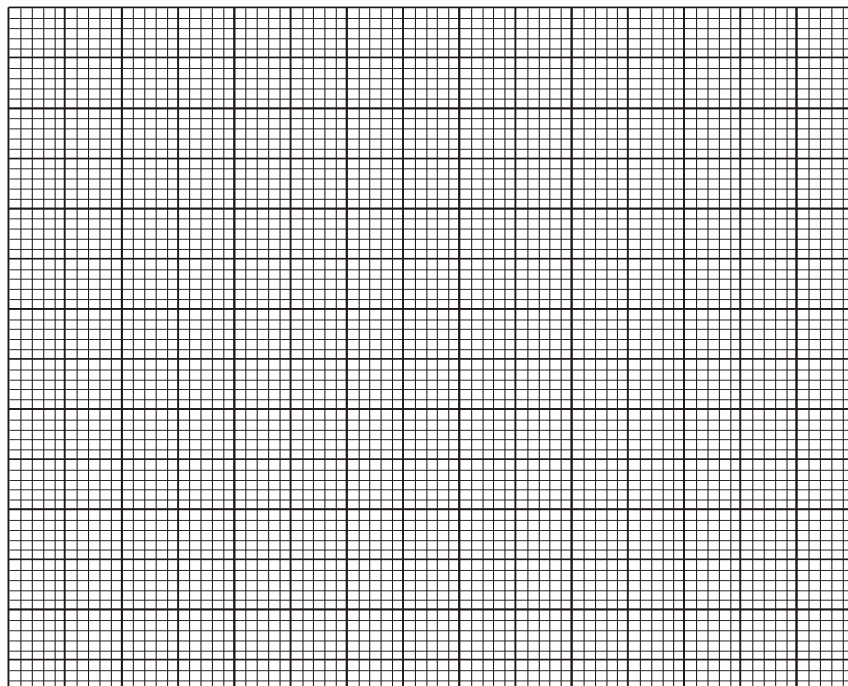


Figure 6. V_{GS} and V_{DS} voltages (for the threshold value)

- Interpret the results obtained.

4. IGBT Experiments

4.1. IGBT ON-OFF Test

Table 7. IGBT ON-OFF Test

Gate Voltage (V_{GE})	Output Voltage (V_{OUT})
0	
2	
3	
4	
6	
7	
8	
9	
10	

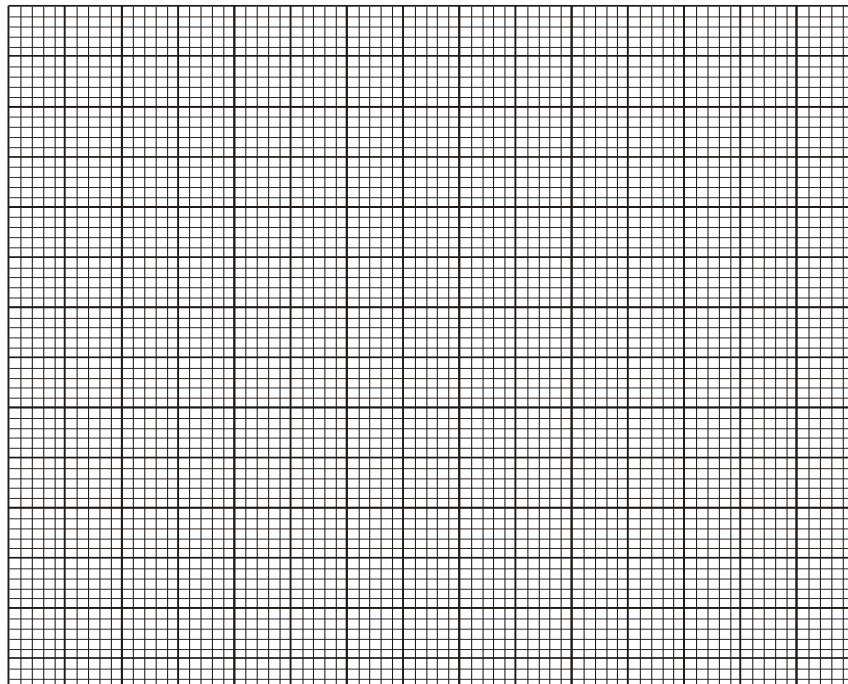


Figure 7. The change curve of $V_{GE} - V_{out}$

- Interpret the results obtained.

3.2. IGBT Switching Test

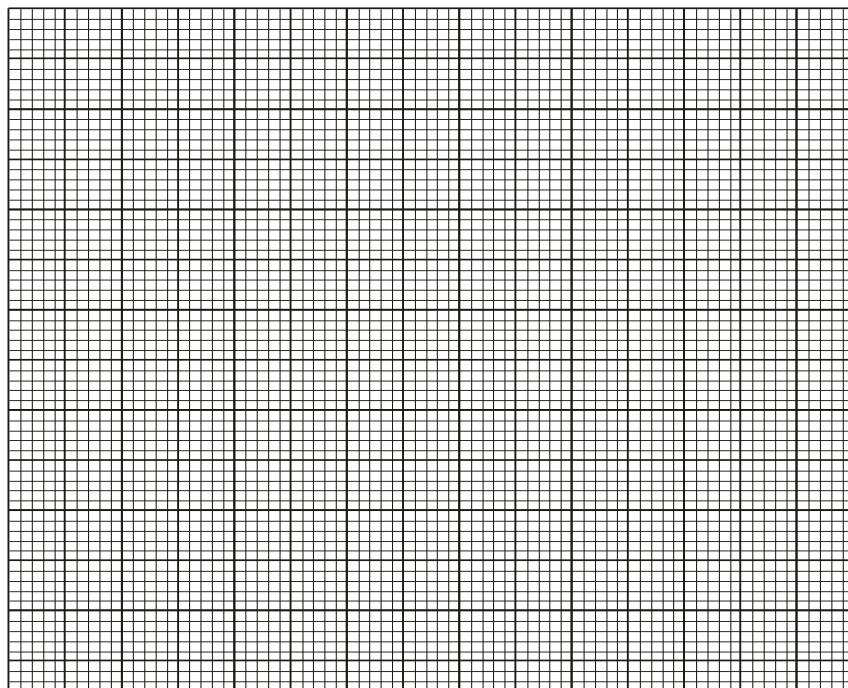


Figure 8. V_{GE} and V_{CE} voltages (for 10 V)

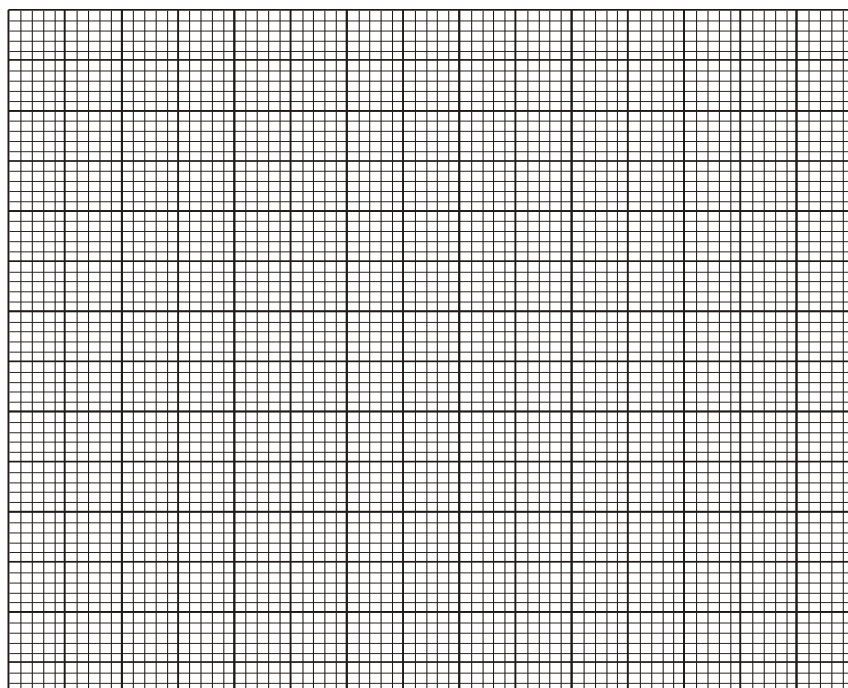


Figure 9. V_{GE} and V_{CE} voltages (for the threshold value)

- Interpret the results obtained.

